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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 15, 1995 Volume 1177 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1175 O.G. 52, on June 20, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1174 O.G. 57, on May 9, 1995.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective June 20, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1722.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

May 30, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

Withdrawal of Chapter II Reservations by Liechtenstein and Switzerland

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that on June 1, 1995, Liechtenstein and Switzerland notified the withdrawal of their declarations under Article 64(1)(a) of the PCT. Liechtenstein and Switzerland will become bound by Chapter II of the PCT on September 1, 1995.

The withdrawals of the declarations has the effect that, on and after September 1, 1995,

(a) nationals and residents of Liechtenstein and Switzerland may submit demands for international preliminary examination of international applications filed by them;

(b) Liechtenstein and Switzerland may be elected in demands for international preliminary examination, or in later elections, submitted in respect of international applications in which Liechtenstein and Switzerland are designated States;

(c) paragraphs (a) and (b) apply irrespective of whether the international application is filed before, on or after September 1, 1995.

The time limit for entering the national phase before the Swiss Federal Intellectual Property Office will be extended from 20 to 30 months from the priority date if Liechtenstein and Switzerland are elected in a demand for international preliminary examination or in a later election, provided the said demand or later election is received before the expiration of the 19th month from the priority date, even in respect of international applications which are pending on September 1, 1995.

July 17, 1995 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for a Decision Without a Hearing as of June 30, 1995.

Chemical Discipline -	03/11/93
Mechanical Discipline -	06/08/94
Electrical Discipline -	04/01/94

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of June 30, 1995.

Chemical Discipline -	04/08/93
Mechanical Discipline -	04/26/94
Electrical Discipline -	06/07/94

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of June, 1995.

Affirmed	88
Affirmed-in-Part	12
Reversed	76
Total Decided	176

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 11, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,136,721 through 5,138,713
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 9, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,761,834 through 4,763,361
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 7, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,463,455 through 4,464,794
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 7, 1995 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,912	06/515,418	06/11/85
(4,386,999)	(06/415,126)	(06/07/83)
Re. 32,220	06/637,888	08/05/86
(4,386,763)	(06/309,646)	(06/07/83)
Re. 33,569	07/354,166	04/09/91
(4,669,469)	(06/834,950)	(06/02/87)
Re. 33,618	07/360,225	06/25/91
(4,669,160)	(06/835,830)	(06/02/87)
Re. 33,691	07/361,843	09/17/91
(4,670,682)	(06/685,109)	(06/02/87)
Re. 34,228	07/844,782	04/20/93
(5,021,539)	(07/328,438)	(06/04/91)
4,386,465	06/249,415	06/07/83
4,386,481	06/326,064	06/07/83
4,386,485	06/240,420	06/07/83
4,386,487	06/271,331	06/07/83
4,386,501	06/287,992	06/07/83
4,386,502	06/280,353	06/07/63
4,386,503	06/235,050	06/07/83
4,386,506	06/246,852	06/07/83
4,386,508	06/269,061	06/07/83
4,386,516	06/223,517	06/07/83
4,386,525	06/414,305	06/07/83
4,386,528	06/290,839	06/07/83
4,386,532	06/354,862	06/07/83
4,386,534	06/311,858	06/07/83
4,386,544	06/228,531	06/07/83
4,386,549	06/308,357	06/07/83
4,386,552	06/232,844	06/07/83
4,386,555	06/206,402	06/07/83
4,386,576	06/338,348	06/07/83
4,386,587	06/333,244	06/07/83
4,386,598	06/280,079	06/07/83
4,386,600	06/236,862	06/07/83
4,386,601	06/292,051	06/07/83
4,386,608	06/283,555	06/07/83
4,386,612	06/308,938	06/07/83
4,386,614	06/310,293	06/07/83
4,386,619	06/314,802	06/07/83
4,386,625	06/261,402	06/07/83
4,386,629	06/279,631	06/07/83
4,386,631	06/232,421	06/07/83
4,386,641	06/261,874	06/07/83
4,386,658	06/280,407	06/07/83
4,386,665	06/315,394	06/07/83
4,386,673	06/327,314	06/07/83
4,386,683	06/254,091	06/07/83
4,386,684	06/372,865	06/07/83
4,386,690	06/220,668	06/07/83
4,386,692	06/277,621	06/07/83
4,386,693	06/256,954	06/07/83
4,386,705	06/228,597	06/07/83
4,386,707	06/250,380	06/07/83
4,386,708	06/233,946	06/07/83
4,386,713	06/351,869	06/07/83
4,386,729	06/246,473	06/07/83
4,386,737	06/229,648	06/07/83
4,386,742	06/289,034	06/07/83
4,386,744	06/244,246	06/07/83
4,386,747	06/310,602	06/07/83
4,386,764	06/336,912	06/07/83
4,386,765	06/313,437	06/07/83
4,386,767	06/263,405	06/07/83
4,386,775	06/283,918	06/07/83
4,386,785	06/369,893	06/07/83
4,386,788	06/234,226	06/07/83
4,386,791	06/280,760	06/07/83
4,386,805	06/246,948	06/07/83
4,386,807	06/244,998	06/07/83
4,386,808	06/288,633	06/07/83
4,386,810	06/288,975	06/07/83
4,386,811	06/281,051	06/07/83
4,386,817	06/218,946	06/07/83
4,386,819	06/297,543	06/07/83
4,386,824	06/217,468	06/07/83
4,386,830	06/298,158	06/07/83
4,386,845	06/220,721	06/07/83
4,386,859	06/274,000	06/07/83
4,386,862	06/296,485	06/07/83
4,386,867	06/246,963	06/07/83
4,386,868	06/224,104	06/07/83
4,386,873	06/218,011	06/07/83
4,386,878	06/260,216	06/07/83
4,386,882	06/241,389	06/07/83
4,386,890	06/230,636	06/07/83
4,386,896	06/349,807	06/07/83
4,386,901	06/246,249	06/07/83
4,386,902	06/269,050	06/07/83
4,386,905	06/217,907	06/07/83
4,386,911	06/325,635	06/07/83
4,386,914	06/254,405	06/07/83
4,386,926	06/234,907	06/07/83
4,386,927	06/285,635	06/07/83
4,386,938	06/313,211	06/07/83
4,386,953	06/299,919	06/07/83
4,386,955	06/255,514	06/07/83
4,386,958	06/260,138	06/07/83
4,386,969	06/279,427	06/07/83
4,386,970	06/312,967	06/07/83
4,386,971	06/354,358	06/07/83
4,386,974	06/333,716	06/07/83
4,386,975	06/274,354	06/07/83
4,386,984	06/281,987	06/07/83
4,386,986	06/251,680	06/07/83
4,386,987	06/277,951	06/07/83
4,386,991	06/234,206	06/07/83
4,386,993	06/335,671	06/07/83
4,387,003	06/284,525	06/07/83
4,387,008	06/215,763	06/07/83
4,387,014	06/318,199	06/07/83
4,387,015	06/431,511	06/07/83
4,387,026	06/228,662	06/07/83
4,387,033	06/293,861	06/07/83
4,387,034	06/314,375	06/07/83
4,387,037	06/329,766	06/07/83
4,387,040	06/307,270	06/07/83
4,387,041	06/301,667	06/07/83
4,387,042	06/311,706	06/07/83
4,387,043	06/288,430	06/07/83
4,387,045	06/269,062	06/07/83
4,387,055	06/282,651	06/07/83
4,387,059	06/324,749	06/07/83
4,387,064	06/289,494	06/07/83
4,387,065	06/317,361	06/07/83
4,387,070	06/227,158	06/07/83
4,387,074	06/336,145	06/07/83
4,387,075	06/271,726	06/07/83
4,387,078	06/286,016	06/07/83
4,387,079	06/299,939	06/07/83
4,387,080	06/230,179	06/07/83
4,387,084	06/314,859	06/07/83
4,387,091	06/240,759	06/07/83
4,387,092	06/237,135	06/07/83
4,387,097	06/357,023	06/07/83
4,387,098	06/361,779	06/07/83
4,387,099	06/348,297	06/07/83
4,387,104	06/292,869	06/07/83
4,387,113	06/353,880	06/07/83

Patent Number	Serial Number	Issue Date
4,387,116	06/335,229	06/07/83
4,387,120	06/239,592	06/07/83
4,387,130	06/371,313	06/07/83
4,387,134	06/366,334	06/07/83
4,387,138	06/364,757	06/07/83
4,387,140	06/220,053	06/07/83
4,387,146	06/383,847	06/07/83
4,387,148	06/293,127	06/07/83
4,387,149	06/354,609	06/07/83
4,387,150	06/294,553	06/07/83
4,357,154	06/383,884	06/07/83
4,387,155	06/267,363	06/07/83
4,387,157	06/324,278	06/07/83
4,387,163	06/282,744	06/07/83
4,387,165	06/370,790	06/07/83
4,387,173	06/254,980	06/07/83
4,387,178	06/317,196	06/07/83
4,387,180	06/427,108	06/07/83
4,387,182	06/268,445	06/07/83
4,387,185	06/391,736	06/07/83
4,387,189	06/297,948	06/07/83
4,387,190	06/289,638	06/07/83
4,387,194	06/400,730	06/07/83
4,387,203	06/334,817	06/07/83
4,387,220	06/313,360	06/07/83
4,387,226	06/296,557	06/07/83
4,387,227	06/311,933	06/07/83
4,387,228	06/302,845	06/07/83
4,387,229	06/353,113	06/07/83
4,387,233	06/353,663	06/07/83
4,387,236	06/354,195	06/07/83
4,387,244	06/367,973	06/07/93
4,387,245	06/265,490	06/07/83
4,387,248	06/314,446	06/07/83
4,387,249	06/332,288	06/07/83
4,387,250	06/219,814	06/07/83
4,387,251	06/285,046	06/07/83
4,387,255	06/305,548	06/07/83
4,387,257	06/393,237	06/07/83
4,387,265	06/284,355	06/07/83
4,387,268	06/279,997	06/07/83
4,387,275	06/285,110	06/07/83
4,387,276	06/301,816	06/07/83
4,387,285	06/217,804	06/07/83
4,387,286	06/245,596	06/07/83
4,387,292	06/329,474	06/07/83
4,387,295	06/340,824	06/07/83
4,387,301	06/255,966	06/07/83
4,387,302	06/221,480	06/07/83
4,387,305	06/273,099	06/07/83
4,387,312	06/220,055	06/07/83
4,387,313	06/370,634	06/07/83
4,387,315	06/281,237	06/07/83
4,387,316	06/307,007	06/07/83
4,387,318	06/270,370	06/07/83
4,387,320	06/250,923	06/07/83
4,387,323	06/216,590	06/07/83
4,387,328	06/258,719	06/07/83
4,387,341	06/263,125	06/07/83
4,387,342	06/240,531	06/07/83
4,387,344	06/225,556	06/07/83
4,387,355	06/267,680	06/07/83
4,387,359	06/226,652	06/07/83
4,387,378	06/271,951	06/07/83
4,387,381	06/273,250	06/07/83
4,387,397	06/246,891	06/07/83
4,387,400	06/262,169	06/07/83
4,387,401	06/305,688	06/07/83
4,387,404	06/295,181	06/07/83
4,387,405	06/295,118	06/07/83
4,387,413	06/220,127	06/07/83
4,387,439	06/221,992	06/07/83
4,387,443	06/246,251	06/07/83
4,387,448	06/254,541	06/07/83
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5,021,267	07/488,881	06/04/91
5,021,268	07/467,830	06/04/91
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5,021,315	07/364,046	06/04/91
5,021,324	07/593,131	06/04/91
5,021,336	07/553,351	06/04/91
5,021,337	07/219,306	06/04/91
5,021,338	07/285,668	06/04/91
5,021,339	07/397,347	06/04/91
5,021,343	07/192,084	06/04/91
5,021,345	07/267,287	06/04/91
5,021,350	07/364,554	06/04/91
5,021,377	07/533,623	06/04/91
5,021,382	07/486,572	06/04/91
5,021,386	07/496,848	06/04/91
5,021,400	07/423,718	06/04/91
5,021,401	07/331,768	06/04/91
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5,021,410	07/354,969	06/04/91
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5,021,447	07/268,824	06/04/91
5,021,451	07/270,983	06/04/91
5,021,455	07/451,139	06/04/91
5,021,471	07/522,331	06/04/91
5,021,476	07/232,154	06/04/91
5,021,496	07/612,059	06/04/91
5,021,499	07/550,237	06/04/91
5,021,508	07/488,428	06/04/91
5,021,510	07/418,754	06/04/91
5,021,511	07/290,672	06/04/91
5,021,524	07/181,662	06/04/91
5,021,526	07/492,413	06/04/91
5,021,535	07/577,836	06/04/91
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5,021,548	07/468,295	06/04/91
5,021,553	07/377,764	06/04/91
5,021,559	07/526,176	06/04/91
5,021,560	07/072,656	06/04/91
5,021,561	07/438,077	06/04/91
5,021,565	07/541,442	06/04/91
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Patent Number	Serial Number	Issue Date
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5,021,585	07/365,868	06/04/91
5,021,587	07/469,657	06/04/91
5,021,592	07/343,342	06/04/91
5,021,596	07/314,816	06/04/91
5,021,600	07/393,787	06/04/91
5,021,601	07/402,768	06/04/91
5,021,612	07/568,080	06/04/91
5,021,613	06/593,415	06/04/91
5,021,629	07/330,525	06/04/91
5,021,634	07/229,328	06/04/91
5,021,635	07/420,939	06/04/91
5,021,640	07/366,700	06/04/91
5,021,644	07/462,131	06/04/91
5,021,645	07/378,570	06/04/91
5,021,652	07/463,587	06/04/91
5,021,672	07/455,222	06/04/91
5,021,706	07/299,766	06/04/91
5,021,718	07/473,511	06/04/91
5,021,723	07/505,233	06/04/91
5,021,735	07/463,239	06/04/91
5,021,738	07/498,883	06/04/91
5,021,740	07/320,315	06/04/91
5,021,748	07/422,970	06/04/91
5,021,751	07/485,936	06/04/91
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5,021,759	07/492,707	06/04/91
5,021,760	07/415,912	06/04/91
5,021,765	07/346,392	06/04/91
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5,021,768	07/298,182	06/04/91
5,021,769	07/515,611	06/04/91
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5,021,789	07/551,813	06/04/91
5,021,791	06/809,862	06/04/91
5,021,792	07/464,271	06/04/91
5,021,803	07/412,603	06/04/91
5,021,804	07/269,600	06/04/91
5,021,813	07/575,397	06/04/91
5,021,824	07/476,830	06/04/91
5,021,826	07/400,582	06/04/91
5,021,830	07/469,023	06/04/91
5,021,832	07/406,783	06/04/91
5,021,834	07/583,441	06/04/91
5,021,854	07/500,230	06/04/91
5,021,861	07/527,747	06/04/91
5,021,875	07/465,533	06/04/91
5,021,897	07/203,107	06/04/91
5,021,901	07/360,563	06/04/91
5,021,904	07/331,210	06/04/91
5,021,916	07/318,581	06/04/91
5,021,918	07/377,560	06/04/91
5,021,923	07/430,680	06/04/91
5,021,925	07/496,247	06/04/91
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5,021,934	07/574,731	06/04/91
5,021,946	07/571,035	06/04/91
5,021,947	07/474,707	06/04/91
5,021,953	07/492,260	06/04/91
5,021,954	07/141,933	06/04/91
5,021,964	07/326,390	06/04/91
5,021,965	07/263,722	06/04/91
5,021,968	07/440,464	06/04/91
5,021,987	07/401,581	06/04/91
5,022,011	07/457,987	06/04/91
5,022,013	07/489,457	06/04/91
5,022,015	07/532,824	06/04/91
5,022,016	07/527,580	06/04/91
5,022,019	07/440,820	06/04/91
5,022,032	07/522,619	06/04/91
5,022,040	07/607,203	06/04/91
5,022,041	07/418,287	06/04/91
5,022,043	07/455,525	06/04/91
5,022,044	07/391,125	06/04/91
5,022,045	07/547,314	06/04/91
5,022,052	07/121,508	06/04/91
5,022,060	07/346,599	06/04/91
5,022,064	07/474,152	06/04/91
5,022,067	07/512,112	06/04/91
5,022,075	07/336,473	06/04/91
5,022,076	07/253,301	06/04/91
5,022,084	07/303,800	06/04/91
5,022,087	07/189,542	06/04/91
5,022,091	07/486,330	06/04/91

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,337,541	06/223,935	07/06/82	01/09/81	05/25/95
4,491,578	06/516,937	01/01/85	07/25/83	04/05/95
4,580,412	06/780,643	04/08/86	09/26/85	03/30/95
4,596,458	06/570,521	06/24/86	01/13/84	05/24/95
4,643,970	06/469,004	02/17/87	02/23/83	05/23/95
4,762,558	07/050,914	08/09/88	05/15/87	04/26/95
4,783,089	06/760,141	11/08/88	07/29/85	03/20/95
4,905,465	07/350,346	03/06/90	05/08/89	05/31/95
4,937,856	07/057,091	06/26/90	06/01/87	05/30/95
4,945,563	07/247,844	07/31/90	09/22/88	03/31/95
4,957,392	07/344,079	09/18/90	04/27/89	04/10/95
4,964,604	07/456,462	10/23/90	12/26/89	05/26/95

PATENTS REINSTATED DUE TO THE ACCEPTANCE OF A LATE MAINTENANCE FEE FROM 6/23/95

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 34,486	07/772,389	10/07/91	12/21/93	06/30/95
4,363,580	06/281,778	07/09/81	12/14/82	06/26/95
4,528,442	06/614,387	05/25/84	07/09/85	06/30/95

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,535,597	06/573,679	01/25/84	08/20/85	06/23/95
4,605,701	06/662,726	10/19/84	08/12/86	06/23/95
4,610,972	06/601,685	04/18/84	09/09/86	06/27/95
4,660,336	06/807,376	12/10/85	04/28/87	06/30/95
4,853,780	07/154,881	02/11/88	08/01/89	06/23/95
4,898,504	07/277,778	11/30/88	02/06/90	06/30/95
4,906,093	07/222,403	07/21/88	03/06/90	06/27/95
4,953,553	07/350,500	05/11/89	09/04/90	06/26/95
4,968,265	07/374,622	06/29/89	11/06/90	06/27/95
4,969,251	07/338,890	04/17/89	11/13/90	06/27/95
4,974,288	07/469,081	01/23/90	12/04/90	06/29/95
4,978,658	07/257,723	10/14/88	12/18/90	06/27/95
4,989,256	07/215,583	07/06/88	01/29/91	06/29/95
4,997,827	07/321,083	03/09/89	03/05/91	06/30/95
5,002,672	07/532,261	06/01/90	03/26/91	06/29/95
5,007,828	07/476,734	02/08/90	04/16/91	06/27/95

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 336,078, Re. S.N. 29/039,810, May 31, 1995, D14, OPTICAL SCANNER, Modest Khovaylo, Owner of Record: *Hewlett-Packard Co. Corp., Palo Alto, Calif.*, Attorney or Agent: Joseph J. Kelly, Ex. Gp.: 2901

D. 340,155, Re. S.N. 29/018,999, May 2, 1994, D06/450, STORAGE STAND FOR COMPACT DISCS, Stephen Koziol, Owner of Record: *Koziol Geschenkartikel Gmbh, Erbach/Odenwald, Federal Republic of Germany*, Attorney or Agent: Michael J. Striker, Ex. Gp.: 2903

D. 343,999, Re. S.N. 29/640,532, June 21, 1995, D08, PLIERS, Marshall G. Letson, Owner of Record: *Snap-On Tools Corp.*, Attorney or Agent: Emrich & Dithmar, Ex. Gp.: 2903

5,045,940, Re. S.N. 08/418,863, Apr. 7, 1995, Cl. 348/472, VIDEO/AUDIO TRANSMISSION SYSTEM AND METHOD, Eric C. Peters, Owner of Record: *Avid Technology, Burlington, Mass.*, Attorney or Agent: Peter J. Gordon, Ex. Gp.: 2602

5,151,239, Re. S.N. 08/421,510, Apr. 11, 1995, Cl. 174/87, WIRE JUNCTION ENCAPSULATING WIRE CONNECTOR AND METHOD OF MAKING SAME, Lloyd H. King, Jr., Owner of Record: *King Technology of Missouri Inc., St. Louis, Mo.*, Attorney or Agent: Carl L. Johnson, Ex. Gp.: 1307

5,161,738, Re. S.N. 08/336,401, Nov. 9, 1994, Cl. 236/92C, PRESSURE AND TEMPERATURE RELIEF VALVE WITH THERMAL TRIGGER, Lloyd G. Wass, Owner of Record: *Inventor*, Attorney or Agent: John M. Wey, Ex. Gp.: 3404

5,178,200, Re. S.N. 08/368,424, Jan. 4, 1995, Cl. 160/107, VENETIAN- OR PLEATED BLINDS, PARTICULARLY FOR MULTIPLE PANE INSULATING GLASS WINDOW, Helge Hagen, Owner of Record: *Hagen System A/S, Frederikshaun, Denmark*, Attorney or Agent: Michael Grillo, Ex. Gp.: 3505

5,194,160, Re. S.N. 08/404,705, Mar. 15, 1995, Cl. 210/741, FLUID STRAINER AND METHOD OF CONVERTING THE SAME BETWEEN MOTORIZED AND MANUAL MODES WITH PRESSURE-SENSITIVE SWITCH, James K. Simonelli, et. al., Owner of Record: *Vesper Corp., Cleveland, Ohio*, Attorney or Agent: Martin L. Faigus, Ex. Gp.: 1306

5,202,067, Re. S.N. 08/452,601, May 10, 1995, Cl. 264, POWDER COMPACTING PRESS APPARATUS AND METHODS, Michael C. Solazzi, Owner of Record: *Chemplex Industries, Inc., Tuckahoe, N.Y.*, Attorney or Agent: Arthur L. Plevy, Ex. Gp.: 1306

5,207,018, Re. S.N. 08/428,918, Apr. 25, 1995, Cl. 43/137, COMBINATION FLY SWATTER AND INSECT TRAP, Robert R. Reaver, et. al., Owner of Record: *Inventor*, Attorney or Agent: Scott W. Kelley, Ex. Gp.: 3205

5,207,224, Re. S.N. 08/427,070, Apr. 24, 1995, Cl. 128/653.5, MAGNETIC RESONANCE APPARATUS, Robert J. Dickinson, et. al., Owner of Record: *Picker International, Ltd., Wembley, United Kingdom*, Attorney or Agent: Thomas E. Kocovsky, Jr., Ex. Gp.: 3305

5,213,583, Re. S.N. 08/450,280, May 25, 1995, Cl. 8/526, PROCESS FOR THE PREPARATION OF IMPROVED DYESTUFF GRANULES FROM SUSPENSION CONTAINING A PROPYLENE OXIDE-ETHYLENE OXIDE COPOLYMER, Vaclav Kaspar, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Federal Republic of Germany*, Attorney or Agent: Leonard Horn, Ex. Gp.: 1105

5,214,820, Re. S.N. 08/452,746, May 30, 1995, Cl. 15/118, DISH SCRUBBER, Craig S. Shumway, et. al., Owner of Record: *Inventor*, Attorney or Agent: Rajesh Vallabh, Ex. Gp.: 2402

5,217,474, Re. S.N. 08/488,361, June 7, 1995, Cl. 606/159, EXPANDABLE TIP ATHERECTOMY METHOD AND APPARATUS, Nadim M. Zacca, et. al., Owner of Record: *Inventor*, Attorney or Agent: David A. Rose, Ex. Gp.: 3309

5,329,472, Re. S.N. 08/453,152, May 30, 1995, Cl. 364/724.19, METHOD AND APPARATUS FOR CONTROLLING COEFFICIENTS OF ADAPTIVE FILTER, Akihiko Sugiyama, Owner of Record: *Nec Corp., Tokyo, Japan*, Attorney or Agent: Joseph R. Keating, Ex. Gp.: 2306

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,316,704, Reexam. No. 90/003,866, June 5, 1995, Cl. 264/2.6, PROCESS FOR FABRICATING FULL SIZED EXPANSILE HYDROGEL INTRAOCULAR LENSES, Yading Wang, et. al., Owner of Record: *Kabi Pharmacia Opthalmics, Inc., Monrovia, Calif.*, Attorney or Agent: Poms Smith Lande & Rose, Los Angeles, Calif., Ex. Gp.: 1307, Requester: Aqualens Corp., Rocky Hills, N.J., c/o Kenneth P. Glynn, Glynn & Associates, Flemington, N.J.

5,351,827, Reexam. No. 90/003,867, June 5, 1995, Cl. 206/443, RETURNABLE PACKAGING SYSTEM FOR

AWNINGS, Gregory J. Baka, Owner of Record: *The Dometic Corp., La Grange, Ind.*, Attorney or Agent: Pearne Gordon McCoy & Granger, Cleveland, Ohio, Ex. Gp.: 3208, Requester: Owner

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Information in Oath/Declaration Necessary to Identify the Specification for an Application filed under 35 USC 111 in Accordance with 37 CFR 1.63

This notice supersedes the previous notice published at 1035 Off. Gaz. Pat. Office 3 on September 12, 1983, and is intended to make it easier for an applicant(s) to comply with the identification requirement of 37 CFR 1.63.

37 CFR 1.63 requires that an oath or declaration identify the specification to which it is directed. The declaration form suggested by the Office includes spaces for filling in the names of the inventors, title of invention, application number, filing date, foreign priority application information and United States priority application information. While this information should be provided, it is not essential that all of these spaces be filled in order to adequately identify the specification in compliance with 37 CFR 1.63(a)(2).

The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;
(2) name of inventor(s), and attorney docket number which was on the specification as filed; or
(3) name of inventor(s), and title which was on the specification as filed.

Filing dates are now granted on applications filed without an oath or declaration in compliance with 37 CFR 1.63, the oath or declaration being filed later with a surcharge. The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

(1) name of inventor(s), and application number (consisting of the series code and the serial number; e.g.,08/123,456);
(2) name of inventor(s), serial number and filing date;
(3) name of inventor(s) and attorney docket number which was on the specification as filed;
(4) name of inventor(s), title which was on the specification as filed and filing date;
(5) name of inventor(s), title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or
(6) name of inventor(s), title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number; e.g.,08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration.

Any specification that is filed attached to an oath or declaration on a date later than the application filing date will not be compared with the specification submitted on filing. Absent any statement(s) to the contrary, the "attached" specification will be presumed to be a copy of the specification and any amendments thereto which were filed in the Office in order to obtain a filing date for the application.

Any variance from the above guidelines will only be considered upon the filing of a petition for waiver of the rules under 37 CFR 1.183 accompanied by a petition fee (37 CFR 1.17(h)).

Further, an oath or declaration attached to a cover letter referencing an incorrect application may not become associated with the correct application and, therefore, could result in the abandonment of the correct application.

Supplemental oaths or declarations in accordance with 37 CFR 1.67 will be required in applications in which the oaths or declarations are not in compliance with the other requirements of 37 CFR 1.63 but contain sufficient information to identify the specifications to which they apply as detailed above.

A copy, such as a photocopy or facsimile transmission, of an originally executed oath or declaration is acceptable and may be filed. In the event that a copy of the original is filed, the original should be retained as evidence of authenticity. If a question of authenticity arises, the Patent and Trademark Office may require submission of the original. See 37 CFR 1.4(d)(2).

See MPEP § 1896 for the identification requirements for a declaration filed in a U.S. national stage application filed under 35 USC 371.

These changes will appear in MPEP § 601.01 in the next revision of the Manual.

July 13, 1995

STEPHIN G. KUNIN
Deputy Assistant Commissioner for Patent Policy and Projects

Changes to Disclosure Document Program

The PTO is revising and clarifying the Disclosure Document Program to improve processing and to simplify customer requirements. The following changes to the Disclosure Document Program are effective upon publication:

• Duplicate copies of documents are no longer required. Only the original document is required for submission.

• The original Disclosure Document will not be returned to the customer.

• A self addressed, stamped envelope is no longer required.

• A standard format for the disclosure Document is required:

1) The document must be written on one side only, on white letter-size (21.6 cm x 27.9 cm or 8 1/2 by 11 inches) or DIN Size A4 (21.0 x 29.7 cm) paper. (Oversized paper, although foldable to the above dimensions, is not acceptable.) 2) Drawings or sketches must be on paper the same size as the rest of the document.

• The fee for filing a Disclosure Document is $10.00. Documents submitted without the full fee will be returned.

• A copy of a Disclosure Document will be furnished upon receipt of a written request (from the inventor or attorney/agent only) and with a fee of $25.00. 37 CFR § 1.19(b)(3).

Section 1706 of the Manual of Patent Examining Procedures (MPEP) will be revised in accordance with this notice. The section also contains further information regarding the Disclosure Document Program.

July 21, 1995

JAMES O. THOMAS, JR.
Deputy Assistant Commissioner for Patent Process Services

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,788,036, Herbert L. Eiselstein, Jerry A. Harris, Darrell F. Smith, Jr., Edward F. Clatworthy, Stephen Floreen, Jeffrey M. Davidson, CORROSION RESISTANT HIGH-STRENGTH NICKELBASE ALLOY, Interference No. 102,601, final judgment adverse to the patentees rendered February 9, 1994, as to claims 1-19.

Patent No. 4,845,118, Hans-Jochen Lang, Robert Rippel, Andreas W. Herling, Klaus Weidmann, SUBSTITUTED THIENOIMIDAZOLE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND THEIR USE AS INHIBITORS OF GASTRIC ACID SECRETION, Interference No. 102,841, final judgment adverse to the patentees rendered February 27, 1995, as to claims 1-7 and 9-12.

Patent No. 4,854,980, Ramaswamy V. Raman, Shih C. Hsu, REFRACTORY TRANSITION METAL GLASSY ALLOYS CONTAINING MOLYBDENUM, Interference No. 103,038, final judgment adverse to the patentees rendered May 2, 1995, as to claims 1 and 4-6.

Patent No. 4,871,738, Klaus Opitz, Maria-Luise Weischer, Jorg Traber, USE OF 2-PYRIMIDINYL-1-PIPERAZINE DERIVATIVES IN THE TREATMENT OF DEPENDENCE ON NICOTINE, Interference No. 102,504, final judgment adverse to the patentees rendered February 16, 1995, as to claims 1-7.

Patent No. 4,900,326, Jean F. Grollier, DYE COMPOSITION FOR HUMAN KERATINOUS FIBRES IN THE FORM OF FOAM, BASED ON 5,6-DIHYDROXYINDOLE, Interference No. 102,807, final judgment adverse to the patentee rendered June 20, 1995, as to claims 1-19.

Patent No. 5,016,128, Mark S. Diiorio, Stephen E. Robinson, Duane B. Crum, Douglas N. Paulson, D. S. Buchanan, James R. Marsden, SUPERCONDUCTING INFORMATION STORAGE DEVICE, Interference No. 103,390, final judgment adverse to the patentees rendered April 11, 1995, as to claims 1-12.

Patent No. 5,017,416, George R. Imperial, Hsiang-Ching Kung, Paul A. Makarewicz, Bonnie J. McCormick, Lori S. Slovik, PAPER FOR USE IN ION DEPOSITION PRINTING, Interference No. 102,702, final judgment adverse to the patentees rendered March 22, 1995, as to claims 1-6.

Patent No. 5,056,029, Thomas G. Cannon, METHOD AND APPARATUS FOR MANUFACTURING AND VENDING SOCIAL EXPRESSION CARDS, Interference No. 102,872, final judgment adverse to the patentee rendered May 15, 1995, as to claims 1-21.

Patent No. 5,061,807, Hanspeter Gethoffer, Gerd Reinhardt, IMIDOPEROXYCARBOXYLIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE, Interference No. 103,149, final judgment adverse to the patentees rendered April 26, 1995, as to claims 1-2.

Patent No. 5,099,380, Richard K. Childers, John H. Bunch, Karen P. Shrier, ELECTRICAL CONNECTOR WITH OVER-VOLTAGE PROTECTION FEATURE, Interference No. 103,288, final judgment adverse to the patentees rendered December 2, 1994, as to claims 1-5.

Patent No. 5,075,871, William E. Weideman, VARIABLE GAIN NEURAL NETWORK IMAGE PROCESSING SYSTEM, Interference No. 103,109, final judgment adverse to the patentee rendered May 23, 1995, as to claims 1 and 4.

Patent No. 5,102,971, Thomas Himmler, Rudolf Braden, Joachim Genz, Karsten-Josef Idel, Ralf Pakull, SOLUBLE POLYAROMATIC COMPOUNDS, Interference No. 103,302, final judgment adverse to the patentees rendered May 16, 1995, as to claim 1.

Patent No. 5,188,942, John J. Reddington, Ginger M. Reddington, METHOD FOR DETERMINING BLUETONGUE VIRUS ANTIBODIES IN SERUM, Interference No. 103,585, final judgment adverse to the patentees rendered June 22, 1995, as to claims 6 and 7.

Patent No. 5,202,831, Brian K. Blackburn, Joseph F. Mazur, Scott B. Gentry, METHOD AND APPARATUS FOR CONTROLLING AN OCCUPANT RESTRAINT SYSTEM USING REAL TIME VECTOR ANALYSIS, Interference No. 103,356, final judgment adverse to the patentees rendered May 18, 1995, as to claims 1-23.

Patent No. 5,215,989, John J. Baldwin, David A. Claremon, Jason M. Elliott, Gerald S. Ponticello, David C. Remy, Harold G. Selnick, NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS AS CLASS III ANTIARRHYTHMIC AGENTS, Interference No. 103,445, final judgment adverse to the patentees rendered May 9, 1995, as to claims 2 and 6.

OLIVIA M. DUVALL, *Sup'v Legal Instruments Examiner*
Board of Patent Appeals & Interferences
(703) 603-3298

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1, 3 and 5

[Docket #:]
RIN 0651-AA75

Changes to Implement 18-Month Publication of Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.
Summary: The Patent and Trademark Office (Office) is proposing to amend the rules of practice in patent cases primarily to implement changes related to the 18-month publication of patent applications in title 35, United States Code, contained in the Patent Application Publication Act of 1995 (H.R. 1733). Among the changes that are contained in H.R. 1733 would be the publication of patent applications after 18 months from the earliest filing date for which a benefit is sought, and the addition of provisional rights to the rights provided in a patent. These changes would apply to utility and plant applications other than provisional applications, but not to design applications. H.R. 1733 was introduced in the House of Representatives on May 25, 1995. The amendments to title 35 relating to 18-month publication, if enacted as proposed, would be effective on January 1, 1996.
Dates: A public hearing will be held on Tuesday, September 19, 1995, at the Holiday Inn - National Airport, 15th Street and Jefferson Davis Highway, Arlington, Virginia, at 9:30 a.m. Those wishing to present oral testimony must request an opportunity to do so no later than September 14, 1995. Written comments must be submitted on or before September 19, 1995.
Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Stephen G. Kunin, Deputy Assistant Commissioner for Patent Policy and Projects. In addition, written comments may also be sent by facsimile transmission to (703) 305-8825, with a confirmation copy mailed to the above address, or by electronic mail messages over the Internet to early-pub@uspto.gov.

Written comments should include the following information:

- name and affiliation of the individual responding;
- an indication of whether comments offered represent views of the respondent's organization or are the respondent's personal views; and
- if applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, non-profit organization).

Parties mailing written comments are asked to provide their comments in machine readable format. Machine-readable sub-

missions may be provided on a 3 1/2 inch floppy disk formatted for use in either a Macintosh or MSDOS-based computer. Machine-readable submissions should be provided as unformatted text (*e.g.*, ASCII or plain text), or as formatted text in one of the following file formats: Microsoft Word (Macintosh, DOS or Windows versions) or WordPerfect (Macintosh, DOS or Windows versions).

Written comments and transcripts of the hearings will be available for public inspection on or about October 2, 1995, in Room 520 of Crystal Park One, 2011 Crystal Drive, Arlington, Virginia, and will be available on or about October 2, 1995, through anonymous file transfer protocol (ftp) via the Internet (address: ftp.uspto.gov).

For Further Information Contact: Stephen G. Kunin by telephone at (703) 305-8850, by facsimile at (703) 305-8825, by electronic mail at rbahr@uspto.gov, or Jeffrey V. Nase by telephone at (703) 305-9285, or by mail marked to the attention of Stephen G. Kunin, addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information

This proposed rule change is designed primarily to implement the changes in practice related to the publication of patent applications provided for in H.R. 1733. A copy of this legislation may be obtained from the individuals identified in the "For Further Information Contact" section of the notice.

Section 122 of title 35, United States Code, currently provides that patent applications are maintained in confidence until a patent is granted. H.R. 1733, if enacted, would amend 35 U.S.C. 122 to provide that each application for patent, except for design applications filed under 35 U.S.C. 171 and provisional applications filed under 35 U.S.C. 111(b), shall be published "as soon as possible after the expiration of a period of 18 months from the earliest filing date for which a benefit is sought," but provides that applications that are no longer pending and applications that are subject to a secrecy order under 35 U.S.C. 181 shall not be published.

H.R. 1733 includes a provision (35 U.S.C. 122(b)(2)) that, upon request, an application of an independent inventor who has been accorded status under 35 U.S.C. 41(h) will not be published until three months after an Office action under 35 U.S.C. 132; however, applications filed under 35 U.S.C. 363 and applications claiming the benefit of an earlier filing date under 35 U.S.C. 119, 120, 121, 365(a) or 365(c) are not eligible for such a request. In addition, H.R. 1733 provides that an applicant making such a request must certify that the invention disclosed in the application was not or will not be the subject of an application filed in a foreign country. H.R. 1733 provides that the Commissioner may establish appropriate procedures and fees for such a request.

H.R. 1733, if enacted, would further amend 35 U.S.C. 119 to provide that the claim and certified copy of the original foreign application must be filed in the Office at such time during the pendency of the application as required by the Commissioner, and that the Commissioner may consider the failure of the applicant to file a timely claim for priority as a waiver of any such claim. H.R. 1733, if enacted, would likewise amend 35 U.S.C. 120 to provide that the Commissioner may determine the time period during the pendency of the application within which an amendment containing the specific reference to the earlier filed application shall be submitted, and that the Commissioner may consider the failure of the applicant to file a timely claim for priority as a waiver of any such claim.

H.R. 1733, if enacted, would further amend 35 U.S.C. 102(e) to include applications published pursuant to 35 U.S.C. 122(b) within its scope. H.R. 1733, if enacted, would provide that the costs of early publication shall be recovered by adjusting the filing, issue and maintenance fees, by charging a separate publication fee, or by any combination of these methods. H.R. 1733, if enacted, would also provide that, upon issuance of the application as a patent, the patent shall, where the invention claimed in the patent is identical to the invention claimed in the published application, include provisional rights during the period from publication until issuance of the patent.

H.R. 1733 also includes amendments relating to 20-year patent term and provisional applications. Specifically, H.R. 1733 includes an amendment to 35 U.S.C. 119(e) to provide that if the day that is twelve months after the filing date of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, the period of pendency of the provisional application shall be extended to the next succeeding secular or business day. H.R. 1733 also includes an amendment to 35 U.S.C. 154(b) to: (1) include an unusual administrative delay by the Office in issuing the patent as a basis for patent term extension; (2) provide that the total duration of all extensions under 35 U.S.C. 154(b) shall not exceed ten years, as opposed to the five year limit currently provided in Public Law 103-465; (3) provide that no patent that has issued before the expiration of three years after the filing date of the application or entry of the application into the national stage under 35 U.S.C. 371 shall be extended under 35 U.S.C. 154(b); (4) provide that no patent whose term has been disclaimed beyond a specified date shall be extended under 35 U.S.C. 154(b) beyond the expiration date specified in the terminal disclaimer, and (5) provide that any period of extension under 35 U.S.C. 154(b) shall be reduced by the period during which the applicant for patent did not engage in reasonable efforts to conclude processing or examination of the application, rather than the "due diligence" provision applicable to extensions under 35 U.S.C. 154(b)(2) in Public Law 103-465.

The current planning approach to the implementation of early publication is to create an electronic data base which captures the technical content, *i.e.*, the specification, abstract, claims and drawings, of the application-as-filed. A data capturing operation will enable the creation of a data base containing image and text equivalent of the technical contents of the application-as-filed. Application materials will be digital image and/or optical character recognition (OCR) scanned by the Office for entry into this electronic data base. This electronic data base will be used to provide a source for (a) meeting publication requirements for the applications, (b) providing a basis for electronic searching and retrieval of applications, and (c) providing a basis for producing copies of the technical contents of the application-as-filed. The publication of an application will take the form of publishing information necessary to identify the applicant and the technical subject matter of the application, *i.e.*, a Gazette Entry, in a separate *Gazette of Patent Application Notices*, with a one-page printed publication, *i.e.*, a Patent Application Notice or PAN, containing similar information for placement in the paper search files. Published applications will be assigned a sequential Patent Application Notice (PAN) number in the manner that issued patents are assigned a sequential patent number. In addition, a document including the Patent Application Notice and the technical contents of the application-as-filed, designated as the Technical Contents Publication, will be available to the public upon publication.

The digital images of the technical contents of the application- as-filed, *i.e.*, the Technical Contents Publication, will be available for public review. Paper copies of the Patent Application Notice and Technical Contents Publication will also be available for purchase similar to the way paper copies of patents are currently available for purchase. When budgetary and process considerations permit, text searching of the Patent Application Notice and Technical Contents Publication will be implemented.

The information provided to Patent and Trademark Depository Libraries will be expanded to include weekly issues of the *Gazette of Patent Application Notices* (provided by the Government Printing Office), and a CD-ROM collection of facsimile images of the Patent Application Notices and Technical Contents Publications. The public would also be able to place subscription orders to receive weekly paper copies of the Patent Application Notices and Technical Contents Publications published in specific classes and subclasses similar to the way such orders are currently placed for issued patents, as well as subscription orders to receive the CD-ROM collection of facsimile images of the Patent Application Notices and Technical Contents Publications.

H.R. 1733, as proposed, does not specifically exclude applications that are national security classified from those applications to be published. Executive Order 12356 and a number of statutes, *e.g.*, 42 U.S.C. 2011 *et seq.* (the Atomic Energy Act of 1954), 15 U.S.C. 1155 (provides that the Secretary of Commerce shall respect and preserve the security classification of inventions in the possession or control of the Department of Commerce), and 18 U.S.C. 798 (provides criminal sanctions for the disclosure of classified information) preclude the publication of a national security classified application. Further, the publication requirement in H.R. 1733, as proposed, provides some latitude to the Commissioner to publish applications later than 18 months from the earliest filing date for which a benefit is sought. Therefore, the publication of a national security classified application will be delayed until such application is either declassified, which will permit publication of the application, or subjected to a secrecy order pursuant to 35 U.S.C. 181, which will exclude the application from publication by the express terms of H.R. 1733, as proposed. In view of national security considerations, and the current statutory prohibitions on the disclosure of classified information, it is appropriate to specifically exclude those applications that are national security classified from publication under the provisions of H.R. 1733.

While H.R. 1733, if enacted, would not directly affect design applications, this notice of proposed rulemaking includes a proposed amendment to § 1.154 such that the arrangement for a design application will be consistent with the arrangements for a utility (§ 1.77) or plant (§ 1.163) application, as well as a proposed amendment to § 1.5 to provide that a paper concerning a provisional application must identify the provisional application as such and by application number. In addition, while this proposed rule change is designed primarily to implement the changes in practice related to the publication of patent applications provided for in H.R. 1733, a number of proposed rule changes set forth in this notice of proposed rulemaking would be desirable even in the absence of an 18-month publication system. Specifically, this proposed rule change is also designed to: (1) clarify which applications claiming the benefit of prior applications or prior applications for which a benefit is claimed in a later application will be preserved in confidence; (2) amend the rules pertaining to the format and standards for application papers and drawings to improve the standardization of patent applications; (3) broaden the application of § 1.131 to instances in which inventions of a pending application or patent under reexamination and a patent held by a single party are not identical, but not patentably distinct; (4) broaden the application of §§ 1.78(c) and (d) to patents under reexamination, (5) clarify the practice for the delivery or mailing of patents; (6) provide for the treatment of national security classified applications; (7) expedite the entry of international applications into the national stage; and (8) amend a number of rules for consistency and clarity. Since these proposed rule changes may be adopted as final rules even in the absence of an 18-month publication system, interested persons are advised to comment on any proposed rule change, regardless of whether H.R. 1733 is enacted. If H.R. 1733 is amended during the legislative process, the final rules will comply with this legislation as enacted. If H.R. 1733 is not enacted, the proposed rules that would implement publication of patent applications would be withdrawn.

In a Notice of Public Hearing and Request for Comments on 18-Month Publication of Patent Applications (18-Month Publication Notice) published in the *Federal Register* at 59 *FR* 63966 (December 12, 1994) and in the Patent and Trademark Office *Official Gazette* at 1170 *Off. Gaz. Pat Office* 390-94 (January 3, 1995), the Office requested public comment on the procedures the Office should adopt if an 18-month publication system was enacted. The 18-Month Publication Notice set forth the Office's planning approach for the implementation of 18-month (pre-grant) publication of patent applications, and specifically presented fourteen (14) questions on which comment was invited. An oral hearing was conducted on February 15, 1995.

Sixty-five (65) written comments, as well as two (2) Law Review articles concerning the pre-grant publication of pending patent applications, were submitted. Of the sixty-five (65) comments, forty (40) submitted comments directed to at least one of the questions presented in the 18-Month Publication Notice. Sixteen (16) persons testified at the public hearing conducted on February 15, 1995.

Response to Comments on the 18-Month Publication Notice

The following questions were presented in the 18-Month Publication Notice. Each question is followed by a summary of the comments submitted in response to the question, and the proposed disposition of the issue presented in the question.

1. Should the PTO require that all official application-related materials be delivered to a central location? Specifically, what problems would a requirement that all official application-related materials be delivered to a central location cause?

Summary: A slight majority of the comments opposed a requirement that all official application-related materials be delivered to a central location.

Response: As the Office currently considers the delivery of all official application-related materials to a central location to be unnecessary to the currently planned approach to implementation of 18-month publication, no change to the rules of practice to require that all official application-related materials be delivered to a central location will be proposed.

2. Should the PTO adopt a standard application format? If so, what portions of the application papers should the PTO require be submitted in a standard size and/or format, and what sanction (*e.g.*, surcharge) should be established for the failure to comply with these requirements?

Summary: A majority of the comments favored the implementation of a standard application format, so long as an applicant was given a time period in which to comply with this format, *i.e.*, failure to comply with the standard application format did not deprive the application of a filing date. In addition, a number of comments indicated that any additional requirements should not be inconsistent with European Patent Office (EPO) or Patent Cooperation Treaty (PCT) requirements, or in excess of those requirements necessary for the implementation of 18-month publication.

Response: The Office is proposing to change the rules of practice to institute only those additional standardizations which are consistent with the requirements set forth in PCT Rule 11, and are considered necessary for the digital image and OCR scanning of application materials into an electronic data base. Those additional standardizations are that: (1) applications be submitted on flexible, strong, smooth, non-shiny, durable and white paper (PCT Rule 11.3); (2) the papers be typewritten by a typewriter or word-processor, *i.e.*, hand-written application materials would no longer be acceptable, with 1 1/2 or double spaced lines (PCT Rule 11.9(c)), and in permanent "dark" ink (PCT Rule 11.9(d)) and portrait orientation, *i.e.*, with the shorter sides of the paper on the top and bottom (PCT Rule 11.2(d)); (3) the sheets of papers be the same size and either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches) (PCT Rule 11.5), with a top margin of at least 2.0 cm. (3/4 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 2.0 cm. (3/4 inch), and a bottom margin of at least 2.0 cm. (3/4 inch) (PCT Rule 11.6(a)); (4) the pages of the application be numbered consecutively, with the numbers being centrally located above or below the text (PCT Rule 11.7); and (5) the claims be on a separate sheet (PCT Rule 11.4). Finally, §§ 1.52(b) and 1.84(x) are proposed to be amended to provide that no holes should be provided in the paper or drawing sheets due to the potential for their interference with the scanning operation.

Section 1.52(b) currently requires that application papers be written on but one side, and § 1.72(b) currently requires that the abstract be on a separate sheet. In an application filed without: (1) typewritten application papers on flexible, strong, smooth, non-shiny, durable and white paper; (2) 1 1/2 or double spaced lines in portrait orientation; (3) permanent "dark" ink typing; (4) sheets of papers of the same size and either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), with a top margin of at least 2.0 cm. (3/4 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 2.0 cm. (3/4 inch), and a bottom margin of at least 2.0 cm. (3/4 inch); (5) the pages of the application including claims and abstract be numbered consecutively, starting with page one, with the numbers being centrally located above or below the text; (6) application papers typed on but one side; and (7) an abstract and claims on a separate sheet, the applicant will be given a time period, non-extendable under § 1.136(a), in which to file a substitute specification in compliance with § 1.125 on application papers in compliance with §§ 1.52(a) and (b). The Office, however, does not propose to require a surcharge for the failure to comply with these standardizations on filing.

Additional standardizations to the rules of practice concerning drawings requirements are also being proposed. Currently, § 1.84(f) permits paper sizes of 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches), 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches), 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), and 21.0 cm. by 29.7 cm. (DIN size A4). Section 1.84(f), as proposed, would permit paper sizes of only 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches). The use of these paper sizes, which correspond to the paper sizes required under § 1.52(b), as proposed, would not impact the current Automated Patent System (APS) database, and would permit a fully automatic scanning operation due to their similar size. To electronically store, display, and print drawings paper sheet sizes up to 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches) would require modifications of the APS system hardware, software, displays, and printers. In addition, the digital image scanning of drawing paper sheet sizes up to 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches) would require a semi-automatic scanning operation, thus increasing scanning costs significantly. Therefore, § 1.84(f), as proposed, would permit paper sheet sizes of only 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), with a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (9/16 inch), and a bottom margin of at least 1.0 cm. (3/8 inch), thereby leaving a sight no greater than 17.0 cm. by 26.2 on 21.0 cm. by 29.7 cm. (DIN size A4) sheets, and a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches) on 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) sheets (PCT Rule 11.6(c)). As PCT Rule 11.6(d) provides that the margin requirements apply to 21.0 cm. by 29.7 cm. (DIN size A4) sheets such that a copy of the drawings sheet on a 21.0 cm. by 29.7 cm. (DIN size A4) sheet leaves the required margin, the requirement for drawing sheet sizes of only 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches) or 21.0 cm. by 29.7 cm. (DIN size A4) is not a substantive drawing limitation in excess of PCT Rule 11.

Currently, formal drawings are not required until an application has been allowed. As a drawing figure will be included in the Gazette Entry in the *Gazette of Patent Application Notices*, as well as the Patent Application Notice, drawings of sufficient quality for digital image scanning into an electronic data base will be necessary for the initial processing of the application. In instances in which an application is filed with drawings of such poor quality as to preclude their digital image scanning into the electronic data base, it will be necessary to set a time period, non-extendable under § 1.136(a), in which to file drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction by digital imaging.

Currently, a complete application under § 1.51(a) does not require an abstract on a separate sheet, claims on a separate sheet, application papers typed on but one side of the paper, or application papers or drawings of sufficient clarity, contrast, or quality or in the proper size or format for electronic reproduction, and, as such, an application may be filed under § 1.60 from a prior application not in a format necessary for the image and/or OCR scanning of the application materials into an electronic data base. Therefore, an amendment to § 1.60(d) is necessary to assure the prompt filing of application papers including an abstract and claims on a separate sheet, application papers typed on but one side of the paper, and application papers and drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction.

Currently, the filing of the copy of the specification from the prior application, or a new specification, in an application filed under § 1.62 is considered improper. As applications filed prior to January 1, 1996, will not have been image- or OCR-scanned into the electronic data base, the technical contents of an application filed under § 1.62 in which the prior application was itself filed prior to January 1, 1996, will not be contained in the electronic data base. For applications under § 1.62 which do not add additional disclosure, *i.e.*, continuation or divisional applications, the Office will obtain the microfiche copy of the prior application and image or OCR scan it into the electronic data base. For applications under § 1.62 which add additional disclosure, *i.e.*, continuation-in-part applications, a substitute specification and drawings will be necessary for image or OCR scanning into the electronic data base. Therefore, an amendment has been proposed to § 1.62 to provide that, where the application is a continuation-in-part application, a substitute specification in compliance with § 1.125 and drawings will be required.

Section 1.62 currently provides that no copy of the prior application or new specification is required, and further provides that the filing of such a copy or specification will be considered improper, and a petition is necessary to obtain the date of deposit of the request for an application under § 1.62 as the filing date. Section 1.62, as proposed, would provide that the failure to provide any required substitute specification would not affect the filing date of the application, but a time period, non-extendable under § 1.136(a), would be set for its filing. Section 1.62, as proposed, would further provide that any new specification filed in an application under § 1.62 would not be considered part of the original application papers, but would be treated as a substitute specification under § 1.125. Any request to treat a new specification filed in an application under § 1.62 as part of the original application papers may be by way of petition under § 1.182.

Finally, amendments to §§ 1.77, 1.154, and 1.163 have been proposed to provide a standard arrangement for utility, design, and plant applications, respectively. This standard arrangement will include, *inter alia*, a Fee Transmittal form for utility, design, and plant applications, a Utility Patent Application Transmittal form, a Design Patent Application Transmittal form, a Plant Patent Application Transmittal form, and a Plant Color Coding Sheet for plant applications. Standardized versions of the Fee Transmittal form, Utility Patent Application Transmittal form, Design Patent Application Transmittal form, Plant Patent Application Transmittal form, Plant Color Coding Sheet, as well as a standard Declaration form and Plant Patent Application Declaration form, are included as an Appendix A to this notice of proposed rulemaking.

3. Assuming that the entire application is not published, what information concerning the application should be publishedin the *Gazette of Patent Application Notices*?

Summary: A slight majority of the comments indicated that the printed publication should include the entire application, or at least the claims, each independent claim, or a claim of each statutory class in the application. The remaining comments that did not oppose pre-grant publication indicated that any Patent Application Notice should contain information similar to what is published in the *Official Gazette* or sufficient information to determine whether further investigation was warranted. Those comments that opposed any pre-grant publication opposed publication of any information other than the applicant's name, address and a "non-enabling" abstract of the invention.

Response: The Technical Contents Publication will include a copy of the Patent Application Notice, and the specification, abstract, claims and drawings of the application-as-filed. The Technical Contents Publication will be available for public review through video display terminals in the Public Search Room and through CD-ROM collections of facsimile images of Patent Application Notices and Technical Contents Publications in the Patent and Trademark Depository Libraries. Copies of the Patent Application Notices and Technical Contents Publications will also be available for purchase under the conditions that paper copies of patents are currently available for purchase. When budgetary and process constraints permit, text searching of the Patent Application Notices and Technical Contents Publications will be implemented.

H.R. 1733, if enacted, would not provide any appropriations to cover the costs of early publication, but would provide that these costs are to be recovered by adjusting the filing, issue and maintenance fees, by charging a separate publication fee, or by any combination of these methods, *i.e.*, that the patent applicant is to bear the costs of publication. A number of comments have criticized this method of allocating the publication costs as pre-grant publication provides no benefit to the patent applicant. The Office was required to balance the requests for a printed publication conveying the greatest amount of application information with those comments opposing additional publication costs. To provide the maximum amount of application information at the lowest cost to applicant, the specification, abstract, claims and drawings of the application-as-filed will be available for public review in the Technical Contents Publication.

4. Should the patent applicant receive a copy of the published application — either published notice and/or application content at time of publication?

Summary: A majority of the comments indicated that the applicant should receive a copy of the Patent Application Notice.

Response: The Office proposes to provide for the delivery of the Patent Application Notice similar to the current delivery of patents.

5. Should the PTO permit an accelerated examination? If so, under what conditions?

Summary: A majority of the comments favored permitting accelerated examination. A number of comments indicated that accelerated examination should be provided for applicants who either: (1) meet the current conditions for accelerated examination; or (2) pay a relatively high fee, *i.e.*, that the Office should add the payment of a high accelerated examination fee to the current conditions for providing an accelerated examination. A number of comments, however, indicated that adding the payment of a high accelerated examination fee to those conditions for providing an accelerated examination would benefit large companies at the expense of small entities.

Response: The Office will provide accelerated examination only under the current conditions set forth in § 1.102, as described in MPEP 708.02. Accelerated examination is currently provided depending upon the subject matter of the invention, medical condition of the applicant, business circumstances, or the willingness of the applicant to participate in a special accelerated examination procedure. Increasing the number of applications receiving accelerated examinations could diminish the availability or speed of accelerated examination to an individual applicant because there will be more applications receiving an accelerated examination. It would further delay the examination of applications not provided with accelerated examination. Adding a condition for providing accelerated examination which bears no relationship to the merits of the application or circumstances of the applicant, *i.e.*, for the mere payment of a fee, is not considered appropriate. Therefore, the Office does not propose to change the conditions under which the examination of an application will be accelerated.

The Office, however, will continue to make special an application under the conditions currently set forth in MPEP 708.02 (VIII), special examining procedures for certain new applications - accelerated examination. MPEP 708.02 (VIII) provides that a new application may be granted special status provided that the applicant: (1) submits a written petition to make special accompanied by the fee set forth in § 1.17(i); (2) presents all claims directed to a single invention, or if the Office determines that all the claims presented are not obviously directed to a single invention, will make an election without traverse as a prerequisite to the grant of special status; (3) submits a statement that a pre-examination search was made; (4) submits one copy each of the references deemed most closely related to the subject matter encompassed by the claims; (5) submits a detailed discussion of the references pointing out with the particularity required by § 1.111(b) and (c) how the claimed subject matter is distinguishable over the references; and (6) submits any affidavit or declaration under § 1.131 that is necessary to overcome the references before the application is taken up for action, but in no event later than one month after request for special status. An application granted special status under MPEP 708.02 (VIII) will be taken up by the examiner before all other categories of applications except those clearly in condition for allowance and those with set time limits, such as examiner's answers, etc., and will be given a complete first action which will include all essential matters of merit as to all claims.

6. Since the cost for publishing applications must be recovered from fees, how should the cost of publication be allocated among the various fees, including the possibility of charging a separate publication fee?

Summary: The overwhelming majority of comments opposed a separate publication fee. Most comments indicated that the costs of publication should be spread over the existing fees, with the remaining comments indicating that these costs should be absorbed by those accessing the published applications or the Office.

Response: H.R. 1733, if enacted, would not provide appropriations for the Office to absorb the publication cost, but provides that the "Commissioner shall recover the costs of early publication ... by adjusting the filing, issue, and maintenance fees, by charging a separate publication fee, or by any combination of these methods." Notwithstanding that H.R. 1733, if enacted, would not authorize the Office to recover the costs of publication through those seeking access to the published application, the demand for publication products, *e.g.*, Patent Application Notices and Technical Contents Publications, would not be consistent, and it would not be possible to project the demand for publication products with the degree of precision necessary to recover a substantial portion of the publication costs through the inclusion of such costs in the fees charged for the publication products. In addition, the Office will supply, *inter alia*, CD-ROM collections of facsimile images of the Patent Application Notices and Technical Contents Publications under the condition that CD-ROM collections of patent images are currently supplied. As the Office has no authority to control the further duplication of such images, it would not be practicable to attempt to recover publication costs through increases in the fees charged for publication products, since those persons desiring copies of Patent Application Notices or Technical Contents Publications would simply obtain them from the original purchasers of the CD-ROM collections, who need not include any publication costs in their prices. Therefore, the Office proposes to adjust the filing, issue, and maintenance fees to recover the costs of publication.

In a Notice of Proposed Rulemaking published in the *Federal Register* at 60 *FR* 27934 (May 26, 1995) and in the Patent and Trademark Office *Official Gazette* at 1174 *Off. Gaz. Pat Office* 134-50 (May 30, 1995), a number of changes to the rules of practice to, *inter alia*, adjust patent and trademark fees to reflect the fluctuations in the Consumer Price Index (CPI) pursuant to 35 U.S.C. 41(f) were proposed (Patent and Trademark Fee Notice of Proposed Rulemaking). The proposed patent and trademark fee adjustments, if adopted in final rules, would take effect on October 2, 1995 (October 1, 1995 being a Sunday), prior to the effective date of the fee increase in this notice of proposed rulemaking to recover the costs of publication. The proposed amendments to §§ 1.19(b)(1)(i) and 1.19(b)(1)(ii) are repeated in this notice of proposed rulemaking for clarity. The Office estimates that it will cost about $9 million to publish applications in Fiscal Year 1996. To allocate these costs among the filing fees of those applications which the Office anticipates will be filed in Fiscal Year 1996, the issue fee for those applications for which the Office anticipates payment of an issue fee in Fiscal Year 1996, and maintenance fees due at three (3) years and six (6) months, seven (7) years and six (6) months, and eleven (11) years and six (6) months for those patents for which the Office anticipates payment of the respective maintenance fees in Fiscal Year 1996, a further increase in the filing fee for an original nonprovisional (35 U.S.C. 111(a)) or reissue application to $780 ($390 for a small entity) and a plant application to $540 ($270 for a small entity), issue fee for an original or reissue application to $1280 ($640 for a small entity) and a plant application to $660 ($330 for a small entity), maintenance fee due at three (3) years and six (6) months to $1020 ($510 for a small entity), maintenance fee due at seven (7) years and six (6) months to $2020 ($1010 for a small entity), and maintenance fee due at eleven (11) years and six (6) months to $3020 ($1510 for a small entity) is necessary to recover the costs of publication in Fiscal Year 1996. A comparison of existing fee amounts, fee amounts proposed in the Patent and Trademark Fee Notice of Proposed Rulemaking, and fee amounts proposed in this notice of proposed rulemaking is included as an Appendix B to this notice of proposed rulemaking.

7. Should the PTO require an affirmative communication from a patent applicant indicating that the applicant does not wish the application to be published, or should failure to timely submit a publication fee be taken as instruction not to publish the application? That is, should an application be published unless the applicant affirmatively indicates that the application

is not to be published, regardless of whether a publication fee has been submitted?

What latitude should the PTO permit for late submission of a publication fee?

Summary: An overwhelming majority of the comments (except for those who opposed any pre-grant publication) favored a requirement that an applicant affirmatively communicate that an application is being expressly abandoned to avoid publication of the application at 18 months.
Response: The Office does not process applications as abandoned until seven (7) months after the mailing date of an Office action to allow for extensions of time under § 1.136(a) and mailing delays. Where no response to an Office action setting a shortened statutory period for response of three (3) months mailed at 13 months after filing in an application is received, the application becomes abandoned by operation of 35 U.S.C. 133 at 16 months after filing, but is not recognized or processed by the Office as an abandoned application until 20 months after filing, and thus would be published in regular course at 18 months. Therefore, an applicant intending to permit an application to become abandoned for failure to respond to an Office action mailed within seven (7) months of the projected publication date must take affirmative action to avoid publication of the application.

The Office intends to indicate the projected date of publication on the filing receipt. Any person who wants to avoid publication of the application at 18 months must submit a letter of express abandonment in sufficient time to permit the Office to act on the letter. Likewise, any person who considers the projected date of publication on the filing receipt to be incorrect must submit a request to correct the projected date of publication in sufficient time to permit the Office to act on the request.

Currently, the Office considers two (2) months to be the minimum time necessary to avoid publication of an application. Therefore, any letter of express abandonment or request to withdraw the application from publication submitted less than two (2) months from the projected date of publication will not be considered effective to avoid publication of the application at the projected date of publication. The Office also intends to indicate on the filing receipt the date by which an application must be expressly abandoned to avoid its publication.

8. The delayed filing of either a claim for priority under 35 U.S.C. 119 or 120 may result in the delayed publication of the application. Should priority or benefit be lost if not made within a reasonable time after filing? What latitude should the PTO permit for late claiming of priority or benefit?

Summary: A large majority of the comments indicated that claims for priority under 35 U.S.C. 119 and 120 should be lost if not timely filed. A number of comments also indicated that there should be provisions for the acceptance of late claims for priority.
Response: The submission of a claim for priority under 35 U.S.C. 119 or 120 later than four (4) months prior to the publication date appropriate for an application claiming that priority date will result in delays in the publication of the application and will interfere with the publication process. Therefore, the Office proposes to change the rules of practice to provide that claims for priority under 35 U.S.C. 119 or 120 must be made within two (2) months of filing, or fourteen (14) months from the filing date for which a benefit is desired, whichever is later. To avoid a potential loss of patent rights to an applicant who inadvertently failed to present a timely claim for priority, the Office further proposes to provide for the acceptance of late claims for priority submitted during the pendency of the application with a surcharge, so long as the delay in submitting the claim for priority was unintentional.

9. Once the patent has issued, should the paper document containing information similar to that published in the Gazette of *Patent Application Notices*, *i.e.*, the Patent Application Notice, be removed from the search files, and should publication information be included on the issued patent?

Summary: A majority of the comments indicated that the Patent Application Notice should not be removed from the search files.
Response: The Office will not remove the Patent Application Notice from the search files upon issuance of the patent.

10. After publication, should access to the content of the application file be limited to the originally filed application papers? If not, what degree of access should be permitted? Should access be limited to the content before publication, or should it extend to materials added after publication?

Summary: A majority of the comments indicated that, upon publication, the access to the content of the application file should not be limited.
Response: The Office proposes to change the rules of practice to provide that, upon publication, access to the entire content of the application file would be permitted. To avoid undue interference with the examination of the application, however, the public access to the application file of a pending published application is proposed to be limited to obtaining, upon the payment of the fee set forth in § 1.19(b)(2), a copy of the application file produced during non-working hours by the Office when the application file is made available by the appropriate patent application processing organization. The Office also proposes to provide, upon the payment of the fee(s) set forth in § 1.19(b)(4), as proposed, a copy of specifically identified document(s) contained in a pending published application.

The Office will provide public access to a database containing information concerning the status of a pending published application and the content of the application file similar to that contained in the Patent Application Location and Monitoring (PALM) system. Using this database, interested members of the public will be able to ascertain the status of a pending published application to determine whether obtaining a copy of the file wrapper and content of the application or any document(s) in the file wrapper is warranted. In addition, this database can also be used to permit specific identification of the document(s) of which a copy is desired, assuming that obtaining a copy of the entire file wrapper and content is not considered warranted.

The Office specifically proposes to provide a copy of a specifically identified document contained in a pending published application for a fee of $75.00. Each paper in the application file to which a separate paper number is assigned constitutes a document in the application. As the cost of obtaining a pending published application from its location in the various patent application processing organizations throughout the Office is a substantial portion of the cost of providing a copy of the file wrapper and content of a pending published application, the fee for providing a copy of the first requested document from a pending published application must recover the cost of obtaining the application. The Office, however, will provide copies of additional documents from the same application in the same request for a fee of $25.00 per document.

11. After publication, should assignment records of a published application also be made accessible to the public?

Summary: An overwhelming majority of the comments indicated that, upon publication, the assignment records of an application should be accessible to the public.
Response: The Office proposes to change the rules of practice to provide that, upon publication, the assignment records of the application would be available by both application and Patent Application Notice (PAN) number and open to public inspection through the existing Patent Assignment Search System. The Office further proposes to permit applicants to indicate on the assignment cover sheet whether they want assignment information to be printed on the Patent Application Notice. The Office, however, does not propose to require that any assignment information be printed on the Patent Application Notice.

12. After publication, should access include the deposit of biological materials as set forth in § 1.802 *et seq.*?

Summary: A majority of the comments indicated that, upon publication, any deposit of biological materials should be accessible to the public. A number of comments, however, indicated that such access should be limited in the manner similar to that in European or Japanese laws, or that such access should be limited to experimental use.
Response: Section 1.809(c) currently provides that the applicant need not provide any necessary deposit of biological materials until three (3) months from the mailing of the Notice of Allowance and Issue Fee Due. The deposit of biological materials on filing of an application are often required by foreign laws. Applicants may not be able to claim priority under these laws based upon an earlier United States application filed without any necessary deposit of biological materials. The laws and rules of practice of the United States, however, do not require an applicant to make any deposit of biological materials until the application is allowed. *See, In re Lundak*, 723 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985). Accordingly, the Office proposes to change the rules of practice to provide that, upon publication, any deposit of biological materials that has been made would be available after deposit under the same conditions that such deposit of biological material would be available for an issued patent.

13. What types of problems will be encountered if all amendments must be made by (a) substitute paragraphs and claims, (b) substitute pages, or (c) replacement of the entire application?

Summary: A majority of the comments indicated that, if the rules of practice regarding the submission of amendments were changed, a requirement for substitute paragraphs and claims, or substitute pages would be acceptable.
Response: The Office currently considers changes in the procedures for entering amendments into applications to be unnecessary to the current planning approach to implementation of 18-month publication, and, as such, no change to the rules of practice to require substitute paragraphs and claims, substitute pages, or replacement of the entire application is being proposed.

14. Should protest procedures be modified to permit the third-party submission of prior art only prior to a specific period after publication of the application? What action should be taken with respect to untimely submissions by a third party?

Summary: A majority of comments indicated that third party submissions of prior art patents and publications should be permitted for a limited period upon publication, but the overwhelming majority of comments opposed any pre-grant opposition procedure.
Response: The Office does not intend to institute any procedures that would amount to pre-grant opposition. H.R. 1732 was also introduced in the House of Representatives on May 25, 1995, and, if enacted, will expand reexamination, *i.e.*, post-grant opposition, proceedings to provide a third party requester with increased participation rights, including the right to appeal any decisions favorable to patentability to the Board of Patent Appeals and Interferences and to the courts. In view of the opposition to pre-grant third party participation, *i.e.*, support for the continued *ex parte* examination of pending applications, the Office proposes to change the rules of practice to limit the period for filing protests and petitions for the institution of public use proceedings.

The Office proposes to change the rules of practice concerning protests to provide that a submission by a third party in a pending application would be considered if: (1) it is submitted within two months of the date the application was published or prior to the mailing of a notice of allowance under § 1.311, whichever occurs first; (2) the submission has been served on the applicant in accordance with § 1.248 if filed after the date the application was published, and the submission indicates such service; (3) the submission is accompanied by a $220 fee if submitted after publication of the application; and (4) the application is still pending when the submission and application file is brought before the examiner.

The $220 fee for a protest submitted after publication of the application is considered appropriate. Any party submitting a protest after publication has benefitted by the publication of the application. The third party should not obtain this benefit solely at the expense of the patent applicant, but should obtain this benefit only upon payment of a fee. In addition, it is expected that any protest submitted after publication of the application will be considered late in the prosecution of the application, which will cause inconvenience both to the patent applicant and the Office. Therefore, the requirement for the payment of a fee is considered appropriate to defray the costs of the belated consideration of any such submission and discourage the submission of protests having questionable merit.

Third parties may continue to submit information concerning prior public use of the invention in accordance with § 1.292.

Currently, § 1.292 does not set forth a time period within which a petition for the institution of public use proceedings must be filed. The Office proposes to further amend § 1.292 to provide that the public use petition will be entered if submitted within two months of the publication date of the application or prior to the mailing of a notice of allowance under § 1.311, whichever occurs first.

The proposed changes to §§ 1.291 and 1.292 are intended to limit any right of third parties to have information entered and considered in a pending application. They do not vest the applicant with any right to prevent the Office from *sua sponte* making such information of record in the application or relying upon such information in subsequent proceedings in the application, *i.e.*, they do not limit the authority of the Office to reopen the prosecution of an application to consider any information deemed relevant to the patentability of any claim.

A number of miscellaneous comments concerning the 18-month publication of patent applications were also received.

Comment 1: A number of comments opposed any pre-grant publication of pending applications as an improper limiting of the right of a patent applicant to maintain trade secrets, or argued that any pre-grant publication should not occur prior to 24 or 60 months from the earliest filing date.
Response: H.R. 1733, if enacted, would require the Commissioner to publish pending applications at 18 months. The proposed changes to the rules of practice concern the implementation of an 18-month publication system mandated by statute, not the advisability of an 18-month publication system. If legislation containing provisions for the publication of pending applications is enacted, it is not expected that the Office would have the discretion to determine whether or when pending applications are to be published. That is, it is expected that any legislation containing provisions for the publication of pending applications will mandate whether and when applications are to be published.
Comment 2: A number of comments indicated that the publication of pending applications should be joined with provisional rights.
Response: H.R. 1733, as proposed, provides for provisional rights. This issue, however, was not treated in the 18-Month Publication Notice or this notice of proposed rulemaking since it does not affect the way business is conducted with or within the Office.
Comment 3: One comment indicated that the requirement under 35 U.S.C. 112, first paragraph, for a disclosure of a best mode should be eliminated in view of 18-month publication.
Response: The requirement in 35 U.S.C. 112, first paragraph, for a disclosure of a best mode is a statutory, not regulatory, requirement. Therefore, the Office has no authority to eliminate or limit this requirement of the patent statutes.
Comment 4: One comment indicated that any publication of patent applications should address the situation in which: (1) an applicant files a continuing application prior to receiving a patent, and then maintains the pendency of continuing application(s), which are maintained in confidence, to obtain claims of various scope; (2) a second party invests resources in developing a product which does not infringe the claims of the patent, but which the applicant could draft claims in the continuing application(s) to cover; and (3) the applicant then permits a continuing application having claims which covers the second party's product to issue, thus checkmating the second party.
Response: H.R. 1733, if enacted, would provide that applications shall be published "as soon as possible after the expiry of a period of 18 months from the earliest filing date for which a benefit is sought." Any continuing application which claims priority from any prior application would be published either 18 months after the filing date of the earliest filed prior application or as soon as possible after filing of the continuing application, and thus would not be maintained in confidence.

Comment 5: One comment indicated that applicants should obtain the defensive benefit of their filing date in a published application regardless of whether the application issues as a patent, either by statute or rule.
Response: H.R. 1733, if enacted, would provide that a published application is prior art under 35 U.S.C. 102(e) as of its filing date. As prior art is defined by statute, *i.e.*, 35 U.S.C. 102, the Office has no authority to promulgate regulations defining what does or does not constitute prior art.
Comment 6: One comment indicated that any rulemaking should be postponed until there is pending legislation, and it is clear as to what form 18-month publication will take.
Response: As legislation has been introduced, it is now appropriate to initiate the rulemaking process, the form that 18-month publication will likely take is known. As such, in light of the changes that would be necessitated by this legislation, the requirement for a rapid implementation, if enacted, and a desire on the part of the Office to receive public input prior to initiating the rulemaking process. If H.R. 1733 is amended during the legislative process, the final rules will comply with this legislation as enacted. If H.R. 1733 is not enacted, the proposed rules that would implement publication of patent applications would be withdrawn.
Comment 7: One comment indicated that it is unclear as to whether, when a restriction requirement is applied, each application will require a separate publication fee.
Response: No separate publication fee has been proposed. In accordance with current practice, each application would require separate filing, issue, and maintenance fees, which fees will be increased to recover the costs of publication.
Comment 8: Several comments indicated that the Office should not impose access fees for either copying the paper application files, or searching and copying a published application from any electronic data base.
Response: As discussed *supra*, the Office intends to provide free public access to images of the Patent Application Notices and Technical Contents Publications through video display terminals in the Public Search Room and through CD-ROM collections of facsimile images of Patent Application Notices and Technical Contents Publications in the Patent and Trademark Depository Libraries. Copies of the Patent Application Notices, Technical Contents Publications, or copies of the file wrapper and contents of the application will be available for a fee. The costs of publication have been allocated primarily to those applicants whose applications are being published. Since publication primarily benefits those seeking access to the published applications, it is reasonable to require such persons to pay a fee for making copies of the Patent Application Notices and Technical Contents Publications, or obtaining a copy of the file wrapper and application contents of a published application from the Office.
Comment 9: One comment indicated that the publication of applications may result in instances in which third parties will submit information to the applicant directly, rather than to the Office. In instances in which the applicant was previously aware of the information, but did not consider it material, the applicant cannot submit the information to the Office in that application (if after final or allowance), but will be charged with a § 1.56 violation if they do not file a continuation application to have it considered. Thus, § 1.56 should be amended such that an applicant in this situation no longer has a duty to submit information to the Office.
Response: Section 1.56 expressly provides that there is no duty to submit information which is not material to the patentability of any existing claim. Since the applicant previously determined that the information was not material, the fact that a third party has provided this previously known material to the applicant has no effect on the applicant's compliance with § 1.56. Second, since the applicant was previously aware of this information, the applicant is under a duty to bring such information to the attention of the Office if it is material, regardless of the actions of any third party, and the applicant is not under a duty to bring such information to the attention of the Office if it is not material, again regardless of the actions of any third party. In either instance, the third party's actions have no bearing on whether the applicant is in compliance with § 1.56. Therefore, no change to § 1.56 is being proposed.
Comment 10: One comment indicated that § 1.56 should be modified or abolished. Where information is brought to the attention of the applicant after allowance, the applicant should be considered to have met his or her duty of disclosure under § 1.56 if the applicant simply chooses to permit the patent to issue, as the public can take care of itself through reexamination or whatever opposition proceedings are instituted.
Response: As indicated *supra*, no change to § 1.56 is being proposed. In addition, the Office is proposing to limit third party protest procedures, and is not proposing to develop any procedures amounting to pre-grant opposition. Since the Office is continuing the *ex parte* examination of applications, the proposed modification or abolition of § 1.56 is not considered appropriate.
Comment 11: One comment indicated that an applicant should be allowed to request early publication.
Response: Section 1.306(d) is being proposed to provide for petitions requesting early publication.
Comment 12: One comment indicated that the Office should require that the text of all applications be filed in digital form, and the publication of applications should be purely digital, *i.e.*, that Office should not print any publication.
Response: 35 U.S.C. 22 provides that "[t]he Commissioner may require papers filed in the Patent and Trademark Office to be printed or typewritten." Therefore, the Office does not currently have the authority to require that application papers be submitted in digital form. The Office is considering the legislative and regulatory changes that would be necessary to permit purely digital filing of application papers; however, requiring all applicants to submit application papers in digital form at this time would place an unnecessary burden on those applicants lacking word-processing resources. In addition, the Office received a substantial number of comments requesting a printed publication containing more information, as well as a number of comments opposing the promulgation of any regulations concerning a standard application format which were in excess of EPO and PCT regulations and not necessary to 18-month publication.
Comment 13: One comment indicated that the Office should clearly define or eliminate the "formal" pre-examination search requirement in MPEP 708.02.
Response: MPEP 708.02(VIII) provides that an application may be granted special status under the condition that, *inter alia*, the applicant:

> Submits a statement that a pre-examination search was made, and specifying whether by the inventor, attorney, agent, professional searchers, *etc.*, and listing the field of search by class and subclass, publication, Chemical Abstracts, foreign patents, *etc.* A search made by a foreign patent office satisfies this requirement.

This definition of a pre-examination search is reasonably clear as to what actions are necessary for an applicant to have satisfied this requirement of MPEP 708.02(VIII), and the requirement for a pre-examination search is basic to the justification for granting special status to an application on that basis. No changes to 37 CFR 1.102 are being proposed.
Comment 14: One comment indicated that the publication of applications at 18 months will create a security review problem, especially where a nonprovisional, *i.e.*, 35 U.S.C. 111(a), application claiming the benefit of a prior provisional application not subject to a secrecy order contains additional material which must be reviewed. Therefore, the Office should require that any nonprovisional applications claiming the benefit of a prior provisional application indicate any additional material by underlining and bracketing.
Response: Provisional applications will increase the number of applications requiring security screening. All provisional applications will require security screening immediately after filing in the same manner as nonprovisional applications due to the licensing provision of 35 U.S.C. 184. Any subsequent U.S. patent application claiming the benefit of a prior provisional application will also require security screening unless it is evident on its face that no additional subject matter is contained in the application beyond that in the provisional application. It would be beneficial for the applicant to provide this information to the Office upon filing of the nonprovisional application. Thus, the Office is considering suggesting that applicants employ a standard application transmittal letter similar to the standard transmittal letter for transmitting an international application to the United States Receiving Office (PTO-1382). This standard transmittal letter would indicate, *inter alia*: (1) any difference between a provisional application and a nonprovisional application claiming the benefit of the provisional application; (2) the residence of the inventor(s) to avoid the unnecessary screening of foreign origin applications; and (3) any Government interests in the application, which applications should be screened through contract provisions.

Comment 15: One comment indicated that the Office should automatically place a secrecy order on any nonprovisional application in which the prior provisional application was under a secrecy order.
Response: The Office does not have the authority to impose a secrecy order without a specific recommendation from a defense agency. 35 U.S.C. 181. Additionally, all secrecy orders include the provision that any other patent application already or hereafter filed in this or any foreign country which contains any significant part of the subject matter of the application under secrecy order also falls within the scope of the secrecy order and must be brought to the immediate attention of Licensing and Review. See § 5.2(d). All papers pertaining to such applications must be filed under the provisions of § 5.33, *i.e.*, to the attention of Licensing and Review. Thus, the applicant is obligated to maintain proper security of any nonprovisional application that claims benefit of a prior provisional application under a secrecy order.
Comment 16: One comment expressed concern that the defense agencies may not have sufficient time to complete national security review of applications made available to them under 35 U.S.C. 181 prior to publication at 18 months from the earliest filing date for which a benefit is sought, and suggested that applications not be published until they have been cleared by the defense agencies.
Response: H.R. 1733, if enacted, would provide for withholding an application from publication beyond 18 months from the earliest filing date for which a benefit is sought if the application is under a secrecy order or abandoned. There is no provision for delaying the publication of an application until a completion of all reviews under 35 U.S.C. 181. In addition, 35 U.S.C. 184 authorizes foreign filing of an application without the need for a license once the application has been on file for at least six (6) months. In view of 35 U.S.C. 184, the defense agencies must complete all security reviews within six (6) months of filing to prevent public disclosure. Thus, security review must be completed within six (6) months of the actual U.S. filing date. For those applications due for publication prior to six (6) months from the actual filing date, *e.g.*, those claiming the benefit of an earlier application filed more than 18 months prior and those which a petition for early publication has been granted, considerations of national security mandate a limited delay in publication. The Office will not pass an application for publication that is still under review by a defense agency unless it has been on file for at least six (6) months and the defense agency has been provided a minimum of three (3) months to review the application.
Comment 17: One comment indicated that the digitized images of the application file contents should be available in magnetic tape form in the morning of the day of publication.
Response: Digitized images of the Patent Application Notice and Technical Contents Publication will be available in magnetic tape form for a fee to all parties as soon as possible after publication similar to the way in which digitized images of granted patents are provided, assuming that there is interest in such products.
Comment 18: One comment indicated that it is unclear as to whether an examiner can cite the Patent Application Notice, and whether the examiner will be required to supply the full application specification.
Response: When an examiner cites a published application, a copy of the Technical Contents Publication will be provided with the Office action under the same conditions that a copy of the entire patent of any cited patent would currently be provided. That is, where an examiner would provide only those portions of a patent relied upon, rather than a copy of the entire patent due to its size, *i.e.*, in instances of jumbo patents, the examiner would similarly be expected to provide only those portions of a published application relied upon in instances of jumbo applications.
Comment 19: One comment indicated that the entire application as filed should be published, otherwise the abandoned published application must be permanently stored in a manner that would permit on-site retrieval.
Response: The Technical Contents Publication of any published application will be electronically available, without any necessity for retrieval of the actual application file. Therefore, a printed publication of the application-as-filed would not provide any information not electronically available. Nevertheless, the actual file of an abandoned application may be readily obtained regardless of where it is stored.
Comment 20: One comment indicated that the 18-Month Publication Notice did not set forth the capacity of Patent and Trademark Depository Libraries (PTDLs) to: (1) collect fees, (2) provide librarians of assistance, and (3) house new publications.
Response: Each PTDL sets its own service standard procedures. Any customer must directly contact the PTDL to ascertain its customer service standards and requirements. Nevertheless, as the Office proposes to publish only a Patent Application Notice, rather than the entire application-as-filed, in printed form, and further proposes to provide the Patent Application Notices and Technical Contents Publications to PTDLs through CD-ROM collections of facsimile images, this publication of applications would appear to alleviate, rather than exacerbate, any publication storage housing problems.
Comment 21: One comment indicated that the Office should provide a first Office action on the merits in all patent applications within 14 months of the actual filing date of the application in the United States.
Response: The ability of the Office to process application within any established time frame is entirely dependent upon the staff and resources allocated by Congress, the Office of Management and Budget (OMB), and the Department of Commerce (DoC). In January of 1995, the first Office action was mailed within 14 months of the actual filing date of the application in the United States in ninety-two (92) percent of all applications in which a first Office action was mailed. Any applicant who absolutely needs a first Office action on the merits mailed within 14 months of the actual filing date of the application should consider a petition to make special using the special examining procedure for certain new applications set forth in MPEP 708.02(VIII). In addition, any independent inventor meeting the requirements set forth in 35 U.S.C. 122(b)(2) and § 1.306(e), as proposed, may wish to consider filing the application with a petition under § 1.306(e).
Comment 22: One comment noted the current procedure of permitting applicants to submit trade secret material and later expunge the material if it is not necessary to patentability, and indicated that new procedures should be implemented in the content of pre-grant publication of pending applications.
Response: The current procedures for the treatment of petitions to expunge trade secret, proprietary, or protective order material are set forth in MPEP 724.05. Applicants are cautioned, in MPEP 724.05, that in instances in which a decision on the petition is not made prior to the date on which the application issues as a patent, any material in the application file will remain open to public inspection, and, as such, petitions to expunge must be filed as soon as possible. Under an 18-month publication system, any material in the application file on the date the application is published would likewise remain open to public inspection. However, as petitions to expunge are considered under § 1.182, *i.e.*, petitions not otherwise provided for, no change to the rules of practice regarding petitions to expunge is being proposed.

Discussion of Specific Rules

Title 37 of the Code of Federal Regulations, Parts 1, 3 and 5, are proposed to be amended as follows:

Section 1.4(a), as proposed, would add Patent Application Notices and Technical Contents Publications to those services and facilities which correspondence with the Office may comprise.

Section 1.5(a), as proposed, would provide that any letter concerning an application must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number) or serial number and filing date assigned to that application by the Office, or the international application number of the international application, regardless of whether the application is a published application.

That is, the identification required for a pending or abandoned application would not change due to its status as a published application.

Section 1.5(f), as proposed, would provide that a paper concerning a provisional application must identify the application as such and by the application number.

Section 1.5(g), as proposed, would provide that a paper relating to a Patent Application Notice should identify it as such and by the Patent Application Notice number. That is, a paper concerning a published application must identify the application by application number, not Patent Application Notice number; however, a paper concerning the Patent Application Notice *per se* must identify it by Patent Application Notice number.

Section 1.9(a), as proposed, would define an international application in subparagraph (a)(4), rather than in paragraph (b).

Section 1.9(b), as proposed, would now define a published application as an application for patent which has been published pursuant to 35 U.S.C. 122(b).

A new § 1.9(h), as proposed, would define national security classified as specifically authorized under criteria established by Act of Congress or Executive Order to be kept secret in the interest of national defense or foreign policy and in fact properly classified pursuant to Act of Congress or Executive Order.

Section 1.11, as proposed, would provide that, like an issued patent or a statutory invention registration, the specification, drawings, and all papers relating to the case in the file of an abandoned published application would be open to inspection by the public. Section 1.11, as proposed, would further provide that a copy of the specification, drawings, and all papers relating to the case in the file of any published application, a patent, or statutory invention registration may be obtained upon the payment of the fee set forth in § 1.19(b)(2). That is, while the actual application file of an abandoned published application, patent, and statutory invention registration would be available for public inspection, the actual application file of a pending published application would not be available for public inspection, but a copy of the specification, drawings, and all papers relating to a pending published application would, upon the payment of the fee set forth in § 1.19(b)(2), be provided to any member of the public.

Section 1.12, as proposed, would provide that the assignment records relating to published applications are available and open to public inspection at the Office, and copies of those assignment records may be obtained upon request and payment of the fee. Section 1.12 would further exclude the assignment records of published applications from those records that are preserved in confidence. Finally, § 1.12, as proposed, would revise paragraph (c) to read "preserved in confidence under § 1.14" for consistency with § 1.14.

Section 1.13, as proposed, would provide that, like an issued patent, certified and non-certified copies of Patent Application Notices, Technical Contents Publications, and the file wrapper and contents of published applications would, upon payment of a fee, be furnished to any person.

Section 1.14, as proposed, would revise the title and paragraphs (a) and (e) to read "preserved in confidence" for consistency with the language in 35 U.S.C. 122.

Section 1.14(a), as proposed, would provide that published applications are excluded from those pending and abandoned applications which are maintained in confidence. Section 1.14(a), as proposed, would further change "the United States of America has been indicated as a Designated State in a published international application" to "a published international application in which the United States of America has been indicated as a Designated State" for clarity, and add "U.S. published application" to those documents in which identification of an application by application number or serial number and filing date would entitle the public to status information concerning the application. Section 1.14(a), as proposed, would further provide that reference to an application in a U.S. published application or patent, or identification of an application by application number or serial number and filing date in a published patent document or a published international application in which the United States of America has been indicated as a Designated State would entitle the public to the application number, filing date, and status information concerning any application claiming the benefit of the identified or referenced application. Finally, § 1.14(a), as proposed, would replace the phrase "serial number" with "application number or serial number and filing date" since the mere reference to a serial number without the series code (application number) or filing date would not constitute a reference to a specific single application.

Section 1.14(b), as proposed, would provide that published applications, as well as applications that are referred to in a published application, are excluded from those abandoned applications which are not open to public inspection. Section 1.14(b), as proposed, would further provide that applications that are referred to in applications open to public inspection pursuant to this section and applications which claim the benefit of an application open to public inspection pursuant to this section are also excluded from those abandoned applications which are not open to public inspection. Finally, § 1.14(b), as proposed, would further remove applications that have been published pursuant to 35 U.S.C. 122(b) from those abandoned applications that may be destroyed after 20 years from their filing date.

Section 1.16(a), (h) and (g), as proposed, would increase the filing fee for an original nonprovisional (35 U.S.C. 111(a)) or reissue application to $780 ($390 for small entities), and plant application to $540 ($270 for small entities). The filing fee for a design application would not be affected by this proposed rule change.

Section 1.17(i), as proposed, would add petitions under § 1.306(d) for early publication of an application, petitions under § 1.306(e) for deferred publication of an application, and under § 1.701(f) for patent term extension based upon administrative delays not specifically provided for to the list of petitions for which the fee set forth in § 1.17(i) is required.

A new § 1.17(t), as proposed, would be added to establish the fee for submitting a protest under § 1.291 after publication of an application.

A new § 1.17(u), as proposed, would be added to establish the surcharge for accepting a late claim for priority under 35 U.S.C. 119(a)-(d) or for the benefit of a prior application under 35 U.S.C. 119(e), 120 or 121 filed during the pendency of the application.

Section 1.18(a) and (c), as proposed, would increase the issue fee for an original or reissue application to $1280 ($640 for small entities), and plant application to $660 ($330 for small entities). The issue fee for a design application would not be affected by this proposed rule change.

Section 1.19(a)(1), as proposed, would add Patent Application Notices to the documents that the Office would supply in the manner of a patent upon payment of a fee.

A new § 1.19(a)(4), as proposed, would add Technical Contents Publications to the documents that the Office would supply upon payment of a fee.

Section 1.19(b)(2), as proposed, would add the file wrapper and contents of published applications to the files that the Office would supply a copy of upon payment of a fee.

Current § 1.19(b)(4), as proposed, would be redesignated as § 1.19(b)(5), and would add the assignment records of published applications to the assignment records that the Office would supply upon payment of a fee.

A new § 1.19(b)(4), as proposed, would provide the fees for a certified or uncertified copy of documents contained in a pending application. Section 1.19(b)(4)(i), as proposed, would provide that the fee for a certified or uncertified copy of the first document contained in a pending application would be $75.00. Section 1.19(b)(4)(ii), as proposed, would provide that the fee for a copy of each commonly requested additional document contained in such pending application would be $25.00. That is, while the fee for the first document contained in a pending application would be $75.00, the fee for a copy of each additional document contained in the same pending application and requested together with the first document would be $25.00. Where, however, a person requests a first document from a pending published application, and subsequently requeats an additional document, the additional document was not commonly requested with the first document, and the fee for the additional document would be $75.00. Nevertheless, the fee for any further additional document(s) commonly requested with the additional document would be $25.00 per additional document.

Section 1.19(c), as proposed, would provide that copies of all Technical Contents Publications published annually would also be provided to libraries upon payment of the fee for copies of all patents issued annually.

Section 1.20(e)-(g), as proposed, would increase the fee for maintaining an original or reissue patent in force beyond four years, eight years, and twelve years, respectively, to $1020, $2020, and $3020, respectively ($510, $1010, and $1510, respectively, for small entities).

Section 1.24, as proposed, would add the purchase of copies of Patent Application Notices and Technical Contents Publications to those documents for which the coupons set forth therein may be used.

Section 1.51(a)(1), as proposed, would further provide that a complete application comprises, *inter alia*, an abstract.

Section 1.52(a), as proposed, would provide that all papers which are to become a part of the permanent records of the Office must be legibly typed in permanent dark ink in portrait orientation on flexible, strong, smooth, non-shiny, durable and white paper. Currently, § 1.52(a) permits such papers to be hand-written, and does not limit the color of the ink or paper, quality of the paper, or orientation of the typing. Section 1.52(a), as proposed, would further provide that the application papers must be presented in a form having sufficient clarity and contrast between the paper and the typing thereon to permit electronic reproduction by use of digital imaging and optical character recognition, as well as the direct reproduction currently provided for. Section 1.52(a), as proposed, would further provide that substitute typewritten papers "will," rather than "may," be required if the original application papers are not of the required quality. As any substitute typewritten papers containing the subject matter of the originally filed application papers would constitute a substitute specification, the provisions of § 1.125 governing the entry of a substitute specification would be applicable, and § 1.52(a), as proposed, would include a specific reference to § 1.125.

Section 1.52(b), as proposed, would provide that the claims must be set forth on a separate sheet. Section 1.72(b) currently provides that the abstract must be set forth on a separate sheet. Thus, §§ 1.52(b), as proposed, and 1.72(b) would require that the abstract and claims be set forth on a separate sheet. Section 1.52(b), as proposed, would further provide that the sheets of paper must be the same size and either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm (8 1/2 by 11 inches), with a top margin of at least 2.0 cm. (3/4 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 2.0 cm. (3/4 inch), and a bottom margin of at least 2.0 cm. (3/4 inch), and that no holes should be provided in the paper sheets. Section 1.52(b) currently provides that papers must be written on but one side, but this phrase is proposed to be changed to "typed on but one side" to conform to § 1.52(a) which, as proposed, would no longer permit hand-written or hand-printed ("written or printed") papers. Section 1.52(b), as proposed, would further provide that the lines "must," rather than "should," be 1 1/2 or double spaced, and that the pages "must," rather than "should," be numbered consecutively, starting with page one, with the numbers being centrally located above or below the text. Finally, § 1.52(b), as proposed, would specifically reference drawings to clarify that drawings are part of the application papers, but that the standards for drawings are set forth in § 1.84.

Section 1.52(d), as proposed, would provide that where an application is filed in a language other than English, the verified English translation of the non-English-language application and the fee set forth in § 1.17(k) are required to be filed with the application or within such time period as may be set by the Office, and that extensions of time pursuant to § 1.136(a) would not be available for submitting the English translation.

Section 1.53(d)(1), as proposed, would further provide that the applicant will be given a time period within which to file an abstract and claims on a separate sheet, or substitute specification in compliance § 1.125 with papers typed on but one side of the paper or new sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality, and in a proper size and format for electronic reproduction in instances in which the application papers did not comply with §§ 1.52(a) and (b), as proposed, or the drawings were of such poor quality as to preclude their digital image scanning into the electronic data base. Section 1.53(d)(1), as proposed, would further provide that extensions of time pursuant to § 1.136(a) would not be available for filing an abstract and claims on a separate sheet, and a substitute specification with papers typed on but one side of the paper and sheets of drawings, each of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction.

Section 1.54(b), as proposed, would provide that the applicant will be informed of the application number, filing date, and projected publication date on a filing receipt. The phrase "application serial number" would be changed to "application number" for consistency with § 1.5(a).

Section 1.55(a), as proposed, would provide that any claim to priority under 35 U.S.C. 119(a)-(d) must be stated within two months of filing or within fourteen months of the date of the prior foreign application, whichever is later, and must identify the prior foreign application by specifying its application number, country, and day, month and year of its filing. The proposed amendment to § 1.55, however, would not affect claims to priority under 35 U.S.C. 172, and would not affect the time periods set forth in § 1.55(a) for the perfection of any claim for priority under 35 U.S.C. 119 (a)-(d), *i.e.*, the filing of a certified copy of the foreign application.

Section 1.55(c), as proposed, would provide a procedure for the acceptance of claim to priority under 35 U.S.C. 119(a)-(d) presented after the time period set in § 1.55(a). The procedure would require the filing of a petition during the pendency of the application requesting acceptance of the delayed claim, the surcharge set forth in § 1.17(u), and a statement that the delay was unintentional.

Section 1.55(d), as proposed, would provide that the time periods set forth in this section, *i.e.*, two months of filing or within fourteen months of the filing date of the prior foreign application as set forth in § 1.55(a), and during the pendency of the application as set forth in § 1.55(c), cannot be extended.

Section 1.58(b), as proposed, would be removed and reserved as unnecessary in view of the proposed amendments to §§ 1.52(a) and (b).

Section 1.58(c), as proposed, would delete the sentence "[i]f it is not possible to limit the width of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10 3/4 inches (27.3 cm.) and to place it sideways on the sheet" and "[h]and lettering must be neat, clean, and have a minimum character height of 0.08 inch (2.1 mm.)" to conform to the typing and paper size and orientation limitations in §§ 1.52(a) and (b), as proposed. Section 1.58(c), as proposed, would further provide metric dimensions with English equivalents in parentheticals, rather than *vice versa*.

Section 1.60(d), as proposed, would provide that the applicant will be given a time period, which is not extendable under § 1.136(a), within which to file an abstract and claims on a separate sheet, and a substitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction where the papers of the prior application did not comply with §§ 1.52(a) and (b), as proposed, or the drawings of the prior application were of such poor quality as to preclude their digital image scanning into the electronic data base.

Section 1.62(d), as proposed, would provide that the applicant will be given a time period, which is not extendable under § 1.136(a), within which to file any substitute specification and drawings required under § 1.62(e)(2), discussed *infra*.

Section 1.62(e), as proposed, would be subdivided into paragraphs (e)(1) and (e)(2) for clarity. Section 1.62(e)(1), as proposed, would contain the first two (2) sentences of § 1.62(e) without change. Section 1.62(e)(2), as proposed, would provide that a substitute specification and drawings would be required when the application being filed under § 1.62 is a continuation-in-part application. Section 1.62(e) currently provides that no copy of the prior application or new specification is required, that the filing of a copy of the prior application or new specification is in fact considered improper, and that a petition with instructions to cancel the copy of the prior application or new specification is necessary to obtain the date of deposit of the request for an application under § 1.62 as the filing date. Section 1.62(e)(2), as proposed, would provide that any new specification filed will not be considered part of the original application

papers, but will be treated as a substitute specification in accordance with § 1.125.

Section 1.62(f), as proposed, would amend "35 U.S.C. 122" to read "35 U.S.C. 122(a)" to reflect the changes in H.R. 1733, if enacted, would change "secrecy" to "confidence" as is found in § 1.14, as proposed, and would change "37 CFR 1.14" to "§ 1.14" for consistency.

Section 1.72(b), as proposed, would provide that the abstract should be prior to the first page of the specification, rather than following the claims, to conform to § 1.77, as proposed.

Section 1.75, as proposed, would include an amendment to paragraph (g), and would add two new paragraphs. Section 1.75(g), as proposed, would add the phrase "the least restrictive claim should be presented as claim number 1" to paragraph (g) to facilitate the selection of a representative claim. Section 1.75(h), as proposed, would provide that the claim or claims must be set forth on a separate sheet. Section 1.75(i), as proposed, would provide that where a claim sets forth a plurality of elements or steps, each element or step of the claim should be seperated by a line indentation to facilitate the digital image and/or OCR scanning of the claim into the electronic data base.

Section 1.77, as proposed, would provide that the elements of the application, if applicable, should appear in the following order: (1) Utility Application Transmittal Form; (2) Fee Transmittal Form; (3) abstract of the disclosure; (4) title of the invention; or an introductory portion stating the name, citizenship, and residence of the applicant, and the title of the invention may be used; (5) cross-reference to related applications; (6) statement regarding federally sponsored research or development; (7) reference to a "Microfiche appendix; (8) background of the invention; (9), brief summary of the invention; (10) brief description of the several views of the drawing; (11), detailed description; (12) claim or claims; (13) drawings; (14) executed oath or declaration; and (15) sequence listing. The phrase "if applicable" is proposed to be inserted in the heading, rather than associated with any particular listed element, to clarify that § 1.77 does not *per se* require that an application include all of the listed elements, but merely provides that any listed element included in the application should appear in the order set forth in § 1.77. Section 1.77, as proposed, would further provide that the (1) abstract of the disclosure; (2) title of the invention; (3) cross-reference to related applications; (4) statement regarding federally sponsored research or development; (5) background of the invention; (6) brief summary of the invention; (7) brief description of the several views of the drawing; (8) detailed description; (9) claim or claims; and (10) sequence listing, should appear in upper case, without underlining or bold type, as section headings, and if no text follows the section heading, the phrase "Not Applicable" should follow the section heading. Finally, § 1.77, as proposed, would be amended to change the reference to § 1.96(b) in § 1.77(c)(2), § 1.77(a)(7) as proposed, to § 1.96(c) for consistency with § 1.96, as proposed.

Section 1.78(a)(2), as proposed, would provide that any claim to the benefit of any prior filed copending nonprovisional application or international application designating the United States of America must be stated within two months of filing or fourteen months from the filing date of the prior application, whichever is later, and must include an identification of the prior application by application number.

Section 1.78(a)(3), as proposed, would delete the sentence "[s]ince a provisional application can be pending for no more than twelve months, the last day of pendency may occur on a Saturday, Sunday, or Federal holiday within the District of Columbia which for copendency would require the nonprovisional application to be filed prior to the Saturday, Sunday, or Federal holiday." In view of the proposed amendment in H.R. 1733 to 35 U.S.C. 119(e), the provisions of § 1.7 would be applicable to a nonprovisional application claiming the benefit of a prior provisional application.

Section 1.78(a)(4), as proposed, would provide that any claim to the benefit of any prior filed copending provisional application must be stated within two months of filing or within fourteen months of the filing date of the prior application, whichever is later, and must include an identification of the prior application by application number.

Section 1.78(a)(5), as proposed, would provide a procedure for the acceptance of a delayed claim to priority under 35 U.S.C. 119(e), 120 or 121. The procedure would require the filing of a petition during the pendency of the application requesting acceptance of the delayed claim, the surcharge set forth in § 1.17(u), and a statement that the delay was unintentional.

Section 1.78(a)(6), as proposed, would provide that the time periods set forth in this paragraph, *i.e.*, two months of filing or within fourteen months of the filing date of the prior application as set forth in §§ 1.78(a)(2) and (a)(4), and during the pendency of the application as set forth in § 1.78(a)(5), cannot be extended.

Section 1.78(c), as proposed, would change "two or more applications or an application and a patent" to "an application or a patent under reexamination and an application or a patent" such that the provisions of § 1.78(c) will also be applicable to a patent under reexamination. Section 1.78(c), as proposed, would further correct "inventors and owned by the same party contain conflicting claims" to read "inventors are owned by the same party and contain conflicting claims."

Section 1.78(d), as proposed, would change "obviousness-type double patenting rejection" to "non-statutory double patenting rejection" as current examining procedures authorize non- obviousness-type double patenting rejections, as well as obviousness-type double patenting rejections (MPEP 804(II)), and either may be obviated by filing a terminal disclaimer in accordance with § 1.321(b). Section 1.78(d), as proposed, would further change each instance of "application" to "application or a patent under reexamination" for consistency with § 1.321(b) and to clarify that double patenting is a proper consideration in reexamination (*Ex parte Obiaya*, 227 USPQ 58, 60-61 (Bd. Pat. App. & Inter. 1985)), and that a non-statutory double patenting rejection in a patent under reexamination may be obviated by filing a terminal disclaimer in accordance with § 1.321(b).

Section 1.84(c), as proposed, would provide that a reference to the application number, or, if an application number has not been assigned, the inventor's name, may be included in the left-hand corner of the drawing sheet, provided that reference appears within 1.5 cm. (9/16 inch) from the top of the sheet. As the back side of a drawing sheet will not be scanned into the electronic data base, an applicant can include other identifying indicia on the back side the drawing sheet.

Section 1.84(f), as proposed, would provide that the size of all drawing sheets in an application must be either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches) to conform to the requirement in § 1.52(b) concerning papers in an application.

Section 1.84(g), as proposed, would be amended to delete the margin requirements for the sheet sizes that would no longer be acceptable if the proposed change to § 1.84(f) were adopted. Section 1.84(g), as proposed, would be further amended to provide that, to facilitate digital image scanning of the drawing sheets, the sheets should have scan targets (cross-hairs) on two cater-corner margin corners. Finally, § 1.84(g), as proposed, would increase the bottom and side margins such that each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (9/16 inch), and a bottom margin of at least 1.0 cm. (3/8 inch), thereby leaving a sight no greater than 17.0 cm. by 26.2 cm. on 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, and a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches) on 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets.

Section 1.84(j), as proposed, would provide that one of the views should be suitable for publication in the Patent Application Notice, and the *Gazette of Patent Application Notices*, as well as the *Official Gazette*, as the illustration of the invention.

Section 1.84(x), as proposed, would be amended to delete the provisions indicating the proper location for holes in a drawing sheet, and provide that no holes should be provided in the drawing sheets.

Section 1.85, as proposed, would provide that drawings must be suitable for "electronic" reproduction "by digital imaging" before being admitted for examination. As discussed *supra*, as a drawing figure will be included in the Gazette Entry in the *Gazette of Patent Application Notices* and the Patent Application Notice, drawings suitable for electronic reproduction by digital imaging would be necessary for the initial processing of the application.

Section 1.96, as proposed, would be amended to designate the text preceding current paragraph (a) as paragraph (a), and would redesignate current paragraphs (a) and (b) as paragraphs (b) and (c), respectively. New § 1.96(a), as proposed, would be further amended to insert a period between "specification" and "[a] computer," to change "these rules" to "this section," and to change "may be submitted in patent applications in the following forms" to "may be submitted in patent applications as set forth in paragraphs (b) and (c) of this section.

New § 1.96(b), as proposed, would be further amended to change the sentences "[t]he listing may be submitted as part of the specification in the form of computer printout sheets (commonly 14 by 11 inches in size) for use as "camera ready copy" when a patent is subsequently printed" and "[s]uch computer printout sheets must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 13 inches wide, and the sheets should be submitted in a protective cover" to "[a]ny listing submitted as part of the specification must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper, and the sheets should be submitted in a protective cover," to delete the sentence "[w]hen printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will usually be reduced about 1/2 in size with two printout sheets being printed as one patent specification page," and to delete the phrase "if the copy is to be used for camera ready copy." Section 1.96(a)(1), new § 1.96(b)(1) as proposed, currently provides that the requirements of § 1.84 apply to computer program listings submitted as sheets of drawings, and § 1.96(a)(2), new § 1.96(b)(2) as proposed, currently provides that the requirements of § 1.52 apply to computer program listings submitted as part of the specification. Section 1.52(b), as proposed, would require that the sheets of paper be the same size and either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm (8 1/2 by 11 inches), with a top margin of at least 2.0 cm. (3/4 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 2.0 cm. (3/4 inch), and a bottom margin of at least 2.0 cm. (3/4 inch), and § 1.52(a), as proposed, would require that application papers be legibly typed in permanent dark ink in portrait orientation.

New § 1.96(c), as proposed, would be amended to change the references to § 1.77(c)(2) in new § 1.96(c) to § 1.77(a)(7) for consistency with § 1.77, as proposed, to change "may" and "should" to "must," to delete the sentence "[a]ll computer program listings submitted on paper will be printed as part of the patent," to relocate the phrase "except as modified or clarified below" in subsection (c)(2), to change the phrase "computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards" to "computer-generated information submitted as a "microfiche appendix" to an application shall be in accordance with the standards" for clarity, to change to sentences "[e]ither Computer-Output-Microfilm (COM) ouput or copies of photographed paper copy may be submitted" and "[i] the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies" to "[c]omputer-Output-Microfilm (COM) ouput may be submitted in accordance with either NMA standard MS1 or MS2," to change "serial number" to "application number," and to provide metric dimensions with English equivalents in parentheticals, rather than *vice versa*.

Section 1.97(a)-(d), as proposed, would be amended to include the phrase "for an applicant for patent or for reissue of a patent, or an owner of a patent under reexamination" in paragraph (a) and "by the applicant or patent owner" to clarify that § 1.97 is not available for any third party seeking to have information considered in a pending application. Any third party seeking to have information considered in a pending application must proceed under §§ 1.291 or 1.292, both discussed *infra*. Section 1.97(c), as proposed, would be further amended to correct the phrase "certification as specified in paragraph (3) of this section" to read "certification as specified in paragraph (e) of this section."

Section 1.98, as proposed, would provide that any Patent Application Notice or Technical Contents Publication listed in an information disclosure statement must be identified by applicant, Patent Application Notice number or Technical Contents Publication number and publication date. Section 1.98, as proposed, would also limit those U.S. patent applications of which a copy need not be included to unpublished applications.

Section 1.107, as proposed, would provide that if domestic published applications are cited by the examiner, their Technical Contents Publication number, publication date, the names of the applicants must be stated. Section 1.107, as proposed, would be amended to delete the phrase "and the classes of inventions."

Section 1.108, as proposed, would further except published applications from those abandoned applications that will not be cited as references.

Section 1.131(a), as proposed, would include pending or patented U.S. published applications which substantially show or describe but do not claim the same patentable invention, as defined in § 1.601(n), and abandoned U.S. published applications as references to which the provisions of § 1.131 apply. Pending or patented U.S. applications would be treated in the same manner that U.S. patents are currently treated, *i.e.*, § 1.131 would apply only if the pending or patented application does not claim the same patentable invention. Abandoned U.S. published applications would be treated in the manner that foreign patents or printed publications are currently treated. As U.S. published applications, either pending, abandoned or patented, may constitute prior art under 35 U.S.C. 102(a) or (e), this change, and the change to § 1.132 *infra*, are necessary to accommodate such references.

In a Notice pf Proposed Rulemaking published in the Federal Register at 59 FR 49876 (September 30, 1994) and in the *Official Gazette* at 1167 Off. Gaz. Office 96-97 (October 25, 1994)(§ 1.131 Notice of Proposed Rulemaking), § 1.131(a) was proposed to be amended to *inter alia* broaden its application to instances in which inventions of a pending application or patent under reexamination and a patent held by a single party are not identical as set forth in 35 U.S.C. 102, but not patentably distinct, and changes to § 1.131 were adopted as a final rule. 60 FR 21043 (May 1, 1995); 1174 Off. Gaz. Pat. Office 155 (May 30, 1995).

An amendment to § 1.131(a) was proposed to avoid a potential conflict between § 1.131(a) and § 1.602(a) in instances in which § 1.131(a) prohibits the filing of affidavits or declarations thereunder when the same patentable invention as defined in § 1.601(n) is being claimed, but § 1.602(a) prohibits, unless good cause is shown, the declaration or continuance of an interference when the application(s) and patent are owned by a single party. While this conflict between two pending applications can be avoided by filing a continuation-in-part application merging the conflicting inventions into a single application, this conflict can result in hardship where there is a pending application and an issued patent that can no longer be merged by filing a continuation-in-part application.

Specifically, the proposed amendment to § 1.131(a) in the § 1.131 Notice of Proposed Rulemaking would have permitted the filing of an affidavit or declaration thereunder in a pending application or patent under reexamination to avoid a rejection under 35 U.S.C. 103 based upon a patent which qualifies as prior art only under 35 U.S.C. 102(a) or (e) where the pending application or patent under reexamination and patent upon which the rejection was based were owned by a single party. This proposed amendment to § 1.131(a) in the § 1.131 Notice of Proposed Rulemaking, however, was withdrawn in the final rule to permit further study.

Section 1.131(a), as currently proposed, would permit a showing of prior invention in a pending application or patent under reexamination to avoid a rejection under 35 U.S.C. 103 based upon a patent which qualifies as prior art only under 35 U.S.C. 102(a) or (e), where the application or patent under reexamination and the patent upon which the rejection is based are both owned by a single party, so long as the invention claimed in the pending application or patent under reexamination and in the other patent are not identical as set forth in 35 U.S.C. 102. Section 1.131(a)(3), as proposed, would not require common ownership at the time the latter invention was made, but consistent with § 1.602(a), would require only that there be common ownership when the § 1.131 affidavit or declaration is under consideration.

Where the patent upon which the rejection is based is not prior art under 35 U.S.C. 102(a) or (e), but is prior art only under 35 U.S.C. 102(f) or (g), to the pending application or patent under reexamination, and the invention claimed in the

pending application or patent under reexamination is not identical as set forth in 35 U.S.C. 102, the issue is whether the subject matter of the other patent and the invention claimed in the pending application or patent under reexamination were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person, *i.e.*, whether the patent upon which the rejection is based is disqualified as prior art under the second paragraph of 35 U.S.C. 103, and §§ 1.78(c) and (d) are applicable to this issue. Where, however, the patent upon which the rejection is based is prior art under 35 U.S.C. 102(a) or (e), it cannot be disqualified as prior art under the second paragraph of 35 U.S.C. 103, and as such §§ 1.78(c) and (d) are inapplicable. Section 1.131(a)(3), as currently proposed, would permit a showing of prior invention in an application or patent under reexamination where the application or patent under reexamination and patent upon which the rejection was based were owned by a single party.

As the conflict between two pending applications can be avoided by filing a continuation-in-part application merging the conflicting inventions into a single application, § 1.131(a)(3), as proposed, provides only for a showing of prior invention to avoid a rejection based upon a patent. In situations in which two pending applications claiming patentably indistinct but not identical inventions are held by a single party but cannot be merged into a single application, petitions under § 1.183 will be entertained for waiver of the § 1.131 requirement that the rejection be based upon a patent.

Section 1.131, as proposed, would not affect a statutory or non- statutory double patenting rejection. Specifically, affidavits or declarations under § 1.131 will continue to be ineffective where the claims of the pending application or the patent undergoing reexamination are rejected under 35 U.S.C. 101 for double patenting and the claims of the pending application or the patent under reexamination claim the identical invention of a patent. However, where patentably indistinct but not identical inventions are claimed, a non-statutory double patenting rejection can be overcome by filing an appropriate terminal disclaimer.

Section 1.132, as proposed, would change "domestic" to "U.S." for consistency with § 1.131, and would include U.S. pending published applications which substantially show or describe but do not claim the invention, and abandoned published applications as references to which the provisions of § 1.132 apply for the reasons discussed *supra*.

Section 1.136(a), as proposed, would provide that extensions under § 1.136(a) are not available where the response is to a requirement for an English translation, an abstract or claims on a separate sheet, or substitute specification or sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction submitted pursuant to §§ 1.52(d), 1.53(d), 1.60(d), 1.62(d), 1.494(c), or 1.495(c), or an oath or declaration submitted pursuant to §§ 1.494(c) or 1.495(c).

Section 1.138, as proposed, would add "or publication" to the end of the sentence that "express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue" to clarify that the express abandonment must be filed in sufficient time to permit its correlation with the application file and the termination of the publication process. Section 1.138, as proposed, would further provide that an applicant seeking to abandon an application to avoid publication of the application must submit a proper letter of express abandonment at least two months prior to the projected date of publication to allow sufficient time to permit the appropriate officials to recognize the abandonment and remove the application from the publication process, and that unless an applicant receives written acknowledgement of the letter of express abandonment prior to the projected date of publication, applicant should expect that the application will be published in due course.

Section 1.154, as proposed, would provide that the elements of a design application, if applicable, should appear in the following order: (1) Design Application Transmittal Form; (2) Fee Transmittal Form; (3) preamble, stating name of the applicant and title of the design; (4) cross-reference to related applications; (5), statement regarding federally sponsored research or development; (6) description of the figure or figures of the drawing; (7) description; (8) claim; (9) drawings or photographs; and (10) executed oath or declaration. The phrase "[t]he following order of arrangement should be observed in framing design specifications" is proposed to be changed to "[t]he elements of the design application, if applicable, should appear in the following order" to clarify that § 1.154 does not per se require that an application include all of the listed elements, but merely provides that any listed element included in the application should appear in the order set forth in § 1.154.

A new § 1.163(c), as proposed, would be added to provide that the elements of a plant application, if applicable, should appear in the following order: (1) Plant Application Transmittal Form; (2) Fee Transmittal Form; (3) abstract of the disclosure; (4) title of the invention; (5) cross-reference to related applications; (6) statement regarding federally sponsored research or development; (7) background of the invention; (8) brief summary of the invention; (9) brief description of the drawing; (10) detailed botanical description; (11) claim; (12) drawings (in duplicate); (13) executed oath or declaration; and (14) Plant Color Coding Sheet. The phrase "if applicable" is proposed to be included in the heading, rather than associated with any particular listed element, to clarify that § 1.163 does not *per se* require that an application include all of the listed elements, but merely provides that any listed element included in the application should appear in the order set forth in § 1.163.

A new § 1.163(d), as proposed, would be added to define a plant color coding sheet. A plant color coding sheet is a sheet that specifies a color coding system as designated in a recognized color dictionary, and lists every plant structure to which color is a distinguishing feature and the corresponding color code which best represents that plant structure. The plant color coding sheet will provide a means for applicants to uniformly convey detailed color characteristics of the plant. Providing this information is a systematic manner will facilitate the examination of the application.

Section 1.291, as proposed, would provide that a protest must be filed within two months of the date the application is published or prior to the mailing of a Notice of Allowance, whichever occurs first, to be considered timely, and that any protest submitted after publication must be accompanied by the fee set forth in § 1.17(t). In addition, § 1.291(a)(2), as proposed, would require that any protest filed after the date the application was published be served upon the applicant in accordance with § 1.248, *i.e.*, filing two copies of the protest in the Office would not be acceptable. As a protest cannot be considered subsequent to issuance of the application as a patent, § 1.291(b), as proposed, would provide that the protest will be considered if the application is still pending when the protest and application file is brought before the examiner, *i.e.*, that the application was pending at the time the protest was filed would be immaterial to its ultimate consideration. Finally, § 1.291, as proposed, would further locate the sentences "[p]rotests raising fraud or other inequitable conduct issues will be entered in the application file, generally without comment on those issues" and [p]rotests which do not adequately identify a pending patent application will be disposed of and will not be considered by the Office" in paragraph (b).

Section 1.292, as proposed, would be amended to delete the phrase "is filed by one having information of the pendency of an application" as applications will no longer necessarily be maintained in confidence throughout their entire pendency, and would move the requirement for the fee set forth in § 1.17(j) from paragraph (a) to paragraph (b) where the conditions for entry of a petition for the institution of public use proceedings are set forth. Section 1.292, as proposed, would further require that any petition filed after the date the application was published be served on the applicant in accordance with § 1.248. Finally, § 1.292, as proposed, would provide that a petition to institute public use proceedings must be filed within two months of the date the application is published or prior to the mailing of a Notice of Allowance, whichever occurs first, to be considered timely.

Sections 1.305 through 1.309 are proposed to be added to set forth the procedures for the 18-month publication of patent applications.

Section 1.305, as proposed, would provide that applications may be withdrawn from publication at the initiative of the Office or upon request by the applicant. The basis for the withdrawal of an application from publication would be limited to: (1) a mistake on the part of the Office, *e.g.*, the application is abandoned or has issued as a patent, or the projected publication date is not at 18 months from the earliest filing date for which a benefit is sought; (2) the application is either national security classified or subject to a secrecy order pursuant to 35 U.S.C. 181; or (3) express abandonment of the application.

Section 1.306(a), as proposed, would provide that applications under 35 U.S.C. 111(a), 161 or 371 will be published as soon as possible after the expiration of a period of 18 months from the filing date, including the earliest filing date for which a benefit is sought, but excludes applications that: (1) are national security classified or subject to a secrecy order pursuant to 35 U.S.C. 181; (2) have issued as a patent; (3) are recognized by the Office as no longer pending, *i.e.*, are abandoned; or (4) were previously published through early publication.

Section 1.306(b), as proposed, would provide that the publication of an application will include a notice designated as a "Gazette Entry" containing information such as the application number, filing date, title, inventor's name, abstract, a drawing figure, a representative claim, and U.S. and IPC classification in a *Gazette of Patent Application Notices*, and a printed publication designated as a Patent Application Notice or PAN containing information such as the application number, filing date, title, inventor's name, correspondence address, abstract, a drawing figure, a representative claim, and U.S. and IPC classification. In addition, § 1.306(b), as proposed, would provide that the publication of an application will include a document designated as a Technical Contents Publication containing the Patent Application Notice, and the specification, abstract, claims, and drawings of the original application papers. Finally, § 306(b), as proposed, would provide that publication would include public access to a copy of the specification, drawings, and all papers relating to the application file in accordance with § 1.11.

Section 1.306(c), as proposed, would provide that provisional applications under 35 U.S.C. 111(b) shall not be published, and that design applications under 35 U.S.C. 171 and reissue applications under 35 U.S.C. 251 shall not be published pursuant to § 1.306. H.R. 1733, if enacted, would not authorize the publication of design applications (prior to their issuance as patents) or provisional applications. Reissue applications are currently published through the announcement in the *Official Gazette* of the filing of the reissue application, and the opening of the application to public inspection in accordance with § 1.11(b).

Section 1.306(d), as proposed, would provide for the early publication of applications. Any request for early publication of an application should be filed as soon as possible, and must be by way of petition, including the fee set forth in § 1.17(i). In addition, any application must include an abstract and claims on a separate sheet, any substitute specification or drawings required pursuant to §§ 1.53(d), 1.60(d), or 1.62(d), and any English translation required pursuant to § 1.52(d). The Office cannot assure publication of an application on any certain date, and, as such, requests for publication on a date certain will be treated as a request for publication as soon as possible. Finally, as H.R. 1733, if enacted, would not authorize the publication of provisional applications, no consideration will be given to any request for the early publication of a provisional application.

Section 1.306(e), as proposed, would implement the provisions in H.R. 1733 (35 U.S.C. 122(b)(2)) for, under limited circumstances, not publishing an application under 35 U.S.C. 122(b) until three months after an Office action under 35 U.S.C. 132. Section 1.306(e), as proposed, would specifically provide that an applicant who is an independent inventor and has been accorded status under 35 U.S.C. 41(h) in an application that does not claim the benefit of an earlier filing date under 35 U.S.C. 119, 120, 121, 365(a) or 365(c) may request that the application not be published until three months after an action on the merits, and that a petition requesting that the application not be published until three months after an action on the merits must be submitted on filing, and accompanied by the petition fee set forth in § 1.17(i) and a certification that the invention disclosed in the application was not or will not be the subject of an application filed in a foreign country, which certification must be verified if made by a person not registered to practice before the Patent and Trademark Office.

Section 1.307, as proposed, would provide for the delivery of the printed publication, *i.e.*, the Patent Application Notice or PAN, to the correspondence address of record, which is the manner in which a patent is currently delivered to the patentee.

Section 1.308, as proposed, would provide for the correction of the printed publication, but such correction would be granted only for a significant mistake made by the Office which is apparent from Office records.

Section 1.315, as proposed, would change "the attorney or agent of record, if there be one; or if the attorney or agent so requests, to the patentee or assignee of an interest therein; or, if there be no attorney or agent, to the patentee or to the assignee of the entire interest, if he so requests" to "the correspondence address of record. See § 1.33(a)" for simplicity as patents are currently mailed to the patentee at the correspondence address of record.

Section 1.321(c), as proposed, would change "double patenting rejection" to "non-statutory double patenting rejection" for consistency with § 1.78(c), as proposed, and to clarify that the filing of a terminal disclaimer is ineffective to overcome a statutory double patenting rejection.

Section 1.492(a), as proposed, would increase the basic national fee for international applications entering the national stage under 35 U.S.C. 371 to: (1) $710 ($355 for a small entity) where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the Office; (2) $780 ($390 for a small entity) where no international preliminary examination fee as set forth in § 1.482 has been paid to the Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the Office as an International Searching Authority; (3) $1040 ($520 for a small entity) where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the Office; (4) $120 ($60 for a small entity) where the international preliminary examination fee as set forth in § 1.482 has been paid to the Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)); and (5) $910 ($455 for a small entity) where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office.

Section 1.494(c) and (g), as proposed, would provide that the applicant will be given a time period within which to file an abstract and claims on a separate sheet, or substitute specification in compliance § 1.125 with papers typed on but one side of the paper or new sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality, and in a proper size and format for electronic reproduction in instances in which the application papers did not comply with §§ 1.52(a) and (b), as proposed, or the drawings were of such poor quality as to preclude their digital image scanning into the electronic data base. Section 1.494(c), as proposed, would further provide that extensions of time pursuant to § 1.136(a) would not be available for filing an English translation, oath or declaration, abstract and claims on a separate sheet, and a substitute specification with papers typed on but one side of the paper and sheets of drawings, each of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction.

Section 1.495(c) and (h), as proposed, would provide that the applicant will be given a time period within which to file an abstract and claims on a separate sheet, or substitute specification in compliance § 1.125 with papers typed on but one side of the paper or new sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality, and in a proper size and format for electronic reproduction in instances in which the application papers did not comply with §§ 1.52(a) and (b), as proposed, or the drawings were of such poor quality as to preclude their digital image scanning into the electronic data base. Section 1.495(c), as proposed, would further provide that extensions of time pursuant to § 1.136(a) would not be available for filing an English translation, oath or declaration, abstract and claims on a separate sheet, and a substitute specification with papers typed on but one side of the paper and sheets of drawings, each of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction.

The proposed rules to implement 18-month publication provide that extensions of time pursuant to § 1.136(a) are not available for submissions which will affect the publication of the application. Section 1.53(d)(1), as proposed, does not exclude extensions of time pursuant to § 1.136(a) for the filing of an oath or declaration as the absence of an oath or declaration for an application filed under 35 U.S.C. 111(a) does not affect the publication of the application. Section 1.306(a), as proposed, does not provide for the publication of a national application for patent which resulted from an international application until after compliance with 35 U.S.C. 371, and an international application is not in compliance with 35 U.S.C. 371 until an oath or declaration is filed. See 35 U.S.C. 371(c)(4). Therefore, the absence of an oath or declaration will affect the publication of an application under 35 U.S.C. 371. Accordingly, §§ 1.494(c) and 1.495(c), unlike § 1.53(d)(1), provide that the period for filing the oath or declaration cannot be extended pursuant to § 1.136(a) to consistently provide that extensions of time pursuant to § 1.136(a) are not available for submissions which will affect the publication of the application.

Section 1.497(a), as proposed, would be amended to provide that an applicant in an international application must file an oath or declaration that: (1) is executed in accordance with either §§ 1.66 or 1.68, (2) identifies the specification to which it is directed, (3) identifies each inventor and the country of citizenship of each inventor, and (4) states that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought, rather than an oath or declaration in accordance with § 1.63, to enter the national stage pursuant to §§ 1.494 or 1.495. Currently, the failure to file an oath or declaration in strict compliance with § 1.63 results in non-compliance with § 1.497, and thus 35 U.S.C. 371, which in turn delays the entry of the international application into the national stage. To expedite the entry of international applications into the national stage, § 1.497(a), as proposed, would require only an oath or declaration that is properly executed, identifies the specification to which it is directed, and, as required by 35 U.S.C. 115, identifies each inventor and the country of citizenship of each inventor and states that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

Section 1.497(b), as proposed, would be subdivided into paragraphs (b)(1) and (b)(2). Section 1.497(b)(1), as proposed, would provide that the oath or declaration must be made by all of the actual inventors except as provided for in §§ 1.42, 1.43 or 1.47. Section 1.497(b)(2), as proposed, would change "[i]f the international application was made as provided in §§ 1.422, 1.423 or 1.425, the applicant shall state his or her relationship to the inventor and, upon information and belief, the facts which the inventor is required by § 1.63 to state" to "[i]f the person making the oath or declaration is not the inventor (§§ 1.42, 1.43 or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state" such that § 1.497(b), as proposed, would be parallel to § 1.64.

Section 1.497(c), as proposed, would be added to provide that the oath or declaration must comply with the requirements of § 1.63. Section 1.497(c), as proposed, would further provide that in instances in which the oath or declaration does not comply with § 1.63, but meets the requirements of § 1.497(a) and (b), as proposed, the oath or declaration will be accepted as complying with 35 U.S.C. 371(c)(4) and §§ 1.494(c) or 1.495(c), thus permitting the application to enter the national stage and the assignment of dates under 35 U.S.C. 102(e) and 371(c). A supplemental oath or declaration in compliance with § 1.63, however, will be required in accordance with § 1.67.

Section 1.701(a), as proposed, would add "an unusual administrative delay by the Office" to the bases for extension of patent term due to prosecution delay. H.R. 1733 provides that the Commissioner shall prescribe regulations to govern the particular circumstances deemed to be an unusual administrative delay. Section 1.701(a)(4)(i), as proposed, would set forth the failure to act on a reply under § 1.111 or appeal brief under § 1.192 within six months of the date it was filed; the failure to act on an application within six months of the date of a decision under § 1.196 by the Board of Patent Appeals and Interferences where claims stand allowed in an application or the nature of the decision requires further action by the examiner; and the failure to issue a patent within six months of the date that the issue fee was paid and all outstanding requirements were satisfied as circumstances constituting a *prima facie* unusual administrative delay. In an application entitled to an extension under § 1.701(a)(3), however, any unusual administrative delay during the appellate proceeding would be disregarded under § 1.701(a)(4) in accordance with the "not overlapping" provision in § 1.701(b). Requests for patent term extension based upon circumstances not specifically set forth in § 1.701(a)(4)(i) as a *prima facie* unusual administrative delay must be specifically requested by petition and would be considered on a case-by-case basis. Section 1.701(a), as proposed, would further add "subject to the provisions of this section" and delete the phrase "if the patent is not subject to a terminal disclaimer due to the issuance of another patent claiming subject matter that is not patentably distinct from that under appellate review" from paragraph (a)(3).

Section 1.701(b), as proposed, would add paragraph (c)(4) to those paragraphs summed in calculating the period of extension, and change the maximum extension from five years to ten years in accordance with H.R. 1733.

Section 1.701(c), as proposed, would provide that the period of delay is the sum of the number of days, if any, in the period of unusual delay by the Office. That is, the ordinary delay in processing and examining an application would not be included under § 1.701(c), as proposed, in determining the extension under § 1.701(b). For example, (1) where there was a failure to act on a reply under § 1.111 within six months of the date it was filed, the period of delay is the number of days in excess of six months, if any, in the period beginning on the date a reply under § 1.111 was filed and ending on the mailing date of an action in response thereto, (2) where there was a failure to act on an appeal brief under § 1.192 within six months of the date it was filed, and the application is not entitled to an extension under § 1.701(a)(3), the period of delay is the number of days in excess of six months, if any, in the period beginning on the date an appeal brief under § 1.192 was filed and ending on the mailing date of either a notification under § 1.192(d) or examiner's answer under § 1.193, and (3) where there was a failure to issue a patent within six months of the date that the issue fee was paid and all outstanding requirements were satisfied, § 1.701(a)(3), the period of delay is the number of days in excess of six months, if any, in the period beginning on the date the issue fee was paid or all outstanding requirements were satisfied, whichever is later, and the date the patent was issued.

Section 1.701(d), as proposed, would change "[t]he period of delay set forth in paragraph (c)(3)" to "[t]he period set forth in paragraph (c)," as the limitation on patent term extension in H.R. 1733 based upon an applicant's failure to engage in reasonable efforts to conclude processing or examination of the application is not limited to extension under 35 U.S.C. 154(b)(2), *i.e.*, delays during appellate proceedings. Section 1.701(d), as proposed, would further delete "any time during the period of appellate review that occurred before three years from the filing date of the first national application for a patent presented for examination." Public Law 103-465 provides that extensions under 35 U.S.C. 154(b)(2) shall be reduced by any time during the period of appellate review that occurred before three years from the filing date of the first national application for patent presented for examination, where H.R. 1733 provides only that no patent shall be extended under 35 U.S.C. 154(b) that has issued before the expiration of three years after the filing date of the application or entry of the application into the national stage under 35 U.S.C. 371, whichever is later, not taking into account any claim to the benefit of the filing date of any application under 35 U.S.C. 120, 121, or 365(c).

Section 1.701(d), as proposed, would further change "any time during the period of appellate review, as determined by the Commissioner, during which the applicant for patent did not act with due diligence" and "[i]n determining the due diligence of an applicant, the Commissioner may examine the facts and circumstances of the applicant's actions during the period of appellate review to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, a person during a period of appellate review" to "any time during the processing or examination of the application, as determined by the Commissioner, during which the applicant for patent failed to engage in reasonable efforts to conclude processing or examination of the application," "[i]n determining whether an applicant failed to engage in reasonable efforts to conclude processing or examination of the application, the Commissioner may examine the facts and circumstances of the applicant's actions during the entire prosecution of the application to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, an applicant for patent seeking to conclude the processing or examination of the application," and "[c]ircumstances constituting a failure to engage in reasonable efforts to conclude processing or examination of the application include: (1) requesting suspension of action under § 1.103, and (2) abandonment of the application."

H.R. 1733 provides that the period of extension under 35 U.S.C. 154(b) shall be reduced by a period equal to the time during the processing or examination of the application leading to the patent in which the applicant failed to engage in reasonable efforts to conclude processing or examination of the application and that the Commissioner shall prescribe regulations establishing the circumstances that constitute a failure of an applicant to engage in reasonable efforts to conclude processing or examination of an application. Section § 1.701(d) specifically sets forth requesting suspension of action under § 1.103 and abandonment of the application as examples of *prima facie* failures to engage in reasonable efforts to conclude processing or examination of the application. In determining whether an applicant engaged in reasonable efforts to conclude processing or examination of the application, however, the facts and circumstances of applicant's actions during the entire prosecution of the application will be considered on a case-by-case basis to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, an applicant for patent seeking to conclude the processing or examination of the application. As such, it is not possible to list all of the specific circumstances in § 1.701(d). That is, circumstances other than the examples specifically set forth § 1.701(d) may, on a case-by-case basis, be considered the failure to engage in reasonable efforts to conclude the processing or examination of the application.

A new § 1.701(e), as proposed, would provide that no patent shall be extended under this section: (1) beyond the expiration date specified in a terminal disclaimer in a patent whose term has been disclaimed in such terminal disclaimer, or (2) an instance in which the patent issued before the expiration of three years after the filing date of the application or entry of the application into the national stage under 35 U.S.C. 371, whichever is later, not taking into account any claim to the benefit of the filing date of any application under 35 U.S.C. 120, 121, or 365(c). H.R. 1733 provides these limitations on extensions under 35 U.S.C. 154(b).

A new § 1.701(f), as proposed, would provide that any extension of patent term under § 1.701(a)(4) on the basis of an administrative delay other than one specifically set forth in §§ 1.701(a)(4)(i)(A)-(C) must be requested by petition. Due to the necessity for individualized determinations of patent term extensions based upon prosecution delay due to an unusual administrative delay by the Office not specifically provided for, such extensions of patent term under § 1.701(a)(4) must be specifically requested by petition in a timely manner. Section 1.701(f), as proposed, would specifically provide that any petition for patent term extension based upon § 1.701(a)(4) for an unusual administrative delay by the Office other than one specifically set forth in §§ 1.701(a)(4)(i)(A)-(C) cannot be filed prior to the mailing of a notice of allowance under § 1.311 and must be accompanied by a statement of the facts involved, the administrative delay by the Office to be reviewed, the period of extension requested, and the fee set forth in § 1.17(i). The petition may include a request that the petition fee be refunded if an extension of the patent term under § 1.701(a)(4) is granted.

Section 1.808(a), as proposed, would provide that upon the publishing of the application, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed, subject to provisions of § 1.808(b).

Section 3.31, as proposed, would provide that the assignment cover sheet may, but need not, include an indication that the assignment information is to be printed on the Patent Application Notice. Section 3.31, as proposed, would further provide that, due to constraints in the publication process, any such indication not submitted within two months of filing or fourteen months from the earliest filing date for which a benefit is claimed, whichever is later, may result in the assignment information not being printed on the Patent Application Notice.

Section 5.1, as proposed, would include a new paragraph (c) which would provide defense agencies adequate time to complete national security review under 35 U.S.C. 181 before an application would be released for publication under § 1.306. Specifically, the period for completion of a defense agency review would be six (6) months from the actual U.S. filing date for applications filed under 35 U.S.C. 111(a) or three (3) months from the date the application was made available to the defense agency for review, whichever is later.

Section 5.1, as proposed, would further include a new paragraph (d) which would set forth the current practice that applications on inventions not made in the United States and on inventions in which the Federal Government has a known property interest are not made available to defense agencies under § 5.2(b).

A new § 5.9, as proposed, would set forth the procedures for the treatment of national security classified applications. The procedures set forth in this section, except for those pertaining to the publication of applications pursuant to § 1.306, are the current procedures for the treatment of national security classified applications. It is, however, considered appropriate to implement these procedures through the rulemaking process.

35 U.S.C. 181 authorizes the withholding of the grant of a patent on an application that has been placed under a secrecy order; however, title 35, United States Code, does not specifically authorize the withholding of the grant of a patent on an application that is national security classified, but not placed under a secrecy order. Nevertheless, the Office is prohibited by Executive Order and statute from disclosing a national security classified application. Therefore, procedures for obtaining a secrecy order pursuant to 35 U.S.C. 181 on a national security classified application, or the declassification of such application, are necessary.

Section 5.9(a), as proposed, would provide that patent applications and papers that are national security classified and contain authorized national security markings of "Confidential," "Secret" or "Top Secret" are accepted by the Office, that national security classified documents mailed to the Office must be addressed in compliance with § 5.33, and that national security classified documents may be hand-carried to Licensing and Review.

Section 5.9(b), as proposed, would provide that a national security classified patent application will not be published pursuant to § 1.306 or allowed pursuant to § 1.311 of this chapter until the application is declassified.

Section 5.9(c), as proposed, would clarify that, in a national security classified application, it is the applicant's responsibility to either obtain a secrecy order pursuant to § 5.2, or have the application declassified by the relevant department or agency. Section 5.9(c), as proposed, would further provide that in a national security classified patent application filed without a notification pursuant to § 5.2(a), *i.e.*, a recommendation for imposition of a secrecy order from the relevant department or agency, the Office will set a time period within which the application must be declassified, a secrecy order must be obtained, or evidence of a good faith effort to obtain a secrecy from the relevant department or agency must be presented in order to prevent abandonment of the application.

Section 5.9(d), as proposed, would provide for instances in which, after an effort to obtain a secrecy order, the national security classified application has not been declassified and a secrecy order has not been obtained. Section 5.9(d), as proposed, would specifically provide that in each instance in which the national security classified application has not been declassified and a secrecy order has not been obtained, but the applicant has presented evidence of a good faith effort to obtain a secrecy order, the Office will again set a time period within which the application must be declassified, a secrecy order pursuant to § 5.2 must be obtained, or evidence of a good faith effort to again obtain a secrecy order pursuant to § 5.2 from the relevant department or agency must be presented in order to prevent abandonment of the application. This process will

reiterate until the application becomes abandoned, *e.g.*, through a lack of a good faith effort to obtain a secrecy order or failure to prosecute under 35 U.S.C. 133, the application is declassified, or a secrecy order is obtained.

Other Considerations

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these proposed changes is to require that application papers be filed in a format which permits their digital image and OCR scanning into an electronic data base, and that claims for the benefit of the filing date of prior foreign and domestic applications be submitted promptly to permit publication of the application at 18 months from the earliest filing date for which a benefit is sought.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These proposed rule changes contain a collection of information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* The initial patent application filing is currently approved by the Office of Management and Budget under Control No. 0651-0032. Public reporting burden for the collection of information for filing the initial patent application is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The Fee Transmittal form, Utility Patent Application Transmittal form, Design Patent Application Transmittal form, Plant Patent Application Transmittal form, Plant Color Coding Sheet, Declaration form, and Plant Patent Application Declaration form will reduce the burden and uncertainty associated with the submission of an application and related information, and enhance the Office's ability to use standardized automation routines (optical character recognition, *etc.*) to record and process information concerning applications. Public reporting burden for these collections of information is estimated to average:(1) 12 minutes per response for the Fee Transmittal form, (2) 12 minutes per response for the Utility Patent Application Transmittal form, (3) 12 minutes per response for the Design Patent Application Transmittal form, (4) 12 minutes per response for the Plant Patent Application Transmittal form, (5) 12 minutes per response for the Plant Color Coding Sheet, (6) 24 minutes per response for the Declaration form, and (7) 24 minutes per response for the Plant Patent Application Declaration. These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collections of information.

The assignment cover sheet is currently approved by the Office of Management and Budget under Control No. 0651-0027. Public reporting burden for the collection of information on the assignment cover sheet is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Office of Assistance Quality and Enhancement Division, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Projects 0651-0027 and 0651-0032). The Fee Transmittal form, Utility Patent Application Transmittal form, Design Patent Application Transmittal form, Plant Patent Application Transmittal form, Plant Color Coding Sheet, Declaration form, and Plant Patent Application Declaration form have been submitted to the Office of Management and Budget for clearance under the Paperwork Reduction Act. See 60 FR 35174 (July 6, 1995). Written comments and recommendations for the proposed information collection should be sent to Maya A. Bernstein, OMB Desk Officer, room 10236, New Executive Office Building, Washington, D.C. 20230.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposed to amend Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects

37 CFR Part 1
Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small Businesses.

37 CFR Part 3
Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements.

37 CFR Part 5
Classified information, foreign relations, inventions and patents.

For the reasons set forth in the preamble, 37 CFR Parts 1, 3 and 5 are proposed to be amended as follows, with removals indicated by brackets ([]) and additions by arrows (cb):

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.4 is proposed to be amended by revising paragraph (a)(1) to read as follows:

§ 1.4 Nature of correspondence and signature requirements.

(a) Correspondence with the Patent and Trademark Office comprises:

(1) Correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents c, patent application notices, technical contents publicationsb or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and

* * * * *

3. Section 1.5 is proposed to be amended by revising paragraph (a) and adding paragraphs (f) and (g) to read as follows:

§ 1.5 Identification of application, patent, or registration.

(a) No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, cincluding a published application,b it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number; *e.g.*, 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied with a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mail date on the cover letter, the original date of receipt of the correspondence will be considered by the Patent and Trademark Office as the date of receipt of the correspondence. Applicants may use either the Certificate of Mailing or Transmission procedure under § 1.8 or the Express Mail procedure under § 1.10 for resubmissions of returned correspondence if they desire to have the benefit of the date of deposit in the United States Postal Service. If the returned correspondence is not resubmitted within the two-week period, the date of receipt of the resubmission will be considered to be the date of receipt of the correspondence. The two-week period to resubmit the returned correspondence will not be extended. If for some reason, returned correspondence is resubmitted with proper identification later than two weeks after the return mailing by the Patent and Trademark Office, the resubmitted correspondence will be accepted but given its date of receipt. In addition to the application number, all letters directed to the Patent and Trademark Office concerning applications for patents should also state "PATENT APPLICATION," the name of the applicant, the title of the invention, the date of filing the same, and, if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

* * * * *

c(f) When a paper concerns a provisional application, it should identify the application as such and include the application number.

(g) A paper relating to a patent application notice should identify it as such and include the patent application notice number.b

4. Section 1.9 is proposed to be amended by revising paragraphs (a) and (b) and adding a paragraph (h) to read as follows:

§ 1.9 Definitions.

(a)(1) A national application as used in this chapter means a U.S. national application for patent which was either filed in the Office under 35 U.S.C. 111, or which entered the national stage from an international application after compliance with 35 U.S.C. 371.

(2) A provisional application as used in this chapter means a U.S. national application for patent filed in the Office under 35 U.S.C. 111(b).

(3) A nonprovisional application as used in this chapter means a U.S. national application for patent which was either filed in the Office under 35 U.S.C. 111(a), or which entered the national stage from an international application after compliance with 35 U.S.C. 371.

c(4)b[(b)] An international application as used in this chapter means an international application for patent filed under the Patent Cooperation Treaty prior to entering national processing at the Designated Office stage.

c(b) A published application as used in this chapter means an application for patent which has been published pursuant to 35 U.S.C. 122(b).b

* * * * *

c(h) National security classified as used in this chapter means specifically authorized under criteria established by Act of Congress or Executive order to be kept secret in the interest of national defense or foreign policy and in fact properly classified pursuant to Act of Congress or Executive order.b

5. Section 1.11 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.11 Files open to the public.

(a) [After a patent has been issued or a statutory invention registration has been published, the] cTheb specification, drawings, and all papers relating to the case in the file of can abandoned published application, ab [the] patent c,b or cab statutory invention registration are open to inspection by the public c.b [, and copies may be obtained upon paying the fee therefor.] cA copy of the specification, drawings, and all papers relating to the case in the file of a published application, a patent, or statutory invention registration may be obtained upon the payment of the fee set forth in § 1.19(b)(2).b See § 2.27 for trademark files.

* * * * *

6. Section 1.12 is proposed to be amended by revising paragraphs (a)-(c) to read as follows:

§ 1.12 Assignment records open to public inspection.

(a)(1) Separate assignment records are maintained in the Patent and Trademark Office for patents and trademarks. The assignment records, relating to original or reissue patents, including digests and indexes, for assignments recorded on or after May 1, 1957, cpublished applications,b and assignment records relating to pending or abandoned trademark applications and to trademark registrations, for assignments recorded on or after January 1, 1955, are open to public inspection at the Patent and Trademark Office, and copies of those assignment records may be obtained upon request and payment of the fee set forth in § 1.19 and § 2.6 of this chapter.

(2) All records of assignments of patents recorded before May 1, 1957, and all records of trademark assignments recorded before January 1, 1955, are maintained by the National Archives and Records Administration (NARA). The records are open to public inspection. Certified and uncertified copies of those assignment records are provided by NARA upon request and payment of the fees required by NARA.

(b) Assignment records, digests, and indexes relating to any pending or abandoned application cwhich has not been published pursuant to 35 U.S.C. 122(b)b are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in cconfidenceb [secrecy] under § 1.14, or any information with respect thereto, must

(1) Be in the form of a petition accompanied by the petition fee set forth in § 1.17(i), or

(2) Include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

* * * * *

7. Section 1.13 is proposed to be revised to read as follows:

§ 1.13 Copies and certified copies.

(a) Non-certified copies of patents c, patent application notices, technical contents publications, file wrapper and contents of published applications,b and trademark registrations and of any records, books, papers, or drawings within the jurisdiction of the Patent and Trademark Office and open to the public, will be furnished by the Patent and Trademark Office to any person, and copies of other records or papers will be furnished to persons entitled thereto, upon payment of the fee therefor.

(b) Certified copies of the patents c, patent application notices, technical contents publications, file wrapper and contents of published applications,b and trademark registrations and of any records, books, papers, or drawings within the jurisdiction of the Patent and Trademark Office and open to the public or persons entitled thereto will be authenticated by the seal of the Patent and Trademark Office and certified by the Commissioner, or in his name attested by an officer of the Patent and Trademark Office authorized by the Commissioner, upon payment of the fee for the certified copy.

8. Section 1.14 is proposed to be amended by revising paragraphs (a)-(b) and (e) to read as follows:

§ 1.14 Patent applications preserved in cconfidenceb [secrecy].

(a) Except as provided in § 1.11(b) c,b pending patent applications cwhich have not been published pursuant to 35 U.S.C. 122(b)b are preserved in cconfidence.b [secrecy.] No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, unless the application has been identified by cpplication number orb serial number cand filing dateb in a published patent document c, a U.S. published application,b or ca published international application in whichb the United States of America has been indicated as a Designated State [in a published international application], in which case status information such as whether it is pending, abandoned, or patented may be supplied, cor unless the application claims the benefit of the filing date of an applicntion that has been referred to in a U.S. published application or patent, or identified by application number or serial number and filing date in a published patent document or a published international application in which the United States of America has been indicated as a Designated State, in which case the application number, filing date, and status information such as whether it is pending, abandoned, or patented may be supplied,b or unless it shall be necessary to the proper conduct of business before the Office or as provided by this part. Where an application has been patented, the patent number and issue date may also be supplied.

(b) [Except as provided in § 1.11(b), abandoned] cAbandonedb applications cwhich have not been published pursuant to 35 U.S.C. 122(b)b are likewise not open to public inspection, except cas provided in § 1.11(b) and as set forth below.b [that if] clfb an application referred to in a U.S. cpublished application orb patent, cpplication open to public inspection pursuant to this section, application which claims the benefit of the filing date of an application open to public inspection pursuant to this section,b or in an application in which the applicant has filed an authorization to open the complete application to the public, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Complete applications (§ 1.51(a)) which are abandoned cand have not been published pursuant to 35 U.S.C. 122(b)b may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

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(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in cconfidenceb [secrecy] pursuant to paragraphs (a) and (b) of this section, or any papers relating thereto, must

(1) Be in the form of a petition and be accompanied by the petition fee set forth in § 1.17(i), or

(2) Include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

9. Section 1.16 is proposed to be amended by revising paragraphs (a) and (g)-(h) to read as follows:

§ 1.16 National application filing fees

(a) Basic fee for filing each application for an original patent, except provisional, design or plant cases:

By a small entity (§ 1.9(f)) .....c$390.00b [$365.00]
By other than a small entity .....c780.00b [730.00]

• • • • •

(g) Basic fee for filing each plant application, except provisional applications:

By a small entity (§1.9(f)).....c270.00b [245.00]
By other than a small entity .....c540.00b [490.00]

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f)) .....c390.00b [365.00]
By other than a small entity.....c780.00b [730.00]

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10. Section 1.17 is proposed to be amended by revising paragraph (i) and adding new paragraphs (t) and (u) to read as follows:

§ 1.17 Patent application processing fees

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(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph 130.00

§ 1.12 - for access to an assignment record.
§ 1.14 - for access to an application.
§ 1.53 - to accord a filing date.
§ 1.55 - for entry of late priority papers.
§ 1.60 - to accord a filing date.
§ 1.62 - to accord a filing date.
§ 1.97(d) - to consider an information disclosure statement.
§ 1.102 - to make application special
§ 1.103 - to suspend action in application.
§ 1.177 - for divisional reissues to issue separately.
§ 1.312 - for amendment after payment of issue fee.
§ 1.313 - to withdraw an application from issue.
c§ 1.306(d) - for early publication of an application.
§ 1.306(e) - to defer publication of an application.b
§ 1.314 - to defer issuance of a patent.
§ 1.666(b) - for access to interference settlement agreement.
c§ 1.701(f) - for patent term extension based upon administrative delay not specifically provided for.b
§ 3.81 - for patent to issue to assignee, assignment submitted after payment of the issue fee.

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c(t) For filing a protest under § 1.291 in an application after the date the application was published 220.00

(u) For the acceptance of a late claim for priority under 35 U.S.C. 119(a)-(d) or for acceptance of a late claim for the benefit of a prior application under 35 U.S.C. 119(e), 120 or 121 filed during the pendency of the application.... 1500.00b

11. Section 1.18 is proposed to be amended by revising paragraphs (a) and (c) to read as follows:

§ 1.18 Patent Issue Fees

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§ 1.9(f)) .....c$640.00b [$605.00]
By other than a small entity.....c1280.00b [1210.00]

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(c) Issue fee for issuing a plant patent:

By a small entity (§ 1.9(f)) .....c330.00b [305.00]
By other than a small entity.....c660.00b [610.00]

12. Section 1.19 is proposed to be amended by revising paragraphs (a)-(d) to read as follows:

§ 1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of patents c, patent application notices, and technical contents publicationsb:

(1) Printed copy of a cpatent application notice,b patent, including a design patent, statutory invention registration, or defensive publication document, except plant or statutory invention registration containing color drawing:

(i) Regular service.....$3.00
(ii) Overnight delivery to PTO Box or overnight fax...6.00
(iii) Expedited service for copy ordered by expedited mail or fax delivery service and delivered to the customer within two workdays 25.00

(2) Printed copy of a plant patent in color 12.00
(3) Copy of a utility patent or statutory invention registration containing color drawing (see § 1.84(a)(2)) 24.00
c(4) Copy of a technical contents publication 9.00b

(b) Certified and uncertified copies of Office documents:

(1) Certified or uncertified copy of patent application as filed:

(i) Regular service.....c15.00b [12.00]
(ii) Expedited local service.....c30.00b [24.00]

(2) Certified or uncertified copy of cpublished application orb patent-related file wrapper and contents 150.00
(3) Certified or uncertified copy of Office records, per document c,b except cthose contained in a pending application andb as otherwise provided in this section 25.00
c(4) Certified or uncertified copy of documents contained in a pending application:

(i) First document contained in a pending application 75.00
(ii) For each commonly requested additional document contained in such pending application.....25.00

(5)b [(4)] For assignment records, abstract of title and certification, per cpublished application orb patent 25.00

(c) Library service (35 U.S.C. 13): For providing to libraries copies of all patents issued annually cand technical contents publications published annuallyb, per annum 50.00
(d) For list of all United States cpublished applications,b patents and statutory invention registrations in a subclass.....3.00

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13. Section 1.20 is proposed to be amended by revising paragraphs (e)-(g) to read as follows:

§ 1.20 Post-issuance fees

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(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant

By small entity (§ 1.9(f)) .....c510.00b [480.00]
By other than a small entity.....c1020.00b [960.00]

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant

By a small entity (§ 1.9(f)) .....c1010.00b [965.00]
By other than a small entity.....c2020.00b [1930.00]

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant

By a small entity (§ 1.9(f)) .....c1510.00b [1450.00]
By other than a small entity.....c3020.00b [2900.00]

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14. Section 1.24 is proposed to be revised to read as follows:

§ 1.24 Coupons.

Coupons in denominations of three dollars, for the purchase of patents, cpatent application notices and technical contents publications,b designs, defensive publications, statutory invention registrations, and trademark registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The three-dollar coupons are sold individually and in books of 50 for $150.00. These coupons are good until used; they may be transferred but cannot be redeemed.

15. Section 1.51 is proposed to be amended by revising paragraph (a)(1) to read as follows:

§ 1.51 General requisites of an application.

(a) Applications for patents must be made to the Commissioner of Patents and Trademarks.

(1) A complete application filed under § 1.53(b)(1) comprises:

(i) A specification, including can abstract andb a claim or claims, see §§ 1.71 to 1.77;
(ii) An oath or declaration, see §§ 1.63 and 1.68;
(iii) Drawings, when necessary, see §§ 1.81 to 1.85; and
(iv) The prescribed filing fee, see § 1.16.

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16. Section 1.52 is proposed to be amended by revising paragraphs (a)-(b) and (d) to read as follows:

§ 1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in § 1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly [written,] typed [, or printed] in permanent cdarkb ink cin portrait orientation on flexible, strong, smooth, non- shiny, durable and white paper.b [or its equivalent in quality.] All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the [writing,] typing [, or printing] thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes cand electronic reproduction by use of digital imaging and optical character recognitionb. If the papers are not of the required quality, substitute typewritten [or printed] papers of suitable quality cwillb [may] be required. cSee § 1.125 for filing substitute typewritten papers constituting a substitute specification.b

(b) cExcept for drawings, theb [The] application papers (specification, including claims, abstract, oath or declaration, and papers as provided for in §§ 1.42, 1.43, 1.47, etc.) and also papers subsequently filed, must be plainly ctypedb [written] on but one side of the paper c, with the abstract and claims set forth on a separate sheet. See §§ 1.72(b) and 1.75(h)b. The [size of all] sheets of paper cmust be the same size and either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches).b [should be 8 to 8 1/2 by 10 1/2 to 13 inches (20.3 to 21.6 cm. by 26.6 to 33.0 cm.).] cEach sheet must include a top margin of at least 2.0 cm. (3/4 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 2.0 cm. (3/4 inch), and a bottom margin of at least 2.0 cm. (3/4 inch), and no holes should be provided in the sheets.b [A margin of at least approximately one inch (2.5 cm.) must be reserved on the left-hand of each

page. The top of each page of the application, including claims, must have a margin of at least approximately 3/4 inch (2 cm.).] The lines must [not be crowded too closely together; typewritten lines should] be 1 1/2 or double spaced. The pages of the application including claims and abstract cmustb [should] be numbered consecutively, starting with 1, the numbers being centrally located above or preferably, below, the text. cSee § 1.84 for drawings.b

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(d) An application may be filed in a language other than English. A verified English translation of the non-English-language application and the fee set forth in § 1.17(k) are required to be filed with the application or within such time cperiodb as may be set by the Office. cThe period for filing the verified English translation cannot be extended pursuant to § 1.136(a).b

17. Section 1.53 is proposed to be amended by revising paragraph (d)(1) to read as follows:

§ 1.53 Serial Number, filing date, and completion of application.

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(d)(1) If an application which has been accorded a filing date pursuant to paragraph (b)(1) of this section does not include the appropriate filing fee c,b[or]an oath or declaration by the applicant, can abstract on a separate sheet, claims on a separate sheet, papers typed on but one side of the paper, or application papers or sheets of drawings of sufficient clarity, contrast, and quality, and in the proper size and format for electronic reproduction,b applicant will be so notified, if a correspondence address has been provided c. The applicant will beb [and] given a period of time within which to ccorrect the deficienciesb [file the fee, oath or declaration] and to pay the surcharge as set forth in § 1.16(e) cif the application did not include the basic filing fee or the oath or declaration by the applicantb in order to prevent abandonment of the application. A copy of the "Notice to File Missing Parts" form mailed to applicant should accompany any response thereto submitted to the Office. If the required filing fee is not timely paid, or if the processing and retention fee set forth in § 1.21(l) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the basic filing fee, oath or declaration c, abstract or claims on a separate sheet, papers typed on but one side of the paper, papers and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction,b and to pay the surcharge as set forth in § 1.16(e) cif the application did not include the basic filing fee or the oath or declaration by the applicantb in order to prevent abandonment of the application; or, if no basic filing fee has been paid, one year from the filing date to pay the processing and retention fee set forth in § 1.21(l) to prevent disposal of the application. cThe period for filing an abstract and claims on a separate sheet, and a substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction cannot be extended pursuant to § 1.136(a).b

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18. Section 1.54 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.54 Parts of application to be filed together; filing receipt.

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(b) Applicant will be informed of the application [serial] number c,b [and] filing date c, and projected publication dateb by a filing receipt.

19. Section 1.55 is proposed to be amended by revising paragraph (a) and adding paragraphs (c)-(d) to read as follows:

§ 1.55 Claim for foreign priority.

(a) An applicant in a nonprovisional application may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 (a)-(d) and 172. The claim to priority cunder 35 U.S.C. 172b need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. cThe claim to priority under 35 U.S.C. 119(a)-(d) must be presented within two months of filing or fourteen months from the filing date of the prior foreign application, whichever is later, must identify the prior foreign application by specifying its application number, country, and the day, month and year of its filing, and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63.b The [claim for priority and the] certified copy of the foreign application specified in 35 U.S.C. 119(b) must be filed in the case of an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other cases, before the patent is granted. If the [claim for priority or the] certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(i). If the certified copy filed is not in the English language, a translation need not be filed except in the case of interference, or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

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c(c) If a claim to priority under 35 U.S.C. 119(a)-(d) is presented after the time period provided by paragraph (a) of this section, the claim may be accepted if the claim identifying the prior foreign application by specifying its application number, country, and the day, month and year of its filing is filed during the pendency of the application and the delay in stating the claim was unintentional. A petition to accept a delayed claim to priority under 35 U.S.C. 119(a)-(d) must be accompanied by:

(1) The surcharge set forth in § 1.17(u); and,

(2) A statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional.

(d) The time periods set forth in this section cannot be extended.b

20. Section 1.58 is proposed to be amended by removing and reserving paragraph (b) and revising paragraph (c) to read as follows:

§ 1.58 Chemical and mathematical formulas and tables.

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(b) c[Reserved]b [All tables and chemical and mathematical formulas in the specification, including claims, and amendments thereto, must be on paper which is flexible, strong, white, smooth, non-shiny, durable in order to permit use as camera copy when printing any patent which may issue. A good grade of bond paper is acceptable; watermarks should not be prominent. India ink or its equivalent, or solid black typewriter, should be used to secure perfectly black solid lines.]

(c) To facilitate camera copying when printing, the width of formulas and tables as presented should be limited normally to c12.7 cm. (5 inches)b [5 inches (12.7 cm.)] so that it may appear as a single column in the printed patent. [If it is not possible to limit the width of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10 3/4 inches (27.3 cm.) and to place it sideways on the sheet.] Typewritten characters used in such formulas and tables must be from a block (nonscript) type font or lettering style having capital letters which are at least c2.1 mm. (0.08 inch)b [0.08 inch (2.1 mm.)] high (*e.g.*, elite type). [Hand lettering must be neat, clean, and have a minimum character height of 0.08 inch (2.1 mm.)]. A space at least c.64 cm. (1/4 inch)b [1/4 inch (6.4 mm.)] high should be provided between complex formulas and tables and the text. Tables should have the lines and columns of data closely spaced to conserve space, consistent with high degree of legibility.

21. Section 1.60 is proposed to be amended by revising paragraph (d) to read as follows:

§ 1.60 Continuation or divisional application for invention disclosed in a prior application.

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(d) If an application filed pursuant to paragraph (b) of this section is otherwise complete, but does not include the appropriate filing fee, a true copy of the oath or declaration from the prior complete application, showing the signature or an indication it was signed, cor the prior application did not include an abstract and claims on a separate sheet, and application papers typed on but one side of the paper with application papers or sheets of drawings of sufficient clarity, contrast, or quality in the proper size and format for electronic reproduction,b a filing date will be granted and applicant will be so notified and given a period of time within which to file the fee, or the true copy of the oath or declaration c, an abstract and claims on a separate sheet, substitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction,b and to pay the surcharge as set forth in § 1.16(e) cif the application did not include the basic filing fee or the copy of the oath or declaration from the prior applicationb in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. cThe period for filing an abstract and claims on a separate sheet and a substitute specification and sheets of drawings of sufficient clarity, contrast, and quality for electronic reproduction cannot be extended pursuant to § 1.136(a).b

22. Section 1.62 is proposed to be amended by revising paragraphs (d)-(f) to read as follows:

§ 1.62 File wrapper continuing procedure.

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(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate basic filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, cor any substitute specification and drawings pursuant to subparagraph (e)(2) of this section,b applicant will be so notified and given a period of time within which to file the fee, oath[,]or declaration c, substitute specification, and drawingsb and to pay the surcharge as set forth in § 1.16(e) cif the application did not include the basic filing fee or oath or declarationb in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section. cThe period for filing a substitute specification cannot be extended pursuant to § 1.136(a).b

(e)c(1)b an application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application [serial] number. Changes to the prior application must be made in the form of an amendment to the prior application as it exists at the time of filing the application under this section.

c(2)b No copy of the prior [application or new] specification cor drawingsb is required c, unless the application is a continuation-in-part application containing any additional disclosure, in which case a substitute specification in compliance with § 1.125 and drawings are required. Any new specification filed will not be considered part of the original application papers, but will be treated as a substitute specification in accordance with § 1.125b. [The filing of such a copy or specification will be considered improper, and a filing date as of the date of deposit of the request for an application under this section will not be granted to the application unless a petition with the fee set forth in § 1.17(i) is filed with instructions to cancel the copy or specification.]

(f) The filing of an application under this section will be construed to include a waiver of cconfidenceb [secrecy] by the applicant under 35 U.S.C. 122c(a)b to the extent that any member of the public who is entitled under the provisions of c§b [37 CFR] 1.14 to access to, or information concerning either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.

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23. Section 1.72 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.72 Title and abstract.

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(b) A brief abstract of the technical disclosure in the specification must be set forth on a separate sheet, preferably cprior to the first page of the specificationb [following the claims] under the heading "Abstract of the Disclosure". The purpose of the abstract is to enable the Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. The abstract shall not be used for interpreting the scope of the claims.

24. Section 1.75 is proposed to be amended by revising paragraph (g) and adding paragraphs (h) and (i) to read as follows:

§ 1.75 Claim(s).

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(g) cThe least restrictive claim should be presented as claim number 1, and allb [All] dependent claims should be grouped together with the claim or claims to which they refer to the extent possible.

c(h) The claim or claims must be set forth on a separate sheet.

(i) Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation.b

25. Section 1.77 is proposed to be revised to read as follows:

§ 1.77 Arrangement of application elements.

c(a)b The elements of the application c, if applicable,b should appear in the following order:

[(a)] c(1) Utility Application Transmittal Form.

(2) Fee Transmittal Form.

(3) Abstract of the disclosure.

(4)b Title of the invention; or an introductory portion stating the name, citizenship, and residence of the applicant, and the title of the invention may be used.

c(5)b[(c)(1)] Cross-reference to related applications [, if any].

c(6)b [(2)] cStatement regarding federally sponsored research or development.

(7)b Reference to a "Microfiche appendix" [if any].

(See § 1.96 c(c)b [(b)]). The total number of microfiche and total number of frames should be specified.

c(8)b [(d)] cBackground of the invention

(9)b brief summary of the invention.

c(10)b [(e)] Brief description of the several views of the drawing [, if there are drawings].

c(11)b [(f)] Detailed description.

c(12)b [(g)] Claim or claims.

c(13)b [(h) Abstract of the disclosure.
(i) Signed oath or declaration.
(j)] Drawings.

c(14) Executed oath or declaration.

(15) Sequence Listing (See § 1.821 *et seq.*).

(b) The elements set forth in subparagraphs (a)(3)-(a)(6), (a)(8)-(a)(12) and (a)(15) should appear in upper case, without underlining or bold type, as section headings. If no text follows the section heading, with the phrase "Not Applicable" should follow the section heading.b

26. Section 1.78 is proposed to be amended by revising paragraphs (a) and (c)-(d) to read as follows:

§ 1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a)(1) A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, each prior application must be:

(i) complete as set forth in § 1.51(a)(1); or
(ii) entitled to a filing date as set forth in § 1.53(b)(1), § 1.60 or § 1.62 and include the basic filing fee set forth in § 1.16; or
(iii) entitled to a filing date as set forth in § 1.53(b)(1) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(d)(1).

(2) Any nonprovisional application claiming the benefit of one or more prior filed copending nonprovisional applications or international applications designating the United States of America must c, within two months of filing or within fourteen months of the filing date of the prior application, whichever is later,b contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See § 1.14(b)).

(3) A nonprovisional application other than for a design patent may claim an invention disclosed in one or more prior filed copending provisional applications. [Since a provisional application can be pending for no more than twelve months, the last day of pendency may occur on a Saturday, Sunday, or Federal holiday within the District of Columbia which for copendency would require the nonprovisional application to be filed prior to the Saturday, Sunday, or Federal holiday.] In order for a nonprovisional application to claim the benefit of one or more prior filed copending provisional applications, each prior provisional application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, each prior provisional application must be:

(i) complete as set forth in § 1.51(a)(2); or
(ii) entitled to a filing date as set forth in § 1.53(b)(2) and include the basic filing fee set forth in § 1.16(k).

(4) Any nonprovisional application claiming the benefit of one or more prior filed copending provisional applications must c, within two months of filing or within fourteen months of the filing date of the prior application, whichever is later,b contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior provisional application, identifying it as a provisional application, and including the provisional application number (consisting of series code and serial number).

c(5) If a claim to the benefit of any prior filed copending nonprovisional application or international application designating the United States of America is presented in a nonprovisional application after the time period provided by subparagraph (a)(2) of this section, or if a claim to the benefit of any prior filed copending provisional application is presented in a nonprovisional application other than for a design patent after the time period provided by subparagraph (a)(4) of this section, the claim may be accepted in the application if the claim identifying the prior application by application number or international application number and international filing date is filed during the pendency of the application and the delay in stating the claim was unintentional. A petition to accept a delayed claim to the benefit of a prior filed copending application must be accompanied by:

(i) The surcharge set forth in § 1.17(u); and,
(ii) A statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional.

(6) The time periods set forth in this paragraph cannot be extended.b

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(c) Where canb [two or more] application[s,]cor a patent under reexaminationb [or an application] and can application orb a patent naming different inventors careb [and] owned by the same party canb contain conflicting claims, and there is no statement of record indicating that the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, the assignee may be called upon to state whether the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, and if not, indicate which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should or should not be declared.

(d) Where an application cor a patent under reexaminationb claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will

be made in the application cor a patent under reexaminationb. cA non-statutoryb [An obviousness-type] double patenting rejection may be obviated by filing a terminal disclaimer in accordance with § 1.321(b).

27. Section 1.84 is proposed to be amended by revising paragraphs (e), (f)-(g), (j) and (x) to read as follows:

§ 1.84 Standards for drawings.

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(e) *Identification of drawings.* Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawings a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page. cIn addition, a reference to the application number, or, if an application number has not been assigned, the inventor's name, may be included in the left-hand corner, provided that the reference appears within 1.5 cm. (9/16 inch) from the top of the sheet.b

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(f) *Size of paper.* All drawing sheets in an application must be the same size. One of the shorter sides of the sheet is regarded as its top. The size of the sheets on which drawings are made must be:

[(1) 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches),
(2) 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches),
(3) 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), or
(4)] c(1)b 21.0 cm. by 29.7 cm. (DIN size A4) c, or
(2) 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches)b.

(g) *Margins.* The sheets must not contain frames around the sight; *i.e.,* the usable surface[.]c, but should have scan target points, *i.e.,* cross-hairs, printed on two catercorner margin corners.b [The following margins are required:

(1) On 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches) drawing sheets, each sheet must include a top margin of 5.1 cm. (2 inches), and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight no greater than 20.3 cm. by 29.8 cm. (8 by 11 3/4 inches).
(2) On 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches) drawing sheets, each sheet must include a top margin of 2.5 cm. (1 inch) and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight no greater than 20.3 cm. by 29.8 cm. (8 by 11 3/4 inches).
(3) On 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets, each sheet must include a top margin of 2.5 cm. (1 inch) and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight no greater than 20.3 cm. by 24.8 cm. (8 by 9 3/4 inches).
(4) On 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, each] cEachb sheet must include a top margin of at least 2.5 cm. c(1 inch)b, a left side margin of cat leastb 2.5 cm. c(1 inch)b, a right side margin of cat leastb 1.5 cm. c(9/16 inch)b, and a bottom margin of cat leastb 1.0 cm. c(3/8 inch)b, thereby leaving a sight no greater than 17.0 cm. by 26.2 cm con 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, and a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches) on 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheetsb.

• • • • •

(j) *View for Official Gazette.* One of the views should be suitable for publication in the *Official Gazette* c, the patent application notice, and the *Gazette of Patent Application Noticesb* as the illustration of the invention.

• • • • •

(x) *Holes.* cNo holes should be provided in the drawing sheets.b [The drawing sheets may be provided with two holes in the top margin. The holes should be equally spaced from the respective side edges, and their center lines should be spaced 7.0 cm. (2 3/4 inches) apart.]
(See § 1.152 for design drawings, § 1.165 for plant drawings, and § 1.174 for reissue drawings.)

28. Section 1.85 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.85 Corrections to drawings.

(a) The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for celectronicb reproduction cby digital imagingb , may be admitted for examination but in such case a new drawing must be furnished.

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29. Section 1.96 is proposed to be revised to read as follows:

§ 1.96 Submission of computer program listings.

c(a)b Descriptions of the operation and general content of computer program listings should appear in the description portion of the specification c.b a computer program listing for the purpose of cthis sectionb [these rules] is defined as a printout that lists in appropriate sequence the instructions, routines, and other contents of a program for a computer. The program listing may be either in machine or machine-independent (object or source) language which will cause a computer to perform a desired procedure or task such as solve a problem, regulate the flow of work in a computer, or control or monitor events. Computer program listings may be submitted in patent applications cas set forth in paragraphs (b) and (c) of this section.b [in the following forms:]

c(b)b [(a)] *Material which will be printed in the patent.* If the computer program listing is contained on 10 printout pages or less, it must be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in § 1.84.
At least one figure numeral is required on each sheet of drawing.

(2) *Specification.* (i) The listing may be submitted as part of the specification in accordance with the provisions of § 1.52, at the end of the description but before the claims.

(ii) cAnyb [The] listing [may be] submitted as part of the specification [in the form of computer printout sheets (commonly 14 by 11 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets] must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper, [the printing on each sheet must be limited to an area 9 inches high by 13 inches wide,] and the sheets should be submitted in a protective cover. [When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will usually be reduced about 1/2 in size with two printout sheets being printed as one patent specification page.] Any amendments must be made by way of submission of a substitute sheet c.b [if the copy is to be used for camera ready copy.]

c(c)b [(b)] *As an appendix which will not be printed.* If a computer program listing printout is 11 or more pages long, applicants cmustb [may] submit such listing in the form of microfiche, referred to in the specification (see § 1.77 c(a)(7)b [(c)(2)]). Such microfiche filed with a patent application is to be referred to as a "microfiche appendix." The "microfiche appendix" will not be part of the printed patent. Reference in the application to the "microfiche appendix" cmustb [should]

be made at the beginning of the specification at the location indicated in § 1.77 c(a)(7)b ((c)(2)]. Any amendments thereto must be made by way of revised microfiche. [All computer program listings submitted on paper will be printed as part of the patent.]

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public for inspection, and microfiche copies thereof will be available for purchase with the file wrapper and contents, after a patent based on such application is granted or the application is otherwise made publicly available.

(2) *Submission requirements.* cExcept as modified or clarified below, computer-generatedb [Computer-generated] information submitted as ca "microfiche appendix"b [an appendix] to an application [for patent] shall be in [the form of microfiche in] accordance with the standards set forth in the following American National Standards Institute (ANSI) or National Micrographics Association (NMA) standards (Note: As new editions of these standards are published, the latest shall apply):

ANSI PH 1.28-1976-Specifications for Photographic Film for Archival records, Silver-Gelatin Type, on Cellulose Ester Base.
ANSI PH 1.41-1976 Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Polyester Base.
NMA-MSI (1971) Quality Standards for Computer Output-Microfilm.
ANSI/NMA MS2 (1978) Format and Coding Standards for Computer Output Microfilm.
NMA MS5 (ANSI PH 5.9-1975) Microfiche of Documents.
ANSI PH 2.19 (1959)-Diffuse Transmission Density.

[except as modified or clarified below:]

(i) [Either] Computer-Output-Microfilm (COM) output [or copies of photographed paper copy] may be submitted cin accordance with eitherb [. In the former case,] NMA cstandardb [standards] MS1 corb [and] MS2 c.b [apply; in the latter case, standard MS5 applies.]

(ii) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least c0.13 mm (.005 inches)b [.005 inches (0.13 mm)] and not more than c0.23 mm (.009 inches)b [.009 inches (0.23 mm)] for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most 1/3 (50 mm x 12 mm) of the header or title area of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply capplicationb [serial] number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application identification such as the title and/or the first inventor's name. The attorney's docket number may be included. The final right-hand portion of the microfiche shall contain sequence in-formation for the microfiche, such as 1 of 4, 2 of 4, *etc.*

(vii) Additional requirements which apply specifically to microfiche of filmed paper copy:

(A) The first frame of each microfiche submitted shall contain a standard test target which contains five NBS Micro-copy Resolution Test Charts (No. 1010A), one in the center and one in each corner. See illustration on page 2 of NMA Recommended Practice MS104, Inspection and Quality Control of First Generation Silver Halide Microfilm. See also paragraph 7 of NMA-MS5.

(B) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(C) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(D) Pagination of the microfiche frames shall be from left to right and from top to bottom.

(E) At a reduction of 24:1 resolution of the original microfilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4 of NMA Standard MS5.

(F) Background density of negative appearing camera master microfiche of filmed paper documents shall be within the range of 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19.

(G) An index, when included, should appear in the last frame (lower right hand corner when data is right-reading) of each microfiche. See NMA-MS5, paragraph 6.6.

(viii) Microfiche generated by Computer Output Microfilm (COM).

(A) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.5 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH2.19.

(B) The first frame of each microfiche submitted should contain a resolution test frame in conformance with NMA standard MS1.

(C) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(D) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(E) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, *i.e.*, from top to bottom and from left to right, is also acceptable.

(F) An index, when included, should appear on the last frame (lower right hand corner when data is right reading) of each microfiche.

(G) Amendment of microfiche must be made by way of replacement microfiche.

30. Section 1.97 is proposed to be amended by revising paragraphs (a)-(d) to read as follows:

§ 1.97 Filing of an information disclosure statement.

(a) In order cfor an applicant for patent or for reissue of a patent, or an owner of a patent under reexaminationb to have information considered by the Office during the pendency of a patent application, an information disclosure statement in compliance with § 1.98 should be filed in accordance with this section.

(b) An information disclosure statement shall be considered by the Office if filed cby the applicant or patent ownerb:

(1) Within three months of the filing date of a national application;
(2) Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application; or
(3) Before the mailing date of a first Office action on the merits, whichever event occurs last.

(c) An information disclosure statement shall be considered by the Office if filed cby the applicant or patent ownerb after the period specified in paragraph (b) of this section, but before the mailing date of either:

(1) A final action under § 1.113 or
(2) A notice of allowance under § 1.311,whichever occurs first, provided the statement is accompanied by either a certification as specified in paragraph c(e)b [(3)] of this section or the fee set forth in § 1.17(p).

(d) An information disclosure statement shall be considered by the Office if filed cby the applicant or patent ownerb after the mailing date of either:

(1) A final action under § 1.113 or

(2) A notice of allowance under § 1.311, whichever occurs first, but before payment of the issue fee, provided the statement is accompanied by:

(i) A certification as specified in paragraph (e) of this section,
(ii) A petition requesting consideration of the information disclosure statement, and
(iii) The petition fee set forth in § 1.17(i).

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31. Section 1.98 is proposed to be amended by revising paragraphs (a)-(b) to read as follows:

§ 1.98 Content of information disclosure statement.

(a) Any information disclosure statement filed under § 1.97 shall include:

(1) list of all patents, publications or other information submitted for consideration by the Office;
(2) A legible copy of:

(i) Each U.S. cpatent application notice, technical contents publication and U.S.b and foreign patent;
(ii) Each publication or that portion which caused it to be listed; and
(iii) All other information or that portion which caused it to be listed, except that no copy of can unpublishedb[a]U.S. patent application need be included; and

(3) A concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.

(b) Each U.S. patent listed in an information disclosure statement shall be identified by patentee, patent number and issue date. cEach U.S. patent application notice or technical contents publication listed in an information disclosure statement shall be identified by applicant, patent application notice number or technical contents publication number and publication date.b Each foreign patent or published foreign patent application shall be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication shall be identified by author (if any), title, relevant pages of the publication, date, and place of publication.

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32. Section 1.107 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.107 Citation of references.

(a) If domestic patents are cited by the examiner, their numbers and dates, and the names of the patentees [, and the classes of inventions] must be stated. cIf domestic published applications are cited by the examiner, their technical contents publication number, publication date, and the names of the applicants must be stated.b If foreign published applications or patents are cited, their nationality or country, numbers and dates, and the names of the patentees must be stated, and such other data must be furnished as may be necessary to enable the applicant, or in the case of a reexamination proceeding, the patent owner, to identify the published applications or patents cited. In citing foreign published applications or patents, in case only a part of the document is involved, the particular pages and sheets containing the parts relied upon must be identified. If printed publications are cited, the author (if any), title, date, pages or plates, and place of publication, or place where a copy can be found, shall be given.

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33. Section 1.108 is proposed to be revised to read as follows:

§ 1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references c,b except those which care published applications orb have been opened to inspection by the public following a defensive publication.

34. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a)(1) When any claim of an application or a patent under reexamination is rejected under 35 U.S.C. 102(a) or (e), or 35 U.S.C. 103 based on a U.S. patent cor pending or patented published applicationb to another which is prior art under 35 U.S.C. 102 (a) or (e) and which substantially shows or describes but does not claim the same patentable invention, as defined in § 1.601(n), or on reference to a foreign patent c, an abandoned U.S. published application,b or to a printed publication, the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the party qualified under §§ 1.42, 1.43, or 1.47, may submit an appropriate oath or declaration to overcome the patent c, published applicationb or publication. The oath or declaration must include facts showing a completion of the invention in this country or in a NAFTA or WTO member country before the filing date of the cU.S. published application or theb application on which the U.S. patent issued, or before the date of the foreign patent, or before the date of the printed publication. When an appropriate oath or declaration is made, the patent c, published applicationb or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent c, published applicationb or publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

(2) A date of completion of the invention may not be established under this section before December 8, 1993, in a NAFTA country, or before January 1, 1996, in a WTO member country other than a NAFTA country.

c(3) Notwithstanding the provisions of paragraph (a)(1), a showing may be made under this section where the inventions defined by a claim in an application or a patent under reexamination and by a claim in U.S. patent or pending or patented published application are not identical as set forth in 35 U.S.C. 102, and where the inventions are owned by the same party, unless the date of such patent or published application is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.b

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35. Section 1.132 is proposed to be revised to read as follows:

§ 1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a [domestic] cU.S.b patent cor pending U.S. published applicationb which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, can abandoned U.S. published application,b or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

36. Section 1.136 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a)(1) If an applicant is required to respond within a nonstatutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in § 1.17 are filed prior to or with the response, unless:

(i) Applicant is notified otherwise in an Office action,

(ii) cThe response is to a requirement for an English translation, an abstract or claims on a separate sheet, or substitute specification or sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction submitted pursuant to §§ 1.52(d), 1.53(d), 1.60(d), 1.62(d), 1.494(c) or 1.495(c), or an oath or declaration submitted pursuant to §§ 1.494(c) or 1.495(c),

(iii)b The response is a reply brief submitted pursuant to § 1.193(b),

c(iv)b [(iii)] The response is a request for an oral hearing submitted pursuant to § 1.194(b),

c(v)b [(iv)] The response is to a decision by the Board of Patent Appeals and Interferences pursuant to § 1.196, § 1.197 or § 1.304, or

c(vi)b [(v)] The application is involved in an interference declared pursuant to § 1.611.

(2) The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See § 1.136(b) for extensions of time relating to cthe filing of an English translation pursuant to §§ 1.52(d), 1.494(c) or 1.495(c), the filing of an abstract or claims on a separate sheet, substitute specification or sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction pursuant to §§ 1.53(d), 1.60(d), 1.62(d), 1.494(c), or 1.495(c), the filing of an oath or declaration pursuant to §§ 1.494(c) or 1.495(c), orb proceedings pursuant to §§ 1.193(b), 1.194, 1.196 or 1.197. See § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action. See § 1.550(c) for extension of time in reexamination proceedings and § 1.645 for extension of time in interference proceedings.

37. Section 1.138 is proposed to be revised to read as follows:

§ 1.138 Express abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant and the assignee of record, if any, and identifying the application. An application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of § 1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue cor publication. An applicant seeking to abandon an application to avoid publication of the application must submit a proper letter of express abandonment more than two months prior to the projected date of publication to allow sufficient time to permit the appropriate officials to recognize the abandonment and remove the application from the publication process, and unless an applicant receives written acknowledgement of the letter of express abandonment prior to the projected date of publication, applicant should expect that the application will be published in regular courseb.

38. Section 1.154 is proposed to be revised to read as follows:

§ 1.154 Arrangement of specification.

c(a) The elements of the design application, if applicable, should appear in the following orderb [The following order of arrangement should be observed in framing design specifications]:

c(1) Design Application Transmittal Form.
(2) Fee Transmittal Form.
(3)b [(a)] Preamble, stating name of the applicant and title of the design.
c(4) Cross-reference to related applications.
(5) Statement regarding federally sponsored research or development.b
c(6)b [(b)] Description of the figure or figures of the drawing.
c(7)b [(c)] Description [, if any].
c(8)b [(d)] Claim.
c(9) Drawings or photographs
(10)b [(e)] Executed oath or declaration (See § 1.153(b)).

39. Section 1.163 is proposed to be amended by adding new paragraphs (c) and (d) to read as follows:

§ 1.163 Specification

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c(c) The elements of the plant application, if applicable, should appear in the following order:

(1) Plant Application Transmittal Form.
(2) Fee Transmittal Form.
(3) Abstract of the disclosure.
(4) Title of the invention.
(5) Cross-reference to related applications.
(6) Statement regarding federally sponsored research or development.
(7) Background of the invention.
(8) Brief summary of the invention.
(9) Brief description of the drawing.
(10) Detailed Botanical Description.
(11) Claim.
(12) Drawings (in duplicate).
(13) Executed oath or declaration.
(14) Plant color coding sheet.

(d) A plant color coding sheet as used in this section means a sheet that specifies a color coding system as designated in a recognized color dictionary, and lists every plant structure to which color is a distinguishing feature and the corresponding color code which best represents that plant structure.b

40. Section 1.291 is proposed to be amended by revising paragraphs (a)-(b) to read as follows:

§ 1.291 Protests by the public against pending applications.

(a) Protests by a member of the public against pending applications will be referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file if:

(1) The protest is [timely] submitted c:

(i) prior to the date the application was published or the mailing of a notice of allowance under § 1.311, whichever occurs first, or

(ii) within two months of the date the application was published or prior to the mailing of a notice of allowance under § 1.311, whichever occurs first, if accompanied by the fee set forth in § 1.17(t)b; and

(2) The protest is either served upon the applicant in accordance with § 1.248, or c, if submitted prior to the date the application was published,b filed with the Office in duplicate in the event service is not possible.

[Protests raising fraud or other inequitable conduct issues will be entered in the application file, generally without comment on those issues. Protests which do not adequately identify a pending patent application will be disposed of and will not be considered by the Office.]

(b) A protest submitted in accordance with the second sentence of paragraph (a) of this section will be considered by the Office if cthe application is still pending when the protest and application file are brought before the examiner andb it includes (1) a listing of the patents, publications, or other information relied upon; (2) a concise explanation of the relevance of each listed item; (3) a copy of each listed patent or publication or other item of information in written form or at least the pertinent portions thereof; and (4) an English language translation of all the necessary and pertinent parts of any non-English language patent, publication, or other item of information in written form relied upon. cProtests raising fraud or other inequitable conduct issues will be entered in the application file, generally without comment on those issues. Protests which do not adequately identify a pending patent application will be disposed of and will not be considered by the Office.b

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41. Section 1.292 is proposed to be amended by revising paragraphs (a)-(b) to read as follows:

§ 1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations [and the fee set forth in § 1.17(j), is filed by one having information of the pendency of an application and] is found, on reference to the examiner, to make a *prima facie* showing that the invention claimed in an application believed to be on file had been in public use or on sale more than one year before the filing of the application, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, the Commissioner may designate an appropriate official to conduct the public use proceeding, including the setting of times for taking testimony, which shall be taken as provided by §§ 1.671 through 1.685. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

(b) The petition and accompanying papers [should either: (1) Reflect that a copy of the same has been served upon the applicant or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible. The petition and accompanying papers], or a notice that such a petition has been filed, shall be entered in the application file [.] cif:

(1) The petition is accompanied by the fee set forth in § 1.17(j);

(2) The petition is served on the applicant in accordance with § 1.248, or, if submitted prior to the date the application was published, filed with the Office in duplicate in the event service is not possible; and,

(3) The petition is submitted within two months of the date the application was published or prior to the mailing of a notice of allowance under § 1.311, whichever occurs first.b

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42. A new, undesignated center heading and new sections 1.305 through 1.308 are proposed to be added to Subpart B-National Processing Provisions to read as follows:

cPUBLICATION OF APPLICATIONS

§ 1.305 Withdrawal from publication.

Applications may be withdrawn from publication at the initiative of the Office or upon request by the applicant. An application will not be withdrawn from publication for any reason except:

(a) A mistake on the part of the Office;

(b) The application is either national security classified (see § 5.9(b)) or subject to a secrecy order pursuant to 35 U.S.C. 181; or,

(c) Express abandonment of the application pursuant to § 1.138.

§ 1.306 Publication of application.

(a) A U.S. national application for patent which was either filed in the Office under 35 U.S.C. 111(a) or which resulted from an international application after compliance with 35 U.S.C. 371, or an application filed in the Office under 35 U.S.C. 161 will be published as soon as possible after the expiration of a period of 18 months from the filing date, including the earliest filing date for which a benefit is sought, unless:

(1) The application is national security classified (see § 5.9(b)) or subject to a secrecy order pursuant to 35 U.S.C. 181;

(2) The application has issued as a patent;

(3) The application is recognized by the Office as no longer pending; or,

(4) The application was previously published pursuant to paragraph (d) of this section.

(b) The publication of an application shall consist of:

(1) A notice designated as a "Gazette Entry" containing information such as the application number, filing date, title, inventor's name, abstract, a drawing figure (if appropriate), a representative claim, and U.S. and International Patent Classification (IPC) classification(s) in a *Gazette of Patent Application Notices*;

(2) A printed publication designated as a "patent application notice" containing information such as the application number, filing date, title, inventor's name, correspondence address, abstract, a drawing figure (if appropriate), a representative claim, and U.S. and International Patent Classification (IPC) classification(s);

(3) A document designated as a "technical contents publication" containing the patent application notice and the specification, abstract, claim(s), and drawing(s); and

(4) Public access to a copy of the specification, drawings, and all papers relating to the application file in accordance with § 1.11(a).

(c) Provisional applications filed in the Office under 35 U.S.C. 111(b) shall not be published, and design applications filed in the Office under 35 U.S.C. 171 and reissue applications filed in the Office under 35 U.S.C. 251 shall not be published pursuant to this section.

(d) Applications that will be published pursuant to paragraph (a) of this section may be published earlier than as set forth in paragraph (a) upon petition by the applicant. Any petition requesting early publication of an application must be accompanied by the fee set forth in § 1.17(i) and filed as soon as possible. No consideration will be given to requests for early publication in an application lacking an abstract or claims on a separate sheet, any English translation required pursuant to § 1.52(d), or substitute specification or drawings required pursuant to §§ 1.53(d), 1.60(d), or 1.62(d). No consideration will be given to requests for publication on a certain date, and such requests will be treated as a request for publication as soon as possible.

(e) An applicant who is an independent inventor and has been accorded status under 35 U.S.C. 41(h) in an application that will be published pursuant to paragraph (a) of this section and does not claim the benefit of an earlier filing date under 35 U.S.C. 119, 120, 121, 365(a) or 365(c) may request that the application not be published until three months after an action on the merits. A petition requesting that the application not be published until three months after an action on the merits must be submitted with the filing of the application and be accompanied by:

(1) The petition fee set forth in § 1.17(i); and,

(2) A certification that the invention disclosed in the application was not or will not be the subject of an application filed in a foreign country. The certification must be verified if made by a person not registered to practice before the Patent and Trademark Office.

§ 1.307 Delivery of the printed publication.

The patent application notice will be delivered or mailed on the day of its publication to the correspondence address of record. See § 1.33(a).

§ 1.308 Correction of the printed publication.

A request for a certificate of correction for the patent application notice will only be granted when the Office makes a significant mistake which is apparent from Office records.b

43. Section 1.315 is proposed to be revised to read as follows:

§ 1.315 Delivery of patent.

The patent will be delivered or mailed cupon issuanceb [on the day of its date] to cthe correspondence address of record. See § 1.33(a).b [the attorney or agent of record, if there be one; or if the attorney or agent so requests, to the patentee or assignee of an interest therein; or, if there be no attorney or agent, to the patentee or to the assignee of the entire interest, if he so requests.]

44. Section 1.321 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.321 Statutory disclaimers, including terminal disclaimers.

* * * * *

(c) A terminal disclaimer, when filed to obviate a cnonstatutoryb double patenting rejection in a patent application or in a reexamination proceeding, must:

(1) Comply with the provisions of paragraphs (b)(2) through (b)(4) of this section;

(2) Be signed in accordance with paragraph (b)(1) of this section if filed in a patent application or in accordance with paragraph (a)(1) of this section if filed in a reexamination proceeding; and

(3) Include a provision that any patent granted on that application or any patent subject to the reexamination proceeding shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

45. Section 1.492 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.492 National stage fees.

* * * * *

(a) * * * * *

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) .....c$355.00b [$330.00]
By other than a small entity.....c710.00b [660.00]

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f)) .....c390.00b [365.00]
By other than a small entity.....c780.00b [730.00]

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) .....c520.00b [490.00]
By other than a small entity.....c1040.00b [980.00]

(4) Where the international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f)) .....c60.00b [46.00]
By other than a small entity.....c120.00b [92.00]

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:

By a small entity (§ 1.9(f)) .....c455.00b [425.00]
By other than a small entity.....c910.00b [850.00]

46. Section 1.494 is proposed to be amended by revising paragraphs (c) and (g) to read as follows:

§ 1.494 Entering the national stage in the United States of America as a Designated Office.

* * * * *

(c) If applicant complies with paragraph (b) of this section before expiration of 20 months from the priority date but omits:

(1) A translation of the international application, as filed, into the English language, if it was originally filed in another language (35 U.S.C. 371(c)(2)) c,b [and/or]

(2) The oath or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497),

c(3) An abstract or claims on a separate sheet (see §§ 1.72(b) and 1.75(h)),

(4) Papers typed on but one side of the paper (see § 1.52(b)), and/or

(5) Application papers or sheets of drawings of sufficient clarity, contrast, and quality, and in the proper size and format for electronic reproduction (see §§ 1.52(a) and (b) and 1.85(a)),b applicant will be so notified and given a period of time within which to file the cEnglishb translation c,b [and/or] oath or declaration c, abstract or claims on a separate sheet, and a substitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproductionb in order to prevent abandonment of the application. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 20 months after the priority date. The payment of the surcharge set forth in § 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 20 months after the priority date. cThe period for filing the English translation, oath or declaration, an abstract and claims on a separate sheet, and a substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction cannot be extended pursuant to § 1.136(a).b A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

* * * * *

(g) An international application becomes abandoned as to the United States 20 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 20 months from the priority date where the United States has been designated but not elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 20 months from the priority date but any required translation of the international application as filed c,b [and/or] the oath or declaration c, abstract or claims on a separate sheet, and/or substitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproductionb are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

47. Section 1.495 is proposed to be amended by revising paragraphs (c) and (h) to read as follows:

§ 1.495 Entering the national stage in the United States of America as an Elected Office

* * * * *

(c) If applicant complies with paragraph (b) of this section before expiration of 30 months from the priority date but omits:

(1) A translation of the international application, as filed, into the English language, if it was originally filed in another language (35 U.S.C. 371(c)(2)) c,b [and/or]

(2) The oath or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497),

c(3) An abstract or claims on a separate sheet (see §§ 1.72(b) and 1.75(h)),

(4) Papers typed on but one side of the paper (see § 1.52(b)), and/or

(5) Application papers or sheets of drawings of sufficient clarity, contrast, and quality, and in the proper size and format for electronic reproduction (see §§ 1.52(a) and (b) and 1.85(a)),b applicant will be so notified and given a period of time within which to file the cEnglishb translation c,b [and/or] oath or declaration c, abstract or claims on a separate sheet, and a substitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproductionb in order to prevent abandonment of the application. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 30 months after the priority date. The payment of the surcharge set forth in § 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 30 months after the priority date. cThe period for filing the English translation, oath or declaration, an abstract and claims on a separate sheet, and a substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproduction cannot be extended pursuant to § 1.136(a).b A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

* * * * *

(h) An international application becomes abandoned as to the United States 30 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 30 months from the priority date where the United States has been elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 30 months from the priority date but any required translation of the international application as filed c,b [and/or] the oath or declaration c,abstract or claims on a separate sheet, and/or a subatitute specification in compliance with § 1.125 with papers typed on but one side of the paper and sheets of drawings, each of the substitute specification and sheets of drawings of sufficient clarity, contrast, and quality and in the proper size and format for electronic reproductionb are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

48. Section 1.497 is proposed to be revised to read as follows:

§ 1.497 Oath or declaration under 35 U.S.C. 371(c)(4).

(a) When an applicant of an international application [, if the inventor,] desires to enter the national stage under 35 U.S.C. 371 pursuant to §§ 1.494 or 1.495, he or she must file an oath or declaration cthat:

(1) Is executed in accordance with either §§ 1.66 or 1.68,

(2) Identifies the specification to which it is directed,

(3) Identifies each inventor and the country of citizenship of each inventor, and

(4) States that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.b [in accordance with § 1.63.]

(b) c(1) The oath or declaration must be made by all of the actual inventors except as provided for in §§ 1.42, 1.43 or 1.47.

(2)b If the cperson making the oath or declaration is not the inventor (§§ 1.42, 1.43 or 1.47),b [international application was made as provided in §§ 1.422, 1.423 or 1.425,] the oath or declaration shall state the relationship of the personb [applicant shall state his or her relationship] to the inventor and, upon information and belief, the facts which the inventor is required [by § 1.63] to state.

c(c) The oath or declaration must comply with the requirements of § 1.63; however, if the oath or declaration meets the requirements of paragraphs (a) and (b) of this section, the oath or declaration will be accepted as complying with 35 U.S.C. 371(c)(4) and §§ 1.494(c) or 1.495(c). If the oath or declaration does not meet the requirements of § 1.63, a supplemental oath or declaration in compliance with § 1.63 will be required in accordance with § 1.67.b

49. Section 1.701 is proposed to be revised as follows:

§ 1.701 Extension of patent term due to prosecution delay.

(a) A patent, other than for designs, issued on an application filed on or after June 8, 1995, is c, subject to the provisions of this section,b entitled to extension of the patent term if the issuance of the patent was delayed due to:

(1) interference proceedings under 35 U.S.C. 135(a); and/or

(2) the application being placed under a secrecy order under 35 U.S.C. 181; and/or

(3) appellate review by the Board of Patent Appeals and Interferences or by a Federal court under 35 U.S.C. 141 or 145, if the patent was issued pursuant to a decision reversing an adverse determination of patentability c; and/orb [and if the patent is not subject to a terminal disclaimer due to the issuance of another patent claiming subject matter that is not patentably distinct from that under appellate review.]

c(4) an unusual administrative delay by the Office.

(i) Circumstances constituting an unusual administrative delay by the Office include the failure to:

(A) act on a reply under § 1.111 or appeal brief under § 1.192 within six months of the date it was filed;

(B) act on an application within six months of the date of a decision under § 1.196 by the Board of Patent Appeals and Interferences where claims stand allowed in an application or the nature of the decision requires further action by the examiner (§ 1.197); and

(C) issue a patent within six months of the date that the issue fee was paid or all outstanding requirements were satisfied, whichever is later.b

(b) The term of a patent entitled to extension under paragraph (a) of this section shall be extended for the sum of the periods of delay calculated under paragraphs (c)(1), (c)(2), (c)(3) c, (c)(4)b and (d) of this section, to the extent that these periods are not overlapping, up to a maximum of ctenb [five] years. The extension will run from the expiration date of the patent.

(c)(1) The period of delay under paragraph (a)(1) of this section for an application is the sum of the following periods, to the extent that the periods are not overlapping:

(i) with respect to each interference in which the application was involved, the number of days, if any, in the period beginning on the date the interference was declared or redeclared to involve the application in the interference and ending on the

date that the interference was terminated with respect to the application; and

(ii) the number of days, if any, in the period beginning on the date prosecution in the application was suspended by the Patent and Trademark Office due to interference proceedings under 35 U.S.C. 135(a) not involving the application and ending on the date of the termination of the suspension.

(2) The period of delay under paragraph (a)(2) of this section for an application is the sum of the following periods, to the extent that the periods are not overlapping:

(i) the number of days, if any, the application was maintained in a sealed condition under 35 U.S.C. 181;

(ii) the number of days, if any, in the period beginning on the date of mailing of an examiner's answer under § 1.193 in the application under secrecy order and ending on the date the secrecy order and any renewal thereof was removed;

(iii) the number of days, if any, in the period beginning on the date applicant was notified that an interference would be declared but for the secrecy order and ending on the date the secrecy order and any renewal thereof was removed; and

(iv) the number of days, if any, in the period beginning on the date of notification under § 5.3(c) and ending on the date of mailing of the notice of allowance under § 1.311.

(3) The period of delay under paragraph (a)(3) of this section is the sum of the number of days, if any, in the period beginning on the date on which an appeal to the Board of Patent Appeals and Interferences was filed under 35 U.S.C. 134 and ending on the date of a final decision in favor of the applicant by the Board of Patent Appeals and Interferences or by a Federal court in an appeal under 35 U.S.C. 141 or a civil action under 35 U.S.C. 145.

c(4) The period of delay under paragraph (a)(4) of this section is the sum of the number of days, if any, in the period of unusual delay by the Office.b

(d) The period [of delay] set forth in paragraph (c)[(3)] shall be reduced by cany time during the processing or examination of the application, as determined by the Commissioner, during which the applicant for patent failed to engage in reasonable efforts to conclude processing or examination of the application. In determining whether an applicant failed to engage in reasonable efforts to conclude processing or examination of the application, the Commissioner may examine the facts and circumstances of the applicant's actions during the entire prosecution of the application to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, an applicant for patent seeking to conclude the processing or examination of the application. Circumstances constituting a failure to engage in reasonable efforts to conclude processing or examination of the application include:

(1) requesting suspension of action under § 1.103, and
(2) abandonment of the application.b [:

(1) any time during the period of appellate review that occurred before three years from the filing date of the first national application for patent presented for examination; and

(2) any time during the period of appellate review, as determined by the Commissioner, during which the applicant for patent did not act with due diligence. In determining the due diligence of an applicant, the Commissioner may examine the facts and circumstances of the applicant's actions during the period of appellate review to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, a person during a period of appellate review.]

c(e) No patent term shall be extended under this section:

(1) beyond the expiration date specified in a terminal disclaimer in a patent whose term has been disclaimed in such terminal disclaimer;

(2) in a patent issued before the expiration of three years after the filing date of the application or entry of the application into the national stage under 35 U.S.C. 371, whichever is later, not taking into account any claim to the benefit of the filing date of any application under 35 U.S.C. 120, 121, 365(c).

(f) Any extension of patent term under paragraph (a)(4) of this section or the basis of an administrative delay other than one specifically set forth in paragraphs (a)(4)(i)(A)-(C) must be requested by petition. A petition for an extension of patent term based upon unusual administrative delay by the Office other than one specifically set forth in paragraphs (a)(4)(i)(A)-(C) cannot be filed prior to the mailing of a notice of allowance under § 1.311 and must be accompanied by:

(1) a statement of the facts involved, the administrative delay by the Office to be reviewed, and the period of extension requested; and,

(2) the fee set forth in § 1.17(i). The petition may include a request that the petition fee be refunded if an extension of the patent term under paragraph (a)(4) of this section is granted.b

50. Section 1.808 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.808 Furnishing of samples.

(a) A deposit must be made under conditions that assure that:

(1) Access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Commissioner to be entitled thereto under § 1.14 and 35 U.S.C. 122c(a)b, and

(2) Subject to paragraph (b) of this section, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the cpublication of the application under § 1.306 orb granting of the patent.

• • • • •

PART 3 - ASSIGNMENT, RECORDING, AND RIGHTS OF ASSIGNEE

51. The authority citation for 37 CFR Part 3 would continue to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6.

52. Section 3.31 is proposed to be amended by redesignating paragraph (b) as paragraph (c) and adding a new paragraph (b) to read as follows:

§ 3.31 Cover sheet content.

• • • • •

(b) cFor a patent application, the cover sheet may include an indication that the assignment information is to be printed on the patent application notice. If the assignment and cover sheet containing the above-mentioned indication is not submitted within two months of filing or fourteen months from the earliest filing date for which a benefit is claimed, whichever is later, the assignment information may not be printed on the patent application notice.

(c)b A cover sheet may not refer to both patents and trademarks.

PART 5 - SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

53. The authority citation for 37 CFR Part 5 would continue to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, as amended by the Patent Law Foreign Filing Amendments Act of 1988, Pub. L. 100-418, 102 Stat. 1567; the Arms Export Control Act, as amended, 22 U.S.C. 2751 *et seq.*; the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*; and the Nuclear Non- Prolifer-

ation Act of 1978, 22 U.S.C. 3201 *et seq.*; and the delegations in the regulations under these Acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

54. Section 5.1 is proposed to be amended by adding new paragraphs (c) and (d) to read as follows:

§ 5.1 Defense inspection of certain applications.

• • • • •

c(c) Defense agency inspection must be promptly completed to enable those applications due for publication under § 1.306 of this chapter to be published in regular course. Applications under defense agency review will be released for publication six months from the actual U.S. filing date or three months from the date the application was made available to a defense agency under paragraph (b) of this section, whichever is later.

(d) Applications on inventions not made in the United States and on inventions in which the U.S. Government has a property interest will not be made available to defense agencies under § 5.2(b).b

55. A new section 5.9 is proposed to be added to Part 5 to read as follows:

c§ 5.9 National security classified applications.

(a) Patent applications and papers relating thereto that are national security classified and contain authorized national security markings of "Confidential," "Secret" or "Top Secret," as appropriate, are accepted by the Office. National security classified documents mailed to the Office must be addressed in compliance with § 5.33. National security classified documents may be hand-carried to Licensing and Review.

(b) A national security classified patent application will not be published pursuant to § 1.306 or allowed pursuant to § 1.311 of this chapter until the application is declassified.

(c) The applicant in a national security classified patent application must obtain a secrecy order pursuant to § 5.2. In a national security classified patent application filed without a notification pursuant to § 5.2(a), the Office will set a time period within which the application must be declassified, a secrecy order pursuant to § 5.2 must be obtained, or evidence of a good faith effort to obtain a secrecy order pursuant to § 5.2 from the relevant department or agency must be presented in order to prevent abandonment of the application.

(d) Where evidence of a good faith effort to obtain a secrecy order pursuant to § 5.2 from the relevant department or agency is presented within the time period set by the Office, but the application has not been declassified and a secrecy order pursuant to § 5.2 has not been obtained, the Office will again set a time period within which the application must be declassified, a secrecy order pursuant to § 5.2 must be obtained, or evidence of a good faith effort to again obtain a secrecy order pursuant to § 5.2 from the relevant department or agency must be presented in order to prevent abandonment of the application.b

July 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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NOTE- The following appendix will not appear in the Code of Federal Regulations.

Type a plus sign (+) inside this box -> ☐

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0010/PTO Rev. 6/95 — U.S. Department of Commerce Patent and Trademark Office

DECLARATION

☐ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing

Attorney Docket Number	
First Named Inventor	
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled :

(Title of the Invention)

the specification of which
☐ is attached hereto
OR
☐ was filed on (MM/DD/YYYY) ____ as United States Application Number or PCT International Application Number ____ and was amended on (MM/DD/YYYY) ____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Copy Attached? YES	Copy Attached? NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

Burden Hour Statement: This form is estimated to take .4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

DECLARATION — Page 2

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Firm Name ____ Payor Number (if applicable) ____

Name	Registration Number	Name	Registration Number

☐ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.

☐ Please direct all correspondence to: Name ____

Address ____

Address ____

City ____ State ____ ZIP ____

Country ____ Telephone ____ Fax ____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name ____ Middle Initial ____ Family Name ____ Suffix ____

Inventor's Signature ____ Date ____

RESIDENCE: City ____ State ____ Country ____ Citizenship ____

POST OFFICE ADDRESS ____

City ____ State ____ Zip ____ Country ____ Applicant Authority ____

☐ Additional inventors are being named on supplemental sheet(s) attached hereto

Type a plus sign (+) inside this box --> ☐

DECLARATION — ADDITIONAL INVENTOR(S) Supplemental Sheet

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name | Middle Initial | Family Name | Suffix

Inventor's Signature | Date

RESIDENCE: City | State | Country | Citizenship

POST OFFICE ADDRESS

City | State | Zip | Country | Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name | Middle Initial | Family Name | Suffix

Inventor's Signature | Date

RESIDENCE: City | State | Country | Citizenship

POST OFFICE ADDRESS

City | State | Zip | Country | Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name | Middle Initial | Family Name | Suffix

Inventor's Signature | Date

RESIDENCE: City | State | Country | Citizenship

POST OFFICE ADDRESS

City | State | Zip | Country | Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name | Middle Initial | Family Name | Suffix

Inventor's Signature | Date

RESIDENCE: City | State | Country | Citizenship

POST OFFICE ADDRESS

City | State | Zip | Country | Applicant Authority

☐ Additional inventors are being named on supplemental sheet(s) attached hereto

DECLARATION — PRIORITY DATA (Supplemental Sheet)

Additional foreign applications:

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Copy Attached? YES	Copy Attached? NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

Additional provisional applications:

Application Number	Filing Date (MM/DD/YYYY)

Additional U.S. applications:

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

DECLARATION	ATTORNEY and/or AGENT INFORMATION (Supplemental Sheet)

Name	Registration Number	Name	Registration Number

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0002/PTO
Rev. 6/95

U.S. Department of Commerce
Patent and Trademark Office

FEE TRANSMITTAL

TOTAL AMOUNT OF PAYMENT ($)

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	
Group Art Unit	
Examiner Name	
Attorney Docket Number	

METHOD OF PAYMENT (check one)

1 ☐ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number

Deposit Account Name

☐ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Charge the Issue Fee Set in 37 CFR 1.18 at the Mailing of the Notice of Allowance, 37 CFR 1.311(b)

2 ☐ Payment Enclosed:

☐ Check

☐ Money Order

☐ Other

(reserved space)

FEE CALCULATION (fees effective 1/1/96)

1 FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	780	201	390	Utility filing	
106	300	206	150	Design filing fee	
107	540	207	270	Plant filing fee	
108	780	208	390	Reissue filing fee	

SUBTOTAL (1) ($)

2 CLAIMS

		Extra	Fee from below	Fee Paid
Total Claims	- 20 =		X	=
Independent Claims	- 3 =		X	=
Multiple Dependent Claims				=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
102	78	202	39	Independent claims in excess of 3
103	22	203	11	Claims in excess of 20
104	250	204	125	Multiple dependent claim
109	78	209	39	Reissue independent claims over original patent
110	22	210	11	Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

3 ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge-late filing fee or oath	
139	130	139	130	Non-English specification	
147	2,390	147	2,390	For filing a request for reexamination	
112	920	112	920	Requesting publication of SIR prior to Examiner action	
113	1,840	113	1,840	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for response within first month	
116	390	216	190	Extension for response within second month	
117	990	217	490	Extension for response within third month	
118	1,470	218	735	Extension for response within fourth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive unavoidably abandoned application	
141	1,280	241	640	Petition to revive unintentionally abandoned application	
142	1,280	242	640	Utility issue fee (or reissue)	
143	430	243	215	Design issue fee	
144	580	244	290	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	223	25	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (x no. properties)	
147	2,520	147	2,520	Filing a submission after final rejection (37 CFR 1.129(a))	
149	240	249	120	For each additional invention to be examined (37 CFR 1.129(b))	
179	790	279	395	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	
199	1,000	199	1,000	Other fee (specify)	
199	1,000	199	1,000	Other fee (specify)	

SUBTOTAL (3) ($)

SUBMITTED BY				Complete (if applicable)	
Typed or Printed Name				Reg. Number	
Signature		Date		Deposit Account User ID	

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

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U.S. Department of Commerce Patent and Trademark Office

NEW UTILITY PATENT APPLICATION TRANSMITTAL

(to be used for new applications only)

Attorney Docket Number	
First Named Inventor	
Total Pages in this Submission	

APPLICATION ELEMENTS

Notice: Checklist items mentioned under Application Elements section construct a new utility patent application. Please refer to MPEP Sections 506, 601, (37CFR 1.77, 1.53, 35 USC 111, 112, 113) for detailed explanation regarding completeness of an original patent application.

1. ☐ Fee Transmittal Form (prescribed filing fee(s))
2. Specification
   - ☐ Abstract of the Disclosure
   - ☐ Title of the Invention
   - ☐ Cross References to Related Applications *(if applicable)*
   - ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
   - ☐ Reference to Microfiche Appendix *(if applicable)*
   - ☐ Background of the Invention
   - ☐ Brief Summary of the Invention
   - ☐ Brief Description of the Drawings *(if drawings filed)*
   - ☐ Detailed Description
   - ☐ Claim or Claims
3. ☐ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
4. ☐ Executed Declaration
5. Genetic Sequence Submission *(if applicable, all must be included)*
   - ☐ Paper Copy
   - ☐ Computer Readable Copy
   - ☐ Statement Verifying Identical Paper and Computer Readable Copy

ACCOMPANYING APPLICATION PARTS

6. ☐ Assignment Papers
7. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
8. ☐ Computer Program in Microfiche
9. ☐ English Translation Document *(if applicable)*
10. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
11. ☐ Petition Checklist and Accompanying Petition
12. ☐ Preliminary Amendment
13. ☐ Proprietary Information
14. ☐ Return Receipt Postcard
15. ☐ Small Entity Statement
16. ☐ Additional Enclosures *(please identify below):*

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	
Signature	
Date	

FOR OFFICIAL USE ONLY

Application Number			Class		Independent Claims	
Date of Receipt	Application Type		GAU		Total Claims	
	Filing Date		Foreign Filing License?		Drawing Sheets	
	Small Entity		Foreign Address?		Special Handling?	

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box --> ☐

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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

0003/PTO Rev. 6/95

U.S. Department of Commerce Patent and Trademark Office

NEW DESIGN PATENT APPLICATION TRANSMITTAL

(to be used for new applications only)

Attorney Docket Number	
First Named Inventor	
Total Pages in this Submission	

APPLICATION ELEMENTS

Notice: Checklist items mentioned under Application Elements section construct a new design patent application. Please refer to MPEP Section1500 (37 CFR 1.151, 1.152, 1.153, 1.154) for detailed explanation regarding completeness of an original design application.

1. ☐ Fee Transmittal Form (prescribed filing fee(s))
2. Specification
   - ☐ Preamble (Application name, Title of Design)
   - ☐ Cross References to Related Applications *(if applicable)*
   - ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
   - ☐ Description of the Figure(s) of the Drawings
   - ☐ Claim
3. ☐ Drawings
   - ☐ Photographs
4. ☐ Executed Declaration

ACCOMPANYING APPLICATION PARTS

5. ☐ Assignment Papers
6. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
7. ☐ English Translation Document *(if applicable)*
8. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
9. ☐ Petition Checklist and Accompanying Petition
10. ☐ Preliminary Amendment
11. ☐ Proprietary Information
12. ☐ Return Receipt Postcard
13. ☐ Small Entity Statement
14. ☐ Additional Enclosures *(please identify below):*

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	
Signature	
Date	

FOR OFFICIAL USE ONLY

Application Number			Class		Drawing Sheets	
Date of Receipt	Application Type		GAU		Special Handling?	
	Filing Date		Foreign Filing License?			
	Small Entity		Foreign Address?			

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box --> ☐

PTO/SB/ xx (6-95)
Approved for use through OMB 0651-0032
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

0004/PTO
Rev. 6/95

U.S. Department of Commerce
Patent and Trademark Office

NEW PLANT PATENT APPLICATION TRANSMITTAL

(to be used for new applications only)

Attorney Docket Number	
First Named Inventor	
Total Pages in this Submission	

APPLICATION ELEMENTS

Notice: Checklist items mentioned under Application Elements section construct a new plant patent application. Please refer to MPEP Sections 506, 601, 1600 (37 CFR 1.53, 35 USC 111, 112, 113) for detailed explanation regarding completeness of an original plant application.

1. ☐ Fee Transmittal Form (prescribed filing fee(s))
2. Specification
   - ☐ Abstract of the Disclosure
   - ☐ Title of the Invention *(with Plant's name)*
   - ☐ Cross References to Related Applications *(if applicable)*
   - ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
   - ☐ Background of the Invention
   - ☐ Brief Summary of the Invention
   - ☐ Brief Description of the Drawings
   - ☐ Detailed Botanical Description
   - ☐ Claim
3. ☐ Drawing(s) in duplicate *(as prescribed by 35 USC 165)*
4. ☐ Executed Declaration
5. ☐ Plant Color Coding Sheet

ACCOMPANYING APPLICATION PARTS

6. ☐ Assignment Papers
7. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
8. ☐ English Translation Document *(if applicable)*
9. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
10. ☐ Petition Checklist and Accompanying Petition
11. ☐ Preliminary Amendment
12. ☐ Proprietary Information
13. ☐ Return Receipt Postcard
14. ☐ Small Entity Statement
15. ☐ Additional Enclosures *(please identify below):*

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	
Signature	
Date	

FOR OFFICIAL USE ONLY

Application Number			Class			Drawing Sheets	
Date of Receipt	Application Type		GAU			Special Handling?	
	Filing Date		Foreign Filing License?				
	Small Entity		Foreign Address?				

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box --> ☐

PTO/SB/ xx (6-95)
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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

0002/PTO
Rev. 6/95

U.S. Department of Commerce
Patent and Trademark Office

PLANT COLOR CODING SHEET

(to be used for new applications only)

Sheet ____ of ____

Attorney Docket Number	
First Named Inventor	
FOR OFFICIAL USE ONLY	
Date of Receipt	
Application Number	

PLEASE LIST THE ITEM TO WHICH COLOR IS A DISTINGUISHING FEATURE, THE COLOR CODE WHICH BEST REPRESENTS THAT PLANT STRUCTURE AND THE COLOR CODE SYSTEM.

ITEM	COLOR

COLOR CODE SYSTEM:

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/ xx (6-95)
Approved for use through OMB 0651-0032
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Type a plus sign (+) inside this box -> ☐

0010/PTO Rev. 6/95 — U.S. Department of Commerce Patent and Trademark Office

PLANT PATENT APPLICATION (35 USC §161) DECLARATION

☐ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing

Attorney Docket Number	
First Named Inventor	
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the new and distinct variety of:

plant named:

which is claimed and for which a plant patent is sought,

the specification of which ☐ is attached hereto ☐ was filed on (MM/DD/YYYY) as United States Application Number or PCT International Application Number and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I hereby asexually reproduced the plant to which this application applies.

☐ Said plant was found in a cultivated area *(check this box for newly found plant only)*

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119 (a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Copy Attached? YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental sheet(s) attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
		☐ Additional provisional application numbers are list on a supplemental sheet(s) attached hereto.

Burden Hour Statement: This form is estimated to take .4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget (Project 0651-0032), Washington, DC 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

DECLARATION — Page 2

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) or § 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

☐ Additional U.S. or PCT international application numbers are listed on a supplemental sheet(s) attached hereto:

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Firm Name — Payor Number (if applicable)

Name	Registration Number	Name	Registration Number

☐ Please direct all correspondence to: Name

Address

Address

City — State — ZIP

Country — Telephone — Fax

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name — Middle Initial — Family Name — Suffix

Inventor's Signature — Date

RESIDENCE: City — State — Country — Citizenship

POST OFFICE ADDRESS

City — State — Zip — Country — Applicant Authority

☐ Additional inventors are being named on separately numbered sheets attached hereto.

Type a plus sign (+) inside this box --> ☐

DECLARATION

Additional Inventor(s) Supplemental Sheet

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix	
Inventor's Signature					Date		
RESIDENCE: City		State		Country		Citizenship	
POST OFFICE ADDRESS							
City		State		Zip		Country	Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix	
Inventor's Signature					Date		
RESIDENCE: City		State		Country		Citizenship	
POST OFFICE ADDRESS							
City		State		Zip		Country	Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix	
Inventor's Signature					Date		
RESIDENCE: City		State		Country		Citizenship	
POST OFFICE ADDRESS							
City		State		Zip		Country	Applicant Authority

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix	
Inventor's Signature					Date		
RESIDENCE: City		State		Country		Citizenship	
POST OFFICE ADDRESS							
City		State		Zip		Country	Applicant Authority

☐ Additional inventors are being named on separately numbered sheets attached hereto

SUPPLEMENTAL PRIORITY SHEET

Additional foreign applications:

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Copy Attached? YES	Copy Attached? NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

Additional provisional applications:

Application Number	Filing Date (MM/DD/YYYY)

Additional U.S. applications:

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

Appendix B - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995	Jan 1996
1.16(a)	Basic Filing Fee	$730	$750	$780
1.16(a)	Basic Filing Fee (Small Entity)	$365	$375	$390
1.16(b)	Independent Claims	$76	$78	—
1.16(b)	Independent Claims (Small Entity)	$38	$39	—
1.16(c)	Claims in Excess of 20	$22	—	—
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	—	—
1.16(d)	Multiple Dependent Claims	$240	$250	—
1.16(d)	Multiple Dependent Claims (Small Entity)	$120	$125	—
1.16(e)	Surcharge - Late Filing Fee	$130	—	—
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	—	—
1.16(f)	Design Filing Fee	$300	$310	—
1.16(f)	Design Filing Fee (Small Entity)	$150	$155	—
1.16(g)	Plant Filing Fee	$490	$510	$540
1.16(g)	Plant Filing Fee (Small Entity)	$245	$255	$270
1.16(h)	Reissue Filing Fee	$730	$750	$780
1.16(h)	Reissue Filing Fee (Small Entity)	$365	$375	$390
1.16(i)	Reissue Independent Claims	$76	$78	—
1.16(i)	Reissue Independent Claims (Small Entity)	$38	$39	—
1.16(j)	Reissue Claims in Excess of 20	$22	—	—
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	—	—
1.16(k)	Provisional Application Filing Fee	$150	—	—
1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	—	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	—	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	—	—
1.17(a)	Extension - First Month	$110	—	—
1.17(a)	Extension - First Month (Small Entity)	$55	—	—
1.17(b)	Extension - Second Month	$370	$380	—
1.17(b)	Extension - Second Month (Small Entity)	$185	$190	—
1.17(c)	Extension - Third Month	$870	$900	—
1.17(c)	Extension - Third Month (Small Entity)	$435	$450	—
1.17(d)	Extension - Fourth Month	$1,360	$1,400	—
1.17(d)	Extension - Fourth Month (Small Entity)	$680	$700	—
1.17(e)	Notice of Appeal	$280	$290	—
1.17(e)	Notice of Appeal (Small Entity)	$140	$145	—
1.17(f)	Filing a Brief	$280	$290	—
1.17(f)	Filing a Brief (Small Entity)	$140	$145	—
1.17(g)	Request for Oral Hearing	$240	$250	—
1.17(g)	Request for Oral Hearing (Small Entity)	$120	$125	—
1.17(h)	Petition - Not All Inventors	$130	—	—
1.17(h)	Petition - Correction of Inventorship	$130	—	—
1.17(h)	Petition - Decision on Questions	$130	—	—
1.17(h)	Petition - Suspend Rules	$130	—	—
1.17(h)	Petition - Expedited License	$130	—	—
1.17(h)	Petition - Scope of License	$130	—	—
1.17(h)	Petition - Retroactive License	$130	—	—
1.17(h)	Petition - Refusing Maintenance Fee	$130	—	—
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	—	—
1.17(h)	Petition - Interference	$130	—	—
1.17(h)	Petition - Reconsider Interference	$130	—	—
1.17(h)	Petition - Late Filing of Interference	$130	—	—
1.20(b)	Petition - Correction of Inventorship	$130	—	—
1.17(h)	Petition - Refusal to Publish SIR	$130	—	—
1.17(i)	Petition - For Assignment	$130	—	—
1.17(i)	Petition - For Application	$130	—	—
1.17(i)	Petition - Late Priority Papers	$130	—	—
1.17(i)	Petition - Suspend Action	$130	—	—
1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	—	—
1.17(i)	Petition - For Interference Agreement	$130	—	—
1.17(i)	Petition - Amendment After Issue	$130	—	—
1.17(i)	Petition - Withdrawal After Issue	$130	—	—
1.17(i)	Petition - Defer Issue	$130	—	—
1.17(i)	Petition - Issue to Assignee	$130	—	—
1.17(i)	Petition - Accord a Filing Date Under § 1.53	$130	—	—
1.17(i)	Petition - Accord a Filing Date Under § 1.62	$130	—	—
1.17(i)	Petition - Make Application Special	$130	—	—
1.17(j)	Petition - Public Use Proceeding	$1,390	$1,430	—
1.17(k)	Non-English Specification	$130	—	—
1.17(l)	Petition - Revive Abandoned Appl.	$110	—	—
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$55	—	—
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$1,210	$1,250	—
1.17(m)	Petition - Revive Unintentionally Abandoned Appl. (Small Entity)	$605	$625	—
1.17(n)	SIR - Prior to Examiner's Action	$840	$870	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995	Jan 1996
1.17(o)	SIR - After Examiner's Action	$1,690	$1,740	—
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	$210	$220	—
1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$50	—	—
1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	—	—
1.17(r)	Filing a submission after final rejection (1.129(a))	$730	$750	—
1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$365	$375	—
1.17(s)	Per add'l invention to be examined (1.129(b))	$730	$750	—
1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$365	$375	—
1.17(t)	For filing a protest in an app. after publication (1.291)	—	—	$220
1.17(u)	Acceptance of a late claim for priority (119(a)-(d))	—	—	$1,500
1.17(u)	Acceptance of a late claim for benefit of prior app. (119(e))	—	—	$1,500
1.18(a)	Issue Fee	$1,210	$1,250	$1,280
1.18(a)	Issue Fee (Small Entity)	$605	$625	$640
1.18(b)	Design Issue Fee	$420	$430	—
1.18(b)	Design Issue Fee (Small Entity)	$210	$215	—
1.18(c)	Plant Issue Fee	$610	$630	$660
1.18(c)	Plant Issue Fee (Small Entity)	$305	$315	$330
1.19(a)(1)(i)	Copy of Patent	$3	—	—
1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$6	—	—
1.19(a)(1) (iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$25	—	—
1.19(a)(2)	Plant Patent Copy	$12	—	—
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$24	—	—
1.19(a)(4)	Copy of a technical contents publication	—	—	$9
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$12	$15	—
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$24	$30	—
1.19(b)(2)	Cert or Uncert Copy of pub. app. or patent-related file wrapper	$150	—	—
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	—	—
1.19(b)(4)(i)	Cert. or uncert. copy of first doc. contained in pending app.	—	—	$75
1.19(b)(4)(ii)	Cert. or uncert. copy of second and sub. doc. in pending app.	—	—	$25
1.19(b)(5)	For Assignment Records, Abstract of Title and Certification	$25	—	—
1.19(c)	Library Service	$50	—	—
1.19(d)	List of Patents and Published Applications in Subclass	$3	—	—
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	—	—
1.19(f)	Copy of Non-U.S. Patent Document	$25	—	—
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	—	—
1.19(h)	Duplicate or Corrected Filing Receipt	$25	—	—
1.20(a)	Certificate of Correction	$100	—	—
1.20(c)	Reexamination	$2,320	$2,390	—
1.20(d)	Statutory Disclaimer	$110	—	—
1.20(d)	Statutory Disclaimer (Small Entity)	$55	—	—
1.20(e)	Maintenance Fee - 3.5 Years	$960	$990	$1,020
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$480	$495	$510
1.20(f)	Maintenance Fee - 7.5 Years	$1,930	$1,990	$2,020
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$965	$995	$1,010
1.20(g)	Maintenance Fee - 11.5 Years	$2,900	$2,990	$3,020
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,450	$1,495	$1,510
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	—	—
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	—	—
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$640	$660	—
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,500	$1,550	—
1.20(j)	Extension of Term of Patent	$1,030	$1,060	—
1.21(a)(1)	Admission to Examination	$300	$310	—
1.21(a)(2)	Registration to Practice	$100	—	—
1.21(a)(3)	Reinstatement to Practice	$15	—	—
1.21(a)(4)	Certificate of Good Standing	$10	—	—
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	—	—
1.21(a)(5)	Review of Decision of Director, OED	$130	—	—
1.21(a)(6)	Regrading of Examination	$130	—	—
1.21(b)(1)	Establish Deposit Account	$10	—	—
1.21(b)(2)	Service Charge Below Minimum Balance	$25	—	—
1.21(b)(3)	Service Charge Below Minimum Balance	$25	—	—
1.21(c)	Filing a Disclosure Document	$10	—	—
1.21(d)	Box Rental	$50	—	—
1.21(e)	International Type Search Report	$40	—	—
1.21(g)	Self-Service Copy Charge	$.25	—	—
1.21(h)	Recording Patent Property	$40	—	—
1.21(i)	Publication in the OG	$25	—	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995	Jan 1996
1.21(j)	Labor Charges for Services	$30	—	—
1.21(k)	Unspecified Other Services	Actual Cost	—	—
1.21(k)	Terminal Use APS-CSIR (per hour)	$50	—	—
1.21(m)	Processing Returned Checks	$50	—	—
1.21(n)	Handling Fee - Incomplete Application	$130	—	—
1.21(o)	Terminal Use APS-TEXT	$40	—	—
1.24	Coupons for Patent and Trademark Copies	$3	—	—
1.296	Handling Fee - Withdrawal SIR	$130	—	—
1.445(a)(1)	Transmittal Fee	$210	$220	—
1.445(a)(2)(i)	PCT Search Fee - No U.S. Application	$640	$660	—
1.445(a)(2)(ii)	PCT Search Fee - Prior U.S. Application	$420	$430	—
1.445(a)(3)	Supplemental Search	$180	$190	—
1.482(a)(1)(i)	Preliminary Exam Fee	$460	$470	—
1.482(a)(1)(ii)	Preliminary Exam Fee	$690	$710	—
1.482(a)(2)(i)	Additional Invention	$140	—	—
1.482(a)(2)(ii)	Additional Invention	$240	$250	—
1.492(a)(1)	Preliminary Examining Authority	$660	$680	$710
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$330	$340	$355
1.492(a)(2)	Searching Authority	$730	$750	$780
1.492(a)(2)	Searching Authority (Small Entity)	$365	$375	$390
1.492(a)(3)	PTO Not ISA nor IPEA	$980	$1,010	$1,040
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$490	$505	$520
1.492(a)(4)	Claims - IPEA	$92	$94	$120
1.492(a)(4)	Claims - IPEA (Small Entity)	$46	$47	$60
1.492(a)(5)	Filing with EPO/JPO Search Report	$850	$880	$910
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$425	$440	$455
1.492(b)	Claims - Extra Individual (Over 3)	$76	$78	—
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$38	$39	—
1.492(c)	Claims - Extra Total (Over 20)	$22	—	—
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	—	—
1.492(d)	Claims - Multiple Dependents	$240	$250	—
1.492(d)	Claims - Multiple Dependents (Small Entity)	$120	$125	—
1.492(e)	Surcharge	$130	—	—
1.492(e)	Surcharge (Small Entity)	$65	—	—
1.492(f)	English Translation - After 20 Months	$130	—	—
2.6(a)(1)	Application for Registration, Per Class	$245	—	—
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	—	—
2.6(a)(3)	Statement of Use, Per Class	$100	—	—
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	—	—
2.6(a)(5)	Application for Renewal, Per Class	$300	—	—
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	—	—
2.6(a)(7)	Publication of Mark Under § 12(c), Per Class	$100	—	—
2.6(a)(8)	Issuing New Certificate of Registration	$100	—	—
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	—	—
2.6(a)(10)	Filing Disclaimer to Registration	$100	—	—
2.6(a)(11)	Filing Amendment to Registration	$100	—	—
2.6(a)(12)	Filing Affidavit Under Section 8, Per CLass	$100	—	—
2.6(a)(13)	Filing Affidavt Under Section 15, Per Class	$100	—	—
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	—	—
2.6(a)(15)	Petitions to the Commissioner	$100	—	—
2.6(a)(16)	Petition to Cancel, Per Class	$200	—	—
2.6(a)(17)	Notice of Opposition, Per Class	$200	—	—
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	—	—
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	—	—
2.6(b)(1)(i)	Copy of Registered Mark	$3	—	—
2.6(b)(1)(ii)	Copy of Registered Mark, overnight delivery to PTO box or fax	$6	—	—
2.6(b)(1)(iii)	Copy of Reg. Mark Ordered Via Exp. Mail or Fax, Exp. Svc.	$25	—	—
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$12	$15	—
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$24	$30	—
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	$50	—	—
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$10	—	—
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$20	—	—
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	—	—
2.6(b)(6)	Recording Trademark Property, Per Mark, Document	$40	—	—
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	—	—
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	—	—
2.6(b)(8)	Terminal Use X-SEARCH	$40	—	—
2.6(b)(9)	Self-Service Copy Charge	$0.25	—	—
2.6(b)(10)	Labor Charges for Services	$30	—	—
2.6(b)(11)	Unspecified Other Services	Actual Cost	—	—

—These fees are not affected by this rulemaking.

Certificate of Corrections For Week of August 15, 1995

Re. 34,777	5,171,452	5,299,135	5,346,186
Re. 34,890	5,177,427	5,301,030	5,347,698
D. 355,930	5,182,494	5,302,679	5,348,889
D. 356,110	5,184,908	5,303,287	5,351,605
D. 358,568	5,189,151	5,304,954	5,352,899
4,589,876	5,199,467	5,309,183	5,355,908
4,681,449	5,225,356	5,310,946	5,356,857
4,770,999	5,249,252	5,314,537	5,356,892
4,935,354	5,250,431	5,316,389	5,357,120
4,935,369	5,258,494	5,317,255	5,357,275
4,985,570	5,258,861	5,317,428	5,357,623
4,987,763	5,261,048	5,317,602	5,359,189
5,040,345	5,266,409	5,318,204	5,359,317
5,079,585	5,268,136	5,319,074	5,360,603
5,081,115	5,273,785	5,322,363	5,360,790
5,082,956	5,276,960	5,323,247	5,361,767
5,096,310	5,282,887	5,329,260	5,362,145
5,099,858	5,285,595	5,330,716	5,363,758
5,100,580	5,287,081	5,334,046	5,363,806
5,102,990	5,289,021	5,336,453	5,365,073
5,104,867	5,290,539	5,338,091	5,365,167
5,110,107	5,292,755	5,339,067	5,365,918
5,137,019	5,294,093	5,342,172	5,366,346
5,142,576	5,295,177	5,342,904	5,368,895
5,162,350	5,298,514	5,345,250	5,369,896
5,166,156	5,298,680	5,345,285	5,370,799
5,370,981	5,386,324	5,404,222	5,413,696
5,371,475	5,387,458	5,404,244	5,413,921
5,371,659	5,387,688	5,404,726	5,414,008
5,372,881	5,388,106	5,404,778	5,414,092
5,373,458	5,388,154	5,404,879	5,414,097
5,374,209	5,388,572	5,405,074	5,414,979
5,375,010	5,388,809	5,405,918	5,417,074
5,375,639	5,389,950	5,406,018	5,417,690
5,376,187	5,390,321	5,406,056	5,417,918
5,376,678	5,391,708	5,406,317	5,417,938
5,376,994	5,393,029	5,407,768	5,418,036
5,377,159	5,394,970	5,407,928	5,418,147
5,378,099	5,396,112	5,408,246	5,418,734
5,378,887	5,396,598	5,408,901	5,419,102
5,379,055	5,398,229	5,409,346	5,419,487
5,379,088	5,399,024	5,409,614	5,419,886
5,379,292	5,399,733	5,409,672	5,420,362
5,380,515	5,400,148	5,409,703	5,420,608
5,380,684	5,400,155	5,409,938	5,421,510
5,380,705	5,400,630	5,409,952	5,421,814
5,382,997	5,401,811	5,410,616	5,422,095
5,383,289	5,402,122	5,410,676	5,423,261
5,383,615	5,402,256	5,410,765	5,424,298
5,383,878	5,402,492	5,410,859	5,424,391
5,384,010	5,403,158	5,411,322	5,424,532
5,384,753	5,403,512	5,411,477	5,424,641
5,385,650	5,403,751	5,412,811	5,427,635
5,385,935	5,404,213	5,412,971	5,428,917

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	03/24/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	06/14/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	08/13/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	07/07/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	01/11/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	08/30/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/11/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	04/14/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	308-0771	03/17/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	02/01/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	11/30/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	01/10/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	04/25/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	02/22/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	05/30/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/07/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	04/11/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 15[illegible], have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Erskine, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Housewares and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/30/95
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Housewares and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/95	05/08/95
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/95	03/01/95
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Housewares and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	03/06/95
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/06/95	05/01/95
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/01/95
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/95	04/12/95
Law Office 10—Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/08/95	04/03/95
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/17/95	02/27/95
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	04/17/95
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/01/94	04/03/95
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/21/94	05/25/95
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/02/95	03/29/95
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	08/10/94	—0—
Renewals (All Classes)	05/03/95	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

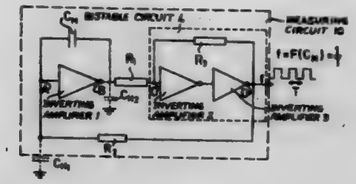
AUGUST 15, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,295,091 (2651st)
CIRCUIT FOR MEASURING LOW CAPACITANCES

Jorma Ponkala, Helsinki, Finland, assignor to Vaisala, Oy Finland

Reexamination Request No. 90/003,209, Oct. 1, 1993.
Reexamination Certificate for Patent No. 4,295,091, issued Oct. 13, 1981, Ser. No. 100,200, Dec. 4, 1979.
Continuation of Ser. No. 950,547, Oct. 12, 1978, abandoned
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—611



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-6 are cancelled.

[1. A circuit for measuring low acpacitances with the elimination of the influence of stray capacitances, said circuit comprising

an inverting amplifier having an input and an output;

a capacitance to be measured connected between the input and the output of the inverting amplifier;

a bistable circuit having an input connected to the output of said inverting amplifier, an output and an output frequency inversely proportional to the capacitance to be measured; and

a resistive feedback connected from the output of the bistable circuit to the input of the inverting amplifer.]

B1 4,571,456 (2652nd)
PORTABLE COMPUTER

David C. Paulsen, Santa Clara; Glenn T. Edens, Menlo Park; Karl S. Nakamura, Santa Clara; David M. Gallatin, San Jose; Stephen R. Hobson, and William G. Moggridge, both of Palo Alto, all of Calif., assignors to Grid Systems Corporation, Mountain View, Calif.

Reexamination Request Nos. 90/002,014, Apr. 27, 1990 and 90/002,053, Jun. 12, 1990 and 90/002,179, Oct. 22, 1990.
Reexamination Certificate for Patent No. 4,571,456, issued Feb. 18, 1986, Ser. No. 435,126, Oct. 18, 1982.
Int. Cl.[6] H04M *11/00*; G09G *1/00*; A47B *88/00*
U.S. Cl. 379—96

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5, 8, 13–17** is confirmed.

Claims **1–4, 6, 9–12, 18–19** are cancelled.

Claim **7** is determined to be patentable as amended.

15. A portable computer constructed to be contained within ah outer case for transport and to be erectable to a viewing and operating configuration for use, said computer comprising

a base,

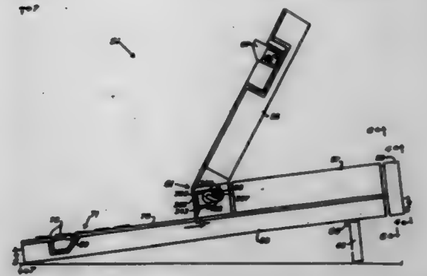
a display housing,

a top cover,

rear cover,

hinge means for permitting swinging movement of the display housing about an axis of rotation adjacent the rear end of the display housing and from a closed and latched position of the display housing on the base to an erected position for viewing by an operator,

leg means rotatable from a retracted position against the base of the computer in the closed position of the computer to



an extended position in the erected and operating configuration of the computer, wherein the leg means include movable pivot means and spring means for permitting the leg to be positively held in both the retracted position and the extended position, and

wherein the leg means include a nose which fits within a related opening in the base in the extended position,

and wherein the nose and the opening in the base having coacting, inclined surface which allow for part tolerances so as to insure that the nose is pulled up by the spring means to positively engage the nose within the opening in the base.

B1 4,941,819 (2653rd)
AIR CIRCULATION AND EXHAUST CONTROL SYSTEM FOR COMMERCIAL OVENS

G. Wayne Stewart, Plano; Bill E. Davis, Irving; William M. Thomas, Garland; Michael J. Dobie, Plano, and Carlos Bacigalupe, The Colony, all of Tex., assignors to Stewart Systems, Inc. Plano, Tex.

Reexamination Request No. 90/003,315, Jan. 21, 1994.
Reexamination Certificate for Patent No. 4,941,819, issued Jul. 17, 1990, Ser. No. 343,287, Apr. 26, 1989.
Continuation of Ser. No. 226,893, Aug. 1, 1988, Pat. No. 4,846,647, which is a continuation of Ser. No. 101,841, Sep. 28, 1987, Pat. No. 4,792,303, which is a division of Ser. No. 936,160, Dec. 1, 1986, Pat. No. 4,726,766
Int. Cl.[6] F23J *15/00*
U.S. Cl. 432—8

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

1. A heated air circulation and exhaust control system for an oven comprising:

means forming an oven enclosure defining an oven interior;

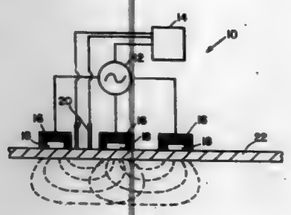
conveyor means for transporting food products through the

oven interior along a predetermined spiral path having relatively elongated side portions and curved end portion;
inlet apertures within the oven interior for receiving heated gases;
discharge tubes having outlet apertures situated within the oven interior adjacent to the conveyor path at the curved end portions; and



circulation means coupling said inlet apertures to said discharge tubes for causing the flow of heated gases from the inlet aperture to the outlet apertures of the discharge tubes to heat the food products on the conveyor in the curved end portions.

B1 5,019,034 (2654th)
CONTROL OF TRANSPORT OF MOLECULES ACROSS TISSUE USING ELECTROPORATION
James C. Weaver, Sudbury; Kevin T. Powell, Boston, and Robert S. Langer, Jr., Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Reexamination Request No. 90/003,252, Nov. 9, 1993.
Reexamination Certificate for Patent No. 5,019,034, issued May 28, 1991, Ser. No. 331,263, Mar. 30, 1989.
Continuation-in-part of Ser. No. 146,343, Jan. 21, 1988, abandoned
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—20



AS A RESULT OF REEXAMINATIN, IT HAS BEEN DETRMINED THAT:

claims 2–5, are cancelled.

claims 1 and 6–23 are determined to be patentable as amended.

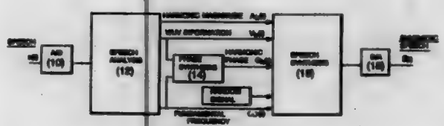
New claim 24 is added and determined to be patentable.

1. A method for transporting molecules across *skin* tissue comprising the steps of:

a. applying at least one electrical pulse of sufficient voltage and duration to a region of *skin* tissue, wherein the *skin* tissue comprises at least a single layer of cells, in order to cause electroporation *through the layer of cells of the skin tissue* in the region; and

b. utilizing a driving force to move molecules across the regions of the *skin* tissue undergoing electroporation.

B1 5,081,681 (2655th)
METHOD AND APPARATUS FOR PHASE SYNTHESIS FOR SPEECH PROCESSING
John C. Hardwick, Cambridge, and Jae S. Lim, Winchester, both of Mass., assignors to Digital Voice Systems, Inc. Cambridge, Mass.
Reexamination Request Nos. 90/003,024, Apr. 12, 1993 and 90/003,455, May 20, 1994.
Reexamination Certificate for Patent No. 5,081,681, issued Jan. 14, 1992, Ser. No. 444,042, Nov. 30, 1989.
Int. Cl.[6] G10L *5/00*
U.S. Cl. 381—51



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 11 and 17 are cancelled.

Claims 1, 6, 12–16 and 18–22 are determined to be patentable as amended.

Claims 2–5 and 7–10, dependent on an amended claim, are determined to be patentable.

1. A method for synthesizing speech, *by combining voiced and unvoiced frequency components coexisting at the same time instants,*

wherein the *voiced frequency components are synthesized from a* harmonic phase signal $\theta_l(t)$ [in voiced speech is synthesized] by the method comprising the steps of

[enabling] receiving voiced/unvoiced information $V_l(t)$ and fundamental angular frequency information $\omega(t)$,

[enabling] processing $V_l(t)$ and $\omega(t)$, *using the voiced/unvoiced information to separate the voiced frequency components from the unvoiced frequency components,* generating intermediate phase information $\phi_l(t)$, and obtaining a random component $r_l(t)$, and

[enabling] synthesizing $\theta_l(t)$ of *the* voiced [speech] *frequency components* by combining $\phi_l(t)$ and $r_l(t)$, *and wherein the unvoiced frequency components are synthesized by a method different from the method used for synthesizing the voiced frequency components.*

B1 5,104,493 (2656th)
TERTIARY BUTYL HYDROPEROXIDE CONCENTRATION
Victor M. Chong, Media, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.
Reexamination Request No. 90/002,839, Sep. 18, 1992.
Reexamination Certificate for Patent No. 5,104,493, issued Apr. 14, 1992, Ser. No. 645,434, Jan. 24, 1991.
Int. Cl.[6] B01D *3/10*; C07C *29/80, 409/04*
U.S. Cl. 203—91

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 4 are determined to be patentable as amended.

Claims 2 and 3, dependent on an amended claim, are determined to be patentable.

1. In a process for the production of a product stream consisting essentially of tertiary butyl hydroperoxide and tertiary butyl alcohol and containing 65 wt. % or more tertiary butyl hydroperoxide from a [dubutanized] *debutanized* isobutane oxidate mixture consisting essentially of tertiary butyl alcohol and [up] *30 wt.* % to 60 wt. % tertiary butyl hydroperoxide, the improvement which comprises distilling said debutanized oxidate mixture in a fractional distillation zone *at a temperature which does not exceed 80° C. and* at a pressure of 300 mmHg or less to form vapor enriched in tertiary butyl alcohol and liquid enriched in tertiary butyl hydroperoxide, maintaining the concentration of the tertiary butyl hydroperoxide in the vapor in the distillation zone below the flammable limit concentration of said tertiary butyl hydroperoxide in the vapor mixture, separating an overhead vapor fraction enriched in tertiary butyl alcohol and consisting essentially of tertiary butyl alcohol and tertiary butyl hydroperoxide, and separating a liquid fraction consisting essentially of tertiary butyl alcohol and tertiary butyl hydroperoxide and containing 65 wt. % tertiary butyl hydroperoxide or higher.

B1 5,130,144 (2657th)
HUMAN STEM CELLS AND MONOCLONAL ANTIBODIES
Curt I. Civin, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Reexamination Request No. 90/003,402, Apr. 15, 1994.
Reexamination Certificate for Patent No. 5,130,144, issued Jul. 14, 1992, Ser. No. 673,721, Mar. 22, 1991.
Division of Ser. No. 580,337, Sep. 7, 1990, which is a division of Ser. No. 55,942, Jun. 1, 1987, Pat. No. 4,965,204, which is a division of Ser. No. 670,740, Feb. 6, 1984, Pat. No. 4,714,680
Int. Cl.[6] A61K *35/28*; C12N *5/08*
U.S. Cl. 424—577

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–4 is confirmed.

1. A method of transplanting stem cells comprising:

(a) providing a suspension of human cells comprising pluripotent lympho-hematopoietic stem cells substantially free of mature lymphoid and myeloid cells, having the ability to restore the production of lymphoid and hematopoietic cells in a patient where such production is lacking; and

(b) administering said cell suspension to a human patient in an amount effective to effect such restoration.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics | indicates additions made by reissue.

Re. 35,015

WIRE WINDING AND TYING MACHINE WITH MAGNETIZED HANKING HEAD

Miguel Cans Urchaga, Barbastro, Spain, assignor to Hanscom-Madex, A.I.E., Providence, R.I.

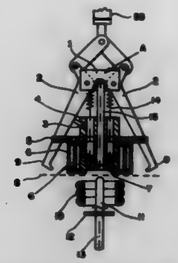
Original No. 5,311,721, dated May 17, 1994, Ser. No. 982,472, Nov. 27, 1992. Application for reissue Jun. 6, 1994, Ser. No. 257,825

Claims priority, application Spain, Nov. 29, 1991, 9102674

Int. Cl.[6] B65B *13/28, 63/04*

U.S. Cl. 53—118

7 Claims



3. A wire winding and typing machine for winding a strand having ends into a hank and then individually tying, comprising:

a hanking head with a pair of clamping arms and a lower face; said lower face including a plurality of magnetic elements;

conveying means for delivering ferrous wire to said lower face, said ferrous wire being magnetically affixed to said lower face;

means for moving said head from said conveying means to said wound strand to deliver the wire,

a winding plate having spaced winding fingers and an adjustable clamp adjacent one finger

said strand ends remaining fixed to said winding plate, and

twisting means for engaging said wire to complete a tied hank.

Re. 35,016

THREE-AXIS FORCE MEASUREMENT STYLUS

Larry S. Gullman, La Honda; Roy Kornbluh, Palo Alto; Thomas P. Low, La Honda, all of Calif.; Peter M. Newgard, Rainier, Wash., and Eric J. Shrader, La Honda, Calif., assignors to SRI International, Inc., Menlo Park, Calif.

Original No. 4,896,543, dated Jan. 30, 1990, Ser. No. 271,254, Nov. 15, 1988. Application for reissue Jan. 30, 1992, Ser. No. 831,257

Int. Cl.[6] G01L *5/16*; G06K *9/00*

U.S. Cl. 73—862.041

23 Claims

17. A stylus comprising:

a) a pickup, said pickup coupled to a shaft;

b) a housing for holding said pickup; and

c) a sensor connected to and between said pickup and said housing, said pickup comprising a funnel portion and a cone portion, said funnel portion and said cone portion defining a substantially common vertex, each of said cone portion and said funnel portion defining interfaces skewed from an axis of said pickup, said sensor further comprising:

i) a first substantially planar pad;

ii) a second substantially planar pad; and

iii) a third substantially planar pad, each of said pads varying a conductivity in proportion to pressure between said coating and said traces when pressure is applied to said shaft in said stylus.



Re. 35,017

METHOD FOR REMOVING SOLDERING FLUX WITH ALKALINE SALTS, AN ALKALI METAL SILICATE AND ANIONIC POLYMER

Anthony E. Winston, East Brunswick; Francis R. Cala, Highland Park; Steven E. Dunn, Hillsborough; Alfredo Vinci, Dayton, and M. Stephen Lajoie, Basking Ridge, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Original No. 5,234,505, dated Aug. 10, 1993, Ser. No. 896,381, Jun. 10, 1992. Continuation-in-part of Ser. No. 731,512, Jul. 17, 1991, abandoned. Application for reissue Jun. 8, 1994, Ser. No. 255,979

Int. Cl.[6] C23G *5/06*

U.S. Cl. 134—40

18 Claims

1. A method for removing soldering flux *alone* or *with* other residues from a printed wiring board, comprising

(a) contacting the board with an aqueous flux removing solution comprising from about 0.1 to 15 percent by weight of a flux removing composition comprising alkaline salts, an alkali metal silicate and an anionic polymer for maintaining said silicate in solution, said solution having a pH of from about 10 to 13;

(b) allowing the contact to continue for sufficient time to emulsify and remove *the* soldering flux [or] *and the other* residues *if present*; and

(c) removing the combined composition and soldering flux [or] *and* other residues from the board.

Re. 35,018

BATH WATER CONTROL SYSTEM

Gerald L. Homan, 103 Dexter Cir., Madison, Ala. 35758

Original No. 4,923,116, dated May 8, 1990, Ser. No. 357,063, May 24, 1989. Application for reissue Nov. 14, 1991, Ser. No. 791,360

Int. Cl.[6] G05D *23/185*; F16D *65/20*

U.S. Cl. 236—12.12

26 Claims

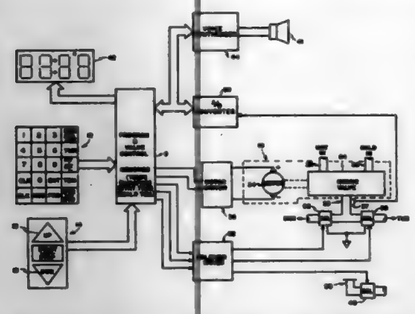
24. A mixing valve comprising:

an elongated housing having an elongated chamber therein, said chamber having first and second ends, said housing having a set of first and second axially spaced openings defining hot and cold water passageways extending transversely through

said housing, and a third passageway extending transversely through said housing to define at least one mixed water output passageway;

a solid plunger member axially slidable in said elongated chamber, said plunger member having a fourth passageway extending transversely therethrough, said fourth passageway disposed for communication with said first and second spaced passageways of said housing for differentially coupling with said first and second spaced openings of said housing to vary the mixture of hot and cold water applied to said mixed water passageway as a said mixed water output;

water coupling means in said housing comprising said at least one mixed water output passageway, an axial passageway communicating into said one end of said elongated chamber



and in communication with said fourth passageway in said plunger member and said mixed water output passageway, said plunger disposed for slidable movement to differentially couple said first and second passageways with said fourth passageway to control the mixture of hot and cold water directed to said mixed water output;

electromechanical driving means coupled to said plunger and responsive to a control input for selectively positioning said plunger member between and including open and closed positions in said housing chamber; and

temperature sensing means positioned in said axial passageway adjacent to said second transversely extending outlet passageway for sensing the temperature of said water in said housing prior to said water exiting said output and for providing an electrical signal output indicative of sensed temperature.

Re. 35,019

SMALL-SIZE MAGNETIC DISK DRIVE MECHANISM WITH HERMETICALLY SEALED CHAMBER

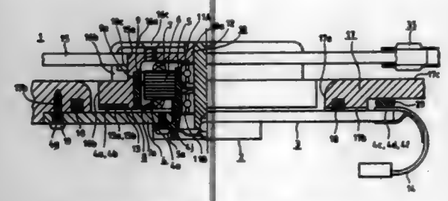
Yasuhiro Ueki, and Tatsuya Miki, both of Sagamihara, Japan, assignors to Victor Company of Japan, Limited, Japan

Original No. 5,097,366, dated Mar. 17, 1992, Ser. No. 544,534, Jun. 28, 1990. Application for reissue May 18, 1993, Ser. No. 62,622

Claims priority, application Japan, Jun. 30, 1989, 1-78031 U

Int. Cl.[6] G11B *5/012*

U.S. Cl. 360—97.02 **17 Claims**



11. A magnetic disk drive mechanism comprising:

a casing including a chassis and a stator base defining a hermetically sealed chamber therein;

a magnetic disk arranged in said chamber;

a magnetic disk drive motor arranged in said chamber and holding said magnetic disk at its center for rotating said magnetic disk, said motor including a cup-shaped rotor case, said rotor having a magnet mounted to an inner peripheral surface thereof and a center shaft rotatably supported by bearing means which is held by said casing, said rotor having a radial outer edge relative to said center shaft, said radial outer edge facing said casing with a first small gap therebetween, said motor further including a stator core held by said casing, said stator core disposed with a second small gap from said magnet and having drive coils therearound;

a magnetic head arranged in said chamber for recording and reproducing information on and from said magnetic disk;

electrically conductive means connected to said drive coils for supplying drive signals to said cupshaped rotor, said electrically conductive means extending from said drive coils to be drawn out, being converged, through said first small gap and along said casing, said electrically conductive means extending out of said hermetically sealed chamber through said casing at a location remote from said drive coils.

Re. 35,020

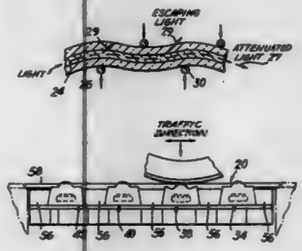
FIBER OPTIC LOAD SENSING DEVICE

Thomas J. Quinlan, Jr., Beach Haven Terrace, N.J., assignor to Cubic Toll Systems, Inc., Hauppauge, N.Y.

Original No. 5,056,884, dated Oct. 15, 1991, Ser. No. 508,139, Apr. 10, 1990. Application for reissue Oct. 15, 1993, Ser. No. 138,709

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—13 **39 Claims**



22. A treadle sensing device for vehicular traffic adapted to be mounted transversely on a roadway and to receive and sense a downward load of the type imparted by a vehicle wheel comprising

a longitudinal elastomeric envelope having spaced apart longitudinal walls in a lengthwise region of said envelope adapted to receive said load;

a substantially deformable inner member embedded within said envelope;

a fiber optic cable supported by said substantially deformable inner member within said region of said elastomeric envelope and running generally perpendicular to the direction of the load to be applied substantially the length of said region, said fiber optic cable having a first end adapted to be connected to a signal source of light and a second end adapted to be connected to a receiver;

means permitting deformation of said fiber optic cable within said envelope when a transverse load of the type applied by a vehicle wheel is applied to said envelope sufficient to significantly alter the amount of light transmitted through said fiber optic cable; and

means for preventing complete compression of said substantially deformable inner member where said fiber optic cable rests against said substantially deformable inner member during application of said load when said device is mounted on a roadway.

PLANT PATENTS

GRANTED AUGUST 15, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,239

HYBRID TEA ROSE PLANT NAMED 'MACSPEEGO'

Sam McGrady, Auckland, New Zealand, assignor to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Mar. 18, 1994, Ser. No. 215,291

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea rose class, substantially as shown and described.

9,240

NECTARINE TREE 'SUMMER JIM'

Tracy Ito, Reedley, Calif., assignor to Ito Packing Co., Reedley, Calif.

Filed Aug. 8, 1994, Ser. No. 287,291

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree with fruit of yellow-fleshed cling stone type, with reddish over color of not only a solid blush, but appearing variously as striations, speckles, dapples and mottles, with the red over color tending to become darker at full maturity, substantially as herein shown and described, having a maturity period in the mid-season, having fruit of average sie with high red coloring, initially displaying a prominent yellow suture stripe which tends to fade upon full maturity and providing a long harvest period by virtue of its keeping quality on the tree.

9,241

'GREEN DIAMOND' NAVEL

Scott E. Green, P.O. Box 449, Dundee, Fla. 33838

Filed Jun. 14, 1994, Ser. No. 259,637

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—45 **1 Claim**

1. A new and distinct variety of navel orange tree substantially as shown and described, characterized particularly as to novelty by having a distinctive leaf stem wing, and by producing seedless fruit with a navel which matures in May, June or July.

9,242

'PEARL STREET' PISTACHE

Peter Cowles, and Allen Lagarbo, both of Modesto, Calif., assignors to City of Modesto, Modesto, Calif.

Filed Nov. 28, 1994, Ser. No. 320,132

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—51.1 **1 Claim**

1. A new and distinct variety of Chinese Pistache tree, substantially as herein shown and described, characterized particularly as to novelty by a high percentage of upright scaffold branches growing nearly vertical on 4-year-old trees, with solid attachments and a narrower branch angle than that of the Seedling Pistache and the 'Keith Davey' variety; superior apical dominance resulting in heavy caliper of trunk and rapid growth of young budded nursery stock 2 years old.

9,243

***MAGNOLIA GRANDIFLORA* NAMED 'MGTIG'**

Barbour John, Monroe, Ga., assignor to Athens Trees, Inc., Monroe, Ga.

Filed Sep. 27, 1994, Ser. No. 313,005

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—53.5 **1 Claim**

1. A new and distinct variety of Southern Magnolia tree as herein described and illustrated, primarily characterized by a candle flame shaped compact growth habit and mature leaves with an upper surface which is a lustrous dark green and which are of a convex shape.

9,244

POINSETTIA PLANT '718'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jun. 2, 1994, Ser. No. 253,961

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its large rich red flower bracts, dark green foliage, and self-branching characteristics.

9,245

'LONGIFLORUM×ASIATIC HYBRID LILY PLANT NAMED 'CEB GLOW'

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,257

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of *longiflorum*-Asiatic hybrid lily plant substantially as herein shown and described.

9,246

***LONGIFLORUM*×ASIATIC HYBRID LILY PLANT NAMED 'CEB DREAM'**

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,492

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of *longiflorum*-Asiatic hybrid lily plant substantially as herein shown and described.

9,247

***LONGIFLORUM*×ASIATIC HYBRID LILY PLANT NAMED 'CEB BEAUTY'**

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,493

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of *longiflorum*-Asiatic hybrid lily plant substantially as herein shown and described.

9,248

***LONGIFLORUM*×ASIATIC HYBRID LILY PLANT NAMED 'CEB WINE'**

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,494

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of *longiflorum*-Asiatic hybrid lily plant substantially as herein shown and described.

9,249

LONGIFLORUM×ASIATIC HYBRID LILY PLANT NAMED 'CEB SUN'

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,495
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct cultivar of *Longiflorum-Asiatic* hybrid lily plant, substantially as herein shown and described.

9,250

LONGIFLORUM×ASIATIC HYBRID LILY PLANT NAMED 'CEB MAGIC'

Donald L. Egger, Aurora, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Nov. 2, 1994, Ser. No. 333,502
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct cultivar of *Longiflorum-Asiatic* hybrid lily plant substantially as herein shown and described.

PATENTS

GRANTED AUG. 15, 1995

ERRATA

For CLASS	See PATENT NO.
038–143	5,440,810
015–376	5,440,848
053–138	5,440,850
053–244	5,440,851
053–377	5,440,852
053–432	5,440,853
602–028	5,441,015
600–236	5,441,040
600–106	5,441,041
601–109	5,441,042
600–109	5,441,043
600–234	5,441,044
600–236	5,441,045
181–292	5,441,127
221–002	5,441,165
248–154	5,441,220
407–113	5,441,370
434–085	5,441,418
451–072	5,441,449
451–357	5,441,450
600–009	5,441,495
427–002	5,441,536
419–002	5,441,537
216–027	5,441,593
216–002	5,441,597
216–051	5,441,600
326–038	5,442,246
347–182	5,442,381
364–152	5,442,510
369–013	5,442,596
369–013	5,442,597
369–032	5,442,598
395–182	5,442,638
395–184	5,442,644
359–629	5,442,787

VOL 1177 ISS 3 AUG 15 1995 UMI

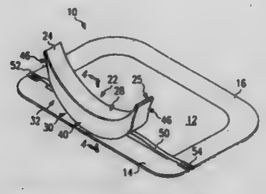
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PATENTS

GRANTED AUGUST 15, 1995

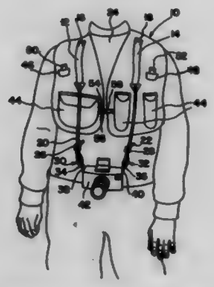
GENERAL AND MECHANICAL

5,440,760
DISPOSABLE FACE SHIELD
Monte Highsmith, North Richland Hills, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.
Filed Feb. 4, 1994, Ser. No. 191,942
Int. Cl.[6] A61F *9/04*; A42B *1/06*
U.S. Cl. 2—9 **20 Claims**



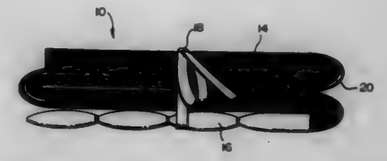
12. A disposable face shield comprising:
a generally flat and flexible transparent plastic shield having a non-reflective surface along its upper edge;
a headband bonded to said transparent plastic shield near said upper edge thereof for securing around a wearer's head;
a foam member having a forehead-engaging surface for substantially and resiliently forming to the wearer's forehead, said foam member being coupled to said transparent plastic shield solely at a central spot near said transparent plastic shield upper edge thereby enabling said transparent plastic shield to lie flat when not worn, said foam member having a thickness creating a predetermined spacing between said transparent plastic shield and the wearer's face, said foam member further having two outer ends each having a contour defining a ventilation gap between said foam member and said transparent plastic shield; and
a liquid-impermeable skin formed on an upper surface of said foam member.

5,440,761
MULTI-FACETED PHOTOGRAPHER'S VEST
Jack Abrams, Commack, and William Giordano, Huntington Bay, both of N.Y., assignors to Nikon Inc., Melville, N.Y.
Filed Jan. 29, 1993, Ser. No. 11,213
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **24 Claims**



1. A multi-faceted photographer's vest comprising, in combination:
a sleeveless vest garment having a half upper body length for providing a wearer thereof with essentially unrestricted mobility, said vest garment comprising a right front section, a left front section, and a rear section, said right front section being attached to said rear section along a right shoulder seam and a right side seam, said left front section being attached to said rear section along a left shoulder seam and a left side seam, said right front section and said left front section being fastenable to each other by first fastening means; and
a pair of camera strap halves, said pair of camera strap halves comprising a camera strap half corresponding to said right front section of said vest garment and a camera strap half corresponding to said left front section of said vest garment, wherein each said camera strap half in said pair is provided with a material end and a free end, wherein the material end of said right front section camera strap half is securely attached to said vest garment in the area of said right shoulder seam, wherein the material end of said left front section camera strap half is securely attached to said vest garment in the area of said left shoulder seam, and wherein the free end of each said camera strap half in said pair is provided with attachment means for removably attaching a carrying loop of a camera thereto, such that a camera may be removably attached to and suspended from and below said vest garment and said vest garment spreads the weight of such a camera across the shoulders and back of a wearer thereof, thereby relieving neck strain.

5,440,762
NURSING COVER AND METHOD OF MAKING SAME
Lynley Schill, P.O. Box 3240, Silverdale, Wash. 98383
Filed Oct. 28, 1993, Ser. No. 144,282
Int. Cl.[6] A41D *1/20*
U.S. Cl. 2—104 **1 Claim**



1. A method of constructing an accessory for discretely nursing a baby comprising the steps of:
forming a rectangular sheet of fabric; pleating said sheet of fabric such that a compact stack is formed; stitching a first side edge, a second side edge and a bottom edge of said sheet; forming a smaller rectangular piece of fabric from a larger sheet of fabric; wrapping said smaller piece of fabric around a top edge of the pleated fabric, with the pleated fabric in a stacked condition, with the finished side of smaller piece of fabric toward said pleated fabric; sewing said top edge of pleated fabric to a edge of said smaller piece of fabric; sewing a long edge of said smaller piece of fabric; turning said smaller piece of fabric inside out forming a tube having an open end, and a corresponding end; and
inserting solid weights into said tube, sewing across said tube thereby forming pockets containing said weights.

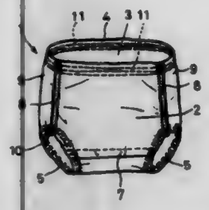
5,440,763
MULTI-PURPOSE GOWN
Ramesh M. Shah, Indianpolis, and Robert J. Demeter, Mooresville, both of Ind., assignors to DataChem, Inc. and Methodist Hospital of Indiana, Inc., both of Indianapolis, Ind.
Filed Nov. 14, 1994, Ser. No. 339,001
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—114 7 Claims



1. A gown comprising:
a front portion having upper and side edges, said front portion being subdivided by a vertically disposed opening such that a left panel and a right panel are defined thereby, each of said left and right panels being subdivided by a horizontally disposed cross slit into an upper portion and a lower portion;
a back portion having upper and side edges, said back portion upper and side edges joined to respective front portion upper and side edges such that a body portion having left and right arm openings and a neck opening is defined thereby; and
a strap extending downwardly along the vertically disposed opening of the front portion, said strap being affixed at its uppermost portion to one of said panels generally adjacent said neck opening, said strap including vertically aligned releasable fasteners;
each of said left and right panels including releasable fasteners arranged adjacent the vertically disposed opening, each of said fasteners positioned in mating relationship with a fastener on said strap and releasably fastenable therewith;
said left upper and lower portions each including releasable fasteners arranged adjacent said cross slit, each of the fasteners on said left upper portion being positioned in mating relationship with a fastener on the left lower portion and releasably fastenable therewith; said right upper and lower portions each including releasable fasteners arranged adjacent said cross slit, each of the fasteners on said right upper portion being positioned in mating relationship with a fastener on the right lower portion and releasably fastenable therewith.

5,440,764
DISPOSABLE PANTS AND METHOD FOR MAKING THEM
Michiko Matsushita, Iyomishima, Japan, assignor to Uni-Charm Co., Ltd., Ehime, Japan
Filed Jun. 24, 1992, Ser. No. 903,163
Claims priority, application Japan, Jul. 10, 1991, 3-195702
Int. Cl.[6] A41B *9/12*
U.S. Cl. 2—401 2 Claims

2. Disposable pants having a waist-opening (4) and a pair of leg openings (5), and which includes:
(a) an outer front body (2) comprising a liquid-impermeable sheet having elastic stretchability at least in the transverse direction, an outer rear body (3) comprising a liquid-impermeable sheet having substantially no elastic stretchability, the transverse and longitudinal dimensions of said front body (2) being smaller than those of said rear body (3), the longitudinal dimensions of said front and rear bodies (2,3) being bonded to each other along a seal line (7) in the crotch area,
(b) an inner front body and a inner rear body constituting a single continuous liquid-permeable sheet (31) having substantially no elastic stretchability and positioned on the inner side of said outer sheets (2, 3), said sheet being substantially coextensive in area with the area of said outer front and rear bodies (2,3),
(c) a liquid-absorbent core (34) sandwiched between
(i) said outer front and rear bodies (2,3) and

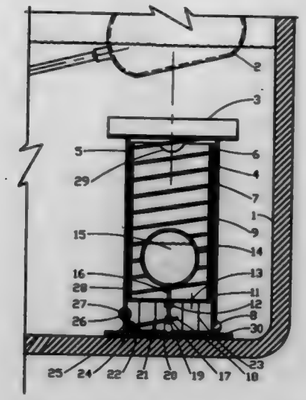


(ii) the sheet (31) constituting said inner front and rear bodies,
(d) said sheets of said outer front and rear bodies (2,3) and said sheet (31) of said inner front and rear bodies being positioned face-to-face and bonded to each other,
(1) where they meet to define the waist opening (4), and
(2) where they meet to form the pair of leg openings (5), and
(3) along two spaced apart seal lines (8), each seal line (8) extending between a leg opening (5) and the waist opening (4), said seal line (8) and said seal line (7) being located on the belly side of said pants, wherein said outer front body (2) is made of plastic film and said outer rear body (3) is comprised of said liquid impermeable sheet made of a liquid-impermeable material which is also moisture permeable.

5,440,765
REVISED AUTOMATIC WATER SHUT OFF FOR STUCK OPEN FLUSH VALVES IN TOILET WATER TANKS
Richard L. Weir, 2217 Grant Ave., Dayton, Ohio 45406
Filed Feb. 14, 1994, Ser. No. 195,210
Int. Cl.[6] E03D *1/00, 1/22*
U.S. Cl. 4—415 1 Claim

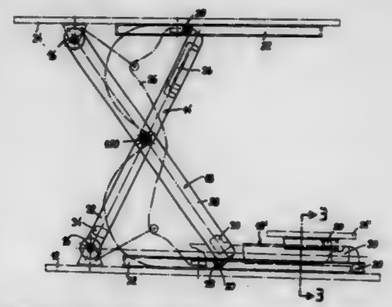
1. A time delay device for use in a water flush toilet tank of a conventional toilet to automatically cut off water flow into said tank thru a float lever arm controlled inlet valve when a flush valve mal-functions allowing water in the tank to continuously drain from the tank for an extended period of time, said device comprising a base plate for being positioned on a bottom wall of the toilet tank, an inner cylinder having an open top and a closed bottom, said inner cylinder having an end opposite said open top mounted on said base plate, an outer cylinder having an open bottom and closed top, said outer cylinder being telescopically received over said inner cylinder, a coil spring in compression between said closed bottom and said closed top, a ball float located within said spring coils and having a rod extending through the inner cylinder closed bottom, said rod being attached to one end of a generally L-shaped actuator arm, said actuator arm having a roller wheel mounted on one end of another leg of said arm, said actuator arm being rotatably mounted about a horizontal axis on said base plate such that said roller wheel, with said ball float in an upwardmost position, will protrude through a slot in said outer cylinder, a small hole in the bottom of the inner cylinder to allow drain down of water there within when the toilet water tank is essentially empty whereby the weight of the ball float

will cause said actuator arm to rotate in a clock-wise manner about said axis thus moving said roller wheel from said slot so



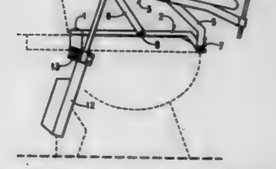
as to release said outer cylinder for movement via force applied by said coil spring, said movement will cause said float lever arm to be moved to a closed position of said inlet valve.

5,440,766
BATHTUB LIFTING APPARATUS
Peter Schmidt, Argenbühl/Eisenharz, Germany, assignor to Schmidt & Lenhardt GmbH & Co. oHG, Germany
Filed Feb. 25, 1994, Ser. No. 201,660
Claims priority, application European Pat. Off., May 11, 1993, 93103902
Int. Cl.[6] A47K *3/12*
U.S. Cl. 4—565.1 10 Claims



1. Lifting apparatus for handicapped persons, for insertion in a bathtub, comprising a bottom plate (12), a guide device consisting of two frames (14, 18) joined together in a scissors-like, articulated manner, a lift platform (24) guided by said guide device, and a lifting device (26) for raising and lowering the lift platform (24), the two frames (14, 18) each having two parallel longitudinal shanks (28, 32) and at least one transverse shank (30, 34, 36), each longitudinal shank (28, 32) lying in a separate vertical plane, and each frame (14, 18) having two coaxial non-sliding articulations (16) on one of the plate and platform (12, 24), and two runner-guided sliding articulations (20), coaxial in each case, on the other of the plate and platform (12, 24), the two frames (14, 18), when the lift platform (24) is in its lowest position, being engaged in such a way that one of the two frames (14) forms an inner frame which occupies part of an internal space between the vertical planes of the shanks of the other of the two frames (18), the other of the two frames constituting an outer frame (18), the two runner-guided sliding articulations each comprising a runner (22) for each of the longitudinal shanks, each runner connected to one of the plate and platform (12, 24) and extending in the vertical plane of its respective longitudinal shank, each runner having an open side facing away from the one of the plate and platform (12, 24) to which the runner is connected, each sliding articulation (20) having an articulated axis about which the frame of that sliding articulation slides and rotates, each longitudinal shank having a central longitudinal axis, the articulated axis of each sliding articulation being spaced apart from the central longitudinal axis of each longitudinal shank in a direction toward a respective runner to which the sliding articulation is engaged, each sliding articulation having two pegs (40) protruding in each case on opposite lateral surfaces of each longitudinal shank (28, 32), the pegs (40) being disposed immovably on the respective longitudinal shank (28, 32) and sliding and rotating in one of the runners.

5,440,767
DEVICE IN TOILET SEATS
Henning Bergenwall, Sollentuna, Sweden, assignor to Semhall Rehab AB, Sweden
PCT No. PCT/SE92/00660, § 371 Date Jul. 5, 1994, § 102(e) Date Jul. 5, 1994, PCT Pub. No. WO93/06766, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 24, 1992, Ser. No. 211,371
Claims priority, application Sweden, Sep. 30, 1991, 9102829
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—667 7 Claims



1. A device mounted on a horizontal upper surface of a toilet bowl, said device being intended to make it easier for a person, in particular a person whose movements are hampered, to rise from and/or sit down on the toilet bowl and comprising a first member being attached to the upper horizontal surface of the toilet bowl, a second member carrying a sitting surface-forming arrangement having a front and rear portion and being vertically movable with respect to the first member, and means defining the movability of the second member with respect to the first member so that said members are located close to each other in a first relative position and spaced apart in a second relative position, the means defining the movability being adapted to locate, in said second relative position, the second member so that the sitting surface-forming arrangement assumes a position above said first member with said front portion extending forwardly of said toilet bowl and said rear portion inclined with respect to said front portion, the means defining the movability being in the form of foremost and hindmost links pivotably connected between the first and second members through first and second pivot axes, said links being arranged to pivot upwardly and forwardly upon raising the second member, characterized in that said first pivot axes between foremost of the links and the first member are located on a level below a horizontal plane through said second pivot

axes between hindmost of the links and the first member wherein the first member at a front region thereof has portions extending downwardly below the horizontal surface of the bowl, said first pivot axes are attached near a lowermost end of said portions extending downwardly such that the first pivot axes at all times are located below the horizontal surface of the toilet bowl.

5,440,768

COMBINATION BED AND TABLE

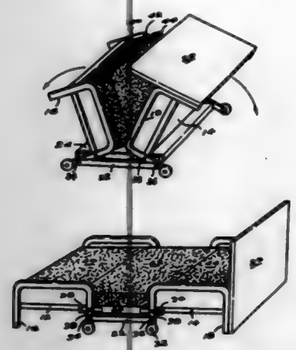
Colin Danin, 14 Homestead Road, Bedfordview, Johannesburg, Transvaal, South Africa

Filed Jan. 24, 1994, Ser. No. 185,042

Claims priority, application South Africa, Feb. 4, 1993, 93/0747

Int. Cl.[6] A47C *17/60, 17/62*

U.S. Cl. 5—4 **4 Claims**



1. A combination bed and table which includes first and second frame means, said first and second frame means comprising first and second support members respectively, at least one link which is pivotally connected to the frame means, a bridging member between the frame means, connection means which connects the bridging member to the frame means, the connection means providing a connection between each frame means and the bridging member which permits pivotal and sliding movement of the bridging member relatively to the respective frame means, and a planar member attached to one of the frame means, the frame means and the support members being movable between a table mode at which the support members are substantially vertical, the planar member is substantially horizontal thereby forming a working top, and the bridging member is at a first position, and a bed mode at which the planar member is substantially vertical, the support members are substantially horizontal and co-planar, and the bridging member is elevated from the first position by the connection means, to be co-planar with the support members.

5,440,769

SPECIALTY ITEM FOR USE WHEN HOLDING A BABY

Kassandra Thomas, 4045 Sheridan Ave., Miami Beach, Fla. 33140

Filed Aug. 26, 1994, Ser. No. 296,442

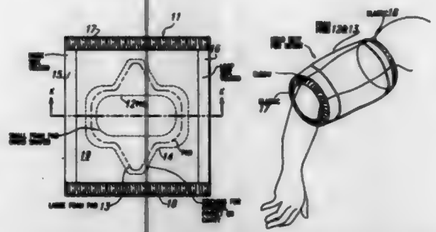
Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—655 **4 Claims**

1. A specialty item adapted to be removably positioned to surround a substantial portion of a person's arm, for supporting a baby's head, comprising:

a soft pad shaped to support a baby's head without surrounding a person's arm, said pad being comprised of at least tow layers, one of which extends substantially beyond the edges of the other along the length of the wearer's arm;

a fabric enclosure comprising first and second layers stitched to and covering said pad, said enclosure having fabric dimensions that extend well beyond said pad, shaped to surround a person's arm; and



means to hold said extended fabric portions in place, around a person's arm, so that the pad remains fixed in a position to support the baby's head.

5,440,770

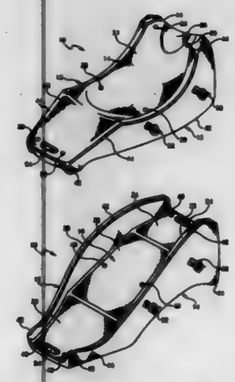
INFANT SEAT WITH OPPOSITE SUPPORTING SURFACES

Khipra Nichols, Rumford, R.I., assignor to Better Baby Products, Inc., Mountain Lakes, N.J.

Continuation of Ser. No. 52,000, Apr. 26, 1993, abandoned. This application Nov. 3, 1994, Ser. No. 333,867

Int. Cl.[6] A47D *11/00*

U.S. Cl. 5—655 **10 Claims**



1. An invertible device for supporting an individual, comprising a body integrally formed as a single piece for selectively supporting the individual in a plurality of predetermined positions, said body being invertible between a first orientation and a second orientation and having a first supporting surface with a first contour which is fixed and which is sized and shaped so as to support the individual in a first position, in which the individual is supported in an upwardly facing position with its head at a higher elevation than its legs and torso, when said body is in its said first orientation, and a second supporting surface with a second contour which is fixed and which is sized and shaped so as to support the individual in a second position, in which the individual is supported in a downwardly facing position with its head at a higher elevation than its legs and torso, when said body is in its said second orientation, said first supporting surface having a first footrest portion which is substantially planar and which is located adjacent a lower end of said body, a first headrest portion which has a recess sized and shaped so as to receive the individual's head and which is located adjacent an upper end of said body, and a first seat portion which is generally concave and which is located between said first footrest portion and said first headrest portion, said first seat portion being arranged at a first inclined angle and having an upper edge and a lower edge, said first footrest portion extending downwardly from said lower edge of said first seat portion at a second inclined angle which is different from said first inclined angle, and said first headrest portion extending upwardly from said upper edge of said first seat portion at a third inclined angle which is different from said first inclined angle, and said second supporting surface having a second footrest portion which is substantially planar and which is located adjacent said lower end of said body, a second headrest portion which is substantially planar and which is located adjacent said upper end of said body, and a second seat portion which is substantially planar and which is located between said second footrest portion and said second headrest portion, said second seat portion being arranged at a fourth inclined angle and having an upper edge and a lower edge, said second footrest portion extending downwardly from said lower edge of said second seat portion at a fifth inclined angle which is different from said fourth inclined angle, and said second headrest portion extending upwardly from said upper edge of said second seat portion at a sixth inclined angle which is different from said fourth inclined angle; first engaging means for engaging an underlying support surface to immovably position said body in its said first orientation, in which said first supporting surface faces generally upwardly while said second supporting surface faces generally downwardly, whereby said first supporting surface maintains the individual in its upwardly facing position above the underlying support surface; and second engaging means for engaging the underlying support surface to immovably position said body in its said second orientation, in which said second supporting surface faces generally upwardly while said first supporting surface faces generally downwardly, whereby said second supporting surface maintains the individual in its downwardly facing position above the underlying support surface.

5,440,771

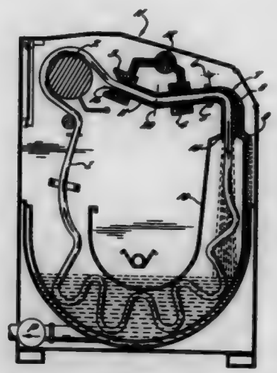
JET DYEING APPARATUS AND METHOD

Aristides Georgantas, Athens, Greece, assignor to S. Sclavos S.A., Athens, Greece

Continuation-in-part of Ser. No. 793,403, Feb. 13, 1992, Pat. No. 5,299,339. This application Apr. 4, 1994, Ser. No. 222,090

Int. Cl.[6] D06B *3/24*

U.S. Cl. 8—149.3 **9 Claims**



6. A method of rinsing a fabric article in continuous rope form within a jet dyeing apparatus of the type which includes a liquid treatment chamber positioned within a housing, a fabric transport tube positioned in the housing above the liquid treatment chamber, and a liquid application jet positioned along the length of the fabric transport tube for applying pressurized liquid dye to the fabric as it is conveyed through the transport tube, said method comprising the steps of treating the fabric in said housing with dye liquor, introducing fresh water to said liquid application jet in order to rinse the treated fabric within the fabric transport tube as it is conveyed therethrough, and removing a portion of the rinse liquid from the fabric as the fabric is discharged from the fabric transport tube so that a portion of the rinse liquid may be removed from the interior of the housing.

5,440,772

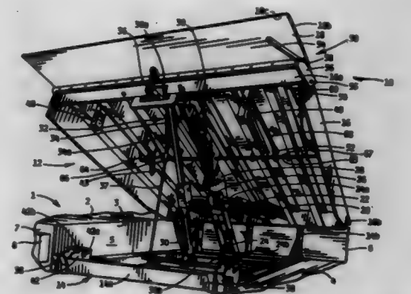
VEHICLE-ACTIVATED SAFETY LEG CONTROL SYSTEM FOR A DOCK LEVELER ASSEMBLY

Scott L. Springer, Milwaukee; Norbert Hahn, Franklin, and Michael A. Swessel, Cudahy, all of Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Jul. 23, 1993, Ser. No. 96,775

Int. Cl.[6] E01D *15/127*

U.S. Cl. 14—69.5 **47 Claims**



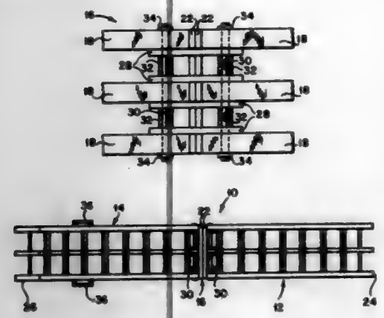
1. A dock leveler assembly for loading and unloading vehicles comprising

a frame mounted relative to a loading dock, a ramp having a front portion and a rear portion pivotally attached to the frame, and lifting means for pivoting the ramp relative to a stored position, a preparatory position, and an operative position for loading and unloading a vehicle, a lip pivotally connected to the front portion of the ramp for pivoting between a downward stored position and extended position wherein the lip may engage a vehicle, and at least one leg adapted to selectively support said ramp,

a safety leg control assembly comprising a sensor assembly adapted for engaging the vehicle so that the sensor assembly disengages from the vehicle before the lip loses contact with the vehicle as the vehicle moves away from the dock leveler, and

an actuation assembly operatively connecting the sensor assembly and the leg and adapted for moving the leg from a supporting position to a non-supporting position in response to the engagement of the sensor assembly and the vehicle and from the non-supporting position to the supporting position in response to the effective disengagement of the sensor assembly and the vehicle wherein the legs are positioned such that they will not interfere with the downward movement of the deck in the non-supporting position and wherein the legs are positioned so that they will restrain downward movement of the deck in the supporting position.

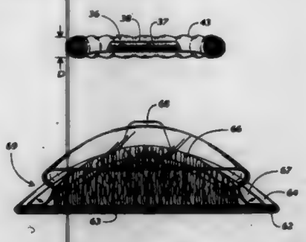
5,440,773
FOLDABLE RAMP
Robert A. Lentini, Pensacola, Fla., assignor to Daws Manufacturing Co., Inc., Pensacola, Fla.
Filed Sep. 9, 1993, Ser. No. 118,230
Int. Cl.[6] E01D *15/22*
U.S. Cl. 14—69.5 20 Claims



1. A foldable ramp comprising:
first and second elongated ramp sections longitudinally aligned with each other and joined proximate the adjoining ends by a hinge assembly permitting said sections to be pivoted to a working position in which said sections form a continuous, substantially straight ramp and a storage position in which one of the first and second ramp sections is folded against the other;
each of said ramp sections having at its respective adjoining end a traverse end member that forms an elongated, planar abutment surface substantially perpendicular to the longitudinal axis of the ramp section;
said end members being formed such that said abutment surfaces of said first and second ramp sections abut against each other when the ramp is pivoted to its working position;
said hinge assembly including,
at least two links extending along said first and second ramp sections and positioned proximate the adjoining ends, each of said links having first and second ends located adjacent said first and second ramp sections, respectively;
a first pin transversely and rotatably extending through said first ramp section and through each of said first ends of said at least two links; and
a second pin transversely and rotatably extending through said second ramp section and through each of said second ends of said at least two links;
said first and second pins being located so that when said first and second ramp sections are rotated in a first rotational direction to the working position, the abutment surfaces of the ramp sections abut against each other and prevent the further rotation of the ramp sections in the first rotational direction.

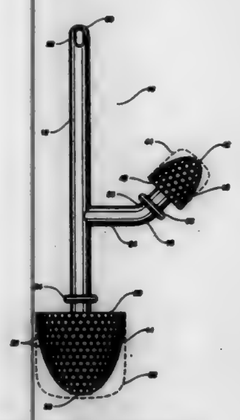
5,440,774
DISPOSABLE INDIVIDUAL GELLED INSTANT TOOTHBRUSH AND SEALED BRUSH POD THEREFOR
William L. Cole, 1015 Canter Rd., Atlanta, Ga. 30324
Continuation-in-part of Ser. No. 130,890, Oct. 4, 1993, Pat. No. 5,348,153, which is a continuation-in-part of Ser. No. 936,941, Aug. 28, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,055
Int. Cl.[6] A47K *7/02*
U.S. Cl. 15—105 12 Claims

1. A sealed pod for application to a furlable sheath to create a disposable toothbrush, said pod comprising:
a flexible base pad having a periphery, a top surface, and a bottom surface;
a bed of brush material on said top surface of said base pad with said bed of brush material having a perimeter that is spaced inwardly from the periphery of said flexible base pad to define a lip portion of said top surface of said pad surrounding said brush bed;
said bottom surface of said base pad being exposed for adhesive attachment to a furlable sheath;



a protective cover having a top and depending sides, said protective cover being positioned on said top surface of said flexible base pad to cover said bed of brush material and being releasably sealed to said base pad top surface about the lip portion thereof;
said depending sides of said protective cover being contoured for receiving and holding a coiled length of dental floss;
and a coiled length of dental floss disposed about said depending sides of said protective cover.

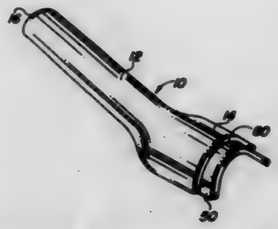
5,440,775
TOILET BOWL SCRUBBER
Katherine L. Banks, Vitemb Rd., P.O. Box 50, Wallisville, Tex. 77597-0050
Filed Mar. 16, 1994, Ser. No. 213,734
Int. Cl.[6] A47L *13/12*
U.S. Cl. 15—106 19 Claims



1. A toilet bowl scrubber comprising:
a handle having a linear configuration;
a first brush connected to one end of said handle;
an arm extending outwardly of said handle between said first brush and an opposite end of said handle;
an arm extending outwardly of said handle between said first brush and an opposite end of said handle; and

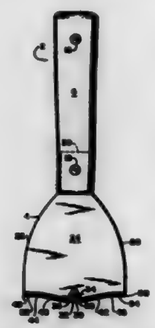
a second brush affixed to an end of said arm opposite said handle, said arm comprising:
a first arm portion extending outwardly perpendicular to said handle; and
a second arm portion extending in a direction from said first arm portion away from said first brush, said second brush affixed to an end of said second arm portion opposite said first arm portion.

5,440,776
CORNER FINISHING SYSTEM
Michael J. Kartler, 2850 E. Sierra, Phoenix, Ariz. 85028
Filed Feb. 22, 1994, Ser. No. 199,520
Int. Cl.[6] B05C *17/10*
U.S. Cl. 15—235.7 4 Claims



1. An applicator for applying cementitious compound from an elongate narrow trough to corners and edges and for smoothing same, said applicator comprising:
(a) a longitudinal body having a handle with a rear end and a forward end and having an integrally formed head secured at the forward end of said handle, said head having a forward edge, said handle and head being transversely curved, each having opposite concave and convex surfaces, said head having a transverse dimension greater than the transverse dimension of the said handle;
(b) an elastomeric blade affixed to said concave surface of said head and having a working edge extending forwardly of the forward edge of said head; and the convex surfaces of said handle and head being disposed at an obtuse angle relative to one another whereby said applicator is reversible to apply compound scooped longitudinally from said trough to both interior and exterior corner surfaces.

5,440,777
PAINTER'S HAND TOOL
Steven M. Olivieri, 171 E. 89th St., Apt. 2C, New York, N.Y. 10128
Filed Jul. 5, 1994, Ser. No. 270,757
Int. Cl.[6] A47L *13/02*
U.S. Cl. 15—236.01 4 Claims



1. A tool for scraping paint from surfaces comprising an elongated handle having a proximal end and a distal end, a flat blade having symmetrical edges, a longitudinal axis, a proximal end and a distal end, and a tang at said proximal end of said blade said distal end of said handle fastened to said tang at said proximal end of said blade, said symmetrical side edges of said blade extending forwardly from said proximal end of said blade and outwardly from said longitudinal axis of said blade to angular outer corners at the distal end of said blade, a V-shaped recess having central edges forming an apex at a center of said distal end of said blade, said central edges at said distal end of said blade forming an angle of from 30 to 60 degrees where joined at said apex of said recess and extending forwardly from said apex of said v-shaped recess to inner corners, said distal end of said blade being further defined by middle edges extending slightly rearwardly and outwardly from said inner corners to said outer corners approximately perpendicularly to said longitudinal axis of said blade.

5,440,778
MULTIPLE PURPOSE WRINGER
Jocelito De Guzman, Redondo Beach, Calif., assignor to Microcnova Manufacturing, Inc., Torrance, Calif.
Filed Sep. 30, 1994, Ser. No. 316,179
Int. Cl.[6] A47L *13/58*
U.S. Cl. 15—260 28 Claims



1. An adjustable wringer for use in cleaning clean rooms which can wring a variety of different types and sizes of mops, wipes, sponges and other wringable items, the wringer comprising:
first and second side plates, said first and second side plates being situated in a spaced relationship relative to one another, said first and second side plates each having a transverse slot;
a lever comprising:
a) a handle having first and second handle side posts, each side post having an upper end and a lower end, said first post being rotatably mounted at its lower end to said first side plate and said second post being rotatably mounted at its lower end to said second side plate, said handle further comprising a handle bar which is interposed in between and connected to said upper ends of said first and second side posts; and
b) a rod attached at one end to said first side post and attached at its other end to said second side post, with one end of said rod passing through said slot of said first side plate and the other end of said rod passing through said slot of said second side plate;
a crank having a crank handle and a rotatable crank shaft,

said crank shaft extending from said first plate to said second plate; and

a substantially lint-free, flexible web which is attached at one end to said rod and which is attached at its other end to said crank shaft;

wherein said wringer has an open position in which said rod is spaced a distance from said crank shaft and in which a user may place a wringable item of a variety of different dimensions onto said web from above, and a closed position in which said rod is substantially adjacent to said crankshaft and in which the flexible web substantially envelopes the wringable item, said lever being movable from said open to said closed position;

whereby the user may rotate the crank handle in said closed position to tighten the flexible web about the wringable item, thereby wringing the item.

5,440,779

MOISTURE REMOVAL FROM METAL STRIP

Christopher D. Collinson, Poole, England, assignor to Davy McKee (Poole) Limited, Dorset, England

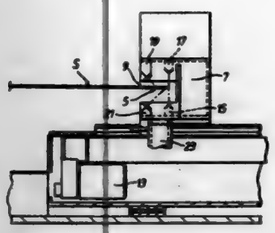
PCT No. PCT/GB92/01973, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/08939, PCT Pub. Date May 13, 1993

PCT Filed Oct. 28, 1992, Ser. No. 182,133

Claims priority, application United Kingdom, Nov. 1, 1991, 9123244; Nov. 4, 1991, 9123398

Int. Cl.[6] B21B *45/02*

U.S. Cl. 15—309.1 **5 Claims**



1. Apparatus for removing moisture from an edge region of metal strip moving in the direction of its length, characterised in that it comprises a hollow housing having a slot in an outer wall thereof; means for supporting the housing relative to the path taken by the strip so as to permit the edge region of the moving strip to project into the slot and be in communication with the interior of the housing; nozzle assemblies in the housing by which air under pressure is directed on to the upper and lower surfaces of the edge region of the strip in the slot, the air being directed towards the edge of the strip so as to remove any moisture present on the strip; and means for extracting air and moisture from the housing.

5,440,780

TIP-RESISTANT CANISTER FOR UPRIGHT VACUUM CLEANERS

William J. Rakocy, Madison, Conn., and Thomas Angelini, Sebring, Ohio, assignors to GMI Holdings, Inc., Alliance, Ohio

Continuation-in-part of Ser. No. 11,448, Aug. 4, 1993. This application Dec. 9, 1993, Ser. No. 164,154

Int. Cl.[6] A47L *5/36*

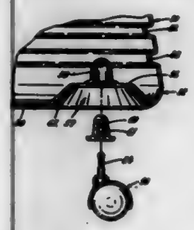
U.S. Cl. 15—327.2 **32 Claims**

1. A tip-resistant canister for use in vacuum cleaners comprising:

a floor having caster supports;

casters disposed in the caster supports; and

a wall connected to the floor and having an upper perimeter and a lower perimeter, the lower perimeter being larger than the upper perimeter and the caster supports being



spaced inwardly from the lower perimeter such that the wall forms a skirt for resisting tipping.

5,440,781

HAND-HELD CLEANER

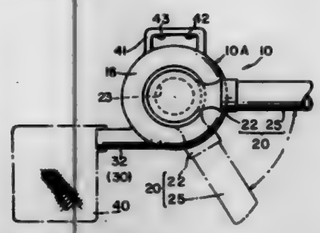
Motoshige Kitazawa, Kodaira, and Takanobu Tasaki, Ohme, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,109

Claims priority, application Japan, Feb. 5, 1993, 5-003036 U

Int. Cl.[6] A47L *5/24*

U.S. Cl. 15—344 **2 Claims**



1. A hand-held cleaner comprising:

a blower body including a prime mover and a blower fan having a horizontal rotation axis, and

an L-shaped blower suction joint pipe and a blower blow-off outlet which are located on said blower body in such a manner that the axis of the former and the axis of the latter are substantially parallel with each other, and each are orthogonal with respect to said horizontal rotation axis, said blower suction joint pipe being constructed and arranged to be freely rotatable about said horizontal rotation axis in a vertical plane.

5,440,782

SUCTION NOZZLE ATTACHMENT FOR VACUUM CLEANER

Shusuke Yamashita, Hamamatsu, Japan, assignor to Azuma Industrial Co., Ltd., Hamamatsu, Japan

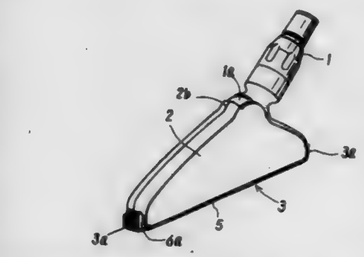
Filed Nov. 29, 1993, Ser. No. 158,273

Claims priority, application Japan, Dec. 28, 1992, 4-093727 U

Int. Cl.[6] A47L *9/06*

U.S. Cl. 15—398 **12 Claims**

1. A suction nozzle attachment for a vacuum cleaner, comprising: a joint pipe and a brush holder box having an intake opening on a bottom side thereof, said joint pipe having one end connectable to a suction pipe of said vacuum cleaner and the other end of said joint pipe connected to an apex portion of said brush holder box at a top of said brush holder box and with said joint pipe extending upwardly therefrom, and said brush holder box having a brush mounted in said intake opening on a bottom side thereof such that a broom-like shape as a whole is provided when said suction nozzle attachment is connected to said suction pipe of said vacuum cleaner, said brush holder box including substantially flat front and rear surfaces with said broom-like shape defined by said brush holder box having said apex portion with said joint pipe and suction pipe extending upwardly both from said apex portion and between said front and rear surfaces.



5,440,783

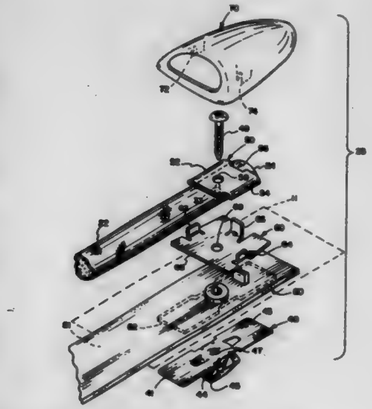
ASSIST STRAP

James D. Allardyce, Grandville; Walter M. Weiland, and Jay M. Frankhouse, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 831,976, Feb. 6, 1992, Pat. No. 5,285,551. This application Dec. 7, 1993, Ser. No. 163,472

Int. Cl.[6] B60N *3/02*

U.S. Cl. 16—110 R **14 Claims**



12. An assist strap for a vehicle comprising:

a strap formed by inserting a tubular polymeric material within a tubular sleeve of woven fabric;

a pair of plates extending on opposite sides of said strap for compressively clamping opposite ends of said strap and for attaching said opposite ends to a vehicle, said plates each including an aperture therethrough which are in alignment with one another; and

a fastener extending through said apertures in said plates and through said strap for attaching said strap to a vehicle.

5,440,784

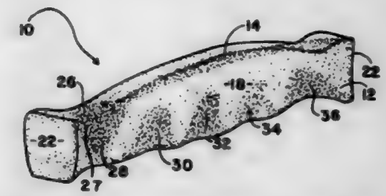
ERGONOMIC HAND GRIP

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Judith Aston, P.O. Box 3568, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 61,684, May 17, 1993. This application Oct. 3, 1994, Ser. No. 316,876

Int. Cl.[6] A45C *13/26*

U.S. Cl. 16—110 R **2 Claims**



1. An ergonomic hand grip comprising; a substantially rigid elongated element forming a handle, said handle having a top, a bottom, a right side, a left side and thumb ends, said element having an ergonomic relationship with a left or right human hand, said human hand having first and second positions, said first position being with a thumb of said left or right human hand being placed on said top of said element at one of said thumb ends and all fingers of said human hand capturing said handle in a hand grip, said second position being with said thumb of said left or right human hand being placed on said left or said right side of said handle element at one of said thumb ends, said fingers capturing said handle in a hand grip, said top having first recessed areas approximately at each of said thumb ends, said recessed areas cooperating with a ball of either thumb of said right or left human hand when said hand is in its said first position, said top being formed substantially in the form of an uprising curve, said uprising curve forming an ergonomic relationship with a palm of said right or said left human hand, second recessed areas formed in said right and said left sides of said handle element approximately at said thumb ends, said second recesses forming an ergonomic relationship with a side of said thumbs of either said left or said right human hand when said human hands are in their said second position, third recessed areas formed in said left side and said bottom of said handle element forming an ergonomic relationship with a first finger of said left or right human hand, forth recessed areas formed in said left and said bottom of said handle element forming an ergonomic relationship with a second finger of said left or right human hand, fifth recessed areas formed in said left, and said bottom of said handle element forming an ergonomic relationship with a third finger of said left or right human hand, sixth recessed areas formed in said left and said bottom of said handle element forming an ergonomic relationship with a little finger of said left or right human hand, said left side being in its length in the form of an inward curve, said right side in its length being in the form of an outward curve and said hand grip having a flowing tracery forming a curvilinear exterior configuration conforming and adapted to take the interior generic shape of said human hands when either hand is in a gripping relationship with said hand grip.

5,440,785

BATTERY HANDLE ASSEMBLY

Kirk A. McDonald, 5153 Emerson Village, Indianapolis, Ind. 46032

Continuation of Ser. No. 429,307, Oct. 31, 1989, abandoned. This application Aug. 26, 1992, Ser. No. 936,072

Int. Cl.[6] A47B *95/02*; A45F *5/00*

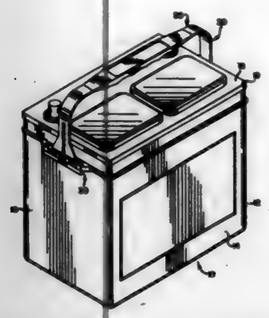
U.S. Cl. 16—114 R **21 Claims**

1. A handle assembly for a storage battery container, said container having opposed vertical end walls, side walls and a

cover forming a top surface thereof, said handle assembly comprising:

a carrying strap adapted to be detachably connected to said container, said strap including an elongate body having a longitudinal axis and a pair of container-attachment portions at opposite ends thereof, each of said container-attachment portions including a terminal bar integrally formed therewith and generally perpendicularly disposed with respect to said longitudinal axis; and,

a pair of integral rigid strap supporting flanges respectively projecting laterally outwardly from and in close confor-



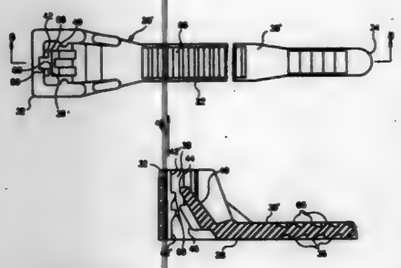
mity to either said end walls or side walls of said container adjacent said top surface, each of said flanges including a pair of end point extensions integrally formed therewith which define a slot for the slidable receipt of one of the container-attachment portions of said strap, end points of said end point extensions of said each of said flanges defining a gap which is sized to permit selective strap insertion into or removal from said slot, and said each of said flanges having a bottom surface, said bottom surface sized and shaped to receive an upper surface of each of the terminal bars of the container-attachment portion of the strap associated therewith when said strap is lifted.

5,440,786

INJECTION MOLDING OF CABLE TIES WITH A MOLD HAVING AN ENHANCED CORE SECTION

Soren C. Sorensen, 412 Marview Dr., Solana Beach, Calif. 92075, and Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

Filed Jun. 4, 1993, Ser. No. 71,474
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB **1 Claim**



1. A tie comprising

an elongated tongue with two ends and two broad sides,

a locking head at one end of the tongue,

a tip at the other end of the tongue,

a first set of ratchet teeth extending along one broad side of the tongue,

wherein the locking head has sides defining an opening for receiving the tip of the tongue, the sides including a movable pawl that is hinged at one side of said opening and an abutment surface that is across the opening from the pawl,

wherein the pawl has at least one pawl tooth disposed for engaging the first set of ratchet teeth when the tip of the tongue has been inserted through said opening with said first set of ratchet teeth facing the pawl, and

wherein the abutment includes a notch,

a second set of ratchet teeth on the other broad side of the tongue and

at least one tooth disposed on the abutment surface for engaging the second set of ratchet teeth when the tip of the tongue has been inserted through the opening with the second set of ratchet teeth facing the abutment wall,

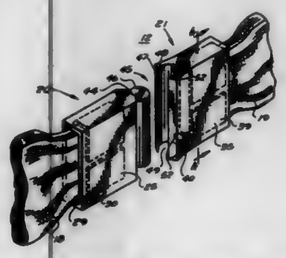
wherein the notch also is included in the at least one tooth disposed on the abutment surface.

5,440,787

CLASP FOR CLOTH NECKWEAR AND THE LIKE

Raul Figueroa, 815 N. 52nd St., 1300, Phoenix, Ariz. 85008, and Guillermo L. Romero, 2929 N. 70th St. #3085, Scottsdale, Ariz. 85251

Filed Nov. 19, 1993, Ser. No. 154,819
Int. Cl.[6] A41D *25/04*
U.S. Cl. 24—50 **6 Claims**



1. A clasp for cloth neckwear and the like comprising:

a first portion designed to substantially encircle a first end of a cloth neckwear and fixedly clamp the first end in a retained positioned;

a second portion designed to substantially encircle a second end of the cloth neckwear and fixedly clamp the second end in a retained position;

the first and second portions include elongated flat pieces of metal formed into a generally U-shape for encircling and clamping an end of the cloth neckwear;

the first portion includes a first housing defining an opening for receiving one of the generally U-shaped elongated flat pieces of metal therein in frictional nesting engagement, the second portion includes a second housing defining an opening for receiving a second one of the generally U-shaped elongated flat pieces of metal therein in frictional nesting engagement; and

clasping means mounted on the first and second housings, the clasping means being manually engageable and disengageable for forming the cloth neckwear into a continuous loop about the neck of a wearer.

5,440,788

CORD LOCK OF ELASTOMERIC MATERIAL

Robert O. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001

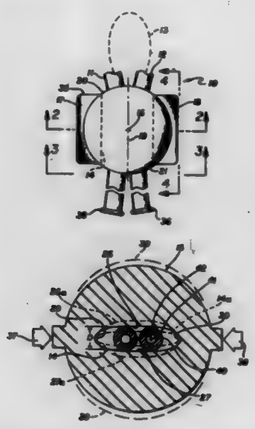
Filed Apr. 4, 1994, Ser. No. 222,387
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—115 H **13 Claims**

1. A cord lock, comprising:

a body of resiliently deformable elastomeric material containing a passage through which at least one cord is to extend;

said passage, as viewed in a predetermined transverse plane, having an oblong cross section in a normal condition to which the resilience of said body tends to return, with said cross section having a minor dimension in a first transverse direction and a major dimension in a second transverse direction generally perpendicular to said first direction;

said minor dimension being defined by opposed first walls of said passage which in said normal condition are spaced apart but in close enough proximity to one another to simultaneously engage opposite sides of a cord or cords in the passage, and be urged against said opposite sides of the cord or cords by the resilience of said elastomeric material, to thereby resist movement of the cord or cords longitudinally relative to the body;



said major dimension being defined by second walls of the passage extending between and joining said spaced first walls at opposite ends of the oblong cross section of the passage as viewed in said plane;

said spaced first walls of the passage, as viewed in said plane and in said normal condition, continuing in said close proximity, near enough to engage and bear against opposite sides of a cord or cords in the passage, through an extended distance in said second transverse direction at least three times as great as the greatest spacing between said first walls in said predetermined transverse plane;

said elastomeric body being manually compressible by a user in said second transverse direction in a manner spreading said first walls of the passage apart in said first transverse direction against the resilience of said elastomeric material, and releasing the cord or cords for movement longitudinally relative to the elastomeric body.

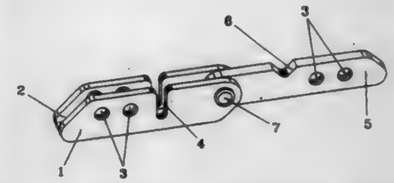
5,440,789

SCISSORS-TYPE CLAMPS AND CLAMPING ASSEMBLIES

James A. Lofland, Milford, Del., assignor to Mohawk Plastic Products, Inc., Milford, Del.

Filed Feb. 28, 1994, Ser. No. 202,379
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—132 R **18 Claims**

1. A scissors-type clamp comprising a first section and a second section which are pivotally attached at a pivotal attachment point wherein said first section has a channel which engages said second section when said clamp is in a closed position, said first section and said second section each having at least one through hole disposed so that said at least one through hole of said first section and said at least one through hole of said second section are in alignment when said clamp is in said closed position, said first section also having at least one through slot located between the pivotal attachment point and said at least one through hole, said through slot forming a



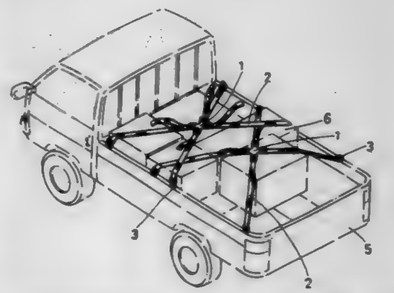
passageway through said channel in said first section and said second section having at least one notch which is disposed so that when said clamp is in said closed position said at least one notch is aligned with said at least one through slot.

5,440,790

STRAP LOCKING DEVICE

An-Chuan Chou, No. 212, Yung An Street, Tainan, Taiwan

Filed Nov. 23, 1993, Ser. No. 155,789
Int. Cl.[6] B65B *11/00*
U.S. Cl. 24—302 **6 Claims**



1. A strap locking device for use in binding freight, comprising:

a plurality of strap members, each of said plurality of strap members having opposing first and second ends;

a plurality of strap hook members, each of said plurality of strap hook members being fixedly coupled to a first end of a respective one of said plurality of strap members; and,

a Y-shaped plate body having three end portions extending in different directions, at least two of said three end portions each having (1) integrally formed side wall members formed on two opposing sides thereof, and (2) means for adjustably securing a section of a respective one of said plurality of strap members disposed between a respective pair of said side wall members, said section of said strap member being displaced from said first end thereof.

5,440,791

SOCK CLIP

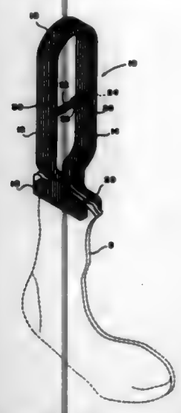
Robert R. Guio, 146 Highland Hills Dr., Follansbee, W. Va. 26037

Filed Oct. 18, 1993, Ser. No. 136,889
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—545 **15 Claims**

1. A clip providing for the securing together of single socks, stockings and hose to form a matched pair thereof, comprising:

a first arm and a second arm, with said first arm and said second arm secured together at their respective proximal

ends by a resilient connecting member and biasing apart thereby;
said first arm and said second arm each respectively having a first jaw and a second jaw extending from the distal end thereof;
said first jaw and said second jaw each being disposed at substantially a right angle respectively to said first arm and said second arm, with said first arm and first jaw, and said second arm and said second jaw, each respectively forming a substantially T shaped configuration;
said clip having a monolithic, unitary construction and being formed as a single piece, and further including means biasing and urging said first jaw and said second jaw together to provide for the gripping therebetween of articles interposed therebetween;
said means biasing and urging said first jaw and said second



jaw together comprise and extension formed upon the inner face of said first arm, with said extension having an elongated, generally ovoid protuberance formed thereon, and a cooperating socket formed on the inner face of said second arm;
said protuberance engaging with and securable within said socket to lock the relative positions of said first arm and said second arm, and thereby the relative positions of said first jaw and said second jaw, whereby;
two single articles comprising a matched pair are inserted between said first jaw and said second jaw, said first jaw and said second jaw are urged together and secured to grip the matched pair of articles therebetween, and said clip and the articles gripped therein are passed through a laundry cycle with said clip precluding the separation of the single articles and facilitating the sorting and proper storing thereof.

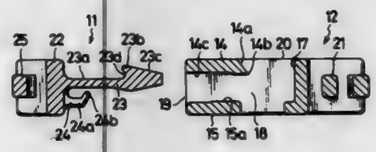
5,440,792

BUCKLE HAVING RESILIENT LOCKING ARM WITH COACTING RETAINING LUG

Kazuo Ida, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 4, 1994, Ser. No. 237,833
Claims priority, application Japan, May 7, 1993, 5-029259 U; Jul. 22, 1993, 5-044696 U; Jul. 30, 1993, 5-045944 U
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—615 **8 Claims**

1. A buckle for fastening a strap or the like which comprises a plug member and a socket member releasably engageable therewith, said socket member having an upper shield and a lower shield disposed in spaced parallel relation to define therebetween a guide channel, said upper shield having a bevelled engaging surface, and said plug member having a support base, a locking arm receivable in said guide channel including a relatively thin planar portion and a hook portion releasably engageable with said engaging surface and a retaining lug underlying said locking arm and including a projecting



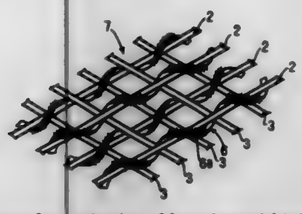
abutment normally spaced apart from but abuttingly engageable with said locking arm when the latter flexes downwardly upon entry into said guide channel.

5,440,793

PROCESS FOR PRODUCTION OF FUR ENHANCED FABRIC

Yukio Yoshioka, 2723-3 Oaza Hukawa, Tone-machi Kitasoma-gun Ibaraki-ken, Japan

Filed Dec. 8, 1993, Ser. No. 162,769
Claims priority, application Japan, Dec. 8, 1992, 4-351701
Int. Cl.[6] C14B *15/00*; D02G *3/02*; D06B *1/00*
U.S. Cl. 28—100 **7 Claims**



1. A process for production of fur enhanced fabric in which a fabric base is combined with fur strips, comprising the steps of:
trimming end portions of warp yarns and weft yarns of a net with an edge member to form a part fabric base, said net woven by interlacing the warp yarns with the weft yarns;
spirally winding each of the fur strips on each of the warp yarns or the weft yarns of said part fabric base to have a hair side of each of the fur strips disposed outside the net so as to form a hairy textile fabric element;
treating the hairy textile fabric element with water by spraying water thereon or by immersing it in water; and
temporarily fixing the part fabric base to a predetermined template to permit the fur strips to be dried and hardened.

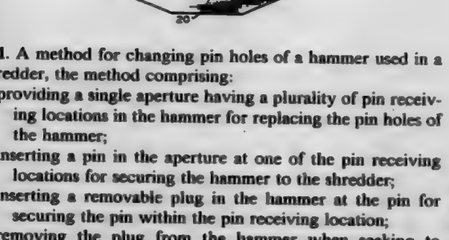
5,440,794

METHOD OF MANUFACTURING LAMINATED CERAMIC CAPACITORS

Michio Kaeriyama, and Masaaki Taniguchi, both of Nagaoka-kyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 24, 1993, Ser. No. 126,486
Claims priority, application Japan, Sep. 25, 1992, 4-256137
Int. Cl.[6] H01G *7/00, 4/12*
U.S. Cl. 29—25.42 **5 Claims**

1. A method of manufacturing laminated ceramic capacitors by cutting chips out of a mother board, said method comprising the steps of:
(a) preparing a mother board having a first and second main surface, interior electrodes in the mother board with respective ends of the interior electrodes exposed on at least one of said main surfaces of the mother board,
wherein said mother board is prepared by the steps of:
(a-1) preparing a plurality of green-sheets, each green-sheet having at least one main surface, a plurality of individual interior electrodes formed on the respective main surfaces of the green-sheets;
(a-2) forming a block by laminating said plurality of green-sheets in a direction orthogonally intersecting the respective main surfaces of the green-sheets; and
(a-3) forming the mother board by slicing said block in a



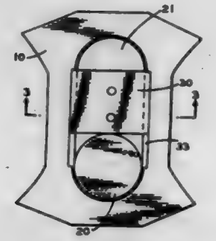
direction orthogonally intersecting the respective main surfaces of said green-sheets;
(b) forming exterior electrodes electrically connected with said respective ends of the interior electrodes, said exterior electrodes being formed on said at least one of said main surfaces of said mother board; and
(c) dicing said mother board to obtain respective chips of said laminated ceramic capacitors.

5,440,795

HAMMER FOR USE IN SHREDDERS HAVING REPLACEABLE PIN HOLES

David N. Chon, Baltimore, Md., and Andrew V. Maynard, West Palm Beach, Fla., assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 74,510, Jun. 11, 1993, Pat. No. 5,381,975. This application Dec. 19, 1994, Ser. No. 359,133
Int. Cl.[6] B02C *13/28*
U.S. Cl. 29—401.1 **6 Claims**



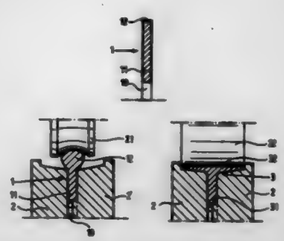
1. A method for changing pin holes of a hammer used in a shredder, the method comprising:
providing a single aperture having a plurality of pin receiving locations in the hammer for replacing the pin holes of the hammer;
inserting a pin in the aperture at one of the pin receiving locations for securing the hammer to the shredder;
inserting a removable plug in the hammer at the pin for securing the pin within the pin receiving location;
removing the plug from the hammer when seeking to change the pin receiving location;
locating the pin at an alternate pin receiving location; and
reinserting the plug in the hammer at the pin for securing the pin to the alternate pin receiving location.

5,440,796

METHOD FOR MANUFACTURING A BRAKE SHOE

Wolf-Dieter Deggau, Ahlen, and Dieter Kirschdorf, Im Paesken 26, D-4270 Dorsten, both of Germany, assignors to Dieter Kirschdorf, Germany

Filed Apr. 9, 1993, Ser. No. 45,655
Claims priority, application Germany, Oct. 30, 1992, 42 36 636.4
Int. Cl.[6] B23P *15/18*
U.S. Cl. 29—412 **17 Claims**



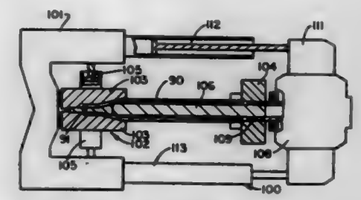
1. A method for manufacturing a brake shoe comprising a carrier of a brake lining whose outside surface has the shape of a circular cylindrical segment, and comprising an arcuate web arranged radially inwardly of the carrier of the brake lining by which the actuation forces of the brake are transmitted onto the carrier of the brake lining, comprising the steps of:
shaping a ring having a cylindrical outside surface and a T-shaped cross section from a flat annular blank by deforming by first buckling a radial outer portion of said blank into a droplet-like cross section shape and subsequent flattening of said radial outer portion of said blank; and
dividing the ring into at least two ring segments, each of which forms a brake shoe.

5,440,797

METHOD FOR MAKING A PNEUMATIC GROUND PIERCING TOOL

Steven W. Wentworth, Brookfield; Robert F. Crane, and Jon A. Haas, both of Oconomowoc, all of Wis., assignors to Earth Tool Corporation, Oconomowoc, Wis.

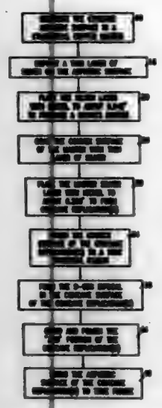
Continuation-in-part of Ser. No. 878,741, May 5, 1992, which is a division of Ser. No. 591,099, Oct. 1, 1990, Pat. No. 5,199,151, which is a continuation-in-part of Ser. No. 435,953, Nov. 13, 1989, Pat. No. 5,025,868. This application Sep. 29, 1994, Ser. No. 315,235
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—437 **8 Claims**



1. A method of making an pneumatic ground piercing tool, which tool comprises a tubular body having a tapered nose at a front end thereof, a striker disposed for reciprocation within said body to impart impacts thereto for driving the body through the ground, an air distributing mechanism for effecting reciprocation of said striker, and a tail assembly mounted in a rear end opening of said body for securing the striker and air distributing mechanism in the body, which method comprises:
forcing a front end portion of a tubular metal body into a

frustoconically tapered shape on both the inner and outer surfaces thereof;
installing an anvil in the front end opening of the swaged tube, the anvil having a frustoconical rear portion which seats against the inner surface of said front end portion and a cylindrical shank which extends out of the front end opening;
inserting the striker into the body through the rear end opening of the body;
installing the air distributing mechanism in the body behind the striker; and
securing the tail assembly in the rear end opening of the body.

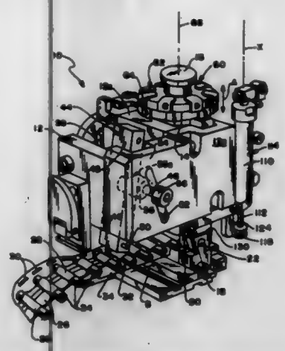
5,440,798
METHOD OF MAKING CONCAVE ASPHERIC BIFOCAL MOLD COMPONENT
Russell F. Weymouth, Jr., Charlton Depot, Mass., assignor to Gentex Optics, Inc., Carbondale, Pa.
Filed Jan. 18, 1994, Ser. No. 182,937
Int. Cl.[6] B21B *1/46*
U.S. Cl. 29—527.6 **17 Claims**



1. A method of making an aspheric bifocal mold insert including the steps of
forming a concave surface in a substrate,
depositing material over said concave surface to form a master having a convex surface in the form of a negative image of said concave surface,
separating said master from said substrate,
depositing material over the convex surface of said master to produce an element having a concave surface which is a replication of the convex surface of said master,
removing said element from said master,
forming a spheric near vision surface portion in the concave surface of said element,
and bringing the concave surface of said element to the desired aspheric configuration.

5,440,799
ELECTRICAL TERMINAL APPLICATOR WITH IMPROVED TERMINAL TAPE FEED MEANS
Robert C. Marshall, and Robert L. Quinn, both of St. Petersburg, Fla., assignors to Molex Incorporated, Lisle, Ill.
Filed Dec. 8, 1993, Ser. No. 164,045
Int. Cl.[6] H01R *43/04*
U.S. Cl. 29—566.2 **31 Claims**

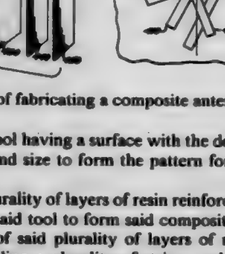
1. In an electrical terminal applicator for crimping terminals onto wires, with the terminals being secured to a tape in a side-by-side relationship,
an applicator housing having a passage therethrough,
an applicator ram positioned in said passage and drivable therein in a first linear vertical path through a working stroke towards, and a return stroke away from, a crimping anvil,
a crimping die mounted on a lower portion of the applicator ram for cooperation with the anvil to crimp a portion of a terminal onto a wire during each working stroke of the ram,
an adaptor head on an upper portion of the applicator ram for engagement with a press ram,
track means for guiding the tape in a second path which intersects the first path of the ram,
tape feeding means for indexing the tape along the second path to sequentially advance a leading uncrimped terminal on the tape in response to reciprocation of the ram,



wherein the improvement in said tape feeding means comprises:
a shuttle member adapted for linear reciprocal movement alongside the second path in an advancing stroke towards, and a return stroke away from, the crimping anvil,
engagement means on the shuttle member for engaging the tape and incrementally advancing the tape in a downstream direction on the advancing stroke of the shuttle member, and
complementary interengaging connecting means between the shuttle member and an oscillating feed link of the tape feeding means for reciprocating the shuttle member in response to oscillation of the oscillating link, said oscillating feed link having opposite ends and being a rigid member pivotable about an axis between said ends.

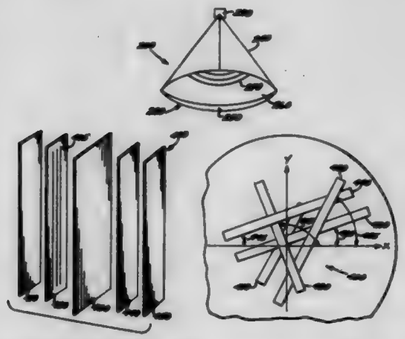
5,440,800
METHOD OF PRE-APPLYING SOLDERING MATERIAL TO A MOTOR COMMUTATOR
Yuichi Terada, Hamamatsu; Satoru Hamano, Kariya, and Kazunobu Kanzo, Toyohashi, all of Japan, assignors to ASMO Co. Ltd., Japan
Continuation of Ser. No. 718,658, Jun. 21, 1991, abandoned.
This application Jan. 27, 1993, Ser. No. 9,418
Claims priority, application Japan, Jun. 26, 1990, 2-168060; Jun. 26, 1990, 2-168061
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—597 **13 Claims**

1. A method of pre-applying soldering material on a motor commutator and thermal welding of connectors thereto, the motor commutator comprising a cylindrical member having one end formed with a plurality of connecting portions, and each of said connecting portions being formed with a concave groove commencing at about a distal end of the connecting portion and extending away from the distal end to at least a predetermined area where a conductive wire is to be electrically connected, said method of pre-applying soldering material comprising the steps of:
heating said commutator;
applying the distal ends of the connecting portions but not the predetermined area to molten soldering material such that said molten soldering material is drawn into the concave grooves of said connecting portions by means of capillary action to the predetermined area;



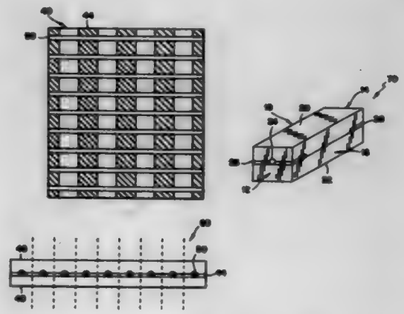
removing the distal ends from the molten soldering material and allowing the molten soldering material which was drawn into the concave grooves to solidify; and
thermally welding at least one connecting wire to the commutator such that the heat produced by the weld melts the soldering material which was drawn into the concave grooves, thus effecting the electrical connection between the commutator and conductive wires.

5,440,801
COMPOSITE ANTENNA
John Marks, Escondido, and George Pynchon, Poway, both of Calif., assignors to Composite Optics, Inc., San Diego, Calif.
Filed Mar. 3, 1994, Ser. No. 205,879
Int. Cl.[6] H01P *11/00*; H01Q *15/16*
U.S. Cl. 29—600 **11 Claims**



1. A method of fabricating a composite antenna, comprising the steps of:
providing a tool having a surface with the desired geometrical shape and size to form the pattern for the composite antenna;
applying a plurality of layers of resin reinforced cloth on the surface of said tool to form said composite antenna;
a first layer of said plurality of layers of resin reinforced cloth including a plurality of strips, each strip having a warp direction, said strips being oriented using precision alignment means for aligning said strips, said precision alignment means being mounted in relation to said tool to scan the surface of said tool as said first layer is applied so that said warp direction of each strip is essentially parallel to said warp direction of each adjacent strip;
a second layer of said plurality of layers of resin reinforced cloth including a plurality of strips, each strip having a warp direction, said second layer further having a plurality of electrical conductors woven parallel to said warp direction of said strips of said second layer of resin reinforced cloth;
a third layer of said plurality of layers of resin reinforced cloth including a reinforcing core;
a fourth layer of said plurality of layers of resin reinforced cloth including a plurality of strips, said fourth layer being substantially identical to said second layer, except that said fourth layer does not include said electrical conductors; and
a fifth layer of said plurality of layers of resin reinforced cloth including a plurality of strips, said fifth layer of resin reinforced cloth being substantially identical to said first layer, but oriented at a predetermined angle in relation to said first layer.

5,440,802
METHOD OF MAKING WIRE ELEMENT CERAMIC CHIP FUSES
Stephen Whitney, Manchester; Vernon Spannhorst, Washington; Joan Winnett, St. Louis, and Varinder Kalra, Chesterfield, all of Mo., assignors to Cooper Industries, Houston, Tex.
Filed Sep. 12, 1994, Ser. No. 302,999
Int. Cl.[6] H01H *69/02*
U.S. Cl. 29—623 **12 Claims**



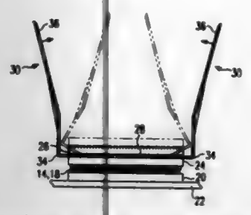
1. A method for making chip fuses, comprising the steps of:
depositing a plurality of spaced, parallel columns of electrically conductive film on an upper surface of a green ceramic plate;
disposing a plurality of electrically conductive wire elements on the upper surface of the plate in mutually parallel spaced relationship and substantially perpendicular to the film columns;
bonding a cover plate of unfired ceramic material to the upper surface of the plate, the cover plate covering the film columns and wire elements to form a laminate structure;
dividing the laminate structure to form a plurality of individual fuses; and
firing the fuses to cure the ceramic and to create an intermetallic bond between the wire elements and the conductive metal film at mutual points of contact.

5,440,803

INTEGRATED CIRCUIT EXTRACTION TOOL

Thomas D. Selgas, Jr., Garland; Sean T. Crowley, Plano, and Paul J. Pascarelli, Southlake, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed May 17, 1993, Ser. No. 63,134
Int. Cl.[6] H05K *13/00*
U.S. Cl. 29—764 7 Claims



1. A tool for extracting an integrated circuit from a socket comprising:

(a) a first and a second member, each member having a proximal end forming a set of teeth, a distal end forming a set of teeth, and a base portion spanning therebetween, the proximal end being disposed at an angle to the base portion;

(b) in an engaged position, the first and second members being disposed adjacent and along opposing first and second sides of the integrated circuit respectively, the proximal end of each member being interposed between a bottom surface of the integrated circuit and an upper surface of the socket, each set of teeth engaging a plurality of pins on the integrated circuit: and

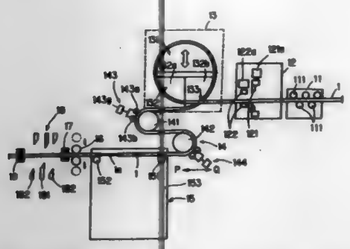
(c) in an applied position, first and second inwardly normal forces applied to the respective base portions of the first and second members are translated to a first and a second lifting force substantially normal to the bottom surface of the integrated circuit.

5,440,804

APPARATUS AND METHOD FOR FABRICATING HARNESS

Toshikazu Tamura, Kanazawa, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 7, 1994, Ser. No. 302,116
Claims priority, application Japan, Oct. 1, 1993, 5-269934
Int. Cl.[6] H01R *43/00*; H02G *1/12*
U.S. Cl. 29—825 15 Claims



1. An apparatus for fabricating a harness by processing a wire, comprising:

wire feed means for intermittently feeding said wire 1n a predetermined amount in a longitudinal direction of said wire,

first processing means located upstream of said wire feed means in a feeding direction of said wire,

second processing means located downstream of said wire feed means in the feeding direction of said wire, and

wire path length adjusting means located between said first and second processing means for adjusting a wire path length of said wire between said first and second processing means,

said wire path length adjusting means including a disc-shaped reel around which said wire is wound,

said reel being divided into a plurality of divided reel elements,

said wire path length being freely adjusted by varying a distance between said divided reel elements.

14. A method of fabricating a harness, comprising the steps of:

intermittently feeding a wire 1n a predetermined amount in a longitudinal direction thereof by wire feed means,

performing a first processing on said wire by first processing means located upstream of said wire feed means in a feeding direction of said wire, and

performing a second processing on said wire by second processing means located downstream of said wire feed means in the feeding direction of said wire,

wherein a wire path length of said wire between said first processing means and said second processing means is adjusted by wire path length adjusting means provided between said first and second processing means so as to simultaneously execute positioning of said wire 1n said first processing means and positioning of said wire 1n said second processing means, for execution of said first processing and/or said second processing,

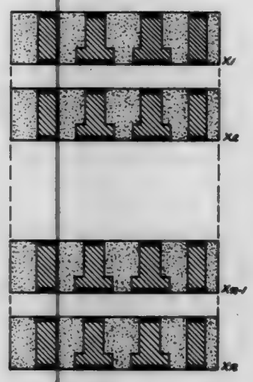
wherein said wire path length adjusting means includes a disc-shaped reel divided into a plurality of divided reel elements around which said wire is wound, and said wire path length is adjusted by varying a distance between said divided reel elements.

5,440,805

METHOD OF MANUFACTURING A MULTILAYER CIRCUIT

Robert C. Daigle, Sterling; W. David Smith, Abington, both of Conn.; John A. Olenick, Brockport, N.Y.; David J. Arthur, Norwood, and Gwo S. Swei, Northboro, both of Mass., assignors to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 847,895, Mar. 9, 1992, Pat. No. 5,287,619. This application Sep. 27, 1993, Ser. No. 127,975
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[6] H05K *3/36*
U.S. Cl. 29—830 36 Claims



1. A method of forming a multilayer circuit comprising the steps of:

providing at least two assemblies each of said first and second assemblies formed by the steps of,

(1) selecting a planar platform having opposed mutually parallel surfaces,

(2) forming first sites for a first part of a conductive circuit on a first of said surfaces of said platform,

(3) plating in said first sites to form said first part of said conductive circuit in said first sites,

(4) forming second sites for a second part of said conductive circuit on selected locations of said first part of said conductive circuit,

(5) plating in said second sites to form said second part of said conductive circuit in said second sites,

(6) laminating a layer of filled fluoropolymeric composite material onto said conductive circuit to define a laminated conductive circuit;

(7) planarizing said laminated conductive circuit to expose selected locations of said conductive circuit and define a planarized surface, and

wherein said conductive circuit includes a layer of a diffusible conductive material on at least one selected location thereof;

stacking said at least two assemblies one on top of the other so that said at least one selected location of diffusible conductive material of said first assembly aligns with said at least one selected location of diffusible conductive material of said second assembly; and

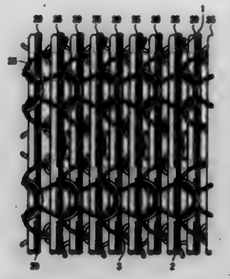
laminating said stacked assemblies under heat and pressure effective to both fuse said filled fluoropolymeric composite material and diffuse said diffusible conductive material so as to form a cohesive multilayer substrate having a solid conductive interconnect between said first and second assemblies, said solid conductive interconnect being defined by said diffusible conductive material.

5,440,806

METHOD OF MAKING BLANK FOR THE MANUFACTURING OF FIBER-REINFORCED COATINGS OR METAL COMPONENTS

William Wei, Munich, and Thomas Stoll, Reutlingen, both of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Germany

Division of Ser. No. 29,667, Mar. 11, 1993, Pat. No. 5,356,701. This application Jun. 9, 1994, Ser. No. 257,537
Claims priority, application Germany, Mar. 13, 1992, 42 08 100.9
Int. Cl.[6] B23P *15/02*
U.S. Cl. 29—889.2 1 Claim



1. A process for manufacturing a shroud for turbine blade wheels with sealing tips and disk-shaped flanges using a blank material having

a plurality of fibers made from a material which has a high tensile strength and is stable at high temperatures;

a knitted metal wire material comprising a plurality of metal wire mesh;

said fibers being knitted into and held in said metal wire material in an orientation in which said fibers are separated from each other and are parallel to an axis of said blank;

said process comprising the steps of:

winding a ring-shaped component from said blank material;

winding long silicon carbide fibers on said ring-shaped component on negative forms to form said sealing tips and disc shaped flanges; and

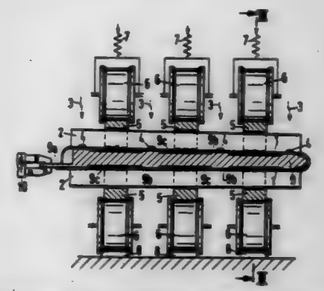
isostatically compressing the long fibers and the blank at a high temperature to form a component.

5,440,807

METHOD FOR MANUFACTURING HEAT EXCHANGER ELEMENTS

Miroslav Podhorsky, and Harald Sassmann, both of Ratingen, Germany, assignors to Balcke-Durr Aktiengesellschaft, Ratingen, Germany

Filed Apr. 22, 1994, Ser. No. 238,665
Claims priority, application European Pat. Off., Apr. 23, 1993, 93106614
Int. Cl.[6] B23D *15/26*
U.S. Cl. 29—890.039 4 Claims



1. A method for manufacturing heat exchanger elements, said method comprising the steps of:

forming an open tubular base body having a longitudinal extension with a width and a height transverse to said longitudinal extension such that said width is substantially greater than said height, thereby defining narrow and wide sides of said tubular base body, and such that in said longitudinal extension of said tubular base body a longitudinal opening with longitudinal edges remains;

removing two strips of sheet metal from supply rolls;

corrugating the strips of sheet metal to form corrugated sheet metal strips;

advancing continuously said open tubular base body and said corrugated sheet metal strips parallel to one another in the direction of, said longitudinal extension of said open tubular base body through a fastening device and positioning said corrugated sheet metal strips such that each one of said wide sides faces one of said corrugated sheet metal strips;

pressing said corrugated sheet metal strips to said wide sides of said open tubular base body in the direction of longitudinal extension of said open tubular base body;

fastening said corrugated sheet metal strips to said wide sides of said open tubular base body at some locations of contact between said wide sides of said open tubular base body and said corrugated sheet metal strips; and

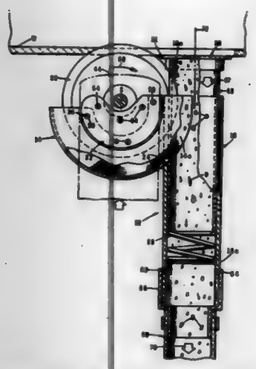
joining said longitudinal edges of said longitudinal opening to close said longitudinal opening.

5,440,808
DISPOSABLE SHAPED ARTICLE
Fred C. Wexler, Madison, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 30, 1992, Ser. No. 828,090
Int. Cl.[6] B26B *21/52*
U.S. Cl. 30—85 27 Claims



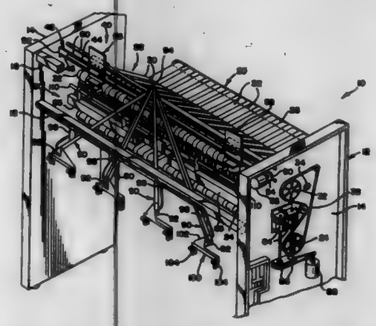
19. A disposable razor comprising:
(a) an inner core of a formable biodegradable material;
(b) an outer coating of a material resistant to moisture covering said inner core; and
(c) exposure means for exposing said formable biodegradable material to at least one degradation agent.

5,440,809
DUST COLLECTOR FOR HAND-HELD POWER TOOL
Daniel G. Padilla, 4545 W. Ave., M6, Quartz Hill, Calif. 93536
Filed Oct. 6, 1993, Ser. No. 132,461
Int. Cl.[6] B25F *5/02*
U.S. Cl. 30—124 14 Claims



1. An apparatus for collecting particulate matter produced by a hand-held power tool of the character having a rotating member for cutting a workpiece, said apparatus comprising:
(a) a guard for enclosing a portion of the rotating member of the tool;
(b) a sleeve connected to said guard, said sleeve having first and second ends and a longitudinally extending slot, said first end being interconnectable with a vacuum source;
(c) a tubular member telescopically receivable within said second end of said sleeve for movement from a first extended position to a second retracted position, said tubular member having first and second ends, said first end being disposed within said sleeve and said second end thereof being engagable with the workpiece, said tube being provided with a slot extending longitudinally thereof and disposed substantially in alignment with said slot in said sleeve for accommodating a portion of the rotating member;
(d) biasing means carried by said sleeve for yieldably resisting movement of said tubular member from said first extended position to said second retracted position upon said rotating member being moved into cutting engagement with the workpiece, said biasing means comprising a coil spring disposed interiorly of said sleeve in engagement with said first end of said tubular member; and
(e) connector means for connecting said guard to the power tool.

5,440,810
APPARATUS FOR FEEDING AND SPREADING LAUNDRY ARTICLES
Martin T. Borucki, Chicago; Kasimir Kober, Niles, and Richard Michals, Skokie, all of Ill., assignors to Chicago Dryer Company, Chicago, Ill.
Filed Mar. 16, 1994, Ser. No. 214,684
Int. Cl.[6] D06F *67/04*
U.S. Cl. 38—143 29 Claims

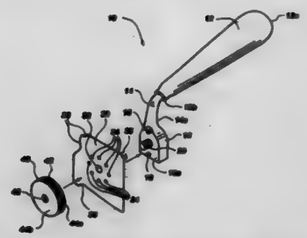


1. An apparatus for transferring a sheet of laundry from a first position spaced forwardly of a conveyor to a second position located closer to the conveyor, comprising:
a clamp having a pivot arm adapted to releasably grip a top corner portion of the sheet, said pivot arm being movable between said first position in which said top corner portion of the sheet is gripped and said second position; and
a spreader mechanism adapted to spread said top corner portion of the sheet and an opposite top corner portion of the sheet laterally apart after the pivot arm has moved to the second position to allow spreading of the sheet after it has been moved closer to the conveyor.

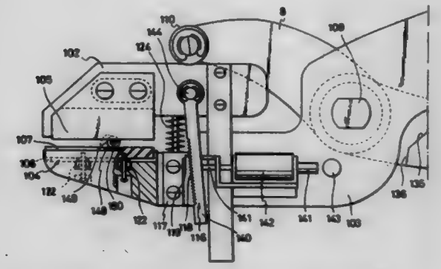
5,440,811
ADJUSTABLE INDEXABLE SCRAPING TOOL
Brian Challis, Sandy, Utah, assignor to L. J. Smith, Inc., Bowerston, Ohio
Filed Jan. 11, 1994, Ser. No. 180,039
Int. Cl.[6] B26B *1/04*
U.S. Cl. 30—169 10 Claims

1. A hand-held scraping tool for scraping across a work surface comprising:
an elongate handle having a proximal extremity configured to be gripped in the hand of a user and a distal extremity which includes a mounting surface for supporting a scraping blade;
a scraping blade for placing onto the mounting surface, having at least one scraping edge configured for scraping across the work surface., wherein said blade includes a

mounting aperture and at least one positioning aperture formed therein for receiving a mounting screw and a positioning peg, respectively; and
means disposed on the mounting surface for releasably securing the scraping blade against said mounting surface in a plurality of different rotational positions of the scraping blade about a center thereof, comprising:
at least one positioning peg disposed on the mounting surface and extending axially outward therefrom;
a male threaded mounting screw disposed on the mounting surface and extending axially outward therefrom in substantial parallel alignment with the positioning peg, the positioning peg and mounting screw configured for insertion into the mounting aperture and said at least one positioning aperture, respectively, to thereby maintain the scraping blade in a seated position; and
a locking collar including a female threaded hole formed therein for screwing said collar onto the mounting screw to thereby releasably sandwich the scraping blade between a face of the collar and the mounting surface in a secured position, said collar further including an annular recess formed in said face for receiving a remaining free end of the positioning peg.

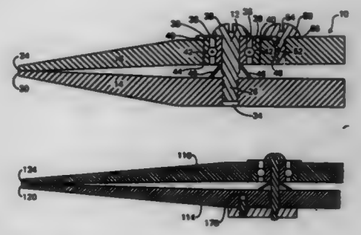


5,440,812
ERRONEOUS CUTTING PREVENTION SCISSORS
Umetaro Nishizuka, Oishida, Japan, assignor to Daikin Denshi Kogyo Co., Ltd., Yamagata, Japan
Filed Aug. 19, 1993, Ser. No. 109,047
Claims priority, application Japan, Aug. 26, 1992, 4-248863; Mar. 11, 1993, 5-076438
Int. Cl.[6] B26B *29/00*
U.S. Cl. 30—175 12 Claims



1. Erroneous cutting prevention scissors, comprising;
a first operating member including a shearing blade;
a second operating member including a receiving portion provided in a closable and separable manner with respect to said shearing blade;
detecting means for detecting a live condition of an electric wire when said shearing blade is in contact with a conductor of said electric wire;
a solenoid cooperating with said detecting means so as to be excited when said detecting means detects the live condition of said electric wire;
a first latch mechanism operated by excitation of said solenoid, provided on said first operating member and
a second latch mechanism provided on the second operating member.

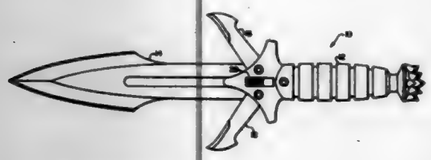
5,440,813
RIDELESS SCISSORS WITH AN ADJUSTABLE LOAD TRANSVERSE TO THE PIVOT AXIS ON A PIVOT JOINT
Scott H. Roskam, 19699 E. Lake Shore Rt., Bigfork, Mont. 59911
Filed Jun. 4, 1993, Ser. No. 71,781
Int. Cl.[6] B26B *13/28*
U.S. Cl. 30—254 11 Claims



1. A scissors comprising:
a pivot joint including a substantially frictionless sealed bearing assembly, said pivot joint having a pivot axis and a diameter;
a securing member;
a first blade member having a first cutting edge and a longitudinal axis, the first blade member further having a pivot joint hole defined therein, the pivot joint hole being oversized with respect to the diameter of the pivot joint in a direction along the longitudinal axis of the first blade member, and the securing member being coupled to the first blade member and contacting a portion of the pivot joint; and
a second blade member having a second cutting edge, the second blade member being pivotally coupled by the pivot joint to the first blade member with the first cutting edge adjacent to the second cutting edge, the pivot joint being coupled to the first blade member through the pivot joint hole in the first blade member, the pivot joint being secured in the pivot joint hole by the securing member in an inclined orientation relative to the first blade member in the direction along the longitudinal axis of the first blade member, the inclined orientation of the pivot joint maintained by the securing member causing the first blade member to incline relative to the second blade member and the pivot joint, wherein inclining the first blade member relative to the pivot joint and the second blade member produces a load transverse to the pivot axis of the pivot joint corresponding to the direction along the longitudinal axis of the first blade member, wherein the load transverse to the pivot axis inclines and forces the first cutting edge into contact with the second cutting edge to produce tension and friction between the first and second cutting edges; and
wherein the first blade member further includes a first ride area on a side of the pivot joint opposite the first cutting edge of the first blade member, and wherein the second blade member further includes a second ride area on a side of the pivot joint opposite the second cutting edge of the second blade member such that when the first blade member is pivotally coupled to the second blade member the first ride area and the second ride area are on the same side of the pivot joint, and wherein the inclined orientation of the pivot joint with respect to the first blade member

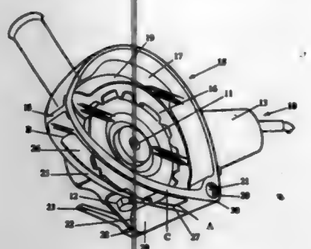
maintained by the securing member causes the first ride area to separate away from contact with the second ride area such that the first ride area is spaced apart from and free of contact with the second ride area.

5,440,814
KNIFE WITH SIDE GUARDS
David K. Hall, Kodak, and Kit Rae, Sevierville, both of Tenn., assignors to United Cutlery Corporation, Sivierville, Tenn.
Filed Feb. 25, 1994, Ser. No. 201,767
Int. Cl.[6] B26B *29/02*
U.S. Cl. 30—295 19 Claims



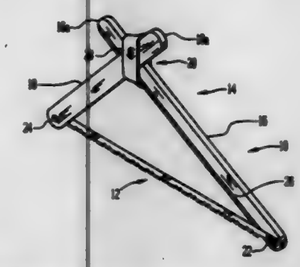
1. A knife comprising:
a handle;
a blade mounted on the handle;
a pair of side guards mounted on the handle and movable between an open position and a closed position, the pair of side guards enclosing at least a portion of the blade when in the closed position; and
means for simultaneously actuating the pair of guards between the open position and the closed position, the actuating means comprising a button movable between a forward position and a rear position and operable with the pair of side guards such that when the button is moved to the forward position, the pair of side guards is moved to the open position and when the button is moved to the rear position, the pair of side guards is moved to the closed position.

5,440,815
GUIDE FOR ROTARY CUTTER TOOLS
Kevin R. Inkster, 107 Darlington Road, Darlington, Western Australia 6070, Australia
Filed Apr. 12, 1993, Ser. No. 46,090
Claims priority, application Australia, Apr. 13, 1992, PL1847
Int. Cl.[6] B23D *45/16, 47/00;* B24B *55/04*
U.S. Cl. 30—390 14 Claims



1. A guide for a hand held power tool having a housing and a spindle rotatably supported in said housing and projecting therefrom to have mounted thereon a rotary cutter having a peripheral cutting formation, said guide comprising a rigid member having a peripheral wall to in use be disposed about at least portion of the periphery of the rotary cutter, means to mount said guide member on the power tool housing for annular movement about an axis offset from and parallel to the rotary cutter axis and so that said peripheral wall is located about at least part of the periphery of the rotary cutter, a slot in said peripheral wall through which portion of said rotary cutter can project to engage a workpiece, said peripheral wall on opposite sides of said slot being flat over portion of the length of said slot, and means to selectively lock the guide member relative to the axis of the rotary cutter to set the degree of projection of the rotary cutter through the slot between said flat portions of the peripheral wall.

5,440,816
COLLAPSIBLE HANDSAW
Robert B. Dustrude, HC 1, Box 1771, Pengilly, Minn. 55775
Filed Mar. 17, 1994, Ser. No. 214,830
Int. Cl.[6] B27B *21/00*
U.S. Cl. 30—512 21 Claims

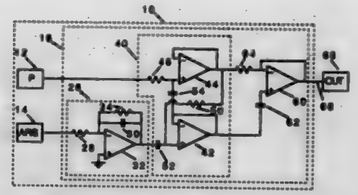


1. A handsaw arrangement comprising a saw blade and foldable frame means, said frame means including at least two elongated frame portions, first pin means for pivotally connecting a first end of a first one of said elongated frame portions to a first end of said saw blade, second pin means for pivotally connecting a first end of a second one of said elongated frame portions to a second end of said saw blade, flexible non-rigid binder means for selectively securing said handsaw arrangement in an erected condition and a collapsed condition, said flexible non-rigid binder means including a distal end, and means for securing said distal end of said flexible non-rigid binder means, whereby said flexible non-rigid binder means can selectively bind said handsaw arrangement in a bundle when said frame means is in said collapsed condition wherein said saw blade and said elongated frame portions are juxtaposed and generally parallel, by wrapping said flexible non-rigid binder means around the frame portions and securing said distal end, and bind said handsaw arrangement in said erected condition wherein a second end of said first elongated frame portion is secured relative to a second end of said second elongated frame portion thereby providing means for tensioning said saw blade and handle means for manipulation of said saw blade wherein said handsaw arrangement can be used as a handsaw.

5,440,817
VERTICAL REFERENCE AND ATTITUDE SYSTEM
William S. Watson, 3026 Aspen Ct., and Drew A. Karnick, 3111 Wellington Drive East, both of Eau Claire, Wis. 54703
Filed May 19, 1993, Ser. No. 64,225
Int. Cl.[6] G01C *9/06*
U.S. Cl. 33—366 19 Claims

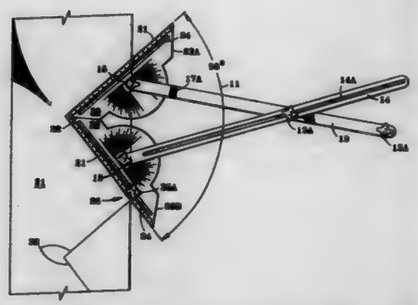
1. A vertical reference apparatus, said apparatus being configured for mounting to a structure whose orientation relative to a predetermined reference axis is desired to be stabilized or measured, said apparatus including:
means for providing a signal indicative of angular rate relative to the predetermined axis;
means for integrating said angular rate signal to provide a dynamic angular tilt signal;
means for providing a signal indicative of angle displacement relative to the predetermined axis;

first filtering and amplifier means for filtering and amplifying said dynamic angular tilt signal and said angle displacement signal to produce a first amplified signal;
second filtering and amplifier means for filtering and amplifying said dynamic angular tilt signal and said first amplified signal to produce a second amplified signal; and



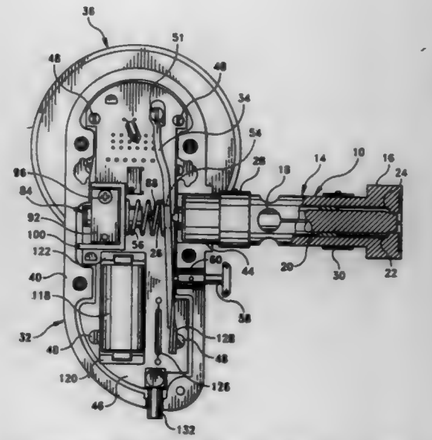
means for combining and amplifying said first and second amplified signals to produce an output signal indicative of vertical reference and attitude
wherein said output signal is provided to control means for controlling the vertical reference and attitude of the structure relative to the predetermined reference axis.

5,440,818
VERSATILE MEASURING DEVICE
Walter L. Mailhot, 70 Main St., Plaistow, N.H. 03865
Filed Dec. 23, 1993, Ser. No. 173,186
Int. Cl.[6] B43L *7/10*
U.S. Cl. 33—452 12 Claims



1. A kit of components which when assembled is an improved versatile measuring device for measuring linear, and angular dimensions said kit of components comprising:
at least two protractor members each having a scribe edge;
at least one connecting member having a predetermined length and a first protractor connection end-being rotatably and clampably attachable to each said at least two protractor members and a second protractor connection end rotatably and clampably attachable to each said at least two protractor members at a protractor connection point;
means for linearly adjusting, to a preselected value, a distance between each said protractor connection points;
means for rotatably and clampably attaching each said at least two protractor members to said protractor connection points of said connecting member; and
positionally adjustable edge-guide pins positionally securable within edge-guide pin slots defined by walls substantially parallel to each said scribe edge.

5,440,819
ACTUATOR AND PROGRAMMABLE AMPLIFIER FOR AN EXPANDING PLUG GAGE HEAD
David W. Marsh, North Scituate, R.I.; Jiening Lai, Nashua, N.H., and Wilfred R. Auger, Woonsocket, R.I., assignors to Comtorgage Corporation, Slatersville, R.I.
Filed Apr. 19, 1994, Ser. No. 229,813
Int. Cl.[6] G01B *3/26*
U.S. Cl. 33—501.6 14 Claims



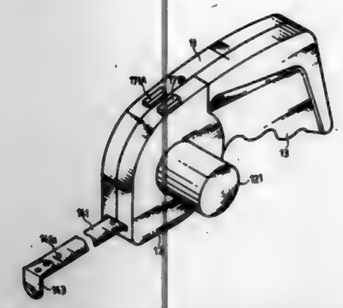
1. An actuator and programmable amplifier for use with one of a plurality of different expanding plug gage heads, each operated by an axially movable plunger having a tapered operating end and an opposite cross head end, comprising:
a housing;
means for releasably mounting a select one of said plurality of gage heads in said housing;
a retracting lever pivotably mounted in the housing, said cross head end of said plunger being releasably received and secured through a slot in said retracting lever;
spring means for normally urging said retracting lever to a first position wherein said plunger is fully extended into said gage head;
means for actuating said retracting lever for withdrawing said plunger to a second position wherein said plunger is at least partially retracted from said gage head;
a transducer having a core which extends coaxially with said plunger, said core being in engagement with the crosshead end of said plunger for sensing an axial position of said plunger;
memory means for storing a plurality of sets of configuration data for said plurality of different gage heads, each of said sets of configuration data including a predetermined measuring dimension of said gage head, and a predetermined amplification factor of said tapered operating end of said plunger of said gage head;
input means for inputting said plurality of sets of configuration data to said memory means and for selecting one of said sets of configuration data from said memory means which corresponds to said selected gage head;
central processing means coupled to said transducer for converting said sensed axial position of said plunger to a measured dimension according to said selected set of configuration data;
display means for displaying said measured dimension; and
electrical power means for energizing said central processing means.

5,440,820

STRUCTURE OF AN ELECTRICAL MEASURING TAPE

Ming-Tsung Hwang, 56 Min Sheng Street, Feng Yuan, Taichung, Taiwan

Filed Mar. 21, 1994, Ser. No. 215,028
Int. Cl.[6] G01B *3/10*; B65H *75/34*
U.S. Cl. 33—761 **3 Claims**



1. An improved structure of an electrical measuring tape comprising:

a bottom shell, a left top shell, a right top shell, with a flat circular stable ring in a left compartment of said bottom shell, a rod situated slightly off-center in said stable ring, said rod being connected to a gear wheel, there being an opening at a lower front portion of said bottom shell, with a metal blade on a top side of said opening, a spring and a blockout device being located on a bottom portion of said opening, said blocknut device being adapted to block electrical current, said left top shell having a space therein and being adapted to snap together with a left compartment of said bottom shell, said right top shell being adapted to be easily opened away from a right compartment of said bottom shell:

the device further comprising a measuring tape and a wheel around which said measuring tape is wrapped, wherein said wheel has a hole in the center, said hole including gear teeth, said wheel being located in said flat circular stable ring inside said bottom shell. The said gear teeth of said hole being attached to and actuated by said gear wheel:

the device further including protruding induction dots located near both ends of said measuring tape, a first end of said measuring tape having a protruding metal blade head being bent downward,

a motor being actuated by batteries controlled by an inch-unit actuating device to control rotation of said motor, thus allowing said measuring tape to be extended or retracted, said motor having a cylindrical protrusion in a center which is attached to a teeth wheel and thus can actuate said gear wheel, said left top shell including a space for receiving said motor, said batteries being located beneath said right top shell;

said inch-unit actuating device comprises; a positive and negative device, a crystal and a resistor, and is connected to said motor and said switches by wires and thus can control rotation of said motor;

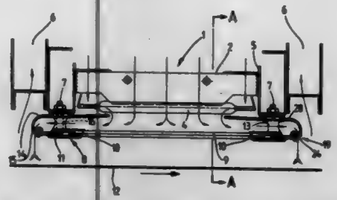
said switches actuating said motor and thus achieve causing said wheel to turn clockwise or counter-clockwise to control extension and retraction of said measuring tape, said protruding induction dots, at both ends of said measuring tape causing transient periods of short-circuit of said motor to prevent excessive extension and retraction of said measuring tape, said protruding metal blade head causing a short circuit when it touches said blockout device.

5,440,821

METHOD AND A DEVICE OF TREATING A CONTINUOUS MATERIAL WEB WITH INFRARED LIGHT AND HEATED AIR

Karl-Arvid Hamrin, Kungsör, Sweden, assignor to Infrarodteknik AB, Sweden

PCT No. PCT/SE92/00256, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO92/18693, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 21, 1992, Ser. No. 137,104
Claims priority, application Sweden, Apr. 22, 1991, 9101194
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—267 **14 Claims**



14. A method of treating a continuous web of material by providing a unit for treating a continuous web of material, said method comprising the steps of:

using a housing which is opened at one end thereof and defines a hollow interior chamber therein;

supporting an array of infrared lamps (4) in the chamber proximate to and facing toward the open end of said housing;

attaching a pair of glass holders (8) along opposite longitudinal edges of the open end of said housing;

supporting a glass plate (9), by said pair of glass holders, which extends substantially across the width of the open end;

separating each said pair of glass holders from the longitudinal edges of said housing with at least one spacer (13) thereby to define an elongate clearance between each longitudinal edge of said housing and the adjacent glass holder (8);

providing an air flow guide flange (14) which extends from each said longitudinal edge of said housing in a plane parallel to said glass plate, each said air flow guide flange (14) having a remote end curving back toward said glass plate holder and terminating in an end portion (15);

defining a nozzle gap (19, 24), extending the entire width of the web to be dried (12), between each said end portion (15) and the adjacent glass holder (8);

supplying cooling air to said housing which passes around and cools the lamps (4) and becomes heated;

exhausting said heated air from said housing through the clearances; and

directing said heated air, via the guide flanges (14, 15), through said nozzle gaps (19, 24) to form air knives extending across the longitudinal length of the open end and directed substantially at a right angle relative to said glass plate.

5,440,822

METHOD AND APPARATUS FOR DRYING ELECTROPHORESIS GELS

William F. Alpenfels, Del Mar; Sheldon Engelhorn, Encinitas, and David J. Manis, Del Mar, all of Calif., assignors to Novel Experimental Technology, San Diego, Calif.

Filed Jul. 16, 1993, Ser. No. 93,105
Int. Cl.[6] F26B *5/06*
U.S. Cl. 34—305 **6 Claims**

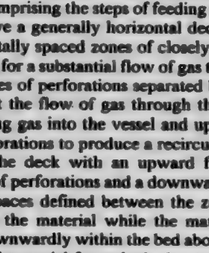
5. A method for drying an electrophoresis gel comprising the steps of:

(a) placing one half of a gel drying frame on a base unit containing an elevated surface surrounded by a trough to form a frame and base unit combination;

(b) layering a first sheet of porous hydrophilic film material over the frame and base unit combination;

(c) placing an electrophoresis gel on the film material;

(d) layering a second sheet of porous hydrophilic film material on the frame and base unit combination;



(e) placing a second half of the gel drying frame on the first half of the frame;

(f) connecting the two halves of the frame together to form a frame assembly; and

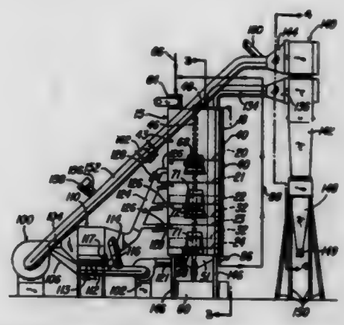
(g) standing the frame assembly upright for drying.

5,440,823

PROCESS AND APPARATUS FOR EFFICIENTLY DRYING WET-MILLED CORN GERM AND FOR PROCESSING OTHER MATERIALS

Ralph H. Willgoks, Covington, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Continuation-in-part of Ser. No. 24,292, Mar. 1, 1993, Pat. No. 5,297,348. This application Mar. 10, 1994, Ser. No. 208,293
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[6] F26B *3/08*
U.S. Cl. 34—363 **25 Claims**



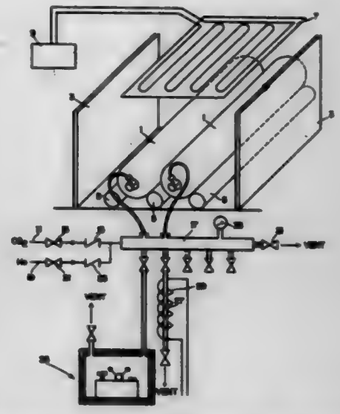
1. A process adapted for continuously processing a flowable solid material, comprising the steps of feeding the material into a vessel and above a generally horizontal deck having across the deck horizontally spaced zones of closely arranged perforations providing for a substantial flow of gas through the deck and with the zones of perforations separated by spaces which substantially limit the flow of gas through the deck between the zones, blowing gas into the vessel and upwardly through the zones of perforations to produce a recirculating bed of the material above the deck with an upward flow of material above the zones of perforations and a downward flow of material within the spaces defined between the zones of perforations, processing the material while the material is flowing upwardly and downwardly within the bed above the deck, and feeding processed material from the bed out of the vessel.

5,440,824

METHOD OF CLEANING GAS CYLINDERS WITH SUPERCRITICAL FLUIDS

Sivaramasubramanian Ramachandran, Warrington, and Alfred U. Boehm, Chalfont, both of Pa., assignors to MG Industries, Malvern, Pa.

Filed Sep. 21, 1993, Ser. No. 124,394
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—443 **5 Claims**



1. Apparatus for cleaning a gas cylinder with a supercritical fluid, the cylinder having an interior region, the apparatus comprising:

a) at least one roller, the roller comprising means for rolling the gas cylinder,

b) means for heating the cylinder, and

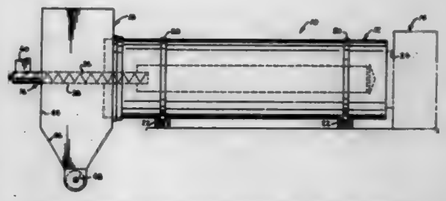
c) conduit means for directing a treating material and a topping gas into a manifold, and means for connecting the manifold to the cylinder, wherein the treating material and the topping gas can be directed into the interior region of the cylinder.

5,440,825

METHOD AND APPARATUS FOR INCREASING DEHYDRATOR EFFICIENCY

Stanley P. Thompson, Topeka, Kans., and Kenneth J. Zimmerman, Miwaukie, Oreg., assignors to Beloit Technologies, Inc., Beloit, Wis.

Division of Ser. No. 753,336, Aug. 30, 1991, Pat. No. 5,207,009. This application Nov. 25, 1992, Ser. No. 981,765
Int. Cl.[6] F26B *9/04*
U.S. Cl. 34—497 **12 Claims**

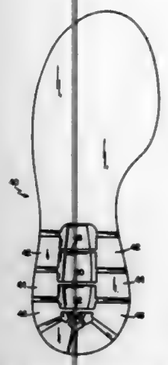


1. A method of drying solid material in an elongated cylindrical drying drum disposed for rotation about its horizontal axis, and characterized by a preheating chamber extending longitudinally of said drum, said method comprising:

introducing the material to be dried into said preheating chamber at one end of said drum;

moving said material through said chamber to a point spaced from said one end while heating the material;
controlling the temperature in said chamber as said material is moved therethrough;
depositing said material from said chamber onto the interior surface of said drum; and
moving said material through said drum back to said one end while heating said material to accomplish drying thereof.

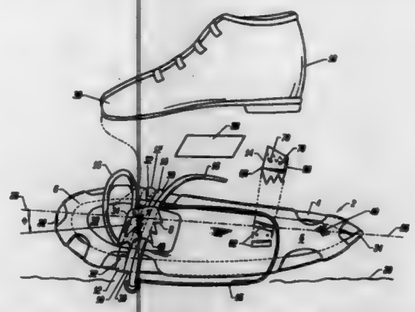
5,440,826
SHOCK ABSORBING OUTSOLE FOR FOOTWEAR
Ian H. Whatley, 240 Donington Dr., Greenville, S.C. 29615
Continuation of Ser. No. 866,020, Apr. 8, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,100
Int. Cl.[6] A43B *13/00*
U.S. Cl. 36—25 R **15 Claims**



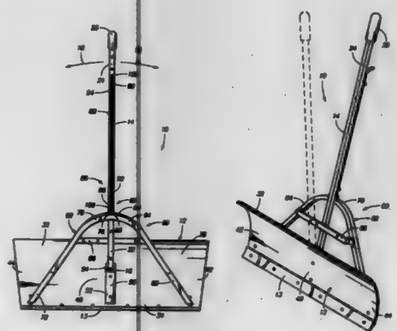
1. An outsole for an item of footwear, comprising:
a lower surface having a central portion and a peripheral portion,
a plurality of resilient shock absorbing strike plates extending from and disposed about said peripheral portion to define a cavity disposed below said central portion, each said strike plate having an inwardly sloped wall adjacent said cavity, said sloped wall being disposed at an obtuse angle to said cavity, and
an elastic membrane connecting a plurality of said strike plates, and extending through said cavity, each membrane having a stiffness less than that of one of the strike plates to which it is connected.

5,440,827
REAR CLEAT FOR A SNOWSHOE
Perry A. Klebahn, and James D. Klingbeil, both of San Francisco, Calif., assignors to Atlas Snowshoe, Inc., San Francisco, Calif.
Continuation of Ser. No. 748,425, Aug. 22, 1991, Pat. No. 5,253,437. This application Jul. 15, 1993, Ser. No. 91,973
Int. Cl.[6] A63C *13/00*; **A43B** *5/04*
U.S. Cl. 36—122 **7 Claims**

1. A rear cleated snowshoe, comprising:
a snowshoe frame;
a membrane covering at least part of said frame; and
a rear cleat including a member having a terrain-facing surface and fixedly attached thereto downwardly projecting spaced-apart first and second sidewalls;
wherein said rear cleat is attached to a rear portion of said snowshoe such that said terrain-facing surface of said member is attached adjacent an upper surface of said membrane, and wherein said membrane defines spaced-apart sidewall-sized openings through which said openings said sidewalls project, said sidewalls extending downward lower than said membrane.

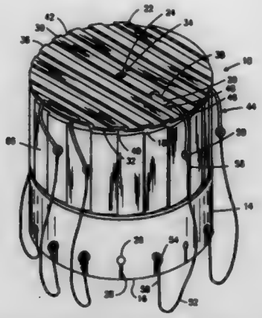


5,440,828
MANUAL SNOW REMOVAL TOOL
Robert C. Simpson, 911 - 8th Ave. No., Lewistown, Mont. 59457
Filed Sep. 29, 1993, Ser. No. 128,879
Int. Cl.[6] E01H *5/02*
U.S. Cl. 37—285 **17 Claims**



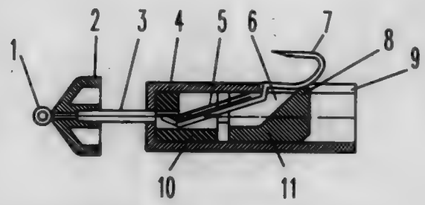
1. A manual snow plow comprising:
a blade;
a handle pivotal about a handle pivot axis, the handle being pivotable over a range of angular positions relative to the blade to allow snow to be windrowed to a side of the plow;
a load transfer subassembly for distributing force applied by a user through the handle to the blade; said load transfer subassembly having a transverse frame member which is arched from and extends across a back of the blade and is connected to the blade near opposing ends thereof; said load transfer subassembly further having at least one frame member that defines a rectangular-shaped elongated channel that is removed from the handle pivot axis, the handle extending through the elongated channel and being slidable therein over the range of angular positions wherein the handle has a rectangular-shaped cross-sectional periphery where the handle fits within the rectangular-shaped elongated channel;
an angle selection latch connected between the handle and the load transfer subassembly.

5,440,829
HOOK HOLDER
Kenneth Parvin, St. Petersburg, Fla., assignor to Parvin Enterprises, Inc., St. Petersburg, Fla.
Filed Nov. 7, 1994, Ser. No. 335,128
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.1 **8 Claims**



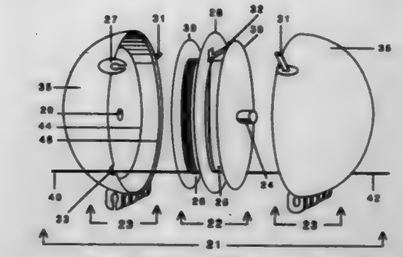
1. A hook holder of the type primarily intended for removably retaining a fishing hook, said hook holder comprising:
hook receiving means comprising at least one opening formed therethrough for receiving the hook therein, said receiving means further comprising a generally central first portion;
retaining means comprising a first surface, a second surface, and a generally central second portion disposed in juxtaposed relation to said receiving means such that said second surface is generally adjacent said receiving means and said second portion is generally adjacent said first portion; and
means for fastening said retaining means to said receiving means, said means for fastening passing through said first and second portions, whereby said hook is held in said at least one opening by pressure from said retaining means when said retaining means is deformed by introduction of said hook between said retaining means and said receiving means.

5,440,830
RETRACTABLE HOOK WEEDLESS FISHING TACKLE
Howard H. Smith, 8871 Ithaca Way, Westminster, Colo. 80030
Filed Nov. 18, 1993, Ser. No. 154,089
Int. Cl.[6] A01K *83/02*
U.S. Cl. 43—37 **3 Claims**



1. A retractable hook fishing lure comprising;
a deflector having a fishing line receiving eyelet,
an elongate connecting screw attached to said deflector opposite said eyelet,
a lift wedge attached to said elongate screw opposite said deflector, said lift wedge having at least one hook receiving channel and a lift fin in-line with each of said at least one hook receiving channels,
a lure body slidably received on said elongate connecting screw and generally encompassing said life wedge,
a hook anchor attached to said lure body having at least one fish hook pivotally attached thereto,
wherein said at least one fish hook is retracted in one of said at least one hook receiving channel in the first position, and deployed to a second position to exposed the at least one fish hook outward of said lure body when said lure body slides away from said deflector.

5,440,831
CASTABLE AND ADJUSTABLE FISHING BOBBER
John W. Chandler, 710 S. 7th St., Fairfield, Iowa 52556
Filed Jan. 12, 1994, Ser. No. 180,451
Int. Cl.[6] A01K *93/00*
U.S. Cl. 43—43.11 **18 Claims**



1. A fishing bobber capable of restricting its movement along a line between two selectable points on said line without external means of regulation or restraint, said line is selected from the group consisting of rope, wire, cable, and chain, said bobber comprising;
a) an outer housing,
b) a spool assembly having a cylindrical drum surface and an axis of rotation, said spool assembly rotatable set within said outer housing, said drum surface having a center ridge radially extending therefrom,
c) entry and exit means for passing said line through said outer housing, wherein said entry and exit means are along a tangent line to said drum surface and said tangent line is perpendicular to said axis.

5,440,832
KEELING BEND FLY HOOK
Thomas A. Hnizdor, 9164 Brady, Redford, Mich. 48239
Continuation-in-part of Ser. No. 119,708, Sep. 10, 1993, Pat. No. 5,394,637. This application Oct. 15, 1993, Ser. No. 138,147
Int. Cl.[6] A01K *83/00*
U.S. Cl. 43—43.16 **14 Claims**



14. An artificial fly comprising:
a body formed of buoyant material;
a hook having a shank with first and second ends, the first end of the shank being disposed within the body of buoyant material;

an eye formed at the first end of the shank and extending outward from the body,

a bend extending from the second end of the shank exteriorly of the body and having first and second portions and an intermediate portion between the first and second end portions, the first end portion and the intermediate portion disposed to one side of a longitudinal axis of the shank, with the first end portion disposed at a predetermined angle from the longitudinal axis of the shank;

a point formed on and extending from an end of the second end portion of the bend angularly outward from the longitudinal axis of the shank, the point terminating in a tip rolled out from the shank;

the second end portion of the bend being bent inward at an acute angle toward the shank such that the tip of the point is disposed at a larger acute angle with respect to the longitudinal axis of the shank than the angle of the second end portion of the bend with respect to the longitudinal axis of the shank; and

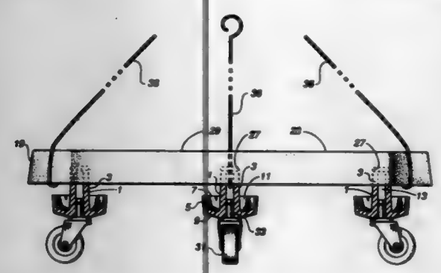
a barb formed on the point and having an outer edge facing away from the shank, the tip and the outer edge of the barb disposed concavely with respect to each other.

5,440,833

INSECT PROTECTION BARRIER COMBINATION

Harris Stoll, 3298 Sugarbush Ter., Vista, Calif. 92084

Filed May 9, 1994, Ser. No. 239,680
Int. Cl.[6] A01M *1/10, 1/20*
U.S. Cl. 43—109 **11 Claims**



1. A combination insect protection barrier and tray upon which to support an object in an insect-free environment, comprising:

a) three barriers each including first and second upright closed loop walls having an open top and a closed bottom floor extending therebetween defining an endless annular cavity for receipt therein of a liquid insect repellant, said first wall being taller than said second wall and forming a vertical bore central thereto; and,

b) a tray including three elongated elements of terminal length interconnected at their respective terminal ends and having a bore formed in the underside of said tray at each said interconnection for receipt therein of said first wall of said barriers;

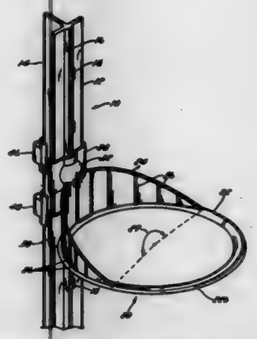
c) said three barriers and said tray formed as one unit in an injection molding mold and including runners from said tray to said barriers that may be broken away to allow assembly of said barriers in said tray.

5,440,834

SINGLE FASTENER PLANT SUPPORT RING FOR USE WITH A T-SHAPED UPRIGHT POST

R. Amil Kleinert, 3911 Mt. Lebanon Rd., Charlestown, Ind. 47111

Continuation-in-part of Ser. No. 297,628, Aug. 29, 1994, abandoned. This application Sep. 28, 1994, Ser. No. 314,006
Int. Cl.[6] A01G *17/06, 17/14*
U.S. Cl. 47—47 **19 Claims**



1. A plant support ring and fastening device for use with an upright support having a T-shaped cross section formed by a first flange having a predetermined width along a first side thereof and a second flange integral and perpendicular to said first flange, said device comprising

(a) a fastener device including

(i) a flange portion positioned in an abutting relationship with said first flange and

(ii) an arm extending from a first side of said flange portion and having a distal end thereof formed into a hook adapted to hook around and be positively engaged to a free edge of said second flange, said flange portion having at least a part of the side opposite to said first side formed into a channel adapted to hook around and enclose an associated edge of said first flange,

(b) at least one ring secured to said flange portion and adapted to extend horizontally outward therefrom when said fastener device is attached to said support upright; and

(c) a ring support positioned beneath said ring and extending from said flange portion to and supporting said ring along at least a part of the circumference thereof.

5,440,835

DRIP IRRIGATION UNIT

Michael A. Romo, 3263 Cole Ave., Simi Valley, Calif. 93063

Filed Nov. 3, 1992, Ser. No. 970,625
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—48.5 **19 Claims**

1. A drip irrigation unit, comprising:

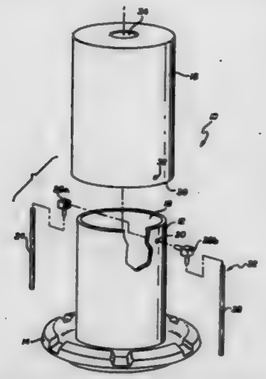
a pan for holding water;

a tank for holding water;

a siphon, said siphon coupling said pan to said tank; and

a cover, said cover surrounding said tank and preventing air flow to said tank until water in said pan is at least partially depleted, said cover comprising a water-level controlled air flow means for responsively and controllably allowing air flow into said cover and to said tank, said air flow means being adjacent said pan at a position below a top portion thereof, said cover being in airtight sealed engagement with said pan when said pan is holding water at a first level, said airtight sealed engagement being broken when said pan is holding water at a second level which is lower than said first level; whereby

when said sealed engagement is broken, ambient air flows into said cover and to said tank through said air flow means, thereby providing water flow through said siphon



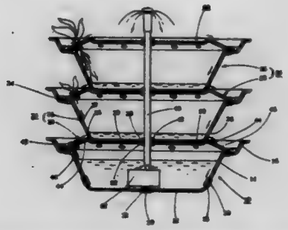
replenishing water in said pan to said first level and establishing said airtight sealed engagement between said cover and said pan.

5,440,836

HYDROPONIC DEVICE FOR PLANT CULTIVATION

Jong-Chul Lee, 447-27, Sutak-Dong, Suli-Si,, Kungki-Do, Rep. of Korea

Filed Mar. 16, 1994, Ser. No. 213,949
Claims priority, application Rep. of Korea, Mar. 16, 1993, 93-3952; Feb. 1, 1994, 94-1836
Int. Cl.[6] A01G *31/06*
U.S. Cl. 47—60 **7 Claims**



1. A hydroponic device adapted to grow plants through the use of circulative culture fluid, comprising:

a reservoir placed at a lowermost position of said hydroponic device for containing the culture fluid therein;

one or more cultivation beds lying on said reservoir one above another, each of said beds including a basin-like body which is provided with a horizontally extending bottom wall and an inclined side wall extending upwardly outwardly from the bottom wall, said side wall having a plurality of fluid outlet holes each arranged at such an elevation as to permit the culture fluid gathered in said body to overflow therethrough;

each of said cultivation beds further including a canted support flange which extends downwardly outwardly from the side wall of said body, said flange having a plurality of plant holding apertures each capable of anchoring the plants in place, said fluid outlet holes being at a position of the side wall such that the culture fluid issued therethrough can flow down along the support flange to reach the corresponding plant holding apertures, said inclined side wall and said canted flange cooperating with each other to allow the plants held in the plant holding apertures to grow straight along said side wall;

a conduit extending vertically upwardly from said reservoir through the bottom wall of said basin-like body up to an uppermost cultivation bed; and

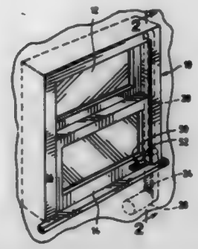
a fluid pump mounted on said reservoir for forcedly feeding the culture fluid to said uppermost cultivation bed through said conduit.

5,440,837

MANUALLY OPERABLE SASH LIFT FOR MOTORIZED DOUBLE HUNG WINDOW

Stephen M. Piltingsrud, Owatonna, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.

Filed Mar. 17, 1994, Ser. No. 214,792
Int. Cl.[6] E05F *15/00*
U.S. Cl. 49—139 **42 Claims**



1. An apparatus for controlling a first sash movable along a substantially straight path relative to a frame for opening and closing an opening defined by the frame, said apparatus comprising:

a drive belt along one side of the frame;

powered means for moving said drive belt;

means for releasably securing said drive belt to a first sash; and

manually graspable means associated with the first sash for manually moving said first sash in response to a manual biasing force applied to said graspable moving means; and

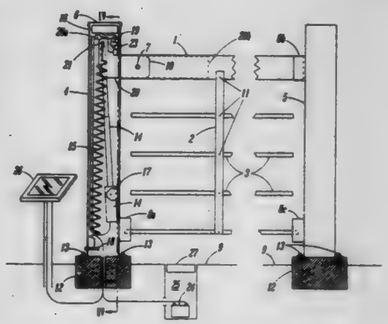
means connecting said moving means to said securing means whereby said securing means is released only during application of said manual biasing force to said moving means.

5,440,838

MOTORIZED VERTICAL LIFT GATE

Christopher M. Lesser, 3036 S. Wolff St., Denver, Colo. 80236

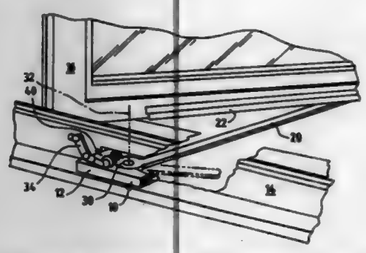
Filed May 24, 1994, Ser. No. 248,437
Int. Cl.[6] E05F *11/24*
U.S. Cl. 49—340 **3 Claims**



1. A vertical lift gate, the improvement being:

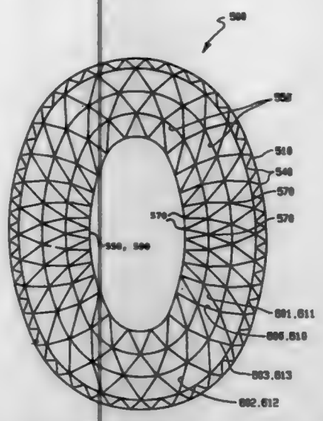
a fixed hollow gate post means;
a pivot support means being attached externally and proximate to an upper end of said fixed hollow gate post means;
an offset pivot arm having an interior and exterior end and being pivotally attached to said pivot support means with the pivotal attachment being external to said fixed hollow gate post means;
a gate means being attached to the exterior end of the offset pivot arm;
a counterbalance spring means with one end being attached to the interior end of the offset pivot arm and the opposite end being attached to a lower inside end of the fixed hollow gate post means;
a linear actuator means with one end being attached to the interior end of the offset pivot arm and the opposite end being attached to the lower inside end of the fixed hollow gate post means.

5,440,839
WINDOW OPERATOR
Stephen M. Piltingsrud, Owatonna, Minn., assignor to Truth Hardware Corporation, Owatoona, Minn.
Filed Jul. 20, 1993, Ser. No. 95,054
Int. Cl.[6] E05F *11/24*
U.S. Cl. 49—342 **20 Claims**



1. An operator for controlling movement of a window sash relative to a window frame, comprising:
a drive gear having an annular configuration and pivotable about a central axis substantially perpendicular to one side of the window frame;
a linkage secured to the drive gear and pivotally connectable to the sash whereby pivoting of said drive gear moves the linkage to move the sash relative to the frame;
a connector defining first and second pivot axes intersecting at a point, said connector being rotatable about said intersection point;
a worm pivotable about a worm axis through said intersection point and lying in a plane which is substantially perpendicular to the central axis, said worm including a helical thread drivably engaging a portion of the drive gear and having a variable height whereby the peaks of said thread lie in an annular orientation substantially conforming to the annular configuration of the portion of the drive gear;
an input drive shaft rotatable about a shaft axis through said intersection point and pivotable relative to said connector about said second pivot axis, said shaft axis intersecting said worm axis at an angle;
means for securing said worm to said connector for pivoting about the first pivot axis; and
means for securing said input drive shaft to said connector for pivoting about the second pivot axis.

5,440,840
TRIANGULATED ROOF STRUCTURE
Matthys P. Levy, New York, N.Y., assignor to Weidlinger Associates, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 608,497, Nov. 2, 1990, Pat. No. 5,259,158. This application Nov. 8, 1993, Ser. No. 148,453
Int. Cl.[6] E04B *7/14*
U.S. Cl. 52—83 **33 Claims**



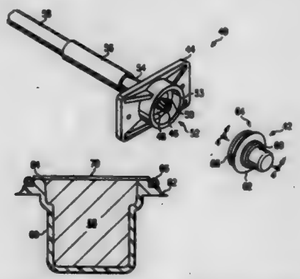
1. A triangulated structure for supporting a roof that projects in plan a substantially closed oval curve having major and minor axes comprising:
a substantially horizontal outer compression ring;
a plurality of oval tension hoops concentrically arranged within said compression ring at different heights relative to a common reference plane;
a plurality of substantially vertical compression members each having an upper end and a lower end, defining upper and lower nodes, affixed at their lower ends to one of said oval tension hoops, said compression members being spaced apart on the tension hoops;
a plurality of tension elements interconnecting at least one of said compression members affixed to a first tension hoop to a proximal pair of said compression members affixed to an adjacent one of said tension hoops, said tension elements comprising:
a first upper tension member extending from the upper node of one of said compression members affixed to said first one of said tension hoops to the upper node of one of said proximal compression members affixed to an adjacent one of said tension hoops;
a second upper tension member extending from said upper node of said compression member affixed to said first tension hoop to the upper node of the other one of said proximal compression members affixed to said adjacent tension hoop;
a first diagonal tension member extending from said upper node of said compression member affixed to said first tension hoop to the lower node of one of said proximal compression members affixed to said adjacent tension hoop; and
a second diagonal tension member extending from said upper node of said compression member affixed to said first tension hoop to the lower node of the other one of said proximal compression members affixed to said adjacent tension hoop; and
means for securing an outermost one of said tension hoops and the vertical compression members attached thereto to said outer compression ring.

5,440,841
PEDESTAL MODULE FOR RAISED FLOOR AND RAISED FLOOR
Sherwood S. Greenfield, Charlotte, N.C., assignor to Powerflor, Inc., Charlotte, N.C.
Continuation of Ser. No. 161,977, Dec. 3, 1993, Pat. No. 5,392,571, which is a continuation of Ser. No. 862,519, Apr. 2, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,367
The portion of the term of this patent subsequent to Feb. 28, 2012, has been disclaimed.
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—126.2 **10 Claims**



1. In combination with a pedestal module of a raised floor assembly mounted on a supporting subfloor, the pedestal module including a base for being vertically spaced apart from the supporting subfloor by a plurality of legs, the base having an access hole defined therein for receiving an electrical or communications utility receptable, the improvement comprising:
(a) a flange assembly for being positioned in the access hole of the base, and defining a recessed compartment, said recessed compartment including a bottom surface thereof defining a utility access port therein for receiving and storing the utility receptacle; and
(b) a cover including a pivotable, receptacle access lid for being positioned in the utility access port of the flange assembly for covering the utility receptacle or for exposing the utility receptacle for access thereto.

5,440,842
SEALED TENDON-TENSIONING ANCHOR SYSTEM
Felix L. Sorkin, 2918 Fairway Dr., Sugarland, Tex. 77478, assignor to Felix L. Sorkin, Houston, Tex.
Filed Dec. 9, 1992, Ser. No. 987,636
Int. Cl.[6] E04C *3/10*
U.S. Cl. 52—223.13 **13 Claims**



1. An apparatus for sealing an anchor retaining a tendon, whereby an end of said tendon extends from said anchor, comprising:
a vessel member having a void and an exterior outer edge along the perimeter of said vessel member;
a rust inhibitor disposed within said void; and
a retaining member permanently affixed around said exterior outer edge of said vessel member, whereby said retaining member is punched by said tendon end upon placing said vessel in sealed communication with said anchor.

5,440,843
FIRECODE ACCESS PANEL
Christoph Langenhorst, Soest, Germany, assignor to Eva Langenhorst nee Lahrmann, Soest, Germany
Filed Dec. 15, 1993, Ser. No. 167,282
Claims priority, application Germany, Dec. 31, 1992, 42 44 578.7
Int. Cl.[6] E04B *1/94*
U.S. Cl. 52—232 **5 Claims**



1. In a wall having an outer surface and formed with a throughgoing access hole with an inner periphery, a firecode access-panel assembly comprising:
a panel generally fitting in the hole, having an outer surface generally coplanar with the outer surface of the wall, and having an outer periphery running generally parallel to the inner periphery of the hole;
respective geometrically similar inner and outer annular frames on the inner and outer peripheries having confronting outer faces forming a annular gap around the panel between the inner and outer frames, one of the frames being of L-section and having an inner leg defining an inner face and extending generally perpendicular to the wall and panel surfaces and an outer leg lying flat on the respective outer surface, the one frame further having a generally Z-section, stiff, and annular element having:
an outer web lying against the respective outer surface underneath the outer leg of the one frame,
an inner web exceeding generally parallel to the surfaces and outwardly butting against the inner face of the one frame, and
an intermediate web extending transversely of the surfaces, bridging the inner and outer webs, and extending generally parallel to the inner face,
the inner face forming with the element an annular compartment extending around the respective periphery, the inner leg of the one frame being formed with an array of throughgoing openings extending between the respective inner and outer faces, the compartment being substantially closed except at the openings; and
an annular body of heat-swellable material wholly contained in the compartment, whereby on heating of the material said annular body swells and exits the compartments through the openings to fill the gap.

5,440,844

CONNECTORS FOR BUILDING UNIT

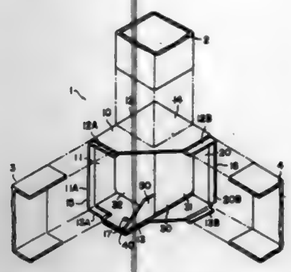
Katsuyuki Chihara, Tokyo; Kazunari Ishii, Yamato, and Akira Kishi, Tokyo, all of Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 817,484, Jan. 7, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,152

Claims priority, application Japan, Jan. 9, 1991, 3-023653; Apr. 9, 1991, 3-104707; Nov. 18, 1991, 3-329941

Int. Cl.[6] E04B *1/18*

U.S. Cl. 52—280 **10 Claims**



1. A connector for connecting a column with two beams in a building unit, said connector comprising:

a core portion being formed with at least four walls and having cross sectional shape adapted to be operatively connected to the column;

a branch portion having a web and substantially parallel flanges extending generally perpendicular to the web, wherein said at least four walls of said core portion extend between said flanges so that said core portion is in substantial coaxial alignment with said column; and

wherein one of said four walls is a portion of said web.

5,440,845

PRECAST CONCRETE SANDWICH PANELS

Maher K. Tadros; David C. Salmon; Amin Einea, and Todd D. Culp, all of Omaha, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 760,078, Sep. 13, 1991, abandoned. This application Oct. 6, 1994, Ser. No. 320,109

Int. Cl.[6] E04C *2/26*

U.S. Cl. 52—309.12 **5 Claims**



1. A composite precast concrete sandwich panel comprising:

a first concrete slab having at least a first planer surface;

a second concrete slab having at least a second planer surface substantially parallel to said first planer surface;

a layer of insulation comprising at least one insulating material between said first and second concrete slabs;

connecting means comprising at least a portion of said insulating material holding said first and second concrete slabs together wherein all thermal conductivity paths between the first and second concrete slabs have a thermal conductivity less than 3 BTU's per hour, per square foot in area, per inch in thickness for 1 degree Fahrenheit;

said connecting means including at least a first elongated strand embedded in said first concrete slab having a first plurality of sections substantially parallel to said at least a first planar surface; at least a second elongated strand embedded in said second concrete slab having a second plurality of sections substantially parallel to said at least a second planer surface; and at least one elongated member having a longitudinal axis extending at least over a portion of its length at an angle to the normal to said first planer surface;

said at least one elongated member connecting sections of said at least a first elongated strand with sections of said at least a second elongated strand wherein said at least a first elongated strand is held to said at least a second elongated strand;

said connecting means providing resistance to shear in at least two directions with a shear strength between the first concrete slab and second concrete slab at least sufficient to withstand 110 percent of the weight of each square foot of one of the first and second concrete slabs, wherein the connecting means takes up at least 50 percent of the full composite action shear forces.

5,440,846

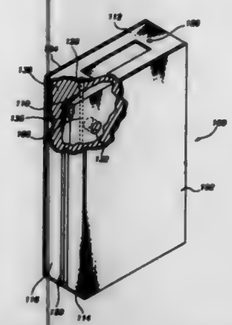
CONSTRUCTION FOR BUILDING PANELS AND OTHER BUILDING COMPONENTS

Grant C. Record, 5423 Ramblewood La., Olympia, Wash. 89503

Filed Nov. 13, 1992, Ser. No. 959,226

Int. Cl.[6] E04C *1/00*

U.S. Cl. 52—309.15 **47 Claims**



1. Structural building component comprised of:

a surface material having a means for providing bonding strength applied to a first surface thereof;

a filler material including a sufficient amount of a chemically active component so thin said filler material and said means for providing bonding strength of said surface material are substantially integrally bonded; and

insulating core means positioned interior of said filler material for improving the insulating properties of said structural building component, said insulating core means including a first side, a second side, and a throughole extending from said first side to said second side with said filler material positioned in said throughole.

5,440,847

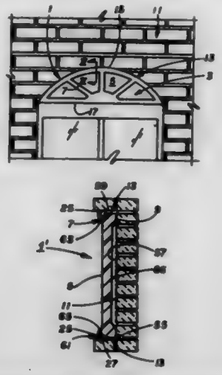
MOLDED EXTERIOR DECORATIVE UNIT FOR BUILDINGS

Sandra L. Butler, 26 Horseshoe Dr., Roscoe, Pa. 15477

Continuation-in-part of Ser. No. 925,958, Aug. 5, 1992. This application Oct. 6, 1993, Ser. No. 132,756

Int. Cl.[6] E04C *1/00*; B44F *9/00*

U.S. Cl. 52—311.1 **25 Claims**



1. A molded exterior decorative unit secured within a recess formed in a structural facing, comprising:

a molded unit having first and second surfaces and a side edge about the periphery thereof connecting said first and second surfaces, said first surface having decorative features thereon for exposure to the environment with said second surface adjacent the structural facing;

said molded unit having a channel formed in said side edge adjacent to, but spaced from, said first surface; and

a compressible, expandable, flexible sealing member disposed partially in said channel and extending outwardly from said side edge, such that upon securement of said molded unit to said structural facing, said compressible, expandable, flexible sealing member forms a flexible seal between said molded unit and said structural facing.

5,440,848

METAL STUDS TO REPLACE WOOD STUDS

Thomas H. Deffet, Ft. Myers, Fla., assignor to H. L. Stud, Inc., Columbus, Ohio

Filed Sep. 18, 1992, Ser. No. 946,887

Int. Cl.[6] E04B *5/00*

U.S. Cl. 52—376 **1 Claim**



1. An improved metal stud to replace conventional wood studs used as vertical studs in forming walls or partitions in houses, apartments, office or other buildings and adapted to be connected to wood plates, comprising:

a rectangular sheet metal strip bent into a form, with an open rectangular cross-section to define three walls comprising two parallel side walls and a central wall;

extensions on and integral to each end of only one of said side walls extending beyond said central wall to form a leg to provide a flange for each end; and

a flange integral and perpendicular to each end of such central wall.

5,440,849

VEHICULAR PANEL ASSEMBLY AND METHOD FOR MAKING SAME

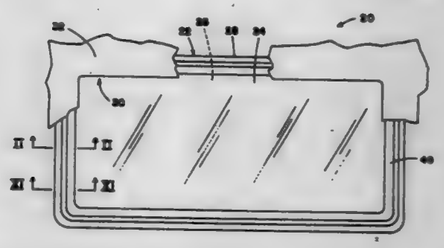
Raj K. Agrawal, and Doug Crank, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 897,764, Jun. 12, 1992, Pat. No. 5,331,784. This application Oct. 29, 1993, Ser. No. 146,731

The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.

Int. Cl.[6] E04B *1/62*

U.S. Cl. 52—393 **52 Claims**



1. A method for manufacturing a panel assembly comprising:

providing a sheet-like panel having at least one surface;

supporting a preformed gasket in a predetermined pattern with a bonding surface arranged to face said panel portion;

priming at least one of said panel surface and said bonding surface of said gasket by applying an adhesion promoting priming composition thereto;

locating said panel on said preformed gasket following arrangement of said gasket in said predetermined pattern;

forcing said panel against said gasket to form a contact boundary; and

heating said contact boundary between said panel and said gasket to bond said gasket to said panel to form said panel assembly.

5,440,850

Patent Not Issued For This Number

5,440,851

AUTOMATIC STATION FOR HOUSING BASKETS IN CONTAINERS

Pieri Vincenzo, Cesena, Italy, assignor to Sorma S.r.l., Cesena, Italy

Filed Mar. 31, 1994, Ser. No. 221,414

Claims priority, application Italy, May 5, 1993, B093A0187

Int. Cl.[6] B65B *1/04, 3/04, 5/00, 39/00*

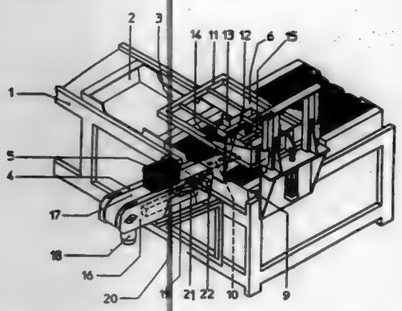
U.S. Cl. 53—244 **9 Claims**

1. A station for depositing baskets in a carton at a filling station, comprising:

means for transporting a basket to the carton and depositing the basket between a first pair of opposite sides of the canon, the means for transporting a basket having an appendage movable between an extended position and a retracted position, wherein the means for transporting a basket deposits the basket in a first position in the carton when the appendage is in the extended position, and deposits the basket in a second position in the carton, adja-

cent the first position, when the appendage is in the retracted position; and

means for laterally moving the basket in the carton from the



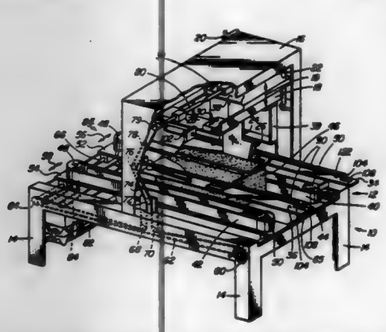
first and second positions in the carton to provide space in the first and second positions for another basket, the means for transporting a basket being synchronized in phase with the means for laterally moving the basket.

5,440,852

FLAP FOLDER

Joe A. S. Lam, Richmond, Canada, assignor to Belcor Industries Inc., Richmond, Canada

Filed Jul. 21, 1993, Ser. No. 94,730
Int. Cl.[6] B65B *7/20, 7/26*
U.S. Cl. 53—377.2 **18 Claims**



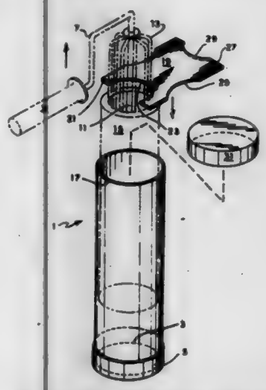
1. A flap folder comprising a pair of spaced parallel rails, a carton passage between said rails, a control bar mounted on each of said rails for axial movement relative to its respective rail, means for moving said bars in a first direction downstream of a direction of movement of a carton along said passage during a flap folding operation and then in a second direction opposite to said first direction, a pair of flap folding levers, each said flap folding lever having a first cam means, one of said flap folding levers being mounted on each of said bars, a pair of first cooperating cam means, one of said first cooperating cam means being fixed to each of said rails in a position to engage its adjacent said first cam means when said bars and said levers are moved in said first direction relative to said rails to move each of said levers from a retracted position to a flap folding position and maintain said levers in said folding positions during further movement of said bars in said first direction, and to return said levers to said retracted positions when said bars and said levers are moved relative to their respective said rails in said second direction opposite to said first direction.

5,440,853

ROLLER COVER STORING METHOD

David C. Engdahl, Manassas, Va., assignor to Stephanie L. Engdahl, Manassas, Va.

Filed Oct. 14, 1994, Ser. No. 323,121
Int. Cl.[6] B67B *1/04, 5/04, 7/28, 31/00*
U.S. Cl. 53—432 **2 Claims**



1. A method of storing a wet, paint-roller cover for up to six months and without wet paint retained by the roller cover setting-up and hardening, the method comprising the steps of: providing an elongated plastic cylindrical tube having proximal and distal open ends, and providing removable proximal and distal end caps for interference fit with the respective proximal and distal ends of the cylindrical tube for closing and sealing the respective proximal and distal open ends of the cylindrical tube, closing by a human operator of the distal open end of the cylindrical tube by his emplacing the distal end cap thereon, inserting by the human operator of the wet, paint-roller cover fully within the cylindrical tube, cradling, by the human operator with his one hand, the cylindrical tube in the region of its distal end, and with his other hand emplacing the proximal end cap upon the proximal open end of the cylindrical tube, squeezing of the cylindrical tube by the human operator with his one hand while simultaneously forcing, with his other hand, the proximal end cap distally, and then releasing his squeezing hand from the cylindrical tube to create a partial vacuum within the cylindrical tube to thereby draw the proximal end cap further distally to thereby seal the proximal open end of the cylindrical tube.

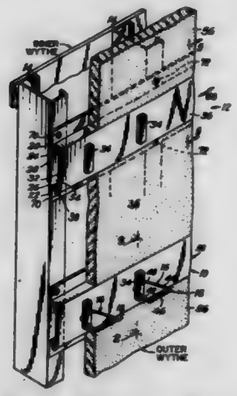
5,440,854

VENEER STRUCTURAL ASSEMBLY AND DRYWALL CONSTRUCTION SYSTEM

Ronald P. Hohmann, Syosset, N.Y., assignor to Hohmann Enterprises, Inc., Hauppauge, N.Y.

Continuation of Ser. No. 31,014, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 793,501, Nov. 15, 1991, and Ser. No. 399,074, Aug. 28, 1989, abandoned. This application Nov. 9, 1993, Ser. No. 149,708
Int. Cl.[6] E04B *9/00*
U.S. Cl. 52—489.1 **33 Claims**

1. A structural assembly for securement between an inner wythe having a plurality of vertically disposed spaced apart support members, and art outer wythe of an edifice for residential/office use, said structural assembly comprising, in combination, at least two longitudinally extending channel assemblies formed substantially as a U, for extending between at least two of said vertically disposed support members and each channel assembly comprising an elongated planar member, having a longitudinally extending flange of predetermined depth attached at an end to each end edge of said planar member and a base member attached to a free end edge of each flange and arranged parallel to said planar member wherein said U is raised outwardly and bridges said base members so as to provide greater rigidity and structural integrity as compared to a flat plate-like member, a plurality of separate, individual spaced apart anchor members fixedly secured to said planar member and extending longitudinally along said planar member, means for securing said base members of said channel assembly to said vertically disposed support members of said inner wythe, means engaged to a plurality of said anchor members for individually securing said anchor members to said outer wythe by means of a plurality of wall ties; and sheet insulation supported at least in part by said flanges, and being substantially flush with each planar member of adjacently disposed channel assemblies.

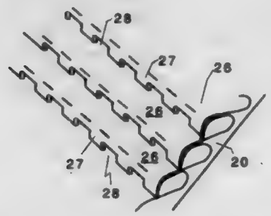


5,440,855

ROOFING STRUCTURE AND METHOD

Harry Loucks, 1812 Spring St., Little Rock, Ark. 72206

Division of Ser. No. 957,136, Oct. 7, 1992, Pat. No. 5,343,664. This application Aug. 5, 1994, Ser. No. 286,183
Int. Cl.[6] E04D *1/30*
U.S. Cl. 52—518 **4 Claims**



1. A roofing element for pitched roofs, comprising:

one or more vane members,

an integral mounting element for securing said one or more vane elements on said pitched roof,

said one or more vane members having a length extending at an angle other than 90 degrees from said integral mounting element such that when installed on said pitched roof with an array of further of said roofing elements, except for the upper most of said vane members, each vane member is in the shadow of an immediately upper vane member wherein each said roofing element includes means forming vent apertures in said one or more vane members.

5,440,856

Patent Not Issued For This Number

5,440,857

ENDLESS EDGE TRIM FABRICATED FROM AN EXTRUDED PROFILE

William Shanok, New York, N.Y.; Harold Waldman, Yardley, Pa.; Salvator Cigna, Bound Brook, N.J.; Valery Safronchik, Staten Island, N.Y.; Victor Shanok, New York, N.Y., and Jesse P. Shanok, New York, N.Y., assignors to Silvatrim Associates, South Plainfield, N.J.

Filed Jun. 27, 1994, Ser. No. 265,915
Int. Cl.[6] E04F *19/00, 19/02*
U.S. Cl. 52—716.8 **20 Claims**

1. An edge trim for mounting on a peripheral edge of an article, comprising:

a longitudinally extending body member fabricated from an extruded profile, said body member having a predetermined length;

securement means for securing abutted opposite ends of said body member together to provide an endless construction;

said body member including a vertical body portion for covering the peripheral edge of the article, and a top flange portion connected to an upper end of said body portion for engaging a top surface portion of the article disposed adjacent to the peripheral edge;

a lower portion of said body portion being provided with pilot means for sliding vertically downwardly against the peripheral edge of the article to position said body portion around the peripheral edge of the article;

resilient flexible means being guided by said pilot means into a vertically downwardly sliding engagement against the peripheral edge of the article for snapping onto the peripheral edge of the article and engaging a bottom surface portion of the article disposed adjacent to the peripheral edge;

said resilient flexible means being connected to said body portion, said resilient flexible means being disposed above said pilot means and spaced below said top flange portion; and

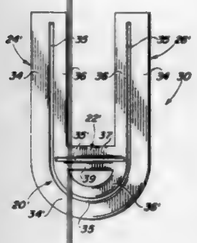
said resilient flexible means and said top flange portion being spaced apart a predetermined distance to provide a tension therebetween when disposed on the article for locking said edge trim on the peripheral edge of the article in a secure engagement.

5,440,858

INSTANT GAME COURT ON A HARD SURFACE AND PROCESS FOR APPLYING THE PRODUCT THERETO

Mark P. Hinkes, 7800 SW. 87 Ave., Suite B-270, Miami, Fla. 33173

Filed Feb. 16, 1994, Ser. No. 198,121
Int. Cl.[6] A63C *19/06*
U.S. Cl. 52—741.1 **10 Claims**



1. A system for forming a fixedly attached, removable game court on a concrete, black-top, or like hard surface, said assembly comprising:

a) means for defining the game court configuration on the hard surface;

b) a marking material having a composition and structure adapted for fixed, removable attachment to the hard surface, said marking material substantially including a clay-based composition of approximately 50% by volume of clay and approximately 50% by volume of a material selected from the group consisting of alumina hydrate and silica;

c) container means for holding and mixing therein a predetermined quantity of said marking material with a predetermined quantity of a fluid to form a liquid solution of said marking material; and

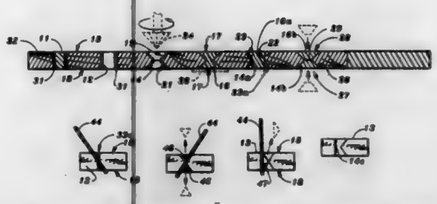
d) applicator means structured for applying said liquid solution to the hard surface along said defined game court configuration.

5,440,859

BOARD OF LUMBER DEFECT REPAIR

Thomas F. Cortese, 3333 Guido St., Oakland, Calif. 94602

Filed May 17, 1993, Ser. No. 62,794
Int. Cl.[6] E02D *37/00*; **E04G** *23/00*; **B27G** *1/00*
U.S. Cl. 52—742.1 **18 Claims**



1. In a method of eliminating a defect in a board of lumber which has opposite surfaces and in which the defect is bounded by bark encasement tree tissue and wherein said defect is in the form of an elongated crack in said board, which method includes the steps of cutting an opening through said board at the site of said defect and cutting said bark encasement tissue out of said board in the process of cutting said opening therein at least at the portions of said board that are adjacent the opposite surfaces, forming the opening to have a width that changes at a first location between the opposite surfaces of the board and which undergoes a reversed change at a second location between the opposite surfaces of the board and forming a plug in said opening that fills said opening and which has end surfaces that are coplanar with the opposite surfaces of the board, including the further steps of forming said opening by making three cuts along said board in the direction of said crack, a first of said cuts being made with a saw blade that is sidewardly angled in a first direction relative to said opposite surfaces of said board, a second of said cuts being made with a saw blade that is sidewardly angled in an opposite direction which second cut intersects said first cut at a location that is between said opposite surfaces of said board and said third cut being made with a saw blade that is offset from the line of intersection of said first and second cuts, and removing the portions of said board that are situated between said cuts to provide said opening.

5,440,860

METHOD AND APPARATUS FOR FORMING AND HERMETICALLY SEALING SLICES OF FOOD ITEMS

Vincent Meli, Green Bay; Michael A. Matharani, DePere; Ted A. Brzezinski, Green Bay; David L. Shaft, Green Bay, and James L. Urmanski, Green Bay, all of Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Continuation of Ser. No. 791,490, Nov. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 644,481, Jan. 18, 1991, Pat. No. 5,114,307, which is a continuation of Ser. No. 361,405, Jun. 5, 1989, abandoned. This application Jul. 28, 1993, Ser. No. 98,752
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[6] B65B *7/02, 9/06, 51/10*
U.S. Cl. 53—451 **13 Claims**

5. An apparatus for packaging a food item wherein the food item is wrapped in individual slices comprising:

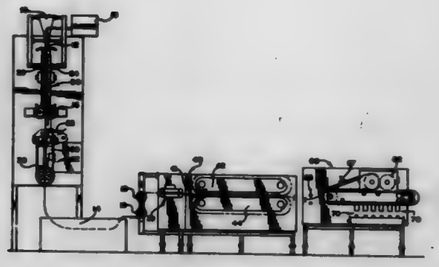
a food former providing a food item with a soft mass;

a device for folding a continuous web of plastic material into folded condition, the folded web including a front sheet and a rear sheet joined by a fold at a bottom longitudinal edge, and having an open top longitudinal edge, the front sheet and the rear sheet each having an outer layer and an inner sealing layer;

a longitudinal sealing station including a positioner positioning the front sheet and the rear sheet such that, at the open top longitudinal edge of the web, the inner sealing layer of the front sheet faces the inner sealing layer of the rear sheet, and a longitudinal sealer forming a longitudinal hermetic seal as the web is continuously moved, the longitudinal hermetic seal extending continuously along the top longitudinal edge of the web and joining the inner sealing layers of the front and rear sheets of the web, thereby defining a continuous tubular web of plastic material;

a food introducer for inserting the food item into the continuous tubular web of plastic material;

a flattening device continuously flattening the tubular web with the inserted food item inside the web such that a continuous slice of the food item is defined between the front sheet and the rear sheet of the web;



a cross-sealing station disposed downstream of the longitudinal sealing station, the cross-sealing station including opposing pairs of heated cleats arranged to receive the web between the cleats, the cleats applying sufficient pressure at cross-sealing zones to remove substantially all of the food item between the front and rear sheets of the flattened web at the cross-sealing zones, the cross-sealing zones extending continuously from the bottom longitudinal edge to the top longitudinal edge of the folded web, and the cleats applying heat conductively to the web at the cross-sealing zones as the web is continuously moved, wherein the heat is applied to the cross-sealing zones for an amount of time sufficient to hermetically seal the inner sealing layers of the front and rear sheets together at the cross-sealing zones to thereby provide a hermetically sealed package.

5,440,861

METHOD AND APPARATUS FOR EMPTYING ENVELOPES

Bernd Lund, Hamburg, Germany, assignor to Stielow GmbH & Co. KG, Norderstedt, Germany

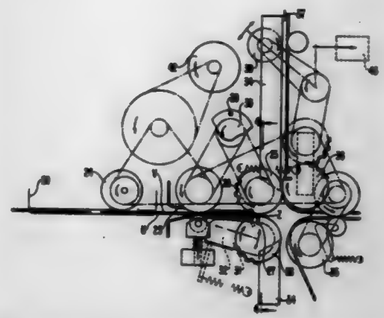
Continuation of Ser. No. 35,573, Mar. 23, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 323,699
Claims priority, application Germany, Apr. 9, 1992, 42 11 885.9
Int. Cl.[6] B65B *69/00, 43/30*
U.S. Cl. 53—492 **19 Claims**

1. A method for emptying envelopes, comprising the steps of:

opening an envelope on a first short edge and first and second long edges;

conveying the opened envelope upright to a removal device while standing on the second long edge;

drawing apart the two envelope sides which are only interconnected by a second short edge, laterally in different directions to linearly convey any contents of the envelope away from the envelope by using a portion of the envelope adjacent the interconnected second short edge to assist in the removal of any contents of the envelope.

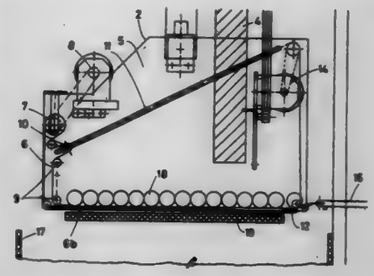


5,440,862

AUTOMATIC FRUIT CONTAINER FILLER MACHINE

Juan A. Sanchez-de-Leon-Rodriguez-Roda, Valencia, Spain, assignor to Food Machinery Espanola S.A., Valencia, Spain

Filed Aug. 31, 1994, Ser. No. 297,935
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—535 **2 Claims**



1. An automatic fruit container filler machine, essentially characterized by comprising an upwardly elongate structure (1) supporting an electric motor (3) at the top which is designed for upward and downward movement of a carriage (2), conformed with two parallel flanks (5), sized to be housed within a standard container (17) that is designed to lie at foot of said structure (1), and which carriage is fitted with an endless belt (6) having a width equal to that of the carriage and a length in excess of a carriage length, such belt conforming a specific circuit that can be comprised within said carriage, this belt being connected to a first drive means (8) conferring it with slide movement turning about the transverse guide rollers (9) that are fixed at their ends to the flanks (5) of the carriage (2) and the belt (6) surrounding respectively a movable roller (10) and a movable strip (12) being equal in length to the width of the belt (6), the roller and strip taking up a horizontal position across the belt, said roller and strip being connected to a common second drive means (14) movable in either of two directions and which, depending upon the direction of movement, drive the roller (10) along an oblique and rising guide (11) lying on the higher part of the carriage flanks (5) or the strip (12), along a horizontal guide (13) lying on the lower part of said carriage flanks (5) detectors for controlling said first and second drive means to provide, opposed movements of the roller (10) and strip (12), defining, as the case may be, a horizontal belt section (6b) along said guide which in raised car-

riage (2) position is positioned at the height of a feeding belt (16) which forms an integral part of the conventional fruit feeder, in order to transfer a fruit layer (18c) provided by said feeding belt (16) to said horizontal belt section (6b), whereas in lower carriage (2) position, said horizontal belt section (6b) is retracted, since the movement of said second drive means (14) is inverted, now moving the roller (10) allowing the belt section (6b) to be retracted to deposit the fruit layer (18) upon the bottom of the container (17), forming an initial filling layer (18a) in the container and thereafter upon preceding layers, until the container (17) is filled.

5,440,863

BAGGER

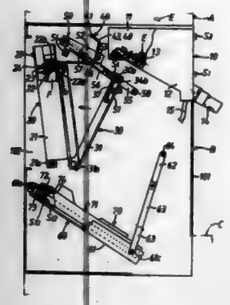
Chiyoshi Toya, Nagoya; Tokuo Tanaka, Toyoake, and Yoshinori Tanaka, Nagoya, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Continuation of Ser. No. 852,065, Mar. 16, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 47,010

Claims priority, application Japan, Jun. 14, 1991, 3-170473; Jul. 8, 1991, 3-194811; Mar. 9, 1992, 4-050920

Int. Cl.[6] B65B *43/44*

U.S. Cl. 53—571 **13 Claims**



1. A bagging apparatus in combination with an ice making machine mounted thereon, comprising:

a frame structure provided thereon with the ice making machine;

a bag storage mechanism mounted on said frame structure to store a plurality of stacked bags each having a front portion and a rear attachment portion extending above the front portion, said bag storage mechanism including an upright support member mounted on said frame structure and provided with a plurality of laterally spaced parallel support pins on which the stacked bags are hung at their rear attachment portions to be successively taken out;

a bag feeding mechanism mounted on said frame structure at a position opposed to said bag storage mechanism and located below an ice delivery chute of said ice making machine, said bag feeding mechanism including an arch-shaped frame tiltably mounted on said frame structure to be moved toward and away from the stacked bags carried on said upright support member, means for moving said tiltable frame forwardly and backwardly, and clamping means mounted on an upper end portion of said tiltable frame for clamping the front portion of a foremost bag of the stacked bags when engaged therewith by forward movement of said tiltable frame and for pulling the front portion of the foremost bag when retracted by backward movement of said tiltable frame;

a bag support mechanism mounted on said frame structure at a position located between said upright support member and said tiltable frame, said bag support mechanism including a plurality of laterally spaced parallel support rods tiltably mounted on said frame structure and engageable with the parallel support pins of said upright support member and receiving the rear attachment portion of the foremost bag during backward movement of said tiltable frame, each of said parallel support rods being provided at an intermediate portion thereof with a retainer which is cooperable with said clamping means in backward movement of said tiltable frame for deploying an upper opening of the foremost bag at a position located below said ice delivery chute;

a sealing mechanism mounted on said frame structure to heat seal the upper opening of the foremost bag after a predetermined amount of ice cubes is supplied therein from said ice delivery chute; and

support means tiltably mounted on said frame structure at a position located below said bag support mechanism to be retained in a horizontal position for receiving a bottom portion of the foremost bag thereon until the upper opening of the foremost bag is heat sealed and to be inclined downwardly for sliding the sealed bag of ice cubes into a cold storage bin arranged under said bagging apparatus,

wherein said clamping means comprises a pair of laterally spaced stationary pawls secured to the upper end portion of said tiltable frame to be brought into contact with the front portion of said foremost bag in forward movement of said tiltable frame, a pair of spring loaded swingable levers pivoted to the upper end portion of said tiltable frame to be rotated in a forward direction when engaged at each first end thereof with the front portion of said foremost bag in forward movement of said tiltable frame and to be rotated in a reverse direction when engaged at each second end thereof with a stationary member mounted on said frame structure for support of a heater block of said sealing mechanism, and a pair of movable pawls integrally provided with said swingable levers to be engaged with said stationary pawls in response to forward rotation of said swingable levers for grasping the front portion of said foremost bag and to be disengaged from said stationary pawls in response to reverse rotation of said swingable levers for releasing the front portion of the foremost bag.

5,440,864

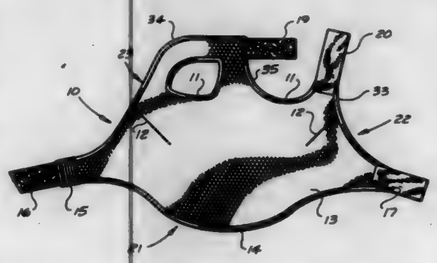
INSECT CONTROL APPARATUS FOR ANIMALS

Brenda L. Green, 5014 N. 81st Dr., Glendale, Ariz. 85303

Continuation-in-part of Ser. No. 79,742, Jun. 21, 1993, abandoned. This application Apr. 18, 1994, Ser. No. 229,180

Int. Cl.[6] B68C *5/00*; A01K *13/00*

U.S. Cl. 54—80.5 **5 Claims**



1. An insect control apparatus for the head and eyes of an animal, said apparatus comprising:

a piece of material having a contoured left side edge, a contoured right side edge, a lower edge and an upper edge;

an adjustable first ear opening formed in said upper edge and including a first loop fastener and a first hook fastener configured to separably couple, defining said adjustable ear opening;

a second ear opening formed in said piece of material adjacent said adjustable ear opening

a second loop fastener affixed to said piece of material proximate a convergence of said left side edge and said lower edge; and

a second hook fastener affixed to said piece of material proximate a convergence of said right side edge and said lower edge, adapted to be separably coupled to said second loop fastener to define an adjustable neck opening and an adjustable nose opening.

5,440,865

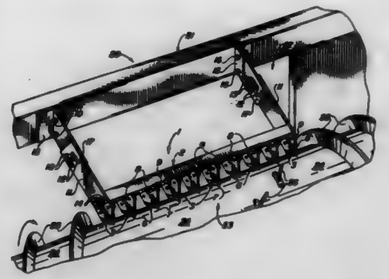
CROP CUTTING ASSEMBLY

Elcie C. Hale, 890 Forgotten La., Winnsboro, La. 71295

Filed Feb. 22, 1994, Ser. No. 199,609

Int. Cl.[6] A01D *41/06*

U.S. Cl. 56—14.4 **16 Claims**



1. A crop cutting assembly for a combine having a rotating cross auger for handling a crop, comprising blade mount means having mount bolt apertures carried by the combine; at least one double-bevelled serrated blade having blade bolt apertures; bolts extending through said mount bolt apertures and said blade bolt apertures, with said at least one double-bevelled serrated blade extending from said blade mount means in close proximity to said cross auger; and nuts threaded on said bolts, for removably securing said at least one double-bevelled serrated blade to said blade mount means.

5,440,866

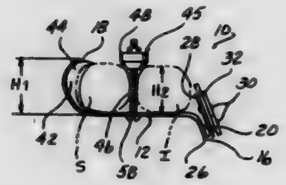
TOOL FOR AMBIDEXTROUS FRUIT PICKING

Timothy P. Gorman, Afton, Va., assignor to Cardinal Point, Inc., Afton, Va.

Filed Sep. 13, 1994, Ser. No. 305,275

Int. Cl.[6] A01D *1/00, 46/00*

U.S. Cl. 56—239 **18 Claims**



1. A hand-held device for picking fruit comprising:

an elongate central strip having a first end and an opposed second end, the elongate central strip having a longitudinal axis extending from the first to the second end and a latitudinal axis perpendicular thereto, the longitudinal and latitudinal axis defining a first normal plane;

an end member attached to the first end of the elongate central strip, the end member extending contiguously outward from the normal plane of the elongate central strip; and

a cutting blade attached to the second end of the central strip, the cutting blade extending angularly outward from the first normal plane.

5,440,867

FRUIT PICKING DEVICE

Joseph A. Strus, Rte. 2, Box 409, Comanche, Okla. 73529

Filed Apr. 14, 1994, Ser. No. 227,674

Int. Cl.[6] A01D *46/00*

U.S. Cl. 56—332 **8 Claims**



1. A fruit picking device for removing a fruit from a tree or bush, which device comprises:

a conical receptacle having an open base end, a compressible, resilient interior and an axially extending shaft;

means to frictionally engage said interior with one of said fruit;

a pole in axial alignment with said conical receptacle; and

motor means to rotate said axially extending shaft of said receptacle with respect to said pole wherein rotation of said receptacle rotates said fruit.

5,440,868

FOLDABLE RAKE IMPLEMENT

Clete Darnell, Paducah, Ky., assignor to Pick-Up Rake Corporation, Paducah, Ky.

Filed May 25, 1994, Ser. No. 248,652

Int. Cl.[6] A01D *7/00*

U.S. Cl. 56—400.17 **20 Claims**

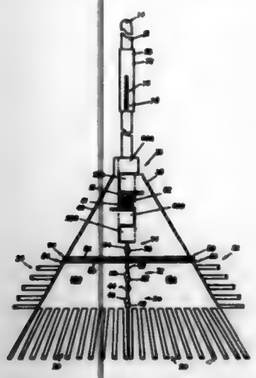
1. A foldable rake implement, comprising:

an elongated handle having a proximal end and a distal end;

an articulated frame structure having a centrally disposed axis of articulation coaxial with a longitudinal axis of the handle, the frame structure attached to the handle proximate the distal end for articulated movement between folded and unfolded positions about the axis of articulation;

a plurality of projecting tines secured to the articulated frame structure for motion therewith between the folded and unfolded positions; and

articulating means associated with the handle and the articulated frame structure for selectively folding and unfolding



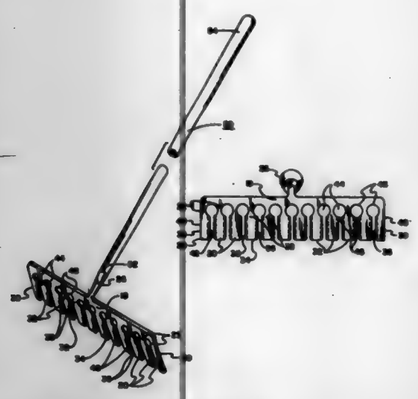
the articulated frame structure about the axis of articulation between folded and unfolded positions.

5,440,869

WEED REMOVAL RAKES

Nancy E. Meehan, Box 430 RRI, Woodland, Me. 04694

Filed Sep. 28, 1994, Ser. No. 314,099
Int. Cl.[6] A01D *7/02, 7/06*
U.S. Cl. 56—400.21 5 Claims



2. A weed removal rake comprising:

a blade in a generally planar rectangular configuration with an upper region, a lower region, a central region therebetween, the upper region including a hollow handle retainer extending rearwardly therefrom, the lower region formed of a plurality of equidistantly spaced tines, the tines being formed contiguously with the central region and shaped in a rectangular configuration, a plurality of inner tines including two sharp side edges, each end of the blade including an end tine with a sharp inner edge and a dull outer edge, the central region of the blade formed as a planar rectangular member with a series of apertures with openings formed contiguously with the spaces between the tines, the edges of the apertures being sharp; and

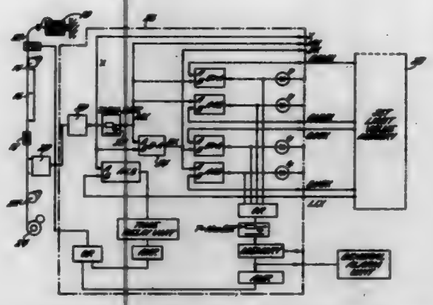
a handle having an inboard end and an outboard end, the inboard end adapted to be tightly coupled within the retainer handle of the blade in the operative orientation.

5,440,870

METHOD AND APPARATUS OF MONITORING THE QUALITY OF A FALSE TWIST TEXTURED YARN

Bernd Neumann, Radevormwald, Germany, assignor to Barmag AG, Remscheid, Germany

Filed Jan. 9, 1992, Ser. No. 818,511
Claims priority, application Germany, Jan. 17, 1991, 41 01 189.9; Mar. 13, 1991, 41 07 951.5
Int. Cl.[6] D01H *7/92, 13/22*
U.S. Cl. 57—265 13 Claims



1. A method of monitoring the quality of an advancing yarn and comprising the steps of

continuously sensing the tension of the advancing yarn, while continuously determining the coefficient of variation of the sensed yarn tension and including the steps of:

(a) deriving a signal representative of the tension of the advancing yarn;

(b) filtering said tension signal to derive a mean value thereof;

(c) deriving a signal representative of the difference between said mean value and said tension signal;

(d) squaring said difference signal;

(e) filtering said squared signal;

(f) deriving the square root of said filtered squared signal; and

(g) deriving the quotient of said square root divided by said mean value, and

generating an error signal whenever at least one of the following conditions is present: (1) the coefficient of variation exceeds a predetermined upper limit, and (2) the coefficient of variation drops below a predetermined lower limit.

5,440,871

CIRCULATING FLUIDIZED BED REACTOR COMBINED CYCLE POWER GENERATION SYSTEM

David H. Dietz, Hampton, N.J., and Mouhyieldin Kandis, College Station, Tex., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation of Ser. No. 976,027, Nov. 13, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,663
Int. Cl.[6] F02B *43/00;* F02C *6/00*
U.S. Cl. 60—39.02 14 Claims

1. A fluidized bed combustion system comprising:

a vessel operative at atmospheric pressure;

means for forming a bed of particulate material including fuel in said vessel whereby a portion of said particulate material is entrained by flue gases produced as a result of combustion of said fuel;

means for fluidizing said particulate material;

means for separating entrained particulate material from flue gases produced as a result of combustion of said fuel;

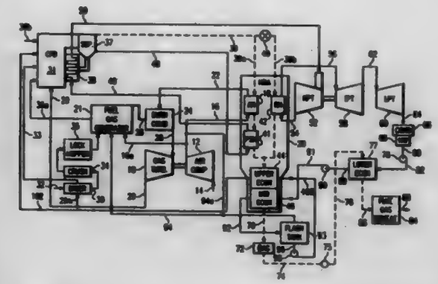
means for injecting air with a first quantity of steam to preheat said air;

means for passing a first portion of said separated flue gases into a heat exchange relation with a second quantity of steam to heat said second quantity of steam;

means for passing a remaining portion of said separated flue gases into a heat exchange relation to said preheated air to heat said preheated air;

valve means for controlling the relative amounts of separated flue gases passed in said heat exchange relationship with said second quantity of steam and said preheated air;

means for passing water in a heat exchange relation to said



fluidized bed to convert said water to a third quantity of steam;

steam turbine means;

means for passing said second quantity of steam to said steam turbine means to drive same;

means for passing said third quantity of steam to said steam turbine means to drive same;

a gas combustor;

means for passing said heated air to said gas combustor;

means for passing fuel gas to said gas combustor for combusting said fuel gas in the presence of said first quantity of steam and said heated air to produce hot gases;

a gas turbine; and

means for passing said hot gases to said gas turbine to drive same.

5,440,872

CATALYTIC METHOD

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Continuation-in-part of Ser. No. 245,429, May 18, 1994, which is a continuation-in-part of Ser. No. 661,386, Feb. 26, 1991, Pat. No. 5,342,591, which is a division of Ser. No. 273,343, Nov. 18, 1988, Pat. No. 5,051,241. This application Sep. 12, 1994, Ser. No. 304,137
Int. Cl.[6] F23R *3/40*
U.S. Cl. 60—39.06 12 Claims

1. A low emissions combustor for use in gas turbines which operate at turbine inlet temperatures below about 1250 degrees Kelvin, which comprises;

a multiplicity of microlith catalyst elements; and

means for providing an admixture of fuel and air having an adiabatic flame temperature within the range of 600 to 1250 degrees Kelvin.

9. The method of operating gas turbines which operate at turbine inlet temperatures below 1250 degrees Kelvin, which comprises;

providing an admixture of fuel and air having an adiabatic flame temperature between 600 and 1250 degrees Kelvin;

passing said admixture through a combustor comprising a multiplicity of microlith catalyst elements; and

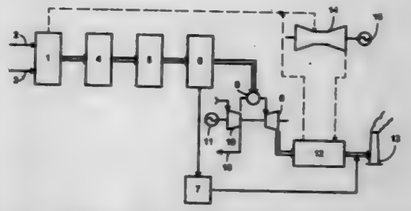
reacting said fuel on said catalyst elements to produce water and carbon dioxide with liberation of heat.

5,440,873

GASIFICATION-COMBINED POWER PLANT

Hiromichi Toda; Shigeyasu Ishigami; Norihisa Kobayashi; Takaaki Furuya, all of Tokyo, and Jun Izumi, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 861,525, Apr. 1, 1992, Pat. No. 5,313,781. This application May 24, 1994, Ser. No. 248,626
Claims priority, application Japan, Apr. 2, 1991, 3-096396
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[6] F02C *3/28*
U.S. Cl. 60—39.12 3 Claims



1. A gasification-combined power plant which comprises:

a gasification apparatus for partially oxidizing a carbon-containing fuel with an oxygen-containing gas at a high temperature and under a high pressure;

a gas turbine driven by combustion of a high temperature fuel gas generated in said gasification apparatus; an exhaust heat recovery boiler for recovering heat from a high-temperature gas at an outlet of said gas turbine;

a steam turbine driven by steam produced by heat recovered respectively at said gasification apparatus and said exhaust heat recovery boiler;

a gas clean-up apparatus for purifying at a high temperature the high-temperature fuel gas generated by said gasification apparatus, said gas cleanup apparatus being positioned downstream from said gasification apparatus; a dust collector for removing char and dust from the fuel gas; and

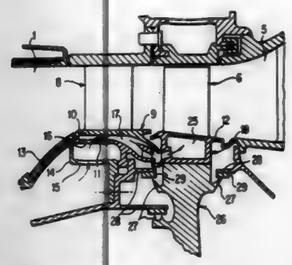
a gas separation apparatus positioned downstream from the dust collector for removing substantially all of the trace gas components from the fuel gas at the same time by way of dry physical adsorption wherein the dry physical adsorption is carried out with a pressure swing adsorption procedure consisting of adsorbing trace gas components adsorbed by the adsorbent by increasing the pressure conditions at the gasification, apparatus, and desorbing and removing the trace gas components from the adsorbent by reducing the pressure, said gas separation apparatus comprising a plurality of adsorption towers containing an adsorbent which is capable of selectively adsorbing trace components from the fuel gas, conduit means for introducing fuel gas to the adsorption towers, means for removing trace component-free fuel gas from the adsorption towers and introducing the removed trace component-free fuel gas to a combustor for the turbine, means to remove trace gas components desorbed from the adsorbent and introduce the removed trace components to a gas disposal apparatus, means for maintaining an elevated pressure in the conduit means and in the adsorption towers, means for withdrawing the fuel gas from the adsorption towers, and means for repeating the physical absorption step by way of pressure increase and the desorption step by way of pressure reduction.

5,440,874

TURBO-ENGINE PROVIDED WITH A DEVICE FOR BLOWING AIR ONTO A ROTOR ELEMENT

Gilles A. Charier, La Grande Paroisse; Xavier, J. M. A. Guyonnet, St Fargeau Ponthierry, and Jean-Louis Picard, Vaux le Penil, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Jul. 14, 1994, Ser. No. 274,709
Claims priority, application France, Jul. 15, 1993, 93 08665
Int. Cl.[6] F02C 7/18
U.S. Cl. 60—39.75 6 Claims



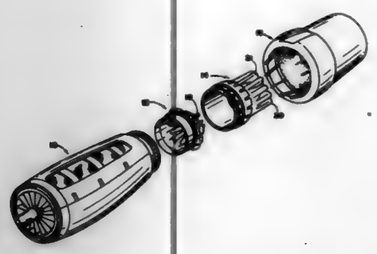
1. Turbojet engine which comprises:
a combustion chamber located upstream of a turbine, said turbine having a rotor disk integrally bladed with vanes and including a channel blowing gas from a position outside a wall of the combustion chamber to a peripheral zone of the rotor disk adjacent to the vanes,
a channel divided in front of a zone adjacent to the vanes into an internal channel and an external channel surrounding the internal channel, wherein the internal channel has a greater cross-section than the external channel and wherein the external channel converges upon approaching an outlet thereof so as to accelerate the gas flowing therethrough and prevent gas which has passed through the internal channel from being dispersed.

5,440,875

FIXED GEOMETRY MIXER/EJECTOR SUPPRESSION SYSTEM FOR TURBOFAN AIRCRAFT ENGINES

Delbert W. Torkelson, Catoosa; Thomas J. Jannetta, Tulsa, both of Okla.; John P. Nikkanen, West Hartford, Conn.; Daniel E. Webb, Wethersfield, Conn.; Steven H. Zysman, Middletown, Conn.; William D. Colletti, Cromwell, Conn.; Alfred M. Stern, Manchester, Conn., and Wesley K. Lord, Glastonbury, Conn., assignors to United Technologies Corporation, East Hartford, Conn. and Nordam, Tulsa, Okla.

Continuation of Ser. No. 82,612, Jun. 25, 1993, This application Dec. 20, 1994, Ser. No. 360,174
Int. Cl.[6] F02K 3/02
U.S. Cl. 60—226.1 11 Claims



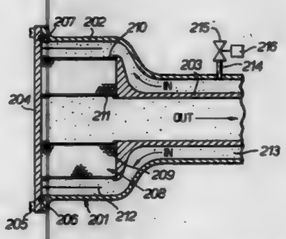
1. A noise suppression system for use with a turbofan engine having, at its exhaust end, fan flow and core flow streams, the suppression system comprising:
a flow mixer having an aft end and formed of a selected number of fixed wave-like lobes and attached to said exhaust end of said turbofan engine and configured to invert said fan flow and said core flow streams to provide a flow mixer outlet stream,
an exhaust nozzle having a forward end and being formed of a selected number of fixed wave-like lobes supported aft of said flow mixer including means for the introduction of ambient air that is mixed with said flow mixer outlet stream, said exhaust nozzle forward end being forward of said flow mixer aft end so that said flow mixer is contained at least in part within said exhaust nozzle; and
an exhaust shroud supported at least in part aft of said exhaust nozzle, said engine, said flow mixer, said exhaust nozzle and said exhaust shroud being arranged in sequential and at least substantially inline relationship.

5,440,876

EXHAUST GAS PURIFICATION

Keith H. Bayliss, Bridgnorth; Stephen I. Hull, Oxford, and David Raybone, Gloucester, all of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Didcot, England

Filed Dec. 15, 1993, Ser. No. 166,937
Claims priority, application United Kingdom, Jan. 20, 1993, 9301433
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—274 16 Claims



1. A reactor for reducing exhaust emissions from internal combustion engines, comprising a reactor chamber adapted to form part of an internal combustion engine exhaust system, wherein the reactor chamber includes an active element through which in use exhaust gases are constrained to pass consisting of a body of pellets of a heat resistant material having a high dielectric constant and at least one pair of electrodes by means of which the pellets within the active element can be charged electrically.

5,440,877

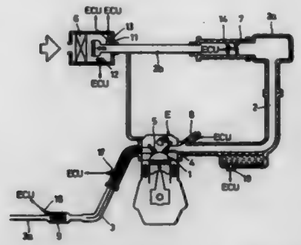
AIR-FUEL RATIO CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Hitoshi Kamura, Kyoto; Kazutoshi Noma, Kusatsu, and Atsuyoshi Kojima, Chiryu, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 138,017, Oct. 19, 1993, abandoned.
This application Sep. 26, 1994, Ser. No. 313,570
Claims priority, application Japan, Oct. 20, 1992, 4-281357
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—274 22 Claims

1. An air-fuel ratio controller for an internal-combustion engine, comprising:
an upstream-side oxygen sensor, installed in an exhaust system of the internal-combustion engine on an upstream side of an exhaust gas purifier, for detecting a first oxygen concentration in exhaust gas;

a downstream-side oxygen sensor, installed in the exhaust system on a downstream side of or inside the exhaust gas purifier, for detecting a second oxygen concentration in exhaust gas;
air-fuel ratio control means for correcting an air-fuel ratio of an air-fuel mixture supplied to the internal-combustion engine in accordance with a result of comparison between the first oxygen concentration value detected by said upstream-side oxygen sensor and a first reference value, to thereby control the air-fuel ratio to a desired value; and



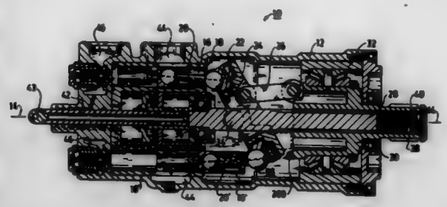
parameter value correcting means for correcting a value of a parameter, related to operation of said air-fuel ratio control means, in accordance with a difference between the second oxygen concentration value detected by said downstream-side oxygen sensor and a second reference value, said parameter value correcting means correcting the value of the parameter at a correction degree that changes according to a magnitude of the difference between the detected value of the second oxygen concentration and the second reference value.

5,440,878

VARIABLE HYDRAULIC MACHINE

Vernon E. Gleasman, 11 Pondview Dr., Pittsford, N.Y. 14534; Keith E. Gleasman, 11 McCoord Woods, Fairport, N.Y. 14450; Arthur H. McElroy, II, Tulsa, and David W. Porter, Broken Arrow, both of Okla., assignors to Vernon E. Gleasman, Pittsford and Keith E. Gleasman, Fairport, both of N.Y.

Filed Aug. 27, 1992, Ser. No. 936,842
Int. Cl.[6] F16D 39/00
U.S. Cl. 60—487 26 Claims



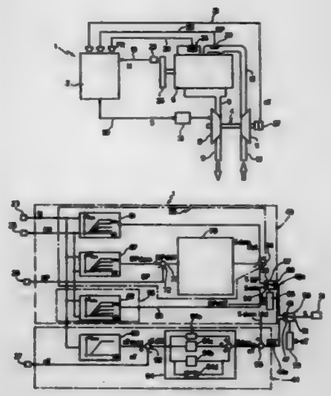
1. In a hydraulic machine having:
a plurality of pistons reciprocative in respective fixed cylinders positioned in a housing circumferentially about a central axis aligned with a drive element supported in said housing by a main bearing, the stroke of said pistons being determined by the inclination of a split swash-plate about a pivot;
valve means associated with each cylinder for opening and closing respective fluid passages in said housing permitting the flow of fluid to and from said cylinders; and
said swash-plate being split into
a nutatable-but-non-rotatable portion for holding a first end of each of a plurality of connecting rods, the other end of each connecting rod being held by a respective one of said pistons, and
a nutatable-and-rotatable portion connected to said drive element for movement about said pivot and said central axis;
the improvement comprising:
restraining means for limiting the motion of at least one of said connecting rods to one plane relative to its respective piston to maintain said connecting rods in alignment about said drive means axis, said restraining means being one of:
a slotted end cap for at least one of said pistons for restraining its respective connecting rod to motion in one plane relative to said piston; and
gimbal means for supporting said nutatable-but-non-rotatable portion of said split swash-plate, said gimbal means having (a) a first bearing in which said non-rotatable portion is mounted for movement about a first axis, said first bearing being carried on (b) a yoke mounted for movement about a second axis perpendicular to said first axis, said yoke being secured to said housing by a single second bearing.

5,440,879

ELECTRONIC CONTROL SYSTEM FOR THE SPEED OF ROTATION OF A VARIABLE GEOMETRY TURBOCOMPRESSOR

Giancarlo Dellora, Settimo Torinese, Italy, assignor to Iveco Fiat S.p.A., Turin, Italy

Filed Nov. 29, 1993, Ser. No. 158,906
Claims priority, application Italy, Nov. 27, 1992, TO92A0964
Int. Cl.[6] F02B 37/12
U.S. Cl. 60—602 11 Claims



1. An electronic control system for a variable geometry turbocompressor (4) applied to an engine (6), comprising first electronic calculation means (40) receiving as an input a plurality of information signals (N, FR) measured in the engine (6),

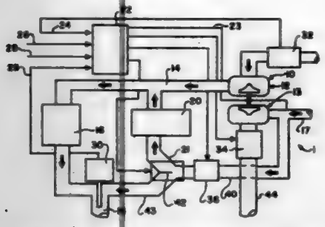
said first electronic calculation means (40) generating as an output (40e), in response to the information signals (N, FR), a first piloting signal (S), second electronic calculation means (44) having an input connected to sensor means (27) coupled to the turbocompressor (4), said sensor means (27) generating a measurement signal (nT) proportional to the number of revolutions of the turbocompressor (4), said second electronic calculation means (44) generating as an input (44e), in response to the measurement signal (nT), a second piloting signal (SnT), and an electronic diverter means (50) having an output (51) adapted to supply a piloting signal to an actuator (31) of the turbocompressor (4) and at least a first (46) and a second (47) input connected respectively to the outputs of the first (40) and the second (44) electronic calculation means, the system (1) further comprising actuator means (53) for the electronic diverter means (50) adapted to connect the output (51) of the diverter means to the second input (47) of the diverter means when an instantaneous value of the measurement signal (nT) exceeds a stored threshold value (nTmax).

5,440,880

DIESEL ENGINE EGR SYSTEM WITH EXHAUST GAS CONDITIONING

Kenneth P. Ceynow, Oak Lawn; Richard E. Jaas, Frankfort, and Robert X. Shi, Chicago, all of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed May 16, 1994, Ser. No. 243,022
Int. Cl.[6] F02B *33/44, 47/08*
U.S. Cl. 60—605.2 **12 Claims**



1. An exhaust gas recirculation system for a supercharged diesel engine of the type having an aftercooler operatively disposed between a supercharging device and an intake manifold of said engine comprising an exhaust gas recirculation means selectively operable to feed exhaust gases from said engine directly to said intake manifold, said exhaust gas recirculation means including selectively operable communication means for communicating a portion of said exhaust gases from said exhaust gas recirculation means to said aftercooler, and a conditioning device operatively disposed in said communication means to remove diesel particulate matter from exhaust gas communicated to the aftercooler.

5,440,881

INTAKE SYSTEM FOR AN INTERNAL-COMBUSTION ENGINE FOR USE IN ONE-STAGE OR TWO-STAGE SUPERCHARGING

Hans Sudmanns, and Karl Schier, both of Friedrichshafen, Germany, assignors to MTU Motor- und Turbinen-Union Friedrichshafen, Germany

PCT No. PCT/DE91/00431, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO91/19086, PCT Pub. Date Dec. 12, 1991
PCT Filed May 24, 1991, Ser. No. 828,989
Claims priority, application Germany, Jun. 2, 1990, 40 17 823.4
Int. Cl.[6] F02B *37/02*
U.S. Cl. 60—612 **24 Claims**

1. An intake system for an internal-combustion engine for use with both a one-stage and a two-stage supercharging, comprising:

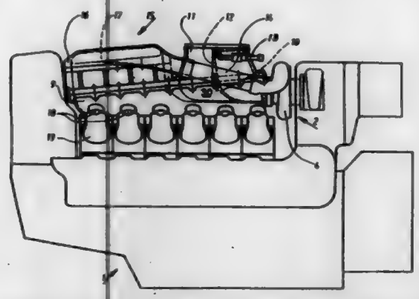
an internal combustion engine having cylinder heads with inlet ducts;

at least one exhaust gas turbocharger located on the internal combustion engine;

one charge air cooler located on the internal combustion engine;

one air collecting housing located on the internal combustion engine;

connection pipe means connecting an outlet of a compressor of the at least one exhaust gas turbocharger to the inlet ducts of the cylinder heads of the internal combustion engine through said one charge air cooler and said one air collecting housing;



wherein said one air collecting housing and the connection pipe means are substantially identical in shape, size, and location when used with a two-stage supercharging and a one-stage supercharging;

wherein there is a flow housing for receiving charge air for the internal combustion engine and which flow housing is constructed with an identical sized and shaped bottom part in both one-stage and two-stage supercharging;

wherein the bottom part has connection tubes for diverting the charge air to the compressor of the at least one exhaust gas turbocharger; and

wherein the bottom part is located on the internal combustion engine at the same point in one-stage and two-stage supercharging.

5,440,882

METHOD AND APPARATUS FOR CONVERTING HEAT FROM GEOTHERMAL LIQUID AND GEOTHERMAL STEAM TO ELECTRIC POWER

Alexander I. Kalina, Hillsborough, Calif., assignor to Exergy, Inc., Hayward, Calif.

Filed Nov. 3, 1993, Ser. No. 147,670
Int. Cl.[6] F03G *4/00*; F01K *23/04*
U.S. Cl. 60—641.2 **19 Claims**

1. A method of implementing a thermodynamic cycle comprising the steps of:

expanding a gaseous working stream, transforming its energy into usable form and producing a spent working stream;

heating a multicomponent oncoming liquid working stream by partially condensing the spent working stream, thereby forming a preheated liquid working stream; and

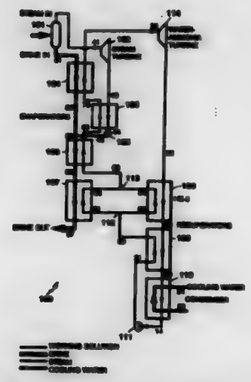
further comprising the steps of:

dividing the preheated liquid working stream into first and second substreams;

partially evaporating the first substream using heat produced by partially condensing the spent working stream;

partially evaporating the second substream using heat produced by cooling geothermal liquid;

combining the partially evaporated first and second substreams; and



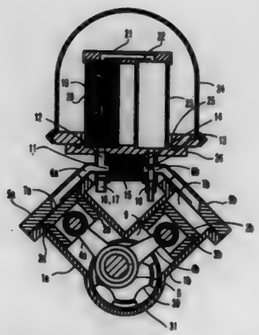
evaporating the partially evaporated first and second substreams to form the gaseous working stream using heat produced by a combination of cooling geothermal liquid and condensing geothermal steam.

5,440,883

PULSE-TUBE REFRIGERATOR

Shintaro Harada, 73-2, Nakaawahara, Kumami-Choo, Nishio-City, Aichi-Pref., Japan

Filed Aug. 24, 1994, Ser. No. 295,277
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **4 Claims**



1. A refrigerator comprising:

a housing having a compression cylindrical portion and a expansion cylindrical portion therein;

a reciprocable compression piston disposed in said compression cylindrical portion of said housing and fluid-tightly dividing said compression cylindrical portion into compression and crank chambers;

a compression cylinder head covering said compression cylindrical portion;

an expansion piston disposed in said expansion cylindrical portion of said housing, reciprocating at a preceding phase angle of about a quarter cycle, and fluid-tightly dividing said expansion cylindrical portion into expansion and crank chambers;

an expansion cylinder head covering said expansion cylindrical portion;

a high temperature heat exchanger connected between said compression cylinder head and said expansion cylinder head having two-way ports in both sides;

a flange connected to said high temperature heat exchanger;

a regenerator connected to said flange and including a plurality of regenerative materials;

a low temperature heat exchanger connected said regenerator;

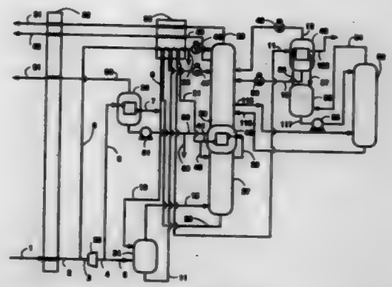
a pulse tube connected between said low temperature heat exchanger and said flange.

5,440,884

CRYOGENIC AIR SEPARATION SYSTEM WITH LIQUID AIR STRIPPING

Dante P. Bonaquist, and Michael J. Lockett, both of Grand Island, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jul. 14, 1994, Ser. No. 274,885
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—22 **16 Claims**



1. A method for the cryogenic rectification of feed air employing a double column main plant, comprising a higher pressure column and a lower pressure column, and an argon column having a top condenser, comprising:

(A) condensing a portion of the feed air to produce liquid feed air;

(B) passing liquid feed air and gaseous feed air into a stripping column and passing liquid feed air against gaseous feed air in the stripping column to produce stripping column product gas, having a nitrogen concentration which exceeds that of air, and stripping column product liquid, having an oxygen concentration which exceeds 25 mole percent;

(C) passing stripping column product gas into the higher pressure column for separation by cryogenic rectification;

(D) at least partially vaporizing stripping column product liquid by indirect heat exchange with argon-containing fluid in the argon column top condenser to produce oxygen-containing gas; and

(E) passing oxygen-containing gas into the lower pressure column for separation by cryogenic rectification.

5,440,885

PROCESS AND INSTALLATION FOR THE PRODUCTION OF ULTRA-PURE NITROGEN BY DISTILLATION OF AIR

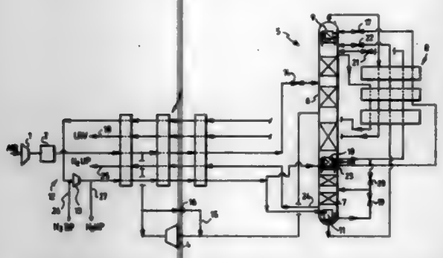
Pascal Arrialou, Saint Maurice, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude, Paris, France

Filed Jan. 18, 1994, Ser. No. 182,331
Claims priority, application France, Feb. 9, 1993, 93 01403
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—24 **9 Claims**

1. In a process for the production of ultra-pure nitrogen by distillation of air, comprising

separating the air to be treated in a first column into nitrogen

in the head of the column and liquid in the bottom of the column rich in oxygen,
circulating nitrogen from the head of the column in a refrigeration cycle,
purifying a flow of high pressure cycle nitrogen from hydrogen in a second column comprising a bottom vaporizer which ensures the condensation of this nitrogen before its



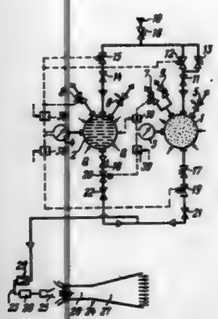
introduction into this second column, said second column also comprising a head condenser cooled by the bottom liquid of the first column and
withdrawing the ultra-pure production nitrogen from the bottom of the second column
the improvement comprising condensing a second high pressure cycle nitrogen flow by vaporization of the bottom liquid of thee first column.

5,440,886

METHOD OF GAS GENERATION AND PLANT FOR EFFECTING SAME

Alexandr K. Malakeev; Alexandr I. Kuzin, and Vladimir K. Malakeev, all of Voronezh, Russian Federation, assignors to Tovarischestvo s ogranichennoi otvetstvennostju, firma "MEGMA ARS" (MEGMA ARS Ltd), Voronezh, Russian Federation

PCT No. PCT/RU92/00076, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO93/21470, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 14, 1992, Ser. No. 204,138
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—50.2 **10 Claims**



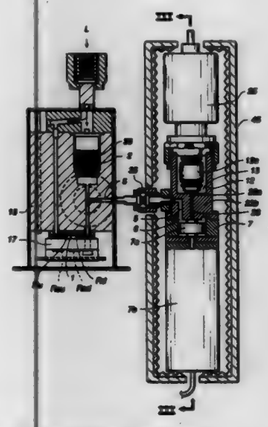
1. A method of gas generation, comprising:
placing a cryogen working medium, fed from a source in a liquid phase, in a defined enclosure of space;
placing said defined enclosure in the surrounding medium having parameters providing thermal inversion in an isochoric process until a gaseous fluid having an increased potential pressure energy is obtained;
reducing said gaseous fluid followed by gas-dynamic ejecting of said fluid so as to form a gas flow therefrom having preset parameters; and
delivering said gas flow thus formed to a consumer.

5,440,887

LIQUID VAPORIZER-FEEDER

Hiroshi Nishizato, Chiba, and Hirofumi Ono, Shiga, both of Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 822,179, Jan. 16, 1992, Pat. No. 5,272,880. This application Jul. 9, 1993, Ser. No. 90,344
Claims priority, application Japan, Feb. 5, 1991, 3-036707
Int. Cl.[6] F17C *13/00*
U.S. Cl. 62—50.7 **7 Claims**



1. A liquid vaporizer-feeder comprising:
a control valve for controlling the amount of a liquid passing therethrough;
a vaporization valve for causing said liquid, of which the amount has been controlled by said control valve, to be vaporized and transported out by a carrier gas;
a passage connecting said control valve with said vaporization valve for allowing said liquid to flow from said control valve therethrough to into said vaporization valve;
a temperature-controlled housing structure containing both said control valve and said vaporization valve therein; and
temperature-controlling means for maintaining a thermostatic condition inside said housing structure.

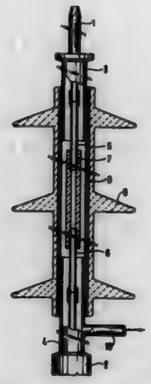
5,440,888

APPARATUS FOR TRANSFERRING LIQUID HELIUM BETWEEN TWO DEVICES AT DIFFERENT POTENTIALS

Christian Cottevieille, Montreuil, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Jun. 7, 1994, Ser. No. 255,742
Claims priority, application France, Jun. 8, 1993, 93 06841
Int. Cl.[6] F17C *13/00*
U.S. Cl. 62—50.7 **1 Claims**

1. An apparatus for transferring liquid helium between axially spaced first and second endpieces, the first endpiece being connected to a device at a first voltage, the second end piece being connected to a device at a second voltage different from the first voltage,
said apparatus comprising:
an internal cryogen delivery conduit extending between said two end pieces and being respectively coupled thereto at opposite ends thereof, said internal cryogen delivery conduit further having an insulative portion between said ends thereof;
an outer conduit coaxial with said internal cryogen delivery conduit extending between said two endpieces and being connected thereto, said outer conduit having an insulative portion, said insulative portions of internal cryogen delivery conduit and said coaxial outer conduit electrically



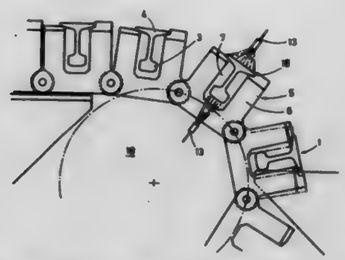
insulating the first endpiece from the second endpiece, said coaxial outer conduit being concentrically spaced from said internal cryogen delivery conduit and forming ah annular space therebetween;
a pumping passage for connecting said annular space to a pump for providing a vacuum in said annular space; and
fins disposed about the periphery of said coaxial outer conduit.

5,440,889

METHOD OF AND ARRANGEMENT FOR COOLING OF HOT ROLLED SECTIONS IN PARTICULAR RAILS

Egon Sippel, Niederkrüchten; Meinert Meyer, Erkrath; Manfred Albedyhl, Mettmann, and Friedrich Hollmann, Grevenbroich, all of Germany, assignors to SMS Schloemana-Siemag AG, Düsseldorf, Germany

Filed Nov. 12, 1993, Ser. No. 151,706
Claims priority, application Germany, Nov. 11, 1992, 42 37 991.1
Int. Cl.[6] F25D *13/06*
U.S. Cl. 62—63 **5 Claims**



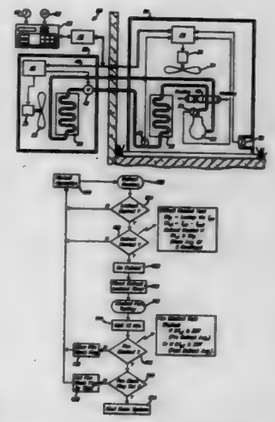
1. An apparatus for cooling hot rolled rails, comprising a cooling bed, means for transporting the hot rolled rails along the cooling bed, and a plurality of support elements provided on the transporting means for supporting the hot rolled rails in a suspended state with rail heads of the hot rolled rails oriented downwardly.

5,440,890

BLOCKED FAN DETECTION SYSTEM FOR HEAT PUMP

Vijay Babel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton, and Gregory P. Herroon, Piqua, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Dec. 10, 1993, Ser. No. 165,725
Int. Cl.[6] F25B *41/00, 47/02*; F25D *21/06*; G01N *25/00*
U.S. Cl. 62—81 **12 Claims**



1. An airflow obstruction detection method for detecting an airflow obstruction condition in an outdoor heat exchanger, comprising the steps of:
at first time, determining a first temperature difference parameter indicative of a temperature difference between the outdoor heat exchanger and the ambient air surrounding said heat exchanger;
performing a defrost cycle when the first temperature difference parameter is equal or exceeds a first predetermined value;
at a second time, determining a second temperature difference parameter indicative of a temperature difference between the outdoor heat exchanger and the ambient air surrounding said heat exchanger after the defrost cycle has been completed;
declaring an obstruction condition due to foreign matter or debris to exist if the second temperature difference parameter is equal or exceeds a second predetermined value.

5,440,891

FUZZY LOGIC BASED CONTROLLER FOR COOLING AND REFRIGERATING SYSTEMS

James O. Hindmon, Jr., 110 Old Hickory La., Powder Springs, Ga. 30073, and Phillip G. Hindmon, Sr., 210 Maple Dr., Cedartown, Ga. 30125

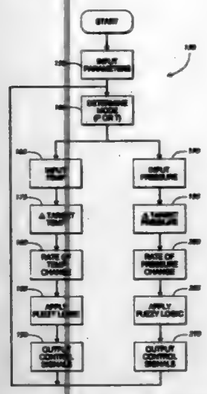
Filed Jan. 26, 1994, Ser. No. 187,448
Int. Cl.[6] F25B *7/00*
U.S. Cl. 62—117 **33 Claims**

1. A refrigeration system control device using fuzzy logic for controlling a plurality of refrigeration compressors such that the closest capacity is selected to match the load to each of a plurality of evaporators comprising:
a control having an input adapted to be connected to a means to sense the temperature in the controlled space wherein a control signal is indicative of the maximum refrigeration load of the controlled space;
a means for determining whether the primary control variable in said space is above or below a single predetermined desired target;
a pressure sensing means connected to the refrigeration system in a manner which allows generating a signal

responsive to the suction pressure of the refrigeration system;

a means for generating a signal indicative that the temperature in said space is above a predetermined high alarm setpoint or below a low alarm setpoint, said signal causing disconnect of said temperature control signal from the control device and allowing the control to use a signal from the pressure sensing means as the control signal;

a signal means to indicate that said controlled space is in defrost, such means causing disconnect of said temperature control signal from the control device and allowing the control to use a signal from the pressure sensing means as the control signal;



a timer having an adjustable timing interval based upon the error in the control signal of the device and the single predetermined desired target for that control signal and the rate of change of the control signal;

a selection means consisting of fuzzy logic rules and membership functions for determining, after said timer interval has elapsed, the closest combination of available compressors which will match the load;

an output being an electric signal adapted to selectively energize or de-energize said combination of the plurality of refrigeration compressors.

5,440,892

AUGER-TYPE ICE MAKING MACHINE

Susumu Tatematsu, Nagoya; Kazuhiro Mori, Toyoake, and Hideyuki Ikari, Kariya, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 29, 1994, Ser. No. 294,841

Int. Cl.[6] F25C *1/14*

U.S. Cl. 62—135 **18 Claims**

1. An auger-type ice making machine, comprising:

a refrigerating cylinder;

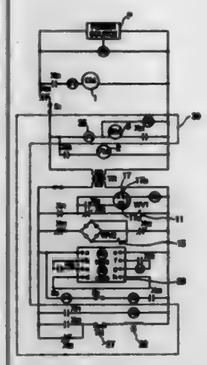
an auger disposed rotatably within said refrigerating cylinder and provided with a spiral blade;

a refrigerating system including a coolant vaporizing tube wound around outer periphery of said refrigerating cylinder;

a driving motor for driving rotatively said auger;

a water supply system for feeding raw water into said refrigerating cylinder;

electric heater means mounted around an outlet end portion of said refrigerating cylinder into and through which ice is transported under the effect of the rotation of said auger; and



a control circuit for electrically energizing said electric heater means upon detection of an overcurrent flow in said driving motor.

5,440,893

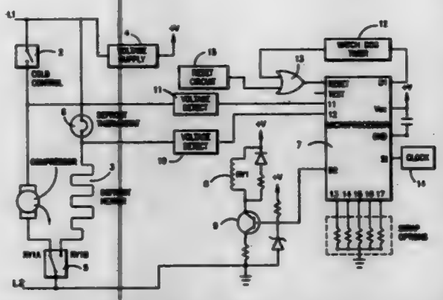
ADAPTIVE DEFROST CONTROL SYSTEM

Kenneth Davis, Berwyn; Alvin Miller, and Robert Wetekamp, both of Galesburg, all of Ill., assignors to Maytag Corporation, Newton, Iowa

Filed Feb. 28, 1994, Ser. No. 202,587

Int. Cl.[6] F25D *21/06*

U.S. Cl. 62—155 **41 Claims**



1. In an automatically defrosting refrigeration apparatus including a refrigerant evaporator, a heater for defrosting the evaporator, defrost initiation means for initiating a defrost operation and timer means for measuring a defrost time required to carry out the defrost operation, the improvement comprising:

adaptive defrost means for changing an accumulated compressor run time interval between defrost operations, said adaptive defrost means including means for calculating a difference between two successive defrost times, and means for changing the interval between defrost operations based on the difference.

5,440,894

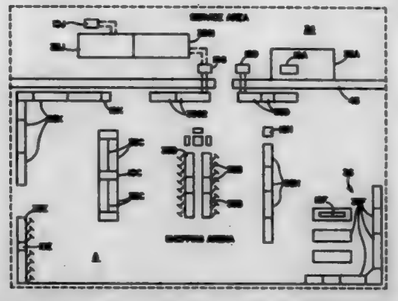
STRATEGIC MODULAR COMMERCIAL REFRIGERATION

Wayne G. Schaeffer, Ballwin; William C. Wehmeier, St. Charles; Terry J. Broccard, St. Louis, and John A. Behr, Defiance, all of Mo., assignors to Hussmann Corporation, Bridgeton, Mo.

Filed May 5, 1993, Ser. No. 57,617

Int. Cl.[6] F25D *23/12*

U.S. Cl. 62—203 **107 Claims**



1. A modular commercial refrigeration unit constructed and arranged for placement in strategic proximity to plural associated product cooling zones within the shopping arena of a food store, said refrigeration unit comprising a condensing unit rack configured to accommodate the maximum refrigeration loads of the associated zones and having an optimum floor space footprint in the shopping arena, said condensing unit rack being constructed to support the components of a closed refrigeration circuit including a plurality of multiplexed compressor means, condenser means and associated high side and low side refrigerant delivery and suction means extending from the rack and being operatively connected to evaporator means constructed and arranged for cooling the associated zones, and another cooling source remote from said refrigeration unit but operatively constructed and arranged to provide a heat exchange relationship with said condenser means for providing optimum condensing and efficiency of said evaporator means in cooling the associated zones.

5,440,895

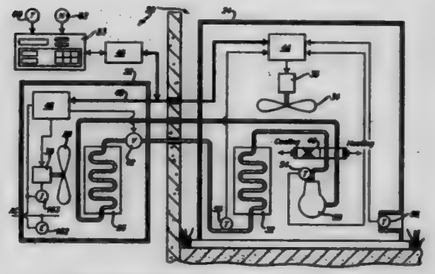
HEAT PUMP MOTOR OPTIMIZATION AND SENSOR FAULT DETECTION

Vijay Babel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton; Gregory P. Herroon; Wayne R. Warner, both of Piqua, and Jean-Luc M. Caillat, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Jan. 24, 1994, Ser. No. 186,010

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—223 **8 Claims**



1. In a heat pump system powered by an electrical line, including a refrigerant compressor and an electrically controlled expansion valve, a system operating method comprising,

obtaining an outdoor air temperature by measuring a property indicative of the outdoor air temperature;

obtaining a line voltage by measuring a property indicative of line voltage;

comparing the outdoor air temperature with a predetermined temperature indicative of an alert condition;

comparing the line voltage to a predetermined value indicative of a low voltage condition, and

based on said comparing steps:

if the outdoor air temperature is above said predetermined temperature and if the line voltage is below said predetermined value, then automatically increasing the setting of said expansion valve to increase the flow of refrigerant in said heat pump system.

5,440,896

APPARATUS FOR COOLING A MEDIUM WITHIN A CONTAINER

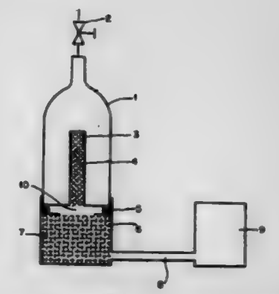
Peter Maier-Laxhuber, Sauerwebrstr. 14, D-8080 Munchen 60; Jorn Schwarz, Josef-Zintl-Str. 6 a, D-8000 Munchen 50; Edgar R. F. Winter, Fontaneweg 4, Neu-Eating, D-8037, Olching, and Josef Soltes, Luisenstr. 60 A, D-8000 Munchen 40, all of Germany

Continuation of Ser. No. 978,319, Nov. 18, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,235

Claims priority, application Germany, Nov. 19, 1991, 41 38 114.9

Int. Cl.[6] F25B *19/00*

U.S. Cl. 62—269 **7 Claims**



1. Apparatus for cooling a medium located within a chamber of a container defined by a container wall, the container wall having interior and exterior surfaces, the chamber being defined by the interior surface of the container wall, the medium being located within the chamber and in contact with the interior surface, the container wall providing means for transferring heat energy from the interior surface to the exterior surface, the apparatus comprising:

an evaporation unit having liquid operating medium therein and a connection port, the exterior surface of the container being in contact with the liquid operating medium of the evaporation unit,

a sorption medium container having at least first and second connection ports and sorption medium therein, the sorption medium being capable of adsorbing and desorbing the liquid operating medium vapor, the container being oriented over the sorption medium container such that the connection port of the evaporation unit and a portion of the exterior surface of the container are disposed adjacent and operatively coupled to the first connection port of the sorption medium container,

vacuum means, the vacuum means being coupled to the second connection port of the sorption medium container

such that sorption medium is interposed between the point at which the evaporation unit and sorption medium container are coupled and the point at which the vacuum means and the sorption medium container are coupled, the vacuum means providing means for drawing evaporated liquid operating medium down and through the sorption medium,

wherein when a portion of the liquid operating medium evaporates, the liquid operating medium vapor is absorbed by the sorption medium causing the temperature of the liquid operating medium to decrease, and wherein heat energy is transferred from the medium within the container to the container wall, the operating medium absorbing the heat energy from the container wall so as to lower the temperature of the medium within the container.

5,440,897

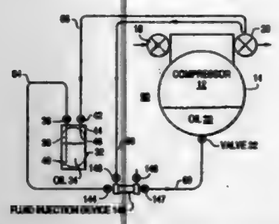
CLOSED LOOP OIL SERVICE SYSTEM FOR AC OR REFRIGERANT COMPRESSOR UNITS

Herbert R. Eden, 421 SW. 124 Ave., Miami, Fla. 33184

Division of Ser. No. 94,947, Jul. 21, 1993. This application Sep. 19, 1994, Ser. No. 308,595

Int. Cl.[6] F25B *43/02*

U.S. Cl. 62—468 **1 Claim**



1. A closed loop calibrated oil system in combination with an operating compressor in an air conditioning system or refrigeration system, said operating compressor having lubricating oil therein, a submerged oil drain port, a refrigerant inlet port and refrigerant outlet port, the system comprising;

a sealed canister for containment of said compressor lubricating oil, said canister having a first and second valve, said first valve having a long stem with port located near bottom of said canister and said second valve having short stem with port located near top of said canister;

a clear calibrated fluid injection device having a inlet port, outlet port, pressure port and vent port;

a first coupler hose fluidly connects said oil drain port to said clear calibrated fluid injection device outlet port, a second coupler hose fluidly connects said clear calibrated fluid injection device inlet port to said first valve, a third coupler hose gaseously connects said second valve to said refrigerant outlet port and a fourth coupler hose gaseously connects said clear calibrated fluid injection device pressure port to said refrigerant outlet port;

whereby a closed gaseous and fluid loop is established between said operating compressor, said canister and said clear calibrated fluid injection device, while said oil is injected, in calibrated amounts, into said operating compressor.

5,440,898

FILTER-DRYER UNIT

Thomas L. Starr, Roswell, Ga., assignor to Sporlan Valve Company, Washington, Mo.

Filed Jan. 21, 1994, Ser. No. 181,764

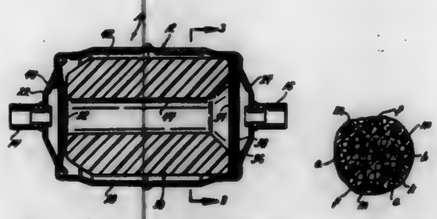
Int. Cl.[6] F25B *43/00*; B01D *29/00*

U.S. Cl. 62—474 **20 Claims**

1. A filter drier for drying refrigerant circulated in a refrigeration system by removing moisture therefrom, the filter drier comprising:

a drier casing having a filter-drier core supported therein,

the casing having an inlet for admitting moisture containing refrigerant into the casing and an outlet for permitting passage of dried refrigerant out of the casing, the filter-drier core being supported between the inlet and outlet



and having means for permitting flow of refrigerant through the filter-drier core,

the filter-drier core being a permeable matrix of desiccant particles including beaded molecular sieve, activated alumina, a phosphate binder and reinforcing fibers, the fibers being distributed throughout the matrix and fixed in place by the binder, the fibers being effective to impart strength and permeability to the filter-drier core.

5,440,899

HEAT ACCUMULATOR, METHOD FOR THE PRODUCTION THEREOF AND ENERGY SYSTEM PROVIDED WITH SUCH A HEAT ACCUMULATOR

Hendrikus A. De Beijer, Huissen, and Jan W. Klein Horsman, Arnhem, both of Netherlands, assignors to De Beijer Raadgevend Technisch Bureau B.V., Arnhem, Netherlands

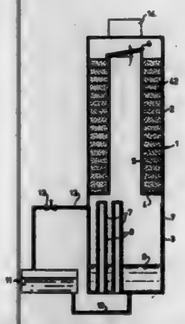
PCT No. PCT/NL92/00225, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/12394, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 11, 1992, Ser. No. 244,750

Claims priority, application Netherlands, Dec. 11, 1991, 9102072

Int. Cl.[6] F25B *17/08*

U.S. Cl. 62—480 **23 Claims**



1. Heat accumulator consisting of a vessel having a wall which is at least partially heat-conducting, which vessel contains a material which exothermally absorbs and endothermally desorbs a heat-transporting substance, characterised in that the absorbing and desorbing material is adhered to the wall of the vessel by means of a fibrous material capable of absorbing liquids.

5,440,900

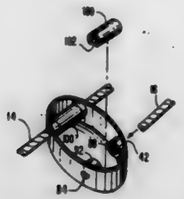
ADD-ON JEWELRY ITEM FOR FLEXIBLE JEWELRY CHAINS

Howard H. White, Staten Island, N.Y., assignor to Omega Casting Corp., New York, N.Y.

Filed Jun. 22, 1993, Ser. No. 81,019

Int. Cl.[6] A44C *25/00*

U.S. Cl. 63—2 **7 Claims**



1. A jewelry item to be added to a jewelry chain and to be held in place on said chain, said jewelry item comprising:

a display front surface and a rear portion,

a side wall integrally formed with said front surface, said chain passable through said side wall; and,

retaining means insertable and holdable in the rear of said jewelry item and bearing against said chain to hold said jewelry item in place on said chain, said retaining means comprising deformable cylindrical members having an opening therethrough through which said chain is press fit to be fixedly held thereon.

5,440,901

PICKER DEVICE OF HOSIERY KNITTING MACHINE

Masahiro Seino; Minoru Oboshi; Satoshi Okoshi, and Kazuhiko Tamaki, all of Nishi, Japan, assignors to Nagata Seiki Kabushiki Kaisha, Tokyo, Japan

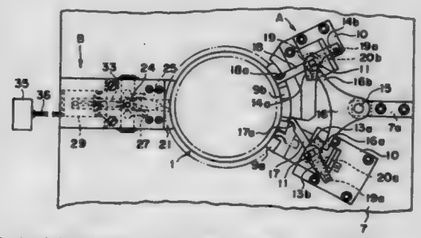
PCT No. PCT/JP93/01748, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO94/12712, PCT Pub. Date Jun. 9, 1994

PCT Filed Dec. 1, 1993, Ser. No. 256,892

Claims priority, application Japan, Dec. 1, 1992, 4-082912 U; Apr. 7, 1993, 5-080882

Int. Cl.[6] D04B *9/20, 9/46*

U.S. Cl. 66—47 **13 Claims**



1. A picker device of a hosiery knitting machine having a knitting cylinder, a machine frame provided outside the knitting cylinder, a center cam, a pair of first and second stitch cams, and a leveling cam, the knitting cylinder supporting a number of knitting needles for upward and downward movement, the knitting needles having butts, respectively, the center cam being supported by the machine frame, the first and second stitch cams being disposed on both sides of the center cam, the leveling cam being supported by the machine frame, said picker device comprising:

an up-picker mechanism; and

a down-picker mechanism,

wherein said up-picker mechanism comprises:

a first up-picker formed in a lever shape and having a first front end portion and a first rear end portion, the first front end portion being disposed above the first stitch cam, the first rear end portion being disposed at a far side of the knitting cylinder;

first support means for supporting said first up-picker at an intermediate portion thereof so that said first up-picker is rotatable about a vertical axis and a horizontal axis;

a second up-picker formed in a lever shape and having a second front end portion and a second rear end portion, the second front end portion being disposed above the second stitch cam, the second rear end portion being disposed at a far side of the knitting cylinder;

second support means for supporting said second up-picker at an intermediate portion thereof so that said second up-picker is rotatable about a vertical axis and a horizontal axis;

first inclined guide means engaging the first rear end portion of said first up-picker for gradually lowering said first rear end so as to move the first front end portion of said first up-picker to an upper position above the center cam along with a knitting needle that is caused to abut against the first front end portion, when the butt of the knitting needle in a knitting level of the knitting cylinder rotating in a first direction is caused to move to and abut against the first front end portion of said first up-picker to move the first front end portion in such a manner that said first up-picker is rotated about the vertical axis;

first elastic means for applying such a force to said first up-picker to lower the first front end portion;

second inclined guide means engaging the second rear end portion of said second up-picker for gradually lowering said second rear end so as to move the second front end portion of said second up-picker to an upper position above the center cam along with a knitting needle that is caused to abut against the second front end portion, when the butt of the knitting needle in a knitting level of the knitting cylinder rotating in a second direction is caused to move to and abut against the second front end portion of said second up-picker to move the second front end portion in such a manner that said second up-picker is rotated about the vertical axis;

second elastic means for applying such a force to said second up-picker to lower the second front end portion; and

interconnection means for coupling and rotating said first up-picker and said second up-picker in the same direction about the vertical axis and in opposite directions about the horizontal axis;

wherein said down-picker mechanism comprises:

a down-picker having a front end portion and a rear end portion, the front end portion being disposed immediately below the leveling cam, the rear end portion being disposed on a far side of said knitting cylinder, the down-picker being supported at the rear end portion thereof for upward and downward rotation by a horizontal shaft;

means for supporting the rear end portion of said down-picker so that the down-picker is rotatable horizontally from a neutral position thereof;

cam guide means for moving said down-picker downward when the down-picker is rotated horizontally from the neutral position;

locking means for locking rotating position of said horizontal shaft so that said down-picker is selectively placed at a first rotating position or a second rotating position of the horizontal shaft, the front end portion of said down-picker at the first rotating position being adapted for contact with the butt of the knitting needle in the non-knitting level, the front end portion of said down-picker at the second rotating position being free from contact with the butt of the knitting needle in the non-knitting level; and

elastic means for urging said down-picker toward the leveling cam.

5,440,902

WARP KNITTED FABRIC AND A MACHINE AND PROCESS FOR FORMING SAME

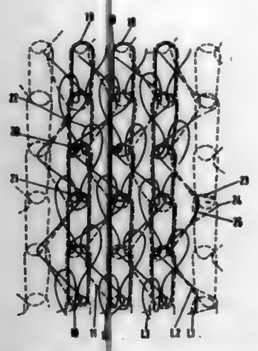
Jakob Wieland, Rodgau, and Herman Kraner, Obertshausen, both of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Germany

Filed Apr. 19, 1994, Ser. No. 229,699

Claims priority, application Germany, Apr. 20, 1993, 43 12 706.1

Int. Cl.[6] D04B *21/02*

U.S. Cl. 66—194 **6 Claims**



3. Process for the production of warp knitted fabric with a machine having needles and pile sinkers, comprising the steps of:

building stitches with a first ground lap over successive needles which have a separation of n needle spaces;

laying a second ground lap as a lay-in with threads laid in the same direction as the first ground lap, said second ground lap having a lapping movement with successive turn-around points separated by approximately n+1 needle spaces;

forming stitches and pile with a pile lap over successive needles which have a separation of m needle spaces, by crossing pile sinkers resting in spaces between adjacent needles; and

displacing pile sinkers by n needle spaces in the same direction as the first ground lap, n being at least 1 and m being at least 0 and unequal to n.

5,440,903

WASHING MACHINE AGITATOR

Keith E. Kropf; Richard F. Bergeson, both of Newton, and Luann E. Fitzpatrick, Des Moines, all of Iowa, assignors to Maytag Corporation, Newton, Iowa

Continuation of Ser. No. 153,618, Nov. 17, 1993, abandoned. This application Jul. 6, 1994, Ser. No. 271,231

Int. Cl.[6] D06F *17/10*

U.S. Cl. 68—134 **23 Claims**

1. A washing machine agitator comprising:

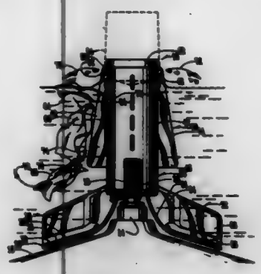
a vertical barrel having a top end, a bottom end, and an external barrel surface extending between said top end and said bottom end;

a skirt connected to said bottom end of said barrel and having a generally upwardly facing tapered skirt surface;

a splash rib extending circumferentially around said barrel adjacent said top end thereof and protruding outwardly from said external barrel surface, said splash rib having a substantially horizontal downwardly presented lower surface;

a plurality of lower vanes connected to said barrel, each of said lower vanes having upstanding vane surfaces extending outwardly from said barrel adjacent said tapered skirt surface; and

a plurality of upper vanes connected to said barrel, each of said upper vanes extending outwardly from said barrel to terminate in an outer vane edge, said outer vane edge



commencing at an upper end adjacent said splash rib and extending downwardly and outwardly therefrom to terminate in a lower end.

5,440,904

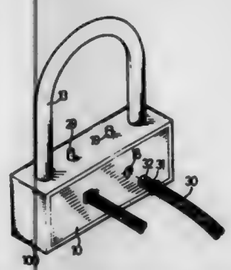
CABLE LOCK ASSEMBLY FOR BICYCLES

Shun-Chang Su, No. 11, Pin Ho Road, Ru Gang Cheng, Chang Hua Hsien, Taiwan

Filed Jan. 27, 1994, Ser. No. 265,746

Int. Cl.[6] E05B *71/00*

U.S. Cl. 70—18 **1 Claim**



1. A lock assembly comprising a block including two holes and two rooms formed therein, two apertures formed in said block and communicated with said rooms, a shackle for engaging with said holes of said block and including two cavities formed therein, a pair of latches slidably disposed in said block, means for biasing said latches to engage with said cavities of said shackle so as to lock said shackle in said holes, a cable including two ends for engaging with said apertures, said ends each including an annular groove formed therein, two catches slidably engaged in said rooms respectively and each including a knob extended outward through said block, said catches each including a puncture for receiving said ends and each including a key means for engaging with said annular groove of said ends so as to lock said ends in place, means for biasing said knobs of said catches outward beyond said block, said catches each including a depression formed therein, two pins slidably engaged in said block and extendible inwards of said holes and said rooms, means for biasing said pins toward said holes, said pins being forced toward said catches to engage with said depressions of said catches so as to lock said catches when said shackle is engaged in said holes.

5,440,905

DOOR LOCKING HANDLE ASSEMBLY OF A PULL-OUT AND SIDE-SWINGING LEVER-ACTION TYPE

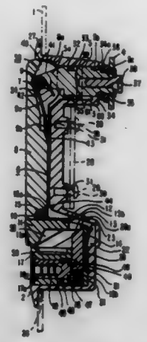
Kenichi Yamada, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,806

Claims priority, application Japan, Feb. 12, 1993, 5-009569 U

Int. Cl.[6] E05B *13/00*

U.S. Cl. 70—208 **2 Claims**



1. A door locking handle assembly of a pull-out and side-swinging lever-action type, comprising:

a casing (2) for fixedly mounting on a door (1);

a locking shaft (5) rotatably mounted in a cylindrical portion (3) of a base-end portion of said casing (2) in an insertion manner, said locking shaft (5) having its rear-end portion fixed to a catch plate (4);

a retractable handle (8) which folds into a front concave portion (6) of said casing (2), and has its base-end portion pivoted to a front-end portion of said locking shaft (5) through a first cross pivot (7);

a biasing spring (9) for swingably biasing said retractable handle (8) in its projecting direction on said first cross pivot (7), said biasing spring (9) being mounted between said locking shaft (5) and said handle (8);

a push button (11) which is connected with a front-end portion of said handle (8) through a second cross pivot (10) and is provided with a projecting leg portion (12) on a push button rear side, said leg portion (12) having its front-end portion formed into a locking hole (13) and an engaging-hook portion (14);

a position-keeping spring (15) disposed between said handle (8) and said push button (11) to align said push button (11) with said handle (8) along an extension line of said handle (8);

a lock unit (17) which is fixedly embedded in a lock-receiving portion (16) of a front-end portion of said casing (2), and comprises a rotor (19) which is rotated by a key (18) to move a latch element (20) forward and backward so that said latch element (20) engages with and disengages from said locking hole (13) respectively, said latch element being biased forward by a return spring (21) toward said leg portion (12);

a leaf spring (22) disposed in a position behind a rear surface of said latch element (20) and fixedly mounted in said position, said leaf spring (22) having a front-end bent portion (23) engaged with the engaging-hook portion (14) of said leg portion (12) when said push button (11) is depressed to swing on said second cross pivot (10) so that said push button (11) is held in the thus depressed position;

said latch element (20) having a length permitting a front-end portion of said latch element (20) to be free from said engaging-hook portion (14) of said push button (11) in said depressed position when said latch element (20) is held in its backwardly retracted position;

said locking shaft (5) being provided with a longitudinal groove (60) in its outer surface to permit said groove (60) to open to a rear surface side, said longitudinal groove (60) having a front-end portion crossed with a circumferential groove (61) in the outer surface of said locking shaft (5);

said cylindrical portion (3) of said casing (2) being provided with a drop-prevention projection (62) in its inner surface, said projection (62) passing through said longitudinal groove (60) to engage with said circumferential groove (61); and

said drop-prevention projection (62) being so arranged as to be misaligned with said longitudinal groove (60) when said locking shaft (5) rotates to travel between a locking and an unlocking position.

5,440,906

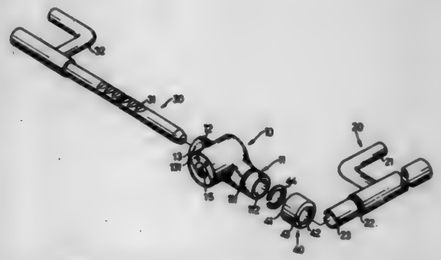
FIXING ARRANGEMENT FOR A CYLINDER MOUNTING BODY AND A FIXED HOOK MEMBER OF A VEHICLE STEERING WHEEL LOCK ASSEMBLY

Chao C. Shen, No. 62, Hoshan St., Tainan, Taiwan

Filed Jul. 12, 1994, Ser. No. 273,827

Int. Cl.[6] B60R *25/02*

U.S. Cl. 70—209 **2 Claims**



1. A vehicle steering wheel lock assembly comprising:

a body having a cylinder mounted therein and first and second ends, said first end of said body including a hole therein, a first annular groove in an outer periphery thereof, and an end edge;

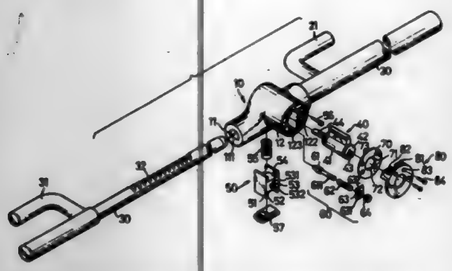
a first hook member securely attached to said first end of said body, said first hook member including an engaging end with a second annular groove defined in an outer periphery thereof;

a sleeve mounted to said first end of said body and having a longitudinal bore, a first end securely mounted in said first annular groove, and a second end mounted to said end edge of said first end of said body;

an elastic retainer ring having an inner diameter slightly less than that of said bore of said sleeve, said retainer ring being mounted between said end edge of said first end of said body and said second end of said sleeve and received in said second annular groove in said first hook member; and

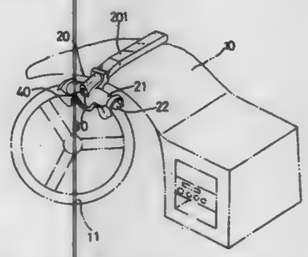
a second hook member movably attached to said second end of said body, said second hook member being movable in two directions away from and toward said first hook member when the cylinder is in an unlocked position and is movable in only one of said two directions when the cylinder is in a locked position.

5,440,907
STEERING WHEEL LOCK ASSEMBLY WITH A REMOVABLE CYLINDER
Chao C. Shen, No. 62, Hoshan St., Tainan, Taiwan
Filed Jul. 12, 1994, Ser. No. 273,959
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 4 Claims



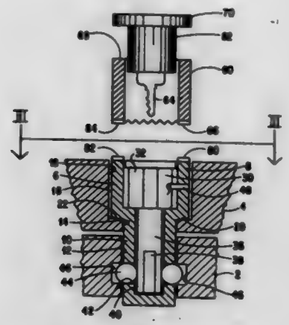
1. A vehicle steering wheel lock assembly comprising:
a body having first and second ends and a longitudinal axis, a longitudinal bore being defined in said body, said body further having a base projecting therefrom and extending in a direction transverse to said longitudinal axis, said base defining a compartment which communicates with said longitudinal bore, said compartment having an inclined bottom surface, a recess being defined in said body and communicating with said bore and said compartment;
a cylinder removably received in said compartment and having a plug with an end and a tailpiece operable by said plug;
a bolt having a first end mounted in said compartment and a threaded second end, a retaining piece and an adjusting nut being mounted around said threaded second end of said bolt with a lower end of said retaining piece contacting with said inclined bottom surface of said compartment and with an upper end of said retaining piece contacting with a peripheral edge of said cylinder such that said cylinder is tightly retained in position upon rotation of said adjusting nut;
a cap mounted to and thus sealing said base, said cap having a central hole in which said end of said plug is rotatably received and a pair of first screw holes therein, said cap further having a pair of substantially L-shaped members projecting therefrom, each said L-shaped member having a second screw hole therein which aligns with an associated said first screw hole, a fastener engaging with each said second screw hole for removably mounting said cap to said base;
a protective cover disposed between said cap and said base and securely mounted around said end of said plug of said cylinder to rotate therewith and having a pair of third screw holes therein, said first, second, and third screw holes align with each other when said cylinder is in an unlocked position such that said second screw holes are accessible to detach said cap from said base, and said second screw holes are shielded by said protective cover when said cylinder is in a locked position;
a spring-biased lock piece slidably received in said recess, said spring-biased lock piece engaging with and thus actuatable by said tailpiece of said cylinder and thus slidable in said recess upon rotation of said cylinder, said lock piece having an engaging surface;
a first hook member securely mounted to said first end of said body; and
a second hook member partially received in said bore of said body and having a plurality of teeth therein for releasably engaging with said engaging surface of said lock piece, said second hook member being movable in two directions of away from and toward said first hook member when said cylinder is in an unlocked position in which said engaging surface of said lock piece disengages with said teeth of said second hook member, and said second hook member being movable in only one of said two directions when said cylinder is in a locked position in which said engaging surface of said lock piece engages with said teeth of said second hook member.

5,440,908
SECURITY DEVICE FOR A STEERING WHEEL OF AN AUTOMOBILE
Shu-Hwa Lin, No. 5, Alley 3, Lane 88, Wuchuan Rd., Shenkang Hsiang, Taichung Hsien, Taiwan
Filed Jul. 25, 1994, Ser. No. 279,969
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 2 Claims



1. A security device for a steering wheel of a vehicle which comprises a steering wheel and an instrument panel, said security device comprising:
a body having an extension portion protruding from a longitudinal direction thereof for abutting on said instrument panel, an arcuate shell mounted on an underside of said body and having an opening defined in an underside thereof and facing downwardly for receiving said steering wheel therein;
an elongated passage defined in a longitudinal direction of said body and communicating with said opening and having a closed end;
a linking rod slidably received in said passage and having a first end and a second end disposed outside said body, a hole defined in the first end of said linking rod;
a spring biased between the first end of said linking rod and the closed end of said passage;
a control member for controlling said linking rod to reciprocate in said passage; and
a substantially L-shaped pawl member mounted in said opening and pivotally engaged with said body, said pawl member having a first stop end, and a second stop end releasably engaged with said steering wheel, said first stop end of said pawl member being received in said hole and having a substantially L-shaped cavity defined therein, a wall defining said L-shaped cavity releasably engaging with said first end of said linking rod whereby, when said steering wheel is received in said opening said linking rod is pushed to drive said pawl member to rotate and is prevented from moving backward by said control member, thereby causing said second stop end to engage with said steering wheel such that said steering wheel is locked, in said opening and when said linking rod is released by said control member, said linking rod is biased backward by said spring to rotate said pawl member in an opposite direction thereby causing said second stop end to disengage with said steering wheel such that said steering wheel is released from said opening, and when said linking rod is biased backward by said spring, said first stop end is able to stop movement of said linking rod by said wall defining said cavity.

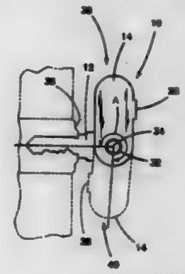
5,440,909
LOCK AND KEY SHELL ASSEMBLY
Timothy B. Ely, and Frederick P. Finck, both of Fairfield, Conn., assignors to The Highfield Mfg. Company, Bridgeport, Conn.
Filed Jun. 29, 1993, Ser. No. 84,416
Int. Cl.[6] E05B *19/00*
U.S. Cl. 70—395 16 Claims



1. A lock and key shell assembly comprising
a lock assembly for securing a first member to a second member, said lock assembly comprising
a cylindrical lock body portion for disposal in bores in said members, said lock body having an exposed annular surface,
a cylinder retained in and mounted for rotative movement in said lock body, said cylinder having a head portion having a keyway therein, and a shank portion operative upon turning to activate a lock mechanism, and
a key shell assembly comprising
a tubular grip portion comprising a one-piece cylindrically-shaped tube having an annular surface,
a cylindrically-shaped piston slidably disposed in said grip portion, the sidewall of said piston being substantially entirely slidable along the interior of said grip portion,
a key extending from only one end of said piston, said key extending from said one end being adapted to enter said keyway,
said piston being mounted in said grip portion so as to be always rotatable to turn said key in said keyway and thereby turn said cylinder in said lock body to cause activation of said lock mechanism,
said key shell assembly grip portion annular surface being interlockingly engageable with said lock assembly lock body exposed annular surface to hold said lock body against rotative movement relative to said grip portion during said rotative movement of said cylinder.

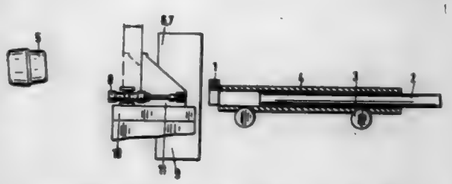
5,440,910
KEY ADAPTOR
David W. Florian, 35 Copper Ridge, Southington, Conn. 06489
Continuation of Ser. No. 71,951, Jun. 7, 1993, abandoned. This application Jun. 17, 1994, Ser. No. 261,744
Int. Cl.[6] A47G *29/10*
U.S. Cl. 70—456 R 18 Claims

1. A key adaptor in combination with a key, comprising:
a substantially rigid body member having a length, a first end terminating at a first edge, and a second end spaced lengthwise from the first end and terminating at a terminal edge which is opposite to said first edge;
a key having a bow, a length, an end portion spaced lengthwise from the bow, and side portions extending between the bow and the end portion; and
a fixed connection pivotably connecting the first end of the body member to the bow of the key so that the key is pivotable around a pivot point fixed relative to the body member between a closed position, wherein the key is aligned lengthwise within the body member and the end portion of the key is substantially adjacent to and extends lengthwise beyond the terminal edge of the second end of the body member, and an open position wherein the end portion of the key is pivoted away from the terminal edge of the second end of the body member and wherein the key is adapted to be pivoted in a pivot direction to an angle with the body member so that the body serves as one of an upwardly oriented and a downwardly oriented handle with respect to the length of the key for turning the



key when the key is initially inserted into a lock, and wherein the key can be further pivoted about 180° in the pivot direction to an angle with the body member so that the body member serves as the other of the upwardly oriented and the downwardly oriented handle for turning the key, wherein said pivot point is fixed closer to said first edge of said body member than to said terminal edge of said body member, whereby the key is readily pivotable to the open position by contacting the end portion of the key with a contact surface and force required to pivot the key is minimized through application at a point spaced from the pivot point by the length of the key.

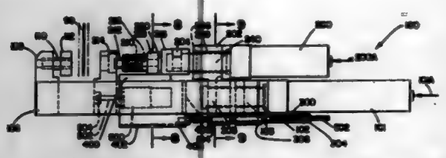
5,440,911
PRE-REDUCTION EQUIPMENT AND METHOD
Manfred Peglau, Duisburg, and Paul Koenen, Krefeld-Hüls, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Dec. 13, 1993, Ser. No. 166,522
Claims priority, application Germany, Dec. 11, 1992, 42 42 423.2
Int. Cl.[6] B21B *19/00*
U.S. Cl. 72—95 5 Claims



1. Pre-reduction equipment for guiding a pipe blank and reducing its end before the pipe enters an Assel rolling mill which is disposed immediately downstream of the pre-reduction equipment, comprising: a plurality of freely rotatable rollers uniformly distributed about the pipe blank so as to be adjustable concentrically with the pipe blank as a function of a determined position of the pipe blank; and means for introducing the pipe blank into the Assel rolling mill by moving the pre-reduction equipment with the rollers clamping the pipe blank so that an initial rolling of the pipe blank takes place before the blank enters the rolling mill, the rollers being pro-

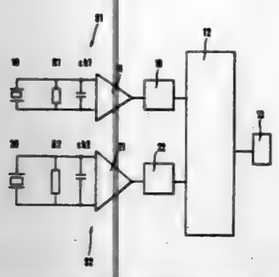
vided so as to rotatably guide the pipe blank into the rolling mill in lunette-fashion during the initial rolling by the rollers.

5,440,912
FORM AND PUNCH APPARATUS
David G. Copeman, Sterling Heights, Mich., assignor to Savair Inc., St. Clair Shores, Mich.
Filed Dec. 6, 1993, Ser. No. 162,711
Int. Cl.[6] B21D *28/20*
U.S. Cl. 72—334 18 Claims



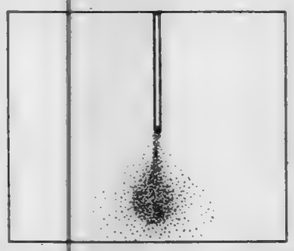
1. An apparatus to form a workpiece to a net position, which comprises:
a) a base;
b) an inner slide assembly mounted on said base for reciprocal movement, said inner slide assembly including a form back-up;
c) means for equalizing said form back-up against a workpiece;
d) an outer slide assembly mounted on said base for reciprocal movement, and said outer slide assembly including a forming piston having a forming cylinder and a rod extendable from said forming cylinder toward said base, said outer slide assembly further including a yoke having a distal end and a proximal end, said yoke mounted to said cylinder at its proximal end, said yoke having a die block mounted to its distal end; so that when said rod extends a predetermined amount from said cylinder and contacts said base, said die block moves towards said workpiece to deform said workpiece.

5,440,913
ELECTRONIC DEVICE FOR SAFEGUARDING OCCUPANTS OF A VEHICLE AND METHOD FOR TESTING THE SAME
Norbert Crispin, Markgroeningen; Michael Henne, Ditzingen-Schoeckingen; Bernhard Mattes, Sachsenheim, and Hartmut Schumacher, Freiberg, all of Germany, assignors to Robert Bosch GmbH, Germany
Filed Sep. 27, 1993, Ser. No. 126,948
Claims priority, application Germany, Sep. 25, 1992, 42 32 108.5; Jan. 28, 1993, 43 02 299.1
Int. Cl.[6] B60R *21/32*
U.S. Cl. 73—1 D 27 Claims



1. A method for testing an electronic device having a first acceleration-sensitive sensor arrangement that generates a first acceleration signal and a second acceleration-sensitive sensor arrangement that generates a second acceleration signal, comprising the steps of:
a) determining whether at least one of the first and second acceleration signals exceeds a preselected minimum absolute acceleration value;
b) if the minimum absolute acceleration value is exceeded by at least one of the first and second acceleration signals, sampling the first and second acceleration signals for a preselected number of sampling periods within a predetermined time interval to generate a plurality of first sample values from the first acceleration signal and a plurality of second sample values from the second acceleration signal;
c) applying a first compensation factor to each of the plurality of first sample values and a second compensation factor to each of the plurality of second sample values;
d) summing the compensated first sample values to generate a first evaluation signal and summing the compensated second sample values to generate a second evaluation signal;
e) determining a difference between the first evaluation signal and the second evaluation signal; and
f) determining whether the difference between the first and second evaluation signals exceeds a specified threshold value.

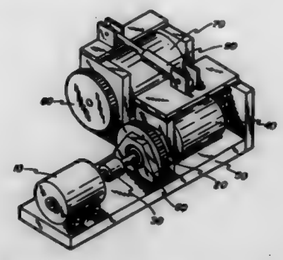
5,440,914
METHOD OF MEASURING DISTRIBUTION AND INTENSITY OF ULTRASONIC WAVES
Katsuro Tachibana, and Shunro Tachibana, both of 6-18, Kusagae 1-chome, Chuo-ku, Fukuoka-shi, Fukuoka-ken, Japan
Filed Jul. 20, 1994, Ser. No. 277,822
Claims priority, application Japan, Jul. 21, 1993, 5-180386
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—1 DV 1 Claim



1. A method of measuring the intensity and distribution of ultrasonic waves comprising the steps of:
dispersing a multiplicity of bubble-shaped elements, which are trace amounts of gas with an extremely thin coating, in a liquid;
placing an ultrasonic oscillation element in said liquid to radiate ultrasonic waves, thereby collapsing said bubble-shaped elements; and
visually measuring changes in the optical characteristics of said liquid caused by the collapse of said bubble-shaped elements.

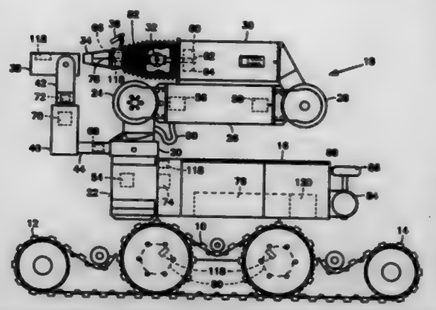
5,440,915
METHOD AND APPARATUS FOR MEASURING FRICTION TORQUE
Robert C. Storar, c/o Automation Technology, Inc. 1900 Troy St., Dayton, Ohio 45404
Filed Sep. 9, 1994, Ser. No. 303,370
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—9 9 Claims

1. Method for testing electric motors to determine friction torque comprising the steps of
mechanically connecting an output shaft of a motor to be tested in a test fixture which includes a torque measuring device,
rotating the output shaft of the test motor to rotate the output shaft in a direction reverse to that which the motor normally rotates when electrical power is applied thereto,
electrically connecting electrical power to the test motor to cause the output shaft to rotate in its normal direction,
measuring the average torque of the motor as the speed of the output shaft decreases to zero,



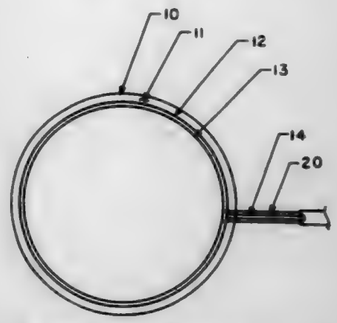
measuring the average torque of the motor as the speed of the output shaft increases from zero to a predetermined low speed in the normal direction, and
calculating friction torque by dividing by two the difference between the average torque value calculated as the output shaft speed decreases to zero and the average torque value calculated as the output shaft speed increases from zero to a predetermined low speed.

5,440,916
EMERGENCY RESPONSE MOBILE ROBOT FOR OPERATIONS IN COMBUSTIBLE ATMOSPHERES
Henry W. Stone, Altadena, and Timothy R. Ohm, La Crescenta, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 15, 1993, Ser. No. 153,934
Int. Cl.[6] B25J *19/00*; H04N *7/10*
U.S. Cl. 73—23.31 14 Claims



1. A mobile, remote-controlled robot for operating safely in a surrounding combustible atmosphere, comprising:
(a) positively pressurized enclosures enclosing all electromechanical and electronic components of the robot for preventing the intrusion of the combustible atmosphere into the enclosures; and,
(b) a supply of pressurized gas disposed onboard the robot and connected to at least one of the enclosures.

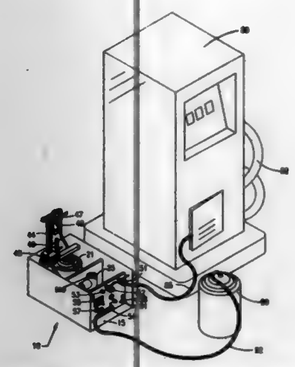
5,440,917
LEAK DETECTOR
Glenn T. Smith, 2637 Chanella Wy, Rancho Cordova, Calif. 95670, and Don T. Smith, Rancho Murieta, Calif., assignors to Glenn Smith, Rancho Cordova, Calif.
Filed Apr. 28, 1994, Ser. No. 234,369
Int. Cl.[6] G08B *21/00*; G01M *3/16*
U.S. Cl. 73—40 4 Claims



1. A leak detector apparatus formed into a removeable clamp, gasket, or flange type member for placement around the circumference, periphery, perimeter, or base boundary of a fluid-handling pipe, pump, vessel, or household component such as a tub, sink, or commode, comprising the following elements: a rigid U-shaped ring consisting of an outside diameter wall with an inside surface and an outside surface, an inside diameter wall with an inside surface and an outside surface (inside surface being that surface of the two parallel walls that face one another), and a bottom ring secured fully around and flush with the edge of said walls, thusly forming said U-shaped ring, with an electrically conductive strip secured fully around on the inside diameter wall, and an absorbant band made from swellable, fluid-absorbing material, non-conductive electrically with an outside diameter surface attached fully around the inside surface of said outside diameter wall of "U"-shaped ring; where said absorbant band has an inside diameter surface with an electrically conductive strip secured fully around said inside diameter surface such that said conductive strips are arranged concentrically and facing each other, but not contacting anywhere along the circumference due to an air gap separating the facing surfaces of the two internal conductor strips within said U-shaped ring; a wire lead from the positive terminal of a low voltage power supply is connected to one side of a low voltage warning lamp, with another wire lead from the other side of said warning lamp connected to the conductive strip on the absorbant band, while another wire lead from the negative terminal of said power supply is connected to the other conductive strip on the U-shaped ring, such that the said air gap serves to separate the two said conductive strips with a uniform circumference spacing and maintain an open electrical circuit while the leak detector apparatus is maintained under dry conditions (no leak-status), so as to provide voltage for a visible alarm in case a leak develops and exposes said apparatus to wet conditions (leak status) that alter the prior separation spacing and circular geometry between the two said conductive strips for a closed circuit situation; and a test switch is included with two wire leads therefrom connected across the two said conductive strips, thereby illuminating said warning lamp during a status check test of said leak detector apparatus, performed at will by owner/operator; said test switch, said warning lamp, and said power supply are each mounted on a local remote wall plate, as placed at an observer accessible location on wall, with appropriate gauge wire used throughout for all electrical interconnections.

5,440,918
PORTABLE PIPING-AND-PUMP-SYSTEM TESTING APPARATUS

Earl H. Oster, Rte. 1, Box 44, Beulah, N. Dak. 58523
Filed Apr. 18, 1994, Ser. No. 229,029
Int. Cl.[6] G01M *3/28*
U.S. Cl. 73—40.5 R 9 Claims

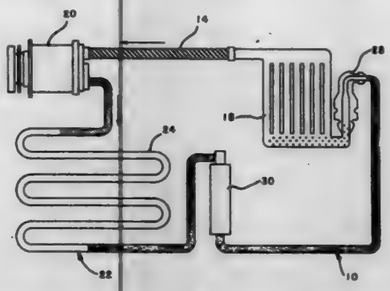


1. A portable piping-and-pump-system testing apparatus comprising:
a cabinet having a bottom wall, a back wall, two side walls, a hinged front wall, and a hinged lid;
a supply tank having liquid inlet and outlet valves disposed therein and having a gas inlet valve and a gas inlet hose having an end connected to said gas inlet valve, said supply tank further having a liquid outlet hose having an end attached to said liquid outlet valve, said supply tank being securely mounted upon said bottom wall of said cabinet;
a control panel having a frontside and a backside and being securely attached inside said cabinet near said front wall, said control panel having means to regulate and monitor testing of a leakage detector in a piping and pump system, said regulating and monitoring means disposed upon and through said control panel;
a leakage detector adapter being fixedly mounted inside of said cabinet and having a hollow body dimensioned to receive said leakage detector and having an open top through which said leakage detector is positioned in said hollow body, said leakage detector adapter further having an adapter bleed valve disposed therein to purge air from said hollow body and further having an adapter inlet valve disposed therein, said adapter inlet valve attachable to the end of said liquid outlet hose, for receiving liquid from said supply tank to test said leakage detector, said leakage detector adapter also having an adapter hose connected thereto to allow said liquid in said hollow body to flow through a portion of said regulating and monitoring means of said control panel; and
a means to test for line leaks in said piping and pump system.

5,440,919
METHOD OF INTRODUCING LEAK DETECTION DYE INTO AN AIR CONDITIONING OR REFRIGERATION SYSTEM

B. William Cooper, Lloyd Harbor, N.Y., assignor to Spectronics Corporation, Wesbury, N.Y.
Filed Aug. 29, 1994, Ser. No. 297,355
Int. Cl.[6] G01M *3/20*
U.S. Cl. 73—40.7 13 Claims

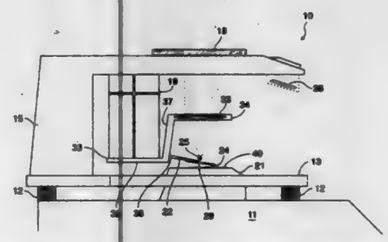
1. A method of introducing a leak detection additive into a refrigeration system in which a refrigerant and a refrigeration lubricant are circulated, comprising the steps of:
providing a substrate of material which is capable of absorbing and releasing a leak detection additive;
placing a predetermined amount of a leak detection additive, which is soluble in the refrigerant and refrigeration lubricant, on the substrate and allowing the additive to absorb into the substrate;
installing the additive-absorbed substrate in a component of



the refrigeration system through which refrigerant circulates when the system is assembled and operated;
assembling the refrigeration system to include the component containing the additive-absorbed substrate;
charging the refrigeration system with a refrigerant; and
circulating the refrigerant in the refrigeration system to release the leak detection additive into the refrigerant and system lubricant.

5,440,920
SCANNING FORCE MICROSCOPE WITH BEAM TRACKING LENS

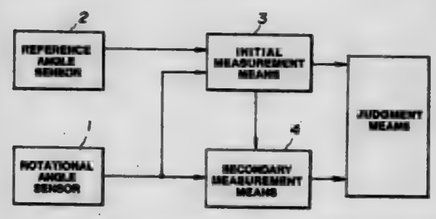
Pan S. Jung, Gilbert, and Daphna R. Yaniv, Scottsdale, both of Ariz., assignors to Molecular Imaging Systems, Tempe, Ariz.
Filed Feb. 3, 1994, Ser. No. 190,948
Int. Cl.[6] G01B *5/28*; G01N *21/00*
U.S. Cl. 73—105 15 Claims



1. A scanning force microscope for examining the surface properties of a sample surface, said microscope comprising:
a frame;
a sample stage adjustable in position with respect to said frame;
a scanner element having a first scanner end fixed in operation with respect to said frame and a second scanner end capable of motion relative to said frame in response to signals applied to said scanner element;
a cantilever having a reflective back surface, a first cantilever end and a second cantilever end, said first cantilever end having a sharp probe tip extending therefrom toward said sample stage, said second cantilever end fixed in operation with respect to said second scanner end;
a beam tracking element mounted to a rigid support element mounted in turn to said scanner element;
a source of a collimated light beam, said source fixed in operation to said frame, said source arranged to project said collimated light beam to said beam tracking element and from said beam tracking element to a focus on said reflective back surface of said cantilever forming a reflected light beam emanating from said reflective back surface; and
a position sensitive detector fixed in operation to said frame and positioned to intercept said reflected light beam and produce a signal responsive to angular movement of said reflected light beam.

5,440,921
DEVICE FOR DETECTING MISFIRE OF INTERNAL COMBUSTION ENGINE

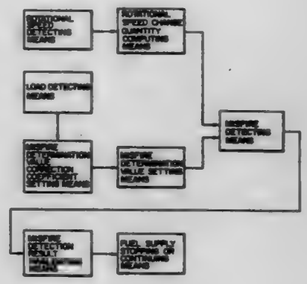
Osamu Matsuno; Takashi Aramaki; Katsuhiko Kawamura, all of Kanagawa, and Jun Nakanowatari, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 14, 1992, Ser. No. 960,819
Claims priority, application Japan, Oct. 16, 1991, 3-267768; Oct. 16, 1991, 3-267769
Int. Cl.[6] G01N *15/00*
U.S. Cl. 73—117.3 5 Claims



1. A device for detecting misfire of an internal combustion engine, comprising:
rotational speed measurement means for measuring crankshaft rotational speed during a combustion stroke of each cylinder; and
judgment means for judging misfire of the engine from a variation of a crankshaft rotational speed during a combustion stroke of each cylinder;
said rotational speed measurement means including a first sensor for detecting an angle of rotation of a crankshaft of the engine and producing a first signal representative thereof, a second sensor for detecting a reference crank position at each cylinder of the engine and producing a second signal discriminating a cylinder at which the reference crank position is obtained, and measurement period setting means for setting, at initial measurement, a measurement period for measurement of crankshaft rotational speed at a corresponding cylinder by counting a predetermined number of first signals produced by said first sensor on the basis of a second signal produced by said second sensor and setting, after said initial measurement, a measurement period for measurement of crankshaft rotation speed at each cylinder by counting a predetermined number of first signals produced by said first sensor on the basis of the first signals of the previous measurement periods.

5,440,922
APPARATUS FOR DETECTING MISFIRE IN INTERNAL COMBUSTION ENGINES FOR VEHICLES

Akira Ichikawa, Chiryu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Division of Ser. No. 785,321, Oct. 31, 1991, Pat. No. 5,263,453.
This application Sep. 27, 1993, Ser. No. 126,609
Claims priority, application Japan, Nov. 1, 1990, 2-296662; Nov. 27, 1990, 2-327442; Nov. 27, 1990, 2-327443; Nov. 28, 1990, 2-333303; Mar. 19, 1991, 3-054898
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 5 Claims



1. An apparatus for detecting a misfire in an internal combustion engine, comprising:
rotational signal output means for outputting a rotational signal corresponding to every predetermined rotational position of said internal combustion engine;
average rotational angular speed computing means for computing an average rotational angular speed of said internal combustion engine based on said rotational signal output from said rotational signal output means;
deviation computing means for computing a deviation of a computation result of said average rotational angular speed computing means from an immediately previous computation result of said average rotational angular speed computing means, at every predetermined rotational position; and
misfire determining means for determining if a misfire has occurred in said internal combustion engine, based on a pattern of a relative magnitude of a plurality of consecutive ones of said deviations computed by said deviation computing means at every predetermined rotational position.

5,440,923
DRIVABLE SLOPE-SENSITIVE UNIT FOR MEASURING CURVATURE AND CROSSFALL OF GROUND SURFACES

Peter W. Arnberg, Stockholm, and Roland Östergren, Linköping, both of Sweden, assignors to RST Sweden AB, Solna, Sweden
Filed Jun. 10, 1993, Ser. No. 74,862
Claims priority, application Sweden, Dec. 12, 1990, 90039769
Int. Cl.[6] G01B *7/00*
U.S. Cl. 73—146 10 Claims

5. Apparatus for measuring the curvature and the slope of ground surfaces in two different directions by means of a drivable slope-sensitive unit which emits measured values relating to the crossfall, the hilliness, the horizontal curvature, and at least one of the covered distance by the drivable unit and the velocity thereof, the apparatus comprising two electronic angle sensors for measuring the inclination of the drivable unit in and transversely of the direction of travel, and an angular-velocity gyro with its measuring direction in the verti-

cal direction for measuring the angular velocity of the drivable unit,

a pulse means provided in a nondriving wheel of the drivable unit for emitting a certain number of pulses per revolution of the wheel;

means for determining a velocity and an acceleration of the drivable unit in the direction of travel;

laser ranging units for measuring the distance to the ground surface in at least one of the ruts of the ground surfaces and locations of the ground surfaces outside of the ruts to measure relative inclination;



a compass for measuring angular direction of the drivable unit and means for continuous zero-point monitoring and calibration of the angular-velocity gyro using the output of the compass; and

means for correcting the measured inclination in the direction of travel by use of the determined acceleration, and for correcting the measured inclination in the transverse direction by use of the velocity, angular velocity, and the distances to the ground surface.

5,440,924

HEATING RESISTOR TYPE AIR FLOW METER WITH SEPARATE PROCESSING UNIT

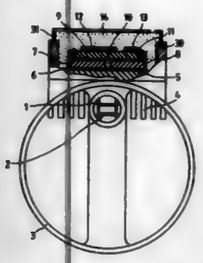
Takayuki Itsuji, Katsuta; Kaoru Uchiyama, Oomiya, and Mitsukuni Tsutsui, Naka, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., both of Japan

Filed Dec. 28, 1993, Ser. No. 174,016

Claims priority, application Japan, Jan. 12, 1993, 5-003107

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.25 **14 Claims**



1. A heating resistor type air flow meter which measures an air flow rate with use of a heating resistor provided in an inlet pipe, comprising a processing unit configured with a program to control temperature of said heating resistor and mounted to said inlet pipe wherein said processing unit comprises a memory storing data representing a relationship between a signal corresponding to an electrical current flowing through said heating resistor and the air flow rate corresponding thereto, and an additional processing unit operatively associated with an engine for direct control, thereof.

5,440,925

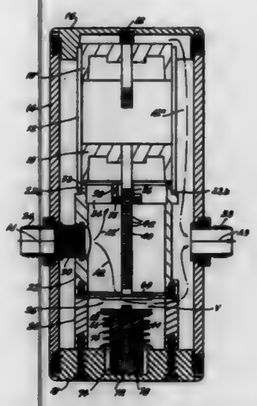
FLOW CALIBRATOR

Harvey F. Padden, Pompton Lakes; Frank C. Rumore, Mahwah, and Scott R. Calvert, Hewitt, all of N.J., assignors to Computer Control Corporation, Pompton Plains, N.J.

Continuation of Ser. No. 982,150, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 703,258, May 20, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 119,808

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—253 **10 Claims**



1. A gas flowmeter comprising in combination:

an enclosure;

a piston movable within said enclosure, the piston having a surface which forms a clearance seal with a surface of said enclosure;

a channel for receiving a gas flow to be measured and directing said flow so as to move said piston within said enclosure; and

a movement detector for detecting movement of said piston and generating therefrom electrical signals representative of said gas flow to be measured;

wherein said piston and enclosure have respective interfacing portions which have substantially the same coefficient of thermal expansion;

wherein said portion of said piston contains graphite and said portion of said enclosure contains borosilicate glass.

5,440,926

FOLDING-UNFOLDING ROTARY VANE METER-MOTOR-PUMP

Hyok S. Lew; Hyon S. Lew, and Yon K. Lew, all of 7890 Oak St., Arvada, Colo. 80005

Filed Jan. 24, 1994, Ser. No. 185,206

Int. Cl.[6] G01F *3/08*; F01C *1/00*

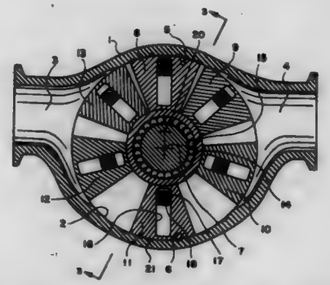
U.S. Cl. 73—259 **20 Claims**

1. An apparatus kinematically inter-relating a rotating motion occurring in the apparatus and a flow of fluid media, comprising in combination:

a) a body of apparatus including a cylindrical cavity with a cylindrical wall having at least two diametrically opposite portions substantially coinciding with a circular cylindrical surface, and two opposite planar end walls; said cylindrical cavity including two port openings respectively open to a first half and a second half of the cylindrical cavity respectively located on two opposite sides of a plane of symmetry including the central axis of said circular cylindrical surface, and intersecting with each of said two diametrically opposite portions of the cylindrical wall of the cylindrical cavity;

b) a plurality of vanes assembled into a radially extending pattern from a shaft disposed in a substantially coaxial relationship to the central axis of said circular cylindrical surface, and disposed within the cylindrical cavity, said vanes mounted on the shaft in a relationship allowing rotating motion of the vane assembly about the shaft and pivotal motion of each of the vanes relative to adjacent vanes about the shaft; wherein outer radial extremities of the vanes adjacent to the cylindrical wall of the cylindrical cavity substantially describe said circular cylindrical surface during rotation of the vanes about the shaft, and inner radial extremities of the vanes opposite to the outer radial extremities of the vanes are assembled and mounted on the shaft in a piano-hinge like assembly in a relationship substantially inhibiting leakage of fluid media from one region between one adjacent pair of vanes to other regions between the other adjacent pairs of vanes through crevices existing in said piano-hinge like assembly of the inner radial extremities of the vanes;

c) at least one cam disc disposed adjacent to one of two opposite end faces of the vane assembly rotatably about a cam axis located substantially on said plane of symmetry



in an offset and parallel relationship with respect to the central axis of said circular cylindrical surface; and

d) at least one cam follower-guide mechanism comprising a plurality of cam guide means and a plurality of cam follower means, wherein the plurality of cam guide means are included in one of the following two elements; at least one of the two opposite end portions of the vane assembly, and a cam disc, wherein the cam guide means are disposed in a radially extending relationship from the axis of rotation of said one of the two elements; and the plurality of cam follower means are secured to the other of said two elements in a distributed relationship on a hypothetical circular cylindrical surface coaxial to the axis of rotation of said the other of the two elements; wherein each of the plurality of cam guide means guides each of the plurality of cam follower means in a sliding relationship in such a way that separation angle between each adjacent pair of the vanes increases from a minimum value to a maximum value in the first half of the cylindrical cavity ,and decreases from the maximum value to the minimum value in the second half of the cylindrical cavity during rotation of the vane assembly about the shaft.

5,440,927

FIBER OPTIC MOISTURE SENSOR

Ling Chu, Chelmsford, Mass., and Henrik Pedersen, North Brunswich, N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Division of Ser. No. 914,795, Jul. 16, 1992, Pat. No. 5,319,975. This application Feb. 25, 1994, Ser. No. 201,820

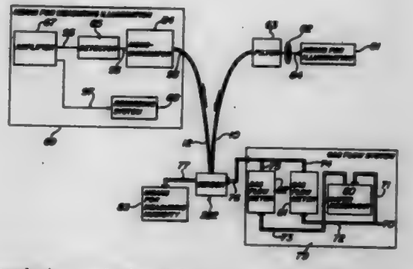
The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.

Int. Cl.[6] G01N *3/00*

U.S. Cl. 73—335.01 **1 Claim**

1. A method for the measurement of the level of moisture in a gaseous phase utilizing an optical sensor, said sensor comprising a film of a polymer, said polymer having embedded therein a predetermined amount of a salt complex of a metal ion and an organic compound, wherein said salt complex emits fluorescence within a determined wavelength range, said polymer optically transparent in said wavelength range, and wherein said salt complex absorbs the moisture in said gaseous phase, the fluorescence emission being sensitive to quenching by said moisture, said method comprising the steps of:

contacting said optically transparent polymer with said gaseous phase;



introducing excitation light into the distal end of a first optical fiber and communicating said excitation light to said polymer through the proximal end of said first optical fiber to induce said fluorescence emission;

collecting said fluorescence emission into the proximal end of a second optical fiber;

detecting said fluorescence emission through the distal end of said second optical fiber;

measuring the quenching of said fluorescence emission; and

determining the level of moisture in said gaseous phase.

5,440,928

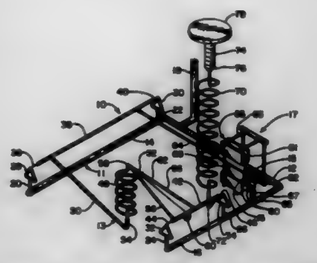
NULLING AND MEASURING SYSTEM

Theodore V. Lautzenhiser, Tulsa, Okla., and Karl Pelegrin, Evergreen, Colo., assignors to Delta G Instruments, Inc., Evergreen, Colo.

Filed Sep. 8, 1992, Ser. No. 941,395

Int. Cl.[6] G01V *7/04*

U.S. Cl. 73—382 G **11 Claims**



1. In a gravity meter mounted to a rigid framework and having a reaction mass mounted on a weight beam coupled to a suspension system whereby said weight beam is alternatively moveable in a first direction and a second direction in response to changes in the ambient gravitational field, the improvement comprising;

a nulling assembly including a dielectric mass, a first pair of spaced-apart conductors and a second pair of spaced-apart conductors, said dielectric mass being rigidly secured to said weight beam for movement in the plane of movement of said weight beam, said first and second pair of conductors being rigidly and immovably secured to said framework, said first pair of conductors having a first cavity

therebetween and being located and positioned parallel to and on opposite sides of said plane with a portion of said dielectric mass extending into said first cavity, said second pair of conductors having a second cavity therebetween and being located and positioned parallel to and on opposite sides of said plane and oriented relative to said first pair of conductors such that a portion of said dielectric mass also extends into said second cavity, movement of said beam in saint first direction causing corresponding transverse movement of said dielectric mass in said plane into said first cavity and out of said second cavity and movement of saint weight beam in said second direction causing corresponding transverse movement of saint dielectric mass in said plane out of said first cavity and into said second cavity, and the nulling assembly further includes means connected to said first and second pairs of conductors for varying and measuring the electric potential therebetween.

5,440,929

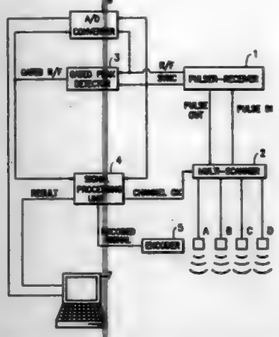
ULTRASONIC DEVICE FOR MEASURING THICKNESS OF A TANK BOTTOM FLAT PLATE

Hsi-Yang Huang, Chutung Hsinchu; Mu-Chung Peng, and Yung-How Wu, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Nov. 22, 1993, Ser. No. 156,038

Int. Cl.[6] G01N *29/26*

U.S. Cl. 73—628 **5 Claims**



1. An ultrasonic measuring device for measuring the thickness of a large flat plate having an upper surface and a lower surface, said ultrasonic measuring device comprising:

a) a probe drive frame having a chassis and at least two wheels mounted on the chassis for supporting said frame on the upper surface of the flat plate;

b) means for driving said probe drive frame over the upper surface of the flat plate;

c) an encoder mounted on one of the wheels, said encoder transmitting an encoder signal corresponding to the movement of the wheel on which said encoder is mounted over the upper surface of the flat plate;

d) a plurality of ultrasonic probes mounted on the chassis of said probe drive frame, each of said plurality of probes including a transmitter means for generating and emitting a directed beam of ultrasonic waves toward the flat plate upon receipt of an ultrasonic signal, and including a receiver means for receiving a single echo from the upper surface of the flat plate and a plurality of echoes from the lower surface of the flat plate and transforming said single echo from the upper surface and said plurality of echoes from the lower surface into response signals;

e) a pulser-receiver in electrical communication with said plurality of ultrasonic probes, said pulser receiver transmitting ultrasonic signals to said ultrasonic probes, generating a synchronizing signal, receiving the response signals from the ultrasonic probes, and amplifying the response signals to generate amplified response signals for output transmittal;

f) a gated peak detector in electrical communication with said pulser-receiver for receiving the amplified response signals and the synchronizing signal from the pulser-receiver, said gated peak detector gating the amplified response signals to extract the upper surface echo and a first lower surface echo to generate gated response signals;

g) a processing unit in electrical communication with said encoder, said pulser-receiver, and said gated peak detector, said processing unit receiving the encoder signal from said encoder, the synchronizing signal from said pulser-receiver and the gated response signals from said gated peak detector, and said processing unit calculating a thickness of the flat plate according to the gated response signals and a known speed of sound value for the flat plate, and calculating a position of said plurality of ultrasonic probes according to the encoder signal, whereby the thickness of the flat plate is determined along the path of the probes over the upper surface of the flat plate.

5,440,930

ULTRASONIC MEASURING ASSEMBLY AND MEANS FOR ATTACHING SAME TO A VESSEL

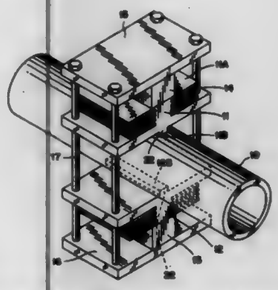
Sylvie Daire, Chateauneuf les Martigues, and Michel Demets, Istres, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Feb. 1, 1993, Ser. No. 11,684

Claims priority, application France, Jan. 31, 1992, 92 01074

Int. Cl.[6] G01N *29/28*

U.S. Cl. 73—644 **14 Claims**



1. Apparatus for use in the measurement of a characteristic of a high temperature medium disposed in a vessel, wherein ultrasonic waves are passed through the medium, said apparatus comprising:

a spacer element formed of a material for transmitting ultrasonic waves without changing the frequency thereof, said spacer element including opposing inner and outer opposing surfaces, said inner surface bearing against an external surface of a wall of the vessel;

an ultrasonic element including opposing inner and outer surfaces, said inner surface bearing against said outer surface of said spacer element; and

releasable fastening means applying an inwardly directed force to said outer surface of said ultrasonic element which is transmitted by said ultrasonic element to said outer surface of said spacer element for holding said inner end of said spacer against said external wall of said vessel.

5,440,931

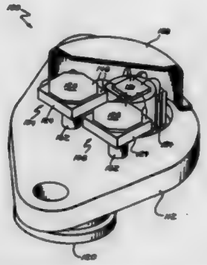
REFERENCE ELEMENT FOR HIGH ACCURACY SILICON CAPACITIVE PRESSURE SENSOR

Walter J. Wiegand, Glastonbury; Frank W. Gobetz, South Windsor, and Robert H. Bullis, Avon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 25, 1993, Ser. No. 142,236

Int. Cl.[6] G01L *9/12*

U.S. Cl. 73—724 **20 Claims**



1. A silicon capacitive pressure sensor, comprising:

a. a header;

b. a sensing element having a conductive silicon sensing substrate and a conductive silicon sensing diaphragm separated by a first dielectric spacer, and having a conductive silicon sensing transition element separated from the sensing diaphragm by a second dielectric spacer, wherein the sensing transition element is mounted to a surface of the header, and wherein the sensing substrate and sensing diaphragm are arranged to form the parallel plates of a sensing capacitor; and

c. a reference element having a conductive silicon reference substrate and a conductive silicon reference diaphragm separated by a third dielectric spacer, and having a conductive silicon reference transition element separated from the reference diaphragm by a fourth dielectric spacer, wherein the reference transition element is mounted to the surface of the header, and wherein the reference substrate and reference diaphragm are arranged to form the parallel plates of a reference capacitor.

5,440,932

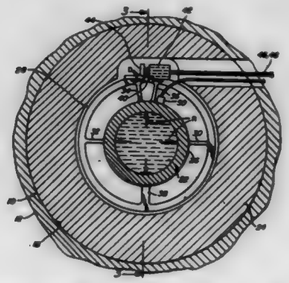
PRESSURE TRANSDUCER INCLUDING COAXIAL RINGS

William Wareham, Marion, Mass., assignor to Dynisco, Inc., Sharon, Mass.

Division of Ser. No. 632, Jan. 5, 1993, Pat. No. 5,360,331. This application Mar. 24, 1994, Ser. No. 217,645

Int. Cl.[6] G01L *7/02*

U.S. Cl. 73—730 **38 Claims**



1. A pressure transducer for an injection molding machine, comprising:

a housing coupled to a nozzle of the injection molding machine;

a hollow stress tube, attached to the housing, through which molten material of the injection molding machine flows, the stress tube bellowing in response to pressure from the material;

an outer ring, located coaxially of the stress tube and having only a single gap, coupled to the stress tube through at least one flexure member such that the outer ring expands, causing displacement of the outer ring about the gap, when the stress tube bellows; and

means for determining the displacement of the outer ring about the gap.

5,440,933

PRESSURE SLEEVE

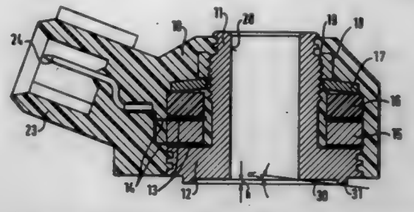
Hartmut Brammer, Vaihingen; Romuald Fries, Weissach; Karl Duma, Renningen, and Holger Krebs, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 30, 1994, Ser. No. 221,062

Claims priority, application Germany, Apr. 10, 1993, 43 11 920.4; Feb. 5, 1994, 44 03 660.4

Int. Cl.[6] G01L *19/00*

U.S. Cl. 73—756 **7 Claims**



1. A pressure sleeve in particular for a vibration pickup, comprising a body having an abutment surface for abutting against a structure and an opening for passing mounting element for mounting said body on the structure, said abutment surface being provided with at least one circumferential raised portion which is radially spaced from a central point of said abutment surface and formed so that between a mouth of said opening and an inner periphery of said raised portion an angle of substantially 0.5° to 1.5° is formed so as to improve a mechanical coupling of said body on the structure.

5,440,934

TEST APPARATUS LIMIT SWITCH ASSEMBLY

Paulo A. Martin, Fall River, Mass., assignor to Instron Corporation, Canton, Mass.

Filed Oct. 13, 1993, Ser. No. 135,926

Int. Cl.[6] G01B *5/30*

U.S. Cl. 73—760 **13 Claims**

1. A materials testing apparatus comprising

a support for supporting a movable element movable with respect to said support,

said movable element,

linkage means movable responsive to movement of said movable element and relative to said support, and

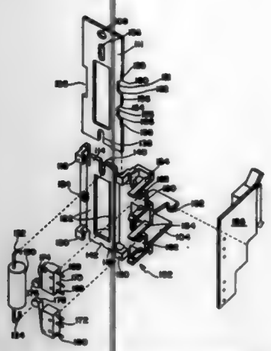
a switch assembly operatively connected with said linkage means, said switch assembly comprising

a base,

an actuator element carried by said base and movable with respect to said base,

said actuator element being movable with said linkage means, and

switching means selectively actuatable by said actuator element,



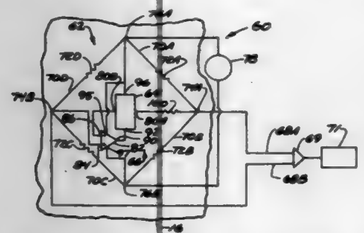
in which said linkage means is a rod slidable with respect to said support and said rod is rectilinear in most of its length.

5,440,935

APPARATUS FOR COMBINING TRANSDUCER OUTPUT SIGNALS

Niel R. Petersen, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Mar. 18, 1993, Ser. No. 32,990
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—765 **21 Claims**



1. A sensing apparatus for sensing at least two physical quantities, the sensing apparatus comprising:

a first transducer providing a first output signal proportional to a first measured quantity represented by a difference in signals from a pair of first output terminals;

a second transducer providing a second output signal proportional to a second measured quantity represented by a difference in signals from a pair of second output terminals, the second transducer having an excitation reference terminal; and

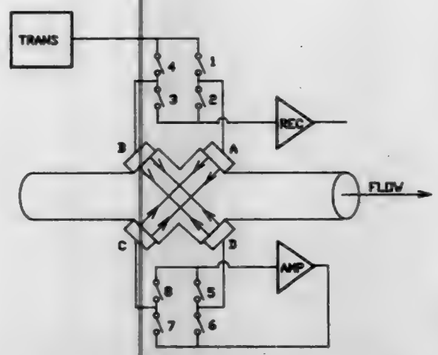
an excitation regulator device having an output connected to the excitation reference terminal and a first input connected to one of the first output terminals and a second input connected to one of the second output terminals, the excitation regulator device providing an excitation signal to the second transducer so that said one of the second output terminals to obtain a resultant output signal across two of the output terminals proportional to a combustion of the first and second output signals.

5,440,936

COMPACT X-CROSS TRANSDUCER ARRAY FOR A TRANSIT TIME FLOWMETER, PARTICULARLY FOR USE DURING IN-VIVO BLOOD FLOW MEASUREMENT

Wayne M. Spani, and William S. Kemper, both of San Diego, Calif., assignors to Triton Technology, Inc., San Diego, Calif.

Filed Nov. 16, 1992, Ser. No. 977,143
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.28 **9 Claims**



1. An acoustic transit-time flowmeter comprising:

a first acoustic transmitter means, located at and acoustically coupled to a first side of a conduit flowing a fluid, for projecting a first acoustic signal (i) in a first acoustic path (ii) proceeding diagonally across the conduit and across the fluid flowing in the conduit, the diagonal first acoustic path having a vector component relative to the fluid flow that is (iii) in a first direction relative to the fluid flow;

a first acoustic receiver means, acoustically coupled to a second side, opposite to the first side, of the conduit flowing fluid in a position that is displaced in the first direction, and that is diagonally opposite, from the first acoustic transmitter means, for receiving the first acoustic signal (i) in the first acoustic path (ii) from diagonally across the conduit and across the fluid flowing in the conduit (iii) from the first acoustic transmitter means, and for transducing the received first acoustic signal into a first electrical signal;

a second acoustic transmitter means, receiving the first electrical signal from the first acoustic receiver means located at and acoustically coupled to the conduit flowing fluid on the first side thereof at a position that is displaced from the first acoustic receiver in a second direction, opposite to the first direction, for, responsive to the electrical signal, projecting a second acoustic signal (i) in a second acoustic path (ii) diagonally across the conduit and across the fluid flowing in the conduit, the diagonal second acoustic path having a vector component relative to the fluid flow that is (iii) in the first direction relative to the fluid flow;

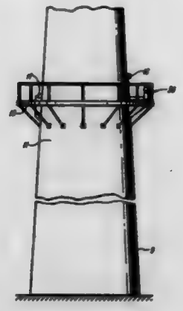
a second acoustic receiver means, located and acoustically coupled to the second side of the conduit flowing fluid in a position that is diagonally opposite from the second acoustic transmitter means and displaced from the first acoustic transmitter in the first direction, for receiving the second acoustic signal (i) from the second acoustic path (ii) from diagonally across the conduit and across the fluid flowing in the conduit from the second acoustic transmitter means, and for transducing the received second acoustic signal into a second electrical signal.

5,440,937

PROCESS AND APPARATUS FOR ULTRASONIC MEASUREMENT OF VOLUMERIC FLOW THROUGH LARGE-DIAMETER STACK

Lawrence C. Lynnworth, Waltham; James E. Bradshaw, Tyngsboro; Christopher C. Doyle, Weston; Steven A. Lynnworth, Natick; James E. Matson, Needham, and Jeffrey Tilden, Norton, all of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Filed Apr. 30, 1993, Ser. No. 55,200
Int. Cl.[6] G01F *1/66*
U.S. Cl. 73—861.29 **45 Claims**



39. A method of monitoring the volumetric gas flow rate through a substantially vertically oriented stack comprising the steps of,

(a) emitting a beam of ultrasonic waves from a first position above the bottom of said stack, across a diameter of said stack, said beam being emitted along a central axis of propagation normal to the vertical axis of said stack;

(b) sensing said emitted ultrasonic beam at a second position vertically displaced from said emission position by a distance L equal to the stack diameter times the tangent of the half angle, θ_h, of the emitted beam,

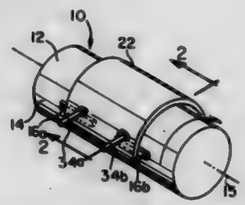
the variations in the transit time between emitting and sensing in said sensing step providing a measurement of the gas flow velocity along said vertical axis of said stack.

5,440,938

SYSTEM FOR DETERMINING SHAFT LOAD PARAMETERS INCLUDING SHAFT WINDUP ANGLE PER UNIT LENGTH, TORQUE OUTPUT AND POWER OUTPUT IN A GENERALLY CYLINDRICAL ROTATING SHAFT

Robert L. Leon, Maple Glen, and Anthony L. Moffa, Phoenixville, both of Pa., assignors to Liberty Technologies, Inc., Conshohocken, Pa.

Filed Feb. 1, 1993, Ser. No. 12,083
Int. Cl.[6] G01L *3/02*
U.S. Cl. 73—862.191 **28 Claims**



1. A system for determining a shaft torsional load parameter in a generally cylindrical torque carrying, rotating shaft having a cylindrical outer surface and a longitudinal axis extending through the center thereof, the rotating shaft possibly vibrating and displacing, the system comprising:

a plurality of probes spaced from each other, with at least two probes spaced from each other in the shaft axial direction, each probe having a first end and second end, the first end of each probe being in facing relationship with the outer surface of the rotating shaft;

a rigid frame commonly supporting all of the probes at a predetermined distance from the outer surface of the shaft, the frame being supported in such a manner that the frame may vibrate and displace relative to the rotating shaft esentially as a rigid body, the frame supporting the plurality of probes at positions to overcome inaccuracies caused by frame vibration and displacement and shaft vibration and displacement;

target means on the outer surface of the rotating shaft and located for triggering a probe output response each time during shaft rotation that a target means passes the first end of one of the probes, the target means located so as to overcome inaccuracies caused by frame vibration and displacement and shaft vibration and displacement; and

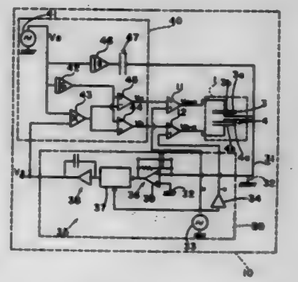
calculating means for calculating the shaft torsional load parameter based in part on the probe trigger times and the spacing of the probes and at the same time overcoming inaccuracies caused by frame vibration and displacement and shaft vibration and displacement.

5,440,939

SERVO-CONTROLLED PENDULAR MICRO-SENSOR

Hervé Barny, Valence; Henri Fima, Malissard, and Michel Torregrosa, Beaumont les Valence, all of France, assignors to Sextant Avionique, Meudon La Foret Cedex, France

Filed Apr. 6, 1993, Ser. No. 43,387
Claims priority, application France, Apr. 7, 1992, 92 04520
Int. Cl.[6] G01L *1/00*
U.S. Cl. 73—862.61 **12 Claims**



12. A micro-sensor for measuring a physical quantity, comprising:

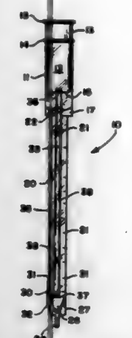
at least one fixed electrode;

a pendular element that is sensitive to the physical quantity to be measured;

at least one mobile electrode movable with said pendular element and facing said at least one fixed electrode; and

means for applying to said fixed and mobile electrodes a return voltage produced by an external voltage source, said return voltage being of zero mean value and producing at the electrodes an electrostatic return force opposing a force acting upon the electrodes by the physical quantity.

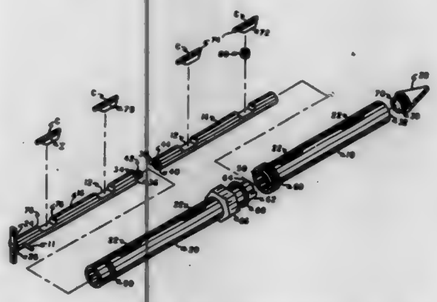
5,440,940
PIPETTE-SYRINGE-TUBULAR MICROBIAL RETRIEVAL AND SAMPLER
Judd R. Wilkins, 281 Littletown Quarter, Williamsburg, Va. 23185
Filed Mar. 18, 1994, Ser. No. 210,277
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.16 **13 Claims**



1. A microbial retrieval and sampling device including:
an elongated pipette having a first and a second end;
a syringe including a barrel containing a slidable plunger provided at said first end of said pipette;
a pipette orifice formed at the second end of said pipette;
an elongated tubular sampling probe having a closed end secured to said slidable plunger and an open free end disposed adjacent said pipette orifice;
said elongated tubular sampling probe being movable with said slidable plunger between a first position wherein said open free end thereof is disposed within said pipette and a second position wherein said open free end of said tubular sampling probe extends exteriorly of said pipette orifice;
removable cover means exteriorly disposed over said pipette orifice;
said removable cover means being manually and slidably removable to expose said pipette orifice to expose said pipette orifice to permit said tubular sampling probe to be extended from said pipette orifice under the influence of said slidable plunger;
said tubular sampling probe including an annular sidewall;
at least one transverse opening in said annular sidewall of said tubular sampling probe, and
wherein said at least one transverse opening in said annular sidewall of said tubular sampling probe is disposed in spaced adjacency to said open free end of said tubular sampling probe.

5,440,941
MULTIPLE-SAMPLE SEGMENTED SAMPLING DEVICE AND METHOD OF USE
Sanyasi R. Kalidindi, 8303 Hana Rd., Edison, N.J. 08817
Continuation-in-part of Ser. No. 70,281, Jun. 1, 1993, Pat. No. 5,337,620. This application May 6, 1994, Ser. No. 239,420
The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.
Int. Cl.[5] G01N *1/12*
U.S. Cl. 73—864.64 **19 Claims**

1. A multiple-sample sampling device capable of extension for taking multiple samples having accurate volumes from the same area and at different depths of powder or semi-solid mixtures, comprising:
at least a first tubular casing segment and a second tubular casing segment of predetermined lengths, each said first tubular casing segment and said second tubular casing segment having means defining at least one aperture, said first tubular casing segment having a first engaging means at its distal end and a second engaging means at its proximate end, said second tubular casing segment having cooperating engaging means at its distal end for connection to said second engaging means and a grooved pattern at its proximate end;
at least a first die receiving rod segment and a second die receiving rod segment of predetermined lengths, said first die receiving rod segment and said second die receiving rod segment fitting snugly inside said first tubular casing segment and said second tubular casing segment, respectively, said first die receiving rod segment having a third engaging means at its proximate end, said second die receiving rod segment having cooperating engaging means at its distal end for connection to said third engaging means and a handle and pin at its proximate end;
each said first die receiving rod segment and said second die receiving rod segment having means defining at least one

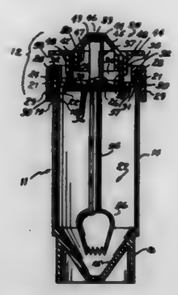


first cavity which is aligned with and of greater dimensions than said at least one aperture formed in each of said first tubular casing segment and second tubular casing segment;
at least one die fitting smugly in said at least one first cavity and having at least one second sampling cavity of predetermined sampling volume; and
a solid cone having a fifth engaging means at its proximate end which engages with said first engaging means and closes the distal end of said first tubular casing segment; whereby
said second die receiving rod segment of the sampling device having the handle and pin at its proximate end enables the rotation of said first receiving rod segment and said second receiving rod segment and guides the pin with respect to said grooved pattern of said second tubular casing, thereby aligning and misaligning said at least one die with said at least one aperture in said first tubular casing and said second tubular casing to provide for sampling and discontinuing sampling.

5,440,942
BIOLOGICAL SAMPLE COLLECTING AND HOLDING DEVICE
Stephen H. Hubbard, 1076 Emerson Rd., Park Hills, Ky. 41011
Filed Feb. 2, 1994, Ser. No. 191,025
Int. Cl.[5] G01N *1/08, 1/00, 1/28*
U.S. Cl. 73—864.91 **4 Claims**

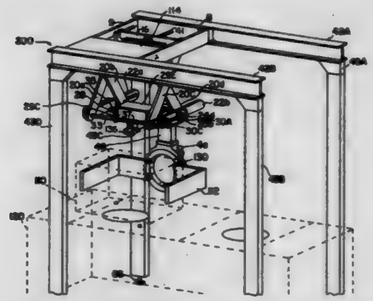
1. A sample holding device comprising a vial and a cap;
said cap sealingly fastenable to said vial;
said cap having a top portion, including a peripheral means to attach to said vial, and a first central opening of said cap;
wherein said top portion of said cap includes a post held in

said first central opening and extending above said first central opening;
a nozzle member having a second central opening, said nozzle member axially movable relative to said post from an open position where said second central opening is spaced from said post to a closed position whereby said second central opening is blocked by an upper portion of said post,



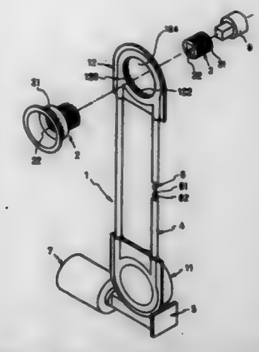
a screen fixed to said cap inwardly and separate from said sealing means, said screen covering said first central opening,
and wherein said screen is a rigid disk attached to a bottom side of said cap, and wherein said screen includes a sample collecting arm extending away from said first central opening.

5,440,943
ELECTRONIC TEST HEAD MANIPULATOR
Alyn R. Holt; Robert E. Matthiessen, both of Cherry Hill, and Christopher L. West, Tabernacle, all of N.J., assignors to inTEST Corporation, Cherry Hill, N.J.
Filed Sep. 15, 1993, Ser. No. 122,055
Int. Cl.[6] F16H *25/20*; B25J *1/12*
U.S. Cl. 74—89.15 **18 Claims**



1. A positioner for docking and undocking an electronic test head with a device handler comprising:
head rotation means for rotating said electronic test head about a first axis;
vertical motion means, including a plurality of linkage arms coupled to said head rotation means;
a first of said plurality of linkage arms coupled to a second of said plurality of linkage arms to define a scissor shape of increasable and decreasable length in a vertical direction for moving said electronic test head vertically along a second axis orthogonal to said first axis as an upper end of said first of said plurality of linkage arms moves towards and away from an upper end of said second of said plurality of linkage arms.

5,440,944
SAFETY POWER WINDOW MECHANISM FOR ALL TYPES OF AUTOMOBILE
Tse-Hsing Chen, No. 22, Lane 351, Di Hwa Street, Taipei, Taiwan
Filed Jul. 8, 1993, Ser. No. 87,270
Int. Cl.[6] F16H *27/02*; G05G *1/08*
U.S. Cl. 74—89.21 **5 Claims**

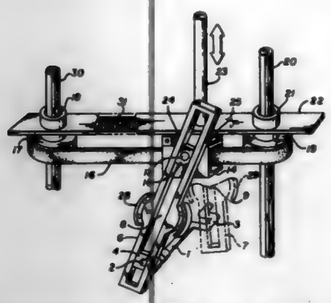


1. In a window raising and lowering mechanism for an automobile which includes a hand crank shaft (8), the improvement comprising:
a conversion gear (3) having a central opening (32) shaped to match that of said shaft and which fits onto the shaft to cause the shaft to rotate in response to rotation of the conversion gear;
a reversible motor (7);
a rack (6);
conversion means (11) tier converting an output motion of said motor into motion of said rack;
a mechanism (12) driven by the rack; and
a coupling gear (2) which transmits power from the rack to the conversion gear, wherein:
said driven mechanism includes a driven gear (120) having a first plurality of concave outer peripheral teeth (121) and said rack includes a cord (61) and ball-type cogs (62) arranged to engage said first plurality of outer peripheral teeth (121) and transmit power from said rack to said driven mechanism even after said cord has lengthened as a result of long term use,
and further comprising a control circuit (CC1–CC6) for controlling said motor to move said rack, driven mechanism, coupling gear, and conversion gear to rotate said hand crank shaft.

5,440,945
HARDGEARED INFINITELY VARIABLE TRANSMISSION
Jay P. Penn, 1725 Morgan La., Redondo Beach, Calif. 90278
Filed Apr. 19, 1993, Ser. No. 50,558
Int. Cl.[6] F16H *29/08*
U.S. Cl. 74—117 **29 Claims**

1. A hardgeared infinitely variable transmission comprising:
a transmission input shaft, said input shaft providing an input drive in the form of repeated strokes;
at least one quick return mechanism, each having an input side and an output side, said input side driven at a fixed ratio by said transmission input shaft, said output side of said quick return mechanisms moving at a near constant linear velocity during an advancing portion of said stroke and then returning to its original position before said stroke by a rapid return motion;
a transmission output shaft;
conversion means to convert said near constant linear veloc-

ity motion of said output side of each of said quick return mechanisms into rotation of said transmission output shaft;
engagement/disengagement means to engage said output side of each of said quick return mechanisms with said output shaft during said near constant linear velocity portion of said motion of said output side and to disengage



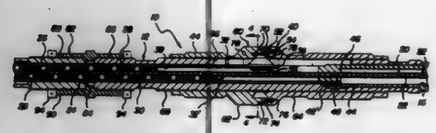
said quick return mechanisms from said output shaft during said rapid return motion; and
input/output speed ratio adjustment means to provide a variable amount of said near constant linear velocity motion of said output side of said quick return mechanism to said conversion means so as to thereby change an input-/output speed ratio of said transmission.

5,440,946

MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY WITH ADJUSTABLE BACKLASH

Frank F. Adelman, Bensalem, Joseph Sosnowski, Norristown, and Rodney L. Alderfer, Harleysville, all of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Oct. 22, 1993, Ser. No. 141,129
Int. Cl.[6] F16C *1/28*
U.S. Cl. 74—502.3 **22 Claims**



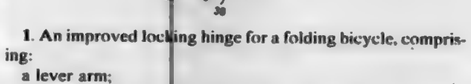
1. A flexible motion transmitting remote control assembly (10) for high load force transmission over long distance with minimal backlash, said assembly comprising: a flexible casing (12) having at least one inner lay wire (14) wound in helical turns at a predetermined pitch to form a tubular inner passage (16) and at least one outer support wire (18) wound in helical turns tightly about the exterior of said inner lay wire (14) at a pitch different than said predetermined pitch to restrain deformation of said inner lay wire (14) from side loads applied against said inner passage (16); a core element (20) slidably disposed within said inner passage (16) of said casing (12) and capable of imparting side loads against said inner lay wire (14) as said core element (20) slides through curved sections of said casing (12); roller means (24) disposed in said inner passage (16) on opposing sides of said core element (20) for reducing sliding friction of said core element (20); an upper race (32) having first and second ends and disposed on one side of said core element (20) between said roller means (24) and said inner lay wire (14); a lower race (32') having first and second ends and disposed on another side of said core element (20) between said roller means (24) and said inner lay wire (14); and characterized by backlash adjustor means (82) for accurately setting the backlash between said core element (20) and said upper (32) and lower (32') races by changing the length of said casing (12) at a position between said ends of said upper (32) and lower (32') races while retaining each of said ends fixed relative to said casing (12).

5,440,947

TIMING LOCK APPARATUS FOR DIESEL ENGINES

Robert J. Manganelli, 3261 W. Helena, Phoenix, Ariz. 85023

Filed Dec. 20, 1993, Ser. No. 169,020
Int. Cl.[6] G01M *15/00*
U.S. Cl. 74—527 **16 Claims**



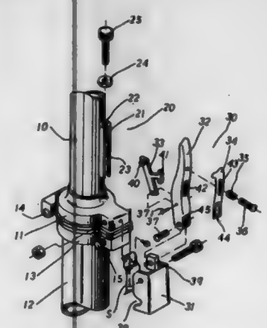
1. Engine timing pin apparatus comprising in combination:
housing means to be secured to a bell housing of an engine;
a bore in the housing means;
pin means movable in the bore and including a pin portion extending out of the bore for engaging a detent in a flywheel within the bell housing;
a first spring for biasing the pin means in a first direction to move the pin portion to engage the detent in the flywheel;
a second spring for biasing the pin means in a second direction to move the pin portion out of engagement with the detent in the flywheel;
means for orienting the first spring in a loaded condition to bias the pin portion to engage the detent in the flywheel and to load the second spring and for orienting the first spring in an unloaded condition for allowing the second spring to move the pin portion out of engagement with the detent in the flywheel.

5,440,948

LOCKING HINGE FOR A FOLDING BICYCLE

Kao P. Cheng, Changhua, Taiwan, assignor to Hsieh Chan Bicycle Co., Ltd., Changhua, Taiwan

Filed Feb. 17, 1994, Ser. No. 197,874
Int. Cl.[6] B62K *21/12, 21/16*; B25G *3/18*
U.S. Cl. 74—551.3 **3 Claims**



1. An improved locking hinge for a folding bicycle, comprising:
a lever arm;
a locking hook pivotally secured to a flanged bottom end of a handlebar of said folding bicycle;
a linkage member pivotally connected to said lever arm;
said locking hook having a pivot hinge associated therewith being pivotally connected to said lever arm and a mount flange at the bottom end of said handlebar respectively;

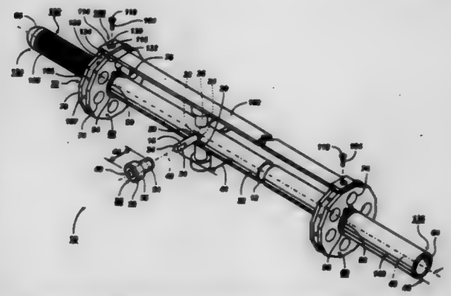
a locking pin disposed on a flanged portion of a steering stem of said folding bicycle;
a tubular means secured to said handlebar having an opening cut so as to permit said linkage member to slidably move therein and said linkage member can be restrained in place by abutment against a point in said tubular means for locking purpose;
said locking hook having a retaining recess being selectively engaged with said locking pin so as to keep said handlebar and said steering stem engaged with or disengaged from each other.

5,440,949

WORKPIECE MANDREL WITH AXIALLY MOVING DYNAMIC BALANCER

Bernard Leibman, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 19, 1993, Ser. No. 108,524
Int. Cl.[6] F16F *15/10*
U.S. Cl. 74—574 **10 Claims**



1. An apparatus for dampening vibration of a rotating sleeve during machining thereof, comprising:
a base adapted to be disposed interiorly of the sleeve and spaced from the sleeve;
a member mounted radially movable on said base, said member being adapted to move radially into contact with the sleeve interior surface in response to the sleeve being rotated during machining thereof so as to dampen vibration of the sleeve; and
a support member attached to said base with the sleeve being slidably mountable on said support member.

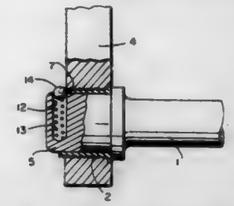
5,440,950

DEVICE FOR QUICK MOUNTING AND REMOVAL OF A SHAFT, SUCH AS A PEDAL SHAFT

Renë Tranvoiz, 20 bis, rue Sophie-Rodrigue, 92500 Rueil-Malmaison, France

PCT No. PCT/FR92/01164, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO93/11990, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 9, 1992, Ser. No. 104,036
Claims priority, application France, Dec. 9, 1991, 91 15204
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—594.4 **10 Claims**

1. A device for the quick mounting and removal of a pedal on and from a standard crank arm (4) of a bicycle, comprising:
a cylindrical threaded recess of circular section defined in an end of the crank arm, said pedal comprising a shaft (1) provided with a substantially cylindrical bearing (5) and an externally threaded ring (2) screwed into the threaded recess of the crank arm, said pedal bearing being received by longitudinal sliding engagement within the ring, the ring and the pedal shaft



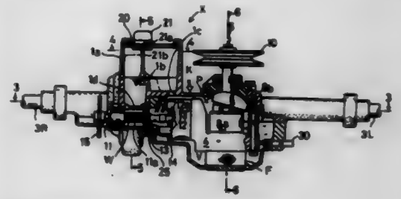
comprising manually operable releasable means (7, 12, 13, 14) for retaining the pedal in an engaged position.

5,440,951

AXLE DRIVING SYSTEM

Hideaki Okada, and Kenji Shiba, both of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Jul. 30, 1993, Ser. No. 99,444
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **17 Claims**



1. An axle driving system comprising:
a housing;
a first chamber formed in said housing;
a second chamber formed in said housing;
means disposed in said housing for partitioning said first and second chambers from each other;
a hydraulic non-stage transmission disposed in said first chamber;
an axle disposed in said housing;
means disposed in said second chamber for transmitting power from said transmission to said axle; and
a fluid storage means in fluid communication with said first chamber and said second chamber disposed in said housing for freely flowing fluid into said first chamber and said second chamber.

5,440,952

ROTARY TABLE WITH INDEX APPARATUS

Kunimichi Nakashima, Anjo, and Takumi Hattori, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

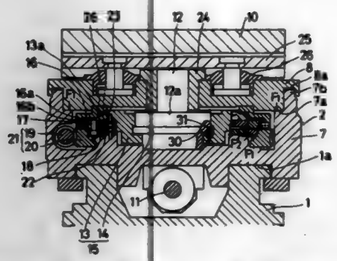
Filed Aug. 24, 1993, Ser. No. 110,976
Claims priority, application Japan, Aug. 26, 1992, 4-226587
Int. Cl.[6] B23B *29/24*
U.S. Cl. 74—813 L **6 Claims**

1. A rotary table with an index apparatus comprising:
a table base having a circular flat guide surface;
a rotary table supported by said table base for rotation, with a peripheral reverse surface thereof being guided by the flat guide surface of said table base;
a drive mechanism mechanically coupled with said rotary table for rotating said rotary table;
first and second circular coupling gears disposed on said table base in coaxial relationship with the rotational axis of said rotary table, said second coupling gear being fixed to

said table base, and said peripheral reverse surface of the rotary table being located radially outside of said first and second coupling gears:

a third circular coupling gear disposed between said first and second coupling gears and said rotary table in coaxial relationship with the rotational axis of said rotary table;

a support member fixed to said rotary table for elastically supporting said first coupling gear in a direction parallel to the rotational axis of said rotary table without permitting the rotation of said first coupling gear with respect to said rotary table, said support member normally holding said first coupling gear at a higher position than said second coupling gear; and



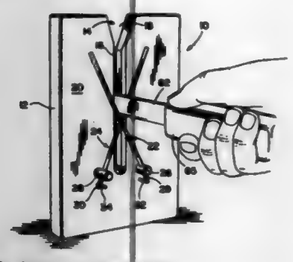
an actuator for moving said third coupling gear between a first position at which said third coupling gear is separated from said first and second coupling gears and a second position at which said third coupling gear is brought into engagement with both of said first and second coupling gears through the elastic deformation of said support member while the force produced by said actuator is transmitted to said rotary table via said third coupling gear, first coupling gear and support member so that the peripheral reverse surface of said rotary table is thrust against the flat guide surface of said table base with a uniform force over the entire circular length thereof.

5,440,953

KNIFE SHARPENER

Fred R. Gangelhoff; James H. Gangelhoff, and Joel T. Gangelhoff, all of Ocala, Fla., assignors to Tru Hone Corporation, Ocala, Fla.

Filed Sep. 22, 1994, Ser. No. 309,460
Int. Cl.[6] B24B *3/54*
U.S. Cl. 76—86 **16 Claims**



1. A knife sharpener comprising:

a base,

an elongated slot extending from one end of said base,

at least one pair of sharpening members,

mounting means for mounting said at least one pair of sharpening members in an overlapping V-formation with said at least one pair of sharpening members crossing in front of said elongated slot,

said mounting means including two pivot pins extending through said base, said at least one pair of sharpening members being fixedly mounted on said two pivot pins,

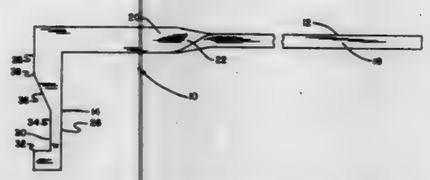
said mounting means further including securing means for securing said pivot pins on said base and for imparting a bias force on said pivot pins to be overcome by movement of said at least one pair of sharpening members, said securing means including two ends of a spring encased in a wrapper to prevent springbreak contamination in the event of breakage of said spring.

5,440,954

DEVICE FOR UNLOCKING VEHICLE DOORS WITHOUT THE USE OF A KEY

Randy D. Stevens, P.O. Box 114, Flagler, Colo. 80815

Filed Jun. 6, 1994, Ser. No. 254,692
Int. Cl.[6] B25B *33/00*
U.S. Cl. 81—15.9 **3 Claims**



1. A new and improved device for unlocking vehicle doors without the use of a key comprising, in combination:

a device formed of a rigid material in a generally L-shaped configuration having a long component and a short component at right angles with respect to the long component;

the long component having an upper extent and a lower extent, the upper extent being longer than the lower extent and parallel to each other with a transition piece therebetween, the transition piece formed as a twist with respect to the upper and lower extent, the transition piece being of a shorter length than either the upper or lower extent; and

the short component being shorter than the long component and formed with a linear upper edge and a lower edge linear for a minor portion of its extent from its junction with the long component, the lower surface of the short component having a recess formed with a right angle perpendicular to the lower surface adjacent to the outboard end, a linear extent within the recess parallel with the upper edge over the majority of its extent and an angled portion extending downwardly and coupling with the inboard section of the lower surface.

5,440,955

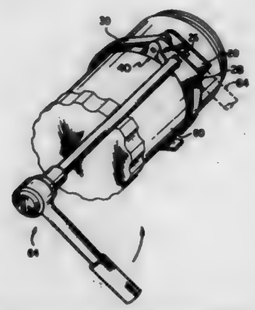
MULTI-PURPOSE STRAP WRENCH

Gregory A. Freeland, P.O. Box 60606, Colorado Springs, Colo. 80960

Filed Feb. 14, 1994, Ser. No. 194,977
Int. Cl.[6] B25B *13/52*
U.S. Cl. 81—64 **7 Claims**

1. A multi-purpose strap wrench, comprising:

(a) a base member comprising a first flange, a second flange, and a crossplate provided with an aperture and connecting said first and second flanges, said first and second flanges having first and second strap retainers extending therebetween and a pair of opposed apertures passing therethrough wherein the apertures are dimensioned to receive means for applying external force to said base member; and



(b) an adjustable-length elongated strap operably connected to said strap retainers.

5,440,956

UNIDIRECTIONAL GAS VALVE SHUTOFF TOOL AND METHOD

A. James Johnston, 11801 Lampton View Dr., Riverton, Utah 84065

Filed Jan. 14, 1994, Ser. No. 181,856
Int. Cl.[6] B25B *13/48*
U.S. Cl. 81—119 **10 Claims**



1. A gas valve shutoff tool operable only to close the gas valve, the gas valve having a valve stem configured as a raised, rectangular boss extending outwardly from the gas valve comprising:

a handle for hand grasping said tool;

a head affixed to one end of said handle;

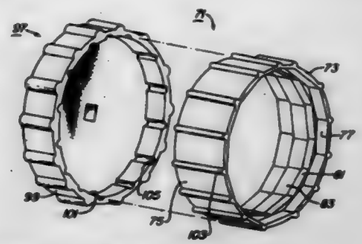
a rectangular recess in one face of said head, said rectangular recess being dimensionally configured to receive the end of the raised, rectangular boss of the gas valve stem, said rectangular recess having a first corner and a second corner diametrically opposed to said first corner, said first corner and said second corner cooperatingly engaging corresponding corners of the raised, rectangular boss of the gas valve stem to permit rotation of the raised, rectangular boss of the gas valve stem upon the application of a torque against said head by rotation of said handle, said recess having a pair of diametrically opposed cutout portions in place of corners that would otherwise correspond to said first corner and said second corner.

5,440,957

OIL FILTER WRENCH

James F. Rogers, P.O. Box 723, Dallas, Tex. 75221-0723

Continuation-in-part of Ser. No. 23,890, Feb. 26, 1993, Pat. No. 5,353,666. This application Nov. 4, 1993, Ser. No. 147,649
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—124.4 **9 Claims**



1. An improved oil filter wrench, comprising:

a wrench body having an exterior surface, an interior surface and an initially open interior which extends from a first end opening to an oppositely arranged second end opening of the wrench body, the interior surface having a plurality of engagement surfaces sized to accommodate different sized oil filters, the engagement surfaces being arranged in side-by-side fashion to extend continuously from the first end opening to the oppositely arranged second end opening of the wrench body; and

a separate driver adapter having a complimentary profile for engaging the exterior surface of the first end opening of the wrench body for applying torque thereto when an oil filter is engaged within the second end opening of the wrench body and for engaging the exterior surface of the second end opening of the wrench body for applying torque thereto when an oil filter is engaged within the first end opening of the wrench body wherein available axial space within the wrench body is maximized.

5,440,958

AUTOMATIC DEVICE FOR STACKING SHEETS OF PAPER

Hiroyuki Terasaki; Masahiro Sekine; Hisanori Miyake; Michael T. Sherick, and Bryan M. Doherty, Jr., all of Kanagawa, Japan, assignors to Japan Digital Laboratory Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 112,096
Claims priority, application Japan, Mar. 2, 1993, 5-067638
Int. Cl.[6] B65H *31/00*
U.S. Cl. 83—83 **18 Claims**

15. An automatic device for stacking sheets of paper comprising:

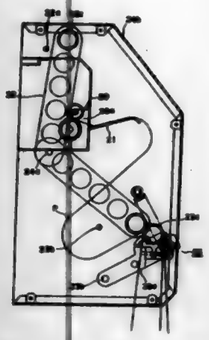
an image tracing output device having a sheet exit portion adapted to facilitate an exit of a sheet of paper therefrom;

sheet stacking means disposed below the sheet exit portion of the image tracing output device and having a support member and a sheet supporting rod dismountably supported by said support member, said sheet supporting rod having a spring at each extremity thereof engaged therewith so that said sheet supporting rod moves upwardly and downwardly when a sufficient component of pressure is applied thereto;

sheet guiding means, for guiding each sheet exiting from said sheet exit portion, towards one side of said sheet stacking means; and

sheet exit direction changing means for thrusting said sheet to said sheet stacking means when the sheet which has exited has a predetermined length so as to change an exit direction thereof to another side of said sheet stacking

means, said sheet exit direction changing means including a contact portion which is movable into contact with said



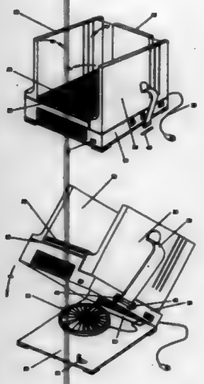
sheet supporting rod to apply said component of pressure thereto.

5,440,959

COLLAPSIBLE BREAD SLICING APPLIANCE WITH ELECTRIC FAN

John N. Bindon, 1168 Cranberry Ave., and Thomas R. Parks, 1289 Mandarin Dr., both of Sunnyvale, Calif. 94087

Filed Nov. 15, 1993, Ser. No. 152,844
Int. Cl.[6] B26D *7/02, 7/18*
U.S. Cl. 83—100 **3 Claims**



1. A bread slicer appliance comprising:

a. a base housing having an opening in an upper surface and containing an aspirating motorized fan, said opening being covered by a filter screen, whereby the base housing actively draws and collects crumb debris during slicing of a loaf of bread;

b. an open slotted support grid, which rests on top of the base housing and the filter screen, for supporting the loaf during slicing while at the same time allowing free flow of aspirating air and crumbs to the base housing;

c. an upright primary slicing guide including at least one slot therein, said primary slicing guide attached to the base housing and extending along a first side of said support grid and extending upwardly from the base housing providing rigid support to the loaf being sliced as well as guidance for a slicing knife;

d. an upright secondary slicing guide including at least one slot therein, said secondary slicing guide attached to the base housing and extending along a second side of support grid and extending upwardly from the base housing in a direction generally parallel to the primary slicing guide, the slot in the secondary slicing guide being aligned with the slot in the primary slicing guide for simultaneous passage of said slicing knife therethrough; and

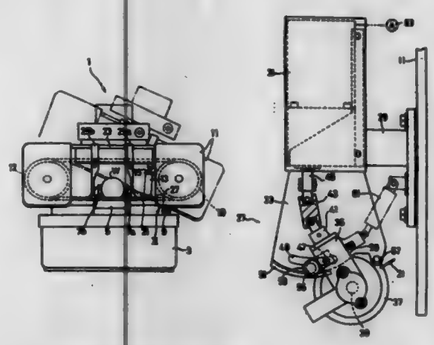
e. an end stop, also mounted on and extending upwardly from the base housing, providing longitudinal positioning for the loaf and, at the same time, support to the completed slice.

5,440,960

SAWDUST REMOVING DEVICE IN SAWING MACHINE

Toru Sadahiro, Isehara, Japan, assignor to Amada Company, Limited, Japan

PCT No. PCT/JP91/01518, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO93/08948, PCT Pub. Date May 13, 1993
PCT Filed Nov. 6, 1991, Ser. No. 856,222
Int. Cl.[6] B23D *59/00;* **B27B** *13/16*
U.S. Cl. 83—168 **9 Claims**



1. A sawing machine, comprising:

a housing;

a saw blade mounted in said housing;

a supporting member mounted in said housing so as to be movable toward and away from said saw blade:

a first actuator means for moving said supporting member toward and away from said saw blade;

a cleaning instrument supported on said supporting member to remove sawdust from said saw blade, said cleaning instrument being movable relative to said supporting member and being engageable with said saw blade when said supporting member is moved toward said saw blade; and

a first sensor means for detecting an engagement between said cleaning instrument and said saw blade;

wherein said first actuator means is operatively controlled on the basis of signals generated by said first sensor means.

5,440,961

FILM CUTTING APPARATUS AND METHOD

Earl S. Lucas, Jr., Glen Allen; Jack R. McLean, Richmond, and Donald E. Vaughan, Chesterfield County, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jan. 24, 1994, Ser. No. 185,335
Int. Cl.[6] B26D *1/18*
U.S. Cl. 83—455 **6 Claims**

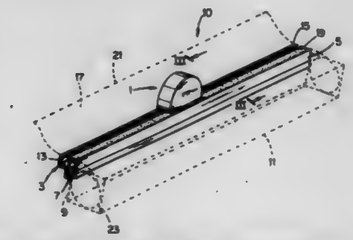
1. A film material cutting aparatus comprising a cutting device and a cutting guide, said cutting device comprising:

a) a housing;

b) a cutting wheel having a first diameter, said cutting wheel disposed in at least a portion of said housing;

c) a roller assembly for rotating said cutting wheel, said roller assembly including a pair of rollers and means for removably attaching said rollers together for fixedly mounting said cutting wheel to said roller assembly coaxially therewith such that rotation of said roller assembly drives said cutting wheel rotatively, wherein each of said rollers has a second diameter smaller that said first diameter such that a cutting wheel edge velocity is greater than a roller circumferential edge velocity during travel of said cutting device and such that said cutting wheel contacts a given portion of said film material in advance of said roller assembly during travel of said cutting device, said roller assembly having a resilient film material engaging surface defining a cutting plane coincident with said film material when being cut and being disposed in at least a portion of said housing;

d) a plurality of guide wheels for guiding said cutting device during travel thereof;



e) means for supporting said guide wheels below said cutting plane and for supporting said roller assembly above said cutting plane, said means for supporting attached to said housing and said roller assembly engaging said supporting means to permit rotation of said roller assembly and said cutting wheel;

f) said curing guide comprising an elongated member having:

i) a channel therethrough sized to receive said plurality of guide wheels;

ii) a top surface parallel to said cutting plane, said top surface having a high friction surface comprising a urethane tape applied to said top surface thereon to adhere said film material to said high friction surface during cutting; and

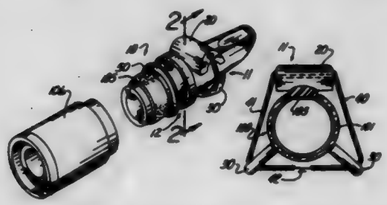
iii) a slot in said top surface communicating with said channel, said slot sized to receive said cutting wheel during rotation thereof and said means for supporting said plurality of guide wheels.

5,440,962

CLARINET LIGATURE AND GRASPING RING

Konstantin L. Valtchev, 43 Cosmic Drive, North York, Ontario, Canada M3B 3G11

Filed May 25, 1994, Ser. No. 248,914
Int. Cl.[6] G10D *9/02*
U.S. Cl. 84—383 R **14 Claims**



1. A clarinet ligature and grasping ring device for use with a mouthpiece/reed assembly which includes a generally cylindrical barrel member having a distal end which is provided with a removable reed element and a proximal end which terminates in a neck portion dimensioned to receive a mouthpiece member; wherein, the device comprises:

a ligature unit including an elongated reed clamp member having an enlarged generally semi-circular recess formed along its longitudinal axis and a discrete elongated bore formed proximate the apex of the semicircular recess; and, a pair of spring support members each comprising a slim profile arched body having a central recess formed therein and an aperture formed proximate the apex of said central recess; and,

an elongated spring member dimensioned to be received in said elongated bore and apertures in the reed clamp member and the spring support members respectively; wherein, the opposite ends of the elongated spring member are provided with securing means for releasably securing the opposite ends of the elongated spring member to one another.

5,440,963

DOUBLE BARREL BOLT ACTION REPEATING RIFLE

Jozsef Szecsei, 2555 8th Concession, R.R. #3, Windsor, Ontario, Canada N9A 6Z6

Filed Oct. 21, 1991, Ser. No. 779,760
Int. Cl.[6] F41F *1/08*
U.S. Cl. 89—1.41 **7 Claims**



1. A double-barrel firearm, said firearm having two barrels and each barrel having a firing chamber for accepting a cartridge, said firearm comprising:

(a) a magazine for storing additional cartridges;

(b) a receiver, said receiver being coupled to the firing chamber of each barrel of said two barrels and to said magazine, said receiver including a first port for injecting the cartridges and a second port for ejecting the cartridges, and said receiver having a recess for accepting a bolt assembly;

(c) said bold assembly being slidably mounted in the recess of said receiver;

(d) said receiver being coupled to said magazine through said first port;

(e) said bolt-assembly comprising a bolt body having a bore, first and second firing pin assemblies, said first and second firing pin assemblies being slidably mounted in the bore of said bolt body, bolt actuation means coupled to said bolt body for manually operating said bolt assembly, said bolt actuation means comprising a bolt collar rotatably mounted on said bolt body, and a bolt handle coupled to said bolt collar, said bolt collar including means for cocking said first and second firing pin assemblies, and said bolt body including breech bolt means for inserting and removing the cartridges from the firing chambers, said breech bolt means having means for accepting said first and second firing pin assemblies; and

(f) the cartridges in the firing chambers being ejected through said second port during rearward manual opera-

tion of said bolt assembly, and two of the cartridges in said magazine being injected through said first port into the firing chambers during forward manual operation of said bolt assembly.

5,440,964

AMMUNITION MAGAZINE DRIVE SYSTEM

Joseph F. Bender-Zanoni, Grand Isle, Vt., assignor to Martin Marietta Corporation, King of Prussia, Pa.

Filed Aug. 3, 1994, Ser. No. 285,474
Int. Cl.[6] F41A *9/76*
U.S. Cl. 89—34 **11 Claims**



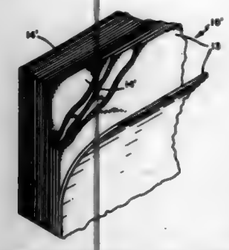
1. An ammunition magazine comprising:
a housing;
a plurality of idler sprocket sets mounted in distributed relation within the housing;
at least first and second driven sprocket sets mounted in spaced relation within the housing, the first and second driven sprocket sets including respective first and second sprocket shafts;
an ammunition chain conveyor trained around the idler and driven sprocket sets;
first and second worm gears respectively drivingly connected to the first and second sprocket shafts;
drive shaft means extending between the first and second worm gears;
a prime mover coupled to drivingly rotate the drive shaft means;
first and second worms drivingly mounted on the drive shaft means in axial positions to respectively mesh with the first and second worm gears; and
means accommodating adjustment of the axial position of at least the first worm on the drive shaft means.

5,440,965

ARMOR SYSTEMS

David S. Cordova, Midlothian, and Kevin M. Kirkland, Richmond, both of Va., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 924,566, Aug. 5, 1992, Pat. No. 5,343,796, which is a continuation of Ser. No. 490,179, Mar. 8, 1990, abandoned. This application Aug. 30, 1993, Ser. No. 112,925
Int. Cl.[6] F41H *5/04*
U.S. Cl. 89—36.02 **14 Claims**



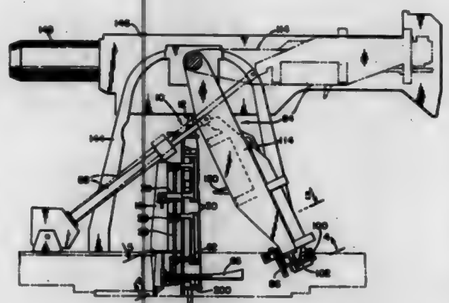
1. An armor system comprising a first pliable, cut resistant fibrous layer and a second pliable fibrous layer substantially coextensive with said first layer, the first layer being arranged to receive an impact from a projectile prior to the second layer and engaging the projectile to slow its velocity, the second layer dissipating the incoming energy of the impact to resist complete penetration of the second layer by the projectile, both of said first and second layers comprising fibers having a tensile modulus of at least about 200 g/d, and an energy-to-break of at least about 8 J/g and a tenacity equal to or greater than about 10 g/d, wherein the first layer comprises an uncoated needle punched felt of discontinuous fibers having a length ranging from about 0.25 to 10.0 inches (0.63 to 25.4 cm) and the second layer comprises a network of one type selected from the group consisting of a nonwoven network of oriented fibers and a plurality of nonwoven networks of oriented fibers.

5,440,966

MATERIAL HAND-OFF DEVICE AND PROCESS

Robert M. Tellander; Kenneth W. Hummel, both of Coon Rapids, and Jeffrey F. Kezar, St. Paul, all of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 10, 1993, Ser. No. 103,952
Int. Cl.[6] F41A *9/16*
U.S. Cl. 89—46 **7 Claims**



5. A method of loading and unloading ammunition between a load station and a cradle structure to engage the load station and transfer the ammunition to ram into the breech tube of a gun comprising the steps of:
indexing the cradle structure within a proximate distance of 10 degrees relative to the load station;
creating contact between cradle shutter unlatch rollers and unlatch cams and pivoting cradle shutter latches to thereby unlatch cradle shutters;
creating contact between cradle shutter primary opening rollers and load station shutter opening cams to pivotably open said cradle shutters;
creating contact between cradle to hoist latch pins and cradle to hoist latches to pivot said cradle to hoist latches to thereby open against latch springs just before the cradle structure is completely engaged into the load station; and
lowering the cradle structure and simultaneously pivoting said cradle to hoist latches inward to latch the cradle to the load station.

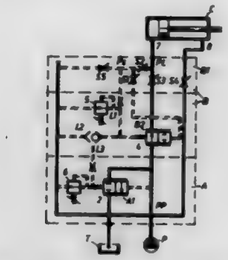
5,440,967

METHOD FOR CONTROLLING A HYDRAULIC MOTOR AND A HYDRAULIC VALVE THEREFOR

Örjan Wennerbo, Boras, Sweden, assignor to Voac Hydraulics Boras AB, Boras, Sweden

Filed Jan. 7, 1994, Ser. No. 179,050
Claims priority, application Sweden, Jan. 14, 1993, 93000842
Int. Cl.[6] F15B *13/02*
U.S. Cl. 91—471 **16 Claims**

1. In a method for controlling a hydraulic motor with the aid of a valve which comprises an inlet section that includes a pump and tank connection and a manoeuvering section having a slide (B1), and a load signal system (L1, L2, L3), and further comprises two regulating constrictions (S3, S4) for each movement direction, wherein said constrictions can be connected to and from a motor (7), wherein the manoeuvering slide (B1) also includes a load level detecting constriction (S2) and a load signal drain (S5), and wherein said pump generates an idling pressure, the improvement wherein when manoeuvering by means of the manoeuvering slide (B1), the load signal Ps of the load signal system is increased by means of an additional constriction (S1) located between the pump connection and that side of the load detecting constriction (S2) which has the higher pressure in the manoeuvering process.

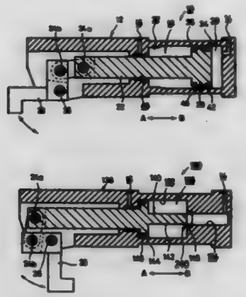


5,440,968

VARIABLE FORCE CYLINDER DEVICE

Akira Sekine, Ibaraki, Japan, assignor to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,293
Claims priority, application Japan, Dec. 1, 1992, 4-322013
Int. Cl.[6] F01B *31/00*; F15B *11/00*
U.S. Cl. 92—6 R **5 Claims**



1. A Variable force cylinder device, comprising:
a piston reciprocated by pressurized fluid in a cylinder chamber, said piston having a large-diameter portion and a small-diameter portion, said piston being connected to a piston rod having a diameter smaller than the diameters of said large-diameter portion and said small-diameter portion;
a cylinder chamber having a large-bore portion which corresponds to said large-diameter portion of the piston, and a small-bore portion which corresponds to said small-diameter portion of the piston, wherein said large-diameter portion and said small-diameter portion are arranged in order in a direction of a descending stroke of the piston in which an end face of said large-diameter portion moves away from a bottom of said large bore portion;
a first passageway introducing said pressurized fluid into the bottom of said larger bore portion when the piston is in said descending stroke;
a second passageway introducing said pressurized fluid into a bottom of said small-bore portion when the piston is in an ascending stroke in which said end face of the large-diameter portion approaches the bottom of the large-bore portion; and
a variable force mechanism varying a pressure-receiving area of the piston under a varying interaction of the piston with the cylinder chamber depending on the phases of a piston stroke, said variable force mechanism comprising:
a ring member mounted around said large diameter portion, wherein a periphery of said ring member is in sliding contact with a wall surface of said large-bore portion and wherein said ring member includes a check valve allowing the pressurized fluid to leak only in the direction of said descending stroke; and
a seal ring mounted around said small-diameter portion, said seal ring performing sealing only when said small-diameter portion is fitted in said small-bore portion during a final phase of said descending stroke.

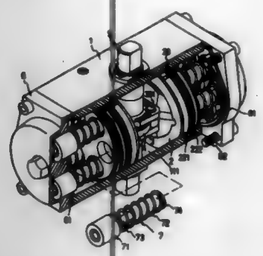
2. A variable force cylinder device, comprising:
a piston reciprocated by a pressurized fluid in a cylinder chamber, said piston having a large-diameter portion and a small-diameter portion, wherein said small-diameter portion of the piston includes a straight rod projecting from said large-diameter portion;
a cylinder chamber having a large-bore portion which corresponds to said large-diameter portion of the piston and a small-bore portion which corresponds to said small-diameter portion of the piston, said large-diameter portion of the piston being fitted in said large-bore portion of the cylinder chamber and wherein said small-diameter portion and said large-diameter portion are arranged in order in a direction of a descending stroke of the piston in which an end face of said small-diameter portion moves away from a bottom of said small-bore portion;
a first passageway introducing said pressurized fluid into the bottom of said small bore portion when the piston is in said descending stroke;
a second passageway introducing said pressurized fluid into a bottom of said large-bore portion when the piston is in an ascending stroke in which said end face of the small-diameter portion approaches the bottom of the small-bore portion; and
a variable force mechanism, said variable force mechanism varying a pressure-receiving area of the piston under a varying interaction of the piston with the cylinder chamber depending on the phases of a piston stroke, said variable force mechanism comprising:
a cylindrical member slidably covering said straight rod in a fluid-tight manner, said cylindrical member having a hole defined in a bottom side thereof through which said pressurized fluid is introduced into said cylindrical member from said small-bore portion, said bottom side of said cylindrical member further including an end portion with a reduced outer diameter so that said pressurized fluid leaks into said large-bore portion through an annular space formed between said end portion and said small-bore portion during a final phase of said descending stroke, wherein said small-bore portion of said cylinder chamber is formed as a straight hole slidably receiving said cylindrical member in a fluid-tight manner until the final phase of said descending stroke is reached.

5,440,969

CYLINDER-OPERATED AND SPRING-LOADED DRIVING MECHANISM FOR A BALL VALVE

Wan-Sheng Shin, No. 190 Jen Ai Street, San Chung City, Taipei, Taiwan

Filed Mar. 9, 1994, Ser. No. 207,612
Int. Cl.[6] F01B *7/04, 31/00*; F16K *31/12*
U.S. Cl. 92—68 **1 Claim**



1. A cylinder-operated and spring-loaded driving mechanism for a ball valve, comprising a cylinder body, two pistons, two links, a driving shaft seat, a driving shaft, a plurality of guided compression springs, and two cylinder caps;

said cylinder body having a hollow cylinder chamber for containing other cylinder elements therein and having an air supply inlet formed at a predetermined position thereon to connect with an air supply system;

said two pistons being oppositely disposed in said cylinder chamber and being connected to each other by means of said two links and said driving shaft seat; said pistons having in their inner side a plurality of second spring locating recesses to receive one end of said guided compression springs;

said driving shaft seat having a centered driving shaft hole for said driving shaft to pass through and being connected at two ends thereof to said two links and accordingly, said pistons;

said driving shaft passing through said driving shaft seat and extending out of said cylinder body to connect a control stem of a ball valve so as to transmit control movements produced by said driving mechanism to said ball valve;

said cylinder caps being sealed to two ends of said cylinder body and having a plurality of first spring locating recesses formed at their inner side, the numbers and positions of said first spring locating recesses being corresponding to those of said second spring locating recesses on said pistons; and

said guided compression springs being separately disposed between said cylinder caps and said pistons with their two ends separately received in said first and said second spring locating recesses; said guided compression springs each consisting of a helical spring which is put over a guide stem disposed between two guide sleeves and therefore is prevented from deformation due to compression; and compressed spring force stored in said compression springs when they are compressed being a power for pushing said pistons to move toward each other to close said ball valve when said air supply system connected to said air inlet is failed;

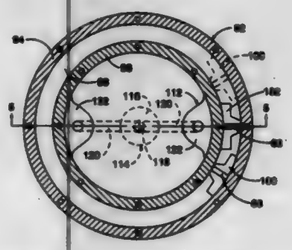
said cylinder-operated and spring-loaded driving mechanism for a ball valve being characterized in that when air is supplied to said cylinder chamber from said air inlet on said cylinder body, said two pistons are forced to move outward away from each other and thereby driving said links connected to said pistons, said driving shaft seat connected to said links, and said driving shaft passing through said driving shaft seat to turn in a first direction that causes said ball valve connected with said driving mechanism through said control stem to turn to open; that said guided compression springs are compressed between said pistons and said cylinder caps while said pistons are pushed by the air to move outward and store compressed spring force equal to the air pressure of said air supplied from said air inlet to control the opening of said ball valve; and that when said ball valve is to be closed or when said air supply system is failed, said air in said cylinder chamber is discharged from said air inlet and the air pressure in said cylinder chamber drops down, accordingly, to become lower than said compressed spring force stored in the compressed guided compression springs, and therefore, causes said pistons to be pushed inward toward each other by said guided compression springs, and said links, said driving shaft seat, and said driving shaft are turned in a reverse second direction to drive said ball valve to turn and close.

5,440,970

HYDRAULIC ROTARY ACTUATOR

Andrew J. Tonsor, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 21, 1994, Ser. No. 310,065
Int. Cl.[6] F01C *9/00*
U.S. Cl. 92—121 **10 Claims**



1. An hydraulic rotary actuator for rotating a first rotatable machine portion relative to a second non-rotatable machine portion, comprising:

a support member connected to said second machine portion;

an inner ring having a first radially extending vane connected thereto;

an outer ring having a second radially extending vane connected thereto, said outer ring encircling said inner ring and defining a circular chamber therebetween, said first and second vanes being positioned within said chamber;

a bearing assembly supporting said outer ring and said first rotatable machine portion on said support member;

first and second cover plates positioned within said outer ring and enclosing said inner ring to close said chamber;

a plurality of seals positioned between said first and second cover plates and said inner and outer rings;

a seal adapted to encircle each of said first and second vanes;

a torque reaction apparatus connecting said inner ring to said second non-rotatable machine portion; and

means for supplying pressurized fluid into said chamber on each side of said first vane.

5,440,971

CYLINDER WITH MOUNTING FOR GUIDE RODS

Lawrence F. Yuda, P. O. Box 499, Westminster, S.C. 29693

Continuation of Ser. No. 151,059, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 964,060, Oct. 21, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 347,837
Int. Cl.[6] F16V *15/18*
U.S. Cl. 92—165 PR **2 Claims**

1. A cylinder having a pair of opposed guide rods vertically slidable therein and bridged by a yoke, and a piston rod connected to said yoke between said guide rods on one end and fixedly secured to a piston on the other end comprising:

a first enlarged elongated aligned abutment integral with each of said guide rods at an upper end adjacent said yoke;

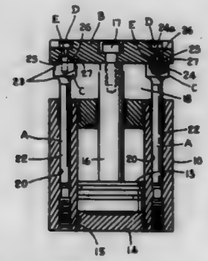
a second abutment integral with each of said first abutments having axially aligned sides extending upwardly therefrom, said second abutment having a lesser cross-sectional area than said first abutment;

a lower axial bore extending from an upper surface of said second abutment through each of said first abutments and terminating within a threaded portion thereof;

an upper axial bore extending from an upper surface of said yoke and adjoining each of said lower axial bores in alignment therewith;

a fastener having a shank received in each of said lower and upper axial bores respectively and a head bearing against said upper surface of said yoke connecting said yoke to each of said guide rods;

said shanks having a threaded lower end portion in threadable engagement with said threaded portions in each of said first abutments;



axially aligned walls in said yokes terminating in a horizontal end wall defining a recess having a complementary configuration for receiving and engaging said axially aligned sides of each of said second abutments avoiding substantial lateral movement as may result in misalignment of the guide rods;

said recess extending from said underside of said yoke terminating therein; and

spaced upper horizontal bearing surfaces provided by each of said first and second abutments for engagement with said underside of said yoke and with said horizontal end wall of said recess in said yoke, respectively, for providing increased load bearing capability between said guide rods and said yoke;

whereby a firm support is provided for attaching said guide rods to said yoke in axial alignment thereon.

5,440,972

PORTABLE BEVERAGE BREWING DEVICE

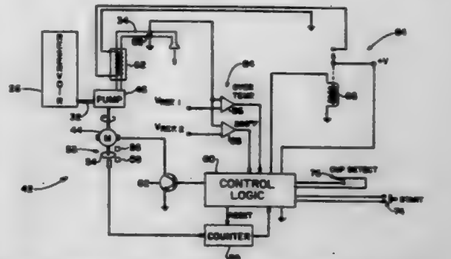
Philip H. English, P.O. Box 1605, Avon, Colo. 81620

Continuation-in-part of Ser. No. 103,860, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 739,311, Aug. 1, 1991, Pat. No. 5,233,914. This application Jun. 14, 1994, Ser. No. 259,960
Int. Cl.[6] A47J *31/22*
U.S. Cl. 99—282 **27 Claims**

1. A portable beverage brewing assembly of the type having a coffee maker containing a base, a body portion comprising a top, a bottom, and a centerpiece, the body portion being removably connected to the base; a liquid reservoir removable from the body portion; a heater communicating with the reservoir for receiving from the reservoir and heating said liquid; a brewing chamber communicating with the heater for admixture of a heated liquid with a prepackaged filter containing beverage precursor particles; a drinking cup positioned below the brewing chamber to receive the brewed beverage; a power circuit to control power supply to the coffee maker, and a thermostatically controlled shut-off means; the beverage brewing assembly further comprising:

a motor means connected on the power circuit;

a pumping means actuated by the motor means and communicating with the heater; and



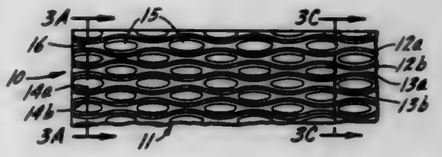
means for shutting down said pumping means and heater means when a predetermined volume of liquid has been pumped.

5,440,973

LOW-FAT NON-STICK FRYING DEVICE

Harold L. Welhouse, Two Rivers, Wis., assignor to Anchor Hocking Corporation, Freeport, Ill.

Filed Apr. 30, 1993, Ser. No. 55,490
Int. Cl.[6] A47J *37/10*
U.S. Cl. 99—425 **12 Claims**



1. An improved low-fat non-stick frying device including a base having an upper cooking surface, the improvement residing in the upper cooking surface, the upper cooking surface comprising:

a series of adjacent curvilinear grooves which are narrow in width and depth, the grooves being disposed in the upper cooking surface in a side-by-side fashion,

each groove being characterized as a series of alternating and oppositely directed undulations, each groove and the groove adjacent to it further being characterized as a series of alternating roots and lands, the lands of each groove and the lands of each adjacent groove being defined as adjacent undulations that curve outwardly from each other without meeting, the roots of each groove and the roots of each adjacent groove being defined as adjacent undulations that curve inwardly toward each other without meeting,

the cooking surface disposed between two adjacent lands being further characterized as including a raised portion, two adjacent grooves providing a series of raised portions disposed between the adjacent lands that are disposed between adjacent roots,

the cooking surface disposed between two adjacent roots being further characterized as including a depressed portion, two adjacent grooves providing a series of depressed portions disposed between the adjacent roots that are disposed between adjacent lands,

the cooking surface carrying a coating of non-stick material,

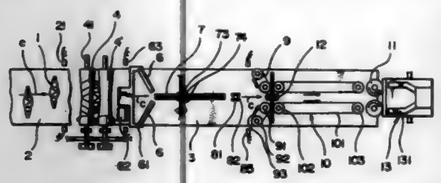
the non-stick material disposed on top of the raised portions will engage cooking utensils, cleaning utensils and food to a greater extent than the non-stick material disposed in the grooves and between adjacent roots or between adjacent raised portions.

5,440,974

CROISSANT DOUGH-PIECE BENDING APPARATUS

Sadao Ueno; Hitoshi Kuwahara, and Michio Morikawa, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tochigi, Japan

Filed Oct. 6, 1994, Ser. No. 319,260
Claims priority, application Japan, Oct. 8, 1993, 5-277584
Int. Cl.[6] A21C *3/00*; A21D *6/00*; A23P *1/00*
U.S. Cl. 99—450.2 2 Claims



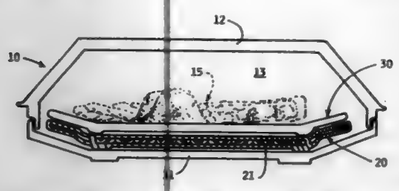
1. A croissant dough-piece bending apparatus comprising:
a conveyor for conveying rolled-up croissant dough pieces; and
a dough-piece bending member to push the dough piece in the direction of its movement on the conveyor between a pair of dough-piece bending belts provided on the conveyor downstream of the bending member;
the pair of dough-piece bending belts being located symmetrically relative to the conveyor, the opposite surfaces of the bending belts converging toward each other in the downstream direction, the dough-piece bending belts being adapted to swing about their downstream ends toward and away from each other so that the dough piece is bent at its center in cooperation with the movement of the dough-piece bending member.

5,440,975

FOOD TEMPERATURE MAINTENANCE

Douglas C. Bean, 84 Lewis Rd., Wantirna South, Victoria 3152, Australia

PCT No. PCT/AU93/00077, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO93/16627, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 23, 1993, Ser. No. 290,989
Claims priority, application Australia, Feb. 25, 1992, PL1088
Int. Cl.[6] A47J *39/02*
U.S. Cl. 99—483 22 Claims



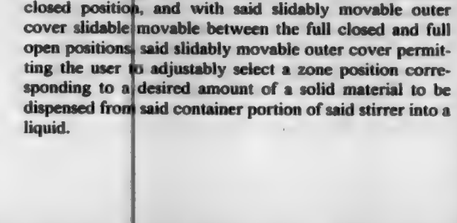
1. An insulated food storage system comprising a thermally insulating enclosure (10) comprising a heat insulating base (11) and a heat insulating cover (12), the base (11) and the cover (12) cooperating together so as to define a cavity (13), the system further including a heat storage insert (20) to fit within the cavity (13), characterized in that the heat storage insert (20) has a chamber (21) therein, a container (32, 33) located within the chamber (21) in the heat storage insert (20), and a liquefiable substance (22) located within the container (32, 33), the substance (22) having the property of being liquefiable by heating and of solidifying at a temperature or at temperatures within a predetermined temperature range, the temperature or temperatures being at or above food spoilage temperatures and at an acceptable temperature for consumption of hot food, the container (32, 33) being made of a dissimilar material to the composition of the liquefiable substance (22) to resist leaching or migration of the liquefiable substance therethrough, whereby food (15) located within the cavity (13) together with the heat storage insert (20) is maintained substantially at said temperature or at temperatures within said range as the liquefiable substance (22) which has been previously heated and liquefied cools and solidifies.

5,440,976

ADJUSTABLE DISPENSING STIRRER FOR SOLUBLE SWEETENERS

Fred Giuliano, P.O. Box 47, Bellport, N.Y. 11713, and John V. Mizzi, Poughkeepsie, N.Y., assignors to Fred Giuliano, Medford, N.Y.

Filed Aug. 23, 1994, Ser. No. 294,542
Int. Cl.[6] B65D *25/04*
U.S. Cl. 99—495 19 Claims



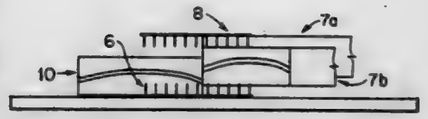
1. A stirrer for convenient controlled dispensing of a solid into at least one material of a liquid, comprising:
an elongated body, the stirrer having a handle end and an opposite dispenser end, a container portion extending therebetween, and wherein
said elongated body further having at least one dispenser region extending along said container portion from a point beginning near or substantially at said dispenser end, and said elongated body also having
a handle region, extending along said container portion from a point near or substantially at said handle end of said stirrer, said handle region comprising a stirrer handle, and further wherein
said at least one dispenser region of said container portion being provided with at least one separator plate attached to said container portion, said respective separator plate further having at least one outer edge, and said stirrer further having
a perforated cover, said cover being substantially coextensive with said dispenser region of said container portion and said perforated cover further being in effective sealing contact with said at least one outer edge of said respective at least one separator plate, and further,
said container portion, said separator plate and said perforated cover further comprising at least one compartment for containing a solid material to be dispensed; and further wherein
said stirrer further having at least one slidably movable outer cover, said outer cover being in effective sealing contact with said perforated cover, and
said at least one slidably movable outer cover having a full open position and a full closed position, said slidably movable outer cover being substantially coextensive and in positional register with said perforated cover in the full closed position, and with said slidably movable outer cover slidable movable between the full closed and full open positions, said slidably movable outer cover permitting the user to adjustably select a zone position corresponding to a desired amount of a solid material to be dispensed from said container portion of said stirrer into a liquid.

5,440,977

METHOD FOR PRODUCTION OF TRUSSED RAFTERS WITH NAIL PLATE JOINTS

Tuomo T. Poutanen, Tapulinkatu 46 C, SF-33400 Tampere, Finland

PCT No. PCT/FI91/00104, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO92/18719, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1991, Ser. No. 117,132
Int. Cl.[6] B30B *13/00*
U.S. Cl. 100—39 17 Claims



1. A method for the production of a trussed rafter from timber members using nail plates, said method comprising accurately affixing a plurality of the nail plates to the timber members prior to assembly of the timber members into the trussed rafter and at a station where cutting of the timber members takes place, said cutting and affixing including measuring of the timber members and gripping of the timber members, assemblying said members at an assembly station which is at a different station from said station wherein the affixing of said plurality of nail plates is performed by using measurements, made during said cutting and said affixing, which are based on uniform measuring and gripping of the timber members, whereby measurement errors caused by gripping of timber members of a non-standard shape are avoided.

5,440,978

REDUCED VOLUME TRASH COLLECTION SYSTEM

Edward J. O'Brien, Eastampton, and Nathan D. Bloch, Cherry Hill, both of N.J., assignors to Scott Paper Company, Delaware County, Pa.

Filed Aug. 8, 1994, Ser. No. 300,192
Int. Cl.[6] B30B *12/00*
U.S. Cl. 100—99 14 Claims



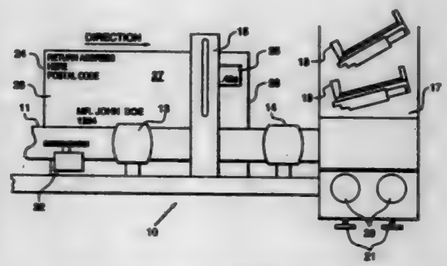
1. A waste paper receptacle apparatus comprising:
(a) a container section having an opening in the top thereof;
(b) a lid section for closing said opening;
(c) piston means extending from said lid section;
(d) a plate member supported within said container section proximate to said opening, said plate member having an aperture therethrough;
(e) a plurality of positioning pins extending from said plate member about the periphery of said aperture;
(f) an expandable liner supported from said positioning pins, said expandable liner extending down from said plate member into said container section, said expandable liner being biased to contract circumferentially thereby exerting forces on the contents thereof directed substantially radially inwardly.

5,440,979

MAIL STAMPING APPARATUS AND METHOD

Richard E. Bonham, Scotland, and Douglas C. Sooley, Waterloo, both of Canada, assignors to Z Mark International, Inc., Markham, Canada

Filed Nov. 12, 1993, Ser. No. 151,032
Claims priority, application United Kingdom, Nov. 16, 1992, 9224016
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—91 8 Claims



7. A method for the rapid, automated identification, stamp-cancelling and sorting of a multiplicity of envelopes, each of said envelopes having a first edge, a second edge, a face, a mailing address on said face and a postage stamp proximate to said first edge and said second edge connected to said face, said method comprising:
transferring said envelopes in singulated file to a first edge sensing structure;
sensing said first edge by said first edge sensing structure;
printing characters on said face at a pre-selected region of said face relative to said first edge in consequence of said first edge sensing,
sensing said second edge by a second edge sensing structure; and
printing characters on said face at said pre-selected region in consequence of said first and said second edge sensing.

5,440,980

SQUEEGEE FOR SCREEN PRINTING MACHINE

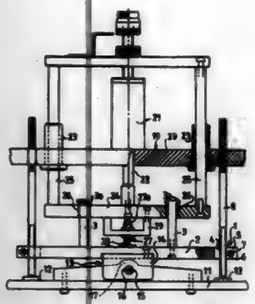
Takehiko Murakami, and Kunio Kondo, both of Fuchu, Japan, assignors to Minami Engineering Co., Ltd., Japan

Filed Jun. 1, 1994, Ser. No. 252,653
Int. Cl.[6] B41F *15/44*, *15/00*
U.S. Cl. 101—123 3 Claims

1. A squeegee apparatus for a screen printing machine including a mask and a squeegee, comprising:
a horizontal movement plate;
a squeegee drive means comprising an air cylinder means including a moving shaft and secured to a longitudinal central portion of said horizontal movement plate;
a vertical operation rod secured to said moving shaft of said air cylinder for accomplishing vertical movement of said vertical operation rod with respect to said horizontal movement plate;
a vertical movement support rod coupled to said vertical operation rod to permit vertical movement with respect to said horizontal movement plate;
cushioning means connected to said vertical operation rod and said vertical movement support rod at a position below said moving shaft of said air cylinder, said cushioning means allowing cushioned relative vertical movement

between said vertical operation rod and said vertical movement support rod;

connecting means secured to said vertical movement support rod at a position below said cushioning means; and,



squeegee attachment means rotatably coupled to said connecting means for attachment of a squeegee, said squeegee attachment means being rotatably mounted about an axis parallel to the mask.

5,440,981

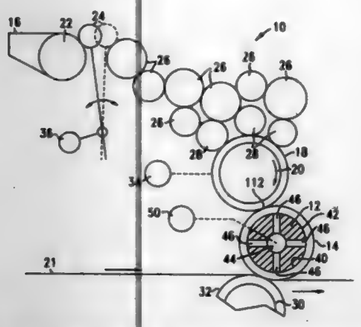
OFFSET LITHOGRAPHIC PRINTING PRESS INCLUDING A GAPLESS TUBULAR PRINTING BLANKET

James B. Vrotacoe, Rochester; Glenn A. Guaraldi, Kingston, both of N.H.; James R. Carlson, Franksville, and Gregory T. Squires, Union Grove, both of Wis., assignors to Heidelberg Harris, Inc., Dover, N.H.

Continuation of Ser. No. 223,792, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 911,771, Jul. 10, 1992, Pat. No. 5,323,702, which is a continuation-in-part of Ser. No. 699,668, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 417,587, Oct. 5, 1989, abandoned. This application Nov. 21, 1994, Ser. No. 342,484

Int. Cl.[6] B41F *7/02*

U.S. Cl. 101—217 **20 Claims**



1. An offset lithographic printing press for reducing vibrations and slippage of a printing surface in the printing press to reduce smearing of a printed image printed on a printed product, the printing press comprising:

a plate cylinder having a printing plate mounted thereon;

a blanket cylinder engageable with the plate cylinder;

a drive assembly for rotating the plate cylinder and the blanket cylinder;

a removable cylindrical printing blanket mounted on the blanket cylinder, the removable cylindrical printing blanket including:

a backing layer including an elastically expandable cylindrical sleeve,

a gapless and seamless cylindrical compressible layer over said sleeve, said compressible layer including a first circumferentially endless tubular body of elastomeric material, a plurality of voids distributed throughout said first circumferentially endless tubular body of elastomeric material,

a gapless and seamless cylindrical inextensible layer over said compressible layer, said inextensible layer including a circumferentially inextensible material embedded in a second gapless and seamless tubular body of elastomeric material, a cylindrical printing layer over said inextensible layer, said printing layer having a gapless and seamless printing surface for transferring an image from the plate cylinder to the printed product.

5,440,982

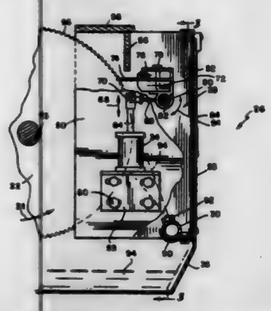
INKING SYSTEM FOR A PRINTING PRESS

Stanley J. Meadows, 619 2nd St., Fort Wayne, Ind. 46808, and Steven C. Waters, 3907 County Rd. 46A, Auburn, Ind. 46706

Filed Jul. 1, 1993, Ser. No. 85,592

Int. Cl.[6] B41F *31/05, 31/08*

U.S. Cl. 101—363 **24 Claims**



1. An inking apparatus for applying ink to a rotating roller of a printing press, the apparatus comprising:

an ink fountain located adjacent the roller for applying ink to the roller;

a doctor blade holder;

a doctor blade coupled to the doctor blade holder for engaging the roller with a predetermined pressure to scrape excess ink from the roller as the roller rotates relative to the doctor blade;

first and second guide rails configured to define a slot therebetween for receiving the doctor blade holder therein, the slot including a first open end through which the doctor blade and doctor blade holder are placed and a second open end through which the doctor blade extends; and

means adjacent the first open end of the slot for retaining the doctor blade holder in the slot to hold the doctor blade against the roller during rotation of the roller, the retaining means configured to be movable to a position away from the slot so that the doctor blade holder can be removed from the slot through the first open end thereof.

5,440,983

SWINGING PREGRIPPER OF A SHEET-FED PRINTING PRESS

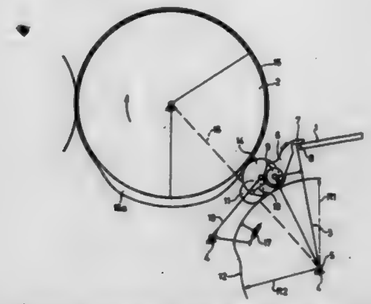
Stefan Dipke, Eppelheim, and Andreas Fricke, Eberbach, both of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Germany

Filed Sep. 8, 1994, Ser. No. 302,631

Claims priority, application Germany, Sep. 8, 1993, 43 30 392.7

Int. Cl.[6] B41F *1/30*

U.S. Cl. 101—410 **4 Claims**



1. Gripper control for a cyclically swingably driven pregripper for transporting single sheets in a sheet-fed printing press, the pregripper having at least one sheet gripper mounted on a free end of a swivel lever motorizingly pivotable about a frame-fixed swivel shaft, the gripper control including cams for forcibly moving the sheet gripper about an articulated shaft oriented parallel to the swivel shaft so as to close and open the sheet gripper upon sheet acceptance and sheet transfer, one of the cams being revolvable in a single revolution for cyclically shifting the other of the cams in the position thereof, the other of the cams being secured to a roller lever supported pivotally at a fixed location and having a cam roller resting on the one cam, relative positions of the cams being adjustable for determining the instants of closing and opening of the gripper, the other of the cams comprising a cam segment having two successive circular cam regions with radii of curvature of different length and a common center point, said cam segment being adjustable equidistantly to the circular cam regions with respect to the roller lever, the one cam revolving in a single revolution being effective for opening the gripper and said cam segment being effective for closing the gripper.

5,440,984

DEVICE FOR CLAMPING FLEXIBLE PRINTING PLATES ON THE PLATE CYLINDER OF ROTARY PRINTING PRESSES

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Feb. 10, 1994, Ser. No. 194,247

Claims priority, application Germany, Feb. 13, 1993, 43 04 328.3

Int. Cl.[6] B41F *27/06, 27/12*

U.S. Cl. 101—415.1 **20 Claims**

1. In combination a plate cylinder for a rotary printing press and a device for clamping a flexible printing plate on the plate cylinder and for correcting diagonal register of the printing plate on the plate cylinder, the printing plate having first and second ends, the plate cylinder having a recess therein for accomodating the device, the recess having a base with first and second side portions disposed in a spaced apart relationship with one another, said device comprising:

first clamp means for being disposed within the recess to clamp the first end of the printing plate to the plate cylinder, said first clamp means having a first end and a second end;

second clamp means for being disposed within the recess to clamp the second end of the printing plate to the plate cylinder;

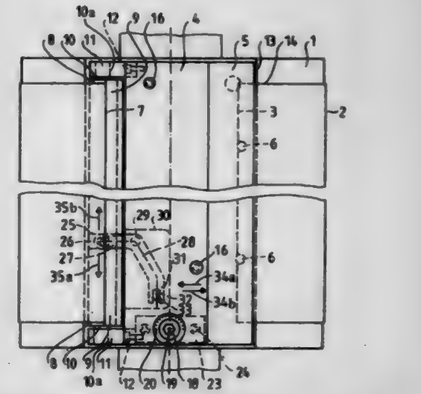
means for mounting said first clamp means in the recess of the plate cylinder, said means for mounting comprising a pivot disposed adjacent the first end of said first clamp means, said second end of said first clamp means being pivotable about said pivot;

means for pivoting said second end of said first clamp means with respect to said pivot, said means for pivoting comprising bolt means defining a longitudinal axis and being disposed radially through said first clamp means;

said bolt means having a first end for being disposed in a slot within the recess, said first end comprising pin means, said pin means defining a longitudinal axis,

said longitudinal axis of said pin means being parallel to and eccentric with respect to said longitudinal axis of said bolt means; and

said bolt means being configured to rotate within said first clamp means eccentrically about said pin means to pivot said first clamp means within the recess of the plate cylinder;



means for connecting said second clamp means to said first clamp means, said second clamp means being axially displaceable within said means for connecting; and

lever means configured for axially displacing said second clamp means during pivoting of said first clamp means, said lever means comprising:

a pivot fixedly mounted on said first clamp means adjacent said second clamp means;

a first lever arm, said first lever arm having a first end at said pivot and extending in a direction towards said second end of said first clamp means to a second end;

a second lever arm, said second lever arm having a first end at said pivot and extending to a second end at said second clamp means;

said second clamp means comprising a means for engaging said second end of said second lever arm therein;

the plate cylinder having, within the recess thereof, means for engaging said second end of said first lever arm; and

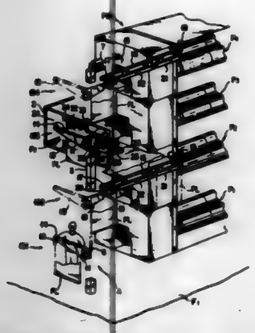
said second end of said second lever arm is configured to move axially towards and away from said first end of said first clamp means during pivoting of said first clamp means towards and away from the first side of the recess of the plate cylinder to axially displace said second clamp means.

5,440,985

DELIVERY SYSTEM FOR PRINTING PLATE

Masatoshi Shimmura, Kanagawa; Yasuo Shibuya, Tokyo, and Tooru Higuchi, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Japan

Filed Jun. 29, 1994, Ser. No. 267,254
Claims priority, application Japan, Sep. 24, 1993, 5-238009
Int. Cl.[6] B41F *27/12*; B41L *29/14*
U.S. Cl. 101—477 14 Claims



1. A printing plate delivery system for a multi-stage printing press, in which a plurality of printing stages are arranged in a vertical direction, comprising:

a vertical transporting means having a carrier movable in said vertical direction between a loading position where a printing plate is set along the height direction of said printing press being loaded and a plurality of mutually different height levels of printing plate transfer positions at the corresponding height positions of said printing stages for selectively transferring the printing plate to and from said printing plate transfer positions; and

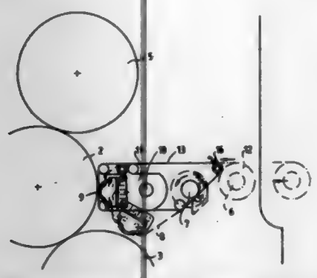
receiving means provided corresponding to each of said printing stages and cooperated with said vertical transporting means for receiving said printing plate from said carrier at the corresponding transfer position.

5,440,986

WASHING DEVICE FOR CYLINDERS OF A PRINTING PRESS

Michael Braun, Speyer, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Mar. 4, 1994, Ser. No. 206,436
Claims priority, application Germany, Mar. 4, 1993, 43 06 676.3
Int. Cl.[6] B41F *35/00*
U.S. Cl. 101—423 10 Claims



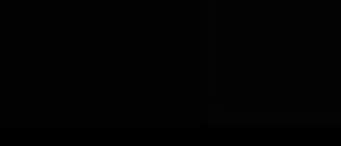
1. Washing device for cylinders of a printing press including an exchangeable supply reel mounted on a clean-cloth spindle and having a cleaning cloth running off therefrom, a pressure pad for pressing the cleaning cloth against a circumferential surface of a respective cylinder of the printing press, a dirty-cloth spindle onto which the cleaning cloth is windable, and drive means for sectionally feeding the cleaning cloth and for rewinding the cleaning cloth from the dirty-cloth spindle onto the supply reel on the clean-cloth spindle, comprising means for automatically pulling the cleaning cloth into the washing device, respective deflector members disposed in the vicinity of the clean-cloth spindle and in the vicinity of the pressure pad, said pulling means including at least one traction means endlessly revolvable over said deflector members, gripper means carried by said traction means for gripping a leading edge of the cleaning cloth running off the supply reel, and means disposed in vicinity of the dirty-cloth spindle for opening said gripper means to receive the leading edge of the cleaning cloth therein, said dirty-cloth spindle carrying adhesion elements on a circumferential surface thereof engageable with the cleaning cloth.

5,440,987

LASER IMAGED SEAMLESS LITHOGRAPHIC PRINTING MEMBERS AND METHOD OF MAKING

Richard A. Williams, Hampstead, and Thomas E. Lewis, E. Hampstead, both of N.H., assignors to Presstek, Inc., Hudson, N.H.

Filed Jan. 21, 1994, Ser. No. 186,143
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] B41N *1/08*
U.S. Cl. 101—454 25 Claims



1. A method of manufacturing a lithographic member comprising:

a. providing a hollow cylinder having an affinity for ink;

b. coating thereon a first polymeric layer characterized by ablative absorption of imaging radiation;

c. causing the first polymeric layer to assume a solid form;

d. coating on the first polymeric layer a second polymeric layer having an affinity for an abhesive fluid for ink and which is not characterized by ablative absorption of imaging radiation; and

e. causing the second polymeric layer to assume a solid form.

5,440,988

METHOD AND APPARATUS FOR LOADING A PLATE IN A PRINTING PRESS

Mineyuki Ito, Gifu, Japan, assignor to Sakurai Graphic Systems Corporation, Japan

Filed Jun. 1, 1994, Ser. No. 251,912
Claims priority, application Japan, Nov. 26, 1993, 5-297039
Int. Cl.[6] B41F *21/00*
U.S. Cl. 101—477 16 Claims

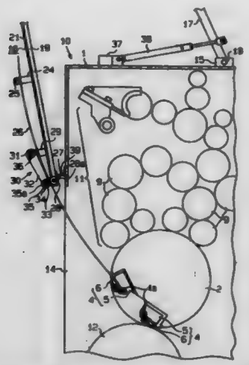
12. A plate loading apparatus for use with a printing press of the type having a rotatably mounted plate cylinder, the apparatus comprising:

a) a movable cover for covering an entrance to the printing press; and

b) plate supporting structure mounted on the movable cover for supporting a printing plate to be loaded in a generally upright position, the supporting structure including:

a lateral support member for contacting a surface of the plate; and

a pair of opposed rollers mounted on the cover, at least one roller being adapted to engage one side of the plate and the other being adapted to engage the opposite surface of the plate wherein the pair of rollers is mounted to a lower portion of the cover such that the



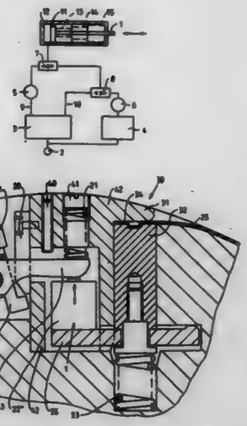
axes of both rollers are perpendicular to a feeding direction of the plate and wherein the pair is located in a contacting, opposed relationship such that a leading edge of a plate being supported prior to loading engages and is held by the pair.

5,440,989

METHOD AND DEVICE FOR PERFORMING WORKSTEPS ON A CYLINDER OF A PRINTING PRESS

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 28, 1994, Ser. No. 203,278
Claims priority, application Germany, Feb. 27, 1993, 43 06 139.7
Int. Cl.[6] B41F *21/00*
U.S. Cl. 101—486 19 Claims



1. In a method of performing worksteps at a cylinder of a printing press of the type having at least one actuator to which an operating medium is supplied through a supply line, and an operating element disposed at the cylinder and acted upon by a given spring force, the actuator being actuatable against the operating element counter the given spring force, the improvement which comprises:

energizing with the operating medium at least one actuator so that the at least one actuator acts against an operating element counter a spring force acting thereon,

supplying the operating medium under discretely defined pressure stages, associating with each workstep to be performed with the operating element in the energizing step a respective defined spring force acting on the operating element and a respective pressure stage of the operating medium overcoming the respective spring force, and

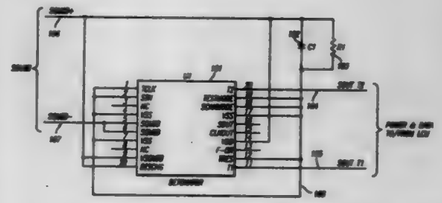
performing successive worksteps in a sequence corresponding to increasing and decreasing pressures, respectively, of the operating medium acting on the actuator.

5,440,990

ELECTRONIC TIME FUZE

William G. Wiedefeld, Clermont, Fla.; Michael H. Peterson, Glendale, Calif., and William F. Cote, Windermere, Fla., assignors to The Walt Disney Company, Burbank, Calif.

Filed Sep. 16, 1993, Ser. No. 122,637
Int. Cl.[6] F23Q *7/02*
U.S. Cl. 102—215 16 Claims



1. A method of initiating an explosion comprising the steps of:

providing a charging current from a control means to a detonating means having a capacitor, said charging current to charge said capacitor;

providing a start command from said control means to said detonating means;

providing a first clock signal at a first frequency from said detonating means to said control means;

determining said first frequency at said control means and providing a time delay signal to said detonating means based on said first frequency, said time delay signal controlling a time delay between a launch command and a detonate command;

providing said launch command from said control means to said detonating means; providing said detonation command at said detonating means when said time delay has occurred and said detonating means is not connected to said control means; resetting said detonating means when said detonating means is connected to said control means after a portion of said time delay has expired.

5,440,991

MINIATURE SELF CONTAINED FIRING SYSTEM

Donald J. Lewis, Scottsdale, and Larry LeClair, Mayer, both of Ariz., assignors to Universal Propulsion Company, Inc., Phoenix, Ariz.

Filed Dec. 29, 1993, Ser. No. 174,844
Int. Cl.[6] F42C *11/06*
U.S. Cl. 102—218 25 Claims

5. In combination,

firing means having properties of being fired upon the receipt of electrical energy,

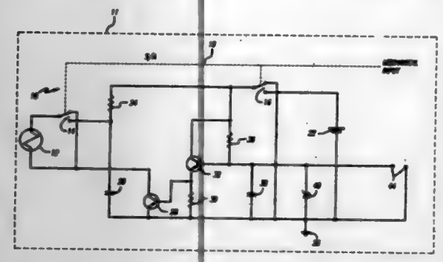
first switching means having first and second operative relationships and operative in the first relationship for short circuiting the firing means,

energy supply means,

energy storage means,

second switching means having first and second operative relationships and operative in the first relationship for short circuiting the energy storage means and operative in the second relationship to provide for the passage of energy from the energy supply means to the energy storage means for the storage of such energy in the energy storage means,

third switching means having first and second operative relationship and normally operative in the first relationship to provide a high impedance to the firing means and the energy storage means to prevent the energy storage



means from discharging through the firing means and operative in the second relationship to provide a low impedance path for the discharge of the energy in the energy storage means through the firing means,

first means for initially providing for a change in the first and second switching means from the first operative relationships to the second operative relationships, and

second means for subsequently introducing a triggering pulse to the third switching means to provide for a change in the third switching means from the first operative relationship to the second operative relationship.

5,440,992

PRIMING AND SELF-DESTRUCT SYSTEM OF A MUNITION

Patrice Chemiere, La Chapelle Saint Ursin, and Jean-Paul Dupuy, Bourges, both of France, assignors to Giat Industries, Versailles, France

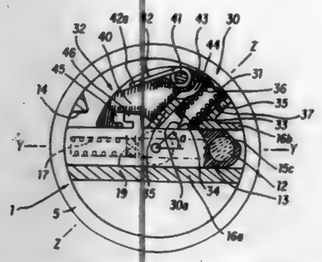
PCT No. PCT/FR93/01178, § 371 Date May 17, 1994, § 102(e) Date May 17, 1994, PCT Pub. No. WO94/15170, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 1, 1993, Ser. No. 244,076

Claims priority, application France, Dec. 18, 1992, 92 15313

Int. Cl.[5] F42C *15/22*

U.S. Cl. 102—246 **14 Claims**



1. A priming and self-destruct system for a munition comprising:

a primer carried by a movable slide valve between a safety position and an armed position;

a main firing pin to initiate the primer and a secondary self-destruct firing pin armed by a spring; and

a self-destruct system comprising:

a centrifugal trigger pivotably mounted about an axis approximately parallel to the rotational axis of the munition, the centrifugal trigger being pivotable under the effect of centrifugal force against the action of a return spring, and

a retainer for securing the secondary firing pin in an armed position, said retainer being controlled by the centrifugal trigger when the system is moving rotationally around the axis of the munition and being released by the centrifugal trigger when the munition stops rotating, wherein the secondary firing pin thereafter causes radial percussion of the primer through an opening of the slide valve.

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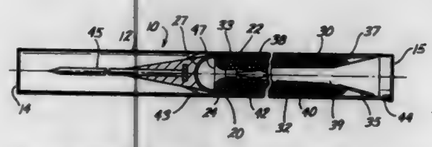
HIGH VELOCITY IMPULSE ROCKET

Irving B. Osofsky, 28327 San Nicolas Dr., Rancho Palos Verdes, Calif. 90274

Continuation of Ser. No. 624,089, Dec. 7, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,239

Int. Cl.[6] F42B *15/10*

U.S. Cl. 102—374 **23 Claims**



1. A high velocity impulse rocket, comprising:

an outer rocket motor case,

a reentry nozzle within said outer rocket motor case and forming an annulus therebetween,

said reentry nozzle terminating in a discharge nozzle for exit of propulsion gases,

a head member in said outer rocket motor case and spaced from said reentry nozzle,

said reentry nozzle being in gas communication with said annulus whereby propulsion gases in said annulus flow in a first direction opposite said discharge nozzle,

said head member and reentry nozzle being operative to cause the propulsion gases to flow in a reverse direction from said first direction and towards said discharge nozzle,

a propellant in said annulus,

means to ignite said propellant,

said reentry nozzle and said head member and said propellant cooperating to generate a pressure within said outer rocket motor case after ignition of said propellant of between 5,000 and 50,000 psi,

said propellant being composed of individual, free flowing granules of a predetermined shape unbonded to said outer rocket motor case whereby upon ignition of said propellant the gases flow from said annulus in said first direction tending to blow said propellant out of said discharge nozzle and then in said reverse direction to said reentry nozzle and out of said discharge nozzle for accelerating said rocket, and

said propellant having a granular flotation velocity which is greater than the gas velocity for maintaining said propellant within said annulus during combustion thereof.

5,440,994

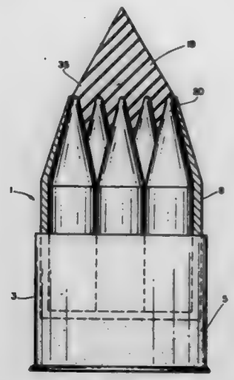
ARMOR PENETRATING BULLET

William Alexander, Stafford, England, assignor to Privada Corporation, New York, N.Y.

Filed Jan. 25, 1994, Ser. No. 186,878

Int. Cl.[6] F42B *12/02*

U.S. Cl. 102—439 **12 Claims**



1. An ammunition round for penetrating armor comprising:

a cartridge containing a propellant charge;

a hollow cylindrical casing attached to said cartridge and constructed of frangible material which deforms upon impact with said armor, said casing having a first end which is closed and second end which tapers inwardly to define an annular open nose;

a plurality of flechettes housed in said casing, each said flechette having a tip pointing towards, but not protruding through, said annular open nose of said casing, said flechette having a width to length ratio of less than one and an unstable spin;

an elastomeric nose cap filling said annular open nose of said second end for stabilizing said flechettes while in said casing during flight and for creating an internal hydrodynamic pressure within said casing upon impact to prevent said casing from collapsing inwardly when said casing strikes the armor, to ensure the proper release and penetration of said flechettes into the armor; and

wherein, during penetration of the armor by the flechette, the armor exerts a force on the shank of the flechette to prevent tumbling of the flechette.

5,440,995

TUNGSTEN PENETRATORS

Albert P. Levitt, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

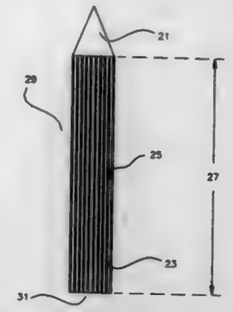
Filed Apr. 5, 1993, Ser. No. 39,603

Int. Cl.[6] F42B *12/00*

U.S. Cl. 102—517 **10 Claims**

5. A penetrator comprising

a long rod having a forward ogive end and an aft end, wherein said long rod comprises therein a plurality of tungsten whiskers disposed throughout said long rod,



wherein said tungsten whiskers are found throughout said long rod between said forward ogive end and said aft end.

5,440,996

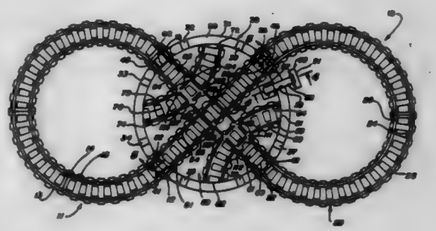
TRACK SET WITH ROTATING INTERSECTION FOR TOY TRAINS

Vittorio Cottino, Castello, Italy, assignor to Mattel, Inc., El Segundo, Calif.

Filed Feb. 10, 1994, Ser. No. 194,770

Int. Cl.[6] B61J *1/00*; E01B *7/00*

U.S. Cl. 104—47 **11 Claims**



1. A toy vehicle track set comprising:

a base;

a track intersection having a platform rotatably supported by said base and having a pair of intersecting generally straight track segments and a pair of curved track segments each intersecting and passing through a common one of said straight track segments on opposite sides of the intersection of said straight track segments;

a pair of loop track segments supported on each side of said track intersection each having open ends; and

lock means for securing said platform at a plurality of rotational positions,

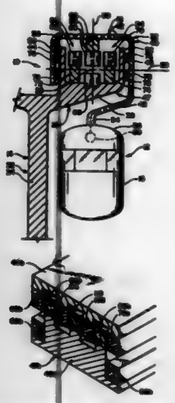
said platform being rotatable to a first position in which said straight track segments couple said loop track segments to form a figure-eight path, a second position in which said pair of curved segments couple said loop track segments to form a peanut-shaped path and a third position in which said pair of curved track segments couple said loop track segments to form two separate closed loop paths.

5,440,997

MAGNETIC SUSPENSION TRANSPORTATION SYSTEM AND METHOD

Walter A. Crowley, 861 E. Shore Dr., Dugualla Bay Heights, Oak Harbor, Wash. 98277

Filed Sep. 27, 1993, Ser. No. 127,315
Int. Cl.[6] B61L *13/04*
U.S. Cl. 104—283 20 Claims



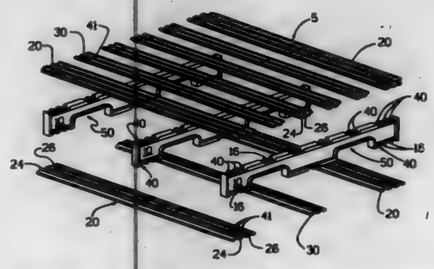
1. A vehicle/track transportation system, comprising:
a. a track having a longitudinal axis aligned with a path of travel along said track, a vertical axis and a horizontal axis;
b. a vehicle having a longitudinal axis, a vertical axis and a lateral axis, and arranged to be magnetically supported from said track for movement along said track path of travel;
c. first and second magnetic support means, one of said first and second magnetic support means being a track magnetic support means mounted to said track and the other of said first and second support means being a vehicle magnetic support means mounted to said vehicle;
d. said vehicle having an operating position adjacent to said track where said vehicle is properly positioned so as to be adequately supported from said track by the two magnetic support means, and positioned for movement along said track;
e. said first magnetic support means comprising at least one first magnetic component having north and south poles;
f. said second magnetic support means comprising:
i. at least one second opposing magnetic component which has north and south poles and is positioned in opposing magnetic relationship to said first magnetic component in a manner that poles of said second opposing magnetic component and said first magnetic component of like polarity are vertically spaced from each other, and facing each other, to create a magmatic repelling force therebetween;
ii. at least one second linking magnetic component which has north and south poles, and which, with the vehicle in the operating position, is positioned with at least one of the north and south poles of said second linking magnetic component being positioned laterally of, and adjacent to, at least one magnetically opposite one of the north and south poles of the first magnetic component, so that the adjacent and magnetically opposite pole of the first magnetic component form linking lines of flux with the adjacent opposite pole of the second linking magnetic component within a vertical support region, so that with the vehicle at a lower part of said region, magnetic lines of force between said adjacent poles exert an upward force on said vehicle, and, with the vehicle at an upper part of said region, the magnetic lines of force between said adjacent poles exert one of a downward force on said vehicle and a lesser upward force on said vehicle;
wherein the north and south poles of said first magnetic component are vertically aligned with one on top the other, and the north and south poles of the second linking magnetic component are vertically aligned with one on top the other.

5,440,998

PLASTIC PALLET ASSEMBLY AND METHOD

Robert L. Morgan, IV, Climax, and Michael D. Monfore, Battle Creek, both of Mich., assignors to Polycytek of Michigan, Inc., Battle Creek, Mich.

Filed Feb. 3, 1994, Ser. No. 191,855
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 14 Claims



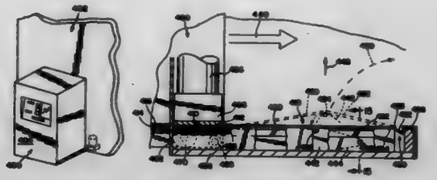
1. A plastic essentially rectangular modular pallet assembly, the parts of which are also modular, comprising front and rear vertical transverse stringer members and top and bottom horizontal longitudinal deck board members having alternating longitudinally-extending flat strip areas and longitudinally-extending channels or concavities on the top and bottom surfaces thereof, wherein the longitudinal flat strip areas and channels or concavities of the top and bottom surfaces of deck board members lie in vertically opposed relation to each other, said stringers comprising, on upper and lower deck board abutting surfaces thereof, integral deck board fastening studs, top and bottom deck board members having apertures therein in the flat surface strip areas thereof near the ends thereof which are adapted to receive said deck board fastening studs, said deck board fastening studs being received in said apertures and secured therein, said front and rear stringers of said pallet having openings therein adapted to receive the prongs of a lift truck or pallet jack therein: wherein said stringers comprise, on upper and lower surfaces thereof and adjacent said integral deck board fastening studs, integral protuberances adapted to support, engage, and be received by corresponding longitudinally-extending channels or concavities in said deck board located adjacent to and between said longitudinally-extending flat surface strip areas thereof, and wherein said protuberances support, engage, and are received in said corresponding channels or concavities.

5,440,999

MODULAR TRANSPORT SYSTEM FOR AN AUTOMATIC TELLER MACHINE

Ernest R. Dallman, Zionsville, and Franklin W. Wehr, Indianapolis, both of Ind., assignors to Dallman Industrial Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 954,001, Sep. 29, 1992, Pat. No. 5,299,511, which is a continuation-in-part of Ser. No. 892,758, Jun. 3, 1992, abandoned. This application Sep. 15, 1993, Ser. No. 121,790
Int. Cl.[6] G07G *5/00*
U.S. Cl. 109—24.1 23 Claims



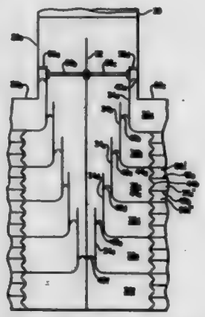
1. An apparatus for moving an ATM relative to a wall between a retracted position and an extended position, the apparatus comprising:
a base;
a gear;
means coupled to the base for rotating the gear relative to the base;
a base plate supporting said ATM;
a rack coupled to add extending along a side of the base plate, the rack including a plurality of teeth for engaging the gear to move the ATM between its retracted position and its extended position as the gear rotates relative to the base; and
a bearing positioned between the base and the base plate to facilitate movement of the ATM relative to the base.

5,441,000

SECONDARY AIR DISTRIBUTION SYSTEM FOR A FURNACE

Joel Vatsky, 66 Lessing Rd., West Orange, N.J. 07052; Timothy W. Sweeney, 32A Buttermilk Bridge Rd., Washington, N.J. 07882, and Lawrence F. Newman, 24 Blauvelt Ave., Dumont, N.J. 07628

Filed Apr. 28, 1994, Ser. No. 234,031
Int. Cl.[6] F23D *1/00*
U.S. Cl. 110—265 15 Claims



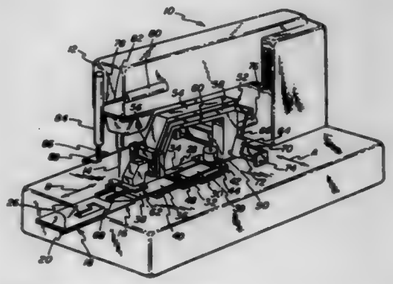
1. An air distribution system for a furnace, said system comprising a housing for receiving air, two subhousings extending to either side of said housing for receiving said air from said housing, a plurality of discharge devices mounted to each of said subhousings and grouped into modules each consisting of one air/fuel burner for discharging a mixture of said air and fuel into an area of said furnace and two air nozzles respectively extending above and below said burner for discharging said air into another area of said furnace, first divider means for splitting the air flow through said housing into a plurality of streams directed towards said subhousings, first damper means positioned relative to said first divider means for controlling the flow of each of said streams, second divider means for splitting each of said streams of air flow into three portions, two of which respectively enter said air nozzles and one of which flows around said burner, and second damper means positioned relative to said second divider means for controlling the flow of each of said stream portions.

5,441,001

EASY LOADING SEWING STATION

Ralph F. Conley, Jr.; Ricky J. Frye, both of Miamisburg, and Clint E. Gehres, Moraine, all of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Filed Sep. 14, 1992, Ser. No. 945,274
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.18 8 Claims



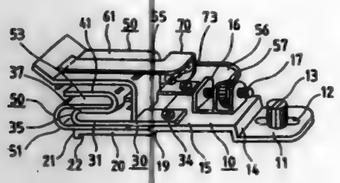
1. A sewing station comprising:
(a) means defining a loading location for reception of a bulky workpiece;
(b) A cloth plate positionable at said loading location for supporting said workpiece upon reception thereat;
(c) means defining a sewing location adjacent said loading location;
(d) a sewing head for sewing bulky workpieces positioned at said sewing location;
(e) shuttle means mounted at said sewing location and secured to said cloth plate for transporting said cloth plate and said workpiece from said loading location to said sewing location;
(f) preclamp means positionable between said sewing location and said loading location, said preclamp means being downwardly moveable for flattening said workpiece against said cloth plate and horizontally moveable for clamping said workpiece against said cloth plate during movement thereof from said loading location to said sewing location; and
(g) a sewing clamp co-operable with said preclamp means for engaging said workpiece upon arrival thereof at said sewing location and maintaining said workpiece in a flattened condition against said cloth plate during sewing thereof by said sewing head.

5,441,002

FOUR ELEMENT HEMMER FOR A SEWING MACHINE

Shiro Satoma, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Aug. 8, 1994, Ser. No. 286,192
Claims priority, application Japan, Dec. 6, 1993, 5-065018
U Int. Cl.[6] D05B *35/02*
U.S. Cl. 112—143 **5 Claims**



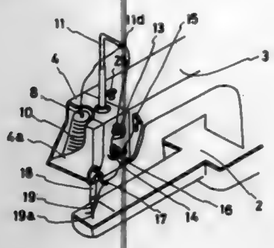
1. A guide device for a sewing machine used for hemming a work, sewing a tape on the work and sewing a rolled hem tape on the work, said guide device comprising:
- a first guide member having a regulating surface for regulating an edge of the tape, said first guide member being mounted on a bed of said sewing machine;
- a second guide member having two regulating surfaces which regulate the position of one edge of the work or one edge of the rolled hem tape and the position of the other edge of the rolled hem tape, respectively, said second guide member being fixedly mounted on said first guide member;
- a third guide member having a narrow space into which the work or a fold of the rolled hem tape is inserted, said third guide member being mounted on said first guide member; and
- a fourth guide member having a pushing surface for pushing another fold of the rolled hem tape against said second guide member, said fourth guide member being mounted on said third guide member.

5,441,003

SEWING MACHINE HAVING A REMOVABLE HEAD

Tadaaki Hashiride, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 40,840, Mar. 31, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 302,960
Claims priority, application Japan, Mar. 31, 1992, 4-076973
Int. Cl.[6] D05B *75/00*; B65H *57/00*
U.S. Cl. 112—259 **7 Claims**



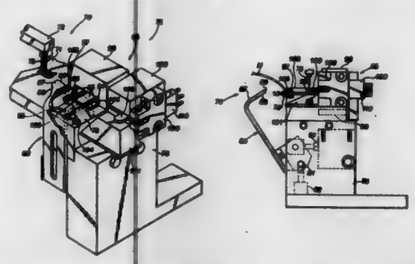
1. A sewing machine comprising:
- a bed;
- an arm having a vertical portion set upright on the bed, and a horizontal portion horizontally extending from the upper end of the vertical portion;
- an arm shaft extended within and journaled on the arm;
- a sewing head detachably joined to the extremity of the arm;
- a needle bar incorporated into the sewing head, supported so as to be driven for vertical reciprocation on the sewing head by the arm shaft, and capable of being removed from the arm together with the sewing head;
- a motion converting means detachably connected with the needle bar to convert the rotation of the arm shaft into the reciprocation of the needle bar;
- needle thread feed means and a thread spool support disposed on the sewing head to feed a needle thread to a needle attached to the lower end of the needle bar; and
- a thread takeup means disposed on the arm, and capable of operating in synchronism with the vertical reciprocation of the needle bar to draw up the slack needle thread and of releasing the needle thread.

5,441,004

HEM FORMER HAVING MULTIPE FOLDING PLATES

Joseph A. Bottoms, 226 Johnson Rd.; Joseph C. Bottoms, Jr., 119 Coffey Rd., and Ronald C. Lovejoy, 565 Cannafax Rd., all of Barnesville, Ga. 30204

Continuation-in-part of Ser. No. 962,917, Oct. 19, 1992, Pat. No. 5,373,797. This application Dec. 16, 1994, Ser. No. 358,183
Int. Cl.[6] D05B *1/00*
U.S. Cl. 112—475.06 **12 Claims**



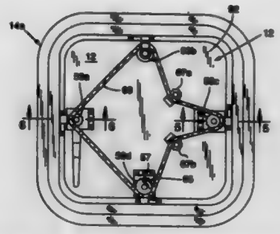
1. A hem former for folding back a margin of sheet material in preparation for sewing, comprising a first folder plate having an upper surface and a lower surface, said upper surface and said lower surface merging along an elongated front edge; guide means mounted beneath said lower surface of said first folder plate for aligning and guiding the margin of the sheet material; a support mounted adjacent said guide means; said first folder plate mounted for reciprocal movement of said elongated front edge between a first position extending beyond said guide means and over said support and a second position retracted behind said guide means; means for moving said first folder plate, a second folder plate having an upper surface and a lower surface, said second folder plate upper surface and said lower surface merging along an elongated front edge; said second folder plate mounted for reciprocal movement of said elongated front edge between a first position distal from said first folder plate and a second position extending over said first folder plate, and means for moving said second folder plate, whereby the margin of sheet material is urged over the second folder plate in its first position, beneath the elongated front edge of the first folder plate in its first position and over the support into alignment with the guide means in preparation for sewing, whereby the second folder plate is moved to its second position to fold the margin along the first folder plate elongated edge and to fold the margin along the second folder plate elongated edge, and whereby the first folder plate is moved to its second position to complete the sewing of the margin.

5,441,005

CLOSURE LATCHING MECHANISM

Arvie E. Freeman, Ophir, and Franz A. Shindler, Gold Beach, both of Oreg., assignors to Freeman Marine Equipment, Inc., Gold Beach, Oreg.

Continuation-in-part of Ser. No. 33,840, Mar. 19, 1993, Pat. No. 5,329,869. This application Jul. 18, 1994, Ser. No. 276,865
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—117 **25 Claims**



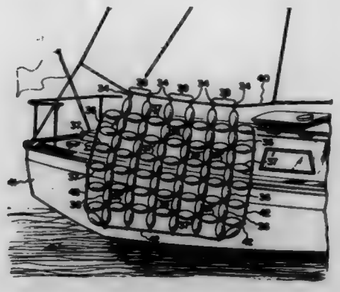
1. A marine closure such as a door or a hatch cover, comprising:
- a peripheral closure frame;
- inner and outer closure panels covering the frame to define a hollow core;
- a plurality of latching dogs spaced about a peripheral portion of the closure;
- latching dog actuating means mounted within the core and operably connected to all of the dogs for rotating all of the dogs simultaneously, wherein actuation of the actuating means causes rotation of all of the latching dogs, at least one of the latching dogs rotating at a different rate than the remaining dogs.

5,441,006

SPACER ASSEMBLY PARTICULARLY USEFUL AS A BOAT FENDER

Andrew K. Wood, 1207 Beaver Rd., Glen Osborne, Pa. 15143

Filed Dec. 19, 1994, Ser. No. 359,023
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—220 **6 Claims**



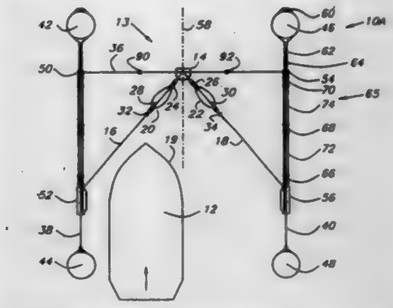
1. A spacer assembly comprising multiple low density first beads, each of said first beads having an unobstructed ropeway extending through the bead between two rope-receiving openings in the skin of the bead; multiple low density second beads, each of said second beads having two eyelets extending from opposite ends of said second bead; a first rope extending through said ropeways of said first beads and then through eyelets of said second beads; a connecting member at each end of said rope for supporting the spacer assembly.

5,441,007

BOAT DOCKING APPARATUS AND METHOD

Milby N. Hunt, 19 Manor Way, Galveston, Tex. 77550

Filed Nov. 21, 1994, Ser. No. 342,733
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 **20 Claims**



1. A docking apparatus for docking a boat, comprising:
- a guide frame for receiving said boat, said guide frame being open at one end and having an open mouth wedge-shaped portion operable for receiving and directing said boat towards an end region of said guide frame;
- at least one elongate slide member adjacent said guide frame for supporting said guide frame, said guide frame being movable in a direction substantially parallel to said at least one elongate slide member;
- first and second sliding connectors for securing said guide frame with respect to said at least one elongate slide member, said first and second sliding connectors being movable along a portion of said at least one elongate slide member;
- a push pipe slidingly carried by said at least one elongate slide member between said first and second sliding connectors, said push pipe being movable along said at least one elongate slide member with said first and second sliding connectors;
- a compression member disposed on said at least one elongate slide member; and
- a stop member substantially immovable with respect to said at least one elongate slide member, said stop member being operable to compress said compression member against the momentum of said boat as said guide frame moves in a direction substantially parallel to said first elongate slide member for compressibly stopping movement of said boat.

5,441,008

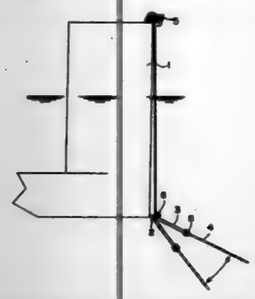
SUBMERGED SWIVELLING MOORING LINE FAIRLEAD DEVICE FOR USE ON A STRUCTURE AT SEA

Espen Lange, Oslo, Norway, assignor to Kvaerner Engineering a.s., Lysaker, Norway

Filed Nov. 24, 1993, Ser. No. 157,214
Int. Cl.[6] B63B *21/24*
U.S. Cl. 114—293 **2 Claims**

1. Submerged swivel mounted fairlead device comprising: a fairlead and a rigid guide extending from the fairlead towards an anchor, said rigid guide having a stopper means for stopping an anchor cable lead around the fairlead and through said guide, said guide being a tube body connected to a swivel mount for mooring of a structure at sea, said fairlead being rotationally mounted in the tube body outside of the swivel

mount wherein the connection between said rigid guide and said swivel mount is constructed and arranged for taking up of



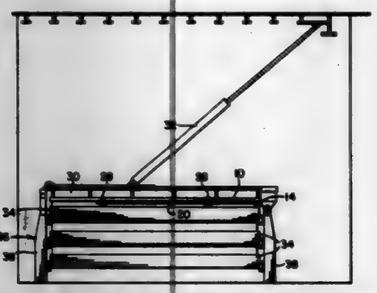
tension force in said anchor cable, and said stopper means being adapted to be activated during mooring.

5,441,009

REMOVABLE WEAPON STOWAGE TRAY

Neil G. Anderson, Loretto, Minn., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 9, 1993, Ser. No. 163,628
Int. Cl.[6] B63G *8/28*
U.S. Cl. 114—316 **6 Claims**



1. A device for removing a weapon tray comprising:
an extendible and retractable assembly;
at least one drive motor and at least one universal joint connected to drive a plurality of screw jacks with said assembly;
said assembly movably mounted to ride on said screw jacks;
a shipping beam; and
means for connecting said assembly to said shipping beam.

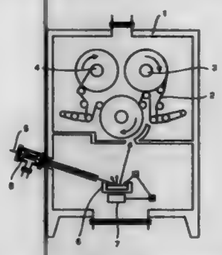
5,441,010

EVAPORATION MATERIAL AND METHOD OF PREPARING THE SAME

Yukihiro Oishi; Susumu Yamamoto; Teruyuki Murai, and Nozomu Kawabe, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/00594, § 371 Date Jan. 4, 1994, § 102(e) Date Jan. 4, 1994, PCT Pub. No. WO93/23586, PCT Pub. Date Nov. 25, 1993
PCT Filed May 6, 1994, Ser. No. 178,277
Claims priority, application Japan, May 11, 1992, 4-146502; May 11, 1992, 4-146503; May 11, 1992, 4-146504; Sep. 30, 1992, 4-286677; Nov. 13, 1992, 4-328526; Apr. 2, 1993, 5-100277; Apr. 9, 1993, 5-107728; Apr. 16, 1993, 5-113749
Int. Cl.[6] C30B *29/00*
U.S. Cl. 117—40 **7 Claims**

1. A method of preparing an evaporation material in the form of a wire having a wire diameter of at least 1.0 mm and not more than 10 mm, and being prepared from one metal material selected from the group consisting of a cobalt metal consisting of cobalt and unavoidable impurities, a cobalt-nickel alloy containing cobalt and not more than 30 weight % of nickel with a rest consisting of unavoidable impurities, and a cobalt-chromium alloy containing cobalt and not more than 30 weight % of chromium with a rest consisting of unavoidable impurities, said method of preparing the evaporation material comprising the steps of: preparing a metal material for forming said wire by fusion casting; and heating said metal material to



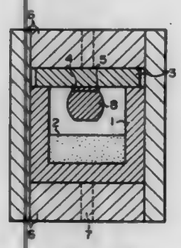
a temperature of at least Tu°C. and thereafter performing plastic working of reduction in area of at least 10% in a single pass at a temperature of at least Td°C. and not more than (Tu+200)°C. wherein Tu°C. is a transformation temperature from a close-packed hexagonal lattice to a face centered cubic lattice as a crystal structure of said metal material in a temperature rise process and Td°C. is a transformation temperature from said face centered cubic lattice to said close-packed hexagonal lattice in a temperature reduction process, thereby obtaining a wire.

5,441,011

SUBLIMATION GROWTH OF SINGLE CRYSTAL SIC

Jun Takahashi, and Masatoshi Kanaya, both of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 213,055
Claims priority, application Japan, Mar. 16, 1993, 5-055687
Int. Cl.[6] C30B *23/00*; H01L *21/20*
U.S. Cl. 117—84 **7 Claims**



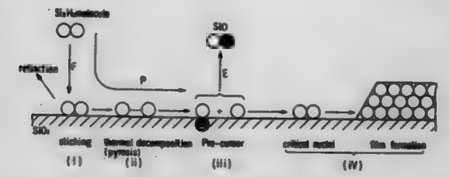
1. A method of growing a first SiC single crystal on a seed crystal including a second SiC single crystal, said method comprising the steps of:
setting a SiC source material at an initial temperature;
growing said first SiC single crystal on said seed crystal including said second SiC single crystal at a temperature lower than said initial temperature of said source material; and
gradually decreasing said source material temperature from said initial temperature during at least a predetermined period during said growing step.

5,441,012

THIN FILM DEPOSITION METHOD FOR WAFER

Ken-ichi Aketagawa; Junro Sakai, both of Fuchu, and Toru Tatsumi, Tokyo, all of Japan, assignors to ANELVA Corporation and NEC Corporation, both of Tokyo, Japan

Continuation of Ser. No. 763,146, Sep. 20, 1991, abandoned. This application Jan. 26, 1994, Ser. No. 186,502
Claims priority, application Japan, Sep. 21, 1990, 2-253004
Int. Cl.[6] C30B *25/14*
U.S. Cl. 117—86 **13 Claims**



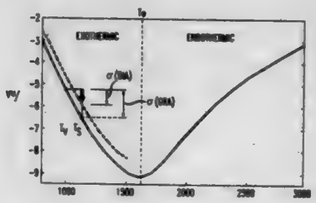
1. A method of depositing a thin film on only a surface of at least one kind of material on a substrate the surface of which consists essentially of at least two kinds of materials so that deposition does not occur on the materials on which deposition is not desired, comprising the steps of:
i) placing a substrate in position inside a vacuum chamber, evacuating the vacuum chamber until a pressure is attained, and introducing a reactant gas into the vacuum chamber after said pressure is attained;
ii) setting said pressure inside the vacuum chamber filled with the reactant gas to a pressure range under which the mean free path "d" of the reactant gas molecules is longer than the shortest distance "L" between the substrate placed inside the vacuum chamber and the vacuum side-exposed wall of the vacuum chamber, or d>L; and
iii) growing a thin film on only the surface of at least one kind of material on the substrate which surface consists essentially of at least two kinds of materials, and controlling the introduction of the reactant gas into the vacuum chamber so that the total supply amount of the reactant gas introduced into the vacuum chamber will be below an amount which is sufficient for nucleus formation on the surface of the other kinds of materials on which deposition is not desired.

5,441,013

METHOD FOR GROWING CONTINUOUS DIAMOND FILMS

Guang-kai D. Jeng, North Plainfield; James W. Mitchell, Somerset, and Lawrence Seibles, Piscataway, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 23, 1993, Ser. No. 36,001
Int. Cl.[6] C30B *23/02*
U.S. Cl. 117—109 **6 Claims**



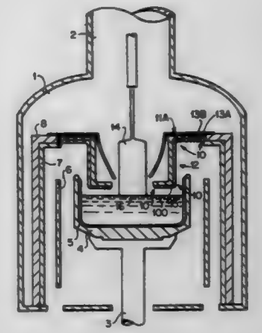
1. A method for growing a diamond film on a substrate comprising the steps of:
providing a substrate;
placing the substrate in a hydrogen gas ambient in the presence of elemental carbon;
forming in said hydrogen gas a plasma contacting said carbon and said substrate;
maintaining said substrate and said carbon each at temperatures of less than about 1500° C.

5,441,014

APPARATUS FOR PULLING UP A SINGLE CRYSTAL

Junsuke Tomioka, Hiratsuka; Kazunori Nagai, Miyazaki, and Akihiro Matsuzaki, Hiratsuka, all of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP91/00849, § 371 Date Dec. 22, 1993, § 102(e) Date Dec. 22, 1993, PCT Pub. No. WO93/00462, PCT Pub. Date Dec. 22, 1993
PCT Filed Jun. 24, 1991, Ser. No. 170,175
The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—213 **4 Claims**



1. An apparatus having a zone for pulling up a single crystal, which comprising a quartz crucible for containing a material, a heater which is provided in the periphery of said crucible for melting a material in the crucible, and a mechanism for immersing a seed crystal into molten material in the crucible to pull up a single crystal, said apparatus having a cylindrical first screen arranged in the periphery of the zone of pulling up a single crystal, said screen comprising a heat absorbing body at the side facing the crucible and a heat insulator at the other side and being provided with respective outward and inward annular rims at the upper and lower ends thereof, the corner of said first screen facing the crucible being formed in a curved or polygonal structure, and said annular rim at the lower end of said first screen being positioned in the vicinity of a surface of molten material in the crucible, and a second screen arranged within said first screen, said second screen forming a parabolic shape in section opening at its center while enclosing the crystal pulling-up zone and being provided at its upper end with an outward annular rim.

5,441,015

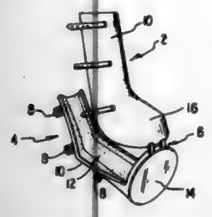
COMPRESSION BOOT AND METHOD FOR TREATMENT OF INJURED LIMB

Michael D. Farley, 2294 N. Riverside Dr., Indialantic, Fla. 32903

Continuation-in-part of Ser. No. 747,389, Aug. 20, 1991, abandoned. This application Dec. 18, 1991, Ser. No. 808,890
Int. Cl.[6] A01K *29/00*
U.S. Cl. 602—28 **1 Claim**

1. A method for treatment of an injured limb of an animal comprising securing a foot of said limb between first parts of an apparatus comprising first and second parts for forming a substantially rigid enclosure for said limb when in a closed position and means for attaching said first and second parts to

each other for movement between an open position for receiving said limb and said closed position, wherein each of said first and second parts comprises a rigid outer shell and an inner lining for conforming to the shape of said limb when said first and second parts are in said closed position and means for



receiving a foot of said limb and a portion of said limb remote from said foot for providing adequate strength for an animal to support itself on said injured limb when in said closed position, applying a longitudinal force to said limb to place said limb in tension, and moving said first and second parts of said apparatus to said second position.

5,441,016

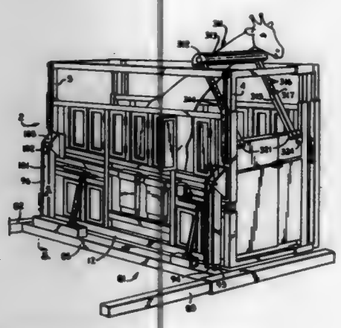
GIRAFFE HANDLING CHUTE

Tod Ricketts, 2330 E. Cherryvale, Springfield, Mo. 65804

Continuation-in-part of Ser. No. 983,409, Nov. 30, 1992, Pat. No. 5,282,441. This application Jan. 21, 1994, Ser. No. 183,827

Int. Cl.[6] A61D *3/00*

U.S. Cl. 119—723 **44 Claims**



1. An animal handling chute comprising:

(a) a support assembly;

(b) a frame;

(c) a fixed wall assembly connected to said frame;

(d) attachment means for attaching said fixed wall assembly to said support assembly;

(e) a movable wall assembly connected to and movable with respect to said frame;

(f) means for selectively moving said movable wall assembly toward and away from said fixed wall assembly along said frame such that a confining space is provided between said fixed and said movable wall assembly; and

(g) said attachment means comprises elevating means for selectively, linearly raising and lowering said fixed wall assembly, said movable wall assembly and said frame in a vertical plane with respect to said support assembly.

5,441,017

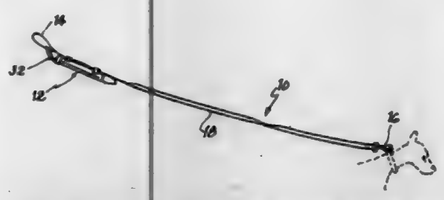
PET LEASH WITH INTEGRAL WASTE BAG DISPENSER

Joseph M. Lindsay, 415 Retsheim Way, La Jolla, Calif. 92037

Filed Dec. 9, 1993, Ser. No. 163,516

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—795 **13 Claims**



1. A pet accessory for restraining pets and assisting in removing the pet droppings, comprising:

(a) a leash having:

(i) an elongated leash line;

(ii) a handgrip defined at one end of said leash line; and,

(iii) collar attachment means at the other end of said leash line to releasably engage a pet collar; and,

(b) a disposable bag dispenser comprising:

(i) an elongated container for holding a plurality of disposable bags in a dispensable order;

(ii) an access opening in said container for providing access to said bags from externally of said container for dispensing same; and,

(iii) mounting means mounting said dispenser to said leash such that the exterior of said compartment defines said handgrip, whereby a person walking a pet on said leash has readily and repeatedly available litter disposal bags to facilitate litter removal.

5,441,018

INTERNAL COMBUSTION ROTARY PISTON ENGINE

Mansour Almassi, 7 Hope Street, Ardross, Australia 6153

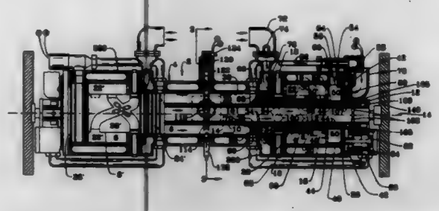
PCT No. PCT/AU92/00545, § 371 Date Apr. 14, 1994, § 102(e) Date Apr. 14, 1994, PCT Pub. No. WO93/08372, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 14, 1992, Ser. No. 211,780

Claims priority, application Australia, Oct. 15, 1991, PK8917

Int. Cl.[6] F02B *75/26, 75/28*

U.S. Cl. 123—45 A **30 Claims**



1. An internal combustion rotary piston engine comprising:

a housing defining a cylinder;

a shaft supported coaxially in said cylinder for rotation about a longitudinal axis of said shaft;

a piston mounted for reciprocation in said cylinder and arranged to slidably move along a length of the shaft during an operating cycle of said engine, said operating cycle comprising a power stroke in which said piston slides in one direction along said shaft and during which a fuel is combusted, and a return stroke in which said piston slides in an opposite direction along said shaft and during which combusted fuel is exhausted; and,

means for constraining said piston to rotate about said axis during said sliding movement along said shaft and wherein said shaft is adapted to rotate with said piston about said axis;

wherein said means for constraining controls said piston motion such that during said power stroke said piston rotates about said axis by an angle X°, where X° is greater than 180° and less than 360° and during said return stroke said piston rotates through an angle Y°, where Y° equals 360° minus X°, whereby, in use, during said power stroke said piston imparts torque to said shaft.

5,441,019

TWO STROKE CYCLE INTERNAL COMBUSTION ENGINES

Christopher N. F. Sayer, Ferndale, and Alan Gorman, Kingsley, both of Australia, assignors to Orbital Engine Company Pty. Limited, Balcatta, Australia

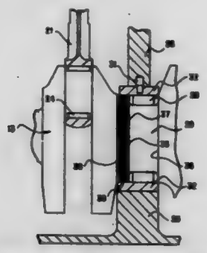
PCT No. PCT/AU92/00070, § 371 Date Nov. 10, 1993, § 102(e) Date Nov. 10, 1993, PCT Pub. No. WO92/14920, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 21, 1992, Ser. No. 104,092

Claims priority, application Australia, Feb. 21, 1991, PK4710

Int. Cl.[6] F02B *33/04*

U.S. Cl. 123—73 R **21 Claims**



1. A multi-cylinder two stroke cycle reciprocating internal combustion engine, said engine including a cylinder block incorporating a plurality of cylinders, a crankshaft, a crankcase detachably secured to the cylinder block to define an individual crankcase compartment communicating with each cylinder, said crankcase compartments being separated from one another by respective internal walls, each internal wall supporting a bearing assembly to rotatably support the crankshaft, said walls being split across the crankshaft axis, whereby a first part of each wall is integral with the cylinder block and a second part is integral with the crankcase, each said bearing assembly including an outer bearing ring non-rotatably mounted in the respective internal wall co-axial with the axis of the crankshaft, said first part of each wall being configured so as not to extend into the area defined by an imaginary extension of the internal surface of the cylinder on at least one side of said wall, and the outer bearing ring mounted therein having an axial extent to project into said area on at least one side of the wall, wherein a seal means is operatively interposed between a part of the outer bearing ring and the crankshaft at a location where the bearing ring extends beyond the first part of the wall to provide a seal between adjacent crankcase compartments and wherein a bearing means is operatively interposed between the outer bearing ring and the crankshaft, the seal means being located directly on the crankshaft one side of the bearing means.

5,441,020

VALVE-MOVING APPARATUS FOR INTERNAL COMBUSTION ENGINE

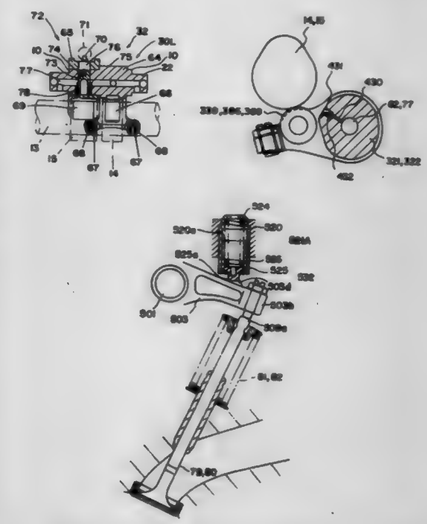
Shinichi Murata; Setsuo Nishihara; Tetsuo Kataoka; Hideki Miyamoto; Noriyuki Miyamura; Masahiko Kubo, and Hirofumi Higashi, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyou Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,390

Claims priority, application Japan, Feb. 28, 1992, 4-043029; Feb. 28, 1992, 4-043030; Mar. 4, 1992, 4-046709; Mar. 4, 1992, 4-046710; Mar. 5, 1992, 4-048249; Mar. 5, 1992, 4-048250; Mar. 5, 1992, 4-048251; Mar. 16, 1992, 4-057913; Mar. 26, 1992, 4-015952 U; Mar. 27, 1992, 4-070847; Mar. 31, 1992, 4-018495 U; Mar. 31, 1992, 4-018496 U; Mar. 31, 1992, 46076730; Jul. 17, 1992, 4-189791; Jul. 31, 1992, 4-205475

Int. Cl.[6] F01L *1/34, 1/18*

U.S. Cl. 123—90.16 **16 Claims**



1. A valve-moving apparatus for an internal combustion engine comprising:

an intake cam shaft and an exhaust cam shaft, each of said cam shafts having a plurality of cams;

a plurality of lever members disposed adjacent to said cam shafts, each said lever member comprising a rocker shaft part rotatably mounted on support members of the engine, a large-diameter part integrally formed with said rocker shaft part and having an outer diameter larger than the outer diameter of said rocker shaft part, and an arm part integrally formed with said large-diameter part, and contacting against at least one of a pair of intake valves and a pair of exhaust valves;

a rocker arm rotatably mounted on said large-diameter part and rocked by one of said cams;

change-over mechanism means for selectively engaging said rocker arm with said large-diameter part; and

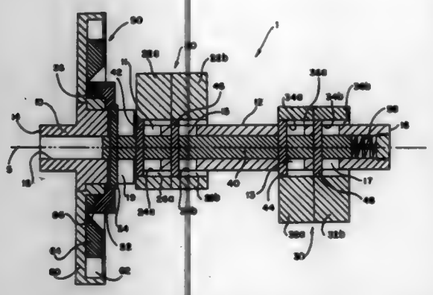
hydraulic pressure supply means for hydraulically operating said change-over mechanism means according to an operating condition of the engine, wherein

said plurality of cams includes at least one low-speed cam and at least one high-speed cam;

said rocker arm includes a high-speed rocker arm driven by said high-speed cam; and

each of said arm parts is in direct contact with one of said at least one low-speed cam.

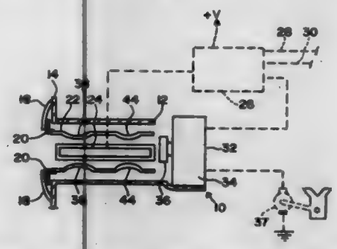
5,441,021
VARIABLE VALVE ACTUATION CAMSHAFT
Ralph Moore, II, Anchorage, Ak., assignor to Moore Variable Cam, Inc., Anchorage, Ak.
Filed Oct. 31, 1994, Ser. No. 332,267
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.17 18 Claims



1. A camshaft for an internal combustion engine, the camshaft rotates about a longitudinal axis, the camshaft includes a generally cylindrical exterior surface circumscribing the longitudinal axis as well as first and second axial end surfaces which are generally orthogonal to the longitudinal axis, the camshaft comprising:
a passage extending parallel to the longitudinal axis;
a first pair of cams, at least a primary one of said first pair of cams is rotatably supported on the exterior surface, said primary one of said first pair of cams includes a first primary interior surface circumscribing and confronting said exterior surface, said primary one of said first pair of cams further includes a first primary groove in said first primary interior surface;
a second pair of cams, at least a primary one of said second pair of cams is rotatably supported on the exterior surface, said primary one of said second pair of cams includes a second primary interior surface circumscribing and confronting said exterior surface, said primary one of said second pair of cams further includes a second primary groove in said second primary interior surface;
an actuator rod extending in said passage, said actuator rod includes a first lateral projection engaging said first primary groove and a second lateral projection engaging said second primary groove; and
centrifugal means for causing displacement of said actuator rod parallel to the longitudinal axis as a consequence of changes in angular speed of the camshaft;
wherein changes in angular speed of the camshaft cause longitudinal displacement of said actuator rod with said first and second lateral projections, in turn the longitudinal displacement of said first and second lateral projections cause both said primary one of said first pair of cams and said primary one of said second pair of cams to rotate relative to the camshaft.

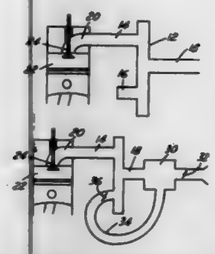
5,441,022
VEHICLE IGNITION SWITCH
Lamar D. Yoder, Fort Wayne; Max E. Young, Albion; Brian P. Marshall, Fort Wayne, all of Ind., and Rodney N. Germann, Payne, Ohio, assignors to Navistar International Transportation Corp., Chicago, Ill.
Filed Apr. 12, 1994, Ser. No. 226,604
Int. Cl.[6] B60R *25/04*; F02N *11/08*
U.S. Cl. 123—179.3 19 Claims

1. An automotive vehicle comprising:
A) an engine for powering the vehicle;
B) an electric system including
1) an electric power source,
2) an electric starter motor for cranking the engine when the engine is to be started,
3) plural branch circuits, including a starter branch circuit operatively coupled with said starter motor, and
4) an ignition switch for selectively connecting said electric power source with said branch circuits, said ignition switch comprising key-receiving means for receiving an associated key by lengthwise insertion of such a key into said key-receiving means along an imaginary axis at one particular circumferential orientation about such axis;
characterized in that: said ignition switch comprises,
5) an associated key-reading means for non-contact reading of a code of such a key after such a key has been initially inserted lengthwise into said key-receiving means along such axis at such orientation and for distinguishing a valid code from an invalid code,



6) means for causing said electric power source to be switched on to one of said branch circuits other than said starter branch circuit in consequence of said key-reading means reading a valid code on such a key, and
7) means for causing said electric power source to be switched on to said starter branch circuit and said starter motor to crank said engine in response to increased insertion of such a key into said key-receiving means along such axis at such orientation beyond initial insertion, provided that said key-receiving means has read a valid code on such a key.

5,441,023
TUNED ENGINE MANIFOLD
Ma: Thomas T., Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/GB92/01036, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO92/22738, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 162,130
Claims priority, application United Kingdom, Jun. 10, 1991, 9112451
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.57 13 Claims



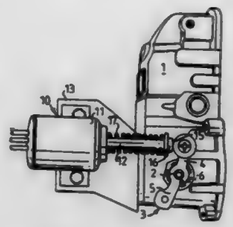
1. An engine manifold having at least one branch for connecting at least one engine port to ambient air, characterised in that each branch of the manifold is connected to pass through an acoustic coupling (10) formed by a chamber (12) of shallow depth having two conjugate foci and defined by two closely spaced end plates and acoustically reflective side walls, a first section of the branch connecting an engine port (20) to the acoustic coupling (10) juxtaposed to one of its conjugate foci and the branch (18) leading, in use, to ambient air being connected to the acoustic coupling (10) at a point remote from either conjugate foci, an acoustic reflector (16) being connected in juxtaposition to the remaining one of the conjugate foci of the acoustic coupling (10) such that in use sound waves propagating along the first branch section (14) leading to the engine port are reflected back towards the same engine port (20).

5,441,024
ENGINE VALVE
Frederick G. Wietig, East Aurora, and Timothy M. Deakin, Clarence, both of N.Y., assignors to Val-Kro, Inc., N. Tonawanda, N.Y.
Filed May 9, 1994, Ser. No. 239,576
Int. Cl.[6] F01L *3/04*
U.S. Cl. 123—188.3 20 Claims



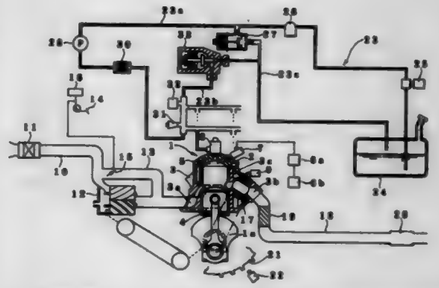
1. A valve for use in internal combustion engines comprising a valve and a coating over at least a portion of said valve, said coating being substantially uniform and comprised of a nickel-containing composition, said coating thickness of from about 0.000030 inches to about 0.000500 inches.

5,441,025
DEVICE FOR STARTING AND STOPPING A DIESEL ENGINE
Bertil Ryberg, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden
PCT No. PCT/SE92/00377, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO92/21873, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 3, 1992, Ser. No. 157,102
Claims priority, application Sweden, Jun. 3, 1991, 9101681
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 DB 3 Claims



1. In a device for starting and stopping a diesel engine having an injection pump housing which comprises a solenoid with means for mounting the solenoid relative to the engine injection pump housing and an armature cooperating with a starting/stopping means having a lever element carried on a shaft rotatably mounted in said housing, the improvement wherein the lever element (3) has a cam surface (7) and is spring biased to press the cam surface against a surface (15) on the armature or an element (12,16) joined to the armature, said solenoid (11) being disposed when actuated to provide a force acting between the armature and the lever element to pivot the lever element, said armature being spring biased towards the lever element (3) with a spring force which is greater than the force with which the spring force biasing the lever element loads the armature in the opposite direction, and said armature being disposed upon actuation of the solenoid to provide a pulling force which is greater than the difference between said spring forces.

5,441,026
FUEL PRESSURE CONTROL SYSTEM FOR HIGH PRESSURE FUEL INJECTION ENGINE
Akira Akimoto, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1994, Ser. No. 340,344
Claims priority, application Japan, Nov. 18, 1993, 5-289298
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 D 6 Claims



1. A fuel pressure control system for a high pressure fuel injection engine, having a high pressure fuel pump and a high pressure regulator provided in a fuel system, a high pressure line connected between the high pressure fuel pump and the high pressure regulator, a low pressure delivery line connected between a fuel tank and the high pressure fuel pump, a low pressure return line interposed between the high pressure regulator and the fuel tank, a feed pump provided in the low pressure delivery line to deliver fuel to the high pressure fuel pump, and an injector connected to the high pressure line for directly injecting said fuel into a combustion chamber, comprising:
means for detecting a degree of impact; and
control means for stopping the feed pump and for fully opening the high pressure regulator when the degree of impact exceeds a set value so as to rapidly relieve a high pressure and to avoid said fuel from blowing out of a damaged portion.

5,441,027

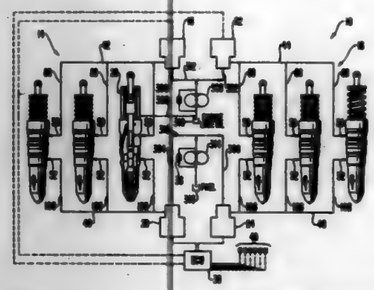
INDIVIDUAL TIMING AND INJECTION FUEL METERING SYSTEM

David L. Buchanon, Westport; Lester L. Peters, Columbus; Julius P. Perr, Columbus, and Yul J. Tarr, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 65,583, May 24, 1993, abandoned. This application Mar. 10, 1994, Ser. No. 208,365

Int. Cl.[6] F02M 57/02, 59/36

U.S. Cl. 123—446 36 Claims



22. A metering system for metering and timing of fuel injection into the combustion chambers of a multi-cylinder internal combustion engine, comprising:

a fluid supply means for supplying fuel and timing fluid at a low supply pressure, said fluid supply means including a timing fluid common rail and a fuel common rail;

one or more unit injectors positioned adjacent said common rails for receiving fuel at the low supply pressure and for injecting the fuel at relatively high pressure into respective combustion chambers of the engine, each of said one or more injectors including an injector body containing an injector cavity, a fluid timing circuit communicating with said timing fluid common rail, a fuel metering circuit communicating with said fuel common rail, and an injection orifice formed in one end of said injector body and further including a plunger means mounted for reciprocal movement in said injector cavity, said plunger means including inner and outer plunger sections, a variable volume timing chamber being formed in said injector cavity between said inner and outer plunger sections and a variable volume fuel metering chamber being formed in said injector cavity between said inner plunger section and an end of the injector cavity;

an electromagnetic timing fluid control valve positioned in said timing fluid common rail for controlling the flow of fuel to said timing chamber, said electromagnetic timing fluid control valve being movable between an open position wherein timing fluid may flow therethrough to said timing chamber and a closed position wherein fluid is blocked from flowing therethrough to said timing chamber; and

an electromagnetic fuel control valve positioned in said fuel common rail for controlling the flow of fuel to said metering chamber, said electromagnetic fuel control valve being movable between an open position wherein fuel may flow therethrough to said metering chamber and a closed position wherein fuel is blocked from flowing therethrough to said metering chamber, wherein said electromagnetic fuel control valve and said electromagnetic timing fluid control valve are each movable from said closed position to said open position and from said open position to said closed position to define a fuel metering event and a timing fluid metering event, respectively, during which a predetermined quantity of fuel and timing fluid, respectively, are metered into said metering chamber and said timing chamber, respectively.

5,441,028

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

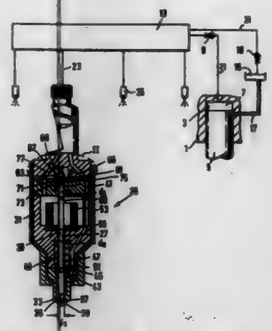
Hubert Felhofer, Algen, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 19, 1994, Ser. No. 184,162

Claims priority, application Germany, Jan. 30, 1993, 43 02 668.0

Int. Cl.[6] F02M 51/08, 69/04

U.S. Cl. 123—456 17 Claims



1. A fuel injection device for internal combustion engines having a high pressure fuel pump, a pump work chamber (7), which communicates via a closable fuel supply line (17) with a low pressure chamber (15), which is filled with fuel, and via a high pressure fuel line (11), which has a pressure valve (9), with a pressure storage chamber (13), said storage chamber (13) communicates via injection lines (23) with injection valves (25), each of said injection valves protrude into a combustion chamber of the engine to be supplied, each of said injection valves include a valve member in the form of a spring-loaded valve needle (27) which is disposed in a housing and works in conjunction with a valve seat (35), opening and closing motions of the spring-loaded valve needle being electrically controlled, the spring-loaded valve needle (27) of the injection valve (25) is actuated by means of an electromagnet (53) and the spring-loaded valve needle (27) is permanently, mechanically, and rigidly connected with an armature (55) of the electromagnet, the spring-loaded valve needle (27) includes a surface area which act in the opening direction and against which the fuel flows, during the contact of the spring-loaded valve needle with the valve seat (35) and during its opening stroke the surface area is exactly the same area as the surface areas of the spring loaded valve needle (27) against which the fuel flows in the closing direction, and at a start of the opening stroke of the spring-loaded valve needle (27), a fuel communication is opened between the injection line (23) and a chamber defined by a pressure balancing surface on an end of the spring-loaded valve needle (27) remote from the valve seat.

5,441,029

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jaroslaw Hlousek, Golling, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1994, Ser. No. 293,191

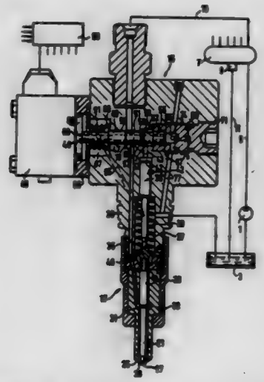
Claims priority, application Germany, Sep. 22, 1993, 43 32 119.4

Int. Cl.[6] F02M 63/02, 51/06

U.S. Cl. 123—467 16 Claims

1. A fuel injection system for internal combustion engines, having a high-pressure fuel pump (1), a feed line (5) which feeds fuel from a low-pressure chamber (3) into a high-pressure collection chamber (7), said high pressure collection chamber

communicates via high-pressure lines (13) with individual injection units (15) that correspond to the number of injection locations connectioned with the combustion chambers of the engine to be supplied, each of the injection units having an injection valve (17), an injection valve member (21) which protrudes into the engine combustion chamber, said injection valve cooperates with a valve seat (29) to control the injection, said injection valve includes a pressure face (31) located in a first pressure chamber (33), said pressure face (31) is acted upon in an opening direction by the pressure in the first pressure chamber (33), a second pressure chamber (41) on the back side of said valve member, remote from the valve seat (29) that can be acted upon at least indirectly by the pressure, wherein the first pressure chamber (33) communicates continuously with the high-pressure collection chamber (7) via a connecting line (35) connected with the high-pressure line (13), and a three-way control valve (19), controlled by an electronic control unit (93) by means of a control magnet (49), said three-way



control valve (19) has a control valve member (45) which has first and second sealing faces (57, 67) said first sealing face (57) cooperates with a first valve seat (59) and said second sealing face cooperates with a second valve seat (65), said valve member (45), in a first position, comes to rest on the first valve seat (59) with said first sealing face (57) and in so doing closes a communication between the high-pressure line (13) and the second pressure chamber (41) and opens a communication between the second pressure chamber (41) and a relief line (77), and in a second position said valve member opens a connection betweeen said high pressure line and said second pressure chamber (41), the control valve member (45) in said first position permits a communication between the second pressure chamber (41) and the relief line (77) and defines a throttle cross section and in its second position produces an unthrottled communication, which permits a flow in both flow directions, between the second pressure chamber (41) and the high-pressure line (13).

5,441,030

FUEL INJECTION SYSTEM FOR TWO-STROKE CYCLE ENGINE

Ryuji Satsukawa, 1188-19 Sodeshi-cho, Shimizu-shi, Shizuoka-ken, Japan

Filed Feb. 1, 1994, Ser. No. 189,787

Int. Cl.[6] F02D 41/06

U.S. Cl. 123—491 5 Claims

1. A fuel injection system for a two-stroke cycle engine, comprising:

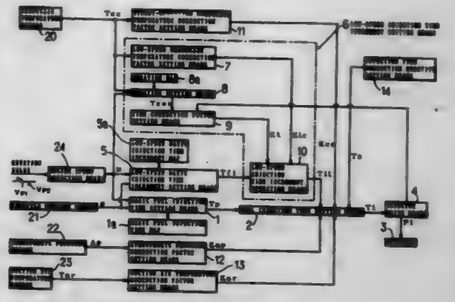
a basic fuel injection time setting means for setting basic fuel injection time Tp using an engine speed N of the two-stroke cycle engine and a throttle opening α;

a fuel injection time setting means for correcting said basic fuel injection time Tp depending on various conditions to set fuel injection time Ti;

an injector drive means for feeding an injector with a fuel injection pulse Pi of a pulse width equal to said fuel injection time Ti set by said fuel injection time setting means;

a low-speed basic injection time increment setting means for setting a low-speed basic injection time increment Tfi corresponding to an increment of the fuel injection time at a low engine speed depending on said engine speed N and throttle opening α; and

a low-speed injection time increment setting means for multiplying said low-speed basic injection time increment Tfi by a predetermined correction factor obtained using a temperature Tcc of a crankcase of the engine and elapsed time t as a parameter, to thereby provide a low-speed injection time increment TiL which is decreased with an increase in crankcase temperature Tcc, as well as with the lapse of time;



said fuel injection time setting means further correcting injection time Tp+TiL, obtained by adding said low-speed injection time increment TiL to said basic fuel injection time Tp, depending on various conditions, to thereby subject said fuel injection time Ti to an operation.

5,441,031

EVAPORATIVE FUEL PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takashi Kiyomiya; Takeshi Suzuki; Hideo Watanabe; Shoji Takahashi; Kazumi Yamazaki; Masashi Takezawa; Shigeki Baba; Kenichi Sawada; Shouji Sekiai; Hideki Kaseyama, and Hiroshi Kitagawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,573

Claims priority, application Japan, May 20, 1992, 4-151214; Dec. 16, 1992, 4-354585; Apr. 5, 1993, 5-102004

Int. Cl.[6] F02D 41/22

U.S. Cl. 123—518 10 Claims

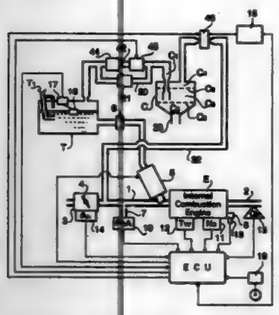
1. In an evaporative fuel processing control system for an internal combustion engine having an intake system, and a fuel tank, including a canister, a vent passage communicating between an upper space within said fuel tank and an interior of said canister, and a purging passage communicating between said interior of said canister and said intake system,

the improvement comprising:

a two-way valve arranged in said vent passage and disposed to open both when pressure within said fuel tank exceeds a first predetermined pressure value higher than atmospheric pressure and when said pressure within said fuel tank is below a second predetermined pressure value lower than the atmospheric pressure;

a pressure valve arranged in said vent passage in parallel with said two-way valve and disposed to open when said pressure within said fuel tank exceeds a third predeter-

mined pressure value lower than said first predetermined pressure value; and



an electromagnetic valve arranged in said vent passage in series with said pressure valve.

5,441,032
FUEL INJECTION SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

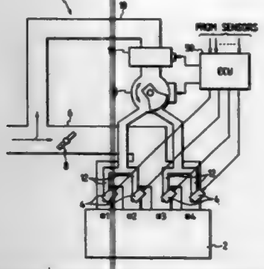
Kenji Ikuta, Rolling Hills Estates, Calif.; Toshihiro Suzumura, Nagoya, Japan; Shigenori Isomura, Kariya, Japan, and Keigi Honjoh, Anjo, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 6, 1993, Ser. No. 161,855

Claims priority, application Japan, Dec. 7, 1992, 4-326315; Dec. 10, 1992, 4-330297; Mar. 12, 1993, 5-052212; Jun. 21, 1993, 5-149311

Int. Cl.[6] F02B *3/00*

U.S. Cl. 123—531 **14 Claims**



1. A fuel injection system for an internal combustion engine, comprising:

engine cylinders divided into a plurality of cylinder groups, each of said cylinder groups including a plurality of the engine cylinders;

fuel injection valves each provided for one of said engine cylinders;

an air passage having an introducing section for introducing air higher in pressure than that in an area near an injection hole of each fuel injection valve, and a plurality of air discharging sections each for conducting the air introduced via said air introducing section to one of said areas;

valve means, provided in said air passage, for opening and closing said air introducing section relative to said air discharging sections and for distributing the introduced air, when opening said air introducing section, to said air discharging sections selectively per cylinder group; and

control means for controlling said valve means synchronously with fuel injection of each fuel injection valve so as to open said air introducing section and for controlling said valve means to a valve position which can supply the introduced air to the air discharging sections for one of said cylinder groups which includes the engine cylinder being injected with the fuel by the corresponding fuel injection valve.

5,441,033
APPARATUS AND METHOD FOR CUTTING UNHARDENED CONCRETE

Edward Chiuminatta, and Alan R. Chiuminatta, both of 1112 Olympic Dr., Corona, Calif. 91718

Continuation of Ser. No. 516,060, Apr. 27, 1990, Pat. No. 5,184,597. This application Jan. 14, 1993, Ser. No. 4,452

Int. Cl.[6] B28D *1/04*

U.S. Cl. 125—15 **14 Claims**



1. A circular saw blade suitable for simultaneously cutting two co-planar grooves of different widths and depths in a concrete surface, comprising:

a support disc for a circular concrete cutting saw blade having a periphery forming a cylindrical circumferential edge; and

a plurality of concrete cutting surfaces located circumferentially about the periphery of the disc, the cutting surfaces having a group of central cutting surfaces extending radially outward from between two groups of side cutting surfaces, the central cutting surfaces being integrally formed with the side cutting surfaces and from a material having the same bonding matrix and grade and size of cutting material as the side cutting surfaces, the central and side cutting surfaces being configured to simultaneously cut two co-planar grooves of different widths and depths in a concrete surface, the central cutting surface being on a central cutting segment connected to the cylindrical circumferential edge of the support disc, and the side cutting surfaces being disposed on opposite side faces of the central cutting surface and extending laterally outwardly beyond the sides of the support disc, without contacting said support disc.

5,441,034
STEAM GENERATOR HEAT EXCHANGER FOR COOKING EQUIPMENT

James P. Bedford, Willoughby, Ohio, and Wayne S. Hollingshead, Guelph, Canada, assignors to Cleveland Range, Inc., Cleveland, Ohio

Filed May 19, 1994, Ser. No. 246,257

Int. Cl.[6] A47J *27/04*; A21B *1/08*

U.S. Cl. 126—20 **7 Claims**

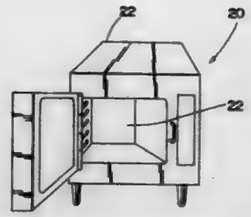
1. A steam cooking device comprising:

a steam generating chamber having a steam generator;

a cooking chamber adjacent to said steam generating chamber for receiving steam from said steam generator;

a heat exchanger secured within said steam generator, said heat exchanger including at least one heating zone comprised of an inner panel having raised surface projections

thereon, an outer panel having raised surface projections thereon, and a path between said raised surface projections whereby flue gases may pass for heating the walls of the heat exchanger.



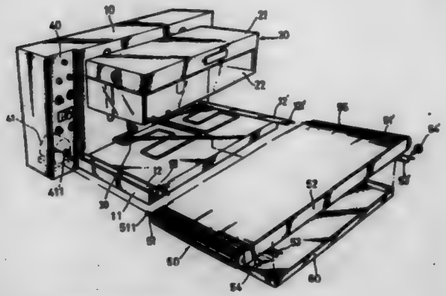
5,441,035
BAKE OVEN WITH A BELT CONVEYOR FOR CONVEYING FOODS

Lin Liang-Chieh, No. 77, Chung Ming 14th St., Tainan, Taiwan

Filed Aug. 23, 1994, Ser. No. 294,573

Int. Cl.[6] A21B *1/42*

U.S. Cl. 126—21 R **1 Claim**



1. A bake oven comprising:

a base frame having a vertical wall and a horizontal wall perpendicularly extended from said vertical wall at the bottom, said horizontal wall having two angle bars transversely bilaterally disposed at the top and a tray mounted on said horizontal wall between said angle bars, each angle bar having the angle disposed at the top and spaced from said horizontal wall;

a tray mounted on said horizontal wall between the angle bars on said horizontal wall;

a belt conveyer disposed above said tray, said belt conveyer comprising a locating frame, two transverse angle bars transversely bilaterally welded to said locating frame at the bottom and respectively fastened to the angle bars on said horizontal wall by screws, two transmission shafts revolvably bilaterally mounted on said locating frame, and a conveying belt mounted around said transmission shafts;

an electric control box mounted on said base frame at one lateral side;

a motor controlled by said electric control box to turn said transmission shafts;

an electric heating coil extended out of said vertical wall of said base frame and horizontally disposed between said transmission shafts within said conveying belt and controlled by said electric control box to produce heat for heating foods on said belt conveyer from the bottom; and

a gas infrared heater mounted on said vertical wall of said base frame and controlled by said electric control box to produce infrared rays for heating foods on said belt conveyer from the top, said gas infrared heater comprising a rectangular casing moved along a vertical track on said vertical wall of said base frame and fixed at a desired elevation and a glass shade downwards extended from the rectangular casing around the border and covered around the space defined between the said electric heating coil and the rectangular casing of said gas infrared heater.

5,441,036
COOL MULTI-SECTIONED OVEN DOOR FOR A LARGE WINDOW OVEN

George A. Mikalauskas, II, Harrison Township, Montgomery County; David N. Corson, Dayton, and Gregory J. Paul, Englewood, all of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 29, 1994, Ser. No. 296,589

Int. Cl.[6] F24C *15/04*

U.S. Cl. 126—198 **14 Claims**



1. An oven door assembly, comprising:

a front oven door panel;

a back oven door panel;

a window pack sub-assembly located between said front oven door panel and said back oven door panel, said window pack sub-assembly having a first glass pane, a second glass pane and a third glass pane, said sub-assembly having top openings and bottom openings for allowing air flow therethrough, said glass panes having an infrared reflective coating on at least one side thereof;

means for holding said panes in spaced parallel relation to each other thereby providing a first channel between said second glass pane and said third glass pane;

a fourth glass pane secured by said window pack to said oven door assembly in spaced parallel relation to the adjacent glass panes in said window pack sub-assembly, thereby providing a second channel between said third glass pane and said fourth glass pane;

means for generating a supply of forced air to flow through said first and second channels; and

heat-radiating fins connected to hinges on said oven door, said fins projecting into said forced air flow for cooling the hinges of the oven door.

5,441,037
MULTIPURPOSE GAS LIGHT

Cheng-Feng Yen, Chung-Ho, Taiwan, assignor to Ruey Bor Enterprise Co., Ltd., Taipei Hsien, Taiwan

Filed Jan. 9, 1995, Ser. No. 369,889

Int. Cl.[6] F24C *5/20*

U.S. Cl. 126—258 **1 Claim**

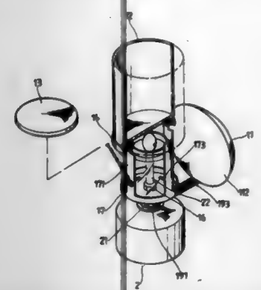
1. A multipurpose gas light of the type comprising a gas can

having a top coupling portion and a lamp bulb fastened to said top coupling portion, and a control mechanism controlled to release fuel gas from said gas can into said lamp head and to burn the released flow of fuel gas in said lamp head, the improvement comprising:

a bracket mounted around said lamp head and secured to said top coupling portion of said gas can by nuts, said bracket comprising a center through hole, through which said lamp head passes, a plurality of air vents spaced around said center through hole, and two upright supporting rods, each upright supporting rod having a top retaining hole and a bottom hooked portion;

a hand carrying means fastened to the bottom hooked portions of said bracket for carrying by hand;

an annular supporting member supported on said upright supporting rods of said bracket, having a top annular groove, a bottom hook and a bottom spring strip respectively fastened to the top retaining holes on said upright supporting rods of said bracket;



a glass shield mounted on said bracket and retained between said upright supporting rods around said lamp head;

a container for supporting on said annular supporting member for cooking food, said container having an annular bottom flange for fitted into the top annular groove of said annular supporting member;

a heat shield for mounting on said annular supporting member to shield heat from said lamp head;

a container cover for covering on said container, said container cover having a top knob for the holding of the hand, and an inside reflecting surface for reflecting light; and

a container cover holder having a clamping portion horizontally disposed at one end and fastened to said top coupling portion of said gas can, a retainer portion vertically disposed at an opposite end for holding down said top knob of said container cover, and a corrugated supporting portion horizontally disposed between said clamping portion and said retainer portion for supporting said container cover in any of a series of tilted positions.

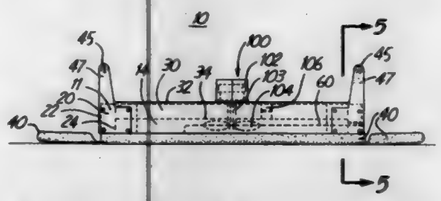
5,441,038
GROUND THAW APPARATUS
Bruce Ohmann, 1395 Aspen Ct., West St. Paul, Minn. 55118
Filed May 31, 1994, Ser. No. 251,028
Int. Cl.[6] F23C *5/00*
U.S. Cl. 126—271.1 **18 Claims**

1. A ground thawing device, comprising:

a manually portable housing including a sidewall, a roof connected to the sidewall, and an open bottom, the sidewall and roof together defining an enclosed heating chamber, and the sidewall and roof each having a coefficient of thermal conductivity less than about 0.6 BTU-in/hr-ft^2-° F. at 400° F.;

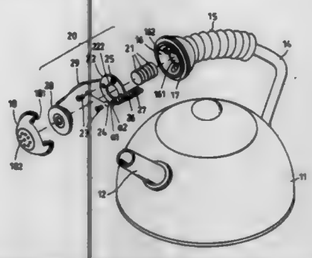
at least one port extending through the sidewall for receiving a removable burner;

a removable burner received in the port and extending into the heating chamber, the burner substantially occupying and being exhausted through the at least one port so that



the chamber is substantially airtight as the apparatus rests on the ground.

5,441,039
TEAPOT CAPABLE OF GIVING OFF SOUND WHILE IT POURS
Thomas Yeh, 10F, No. 97, Sec. 2, Nan-Gun Rd., Taipei, Taiwan
Filed Sep. 9, 1994, Ser. No. 303,822
Int. Cl.[6] A47J *27/00*
U.S. Cl. 126—388 **4 Claims**



1. A teapot comprising a main body for containing a drinking liquid, a spout, and a hand grip fastened to said main body such that said hand grip is opposite in location to said spout, said hand grip having a free end which is fastened with one end of a handle provided in a free end thereof with a receiving space shielded with a cover; wherein said receiving space is provided therein with a sound-reproducing device which comprises a circuit board provided thereon with a sound-reproducing circuit and a touch-control switch which is fastened on said circuit board and is provided with a rolling element capable of being caused to roll to make contact with said circuit board such that said rolling element causes two circuit connection points of said circuit board to become connected so as to trigger said sound-reproducing circuit to transmit a prestored electronic signal to a loud speaker by which said electronic signal is converted into a sound wave, said loud speaker being housed in said cover.

5,441,040
RDS SPECULUM
Barney K. Williams, Jr., Kerrville, Tex.
Filed Feb. 2, 1994, Ser. No. 190,315
Int. Cl.[6] A61B *19/00*
U.S. Cl. 600—236 **16 Claims**

1. An improved speculum for use in eye surgery on a patient's eye having an eyeball, a superior surgical limbus, an upper eyelid and a lower eyelid, wherein said speculum comprises:

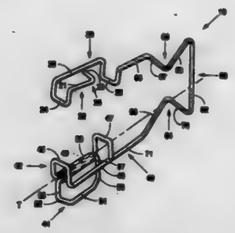
a superior arm with a first end and a second end;

an inferior arm with a first end and a second end;

said second end of said superior arm connected to said second end of said inferior arm by a connecting means;

said first end of said superior arm comprising a retractor means for maintaining the upper eyelid of said patient's eye in an open position, wherein said retractor means of said superior arm further comprises:

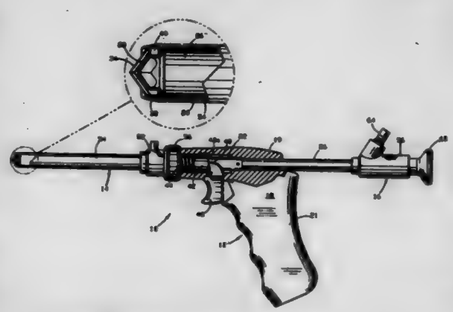
a first U-shaped holding well connected to a second U-shaped shaped holding well by a first holding well connecting bar with each of said first and said second holding wells having a proximate side member and a distal side member in relationship to said patient's eye when said speculum is in use; and



an offset bar allowing additional access to the superior surgical limbus of the patient's eye, wherein said offset bar is connected to one of said first or said second holding wells; and

said first end of said inferior arm comprising a retractor means for maintaining said lower eyelid of patient's eye in an open position.

5,441,041
OPTICAL TROCAR
Jude S. Sauer, Pittsford; Michael G. Oravecz, Rochester; Roger J. Greenwald, Holley, and Alexander I. Kobiliansky, Pittsford, all of N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 13, 1993, Ser. No. 120,489
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—106 **14 Claims**



1. An optical obturator which comprises:

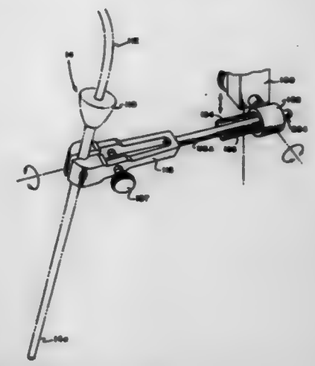
a sleeve having a longitudinal bore between a proximal end and a distal end, said longitudinal bore of said sleeve being configured to receive at least a portion of an endoscope;

an image directing member positioned adjacent said distal end of said sleeve for directing optical images into said longitudinal bore of said sleeve;

a cutting blade for penetrating body tissue positioned distal to said image directing member and in operative association with said distal end of said sleeve, said cutting blade being movable between non-deployed and deployed positions; and

an actuator operatively connected to the cutting blade, the actuator being selectively movable to move the cutting blade between the non-deployed and deployed positions.

5,441,042
ENDOSCOPE INSTRUMENT HOLDER
John M. Putman, 3707 Gaston Ave., Suite 410, Dallas, Tex. 75246
Continuation-in-part of Ser. No. 15,393, Feb. 8, 1993, Pat. No. 5,351,676, which is a continuation-in-part of Ser. No. 740,413, Aug. 5, 1991, Pat. No. 5,184,601. This application Dec. 22, 1993, Ser. No. 171,923
The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.
Int. Cl.[6] A61B *1/00*
U.S. Cl. 601—109 **16 Claims**



1. A surgical instrument holder comprising:

a coupling collar having a bore extending therethrough and a counterbore defining an inner wall with an annular groove formed therein;

a shaft having an end portion which is insertable through the bore;

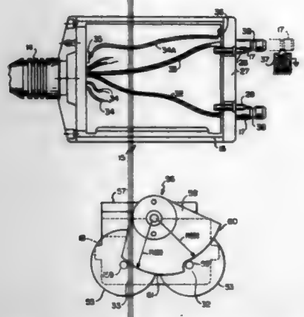
quick disconnect means disposed on the shaft end portion for releasably coupling the shaft to the coupling collar by engaging the annular groove formed within the inner wall, the quick disconnect means being compressible and expandable for lockably engaging the coupling collar as the shaft is inserted into the bore, and being disengageable from the coupling collar by applying a compressive force to the disconnect means as the shaft is withdrawn from the bore; and,

clamp means disposed on the shaft for clamping a surgical instrument.

5,441,043
VIDEO LAPAROSCOPE WITH MODULAR VIDEO CONNECTOR AND DUAL LOW-WATTAGE LIGHT SOURCES
Robert J. Wood, Syracuse; Michael J. Pileski, Skaneateles, and Gregory E. Pasik, Auburn, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Sep. 11, 1992, Ser. No. 944,221
Int. Cl.[6] A61B *1/06*
U.S. Cl. 600—109 **3 Claims**

1. A video laparoscope system which comprises an elongated insertion tube which includes a lens assembly for focussing light which enters a distal end of the insertion tube onto a miniature video imager which produces an image signal that represents a target located distally of the insertion tube; a video processor module connected by an umbilical to said insertion tube and including a sealed housing, video processing circuitry within the housing and receiving power from terminals of an electrical connector on said housing and providing control and synchronizing signals to said video imager and processing the image signals therefrom to provide to output terminals of said electrical connector a video signal to be supplied to a video

monitor to produce a picture of said target; the video signal having a signal strength that depends on brightness of illumination of said target; a fiber optic light conduit having a bifurcated proximal end with two branches each projecting proximally from said module at a respective one of two locations thereon, and extending distally from said module to pass through said umbilical and said insertion tube to the distal end of the insertion tube from which light carried in said bundle is incident upon said target to illuminate same; and a light and power unit including a cabinet which has a socket into which said video processor module is removably inserted, a power supply in said cabinet providing suitable electrical power to a mating electrical connector in said socket which contacts the electrical connector on said processor module; and a pair of light sources within the cabinet each providing illumination onto a respective one of the branches of said fiber optic conduit



at one of said locations, such that in the case of failure of one of said light sources the remaining light source will continue to provide uninterrupted illumination of said target; further comprising a servo-controlled shutter having a movable vane with respective vane positions disposed in a plane transverse to the optical axes of each light source such that the illumination from each light source is concurrently obstructed, substantially to the same degree to control the amount of illumination passing through the fiber optic bundle and illuminating said target; a servo motor controlling the position of said movable vane; and a control circuit input with the signal strength of said video signal for controlling the position of the vane based on the signal strength of the video signal, such that in the event of a loss of one of said pair of light sources, the servo motor automatically moves said vane to increases the illumination provided from the other of the light sources.

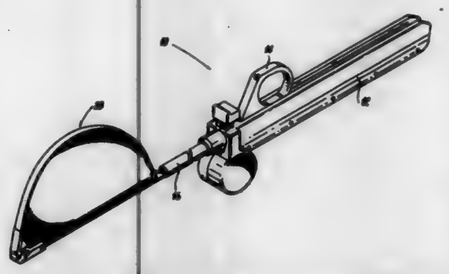
5,441,044

SURGICAL RETRACTOR

H. Jonathan Tovey, Mildord, and Gary S. Kappel, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Aug. 16, 1993, Ser. No. 108,140
Int. Cl.[6] A61B *17/02*
U.S. Cl. 600—234 **30 Claims**

1. A surgical retractor for manipulating body tissue, comprising:
a) a handle assembly;
b) an elongated body extending from said handle assembly and defining a longitudinal axis; and
c) a retractor assembly operatively with said body and defining a uniplanar curvilinear tissue manipulation surface having an area which is selectively variable, a periphery bounding said which is defined by first and second boundary members and an expandable membrane which solely occupies said area bounded by said boundary members, a distal end of said first boundary member being pivotably associated with a distal end of said second boundary member, said second boundary member being substantially collinear with said elongated body, and said retractor assembly being movable between a first position wherein



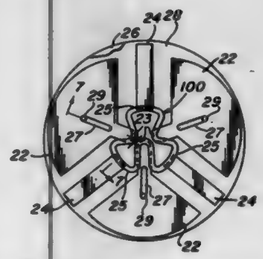
the area of said tissue manipulation surface is minimized and a second position wherein the area of said tissue manipulation surface is maximized.

5,441,045

APPARATUS FOR DEFORMING AN IRIS DILATOR

Jay L. Federman, Philadelphia, and Kenneth P. Cook, Blue Bell, both of Pa., assignors to Escalon Ophthalmics, Inc., Skillman, N.J.

Division of Ser. No. 831,129, Feb. 4, 1992, Pat. No. 5,318,011. This application Apr. 26, 1994, Ser. No. 233,170
Int. Cl.[6] B29C *59/02*; A61B *17/02*
U.S. Cl. 600—236 **4 Claims**



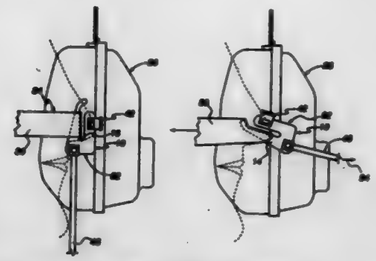
1. An apparatus for deforming art iris dilator from a hydrated first size and shape to a dehydrated second size and shape which is adapted to pass through an incision of predetermined size in an eye, the iris dilator comprising a body having a top side, a bottom side and a peripheral edge, the body lying in a first plane and being formed of an expansible hydratable material so as to be expandable from the second size and shape when the material is dehydrated to the first size and shape when the material is hydrated in the presence of bodily or surgical fluids, the deforming apparatus comprising:
a substantially flat base member for engaging the bottom side of the body;
a substantially flat cover member opposite said base member for engaging the top side of the body;
means for engaging the peripheral edge of the body and for forming thereby a plurality of depressed areas in the peripheral edge of the body to establish and maintain the second shape during dehydration of the body, the engaging means being positioned between said base member and said cover member;
said base member, said cover member, and said engaging means being cooperatively engaged together and lying substantially within said first plane, wherein said cover member comprises means to prevent the body from slipping out of alignment with said first plane.

5,441,046

QUICK RELEASE MECHANISM FOR NASAL AND/OR ORAL GAS DELIVERY MASK

John R. Starr, Leechburg; Eric W. Starr, Pittsburgh, and Mary T. Walthour, Pitcairn, all of Pa., assignors to Respironics, Inc., Murrysville, Pa.

Filed Sep. 29, 1993, Ser. No. 128,902
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—207.11 **13 Claims**



1. A patient gas delivery system, comprising:
mask adapted to fit over the face of a patient and having a first side and, opposite thereto, a second side;
headgear adapted to fit over the head of a patient and including straps, one of said straps extending from each side of said headgear toward said mask;
a first connector on said first side of said mask, presenting a generally vertical, U-shaped slot having an open top;
a first of said straps being received in said U-shaped slot through said open top and detachably connecting said first of said straps to said first connector; and
pivot means connecting said first connector to said first side of said mask for resisted pivotal movement of said first connector from an upright position wherein said first of said straps is connected to said first connector, to an inclined position wherein said first of said straps is quickly disconnected from said first connector and said mask is released from contact with the patient's face without need for removing said headgear from the patient's head; and
means for pivoting said first connector from said upright position to said inclined position.

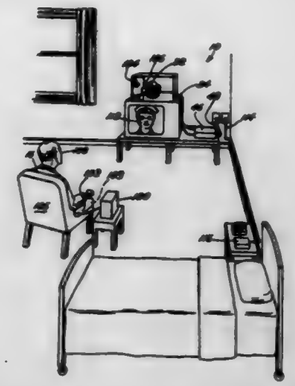
5,441,047

AMBULATORY PATIENT HEALTH MONITORING TECHNIQUES UTILIZING INTERACTIVE VISUAL COMMUNICATION

Daniel David, and Zipora David, both of 52 Hachalom St., Ranana, Israel

Continuation-in-part of Ser. No. 857,470, Mar. 25, 1992, abandoned. This application May 25, 1993, Ser. No. 66,903
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—670 **36 Claims**

1. An interactive system for monitoring a patient's condition by a health practitioner, said patient located at a remote location from a central monitoring station and capable of mobility so as to exercise gait, said health practitioner located at the central station, the system comprising:
a) first audio-visual means for generating a first audio-visual signal of said patient at the remote location;
b) means for measuring a medical condition of said patient at the remote location, said means for measuring including means for visually marking specified anatomical locations on the body of said patient for measurement of a gait of said patient;
c) means for generating a medical signal representative of the measured medical condition, said means for generating including the visual transmission signal of the specified anatomical locations and the changes in said anatomical locations in response to changes in patient location and position within the visual field of the means for generating a visual signal;
d) a central monitoring station;
e) means for transmission of said first audio-visual signal to said central station;
f) means for transmission simultaneously of the medical signal to said central station;
g) display means at said central station for substantially simultaneous display of said first audio-visual signal and said medical signal, said display means further including means for recordal and analysis of the anatomical location measurements of said patient;



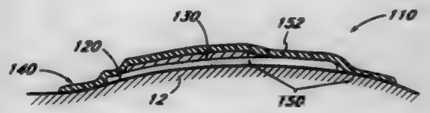
h) second audio-visual means for generating a second audio-visual signal of said health practitioner originating from said central station;
i) means for transmission of said second audio-visual signal to said remote location; and
j) means for display of said second audio-visual signal at said remote location for observation by the patient simultaneously with transmission of the first audio-visual transmission;
whereby said patient and said health practitioner are capable of substantially simultaneous interactive communication concerning said measured medical condition.

5,441,048

METHOD AND APPARATUS FOR DETERMINATION OF CHEMICAL SPECIES IN PERSPIRATION

Donald W. Schoendorfer, Santa Ana, Calif., assignor to Sudor Partners, Santa Ana, Calif.

Continuation-in-part of Ser. No. 569,007, Aug. 15, 1990, Pat. No. 5,203,327, which is a continuation-in-part of Ser. No. 241,707, Sep. 8, 1988, Pat. No. 4,957,108. This application Dec. 11, 1992, Ser. No. 989,204
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—632 **29 Claims**



1. A system for determining the presence of an analyte in perspiration of a subject mammal comprising:
a) a dermal patch to be worn on the skin of a subject mammal, said patch comprising:
i) an absorbent material for collecting components of perspiration which diffuse through the skin of said

subject, said absorbent material having a first and second side, said first side of said absorbent material being adapted to be in fluid communication with the skin of said subject, wherein said absorbent material comprises a material which can be dissolved into a solution with a solvent such that said solvent and the dissolved absorbent material in solution do not interfere with the analysis of said components of perspiration; and

ii) adhesive on said patch for removably securing said first side of said absorbent material in fluid communication with the skin of said subject; and

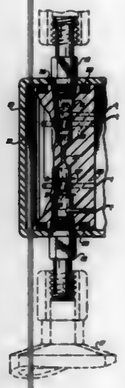
b) a solvent which can dissolve said absorbent material of said dermal patch into solution, wherein said solvent does not interfere with the analysis of said components of perspiration.

5,441,049

CONDUCTIVITY METER

Thomas M. Masano, Scottsdale, Ariz., assignor to Automata Medical Instrumentation, Inc., Scottsdale, Ariz.

Filed Dec. 28, 1992, Ser. No. 997,334
Int. Cl.[6] A61B *5/00*; G01N *27/02*
U.S. Cl. 128—635 **11 Claims**



1. A meter for measuring conductivity of a liquid, said meter comprising:

a conductivity cell including a cylindrical member having a passageway through which said liquid can flow, said passageway extending longitudinally through said member and having a constriction of predetermined diameter;

a first electrode in said passageway on one side of said constriction;

a second electrode in said passageway, wherein said constriction is between said first electrode and said second electrode along said passageway;

a pair of holes through said member, said holes being skew to said passageway and adjacent respective ones of said first and second electrodes;

a thermistor in said passageway adjacent one of said electrodes; and

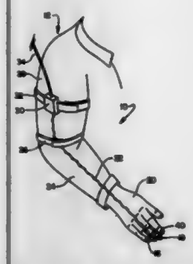
circuit means connected to said first electrode, said second electrode, and to said thermistor for measuring the temperature and the conductivity of said liquid.

5,441,050

RADIATION RESPONSIVE SURGICAL INSTRUMENT

Marlin O. Thurston, Columbus, and Karl W. Olson, Worthington, both of Ohio, assignors to Neoprobe Corporation, Dublin, Ohio

Filed Dec. 18, 1992, Ser. No. 992,622
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—659 **22 Claims**



1. A surgical probe instrument for locating and differentiating tissue at which a locator is concentrated, comprising:

a finger mount having a support region and an oppositely disposed finger mount portion configured for slideable positioning and retention upon a portion of a finger of a surgeon, and a detector mount portion positioned at said support region having a crystal retainer comprised of materials attenuating radiation at predetermined energy levels less than about 150 Kev, said detector mount portion having a detector seat and sidewalls extending to a forward opening;

a crystal detector mounted at said detector seat for response to radiation impinging thereon only from said forward opening to provide a detector output;

a window transmissive of said radiation, mounted over said detector mount portion;

transmission means responsive to said detector output for providing a transmit pulsed output; and

a control system coupled with said transmission means in a manner receiving said pulsed output for validating said transmit pulsed output with respect to said predetermined energy levels to identify valid pulses, said system computing the rate of said valid pulses and generating an audible output audibly perceptible to the surgeon at a frequency selected to correspond with said rate.

5,441,051

METHOD AND APPARATUS FOR THE NON-INVASIVE DETECTION AND CLASSIFICATION OF EMBOLI

Ronald E. Hileman, 27 Redbud La., Lewistown, Pa. 17044; Brian Wall, 4414 Bleeker Ct., Raleigh, N.C. 27606, and David A. Stump, 2565 Woodberry Dr., Winston-Salem, N.C. 27106

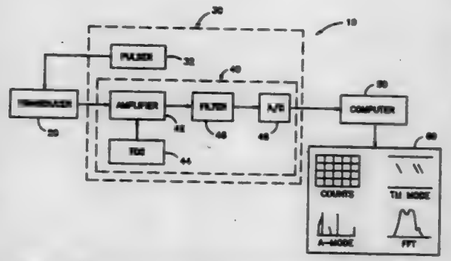
Filed Feb. 9, 1995, Ser. No. 386,297
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.08 **39 Claims**

1. An ultrasonic pulse echo apparatus for detecting an embolus in blood flow, comprising:

a) at least on ultrasound transducer for transmitting short duration, broad bandwidth ultrasound pulses through a blood vessel so that emboli passing through the vessel are insonified;

b) an ultrasound receiver for receiving echo pulses from an emboli passing through said blood vessel and from surrounding tissue and for converting said echo pulses into an electronic signal representation; and

c) signal processing means for processing said electronic signal representation of said echo pulses to detect the presence of an emboli and to characterize said emboli by



determining the polarity of the electronic signal representation of the echo pulses.

5,441,052

COLOR DOPPLER-TYPE ULTRASONIC DIAGNOSTIC APPARATUS

Yasuo Miyajima, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 27, 1993, Ser. No. 173,115
Claims priority, application Japan, Dec. 28, 1992, 4-349066
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.09 **47 Claims**

1. A color Doppler-type ultrasonic diagnostic apparatus having an ultrasonic pulse beam transmitted from a transducer of a transmitting means along a cross section to be scanned toward an object being examined and containing a moving target therein, a Doppler shift frequency detected on the basis of the ultrasonic pulse beam echoed from the moving target and received by a receiving means for one of a plurality of sampling points of the cross section, and a tomographic image of the cross section displayed on a monitor, the apparatus comprising:

means for calculating movement information including a direction and a magnitude of velocity of the moving target for each of the sampling points on the basis of the detected Doppler shift frequency;

means for specifying a reference direction on the tomographic image of the cross section;

means for forming data of a color sample showing a directional relation between the calculated direction and the specified reference direction;

means for creating two-dimensional color display data of the calculated velocities at the plurality of sampling points on the basis of the directional relation; and

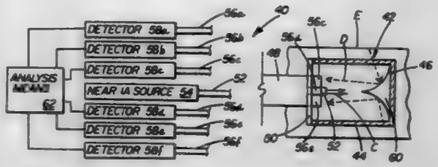
means for color-displaying at least the created two-dimensional color display data together with the formed data of the color sample.

5,441,053

APPARATUS AND METHOD FOR MULTIPLE WAVELENGTH OF TISSUE

Robert A. Lodder, and Lisa A. Casais, both of Nicholasville, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Continuation-in-part of Ser. No. 695,104, May 3, 1991, abandoned. This application Sep. 15, 1992, Ser. No. 945,020
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—664 **8 Claims**



5. A method of analyzing tissue, comprising the steps of:

focusing simultaneously and in parallel light having a continuous bandwidth range of at least 600 nm within a Wavelength range from substantially 1,000–2,500 nm on said tissue to be analyzed;

detecting simultaneously and in parallel light having said at least 600 nm bandwidth range Within a wavelength range from substantially 1,000–2,500 nm scattered by said tissue; and

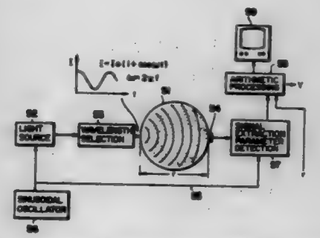
analyzing simultaneously and in parallel the detected light having said at least 600 mm bandwidth range within a wavelength range from substantially 1,000–2,500 nm while giving all wavelengths equal weight.

5,441,054

APPARATUS FOR MEASURING ABSORPTION INFORMATION IN SCATTERING MEDIUM AND METHOD THEREFOR

Yutaka Tsuchiya, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 19, 1993, Ser. No. 92,996
Claims priority, application Japan, Jul. 20, 1992, 4-192370
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—665 **27 Claims**



1. An apparatus for measuring absorption information in a scattering medium, comprising

light-emitting means for emitting modulated light having a predetermined wavelength,

light-incident means for forming the modulated light having the predetermined wavelength into a spot and causing the spot to be incident on the scattering medium,

photodetecting means for photodetecting the modulated light, changed during propagation in the scattering medium, through an opening located near an outer surface of the scattering medium,

signal extracting means for extracting a signal of one predetermined frequency component constituting the modu-

lated light from signals photodetected by said photodetecting means,

parameter detecting means for comparing the signal extracted by the signal extracting means with the signal of the predetermined frequency component of the modulated light to be incident on the scattering medium and detecting a predetermined parameter associated with propagation of a photon density wave having the predetermined frequency component in the scattering medium and absorption of the light of the predetermined wavelength constituting the photon density wave having the predetermined frequency component,

first arithmetic processing means for calculating first absorption information associated with an absorptive constituent in the scattering medium, utilizing a relationship between the predetermined parameter and an absorption coefficient obtained when the photon density wave having the predetermined frequency component propagates in the scattering medium, and

second arithmetic processing means for calculating second absorption information associated with the absorption coefficient in the scattering medium, on the basis of a plurality of first absorption information obtained by the first arithmetic processing means.

5,441,055

GUIDEWIRE EXTENSION WIRE AND CONNECTOR ASSEMBLY

Francisco Ales, Hialeah; Jack C. Conrad, Plantation; David A. Duvall, Miami, and Karl R. Zawoy, Ft. Lauderdale, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Jun. 27, 1994, Ser. No. 266,213
Int. Cl.[6] A61B *17/00*
U.S. Cl. 128—772 **18 Claims**



1. A guidewire extension wire and connector assembly comprising:

a guidewire extension wire having a distal end portion including, extending toward a distal end of said guidewire extension wire, a break-away neck connected to said guidewire extension wire, a stub section having a diameter less than an outer diameter of said distal end portion of said guidewire extension wire and being connected to said break-away neck and a distal stub end having a diameter larger than the diameter of said stub section and being connected to said stub section;

a first sleeve having a proximal end fixed to said guidewire extension wire proximally of said break-away neck and having a distal end extending to said distal stub end;

a second sleeve having a first end thereof fixed by a first fixing means to said distal stub end and

having a second end adapted to be received over a generally cylindrical proximal stub end of an initially inserted guidewire which has a diameter less than the diameter of the initially inserted guidewire; and,

a second fixing means within said second end of said second sleeve for fixing said second sleeve to the proximal stub end of the initially inserted guidewire.

5,441,056

REPELLENT-TREATED, BARRIER-COATED NONWOVEN WEB

Robert E. Weber, Marietta; Steven W. Fitting, Acworth, and Patricia A. Jegier, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 616,133, Nov. 20, 1990, Pat. No. 5,370,132.
This application Feb. 9, 1994, Ser. No. 193,965
Int. Cl.[6] A41D *13/12*
U.S. Cl. 128—849 **2 Claims**

1. A surgical drape including a liquid barrier material comprising:

a plurality of entangled fibers forming a nonwoven batt, said batt having a top surface and a bottom surface, said top surface of said batt including fibers having average widths along their major axes greater than or equal 10 microns and surface pores in said top surface having average diameters ranging in size from about 50 to about100 microns;

a liquid repellent coating covering said fibers forming said top surface of said batt, and

a barrier coating covering said top surface of said batt to form a liquid barrier, said barrier coating having a thickness of about 37 microns or greater.

5,441,057

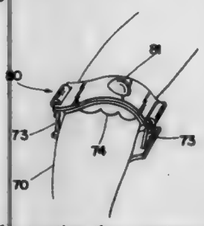
Patent Not Issued For This Number

5,441,058

METHOD FOR TREATING CARPAL TUNNEL SYNDROME

Donald O. Fareed, 801 Buena Vista Ave., Santa Barbara, Calif. 93108

Filed Oct. 15, 1993, Ser. No. 137,629
Int. Cl.[6] A61F *5/04*
U.S. Cl. 128—898 **1 Claim**



1. A method for treating the symptoms of carpal tunnel syndrome comprising the following steps:

(a) presenting a generally circular device having two discrete compression plates projecting inwardly from the circular device and located at anatomically opposed positions along the circumference of the device;

(b) placing the device around the forearm to encircle at least a portion of the forearm so that said discrete compression plates overly respectively the flexor and extensor muscles in the forearm at a portion on the forearm that is closer to the elbow than the wrist; and

(c) drawing said compression plates toward one another to apply bipolar transaxial compression of equal magnitude simultaneously to discrete areas of the skin directly overlying the flexor and the extensor muscles of the proximal portion of the forearm without substantial compression of other skin on the forearm.

5,441,059

METHOD OF MINIMALLY INVASIVE SURGERY

Patrick A. Dannan, 446 Lynwood Forest, Manchester, Mo. 63021

Filed Feb. 2, 1994, Ser. No. 191,026
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 **20 Claims**

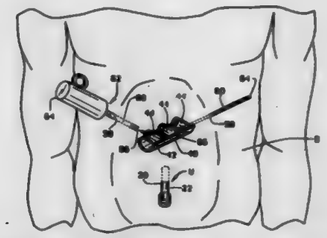
1. A method of conducting minimally invasive surgery comprising the steps of:

making a primary incision;

importing at least one surgical instrument head, having a cross-section, through the primary incision;

making at least one secondary incision, smaller than the primary incision and smaller than the smallest cross-section dimension of the surgical instrument head, each secondary section for receiving a handle having a distal end for mounting a surgical instrument head;

extending the distal end of a handle through a said secondary incision;



attaching a said surgical instrument head to the distal end of the handle inside the body;

manipulating the surgical instrument head with the handle to which it is attached;

detaching the surgical instrument head from the handle;

removing the surgical instrument head through the primary incision; and

withdrawing the distal end of the handle from the secondary incision.

5,441,060

DRY POWDER DELIVERY SYSTEM

Jed E. Rose; Frederique Behm, both of Durham, N.C., and James Turner, Atascosa, Tex., assignors to Duke University, Durham, N.C. and Advanced Therapeutic Products, San Antonio, Tex.

Filed Feb. 8, 1993, Ser. No. 14,773
Int. Cl.[6] A61M *15/00*
U.S. Cl. 131—271 **27 Claims**



1. A dry powder delivery system, comprising:

a) an elongated housing with proximal and distal ends and an air flow path between the ends;

b) the distal end having at least one inlet opening through which air can be introduced into the flow path;

c) the proximal end forming a mouthpiece with at least one outlet opening through which air can be withdrawn from the flow path;

d) desiccant means for removing moisture from air in the flow path;

e) means for introducing a measured amount of particles of a dry powder compound into the flow path, said dry powder being in communication with the desiccant means; and

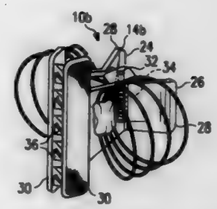
f) whereby suction created at the proximal end causes air to flow into the flow path and into contact with the particles of dry powder for discharging them through the outlet.

5,441,061

INTERCHANGEABLE DECORATIVE ORNAMENT AND METHOD

Gina M. Jordan; Tracie L. Eakin, both of Flower Mound, and Tomima L. Edmark, Dallas, all of Tex., assignors to The Topsytail Company, Dallas, Tex.

Filed Feb. 3, 1994, Ser. No. 190,911
Int. Cl.[6] A45D *8/12, 8/20*
U.S. Cl. 132—275 **6 Claims**



1. A decorative ornament for displaying at least one removable decorative element, comprising:

first and second opposing arms for affixing the decorative ornament to a user for display, said arms each having first and second portions;

a spring having first and second protruding end portions;

a rod passing through said first portion of each of said arms and said spring such that said first and second protruding end portions of said spring push on said first portions of said arms so as to bias said second portion of said arms together;

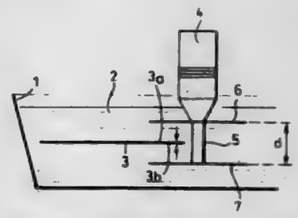
a plurality of loops extending from an outer surface of each of said arms, said loops spaced apart by uninterrupted regions between adjacent loops such that the decorative element may pass through said uninterrupted regions between adjacent holding members.

5,441,062

METHOD AND DEVICE FOR PICKLING THE EDGE PORTIONS OF A SHEET IMMERSED IN A REACTIVE SOLUTION, IN PARTICULAR A HOT ROLLED SHEET

Michel Nogues, Triel Sur Seine, France, assignor to Sollac, Puteaux, France

Division of Ser. No. 950,700, Sep. 25, 1992, abandoned. This application Jan. 7, 1994, Ser. No. 178,794
Claims priority, application France, Oct. 7, 1991, 91 12324
Int. Cl.[6] B08B *3/12*
U.S. Cl. 134—122 R **4 Claims**



1. Device for pickling edge portions of a metal sheet immersed in a reactive solution by creating ultrasonically induced cavitation in the reactive solution located in the vicinity of said edge portions,

said device comprising means for ultrasonically generating cavitation in reactive solution surrounding the edge portions of said metal sheet such that said edge portions are contacted by cavitated solution, said means including two ultrasonically emitting plates respectively placed on each side of an edge portion of said sheet for emitting ultrasonic

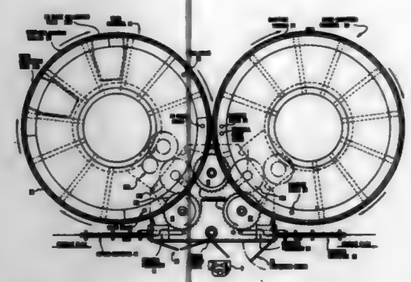
waves having a wavelength of λ, each of which includes a planar emitting surface disposed above its respective edge portion of said sheet and parallel to said sheet with said emitting surfaces thereof contained in two antinodal planes such that cavitation is produced in the volume of said solution between the plane of said surface of said plate and said edge portion of said sheet.

5,441,063

HIGH SPEED BOTTLE WASHING MACHINE

Antonio Fernandez, Danbury, Conn.; Attila Soti, Mississauga, Canada, and Steve Miller, Vienna, Austria, assignors to PepsiCo, Inc., Purchase, N.Y.

Filed Jul. 13, 1993, Ser. No. 90,503
Int. Cl.[6] B08B *9/08*
U.S. Cl. 134—142 **58 Claims**



1. A high speed bottle washing machine for sequentially washing returnable bottles upon their return, prior to refilling, each said bottle having residual soiled locations on an internal surface thereof, said machine comprising:

(a) plurality of moving bottle receiving stations, each of said stations having means for sequentially receiving and means for independently gripping and rotating a respective inverted bottle received from a bottle infeed means and discharging them at a bottle outfeed means,

(b) a plurality of reciprocating spray nozzles, with at least one spray nozzle moving with each bottle receiving station, said spray nozzles reciprocating from a first position below said inverted bottles, to a second position within said bottles,

(c) manifold means for sequentially supplying a caustic wash fluid under pressure to each of said plurality of spray nozzles to clean said bottles by impingement of said wash fluid in a predetermined pattern at said residual soiled locations within the bottles as the bottles are rotated.

5,441,064

COMBINATION UMBRELLA AND RAIN COVER STORAGE SYSTEM

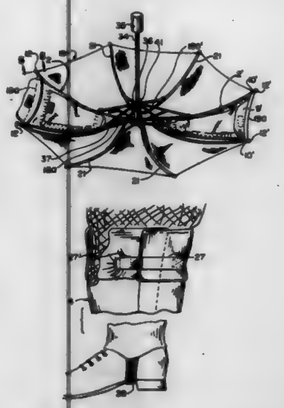
Donald M. Becker, 3169 Summit Ave., and Russell E. Hattis, 1522 Sherwood Rd., both of Highland Park, Ill. 60035

Filed Sep. 20, 1994, Ser. No. 309,138
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—16 **10 Claims**

1. In combination: an umbrella comprising a canopy comprised of adjacent triangular panels of material secured together along tapering side margins;

a series of umbrella frame-forming ribs at the inner surface of said canopy adjacent to the tapering side margin of the triangular panels and extending radially outwardly from a center point of the canopy where said panels have a minimum width to the perimeter thereof, a center post connected at its inner end to the center of said canopy and having a gripping handle at the outer end thereof, and a canopy expanding and contracting assembly comprising a post-encircling member slidable along said post from a point adjacent to the outer handle-forming end thereof to a point adjacent the inner end thereof and a series of connecting links pivotally connected between said post-encircling member and said ribs;

a pair of legging-storage pockets on diametrically opposite sides of the center of said canopy to aid in balancing the weight of the pockets and their contents located on opposite sides of the canopy center thereof, each of said pockets having a closeable entry opening communicating with the pocket interior and through which opening a rain isolating legging body can be passed into and out of the pocket interior, and a pair of open-ended tubular legging



bodies of flexible, liquid-tight sheet material, each insertable into one of said pockets, each of said legging-forming bodies being of a size to be positioned around one of the user's legs, each of said tubular bodies has an open bottom with a loop-forming stirrup adapted to loop around one of the user's shoes and be pulled adjacent to the heel of the user's shoe where it makes little or no contact with the ground to minimize wear thereof, and a first securing means at the outer portion of each legging-forming tubular body to retain the outer portion of the body upon the user's leg.

5,441,065

MULTIPLE-FOLD AUTOMATIC UMBRELLA FOR SAFE OPERATION

Chung-Kuang Lin, and Jung-Jen Chang, both of Taipei Hsien, Taiwan, assignors to Fu Tai Umbrella Works, Ltd., Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 148,621, Nov. 3, 1993. This application Jan. 9, 1995, Ser. No. 370,411
Int. Cl.[6] A45B *25/14*
U.S. Cl. 135—24 **12 Claims**

1. An automatic umbrella comprising:

a central shaft means (1) including: an inner tube (11), a grip (12) secured with the inner tube (11), a middle tube (13) slidably held on an outer and upper side of the inner tube (11), an outer tube (14) slidably held on an outer and upper side of the middle tube (13), an upper notch (15) secured on a top portion of the outer tube (14), and a central sleeve set (17) telescopically held within said inner, middle and outer tubes (11, 13, 14);

a rib assembly (2) including: a top rib (21) pivotally secured to the upper notch (15) of the central shaft means (1), an inner stretcher rib (22) pivotally secured to a lower runner (23) which is slidably held on the outer tube (14) and the inner stretcher rib (22) pivotally connected with the top rib (21), an intermediate rib (24) pivotally connected with the top rib (21) and pivotally connected with an intermediate connecting rod (25) with the intermediate connecting rod (25) pivotally secured to the inner stretcher rib (22), and a rear rib (26) pivotally connected with the intermediate rib (24) and pivotally connected with a spring rod (27) with the spring rod (27) pivotally connected with the top rib (21);

an opening spring (3) for opening an umbrella retained in said central shaft means (1) and slidably disposed about the central sleeve set (17);

a plurality of closing springs (4) respectively secured on said rib assembly (2) for operatively closing an umbrella from an opened state by an elastic energy stored when opening the umbrella; and

a control means (5) including: a push button (51) resiliently mounted in the grip (12), an opening lever (52) pivotally mounted in an upper portion of the grip (12) and operatively depressed by an upper button portion (512) of the push button (51) for opening the umbrella, a closing controller (53) operatively depressible by a lower button portion (513) of the push button (51) for disengaging a locking head (55), which is secured with a drag rod (56a) coupled to a drag rope (56) which is linked through the lower runner (23) to an upper portion of the outer tube (14), from a sliding latch (54) slidably held in the grip (12), thereby allowing each said closing spring (4) to be restored to release a pre-stored elastic energy for closing the umbrella from an opened state, and an anti-false operation safety means (57) formed in the grip (12) for normally shielding the closing controller (53) to prevent a false depression of the closing controller (53) after depressing the upper button portion (512) and when the umbrella is not fully opened.



5,441,066

PORTABLE UNIVERSAL SUNSHADE FOR BOATS

Norman E. Harris, 1000 Bear Island Dr., West Palm Beach, Fla. 33409

Continuation of Ser. No. 871,124, Apr. 20, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 262,761
Int. Cl.[6] E04H *15/06*
U.S. Cl. 135—88.01 **10 Claims**

1. A portable, universally mountable sunshade for boats comprising:

a boat having means for attachment disposed thereon;

a flexible opaque sheet having a peripheral edge, said sheet capable of sun ray blockage to provide shade;

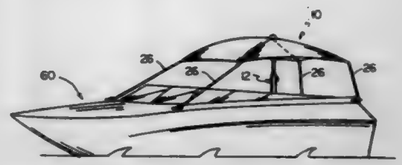
a plurality of primary arcuate support ribs;

a rigid, elongated central support member positioned substantially at the center of said sheet, having an upper end and a lower end, said support member being adjustable longitudinally in length, said primary support ribs each having an inner end and an outer end, each primary support rib pivotally connected at its inner end to said rigid support member adjacent said rigid support member upper end and to said flexible sheet at each outer end;

a movable sleeve connected to said rigid support member;

a plurality of secondary ribs, each secondary rib having a first end and a second end, each first end pivotally connected to said sleeve and each second end pivotally connected to one of said primary ribs;

at least two fasteners attached to predetermined positions of said flexible sheet periphery;



at least two flexible straps, each strap having a first end and a second end, each strap first end connected to one of said fasteners, each strap second end connected to said boat means for attachment, each of said straps being adjustable in length for providing a pulling force at said sheet periphery and for supporting said primary support ribs and said sheet in a fixed position; and

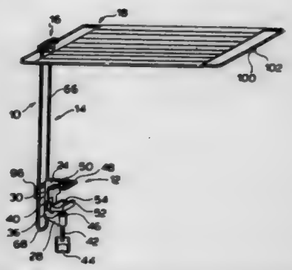
cushion means attached to the lower end of said central support member for providing a cushion support to said central support member, whereby said sunshade is capable of being mounted in a fixed position in different locations through the combined adjustment of the vertical support member in length and adjustment of the tie-downs and fasteners.

5,441,067

SUN SHADE FOR OUTDOOR FURNITURE

Peter James, and Bart Boelryk, both of Orillia, Canada, assignors to Solar-Wise Products Inc., Orillia, Canada

Filed Feb. 1, 1994, Ser. No. 189,554
Int. Cl.[6] E04H *15/02*
U.S. Cl. 135—96 **16 Claims**



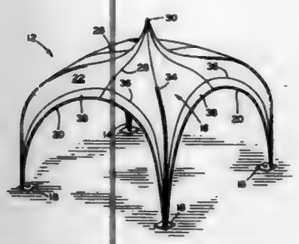
1. A sun shade arrangement for releasable attachment to outdoor furniture, said arrangement comprising a reusable clamping means, an arm having a forward end and a sun shade member having a mounting end piece secured to the forward end of the arm, the arm comprising spaced apart bars removably and adjustably secured to the clamping means and the spaced apart bars being connected to one another at the forward end of the arm and providing a releasable connection for the mounting end piece of the sun shade member.

5,441,068
SUNSHADE, PARTICULARLY FOR STATIONARY INSTALLATION
Bodo Rasch, Leinfelden-Oberaichen, and Juergen Bradatsch, Stuttgart, both of Germany, assignors to SL Sonderckonstruktionen und Leichtbau GmbH, Germany
Filed Mar. 15, 1993, Ser. No. 31,796
Claims priority, application Germany, Feb. 9, 1993, 43 03 679.1
Int. Cl.[6] E04H *15/28*
U.S. Cl. 135—98 21 Claims



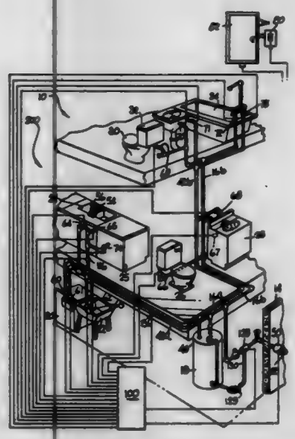
1. A sunshade comprising:
a sunshade column;
movable sunshade arms supported by said sunshade column;
drive means operatively connected to said sunshade arms for driven movement of said sunshade arms between an open position and a closed position;
a sunshade membrane extendable by said arms for movement between said open position and said closed position, wherein in the closed position the membrane has folds that are received between said sunshade arms; and
a plurality of cover elements disposed above the membrane and the sunshade arms in the open position, wherein said cover elements are moved to a position to cover and enclose the sunshade membrane when the sunshade arms are moved to the closed position.

5,441,069
TENSION FABRIC STRUCTURE WITH ARCHES
C. William Moss, Scottsdale, Ariz., assignor to Bill Moss, Inc., Scottsdale, Ariz.
Filed Feb. 7, 1994, Ser. No. 192,968
Int. Cl.[6] E04H *15/36*
U.S. Cl. 135--124 10 Claims



1. A pavilion-type fabric structure adapted to be erected on a support surface to provide shelter, said fabric structure comprising:
a) a plurality of curved corner poles, said corner poles being rectangular in cross section and having a base end, a top end, an outer surface, said corner poles positioned in space apart relationship on a support surface;
b) a fabric membrane provided with a plurality of corner seams, said fabric membrane positioned on said curved corner poles such that a segment of each corner seam slidably engages a corresponding segment of the outer surface of a corner pole, a peripheral edge of said fabric membrane forming a plurality of arches such that an arch extends between each adjacent set of corner poles;
c) a plurality of base plates positioned on the support surface, each base plate including a mounting means receiving and adjustably securing the base end of a corner pole to said base, and a separate tensioning means securing said fabric membrane to said base;
d) a hub having a plurality of receptacles receiving and securing the top end of each of said plurality of corner poles to said hub; and
e) a center rod secured to said hub and extending vertically therefrom, said center rod including a top end secured to said fabric membrane whereby said fabric membrane, which is secure to said base and said center rod, may be placed in the desired tension by further extending said plurality of corner poles from said base plates.

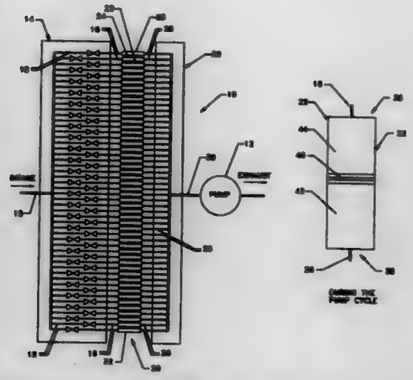
5,441,070
FLUID MANAGEMENT SYSTEM
Gary E. Thompson, P.O. Box 773222, Steamboat Springs, Colo. 80477
Filed Nov. 10, 1993, Ser. No. 149,970
Int. Cl.[6] F17D *3/01*; E03B *7/04*
U.S. Cl. 137—1 22 Claims



18. A method for managing a fluid supply comprising the steps of:
providing a fluid supply system including
a main fluid supply line in fluid communication with a pressurized source of fluid,
a plurality of fluid flow control valves,
a plurality of branch fluid supply lines in fluid communication with the main supply line and the fluid flow control valves,
a main shut-off valve located on the main supply line,
a drain valve located downstream of the main shut-off valve at a point on the main or one of the branch fluid supply lines, and
a fluid flow sensor, located at or upstream of each fluid control valve, for generating or discontinuing the generation of an output signal when flow is sensed; opening the main shut-off valve when flow is detected by the flow sensor and closing the main shut-off valve when flow is undetected by the flow sensor;
selecting an operational period for each flow sensor;
timing a period a flow sensor senses flow; and

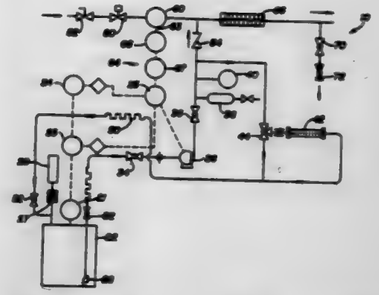
closing the main shut-off valve when the timed period equals the selected operational period for the flow sensor.

5,441,071
AUTOMATED WATER SAMPLE COLLECTING SYSTEM
Kenneth W. Doherty, West Falmouth; Susumu Honjo, Falmouth, and John D. Billings, North Falmouth, all of Mass., assignors to McLane Research Laboratories, Inc., Monument Beach, Mass.
Filed May 4, 1994, Ser. No. 238,150
Int. Cl.[6] G01N *1/14*; F16K *11/074*
U.S. Cl. 137—15 21 Claims



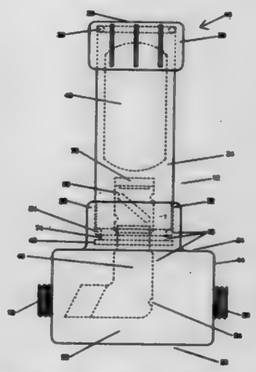
17. A method for automatically sampling water at a remote site using a multiport valve having a plurality of ports and respective port inlets, a sample water intake line coupled to the respective port inlets, and valve means for individually opening and closing the port inlets comprising:
selectively opening a first port inlet and first port;
pumping and drawing sample water through the sample water intake line and first port inlet into a first sample receiver coupled to the respective first port for collecting a first sample;
closing the first port inlet and first port;
selectively opening a cleaning port inlet and respective cleaning port of the multiport valve;
reversing the pumping direction, pumping and pushing cleaning liquid from a cleaning liquid container coupled to the respective cleaning port out the sample water intake line, and washing away befouling material the cleaning port inlet and respective cleaning port;
waiting a predetermined period of time;
selectively opening a second port inlet and respective second port;
pumping and drawing sample water through the sample water intake line and second port inlet into a second sample receiver coupled to the respective second port for collecting a second sample;
closing the second port inlet and second port;
selectively opening the cleaning port inlet and respective cleaning port;
again reversing the pumping direction, pumping and pushing cleaning liquid from a cleaning liquid container coupled to the respective cleaning port out the sample water intake line, and washing away befouling material;
closing the cleaning port inlet and respective cleaning port;
waiting a predetermined period of time;
and alternating the steps of collecting samples and washing away befouling material in series in a timed sequence until a prescribed number of samples has been collected.

5,441,072
FUEL ADDITIVE METERING SYSTEM
Sophie Isdey, Lawrenceville, and William Hagan, Riverton, both of N.J., assignors to Rhone-Poulenc Inc., Princeton, N.J.
Filed Feb. 28, 1994, Ser. No. 203,089
Int. Cl.[6] F02M *43/00*; G05D *11/13*; F16K *15/02*
U.S. Cl. 137—101.21 25 Claims



1. A system for dispensing an additive into a flowing fluid comprising:
a) a sensing device for determining the flow rate of fluid entering the system and for generating a signal in dependence upon said fluid flow rate;
b) means for conditioning said signal to produce a proportional speed of a variable speed motor assembly;
c) a metering pump driven by said motor assembly for dispensing an additive into the fluid flow at a rate proportionate to the speed of said motor assembly; and
d) means for controlling the rate of increase in said fluid flow rate to permit said signal conditioning means and said metering pump to respond to said variations within an effective response time.

5,441,073
APPARATUS FOR CONTROLLED RELEASE OF AN ERODIBLE SOLID INTO A LIQUID
Francis B. Hoadley, Rte. 1 Box 166A, Lamont, Fla. 32336
Filed Mar. 7, 1994, Ser. No. 206,530
Int. Cl.[6] B01D *11/02*
U.S. Cl. 137—268 18 Claims



1. A dispenser assembly for controlled hydro-injection/venturi release of an erodible solid into a liquid comprising:
a lower body member;
said lower body member includes an inlet and an outlet;

said inlet includes an attachment means for attaching a pressurized fluid line to said inlet to allow fluid to flow into said lower body member;

a hydro chamber;

said hydro chamber is located in said lower body member;

upper body member;

said upper body member is attached to said lower body member;

said upper body member houses said erodible solid;

a first means for directing and controlling pressure rate, erosion of said erodible solid, concentration of said dissolved material and flow patterns of said fluid when entering and exiting said upper body member in order to dissolve said erodible solid and transport said dissolve material into said lower body member into a fluid stream and to said outlet;

a second means for directing, alternating, and controlling pressure rate and flow patterns of said fluid from said inlet to said outlet in said lower chamber and said second means also aids in directing alternating and controlling pressure rate of said fluid to said upper body member from said lower body member; and

said first means is located between said upper body member and said lower body member and said second means is located within said hydro chamber of said lower body member and extends through said first means and into said upper body member.

5,441,074

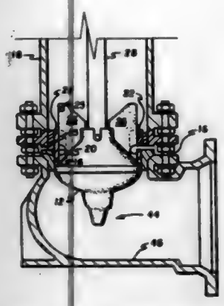
UNITIZED HYDRANT VALVE ASSEMBLY

Niels A. Kjaer, Lasby, Denmark, assignor to AVK-Holding, Galten, Denmark

Continuation-in-part of Ser. No. 196,502, Feb. 15, 1994, Pat. No. 5,368,064. This application Oct. 12, 1994, Ser. No. 321,758

Int. Cl.[6] F16L *7/00*

U.S. Cl. 137—375 **6 Claims**



1. A valve body for a dry barrel fire hydrant, comprising:

a rigid single piece base member having a coating of resilient surface material, a top, a bottom, an empty cavity therein, and a threaded countersunk central opening in said top of said base member, the countersunk portion of said opening being surrounded by a resilient surface coating, whereby said empty cavity is closed from communication with water flowing therearound;

said base member further having a tapered configuration and at least one upwardly orientated ear extending from said top; and a solid, downwardly facing projection extending from said bottom of said base member; and

stop pin means mounted in said at least one ear for cooperating with the valve seat ring of a hydrant assembly and preventing disassembly of said valve downwardly through the hydrant valve seat ring.

5,441,075

SHOWER CONTROL VALVE ASEEMBLY

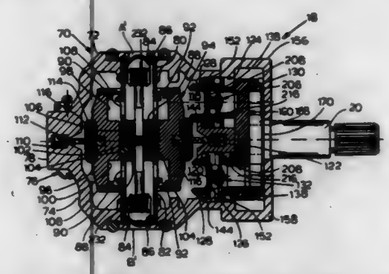
Manamohan Clare, Mississauga, Canada, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany

Filed Oct. 14, 1994, Ser. No. 323,456

Claims priority, application Canada, Oct. 21, 1993, 2109034

Int. Cl.[6] F16K *11/16*

U.S. Cl. 137—454.6 **12 Claims**



1. A shower control valve assembly comprising: a casing having first and second water inlets and first and second water outlets therein; a cartridge shell insertable into said casing and having first and second separate inlet chambers in respective communication with said casing inlets; said inlet chambers being defined by an annular diaphragm member within said cartridge and a throttle valve unit centrally carried by said diaphragm; first and second check valve means within said throttle valve unit to prevent or allow water flow into said inlet chambers; wall means having first and second passages to the first and second chambers respectively; a mixing valve disc rotatably mounted in said cartridge in abutting engagement with said wall means; the casing having a discharge chamber on the side of said disc away from said inlet chambers and communicating with one of said water outlets; and said disc having first and second ports co-operable with said passages to pass water from one or both of said inlet chambers to said discharge chamber; each of said passages containing: an annular axially movable seat member having a first annular surface in constant engagement with cam means adjacent the corresponding port in said disc and a second annular surface axially opposite the first annular surface; and a snap seal member having retaining means engaging an internal flange of said passage, a button portion downstream of said retaining means, and an O-ring held by said button portion, said O-ring being sealingly engageable by said second annular surface to prevent water flow from the adjacent inlet chamber through the mixing valve disc.

5,441,076

PROCESSING APPARATUS USING GAS

Shuji Moriya, Yamanashi; Takenobu Matsuo; Tsuyoshi Wakabayashi, both of Kofu; Kazutoshi Miura, Tokyo, and Takahiro Mori, Sagamihara, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Tohoku Limited, Esashi, both of Japan

Continuation-in-part of Ser. No. 164,545, Dec. 10, 1993. This application Apr. 4, 1994, Ser. No. 222,589

Claims priority, application Japan, Dec. 11, 1992, 4-353287; Dec. 25, 1992, 4-357986; Dec. 25, 1992, 4-357987; Apr. 2, 1993, 5-100229

Int. Cl.[6] G05D *7/06*

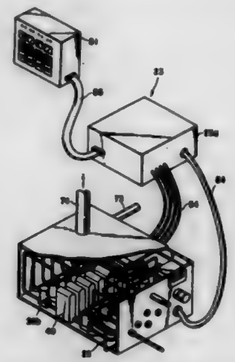
U.S. Cl. 137—486 **21 Claims**

1. A processing apparatus using a gas, comprising:

a gas processing unit for performing specific processing to a target object using the gas; and

a gas supply unit for supplying the gas to said gas processing unit;

wherein said gas supply unit includes a plurality of instruments for controlling gas having a plurality of gas flow control devices, a gas controlling instruments-storage vessel for storing said instruments, and a plurality of electrical parts arranged outside said storage vessel and belonging to said instruments, and said plurality of gas flow control devices are integrated with each other, said gas



controlling instruments-storage vessel including a casing spaced from said plurality of instruments for controlling gas, said casing having an interior within which said plurality of instruments for controlling gas are disposed, with said interior free of said plurality of electrical parts.

5,441,077

FEEDBACK AIR PRESSURE SENSING SYSTEM

Rowland C. Smith, Wimborne, and Paul L. Garlick, Poole, both of United Kingdom, assignors to ITW Limited, Windsor, United Kingdom

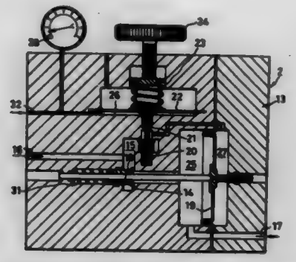
PCT No. PCT/GB93/00058, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO93/13870, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 12, 1993, Ser. No. 256,159

Claims priority, application United Kingdom, Jan. 13, 1992, 9200585; Jan. 13, 1992, 9200630

Int. Cl.[6] B05B *7/08, 7/12*

U.S. Cl. 137—492.5 **10 Claims**



1. For a spray gun having an air cap, a feedback air pressure regulating system comprising an air supply, an air outlet at said air cap, the air supply being monitored by an air pressure feedback circuit which connects the air outlet with a regulator so that any change in pressure at the air outlet is sensed and fed back to the regulator to increase or decrease the air supply to maintain the air pressure at the air outlet at a predetermined pressure, said regulator comprising a body, an inlet for a main air supply to first and second air chambers, an inlet for a feedback air supply to a third air chamber (26), a first diaphragm between an outlet chamber and a pilot air chamber (27), said first diaphragm operating a spring loaded main valve to control the flow of air from said first air chamber to said outlet chamber, a second diaphragm between the third air chamber (26) and a spring loaded adjustment means, a pilot air valve responsive to the position of said second diaphragm and connected between said second chamber and said pilot air chamber to control the flow of air from said second chamber to said pilot air chamber and to control the venting of air from said pilot air chamber whereby adjustment of the adjustment means controls the pilot air pressure in said pilot air chamber to regulate the main air pressure entering the regulator inlet to a predetermined pressure at the air outlet.

5,441,078

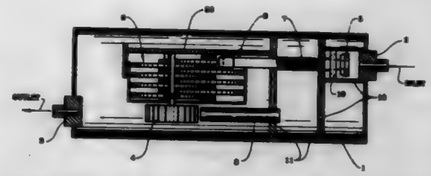
DEVICE FOR TERMINATING FLOW OF A LIQUID AFTER CONTINUOUS FLOW OF A PREDETERMINED DURATION

Anthony D. Gallagher, 1551 NW. 65th Ave., Plantation, Fla. 33313

Filed Aug. 20, 1993, Ser. No. 110,415

Int. Cl.[6] F16K *21/06*

U.S. Cl. 137—624.14 **9 Claims**



1. A device connected in a liquid supply line for preventing continuous flow of a liquid from a liquid source beyond a predetermined duration, comprising:

a housing;

an inlet and an outlet provided in said housing for fluidly connecting said housing in series with the liquid supply line;

means for interrupting flow of liquid movable between an open position, wherein liquid is allowed to flow through said housing by entering said inlet and exiting said outlet, and a closed position wherein liquid flow through said housing substantially terminates;

said means for interrupting flow of liquid biased to a normally open position by a biasing means;

a means for measuring the duration of flow of water through said housing, said means for measuring having a means for moving said means for interrupting after a predetermined time of constant flow of liquid through said housing to the closed position;

bypass means for allowing a generally small amount of liquid from said liquid source to enter said housing downstream of said means for interrupting when said means for interrupting is in the closed position; and,

means for automatically opening said means for interrupting to the normally open position once hydrostatic pressure within said liquid on the upstream and downstream sides of said means for interrupting are equal.

5,441,079

MANIFOLD VALVE ASSEMBLIES

Robert D. Zimmerly, Kenosha, Wis., assignor to Tri-Clover, Inc., Kenosha, Wis.

Filed Apr. 22, 1994, Ser. No. 232,817

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[6] F16K *11/22*

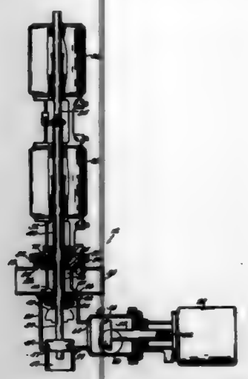
U.S. Cl. 137—637.2 **13 Claims**

1. A manifold valve assembly, comprising: a first valve body formed of a valve cylinder having an upper end and a lower end, an inlet port at the upper end thereof, an outlet port on the lower end thereof aligned with said inlet port;

an actuator assembly fitted in said cylinder including: two aligned upper and lower valve actuators,

a first actuator rod attached to and actuatable by the uppermost of said actuators, one end of said rod projecting outward from said actuator, a valve stem attached to the projecting end of said actuator rod, having a valve plug for opening and closing said lower outlet port,

a second actuator rod attached to and actuatable by said lower actuator, said second rod being in the form of a hollow cylinder concentric and coaxial with said first actuator rod, said first and second rods being independently actuatable by said upper and lower actuators, a hollow cylindrical valve stem attached to the projecting end of said hollow actuator rod, having a valve plug for opening and closing said inlet port, said valve plug having



a central opening through which said first actuator is fitted and being positioned above said inlet port and being downwardly facing so that said inlet port is closed by extension of said second actuator rod,

a side outlet port on a side of said cylinder,

an independently controllable actuator assembly in said side outlet port including a valve actuator, an actuator rod attached to and actuatable by said actuator, one end of said rod projecting outward from said actuator, and a valve plug attached to the projecting end of said actuator rod for closing said outlet port, the bottom of said side outlet port being located below the lowermost surface of the lower end of said cylinder whereby liquids can be drained by gravity from said cylinder when said side outlet is open and said inlet and aligned outlet are both closed.

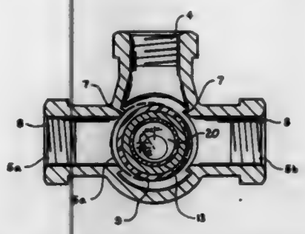
5,441,080

ECCENTRICALLY ROTATABLE SLEEVE TYPE 3-WAY VALVE

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Filed Sep. 26, 1994, Ser. No. 312,225
Int. Cl.[6] F16K *11/04*
U.S. Cl. 137—625.46 **4 Claims**

1. Eccentrically rotatable sleeve type three-way valve, comprising a housing having at least one inlet port and two outlet ports and one central opening having a central longitudinal axis and enlarged mid-section and extending essentially perpendicular to said outlet ports, the interface between said outlet ports and the perpendicular central opening constituting valve seats, a flexible sleeve inserted within the central opening, a cylindrical core snugly fitting within said flexible sleeve and extending in width beyond the cross-sectional dimension of said outlet ports, a shaft having an axis of rotation and extending through the length of said central opening and having an eccentric element, said axis of rotation being offset from said central longitudinal axis, said core having a bore cooperatively engaging with the shaft and having suitably configured portions to engage said eccentric element of the shaft and capable of causing the lateral displacement of said core selectively toward either of said outlet ports thereby forcing the central portion of said flexible sleeve to make a complimentary motion and thereby causing the sleeve to contact one of the



valve seats to close off and prevent fluid from flowing from the inlet to one of the outlet ports upon sufficient rotational displacement of said shaft, and suitable closure means attached to either terminating end of said central opening, and retaining suitable sealing means there between to prevent the escape of fluid between said central opening and said closure means.

5,441,081

IMMERSION TUBE FOR A CYCLONE

Hans-Dietmar Maury, Hindemithstrasse 5, 59227 Ahlen, Germany

Filed Oct. 29, 1993, Ser. No. 144,772
Claims priority, application Germany, Oct. 31, 1992, 42 36 895.2
Int. Cl.[6] F16L *11/16*
U.S. Cl. 138—44 **14 Claims**



1. An immersion tube for a cyclone, said immersion tube comprised of:

a plurality of rings stacked atop one another and connected to one another;

each said ring comprised of a plurality of plate-shaped segments positioned at a same level;

said plate-shaped segments of one said ring being suspended under the force of gravity from said plate-shaped segments of an other said ring positioned above said one ring for connecting said segments of each said ring to one another;

each said segment having contact surfaces for connecting each said segment of said one ring to said segments of said other ring positioned above said one ring, wherein said contact surfaces comprise first inclined planes facing outwardly with respect to said immersion tube;

said plate-shaped segments of each one of said rings abutting one another so as to form a closed annular structure; and

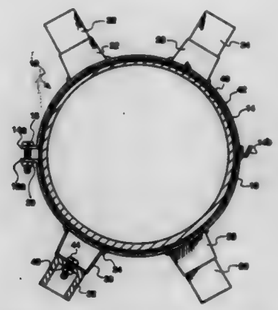
wherein any two abutting ones of said plate-shaped segments of said other ring positioned above said one ring are clamped together by one of said plate-shaped segments of said one ring in a circumferential direction of said immersion tube.

5,441,082

CASING SPACER

Sam Eakew, Atlanta, Ga., and William L. Kane, Somonauk, Ill., assignors to Cascade Waterworks Manufacturing Co., Yorkville, Ill.

Filed Aug. 30, 1994, Ser. No. 297,876
Int. Cl.[6] F16L *9/18*
U.S. Cl. 138—112 **9 Claims**



1. A casing spacer for positioning a carrier pipe carrying a fluid material within a unitary outer casing having a generally circular cross section, said casing spacer comprising:

a first semi-circular shell member having a flange on a first lateral edge thereof;

a second semi-circular shell member having a flange on a first lateral edge thereof;

a hook portion disposed on a second, opposed lateral edge of said first shell member;

means defining an aperture adjacent a second, opposed lateral edge of said second shell member, wherein said aperture is adapted for receiving said hook portion for securely coupling the second lateral edges of said shell members when said shell members are disposed in tight fitting engagement about the carrier pipe, wherein said aperture is elongated extending substantially the entire length of said second shell member and said hook portion extends substantially the entire length of said first shell member, and wherein said hook portion includes a generally flat, elongated section having beveled corners or having corners with a radius on opposed edges thereof;

coupling means for securely connecting the flanges of said first and second shell members for maintaining said shell members disposed about and engaging the carrier pipe;

one or more risers attached to an outer surface of each of said shell members for engaging an inner surface of the casing in maintaining the carrier pipe in fixed position within and spaced from the outer casing; and

a plurality of runners each disposed on a distal end of a respective riser to facilitate insertion of said casing spacer into the outer casing.

5,441,083

INSULATION SYSTEM FOR CONDUIT OR CONTAINER WHEREIN INNER AND OUTER WATER-ABSORBING LAYERS CONNECT THROUGH SLOT IN INTERMEDIATE HEAT-INSULATING LAYER

Vagn Korsgaard, Horsholm, Denmark, assignor to Hygrowick-International APS, Horsholm, Denmark

PCT No. PCT/DK91/00132, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/18237, PCT Pub. Date Nov. 28, 1991
PCT Filed May 14, 1991, Ser. No. 945,983
Claims priority, application Denmark, May 14, 1990, 1192/90
Int. Cl.[6] F16L *9/14*
U.S. Cl. 138—149 **4 Claims**



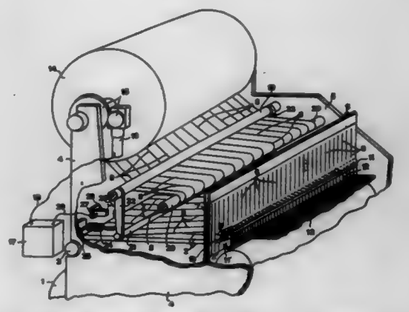
1. The combination of a conduit or container having a surface temperature below the dew point of surrounding air and an insulation system comprising an inner water-absorbing layer in contact with the surface of the conduit or container, a heat-insulating layer located on an exterior side of the inner layer and defining an opening therethrough, and an outer water-absorbing layer, the inner and outer water-absorbing layers being in mutual contact through the opening in the heat-insulating layer such that water absorbed by the inner layer can be transported from the inner layer to the outer layer by capillary suction.

5,441,084

SYSTEM FOR MAINTAINING A CONSTANT TERRY LOOP HEIGHT IN TERRY CLOTH DURING REVERSE MOVEMENT OF THE TERRY LOOM

Luciano Corain; Ruggero Manzardo, and Vittorio Apolloni, all of Venice, Italy, assignors to Nuovopignone - Industrie Meccaniche E Fonderia S.p.A., Florence, Italy

Filed Feb. 9, 1994, Ser. No. 193,870
Claims priority, application Italy, Feb. 11, 1993, MI93A0235
Int. Cl.[6] D03D *39/22, 49/10*
U.S. Cl. 139—25 **2 Claims**



1. A system for maintaining a constant terry height in terry cloth during reverse movement of a terry loom following a loom stoppage comprising:

a first beam for feeding base warp yarns, a second beam for feeding terry warp yarns rotated by an electric motor, an

electrical control center for controlling said electric motor to rotate said second beam in a forward direction to feed said terry warp yarns a specified amount after said loom stoppage, a spring loaded-floating roller for maintaining tension in said terry warp yarns and adapted to be attached to said loom by a loading spring fastened to one side of said roller, and a reed for a weft beat-up in two positions;

the system further including a proximity sensor positioned at a location spaced from said spring-loaded floating roller, said proximity sensor disposed on the same side of said spring-loaded floating roller as the losing spring thereof, with said proximity sensor spaced from said spring-loaded floating roller by a distance equal to a length of warp yarn which the second beam takes up during a reverse movement;

said sensor being connected to said electrical control center so that upon detection of the floating roller it causes said control center to first stop the electric motor and said second beam previously driven in said forward direction and then immediately afterwards to reverse both the motor and the beam directions;

whereby upon said loom stoppage the electric motor drives said second beam in the forward direction such that said spring-loaded floating roller moves said distance to be detected by said proximity sensor and thereafter during said reverse movement the amount of terry warp yarn taken up by said second beam is limited to said specified amount fed as said spring-loaded floating roller is moved said distance.

5,441,085

WARP THREAD INSERTION DEVICE FOR SERIES-SHED LOOMS

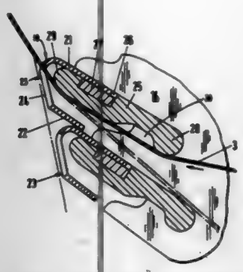
Andreas Hunziker, Nänikon, and Rudolf Frischknecht, Rüti, both of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

Filed Nov. 19, 1993, Ser. No. 154,835

Claims priority, application European Pat. Off., Feb. 26, 1993, 93810141.7

Int. Cl.[6] D03D *41/00*

U.S. Cl. 139—28 **8 Claims**



1. An insertion device for a series-shed loom having a rotor including combs and shedding members for guiding warp threads over a predetermined angular region for shedding, the device comprising a number of laying bars each provided with a recess for guiding the warp threads and each being displaceable parallel to the axis of rotation of the rotor for the insertion of the warp threads into shedding high and low points, a drive mechanism for moving the laying bars to and fro in the direction of the rotor axis for inserting the warp threads according to a program into the shedding points, and a fixed guide bar associated with each laying bar, the fixed guide bar being formed to deflect the warp thread to be inserted for alignment with the recess in the laying bar.

5,441,086

GRIPPER SHUTTLE FOR A LOOM

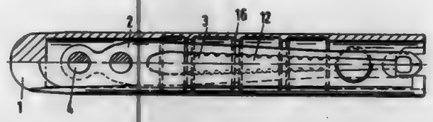
Daniel Nänni, Winterthur, Switzerland, assignor to Sulzer Ruti AG, Ruti, Switzerland

Filed Jan. 10, 1994, Ser. No. 178,700

Claims priority, application Germany, Feb. 18, 1993, 43 05 030.1

Int. Cl.[6] D03D *47/24*

U.S. Cl. 139—196.2 **12 Claims**



1. A gripper projectile for a loom, having:

a housing made as a hollow body,

a weft yarn clamp which is arranged in the housing and includes a pair of clamp arms extending in a longitudinal direction prestressed with elasticity towards one another through a yoke which connects the clamp arms;

an insert body of elastic material inserted between the clamp arms and confronting the clamp arms at [an]inside edge faces thereof, and

at least one connector element which connects the housing and the weft yarn clamp together, the improvement to the insert body including:

the insert body of elastic material has individual sawteeth forming a sawtooth like profile at the inside edge faces confronting the clamp arms;

the sawtooth like profile resting with the individual sawteeth having deformation against the inside edge faces of the clamp arms.

5,441,087

YARN STORAGE AND FEED DEVICE UTILIZING CORRECTIONAL AIR JET NOZZLES

Ake Alberyd, Ulricehamn, and Jerker Hellström, Nol, both of Sweden, assignors to Iro AB, Ulricehamn, Sweden

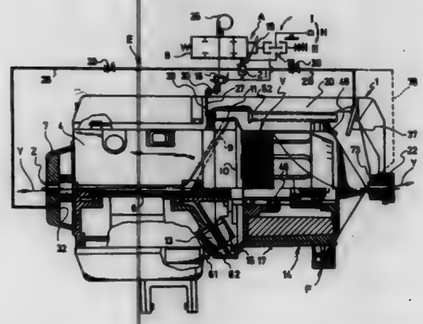
PCT No. PCT/EP92/01362, § 371 Date Apr. 19, 1994, § 102(e) Date Apr. 19, 1994, PCT Pub. No. WO92/22693, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 16, 1992, Ser. No. 167,937

Claims priority, application Sweden, Jun. 18, 1991, 9101941; Germany, Jun. 20, 1991, 41 20 413.1

Int. Cl.[6] D03D *47/34*

U.S. Cl. 139—452 **18 Claims**



1. A yarn storage and feed device for a textile machine, comprising:

(a) a main body;

(b) a yarn winding element supported on said main body and drivingly supported for rotation;

(c) a storage drum provided with a storage surface thereon for a yarn supply consisting of tangential windings of yarn wound upon said storage surface, the yarn being withdrawn endwise of said storage drum and through a guide opening;

(d) a threading device which comprises a compressed-air conveying system that includes direction-jet nozzles provided between a point of inlet into said yarn storage and feed device and said guide opening, at least one first said direction-jet nozzle being arranged between said point of inlet and an outlet of said winding element, and at least a second said direction-jet nozzle being arranged downstream of said outlet; and

(e) an activating device for activating said direction-jet nozzles, said activating device including means for defining two operating modes including (1) a partial-failure mode which represents a condition wherein yarn is still stored on said storage drum after a yarn breakage has occurred between said inlet and said storage drum and (2) a total-failure mode which represents a condition wherein a yarn breakage has occurred and said yarn supply has been totally consumed from said storage surface, said activating device having means for activating only said first direction-jet nozzle when said activating device is in said partial-failure mode, said activating device having means for activating said first and second direction-jet nozzles when said activating device is in said total-failure mode, whereby in the event of a partial failure the yarn is blown downstream of said outlet and in the event of a total failure the yarn is blown from the point of inlet to the guide opening.

5,441,088

LP GAS CAN AND GAS RECYCLING APPARATUS

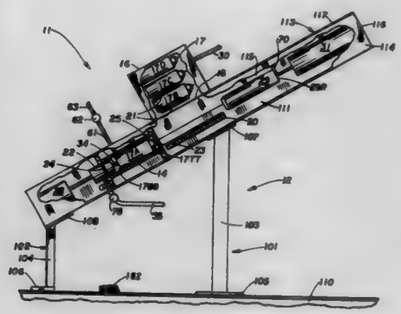
Paul J. O'Neill, Novato, Calif., and Gary P. Wittig, Gardnerville, Nev., assignors to Aervoe-Pacific Company, Inc. Nevada, Gardnervill, Nev.

Filed Jan. 5, 1994, Ser. No. 177,529

The portion of the term of this patent subsequent to Nov. 22, 2011, has been disclaimed.

Int. Cl.[6] B67B *7/00*

U.S. Cl. 141—51 **25 Claims**



1. An LP gas can compaction and gas recycling apparatus comprising:

I. a gas can compaction portion which comprises:

a. a housing having a sealable compaction chamber closeable on each end, by a pair of opposed moving pistons, the first of which pistons includes a needle for piercing an LP gas can, and a second piston for crushing an LP gas can, all within said compaction chamber;

b. means for evacuating air from the compaction chamber after sealing, prior to the needle of said first piston piercing a can located in said chamber;

c. and a passageway from said first piston for evacuation of the fluid content of said LP gas can's contents from said compaction chamber; and

II. means for collection and storage of residual LP gas collected from said passageway in fluid communication therewith.

5,441,089

GUIDING ASSEMBLY FOR GUIDING A MANUALLY CONTROLLED CUTTING TOOL

Jim Lazaron, Lot 1, 1 Killara Road, Cowra NSW 2794, Australia

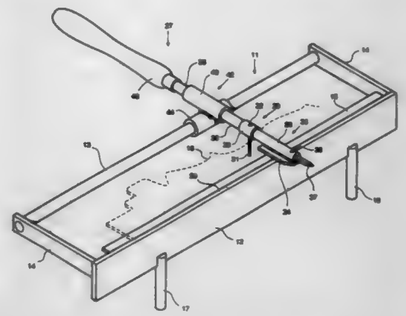
PCT No. PCT/AU92/00192, § 371 Date Oct. 27, 1993, § 102(e) Date Oct. 27, 1993, PCT Pub. No. WO92/19417, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 29, 1992, Ser. No. 140,025

Claims priority, application Australia, Apr. 29, 1991, PK5846

Int. Cl.[6] B27C *7/06*

U.S. Cl. 142—49 **14 Claims**



1. A retrofit kit for a lathe, the kit comprising:

a manually controlled cutting tool having a longitudinal axis, the manually controlled cutting tool including restraining means for restraining rotation of the cutting tool about the Longitudinal axis of the cutting tool, the restraining means being in the form of a flat shoe; and

a guiding assembly for guiding the manually controlled cutting tool relative to a rotational axis of the lathe, said guiding assembly including:

a tool rest extending parallel to the rotational axis of the lathe, the flat shoe of the manually controlled cutting tool seating on the tool rest to restrain rotation of the cutting tool about its longitudinal axis during use;

tool mounting means for mounting the manually controlled cutting tool for free sliding movement across the tool rest normal to the rotational axis of the lathe, the tool mounting means being in the form of a tool mounting sleeve having a longitudinal axis, the longitudinal axis of the tool mounting sleeve being normal to the rotational axis of the lathe; and

guide means for guiding the tool mounting means for free sliding movement parallel to the rotational axis of the lathe, the guide means including a guide sleeve having a longitudinal axis which is parallel to the rotational axis of the lathe, and a guide shaft on which the guide sleeve is slidably mounted;

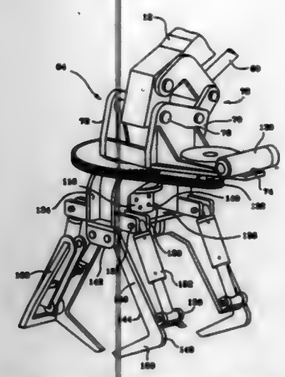
the tool mounting sleeve and guide sleeve being integral, and the tool rest and guide shaft constituting opposed frame members of a substantially rectangular frame which is adapted to be removably mounted with respect to the lathe.

5,441,090

TREE CUTTING AND WOOD MANIPULATING GRAPPLE

Terrence R. Hill, P.O. Box 462, Greelz, Ontario K0A 1Z0, Canada, and Bruce A. Hackett, 1811 Groves Rd. R.R. #2, Russell, Ontario, Canada K4R 1E5

Filed Feb. 1, 1994, Ser. No. 189,644
Int. Cl.[6] A01G *23/08*
U.S. Cl. 144—3 D 22 Claims



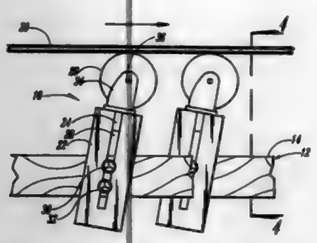
12. A boom comprised of segments pivotally engaged to each other, and having between at least two of said segments adjacent to each other a linkage pivotally connecting said two adjacent segments, said linkage comprising a linkage body pivotally engaged to both of said segments, said segments having upper and lower faces, said linkage comprising a linkage body having upper and lower portions, said linkage body being pivotally engaged to both of said segments and having first and second articulated mount arms each having first and second ends, said first arm being pivotally engaged at a first end thereof to said upper portion of said linkage body and said second arm being pivotally engaged at a first end thereof to said lower portion of said linkage body, both of said arms being pivotally elongated at said second end to a corresponding boom segment, said boom further including longitudinally extensible expansion means extending from said upper and lower faces, respectively, of said boom segments.

5,441,091

ROLLER SUPPORT FOR SAW WORKPIECE

Richard M. Collins, 5300 NW. 66th Pl., Johnston, Iowa 50131

Filed Dec. 28, 1992, Ser. No. 997,518
Int. Cl.[6] B25H *1/00*
U.S. Cl. 144—287 16 Claims



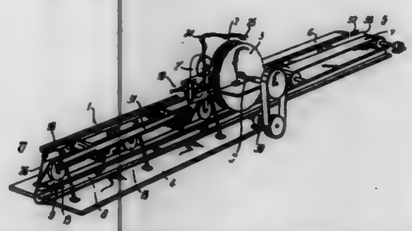
1. A roller support for a work piece comprising,
a base,
a support attachment including a roller assembly having a pair of spaced apart side plates having top and bottom ends, a roller mounted at the top end of the said roller assembly and said bottom end being open to receive said base, said base being straddled by said side plates, and
a bolt means connecting said side plates to said base for vertically adjustably positioning said side plates for roller assembly attachment for said roller assembly attachment to support a saw work piece, wherein said roller is swivelly mounted on the upper end of said pair of side plates.

5,441,092

METHOD AND APPARATUS FOR THE PRODUCTION OF HEART CENTERED, SUBSTANTIALLY SQUARE TIMBERS

Hale Randle, 4031 Rundlehorn Drive N.E., Calgary, Alberta, Canada T1Y 2K2

Filed Jul. 6, 1993, Ser. No. 86,112
Int. Cl.[6] B27B *1/00, 7/00, 31/00*
U.S. Cl. 144—378 7 Claims



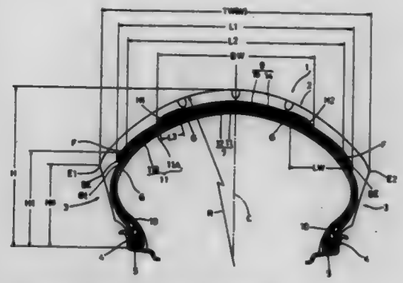
1. An improved portable saw mill of the type having a rigid frame, a horizontal rail mounted longitudinally on the rigid frame, a pair of arbors mounted on the rigid frame for rotation about parallel axes in a plane above and normal to the horizontal rail, a pair of circular saw blades each axially mounted for rotation on a respective one of the pair of arbors, means for adjusting the saw blades to selected positions spaced on opposite sides of the horizontal rail, driving means for rotating the arbors and saw blades, a carriage engaging the rail for movement therealong from a start position at one end of the rail to a stop position at the other end of the rail, the carriage dimensioned to pass between the saw blades at any selected position, dogging means to secure a log to the carriage, and means for reciprocating the carriage between the carriage start position and the carriage stop position past the saw blades, and wherein the improvement comprises:
raw log feed means comprised of a pair of elongate parallel channels spaced apart a fixed distance, the distance less than the anticipate average log length, disposed in a horizontal plane, perpendicular to and aligned with the carriage in the carriage's start position each channel incorporating a driven endless loop chain for drivingly engaging a log deposited at one end of the channels and conveying the log toward the carriage;
log centering means comprised of at least a pair of horizontally opposed and inwardly tapering rigid fingers, the fingers normally biased below the plane of the carriage and rail and to either side of the carriage and rail, hydraulic actuator means which, when activated, extend the fingers vertically upward on either side of the carriage and rail thereby centering any log mounted upon the carriage axially to the carriage and, when de-activated retract the fingers to below the plane of the carriage and rail;
means for rotating a log mounted upon the carriage comprised of at least a pair of horizontally opposed, oppositely driven sprockets, the sprockets engaging the log and rotating the log through 90° degrees about its axis;
means for removal of scrap wood and side cuts comprised of a pair of parallel, horizontally disposed conveyer belts located downstream of the saw blades with each belt axially aligned with a respective saw blade; and
cant removal means comprised of a horizontally disposed conveyer means located in close parallel proximity to the horizontal rail and carriage.

5,441,093

MOTORCYCLE RADIAL TIRE WITH FOLDED BREAKER PLY AND SPIRALLY WOUND BAND PLY

Hisashi Shirasyouji, Kobe, and Eiji Nakasaki, Kakogawa, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 720,213, Jun. 26, 1991, abandoned. This application Apr. 26, 1994, Ser. No. 233,720
Claims priority, application Japan, Jun. 27, 1990, 2-169622
Int. Cl.[6] B60C *3/04, 9/20, 9/26, 15/00*
U.S. Cl. 152—454 9 Claims



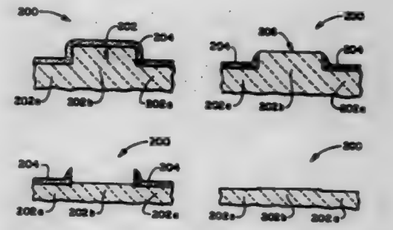
1. A motorcycle radial tire comprising
a tread portion curved so that the maximum cross section width of the tire lies between the tread edges,
a carcass having at least one ply of organic fiber cords extending between beads of the tire and turned up around bead cores disposed one in each bead to form a pair of turned up portions and a main portion therebetween,
a belt disposed radially outside the carcass and comprising a breaker and a band,
the breaker comprising a first ply disposed adjacently to the carcass and a second ply disposed radially outside of the first breaker ply,
the first and second breaker plies each being made of a sheet of parallel cords inclined with respect to the tire equator so that the first breaker ply cords cross the second breaker ply cords,
the edges of the first breaker ply being folded back upon the second breaker ply so that a space is provided between the axially inner edges of the two folded portions, the axial width of the first breaker ply being in a range of 0.85 to 0.95 times the tread width, and the axial width LW of each of the folded portions of the first breaker ply being in a range of 0.15 to 0.30 times tread width,
the band being disposed radially outside the breaker to extend over the space, the width of the band being no greater than 0.7 times the tread width, and
the band including a radially inner ply and a radially outermost ply, said inner ply having a first and a second axial edge and being formed of at least one continuous organic fiber cord which is wound spirally and continuously between said first edge and said second edge, said outermost ply being made of organic fiber cords wound spirally, the cords of said outermost ply being wound at an angle in the range of from greater than 0 degrees to 5 degrees with respect to the tire equator, said outermost ply having a symmetrical cord arrangement with respect to the tire equator, wherein
the turned up portions extending radially outwardly into the tread portion so that the radially outer edges thereof are secured between the breaker edge portions and the main portion,
the band and each folded portion of the first breaker ply overlap by a width of 10 to 30 mm,
the breaker includes at least one aromatic polyamide cord ply,
the band includes at least one nylon cord ply,
said outermost ply is wider than said inner ply, and
in said outermost ply, the cords winding direction in a half portion on one side of the tire equator is the reverse of that in the remaining half portion on the other side of the tire equator.

5,441,094

TRENCH PLANARIZATION TECHNIQUES

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 711,624, Jun. 6, 1991, Pat. No. 5,290,396, and Ser. No. 979,792, Nov. 20, 1992, Pat. No. 5,298,110, said Ser. No. 979,792, is a division of Ser. No. 711,624, Jun. 6, 1991, Pat. No. 5,290,396. This application Feb. 8, 1994, Ser. No. 193,274
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—636.1 9 Claims



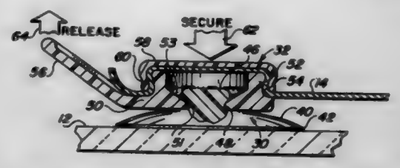
1. Method of removing at least the protruding portions of the thermally-grown oxide isolation features, comprising:
applying a cap layer onto a surface of a semiconductor wafer, said wafer having thermally-grown oxide isolation features, said oxide features including portions protruding above the surface of the wafer;
polishing the wafer sufficiently to create openings in the cap layer atop the protruding portions of the oxide features;
in a first etching step, etching to remove the protruding portions of the oxide features, the cap layer protecting other portions of the wafer surface from etching, until the oxide features are substantially flush with the surface of the wafer .

5,441,095

DETACHABLY MOUNTED WINDSHIELD SCREEN

Brig E. A. Trethewey, 4238 N. 68th Pl., Scottsdale, Ariz. 85251

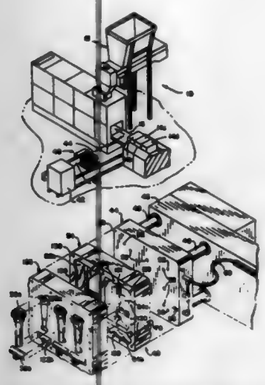
Filed Jan. 10, 1994, Ser. No. 179,119
Int. Cl.[6] B60J *1/20*
U.S. Cl. 160—370.21 21 Claims



1. A detachably mounted apparatus for covering a surface, said apparatus comprising in combination:
a) a sheet of material for protecting the surface;
b) a post mounted upon the surface;
c) a socket for detachable attachment to said post;
d) means for attaching said socket to said post;
e) a cap mountable upon said socket for retaining said sheet intermediate said socket and said cap; and

f) means for detaching said socket from said post.

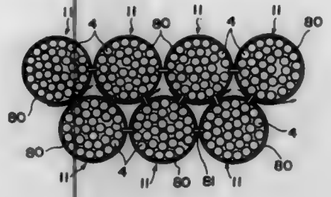
5,441,096
TWO-PIECE CORE MASK
Gary L. Wick, Wind Lake, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Jan. 31, 1994, Ser. No. 189,055
Int. Cl.[6] B22D *33/04*
U.S. Cl. 164—340 28 Claims



1. A core mask assembly for depositing a core within an internal cavity formed by the joinder of first and second cooperating mold sections, comprising:
a reciprocal carrying ram movable between a first core holding position and a second core depositing position;
a base member connectable to the reciprocal carrying ram;
a face plate connectable to the base member, the face plate including a pattern for receipt of the core;
means for removably mounting the face plate on the base member; and
means for aligning the face plate on the base member, said means for aligning including a pin assembly removably connected to the base member, the pin assembly including a removable first pin member extending from the base member, and a bushing assembly extending into a first side of the face plate, the bushing assembly including a first bushing member received within the face plate and removably connected thereto wherein the first bushing member defines a first pin receipt cavity for receipt of the first pin member therein so as to align the face plate with respect to the base member.

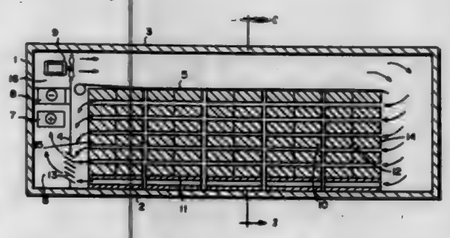
5,441,097
HEAT STORAGE TANK EQUIPPED WITH HEAT STORAGE MEMBERS AND FABRICATION PROCESS FOR THE SAME
Tetsuo Kanda; Eiji Kawata, both of Kanagawa; Noboru Ikeda, Saitama, and Manami Miyazaki, Kanagawa, all of Japan, assignors to Chiyoda Corporation, Japan
Filed May 16, 1994, Ser. No. 242,885
Claims priority, application Japan, May 19, 1993, 5-140045
Int. Cl.[6] F28D *19/00*
U.S. Cl. 165—10 15 Claims

1. A fabrication process of fabricating a heat storage tank, comprising the steps of:
arranging a plurality of heat storage members each having an open end and a closed end in a fill-up state in a heat storage tank so that the open ends of the heat storage members are faced up;
providing spacers supported on the exterior surfaces of the individual heat storage members with each spacer encircling and conforming to the circumferential contour of the exterior surface so that the heat storage members are spaced from one another at such an interval that heat transfer medium can flow through gaps between neighboring heat storage members;



introducing heat storage agent through the open ends of the heat storage members into the heat storage members; and supplying heat transfer medium into the heat storage tank.

5,441,098
SYSTEM FOR DEFROSTING FROZEN PACKED PRODUCTS
Jean J. Kristensen, Holstebro, Denmark, assignor to Morep Food Process Systems Limited, West Yorkshire, England
Filed May 7, 1992, Ser. No. 894,765
Claims priority, application Denmark, Sep. 7, 1989, 4419/89; WIPO, Sep. 4, 1990, PCT/DK90/00229
Int. Cl.[6] F25B *29/00*; A23L *3/365*
U.S. Cl. 165—17 1 Claim

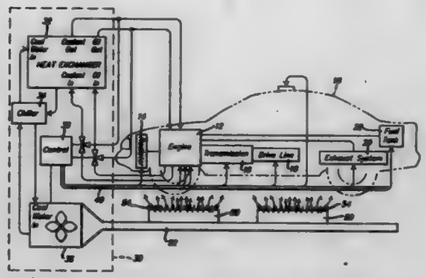


1. A thawing plant for thawing out deep-frozen packed products (10) that are piled with interspaces (12) and including a heating assembly (7), a blower (9) and means (4, 5) to provide a flow duct in which the products are piled along part of said duct, characterized by a temperature sensor (14) disposed on an upstream surface of a product farthest upstream in the pile and a microprocessor which receives a signal from the temperature sensor (14) and emits a control signal to the heating assembly (7).

5,441,099
METHOD AND APPARATUS FOR FORCIBLY COOLING COMPONENTS OF AN AUTOMOTIVE VEHICLE PRIOR TO EMISSION TESING
Adel K. Yasso, Grand Blanc, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 23, 1993, Ser. No. 110,236
Int. Cl.[6] F28D *1/00*
U.S. Cl. 165—41 8 Claims

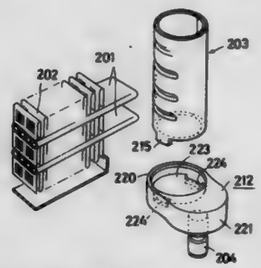
1. An apparatus for cooling selected components of a vehicle including an engine from a first temperature to a second temperature, said vehicle including engine oil and engine coolant operatively associated therewith, said apparatus comprising:
a heat exchanger separate from said engine;
circulating means for circulating said engine oil and engine coolant between said engine and said heat exchanger at a predetermined flow rate;

variable valve means for controlling said flow rate between said engine and heat exchanger;
blower means for forcing and directing air at said components;
feedback means for providing a temperature signal from said engine oil, engine coolant and said components; and



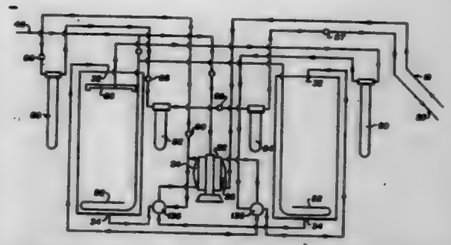
control means, connected to said feedback means, for controlling the operation of said blower means and circulation means, said control means connected to said variable valve means, whereby said component is cooled in a controlled manner to a second temperature.

5,441,100
HEAT EXCHANGER
Shinichi Ueda, Shiga, and Toshinori Tokutake, Oyamashi, both of Japan, assignors to Showa Aluminum Corporation, Osaka, Japan
Filed Jun. 1, 1993, Ser. No. 71,566
Claims priority, application Japan, Jun. 2, 1992, 4-141265
Int. Cl.[6] F28F *9/00*
U.S. Cl. 165—67 6 Claims



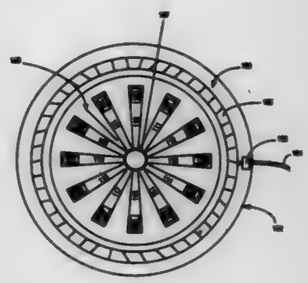
1. A heat exchanger comprising:
tubes and fins alternating with the tubes;
the tubes and the fins being stacked one on another;
a pair of hollow headers;
each tube having both ends connected to the headers in fluid communication therewith;
upper and lower caps brazed to and liquid-tightly closing upper and lower open ends of the headers, respectively; and
pins each formed integral with and protruding upwards or downwards from the upper or lower cap attached to each header, wherein the pins are adapted to secure thereto one or more brackets for mounting the heat exchanger on a structural base such as an automobile body,
each pin extending eccentrically of an axis of the cap.

5,441,101
RECYCLING MACHINE
John C. S. Johnsson, 1447 Delia Dr., Port Coquitlam B.C., Canada V3C 2V9
Filed Jan. 8, 1993, Ser. No. 1,974
Int. Cl.[6] F28G *13/00*
U.S. Cl. 165—95 23 Claims



1. Apparatus to change and recondition a coolant of a car having a radiator, an engine block and a top hose connecting the radiator and the engine block, said apparatus comprising:
a coupling adapted to be received in said top hose;
an inlet pipe and an outlet pipe adapted to be connected to said coupling;
a pump connected to said inlet pipe and said outlet pipe;
first and second tanks, each having an inlet and an outlet, to receive coolant from said pump, to supply coolant to said pump, to store reconditioned coolant and to receive coolant to be reconditioned;
valves to direct coolant flow;
whereby coolant can be withdrawn from the radiator, pumped to at least one of said first or second tanks reconditioned in that tank, passed to the an other of said first and second tanks and returned to the engine block.

5,441,102
HEAT EXCHANGER FOR ELECTRONIC EQUIPMENT
Trevor Burward-Hoy, Cupertino, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.
Filed Jan. 26, 1994, Ser. No. 186,989
Int. Cl.[6] F28D *15/02*
U.S. Cl. 165—104.25 10 Claims



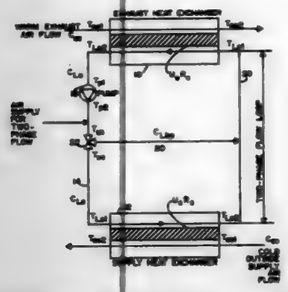
1. A heat transfer apparatus, comprising:
a heat pipe containing a heat transfer liquid;
a magnetic coil surrounding the heat pipe, the magnetic coil for producing a magnetic field when an electric current is supplied to the magnetic coil, the magnetic field passing through the heat pipe; and
an agitator disposed in the heat pipe, the agitator for agitating the heat transfer liquid in response to the magnetic field.

5,441,103

TWO-PHASE FLOW HEAT EXCHANGE

Kamiel Rezkallah, and Robert W. Besant, both of Saskatoon, Canada, assignors to Mechanical Engineering Dept., Saskatoon, Canada

PCT No. PCT/CA91/00438, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO92/11494, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 11, 1991, Ser. No. 94,055
Claims priority, application United Kingdom, Dec. 24, 1990, 9028077
Int. Cl.[5] F28D *15/00*
U.S. Cl. 165—104.29 25 Claims



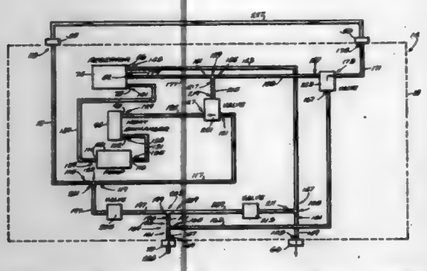
1. In a heat exchange process comprising providing a liquid to gas heat exchanger having a liquid side including a plurality of liquid carrying tubes and a gas side and passing a liquid through the tubes of the liquid side of the heat exchanger and passing a first gas through the gas side of the exchanger for heat exchange with the liquid, the invention comprising pressurizing a second gas and injecting the second gas under pressure into the liquid passing through the liquid side of the heat exchanger to provide a two phase flow through the side of the heat exchanger and controlling heat transfer between the liquid and gas sides of the heat exchanger by controlling the ratio of second gas to liquid passing through the liquid side of the heat exchanger.

5,441,104

FLUID CIRCULATOR AND TEMPERATURE REGULATOR

Timothy G. J. Ehr, Menomonee Falls; Michael E. Hansen, Waukesha, and Scott T. Breyer, Oconomowoc, all of Wis., assignors to Fotodyne Incorporated, Hartland, Wis.

Continuation-in-part of Ser. No. 820,529, Jan. 14, 1992, Pat. No. 5,323,846. This application Jan. 13, 1994, Ser. No. 181,579
Int. Cl.[5] F28D *15/00*
U.S. Cl. 165—104.32 4 Claims



1. A fluid circulator and temperature regulator apparatus for use in an electrophoresis process with a sequencing cell including a cooling jacket having an inlet and an outlet, said apparatus comprising an inlet port adapted to be connected to the cooling jacket outlet, an outlet port adapted to be connected to the cooling jacket inlet, a fill port, an overflow port, a reservoir having an inlet, an outlet and a vent, a heat exchanger having an inlet and an outlet, a pump having an inlet and an outlet, a first conduit having a first end communicating with said inlet port and having a second end, a second conduit having a first end and having a second end communicating with said heat exchanger inlet, a third conduit having a first end communicating with said heat exchanger outlet and having a second end communicating with said pump inlet, a fourth conduit having a first end communicating with said pump outlet and having a second end communicating with said reservoir inlet, a fifth conduit having a first end communicating with said reservoir outlet and having a second end, a sixth conduit having a first end and having a second end communicating with said outlet port, a seventh conduit having a first end communicating with said fill port and having a second end, and valve means operable in a first mode for connecting said second end of first conduit with said first end of said second conduit and for connecting said first end of said sixth conduit with second end of said seventh conduit, operable in a second mode for connecting said second end of said first conduit with said first end of said second conduit and for connecting said second end of said fifth conduit with said first end of said sixth conduit, and operable in a third mode for connecting said first end of said second conduit with said second end of said fifth conduit and for connecting said first end of said sixth conduit with said second end of said seventh conduit.

5,441,105

FOLDED PARALLEL FLOW CONDENSER TUBE

Keiv P. Brummett, Atoka, Okla.; Harold A. Carpenter, Jr., Fort Worth, Tex.; Scott L. Hutto, and John M. McCrady, both of Burleson, Tex., assignors to Wynn's Climate Systems, Inc.

Filed Nov. 18, 1993, Ser. No. 155,079
Int. Cl.[6] F28D *1/03*; F28F *1/40*
U.S. Cl. 165—153 19 Claims

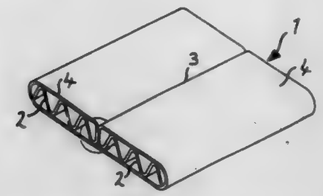
1. A heat exchanger comprising in combination:
a pair of oppositely disposed header pipes having a plurality of slots extending along the length of each pipe;
a set of generally parallel, substantially flat tubes, each tube having a longitudinal axis and opposite facing upper and lower walls which are parallel to each other and joined together along longitudinally extending leading and trailing side edges relative to the direction of air movement over the tube, each tube having an upstream end and a downstream end which are inserted into the slots and joined to the header pipes for providing fluid communication between the header pipes; and
a plurality of inwardly protruding ridges which protrude from an inner surface of at least one of the upper and lower walls of each tube toward the other of the upper and lower walls, each of the ridges having a length that is substantially less than the length of each wall, each of the ridges having an upstream end and a downstream end, the ridges being laterally spaced apart and being staggered along the length of said at least one of the upper and lower walls so that the upstream ends of laterally adjacent ridges are spaced at different distances to the upstream end of the tube and the downstream ends of the laterally adjacent ridges are spaced at different distances to the downstream end of the tube, the ridges forming discrete configurations in which the upstream ends of the ridges in each configuration are aligned along a substantially oblique line which extends across the width of each of the upper and lower walls so that fluid flowing through the tube is directed toward the leading side edge of the tube; and wherein
the ridges in each configuration interlacing longitudinally with the ridges in adjacent upstream and downstream configurations, and the ridges in every second laterally spaced apart ridge having upstream ends aligned along a substantially oblique line.

5,441,106

HEAT EXCHANGE TUBES

Taizo Yukitake, Llanelli, United Kingdom, assignor to Llanelli Radiators Limited, Llanelli, United Kingdom

PCT No. PCT/GB93/01332, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO94/00726, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 24, 1993, Ser. No. 313,235
Claims priority, application United Kingdom, Jun. 24, 1992, 9213358
Int. Cl.[6] F28F *1/40*
U.S. Cl. 165—183 12 Claims



1. In a longitudinally extending heat exchange tube comprising an outer wall having an inner face and an outer face, and a plurality of internal fins extending longitudinally of the tube, the fins and outer wall being formed from a unitary portion of sheet or strip material, each of the fins comprising a respective corrugated portion of the sheet or strip material, the improvement comprising that said fins comprise a first series of fins and a second series of fins, each of said first and second series comprising a plurality of said fins successively spaced in mutually opposed directions, from a common longitudinal seam line which opposed directions are transverse to the longitudinal direction of said tube, each of said fins being in the interior of said tube with alternating troughs and crests in thermally conductive contact with respective opposed portions of said inner face.

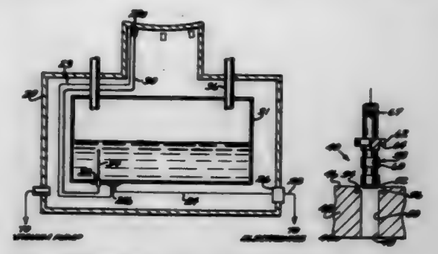
8. A method of forming a heat exchange tube comprising forming respective series of fins in respective deformable portions of strip or sheet material, and subsequently deforming further portions of the strip or sheet material to provide an outer wall surrounding the series of fins, whereby the series of fins extend from a common longitudinal seam line in mutually opposed directions which directions are transverse to the longitudinal direction of the seam line.

5,441,107

SOLID CONDUCTOR THERMAL FEEDTHROUGH

Keith A. Esser, San Diego; Scott W. Riley, Oceanside, and Laurence Warden, San Diego, all of Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jun. 21, 1993, Ser. No. 80,743
Int. Cl.[6] F28F *7/00*; F25B *19/00*
U.S. Cl. 165—185 20 Claims



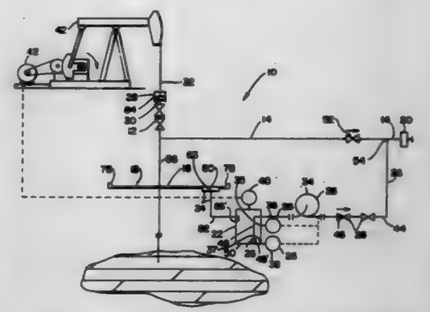
1. A thermal feedthrough, comprising:
a fiber-reinforced plastic plate having a first surface and a second surface, and further having a plate bore therethrough, the plate bore having a first diameter over a first portion of its length and a second, larger diameter over a second portion of its length adjacent to the second surface;
a metallic conductive plug having a first diameter over a first portion of its length and a second, larger diameter over a second portion of its length, the first portion of the plate bore being sufficiently large to receive the first portion of the plug therein with an interference fit, and the second portion of the plate bore being sufficiently large to receive the second portion of the plug therein, the plate being in radial compression in the region of the plate bore; and
a nonmetallic adhesive seal between the plate bore and the plug.

5,441,108

FLUID SPILL CATCHING, CONTAINING, COLLECTION AND RECOVERY SYSTEM FOR WELLHEADS

Michael E. Jenkins, Sour Lake; Charles A. Roberts, Hillister, and Steven D. Stripling, Houston, all of Tex., assignors to R.J.S., Inc., Katy, Tex.

Filed Sep. 15, 1994, Ser. No. 306,598
Int. Cl.[6] E21B *33/08*
U.S. Cl. 166—53 14 Claims



1. A system for catching, containing and collecting fluids spilled from and/or adjacent to a wellhead and for recovering the spilled fluids by automatically transporting the spilled fluids to a wellhead production flowline, said system comprising:

first means located around and beneath said wellhead defining a containment area for catching and containing said fluids;
a wellhead production flowline connected in fluid communication with said wellhead for carrying fluid product from said wellhead to a product receiving location;
a container;
second means connected in fluid communication with said first means and with said container for draining said fluids from said first means into said container; and
third means in operative relationship with said container and with said production flowline for automatically transporting said fluids from said container to said production flowline and to said product receiving location.

5,441,109
ENZYME BREAKERS FOR BREAKING FRACTURING FLUIDS AND METHODS OF MAKING AND USE THEREOF

D. V. Satyanarayana Gupta, The Woodlands; Bethicia B. Prasek, Houston, and Richard D. Horn, Spring, all of Tex., assignors to The Western Company of North America, Houston, Tex.

Filed Apr. 19, 1994, Ser. No. 229,870
Int. Cl.[6] E21B *43/26*
U.S. Cl. 166—300 **7 Claims**

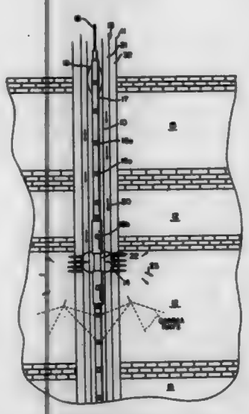
1. A method of fracturing a subterranean formation which surrounds a well bore comprising the steps of:
(a) injecting a fracturing fluid under pressure into the well bore;
(b) injecting an enzyme breaker having activity only above a selected temperature, said selected temperature being at least equal to or greater than 100° F.;
(c) maintaining the fluid in the well bore under sufficient pressure to fracture the formation; and
(d) breaking the fluid with the breaker.

5,441,110
SYSTEM AND METHOD FOR MONITORING FRACTURE GROWTH DURING HYDRAULIC FRACTURE TREATMENT

George L. Scott, III, Roswell, N. Mex., assignor to The Energex Company, Roswell, N. Mex.

Continuation of Ser. No. 262,770, Jun. 20, 1994, Pat. No. 5,413,179, which is a continuation-in-part of Ser. No. 48,838, Apr. 16, 1993, Pat. No. 5,322,126. This application Jan. 17, 1995, Ser. No. 373,792
The portion of the term of this patent subsequent to May 9, 2012, has been disclaimed.
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—308 **29 Claims**

1. A method for monitoring the hydraulic fracturing of an earth formation traversed by a well borehole, comprising:
(a) hydraulically fracturing the formation by pumping a fracturing fluid into the formation at a first predetermined depth;
(b) introducing a radioactive tracer material into the fracturing fluid; and
(c) while the fracturing fluid is being pumped, monitoring spectral emissions including emissions from the radioactive tracer material with at least one detector in the borehole, wherein one of said detectors is placed at a second predetermined depth adjacent to a pre-designated critical

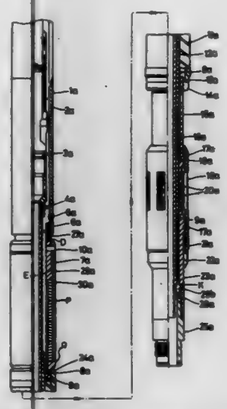


depth past which said hydraulic fracturing is desired not to extend.

5,441,111
BRIDGE PLUG

Drummond Whiteford, Multimber, England, assignor to Petroleum Engineering Services Limited, Aberdeen, United Kingdom

Filed Mar. 1, 1994, Ser. No. 204,679
Int. Cl.[6] E21B *33/127*
U.S. Cl. 166—387 **10 Claims**



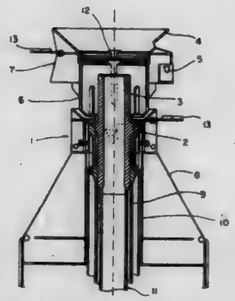
10. A method of locating and retaining a bridge plug within a casing or tubing conduit, the bridge plug comprising a plurality of outermost substantially cylindrical members dependent from one another, and a plurality of innermost substantially cylindrical members dependent from one another, a packing element, an outer surface of which is dimensioned to engage an inner surface of the casing or tubing conduit, in use, so as to provide a seal thereat, and a plurality of slips disposed around the outer surface of the plug, the method comprising setting the plug at a desired position in the casing or tubing conduit by urging the outermost and innermost members relative to one another in their longitudinal directions, in so doing anchoring the slips and locating the packing element on the inner surface of the casing or tubing conduit, and providing a predetermined

force to the packing element greater than that required to provide a seal by means of biasing means held longitudinally between two of the outermost members, whereby the plug is retained within the casing or tubing conduit.

5,441,112
INTEGRATED BASE FOR OIL DRILLING AND PRODUCTION WORK

Eduardo de Melo Sanches; Samir P. Awad; Cezar Augusto Silva Paulo, and Orlando José Soares Ribeiro, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasilerio S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Apr. 26, 1994, Ser. No. 233,409
Claims priority, application Brazil, Apr. 28, 1993, 9301684
Int. Cl.[6] E21B *7/128*
U.S. Cl. 166—358 **3 Claims**

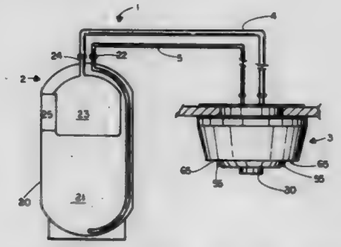


1. An integrated oil drilling and producing base comprising a single guiding funnel for guiding a wet Christmas tree into position for connection to a high pressure well head, said single guiding funnel having a cylindrical downcomer for resting directly on the high pressure well head, at least one cradle on said guiding funnel and at least one pipeline terminal hingedly mounted on said at least one cradle, said guiding funnel having a plurality of slits for allowing passage of a plurality of pipelines therethrough for connection to a respective terminal and for connection of each terminal to the wet Christmas tree when mounted on said high pressure well head.

5,441,113
FIRE EXTINGUISHING SYSTEM

Lauvon Pierce, Rte. 1 Box 122, Leakesville, Miss. 39451

Filed Mar. 9, 1994, Ser. No. 208,463
Int. Cl.[6] A62C *35/00*
U.S. Cl. 169—5 **6 Claims**



1. A fire extinguishing system of the type employing foam and a gas comprising:
a means for storage of the foam and the gas;
a sprinkler head for dispensing the foam and a gas;
a foam conduit means for providing fluid communication between said vessel and said sprinkler head;
a gas conduit means for providing fluid communication between said vessel and said sprinkler head;
said sprinkler head comprising,
a piston, said piston comprising a block portion and a rod portion, said block portion having a top surface, a bottom surface, a vertical side wall connecting said top surface and said bottom surface, means defining a foam bore extending through said side wall, means defining a gas bore extending through said side wall, said rod portion having a first end and a second end, said first end of said rod attached to said bottom surface of said block,
a core, said core comprising a core top surface, a core bottom surface, and a vertical core sidewall connecting said core top and said core bottom to define a cavity adapted for accepting said piston, means defining a foam supply aperture in said core sidewall, means defining a foam dispensing aperture within said core sidewall, means defining a gas supply aperture with said core sidewall, and means defining a gas dispensing aperture within said core sidewall, said piston movable vertically within said cavity from a non-activated position to an activated position within said cavity, said foam supply aperture and said foam dispensing aperture of said core in fluid communication with said foam bore of said piston when said piston is in the activated position, and said gas supply aperture and said gas dispensing aperture of said core in fluid communication with said gas bore when said piston is in the activated position,
a sealing means for providing sealing engagement between said core sidewall and said side wall of said block;
an activating means within said cavity for moving said piston from the non-activated position to the activated position,
an ambient temperature sensor within said cavity of said core for triggering said activating means at a predetermined temperature;
a foam dispensing ring generally disposed around said core, said foam dispensing ring comprising a first tubular ring member, means defining a foam inlet orifice, and a plurality of foam dispensing nozzles extending from said first tubular ring member;
a gas dispensing ring generally disposed around said core and below said foam dispensing ring, said gas dispensing ring comprising a second tubular ring member, means defining a gas inlet orifice, and a plurality of gas dispensing nozzles extending form said second tubular ring member;
means for providing fluid communication between said foam inlet of said foam dispensing ring and said foam dispensing aperture of said core;
means for providing fluid communication between said gas inlet of said gas dispensing ring and said gas dispensing aperture of said core;
means for providing fluid communication between said foam conduit means and said foam supply aperture of said core; and
means for providing fluid communication between said gas conduit means and said gas supply aperture of said core.

5,441,114

PORTABLE SYSTEM FOR EXTINGUISHING A FIRE

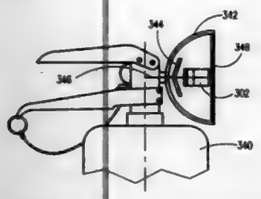
Yechiel Spector; Esther Jacobson, both of Tel Aviv; Vida Naishtut, Kiriat Gat; Michael Vittenberg, Beersheva, and Zohar Beinert, Beersheva, all of Israel, assignors to Spectronix Ltd., Sderot, Israel

Division of Ser. No. 120,497, Sep. 14, 1993. This application Oct. 25, 1994, Ser. No. 328,989

Claims priority, application Israel, Feb. 16, 1993, 104758; Jul. 18, 1993, 106382

Int. Cl.[6] A62C *13/00*

U.S. Cl. 169—14 **3 Claims**



1. A system for extinguishing a fire comprising:
(a) a conventional fire extinguishing cylinder for releasing a pressurized fire extinguishing gas; and
(b) a device including a composition which includes:
(1) a first reactant selected from the group consisting of potassium chlorate, potassium perchlorate, potassium dichromate, cesium nitrate, and potassium nitrate; and
(2) a second reactant serving as a reduction agent;
wherein said composition is activated so as to cause said first reactant and said second reactant to react with each other to create solid particulate products having a diameter of about one micron or less effective in extinguishing the fire, said device being located so that said fire extinguishing gas and said products intermix.

3. A fire extinguishing apparatus comprising:
(a) an inert gas fire extinguishing apparatus for releasing a pressurized fire extinguishing gas, said apparatus including a discharge nozzle; and
(b) a device including a composition which includes:
(1) a first reactant selected from the group consisting of potassium chlorate, potassium perchlorate, potassium dichromate, cesium nitrate, and potassium nitrate; and
(2) a second reactant serving as a reduction agent;
wherein said composition is activated so as to cause said first reactant and said second reactant to react with each other to create solid particulate products having a diameter of about one micron or less effective in extinguishing fire, said device being located so that said fire extinguishing gas and said products intermix, said device being located in or around said discharge nozzle, said inert gas fire extinguishing apparatus and said device being activated so as to allow said inert gas and said products to intermix.

5,441,115

EDGING BLADES FOR CONSTRUCTING BEVELLED AND ANGLED CONTOURS FOR LANSCAPING PURPOSES

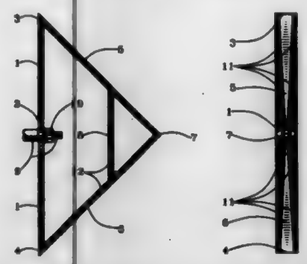
John J. Horzepa, 4123 Manor House Dr., Marietta, Ga. 30062

Filed Jul. 8, 1993, Ser. No. 88,754

Int. Cl.[5] A01D *34/84*

U.S. Cl. 172—15 **13 Claims**

1. A bevelled edger blade comprising:
at least one base side having opposite ends of the base side extended in opposite directions from a blade axis, the base side having an attachment orifice,
opposite angular sides having base ends attached to and forming base corners at the opposite ends of the base side,
an axial corner to which axial-corner ends of the angular sides are extended axially from the attachment orifice, the angular sides being tapered from a width of the base side at the base corners to a narrower width at the axial corner,
base side cutting edges, the base side cutting edges being rotationally leading edges of the base side, and



angular side cutting edges, the angular side cutting edges being rotationally leading edges of the angular sides.

5,441,116

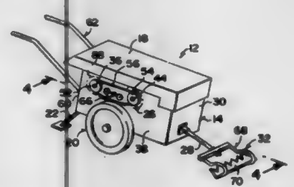
MULTIPLE PURPOSE AGRICULTURAL POWER TOOL

Hermando H. Rodriguez, Jongbloed-1, Curacao, Netherlands Antilles

Filed Oct. 4, 1993, Ser. No. 130,677

Int. Cl.[6] A01B *39/10*

U.S. Cl. 172—101 **5 Claims**



1. A multiple purpose agricultural power tool which comprises:
a) a housing having an open top;
b) a removable cover to fit over said open top of said housing, so as to permit access within said housing when said cover is removed;
c) a wheel assembly rotatively mounted to said housing, so that said housing can travel along the ground;
d) a pair of legs affixed to a rearward bottom edge of said housing for stabilizing said housing when not traveling along the ground;
e) a power source carried within said housing for producing rotary motion, wherein said power source is a rotary gas engine mounted within said housing, said engine having a shaft extending through a side wall of said housing;
f) means carried within said housing for converting the rotary motion from said power source to reciprocating motion, wherein said converting means includes:
I) a crankcase assembly mounted within said housing, said crankcase assembly having a crankshaft with both ends extending through the side walls of said housing and a rod which is rotatively connected at a first end to said crankshaft and a second end coupled to said shank;
II) a first pulley mounted on said shaft of said engine;
III) a second pulley mounted one end of said crankshaft on same side of said housing as said first pulley; and
IV) a continuous belt extending between said first pulley and said second pulley;
g) a shank coupled to said converting means and extending downwardly at an angle from a front wall of said housing;
h) a detachable implement coupled to a distal end of said shank for performing a garden task on the ground;
i) a pair of L-shaped threaded shanks spaced apart and connected to a rear wall of said housing;
j) a handle assembly adapted to be coupled to said L-shaped threaded shanks; and
k) a pair of wing nuts, each threadable onto one of 16 said L-shaped threaded shanks to retain said handle assembly thereto, so that a person can push and/or guide said housing by said handle assembly along the ground via said wheel assembly.

5,441,117

COUPLING HOOK FOR THE LOWER STEERING ARMS OF A THREE-POINT ATTACHING DEVICE OF A TRACTOR

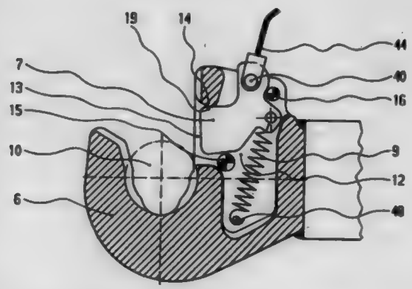
Norbert Fartmann, Siegburg; Joachim Laubner, Ahrweiler, and Norbert Müller, Ruppichteroth, all of Germany, assignors to GKN Walterscheid GmbH, Lohmar, Germany

Filed Oct. 22, 1993, Ser. No. 141,410

Claims priority, application Germany, Oct. 23, 1992, 42 35 780.2

Int. Cl.[6] A01B *59/043*

U.S. Cl. 172—272 **16 Claims**



1. A coupling hook, especially for lower steering arms of a three-point attaching device of a tractor, comprising:
a hook body;
a locking pawl spring-loaded towards a locking position;
means for moving the locking pawl into an open position;
said hook body including a bearing recess open towards one end for a bearing ball of an implement to be attached, a recess for receiving the locking pawl, an aperture for allowing part of the locking pawl to enter the region of the bearing recess, a first stop face is provided by a face of the aperture arranged towards the open end of the bearing recess, a second supporting stop is arranged at a distance therefrom, and a locking stop is arranged away from both said stops in the direction of the bearing recess for securing the locking pawl in the locking position;
the locking pawl includes a first supporting face on an upper face of said locking pawl cooperating with the first stop face, and includes on an underside of said locking pawl a second supporting face cooperating with the second supporting stop, a locking face is included at a rear end of said locking pawl cooperating with the locking stop, an unlocking face is included at a front end in said locking pawl entering the bearing recess, a projection projecting downwardly beyond the second supporting face for limiting the setting movement of the locking pawl and a locking face for arresting the bearing ball in the bearing recess, the locking stop of the hook body includes a face designed to be convex towards the locking face of the locking pawl, the locking face of the locking pawl contacts the locking stop of the hook body below an imaginary connecting line between a point of contact of the locking face of the locking pawl with an outer face of the bearing ball and the center of the convex locking stop, and the locking face of the locking pawl, starting from the point of contact between it and the locking stop towards the underside of the locking pawl, projects backwards beyond an imaginary circle whose center is formed by the point of contact of the first stop face supporting face of the locking pawl and extends through the point of contact of the locking stop of the hook body with the locking face of the locking pawl.

5,441,118

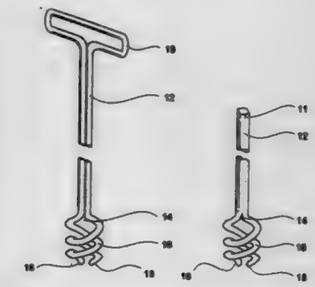
WEED TWISTER

Ramon M. Cruz, Jr., P.O. Box 9326, N. Hollywood, Calif. 91609

Filed Jan. 4, 1994, Ser. No. 177,139

Int. Cl.[6] A01B *1/18*

U.S. Cl. 172—378 **6 Claims**



1. A tool for removing plants and other tubular objects comprising:
an elongated main body member having a first, proximal end and a second, distal end;
said proximal end including a means for holding said main body member by the hand and supporting a rotation of said main body member about a longitudinal axis thereof including an elongated member extended perpendicularly to the longitudinal axis of said main body member at approximately equal lengths from said main body member; and
said distal end being generally coil shaped including means for engaging and disrupting a root system and soil surrounding the base of an unwanted plant including a plurality of tines coiled along a longitudinal axis parallel to the longitudinal axis of said main body member, said tines being generally rod shaped and having approximately equal length and shape and being relatively evenly spaced with a gap between them of a dimension approximately equal to the diameter of the cross-section of each of said tines, said tines including a means for penetrating and loosening the soil surrounding a root system including relatively sharp points at their distal ends, said tines declining from a perpendicular to the longitudinal axis of said main body member at an approximate angle of 30°–45°, said tines each completing approximately one or more complete loops in the coil prior to a point of teronination, said coil having an approximate diameter of 3 cm.

5,441,119

DIRECTIONAL DRILLING TOOL

Philip F. Head, London, Great Britain, assignor to Transocean Petroleum Technology AS, Tananger, Norway

Filed Oct. 20, 1993, Ser. No. 140,286

Claims priority, application United Kingdom, Oct. 23, 1992, 9222298

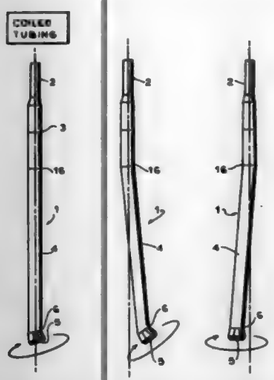
Int. Cl.[6] E21B *7/08, 17/02*

U.S. Cl. 175—74 **17 Claims**

1. A directional drilling system for providing selectively changes in a direction of drilling in a vertical plane by variation

in a bend angle and in an azimuth angle in a horizontal plane, said system comprising:
- a coiled drilling tube fed from above into a borehole from a surface from which said borehole is drilled;
- a tubular directional drilling tool comprising an upper end fixed to an end of said coiled tube and a lower end;
- a drill bit below said lower end and secured thereto, a drilling fluid passing through said tube and said tool to said drill bit,

said drilling tool comprising:
- relatively rotatable first and second parts whose relative rotation determines at least one of said angles,



- means between said relatively rotatable first and second parts for varying one of said angles between said coiled drilling tube and said drill bit at said drilling tool upon relative rotation of said parts, and
- a mechanism in said drilling tool operable independently of said drilling fluid and flow thereof for rotating one of said parts relative to the other of said parts; and

control means for said mechanism including a transmission line running to said mechanism from the surface for controlling the determination of said one of said angles independently of said fluid and without rotation of the coiled tube.

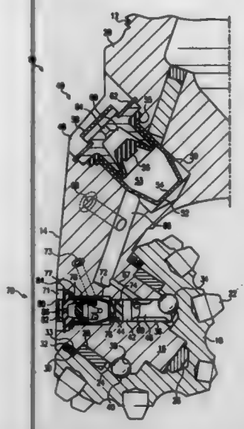
5,441,120

ROLLER CONE ROCK BIT HAVING A SEALING SYSTEM WITH DOUBLE ELASTOMER SEALS

Theodore R. Dysart, Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 31, 1994, Ser. No. 299,492
Int. Cl.[6] E21B *10/22*
U.S. Cl. 175—228 **20 Claims**

1. A roller cone rock bit having a sealing system with double elastomer seals, comprising:
- a bit body having at least one downwardly extending arm terminating in a spindle;
- a cone having a cavity for rotatably mounting the cone on the spindle;
- a bearing assembly disposed within the cavity for rotary load bearing engagement between the spindle and the cone;
- a first elastomer seal disposed between the cone and the spindle, the first elastomer seal operable to seal the cavity and the bearing assembly;
- a second elastomer seal disposed between the cone and the spindle, the second elastomer seal located outward from the first elastomer seal forming a seal-gap between the first elastomer seal and the second elastomer seal, the second elastomer seal operable to seal the seal-gap from fluids external to the rock bit;
- a main lubricant reservoir having a first diaphragm disposed between an inner chamber and an outer chamber, the inner chamber in fluid communication with the cavity and the outer chamber in fluid communication with the external fluids, wherein the cavity and the inner chamber are substantially filled with a first lubricant forming a first volume of lubricant and wherein the first diaphragm is operable to transmit a pressure of the external fluids to the first volume of lubricant; and



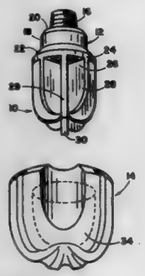
- a seal-gap lubricant reservoir having a second diaphragm disposed between an inner chamber and an outer chamber, the inner chamber in fluid communication with the seal-gap and the ,outer chamber in fluid communication with the external fluids, wherein the seal-gap and the inner chamber are substantially filled with a second lubricant forming a second volume of lubricant and wherein the second diaphragm is operable to transmit the pressure of the external fluids to the second volume of lubricant.

5,441,121

EARTH BORING DRILL BIT WITH SHELL SUPPORTING AN EXTERNAL DRILLING SURFACE

Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Baker Hughes, Inc., Salt Lake City, Utah

Filed Dec. 22, 1993, Ser. No. 173,679
Int. Cl.[6] E21B *10/52*
U.S. Cl. 175—417 **26 Claims**



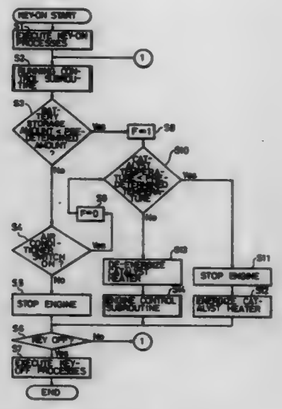
1. A drill bit comprising:
- a matrix outer shell having an external surface adapted to carry cutting elements; an internal surface formed on said shell;
- a ductile bit shank adapted to be received against said internal surface;
- at least one interlockable element disposed between said shank and said internal surface, said interlockable element being oriented to resist relative rotational motion of said shell and said shank during drilling; and
- means for fixing said shank to said shell after said matrix is formed.

5,441,122

HYBRID CAR AND AN OPERATING METHOD THEREFOR

Masato Yoshida, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1993, Ser. No. 60,994
Claims priority, application Japan, May 15, 1992, 4-123816
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—65.2 **17 Claims**



1. A hybrid car comprising:
- an electric motor for driving the hybrid car;
- a battery for supplying electric power to said electric motor;
- a generator for charging said battery;
- an internal combustion engine operatively isolated from said electric motor and used to drive said generator;
- an auxiliary machinery driven by means of said internal combustion engine;
- first discriminating means for discriminating an operating state of the hybrid car;
- second discriminating means for discriminating a charged state of said battery;
- third discriminating means for discriminating presence or absence of a request for the drive of said auxiliary machinery; and
- a controller for controlling an operating state of said internal combustion engine in response to at least one result from decisions on said operating state of the hybrid car by said first discriminating means, said charged state of said battery by said second discriminating means, and the presence or absence of said request for the drive of said auxiliary machinery by said third discriminating means.

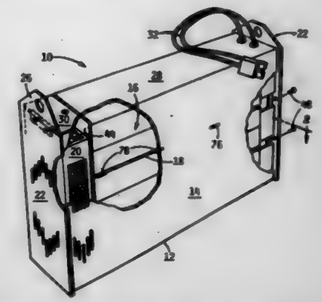
5,441,123

SEALED LEAD-ACID CELL TRAY ASSEMBLY AND MOTIVE POWERED VEHICLE USING SUCH CELL TRAY ASSEMBLY

Gordon C. Beckley, Carol Stream, Ill., assignor to GNB Battery Technologies Inc., Lombard, Ill.

Continuation of Ser. No. 41,687, Apr. 1, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 389,558
Int. Cl.[6] B60R *16/04*
U.S. Cl. 180—68.5 **16 Claims**

1. A sealed lead-acid cell tray assembly mounted on a motive powered vehicle which comprises a tray base, upstanding tray side walls connected to said base, said base and said side walls dimensionally configured to provide a cell enclosure area having a means for accepting at least six sealed lead-acid cells in a horizontal position, said means for accepting including cell-receiving members positioned above said tray base and attached to said upstanding side walls, said cell-receiving members dividing at least part of said cell enclosure area into cell compartments each capable of accepting at least one sealed lead-acid cell in the horizontal position, a sealed lead-acid cell having a positive and negative terminal and horizontally positioned in each cell compartment and electrically connected together, and electrical connectors connecting the cells to the vehicle.

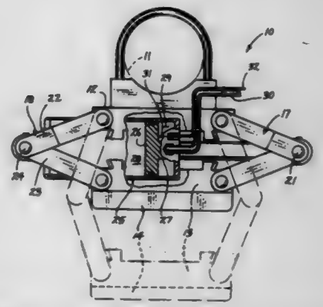


5,441,124

VEHICULAR ANTI-THEFT LIFT APPARATUS

Israel M. Rubin, 505 S. Beverly Dr. #101, Beverly Hills, Calif. 90212

Filed Mar. 1, 1994, Ser. No. 203,928
Int. Cl.[6] B60R *25/00;* **B60S** *9/02*
U.S. Cl. 180—287 **7 Claims**



1. A vehicular anti-theft lift apparatus, comprising in combination,
- an elevator structure arranged for securement to a vehicular axle housing, and
- a pump means arranged for securement to said axle housing spaced from said elevator structure, the elevator structure including a mounting plate arranged for securement to said axle housing, with the mounting plate including at least one clamp member fixedly secured to said mounting plate, wherein the clamp member is arranged to receive the axle housing therethrough, and an elevator plate arranged reciprocatably relative to said mounting plate in a spaced parallel relationship thereto, the elevator plate and the mounting plate including first and second link pairs secured therebetween to effect selective extension and

retraction of the elevator plate relative to the mounting plate, and

first link pairs each including first and second link plates pivotally mounted to the respective mounting plate and elevator plate, with said first link pairs including a first axle securing said first link pairs together, with the first axle pivotally mounting each respective first link plate to one said second link plate, and each of said second link pairs includes a third link plate pivotally mounted to said mounting plate, and a fourth link plate pivotally mounted to said elevator plate, with a second axle pivotally mounted to each of said second link pairs, with said first axle arranged in a parallel spaced relationship relative to said second axle, and

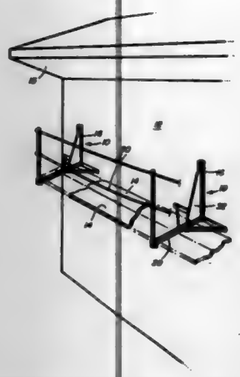
drive means secured to said mounting plate for effecting selective reciprocation of said elevator plate relative to said mounting plate.

5,441,125

PLATFORM FOR TEMPORARY ATTACHMENT TO WALLS

William R. Cook, 6732 Lochdale Street, Burnaby, B.C., Canada V5B 2N1

Filed Jul. 15, 1993, Ser. No. 91,292
Int. Cl.[6] E04G 3/08
U.S. Cl. 182—82 **5 Claims**



1. A platform for temporary attachment to projections extending from a vertical side of a structure, comprising:

a pair of support devices for attachment to the projections; and

a pair of planks;

said support devices each comprising:

an elongate upright member;

said elongate upright member having an upper end and a lower end, a lower end opposite sides and a front;

an attachment portion at said upper end;

said attachment portion having an opening for receiving one of the projections therethrough, whereby said elongate upright member is suspended from the structure at a location determined by the location of the respective projections;

a pair of arms extending laterally outwardly from the opposite sides of said lower end of said elongate upright member for stabilizing abutment against the structure;

an elongate horizontal support projecting forwardly from said lower end of said elongate upright member for supporting said planks thereon;

said support having one end attach to said elongate upright member, a free end spaced from said upright member and a top for supporting said planks thereon; and

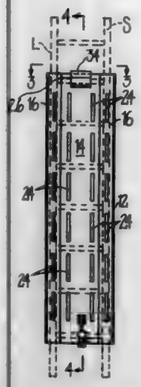
a reinforcement extending between and jointed to said top of said support and said front of said elongate upright member.

5,441,126

LADDER GUARD

James Orrick, 17 Clinton Pl., Normal, Ill. 61761

Filed Feb. 25, 1994, Ser. No. 201,905
Int. Cl.[6] E06C 5/32
U.S. Cl. 182—106 **13 Claims**



1. A ladder guard for a ladder, the ladder having spaced apart side rails and a plurality of rungs between the side rails, the ladder guard comprising:

(a) a shell, said shell having a pair of channels and a flat panel connected to and extending in between said channels, said shell not extending laterally beyond said channels, said panel adapted to be placed juxtaposed to the rungs and in between the side rails of the ladder, said panel being recessed inwardly relative to said channels, whereby said panel is adapted to be drawn closely to the rungs of the ladder, each said channel being adapted to partially surround a respective side rail of the ladder;

(b) means attached to said shell and adapted for holding said shell to the ladder; and

(c) locking means for locking said shell onto the ladder, said locking means having an arm connected to said shell and adapted to engage the ladder and a lock attached to said arm.

5,441,127

ELEVATOR CONTROL APPARATUS

Hiroyuki Ikejima; Sigemi Iwata, and Masayuki Yosida, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 712,523, Jun. 10, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 155,907
Claims priority, application Japan, Jun. 11, 1990, 2-149841; Mar. 4, 1991, 3-37395
Int. Cl.[6] B66B 1/44
U.S. Cl. 187—292 **7 Claims**

1. An apparatus for determining drive torque for an elevator car motor in an elevator system including a weight, an elevator car, a pulley and a rope disposed around the pulley and interconnecting the weight and the elevator car, the apparatus comprising:

means for driving said elevator car through a drive path, the elevator car being driven at a constant speed throughout at least a part of the drive path;

torque command generating means for generating a torque command based on the difference of a motor speed command signal and the actual motor speed signal;

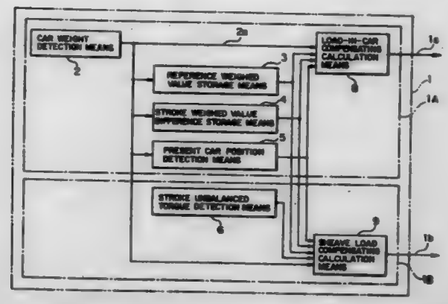
converter means for supplying electric power to a motor for driving an elevator car;

car position calculation means for calculating the present position X of said elevator car;

means for calculating a torque difference command ΔT_0 between torque measured at a first position X_1 and torque measured at a second position X_3;

distance calculating means for calculating the distance between the first position X_1 and the second position X_3 and for calculating a length of the elevator drive path X_4;

compensation means for calculating a compensation value ΔT for compensating for the difference in weights of rope



and cable positioned between the weight and the pulley and rope and cable positioned between the elevator car and the pulley according to the following equation:

$$\Delta T = \Delta T_0 (X_4/(X_3 - X_1));$$

load weighing means for detecting a load T_2 in said elevator car;

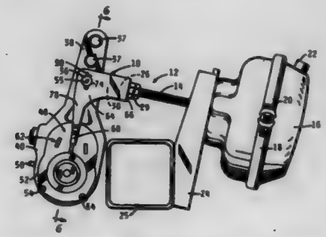
and final torque command supply means for adding outputs of said compensation means and said load weighing means to the torque command generated by said torque command generating means and supplying the torque command as a final torque command to said converter means.

5,441,128

REFERENCE BRACKET MEANS FOR BRAKE STROKE LENGTH ADJUSTMENT GAUGE

Gordon C. Hoyt, P.O. Box 195, Little Hocking, Ohio 45742

Filed Jul. 22, 1994, Ser. No. 279,207
Int. Cl.[6] F16D 66/02
U.S. Cl. 188—1.11 **16 Claims**



1. A reference bracket means for a visually indicative stroke length gauge means for visually indicating travel of a brake rod of an air brake apparatus of a vehicle, said air brake apparatus including a brake rod and an air chamber cylinder from which cylinder the brake rod extends;

the apparatus being such that the brake rod moves substantially linearly outwardly of the air chamber cylinder in response to activation of the brake apparatus;

the air brake apparatus also including a clevis member having a clevis pin, and a rotatable adjuster member having a rotatable adjuster member body having a rotatable arm and a connection of the adjuster member body and the arm;

the clevis member being fixedly carried on the brake rod, and linearly movable therewith;

and the clevis member is provided with retainer holes which carry respective ends of the clevis pin and support it in a direction in which its axis is generally transverse to the axis of the brake rod and the path of the movement of the brake rod and clevis member;

and there being a pivotal connection, by the clevis pin, of the clevis member to the arm of the adjuster member body,

and the clevis member and the adjuster member being relatively rotatably movable due to their pivotal connection by the clevis pin;

the clevis member having a first portion relatively adjacent the air chamber cylinder and a second portion relatively remote from the air chamber cylinder, the clevis pin being connected to the clevis member's second portion;

the clevis, clevis pin, and brake rod being connected into an assembly whose components are relatively fixed with respect to the brake rod;

the gauge means comprising visually indicative reference indicators comprising a first visual reference indicator which is carried by the said assembly and a second visual reference indicator which is carried by the adjuster member inwardly of the side edges thereof;

the first and second reference indicators being cooperative to visually show, by their relative movement, the linear stroke length of the brake rod, by visually showing relatively the linear travel of the clevis member and the angular rotation of the adjuster member;

in which the reference bracket means comprises a central body portion from which extends two extension members, a first one of said two extension members is provided with a recess and a throat opening to the recess from an edge of said first extension member;

and the central body portion of the reference bracket means is provided with an opening adapted to be received over an end of the clevis pin;

and the second extension member from the central body means extends toward the axis of rotation of the adjuster member and its arm, and provides the first visual reference indicator;

the throat and the recess of said first extension member being provided to be received onto the clevis and brake rod assembly at a location thereon spaced from the clevis pin, and providing a snug fit thereon such as to prevent rotation of the reference bracket means about the axis of the clevis pin;

and the opening in the central body portion is provided to be a snug fit with respect to the clevis pin such as to prevent translation of the reference bracket means with respect to the said assembly.

5,441,129

PRECISION LINEAR MECHANICAL LOCK

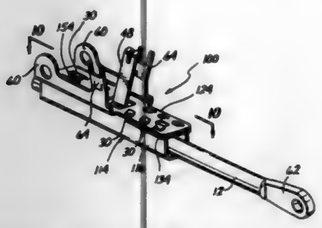
Clyde R. Porter, Los Angeles, and Calvin R. Stringer, Saugus, both of Calif., assignors to P. L. Porter Co., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 74,041, Jun. 8, 1993. This application Feb. 14, 1994, Ser. No. 195,933
Int. Cl.[6] B65H 59/10
U.S. Cl. 188—67 **42 Claims**

1. A mechanical lock comprising:

a lock housing having a plurality of housing elements, a spring end bearing on different ones of said housing elements, a rod, coil spring means wound on said rod, said spring means having a reduced normal diameter for tightly gripping said rod, said spring means being axially contained between said end bearing means thereby to hold said rod against axial displacement through said housing.

said spring means having opposite ends circumferentially fixed to said housing, deformable means on one of said housing elements insertable through corresponding openings in the others of said housing elements, said deformable means allowing relative positioning of said housing elements in an inserted but undeformed condition of said



deformable means for adjusting said end bearing means into positive engagement with opposite ends of said spring means, all said housing elements being fixed relative to each other in a deformed condition of said deformable means, and means for partially unwinding said spring means to thereby release said rod for axial movement through said housing.

5,441,130

MAGNETIC APPARATUS FOR PREVENTING BACKLASH OF TRANSMISSION FOR A VEHICLE

Jung Y. Ha, 1624-1, Bongcheon 7-dong, Kwanak-gu, Seoul 151-057, Rep. of Korea

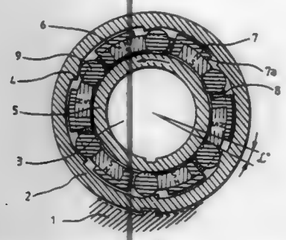
PCT No. PCT/KR92/00013, § 371 Date Nov. 5, 1993, § 102(e) Date Nov. 5, 1993, PCT Pub. No. WO92/19884, PCT Pub. Date Nov. 12, 1992

PCT Filed May 8, 1992, Ser. No. 146,012

Claims priority, application Rep. of Korea, May 8, 1991, 91-7418

Int. Cl.[6] F16D *63/00*

U.S. Cl. 188—82.84 **4 Claims**



1. A backlash preventing apparatus for a transmission of a vehicle, said apparatus having an outer race fixed to a body and having a substantially circular inner surface, an inner race arranged within said outer race and fixed to another body, said inner race having a substantially circular outer surface facing said inner surface of said outer race to form an annular space between said inner and outer races, said backlash preventing apparatus comprising:

a plurality of projections formed on at least one of said circular surfaces of said races;

a plurality of rotating bodies disposed in said annular space between said inner and outer races so that said rotating bodies can come into contact with said projections;

a permanent magnet mounted on each of said rotating bodies; and

a backlash preventing member disposed in said annular space between said races so that said inner race can rotate in a first direction but not in a direction opposite to said first direction.

5,441,131

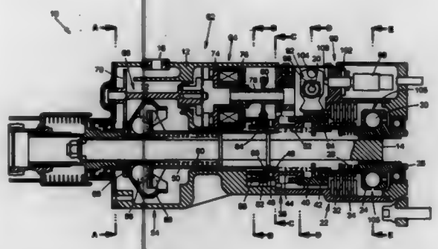
ASYMMETRY/OVERSPEED BRAKE UNIT

Edward A. Mayer, West Orange, and Gary S. Ruschke, Edison, both of N.J., assignors to Curtiss Wright Flight Systems Inc., Fairfield, N.J.

Filed Nov. 14, 1994, Ser. No. 339,409

Int. Cl.[6] B60T *8/78*

U.S. Cl. 188—180 **18 Claims**



1. An asymmetry/overspeed brake comprising:

a brake housing having a rotatable main shaft running axially therethrough;

a locking mechanism contained within said brake housing, said locking mechanism having a trigger sleeve concentric with and disposed annularly about said main shaft, a ball retention sleeve concentric with and disposed annularly about said main shaft, and a plurality of locking balls seated within said ball retention sleeve between said brake housing on the outside and said trigger sleeve on the inside, said trigger sleeve and said ball retention sleeve being forcibly opposed by trigger sleeve spring means, said trigger sleeve having a trigger cam and a trigger shoulder formed therein;

a braking mechanism contained within said brake housing, said braking mechanism having a plurality of rotatable brake disks concentric with and disposed annularly about said main shaft, a corresponding plurality of fixed brake disks concentric with and disposed annularly about said main shaft, and rotatable brake plate means concentric with and disposed annularly about said main shaft, said rotatable brake disks being intermingled with said fixed brake disks, said brake plate means being directly coupled to said main shaft, said plurality of rotatable brake disks being spline coupled to said brake plate means, said brake plate means being forcibly biased toward and against said ball retention sleeve by brake plate spring means;

a mechanical trip mechanism contained within said brake housing, said mechanical trip mechanism comprising a rotatable flyball carrier concentric with and disposed annularly about said main shaft, an overspeed governor sleeve concentric with and disposed annularly about said main shaft, and a plurality of flyballs seated within a corresponding plurality of pockets in said flyball carrier, said flyball carrier being directly coupled to said main shaft, said overspeed governor sleeve being forcibly biased toward and against said plurality of flyballs by overspeed governor spring means, said overspeed governor sleeve being axially movable into contact with said trigger shoulder; and

an electrical trip mechanism contained within said brake housing, said electrical trip mechanism comprising a solenoid activated electric clutch and a clutch drive train, said clutch drive train having a rotatable input clutch shaft that is gear coupled to said main shaft and a rotatable output clutch shaft that is gear coupled to a rotatable clutch cam, said solenoid activated electric clutch being responsive to an electrical trigger signal for coupling said input clutch shaft to said output clutch shaft, said clutch cam being concentric with and disposed annularly about said main shaft so as to mate with said trigger cam.

5,441,132

DOUBLE TUBE VIBRATION DAMPER UNIT

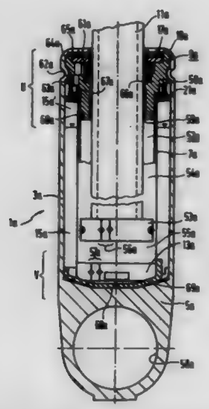
Robert Pradel, Röthlein-Heidenfeld, and Stefan Schiffler, Schonungen-Forst, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Sep. 9, 1993, Ser. No. 119,477

Claims priority, application Germany, Sep. 10, 1992, 42 30 238.2

Int. Cl.[6] F16F *9/18, 9/36*

U.S. Cl. 188—315 **46 Claims**



1. A double tube vibration damper unit comprising:

a pressure tube member having an axis and axially extending between a first terminal area and a second terminal area with a cavity being defined inside said pressure tube member axially between said first terminal area and said second terminal area;

annular guiding and sealing means within said first terminal area;

a piston rod member axially guided through said annular guiding and sealing means inward and outward of said cavity;

a piston unit connected to said piston rod member inside said cavity, said piston unit separating within said cavity two working chambers from each other, namely a first working chamber nearer to said first terminal area and a second working chamber nearer to said second terminal area;

said first and second working chambers being interconnectable with each other for damping fluid flow through piston bridging valve means;

said second working chamber being confined adjacent said second terminal area by a bottom valve unit;

said pressure tube member being surrounded by a container tube member substantially coaxial with said pressure tube member and axially extending between said first terminal area and said second terminal area;

a compensation space being confined radially between said pressure tube member and said container tube member;

said second working chamber and said compensation space being interconnectable with each other for damping fluid flow through bottom valve means of said bottom valve unit;

said annular guiding and sealing means comprising an annular supporting unit, said annular supporting unit being adapted for axially supporting said pressure tube member and said container tube member with respect to each other;

said container tube member being provided with a bottom unit in said second terminal area, said bottom unit being adapted for axially supporting said pressure tube member and said container tube member with respect to each other;

said annular supporting unit being axially secured with respect to said container tube member in at least one axial direction against movement with respect to said container tube member and being provided with first pressure tube supporting means;

said bottom unit being axially secured with respect to said container tube member in at least one axial direction against movement with respect to said container tube member and being provided with second pressure tube supporting means;

at least one thermal length variation compensator unit disposed axially adjacent said pressure tube member axially adjacent one of and said first and second terminal areas of said pressure tube member;

said at least one thermal length variation compensator unit comprising means for compensating for length variations between the length of said container tube member and the length of said pressure tube member during relative expansion and contraction between said container tube member and said pressure tube member in an axial direction; and

said at least one thermal length variation compensator unit comprising means for providing an axial force to said pressure tube member with respect to said container tube member to permit relative axial movement between at least a portion of said pressure tube member and at least a portion of said container tube member within a predetermined operational range of temperature.

5,441,133

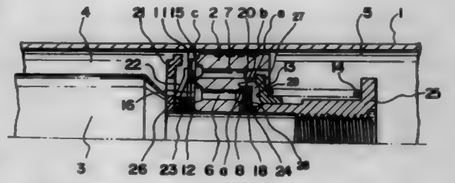
HYDRAULIC DAMPER HAVING LEAF VALVE STOPPER

Tokoharu Murakami, Kakamigahara, Japan, assignor to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 882,910, May 14, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 89,783

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—322.15 **20 Claims**



1. A hydraulic damper comprising:

a cylinder;

a fluid in said cylinder;

a piston movable in said cylinder and forming with said cylinder a first chamber and a second chamber, said piston defining a port having first and second outlets in said first and second chambers respectively, said fluid in said cylinder communicating between said first and second chambers through said port, said first outlet having an inner seat and an outer seat, said inner seat and said outer seat being arranged in series with said fluid communicating between said first and second chamber;

low speed damper means for damping low speed movements of said piston in said cylinder, said low speed damper means having a leaf valve having an extremity end operating in cooperation with said inner seat, said leaf valve having a base end abutted by a valve stopper with a con-

tinuously curved surface, said curved surface and said extremity end of said leaf valve defining a clearance, said clearance having a size to cause said leaf valve to flex during said low speed movements, said curved surface having a shape to substantially evenly support said leaf valve when said leaf valve is fully flexed; and

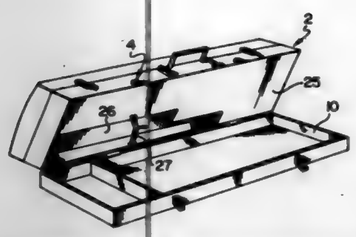
a main valve having sliding means for sliding said main valve substantially axially into contact with and away from said outer seat during high speed movements of said piston, said sliding means also for controlling fluid flow between said first and second chambers by said sliding of said main valve, and said sliding means for damping high speed movements of said piston by said controlling of fluid, an upstream side of said main valve and a downstream of said valve stopper being spaced apart to define an intermediate chamber.

5,441,134

INSTRUMENT CARRYING CASE

Ward Carson, 190 Rensaf Ave. Ottawa, Ontario, Canada K1K 3T1

Filed May 26, 1994, Ser. No. 249,203
Int. Cl.[6] A45C *3/00*
U.S. Cl. 190—111 **6 Claims**



1. In an instrument carrying case having an instrument receiving chamber within, the case comprising a lid for opening the case, the improvement characterized in that a second case is provided secured to the carrying case and having a chamber separate from the chamber of the carrying case, and means being provided for accessing the chamber of the second case, for inserting an object into or removing it from the chamber of the second case, other than through the chamber of the carrying case, and a recess is provided in the chamber of the second case extending into the chamber of the first case, whereby items may be received and stored in that recess so as to be accessible from the second case.

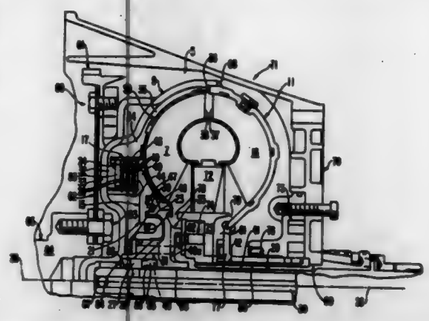
5,441,135

HYDRODYNAMIC TORQUE CONVERTER WITH LOCK-UP CLUTCH

Otto Wörner, Reutlingen; Rolf Schröder, Stuttgart, and Heinz Schultz, Hochdorf, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 15, 1993, Ser. No. 167,283
Claims priority, application Germany, Dec. 17, 1992, 42 42 625.1
Int. Cl.[6] F16D *33/00*
U.S. Cl. 192—3.29 **4 Claims**

1. A hydrodynamic torque converter comprising a bell-shaped casing shell, a centripetal-flow turbine wheel rotatably accommodated in the casing shell and connected in a pressure-tight manner to an outer shell of a pump impeller and casing shell to move therewith by way of a lock-up clutch actuatable by a clutch actuator of axial piston type, which lock-up clutch has friction discs alternatively torsionally held on two annular friction disc carriers concentrically arranged with a torque converter rotation axis, wherein a coupling space is provided within the casing shell, which coupling space is bounded in one direction of the torque converter rotation axis by a radial end wall of the casing shell and, in an opposite direction, by the turbine wheel, and the coupling space having, at a radially outer position thereof, a first flow connection to an annular gap between a pump impeller outlet and a turbine wheel inlet and, at a radially inner position thereof, a second flow connection to a torque converter return conduit, and the friction disc carriers being provided with radial through-flow openings and arranged such that a complete length thereof is located transversely in a centrifugal flow of the coupling space occurring between the first and second flow connections whereby one of the friction disc carriers has an end fixed to the turbine wheel and the other of the friction disc carriers has an end remote from the end of the one friction disc carrier fixed to the turbine wheel and fixed to the radial end wall.

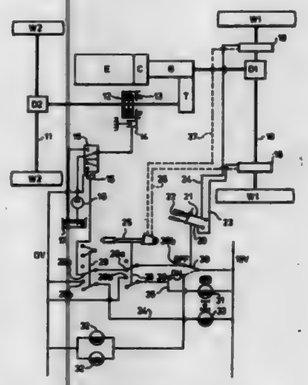


5,441,136

FOUR WHEEL DRIVE VEHICLES

Victor L. Greaves, Coventry; Christian J. Brace, Westbury, both of United Kingdom, and Wilhelm Weigt, Kassel, Germany, assignors to Massey Ferguson Manufacturing Limited, United Kingdom

Filed Dec. 14, 1993, Ser. No. 166,681
Claims priority, application United Kingdom, Dec. 19, 1992, 9226513
Int. Cl.[6] F16D *67/02*
U.S. Cl. 192—13 R **20 Claims**



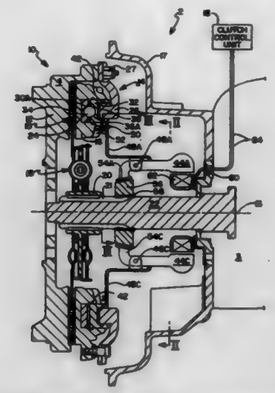
1. A drive system for a vehicle comprising:
an engine;
first and second pairs of wheels;
means for connecting said engine to rotatably drive said first pair of wheels;
a clutch for selectively connecting said engine to rotatably drive said second pair of wheels with said first pair of wheels;
a main brake system actuable to selectively brake at least one of said first pair of wheels;
a secondary brake system actuable to selectively brake at least one of said first pair of wheels independently of said main brake system; and
an actuator for causing said clutch to connect said second pair of wheels with said first pair of wheels whenever said secondary brake system is actuated.

5,441,137

CLUTCH WITH A CENTRIFUGALLY APPLIED BALL RAMP ACTUATOR

Gregory J. Organek, Dearborn, and David M. Preston, Clarkston, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 4, 1994, Ser. No. 237,797
Int. Cl.[6] F16D *43/22*
U.S. Cl. 192—35 **16 Claims**



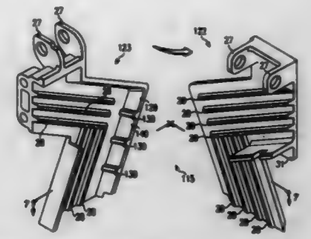
1. A ball ramp mechanism for coupling two rotating elements comprising:
an input element rotating about an axis of rotation;
an output element having an axis of rotation coaxial with said axis of rotation of said input element for rotating an output device;
a ball ramp actuator for generating an axial movement comprising; an annular control ring frictionally coupled to said output element and rotating therewith, said control ring having at least two circumferential control ramps formed in a first face of said control ring, said control ramps varying in axial depth, an equivalent number of rolling elements one occupying each of said ramps, an activation ring having an axis of rotation along said axis of rotation of said control ring, said activation ring having at least two activation ramps substantially identical in number, shape and radial position to said control ramps in said control ring where said activation ramps at least partially oppose said control ramps and where each of said rolling elements is trapped between said activation ramp and a respective at least partially opposed control ramp, said control ring axially and rotationally movably disposed relative to said activation ring;
coupling means for rotatably joining said input element to said output element where said coupling means varies the degree of rotational coupling between said input element and said output element according to the axial position of said control ring relative to said activation ring;
a friction ring nonrotatably attached to and encircling said output member;
a coupling link extending from and attached to said control ring;
a centrifugal weight pivotally attached to said coupling link having a first end for moving outward from said output shaft upon rotation of said centrifugal weight and a second end for moving inward toward said friction ring upon rotation of said centrifugal weight; and
a friction shoe mounted to said second end of said centrifugal weight for frictionally engaging said friction ring.

5,441,138

COIN HANDLING SYSTEM WITH AN IMPROVED COIN CHUTE

John A. Hird, Dallas, and Mark E. Kerr, Wylie, both of Tex., assignors to Intellicall, Inc., Carrollton, Tex.

Continuation of Ser. No. 841,379, Feb. 25, 1992, Pat. No. 5,388,680, which is a continuation-in-part of Ser. No. 594,272, Oct. 9, 1990, Pat. No. 5,090,548. This application Feb. 23, 1994, Ser. No. 200,481
Int. Cl.[6] G07F *1/04*
U.S. Cl. 194—345 **6 Claims**



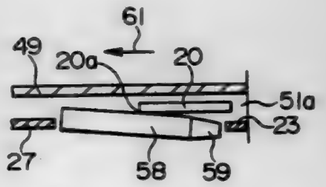
1. A coin handling system, comprising:
first and second chute piece biased together to form a coin chute having an opening for receiving a coin;
a backwall formed on one of said chute pieces;
an exterior bevel surface outside said coin chute, integral with said backwall, and bevelled toward an interior of said coin chute such that said chute pieces separate if said exterior bevel surface is impacted by a foreign object.

5,441,139

COIN SORTING DEVICE IN WHICH UNNECESSARY MATERIAL CAN BE READILY REMOVED FROM A SORTING PASSAGE

Hiroshi Abe, Tokyo, and Yoshinobu Tanaka, Saitama, both of Japan, assignors to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 943,288, Sep. 10, 1992, Pat. No. 5,293,981. This application Nov. 26, 1993, Ser. No. 157,459
Claims priority, application Japan, Sep. 11, 1991, 3-95942 U; Sep. 11, 1991, 3-95943 U; Sep. 11, 1991, 3-95944 U; Nov. 27, 1991, 3-111531; Feb. 28, 1992, 3-23240 U
Int. Cl.[6] G07D *3/04*; G07F *1/04*
U.S. Cl. 194—347 **10 Claims**



10. A coin sorting device comprising:

passage means defining a sorting passage and having a side portion defining one side of said sorting passage and a bottom portion to guide a coin in a predetermined direction;

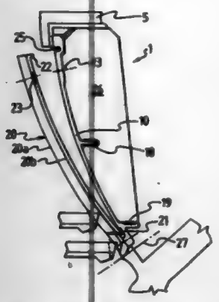
sorting means cooperatively associated with said passage means for carrying out a sorting operation for said coin; and

removing means for removing unnecessary material from said coin, said removing means comprising a side roller member connected to said passage means, said side roller member being supported against said side portion and having a side roller axis extending in said predetermined direction and a side roller peripheral surface surrounding said side roller axis, said side roller peripheral surface being conical and being partly disposed in said sorting passage.

5,441,140
ESCALATORS

John A. Reid, Auckland, New Zealand, assignor to Escalator Advertising Limited, Auckland, New Zealand

Filed Aug. 9, 1994, Ser. No. 287,884
Claims priority, application New Zealand, Aug. 11, 1993, 248387
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 **5 Claims**



1. A method for modifying a passenger conveying device such as an escalator or travelator having a plurality of interacting movable steps (1) each said step having an external profile allowing relative movement between adjacent steps, said profile including a substantially smooth riser face (10*a*) and a substantially straight rear edge (6), said riser face of each step passing in close proximity to the rear edge of an adjacent step in use, comprising: modifying said riser face and modifying said rear edge in a complementary manner, wherein said riser face is modified by removing at least part of said riser face, fixing a backing plate (10) behind said riser, and fitting a cover (20) to the step, said cover substantially corresponding to the removed part of said riser face and further including a plurality of cleats (20*a*) and channels (20*b*) therein.

5,441,141
AUTOMATIC ROTARY SORTER AND CYLINDRICAL STORAGE SYSTEM

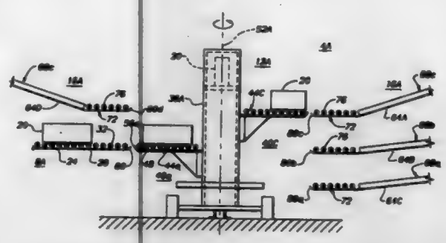
Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 792,211, Nov. 13, 1991, Pat. No. 5,284,252. This application Sep. 13, 1993, Ser. No. 121,147
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] B65G *47/00*
U.S. Cl. 198—370.03 **54 Claims**

1. A system for sorting a plurality of objects having object source means for providing said objects for sorting and a plurality of object receiving means for receiving said objects after sorting, wherein the individual object receiving means of said plurality of object receiving means are spaced apart both horizontally and vertically, comprising:

a plurality of object receiving and discharging means for receiving said objects from said object source means and transferring said objects to said object receiving means; and,

each of said object receiving and discharging means having means for moving an object of said plurality of objects



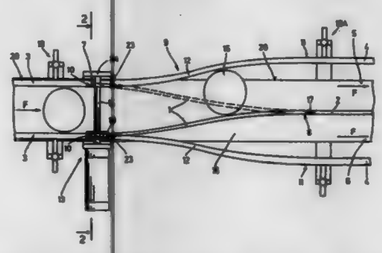
both horizontally and vertically from the vicinity of said object source means to the vicinity of a selected one of said horizontally and vertically spaced apart object receiving means to transfer said object to said selected object receiving means;

wherein said object source means and at least one of said object receiving means are vertically aligned, each of said object receiving and discharging means is coupled to a rotatable member which rotates about an axis of rotation, and said rotatable member rotates about said axis of rotation continuously.

5,441,142
APPARATUS FOR DIVIDING A SINGLE FILE STREAM OF CONVEYED CONTAINERS INTO A PLURALITY OF SEPARATE STREAMS

Egon Schneider, Neutraubling, Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Germany

Filed Aug. 31, 1993, Ser. No. 114,805
Claims priority, application Germany, Sep. 2, 1992, 9211817 U
Int. Cl.[6] B65G *47/26*
U.S. Cl. 198—492 **21 Claims**



1. Apparatus for dividing a single file stream of containers into a plurality of separate streams comprising:

a horizontally translating conveyor for conveying the single file stream of containers upright in a downstream direction to a transition region, said conveyor having a portion extending downstream through and beyond said transition region,

an elongated container diverter rail having at least a section that is flexible, the diverter rail having opposite ends, one end being fixed downstream of the transition region and the opposite movable end disposed for being moved transversely of the direction of container conveyance in the transition region to opposite sides of the transition region to define alternate passageways for containers to be conveyed downstream of the transition region on said portion of the conveyor that extends beyond the transition region,

infeed guide rails laterally spaced apart and parallel to each other for guiding the single file stream of containers as the containers are conveyed in the downstream direction to said transition region,

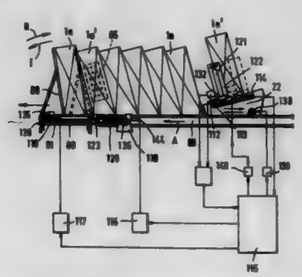
a transitional guide rail junctioned in confluence with said infeed guide rails respectively, in the transition region, said transitional guide rails diverging from each other as they extend in the downstream direction over a predetermined distance form the transition region so that when said opposite movable end of the diverter rail is in one position the diverter rail and one of the transitional guide rails cooperate to define one of said passageways and when the free said movable opposite end is in the opposite position said diverter rail and the other of the transitional guide rails cooperate to define another passageway, and

an actuator mechanically connected to a region at said opposite end of the diverter rail and operative to move said diverter rail alternately from one side of the transition region to the other.

5,441,143
METHOD AND APPARATUS FOR ARRANGING FIBER BALES IN A SINGLE ROW IN PREPARATION FOR A FIBER TUFT DETACHING OPERATION

Fritz Hösel, Mönchengladbach, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Jun. 20, 1994, Ser. No. 262,633
Claims priority, application Germany, Jun. 19, 1993, 43 20 403.1
Int. Cl.[6] B65G *43/08*
U.S. Cl. 198—464.3 **21 Claims**



1. A method of arranging fiber bales to form a first, operational bale row in preparation for detaching fiber tufts from the bales of the first row by a bale opener; comprising the followings steps:

(a) consecutively carrying fiber bales by a transporting device along a conveying device to form a second, standby row of fiber bales on said conveying device by consecutively depositing fiber bales on said conveying device next to a momentarily trailing bale of said second row such that a width of the fiber bales on the conveying device extends parallel to an advancing direction of the conveying device;

(b) moving said conveying device in said advancing direction for consecutively advancing the bales of said second row to a bale separating station situated at an output end of said conveying device;

(c) separating a momentarily leading bale of said second row from remaining bales of said second row;

(d) transferring the fiber bales from said conveying device to a location where said first row of bales is formed in an operating zone of the bale opener;

(e) determining the width of each fiber bale while on one of said transporting device and said conveying device;

(f) determining the ranking of each fiber bale while on one of said transporting device and said conveying device;

(g) generating signals representing said width and ranking;

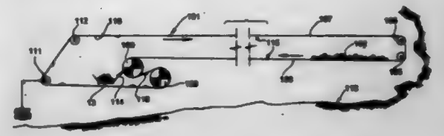
(h) storing said signals in a memory; and

(i) based on said signals, determining an extent of feed for each said bale for the separating step.

5,441,144
METHOD AND APPARATUS FOR REDUCING CONVEYOR BELT SPILLAGE

Barry J. Barnett, Mudgee, Australia, assignor to Barnett Investments Pty Limited, Mudgee, Australia

PCT No. PCT/AU91/00421, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/05095, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 11, 1991, Ser. No. 982,756
Claims priority, application Australia, Sep. 13, 1990, PK2295; Apr. 29, 1991, 76236/91
Int. Cl.[6] B65G *47/31*
U.S. Cl. 198—499 **13 Claims**



1. A method for reducing belt spillage whilst conveying coal-like material by means of a conveyor belt comprising an endless loop having two runs positioned one above the other, extending between a source location and a destination location and, in operation, travelling in opposite directions, with at least the lower run passing over idler rollers; said method comprising the steps of loading said material to be conveyed onto only the upper surface of the lower one of said runs at said source location so that the face of said belt comprising the lower surface of said lower run is substantially free of said material; moving said lower run in the direction from said source location to said destination location; and discharging at said destination location substantially all said material from said lower run except any material adhering to said belt, said discharging being via a splitting chute which divides said discharged material transversely relative to the longitudinal direction of said belt, into two streams, each said stream passing to a corresponding one of two opposite edges of said belt, wherein that face of said belt comprising the upper surface of said lower run also comprises the lower surface of said upper run whereby any of said adhering material not discharged from said belt at said destination location and subsequently dislodged from said upper run lower surface anywhere between said source location and said destination location drops onto said lower run upper surface to be re-conveyed thereby to said destination.

5,441,145
ELEVATOR DEVICE

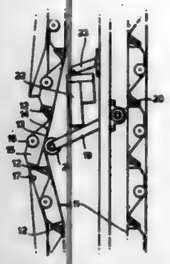
Jordan Knez, Andregatan, Sweden, assignor to J. Knez AB, Halmstead, Sweden

Filed Jan. 28, 1994, Ser. No. 187,714
Claims priority, application Sweden, Jan. 29, 1993, 9300299
Int. Cl.[6] B65G *17/36*
U.S. Cl. 198—705 **7 Claims**

1. A substantially vertical elevator for the transporting of objects from a replenishment point to receptacle containers at different levels of elevation, the elevator comprising:

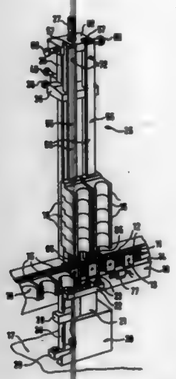
an upper roller;

a lower roller;
a conveyor belt extending between the upper roller and the lower roller and passing a plurality of emptying points between the rollers;
a plurality of spaced carrier planes extending transversely from the conveyor belt for carrying objects during the movement of the carrier planes from the replenishment point to the emptying points;



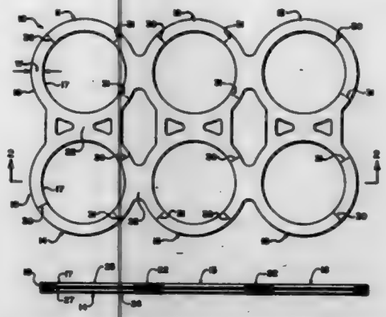
a plurality of ejectors, one ejector disposed between each adjacent pair of the carrier planes, each ejector being separately actuable at selected ones of the emptying points during movement of the carrier planes, for removal of objects on the adjacent carrier plane to a receptacle container at the emptying point.

5,441,146
PACKAGING MACHINE
Otto Ziegler, Rot am See, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed May 4, 1994, Ser. No. 238,088
Claims priority, application Germany, May 4, 1993, 43 14 613.9
Int. Cl.[6] B65G *29/00*
U.S. Cl. 198—803.01 **20 Claims**



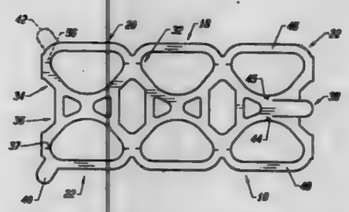
1. A packaging machine which includes a filling and sealing machine having a conveyor device (10) with drivers (12) on which container receptacles (15) are interchangeably disposed, a magazine (55) that stores a plurality of container receptacles (15), the magazine (55) can be connected to a stationary magazine carrier (25) that is disposed on a frame (17) of the packaging machine in a region of a station of the conveyor device (10) and receives the magazine (55) transversely to the conveying direction of the conveyor device (10), and that an intermittently operating changing device (20) is associated with the magazine carrier (25), which device transfers one container receptacle (15) at a time from the magazine (55) to a driver (12) or vice versa.

5,441,147
PLASTIC PACKAGING COLLARS FOR DRINK CANS
Bernard Tanner, Box 42043, Acadian P.O., Calgary, Alberta, Canada T2J 7A6
Filed May 31, 1994, Ser. No. 251,684
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—150 **7 Claims**



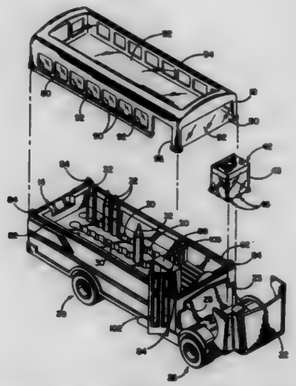
1. A plastic packaging member for connecting a plurality of drink cans comprising a flexible plastic body defining a plurality of annular collars each for engaging around an upper rim of a respective one of the plurality of drink cans, each collar having a thickness less than the width thereof and means interconnecting the collars to hold the plurality of cans interconnected for carrying as a group, the body being formed a plurality of layers at least partly overlapping such that the thickness of the collars at least part thereof is formed by the overlapped layers, each layer having in at least one collar at least one cut through the thickness and width thereof with the cut of one layer being spaced around the collar relative to the cut of another layer, and degradable adhesive means interconnecting the layers such that on degradation of the adhesive means the layers separate such that said at least one collar in each layer is opened by the respective cut therein.

5,441,148
RELEASE MECHANISM FOR CANS
Arthur J. Appleton, 61 Eagle Lake La. #31, San Ramon, Calif. 94583
Filed Jun. 9, 1994, Ser. No. 257,682
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—150 **7 Claims**



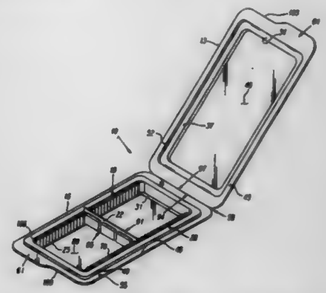
1. A release mechanism for a multiple container package having a space between first and second portions of the multiple containers
comprising:
a. a band of resilient material extending about at least a portion of the periphery of each of the multiple containers, said band forming a closed loop about the entirety of the multiple containers, said closed loop exerting a force on each of the multiple containers, said closed loop possessing at least one frangible element therealong;
b. a connecting member located along the space between the first and second portions of the multiple containers, said connecting member including a plurality of frangible elements linking said connecting member to said band to form a breakable collar about each of the multiple containers; and
c. grasping means for permitting the application of a pulling force on said connecting member to separate any of said frangible elements linking said connecting member to said band, and to separate said closed loop of said band at said one frangible element therealong.

5,441,149
WRITING INSTRUMENT CONTAINER
Michael D. Willard, Olathe, Kans.; Charles W. Dietterich, Brodheadsville, Pa., and Richard A. Tarozzi, Gales Ferry, Conn., assignors to Binney & Smith Inc., Easton, Pa.
Filed Sep. 8, 1993, Ser. No. 118,455
Int. Cl.[6] B65D *85/28*
U.S. Cl. 206—214 **84 Claims**



1. A portable writing instrument container comprising:
at least one writing instrument; and
a housing in the shape of a vehicle having a lower portion and an upper portion, the upper portion is removable from the lower portion, the lower portion includes a holding portion to hold a plurality of writing instruments in a relatively vertical position wherein the upper portion meets the lower portion at an edge and a portion of said writing instruments extend above a portion of said edge wherein said upper portion has an area which allows the writing instrument to be visible through said area.
27. A writing instrument container kit, comprising:
a writing instrument container in the shape of a vehicle having a lower portion and an upper portion, the upper portion is removable from the lower portion, the lower portion includes a plurality of compartments for writing instruments;
a first enclosure containing said writing instrument container and a second enclosure; and
at least one writing instrument in said second enclosure.
50. A portable writing instrument container comprising:
a housing in the shape of a vehicle, said housing includes a plurality of compartments for said writing instruments, said housing includes a sharpener for said writing instruments which is part of the vehicle design and said sharpener is removably positioned on said housing by flanges and channels wherein said sharpener includes a shavings container.
58. A portable writing instrument container comprising:
a housing in the shape of a locomotive, said housing includes a plurality of compartments for writing instruments, said housing includes a sharpener for writing instruments wherein said sharpener is removably positioned on said housing, said sharpener includes a shavings container and said sharpener is the shape of a smokestack.

5,441,150
MEMORY MODULE CONTAINER
Abraham C. Ma, Union City, Calif., assignor to Ma Laboratories, Inc., San Jose, Calif.
Continuation of Ser. No. 939,988, Sep. 3, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 268,665
Int. Cl.[6] B65D *73/02*
U.S. Cl. 206—707 **5 Claims**



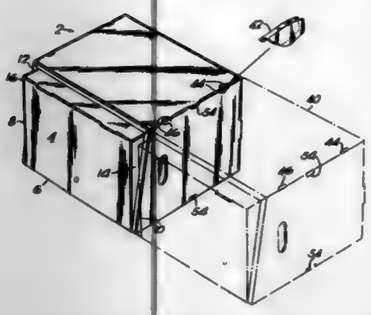
1. A container for memory modules comprising
a stair-stepped lid comprising a substantially horizontal first surface, a substantially horizontal second surface, and a substantially horizontal lid lip, said first surface being between said second surface and said lid lip;
a tray comprising a first tray inner wall, a second tray inner wall, and at least one pair of tray protrusions, wherein said at least one pair of tray protrusions is formed into said first tray inner wall and said at least one pair of tray protrusions forms a slot between said tray protrusions, wherein the slot has a width that is substantially equal to a width of a printed circuit board, and wherein a width of each of said tray protrusions is equal to or greater than a height of the memory modules, each of said tray protrusions being aligned with like tray protrusions on said second tray inner wall, the tray also comprising a tray lip that abuts the lid lip when the container is closed, said tray further comprising an upper flange which abuts said first surface of said lid when the container is closed, said tray still further comprising a lower cavity, a ledge at a root of said tray protrusions for supporting the memory modules, and a container base, wherein said lower cavity is formed between said ledge at said root of said tray protrusions and said container base, wherein said lid and said tray are pivotally connected along one edge by a hinge means; and
a latch for keeping the container releasably closed.

5,441,151
STORAGE SYSTEM
Paul R. Billingham, 22 Heathfield Terrace, Chiswick, London W4 4JE, England
Continuation of Ser. No. 988,118, filed as PCT/GB90/02010, Dec. 21, 1990, abandoned. This application Aug. 11, 1994, Ser. No. 289,443
Claims priority, application United Kingdom, Jul. 4, 1990, 9014837
Int. Cl.[6] B65D *85/00, 21/00, 21/02*
U.S. Cl. 206—425 **10 Claims**

1. A storage box comprising:
a generally rectangular body, one side of which comprises an opening for access to an interior of said body, said body being so shaped that when a side comprising said opening is uppermost, said side is sloped with a single pitch, relative to a base of said body;

a lid operatively secured to said body and closing said body side comprising said opening, wherein said body side comprising said opening has three edges which comprise inward flanges;

wherein said lid is smaller in size than said body side comprising said opening, said lid comprising dependent side walls so shaped that when said lid is closed its top surface is parallel to said base; and,



wherein free edges of said lid side walls are inset relative to said inward flanges of said opening so that when a plurality of storage boxes are stacked together on their sides an access opening is defined between adjacent boxes to allow a user to grasp a side wall or a top wall of a lid of each box and open such box without contacting adjacent boxes.

5,441,152

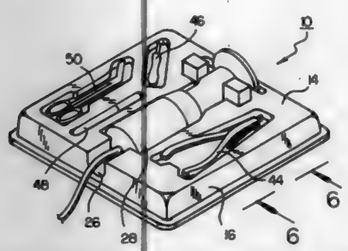
ORGANIZER DEVICES FOR ORTHOPEDIC EQUIPMENT NORMALLY FOUND IN CAST REMOVAL SITUATIONS

Ronald L. Estes, 25 Forest Pines Dr., Statesboro, Ga. 30458

Filed Mar. 29, 1994, Ser. No. 219,439

Int. Cl.[6] B65D *69/00, 1/34, 6/04*

U.S. Cl. 206—570 **1 Claim**



1. A new and improved organizer device for orthopedic equipment comprising:

orthopedic equipment including a saw of the type having a head and a blade at one end and a power cord at the opposite end and, the orthopedic equipment also including a cast spreader, a cast knife, a pen and bandage scissors;

a plastic box with a lower surface, and opened upper surface and a raised peripheral wall therearound, the box being vacuum formed with recesses and projections therein, the recesses including a central recess for the receipt of the saw with a semi-cylindrical end recess formed into one peripheral wall formed as an extension of the central recess for the receipt of the cord of a saw, the central recess having a conical central region extending to a central region of the box, and the central recess also having enlarged projections extending upwardly above the raised peripheral wall from the end of the recess remote from the end recess adapted to receive and support the head and blade of a saw; and

a plurality of supplemental recesses formed on opposite sides of the central recess, the supplemental recesses being shaped to receive the surgical instruments including a cast spreader, a cast knife, a pen and bandage scissors.

5,441,153

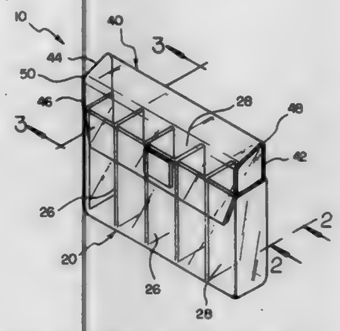
LIPSTICK AND CONTAINER SYSTEM

Cindy L. Lahaye, 10543 Kirkgreen Dr., Houston, Tex. 77089

Filed Mar. 2, 1994, Ser. No. 204,962

Int. Cl.[6] B65D *85/30*

U.S. Cl. 206—581 **1 Claim**



1. A lipstick and container system comprising, in combination:

a color medium in tubular form having a lower end and an upper end adapted to paint the lips of a user, the lipstick also having a base with an upper surface coupled to the lower end of the medium, the base also having a lower surface with indicia formed thereon, the lipstick also having a cylindrical side wall with a lower end coupled with to the upper end of the base of the medium and having an open upper end terminating at an elevation to allow the upper end of the lipstick to be exposed during operation and use, the lipstick also having a tubular cover with an open lower end positionable over the medium and side walls in contact with the upper surface of the base, the cover also having a closed upper end to protect the upper end of the medium;

a holder having a front wall and a rear wall in spaced parallel relationship therebetween, the holder also having a bottom wall coupling a lower end of the front wall and rear wall, the holder also having parallel side walls secured to lateral ends of the front and rear walls and secured to a lower end of the upper surface of the bottom wall, the holder also having a plurality of divider panels configured similar to the side walls and positioned at equally spaced locations therebetween, the front and rear walls and adjacent side walls defining box-like spaces for the removable receipt of the lipstick, the lipstick snugly positioned with the upper end thereof adjacent to the bottom wall of the container, the material of the container being transparent, flexible, and resilient whereby the applying of forces by fingers to portions of the container will fixedly position the cover of the lipstick contained therein whereby the base, lipstick and side walls may be withdrawn for use with the cover retained therein;

a cover for the container, the cover formed as an extension of the back wall extending upwardly then at an angle over to cover the container and then downwardly at an angle with closure means thereon.

5,441,154

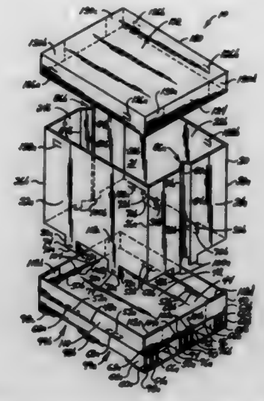
INTEGRATED PAPERBOARD CONTAINER AND PALLET SYSTEM

Donald R. Yousll, III, 5913 MacEwen Ct., Dublin, Ohio 43017

Filed Jun. 28, 1994, Ser. No. 267,884

Int. Cl.[6] B65D *19/20*

U.S. Cl. 206—599 **29 Claims**



1. An integrated paperboard container and pallet system comprising:

a wall portion having upstanding walls spaced-apart to form a generally polygonal-shaped interior cavity, at least one of said walls having at least one side tab extending downwardly therefrom;

a deck portion formed as a generally planar member having an upper side forming a floor surface and a lower side forming a support surface, said planar member having edges forming a generally polygonal periphery and having a first opening therethrough for each said side tab; and

a first and a second runner each formed as having a top wall, each said top wall being attached to said lower support surface for supporting said deck portion between said first and second runner and having a slot therethrough for and in registry with each corresponding said first opening, each said side tab being received through a corresponding said first opening and slot to attach said wall portion to the floor surface of said deck portion.

21. A method of making an integrated container and pallet comprising the steps of:

(a) providing an upstanding wall portion having a pair of oppositely-disposed side walls, and a pair of oppositely-disposed end walls each extending between said side walls intermediate a first and a second edge fold line, each of said side walls having at least one side tab extending downwardly therefrom, and each of said end walls having a central vertical fold line disposed intermediate said first and said second edge fold line and being inwardly folded on said central and said first and second edge fold lines collapsing said wall portion;

(b) providing a deck portion formed as a generally planar member having an upper side forming a floor surface and a lower side forming a support surface, said planar member having edges forming a generally polygonal periphery and having a first opening therethrough for each said side tab, each said first opening being disposed along one of a first pair of opposite edges of said polygonal periphery;

(c) providing a first and a second runner each formed as having a top wall, each said top wall being attached to said lower support surface for supporting said deck portion between said first and second runner and having a slot therethrough for and in registry with each corresponding said first opening of said deck portion;

(d) inserting each said side tab from one of said side walls through a corresponding said first opening and slot;

(e) outwardly expanding the collapsed wall portion about each said central and each said first and second edge fold line to space apart said side and said end walls; and

(f) inserting each said side tab from the other of said side walls into a corresponding said first opening and slot to attach said wall portion to the floor surface of said deck portion forming said integrated container and pallet.

5,441,155

METHOD FOR PROCESSING DOMESTIC GARBAGE

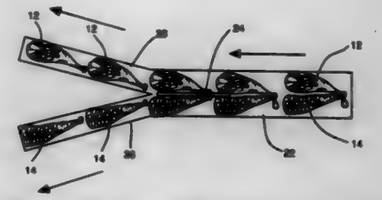
Dor Eldar, 18 Ugarit Street, Tel Aviv, Israel

Filed Mar. 7, 1994, Ser. No. 206,876

Claims priority, application Israel, Mar. 7, 1993, 104968

Int. Cl.[6] B07C *7/04*

U.S. Cl. 209—10 **10 Claims**



1. A method of processing domestic garbage comprising the steps of:

sorting the garbage into first and second classes, placing each class into a unified domestic garbage container comprising a respective number of compartments and located remote from a garbage dump site, thereafter collecting and transferring the container to said garbage dump site, thereafter dismembering the container into its compartments, and transferring each compartment so dismembered to its respective garbage class treatment location;

said container being in the form of a bag made of a pliable sheet material and having an envelope portion, an open mouth portion at a first end of said envelope portion and a closed portion at a second end of said envelope, said second end being opposite said first end;

said bag comprising a series of integrally formed pockets that are connected to each other at said open mouth portions by a seam that is generally parallel to said second end;

said bag being closable by a tying strip at said first end wherein said dismembering is effected by cutting the tied-together portion of the bag to thereby separate the bag into first and second pockets.

5,441,156

PROCESS AND RECOVERING MINERALS FROM NON-SULFIDIC ORES BY FLOTATION

Bernd Fabry, Korschenbroich; Rita Koester, Duesseldorf; Hans-Christian Raths, Monheim; Frank Wangemann, Solingen, and Heinz Mueller, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01120, § 371 Date Nov. 29, 1993, § 102(e) Date Nov. 29, 1993, PCT Pub. No. WO92/21443, PCT Pub. Date Dec. 10, 1992

PCT Filed May 20, 1992, Ser. No. 150,117

Claims priority, application Germany, May 29, 1991, 41 17 671.5

Int. Cl.[6] B03D *1/02, 1/012*

U.S. Cl. 209—166 **20 Claims**

1. In a process for the selective separation and recovery of minerals from a non-sulfidic ore containing said minerals in which said ore is crushed and is mixed with water and a collector for said minerals to form a suspension, subjecting the sus-

pension to flotation by introducing air into the suspension in the presence of said collector and forming a froth which selectively includes said minerals and recovering the minerals therefrom wherein the improvement comprises said collector containing the sodium salts of the reaction products of(a) oleic acid and (b) new rapeseed oil in a ratio by weight of 70:30 to 80:20 with sulfur trioxide, optionally together with another surfactant selected from the group consisting of anionic surfactants, nonionic surfactants and mixtures thereof.

5,441,157

METHOD AND DEVICE FOR SEPARATING A SUSPENSION, PREFERABLY A FIBRE SUSPENSION

Roland Fjällström, Lawrenceville, Ga., assignor to Celleco Hedemora AB, Stockholm, Sweden

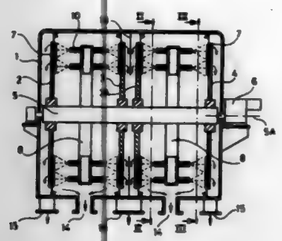
PCT No. PCT/SE93/00002, § 371 Date Jan. 12, 1994, § 102(e) Date Jan. 12, 1994, PCT Pub. No. WO93/15265, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 28, 1993, Ser. No. 119,222

Claims priority, application Sweden, Jan. 28, 1992, 9200233

Int. Cl.[6] B07B *1/08*

U.S. Cl. 209—271 **7 Claims**



6. A device for separating a fiber suspension containing relatively fine particles and coarse particles in the form of fibers and having a fiber concentration in the range of 0.2 to 2.0% comprising a filter sheet in the shape of a circular annular disc having a center and two opposite sides, drive means for rotating said filter sheet about a rotational axis extending through the center of said filter sheet substantially transversely thereto, spray means positioned to spray the fiber suspension against one side of the filter sheet to separate the suspension into a fine fraction which passes through the filter sheet and which contains fine particles, and a coarse fraction which does not pass through the filter sheet and which contains said coarse particles, wherein the drive means rotates the filter sheet about said axis at a speed such that the coarse particles and liquid developing on said one side of the filter sheet during operation are received from the filter sheet substantially as the result of the centrifugal force said coarse particles are subjected to by said rotation, wherein:

the radially inner circumference of the annular filter sheet is situated at a minimum distance (Rmin) from said rotation axis such that the following conditions are fulfilled:

$$Rmin \geq 8.5\left(\frac{60}{2\pi n}\right)^2$$

where Rmin is the minimum distance from the rotation axis in meters, and n is the rotational speed of the filter sheet in rpm.

5,441,158

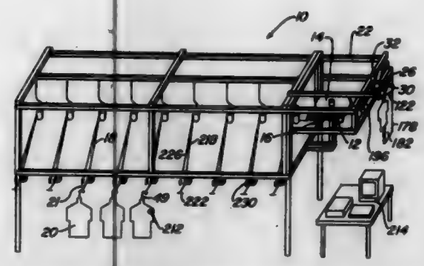
FEEDING SYSTEM FOR A GARMENT SORTER

Karl R. Skinner, Fort Worth, Tex., assignor to Star Uniform Rental Company, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 837,361, Feb. 14, 1992, Pat. No. 5,301,809. This application Dec. 16, 1993, Ser. No. 168,649

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—583 **24 Claims**



1. A feeding system for feeding individual articles from a plurality of articles supported on a plurality of unordered hangers to a sorting conveyor, the sorting conveyor having a plurality of attachment members spaced along the length of the conveyor for conveying the individual articles to various sorting stations, the conveyor and attachment members being driven along a conveyor path to a collection station, the feeding system comprising in combination:

an elevated support member having a forward end and a rearward end, the support member supporting the plurality of unordered hangers and being inclined so that the plurality of hangers is caused to move downward along the support member to the collection station from the rearward end to the forward end;

a first stop member mounted adjacent to the support member, the first stop member being movable between an engaged position and a disengaged position;

means for moving the first stop member between the engaged position and the disengaged position, the first stop member engaging a forward hanger of the plurality of hangers when in the engaged position so that the plurality of hangers is prevented from downward movement along the support member;

a separating member mounted adjacent to the support member, the separating member being movable between a withdrawn position and an interposed position; and

means for moving the separating member between the withdrawn position and the interposed position, the separating member engaging the plurality of hangers when in the interposed position so that the forward hanger is separated from the plurality of hangers and the separating member is interposed between the forward hanger and the plurality of hangers thus preventing the plurality of hangers from downward movement along the support member when the first stop member is moved to the disengaged position, the first stop member disengaging the forward hanger when in the disengaged position to allow the forward hanger to move downward along the support member.

5,441,159

APPARATUS FOR HANDLING DOCUMENTS FOR DELIVERY TO REMITTANCE PROCESSING EQUIPMENT

Robert R. DeWitt, Marlton, N.J., and Jeffrey L. Chodack, Newark, Del., assignors to Opex Corporation, Moorestown, N.J.

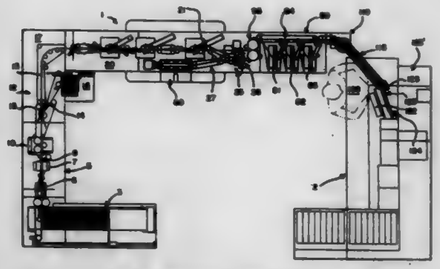
Division of Ser. No. 887,621, May 22, 1992, Pat. No. 5,310,062, which is a continuation-in-part of Ser. No. 363,511, Jun. 8, 1989, Pat. No. 5,115,918, which is a division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037. This application Apr. 28, 1994, Ser. No. 234,673

Claims priority, application Canada, May 21, 1993, 2096757; European Pat. Off., May 24, 1993, 93470011

The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—584 **54 Claims**



1. An apparatus for presenting documents that have been separated from envelopes for containing the documents to a remittance processing device, comprising an arm for receiving a plurality of the documents for presentation to the remittance processing device and means for conveying the received documents along the arm and to a delivery point adjacent to the remittance processing device, for serial presentation at the remittance processing device, thereby permitting remittance processing of the received documents.

5,441,160

METHOD OF COLLECTING DENSIFIED COMMODITIES USING A MOBILE MULTI-COMPARTMENT COMMODITY COLLECTION AND STORAGE ASSEMBLY

Bruce H. DeWoolfson, and Ken R. Powell, both of Fairfax, Va., assignors to Environmental Products Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 915,867, Jul. 20, 1992, Pat. No. 5,226,519, which is a continuation of Ser. No. 693,250, Apr. 29, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 88,333

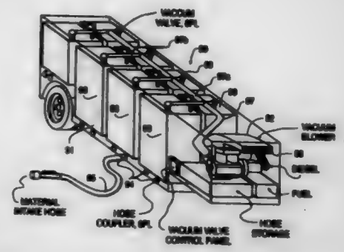
Int. Cl.[6] B07C *7/04*

U.S. Cl. 209—702 **16 Claims**

1. A method of collecting a plurality of commodities comprising the steps of:

densifying each of the plurality of commodities into a plurality of densified materials;

transferring at least one of the plurality of densified materials under vacuum via a hose to at least one of a plurality of segregated storage compartments on a mobile multi-compartment storage vehicle by using a vacuum source on the mobile storage vehicle to draw vacuum on the at least one segregated storage compartment on the mobile storage vehicle; and



controlling a plurality of vacuum valves to place the at least one segregated storage compartment under vacuum, while other storage compartments are not under vacuum.

5,441,161

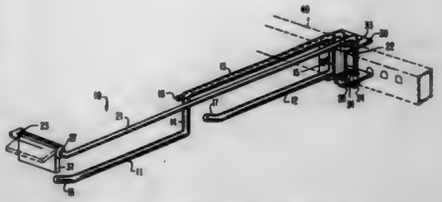
PEG CONSTRUCTION FOR PEGBAR DISPLAYS

Milton J. Merl, Stoanington, Conn., assignor to Milton Merl & Associates Inc., New York, N.Y.

Filed Nov. 1, 1993, Ser. No. 145,797

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—57.1 **7 Claims**



1. A multi-level peg assembly for attachment to a pegbar having a predetermined width comprising:

(a) an elongated peg wire bent to provide a horizontal spine, a vertical back hanger element depending from the rearmost portion of said spine, a vertical front hanger element depending from a forward portion of said spine, a back peg element extending forwardly from said vertical back hanger element, and a front peg element extending forwardly from said vertical front peg hanger element; said spine, hangers, and peg elements all being disposed in a common plane;

(b) a pair of horizontal side wires disposed in tandem and in association with said spine;

(c) said horizontal side wires each having vertical mounting legs depending from rearmost portions thereof;

(d) said vertical mounting legs being spaced from said back peg hanger element a predetermined distance substantially equal to the width of the pegbar;

(e) detent locking means formed integrally with lower portions of said mounting legs;

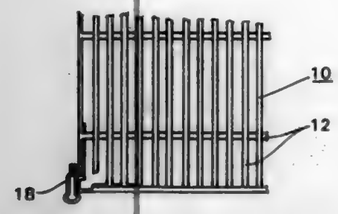
(f) a C-shaped bracket having a horizontal top wall and a horizontal bottom wall joined by a front wall;

(g) a first elongated slot formed in said top wall and a second elongated slot formed in said bottom wall; and

(h) a vertical slot formed in said front wall; whereby

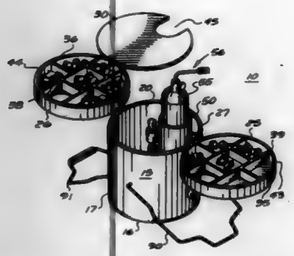
(i) said peg wire may be mounted to said pegbar by superpositioning said C-shaped bracket over said pegbar, inserting said mounting legs through said first and second elongated slots to permit said detent locking means to engage said second elongated slot and to permit said vertical back hanger element to engage said vertical slot.

5,441,162
WIRE SHELF CORNER SUPPORT SYSTEM
George W. Niblock, 1059 Upper State Rd., Chalfont, Pa. 18914
Filed Dec. 20, 1993, Ser. No. 169,352
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—153 10 Claims



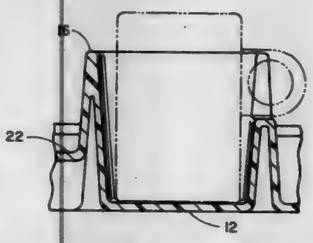
1. A shelf structure of generally rectangular shape adapted to be secured to vertical support posts, said shelf structure comprising a horizontal upper article receiving surface formed of wire members arranged in a criss-cross pattern and side wall portions projecting downwardly at a right angle to the surface of the shelf;
said side wall portions having inner and outer surfaces and terminating short of the corners of the shelf;
a corner mount member at each corner of the shelf for attachment to the vertical support posts, each said corner mount member having a pair of horizontally extending legs at right angles to one another, said legs having a proximal end portion at the junction of the legs terminating adjacent the terminal ends of the side wall portions and a distal end portion, the distal end portion of each leg having its outer surface recessed inwardly from the outer surface of the shelf a distance equal to the thickness of each side wall; and
means securing the corner mounts to said shelf with the outer surface of the distal leg portions in engagement with the inner surface of the side walls adjacent the ends of the side walls.

5,441,163
PORTABLE TOOL CONTAINER
Ray Carrasco, 3997 Brookside Dr., Lake Havasu City, Ariz. 86406
Filed Apr. 6, 1994, Ser. No. 223,773
Int. Cl.[6] A65D *75/00*
U.S. Cl. 220—23.86 20 Claims



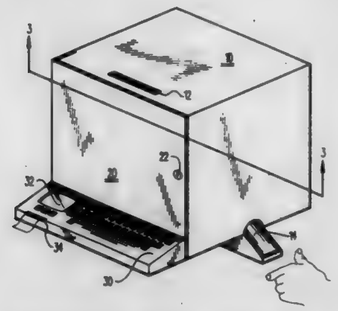
1. A portable tool container comprising:
a generally cylindrically shaped base with a flat bottom and sides defining an upwardly opening main compartment;
a plurality of trays hingedly affixed to the sides of the base in opposed and stacked relationship for pivotal movement between a closed position overlying the upwardly opening main compartment and an open position in which the plurality of trays pivot outward from the sides of the base in different directions and operate as counterweights to maintain the base securely in an upright position; and
a cover pivotally attached in overlying relationship to an upper one of the plurality of trays and pivotal between a closed position in which the cover overlies the upper one of the trays and an open position in which the cover extends outwardly to allow access to all of the plurality of trays.

5,441,164
COMBINATION FOOD AND BEVERAGE PLATE
Heinz Beck, 21752 Montbury, Lake Forest, Calif. 92630, and Michael D. Beck, 5160 North Grey Mountain Trail, Tucson, Ariz. 85715
Filed Mar. 18, 1994, Ser. No. 214,434
Int. Cl.[6] B65D *25/30*
U.S. Cl. 220—575 1 Claim



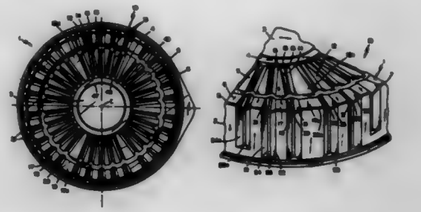
1. A new and improved combination food and beverage plate comprising, in combination:
a planar bottom section with an upper surface and a lower surface;
a generally cylindrically shaped side wall contiguous with and extending upward from the perimeter of the upper surface of the bottom section, the side wall being angled upward and outward with respect to the plane of the plate at about one hundred and ten degrees, the side wall also having a curved ledge at its upper extent extending a short distance further from the perimeter of the plate than the remainder of the side wall;
a generally cylindrically shaped center support cylinder contiguous with and extending upward from the central portion of the upper surface of the bottom section, the center support cylinder having an opening at its upper extent and consisting of an inner cylindrical wall and an outer cylindrical wall which meet at their upper extents to form a circumferential groove in an inverted V-shape configuration, the circumferential groove being shaped to permit snug stacking of multiple plates, with both cylindrical walls measuring between about two and three inches in height, the inner cylindrical wall extending upward and outward from the central portion of the bottom section at about a one hundred degree angle with respect to the plane of the bottom section, with the outer cylindrical wall extending upward and toward the central portion of the bottom section at about an eighty degree angle with respect to the plane of the plate, with the cylindrical walls being separated by a short distance at their lower extent;
a cup handle slot depending downwardly from the upper extent of the center support cylinder, the slot having a generally rectangular shape with an open end even with the upper perimeter of the center support cylinder the slot measuring about one-half the height of the cylinder and wide enough to provide clearance for a cup handle in the operative orientation;
three planar, generally rectangular shaped food dividers contiguous with and extending upward from the upper surface of the bottom section, each food divider being positioned equidistantly from the others and comprised of two walls, with the lower extent of the food divider walls being located a short distance from each other, with the two walls being slanted toward each other and meeting at their upper extent to form a radial groove in an inverted V-shape configuration, the radial grooves being shaped to permit snug stacking of multiple plates, each divider having an inner edge and an outer edge, with the inner edge abutting the center support cylinder and extending radially outwardly therefrom, with the outer edge abutting the side wall, the area between the food dividers encompassing the entire surface area of the bottom section.

5,441,165
AUTONOMOUS CONTROLLED DRUG DISPENSING SYSTEM
Vivian Kemp, 1928 Abshire La., Dallas County, Dallas, Tex. 75228; Janie Nichols, 702 Woodhaven Ave., Dallas County, Duncanville, Tex. 75116; Martha Brushwood, 523 Woodhavaven Ave., Dallas County, Duncanville, Tex. 75116, and David Hullender, 2709 Westridge Dr., Tarrant County, Arlington, Tex. 76012
Filed Jul. 22, 1991, Ser. No. 734,152
Int. Cl.[6] G07F *11/56*
U.S. Cl. 221—2 3 Claims



1. An autonomous stand-alone controlled drug dispensing system particularly adapted for a nursing station at a health care facility comprising:
a) a plurality of front loading vertically stacked drawers each said drawer including a carrousel, and each said carrousel comprising a plurality of slots;
b) a motor connected to each said carrousel in said drawer for independently rotating said carrousel one slot at a time;
c) a controller means connected to each said motor;
d) a programmable microprocessor connected to said controller means;
e) an alpha-numeric keyboard connected to said microprocessor;
f) a video display terminal connected to said microprocessor; and
g) a printer connected to said microprocessor;
and wherein further said carrousels in said drawers, said motors, said controller means, said microprocessor, said alphanumeric keyboard, said video display terminal and said printer are integrated into a box which further comprises:
a) a dual lock and key front door connected to said box,
b) a drug dispensing chute connected to said box at a lower portion thereof; and
c) a drug return slot separate from said drug dispensing chute in an upper portion of said box.

5,441,166
DOME COVER FOR TRAY OR PAN
Earl S. Lucas, Jr., Glen Allen, and Frank J. Rocco, Richmond, both of Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Mar. 15, 1994, Ser. No. 213,274
Int. Cl.[6] B65D *41/18*
U.S. Cl. 220—306 6 Claims



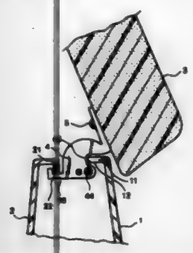
1. A cover of lightweight relatively flexible material used for displaying and packing food comprising:
a circular top comprising:
a flat circular recess formed at the center of said circular top at a first height,
a flat annular surface adjacent said flat circular recess,
a plurality of first radially extending planar segments circumferentially spaced along said circular top adjacent said flat annular surface with each first radially extending planar segment connected to an adjoining first radially extending planar segment by a plurality of first radially extending surfaces defining a plurality of first radially extending trapezoidal grooves, and
a plurality of second radially extending planar segments circumferentially spaced along said circular top radially spaced from said plurality of first radially extending planar segments and trapezoidal grooves with each second radially extending planar segment connected to an adjoining second radially extending planar segment by a plurality of second radially extending surfaces defining a plurality of second radially extending trapezoidal grooves; and
a side wall integrally formed with and extending downwardly from a peripheral edge of said circular top to a circumferential flange, said sidewall having a plurality of planar segments circumferentially spaced along the sidewall with each planar segment connected to an adjoining planar segment by a plurality of surfaces defining a plurality of trapezoidal grooves.

5,441,167
STORAGE AREA AND HINGE STRUCTURE
Yabuya Shigeru, Nakashima, Japan, assignor to Toyoda Gosei Co., Ltd., Japan
Filed Dec: 21, 1993, Ser. No. 170,935
Claims priority, application Japan, Dec. 21, 1992, 4-092126 U
Int. Cl.[6] B65D *43/16*; E05D *7/083, 11/06*
U.S. Cl. 220—334 7 Claims

1. A box and hinge structure comprising:
a box main body having a box part with an opening, two stopper portions and a supporting portion;
a lid for opening and closing said opening of the box part;
a hinge having an arcuate hinge body and extending therefrom a connecting portion connected to said lid, said hinge body having opposing side walls, a first stopper portion formed on at least one of said side walls, a second stopper portion extending from said hinge body remotely from said first stopper portion; and
a pair of pivot members provided on one of said hinge and said box part and cooperating bearings provided on the other of said hinge and said box part so that said hinge is

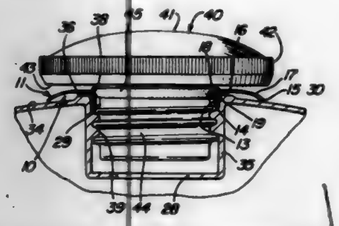
rotatably mounted relative to said box body permitting rotation of said hinge and said lid;
said two stopper portions in said box main body cooperating with said first and second stopper portions, respectively, to stop rotation of said hinge when said lid is fully open.

5. A box and hinge structure comprising:
a main box body having a box part with an opening, two stopper portions adjacent a supporting portion including spaced apart bearing assemblies;
a lid for opening and closing said opening of the box part; and
a hinge having an arcuate hinge body and extending therefrom a connecting portion connected to said lid, said hinge



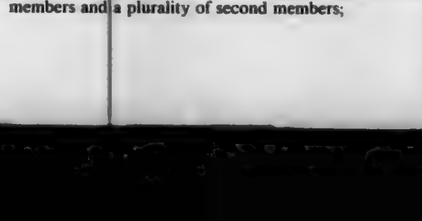
body having opposing side walls, a pivot protruding from each of said opposing side walls, each pivot being supported on said box main body through one of said bearing assemblies so that said lid can swing between open and closed positions, a first stopper portion formed as a bottom part of a recess on at least one of said side walls, between said pivot and said connecting portion, and a second stopper portion protruding from an edge portion of said hinge body and having a substantially perpendicular surface; wherein said two stopper portions in said box main body cooperate with said first and second stopper portions, respectively, to stop rotation of said hinge when said lid is fully open.

5,441,168
PROTECTIVE SEAL RING FOR MOTORCYCLE FUEL FILLER NECK
Anthony J. Carlini, 5 Geneve, Newport Beach, Calif. 92660
Filed Mar. 21, 1994, Ser. No. 216,183
Int. Cl.[6] B65D *55/00*
U.S. Cl. 220—378 **6 Claims**



1. For use in combination with a motorcycle fuel tank having an upper surface, a recessed threaded filler neck, a gasket seat, a raised ring surrounding the filler neck encircled by an upper tank surface, a gasket seat and a gas cap having a seal gasket receivable upon the gasket seat formed in the filler neck and a threaded cylinder stem receivable within the recessed threaded filler neck, a protective seal ring comprising:
an annular body defining a center aperture defining a diameter greater than the diameter of the threaded cylinder stem, a downwardly extending filler neck extension receivable into the motorcycle fuel tank filler neck, a curved gasket seat extending upwardly from said filler neck extension and a raised portion extending outwardly from said gasket seat and protectively covering said raised ring of said motorcycle fuel tank and the surrounding upper tank surface proximate the raised ring; and
an adhesive seal bead interposed between the gasket seat of a motorcycle filler neck and said filler neck extension,
said annular body being positioned within the motorcycle filler neck by inserting the threaded cylinder stem of the motorcycle gas cap through said center aperture and filler neck extension of said annular body into the recessed threaded filler neck to threadably couple the gas cap to the filler and captivate said annular body therebetween forcing the gas cap seal gasket against said curved gasket seat.

5,441,169
SAUCEPAN
Christopher K. Petty, 203 Wildemere Dr., South Bend, Ind. 46615
Filed Jan. 10, 1994, Ser. No. 179,152
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—428 **2 Claims**

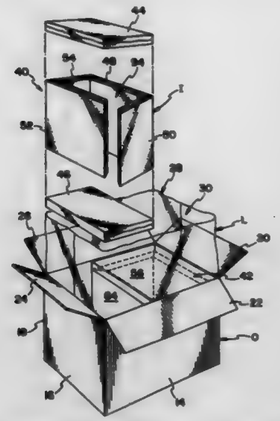


1. A saucepan comprising a lower pan, an upper pan connected to said lower pan to define a closed chamber between said upper and lower pans, a fill housing connected to said lower pan and defining a fill hole and a fill chamber, said lower pan including a hole means for allowing flow communication between said fill chamber and said closed chamber, cap means for selectively covering said fill housing to prevent introduction and exiting of fluid therefrom, said cap means including a plug part and an opening means therethrough for creating an aural indication of rising temperatures within said closed chamber upon the escape of vapors from said fill chamber through said opening means, said cap means further including an integral hinge means for shifting said plug part between a normally closed position covering said fill hole and an open position exposing said fill chamber to allow water to be poured thereinto.

5,441,170
SHIPPING CONTAINER WITH MULTIPLE INSULATED COMPARTMENTS
William W. Bane, III, 1608 N. Franklin St., Wilmington, Del. 19806
Filed Feb. 16, 1994, Ser. No. 197,785
Int. Cl.[6] B65D *5/49, 5/56*
U.S. Cl. 220—462 **20 Claims**

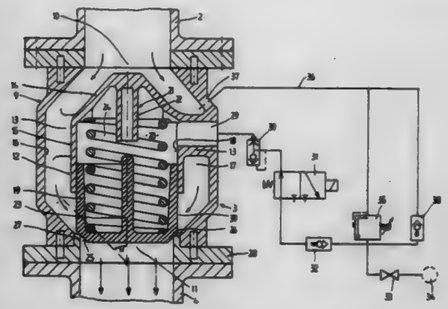
1. A reusable container for shipping temperature sensitive materials, comprising:
a) an outer container having a center;
b) a plurality of inner containers removably positioned in said outer container, each of said inner containers having a top and a bottom;
c) said outer container having a plurality of interconnected side walls with a sealable top and a closed bottom;
d) said inner containers each including a plurality of insulated side panels;
e) said insulated side panels comprising a plurality of first members and a plurality of second members;

f) each of said first members including generally planar first and second longitudinal surfaces;
g) said first members positioned so that said first longitudinal surfaces thereof substantially engage one another;



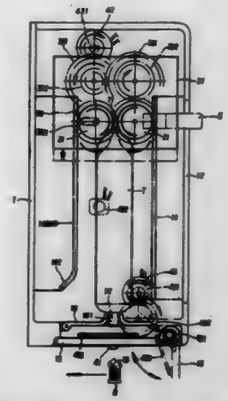
h) each of said first members having a thickness of at least approximately ¼ inch; and
i) said second members positioned adjacent respective said side walls of said outer container.

5,441,171
AIR CANNON FOR REMOVING CAKES OF FLOWABLE MATERIAL AND CLEARING CLOGGED AREAS OF FLOWABLE MATERIAL
Hans-Dietmar Maury, Hindemithstrasse 5, 59227 Ahlen, Germany
Filed Oct. 29, 1993, Ser. No. 144,774
Claims priority, application Germany, Oct. 31, 1992, 42 36 896.0
Int. Cl.[6] B65D *88/70*
U.S. Cl. 222—3 **14 Claims**



1. An air cannon for removing cakes of flowable material and clearing clogged areas of flowable material in silos, heat exchangers, and feed lines with an air blast; said air cannon comprising:
a pressure container for storing compressed air;
a pressure source connected with a first line to said pressure container;
an outlet valve connected to said pressure container;
an outlet jet connected to said outlet valve;
said outlet valve comprising a valve housing and a piston, wherein said valve housing has a guide in which said piston is axially slidable;
an annular channel formed between said valve housing and said guide, said annular channel connected to said pressure container and, in an open position of said outlet valve, forms a cylindrical opening that opens into said outlet jet;
said piston having a forward end face facing said outlet jet, said forward end face having an annular valve sealing surface, and a rearward end face on which a suddenly releasable closure pressure acts, wherein, when said outlet valve is closed, a pressure present in said outlet jet acts on an area surrounded by said annular sealing surface and wherein a pressure of said pressure container acts on an area outside of said annular sealing surface;
said outlet valve having a piston housing with radially extending stays and connected with said stays inside said valve housing, said piston housing being said guide;
a storage volume provided at said rearward end face of said piston, wherein said pressure source is connected with a second line to said storage volume;
a connecting channel for connecting said second line to said storage volume provided in at least one of said stays; and
said second line comprising a switchable valve which in a rest position connects said pressure source to said storage volume and which in a venting position opens a cross-section through which compressed air is vented from said storage volume.

5,441,172
APPARATUS FOR DISPENSING THE CONTENT OF A COLLAPSIBLE PASTE TUBE
Abraham Yu, No. 24, Kung Ying Wu Street, Tainan City, Taiwan
Filed Jul. 12, 1994, Ser. No. 273,974
Int. Cl.[6] B65D *35/28, 35/54*
U.S. Cl. 222—52 **2 Claims**



1. A dispensing apparatus for automatically dispensing the paste-like content of a collapsible tube, the apparatus comprising:
a housing having an elongated slot vertically disposed on a front wall thereof, two opposing pairs of vertical racks, a bottom opening on a bottom wall thereof, an outward-swinging outer door retained by springs to close said bottom opening, and a swinging inner door stopped in a closed position inside said bottom opening by a swivel pin, said swinging inner door having a through hole, said opposing pairs of vertical racks including one inner pair of vertical racks having each a curved bottom section;
a collapsible paste tube installed inside said housing to hold a paste-like content;

a dispensing unit mounted within said housing and moved to squeeze said collapsible paste tube causing said collapsible paste tube to send a predetermined amount of the paste-like content out of said housing through the through hole on said swinging inner door, said dispensing unit comprising two rollers having each two round pins longitudinally aligned at two opposite ends and two driven gears respectively fixedly mounted around the round pins and respectively meshed between said opposing pairs of vertical racks;

a transmission gear unit mounted on the round pins of said rollers at one side, said transmission gear unit comprising two parallel frames connected by spacers and screw bolts, a first gear shaft and a second gear shafts respectively inserted through holes on the parallel frames, a first gear and a second gear fixedly mounted around said first gear shaft, a third gear and a fourth gear fixedly mounted around said second gear shaft, said third gear being meshed with said second gear, a fifth gear fixedly mounted around one of said round pins at an outer side of one roller and supported by a spring member to mesh with said fourth gear;

a lever pivotally fastened to said transmission gear unit and retained in place by a spring member, said lever having one end extended out of the elongated slot on the front wall of said housing and moved to disengage said fifth gear from said fourth gear;

an induction type actuator controlled by an electric eye to detect the presence of a pick-up device for picking up the dispensed paste-like content from said collapsible paste tube and to turn said dispensing unit through said transmission gear unit causing said dispensing unit to squeeze a predetermined amount of the paste-like content out of said collapsible paste tube, said induction type actuator comprising a first motor controlled by said electric eye to rotate to said first gear in one direction at a predetermined distance, a return control switch controlled to turn said first motor reversely at a predetermined distance, a second motor controlled by said electric eye to turn a rotary wheel back and forth in one cycle causing said rotary wheel to open said outward-swinging outer door by push rods thereof; and

wherein when said pick-up device is detected by said electric eye, said first motor is triggered by said electric eye to move said rollers along said opposing pairs of opposite racks at a predetermined distance in squeezing a predetermined amount of the paste-like content out of said collapsible paste tube, and said second motor is simultaneously triggered by said electric eye to open said outward-swinging outer door for permitting the dispensed paste-like content to be picked up by said pick-up device; and wherein when said rollers are moved to the curved bottom sections of said vertical racks, said rollers are spaced from said collapsible paste tube.

5,441,173

PISTON DEPOSITOR

Michael J. Koval, Ballwin; Richard M. Silzer, Chesterfield; William M. Hasse, St. Charles, and Michael E. Leiweke, Arnold, all of Mo., assignors to Continental Baking Company, St. Louis, Mo.

Filed Mar. 2, 1994, Ser. No. 205,204
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—63 **19 Claims**

14. A drive system for a piston depositor of the type including a rotary valve for selectively connecting a cylindrical bore with a product source and a deposit outlet and a piston within said bore, said drive system comprising:

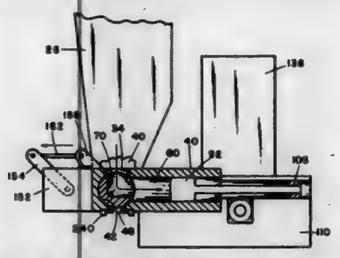
a piston drive servomotor;

a piston drive subassembly for connecting said piston drive servomotor to the piston to drive said piston through variable fill and deposit strokes;

a rotary valve servomotor;

a valve drive subassembly for connecting said rotary valve servomotor to the rotary valve for rotating the valve between fill and deposit positions; and

a control operatively connected to said piston drive servomotor and said valve servomotor for programmably con-



trolling the operation of said servomotors whereby the operation of the depositor, including the length of the fill and deposit strokes of the piston and the speed of rotation of the rotary valve, may be accurately controlled.

5,441,174

STERILE WOUND CLEANSING DISPENSER WITH SPRAY SHIELD AND METHOD OF MAKING A DISPENSER

Charles R. Sperry, 113 Clinton St., Springfield, Vt. 05156

Continuation-in-part of Ser. No. 873,952, Apr. 23, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 47,816
Int. Cl.[6] B65D *35/56*
U.S. Cl. 222—105 **20 Claims**



1. A portable, non-aerosol, incineratable wound cleansing liquid dispenser consisting essentially of:

actuatable, elastomeric container means for holding and selectively delivering sterile wound cleansing liquid at a substantially constant liquid pressure;

spokes mounted at the exterior of said container means and extending longitudinally along said container means adapted to prevent said container from rolling;

nozzle means in fluid communication with said container means for selectively actuating said container means to discharge therefrom, through said nozzle means, wound cleansing liquid in a directed liquid stream at a substantially constant stream pressure of about 8 psig; and

shield means mounted on said nozzle means for protecting a care giver from splashing;

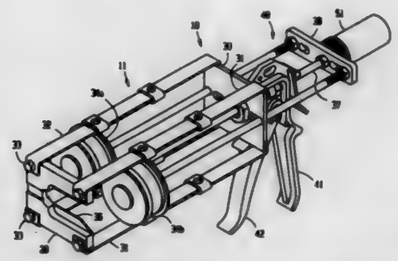
whereby said container means shrinks as wound cleansing liquid is discharged, thereby providing a visual indication of wound cleansing liquid held in said container means.

5,441,175

UNIVERSAL TOOL FOR TWIN CARTRIDGE MATERIAL SYSTEMS

Kenneth H. Jacobsen, 921 N. Quentin Rd., Palatine, Ill. 60067, and Louis F. Cole, 672 Constitution Dr., Unit 93-5, Palatine, Ill. 60074

Filed May 23, 1994, Ser. No. 248,060
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—137 **6 Claims**



1. A tool for dispensing material from a multiple component reactive materials system having paired tubular cartridges each having a front closure wall with a nozzle and having an open rear end, and a wiper slidable within the cartridge and closing the open end thereof, and a static mixing nozzle sealed over the cartridge nozzles by means including a tightening nut and having a common outlet for the mixed cartridge materials, the cartridges being conventional and usable in varying relative sizes and shapes, comprising the combination of

the tool having a cartridge frame formed of a front wall, a rear wall, and two pairs of two straps each between the walls, the axial spacing between the front and rear walls slightly exceeding the length of the cartridges, and the lateral spacing between each pair of two adjacent straps slightly exceeding the diameter of largest cartridge useable with the tool;

a plunger for each cartridge, each plunger having a rigid body sized to fit within the open end of the respective cartridge end and against the wiper, and spaced parallel rods extended through respective openings in the rear wall for supporting the respective plungers for axial movement between the front and rear walls;

said front wall having an open ended slot extended from near the center of the front wall generally along a plane through the spaced rods and in the direction normal to a plane through one pair of the straps and disposed centrally spaced therebetween, and the portion of the front wall adjacent and defining the slot having a given thickness;

means for mounting the front wall in two different arrangements, where in each mounting arrangement the axial separation between the rear wall and a near side of the front wall spaced from the slot is substantially the same, and where in one mounting arrangement the axial separation between the rear wall and the remote side of the front wall adjacent and defining the slot is less than in the other mounting arrangement;

said one mounting arrangement being suited for cartridges having rigid tabs extended laterally from the respective nozzle and generally parallel to the respective front closure wall only slightly spaced forwardly therefrom by approximately the thickness of the portion of the front wall defining the slot, and said cartridges being adapted to be positioned in the tool with said nozzles in the slot and the front closure wall butted against the near side of the front wall spaced from the slot and the tabs being on and butted against the remote side of the front wall adjacent and defining the slot, for rearward plunger withdrawal from the cartridges and for holding the cartridges in the tool at any needed positions along the slot to have the respective cartridge and plunger centers coincide; and

said other mounting arrangement being suited for cartridges not having laterally extended rigid tabs, said cartridges being adapted to be positioned in the tool with said nozzles in the slot and the front closure wall butted against the front wall spaced from the slot and said static mixing nozzle tightening nut butted against the remote side of the front wall along the slot, for rearward plunger withdrawal from the cartridges and for holding the cartridges in the tool at any needed positions along the slot to have the respective cartridge and plunger centers coincide.

5,441,176

VOLUMETRIC DRY MEASURE APPARATUS

Paul Aucé, Voltastraat 28, 3817 KN Amersfoort, Netherlands

Filed Feb. 22, 1994, Ser. No. 200,775
Int. Cl.[6] G01F *11/28*
U.S. Cl. 222—163 **19 Claims**

1. A volumetric measuring and dispensing apparatus for the dry measure of particulate matter having one of (I) a fixed body and a movable base, and (II) a movable body and a fixed base, which apparatus comprises;

a. a body open at the bottom having a storage zone for particulates to be measured and a retention zone for the receipt and disbursement of particulate matter, which storage zone is defined by an upstanding curved arcuate portion, and its intersection on one end with a inverted U-shaped portion,

b. a gate spaced up from the base a finite distance is mounted along one of its two sides to another end of said arcuate portion and on the second of its two sides to the inverted U-shaped portion, and which retention zone is defined as an area on said base outside of said gate and said barrier; and

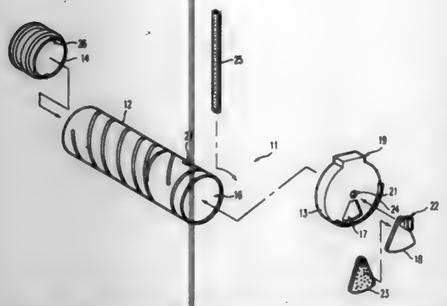
c. said base comprising a plate, one of said plate and said body being connected to a motor which upon energization causes the one of said table and said body to rotate relative to the other of said table and said body, whereby material piled within the storage zone will pass under the gate and out of the body for collection with residual material being retained on the retention zone.

5,441,177

TONER CONTAINER AND TONER REPLENISHING DEVICE INCLUDING A CAP MEMBER HAVING A SHUTTER

Takaaki Yanagisawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 166,956
Claims priority, application Japan, Mar. 14, 1993, 5-080095
Int. Cl.[6] B67D 5/64
U.S. Cl. 222—167 24 Claims



1. A toner container rotatably mountable to a toner replenishing device for discharging toner to the toner replenishing device upon rotation of the toner container, comprising:

a cylindrical member for containing toner to be discharged, said cylindrical member having a mouth portion adjacent one end thereof;

a cap member covering the mouth portion and fittable in the toner replenishing device when said cylindrical member is rotatably mounted to the toner replenishing device, said cap member being rotationally movably attached relative to said cylindrical member such that said cap member can remain stationary without becoming detached from said cylindrical member when said cylindrical member is rotated, said cap member having an opening through which toner can be discharged and an engaging portion which cooperates with the toner replenishing device to prevent rotation of the cap member relative to the toner replenishing device when said cylindrical member is rotatably mounted to the toner replenishing device; and

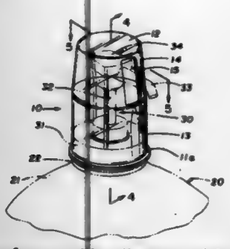
a shutter mounted to said cap member so as to selectively close said opening.

5,441,178

OVERCAP FOR PUMP STYLE DISPENSER

J. Christopher Wysocki, Stow, Ohio, assignor to GOJO Industries, Inc., Cuyahoga Falls, Ohio

Filed Apr. 25, 1994, Ser. No. 231,755
Int. Cl.[6] B67D 5/06
U.S. Cl. 222—182 15 Claims



1. An overcap for use with a dispenser of the type including a container and a pumping unit attachable thereto, the pumping unit being releasably attached to the container by a closure and having a projecting stem with a pressure member on the distal end thereof and dispensing spout, the overcap comprising:

a) a generally cylindrical body having a substantially closed wall, an open end and a closed end;

b) said open end being sized for press-fit engagement with the closure; said body having a height dimension slightly greater than the projecting height of the stem;

d) a through opening in the wall of said cylindrical body for projecting receipt of the dispensing spout; and

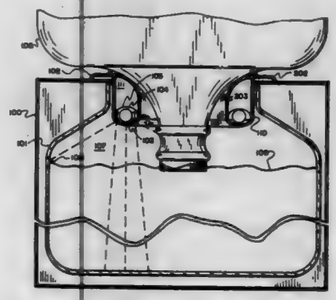
e) said closed end of said body overlying the pressure member when said body is in engagement with said closure.

5,441,179

ULTRA-VIOLET DISINFECTING DEVICE ADAPTED FOR USE WITH BOTTLED WATER DISPENSER

Stephen A. Marsh, 21 Payson Estate 456 Belmont St., Watertown, Mass. 02172

Filed May 18, 1994, Ser. No. 245,367
Int. Cl.[6] B67D 5/58
U.S. Cl. 222—190 8 Claims



1. A water dispensing apparatus for providing drinking water from a water bottle, comprising:

a dispensing cabinet including a water holding tank which receives water from the water bottle, and

a bottle positioning collar having disposed therein an ultra-violet (UV) germicidal lamp, wherein the collar further comprises

a ring section disposed along the top section of the collar to support the bottle positioning collar against an upper periphery of the dispensing cabinet;

a throat portion extending downwardly from an upper portion of the bottle positioning collar into the water dispenser cabinet towards the neck of the water bottle when the water bottle is inverted in place; and

the bottle positioning collar forming a lamp chamber, the lamp chamber being formed by the downwardly extending throat portion and an outer annular member within which the ultra-violet germicidal lamp is disposed.

5,441,180

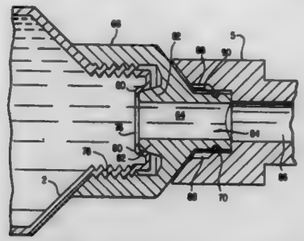
DISPENSER GUN FOR VISCOUS OR SEMI-VISCOUS PRODUCTS

Keith F. Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 82,405, Jun. 23, 1993. This application Nov. 12, 1993, Ser. No. 151,729
Int. Cl.[6] B67D 5/42
U.S. Cl. 222—327 20 Claims

1. In a device for dispensing selected quantities of liquid product, said device comprising a housing having an inlet end defining an inlet opening and an outlet end defining a discharge opening, and pump means for causing said liquid product to flow between said inlet opening and said discharge opening of said housing, the improvement comprising:

a product reservoir removably mountable to said housing in fluid communication with said inlet opening defined in said housing, said product reservoir including a piston received therein for discharging product from said product reservoir, said product reservoir including stop means proximate to a rear end thereof for preventing rearward movement of said piston beyond said stop means,



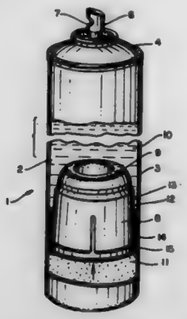
said product reservoir removably received within an adapter, said adapter being removably mountable to said housing in an operating position therein for providing fluid communication between the product within said product reservoir and said inlet opening of said housing, and means for venting air from said housing as said adapter and said inlet opening of said housing are moved in a relative direction towards each other.

5,441,181

PISTON WITH A FLEXIBLE WIPE

Christian T. Scheindel, HCR 67 Box 45, Randolph Center, Vt. 05061

Filed Aug. 9, 1994, Ser. No. 287,789
Int. Cl.[6] B67D 5/54
U.S. Cl. 222—389 10 Claims



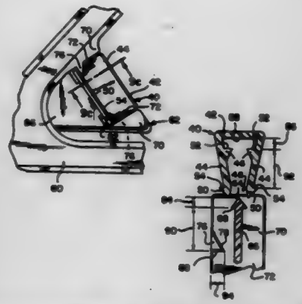
1. A piston for a pressurized container comprising an upper portion shaped to conform to an inner top surface of a container, the upper portion forming a barrier wall to separate the container into an upper product containing chamber and a lower propellant containing chamber, the piston having a lower portion depending from the upper portion, the lower portion being an annular sidewall, a sealing wipe extending downwardly from an end of the lower portion, the sealing wipe having an inner annular ring and an outer annular ring, extending downwardly from a common junction located at the end of the lower portion, the inner and outer rings being separated by a gap, the outer ring having a flexible outwardly projecting tip at a distal end thereof which extends beyond an outer diameter of the lower portion, the tip being movable inwardly into the gap when in contact with the container for wiping a sidewall of the container during upward movement of the piston within the container.

5,441,182

GARMENT HANGER WITH LOCKING INFORAMTION CLIP

Scott L. Sullivan, Chappaqua, N.Y., assignor to Uniplast Industries, Inc., Hasbrouck Heights, N.J.

Continuation-in-part of Ser. No. 109,129, Aug. 19, 1993, abandoned. This application Oct. 18, 1993, Ser. No. 138,706
Int. Cl.[6] A47G 25/14
U.S. Cl. 223—85 18 Claims



1. A garment hanger adapted to have an information clip mounted thereon, wherein said information clip has side walls defining an internal channel, and an internal projection in said channel,

said hanger comprising a body having a hook member joined to said body at one end thereof, and a clip holder,

said clip holder including means including a first region having an open edge with a securing ridge adjacent thereto, adapted to engage said clip projection upon assembly of said clip with said holder said ridge, to inhibit manual removal of said information clip from said clip holder,

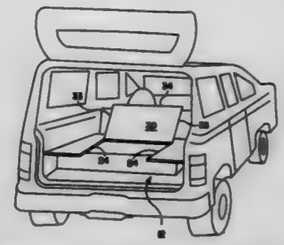
said clip holder including means including an engagement element for preventing outward movement of a clip side wall after said clip is mounted on said clip holder, to prevent disengagement of said projection from said ridge by separating said clip side walls, so as to prevent manual removal of said information clip from said clip holder.

5,441,183

VEHICULAR COMPARTMENTALIZER UNIT

Michael J. Frenzel, 7134 Richards Dr., Baton Rouge, La. 70809

Filed Mar. 30, 1994, Ser. No. 220,209
Int. Cl.[6] B62D 33/04
U.S. Cl. 224—542 20 Claims



1. A free-standing compartmentalizer unit adapted for easy installation in and easy removal from an automotive vehicle that has (a) a generally flat cargo-receiving area having a

perimeter (b) a front seat construction having at least one back rest with a rear side, (c) spaced-apart interior vehicular side walls, and (d) a back door or tailgate having an interior vehicular wall, said perimeter being defined by (i) said side walls, (ii) said interior vehicular wall, and (iii) said rear side; and wherein at least the walls of (i) or at least the walls of (ii) and (iii) are sloped upwardly and inwardly relative to the cargo-receiving area, wherein

A) the unit comprises (1) a platform, (2) a hinged lid; and (3) a supportive wall portion;

B) the platform has (1) an upper surface falling in a generally flat plane, (2) a forward edge portion, (3) a pair of spaced-apart outside edge portions, (4) a pair of laterally spaced-apart rearward edge portions, and (5) a cutaway space extending forwardly between the spaced-apart rearward edge portions and terminating at an interiorly-disposed transverse back edge;

C) the cutaway space in the platform is defined by a pair of forwardly-extending inside edges of the platform and the interiorly-disposed transverse back edge of the platform;

D) the lid has (1) a front edge, (2) a back edge, (3) a pair of spaced-apart side edges, (4) a bottom surface, and (5) a top surface;

E) the lid is sized and shaped to fit within and substantially fill the cutaway space, and is hinged to the platform either (1) between the front edge of the lid and the interiorly-disposed transverse back edge of the platform or (2) between one of the side edges of the lid and the one of the forwardly-extending inside edges of the platform that is proximate thereto, so that in either case the lid can be raised to an open position by pivotal movement upwardly from, and can be lowered to a closed position by pivotal movement downwardly to a position in which the top surface of the lid is co-planar with the upper surface of the platform;

F) said pair of laterally spaced-apart rearward edge portions of the platform and the back edge of the lid form a substantially continuous back edge portion when the lid is disposed in the said closed position;

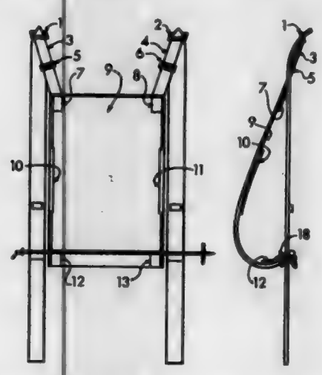
G) said wall portion is sized, shaped and adapted to support the platform a predetermined distance above the cargo area and provide therein a plurality of storage compartments when the compartmentalizer unit is installed in the vehicle with the wall portion below the platform;

H) the platform and lid are shaped and sized such that when the platform is supported at the predetermined distance above the cargo area floor with the lid disposed in the closed position, the platform and lid define an outer perimeter in which (1) one of the spaced-apart side edge portions of the platform generally conforms to and closely confronts or abuts one of the spaced-apart interior vehicular side walls and the other of the spaced-apart side edge portions of the platform generally conforms to and closely confronts or abuts the other of the spaced-apart interior vehicular side walls, (2) the forward edge portion of the platform generally conforms to and closely confronts or abuts the rear side of the seat construction, and (3) the continuous back edge portion generally conforms to and closely confronts or abuts the interior vehicular back door or tailgate wall whereby the compartmentalizer unit is removably secured in position without requiring attachment to the vehicle.

5,441,184
SKI SEAT AND CARRIER
Joe Durso, 514 Lowewood Pl., Chula Vista, Calif. 91910
Filed Dec. 3, 1993, Ser. No. 160,739
Int. Cl.[6] A63C *11/00*
U.S. Cl. 224—151 **5 Claims**

1. In a ski seat and carrier comprising a generally rectangular seat panel having a top and a bottom and a length and a width, means at the top of said seat panel for attaching said seat panel to a pair of skis for suspending said seat panel between the pair of skis, and means at the bottom of said seat panel for receiving a ski pole for suspending the bottom of said seat panel between the pair of skis whereby said seat panel can provide a sling-type seat for a skier when suspended between the pair of skis, an improvement comprising in combination:

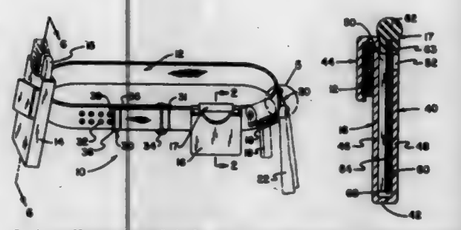
means providing a pocket extending across the bottom of said seat panel, said pocket having a closed bottom end and closed side ends and providing a compartment having a depth substantially less than the length of said seat panel and a width extending substantially across the width of



said seat panel, and said pocket having an opening extending substantially across the width of said seat panel so that said compartment opens toward the end of said seat panel that is opposite the seat panel's bottom end;

the means providing said pocket being so constructed and arranged with respect to said seat panel that, when said seat panel is folded onto itself into a series of transverse folds, said compartment may be turned inside out to envelope the folded seat panel.

5,441,185
WALLPAPER WORK BELT AND ACCESSORIES
Michael R. Dragos, 7038-H Brandemere La., Winston Salem, N.C. 27106
Filed Mar. 14, 1994, Ser. No. 209,300
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—151 **1 Claim**



1. A wallpaper work belt and accessories for holding tools used by humans in the installation of wallpaper and similar materials comprising:

a waist belt comprising a flexible substantially flattened member having a length adjustment means, said waist belt comprising a woven fabric composition comprising a polymer based woven fabric composition, said waist belt adjustment means comprising a first ring member affixed to a free end of the waist belt and a second ring member affixed to a second free end of the waist belt wherein said second ring member has two hooks affixed thereon and is furthermore threaded through said first ring member when encircling a user and said waist belt has a series of through hole pairs disposed thereon wherein said hooks engage a through hole pair corresponding to a desirable waist belt length thereby securing said waist belt to the user;

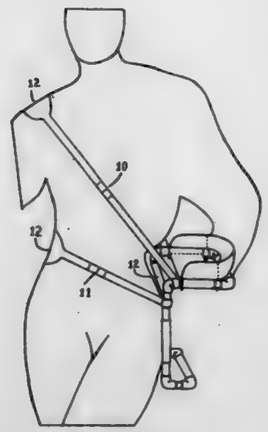
a smoothing brush holder detachably affixed to said waist belt, said smoothing brush holder comprising an elongated pocket member having a first waist belt attachment means operationally disposed when affixing the smoothing brush holder to the right side of the user and a second waist belt attachment means operationally disposed when affixing the smoothing brush holder to the left side of the user and said first and second waist belt attachment means provide an angular disposition rendering an uppermost portion of the elongated pocket member in a position more forward than a bottommost portion of said elongated pocket member irregardless of the side of attachment of the smoothing brush holder upon the user;

a seam roller holder affixed to said waist belt, said seam roller holder comprising a continuous ring affixed to said waist belt and engaging a portion of an existing seam roller thereby maintaining said seam roller at the waist belt for use;

an edging tool and edging tool holder affixed to said waist belt, said edging tool comprising a handle member affixed to a blade member wherein said handle member is an elongated rectangular semi-solid having a blade engagement slot formed therein, said blade member comprising a metal blade having a polymeric coating applied thereon and furthermore said blade member is substantially wider at a free end than at an opposing end wherein said opposing end forms a portion engaging said handle member and said wider free end terminates in a triangular cross section; and

a cleaning cloth holder affixed to said waist belt, said cleaning cloth holder comprising a J-shaped hook member having a spring closing member affixed to the waist belt by a fastening means.

5,441,186
SIDE SADDLE CHILD HOLSTER
Guy W. Halligan, 11406 Julian Way, Westminster, Colo. 80030
Filed Sep. 16, 1993, Ser. No. 126,693
Int. Cl.[6] A47D *13/02*
U.S. Cl. 224—159 **2 Claims**



1. A child carrier adapted to be worn by an adult for supporting and transporting a child comprising:

first and second vertical frame members having a top end and a bottom end;

first and second horizontal frame members having a first end and a second end;

the top end of the first vertical frame member being attached to the first end of the first horizontal frame member forming a first inverted L-shaped member and the top end of the second vertical frame member being attached to the first end of the second horizontal frame member forming a second inverted L-shaped frame member;

at least one cross frame member attaching together and spacing the first and second inverted L-shaped frame members; the first and second inverted L-shaped frame members and the at least one cross frame member together forming a seat frame;

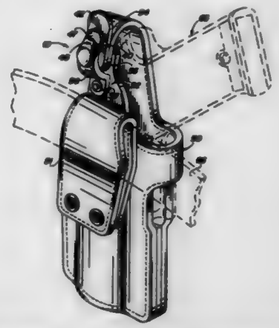
a fabric seat for holding the child having a first side attached to the first horizontal frame member and a second side attached to the second horizontal frame member;

a fabric thigh support for resting against a thigh of the adult having a first side attached to the first vertical frame member and a second side attached to the second frame member;

a waist strap for securing the seat frame on the adult having a first end attached to the first vertical frame member and a second end attached to the second vertical frame member; and

a shoulder strap for securing the seat frame on the adult having a first end attached to the first horizontal frame member and a second end attached to the second horizontal frame member.

5,441,187
HOLSTER SAFETY SNAP ASSEMBLY
Robert Mixson, Hialeah, Fla., assignor to Mixson Leathercraft, Hialeah, Fla.
Filed Feb. 15, 1994, Ser. No. 196,708
Int. Cl.[6] F41C *33/02;* **A44B** *17/00*
U.S. Cl. 224—243 **10 Claims**



1. In combination with a weapon holster of the type including a primary weapon holding housing with a first protruding containment segment extending upwardly from an inner side of the housing, and a second strap segment extending from an outer side of the housing and structured to be disposed about a rear of a weapon contained within the weapon holding housing and secured at the first protruding containment segment so as to contain the weapon within the housing; a safety snap assembly comprising:

a first snap member disposed on the first segment,

a second snap member structured and disposed to be matingly engaged with said first snap member, said second snap member being disposed on an interior surface of a free distal end of the second segment such that said free distal end of the second segment is removably secured to the first segment upon snapped engagement of said first snap member with said second snap member,

a first release means secured to an exterior of said free distal

end of the second segment, said first release means being structured and disposed to facilitate disengagement of said second snap member from said first snap member,

said first release means including a protruding, exposed actuator end structured and disposed to be pushed toward the first and the second segments so as to disengage said second snap member from said first snap member,

a third snap member disposed on the exterior of said free distal end of the second segment, opposite said second snap member,

a third segment including a proximal end and a distal end, said third segment being fixedly secured at said proximal end thereof to the first segment,

a fourth snap member disposed on an interior of said distal end of said third segment and structured and disposed to be matingly and releasably engaged with said third snap member on said exterior of said free distal end of the second segment,

a second release means secured to an exterior of said distal end of said third segment, said second release means being structured and disposed to facilitate disengagement of said fourth snap member from said third snap member,

said second release means including a concealed actuator end structured and disposed to be pushed away from the second and said third segments so as to disengage said fourth snap member from said third snap member, and

said first release means being sized to conceal said second release means there behind, disengagement of said fourth snap member from said third snap member by said second release means being required prior to said first release means disengaging said second snap member from said first snap member.

5,441,188

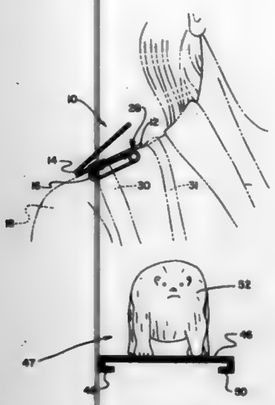
SHOULDER STRAP AND JEWELRY RETAINER

Julia A. Rosenstein, 795 Granada Dr., Greenwood, Ind. 46143

Filed Apr. 29, 1993, Ser. No. 53,692

Int. Cl.[6] A41F *15/02*

U.S. Cl. 224—264 **3 Claims**



1. A shoulder strap retainer comprising:

a base plate having first and second base plate ends, and a top surface and a bottom surface;

a pivoting member having first and second pivoting member ends and being hingedly coupled at said first pivoting member end to said first base plate end of said base plate, said pivoting member further having a through-extending aperture proximal to said second pivoting member end;

a fastener mounted to said top surface of said base plate proximal to said second base plate end thereof, said fastener comprising a cylindrical boss which extends orthogonally upward from said base plate and terminates in an upper distal end, and a conical projection having a pointed end and a circular base fixedly secured at said circular base thereof to said upper distal end of said cylindrical boss, such that said conical projection extends through said aperture in said pivoting member to retain said pivoting member against and coplanar with said base plate, thereby capturing a shoulder strap against said base plate between said base plate and said pivoting member and between said fastener and said first end of said base plate; and,

at least one pin pivotally coupled to said bottom surface of said base plate for securing said base plate to an article of clothing, and further comprising a pair of pin holders projecting from said bottom surface of said base plate for pivotally coupling said at least one pin to said base plate, each of said pin holders comprising a cylindrical post orthogonally mounted to said bottom surface of said base plate, said pin holders each having a post aperture extending orthogonally through said post relative to a longitudinal axis of said post, with said at least one pin projecting through said post apertures of said cylindrical posts of said pin holders.

5,441,189

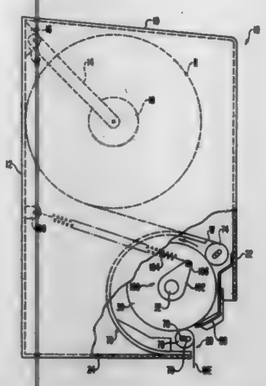
METHOD AND APPARATUS FOR DISPENSING FLEXIBLE SHEET MATERIAL

John S. Formon, Marietta, Ga., and Paul W. Jespersen, Salt Lake City, Utah, assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation of Ser. No. 935,342, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 660,892, Feb. 26, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,409

Int. Cl.[6] B26F *3/02;* **A47K** *10/36*

U.S. Cl. 225—2 **21 Claims**



1. A method of dispensing a web of flexible sheet material without need of a positive stop mechanism from a dispenser having a discharge opening and containing a feed roll traversed by said web, knife means for perforating the web as the web traverses the feed roll, and an energy storing spring operatively connected to said feed roll, comprising the steps of:

pulling the web to impart rotation to said feed roll and to load said spring over one portion of the rotational cycle of said feed roll;

actuating said knife means for perforating said web to produce a line of cut therein containing a plurality of residual unsevered segments;

driving said feed roll by the energy stored in said spring over another portion of the rotational cycle of said feed roll to deliver the portion of said web containing said line of cut to a predetermined position accessible to a user; and

thereafter, severing said web along said line of cut by causing said feed roll to rotate beyond a position corresponding to said predetermined position of said web portion containing said line of cut in which said spring is again loaded to generate against the pull of the user tensile stresses in said residual segments that increase gradually until said segments break.

5,441,190

APPARATUS FOR DISPLACING A CONTINUOUS SHEET OF MATERIAL

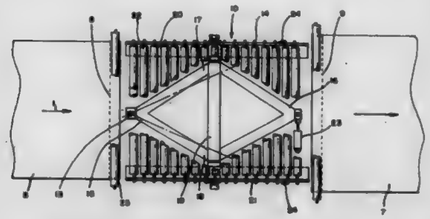
Charles Goodwin, Staffs, Great Britain, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 677,240, Mar. 29, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 110,679

Claims priority, application United Kingdom, Mar. 31, 1990, 9007323

Int. Cl.[6] B23Q *16/00*

U.S. Cl. 226—18 **13 Claims**



1. An apparatus for displacing a continuous sheet of material having a first edge and a second edge comprising:

a feed conveyor carrying the sheet longitudinally in a first plane to a first support roller in the first plane, said first support roller extending perpendicularly to a centerline of the feed conveyor;

a second support roller parallel to the first support roller and formed in a second plane;

means for displacing at least one end of said second support roller from the second plane;

a third support roller parallel to the first support roller, and longitudinally spaced from the second support roller within the second plane;

means for displacing at least one end of said third support roller from the second plane, wherein the second and third support rollers are the beginning and end rollers of a set of support rollers all mutually parallel when viewed perpendicular to the plane and wherein the second and third support rollers are rotated about respective rotational axes thereof and in alignment with a longitudinal centerline of the sheet such that each roller remains, when viewed perpendicularly to said plane, perpendicular to the direction of movement of the sheet over the respective roller; and

an output conveyor running parallel to the direction of the feed conveyor such that displacement of the second and third respective support rollers affect sideways displacement of the sheet between the feed conveyor and output conveyor.

5,441,191

INDICATING "STAPLES LOW" IN A PAPER STAPLER

Gerald E. Linden, 2008 Cotswold Dr., Orlando, Fla. 32825

Filed Dec. 30, 1993, Ser. No. 175,975

Int. Cl.[6] B25C *5/16*

U.S. Cl. 227—120 **19 Claims**

1. Paper stapler, comprising:

a magazine having a front end;

a follower in the magazine for urging staples towards the front of the magazine;

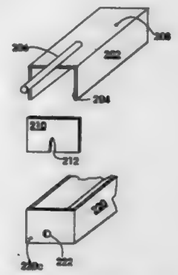
a blade for ejecting staples from the front of the magazine;

means, on the follower, for indicating to a user that the stapler is low on staples;

wherein the means for indicating comprises:

a pin disposed on a top surface of the follower;

further comprising:



a notch in the blade aligned with the pin,

wherein:

as the staples are ejected by the blade, a number of staples remaining in the stapler decrements; and

the pin projects through the notch in the blade when the number of staples remaining in the stapler reaches a predetermined number.

5,441,192

FASTENER DRIVING TOOL

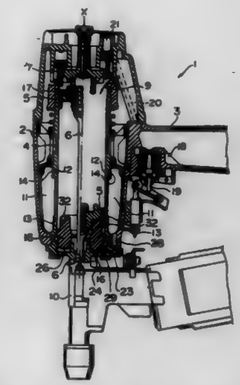
Saburo Sugita; Hiroyuki Fukui, and Yukinori Komiya, all of Tokyo, Japan, assignors to Kanematsu-nnk Corporation, Tokyo, Japan

Filed Dec. 2, 1994, Ser. No. 352,829

Claims priority, application Japan, Dec. 3, 1993, 5-304247

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—130 **10 Claims**



1. A fastener driving tool comprising a housing for receiving pressurized air therein as a reservoir, a cylinder disposed within the housing, a piston reciprocatingly located within the cylinder, a driver connected with the piston to drive a fastener, a nose extending downward of the lower portion of the cylinder to locate a fastener to be driven, a return-air-chamber formed between the outer surface of the cylinder and the inner wall of the housing to store compressed air from the cylinder and to exhaust the compressed air to the lower surface of the

piston in the cylinder and a ring bumper at the lower end of the cylinder to absorb shock of the moving piston; said tool further comprising:

(a) a first annular recess formed in a portion closing the lower end of the cylinder to receive the ring bumper with the recess having a sufficient depth to move a lower portion of the bumper downward and upward therein;

(b) said first annular recess formed so that the bumper is fittingly pressed into said recess to form an air chamber as defined in said recess closed by the lower end of the bumper; and

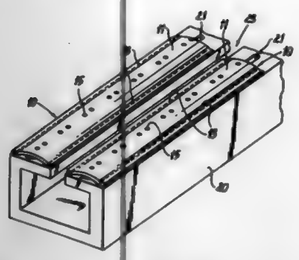
(c) a check valve positioned between the air chamber and a supply of the pressurized air to feed the pressurized air to the air chamber so that the pressurized air is further compressed by the bumper which is downwardly moved by the abrupt downward movement of the piston.

5,441,193

SURGICAL FASTENER APPLYING APPARATUS WITH RESILIENT FILM

Roy D. Gravener, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 23, 1993, Ser. No. 125,906
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—176 **24 Claims**



1. A surgical device, which comprises:

a) first and second elongated members movable between an open first position wherein said members are relatively spaced apart from each other and a closed second position wherein said members are relatively close to each other for clamping body tissue therebetween, said members having mutually facing surfaces;

b) at least one sheet of resilient material attached to and covering at least a portion of said mutually facing surface of at least one of said members, said sheet of resilient material having a curved surface.

5,441,194

THERMO-COMPRESSION ASSEMBLY/DISASSEMBLY SYSTEM FOR ELECTRIC CIRCUIT BOARD IN INERT AMBIENCE

Seiya Nishimura; Yoshihisa Maejima, and Tokuyoshi Ohta, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 22, 1993, Ser. No. 172,613
Claims priority, application Japan, Dec. 25, 1992, 4-358977; Mar. 24, 1993, 5-090881
Int. Cl.[6] B23K *3/00*
U.S. Cl. 228—6.2 **1 Claim**

1. A thermo-compression assembly/disassembly system, which comprises:

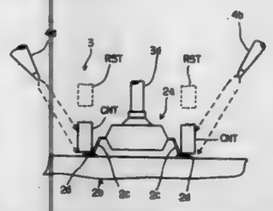
(a) a working region for receiving a circuit board having at least one conductive pad;

(b) holding means for holding an electric circuit component having at least one conductive lead coated with a thermally fusible substance, the holding means being selectively moveable into the holding region for placing the at least one conductive lead of the electric circuit component into contact with the at least one conductive pad of the circuit board, and being selectively moveable out of the working region for removing the electric circuit component from the circuit board;

(c) a thermo-compression tool moveable into an out of the working region independently of the holding means for applying heat and compression to the at least one conductive lead to thereby fuse the thermally fusible substance;

(d) a plurality of nozzles arranged independently of the holding means and the thermo compression tool for selectively blowing one or both of an inert gas and air to the at least one conductive pad and at least one conductive lead in the working region;

(e) heating means for selectively heating the inert gas to a temperature greater than the melting point of the thermally fusible substance;



(f) cooling means for selectively cooling the inert gas below the melting point of the thermally fusible substance;

(g) means for supplying one or both of the inert gas and air to the plurality of nozzles; and

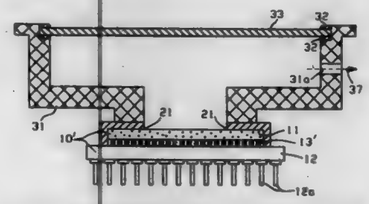
(f) controlling means for controlling the thermo-compression tool, the holding means, the heating means, the cooling means and the supplying means to selectively assemble the electric component to the circuit board by thermally fusing the at least one conductive lead to the at least one conductive path or selectively disassemble the electric component from the circuit board by melting the thermally fusible substance after assembly of the electric component to the circuit board.

5,441,195

METHOD OF STRETCHING SOLDER JOINTS

Jerry I. Tustaniwskyj, Mission Viejo; Maria D. Alvarez, El Cajon; Steve J. Bezuk, Poway; Robert E. Rackerby, San Diego, and Patrick A. Weber, Escondido, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 13, 1994, Ser. No. 181,282
Int. Cl.[6] B23K *1/00, 37/04*
U.S. Cl. 228—180.22 **19 Claims**



10. A method of stretching solder joints between the input-/output pads of an electrical component and corresponding input/output pads on a substrate including the steps of:

melting said solder joints;

confining said component with a fixture while said solder joints are melted such that said component can only move substantially perpendicular to said substrate;

sucking said component, while said component is confined, with a vacuum in a direction away from said substrate to thereby stretch said melted solder joints;

stopping all movement of said component, after said component has moved a predetermined distance, with said fixture; and,

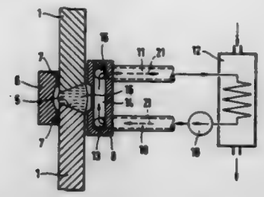
resolidifying said solder joints while said component is stopped.

5,441,196

WELDING METHOD

Matti Heinäkari; Ismo Iiola; Kyösti Kaukonen, all of Turku, and Jari Nieminen, Raisio, all of Finland, assignors to Kvaerner Masa-Yards Oy, Helsinki, Finland

Filed Feb. 14, 1994, Ser. No. 195,923
Claims priority, application Finland, Feb. 16, 1993, 930668
Int. Cl.[6] B23K *9/038*
U.S. Cl. 228—222 **18 Claims**



1. A method for joining two metal plates that meet at a substantially vertical groove, comprising:

employing a welding tool to form a one-sided weld that substantially fills the groove by advancing the welding tool along the groove in an upward direction,

providing a weld pool support device, the weld pool support device comprising a dam member that is formed with a cooling duct,

advancing the weld pool support device along the groove concurrently with the welding tool, and

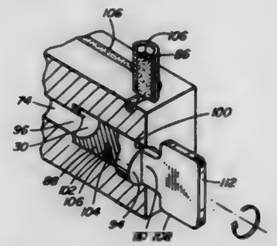
passing a liquid coolant through the cooling duct of the dam member, the temperature of liquid coolant supplied to the cooling duct being substantially below ambient temperature.

5,441,197

METHOD OF MANUFACTURING INJECTION MOLDING MANIFOLD HAVING A MELT PASSAGE WITH AN ELBOW

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1; Randy Zuest, 115 Town Line, Milton, Ontario, Canada L9T 2X1 , and Hans Guenther, 371 Delrex Boulevard, Georgetown, Ontario, Canada L7G 4H6

Filed Jan. 17, 1995, Ser. No. 373,444
Int. Cl.[6] B23K *1/008, 31/02*
U.S. Cl. 228—248.1 **4 Claims**



1. In a method of making an injection molding manifold with a melt passage extending therethrough from a rear face to a front face, the melt passage having at least one lateral portion branching to a plurality of elbows, each elbow in the melt passage having an inlet extending from the at least one lateral portion of the melt passage and an outlet extending to an outlet bore extending frontwardly to the front face, the method including preforming a plurality of plugs, each having an inner end and a generally cylindrical outer surface with each elbow extending therebetween, integrally brazing each plug in a bore extending inwardly from an end of the manifold with the inlet in alignment with the lateral portion of the melt passage, and integrally brazing an electrical heating element into a matching channel in one of the rear and front faces of the manifold by setting the heating element into the channel, putting a highly conductive brazing material in the channel along the heating element, placing the manifold and heating element in a vacuum furnace with said one of the rear and front faces of the manifold upward, and heating the manifold and heating element in the vacuum furnace to a predetermined temperature under a partial vacuum according to a predetermined cycle whereby each plug is integrally brazed in place in the bore and the brazing material melts and flows around the heating element in the channel to integrally braze the heating element into the channel, having the improvement including;

(a) forming each plug with a brazing hole having an open mouth on the cylindrical outer surface thereof and an outer end with a tool engagement opening therein,

(b) orienting each plug with the mouth of the brazing hole facing upward and putting a predetermined quantity of brazing material into the hole,

(c) inserting each plug into the respective bore extending inwardly from an end of the manifold,

(d) inserting a tool into the tool engagement opening in the outer end of each plug and rotating the plug to a predetermined brazing position with the mouth of the brazing hole facing downward, and

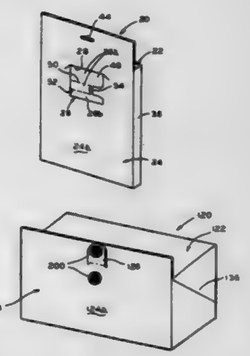
(e) after integrally brazing the plugs in the bores in the vacuum furnace, machining an outlet bore extending from the front face of the manifold to the outlet of each plug.

5,441,198

RECLOSABLE PRODUCT PACKAGING

Thomas P. McQueeny, Chicago, Ill., assignor to R. R. Donnelley & Sons Company, Lisle, Ill.

Filed Jul. 26, 1994, Ser. No. 280,717
Int. Cl.[6] B65D *5/54, 5/43*
U.S. Cl. 229—102 **20 Claims**



1. A package, comprising:

a plurality of walls in fully assembled relation including at least a package access wall and a package container wall at an angle to said package access wall;

said package access wall having a tongue adapted to extend from inside to out through a slot in said package container wall to be in confronting relation to an outer surface of said package container wall; and

means for releasably securing said tongue to said outer surface of said package container wall to releasably maintain said package access wall in a closed position;

said releasable securing means comprising first and second tongue portions adjacent and remote from said package access wall, respectively, said first tongue portion including a tear strip and said second tongue portion being adhesively secured to said outer surface of said package container wall.

5,441,199

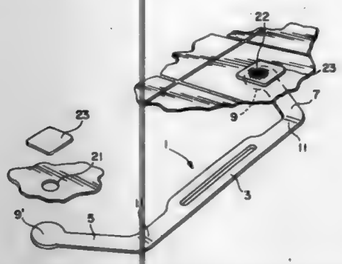
SONICALLY WELDED HANDLE

John T. Roberts, Clover; Claude E. Monsees, Fort Mill, both of S.C., and Larry J. Mattson, Charlotte, N.C., assignors to Roberts Systems, Inc., Charlotte, N.C.

Continuation of Ser. No. 131,909, Oct. 5, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 355,095

Int. Cl.[6] B65D *25/32*

U.S. Cl. 229—117.25 **11 Claims**



1. A rotatable handle assembly attached to a container comprising:

a flexible strap having a first end and a second end, said first and said second end each defining a respective first engaging surface and a second engaging surface;

a first disk integrally secured to said first engaging surface in a manner allowing no relative movement between said first disk and said first engaging surface;

a second disk integrally secured to said second engaging surface in a manner allowing no relative movement between said second disk and said second engaging surface;

wherein, said first engaging surface is integrally secured to said first disk through a first opening in a container and said second engaging surface is integrally secured to said second disk through a second opening in a container, thereby providing a rotatable handle.

5,441,200

TROPICAL CYCLONE DISRUPTION

Ernest J. Rovella, II, 5090 Rosewood Rd., Vero Beach, Fla. 32966

Filed Aug. 20, 1993, Ser. No. 109,521

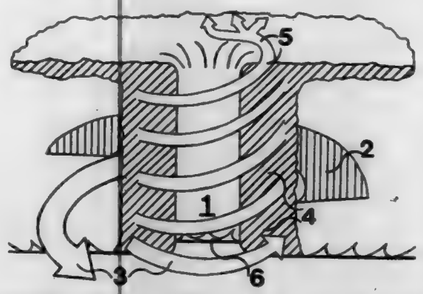
Int. Cl.[6] A01G *15/00*

U.S. Cl. 239—2.1 **5 Claims**

1. A process for disrupting a mature, developed tropical cyclone having an eye wall comprising:

introducing a hydrate agent into the eye wall such that the winds of the tropical cyclone will circle the hydrate agent throughout the eye wall;

increasing the centrifugal force on the eye wall of the tropical cyclone as a result of said hydrate agent associating with water present in the tropical cyclone and becoming heavier hydrate drops which are cast out away from the center of the tropical cyclone; and



increasing the diameter of the eye wall due to the eye wall traveling outward along with the heavier hydrate drops.

5,441,201

LIQUID SPRAY DEVICE

Norman Dombrowski, Salford, United Kingdom, assignor to The University of Leeds, West Yorkshire, England

PCT No. PCT/GB92/00757, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO92/19385, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 24, 1992, Ser. No. 140,102

Claims priority, application United Kingdom, Apr. 25, 1991, 9108865

Int. Cl.[6] B05B *1/24, 7/20*

U.S. Cl. 239—75 **10 Claims**

1. A liquid spray device including,

a nozzle adapted to form a conical sheet of liquid which disintegrates downstream of said nozzle to form a conical spray, said liquid sheet having an interior surface,

a source of heated gas for forming a heated gas stream, and

a shroud adapted to protect said gas stream in the vicinity of said nozzle from drafts, said shroud including an open-ended barrel extending therefrom, and said source being located within said open-ended barrel, so that said gas stream is directed onto said sheet at a region wherein said sheet disintegrates to form said spray.

5,441,202

MISTING SYSTEM WITH IMPROVED COUPLERS

Gary F. Wintering, 15846 S. 13th Way, Phoenix, Ariz. 85048, and Thomas A. Bontems, 1909 E. Palmcroft, Tempe, Ariz. 85282

Filed Apr. 20, 1994, Ser. No. 230,326

Int. Cl.[6] A01G *15/00*

U.S. Cl. 239—267 **5 Claims**

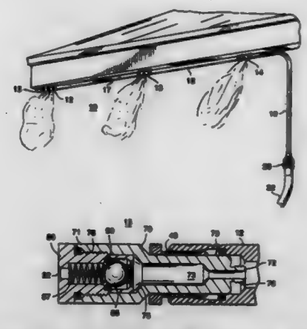
5. A misting system comprising:

a locking T coupler including:

an elongated tubular body with first and second ends and a fluid conducting opening extending therebetween,

said first and second ends each adapted for receiving and holding a supply tube therein;

the elongated tubular body being axially rotatable about a supply tube or between two supply tubes, and including a nozzle opening midway between the first and second ends, which nozzle opening moves with the rotation of the body; and



an automatic drain valve including means for attaching said drain valve to said locking T coupler wherein said drain valve moves between a misting system unpressurized position in which the drain valve opens to conduct water therethrough and a misting system pressurized position in which the drain valve closes the flow of water therethrough.

5,441,203

SPRAY NOZZLE HOLDER CONTAINING TWO VALVES FOR FLOW CONTROL

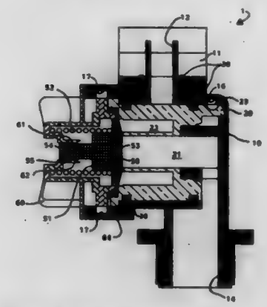
Trevor W. B. Swan, and John A. B. Castell, both of Cambridgeshire, United Kingdom, assignors to Lurmark Limited, Cambridge, United Kingdom

Filed Jan. 19, 1994, Ser. No. 182,984

Claims priority, application United Kingdom, Jan. 25, 1993, 9301371; Jul. 16, 1993, 9314828

Int. Cl.[6] B05B *1/32*

U.S. Cl. 239—574 **18 Claims**



1. A spray nozzle holder comprising:

an inlet through which liquid to be sprayed is admitted;

an outlet for passing liquid to a nozzle tip attached in use to the holder;

a removable check valve between said inlet and said outlet for preventing liquid flow when the liquid pressure is below a predetermined level;

a further valve located upstream of the check valve and positionable for preventing liquid flow to said outlet during removal or maintenance of the check valve; and

the check valve only being removable when the further valve is positioned to prevent liquid flow beyond the further valve.

5,441,204

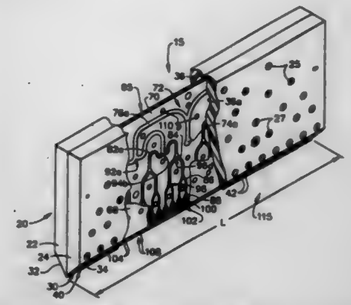
ELECTROSTATIC FLUID DISTRIBUTION NOZZLE

Daniel R. Tappel, and Frederick R. Wichmann, both of Cincinnati, Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Continuation of Ser. No. 74,496, Jun. 10, 1993, abandoned. This application Jul. 15, 1994, Ser. No. 275,652

Int. Cl.[6] B05B *5/02*

U.S. Cl. 239—708 **7 Claims**



1. An electrostatic dispensing nozzle having a nozzle body comprising a base and a cap, said nozzle body having a fluid inlet, a fluid distribution chamber connected to said inlet for receiving fluid within said nozzle, an outlet opening connected to said fluid distribution chamber enabling discharge of fluid from said nozzle, means for providing an electrical charge to said fluid within said nozzle, said means comprising a metallic shim structure, said base and cap being joined together with said shim structure located therebetween, said cap and base defining therebetween an elongated slot comprising said outlet opening, said fluid distribution chamber comprising a network of a plurality of distribution channels providing discrete dispensing points along said outlet opening, said pathways having predetermined flow characteristics which are substantially matched, said distribution chamber being formed in said shim structure.

5,441,205

APPARATUS FOR WATER-GRANULATING SLAG

Hisao Kanazumi; Akiyoshi Yamashiro, and Kiyoshi Fujiwara, all of Kagawa, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 27, 1994, Ser. No. 266,469

Claims priority, application Japan, Jun. 30, 1993, 5-187147; Sep. 8, 1993, 5-223734

Int. Cl.[6] B02C *19/12;* **F27D** *15/02*

U.S. Cl. 241—41 **20 Claims**

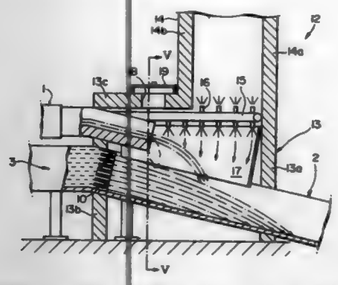
1. An apparatus for water-granulating slag, comprising:

a receiving device having an upwardly directed opening for receiving slag, said receiving device having opposite side plates to define a widthwise space therebetween; and

a water-jetting device attached to said receiving device for jetting granulating water to the slag, being discharged into said receiving device, to water-granulate the slag,

wherein said water-jetting device includes a plurality of partitioning plates arranged in said receiving device so as to span said widthwise space between said side plates thereof and spaced from each other so as to define a plurality of water outlets with said plurality of water outlets extending in a widthwise direction along an entirety of said widthwise space between said side plates, and a water-supplying unit attached to said receiving device for

supplying the granulating water into the water outlets, whereby the granulating water supplied from said water-



supplying unit is jetted from the water outlets against the slag.

5,441,206

MOBILE MACHINE FOR PROCESSING RAW MINERAL ORES IN-SITU

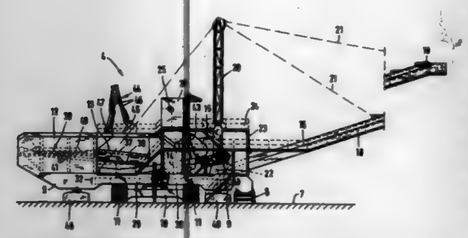
Jorg Schade, Castrop-Rauxel, Germany, and Robert Conraud, Sarreinsming, France, assignors to Westfalia Becorit Industrietechnik GmbH, Germany

Filed Jul. 12, 1994, Ser. No. 273,889

Claims priority, application Germany, Jul. 14, 1993, 43 23 492.5

Int. Cl.[6] B02C *21/02, 23/08*

U.S. Cl. 241—81 **20 Claims**



1. A mobile machine for processing mineral ore in-situ and for discharging spoil and finer mineral ore product separated after the processing; said machine comprising:

a chassis,

means for supporting the chassis for movements along the ground predominantly in a rectilinear normal direction of travel;

first and second outrigger portions on the chassis extending laterally outwardly from the support means of the chassis and transversely to the normal direction of travel;

a hopper supported by the first outrigger portion for receiving raw mineral ore material excavated from an open cast working;

screening means supported by the chassis for receiving material from the hopper and for separating coarser spoil material from the finer mineral ore product;

a multi-component conveyor means which is adjustable or displaceable to vary its effective length for transferring the mineral ore product from the screening means and away from the second outrigger portion in a direction extending transversely to the normal direction of travel; and

a crusher for reducing the size of the spoil material processed and discharged by the screening means, a jib extending transversely to the normal direction of travel and outwardly from the second outrigger portion in the same direction as the multi-component conveyor means and means for transferring the spoil from the screening means and the crusher to the jib and along the jib for elevated discharge.

5,441,207

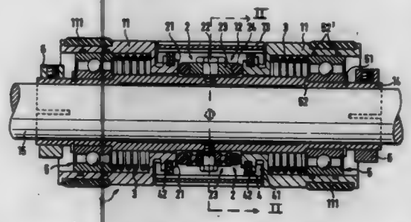
DIFFERENTIAL GEAR WINDING DEVICE FOR BOBBINS

Erich Bock, Weilstetten; Hermann Adolf, and Romeo Pohn, both of Ingolstadt, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Jun. 8, 1993, Ser. No. 73,860

Int. Cl.[6] B65H *67/044*

U.S. Cl. 242—18 DD **22 Claims**



1. A bobbin winding device for driving a bobbin, said device comprising a drive shaft and a rotatable friction roller disposed concentric on said drive shaft, said friction roller comprising a plurality of rotatable elements disposed adjacently on said drive shaft, at least two of said rotatable elements being freely rotatable relative to said drive shaft, said friction roller further Comprising a differential gear operably disposed between said freely rotatable elements and operably connected to said shaft so as to rotate therewith, said differential gear comprising at least one differential friction wheel disposed in driving contact with said freely rotatable elements, said differential gear further comprising a radially extending member for each said differential friction wheel fixed relative to said shaft so as to rotate therewith, each said differential friction wheel rotatably mounted on a respective said radially extending member so as to rotate relative to said radially extending member about an axis essentially perpendicular to the rotational axis of said drive shaft.

5,441,208

TEXTILE CORE HAVING TRANSFER TAIL ENGAGEMENT

Fred S. Millen, Darlington; John F. Auten, and Jack W. Segars, both of Hartsville, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed May 20, 1993, Ser. No. 65,114

Int. Cl.[6] B65H *75/28*

U.S. Cl. 242—125.1 **9 Claims**



1. A textile core for winding a package of yarn comprising:

a tubular body having opposed ends comprising a bodywall formed of a paperboard material; and

a yarn engagement means for frictionally engaging a transfer tail positioned on the exterior periphery of said tubular body adjacent at least one end thereof comprising a plurality of spaced, discrete perforations extending substantially around the circumferential periphery of said tubular body, each of said perforations extending radially into said bodywall for only a portion of the thickness thereof and being defined by an open top and a closed bottom and each of said perforations being adjacent a projection extending radially outwardly of said bodywall comprising paperboard material removed from said adjacent perforation, said projections being capable of frictionally engaging a segregated grouping of yarn windings and holding the segregated grouping of yarn windings as a transfer tail bunch at a location spaced apart from the package of yarn and adjacent one end of said tubular body, and wherein a portion of said tubular body is adapted to support the package of yarn and has substantially different frictional characteristics than said yarn engagement means.

5,441,209

SEAT BELT RETRACTOR

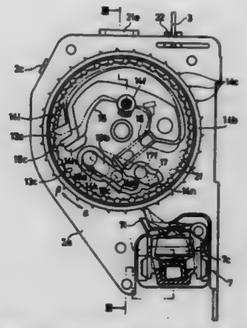
Yoshiichi Fujimura, Echi, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,140

Claims priority, application Japan, Mar. 6, 1992, 4-049428

Int. Cl.[6] B60R *22/40*

U.S. Cl. 242—384 **3 Claims**



1. A seat belt retractor for a vehicle including a reel shaft for winding up a webbing, a frame rotatably supporting both ends of said reel shaft, lock disposed in between said frame and said reel shaft and arranged to allow rotation of said reel shaft under normal circumstances and to be activated, when need arises, so as to prevent rotation of said reel shaft in at least a direction in which said webbing is unwound, deceleration sensing means operating when deceleration exceeding a predetermined value acts on the vehicle, and lock activating means arranged to rotate synchronously with the rotation of said reel shaft under normal circumstances and to rotate relative to said reel shaft in response to the operation of said deceleration sensing means, thereby activating said lock means;

said lock means including a first engagement portion provided on said frame at a position which is closer to one end of said reel shaft, a first engagement member having a cam follower pivotably supported at one end thereof on said one end of said reel shaft and having at the other end thereof a first pawl portion engageable with said first engagement portion, said first engagement member being arranged such that under normal circumstances, it is held in a non-engaging position where said first pawl portion does not engage with said first engagement portion, whereas, when said need arises, said first engagement member pivots to an engageable position where said first pawl portion is engageable with said first engagement portion, a second engagement portion provided on said frame at a position which is closer to the other end of said reel shaft, and a second engagement member pivotably supported at one end thereof on the other end of said reel shaft and having at the other end thereof a second pawl portion engageable with said second engagement portion, said second engagement member being arranged such that under normal circumstances, it is held in a non-engaging position where said second pawl portion does not engage with said second engagement portion, whereas, when said need arises, said second engagement member pivots to an engageable position where said second pawl portion is engageable with said second engagement portion;

said first and second engagement portions each comprising a predetermined number of teeth;

and said lock activating means having control means including a cam hole receiving said cam follower of said first engagement member for pivoting said first engagement member to a standby position where said first pawl portion begins to engage with a tooth of said first engagement portion when said lock activating means rotates relative to said reel shaft, the teeth of said first engagement portion being shaped so that when said reel shaft further rotates in the webbing unwinding direction after said first engagement member has reached the standby position, said first engagement member performs a self-lock action by pivoting to a lock position where engagement of said first pawl portion with said first engagement position is completed.

5,441,210

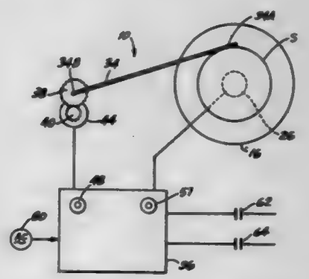
APPARATUS AND METHOD FOR CONTROLLING TENSION AND STOPPING ACTION OF WEB MATERIAL

Gaylen R. Hinton, 4316 Buckeye La., Merced, Calif. 95348

Filed Oct. 15, 1993, Ser. No. 138,476

Int. Cl.[6] B65H *23/08*

U.S. Cl. 242—421.1 **9 Claims**



1. An apparatus for controlling the tension and stopping action of web material fed from a supply roll comprising:

means for supporting a supply roll of web material to be withdrawn therefrom,

braking means operatively connected to said support means for applying a braking force onto said support means and applying tension onto the withdrawn web material,

means for sensing the diameter of the supply roll and generating an output signal to said braking means that is proportional to the diameter of the supply roll for varying the applied braking force and maintaining constant tension on the withdrawn web material,

means for generating a stop signal to said braking means during stopping operation of web withdrawal to increase the braking force applied to said support means, said stop signal comprising the additive combination of a first signal that is essentially proportional to the diameter of the supply roll and a second signal that is essentially constant, said apparatus further including a comparator operatively

connected to said braking means for comparing the current feeding the braking means with a predetermined standard indicative of the desired amount of web tension for the given roll diameter, wherein said comparator adjusts the amount of braking force to provide the desired amount of web tension,

a roll diameter sensing means including a supply roll potentiometer operatively connected to said comparator for generating a voltage signal to said comparator proportional to the supply roll diameter, and a tension potentiometer for modifying the voltage signal generated from the supply roll diameter potentiometer to provide a voltage signal to the comparator indicative of a desired tension setting,

a resistor operatively connected to said braking means and comparator to provide a circuit voltage to said comparator indicative of the current supplied to the braking means, said signal therefore being proportional to the amount of braking force exerted by said braking means, and

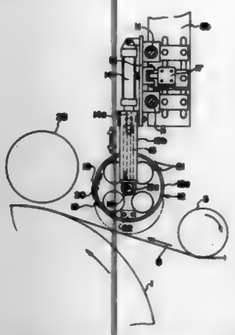
a pulse generating means operatively connected to said comparator for generating a voltage pulse during a stop condition that effectively increases the voltage signal supplied from said supply roll and tension potentiometer to said comparator.

5,441,211

METHOD AND APPARATUS FOR UNINTERRUPTED WINDING OF A CONTINUOUS SHEET ONTO A SUCCEEDING SPOOL

Takashi Ueda, Nishinomiya, and Itsuo Fuki, Amagasaki, both of Japan, assignors to Kanzaki Seishi Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 78,454
Claims priority, application Japan, Jun. 19, 1992, 4-160966
Int. Cl.[6] B65H *19/26, 19/28*
U.S. Cl. 242—526.1 **15 Claims**



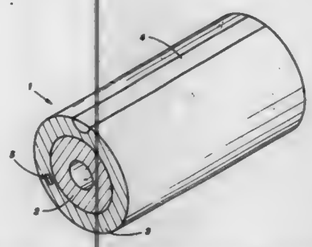
1. In a process for winding a continuous webbing onto a windup spool, which comprises supplying from an upstream supply direction the continuous webbing into contact with a rotatable feed drum, contacting said feed drum with a first windup spool for frictional rotational engagement therewith, winding the webbing onto said first windup spool, when said first windup spool has a predetermined amount of webbing wound thereon, ripping apart the webbing by forming a rip therein with the discharge pressure of a blast of air, and detaching said first windup spool from said engagement with said feed drum, said ripping of said webbing forming a leading edge at the rip in the webbing from the supply direction, winding said leading edge on a second windup spool, the improvement which comprises prior to the ripping, and at a location of the webbing when viewed from the supply direction upstream of the second windup spool, establishing contact between the lateral center of the webbing and a slitting wheel having a lateral slitting knife and an adhesive mounted thereon, rotating the slitting wheel by contact with the webbing, forming a slit in the center of the webbing with the knife to facilitate the subsequent ripping, transferring said adhesive to said webbing at a position when viewed from the supply direction upstream of said slit, and simultaneously with the ripping apart of the webbing by the air blast directed at said slit, blowing the leading edge with the adhesive thereon to adhere to the second windup spool by the adhesive.

5,441,212

MANDREL SLEEVE ADAPTOR

Dale H. Dicken, Westlake; Thomas M. Pituch, Aurora, both of Ohio, and Francis N. Smutney, Washington, Pa., assignors to L-S Electro-Galvanizing, Cleveland, Ohio

Continuation of Ser. No. 750,965, Aug. 19, 1991, abandoned.
This application Nov. 22, 1993, Ser. No. 162,361
Int. Cl.[6] B65H *18/00*
U.S. Cl. 242—532 **18 Claims**



1. In combination, an expandable coiling mandrel for receiving a web of material, the web having a head end, and an elastomeric sleeve adapter, said sleeve adaptor having a longitudinal central axis and comprising:

a) an axially extending void disposed in said sleeve adaptor, said void located radially outward of the longitudinal central axis and defining an axially extending compressible zone for engaging said head end;

b) said zone being a portion of the sleeve that is more compressible than the remaining portion of the sleeve by virtue of its being located radially outward of said void and adapted to be depressed by said head end;

c) said zone having an arcuate extent adapted to prevent creases and flat spots in wraps of the web superimposed over said head end when said head end is depressed into said zone.

5,441,213

DIAMETER FEEDBACK CONTROLLED WINDING DEVICE

Walker O. Graham, Waterloo, S.C., assignor to Cooper Machinery, Inc., Fountain Inn, S.C.

Filed Aug. 31, 1993, Ser. No. 114,583
Int. Cl.[6] B65H *18/20*
U.S. Cl. 242—534.2 **14 Claims**

1. A surface drive winding apparatus for winding a material into a roll, said surface drive winding apparatus comprising:

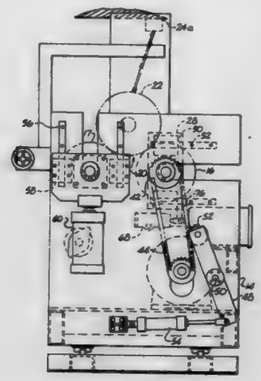
a) a frame;

b) at least a pair of drive rollers supported on said frame having respective axes in substantially parallel orientation and forming a material roll receiving area therebetween for supporting and driving material roll for winding, one of said drive rollers being linearly stationary on said frame and the other of said drive rollers being linearly movable from an initial position in a direction essentially perpendicular to said axes and relative to said frame away from the other said stationary drive roller as said material roll grows in diameter;

c) a stationery proximity sensing device disposed above said material roll receiving area at a position displaced from a vertical plane through the longitudinal centerline of said material roll when said movable roller is at said initial position for sensing the approximate diameter of said material roll, the position of said proximity sensing device being such that said vertical plane moves toward said proximity sensing device as said material roll grows in diameter during winding;

d) a linear position sensor operably disposed relative to said movable drive roller and said frame to measure the linear displacement of said movable drive roller relative to said frame;

e) a controller in communication with said proximity sensing



device and said linear position sensor, said controller configured to compare the linear position of said movable roller to a predetermined desired linear position corresponding to the measured approximate material roll diameter;

(f) a driving device in communication with said controller and configured to linearly move only said moveable drive roller to said predetermined desired linear position responsive to the approximate diameter of the material roll sensed by said proximity sensing device so that said movable drive roller will be moved relative to said stationary drive roller responsive to the measured changes in the diameter of the material roll as it is wound.

5,441,214

PAPER WEB RESERVOIR APPARATUS

Shigenobu Kushihashi, and Shigemitsu Inomata, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

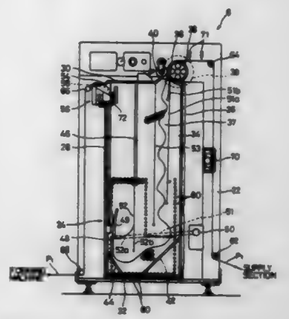
Filed Nov. 10, 1993, Ser. No. 149,772
Claims priority, application Japan, Nov. 12, 1992, 4-301983
Int. Cl.[6] B65M *20/24*
U.S. Cl. 242—552 **11 Claims**

1. A paper web reservoir apparatus provided along a supply path with a paper web being supplied from a paper web supply section to a paper web consuming unit, said reservoir apparatus comprising:

a reservoir box having an inlet port and an outlet port for the paper web;

said inlet port opening upwardly and said outlet port being located at an upper portion of said reservoir box and opening toward the paper web consuming unit;

said reservoir box including a pair of sheet members for defining a paper web storage chamber, said storage chamber extending downwardly in said reservoir box from the inlet port and being capable of storing the paper web introduced through the inlet port wherein the paper web is folded, said pair of sheet members being formed of a flexible material and extending downwardly from a top wall of said reservoir box; and



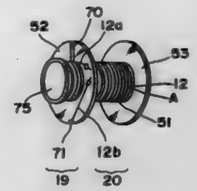
ventilation means for connecting the inside of said reservoir box to ambient air.

5,441,215

SLITTED WINDING WHEEL FOR OPTICAL FIBER

Katsuya Nagayama; Toshifumi Hosoya; Ichiro Yoshimura, and Yasuo Matsuda, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 884,185, May 18, 1992, Pat. No. 5,322,228.
This application May 31, 1994, Ser. No. 251,346
Claims priority, application Japan, May 20, 1991, 3-35423; May 27, 1991, 3-121039; Jun. 5, 1991, 3-159911; Jul. 15, 1991, 3-63435; Jan. 17, 1992, 4-6074; Apr. 23, 1992, 4-104339
Int. Cl.[6] B65H *75/28*
U.S. Cl. 242—580 **8 Claims**



1. A winding reel for winding an optical fiber around a drum of said winding reel comprising: two slits provided on a flange of said winding reel, a length of one of said slits being substantially equal to a distance obtained by subtracting a radius of the drum of the winding reel from the radius of said flange; and a length of the other slit does not reach a maximum outer cylindrical surface of the optical fiber wound around said drum, said slits extending inwardly from an outer periphery of said flange at positions spaced approximately 180 degrees from each other.

5,441,216

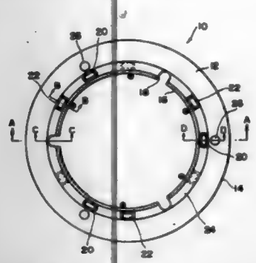
TAPE TAKE-UP HUB

Haruo Shiba, Komoro, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,900
Claims priority, application Japan, Oct. 2, 1992, 4-287079
Int. Cl.[6] B65H *75/18*
U.S. Cl. 242—605 **5 Claims**

1. An improved take-up hub including a circular ring having an outer wall surface on which a length of magnetic tape is taken up and an inner wall surface defining an opening such that the ring can fit onto a driving shaft and formed with a plurality of key ways adapted to mesh with keys formed on a

driving shaft, said ring having a thickness substantially equal to the width of the magnetic tape, wherein the improvement comprises: as additionally formed on either side of the circular ring, a plurality of protrusions of the same height, the same in number as the key ways, and a plurality of recesses, the same in number as the protrusions, with the plurality of recesses each being defined by an opening formed on one of the sides of



the circular ring which does not open to the inner wall surface and a bottom surface and being of a depth greater than the height of the protrusions and adapted to receive the corresponding protrusions of an adjacent hub of an identical structure, said protrusions and recesses being equally spaced apart along one and the same circle, said protrusions being aligned in position to those formed on the reverse side of the circular ring.

5,441,217

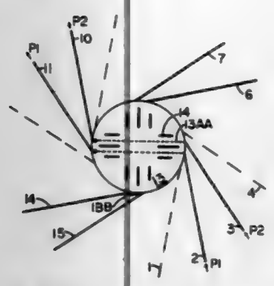
VARIABLE ONE WAY AIRPORT

Harry E. Novinger, 13890 E. Marina Dr. #609, Aurora, Colo. 80014-3760

Continuation-in-part of Ser. No. 5,859, Jan. 13, 1993, Pat. No. 5,368,257. This application May 9, 1994, Ser. No. 222,123

Int. Cl.° B64F *1/36*

U.S. Cl. 244—114 R **10 Claims**



1. An airport facility providing for at least one stream of aircraft to obtain safe, efficient and short transit distances throughout aircraft approach, taxi and departure operations, comprising:

a taxiing surface on which the aircraft moves during the taxi operation and including an apron surface around the perimeter of said taxing surface;

plural runways with one end of each said runways connected to the perimeter of said apron, the runways arranged around the apron in a radiating configuration;

said runways grouped in pairs of one landing and one takeoff runway, with their centerlines oriented substantially parallel and laterally spaced on substantially opposite sides of said taxiing surface;

said taxing surface further comprising aviation support buildings thereon, a first structural arrangement comprising a first at least one of said buildings radially oriented on said taxiing surface and a second at least one of said buildings laterally spaced in parallel to said first at least one of said radially oriented buildings in an arrangement that forms a straight access taxi passageway between the ends of said runways in a first pair of said pairs of runways, a second structural arrangement which is a duplicate of said first structural arrangement that forms a second straight access taxi passageway in a second pair of said pairs of runways, said first and second structural arrangements angularly oriented in arrangement to one another so that respective said passageways cross one another substantially at right angles, the passageways communicating with the buildings for docking the at least one stream of aircraft while taxiing from the landing to the take-off runway in a one way path;

said runways are clear of intersections with other said runways and their centerlines angularly displaced from the parallel orientation of said support buildings.

5,441,218

OVERHEAD LUGGAGE COMPARTMENT SYSTEM FOR PASSENGER AIRCRAFT

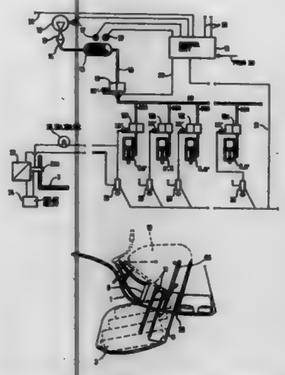
Hans-Juergen Mueller, Henstedt-Ulzburg; Ralf Schliwa, Hamburg, both of Germany, and Guenther Schwertfeger, Tournefeuille, France, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Mar. 22, 1993, Ser. No. 34,100

Claims priority, application Germany, Mar. 20, 1992, 42 09 037.7

Int. Cl.° B64D *11/00*

U.S. Cl. 244—118.1 **14 Claims**



1. An overhead luggage compartment system for passenger aircraft, comprising a lockable shell forming a luggage compartment arranged in an overhead area of a passenger cabin, said compartment shell forming a box having an opening, said system further comprising mounting means for adjustably securing said shell to a supporting structure, and a power drive connected to said adjustable mounting means for positioning said shell in a loading position, an unloading position, and in a recessed, closed position, and a control device connected to said power drive means for controlling said power drive means, said control device comprising a passenger operated control element (**20**) for operating said power drive for said luggage compartment, and a remote control (**22**) operable by a crew member for preventing a passenger initiated control.

5,441,219

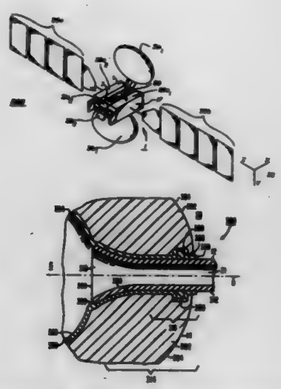
METHOD FOR ATTACHING METALLIC TUBING TO NONMETALLIC PRESSURE VESSEL, AND PRESSURE VESSEL MADE BY THE METHOD

Robert A. Rauscher, Jr., Lawrenceville, N.J., assignor to Martin Marietta Corporation, East Windsor, N.J.

Filed May 27, 1993, Ser. No. 68,509

Int. Cl.° B65D *90/04*; B64D *37/00*

U.S. Cl. 244—135 R **7 Claims**



1. A tank including a cavity for storing a fluid, said tank comprising:

an elongated metal feed pipe defining a longitudinal axis, an outer surface and a bore, said pipe including a coupling portion near one end thereof, said coupling portion including a substantially cylindrical outer surface, said coupling region also including an annular ring integral with said cylindrical outer surface and protruding radially from said cylindrical outer surface;

a thin, ductile metal tank liner defining said cavity, and also defining an elongated neck portion extending over and around said coupling portion of said pipe, and closely fitted about said annular ring; and

a composite reinforcing outer shell closely fitted about said liner, and extending over said neck portion and coupling region in a manner to, in said coupling region, sandwich said liner between said feed pipe, including said integral annular ring, and said outer shell.

5,441,220

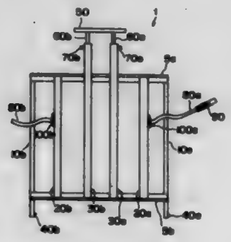
CONTAINER CARRIER

Marvin W. Carlson, R.R. 2 P.O. Box 79, Overton, Nebr. 68883

Filed Aug. 10, 1994, Ser. No. 288,024

Int. Cl.° A47G *23/02*

U.S. Cl. 248—154 **10 Claims**



1. A container carrier, comprising:

two parallel support members, each said support member having a foot disposed at an end portion thereof, each said flange comprising an angled extension portion of said support member;

two brackets attached to said parallel support members to form a frame, a first bracket being disposed toward a first end of said frame, a second bracket being disposed toward a second end of said frame, said brackets being adapted to support a plurality of cradle support members;

said plurality of cradle support members extending from said first bracket to said second bracket to form a cradle, two of said plurality of cradle support members arranged in parallel and extending from said second bracket past said first bracket by a predetermined length and adapted to receive rods connected to a retaining ring, said rods being slidable in said two of said support members;

said retaining ring being adjustably disposed at an extended end of said extending cradle support members, said retaining ring adapted to receive a neck portion of said pressurized container, said ring being adjusted when said rods are slidably engaged in said extended support members; and

said angled extensions of said support members being adapted to overhang an end of a surface on which said carrier rests.

5,441,221

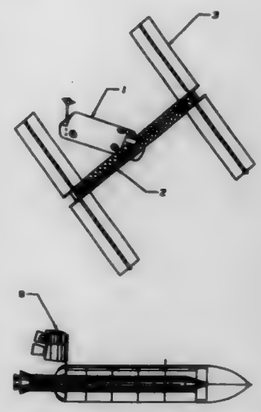
HEAVY-LIFT VEHICLE-LAUNCHED SPACE STATION METHOD AND APPARATUS

Donald C. Wade, Friendswood; Horacio M. De La Fuente, Friendswood; Reginald B. Berka, Houston; Steven L. Rickman, League City; Edgar O. Castro; Kornel Nagy, both of Houston; Clarence J. Wesselski, Alvin; Timothy E. Pelischek, Santa Fe, and John A. Schliesing, Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 3, 1993, Ser. No. 161,038

Int. Cl.° B64G *1/60, 1/22, 1/44*

U.S. Cl. 244—159 **20 Claims**



1. A space station and launch vehicle combination, comprising:

a substantially elongate external tank with at least one rocket engine laterally disposed with respect to said external tank; and

a payload laterally disposed with respect to said external tank, said payload further including:

a first space station core module including an unpressurized forward volume, an unpressurized aft volume, and a pressurized middle volume,

a propulsion module removably disposed adjacent said unpressurized aft volume,

a transition section removably disposed between said pressurized middle volume and said propulsion module, said transition section having an outer covering forming an aerodynamic fairing in surrounding relationship to said unpressurized aft volume, and

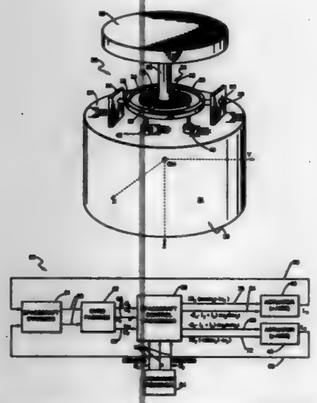
a removably disposed forward shroud in surrounding relationship to said unpressurized forward volume, said forward shroud forming an aerodynamic fairing.

5,441,222

ATTITUDE CONTROL OF SPINNING SPACECRAFT

Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 26, 1993, Ser. No. 52,879
Int. Cl.[6] B64G *1/28*; G05D *1/02*
U.S. Cl. 244—165 **27 Claims**



1. An attitude control system for a spinning spacecraft comprising:

a gimbal adapted to be mounted on said spacecraft, said gimbal having first and second portions respectively pivotable about first and second orthogonal axes (x, y);

a spinning momentum wheel mounted on said gimbal;

first actuator means connected between said first portion and said spacecraft for applying a first control moment to said spacecraft about said first axis (x); and,

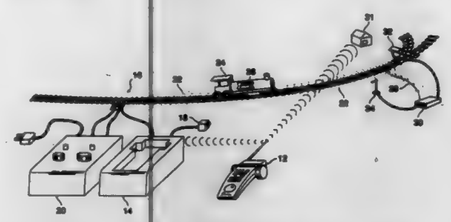
second actuator means connected between said second portion and said spacecraft for applying a second control moment to said spacecraft about said second axis (y), said first and second actuator means being respectively secured to said first and second portions at locations along said first and second axes respectively to avoid the undesirable application to said spacecraft of unwanted secondary moments, said first and second control moments being operative to control the attitude of said spacecraft.

5,441,223

MODEL TRAIN CONTROLLER USING ELECTROMAGNETIC FIELD BETWEEN TRACK AND GROUND

Neil P. Young, 3240 Bear Gulch Rd., Redwood City, Calif. 94062, and David M. Hampton, Nevada City, Calif., assignors to Neil P. Young, Redwood City, Calif.

Continuation-in-part of Ser. No. 833,869, Feb. 11, 1992, Pat. No. 5,251,856. This application Oct. 8, 1993, Ser. No. 134,102
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] B61L *7/08, 27/00*
U.S. Cl. 246—4 **14 Claims**



1. A control system for transmitting control signals to a model vehicle on a track, comprising:

input means for accepting user input signals;

control means, coupled to said input means, for generating control signals for said model vehicle; and

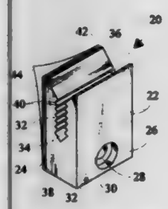
a transmitter, coupled to said control means, connected between a rail of said track and earth ground, for transmitting said control signals between said rail of said track and earth ground to generate an electromagnetic field above said track, such that said control signals can be received by a receiver on said model vehicle from said electromagnetic field.

5,441,224

RETAINER AND METHOD FOR ATTACHING WIRING TO OBJECTS

Douglas P. Ludwig, 560 South St., Glendale, Calif. 91202

Filed Aug. 1, 1994, Ser. No. 283,631
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.2 **8 Claims**



1. A retainer for attaching wiring to an object, comprising:

a body having an exterior surface, said exterior surface having a first substantially planar side;

said body having a first hole oriented substantially perpendicular to said first planar side, said first hole passing through said body and said first planar side;

receiving means integral with said body, said receiving means adapted to longitudinally accept the wiring, said receiving means including substantially parallel walls defining a slot, said slot having an outward open end and an inward end; and,

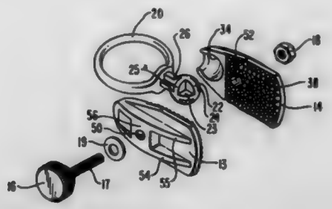
adhesive disposed on said first planar side.

5,441,225

WEBBING CLAMP AND RESILIENT HOOP APPARATUS AND METHOD

Larry D. Hall, 380 N. 400 East P.O. Box 1010, Morgan, Utah 84050-1010

Filed Oct. 18, 1993, Ser. No. 138,700
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—231.6 **12 Claims**



1. A clamp for adjustably affixing an airspeed indicator to a webbing strap comprising:

an elastic hoop adopted to have a diameter incrementally smaller than the diameter of the airspeed indicator, said elastic hoop being operable for stretchably receiving the airspeed indicator in a constrictive, frictional relationship;

a ball mounted to said elastic hoop;

a webbing clamp;

having a first jaw, said first jaw having a first socket half at a first end and

a second jaw, said second jaw having a second socket half at a first end, said second jaw cooperating with said first jaw in a face-to-face relationship to engage said ball between said first socket half and said second socket half;

release means on said webbing clamp for releasably mounting said webbing clamp to the webbing strap, said release means comprising a first gripping face on a surface of a substantially planar portion of on a second end of said first jaw and a second gripping face has been inserted after "a second gripping face" on a second end of said second jaw, said webbing clamp adopted to releasably the webbing strap between said first gripping face and said second gripping face when said ball is engaged between said first socket half and said second socket half;

said webbing clamp having a hole through said first jaw and said second jaw; and

screw means passing through said hole for bringing said first jaw toward said second jaw, said screw means causing said first jaw and said second jaw to simultaneously engage said ball and the webbing strap in a clamping relationship.

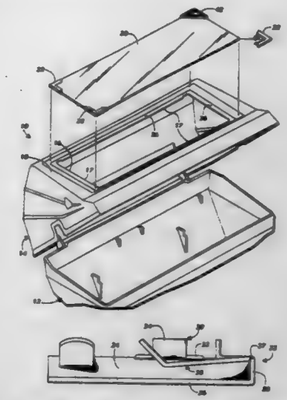
5,441,226

WINDOW MOUNTING BRACKET

Joseph B. Craven, Jr., Columbus, and Floyd A. Collins, Fortson, both of Ga., assignors to W. C. Bradley Company, Columbus, Ga.

Filed Aug. 13, 1993, Ser. No. 106,139
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—231.8 **15 Claims**

1. A window mounting bracket for use in installing a window in an opening in a barbecue grill hood or the like, said bracket comprising channel means for receiving an edge of the window and fastening means for securing said bracket in the opening, said fastening means having a first position biased



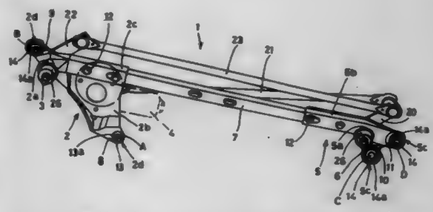
against the window and a second position biased against the grill hood or the like.

5,441,227

MOUNTING STRUCTURE FOR MODULAR-TYPE WIPER DEVICE

Akira Hayashi, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Continuation of Ser. No. 915,615, Jul. 21, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,535
Claims priority, application Japan, Jul. 30, 1991, 3-067214
Int. Cl.[6] B60S *1/04*
U.S. Cl. 248—274 **8 Claims**



1. A mounting structure on a vehicle body for a modular-type wiper device in the form of an integral unit having a plurality of wiper components, comprising:

brackets into which said wiper components are incorporated, said brackets provided with a plurality of mounting holes for mounting said wiper components to the vehicle body;

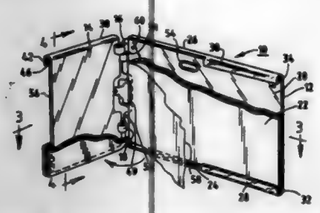
a plurality of mounting seats provided on a cowl of the vehicle body in correspondence with said mounting holes;

a plurality of fasteners passing through said plurality of mounting holes to said mounting seats to fix the brackets to the vehicle body;

wherein at least one of said plurality of mounting holes is a small-diameter mounting hole having a diameter smaller than that of the remaining mounting holes and corresponding to the dimension of the fasteners; and

wherein one of the plurality of mounting seats for the fastener passed through said small-diameter mounting hole is formed integrally with the cowl of the vehicle body and the remaining mounting seats are provided on mounting stays mounted on the cowl to position the brackets and the wiper components relative to the vehicle body.

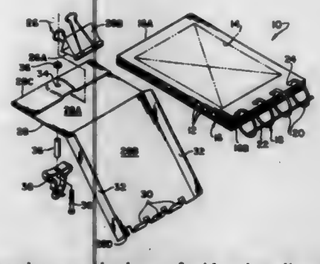
5,441,228
DOCUMENT HOLDING AND DISPLAY DEVICE
Thomas H. Geborek, 17528 W. Woodland Dr., Grayslake, Ill. 60030
Filed Feb. 28, 1994, Ser. No. 202,327
Int. Cl.[6] A47B *23/00*
U.S. Cl. 248—441.1 **15 Claims**



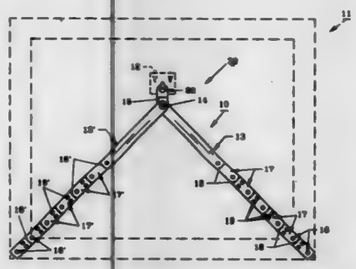
1. A holder for holding a plurality of documents, and for displaying one of the documents comprising:
a first support member, said first support member having a generally rectangular flat surface, is adapted to correspond in size and shape to the size of the document to be held by the holder, said first support member flat surface having first and second pairs of opposite edges,
retaining means adjacent said first pair of opposite edges of said first support member for retaining opposite edges of the plurality of documents,
releasable securing means mounted on said first support member adjacent a first one of said second edges, for releasably securing the plurality of documents to said first support member,
a second support member, said second support member having a generally rectangular flat surface, said second support member flat surface having a first pair of opposite edges, each of which is approximately one-half as long as said first opposite edges of said first support member, and having a second pair of opposite edges each of which is approximately the same length as the second pair of opposite edges of said first support member,
retaining means adjacent said first pair of opposite edges of said second support member for retaining opposite edges of the documents,
hinge means having first and second portions, said first portion secured to said first support member adjacent said first one of said second edges, said second portion secured to said second support member adjacent a first one of said second edges of said second support member,
whereby, a portion of the plurality of documents secured by said releasable securing means which are on top of the document which is to be viewed may be disengaged from said retaining means adjacent said first pair of opposite edges of said first support member, and folded over said second one of said second edges of said second support member and retained by said retaining means adjacent said first pair of opposite edges of said second support member, such that all of said documents are supported by the holder and the document to be displayed is supported in a position for ready viewing.

5,441,229
HOLDER OF ASSEMBLAGE OF PILOT FLIGHT CHARTS
Remo Spagnoli, 6 Governor Dr., Newburgh, N.Y. 12550
Filed Feb. 1, 1995, Ser. No. 382,163
Int. Cl.[6] A47B *97/04*
U.S. Cl. 248—452 **3 Claims**

1. A convenience article of manufacture for assisting an airplane pilot in navigation comprising an assemblage of flight charts useful to an airplane pilot imprinted on plural paper substrate pages of rectangular shape having first and second opposite edges, a support for said assemblage having first and second opposite edges, ring binder means operatively disposed to interconnect said first edges of said assemblage to a first edge of said support so as to allow a pivotal traverse of said assemblage pages in relation to said ring binder means, and spring clip means attached to said second edge of said support and releasably engaged to said second edges of said assemblage, whereby manual release of said spring clip means contributes to manual page-turning of said assemblage until encountering a selected flight chart of interest while maintaining said attachment of said other flight chart pages to said support.



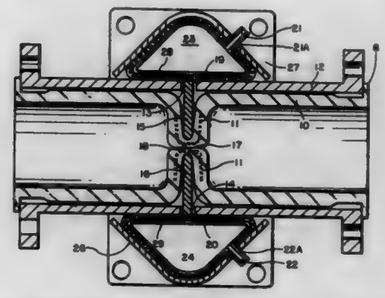
5,441,230
DECORATIVE ACCESSORY WALL SUSPENSION SYSTEM
William W. Sambleson, 8343 Lakedale Cir., Colfax, N.C. 27235, assignor to William W. Sambleson, High Point, N.C.
Filed Dec. 21, 1993, Ser. No. 170,812
Int. Cl.[6] A47G *1/16*
U.S. Cl. 298—495 **16 Claims**



1. In a suspension system with a device having a pair of spreadable arms for attachment to a wall bracket whereby the arms are affixed to an object to suspend said object from the wall bracket, the improvement comprising: a plurality of elongated arm segments, said segments joined end-to-end in frangible relation to form an arm, each of said arm segments having an outer surface which defines an aperture.

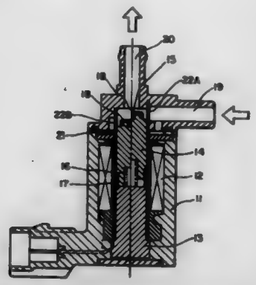
5,441,231
VALVE CLOSING ACTUATOR
Barrett M. M. Payne, 9 Caithness Road, Hillside, Bulawayo, and John L. Sullivan, 4 Stuttaford Road, Fortunes Gate, Bulawayo, both of Zimbabwe
Filed May 17, 1994, Ser. No. 245,028
Int. Cl.[6] F16K *7/07*
U.S. Cl. 251—5 **8 Claims**

1. A valve for use in regulating flow of fluid through a conduit having a deformably resilient valve sleeve, said valve comprising
a) a housing defining first and second cavities, each of said first and second cavities being substantially triangular in cross section;
b) jaw member means within the housing comprising at least first and second opposing jaw members for at least partially encircling the conduit with the first and second jaw members disposed transverse to the conduit and for deforming the valve sleeve of the conduit with the conduit sandwiched between the first and second opposing jaw members, said jaw member means being movable between an open position with the first and second jaw members spaced apart a distance sufficient to permit flow of fluid through the conduit and a closed position with the jaw members urged together sufficiently to restrict the flow of fluid through the conduit, and



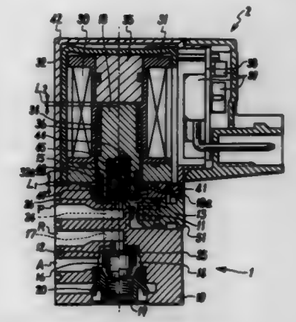
c) inflatable diaphragm means having deflated and inflated configurations for controlling movement of the jaw member means between said open position with the diaphragm means in said deflated configuration, and said closed position, with the diaphragm means in said inflated configuration, said diaphragm means comprising first and second diaphragms disposed within said first and second cavities respectively, said first and second diaphragms substantially filling said first and second cavities respectively when the diaphragm means is in said inflated configuration.

5,441,232
SOLENOID VALVE
Masaharu Tanaka, Sashima, Japan, assignor to Kyosan Denki Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 166,348
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.05 **5 Claims**



1. In a duty control solenoid valve having an electromagnetic coil, a plunger which is movably operated in one direction by electromagnetic attraction upon energization of the electromagnetic coil, a valve element provided on the plunger, return spring means for movably urging said plunger in an opposite direction, fluid passages through which fluid flows and a valve port provided in said fluid passages, said valve port being open or closed by said valve element wherein opening time of said valve port is controlled by exciting said electromagnetic coil in a given cycle which can be regulated, the improvement comprising:
a guide body, said plunger being longitudinally slidably guided in said guide body;
at least first and second flow control ports formed in said guide body in longitudinally spaced relation to provide at least first and second stages of flow control between said fluid passages, said flow control ports being opened or closed in response to the movement of the plunger; and
said return spring means including at least first and second return springs which movably urge the plunger in said opposite direction and provide different urging for said first and second stages, whereby the excitation energy of said electromagnetic coil can be switched to first and second stages so that said plunger can open or close said flow control ports in stages to vary the opening areas of said flow control ports.

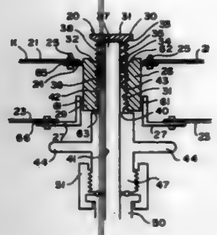
5,441,233
ELECTROMAGNETIC VALVE
Yoshio Asou; Hideharu Sato; Keisuke Shimauchi, and Takumi Matsumoto, all of Yawara, Japan, assignors to SMC Corporation, Tokyo, Japan
Filed Mar. 18, 1994, Ser. No. 210,367
Int. Cl.[6] F16K *31/06*; F15B *13/044*
U.S. Cl. 251—129.15 **3 Claims**



1. An electromagnetic valve, comprising:
a plurality of ports, through which fluid flows in or out;
a valve seat arranged in a flow passage communicating with said plurality of ports:
a valve member for opening and closing said valve seat; a movable iron core movably inserted into an iron core hole in a solenoid unit and holding said valve member in a recess at an end surface thereof, when power to coil is turned on, said movable iron core being drawn to a fixed iron core and separating said valve member from said valve seat, and when power is turned off, said movable iron core being separated from the fixed iron core by a force of a return spring and attaching said valve member to the valve seat; and
a cap mounted on a forward end of said movable iron core and made of an elastic material for engaging with said valve member and preventing said valve member from moving out of the recess,
said cap having a guide tube unit to be engaged in the iron core hole and a flange unit located on an outer side of said iron core hole, with the flange unit adjacent an outer wall of the iron core hole, said guide tube unit having an outer diameter slightly larger than an outer diameter of the movable iron core, the movable iron core being prevented from contacting said iron core hole by making said guide tube unit slidably contact the iron core hole, a distance between said flange unit and the outer wall of the iron core hole being shorter than a distance between the movable iron core and the fixed iron core so that, when power is turned on, the flange unit is brought into contact with

the outer wall of the iron core hole before the movable iron core collides against the fixed iron core.

5,441,234
FUEL SYSTEMS
George W. White, 701 Piney Point Rd., Houston, Tex. 77024; Edwin R. Daniel, #83 10 S. Briarhollow La., Houston, Tex. 77027; James E. Kirkland, 704 F Bering Dr., Houston, Tex. 77057, and James S. Shively, 5261 Memorial Dr., Houston, Tex. 77007
Filed Nov. 26, 1993, Ser. No. 158,023
Int. Cl.[6] F16K *51/00*
U.S. Cl. 251—144 **9 Claims**



1. An internal valve for a tank, the tank having an inner wall and an outer wall spaced apart from the inner wall, the internal valve comprising

a body member with a central channel therethrough and a body flange therearound, the body flange secured about an opening in the inner wall of the tank with a first portion of the body member extending into the tank and a second portion of the body member extending into a space between the inner wall and the outer wall,

at least one flow slot through the first portion of the body member through which a fluid in the tank may flow to the central channel of the body member and out from the tank, and

a valve member movably disposed in the body member, the valve member movable back and forth in the central channel of the body member to selectively permit or prevent flow from the at least one flow slot to the central channel, the valve member having a valve disc within the tank which extends across the central channel of the body member, the valve member having a rod extending outwardly from the valve disc, the rod having a recess therein, the valve disc movable with the body member to effect a seal within the tank to close off fluid flow through the central channel.

5,441,235
TITANIUM NITRIDE COATED VALVE AND METHOD FOR MAKING
Sundaram L. Narasimhan, Marshall; Stephen B. Caird, Saginaw, both of Mich., and Flavio A. Rigamonti, Turin, Italy, assignors to Eaton Corporation, Cleveland, Ohio
Filed May 20, 1994, Ser. No. 246,651
Int. Cl.[6] F01L *3/00*
U.S. Cl. 251—368 **5 Claims**

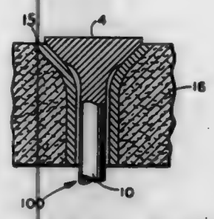
1. A titanium valve having an in situ zone of titanium nitride extending inwardly from the outer surface thereof made by a method including the steps of:

(a) cyclicly annealing the valve at predetermined temperatures below and above a pre-established metallurgical microstructure transition temperature for the titanium for a number of cycles and for a period of time at each temperature sufficient to establish the metallurgical microstructure characteristics desired,

(b) heating the valve of step (a) up to a predetermined nitriding temperature while under controlled vacuum in a furnace,

(c) applying an electrical potential between a cathode and the valve of step (b) while heating the valve in the furnace,

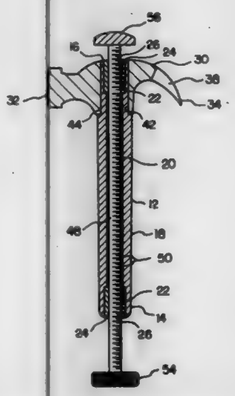
(d) exposing the valve of step (c) to pressurized nitrogen in a halogen-free atmosphere,



(e) adjusting at least one of the nitrogen pressure or the electrical potential between the valve and the cathode of step (d) so as to ionize the nitrogen and initiate titanium ion migration from the cathode toward the valve, and

(f) holding the valve of step (e) at the predetermined nitriding temperature for a period of time sufficient to enable the migrating titanium as to react with the ionized nitrogen and form the titanium coating on the valve.

5,441,236
HAMMERS WITH CLAWS AND ADJUSTABLE PIVOT POINTS
Robert J. Kiernan, 600 W. Picacho Dr., La Habra, Calif. 90631
Filed Mar. 10, 1994, Ser. No. 208,219
Int. Cl.[6] B25C *11/00*
U.S. Cl. 254—26 E **2 Claims**



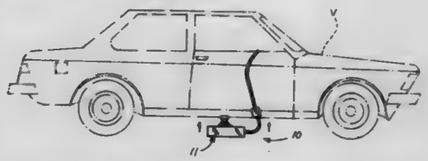
1. A hammer with claws and an adjustable pivot point comprising, in combination:

an elongated handle with a first gripping end for being held by a user, a second operational end for driving and removing nails, an exterior surface for being held by a user, a cylindrical interior surface extending axially through the length of the handle, and inserts with internal screw threads positioned on the interior surface adjacent the first and second ends;

a head having a nail driving side with a flat surface and a nail removing side with a claw having a V-shaped slot positionable under the head of a nail to be removed and a cylindrical bore therebetween, the bore being press fit onto the exterior surface of the handle at the first end; and

an adjustable rod, the adjustable rod being formed as a rigid cylinder with exterior screw threads rotatably received within the screw threads of the handle whereby rotation of the rod within the handle will axially shift the rod, the rod being of a length of about 120 percent greater than the length of the handle, a narrow knob positioned at the end of the rod adjacent to the first end and a domed fulcrum positioned on the end of the rod adjacent to the second end, the fulcrum having a radius of curvature, in all directions whereby the knob may be rotated by a user to vary the location of the fulcrum with respect to the handle, head and claw so that the claw may remove nails of varying sizes by pivoting about the fulcrum at a preselected distance from the claw and nail to be removed.

5,441,237
PNEUMATIC VEHICLE JACK
Charles F. Sweeney, 921 Merrick Ave., Haddon Township, N.J. 08108
Filed Jul. 28, 1994, Ser. No. 281,625
Int. Cl.[6] B66F *3/24*
U.S. Cl. 254—93 HP **4 Claims**



1. A pneumatic vehicle jack, comprising,

a rigid housing, the housing having a continuous side wall, a top wall, and a housing floor opening positioned in a facing relationship relative to the housing top wall, with a least one pneumatic bag positioned within the housing between the housing floor opening and the housing top wall, and

a compressor, and power supply means directed to the compressor for effecting actuation of the compressor, and

a pneumatic conduit directed from the compressor to a valve assembly, the valve assembly directing pressurized air from the compressor through the pneumatic conduit to the at least one pneumatic bag, and

a support tube fixedly and orthogonally mounted to the housing top wall, with a plate tube adjustably received within the support tube;

the valve assembly includes a valve conduit directed therethrough in pneumatic communication with the at least one pneumatic bag and the pneumatic conduit, and a plate pivotally mounted within the valve assembly conduit, and a plate abutment fixedly mounted within the valve assembly conduit oriented between the plate and the pneumatic conduit.

5,441,238
APPARATUS FOR LIFTING ONE SIDE OF A SOFA FOR VACUUMING THEREBENEATH
Edward G. Lindsley, III, 121 Buscher Ave., Valley Stream, N.Y. 11580
Filed May 13, 1994, Ser. No. 242,631
Int. Cl.[6] F16H *29/02*
U.S. Cl. 254—95 **3 Claims**

1. An apparatus for lifting one side of a sofa for vacuuming therebeneath comprising, in combination:

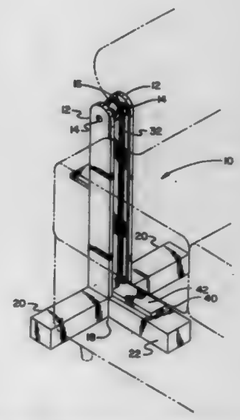
a pair of spaced vertically extending parallel side plates, the side plates having axially aligned apertures through their upper ends with a pin extending through the apertures to define the space between the side plates;

a base comprised of two rectangularly shaped laterally extending feet secured with respect to the lower ends of the side plates and extending parallel with the axis of the pin, the base also having a forwardly extending foot perpendicular to the laterally extending feet, all the feet of the base having lower surfaces in common plane for positioning adjacent to the sofa to be lifted with the forwardly extending foot therebeneath;

a sprocket secured to the pin for rotation about an axis coincident with the axis of the pin, the sprocket having teeth extending radially therefrom;

a chain having a first free end and a second free end and an elongated central extent therebetween positioned over the sprocket with the links of the chain sequentially positionable with the teeth of the sprocket through the chain;

a lifting plate positionable in a lower orientation immediately above the forwardly extending foot and having a horizontal forwardly extending lifting surface parallel with and above the upper surface of the forwardly extending foot, the lifting plate having an upwardly extending attachment member secured with respect to the first free end of the chain;



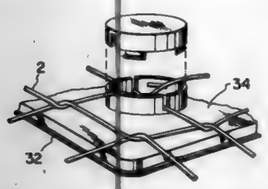
a pedal having an interior end shiftably secured at a location between the side plates and an exterior end formed as a foot receiving pedal extending rearwardly of the side plates reciprocable between an elevated location and a lowered location, the pedal having an upwardly extending attachment member secured with respect to the second free end of the chain; and

a locking component secured to the lower end of one of the side plates on the rearward face thereof, the locking component including a pivot plate and a pivot pin extending therethrough for allowing rotation of the pivot plate about an axis perpendicular to the axis of the pin and sprocket, the locking component having a notch movable to a locking orientation for receiving a portion of the pedal when depressed to secure the lifting plate in the raised orientation, the pivot plate being pivotable away from the pedal to allow the pedal to rise and the lifting plate to lower and return the sofa to its normal position on the floor.

5,441,239
ATTACHMENT DEVICE FOR CHAIN LINK FENCES
David Watson, 5987 Wiltshire Street, Vancouver, B.C., Canada V6M 3L8
Continuation-in-part of Ser. No. 108,444, Aug. 19, 1993, Pat. No. 5,342,021. This application Jan. 31, 1994, Ser. No. 188,786
The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.
Int. Cl.[6] E04H *17/00*
U.S. Cl. 256—1 **12 Claims**

1. A system for attaching a sign to a chain link fence of the

type having post-supported interwoven wires producing a matrix of wire lengths extending between wire cross-over centers, the system comprising one or more attachment devices, each comprising a pair of sections, each section having a face with circumscribing sides and interlocking means to secure the sections together along edges of their sides, the sections, when secured together over a cross-over center, producing a device with a hollow interior and having opposed faces with sides extending therebetween, the sides of the device having slots, when the device is so seated, located as to be seated over corresponding portions of the wire lengths extending outwardly from that center, the face of one of the sections of each of the devices being secured, by securing means, to a rear surface of sign.



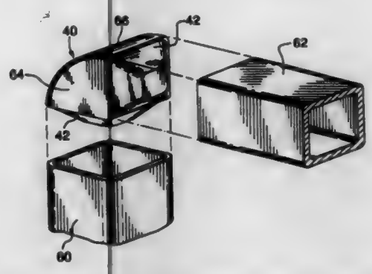
5,441,240
FENCE PANEL ASSEMBLY AND FENCE
James L. Arnold, 6223 Greenway Forest, Houston, Tex. 77088
Filed Mar. 24, 1993, Ser. No. 36,149
Int. Cl.[6] F04H *17/16*
U.S. Cl. 256—24 **14 Claims**



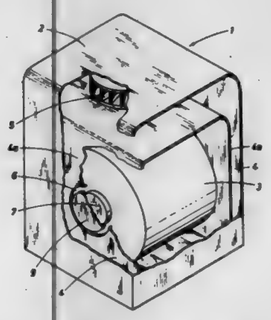
1. A fence for mounting on a fence post, comprising:
a) two panel stringers in a substantially parallel arrangement, each of said stringers comprising a mounting assembly capable of securing said stringer to a fence post and an upper lobed wing and a lower lobed wing; and
b) a plurality of fence panels slidably mounted on said stringers in a substantially parallel arrangement, each of said panels mounted in a substantially perpendicular configuration to said stringers, said fence panels comprising angulated channels capable of permitting air flow between said fence panels, said panels being capable of being spaced apart with respect to each other so as not to permit a line of vision from one side of said panels between said panels to the other side of said panels while permitting air flow through said angulated channels.

5,441,241
KNUCKLE FOR WELDING OF SAFETY HAND RAILING5
Alan M. McKim, 2540 Rivers Bend Lane, Oakville, Ontario, Canada L6L 1V3
Filed Aug. 12, 1993, Ser. No. 105,115
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—65 **5 Claims**

1. A metal knuckle for connecting two sections of hand railing of rectangular cross-section, the knuckle having a solid, non-hollow body with a rectangular cross-section and in profile a circular sector with an included angle less than 180° defined by opposite ends of said body, said knuckle further having frustum portions projecting from said opposite ends, each said frustum portion being configured to enter into a respective one of the two sections of hand railing, the sides of each frustum portion extending at an angle of approximately 45° to the respective end of the body, the knuckle being sized relative to the respective section of hand railing to which it is adapted to be connected such that, when said knuckle and said hand railing sections are in abutment ready to be welded together, a projection of each outside surface of the knuckle extends generally in-line with a respective outside surface of the section of hand railing, and a resultant notch of generally triangular cross-section extending around the knuckle between the end of the knuckle body and the respective section of hand railing defines a space appropriately sized for receiving a welding bead of the necessary strength to hold said knuckle and said hand railing sections together.

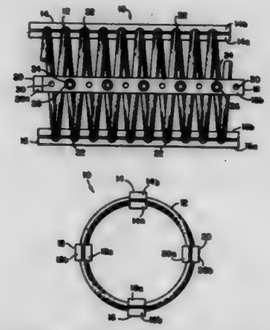


5,441,242
APPARATUS FOR CONTACTING SURFACES OF WORKPIECES WITH A FLOWING GAS
Peter Ebner, Leonding, Austria, assignor to Ebner Industrieofenbau Gesellschaft m.b.H., Leonding, Austria
Filed Nov. 30, 1993, Ser. No. 159,805
Claims priority, application Australia, Dec. 4, 1992, A2395/92
Int. Cl.[6] F26B *9/06*
U.S. Cl. 266—251 **3 Claims**



1. An apparatus for contacting with a flowing gas two opposite, substantially flat annular end faces of a cylindrical strip coil wound on a core having a diameter defining an inside diameter of the strip coil, the strip coil wound on the core being mounted in an oven housing defining with respective side walls spaced from the end faces two opposite plenum chambers receiving the flowing gas, and the side walls defining annular slots concentrically surrounding the core and substantially coaxial therewith, the annular slots having an inner diameter exceeding the core diameter and the inside diameter of the strip coil, and each of said side walls comprising an inner part which defines an inner edge of the annular slot of each side wall and is mounted to be adjustable in the axial direction relative to the remainder of said side wall.

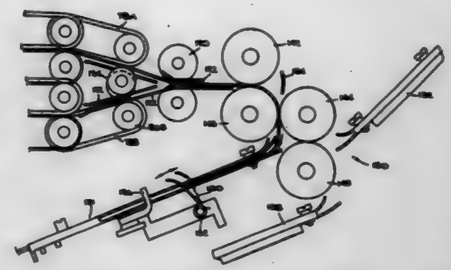
5,441,243
WIRE CABLE ISOLATOR AND ENERGY ABSORBING RESTRAINT
Lawrence A. Loziuk, Vernon Hills, Ill., assignor to Vectra Technologies, Inc., Lincolnshire, Ill.
Continuation-in-part of Ser. No. 978,018, Nov. 17, 1992, Pat. No. 5,360,210, which is a continuation-in-part of Ser. No. 915,477, Jul. 16, 1992, Pat. No. 5,240,232. This application Jul. 13, 1994, Ser. No. 274,645
Int. Cl.[6] F16F *3/00*
U.S. Cl. 267—136 **9 Claims**



1. A wire cable isolator of simple construction, ease of inspection and minimal maintenance to connect to, and isolate a device subject to movement due to dynamic loads, from an adjacent structure, the wire cable isolator having predetermined, symmetrical force-deflection properties, the wire cable isolator comprising:
first and second pairs of entrapment members, each said entrapment member including an inner clamping plate and an outer clamping plate secured one to the other; and
a wire cable formed in a spiral having at least one bight, said spiral having an externally unloaded shape maintained by said first and second pairs of entrapment members, said cable being captured between said inner clamping plate and said outer clamping plate of each said entrapment member, said first pair of entrapment members clamping the wire cable spiral at opposite sides of the wire cable spiral, and said second pair of entrapment members clamping the wire cable spiral at opposite sides of the wire cable spiral, said first and second pairs of entrapment members being disposed at predetermined positions about an exterior periphery of said spiral.

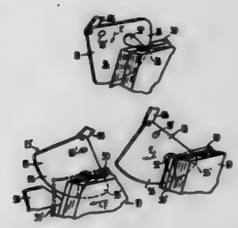
5,441,244
METHOD OF FOLDING COLLATIONS HAVING TWO DIFFERENT SIZE DOCUMENTS
Robert J. Bartoes, Lagrangeville, N.Y.; Haas C. Mol, Wilton, Conn.; Lyle W. Shaw, Southbury, Conn., and William J. Wright, Killingworth, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 27, 1993, Ser. No. 141,764
Int. Cl.[6] B42C *1/00*; B31F *1/08*
U.S. Cl. 270—45 **7 Claims**

1. In a buckle chute folder having a plurality of buckle chutes with fold stops therein and a plurality of fold rollers, an improvement for nest folding at least one smaller document of a collation within the folds of the larger documents of the collation, comprising:



means adjacent to and upstream of a fold stop in one of the buckle chutes for removing the smaller document as the larger documents exit said one of the buckle chutes.

5,441,245
PROCESS AND APPARATUS FOR OPENING MULTI-SHEETED PRODUCTS, IN PARTICULAR PRINTING PRODUCTS
Hans W. Flückiger, Oetwil am See, , assignor to Ferag AG, Hinwil, Switzerland
Filed Jun. 11, 1993, Ser. No. 75,750
Claims priority, application Switzerland, Jun. 11, 1992, 01858/92
Int. Cl.[6] B65H *5/30*
U.S. Cl. 270—57 **16 Claims**



1. A process for opening folded, bound or stapled multi-sheeted products in which a stabbing member (24) of an opening element (18) is used to stab in between sheets of the product (10) on one of its open sides (30) in a stabbing region (32) and, by subsequent moving of the opening element (18), the sheets lying on one side of the stabbing member (24) are lifted off the remaining sheets, wherein the product (10) is held together at the stabbing region (32) between a resting surface (34) of the opening element (18) and a counter-element (22), interacting with said resting surface, the held-together product (10) is stabbed by moving the opening element (18) in a stabbing direction (E) with a stabbing end (26) of the stabbing member (24), which end is offset by a predetermined distance (A) in the direction toward the counter-element (22) with respect to the resting surface (34), and the sheets are lifted off one another by subsequent further moving of the opening element (18).

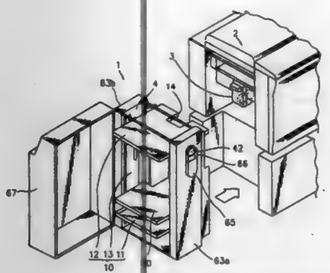
5. An apparatus for opening folded, bound or stapled multi-sheeted products having an opening element (18) with a stabbing member (24) for stabbing between sheets of the product (10) on one of its open sides (30) in a stabbing region (32), the opening element (18) being movable for lifting the sheets lying on one side of the stabbing member (24) off the remaining sheets, wherein the opening element (18) has a resting surface (34) interfacing with a counter-element in order to hold together the product (10) between said opening element and the counter-element (22) at the stabbing region (32), a stabbing end

(26) of the stabbing member (18) is offset by a predetermined distance (A) in a direction toward the counter-element (22) with respect to said resting surface (43), and the opening element (18) is movable in order to stab with the stabbing member (24) in a stabbing direction (E) into the held-together product (10) and to lift the sheets off one another upon subsequent further moving.

5,441,246
CUT SHEET FEEDER FOR IMAGE FORMING APPARATUS

Masakazu Miyata, Ryugasaki, and Tomoko Nagano, Ibaraki, both of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 213,006
Claims priority, application Japan, Mar. 16, 1993, 5-056035
Int. Cl.[6] B65H *3/44*
U.S. Cl. 271—9.11 **5 Claims**

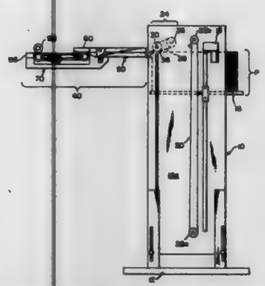


1. A cut sheet feeder for use with an image forming apparatus, comprising:
one sheet feed mechanism for picking up one sheet from stacked cut sheets at a single sheet feed position and for feeding each sheet to an image recording portion of the image forming apparatus;
a sheet feed unit which is vertically movable relative to said sheet feed mechanism;
a cassette detachably attached to said sheet feed unit, said cassette containing cut sheets to be picked up by said sheet feed mechanism;
a sheet feed table which is vertically movably situated inside said sheet feed unit and which carries a large number of cut sheets to be picked up by said sheet feed mechanism;
cassette presence detecting means for detecting presence and absence of the cassette on the sheet feed unit and for outputting a signal indicating one of the presence and the absence of said cassette;
a cover pivotally covering said sheet feed unit, said cut sheets on the sheet feed table being loaded and unloaded and said cassette being attached to and detached from said sheet feed unit by opening the cover;
cover detection means for outputting a detection signal indicating a cover opening status;
mode establishment means for establishing one of a cassette feed mode for feeding the cut sheets from the cassette and a table feed mode for feeding the cut sheets from the sheet feed table, said mode establishment means outputting a mode signal according to an established mode; and
mode control means for controlling said sheet feed unit, said mode control means lowering the sheet feed unit to a predetermined position in case the cassette feed mode is changed to said table feed mode by said mode establishment means while said cover detection means outputs a detection signal indicating a closed status of said cover and said cassette presence detection means outputs a signal indicating the presence of said cassette.

5,441,247
SHEET FEEDING APPARATUS AND METHOD FOR THE SAME

Jon Quilliam, Snohomish, Wash., assignor to EMF Corporation, Redmond, Wash.

Filed Aug. 9, 1993, Ser. No. 104,415
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10.04 **11 Claims**



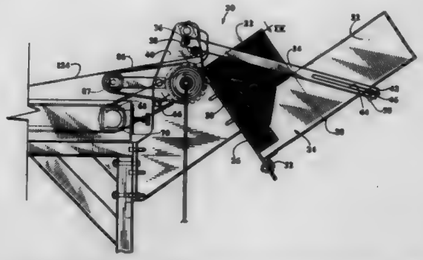
2. In combination with a sheet accepting device having a sheet advance mechanism, a sheet feeding apparatus comprising:
a sheet storage assembly to hold a stack of sheets having a feeder mechanism engagable with said sheets;
a sheet staging assembly operably linked to said sheet storage assembly and having an output end associated with said sheet accepting device and an input end associated with said sheet storage assembly comprising a sheet directing portion having a sheet transport surface at said input end, and a cassette interface portion having a sheet transport surface at said output end wherein said cassette interface portion has a sheet conveying means extending beyond said sheet transport surface thereof, a motor linked to said sheet conveying means and a second sheet sensing means, and wherein said sheet directing portion has a pinch portion located adjacent to said sheet conveying means, and a first sheet sensing means, said sheet directing portion and said cassette interface portion being operably linked together to form a single sheet transport path
wherein said second sheet sensing means permits activation of said motor when a sheet has not engaged said second sheet sensing means, and said first sheet sensing means permits activation of said feeder mechanism when a sheet has not engaged said first sheet sensing means; wherein said sheet staging assembly causes a first sheet to temporarily contact said sheet conveying means and said pinch portion while a leading edge of a second sheet is frictionally engaged with said sheet conveying means so as to create an underlapping relationship with said second sheet; and wherein the advance mechanism associated with said sheet accepting device causes said first sheet and said second sheet to be transported along said sheet staging assembly.

5,441,248
FEEDING MECHANISM

Jay L. Kristola, 21222 Newton Rd., Kiel, Wis. 53042, assignor to Jay L. Kristola, Kiel, Wis.

Filed May 13, 1994, Ser. No. 242,238
Int. Cl.[6] B65H *5/08*
U.S. Cl. 271—12 **20 Claims**

1. A feeding mechanism for flat flexible items, comprising:
a hopper for receiving a stack of said items;
a rotatable cylindrical member positioned to engage a lowermost item of said stack with an outer circumferential surface, thereof;
means for rotationally driving said cylindrical member arrange to drive said cylindrical member at a constant rotational speed;
a source of vacuum connected to said cylindrical member;
at least one vacuum port extending through said outer surface of said cylindrical member which communicates with said vacuum source to provide a vacuum at said port;
a high friction surface at said outer surface adjacent to said vacuum port;

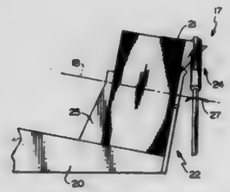


at least one belt carried on said cylindrical member so as not to protrude above said outer surface through a portion of said circumference, said belt also being captured on a pulley member such that said belt extends away from said cylindrical member on a side opposite said portion;
at least one pressing means for pressing against said outer surface of said cylindrical member at said portion.

5,441,249
METHOD AND DEVICE FOR SEPARATING LIFTS FROM A STACK OF SHEETS

Frank A. Todaro, Old Saybrook; Peter D. Hotkowski, Chester, and Charles M. Chadwick, Old Saybrook, all of Conn., assignors to Asterisk, Inc, Old Saybrook, Conn.

Filed Dec. 22, 1992, Ser. No. 995,205
Int. Cl.[6] B65H *3/10*
U.S. Cl. 271—107 **17 Claims**

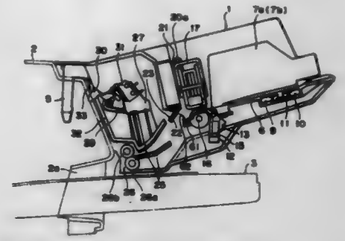


1. Apparatus for separating a lift of n sheets from a stack of sheets, the stack having an axis perpendicular to the faces of the sheets, comprising
a base, for supporting a stack of sheets;
a stop, mounted on the base;
means for axially feeding the stack of sheets along the base, so an end of the stack contacts the stop;
means for serially bending from the end of the stack in the direction of axial feeding, first parts of successive sheets of the stack, and for delivering each sheet first part to a holding means;
holding means, for receiving and retaining the bent away first parts of the sheets at a holding zone axially spaced apart from the end of the stack, to enable accumulation of first parts of n sheets at the holding zone; and,
means for drawing away the n sheets from the stack as a set, to thereby provide a lift of n whole sheets.

5,441,250
SHEET FEEDING APPARATUS

Toru Kameyama, Tokyo, and Toshiyuki Asakawa, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 865,751, Apr. 10, 1992, abandoned, which is a continuation of Ser. No. 426,869, Oct. 26, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 103,162
Claims priority, application Japan, Oct. 31, 1988, 63-275393; Oct. 31, 1988, 63-275394; Oct. 31, 1988, 63-275395
Int. Cl.[6] B65H *3/52*
U.S. Cl. 271—121 **22 Claims**

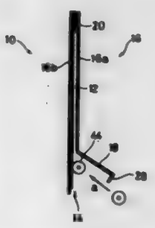


1. A sheet feeding apparatus comprising:
stacking means for stacking sheets;
feeding means for feeding out the sheets from said stacking means; and
separating means for separating the sheets fed out by said feeding means one by one, said separating means comprising a friction member disposed inclined relative to a feed out direction of the sheets fed out by said feeding means for separating the sheets one by one by abutting a leading edge of the sheet fed out by said feeding means thereagainst, a guide member arranged upstream of said friction member at the same side of a sheet feeding path as said friction member for guiding the leading edge of the sheet fed out by said feeding means toward said friction member; and pressure means, arranged on the opposite side of said sheet feeding path from said friction member for urging the leading edge of the sheet fed out by said feeding means against said friction member.

5,441,251
SHEET ARTICLE CONTAINING CASSETTE AND SYSTEM

Yasunori Ohta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 870,992, Apr. 20, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 84,475
Claims priority, application Japan, Apr. 19, 1991, 3-089038; Apr. 19, 1991, 3-088428; Apr. 19, 1991, 3-088775; May 20, 1991, 3-114324; Jul. 1, 1992, 4-174194; Feb. 9, 1993, 5-021154
Int. Cl.[6] B65H *1/00*
U.S. Cl. 271—145 **13 Claims**



1. A sheet article containing cassette for use in a machine

which introduces and extracts the sheet article from the cassette, comprising:

a casing for containing the sheet article, said casing having an opening formed therein on one end and having an end opposite the opening;

a cover for opening and closing the opening, said cover being movably secured to said casing closer to the end at which the opening is formed than to the end opposite the opening;

fastening means for securing said sheet article inside said casing regardless of whether said opening is open or closed; and

a rigid member formed on an abutting inner wall face of said casing, said rigid member cooperating with a roller of the machine for introducing and extracting said sheet article.

5,441,252

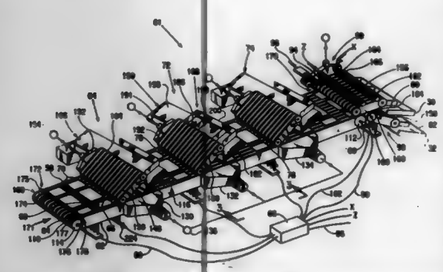
METHOD FOR SEPARATING AND STACKING LANES OF SHEETS

William J. Hommes, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 89,024, Jul. 14, 1993, Pat. No. 5,354,047, which is a division of Ser. No. 809,150, Dec. 16, 1991, Pat. No. 5,295,586. This application Jun. 9, 1994, Ser. No. 257,305

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—290 **1 Claim**



1. A method for separating and stacking lanes of transported sheets into equal-count stacks, comprising the steps of:

a. selecting and separating selected sheets from one of a plurality of lanes of sheets;

b. stacking the remaining sheets from each of the one and the other lanes into stacks at an upper location;

c. counting the sheets in each stack at the upper location;

d. selecting and separating the sheets from the other lanes when the count of sheets in each of the stacks at the upper location for the other lanes reaches a designated number;

e. stopping the stacking of sheets for the other lanes;

f. stopping the stacking of sheets for the one lane at the upper location when the count of remaining sheets from the one lane reaches the designated number;

g. starting the stacking of the one and other lanes simultaneously into stacks at a lower location only after the one lane reaches the designated number;

h. repeating steps c. through f. for the lower location.

5,441,253

PAPER SHEET CONVEYING APPARATUS

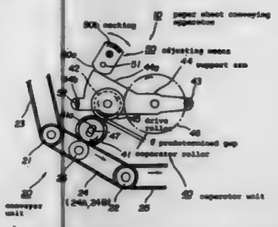
Takatoshi Takemoto; Kazunari Kawashima, both of Tokyo; Hideyuki Kadomatsu, Odawara; Moriyuki Aoyama, Okazaki, and Takaharu Nakamura, Toyohashi, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP91/00862, § 371 Date Dec. 20, 1993, § 102(e) Date Dec. 20, 1993, PCT Pub. No. WO93/00283, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 26, 1991, Ser. No. 167,947

Int. Cl.[6] B65H *3/04*

U.S. Cl. 271—34 **8 Claims**



1. A paper sheet conveying apparatus equipped with paper sheet separating means including a conveyer belt movable in a paper sheet delivering direction, a drive roller normally rotating in one direction at all times, and a separator roller disposed between said drive roller and said conveyer belt so as to come into contact with one of said drive roller and said conveyer belt exclusively with a predetermined gap from the other so that a paper sheet on said conveyer belt is moved back toward the upstream side when said separator roller comes into contact with said drive roller,

wherein said drive roller is supported by a pivotable support arm operatively connected with adjusting means for adjusting said predetermined gap, and

wherein said conveyer belt is a double structure including a pair of parallel spaced conveyer belts, and said separator roller is a double structure including a pair of axially spaced separator rollers in association with said pair of parallel spaced conveyer belts, said pair of axially spaced separator rollers having on their confronting inner sides of a pair of contact wheels for contacting said drive roller.

5,441,254

APPARATUS FOR MANIPULATING SHEETS OR WEBS OF PAPER

Alfred Besemann, Halstenbek, Germany, assignor to E.C.H. Will GmbH, Hamburg, Germany

Division of Ser. No. 922,054, Jul. 29, 1992, Pat. No. 5,363,730. This application Jul. 8, 1994, Ser. No. 272,685

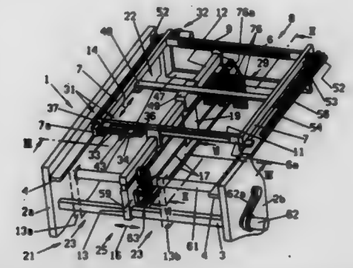
Claims priority, application Germany, Aug. 3, 1991, 41 25 805.3; Oct. 18, 1991, 41 34 458.8

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—299 **18 Claims**

1. Apparatus for stacking sheet-like products at a stacking station, comprising means for transporting the products in a predetermined direction along a predetermined path, said stacking station being adjacent said path and said transporting means including means for transporting at least one stream of successive sheet-like products along said path to said station; tool positioning means including a plurality of movable holders adjacent and disposed at a level above said path, said holders being elongated in said predetermined direction; product engaging means including at least one tool for each of said holders, said tools being movable with and relative to the respective holders and forming at least one row extending transversely of said path; and means for automatically adjusting said tools relative to said path, said adjusting means comprising at least one guide, means for shifting said holders transversely of said predetermined path, at least one common support for said

at least one row of tools, means for moving said at least one common support relative to said holders in said predetermined direction, a locating device, means for moving said device along said at least one guide relative to said path, and means for coupling said device with at least one of said tools, said adjusting means being operative to automatically move said tools between a plurality of different positions to thereby conform the positions of said tools to different sizes of sheet-like products when the apparatus is to be set up to switch from stacking of products having a first size to stacking of products having a different second size.



5,441,255

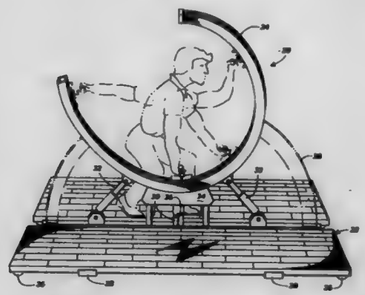
PRACTICE DEVICE FOR BOWLING AND OTHER SPORTS

Basil G. Verbick, 3011 Tiffany Ct., Carmel, Ind. 46032

Filed Jun. 11, 1993, Ser. No. 75,825

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 R **3 Claims**



1. A practice device for us in practicing an underhand, swinging arm motion, comprising a base having at least one elongated portion on which a user of the device stands, an arcuate track means mounted substantially parallel to said elongated portion, and a carrier means adapted to engage and follow said track means when propelled by a user of the device for practicing the underhand arm motion, said carrier means having a handle thereon adapted to be engaged by the hand of a user, said handle including an x-shaped cutout formed therein for receiving a thumb of a user and said handle also being positioned relative to said carrier means to orient a user's hand in proper position during the underhand swinging arm motion.

5,441,256

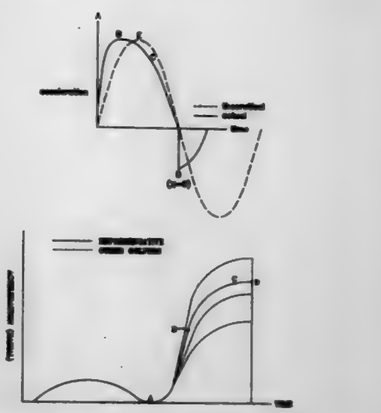
METHOD OF CUSTOM MATCHING GOLF CLUBS

Lloyd E. Hackman, 1322 Clubview Blvd. S., Worthington, Ohio 43085

Continuation-in-part of Ser. No. 998,662, Dec. 30, 1992, Pat. No. 5,351,952. This application Sep. 15, 1994, Ser. No. 307,501

Int. Cl.[6] A63B *53/12*

U.S. Cl. 273—77 A **15 Claims**



1. A method for matching a golfer to a golf club to maximize club head velocity upon ball impact, the golf club having a natural frequency of vibration in a mode of oscillation of a cantilevered beam, the club having a club head mounted to the opposite shaft end which oscillates along an arcuate path about the grip end, the method comprising: '(a) measuring the golfer's swing time from the moment of maximum club head acceleration during downswing until the moment of ball impact; and

(b) selecting for the golfer a golf club wherein divided by four times the club's natural frequency of vibration is substantially equal to the golfer's measured swing time.

5,441,257

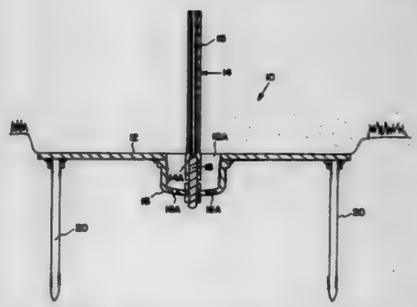
GOLF COURSE DISTANCE MARKER

Roger M. Sheaffer, 1155 Hidalgo, Laramie, Wyo. 82070

Filed Oct. 26, 1994, Ser. No. 329,434

Int. Cl.[6] A63B *57/00*; **G09F** *7/22*

U.S. Cl. 273—32 R **16 Claims**



1. A distance marker system for mounting in a golf course fairway wherein said marker system comprises:

(a) a plate member having a central portion including a recessed cavity;

(b) an upstanding cylindrical marker member having upper and lower ends; wherein said lower end is secured in said

cavity, and wherein said upper end extends above said plate member at least about six inches; wherein said marker member can be deflected in any direction away from an upstanding position to another position where said marker member lies against said plate member; and wherein said marker member is sufficiently resilient to return to said upstanding position; and

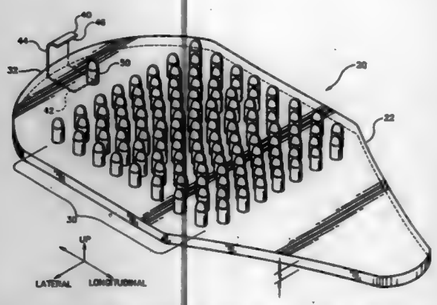
(c) anchor means secured to said plate member for anchoring said plate member to the ground in said fairway.

5,441,258

RACKET STRING ALIGNMENT TOOL

Salvador E. Pagan, 2830-245th Place SE., Issaquah, Wash. 98027

Filed Aug. 10, 1994, Ser. No. 288,292
Int. Cl.[6] A63B *49/00*
U.S. Cl. 273—73 D **10 Claims**



1. A tool for aligning the strings of a racket, the racket including a head defining an opening, a first plurality of spaced, nominally parallel strings attached to the head and extending across the opening and a second plurality of spaced, nominally parallel strings also attached to the head and extending across the opening, the two pluralities of strings cooperating to form a checkered array of nominally rectangle apertures, the tool comprising:

a base;

means attached to the base for positioning the racket head in a predetermined location on the base; and

a plurality of spaced alignment pins projecting upward from the base for aligning the strings in predetermined positions with respect to the head, said plurality of pins in registry with a corresponding plurality of said apertures.

5,441,259

COIN OPERATED JACKPOT MACHINE

Marion Stevenson, 1810 W. State St., Apt. 219, Boise, Id. 83702

Filed Aug. 1, 1994, Ser. No. 283,544
Int. Cl.[6] A63F *5/04*
U.S. Cl. 273—143 R **1 Claim**

1. A double match jackpot machine comprising:

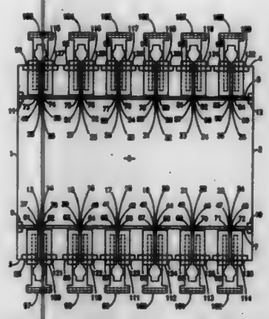
a front side and a rear side with each side having at least one identical mechanism,

said identical mechanism having a plurality of sections that are capable of operating independently of each other and having a plurality of symbols viewing ports and coin slots containers extending through sides in the machine,

each coin slots container having a coin slot with a coin placement for placing a coin and an elevator spring and brace that are attached to a bottom of the coin slots whereby said elevator spring and brace are depressed when a coin is placed thereon to allow the coin slot to enter the machine in a sliding fashion,

each of said sections having a plurality of discs arranged in pairs such that they can rotate at random without control by gears, said discs further having sides and edges and are rotatably mounted upon a bar such that the edges can be viewed through the symbols viewing ports, said bar passes through a center hole provided in each disc side and is mounted to the machine,

the discs further have a plurality of pivotally mounted discs levers attached to said sides which are contacted by the coin slots when they enter the machine in a sliding fashion to impart rotation to the discs and further have symbols on



the edges such that they can be seen through said symbols viewing ports,

a plurality of attachment rods,

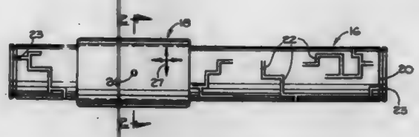
each coin slot further having handles with holes through which said attachment rods may pass to adjoin a plurality of sections of the mechanisms such that a plurality of coin slots may enter the machine simultaneously to impart rotation to the discs.

5,441,260

3-DIMENSIONAL MAZE PUZZLE

Brian J. Gogarty, 385 S. Liberty, Elgin, Ill. 60120

Filed Jan. 29, 1993, Ser. No. 10,879
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—153 R **10 Claims**



1. A maze puzzle comprising,

a central cylindrical bar having maze grooves in its outer surface, the grooves forming a maze of relatively short interconnected longitudinal and circumferential segments,

a sleeve slidable and rotatable on the bar,

the central bar being made up of a plurality of longitudinally spaced sections, that are rotatable relative to each other,

a follower on the inner surface of the sleeve extending into the maze grooves and following in and along the segments thereof in response to the sliding and rotating movements of the sleeve, and

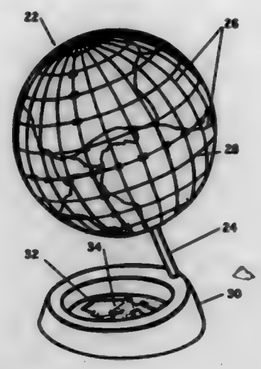
the sections having at least certain of the longitudinal segments of the maze grooves therein opening through the ends of the sections that face other sections, whereby to enable those certain longitudinal segments in adjacent sections to be aligned and enable to follower to pass between such aligned segments.

5,441,261

MAGNETIC GLOBE PUZZLE HAVING PLURAL PUZZLE LAYERS AND GLOBE STAND THEREFOR

Susan Margolis, and Scott H. DeYoung, both of P.O. Box 838, Ridgefield, Conn. 06877

Filed Dec. 31, 1990, Ser. No. 636,447
Int. Cl.[6] G09B *27/08*
U.S. Cl. 273—157 R **23 Claims**



1. A puzzle comprising:

A. a substantially continuous substrate comprising ferromagnetic material;

B. a first layer of first puzzle pieces incorporating magnets having poles oriented in lines in said first layer and said first puzzle pieces bearing informational indicia of a first kind adapted to be magnetically affixed to said substrate and providing a smooth surface away from said substrate; and

C. a second layer of second puzzle pieces incorporating magnets having poles oriented in lines in said second layer and each said second puzzle piece bearing informational indicia of a second kind functionally related to said first kind and each said second puzzle piece adapted to be magnetically affixed over said first layer and to fit over a specific portion of said first layer pieces to which it is specifically functionally related with the poles of said second layer aligned over the poles of said first layer to facilitate such fit and wherein said magnets are aligned with the north and south poles of the magnets in said layers opposite to each other.

5,441,262

MULTIDIMENSIONAL PUZZLE

Frank M. Figone, and Eric M. Seubert, both of Alameda County, Calif., assignors to GFS Creations, San Mateo, Calif.

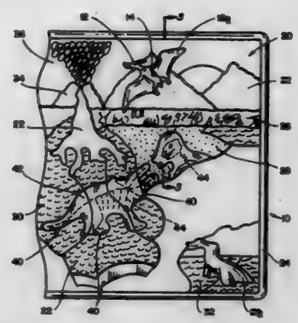
Filed Jan. 12, 1994, Ser. No. 180,659
Int. Cl.[6] A63F *9/12*; G09B *1/06*
U.S. Cl. 273—157 R **19 Claims**

1. A multidimensional puzzle comprising:

a plurality of three-dimensional object pieces having a front contoured surface, a back surface, and a peripheral edge extending between said contoured surface and said back surface, said object pieces each being representative of a thing with said contoured surface having a shape identified with said thing;

a background defining a plurality of recesses each individually shaped to receive a selected one of said object pieces with said back surface positioned and said peripheral edge at least partially seated in said recess and said contoured surface projecting from said recess, said background including a plurality of second pieces; and

each of said recesses having identification indicia separate from the shape of said object pieces identifying said thing represented by said selected one of said object pieces to



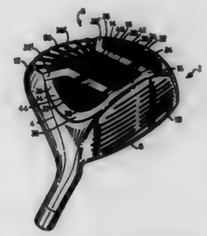
thereby indicate which of said object pieces said recess is shaped to receive.

5,441,263

WOOD-TYPE GOLF CLUB HEAD

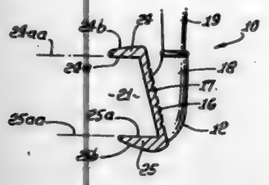
Geoffrey W. Gorman, Greer, S.C., assignor to Dunlop Slazenger Corporation, Greenville, S.C.

Filed Dec. 5, 1994, Ser. No. 349,670
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—167 A **6 Claims**



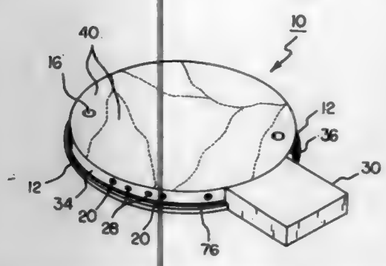
1. A wood-type golf club head comprising a toe portion, a heel portion, a top portion, a sole portion, a front face bounded by said toe, heel, top and sole portions, and a rear wall bounded by said toe, heel, top and sole portions, a peripheral wall depending from the periphery of said sole portion to define a sole cavity in the sole portion, and two struts extending from a portion of said peripheral wall adjacent said front face to a portion of said peripheral wall adjacent said rear wall, said struts being substantially parallel to each other adjacent said portion of said peripheral wall adjacent said front face and diverging from each other toward said portion of said peripheral wall adjacent said rear wall, said struts defining therebetween and in cooperation with said portion of said peripheral wall adjacent said front face a central portion of said sole cavity, said peripheral wall being interrupted adjacent said rear wall, a bottom surface of said central portion of said sole cavity intersecting said rear wall and in cooperation with said two struts defining said interruption in said peripheral wall, thereby defining an opening rearwardly of said club head.

5,441,264
IRON GOLF CLUB HEAD WITH STRAIGHT, HORIZONTAL RECESS
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Continuation of Ser. No. 999,251, Jan. 19, 1993, Pat. No. 5,344,150, which is a continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application May 17, 1994, Ser. No. 245,163
The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—167 H 19 Claims



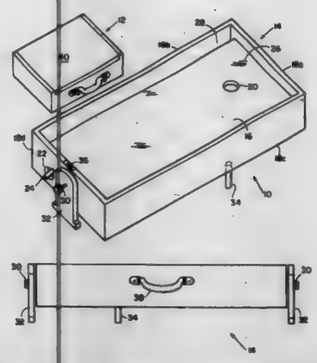
1. A golf club head having a body defining a heel, toe, top wall, sole, and a front wall defining an upwardly and rearwardly inclined front face in ball-addressing position of the head, and comprising
a) said body defining a forwardly extending main recess located rearwardly of said front wall,
b) and said body having upper and lower projections extending rearwardly from said front wall respectively above and below said main recess, said projections being rearwardly elongated and said recess being rearwardly elongated in said ball-addressing position of the head,
c) said projections tapering rearwardly,
d) said upper projection having a lower surface and said lower projection having an upper surface, a vertical plane normal to said front face intersecting said surfaces to define lines that extend substantially horizontally rearwardly in substantially parallel relation in said ball-addressing position.

5,441,265
PRACTICE PUTTING GREENS WITH VARIABLE CONTOURS
Kenneth H. Codlin, 17 North Alarton Street, Mississauga, Ontario, Canada L4T 1J7
Filed Jan. 18, 1994, Ser. No. 181,794
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—176 H 1 Claim



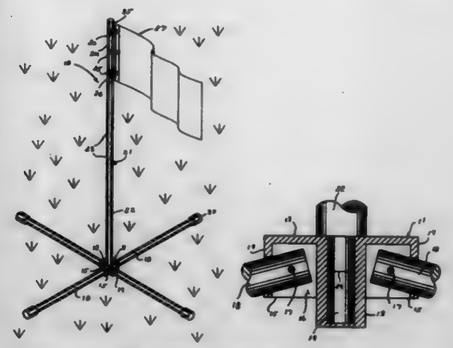
1. A new and improved practice putting green with variable contours comprising, in combination:
a frame structure fabricated of a rigid material within a circular configuration and downwardly extending peripheral side walls with upper edges and lower edge and a base;
a plurality of vertically extending interior walls with upper edges and lower edges and of the approximate height of the side walls dividing the entire area between the side walls into a predetermined number of inflation zones, each such inflation zone being formed by adjacent interior walls of adjacent zones with each inflation zone terminating at a portion of the peripheral side walls;
a plurality of rigid golf holes extending downwardly from an elevation substantially the same as the upper edges of the interior walls and the side walls for receiving putted golf balls;
a plurality of valves formed in the peripheral side walls, each of the valves adapted to provide pressurized air to one of the inflation zones;
a first layer of air impervious elastomeric material located over the area above the inflation zones between the peripheral side walls;
means to couple the air impervious material to the frame structure between the various inflation zones to seal the inflation zones one from another;
a supplemental elastomeric sheet positioned over the air impervious material to constitute a continuous putting surface having a contour as the function of the pressure of air within the various inflation zones;
operator control means to relieve the pressure within the various inflation zones; and
a putting pad at an elevation equal to that of the elevation of the side walls for placing the ball to be putted onto the upper surface of the supplemental sheet.

5,441,266
SYSTEM FOR GOLF PUTTING
Leonard Cedrone, 40 Baxter St., Quincy, Mass. 02169
Filed Nov. 14, 1994, Ser. No. 338,652
Int. Cl.[6] A63B *67/02*
U.S. Cl. 273—176 H 17 Claims



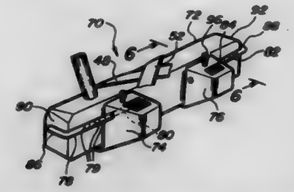
12. A system for golf putting, comprising:
a putting platform having an upper surface defining a first hole, a plurality of platform walls extending upwardly from said upper surface wherein at least one platform wall defines a second hole, a ball return guide disposed between said first hole and said second hole;
means for supporting said platform for pivotal movement about a horizontal axis; and a member extending downward from a bottom side of said platform to prevent pivotal movement of said platform beyond a predetermined angle.

5,441,267
PORTABLE GOLF TARGET STAND
Ivan P. Alder, 420 Devendorf St., Elkhorn, Wis. 53121
Filed Nov. 29, 1994, Ser. No. 346,034
Int. Cl.[6] A63B *69/36*; G09F *17/00*
U.S. Cl. 273—177 R 7 Claims



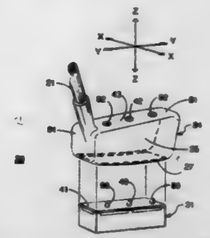
1. A portable golf target stand, comprising,
a base member, the base member receiving a signal rod, the base member having a top wall and the top wall having a tube member extending below the top wall, the tube member having a bore for selective reception of the signal rod, and
a plurality of leg members pivotally mounted to the base member and extending therefrom.

5,441,268
GOLF PUTTING ACCESSORY
Ronald G. Shier, P.O. Box 257, Milington, Mich. 48746
Filed Jul. 18, 1994, Ser. No. 276,855
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.2 12 Claims



1. An accessory for use with a golf putter for striking a golf ball, the golf putter having a golf putter head with a putting face and a shaft connected to the golf putter head, said accessory comprising:
a body;
means for attaching said body to the golf putter head including a pair of straps extending from said body; and
said body including a first guiding portion and a second guiding portion for limiting the golf ball to strike a central portion of the putting face;
a first of said straps looping around the putter head and attaching to one of said guiding portions, a second of said straps looping around the putter head and attaching to the other of said guiding portions, said first strap and said second strap being adjustable to secure said accessory to golf putter heads of varying shapes and sizes.

5,441,269
PUTTING STROKE TRAINING DEVICE
Richard Henwood, 1496 Paloma Pl., Arroyo Grande, Calif. 93420
Filed Aug. 22, 1994, Ser. No. 294,118
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.2 26 Claims



1. A putting stroke training device comprising a golf putter including
an elongated shaft and a head having a sole plate, a top and a golf ball striking face substantially perpendicular to said sole plate;
Y-axis sensor means for detecting and signalling whether said face strikes a golf ball in a proper position with said face perpendicular to the path of said head, said Y-axis sensor means being disposed in a Y plane that is perpendicular to said golf ball striking face;
X-axis sensor means for detecting and signalling any abnormal acceleration or deceleration of said putter head, said X-axis sensor means being disposed in an X plane that is perpendicular to the Y plane and is in the same plane as said shaft; and
means for attaching each of said sensors to said putter.

5,441,270
STRAIGHT HITTING AID FOR GOLFERS
Willard B. Williams, 375 R.D. #2 Mitchell Rd., West Middlesex, Pa. 16159
Filed Aug. 23, 1994, Ser. No. 294,646
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.2 10 Claims



1. A golf device for aiming a golf ball toward a target by a player with a golf club having a shaft and a face in combination with alignment apparatus, said alignment apparatus comprising; a first pointer which is movably connected to said golf club shaft; means for affixing said first pointer relative to said golf club shaft into a desired disposition; a second pointer for being detachably mounted to said golf club face so as to extend perpendicularly outwardly therefrom; said first pointer being movably alignable into a parallel position with said second pointer and affixed in said parallel disposition by said affixing means to said golf club shaft whereby subsequently a golfer can remove said second pointer from said golf club face and by

stroking said golf club so said first pointer is moving rectilinearly in the direction of said target when said golf club face hits said golf ball, said golf ball is thereby driven directly toward said target.

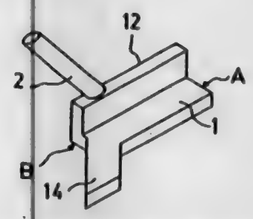
5,441,271
GOLF SWING IMPROVEMENT DEVICE
Fred E. Briggs, Edmonton, Canada, assignor to F. E. Briggs & Company Innovations Ltd., Edmonton, Canada
Filed Aug. 19, 1994, Ser. No. 292,742
Claims priority, application Canada, Sep. 10, 1993, 2105960
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187.2 **10 Claims**



1. A golf swing improvement device for use with a golf club having a grip on the top end thereof comprising harness means for mounting on the shoulders of a user, said harness means including first strap means for extending horizontally across the chest of a user in the area of the sternum; multi-sectional, rectilinear, extensible wand means; first universal joint means pivotally interconnecting said first strap means and one end of said wand means at a front central area of the first strap means, whereby the first joint means is located proximate the sternum of the user when the device is in the use position; and second universal joint means for pivotally interconnecting the other end of said wand means to a top end of a grip on the shaft of the golf club, whereby an extension of the longitudinal axis of the wand always intersects the body of the user approximately at the sternum, said second universal joint means including socket means for receiving the top end of the grip of a golf club, whereby the longitudinal axes of the shaft of the golf club, the wand means and the socket means can be aligned with each other and with the sternum of the user at the start of a golf swing.

5,441,272
PUTTER WITH GUIDE FIN OR MARK
Felipe A. Ugarte, Bizkaia, Spain, assignor to Masker, S.A., Las Arenas-Gexto, Spain
Filed Jan. 21, 1994, Ser. No. 184,216
Claims priority, application Spain, Jan. 21, 1993, 93 00104
Int. Cl.[6] A63B *53/00, 69/36*
U.S. Cl. 273—187.4 **8 Claims**

1. A putter having a putter head and a golf club shaft, said putter head comprising a ball-striking face and a rear portion and a fin protruding from the rear portion, said fin, at least partially, occupying said rear portion, at least one edge of the fin acting as a clearly obvious mark for a player of a direction of a preferred trajectory to be followed by the putter on a backswing, the preferred trajectory being inside the line between ball and an objective, the direction of the at least one edge when the putter head is in a ball striking position being variable and inclined in relation to a longitudinal axis of the



golf club shaft, and the at least one edge forming an acute angle with a direction of a tip-heel line of the putter head.

5,441,273
GOLF CLUB PUTTER FITTING TOOL AND STROKE ANALYZER
Robert D. Stormon, 2103 Divot La., Palm Springs, Calif. 92264
Filed Mar. 22, 1994, Ser. No. 215,632
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187.4 **3 Claims**

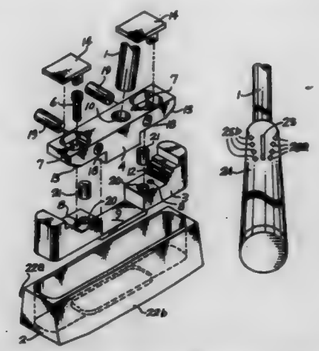


1. An apparatus for gauging the adjustment necessary to alter a golf putter's (club's) lie angle to provide a 90 degree sight plane to match a golfer's desired stance at address and during the stroke, said apparatus comprising in combination: a putter including a head, a handle, and a shaft connecting the head to the handle and said head comprising in part; a face and a sight point on the upper surface; an indicator means including means for detachable mounting the indicator means to the said shaft; a clamping means comprising in combination; the threaded end of a indicator rod and an offset clamp that may be inverted to accommodate a right or left dominant eye, said mounting means is adjustably elevated along the said shaft's inclining plane to a prescribed distance from the said head, then rotated normally around said shaft to project said indicator rod visually parallel to said face and secured by said clamping means for viewing the indicated lie angle indicator mark on a line of sight between the eye and the said sight point.

5,441,274
ADJUSTABLE PUTTER
Truman R. Clay, 7631 Coal Creek Pkwy. Southeast, Renton, Wash. 98059
Filed Oct. 29, 1993, Ser. No. 145,892
Int. Cl.[6] A63B *69/36, 53/02*
U.S. Cl. 273—187.5 **22 Claims**

1. In a golf club, the lie of which can be adjusted, a clubhead comprising an elongated lower part having spaced lengthwise thereof two ramps inclined oppositely downward toward each other, and an elongated upper part having on the underside thereof and spaced lengthwise thereof two slopes inclined downwardly toward each other and complemental to said

ramps in said lower part, said upper part being tiltable relative to said lower part by shifting said upper part lengthwise rela-

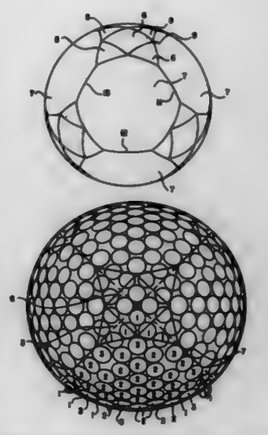


tive to said lower part to alter the engagement of said slopes of said upper part with said ramps of said lower part.

5,441,275
GOLF SWING TRAINING DEVICE
Yukio Yoshishita, 1715 Odaka, Yonago-city, Tottori-pref., 689-35, Japan
Filed Jun. 22, 1994, Ser. No. 264,072
Claims priority, application Japan, Jun. 24, 1993, 5-153900
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—191 A **16 Claims**

1. A golf swing training device for assisting a player in acquiring a correct swing achieved in a swing plane throughout the movement of a club including the backswing, downswing, impact and follow-through, comprising:
(a) a base frame having a bottom frame portion;
(b) a support member disposed on said base frame and including an upper pivot member;
(c) a lower pivot member disposed on said bottom frame portion; and
(d) a swing path guide loop defining the swing plane and attached to said upper and lower pivot members such that said swing path guide loop is incapable of pivoting about an axis passing through said upper and lower pivot portions during the backswing, is capable of pivoting in one direction about said axis by the force of the club during the follow-through, and when pivoted during the follow-through, is capable of automatically returning to its original position.

5,441,276
DIMPLE PATTERN AND THE PLACEMENT STRUCTURE ON THE SPHERICAL SURFACE OF THE GOLF BALL
Dong-keun Lim, Goejeong-dong, Rep. of Korea, assignor to Dong Sung Chemical Ind. Co., Ltd., Pusan, Rep. of Korea
Filed Mar. 23, 1993, Ser. No. 35,923
Claims priority, application Rep. of Korea, Feb. 9, 1993, 1993-1771
Int. Cl.[6] A63B *37/12*
U.S. Cl. 273—232 **7 Claims**

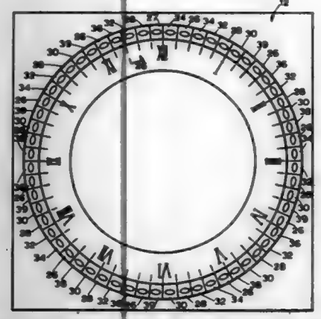


1. A golf ball comprising a dimpled surface on which there are defined:
three orthogonal equators;
six spherical squares each centered by an intersection of two of said equators, wherein said two equators are normal to sides of corresponding squares, respectively; and
24 equilateral spherical triangles, one side of each of which being coincident with one side of one of said squares,and an apex of each of said triangles being on one of said equators; wherein each set of four of said triangles and one attendant square forms a spherical octagon;
wherein said surface therefore comprises eight spherical nonagons and six spherical octagons;
wherein each of said nonagons is formed of, respectively, one side of each of six of said equilateral spherical triangles, respectively, and three sides of portions of each of said equators, respectively;
wherein said dimpled surface is made up of a plurality of dimples of at least three different diameters; and
wherein no row of dimples is made up solely of dimples of the same diameter and no row of dimples has a line connecting all of the dimple centers which is straight or is parallel to an equator.

5,441,277
METHOD OF PLAYING A BOARD GAME
Brad E. Lenhart, and Jill R. Lenhart, both of 633 W. Addison St. #2N, Chicago, Ill. 60613
Filed Jul. 14, 1994, Ser. No. 275,294
Int. Cl.[6] A63F *3/00, 9/18*
U.S. Cl. 273—249 **30 Claims**

12. A method of playing a board game including a game board having a plurality of distinguishable spaces including a starting space, a winning space, and a plurality of spaces there-

between, wherein advancement of a player from said starting space to said winning space is dependent upon a player successfully complying with instructions for creating or reciting a rhyme within a designated period of time, wherein said instructions require a player, within a designated period of time, to recite a word that rhymes with a random word, and then, in



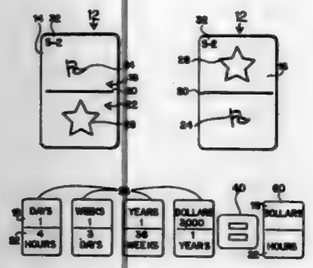
turn, every other player must then recite a word that rhymes with said random word, without repeating a word recited by any other player, if a player fails to recite a word or if a player recites an unacceptable word that player is out of the round, until only one player remains in the round and recites an acceptable rhyming word, said one player advancing toward the winning space.

5,441,278

APPARATUS AND METHOD OF PLAYING AN EDUCATIONAL CARD GAME

Gregory T. Nalder, 2057 Monaco Way, Meridian, Id. 83642

Filed Nov. 1, 1994, Ser. No. 333,064
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—296 9 Claims



1. A game for teaching the fundamentals of dimensional analysis comprising:

(a) at least one set of playing pieces, each set comprising

at least three (3) cards, each card having first and second faces,

each face imprinted with a line bisecting the face to form top and bottom generally rectangular halves, denoting numerator and denominator, respectively,

the numerator of the first face imprinted with a first symbol, the denominator of the first face imprinted with a second symbol, the numerator of the second face imprinted with the second symbol, the denominator of the second face imprinted with the first symbol, so that the numerator of each face appears vertically above the denominator when the card is rotated about an axis parallel to the line bisecting the face, each symbol appearing on an even number of cards; and

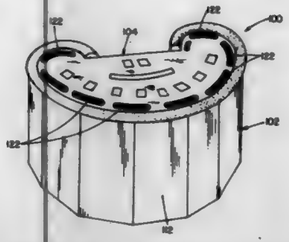
(b) at least one chip imprinted with an equal sign.

5,441,279

SMOKELESS CASINO GAMING TABLE

Gary D. Messina, 476 Cedar Ave., West Long Branch, N.J. 07764

Filed Aug. 8, 1994, Ser. No. 287,277
Int. Cl.[6] A47B *25/00*; B01D *53/00*
U.S. Cl. 273—309 34 Claims



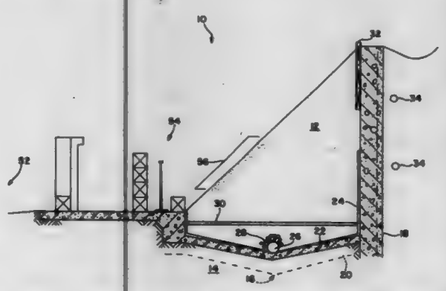
1. An air filtration system comprising a table including a table top having a first location adjacent which at least one person may occupy and a second location adjacent which at least another person may occupy, inlet means in association with said table top for withdrawing contaminated air from said first location above said table top, filtration means in association with said table for filtering the withdrawn contaminated air, and outlet means in association with said table for discharging the filtered air adjacent said second location for isolating said another person from said contaminated air.

5,441,280

CONTAMINANT RECOVERY SYSTEM FOR A RIFLE RANGE

Craig C. Copius, Seaford, N.Y., assignor to Copius Consultants, Inc., Seaford, N.Y.

Continuation of Ser. No. 829,500, Feb. 3, 1992, Pat. No. 5,255,924. This application Sep. 10, 1993, Ser. No. 120,155
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[6] F41J *1/14*
U.S. Cl. 273—410 1 Claim



1. A contaminant recovery system for a rifle range, comprising:

an upstanding retaining wall which serves as a rear wall for the range;

a sloped berm disposed in front of said rear wall which serves as a target backstop; and

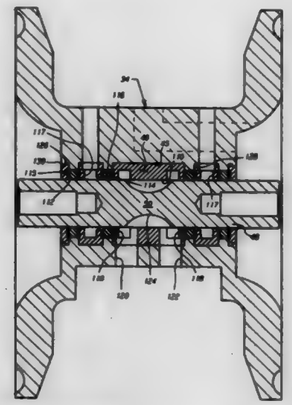
drainage and collection means for diverting and collecting water which passes through said berm and for recovering contaminants in the water, said drainage and collection means additionally including a relatively horizontally disposed base wall located beneath said sloped berm which abuts said retaining wall, and a drainage pipe located between said base wall and said sloped berm, which collects water and contaminants which pass through said berm.

5,441,281

SHAFT SEAL

Kerry W. Baland, Calimesa, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed May 21, 1993, Ser. No. 65,632
Int. Cl.[6] B65D *53/06*
U.S. Cl. 277—70 13 Claims



1. A shaft seal comprising

a housing having a bore therethrough;

a bushing extending in said bore and having a passageway therethrough and an annular channel within said passageway, said annular channel having opposed sides, said housing including an annular flange extending radially inwardly into said bore to said annular channel between said opposed sides, said bushing abutting against said flange on each side of said flange;

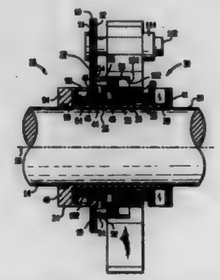
a first O-ring in said annular channel contacting said flange.

5,441,282

MECHANICAL SEAL

Alfredo A. Ciotola, 6 Trinity Pl., Warren, N.J. 07059

Filed May 3, 1993, Ser. No. 57,332
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—85 18 Claims



1. An improved mechanical seal of the type useful to form a seal between a stationary housing and a rotatable shaft having a shaft axis, the shaft having a shaft perimeter and extending through an opening in the housing, the mechanical seal having rotatable components and stationary components,

the rotatable components having a sleeve, the sleeve having a shaft side inner wall having an inner perimeter which fits over the outer perimeter of the shaft and a radial wall extending from the inner wall, and a rotatable circumferential seal element interconnected to the sleeve, the rotatable seal element having a rotatable seal surface,

the stationary components having a gland extending around the perimeter of the shaft, the gland having a gland component which can sealingly abut against the housing around the shaft, a stationary circumferential seal element interconnected to the gland, the stationary seal element having a stationary seal surface, the gland located on the shaft at a position whereby the stationary seal surface faces the rotatable seal surface, wherein the improvement comprises:

a circumferential elastic element located around the sleeve between the radial sleeve wall and the rotatable seal element, having an inner side adjacent to the sleeve inner wall, a radial wall side adjacent to the sleeve radial wall, a seal side adjacent to the rotatable seal element and disposed to sealingly engage and force the rotatable seal element axially away from the radial wall, and an outer side opposite the inner side, the outer side having an outer seal side surface extending for at least part of the circumference of the elastic element, the outer side having a single circumferential groove and the inner side having at least one circumferential groove; and

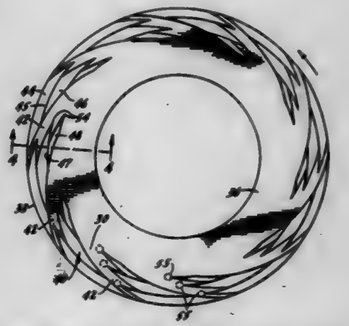
the rotatable component further comprising a rotatable chamber defined by the shaft side inner wall, the radial wall and a circumferential outer wall, the outer wall extending from the radial wall over at least part of the shaft side inner wall and having openings.

5,441,283

NON-CONTACTING MECHANICAL FACE SEAL

Glenn G. Pecht, Vernon Hills, and Jon B. Hamaker, Schaumburg, both of Ill., assignors to John Crane Inc., Morton Grove, Ill.

Filed Aug. 3, 1993, Ser. No. 101,589
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—96.1 24 Claims



1. A mechanical face seal for providing a seal between a pair of relatively rotatable components comprising a first seal ring adapted to be mounted non-rotatably on one of said components and sealed with respect to said one component; a second seal ring adapted to be mounted non-rotatably on the other component and sealed with respect to said other component, said second seal ring being mounted in axial alignment with the first seal ring; and means being provided for resiliently urging a sealing face of the first seal ring axially into sealing engagement with a sealing face of the second seal ring; the sealing face of one of said seal rings having a plurality of grooved areas

spaced angularly around its circumference, the grooved areas opening to one circumferential edge of the sealing face, a continuous annular dam formation being provided between the grooved areas and the other circumferential edge of the sealing face, each grooved area having:

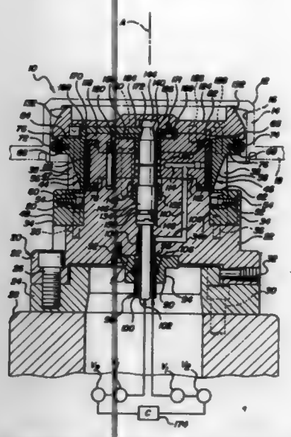
at least two groove boundaries, one said boundary trailing relative to rotation in one direction of said relative rotation between said sealing faces and the other said boundary leading relative to said relative rotation of said sealing faces, said trailing boundary being defined by groove edges in the plane of the seal face forwardly inclined in relation to the circumferential edge and by circumferentially extending transverse edges which intersect the forwardly inclined edges at a plurality of terminal groove corners and said leading boundary being defined by a groove edge in the plane of the sealing face forwardly inclined in relation to the circumferential edge.

5,441,284

FLUID OPERATED CHUCK AND METHODS OF OPERATION

Gerald E. Mueller, Frankenmuth, and Gene B. Slachta, Saginaw, both of Mich., assignors to General Manufacturing Systems, Inc., Saginaw, Mich.

Filed Mar. 1, 1994, Ser. No. 203,423
Int. Cl.[6] B23B *31/20, 31/40*
U.S. Cl. 279—2.02 **20 Claims**



1. Chuck apparatus for holding and gripping a peripheral wall of a thin, easily distortable workpiece, comprising:

a chuck body having a central longitudinal axis;

a plurality of circumferentially spaced discrete flexible gripping fingers secured at one end to said chuck body and extending axially to opposite respective free ends thereof;

a plurality of circumferentially spaced discrete flexible lock-up fingers secured at one end to said chuck body and extending axially to opposite respective free ends thereof;

an inflatable pliant bladder mounted concentrically on said chuck body radially between said chuck body and said gripping fingers;

a fluid supply system operatively coupled to said bladder for selectively inflating said bladder with pressurized fluid to expand said bladder radially of said chuck body axis against said gripping fingers to thereby deflect said free ends of said gripping fingers radially into gripping engagement with the peripheral wall of the workpiece, and for deflating said bladder to permit said free ends of said gripping fingers to return and release the workpiece;

and a lock-up actuator mechanism supported by said chuck body, having finger engaging portions arranged concentrically with respect to said chuck body axis and moveable radially toward and into engagement with said lock-up fingers while maintaining said concentric relationship of said portions for uniformly deflecting said free ends of said lock-up fingers radially to locate and hold the peripheral wall of the workpiece centered about the chuck body axis for subsequent engagement by said gripping fingers via expansion of said bladder.

5,441,285

SLED ATTACHMENT FOR A CONVENTIONAL CARRYING CART

Benjamin E. Russell, Jr., 703 State St., Hart, Mich. 49420, and David W. Hansen, 206 Nanagosa Trail, Suttons Bay, Mich. 49682

Filed Apr. 19, 1994, Ser. No. 229,762
Int. Cl.[6] B62B *19/02*
U.S. Cl. 280—10 **7 Claims**



1. A sled attachment for a conventional shopping cart having two front wheels and two rear wheels connected by a frame, with the frame being above the lowermost portion of and behind the front wheels, the sled attachment comprising:

a panel having an arcuate cross-section extending over a sector of substantially less than 360 degrees, and adapted to receive at least one of said wheels within said cross-section, the panel being wider than the distance between the front wheels, the panel having a rear edge that can be pivoted downwardly to roll the front wheels on the panel, the rear edge pivoting upwardly as the front wheels are thereafter rolled forwardly on the panel until the rear edge of the panel engages the frame, the frame restraining further upward pivotal movement of the panel rear edge, the arcuate length of the panel being such that when the rear edge of the panel contacts the frame a front edge of the panel extends upwardly in front of the front wheels so as to urge the cart to slide over snow in front of the cart when the cart is pushed forwardly.

5,441,286

WHEEL MOUNTING DEVICE FOR INLINE SKATES

Alessandro Pozzobon, Paderno Di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Trevignano, Italy

Filed Dec. 14, 1993, Ser. No. 168,596
Claims priority, application Italy, Dec. 22, 1992, TV92A0159
Int. Cl.[6] A63G *17/00*
U.S. Cl. 280—1127 **5 Claims**

1. In a skate comprising a shoe associated with a supporting frame (1) for a plurality of wheels, each composed of a central hub (5), and a substantially annular tire element (7) associated with said central hub, said frame having wings (2*a*, 2*b*) directed toward the ground, said wings (2*a*, 2*b*) each having a lateral surface, a wheel mounting device (8) comprising;

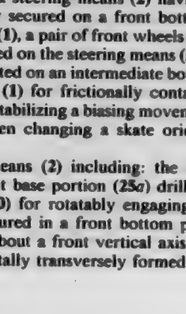
at least one spacer (11*a*, 11*b*);

a pivot (8) having a first end (12) and a second T-shaped end (18), said pivot (8) being associatable with said hub (5) and said frame (1) with the interposition of said at least one spacer (11*a*, 11*b*);

means (13, 14, 15, 17) for at least temporarily locking said pivot to said frame (1), said means being connected to said first end (12);

a head (19) defined by said T-shaped second end (18);

a seat (20) defined in said head (19) for accommodating an actuation element for rotating said second T-shaped end (18) of said pivot (8) with respect to said wings (2*a*, 2*b*) of said supporting frame (1);



a first inclined plane (21) defined by said head (19), said first inclined plane (21) forming a helical surface and facing at least one of said wings (2*a*, 2*b*) and;

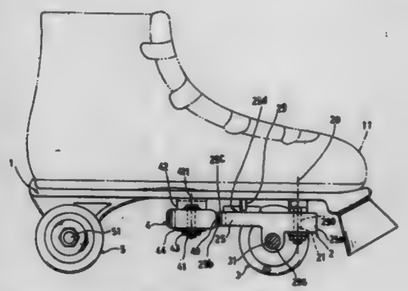
a second inclined plane (24) formed on said lateral surface of at least one of said wings (2*a*, 2*b*), said second inclined plane defining a helical surface which is complementary to said first inclined plane (21).

5,441,287

SIMPLIFIED STEERABLE ROLLER SKATE

Kuo-Tai Tang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan

Filed Oct. 4, 1994, Ser. No. 317,874
Int. Cl.[6] A63C *17/02*
U.S. Cl. 280—11.28 **3 Claims**



1. A steerable roller skate comprising:

a sole member (1) having a pair of rear wheels (5) rotatably transversely secured to a rear bottom portion of the sole member (1), a steering means (2) having a steering base (25) steerably secured on a front bottom portion of the sole member (1), a pair of front wheels (3) rotatably transversely secured on the steering means (2), and a stabilizing disk (4) mounted on an intermediate bottom portion of the sole member (1) for frictionally contacting the steering base (25) for stabilizing a biasing movement of the steering base (25) when changing a skate orientation for safety purpose;

said steering means (2) including: the steering base (25) having a front base portion (25*a*) drilled with a vertical bolt hole (250) for rotatably engaging a front bolt (21) vertically secured in a front bottom portion of the sole member (1) about a front vertical axis (20), an axle hole (255) horizontally transversely formed through a middle portion of the steering base (25) for rotatably engaging a front axle (31) for rotatably securing the pair of front wheels (3) on the steering base (25), and an arcuate edge portion (25*c*) arcuately formed on a rear base portion (25*b*) of the steering base (25) for frictionally engaging the stabilizing disk (4) and defining a curvature (C) about a center at the front vertical axis (20) with a radius (R); and

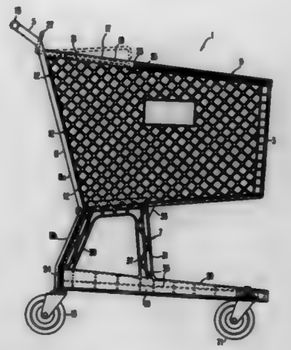
said stabilizing disk (4) generally circular shaded and having a perimeter (40) in tangential contact with the arcuate edge portion (25*c*) of the steering base (25), and a center of the disk (4) vertically aligned with a disk-bolt axis (411) of a disk bolt (41) vertically secured on a disk bracket (42) secured to an intermediate bottom portion of the sole member (1) for mounting the stabilizing disk (4) on the disk bracket (42).

5,441,288

SHOPPING CART AND CHASSIS THEREFOR

Houston Rehrig, 8801 Mary Meade Ct., Potomac, Md. 20854, assignor to Houston Rehrig, Washington, D.C.

Filed Aug. 5, 1993, Ser. No. 102,214
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—33.991 **28 Claims**



1. A cart comprising:

a basket having a molded plastic upper peripheral edge portion;

a cart handle tube having generally vertically extending legs engaging said basket, and a cross-arm portion connecting said legs and providing a cart handle;

a basket support wire having legs extending along and secured to respective side segments of said upper peripheral edge portion, along less than the respective lengths of said side segments, and a cross-arm portion connecting said legs and engaging said cart handle tube, said support wire legs having bent end portions which extend downwardly and are anchored in respective openings provided in said peripheral edge portion; and

a basket support structure attached to an underside of said basket.

5,441,289

CONVERTIBLE WALKER/VEHICLE FOR A CHILD

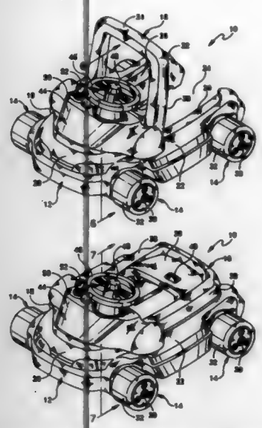
Lee Spielberger, Warwick, R.I., assignor to Hasbro, Inc., Pawtucket, R.I.

Filed Oct. 28, 1994, Ser. No. 331,395
Int. Cl.[6] B62B *7/12, 7/14*
U.S. Cl. 280—87.051 **9 Claims**

1. A convertible walker/vehicle for a child comprising:

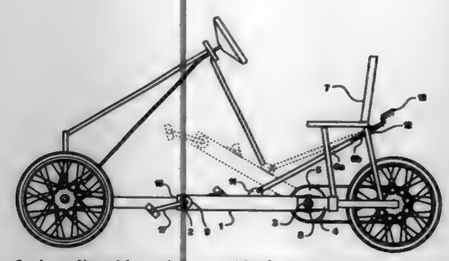
a. a chassis of generally U-shaped configuration including a pair of spaced opposite leg portions and a base portion extending therebetween, said chassis having an open inte-

rior area between said leg portions and an open end, said base portion and said open end defining opposite front and rear ends of said chassis, respectively;
b. wheel means for movably supporting said chassis on a supporting surface;
c. a frame member including spaced transversely extending handle bar and seat portions and at least one connector portion extending therebetween;



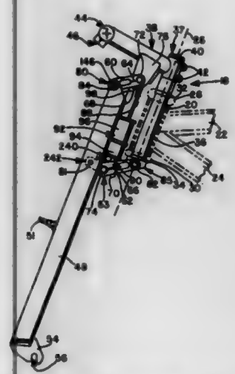
d. first securing means for securing said frame member to said chassis in a first position in which said connector portion extends upwardly from said chassis for positioning said handle bar portion in upwardly spaced transverse relation thereto; and
e. second securing means for alternatively securing said frame member to said chassis in a second position in which said seat portion extends transversely between said opposite leg portions in rearwardly spaced relation to said base portion for supporting a child on said seat portion.

5,441,290
PEDAL ARM, PEDAL ARM ADJUSTER
Ronald E. Morgan, Rte. 2 Box 57i, and Daniel M. Morgan, Rt. Box 71, both of Pomeroy, Wash. 99347
Filed Jun. 13, 1994, Ser. No. 258,676
Int. Cl.[6] B62M *1/02*
U.S. Cl. 280—259 **4 Claims**



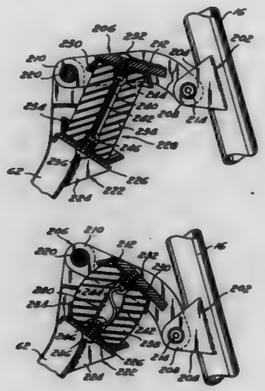
1. An adjustable pedal assembly for an occupant powered vehicle frame comprising:
an elongated pedal arm having one end and a remaining end;
bearings for mounting the one pedal arm end to the vehicle frame substantially free rotation about an axis;
external pedals and pedal cranks mounted to the pedal arm at said remaining end;
a pedal arm adjuster for adjustably connecting the pedal arm and vehicle frame and for operation to selectively pivot the pedal arm and pedals mounted thereto about the axis; and wherein
said pedal arm adjuster includes a lower portion connected to the pedal arm intermediate said one end and said remaining end and having an upper portion adjustably mounted to said lower portion and connected to the vehicle frame such that by adjusting said lower and upper portions, said pedal arm adjuster pivots the pedal arm about said axis with respect to said frame.

5,441,291
BICYCLE FRONT FORK SUSPENSION
Robert H. Girvin, III, Holliston, Mass., assignor to Girvin, Inc., Woonsocket, R.I.
Filed Sep. 20, 1993, Ser. No. 124,342
Int. Cl.[6] B62K *21/20*
U.S. Cl. 280—276 **19 Claims**



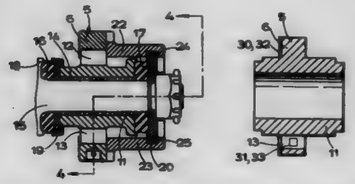
1. A front fork suspension system for a bicycle having a bicycle frame, a front wheel, a rear wheel and with pedals, interconnected with a rear wheel, for driving the rear wheel, the suspension system comprising:
a front fork including a pair of fork members having ends for supporting the front wheel therebetween;
a handlebar stem assembly having a steer tube rotatably mountable in a head tube of the bicycle frame and the stem assembly including, at an upper end, a forwardly-extending handlebar-supporting stem portion substantially transverse to an axis of the head tube;
an upper linkage having a first end pivotally mounted to the stem assembly and having a second end pivotally mounted to a first location on the front fork;
a lower linkage having a first end pivotally mounted to a lower end of the steer tube and having an opposing second end pivotally mounted to a second location on the front fork;
a compression spring attached between the stem assembly and the lower linkage at an attachment point on the upper linkage located substantially at the first end thereof and an attachment point at the lower linkage located substantially between the first end and the second end thereof; and
the upper linkage, the lower linkage, the stem assembly and the front fork being constructed and arranged so that the wheel-supporting ends of the front fork displace in response to a force applied thereto, along a curved path, the curved path defining a path that is oriented at an acute angle at any given point therealong relative to the ground wherein a value of the acute angle continuously increases as displacement of the front fork increases "from minimum to maximum displacement", the acute angle being chosen so that a displacement of the front fork due substantially to a force pedaling motion is less than a value of the acute angle at a greater displacement of the front fork due to an applied force of an impact on the front fork by an obstruction, whereby displacement due to pedaling motion is reduced.

5,441,292
BICYCLE REAR SUSPENSION SYSTEM
James S. Busby, Laguna Beach, Calif., assignor to GT Bicycles, Inc., Santa Ana, Calif.
Continuation-in-part of Ser. No. 121,783, Sep. 15, 1993, Pat. No. 5,409,249. This application Apr. 13, 1994, Ser. No. 227,009
Int. Cl.[6] B62K *25/28*
U.S. Cl. 280—284 **15 Claims**



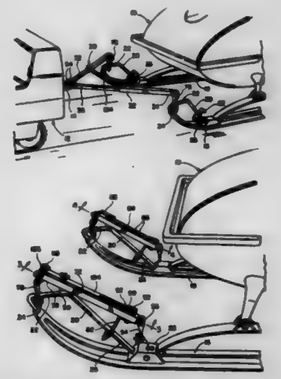
1. A bicycle rear suspension linkage system, comprising:
a bicycle frame;
an upper link pivotally connected to said bicycle frame;
a pair of seat stay members having upper ends pivotally connected to said upper link and lower ends;
a pair of chain stay members having front ends pivotally connected to said bicycle frame and back ends pivotally connected to the lower ends of said seat stay members; and
a shock absorber having a first end rigidly attached to said seat stay members and a second and rigidly attached to said upper link.

5,441,293
DRAW-BAR COUPLINGS FOR VEHICLES
Peter G. Sturgess, Gwent, Wales, assignor to Lucas Industries, Solihull, West Midlands, England
Filed Feb. 9, 1994, Ser. No. 194,066
Claims priority, application United Kingdom, Feb. 11, 1993, 9302762
Int. Cl.[6] B60T *7/12*
U.S. Cl. 280—432 **12 Claims**



1. A draw-bar coupling for a vehicle combination of the type comprising a towing vehicle, a trailer adapted to be towed by said towing vehicle, and a coupling through which said trailer is towed by said towing vehicle, wherein said coupling comprises:
sensing means for sensing loads acting on said coupling in more than one direction;
a housing including a mounting plate adapted to be secured to said towing vehicle, a central core, and at least two symmetrically arranged discrete webs integral with said mounting plate and said central core and supporting said core with respect to said mounting plate, said webs being of a thickness substantially less than that of said mounting plate; and
a loading pin adapted to be coupled to said trailer and coupled with said central core to transmit loads to said webs through said central core;
wherein said sensing means measures strains in said webs to determine said loads acting on said coupling.

5,441,294
TOW HITCH
Gustave J. Losier, R.R. #2, Simcoe, Ontario, Canada N3Y 4K1
Filed Sep. 8, 1994, Ser. No. 301,411
Int. Cl.[6] B60D *1/14*
U.S. Cl. 280—491.4 **12 Claims**



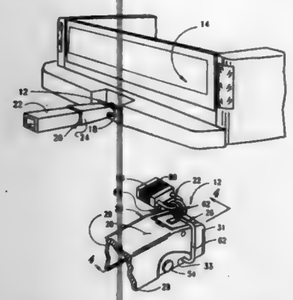
1. In combination, a snowmobile including a pair of front, opposite side dirigible skis each including an upwardly curving toe portion and an elongated toe brace including a forward end anchored to a tip of the corresponding toe portion and a rear end anchored to the corresponding ski rearward of the toe portion, a pair of elongated members having first and second ends, mounting means pivotally mounting each of said first ends to a forward end of a corresponding toe brace and anchor means releasably anchoring each of said second ends to the corresponding toe brace rear end with each elongated member supported in an inactive stored position from the corresponding toe brace, said mounting means including means enabling said elongated members, when said second ends are released from said rear ends, to be swung relative to said braces into forwardly convergent active positions with said second ends forwardmost and allowing angular displacement of said first ends relative to said toe braces about an axis extending between said forward ends, said second ends including means for releasably securing said second ends together when said elongated members second ends are forwardly convergent, said second ends, when releasably secured together, being adapted for pivotal connection with the rear of a towing vehicle disposed forward of said second ends.

5,441,295

LOCK ASSEMBLY FOR A TRAILER HITCH

James E. Smith, P.O. Box 8785, Lumberton, Tex. 77711

Filed Mar. 21, 1994, Ser. No. 210,928
Int. Cl.[6] B60D *1/28*; B60R *25/00*
U.S. Cl. 280—507 15 Claims



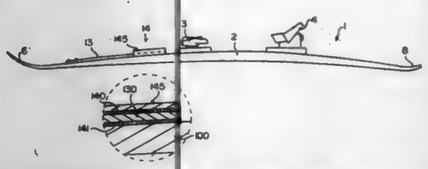
1. A lock assembly for a trailer hitch, comprising:
a) a trailer hitch assembly includes a main hitch housing assembly having spaced latch receiving openings and a hitch ball latch assembly;
b) said hitch ball latch assembly includes a main actuator body having lock anchor holes aligned with respective ones of said latch receiving openings when in an enclosed condition about a hitch ball member;
c) a pair of lock pin members, each of said lock pin members mounted transversely of aligned ones of said lock anchor holes and said latch receiving openings to prevent movement of said hitch ball latch assembly to an unlatched condition about said hitch ball member; and
d) a lock means to hold said lock pin members in a latched condition to prevent movement therefrom from respective aligned ones of said lock anchor holes and said latch receiving openings.

5,441,296

SHOCK ABSORBING DEVICE FOR SKIS

Axel Phelipon, Annecy, and Jacques Le Masson, Cran Gevrier, both of France, assignors to Salomon S.A., Metz Tessy, France

Filed Jun. 9, 1993, Ser. No. 73,512
Claims priority, application France, Jul. 31, 1992, 92 09734
Int. Cl.[6] A63C *5/075*
U.S. Cl. 280—602 50 Claims



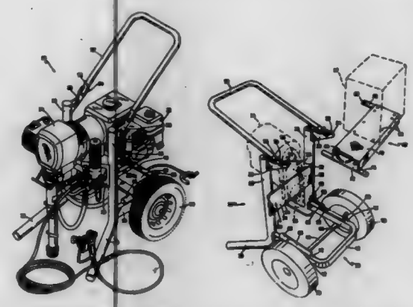
1. A device for dampening vibration of a ski, comprising:
at least one longitudinally extending flexible blade having a first portion and a second portion;
at least one fixed connection device for affixing the first portion of the flexible blade against longitudinal movement with respect to the ski; and
at least one dampening connection device to be affixed to the ski for allowing the second portion of said flexible blade to move longitudinally with respect to the ski upon ski flexion, said at least one dampening connection device comprising at least a layer of viscous material, whereby said second portion of said flexible blade comprises a surface in longitudinal sliding contact with said layer of viscous material of said dampening connection device to dampen vibrations of the ski during use of the ski.

5,441,297

POWER UNIT CART

Duane D. Krohn, Westminster, and George R. Jones, Arvada, both of Colo., assignors to Graco Inc., Golden Valley, Minn.

Filed Nov. 10, 1993, Ser. No. 150,395
Int. Cl.[6] B62B *1/12*, *1/14*
U.S. Cl. 280—655 17 Claims



1. A power unit cart for carrying a power unit comprising:
a) a vertical frame having foot sections and handle brackets;
b) a support frame affixed to, and extending from, said vertical frame, said support frame having parallel side arms, said parallel side arms having upper and lower surfaces;
c) an axle affixed to, and traversing between, said lower surface of said parallel side arms, said axle having a pair of wheels;
d) a handle affixed to, and extending from, said handle brackets;
e) a mounting base affixable to said power unit, said mounting base having an elongate slide and an L-shaped bracket;
f) an axial alignment member affixed to said upper surface of one of said parallel side arms, said axial alignment member having a vertical support tab for positioning of said mounting base and said power unit between said vertical frame and said vertical support tab;
g) a socket affixed to said upper surface of one of said parallel side arms opposite to said axial alignment member, said socket for sliding and pivotal receipt of said elongate slide for releasably coupling said mounting base and said power unit to said support frame;
h) an anchoring means pivotally affixed to said upper surface of said parallel side arm proximate to said axial alignment member, said anchoring means for releasably engaging said L-shaped bracket; and
i) a belt housing affixed to said vertical frame, said belt housing having a plurality of belt guides for positioning of a drive belt for engagement to said power unit.

5,441,298

APPARATUS FOR STABILIZING AN ELECTRIC ACTIVE SUSPENSION SYSTEM UPON INTERRUPTION OF THE POWER SUPPLY

John M. Miller, Saline; Richard J. Hampo, Livonia, and Roy I. Davis, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 22, 1993, Ser. No. 139,680
Int. Cl.[6] B60G *17/015*
U.S. Cl. 280—707 15 Claims

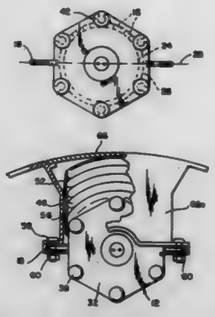
1. An apparatus for controlling an electric active suspension for a motor vehicle having a plurality of wheels and a power source comprising:
motor means connected to the suspension for controlling the movement of the suspension, said motor means having a plurality of stator wires;
control means electrically connected to said motor means and to said power source for developing current commands for input into said motor means through said stator wires;
switching means electrically connected to said stator wires and said power source for electrically connecting said plurality of stator wires together in response to a disconnection of said power source so that a high torque is developed in said motor means for restraining the movement of the suspension;
wherein said switching means comprises a solenoid and plunger, said solenoid being operative to move said plunger upon energization thereof so that said stator wires are not electrically connected.

5,441,299

AIR BAG INFLATOR SUBASSEMBLY FOR INSTALLATION ONTO THE DASHBOARD SUBSTRATE OF A MOTOR VEHICLE

Donald R. Lauritzen, Hyrum; Joseph L. Ralston, Ogden, and Larry D. Rose, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Apr. 25, 1994, Ser. No. 233,161
Int. Cl.[6] B60R *21/20*, *21/26*
U.S. Cl. 280—728.2 11 Claims



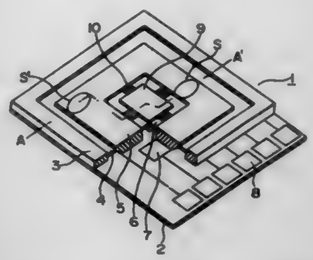
1. A simple one-piece air bag inflator assembly for attachment to a dashboard substrate of a motor vehicle comprising:
an elongated cylindrical inflator for providing a gas at a pressure, said inflator having a tubular outside wall with an outer surface, a first end and a second end, a first end closure attached to said inflator first end and a second end closure attached to said inflator second end to form a sealed tubular chamber, wherein each of said first and second end closures are substantially flat plates attached to the respective inflator ends by fastener means, inflator apertures formed in the outside wall of the inflator for directing generated gas from said sealed tubular chamber, and at least two first flanges integral to the outer surface of the inflator and running the length of the inflator, said first flanges having first apertures formed therein, wherein said first flanges divide said inflator surface into a first arc and a second arc wherein said inflator apertures are contained within one of said arcs, said inflator also including a plurality of channels integral to the outside wall of said inflator and running the length of the inflator, each of said channels defining a central aperture wherein said fastener means comprises fasteners which engage with said central apertures of said channels;
an air bag cushion in a folded condition while being stored, said air bag cushion having a first portion, which when said air bag cushion is deployed is disposed opposite an occupant of the vehicle, a second portion attached to said first portion, which terminates in a third portion defining a gas inlet opening for said air bag cushion, said air bag cushion third portion attached to at least two separate of the first flanges of said inflator such that said inflator apertures exhaust the gas into said air bag cushion for the normal inflation thereof; and
an air bag retention means that maintains the air bag cushion in the folded condition while being stored.

5,441,300

THREE-DIMENSIONAL ACCELERATION SENSOR AND AIRBAG USING THE SAME

Yoshihiro Yokota, Katsuta; Akira Koide, Ibaraki; Masahiro Matsumoto, Hitachi, and Masahide Hayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 18, 1992, Ser. No. 978,397
Claims priority, application Japan, Nov. 18, 1991, 3-301514
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 11 Claims



1. A three-dimensional acceleration sensor having a support on which a stationary electrode is arranged, a central part fixed to said support, a single massive part constituting a movable electrode, a link arrangement for interconnecting said central part and said single massive part, and comprised of diaphragms and beams which are operatively provided around said central part, means for sensing changed electrical capacitance between the stationary electrode and the single massive part at four positions of the sinqle massive part, and means for detecting applied acceleration in response to changes in sensed electrical capacitance at the four positions by addition and subtraction of change electrical capacitance values.

5,441,301

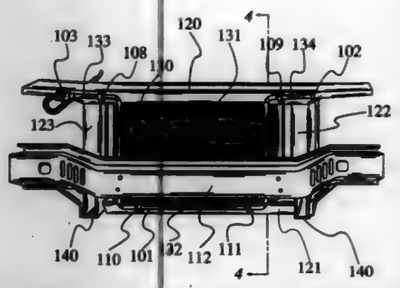
CRUSH SENSING VEHICLE CRASH SENSOR

David S. Breed, Boonton Township; Scott D. Phillips; W. Thomas Sanders, both of Rockaway, and Richard Downs, Jr., Newton, all of N.J., assignors to Automotive Technologies International, Inc., Boonton Twp., N.J.

Continuation-in-part of Ser. No. 795,035, Nov. 20, 1991, Pat. No. 5,326,133, and Ser. No. 727,756, Jul. 9, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,076

Int. Cl.[6] H01H *15/04*; B60R *21/16*

U.S. Cl. 280—735 **9 Claims**



1. A vehicle crush detecting device in combination with a vehicle, said vehicle having an engine compartment, said device comprising:

an elongated electrically conducting tube;

an elongated electrically conducting rod positioned within said electrically conducting tube; said rod and tube positioned in said engine compartment;

insulating means positioned at at least two points between said rod and said tube to insulate said rod from said tube;

said electrically conducting tube being deformed by a force greater than a predetermined magnitude which causes said tube to deflect and contact said rod in response to the crush of a vehicle.

5,441,302

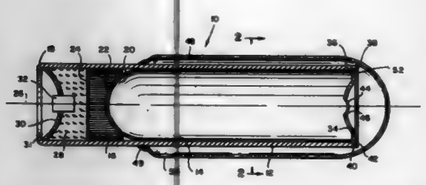
PISTON-ACTUATED AIR BAG INFLATOR WITH HERMETIC LINER

Kelly B. Johnson, Layton; Walter A. Moore, Ogden, both of Utah; Leland B. Kort, Lakewood, Colo., and Karl K. Rink, Liberty, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 23, 1994, Ser. No. 295,296

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **29 Claims**



1. An inflator for delivering pure inert cold gas to an air bag comprising,

a cylindrical crushable hermetic liner in which a pressurized inert gas is stored,

a non-hermetic support tube for said cylindrical liner, said support tube having a first end and a second end, including a cylindrical section in which said liner is located, and having an outlet conduit positioned at said second end, said outlet conduit being sealed by a burst disk that ruptures upon a predetermined increase of pressure of the inert gas stored in said hermetic liner,

a piston in sealed, slidable relation over substantially the full length of said cylindrical section of said support tube, said piston during storage of said inert gas in said hermetic liner being positioned at the end of said support tube cylindrical section that is adjacent to the first end thereof,

pyrotechnic means positioned between said piston and the first end of said support tube, and

means for activating said pyrotechnic means to move said piston through said support tube cylindrical section, crushing said hermetic liner, increasing the pressure of the stored gas in said hermetic liner and rupturing said burst disk to cause the stored gas to escape through said outlet conduit of said support tube.

5,441,303

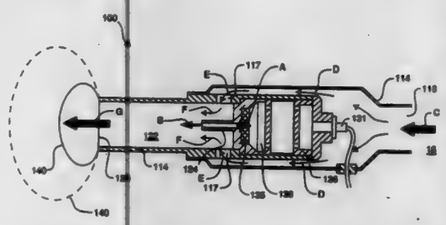
SYSTEM AND METHOD FOR GAS BAG INFLATION AND DEFLATION

James D. Rozanski, Brigham City, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Jan. 10, 1994, Ser. No. 179,734

Int. Cl.[6] B60R *21/28, 21/30*

U.S. Cl. 280—738 **8 Claims**



1. A system for inflating and deflating an air bag within a vehicle, the air bag having an air bag orifice for receiving an inflating gas, the system comprising:

a flow guide having an exterior port in fluid communication with the ambient air outside the vehicle, said flow guide having an air bag port connectable in fluid communication with the air bag orifice, said flow guide also having an internal bore permitting fluid flow between said exterior port and said air bag port;

a nozzle disposed within said flow guide bore; and

an inflator secured to said nozzle and containing a pressurized gas means, said inflator configured to expel pressurized gas produced by said pressurized gas means through said nozzle into said flow guide bore,

wherein said flow guide comprises a wall, said exterior port is positioned within said wall, said nozzle is disposed substantially concentrically within said flow guide,

wherein said flow guide and said nozzle substantially share a central axis, and a transverse plane is any plane transverse to said central axis,

wherein said nozzle has an end disposed at a lead distance from said exterior port, said lead distance measured along said wall from an edge of said exterior port to a transverse plane containing said nozzle end,

wherein said flow guide has a radius measured from said central axis to said wall in a transverse plane, and

wherein the ratio of said lead distance to said radius is in the range from about 0.5 to about 1.0.

5,441,304

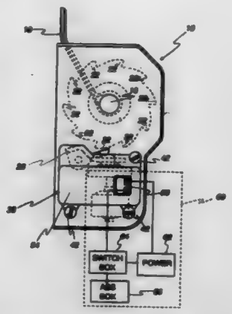
SEAT BELT RETRACTOR ACTIVATION MECHANISM RESPONSIVE TO ANTI-LOCK BRAKING SYSTEMS

James L. Zygutis, Frankfort, Ill., and Gerald A. Doty, Crown Point, Ind., assignors to Takata Inc., Auburn Hills, Mich.

Filed Jun. 1, 1993, Ser. No. 69,607

Int. Cl.[6] B60R *22/48*

U.S. Cl. 280—806 **16 Claims**



1. An activation mechanism for a seat belt retractor used in a vehicle to prevent seat belt protraction, the seat belt retractor comprising a retractor frame, a reel having a reel shaft journaled for rotation in the retractor frame, a seat belt wound on the reel, a ratchet wheel being coupled to the reel for rotation therewith and having ratchet teeth disposed thereon, and a pawl being pivotally mounted on the retractor for rotation between an inoperative position in which the pawl is spaced from the ratchet teeth and an operative position in which the pawl is engaged with the ratchet teeth to lock the reel against rotation in a belt protraction direction, the activation mechanism comprising:

an activation lever having an arm for engagement with the pawl of the retractor and being pivotally mounted for movement between a neutral position in which the arm is spaced from the pawl of the retractor and an actuated position in which the arm urges the pawl into engagement with the ratchet teeth to lock the reel against rotation in the belt protraction direction;

actuating means for actuating the activation lever from its neutral position to its actuated position upon being energized and having a spring for moving the activation lever from its actuated position to its neutral position upon being de-energized;

an energizing means for energizing the actuating means; and

a control means for controlling the energizing means being in response to a braking system used in a vehicle and enabling the energizing means to energize the actuating means when the braking system is activated and prohibiting the energizing means from energizing the actuating means when the braking system is deactivated.

5,441,305

APPARATUS AND METHOD FOR POWERED THERMAL FRICTION ADJUSTMENT

William J. Tabar, 1403 Quail Meadows Dr., Park City, Utah 84060

Filed Jul. 16, 1993, Ser. No. 93,056

Int. Cl.[6] A63C *11/00*

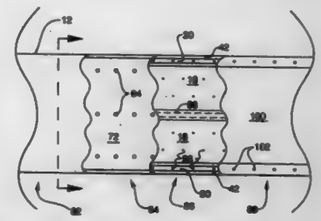
U.S. Cl. 280—809 **16 Claims**

1. An apparatus for reducing friction with snow, comprising:

a ski comprising a body and a base secured to said body, at least a portion of said base configured to frictionally engage the snow;

a power source; and

a heating element powerable by said power source and disposed near said base, said heating element having a plurality of perforations, said base having a plurality of integral extensions which extend into said perforations for securing said heating element to said base, said heating



element being capable of heating at least a portion of said base to facilitate reducing the friction between said ski and the snow.

5,441,306

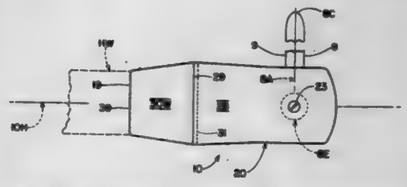
SKIER'S POLE

Thomas F. Green, R.F.D. #1 (box 66B), Council Bluffs, Iowa 51503

Filed Mar. 1, 1994, Ser. No. 203,304

Int. Cl.[6] A63C *11/22*

U.S. Cl. 280—819 **9 Claims**



1. Skier's pole having the capability of protecting the skier's hand and comprising: a selectable ski-pole uprightly extending along a vertical-axis thereof and topically provided with an upright handgrip uppermost portion having a top-end vertically overlying a bottom-end therefor and further comprising a bottom-end therefor and further comprising herein a hand-protector attached in shrouding relationship to the ski-pole handgrip uppermost portion and extending directionally horizontally longitudinally rearwardly from the handgrip portion along a horizontal-axis, and said hand-protector portion of said selectable ski-pole comprising:

(A) attached to said selectable ski-pole and in surrounding relationship to the handgrip upper portion thereof, a hood member of flexible structural material that vertically flanks said handgrip top-end and bottom-end and that extends directionally longitudinally rearwardly from said handgrip to rearwardly terminate as a hood member rear-end that substantially surrounds said horizontal-axis, said hood member having a rearward portion extending directionally longitudinally forwardly from said rear-end and being of physical property to be sufficiently semi-rigid about said horizontal-axis to permit a skier's hand to be readily inserted directionally longitudinally forwardly along said horizontal-axis for readily manually grasping said skier's pole upright handgrip uppermost portion; and

(B) a cuff member being provided of an elastic material that has physical properties differing from that of said hood member and being permanently surroundably pivotably attached to said hood member immediately adjacent the hood member rear-end and thereat being adapted to alternatively assume: a cuff member normal-condition substantially surrounding the hood member rearward portion for usage during temperate weather sking conditions; and also

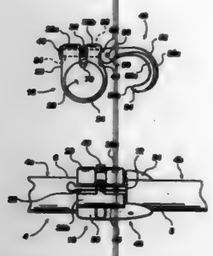
adapted to assume a cuff member rearward-condition extending pivotably rearwardly of the hood member rear-end for thereby protecting the skier's hand rearward areas during usages in frigid weather conditions.

5,441,307

ADJUSTABLE LENGTH SKI POLE/CLAMP

Jason Quintana, Los Gatos, Calif.; Steve C. McDonald, Portland, Oreg., and Jordan Margid, Salt Lake City, Utah, assignors to Black Diamond Equipment, Ltd., Salt Lake City, Utah

Filed Sep. 1, 1993, Ser. No. 115,916
Int. Cl.[6] A63C *11/22*
U.S. Cl. 280—823 7 Claims



1. An adjustable length ski pole comprising

an upper tubular section having an upper handle end and a lower joint end,

a lower tubular section having a lower basket end and an upper joint end,

said joint ends of the upper and lower sections being telescopically joined to slide relative to one another, with one of the upper and lower joint one of the upper and lower joint ends circumscribing the other end and being squeezable to frictionally grip said other joint end, and

a low profile clamp disposable about said one joint end and including

a barrel shaped member having an annular sidewall, open at both ends, defining a central longitudinally extending cylindrical bore for receiving said one joint end, said sidewall having an upper end, a lower end, and a slot extending between the upper end and lower end to define facing side edges which, when urged toward one another, reduces the central bore diameter to tighten around said one joint end and, when urged apart, enlarges the central bore diameter, one of said side edges including a camming surface so that when a force is applied thereto, said one side edge is urged toward the other side edge, and

lever arm means pivotally attached to the facing side edges of the barrel member to pivot between a closed position, in which at least a portion of the lever arm means rests against said one joint end to cause the barrel member to squeeze said one joint end so that said one joint's end grips said other joint end, and an open position, in which the lever arm means is pivoted away from said one joint end to release the grip by said one joint end of the other joint end,

wherein said lever arm means includes a first section which wraps about the exterior of the barrel member when in the closed position, and a second section longitudinally offset from said first section and having a projecting portion which wraps about and engages a portion of said one joint end which is adjacent to the barrel member, and

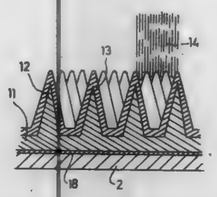
wherein said lever arm means includes a camming knuckle which, when the lever arm means is pivoted to the closed position, contacts and applies a force to the camming surface of said one side edge.

5,441,308

FILING DEVICE AND SUPPLEMENTAL SHEET-LIKE MATERIAL FOR THE SAME

Kenjiro Nishikawa, Osaka, Japan, assignor to Maruni Kasei Kabushikigaisha, Osaka, Japan

PCT No. PCT/JP91/01264, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/17343, PCT Pub. Date Oct. 15, 1992
PCT Filed Sep. 21, 1991, Ser. No. 965,410
Claims priority, application Japan, Mar. 29, 1991, 3-020111 U
Int. Cl.[6] B42D *3/02*
U.S. Cl. 281—21.1 9 Claims



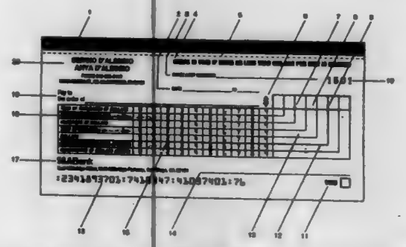
1. A filing device comprising a front cover, a rear cover, a spine connecting the front and rear covers, and non-staining soft polyurethane elastomer secured to said spine at an inner side of the spine, said polyurethane elastomer having continuous high adhesion at room temperature, and said polyurethane elastomer having an exposed surface at the inner side of the spine defining parallel grooves extending in the lengthwise direction of the spine, whereby sheets of materials are detachably securable at their edges to the spine via said elastomer.

5,441,309

NEGOTIABLE INSTRUMENT

Sergio D'Alessio, and Ayna Dp3 Alessio, both of 10315 Azuaga St., #60, San Diego, Calif. 92129

Filed Apr. 19, 1993, Ser. No. 48,802
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—58 6 Claims



1. A negotiable instrument operable for automatic machine processing having data fields for presenting and recording the amount to be paid therein, said negotiable instrument comprising:

a) a first data field that is operable for the presentation and recording of numeric data in a format that is usable by a human user;

b) a second data field that is ,operable for the presentation of and recording of numeric data in a format that is easily usable by a machine device; and

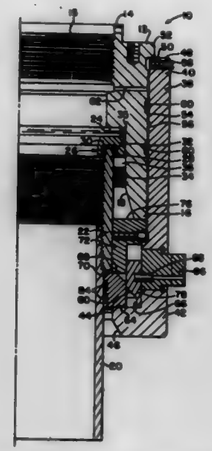
c) a means of translation of the data in the first data field to the data in the second data field, said means being indicia defining a path from said first data field to said second data field.

5,441,310

CEMENT HEAD QUICK CONNECTOR

Stephen P. Barrett, Lyne of Skene, Scotland, and Paul A. Crawford, Stephenville, Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 4, 1994, Ser. No. 206,352
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—18 4 Claims



1. A coupling for connection to a cylindrical member having a longitudinal axis comprising

an upper body having a generally tubular shape, a first section adapted to be placed over a first end of said cylindrical member, and a second section opposite said first section adapted to receive a member to be coupled with said cylindrical member;

a lower body having a generally tubular shape, a first section adapted to telescopically receive said first section of said upper body, and a second section adapted to be placed over said first end of said cylindrical member;

external threads (54) provided along the outer circumferential surface of said upper body, said external threads corresponding to and adapted to engage internal threads (56) provided along the inner circumferential surface of said lower body, whereby engagement of said external threads and said internal threads structurally join said upper body and said lower body;

connecting means received in said second section of said lower body and adapted to engage said cylindrical member;

actuator means for selectively causing said connecting means to engage and disengage said cylindrical member;

means for selectively locking said connection means in a position wherein said connecting means is in engagement with said cylindrical member;

first seal means for sealing between said upper body and said first end of said cylindrical member;

means for adjusting the relative position of said upper body to said lower body when said upper body is received in said lower body;

said actuator means comprise mechanical means for selectively causing said connecting means to engage and disengage said cylindrical member;

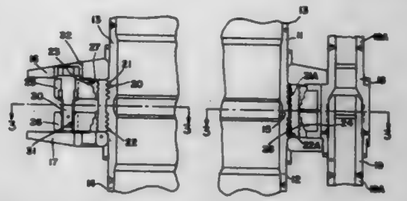
said connecting means comprise a plurality of ring segments which, when assembled, form a ring having an inner diameter approximately equal to the outer diameter of said cylindrical member.

5,441,311

CONNECTOR WITH OPPOSITE MOVING CAM RINGS

Bruce J. Watkins, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Jul. 1, 1994, Ser. No. 269,550
Int. Cl.[6] F16L *55/00, 37/18, 39/00*
U.S. Cl. 285—18 10 Claims



1. A connector comprising

a first tubular member having first locking grooves thereabout,

a second tubular member having second locking grooves thereabout, and

a split lock ring having first and second axially spaced locking teeth on the inner side thereof which are carried by the first tubular member for radial movement between expanded positions in which second teeth may be moved past the end of the second tubular member to dispose the first and second teeth opposite the first and second grooves, respectively, when said members are moved into end-to-end relation, and contracted positions in which the first and second teeth are interlocked with the first and second grooves, respectively,

said teeth having tapered surfaces thereon which are slidable over tapered surfaces of the grooves to urge the end surfaces on said members into tight engagement with one another as the lock ring moves to contracted position

a pair of cam rings having first and second conically shaped cam surfaces about their inner sides for slidable engagement with first and second axially spaced, conically shaped follower surfaces, respectively, about the outer side of the lock ring, and

means for moving the cam rings axially toward and away from one another between a first position in which the lock ring is expanded and a second position in which the lock ring is contracted.

5,441,312

PIPE JOINT FOR CONNECTION OF CORRUGATED TUBE

Minoru Fujiyoshi, Kuwana; Michio Hasegawa, Joetsu; Shinichi Kanomata, Yokohama; Takashi Anamizu, Tokyo; Morio Saito, Tokyo, and Fumitaka Satoh, Tokyo, all of Japan, assignors to Hitachi Metals, Ltd.; Tokyo Gas Co., both of Tokyo and Sanko Gas Seiki, Ltd., Kawaguchi, all of Japan

Filed Sep. 30, 1994, Ser. No. 314,264
Claims priority, application Japan, Oct. 1, 1993, 5-246642; Apr. 22, 1994, 6-084311
Int. Cl.[6] F16L *35/00, 55/00*
U.S. Cl. 285—23 11 Claims

1. A pipe joint for connecting a flexible corrugated tube, the tube having a free end and alternate ridges and valleys at its outer peripheral surface adjacent the free end, the joint comprising:

a joint body having an axial through bore and a threaded portion;

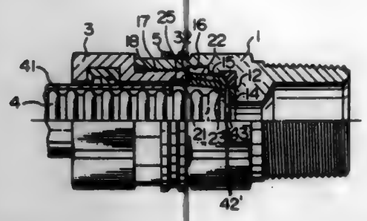
a sleeve received in said through bore for holding the free end of the flexible corrugated tube; and

a nut threadedly fitted in said threaded portion of said joint body;

said joint body having a shoulder formed on an inner surface of said through bore, said shoulder having a sealing sur-

face directed toward one end of said through bore for abuttingly engaging the free end of the tube when the tube is fully inserted, a tapering surface being formed on the inner surface of said through bore in adjacent relation to said shoulder, said tapering surface being decreasing in diameter progressively toward said shoulder, and a radially inwardly-open, annular groove formed in the inner surface of said through bore in adjacent relation to said tapering surface;

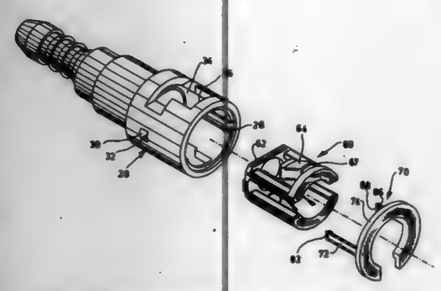
said sleeve having projections extending radially inwardly from one end thereof facing said shoulder, said sleeve having an end surface at the other end thereof, and said projections being pivotally movable resiliently relative to the remainder of said sleeve so as to be received in a predetermined one of the valleys in the outer peripheral



surface of the flexible corrugated tube when the tube free end is fully inserted; and

said nut having means for holding outer surfaces of said projections of said sleeve in registry with said annular groove during insertion of the tube free end, said annular groove being sized radially to accept pivoting movement of said projections during passage of at least the ridge adjacent the tube free end, said nut having a flange surface for abutment against said end surface of said sleeve, wherein when the nut is tightened following full insertion of the tube free end, said sleeve is caused to move axially relative to said joint body, said projections are caused to pivot inwardly by engagement with said tapering surface, and at least the ridge adjacent the tube free end is compressed between said sealing surface and said projections.

5,441,313
INSERTION INDICATOR FOR QUICK CONNECTOR
Gopichand Kalahasthy, Clinton Township, Macomb County, Mich., assignor to Bundy Corporation, Warren, Mich.
Filed Jan. 18, 1994, Ser. No. 183,183
Int. Cl.[6] F16L *35/00, 37/084*
U.S. Cl. 285—93 **12 Claims**



1. A quick connector coupling for forming a joint in a fluid line system comprising:

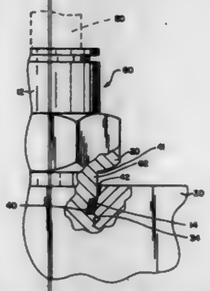
a female connector body defining a bore, said bore extending axially inwardly into said connector body from an entrance, a radial rim being defined in said connector body adjacent said entrance, and a pair of first abutment surfaces and a pair of second abutment surfaces being defined in said connector body axially inwardly of said entrance, said first abutment surfaces being circumferentially spaced ninety degrees from said second abutment surfaces;

a male member received within said bore of said connector body and having a radially enlarged upset portion;

a retainer disposed within said bore of said connector body and having retention fingers extending between said first abutment surfaces and said upset portion of said male member to secure said male member within said bore; and

an insertion indicator disposed within said bore, said insertion indicator including an indicator ring seated against said radial rim adjacent said entrance, legs extending away from said indicator ring and into said bore, and engagement means connected to an end of each leg remote from said ring, said engagement means cooperating with said second abutment surfaces to fix said insertion indicator axially relative to said connector body prior to coupling, and said engagement means being separable from said indicator ring upon a proper coupling to permit axial movement of said indicator ring, signaling a proper coupling.

5,441,314
THREADED FITTINGS
Camozzi Giovanni, via Tito Speri 9, 25065 Lumezzane (BS), Italy
Filed Jul. 1, 1994, Ser. No. 269,767
Int. Cl.[6] F16L *41/08*
U.S. Cl. 285—211 **5 Claims**



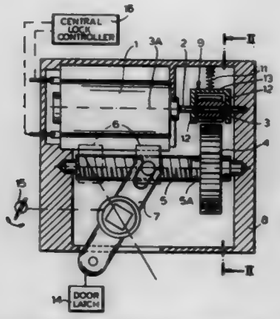
1. In a threaded fitting for installation in a threaded bore having a chamfered surface defining an entrance bore to said threaded bore in a fluid system, in combination:

a body element having a fluid passageway along its longitudinal axis and with a first body element portion at one of its longitudinal extremes having an external thread, a second body element portion at the other of its longitudinal extremes having a tube entrance opening, and a third body element portion intermediate said first and second body element portions having a circumferential horizontal top wall, a circumferential horizontal bottom wall and a circumferential tapered wall which connects said top wall and said bottom wall which define a tapered groove;

an annular, double-tapered seal element contained in said third body element portion tapered groove such that said seal element moves along said longitudinal axis when said body element moves along said axis, said seal element having a tapered external surface with a minimum external radius which is substantially equal to the root radius of said first body element portion external thread, a tapered internal surface separated from said tapered external surface by the thickness of said seal element defined by the distance between said tapered internal and external seal surfaces, and

wherein said seal element tapered external surface engages said chamfered surface when said first body element is threaded into said threaded bore.

5,441,315
ELECTRIC-MOTOR DRIVE FOR MOTOR-VEHICLE CENTRAL LOCK SYSTEM
Frank Kleefeldt, and Rolf Schüler, both of Heiligenhaus, Germany, assignors to Kiekert GmbH & Co. KG, Heiligenhaus, Germany
Filed May 26, 1993, Ser. No. 67,389
Claims priority, application Germany, Jul. 16, 1992, 42 23 341.0
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—201 **5 Claims**



1. In combination with a motor-vehicle door latch movable between a locked and unlocked position, a power actuator comprising:

a housing;

a reversible electric motor in the housing having a rotatable output shaft defining an axis;

an input gear on the shaft;

a threaded output spindle spaced from the shaft in the housing;

an output gear on the spindle out of mesh and out of engagement with the input gear;

a nut threaded on the spindle;

means including an actuating element operatively coupling the nut with the latch to switch it between its positions;

a support pivotal in the housing about the axis;

a pair of coupling gears on the support in mesh with and flanking the input gear, the support being rockable about the axis from a central position in which neither of the coupling gears meshes with the output gear into a pair of end positions in each of which a respective one of the coupling gears meshes with the output gear and couples same to the input gear; and

biasing means urging the support into the central position with a relatively small force such that on rotation of the input gear in either direction the biasing force is overcome and the support is rocked in the same direction into the respective end position.

5,441,316
SEAL
George Georgopoulos, Pine Brook, N.J., assignor to E. J. Brooks Company, Newark, N.J.
Filed Jun. 4, 1993, Ser. No. 72,501
Int. Cl.[6] B65D *27/30*
U.S. Cl. 292—320 **9 Claims**

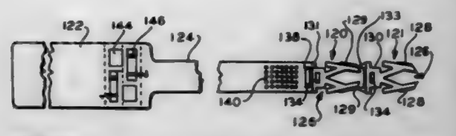
1. A seal construction comprising:

a socket member having a socket cavity defining at least one locking recess;

a locking member including at least one locking tang dimensioned to be inserted in said cavity and mate with said at least one locking recess for locking said locking member to said socket member in said cavity such that the locking member is not generally visible; and

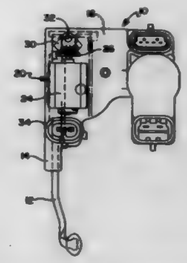
means for coupling said locking member to said socket member;

said socket member having a tang receiving aperture in communication with said cavity and the ambient atmosphere, said tang including a tip portion, said locking recess being dimensioned relative to said at least one tang for permitting said at least one tang to displace in said locking recess and said tip portion to selectively protrude from said locking recess through said tang receiving aperture into the ambient atmosphere while said tang is locked to said socket member;



said locking recess comprising a first opening of a first transverse dimension in communication with a second opening of a second relatively larger transverse dimension, said locking member comprising a body, said tang comprising said tip portion and a tail portion resiliently secured to said body, said first transverse dimension being of a size for resiliently displacing the tang during insertion of the tang into said second opening such that the tang assumes a locked state in said second opening, said second opening having a forward portion and a rear portion, said rear portion having a rearwardly extending recess, said tang tail portion having a rearwardly extending projection which mates in said rearwardly extending recess for locking the tang in the locked state.

5,441,317
SUPERLOCK FEATURE FOR AN AUTOMOTIVE DOOR LOCKING ACTUATOR
James M. Gruden, Centerville, and Ned L. Kikly, Vandalia, both of Ohio, assignors to ITT Automotive Electrical Systems Inc., Auburn Hills, Mich.
Filed Jun. 14, 1993, Ser. No. 76,725
Int. Cl.[6] E05B *53/00*
U.S. Cl. 292—336.3 **2 Claims**



1. A locking assembly for locking an automotive door, comprising:

(a) a housing including an actuating arm having first and second ends, said actuating arm adapted to slide in a linear direction within said housing;

(b) a motor mounted in the housing;

(c) gear means driven by the motor; and

(d) blocking arm means, connected to the gear means, for abutting at least one of said first and second ends of said

actuating arm to prevent the linear movement of said actuator arm in at least one direction.

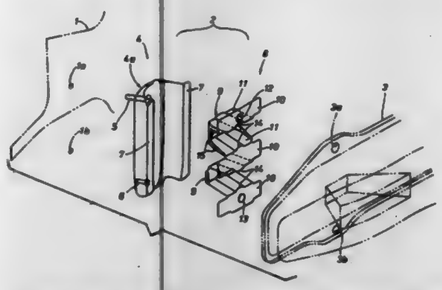
5,441,318
LEVER OPERATED DOOR LOCK ASSEMBLY
Thomas J. Ghostley, Anaheim, Calif., assignor to Emhart Inc., Newark, Del.
Continuation of Ser. No. 928,600, Aug. 13, 1992, abandoned. This application Oct. 7, 1994, Ser. No. 320,796
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 **4 Claims**



1. A door lock assembly comprising
a pair of mirror imaged levers each including
a horizontal handle portion and
a hub portion having a thru bore extending there-through and having a bottom portion and a set screw receiving hole extending vertically upwardly through said bottom portion to said thru bore, and
a latch assembly including
an exterior cylindrical hub having an end portion for insertion into the thru bore of one of said levers,
an interior cylindrical hub having an end portion for insertion into the thru bore of the other of said levers,
emergency plug means secured to said exterior cylindrical hub,
the hub portion thru bore of each lever and each of said cylindrical hubs including cooperating means for preventing relative rotation between a lever and the cylindrical hub inserted into the thru bore of said lever, and
a pair of diametrically, vertically opposed set screw receiving holes in each of said cylindrical hubs selectively located so that when one of said cylindrical hubs is inserted into either of said lever hub portion thru bores said pair of opposed cylindrical hub set screw receiving holes will be in vertical alignment with said set screw receiving hole of said lever,
so that said pair of levers can be secured to said cylindrical hubs with said lever set screw receiving hole at the bottom of said lever when the door is either a left hand door or a right hand door.

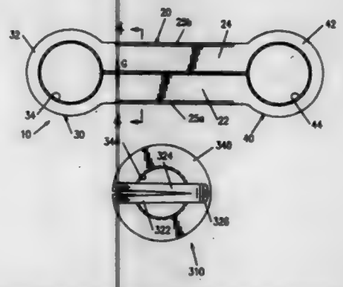
5,441,319
AUTOMOTIVE BUMPER STAY STRUCTURE
Masaru Oyama, and Noriaki Masuta, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 22, 1994, Ser. No. 263,661
Claims priority, application Japan, Aug. 31, 1993, 5-240367
Int. Cl.[6] B60R *19/24*
U.S. Cl. 293—155 **7 Claims**

1. An automotive bumper stay structure generally made of sheet metal for mounting a bumper beam to a vehicle body, comprising:
a stay main body consisting of a substantially U-shaped channel member defining a groove elongated vertically and substantially open at top and bottom and having a closed end fixedly secured to a vehicle body and an open end facing a bumper beam; and
a reinforcement member having at least one substantially



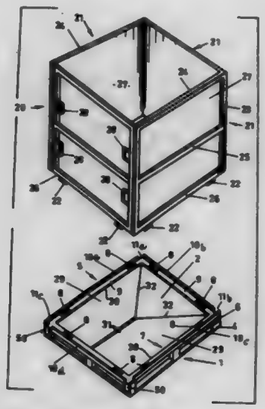
U-shaped middle part defining a groove elongated horizontally and substantially open at left and right ends and fixedly received in said stay main body and secured to said bumper beam.

5,441,320
BOTTLE CARRIER
Bernard Strong, Tarzana, Calif., assignor to Propak-California Corp., La Puente, Calif.
Continuation of Ser. No. 44,270, Apr. 7, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 302,225
Int. Cl.[6] B65D *71/00*
U.S. Cl. 294—31.2 **19 Claims**



1. A bottle carrier comprising a one-piece injection molded construction including a first collar and a second collar in coplanar arrangement and being tangentially connected to opposite sides of a central handle piece, the first and second collars each having a radial slit along a radius proximate to respective connection to the central handle piece, the central handle piece comprising a first web portion connected at opposite ends thereof to the first and second collars on one side of the respective radial slits and a second web portion parallel to the first web portion connected at opposite ends thereof to the first and second collars on the other side of the respective slits, wherein each of the first and second collars comprises a ring means, of thin and flat plate construction, for providing a stiff structure in a radial direction and a flexible structure in a direction perpendicular to the radial direction, the ring means having a circular central aperture into which a bottle neck may be inserted.

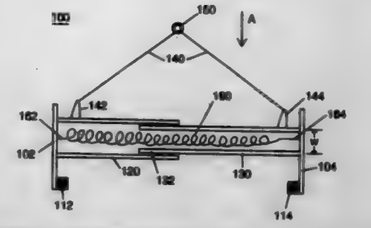
5,441,321
OPENABLE CONTAINER BASE
Ladislav S. Karpisek, 86 Woodfield Boulevarde, Caringbah, New South Wales 2229, Australia
PCT No. PCT/AU92/00460, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO93/04953, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 2, 1992, Ser. No. 50,304
Claims priority, application Australia, Sep. 2, 1991, PK8141
Int. Cl.[6] B65D *88/28, 88/52*
U.S. Cl. 294—68.21 **6 Claims**



1. A container base, comprising:
a four-sided rectangular ring frame with each side of said four-sided rectangular ring frame having an inner face, said inner faces of the four sides of said ring frame defining an opening through said ring frame;
four separate interconnectable wall panels;
coupling means having first elements on each of the four sides of said ring frame for engagement by second elements of said coupling means, said second elements being on each of said four separate interconnectable wall panels;
a base bottom larger in size than the opening through said ring frame;
a hinge connection connecting said base bottom to a first side of said ring frame; and
latch means for releasably retaining said base bottom in a covering relationship with the opening through said ring frame.

5,441,322
APPARATUS FOR LIFTING DRUMS
Wolfgang Jobmann; Uwe Stier, both of Hamburg, Germany, and Michael D. Naugle, Seffner, Fla., assignors to Wolfgang Jobmann Florida, Inc., Seffner, Fla.
Filed Jul. 22, 1994, Ser. No. 279,488
Int. Cl.[6] B66C *1/66*
U.S. Cl. 294—90 **6 Claims**

1. A lifting apparatus for vertically raising and lowering a substantially cylindrical drum, the drum having a top edge and an indented area directly beneath the top edge, wherein the drum is aligned side-by-side to an adjacent drum, the apparatus comprising:
a first square tube having a first end and a second end, the first end includes a first clamp having an inwardly protruding arcuate portion that grips about an indentation directly below a top edge of a drum;
a second square tube having a first end and a second end, wherein the first end of the second tube is axially aligned with to be telescopically inserted within the second end of the first tube, and the second end of the second tube includes a second clamp having an inwardly protruding arcuate portion that grips about the indentation directly below the top edge of the drum;
a spring means for pulling the first end of the first tube toward the second end of the second tube causing an inward force between the first and the second clamps;



a flexible strand attached both to the first end of the first tube, and to the second end of the second tube, the flexible strand having a mid-portion which is attached to a hoisting means, wherein lifting the strand by the hoisting means increases the inward force between the first and the second clamps allowing the drum to be stored side-by-side to another vertically positioned drum.

5,441,323
CARRIER FOR BAGS HAVING STRAPS AND METHOD OF USE
Scott H. Goddard, 230 1/2 Hampton Dr., Venice, Calif. 90291
Continuation-in-part of Ser. No. 169,161, Dec. 17, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 319,613
Int. Cl.[6] B65D *33/06*
U.S. Cl. 294—158 **25 Claims**

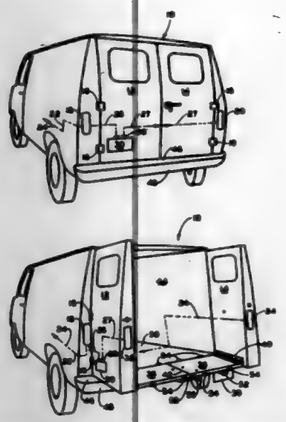


1. A carrier for bags or other articles having carrying straps or the like, comprising an elongated body having a first end, a second end opposite said first end, said body shaped to form an aperture between said first end and said second end, said aperture having an open configuration sized to receive the carrying straps, an outwardly protruding tongue integral with said second end for guiding the carrying straps through said aperture, and, said outwardly protruding tongue including an inwardly projecting heel.

5,441,324
INDUSTRIAL VAN WITH INCREASED CARGO-CARRYING CAPACITY
Peter Gold, 389 Peninsula Blvd., Hempstead, N.Y. 11550
Filed Mar. 13, 1995, Ser. No. 402,857
Int. Cl.[6] B60P *1/00*
U.S. Cl. 296—26 **1 Claim**

1. Improvements for increasing the cargo-carrying capacity of a van of a type having a body with right and left pivotally hinged doors and tail lights displayed to an oncoming motorist located outwardly of a hinge axis of said right and left doors

illuminated by a battery of said van, said improvements comprising door-bracing means operatively disposed to hold open said right and left doors in spaced apart relation extending rearwardly of said body, said spaced apart open positions of said doors being of an extent inadvertently masking the display of said tail lights to an oncoming motorist, a component of said door-bracing means consisting of a weight-supporting platform horizontally oriented in spanning relation between said braced-apart doors, an additional tail light on a cooperating edge of each of said doors in facing relation to an oncoming motorist, and circuit means connected from a battery of said van effective to illuminate said additional tail lights, whereby an illuminated mode of said additional tail lights contributes to safe operation of said van while allowing the transport of additional cargo on said platform between said open doors.

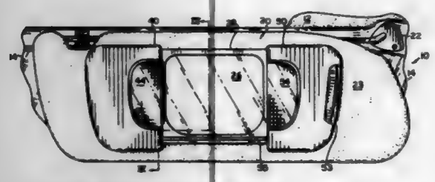


5,441,325

VANITY MIRROR WITH OPPOSED SLIDING COVERS

Eric S. Toth, and Michael J. Gregg, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jul. 7, 1993, Ser. No. 88,567
Int. Cl.[6] B60J *3/00*
U.S. Cl. 296—97.2 13 Claims



1. A vanity mirror visor comprising:

a visor body having a mirror frame and mirror mounted therein, said mirror frame including a pair of spaced guide tracks extending along opposite outer edges of said frame, said visor body including a slot formed therein and extending in spaced relationship from one of said outer edges of said frame;

a pair of sliding opposed covers each including a pair of spaced legs extending in said guide tracks of said frame to slidably mount said covers to said mirror frame for movement toward one another between a closed position for covering said mirror and away from one another toward an open position exposing said mirror for use; and

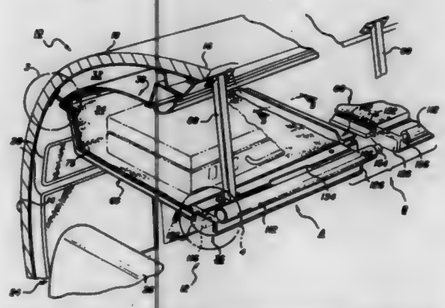
intercoupling means on the outside of said visor body for engaging one of said covers, said intercoupling means extending within said slot for engaging the other of said covers for intercoupling said covers such that movement of one cover synchronously effects the movement of the remaining cover in an opposite direction in the same amount.

5,441,326

COMBINED AIR CONDITIONING DUCT, LUGGAGE COMPARTMENT AND LIGHTING FIXTURE FOR MASS TRANSIT VEHICLES

Liudas K. Mikalonis, Northville, Mich., assignor to Transmatic, Inc., Waterford, Mich.

Continuation-in-part of Ser. No. 7,578, Jan. 22, 1993, abandoned. This application Jan. 6, 1994, Ser. No. 179,525
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 296—208 7 Claims



1. A mass transit vehicle comprising a passenger area with an aisle extending along the longitudinal axis of the vehicle and a seating area on either side of the aisle, said passenger area being enclosed by oppositely disposed sidewalls and a roof adjoining each sidewall and forming a corner therewith,

an elongated air conditioning duct extending along said axis above the seating area on one side of the aisle for supplying air thereto, said duct being defined by an elongated panel means having an inboard edge joined to said roof and an outboard edge joined to one sidewall and spanning the corner formed by the one sidewall and the roof,

a light fixture disposed above said seating area including an elongated support beam and light housing extending along said axis, said light fixture being supported by plural vertically disposed stanchions each being joined at its lower end with said support beam and joined at its upper end to said roof,

and a luggage compartment disposed below said duct and above said seating area, said luggage compartment extending along said axis and comprising an elongated luggage rack panel having a floor and an outboard backwall connected with said floor, said outboard backwall being supported by said one sidewall, said floor being supported by said fixture whereby access to said luggage compartment from said aisle is provided by open space above said light fixture and spacing between said stanchions,

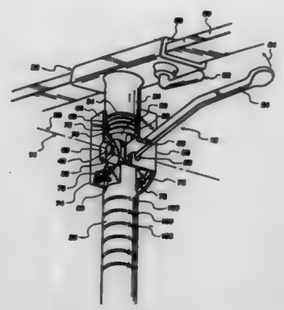
said light housing being adapted to receive a light source and including a lower lens for distributing light from said source into said seating area and said aisle, said light housing also including an upper lens for distributing light from said source into said luggage compartment.

5,441,327

ADJUSTABLE BICYCLE SEAT

Mark B. Sanderson, 717 5th Ave., Salt Lake City, Utah 84103

Filed Feb. 3, 1993, Ser. No. 12,582
Int. Cl.[6] B62J *1/04*
U.S. Cl. 297—195.1 8 Claims



1. An adjustable seat for a wheeled bicycle comprising:

a seat post attachable to a seat pipe of a bicycle, said seat post comprising a first seat post member attachable to a seat and a second seat post member attachable to said seat pipe;

an axle pin positioned through said first and second seat post members to render said first and second seat post members articulable relative to each other;

a housing positioned about said first and second seat post members proximate to said axle pin;

interlocking means attached to said housing for maintaining said first seat post member in a selected position relative to said second seat post member;

locking means attached to said second seat post member and engageable with said interlocking means for maintaining said interlocking means in a selected position; and

securement means associated with said housing for securing said interlocking means in engagement with said locking means, said securement means being a spring biased between said housing and said first seat post member.

5,441,328

ADJUSTABLE SEAT BACK FOR A STROLLER

Timothy J. Snyder, West Seneca, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.

Filed Feb. 10, 1994, Ser. No. 194,442
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—284.9 9 Claims

1. An seat back adjustable by an operator to accommodate an occupant, comprising:

a seat pad having

a center back section and

a side wing section, each of said center back section and said side wing section having a front face to support the occupant and an opposite, rear face, said side wing section being coupled to said back section for pivotal movement between a first, wide position in which said wing section is substantially coplanar with said back section, and a second, narrow position in which said front face of said wing section is rotated toward said front face of said back section; and

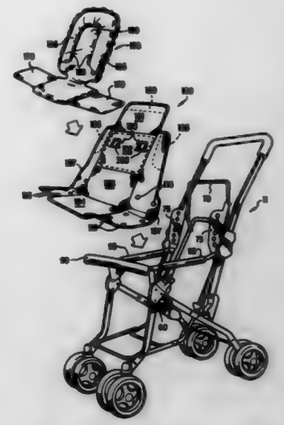
a wing actuator assembly having:

a substantially planar base panel with a front face, a rear face, and an actuator aperture therethrough, and

a wing actuator mounted on said base panel,

said base panel being disposed with said front face of said base panel adjacent to said rear face of said back section,

said wing actuator having a longitudinal axis, and including a lever section and a wing support section, said wing actuator being mounted on said base panel with said longitudinal axis being substantially parallel to said base panel, said wing support section being disposed between said base panel and said wing section, and said lever section extending through said actuator aperture for providing accessibility to an operator from said rear face of said base panel, said wing actuator being mounted on said base panel for pivotal movement about said longitudinal axis between a first, extended position in which said wing support section extends from said front side of said base panel to engage said rear face of said wing section and urge said wing section into said narrow position, and a second, retracted position in which said wing support section is disposed substantially parallel to said front face of said base panel.

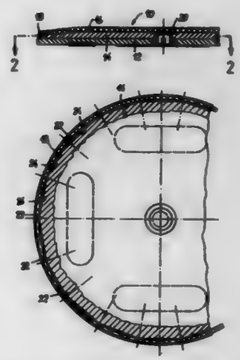


5,441,329

ROTATABLE SEAT

Klaus Janisch, Isny, Germany, assignor to Schmidt & Lenhardt GmbH & Co. oHG, Isny, Germany

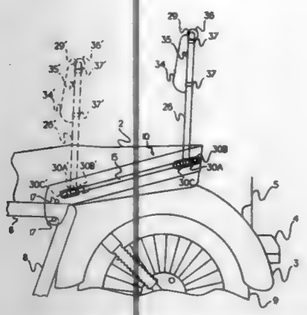
Filed Mar. 2, 1994, Ser. No. 205,943
Claims priority, application European Pat. Off., Mar. 16, 1993, 93104199
Int. Cl.[6] A47C *3/00, 15/00*
U.S. Cl. 297—344.21 10 Claims



1. Rotatable disc arrangement as a seating surface for physically handicapped people, with a bottom plate, a top plate with an outer rim, the top plate being pivotally mounted to the

bottom plate, an upholstery pad with a circumferential rim, centrally arrayed on said top plate, and a removable, circular-contoured retaining ring which is attached to the top plate and engages over both the circumferential rim of the upholstery pad and the outer rim of the top plate, characterized in that the outer rim of the top plate has a regular polygonal circumferential contour with a plurality of rim elements of the same length which are substantially straight-lined in nature, and with a transition between each pair of adjacent rim elements, and that the retaining ring is manufactured as a single piece having an outer annulus which, in it axial section, is hook-shaped and elastically deformable, which retaining ring engages around the top plate at least at each transition between each pair of adjacent rim elements, and at these transitions is securely located against the outer rim of the top plate.

5,441,330
BACK SUPPORT FOR MOTORCYCLES
Libardo Rojas, 50 Lake Ave., Blasdell, N.Y. 14219
Filed Nov. 25, 1991, Ser. No. 797,202
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—383 **5 Claims**



1. A back support for attachment to a motorcycle having a frame and a forwardly disposed driver's seat and a rearwardly disposed passenger's seat, said back support comprising first and second main components:

I. said first main component being a main base support plate and comprising:

a. a first single steel bar with an enlargement at a center thereof attached to a rear of said seats, and being bent at two 90 degree angles to create a U-shaped configuration including said center enlargement and right and left legs, each leg having an end;

b. an enlarged front support head at the ends of each of said two legs, wherein said front support heads are adapted for mounting on the frame of the motorcycle using a U-bolt clamp; and

c. a longitudinal open tract in a middle area of each of said legs extending from the support head to the enlargement at the center;

II. said second main component being a sliding support bar comprising:

a. a second single steel bar that has been bent at two ends in 90 degree angles thereby forming a U-shaped configuration comprising a straight transverse arm of several inches in the center of said second single steel bar and right and left arms each having a free end;

b. at said free ends of each said right and left arms there is another 90 degree bend forming a support head of the sliding support bar wherein each support head has two perforations which are 1 inch apart;

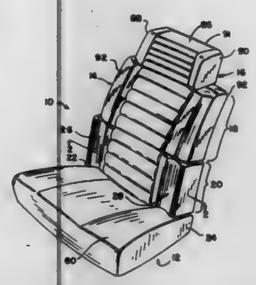
c. two screws disposed in said perforations in each support head which, when loosened, are slidable in the longitudinal open track of the main base support plate and which hold the sliding support bar in a selected position along the track upon tightening of the screws;

d. said support heads each having a free mobile steel plate pivotally attached thereto; said free mobile steel plates each having two perforations; one of said two perforations being attached at all times to one of said two screws such that said mobile steel plate will rotate around this screw in a clockwise motion which will enable locking of the second perforation with the other of the two screws on the sliding track to provide more stability to said sliding support bar;

e. a plurality of metallic rings attaching a cushion pad to said straight transverse arm, wherein said cushion pad is supported at each corner by hook and loop fasteners; and

f. a transverse bar which is soldered at a mid-section of said right and left arms approximately 4 inches from and substantially parallel to said straight transverse arm.

5,441,331
SEATING ASSEMBLY
John M. Vento, Menomonee Falls, Wis., assignor to Concept Seating, Inc., Menomonee Falls, Wis.
Continuation-in-part of Ser. No. 511,249, Apr. 19, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 905,554
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.33 **14 Claims**



1. A seating assembly for use in a motor vehicle wherein the occupant normally wears a belt for supporting one or more objects, said assembly comprising:

a frame having a base and a back;

mounting means for securing said frame within a motor vehicle;

a shell secured to said frame; and,

a cushion assembly secured to said shell, said cushion assembly having a back section, a seat section and a lumbar section intermediate the back section and the seat section, said lumbar section having a width less than the width of said back section and seat section to provide a recess on each side of said lumbar section between the seat section and back section to accommodate an object carried on the occupant's belt.

5,441,332
SEAT INTEGRATED VEHICLE SAFETY APPARATUS
Lawrence J. Verelle, Washington, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Apr. 8, 1994, Ser. No. 225,445
Int. Cl.[6] B60R *22/00*
U.S. Cl. 297—483 **13 Claims**

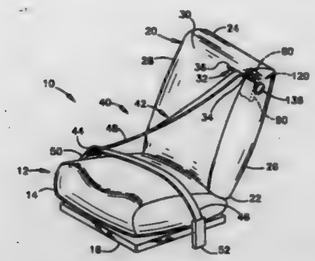
1. A vehicle safety apparatus comprising:

a seat for an occupant of a vehicle, said seat including a seat back, a seat cover covering said seat back, and an elongate opening in said seat cover on said seat back, said opening having first and second opposite ends;

a belt webbing engaging member;

a length of belt webbing extensible from said belt webbing engaging member about the occupant of the vehicle seat to restrain the occupant, said belt webbing comprising a torso portion extending from said belt webbing engaging member out of said seat back through said opening in said seat cover, said belt webbing having a width which is less than the length of said opening, said belt webbing being movable in a first direction into and out of said seat back through said opening in said seat cover to extend said belt webbing around the vehicle occupant;

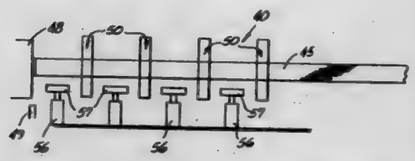
means for supporting said belt webbing engaging member for movement in said seat back inside said seat cover in a second direction along the length of said opening between



said first and second opposite ends of said opening, said second direction extending generally transverse to the length of said torso portion of said belt webbing and generally transverse to said first direction; and

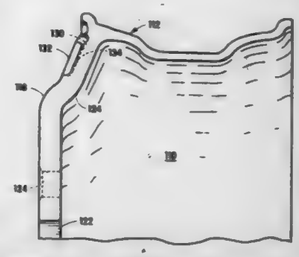
manually actuatable adjusting means for driving said belt webbing engaging member for movement in said second direction to move said torso portion of said belt webbing along the length of said opening in said seat cover between a first position in which said torso portion extends through said opening at a first location adjacent to said first end of said opening in said seat cover and a second position in which said torso portion extends through said opening at a second location spaced from said first location and adjacent to said second end of said opening in said seat cover.

5,441,333
METHOD FOR MAKING CLEANING PAD
Ki Il Kim, 826 S. Berendo St., Los Angeles, Calif. 90005, assignor to Bernard Kuh and Ki Il Kim, both of Los Angeles, Calif.
Filed Feb. 7, 1994, Ser. No. 192,963
Int. Cl.[6] A46B *3/00*; **B32B** *1/10, 31/00*
U.S. Cl. 300—21 **13 Claims**



1. A method for the fabrication of cleaning pads comprising the steps of continuously knitting an abrasive mesh tube, continuously feeding into said mesh tube an absorbent element thereby forming a blank, feeding said blank into a compressing and heating apparatus, compressing a plurality of strips of said blank between a plurality of spaced heating elements for heating said strips to seal opposite sides of said mesh tube together, and cutting! g said blank at each said strip thereby forming plural separate pads.

5,441,334
CUSTOMIZED VEHICLE WHEEL AND METHOD
Ralph C. Botterman, Strongsville; Donald R. Bias, and Vincent T. Russell, both of Cleveland, all of Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Aug. 25, 1993, Ser. No. 111,992
Int. Cl.[6] B60B *7/02*
U.S. Cl. 301—37.1 **18 Claims**



1. In a vehicle disc wheel having a rim portion onto which a tire is mounted, and a disc region with an outer face portion and an inner face portion, said disc region having a plurality of lug mounting apertures extending therethrough, the improvement which comprises:

(a) a plurality of recesses situated within and about a perimeter of the disc region between the rim portion and lug mounting apertures; and

(b) a plurality of self-securing medallions sized to fit within the disc region recesses, said medallions including one or more logos indicative of the make or model of said vehicle and each of said medallions being sized and shaped to limit its being secured in only one direction within its corresponding recess.

14. A method for customizing a vehicle wheel model to include one or more symbols indicative of the make or model of said vehicle, said wheel including a rim portion onto which a tire is mounted, and a disc region having an outer face and inner face portion and a plurality of lug mounting apertures, said method comprising:

(a) providing the wheel with a plurality of non-circular recesses situated within and about a perimeter of the disc region between the rim portion and plurality of lug mounting apertures;

(b) providing a plurality of non-circular medallions, each medallion sized and shaped to fit and be secured in only one direction within the corresponding recesses of the disc region; and

(c) securing the medallions into the disc region recesses.

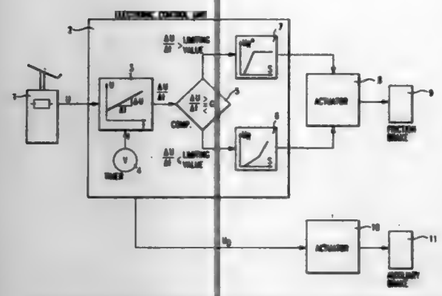
5,441,335
AUXILIARY AND FRICTION BRAKING SYSTEM WHICH RECOGNIZES RAPID BRAKING
Werner Stumpe, and Jürgen Wrede, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE93/00156, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO93/17898, PCT Pub. Date Sep. 16, 1993
PCT Filed Feb. 23, 1993, Ser. No. 256,241
Claims priority, application Germany, Mar. 12, 1992, 42 07 965.9
Int. Cl.[6] B60T *8/00, 10/00, 13/58, 13/66*
U.S. Cl. 303—3 **5 Claims**

1. Braking system for a motor vehicle of the type having a brake pedal, friction brakes at the wheels, and an auxiliary brake, said system comprising

means for determining the actuation path S of the brake pedal,

means for generating an actuation value U which depends on the actuation path S,

means for determining an actuation rate $\Delta U/\Delta t$ from said value U and time t,
means for comparing $\Delta U/\Delta t$ to a limiting value G,
means for actuating said auxiliary brake prior to a first value S_{01} of the actuation path S when the rate $\Delta U/\Delta t$ is less than or equal to G, and for actuating said friction brake



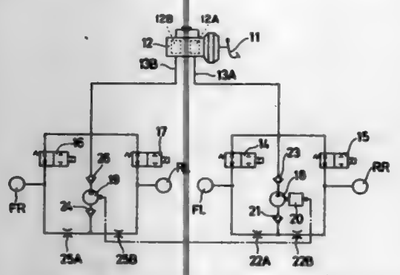
with a slope U_R/S when S reaches S_{01} and the rate $\Delta U/\Delta t$ is less than or equal to G, and
means for actuating said friction brake with a slope U_R*/S when S reaches a second value S_{02} and the rate $\Delta U/\Delta t$ exceeds G, where U_R*/S is greater than U_R/S and S_{02} is less than S_{01}.

5,441,336

FLUID PRESSURE REGULATING DEVICE FOR ANTI-SKID CONTROL DEVICE

Hiroaki Takeuchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 7, 1993, Ser. No. 162,656
Claims priority, application Japan, Dec. 8, 1992, 4-328227
Int. Cl.[6] B60T *8/46*
U.S. Cl. 303—116.1 **6 Claims**



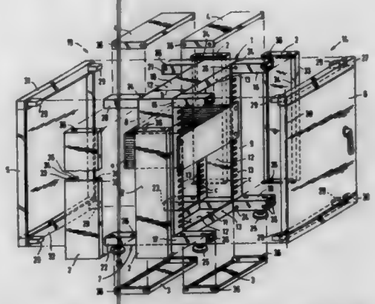
1. A fluid pressure regulating device for an anti-skid control device comprising:
brake master cylinder;
wheel cylinder;
a conduit disposed between the brake master cylinder and the wheel cylinder;
a valve provided in the conduit for opening and closing the conduit during operation of an anti-skid control and for opening the conduit during non-operation of the anti-skid control;
a return conduit disposed between the brake master cylinder and the wheel cylinder for returning fluid from the wheel cylinder toward the brake master cylinder;
a pump provided in the return conduit;
an orifice provided in the return conduit and located between the wheel cylinder and the pump, said orifice maintaining a pressure increase in the wheel cylinder while the wheel cylinder is communicated with the brake master cylinder and maintaining a pressure decrease in the wheel cylinder while the wheel cylinder is out of communication with the brake master cylinder.

5,441,337

COMPONENT CABINET

Paul Mazura, Karlsbad, and Hans-Martin Schwenk, Straubenhardt, both of Germany, assignors to Schroff GmbH, Strabenhardt, Germany

Filed Apr. 25, 1994, Ser. No. 231,674
Claims priority, application Germany, Oct. 6, 1993, 43 33 947.6
Int. Cl.[6] A47B *47/03*
U.S. Cl. 312—265.5 **9 Claims**



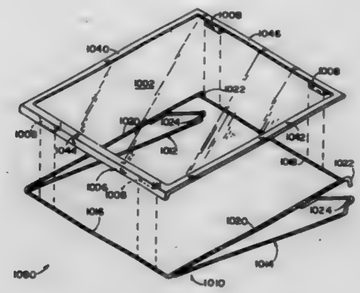
1. In a component cabinet for accommodating structural group carriers, housings of electronic or optoelectronic components or accessories thereof, comprising
(a) a stand formed of a rectangular frame having
(1) two spaced, vertical frame legs;
(2) a horizontal, upper connector interconnecting the frame legs at an upper end thereof and forming two upper corner regions with said frame legs;
(3) a horizontal, lower connector interconnecting the frame legs at a lower end thereof and forming two lower corner regions with said frame legs;
(4) front and rear sides; and
(5) a frame plane facing said front and rear sides;
(b) eight support arms each formed of cross-sectionally rectangular hollow members of identical lengths and each being perpendicular to said frame plane; each support arm extending from one of said corner regions and each having a free end; two of said eight support arms being upper, forward support arms extending towards the front side; two of said eight support arms being upper, rearward support arms extending towards the rear side; two of said eight support arms being lower, forward support arms extending towards the front side; and two of said eight support arms being lower, rearward support arms extending towards the rear side;
(c) attachment means carried by each support arm;
(d) an upper, forward attachment strip interconnecting the free ends of said upper, forward support arms;
(e) an upper, rearward attachment strip interconnecting the free ends of said upper, rearward support arms;
(f) a lower, forward attachment strip interconnecting the free ends of said lower, forward support arms;
(g) a lower, rearward attachment strip interconnecting the free ends of said lower, rearward support arms;
(h) a rear wall secured to said upper, rearward and said lower, rearward attachment strips;
(i) a door secured to said upper, forward and said lower, forward attachment strips;
(j) side panels attached to said attachment means;
(k) floor panels attached to said attachment means; and
(l) ceiling panels attached to said attachment means.

5,441,338

SNAP-ON SHELF

Edmund J. Kane, Holland; Robert S. Herrmann, Grand Haven, and Donald C. Gilbert, Muskegon Heights, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 665,661, Mar. 7, 1991, Pat. No. 5,362,145, Ser. No. 721,104, Jun. 25, 1991, Pat. No. 5,273,354, and Ser. No. 912,778, Jul. 13, 1992, abandoned. This application Jul. 27, 1992, Ser. No. 920,391
Int. Cl.[6] F25D *11/00*
U.S. Cl. 312—408 **70 Claims**



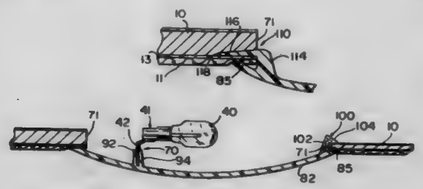
1. A refrigerator shelf assembly comprising:
a removable support frame;
a shelf panel supported by said frame, said shelf panel having a top surface to support an article set thereupon and having a perimeter edge;
a perimeter rim formed separately from said shelf panel, from a moldable material, and about said perimeter edge;
a liquid tight seal between said shelf panel and said rim, said seal resisting collection of material between said shelf panel and said rim; and
a clip formed in one piece with said perimeter rim and removably coupled in snap fit engagement with said frame.

5,441,339

VEHICLE LIGHT

Larry E. Mathias, Hudsonville; Jason M. Hathaway, and Elisabet A. Anderson, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 964,930, Oct. 22, 1992, Pat. No. 5,329,429. This application Mar. 24, 1994, Ser. No. 217,365
Int. Cl.[6] B60Q *3/02*
U.S. Cl. 362—74 **5 Claims**



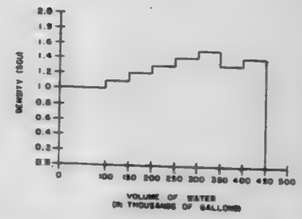
1. A lamp assembly for a vehicle headliner comprising:
a vehicle headliner including a lens aperture defining an edge;
a lamp socket; and
a lens including a peripheral surface for engaging an exposed side of said headliner and a first fastener which includes a tab with an inclined surface forming an acute angle which allows said first fastener to snap into place over said edge of said aperture and at least a second fastener spaced from said first fastener which includes a leg spaced from said peripheral surface of said lens to engage at least a portion of said headliner between said leg and said peripheral surface of said lens, said lens including a slot for receiving said lamp socket therein to mount said lamp socket directly to said lens.

5,441,340

METHOD FOR CONTROLLING THE DENSITY OF A WELL FRACTURING SLURRY

Greg Cedillo; Thomas A. Robertson, both of Houston; Frank C. South, Jr., Spring; Robert A. Baten, Houston, and Bruce A. Vicknair, Baytown, all of Tex., assignors to Stewart & Stevenson Services, Inc., Houston, Tex.

Continuation of Ser. No. 969,944, Oct. 30, 1992, abandoned, which is a division of Ser. No. 389,923, Aug. 20, 1989, Pat. No. 5,281,023. This application Sep. 19, 1994, Ser. No. 308,477
Int. Cl.[6] B01F *15/04*
U.S. Cl. 366—2 **15 Claims**



1. A process for controlling slurry density in a well fracturing operation, comprising the steps of:
(a) supplying water to a blender tub;
(b) delivering proppant to said blender tub according to a desired proppant to water ratio;
(c) mixing together the proppant and the water in the blender tub to produce a slurry with a desired ratio;
(d) discharging said slurry from the blender tub;
(e) measuring the flow rate of slurry;
(f) determining the amount of proppant to deliver based upon the measured flow rate of slurry, the step comprising:
(f)(1) preparing a lookup table relating the quantity of proppant delivered at various operational speeds of a proppant delivery mechanism;
(f)(2) accessing said lookup table to determine the operational speed of the proppant delivery mechanism which will deliver the amount of proppant calculated in step (f)(2);
(f)(4) transmitting a signal to the proppant delivery mechanism representative of the proper operational speed;
(g) determining the actual ratio of proppant to water in the slurry;
(h) comparing the actual ratio of proppant to water with the desired ratio of proppant to water;
(i) calculating a correction factor based on the comparison the step (h);
(j) recalibrating the lookup table based on the correction factor.

5,441,341

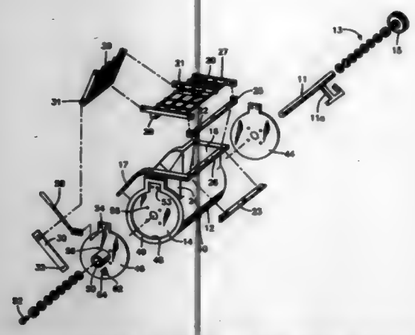
MORTAR MIXER WITH PLASTIC DRUM HAVING REINFORCED END WALLS

David W. Halsted, Hemlock, N.Y., assignor to Stone Construction Equipment, Inc., Honeoye, N.Y.

Continuation of Ser. No. 15,025, Feb. 5, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,273
Int. Cl.[6] B28C *5/14, 7/16*
U.S. Cl. 366—47 **6 Claims**

2. A mixer drum comprising a generally cylindrical member having a peripheral wall and end walls adapted to be supported generally horizontally and adapted to receive a driven paddle assembly to mix material therein, said peripheral wall including

an upwardly extending opening to receive material to be mixed and to discharge mixed material when the drum is pivoted about a longitudinal drum axis to move the opening from an upwardly extending position to a downwardly inclined position, said cylindrical member and said end walls being constructed of plastic material, the improvement comprising each end wall of said drum including a recess in the outer surface thereof defined by an axially projecting flange around the periphery of the end wall, metal end plates attached to and substantially covering the entire outer surface of the end walls,



each recess receiving one of said end plates with the periphery of each end plate engaging the periphery of the recess to reinforce and rigidify the end walls, said recess in at least one of said end walls including a radial extension aligned with the opening in the cylindrical member, at least one of said end plates including a correspondingly shaped radial projection received in the radial extension, the radial projection on said one of said end plates adapted to receive a handle thereon to enable the drum to be pivoted to the position for discharging material therefrom.

5,441,342

APPARATUS FOR KNEADING PORTIONED DOUGH PIECES

Helmut König, deceased, late of Graz, Austria, and by Elisabeth König, legal representative, Ursprungweb 70, Graz, Austria A-8045

PCT No. PCT/AT92/00095, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/00820, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 10, 1992, Ser. No. 178,252

Claims priority, application Austria, Jul. 12, 1991, 1410/91; Jul. 12, 1991, 1413/91; Jul. 12, 1991, 1415/91

Int. Cl.[6] B29B *1/06;* **A21C** *5/04*

U.S. Cl. 366—76.7 **32 Claims**

1. An apparatus for kneading portioned dough pieces comprising:

a frame;

a rotatable drum having an outer periphery, said drum being supported by the frame and rotatable about a horizontal axis in a predetermined direction, said drum having receiving openings disposed on the periphery of the drum, said receiving openings being equally spaced apart from each other along the periphery of the drum, said receiving openings being provided in at least two different sizes alternating with each other along the periphery of the drum;

drive means for rotating the drum in a stepwise fashion;

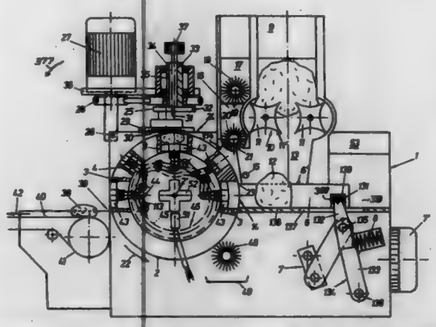
a filling station, positioned proximate to the drum, for depositing a dough piece into the receiving opening;

a kneading station positioned proximate to the periphery of the drum and displaced with respect to the filling station in the direction of rotation of the drum, each receiving opening being adapted to be positioned proximate the kneading station;

at least one kneading tool positioned at the kneading station for kneading the dough piece within the receiving openings;

means for rotating the kneading tool in a circular motion, said rotating means comprising an eccentric pin for rotating the kneading tool in the circular motion, said eccentric pin being adapted to vary the eccentricity of the kneading tool;

a deposit station positioned proximate to the periphery of the drum and displaced relative to the kneading station in the direction of rotation of the drum; said deposit station being adapted to eject the kneaded dough piece from the receiving openings of the drum;



a piston positioned within each receiving opening and movable within a radial direction with respect to the drum for ejecting the dough piece from the receiving opening;

guide means formed in the drum controlling the movement of each piston within its respective receiving opening;

said drive means being adapted to rotate the drum so that receiving openings of the same size are rotated to the filling station, kneading station and deposit station; and

switch-over means for rotating the drum between a position in which receiving openings of one size are proximate the filling station, kneading station and deposit station, to a position in which receiving openings of another size are proximate the filling station kneading station and deposit station, the arrangement being such that a receiving opening of one size is always proximate the filling station.

5,441,343

THERMAL SENSING SCANNING PROBE MICROSCOPE AND METHOD FOR MEASUREMENT OF THERMAL PARAMETERS OF A SPECIMEN

Russell J. Pylkki, Arcadia; Marc Schuman, San Francisco, and Paul E. West, Cupertino, all of Calif., assignors to Topometrix Corporation, Santa Clara, Calif.

Filed Sep. 27, 1993, Ser. No. 127,661

Int. Cl.[6] G01K *7/00, 3/06;* **G01N** *25/18;* **G01B** *9/04*

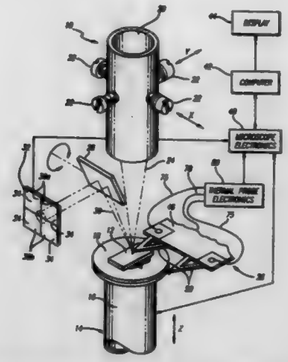
U.S. Cl. 374—137 **9 Claims**

1. A method for measuring a thermal parameter of a specimen with a scanning thermal probe microscope having a probe having a distal tip for maintaining thermal communication with surface contours along a surface of the specimen, and a thermal sensor in thermal communication with said probe for measuring said thermal parameter, comprising the steps of:

maintaining said thermal sensor at a substantially constant temperature while maintaining a temperature differential between said thermal sensor and said specimen;

maintaining the probe in thermal communication with said surface of said specimen;

generating an electrical heat transfer signal proportional to power required to maintain said thermal sensor at said substantially constant temperature, providing an indication of heat transfer between said probe and said specimen;



scanning said specimen relative to said probe and determining the position of said probe relative to said surface of said specimen; and

storing said electrical heat transfer signal and said position of said probe relative to said surface of said specimen.

5,441,344

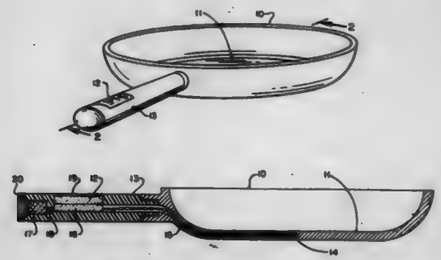
TEMPERATURE MEASUREMENT AND DISPLAY OF A COOKING SURFACE

Walter R. Cook, III, 214.5 LaVerne Ave., Long Beach, Calif. 90803

Filed Oct. 22, 1993, Ser. No. 139,830

Int. Cl.[6] G01K *1/02, 1/14, 7/08, 13/00*

U.S. Cl. 374—141 **3 Claims**



1. Apparatus for measurement and display of a cooking surface temperature of a cooking surface in a utensil comprising

a temperature sensing means in direct thermal contact with a cooking surface for producing a voltage proportional to said cooking surface temperature,

means connected to said temperature sensing means for quantitative measurement of said voltage produced proportional to said cooking surface temperature, and

conversion means electrically connected to said voltage measurement means for converting said quantitative measurement of said voltage into displayed calibrated units of temperature, said conversion means being mounted for viewing on said utensil for display of said quantitative voltage measurement calibrated in units of temperature wherein said temperature sensing means is embedded to said cooking utensil at a point in a bottom wall of said cooking surface, and a pair of insulated electrical leads connecting said temperature sensing means embedded in said wall for coupling said voltage produced by said temperature sensing means to said quantitative voltage measurement means, said quantitative voltage measurement means being disposed at a location on said cooking utensil remote from said cooking surface.

5,441,345

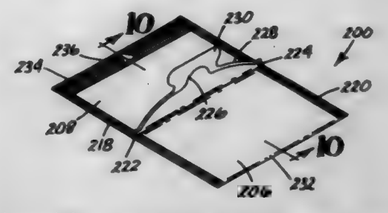
SPECIALIZED POUCHES FOR CONTAINING AND CONTROLLABLY DISPENSING PRODUCT

Joseph F. Garvey, Oakdale, Minn., and Curtis L. Larson, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 9, 1991, Ser. No. 804,802

Int. Cl.[6] B65D *33/14*

U.S. Cl. 383—9 **29 Claims**



1. A pouch for containing a quantity of product comprising two side walls, each side wall having a first end edge and a second end edge, and a gusset connected between first end edges of said walls, said gusset divided by a fold line into two gusset portions with said gusset portions overlying portions of said side walls, wherein side edges of said side walls are sealed to side edges of said gusset portions at said portions of said side walls and to one another along remaining side edges thereof so as to define a product receiving cavity within said pouch, an opening to said receiving cavity is provided between said second end edges of said sidewalls that is open from a second end of said pouch, and a spout is provided by one gusset portion and side wall portion combination that is further partially sealed together along the first end edge of that side wall so as to provide said spout for said pouch through which product is to be controllably dispensed.

5,441,346

BALL SPLINE

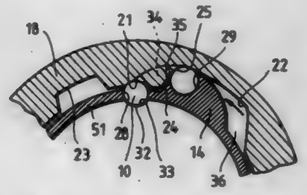
Toyohisa Ishihara, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 376,936

Claims priority, application Japan, Jan. 21, 1994, 6-019845

Int. Cl.[6] F16C *29/06*

U.S. Cl. 384—43 **8 Claims**



1. A ball spline comprising:

a ball spline shaft provided in an outer circumferential surface thereof with at least two longitudinally extending raceway grooves,

an outer cylinder fitted around and moving relatively to said ball spline shaft,

said outer cylinder having an outer cylinder body provided with second raceway grooves in the portion of an inner

circumferential surface thereof which are opposed to said first raceway grooves, and return passages parallel to said second raceway grooves, side rings fixed to both end portions of said outer cylinder body, balls adapted to circulatingly roll in said second raceway grooves, direction change passages and said return passages, and a retainer holding said balls therein,

said outer cylinder body being provided with grooves along said second raceway grooves, one set of which grooves constitutes said return passages,

said retainer having projections capable of being inserted into said grooves in said outer cylinder body and extending axially from outer circumferential portions thereof,

each of said projections being provided with a ball circulating portion extending annularly in the axial direction and adapted to guide said rolling elements, an axial movement stopper portion formed at both inner end parts of said ball circulating portion and adapted to restrict an axial movement of said outer cylinder body, and a turning preventing portion adapted to restrict a circumferential movement of said outer cylinder body, said direction change passages being formed at both end parts of said ball circulating portion,

said ball circulating portions being provided at the parts thereof at which said first and second raceway grooves are opposed to each other with elongated bores so that said balls can roll on said first raceway grooves, and

said side rings being provided with recesses opposed to said direction change passages, and projections for fixing said retainer to said outer cylinder body, said projections being fitted in hollow spaces formed by said grooves in said outer cylinder body and an outer circumferential surface of said retainer.

5,441,347

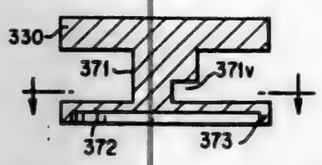
MULTI-DEFLECTION PAD HYDRODYNAMIC THRUST AND JOURNAL BEARINGS HAVING A MODULAR CONSTRUCTION

Russell D. Ide, P.O. Box 744 641 Arnold Rd., Coventry, R.I. 02816

Division of Ser. No. 54,131, Jun. 4, 1990, Pat. No. 5,125,754, which is a continuation-in-part of Ser. No. 516,781, Apr. 30, 1990, Pat. No. 5,054,938, and Ser. No. 516,977, Apr. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, and Ser. No. 283,529, May 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned, said Ser. No. 516,781, is a continuation-in-part of Ser. No. 309,081, May 29, 1987, and Ser. No. 283,529, May 29, 1987. This application Jan. 6, 1992, Ser. No. 817,371

Int. Cl.[6] F16C *17/06*

U.S. Cl. 384—122 **24 Claims**



1. A hydrodynamic bearing for supporting a rotating shaft, the bearing comprising:

a carrier member, the carrier member having a plurality of bores formed therein, the bores being arranged about a predetermined axis; a plurality of bearing pads, each of the bearing pads being secured in one of the bores formed in the carrier, each of the bearing pads further comprising a pad surface and a support portion which includes a primary support structure, a secondary support structure and a tertiary support structure, the primary support structure comprising a pedestal member supporting the bearing pad at the bearing pad's geometric center, the pedestal extending transversely at a right angle from the bearing pad and being non-symmetrically undercut at a lower portion thereof, corresponding to the junction between the primary support structure and the secondary support structure, the secondary support structure comprising a continuous membrane lying in a plane which is substantially parallel to the plane of the bearing pad, the tertiary support portion comprising an annular flange extending from the secondary support portion and away from the bearing pad, the support portion of each of the bearing pads being adapted to deflect underload so as to cause the pad surface of the pad portion to from a hydrodynamic wedge with respect of the rotating shaft.

5,441,348

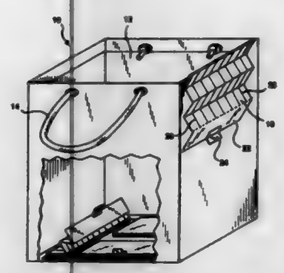
INSERT FOR DECORATIVE GIFT BAG AND METHOD OF USING

George Valentino, 2667 Rockaway Ave., Oceanside, N.Y. 11572

Filed Jul. 13, 1994, Ser. No. 274,484

Int. Cl.[6] B65D *30/20*

U.S. Cl. 383—127 **8 Claims**



1. An insert for a decorative bag having an open top, comprising a flat platform adapted to be inserted within a flexible decorative bag to produce a bottom support therefor, said platform carrying a plurality of lengths of paper folded thereon, said lengths of paper each having a length to extend outwards from the open top of said bag and having at least an upper portion thereof cut longitudinally to enable said lengths to be extended outwardly from said bag and thereafter joined together to provide a decorative cover for an item inserted within said bag.

5,441,349

SLIDE BEARING

Rikuro Shimizu, 29-4, Nanzenjikitanobo-cho, Sakyo-ku, Kyoto, Japan

Filed Aug. 25, 1994, Ser. No. 295,436

Claims priority, application Japan, Oct. 19, 1993, 5-286131; Apr. 29, 1994, 6-113608

Int. Cl.[6] F16C *33/02, 33/10*

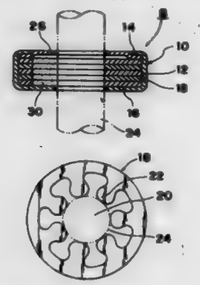
U.S. Cl. 384—276 **16 Claims**

1. A slide bearing comprising:

an outer cylinder in which; a flange is formed on one end of a cylindrical section made of thin metal plate by bending it inwardly and perpendicularly; an annular slide wall section is formed on the other end of the cylindrical section by bending it inwardly and perpendicularly; and a plurality of bearing elements are superimposed one on another in an internal part of the outer cylinder;

said plurality of bearing elements being disk-shaped so as to be disposed in said outer cylinder; and in the center of which an opening having a plurality of concaves and convexes are formed; said convexes protruding inwardly being capable of supporting an object to be supported in face contact with outer periphery of shaft of the object to be supported; and a lubricant being received in said concaves;

and a disk-shaped bearing element holder which is disposed inside said flange of the outer cylinder so that said bearing



elements superimposed inside the outer cylinder may be pressed and secured to said side wall section; and in the center of said bearing element holder, an opening is provided so that the shaft of said object to be supported may be inserted therethrough.

5,441,350

STRUCTURE OF A CROSS ROLLER BEARING

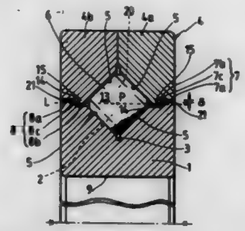
Ryuji Fujita, Hyogo, Japan, assignor to Nippon Thomson Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 253,911

Claims priority, application Japan, Apr. 6, 1993, 5-158066

Int. Cl.[6] F16C *19/36*

U.S. Cl. 384—447 **9 Claims**



1. A structure of a cross roller bearing comprising:

an inner race having a first raceway groove and a first engagement surface formed on an outer circumferential surface thereof, the inner race comprising an undivided race;

an outer race fitted over the inner race and having a second raceway groove and a second engagement surface formed on an inner circumferential surface thereof, the outer race comprising two divided races or annular components divided by a plane perpendicular to the center axis; and

rollers installed in a raceway formed between the first raceway groove and the second raceway groove;

wherein the first engagement surface of the undivided race is formed with recessed portions at axially inner portions and the second engagement surface of the divided races is formed with raised portions that rotatably fit in the recessed portions.

5,441,351

FULL COMPLEMENT SELF-ALIGNING ROLLER BEARING

Mark R. Grunze, Naperville, Ill., assignor to Rexnord Corporation, Milwaukee, Wis.

Filed Oct. 26, 1993, Ser. No. 142,188

Int. Cl.[6] F16C *33/36, 19/50*

U.S. Cl. 384—568 **11 Claims**



1. A roller bearing apparatus comprising

an inner ring member including an arcuate inner race surface having a radius of curvature,

an outer ring member encircling the inner ring member and including an arcuate outer race surface opposing the arcuate inner race surface, the arcuate outer race surface being convex, the arcuate outer race surface having a radius of curvature, and the arcuate inner and outer race surfaces defining therebetween a raceway space,

a plurality of rollers including an axially inclined row of rollers in the raceway space, each of the rollers in the row being engageable with adjacent ones of the rollers in the row, and each of the rollers in the row including a concave longitudinal profile and a radius of curvature, the radius of curvature of each of the rollers in the row being greater than the radius of curvature of each of the arcuate inner and outer race surfaces, and

means for limiting skew of the rollers in the row and for positioning and holding the rollers in the row within the raceway space, said means for limiting skew of the rollers and for positioning and holding the rollers including only the arcuate inner and outer race surfaces.

5,441,352

PRINT TAPE FORMING APPARATUS HAVING TAPE CUTTING MECHANISM

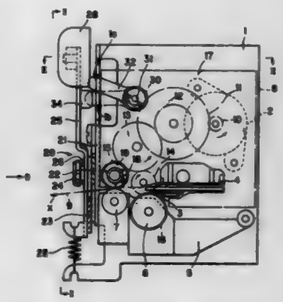
Junji Shiota, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 16, 1994, Ser. No. 306,900

Claims priority, application Japan, Sep. 22, 1993, 5-236821

Int. Cl.[6] B41J *11/70*

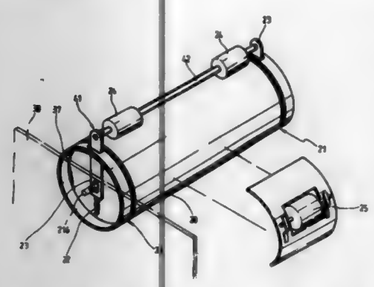
U.S. Cl. 400—621 **14 Claims**



1. A print tape forming apparatus comprising:

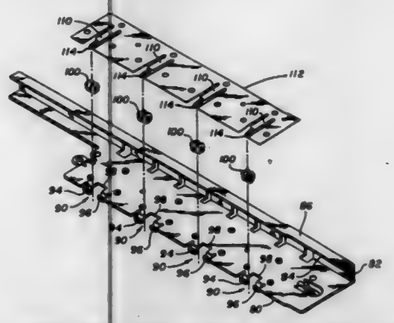
a frame;
feeding means supported to the frame for feeding a tape, the feeding means having a power transmission means rotatable in one direction for feeding the tape in a forward direction for printing, and in opposite direction for feeding the tape in a retracting direction;
printing means supported to the frame for performing a print on the tape when the tape is fed in the forward direction;
cutting means supported to the frame for manually cutting the tape after printing, the cutting means being movable in a cutting direction for cutting the tape, and movable in a non-cutting direction; and
means for preventing the cutting means from being moved in the cutting direction when the tape is fed in the forward direction, the preventing means being supported to the frame and connected to the power transmission means and being movable between a first position in accordance with the rotation of the transmission means in the opposite direction for disengagement from the cutting means, and a second position in accordance with rotation of the transmission means in the one direction for engagement with the cutting means.

5,441,353
BORDERLESS PRINTER HAVING A ROTATING DRUM WITH CLAMP ASSEMBLY
Wan-ha Kim, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Sep. 28, 1994, Ser. No. 313,799
Claims priority, application Rep. of Korea, Sep. 29, 1993, 93-20555
Int. Cl.[6] B41J *13/02*
U.S. Cl. 400—636.1 **4 Claims**



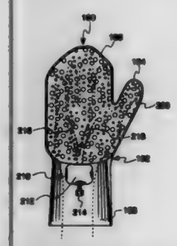
1. A borderless printer comprising a rotating drum for conveying a paper sheet, a clamp assembly rotatable with the drum for forcing the paper sheet into contact with the drum, and a printing head for printing an image on the paper sheet, said clamp assembly comprising:
a clamp;
at least one roller installed on said clamp and located at a circumferential surface of said drum and operative to rotate while in contact with said drum; and
an electromagnetic clutch including a friction member placed between said clamp and said drum and operative between one position wherein said clamp is constrained to rotate together with said drum and another position wherein said drum rotates relative to said clamp.

5,441,354
CARRIAGE SUPPORT SYSTEM FOR COMPUTER DRIVEN PRINTER
Damon Broder; Abdolrëza Movaghar, both of San Diego, and W. Wistar Rhoads, Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 56,639, Apr. 30, 1993, Pat. No. 5,368,403. This application Oct. 11, 1994, Ser. No. 321,354
Int. Cl.[6] B41J *13/02*
U.S. Cl. 400—636.3 **12 Claims**



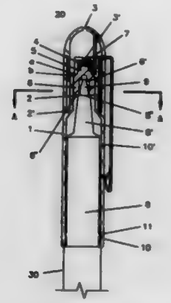
1. A print media moving system for a computer driven printer comprising: a chassis; a powered media drive member and an elongated media pinch wheel support member mounted on said chassis and extending transversely of the path of movement of the media, said support member having a plurality of media pinch wheel supports aligned along an axis extending transversely of the path of movement of the media, each support having a pair of spaced cradles for supporting a media pinch wheel at opposite ends of its axis of rotation; a plurality of media pinch wheels each having a media contact edge and an axis of rotation centrally extending through spaced axle ends respectively supported in said cradles; and a resilient member affixed to said support member, said resilient member having a plurality of resilient tongues which respectively bias one each of said pinch wheels toward said media drive member.

5,441,355
SCRUBBER DEVICE WITH WATERPROOF MITT
Barrett H. Moore, Chicago, Ill., assignor to Arbitrage Imports Incorporated, Chicago, Ill.
Filed May 24, 1994, Ser. No. 248,399
Int. Cl.[6] A47K *7/02;* **A47L** *13/18;* **A46B** *5/04*
U.S. Cl. 401—7 **2 Claims**



1. A cleaning device for protecting the hand and for providing cleaning media, comprising:
a mitt of latex material for receiving a user's hand and wrist;
the mitt comprising a thumb portion, a finger portion and a cuff portion having opposed front and back surfaces with the front surface covering at least some of the palm and adjacent inner finger surfaces of a user's hand and the back surface covering at least part of the back of the user's hand;
a pad cleaning media covering substantially all of the portion of the front surface of the mitt covering the user's palm, fingers and thumb; and
a fluid dispenser comprising a reservoir of fluid carried on the mitt adjacent the pad and having outlet means for dispersing fluid into the pad of cleaning media
said outlet means comprises tubes extending along the front surface between the pad of cleaning media and the front surface of the mitt.

5,441,356
CAP FOR WRITING DEVICE
Cheong K. Cho, #1001-2 Doksan-Dong Guro-Ku, Seoul, Rep. of Korea
Filed Mar. 10, 1995, Ser. No. 402,139
Int. Cl.[6] B43K *9/00*
U.S. Cl. 401—247 **5 Claims**



1. A combination cap and writing device comprising:
(a) said cap comprising:
(1) an outer cap having a ventilating hole formed at leading end thereof, wherein an upper annular step is formed at inside of mid portion of said outer cap, and wherein a lower annular step is formed at inside of trailing end of said outer cap;
(2) an inner cap formed within said outer cap, wherein said inner cap has a ventilating hole formed at leading end thereof, and wherein an annular step is formed at inside of trailing end of said inner cap for preventing the departure of a valve cap;
(3) a spring room formed within said inner cap, wherein said spring room is formed below said ventilating hole of said inner cap;
(4) a valve seat formed within said inner cap, wherein said valve seat is formed below and at an outward angle of said spring room of said inner cap;
(5) a valve room formed within said inner cap, wherein said valve room is formed below said valve seat of said inner cap;
(6) a spring disposed inside said spring room, wherein said spring exerts spring force; and
(7) a valve cap disposed inside said inner cap, wherein said valve cap is disposed below said spring, and wherein said valve cap comprises: longitudinal channels formed on outer circumference thereof; a shoulder formed thereof at said outward angle of said valve seat; a deep recess; and a rear end;
(b) a writing device comprising:
(1) a pen body having an annular step;
(2) a head portion having a leading edge, wherein said head portion is connected to said pen body,
(3) a writing tip connected at said leading edge of said pen body.

5,441,357
CASE MADE RING BINDER AND METHOD OF FABRICATING SAME
Robert B. Wilson, S. Hadley, Mass., assignor to Avery Dennison Corporation, Pasadena, Calif.
Filed Aug. 27, 1993, Ser. No. 133,385
Int. Cl.[6] B42F *3/02*
U.S. Cl. 402—75 **13 Claims**



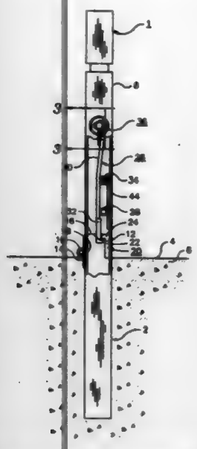
2. A case made ring binder comprising:
a) at least one stiffener defining a front cover panel, a back cover panel and a spine panel;
b) a generally rectangular cover sheet affixed to an outside surface of said at least one stiffener, four edges of said cover sheet being turned over corresponding edges of said at least one stiffener;
c) an inside liner sheet appropriately dimensioned so that its marginal edges overlie the four overturned edges of said cover sheet, said inside liner sheet being placed over an inside surface of said at least one stiffener and affixed to the four overturned edges of said cover sheet with a dry, heat actuable adhesive; and
d) a ring mechanism attached to said spine panel.

5,441,358
COUPLING AND METHOD OF MAKING THE SAME
Dennis M. King, Derby, England, assignor to Rolls-Royce plc, London, England
PCT No. PCT/GB91/01495, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO92/09819, PCT Pub. Date Nov. 6, 1992
PCT Filed Sep. 4, 1991, Ser. No. 39,195
Claims priority, application United Kingdom, Nov. 29, 1990, 9025988
Int. Cl.[6] B25G *3/00*
U.S. Cl. 403—30 **4 Claims**



1. A coupling between confronting faces of two coaxial co-rotatable components, said components having a common axis of rotation, said confronting faces extending radially with respect to said common axis of said components, the radially confronting faces each being provided with a plurality of closely spaced scored lines, all of which extend radially relative to said axis of each component to define radial ridges, the radial ridges on one of the confronting faces engaging the ridges on the other confronting face to prevent lateral movement of the components relative to one another while allowing radial thermal expansion between said faces.

5,441,359
COLLAPSIBLE VEHICULAR BARRIER
George C. Filippi, Philadelphia, Pa., assignor to Filippi Brothers Inc., Philadelphia, Pa.
Filed Feb. 9, 1994, Ser. No. 194,042
Int. Cl.[6] E05B *65/00*
U.S. Cl. 404—6 19 Claims



1. A Collapsible barrier for controlling vehicular access to an area having a floor, comprising: a base adapted to be rigidly secured to the floor of the area;

means comprising an elongated post, for obstructing vehicular access when the post is disposed in an upright condition in which its direction of elongation is substantially vertical;

post hinge means connecting the post to the base, said post hinge means having a post hinge axis, and permitting swinging movement of the post about said post hinge axis, from the upright condition to a collapsed condition in which the post is disposed with its direction of elongation approximately horizontal;

latch means for securing the post in its upright condition, the latch means comprising a first latch member fixed to the base, and a second latch member engageable with the first latch member at a location spaced laterally from the post hinge axis;

second hinge means connecting the second latch member to the post, and having a second hinge axis substantially parallel to, but laterally spaced from, the post hinge axis, whereby the second latch member can rotate about said second hinge axis, into and out of engagement with said first latch member;

spring means, connected to the post and to the second latch member, for exerting a force urging said second latch member in a direction to engage the first latch member;

means, accessible from the exterior of the post, for effecting swinging movement of the second latch member about the second hinge axis, while the post is disposed in said upright condition, in a direction to disengage the second latch member from the first latch member;

said first and second latch members having mutually engaging camming surfaces for effecting swinging movement of the second latch member about the second hinge axis against the force exerted by the spring means, for allowing said first and second latch members to engage each other automatically when the post is moved into its upright condition.

5,441,360
ASPHALTIC COMPOSITIONS AND USES THEREFOR
Howard W. Long, deceased, late of Tualatin, Oreg., and by Genevieve E. Long, executrix, P.O. Box 1388, Tualatin, Oreg. 97062-1388
Continuation-in-part of Ser. No. 284,744, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 149,686, Jan. 28, 1988, abandoned. This application Feb. 14, 1991, Ser. No. 655,675
Int. Cl.[6] E01C *23/10*; C08L *95/00*
U.S. Cl. 404—77 6 Claims

1. A method of repairing failed remaining portions of ways, for vehicles or persons, having cracks and/or potholes, during all seasons of the year comprising the steps of:

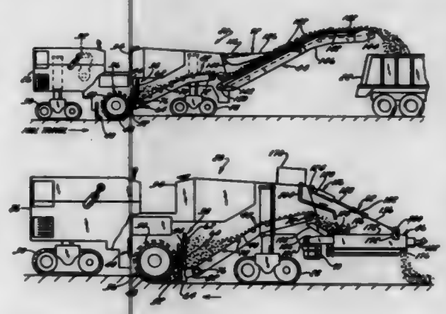
a) cleaning the remaining failed portions;

b) coating the cleaned remaining failed portions with a heated asphaltic concrete compound having anthracite included in this compound, as an added lossy microwave material of sufficient quantity to intercept microwave energy;

c) directing microwave energy at the coated remaining failed portions so the anthracite will absorb microwave energy and conduct the heat generated thereby into a depth of the remaining failed portions; and

d) filling the cracks and/or potholes with an asphaltic concrete compound while the conducted heat energy is still in the remaining failed portions coated with the asphaltic concrete compound, which has the anthracite included as the added lossy microwave material.

5,441,361
FIELD CONVERTIBLE APPARATUS FOR CONDUCTING EITHER FRONT LOAD ROAD PLANING OPERATION OR COLD IN-PLACE RECYCLING OPERATION
Thomas R. Campbell, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.
Filed Dec. 17, 1993, Ser. No. 168,876
Int. Cl.[6] E01C *23/12*
U.S. Cl. 404—90 22 Claims



6. A method comprising:

replacing a conveyor of a roadworking machine with a mixer, thereby converting said roadworking machine from front load road planing capability to a cold in-place recycling capability.

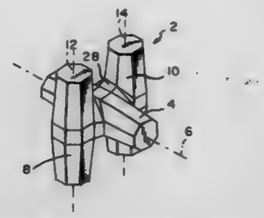
17. A cold in-place recycling machine comprising

A. a chassis;

B. a cutter mounted on said chassis and capable of removing an upper layer of a roadway surface; and

C. a mixer having an upper inlet and a lower outlet, said mixer being mounted on said chassis so as to be pivotable as a unit about at least one of a horizontal and a vertical axis.

5,441,362
CONCRETE ARMOR UNIT FOR PROTECTING COASTAL AND HYDRAULIC STRUCTURES AND SHORELINES
Jeffrey A. Melby, and George F. Turk, both of Vicksburg, Miss., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 30, 1993, Ser. No. 128,426
Int. Cl.[6] E02B *3/04*
U.S. Cl. 405—16 9 Claims

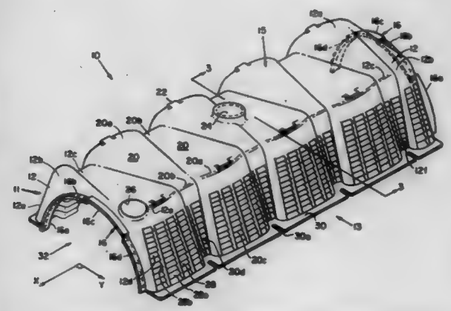


1. An erosion prevention module for protecting coastal, river, lake, and reservoir banks, shorelines and other structures from the damaging hydrodynamic forces of waves and water currents, comprising

(a) a central elongate member having a longitudinal axis; and

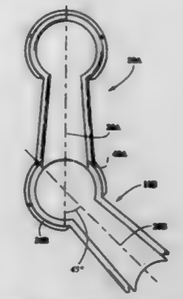
(b) first and second outer elongate members connected with said central elongate member on opposite sides thereof, said first and second outer elongate members having parallel longitudinal axes extending normal to said longitudinal axis of said central elongate member, said elongate members each having an octagonal cross-section, the cross-sectional area of each member decreasing from an intermediate portion toward the opposite ends thereof, whereby when a plurality of structures are interlocked to define a protective array, a high degree of wedging is afforded between said octagonal members and residual stability is provided in the array.

5,441,363
LEACHING CHAMBER
Terrance H. Gray, 28 Webber Ave., Bath, Me. 04530
Filed Apr. 29, 1994, Ser. No. 236,499
Int. Cl.[6] E02B *11/00, 13/00*
U.S. Cl. 405—49 32 Claims



1. A conduit for burial in the ground, the conduit having a longitudinal axis with corrugations extending across the conduit in directions transverse to the longitudinal axis, each corrugation having a ridge and a shoulder, the ridge being higher than the shoulder such that a cross-section of a corrugation in a direction transverse to the longitudinal axis is non-symmetrical, the corrugations being orientated relative to each other such that the ridge of each corrugation is adjacent to the shoulder of an adjoining corrugation.

5,441,364
SPLASH BLOCK
Robert Dressler, Mechanicsburg, Pa., assignor to Alumax Inc., Norcross, Ga.
Filed Aug. 24, 1994, Ser. No. 295,009
Int. Cl.[6] E02B *9/04*; E04D *13/064*; E01C *11/24*
U.S. Cl. 405—119 11 Claims



1. A splash block for coupling with an adjacent identical splash block for carrying water away from a building, comprising: an upper end;

a water-receiving section disposed adjacent said upper end;

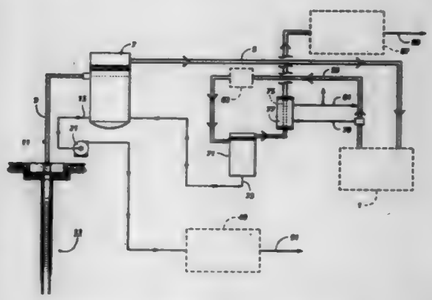
a lower end;

a trough section sloping downward from said upper water-receiving section to said lower end and adapted to discharge water from a lower end thereof;

a channel formed adjacent said upper end of said splash block; and

a pair of pins projecting downward from a location adjacent said lower end of said splash block, said pair of pins being configured to be snugly received within the channel of an adjacent identical splash block for coupling said lower end of said splash block to the upper end of said adjacent identical splash block.

5,441,365
APPARATUS AND PROCESS FOR TREATING CONTAMINATED SOIL GASES AND LIQUIDS
Eliott N. Duffney, Rochester; Paul M. Tornatore, Pittsford; Scott M. Huber, Canandaigua, and Ronald E. Hess, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 29, 1994, Ser. No. 236,791
Int. Cl.[6] B09B *3/00*; A62D *3/00*
U.S. Cl. 405—128 36 Claims



1. Apparatus for extracting contaminants from a stream

comprising a contaminant-containing mixture of liquids and gases which comprises:

(a) a contaminant-containing mixture input;

(b) a vapor-liquid separator receiving the contaminant-containing mixture from the input and producing a liquid component stream at a first outlet and a gaseous component at a second outlet;

(c) an optional first contaminant removal system receiving the liquid component stream from the vapor-liquid separator and producing a contaminant-free liquid stream;

(d) a vacuum inducing device in fluid communication with the contaminant-containing mixture input and the vapor-liquid separator and receiving said gaseous component from the vapor-liquid separator;

(e) a cooling element receiving the gaseous component at a first temperature from the vacuum inducing device and producing the gaseous component at a second temperature from a first outlet and a condensed liquid component from a second outlet, said second temperature being lower than said first temperature;

(f) a heating element receiving the gaseous component from the cooling element at said second temperature and producing a reduced-relative-humidity gas component at a third temperature, said third temperature being higher than said second temperature, said heating element having a heating jacket surrounding a conduit through which the gaseous component passes through the heating element, said heating jacket receiving a heating fluid from a first heat fluid conduit into a heating jacket input and outputting said heating fluid from a heating jacket outlet into a second heating fluid conduit; and

(g) an optional second contaminant removal system receiving the reduced-relative-humidity gas component from the heating element and producing a contaminant-free gas;

wherein the apparatus necessarily includes either the first contaminant removal system or the second contaminant removal system.

5,441,366

METHOD AND APPARATUS FOR COMPACTING GARBAGE DUMPS BY MEANS OF DEPTH VIBRATION

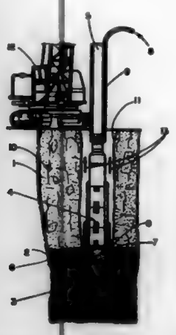
Klaus Esters, Essen, Germany, assignor to Hayward Baker Inc., Odenton, Md.

Filed Aug. 2, 1993, Ser. No. 100,679

Claims priority, application Germany, Aug. 27, 1992, 42 28 542.9

Int. Cl.[6] B09B *1/00*; E02D *3/11*

U.S. Cl. 405—129 **12 Claims**



1. A method for compacting garbage dumps by means of depth vibration, which comprises placing at least one depth vibrator into bore holes drilled in one area of the dump after another, and vibrating and compacting the dump mass while a flushing fluid is added, wherein liquid nitrogen is added as the flushing fluid during the depth vibration, and wherein the liquid nitrogen used as the flushing fluid is introduced via separate line into the vibrator, exits from openings at a lower end of the vibrator and passes upwards through the annular space between the vibrator and the wall of the bore hole.

9. An apparatus for compacting garbage dumps by means of depth vibrator, which comprises a depth vibrator adapted for compacting a garbage dump, wherein the depth vibrator has a separate flushing fluid line to feed liquid nitrogen into the bore hole, wherein said flushing fluid line runs within said depth vibrator.

5,441,367

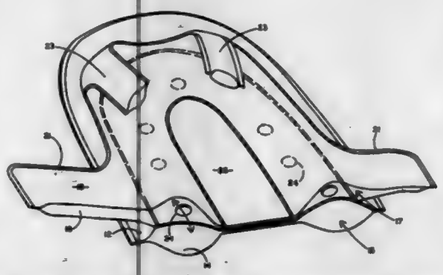
MULTIPLE-WALLED DIVER'S BUOYANCY COMPENSATOR

Douglas J. Toth, Huntington Beach, Calif., assignor to Under Sea Industries, Inc., Rancho Dominguez, Calif.

Filed Apr. 27, 1993, Ser. No. 52,709

Int. Cl.[6] B63C *11/02*

U.S. Cl. 405—186 **4 Claims**



1. A dual floatation chamber for a diver's buoyancy compensator, the chamber comprising:

at least four layers of air-impervious fabric including a top layer, a bottom layer and two intermediate layers;

said top layer being perimeter-welded to one of said intermediate layers;

said bottom layer being perimeter-welded to another of said intermediate layers;

said intermediate layers being welded to one another at a location spaced from their respective perimeters; and

at least one common air passage extending through said intermediate layers.

5,441,368

ANTI-FOULING APPARATUS FOR SUBMERGED MARINE SURFACES

Colin C. Campbell, R.R. #1, Georgetown, Ontario, Canada L7G 4S4, and W. Donald Casselman, 94 Mary Street, Georgetown, Ontario, Canada L7G 4V6

Filed Sep. 7, 1993, Ser. No. 116,705

Int. Cl.[6] E02B *17/00*; B63B *59/00*

U.S. Cl. 405—211 **21 Claims**

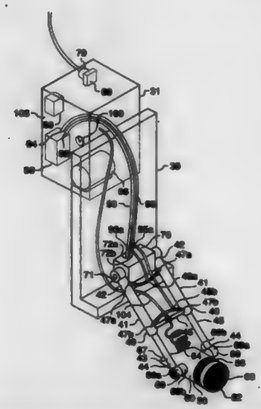
1. An anti-fouling apparatus for retarding the formation of marine plants and animals on marine surfaces submerged in water, said apparatus comprising:

a mounting means affixed to said marine surface or to another surface adjacent to said marine surface;

a support arm member having a proximal end and a distal end, operatively mounted on said mounting means adjacent its proximal end for selective movement between a first raised position, at which said distal end is raised out of said water, and a second lowered position, at which said distal end is submerged in said water;

a selectively energisable water propulsion means operatively mounted on said support arm member adjacent to said distal end so as to be submerged in said water when said support arm is in said second lowered position;

a longitudinal shroud member adjustably mounted on a selected one of said support arm member and said selectively energisable water propulsion means so as to at least partially surround said selectively energisable water propulsion means, said shroud member defining an internal throughpassage longitudinally extending between an inlet end and an outlet end, with said selectively energisable water propulsion means being positioned with respect to said shroud member so as to selectively direct a propelled water stream through said throughpassage from said inlet end to said outlet end in generally parallel relation to the longitudinal axis of said shroud member, generally toward



said submerged marine surfaces when said water propulsion means is energized, said shroud member is appropriately adjusted about its mounting, and said support arm member is in said second lowered position;

a first control means operatively connected to the mounting means and the support arm member for controlling movement of said support arm member between said first raised and said second lowered positions; and,

a second control means operatively connected to the mounting means and the water propulsion means for selectively energizing said water propulsion means.

5,441,369

DUPLICATING MACHINE FOR SECURITY KEYS

Eros Foscan, and Luigi Rossetto, both of Via Podogora, 20, Vittorio Veneto, Italy

Filed Mar. 30, 1994, Ser. No. 220,029

Claims priority, application Italy, Jul. 29, 1993, VE93A0022

Int. Cl.[6] B23C *3/35*

U.S. Cl. 409—81 **16 Claims**

1. A code-duplicating machine for security keys usable in cylinder locks with a bolt operable by a plug and with a plurality of pins operable axially and rotataby by a cut key inserted into said plug to release it and enable it to rotate, said duplicating machine comprising a cutter, a clamp for a key to be cut, and means for causing said clamp and said cutter to undergo mutual movement resulting in said key being cut in accordance with a predetermined code, characterised in that:

a first slide is mounted in a base in a manner slidable parallel to the plane of said cutter,

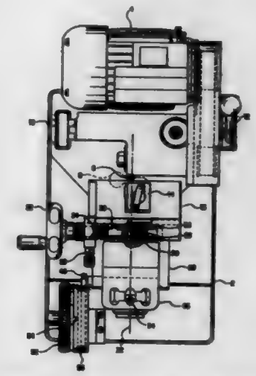
a support is mounted on said first slide in a manner rockable about an axis contained within the plane of the cutter and perpendicular to the axis of the key,

a second slide is mounted on said rockable support in a manner slidable parallel to the axis of the key,

the clamp for retaining said key is mounted on said second slide,

first control means are provided for generating movements of said first slide relative to said base in conformity with the depth of a given notch to be cut,

second control means are provided for generating movements of said second slide relative to said rockable support in conformity with the position of that given notch to be cut,



a control member is associated with said rockable support to generate its rotation movements about said axis in conformity with the inclination of that given notch to be cut with respect to the axis of the key, and to generate traversing movements of said second slide parallel to the key axis in conformity with the type of lock pin associated with that given notch to be cut.

5,441,370

SINTERED POWDER CUTTING INSERT FOR CHIPBREAKING MACHINING

Göran Pantzar, Arsunda, and Sven-Erik Carlsson, Gimo, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

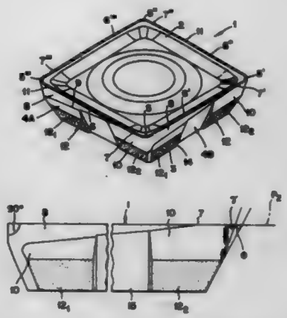
Division of Ser. No. 4,302, Jan. 14, 1993, Pat. No. 5,365,805.

This application Apr. 20, 1994, Ser. No. 230,209

Claims priority, application Sweden, Feb. 5, 1992, 9200319

Int. Cl.[6] B23C *5/02*

U.S. Cl. 407—113 **11 Claims**



1. A polygonal, indexable milling cutting insert for chipbreaking machining, said insert comprising a pressed and sintered powder body having a top chip surface, a bottom surface, and at least two identically configured edge surfaces intersecting said top surface to define therewith respective cutting edges, said edge surface also intersecting said bottom surface, a distance between said top and bottom surfaces defining a

height of said cutting insert, each of said at least two edge surfaces including:

an upper relief surface portion intersecting said top surface at a first angle to form therewith said cutting edge, said cutting edge extending from a first end to a second end of its respective edge surface and having a length greater than said height, said first angle being substantially no greater than ninety degrees a height of said upper relief surface increasing in a direction from said first end toward said second end of its respective edge surface,

an intermediate relief surface portion disposed below said upper relief surface portion and forming a second angle with respect to said top surface, said second angle being smaller than said first angle, a height of said intermediate surface decreasing in a direction from said first end toward said second end of its respective edge surface, and

a lower relief surface portion disposed below said intermediate relief surface portion and forming a third angle with respect to said top surface, said third angle being smaller than said second angle.

5,441,371

MULTIPLE WINCH MOUNTING ON A VEHICLE TRAILER

Fred Erke, 706 Perkinwood SE., Warren, Ohio 44483

Filed Oct. 31, 1994, Ser. No. 332,133
Int. Cl.[6] B61D *45/00*
U.S. Cl. 410—100 **8 Claims**



1. A belt winch mounting apparatus for use on vehicle trailers having a main support frame and a trailer bed on which cargo loads are transported, the belt winch mounting apparatus comprises a main support rod secured to said trailer adjacent and below said trailer bed, multiple winch assemblies rotatably positioned on said support rod, each of said winch assemblies comprising a cylindrical main body member, a ratchet gear, and a drive rod assembly, a support plate extending from said trailer bed to said support rod, a winch pawl mounted on said support plate in registration relation with said ratchet gear, a strap engagement clasp on said body member, a tie down strap and clasp assembly engageable within said strap engagement clasp, means for incrementally rotating said winch assembly on said support rod, a tie down chain secured to and extending from said support rod through said trailer bed, a bed plug secured to said free end of said tie down chain registerable within said trailer bed and means for selectively positioning said winch assemblies on said support rod.

5,441,372

ROCK BOLT SHELL AND CONE

John C. Wilkinson, Norwich, Canada, assignor to Premetalco, Inc., Rexdale, Canada

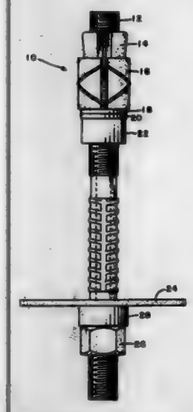
Continuation of Ser. No. 56,916, May 5, 1993, abandoned. This application Nov. 10, 1994, Ser. No. 339,875
Int. Cl.[6] F16B *13/06, 39/02*; E21D *20/00*
U.S. Cl. 411—60 **47 Claims**

1. A shell for a rock bolt with a cone threadedly engaged thereto, the shell comprising:

a tubular shaped member of malleable cast iron having a central axis therethrough and a single axial slit running from end-to-end of the member, an inner face of the member being shaped to axially receive the cone thereagainst and an outer curved face of the member lying on a surface of a circular cylinder; and

a first raised ridge located along a curve of the cylinder, the curve being non-congruent with a circumferential circle of the cylinder, wherein

said ridge has a radially outwardly directed first surface facing a first rotational direction and a radially outwardly directed second surface facing a second rotational direction wherein said first surface forms a relatively large angle with the cylinder and said second surface forms a relatively small angle with the cylinder, and wherein said tubular member has a groove located adjacent the first surface of said ridge.

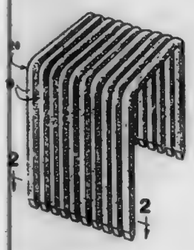


5,441,373

COATED FASTENER

Frederick A. Kish, Wheeling, and Parimal M. Vadhar, Buffalo Grove, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Sep. 7, 1993, Ser. No. 116,758
Int. Cl.[6] F16B *15/00, 15/08*
U.S. Cl. 411—442 **22 Claims**



1. A coated fastener, comprising:

a fastener having a predetermined configuration comprising a pair of oppositely disposed sides, a pair of oppositely disposed ends adapted to be adhered to similarly configured adjacent fasteners, corner portions defined between adjacent ones of said sides and ends, and at least one portion capable of being driven into a desired surface; and

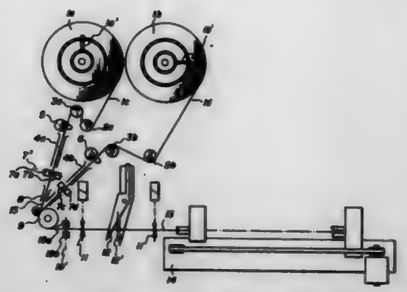
coating means, disposed upon said fastener, comprising one-hundred percent dry solids which are substantially free of solvent emissions when applied to said fastener and during curing thereof, and covering substantially the entire exterior of said fastener, for providing a protective coating to said fastener by having a first predetermined thickness of said coating means upon at least said pair of sides and said pair of ends; and for adhering said fastener to at least one other similarly configured fastener and for providing an irregular surface to said fastener for increasing the holding power of said fastener after it is driven into said desired surface by having a second predetermined thickness of said coating means, which is greater than said first predetermined thickness of said coating means, at said corner portions of said fastener.

5,441,374

APPARATUS FOR FEEDING STRIPS COATED WITH A FUSION ADHESIVE ON ONE OF THEIR SURFACES TO AN ADVANCING TRANSPORT UNIT

Olaf Kossanke, Darmstadt; Sven Fischer; Helmut Domes, both of Stuttgart; Karin Röhrig, Wolfschlugen, and Jürgen Weiblen, Münsinges-Dottingen, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1993, Ser. No. 149,879
Claims priority, application Germany, Nov. 24, 1992, 42 39 388.4
Int. Cl.[6] B42C *9/00*
U.S. Cl. 412—11 **6 Claims**



1. Apparatus for feeding strips having fusion adhesive coated on one of their surfaces to a sheet stack binding apparatus for binding loose sheets to form brochures or books, said strip feeding apparatus comprising:

a plurality of fusion-adhesive coated strips of different widths (**1*c***, **1*d***) provided on respective strip-roll supplies (**1*a***, **1*b***);

separate guide paths (**4*a***, **4*b***) respectively including first drive means (**5**, **6**) for transporting a strip from its strip-roll supply (**1*a***, **1*b***) to a standby position (**7'**) defined by optical switch elements (**7*a***, **7*b***; **7*c***, **7*d***);

a threading element (**8**), located downstream of the respective standby positions (**7'**), for guiding the strips (**1*c***, **1*d***) to a common transport path (**13**) adapted to accommodate the maximum width of said plurality of different widths; and

in the common transport path (**13**), second drive means (**9**) for driving on of said strips along said common transport path (**13**), an optical switch element (**10*a***, **10*b***) and a switchable strip guide element (**11**) such that said driven strip is centered in said transport path (**13**) while it is guided to a strip handling position (**12'**) as defined by strip cutting unit (**12**).

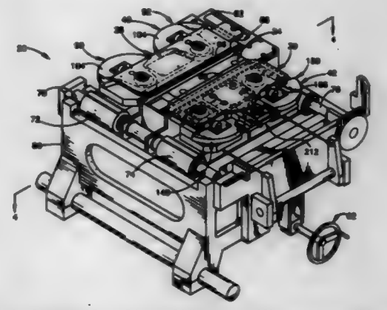
5,441,375

COVER BREAKER ASSEMBLY AND METHOD

Richard B. Hawkes, Bethlehem, Pa., assignor to AM International Inc., Mt. Prospect, Ill.

Filed Dec. 3, 1993, Ser. No. 161,932
Int. Cl.[6] B42C *11/02*
U.S. Cl. 412—19 **41 Claims**

1. A cover breaker assembly for use in applying covers to books of different thicknesses, said cover breaker assembly comprising a base, first and second breaker members connected with said base and engageable with a cover on each of the books in turn, and drive means for moving said second breaker member relative to said base from a retracted position toward said first breaker member through a first distance when a cover is applied to a thin book and for moving said second breaker relative to said base from the retracted position toward the first breaker member through a second distance which is less than the first distance when a cover is applied to a thick book which is thicker than the thin book.

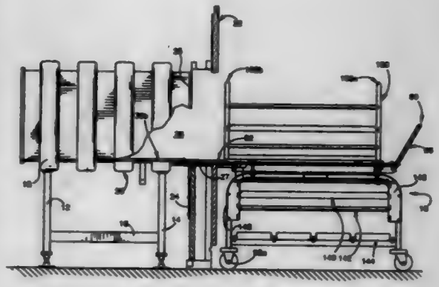


5,441,376

STERILIZER LOADING CAR TRANSFER APPARATUS

Susan M. Napierkowski, and Arthur T. Nagare, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Apr. 15, 1992, Ser. No. 868,912
Int. Cl.[6] B65G *69/00*
U.S. Cl. 414—401 **7 Claims**



1. An apparatus for transferring loading car to a chamber, said apparatus comprising:

a chamber which defines an interior chamber volume for receiving said loading car;

a vertically movable chamber door which alternately opens and closes an opening of said chamber;

a chamber track adapted for supporting the loading car, said chamber track positioned within the chamber volume;

a carriage track adapted for supporting the loading car, said carriage track configured to extend parallel to and in axial alignment with said chamber track;

connecting means mounted on an end of said carriage track;

a bridge having a top surface and a bottom surface, said bridge includes a pivotal mounting which is mounted substantially adjacent the opening of the chamber wherein said bridge may pivot between an open and a closed position, said top surface adapted for supporting the loading car, and said bridge having receiving means adapted for receiving said connecting means when said bridge is in the open position and aligning the chamber track with the

carriage track while in the open position, so as to permit the loading car to be transferred to the chamber; and

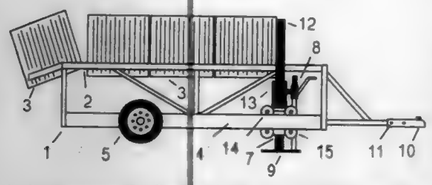
wherein said bottom surface is configured to incline into mechanical contact with said chamber door so that as said chamber door is opened, said bridge is gravitationally pivoted to the open position.

5,441,377

SELF UNLOADING HAY HAULING APPARATUS

Sam V. Cataldie, Jr., 5221 Lark La., Alexandria, La. 71303

Filed Nov. 18, 1994, Ser. No. 342,307
Int. Cl.[6] B60P *1/48*
U.S. Cl. 414—437 **4 Claims**



1. An apparatus for hauling large bales of hay comprising a trailer, said trailer further comprising:

a frame comprising a front end, a rear end, and an "H" beam track;

a plurality of wheels affixed to said track;

a tongue comprising a forward end, a rearward end and a midsection, said tongue having a joint so as to pivot vertically at said midsection, said joint further comprising a pin, wherein removal of said pin is necessary for said joint to pivot;

a hay supporting member comprising a pair of rails, said rails being mounted linearly above said frame so as to accommodate loading of said bales from said rear end of said trailer; and

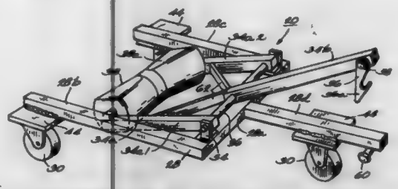
a hay unloading mechanism comprising a set of supporting wheels, and a rearward pushing member, said rearward pushing member further comprising two support posts, each of said support post being positioned vertically and adjacent to said rails, each support post traversing a housing, said support posts having an upper and lower end, said housing being affixed to said support wheels, a base, said base being affixed to said lower ends of said support post perpendicular to said frame of said trailer, said base being rectangular in shape, a cross brace, said cross brace being affixed across and to said upper ends of said support posts so as to contact said hay, a lifting mechanism, said lifting mechanism having an upper and a lower end, said upper end of said lifting mechanism being affixed to said housing, and said lower end of said lifting mechanism being affixed to said base, said support wheels further comprising two sets of upper wheels and two sets of lower wheels, said "H" beam track further comprising upper and lower tracks, said upper wheels so affixed to said housing as to ride along said upper tracks of said "H" beam track so as to support the weight of said base above the ground so that said unloading mechanism may be adjusted from said front to said rear of said trailer being rolled along said track on said upper wheels, and said lower wheels being so affixed to said housing so as to ride along said lower track of said rail so as to support the weight of said trailer when said base is lowered, thereby allowing said trailer to be moved forward as said unloading mechanism remains in place so as to cause said bales to be pushed off said rear end of said trailer by said cross brace and said support posts so as to unload said bales in a row along the length of said trailer.

5,441,378

SNOWMOBILE LIFT DOLLY

Craig Puls, 3466 Lovers La., Slinger, Wis. 53086

Filed Oct. 28, 1993, Ser. No. 144,278
Int. Cl.[6] B62B *3/10*
U.S. Cl. 414—458 **15 Claims**



1. A snowmobile dolly for supporting the front of a snowmobile having two skis mounted thereto, said dolly comprising:

a support frame;

at least three wheels for rollably supporting the support frame on a floor or other surface;

a lift lever, having two ends, pivotably attached to the support frame, the pivotable attachment of the lift lever being between the two ends of the lift lever;

a contact pad mounted to one end of the lift lever, specifically shaped and sized for fitting between the skis and for contacting the underside of the snowmobile, said lift lever having at least two positions to which the lift lever can move the contact pad, a raised position and a lowered position, and

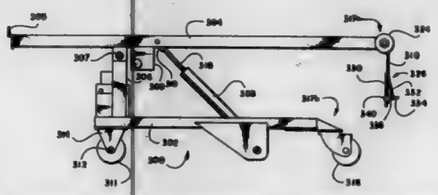
a latch for latching the lever with the contact pad in the raised position.

5,441,379

HAND CART FOR WALL PANEL ASSEMBLY

J. Macklin Gilbert, Jr., 931 N. 2nd Ave., Rome, Ga. 30161

Division of Ser. No. 840,103, Feb. 24, 1992, Pat. No. 5,277,013.
This application Nov. 2, 1993, Ser. No. 146,966
Int. Cl.[6] B65G *7/00*
U.S. Cl. 414—494 **4 Claims**



1. A cart for transporting and handling a modular wall panel for assembling a wall of a building, comprising:

a wheeled frame;

a table pivotally attached to an upwardly extending support member of the wheeled frame, the table having a front loading end for receiving a modular wall panel;

a stop bracket attached at a rear unloading end opposite the front loading end of the table, the stop bracket extending upwardly from the table for engaging the modular wall panel when placed on the table; and

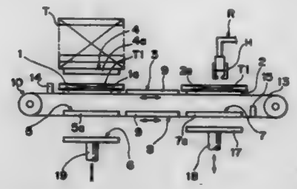
a hydraulic cylinder pivotally connected between a point on the wheeled frame forwardly spaced from the support member and a point on the table between the support member and the front loading end, the hydraulic cylinder being operable to pivot the table from a first position, wherein the table slopes downwardly below horizontal to the front loading end, to a second generally vertical position, wherein the stop bracket is in contact with a building base to allow removal of the wall panel.

5,441,380

METHOD AND APPARATUS FOR CONVEYING TRAYS

Yoichi Horikawa, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 138,438
Claims priority, application Japan, Oct. 21, 1992, 4-208100
Int. Cl.[6] B65G *59/06*
U.S. Cl. 414—788.7 **12 Claims**



3. An apparatus for conveying trays loaded with parts to a parts unloader in a manufacturing process, comprising:

a stocking station having a stocking station support means for holding a vertical stack of loaded trays loaded with parts at an elevation;

a waiting station having a waiting station support means for supporting a loaded tray below said stocking station;

a working station having a working station support means for supporting a loaded tray, said working station located horizontally at a distance from said waiting station;

a supply path having a translation means for moving a loaded tray from said waiting station to said working station;

a shunting station having a shunting station support surface located below said working station and having a means of receiving an empty tray from said working station and positioning said empty tray on said shunting station support surface;

a switching station having a switching station support means for supporting an empty tray below said waiting station;

a discharge path having a translation means for moving said tray from said shunting station support surface to said switching station support means; and

a means for lifting said empty tray from said switching station support means upwardly to said stocking station to support a bottommost loaded tray on said empty tray and lowering said bottommost loaded tray to be supported on said waiting station support means.

5,441,381

BOX STACKER

Jose Boix Jaen, Elche, Spain, assignor to Boix Maquinaria, S.A., Elche, Spain

Continuation of Ser. No. 982,692, Nov. 25, 1992, abandoned.
This application Oct. 7, 1994, Ser. No. 321,152
Claims priority, application Spain, Jul. 14, 1992, 9201460
Int. Cl.[6] B65G *57/30*
U.S. Cl. 414—790.3 **2 Claims**

1. A box stacker comprising:

a housing;

a conveyor belt for connection to a box shaping machine, the conveyor belt having an advancement direction from a first end to a box stacking area;

a pair of guide rods parallel to said advancement direction, said guide rods being disposed on opposite sides of said conveyor belt;

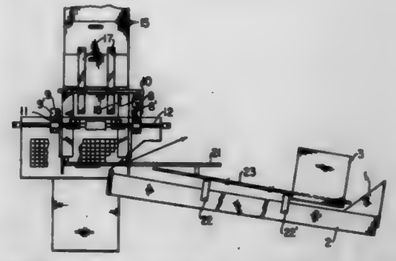
a pair of parallel longitudinal screws each having first and second supports mounted on said housing;

a pair of parallel cross screws each being mounted to both of the longitudinal screws by two cross bridges per cross screw;

a plurality of upright guide, each guide defining each of four corners of a box stacking area, the upright guides being mounted to said cross screws, four sides of the box stacking area being disposed between said plurality of upright guides.

a horizonal pusher disposed in a pusher guide for removing stacks of boxes from said box stacking area, the pusher guide comprising a fluid cylinder which drives said pusher, wherein the pusher guide is mounted on a selected one of said sides of said box stacking area;

a pair of seat and fixture plates mounted to the upright guides on the side of said box stacking area disposed oppositely from the side of which said horizontal pusher is mounted, the seat and fixture plates being disposed for receiving and holding stacks removed from said box stacking area by the horizontal pusher;



a pair of lower prolongations, each lower prolongation being mounted to one of said upright guides;

a pair of guide rails, each lower prolongation being driven along one of said guide rails;

wherein each of said guide rails is parallel to and mounted to a respective one of said guide rods; and

wherein rotation of the longitudinal screws and the cross screws will vary the dimensions of said box stacking area by simultaneously moving said upright guides toward and away from each other such that a vertical symmetrical axis of the box stacking area remains substantially stationary with respect to said housing.

5,441,382

INFEED APPARATUS FOR ARTICLE HANDLING SYSTEM

Andrew E. Mojden, Hinsdale, and Richard P. Hoinacki, Oak Lawn, both of Ill., assignors to Fleetwood Systems, Inc., Romeoville, Ill.

Filed Jan. 29, 1993, Ser. No. 11,381
Int. Cl.[6] B65G *59/00*
U.S. Cl. 414—798.9 **15 Claims**



1. An infeed apparatus for an article handling system comprising: an infeed lane for guiding a flow of articles in a facewise nested condition; a separating station located along said infeed lane for receiving said flow of articles in said infeed lane; separating apparatus located adjacent said separating station for separating said articles into groups of articles of a predetermined length, said separating apparatus including a horizontal drive mechanism and an operatively attached cut-off device, said drive mechanism horizontally displacing said cut-off device, said cut-off device being positionable between two neighboring articles in said flow of articles for separating one of said groups of articles from said flow of articles, said horizontal drive mechanism moving said cut-off device positioned in said

flow of articles for forming a gap between said flow of articles and a trailing end of said group of articles separated from said flow; shuttle apparatus for receiving a group of articles from said separating apparatus, said shuttle including an operatively attached trailing end support, said support being insertable into said gap for abutting and supporting said trailing end of said group of articles, said shuttle transporting said group of articles to an infeed station located along said infeed lane at a location remote from said separating station; and trailing end hold-up apparatus adjacent said infeed station for engaging said trailing end of said group of articles in said infeed station to retain said group of articles in a facewise nested condition in said infeed station while said shuttle returns to said separating station to receive a subsequent group of articles.

5,441,383

VARIABLE EXHAUST DRIVEN TURBOCHARGERS

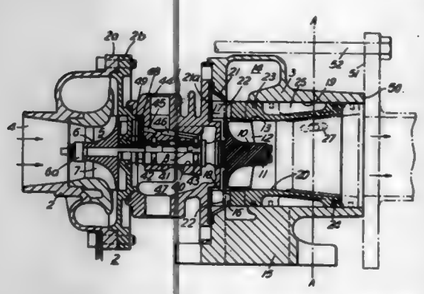
Adrian P. Dale, Reading; David Flaxington, Formby, and Andrew R. S. McCutcheon, Maidenhead, all of Great Britain, assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed May 19, 1993, Ser. No. 64,534

Claims priority, application United Kingdom, May 21, 1992, 9210892; Jul. 2, 1992, 9214085

Int. Cl.[6] F01D *17/14*

U.S. Cl. 415—158 **9 Claims**



1. A variable exhaust-driven turbocharger, comprising a compressor impeller mounted on a shaft for rotation in a compressor housing, said shaft being driveably connected to a turbine wheel rotatable in a turbine housing, said turbine housing having an inlet nozzle for receiving exhaust gases from an engine and being shaped to conduct such gases to impinge upstream edges of blades of said turbine wheel, said nozzle having axially spaced-apart side walls extending circumferentially about said upstream edges of the turbine wheel and having axially extending spaced-apart and angled vanes traversing an annular space defined between the side walls wherein one said side wall is fixed and the other said side wall is carried by one end of a sleeve slideably carried to be moveable in an axial direction in a bore of the turbine housing extending downstream of the turbine wheel, said turbine housing having at least one through aperture, and a control system comprising a connecting member in said bore and connected with the sleeve from outside the turbine housing by means of a collective actuating member, and axially movable in said through aperture in said axial direction to move axially the sleeve to vary the geometry of said nozzle.

5,441,384

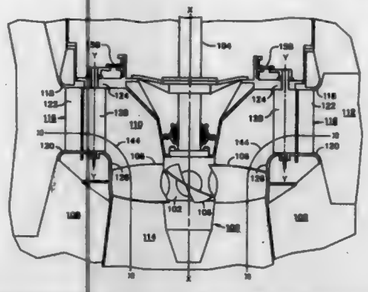
HYDRAULIC TURBINE AND GUIDE GATE APPARATUS AND RUNNER APPARATUS THEREFOR

Alexander Gokhman, San Francisco, Calif., assignor to Hydro West Group, Inc., Bellevue, Wash.

Filed Oct. 15, 1993, Ser. No. 138,150

Int. Cl.[6] F03B *3/18*

U.S. Cl. 415—161 **23 Claims**



1. In combination, a guide gate apparatus and runner apparatus for a hydraulic turbine comprising:

a plurality of wicket gates arranged in a circular array around a central axis with said gates pivotal about a pivot axis parallel to said central axis forming said guide gate apparatus, said gates each having a leading edge and a trailing edge with said trailing edge shaped to present a discharge angle which varies from a first end of said gate to a second end of said gate; and

a plurality of runner blades forming said runner apparatus, said runner apparatus having an inlet and an exit, the shape of said runner blades being a function of the shape of said wicket gates such that a whirl value for fluid flow at substantially every point exiting said runner apparatus is between about zero and a value that is less than the change in whirl from said inlet to said exit of said runner apparatus.

5,441,385

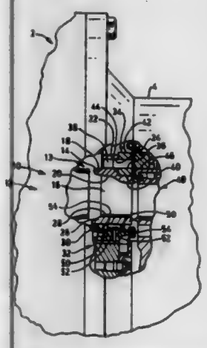
TURBINE NOZZLE/NOZZLE SUPPORT STRUCTURE

Gary L. Boyd, Alpine, Calif., and James E. Shaffer, Maitland, Fla., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Dec. 13, 1993, Ser. No. 166,188

Int. Cl.[6] F04D *29/44*

U.S. Cl. 415—209.2 **2 Claims**



1. An axial flow turbine's nozzle supporting structure comprising:

an outer, annular support ring having a plurality of axial connector openings therein;

a nozzle outer structure having a plurality of nozzle segments each of which includes an outer shroud and an airfoil vane extending radially inwardly therefrom and being joined to the outer shroud, said outer shroud having a connecting protrusion extending generally outwardly therefrom with an axial connector opening therethrough being generally aligned with one of the axial connector openings in the outer, annular support ring;

an annular, unitized inner shroud disposed in free unsupported spaced relation with said airfoil vane;

an annular, inner support ring structure engaged with said inner shroud; and

a pin disposed in aligned connector openings in said connecting protrusion and said outer support ring.

5,441,386

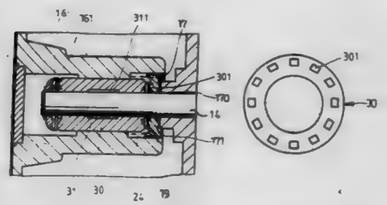
LUBRICATING SYSTEM FOR COOLING FANS

Hsin M. Hsieh, No. 6, Kung Ye 6th Road, West Section, Ping Tung City, Taiwan

Filed Jul. 29, 1994, Ser. No. 282,431

Int. Cl.[6] F04D *29/12*

U.S. Cl. 415—230 **2 Claims**



1. A lubricating system for cooling fans which mainly consist of a main body having a blade holder and a blade support having a plurality of blades and a locating shaft suitable for extending into and engaging with said blade holder of the main body, comprising a self-lubricating bearing, an oil retaining ring disposed adjacent to a rear end surface of said self-lubricating bearing, and an oil retaining cap disposed adjacent to a front end surface of said self-lubricating bearing;

said self-lubricating bearing having an axially extended central shaft hole for receiving said locating shaft of said blade support to rotate therein relative to said self-lubricating bearing, and two end surfaces each having a plurality of shallow bevel grooves inclining toward said shaft hole to reduce friction between said end surfaces of said self-lubricating bearing and said oil retaining cap and ring and to facilitate the flow back of lubricant to said self-lubricating bearing;

said oil retaining cap having a central opening for said locating shaft to extend through and being bowl-shaped to have an inner portion which is adjacent to said central opening and has a convex profile and an outer portion which surrounds said inner portion and has a concave profile; and

said oil retaining ring having a central hole, a round-sectioned inner portion adjacent to said central hole, and a concavo-concave-sectioned outer flange portion integrally extending from said round-sectioned inner portion.

5,441,387

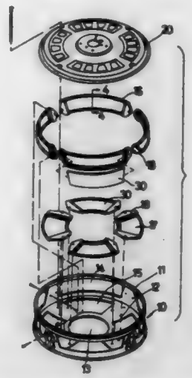
HOUSING COMBINATION FOR CEILING FAN

Jack Yu, No. 109-1, Avenue 6, Lane 164, Tzong Se Road, Da Du Hsiang, Taichung Hsien, Taiwan

Filed Oct. 26, 1994, Ser. No. 329,639

Int. Cl.[6] F04D *29/00*

U.S. Cl. 416—5 **1 Claim**



1. A housing combination for a ceiling fan comprising:

a body including a cylindrical member and a bottom plate having an orifice formed therein, said cylindrical member and said bottom plate each including a plurality of openings formed therein,

a plurality of frames engaged in said openings respectively and secured to said body, said frames each including an inner peripheral portion having channel means formed therein, and

a plurality of panels engaged in said channel means of said frames so as to be secured to said body.

5,441,388

SHIP DRIVE WITH TWO COUNTERTURNING PROPELLERS

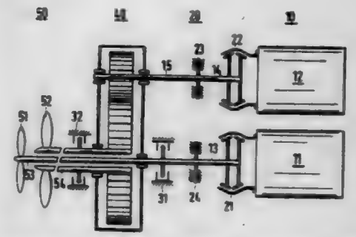
Günter Berger, Castrop, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Dec. 28, 1993, Ser. No. 174,472

Claims priority, application Germany, Dec. 28, 1992, 42 44 586.8

Int. Cl.[6] B63H *5/10*

U.S. Cl. 416—125 **5 Claims**



1. A ship drive, comprising: an inner shaft having a foot end and a head end; a hollow shaft having a foot end and a head end concentric to the inner shaft; two counterturning propellers including a rear propeller fastened to the head end of the inner shaft and a front propeller fastened to the head end of the hollow shaft; a gearing connected to the hollow shaft and having an input shaft parallel to the inner shaft, the gearing including a first gearwheel disposed on the input shaft and a

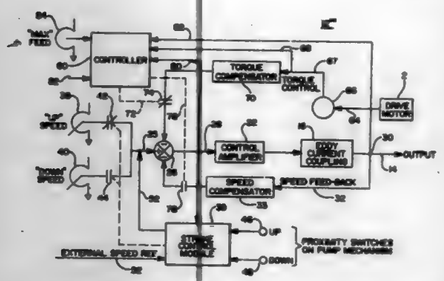
second gearwheel disposed at the foot end of the hollow shaft and engaging the first gear wheel; a first engine having an output shaft, the inner shaft being arranged to pass through the gearing and being fastened at its foot end with the output shaft of the first engine; a second engine having an output shaft, the input shaft of the gearing being connectable to the output shaft of the second engine; a first thrust bearing disposed on the hollow shaft between tire front propeller and the gearing; a second thrust beating arranged on tire inner shaft so as to be disposed between the gearing and the first engine, the ratio of the number of teeth of the second gearwheel disposed on the hollow shaft to the number of teeth of the first gearwheel disposed on the input shaft is 2 to 7.5; a clutch provided at the output shaft of the first engine; braking means connected to the output shaft of the first engine, the clutch and braking means being adapted to stop the inner shaft and the output shaft of the first engine; and additional braking means arranged on the output shaft of the second engine for stopping the input shaft of tire gearing.

5,441,389

EDDY CURRENT DRIVE AND MOTOR CONTROL SYSTEM FOR OIL WELL PUMPING

John H. Wolcott, Racine; William L. Sieger, Franklin, both of Wis., and Alvin J. Watson, Ardmore, Okla., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 854,194, Mar. 20, 1992, abandoned. This application Oct. 14, 1992, Ser. No. 961,195
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—412 **20 Claims**



10. An eddy current coupling control system for an oil well drive comprising:

an AC electric drive motor for powering an oil well pump;

an eddy current coupling assembly comprising a driven rotatable input shaft coupled to said AC electric drive motor, a driven rotatable output shaft, an inductor drum surrounding a peripheral surface of a pole member, said inductor drum being rotatable relative to said pole member, a coil means for inducing an electromagnetic flux for coupling said inductor drum and said pole member and said input shaft and said output shaft;

oil well pumping means nonrotatably connected to said output shaft of said eddy current coupling for moving a sucker rod upward and downward;

speed sensor means for generating a speed signal representing the rotational speed of said output shaft of said eddy current coupling;

control means for supplying electrical power to said coil means for coupling said inductor drum and said pole member in response to said input control signal;

a down speed signal means for generating a first speed signal representing the desired travel speed of said sucker rod in the downward direction;

an up speed signal means for generating a second speed signal representing the desired travel speed of said sucker rod in the upward direction;

direction sensor means for generating a direction signal indicating when said sucker rod is travelling in a downward direction and when said sucker rod is travelling in an upward direction; and

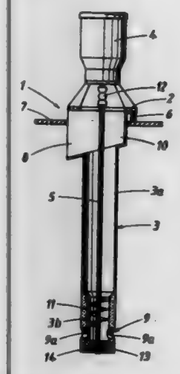
a second control means for establishing a control signal in dependence on said first speed signal when said sucker rod is travelling downward and establishing a control signal in dependence on said second speed signal when said sucker rod is travelling upward as indicated by said direction sensor means where said control signal is connected to said electric drive motor for improving the production rate of said oil well pump by selecting an operating speed for said oil well pumping means when said sucker rod is travelling downward and another speed for said oil well pumping means when said sucker rod is travelling upward.

5,441,390

WORM PUMP FOR DELIVERING A METAL MELT

Josef Rapp, Traunkirchen, and Erich Rauch, Gmunden, both of Austria, assignors to Ing. Rauch Fertigungstechnik Gesellschaft m.b.H., Gmunden, Austria

Filed Jan. 24, 1994, Ser. No. 185,475
Claims priority, application Austria, Jan. 26, 1993, 116/93
Int. Cl.[6] F04B *35/04*
U.S. Cl. 417—359 **6 Claims**



1. A worm pump for delivering a metal melt, which comprises

(a) a mounting flange,

(b) a tubular pump housing mounted on, and suspended from, the mounting flange, the pump housing defining

(1) a lower inlet for receiving the metal melt and

(2) an upper outlet for delivering the metal melt,

(c) a drive motor mounted on the mounting flange, the drive motor having

(1) a pump shaft extending into the tubular pump housing and comprising a conveyor screw between the inlet and outlet,

(d) a guide means for the pump shaft at a lower end thereof, and

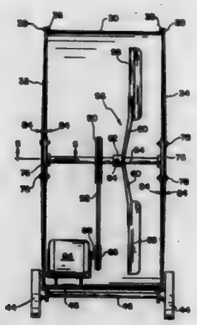
(e) a universal joint at an upper end of the pump shaft above the upper outlet, the universal joint permitting the pump shaft to pivot and the guide means being arranged to support the pump shaft during a pivoting motion.

5,441,391

AIR PROPELLING APPARATUS WITH FAN SHAFT MOUNTED ON GUARDS

Gordon J. Frost, and Edward W. Strubel, Jr., both of Fort Wayne, Ind., assignors to Patton Electric Company, Inc., New Haven, Ind.

Filed Jan. 5, 1994, Ser. No. 177,531
Int. Cl.[6] F04B *17/03*
U.S. Cl. 417—362 **17 Claims**



1. An air propelling apparatus comprising:

an air intake grill;

an air exhaust grill;

a shaft extending between and mounted on said air intake and exhaust grills;

a fan blade assembly on said shaft;

means for turning said fan blade assembly whereby air is propelled through said air intake grill and out through said exhaust grill and;

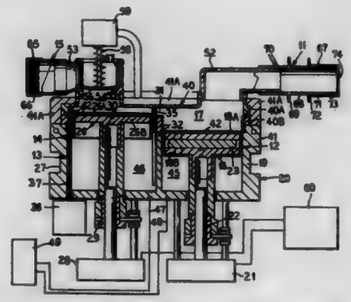
means for placing said shaft in longitudinal compression.

5,441,392

APPARATUS FOR REPETITIVELY DISPENSING A MEASURED VOLUME OF LIQUID

Stig Lundbäck, Vaxholm, Sweden, assignor to Humanteknik AB, Stockholm, Sweden

Continuation of Ser. No. 960,435, Dec. 7, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,510
Claims priority, application Sweden, Jun. 7, 1990, 900205
Int. Cl.[6] F04B *43/02*
U.S. Cl. 417—479 **25 Claims**



1. Apparatus for repetitively dispensing measured volumes of liquid, comprising:

a dosing piston pump having a dosing pump cylinder and a dosing pump piston which is reciprocable in the dosing pump cylinder and defines together with the dosing pump cylinder a dosing pump chamber having an outlet for the discharge of metered volumes of liquid,

an accumulator device including an accumulator receptacle and a movable wall member which is reciprocable in the accumulator receptacle and defines therewith an accumulator chamber having an inlet for liquid to be received into the accumulator chamber,

a transfer passage extending between the dosing pump chamber and the accumulator chamber and having associated therewith a transfer valve for controlling the transfer of liquid from the accumulator chamber to the dosing pump chamber,

an actuating mechanism for repetitively and positively driving the dosing pump piston at least in the direction corresponding to contraction of the dosing pump chamber,

means for contracting the accumulator chamber by displacing the movable wall member of the accumulator device, and

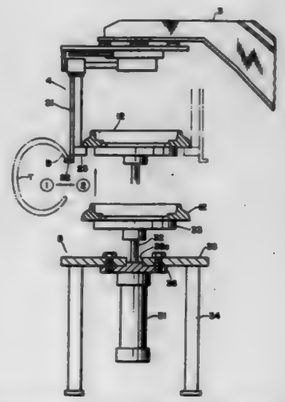
valve means arranged between said outlet and said dosing pump chamber for alternately opening and closing to provide for a pulsed delivery of said metered volumes of liquid.

5,441,393

UPPER AND LOWER RIMS OF POST-CURE TIRE INFLATOR, AND UPPER AND LOWER RIM REPLACING APPARATUS

Yasuhiko Fujieda, and Hisanori Oshiba, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Division of Ser. No. 976,388, Nov. 13, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 257,439
Claims priority, application Japan, Nov. 13, 1991, 3-326468
Int. Cl.[6] B29C *35/16*
U.S. Cl. 425—58.1 **4 Claims**



1. Upper and lower rims of a post-cure tire inflator including an unloader for suspending a cured tire by a chuck swingably disposed between a center of a tire curing press and a center of a post-cure tire inflator for holding said cured tire taken out of said tire curing press and for inflating and cooling said cured tire by filling a high-pressure air into said cured tire and for holding an inside of a bead section of said cured tire; said unloader comprising a lower rim holding section projectingly formed on a forward end of said chuck; a stop station being disposed on the way of swing of said unloader; and a vertically movable rim base set for mounting at least said lower rim on said stop station.

5,441,394

DEVICE FOR COOLING AND GRANULATING MOLTEN THERMOPLASTIC STRANDS EMERGING FROM DIES

Jurgen Keilert, Kleinwallstadt; Frank Glockner, Aschaffenburg; Helmut Meidhof, and Laurenz Hohm, both of Grossostheim, all of Germany, assignors to Rieter Automatik GmbH, Germany

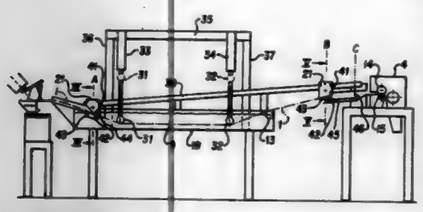
PCT No. PCT/EP93/00542, § 371 Date Apr. 1, 1994, § 102(e) Date Apr. 1, 1994, PCT Pub. No. WO93/17850, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 10, 1993, Ser. No. 146,174

Claims priority, application Germany, Mar. 12, 1992, 42 07 944.6

Int. Cl.[6] B29C *47/88*

U.S. Cl. 425—71 8 Claims



1. A device for cooling and granulating molten thermoplastic strands (1) which emerge from dies (2) comprising:

a precooling device (5) for receiving the strands from the dies and guiding the strands to an end of said precooling device remote from the dies (2);

a coolant bath (9) provided with guide rollers (11, 12) which are arranged to direct the strands (1) received from the precooling device (5) along a predetermined path through said coolant bath (9);

a granulator (4) which receives the strands (1) from the coolant bath (9); and

a gripping device (21) with opposed clamping elements (41, 42) which open and shut to grip and release forward ends (28) of the strands (1), and a guide rail (20, 30) which extends between said end of said precooling device and said granulator (4), wherein said clamping elements (41, 42) are operated to grip the forward ends of the strands (1) at said end of said precooling device, move along said guide rail (20, 30) with the gripped strands to said granulator (9), and to release the forward ends (28) of the strands (1) into said granulator (9).

5,441,395

TUBULAR PLASTIC FILM EXTRUSION APPARATUS WITH IMPROVED ADJUSTABLE SIZING CAGE

Mirek Planeta, 170 Traders Blvd., Mississauga, Ontario L4Z 1W7, Canada

Filed Jun. 22, 1994, Ser. No. 264,123

Int. Cl.[6] B29D *23/00*

U.S. Cl. 425—72.1 2 Claims

1. Tubular plastic film extrusion apparatus comprising:

an extruder for extruding tubular plastic film in an upwards direction,

an adjustable sizing cage above the extruder and surrounding the tubular film,

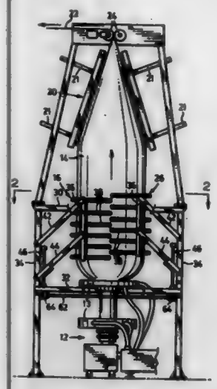
a collapsing frame above the sizing cage for collapsing the tubular film to sheet form and trapping air in the tubular film therebelow,

said sizing cage having a series of adjustable sizing assemblies circumferentially spaced around the tubular film,

each sizing assembly including a vertical arm support carrying vertically-spaced horizontally-extending sizing arms engageable with the tubular plastic film,

upper and lower parallel levers pivotally connected at inner ends to the vertical arm support and at opposite ends to a fixed location, and

an adjuster operable to pivot the upper and lower levers upwardly to cause upward and outer movement of the vertical arm support and the sizing arms carried thereby



and to pivot the upper and lower arms downwardly to cause downward and inner movement of the vertical arm support and the sizing arms carried thereby.

5,441,396

MACHINE FOR THE CENTRIFUGAL MOLDING OF LOW-MELTING METALS OR SYNTHETIC MATERIALS

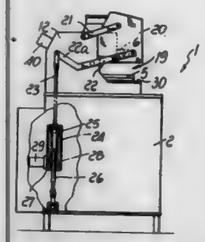
Romeo Nicetto, Senago, Italy, assignor to NICEM S.p.A., Senago, Italy

Filed Oct. 8, 1993, Ser. No. 133,417

Claims priority, application Italy, Oct. 14, 1992, MI92U0892

Int. Cl.[6] B29C *41/04;* B22D *13/12*

U.S. Cl. 425—73 18 Claims



10. Machine for vulcanizing molds or for casting low-melting metals, comprising a box-like structure connected to a main structure of the machine and delimiting a chamber which has, on a front side thereof, an opening closed by a movable cover, wherein said cover is connected to at least one side wall delimiting said chamber by a pair of connecting rods, each of said connecting rods having ends which are pivoted respectively to said cover and to said at least one side wall with substantially horizontal pivoting axes for the opening movement of said cover along an upward vertical component and along a horizontal component toward a rear side of the machine.

5,441,397

MOLD ARRANGEMENT FOR OPTODEVICES

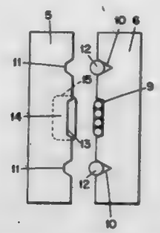
Paul Eriksen, Tyresö ; Jan-Ake Engstrand, Trångsund; Hans-Christer Moll, Eskede; Mikael Persson, Ahus, and Jan-Agne Svensson, Degeberga, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 31, 1994, Ser. No. 251,187

Claims priority, application Sweden, Jun. 1, 1993, 9301858

Int. Cl.[6] B29C *45/14*

U.S. Cl. 425—116 4 Claims



1. In a mold comprising a plurality of mold plates for insertion between a movable top plate and a stationary bottom plate of a transfer molding press, and including an inlet channel, primary and secondary runners, and an optodevice molding cavity defined by two of the plurality of mold plates when brought together and through which an optical fiber ribbon extends, an arrangement for molding an optodevice onto the optical fiber ribbon comprising, in each of the mold plates, respective front and back exchangeable jaws;

wherein a number of V-grooves corresponding to a number of fibers in the fiber ribbon is disposed in one of the front jaws in a jaw dividing plane, the optical fibers having been stripped of protective coveting and positioned in the V-grooves such that their centers lie in the jaw dividing plane;

a first recess is disposed in the other front jaw on a side thereof proximal to the fibers, in which first recess a first pad of soft resilient material is mounted;

one of the back jaws has a second recess in the jaw dividing plane in which the fiber ribbon is positioned;

a third recess is disposed in the other back jaw on a side thereof proximal to the ribbon, in which third recess a second pad of soft resilient material is mounted; and

the pads project beyond the jaw dividing plane and press against and hold the fiber ribbon when the mold is closed.

5,441,398

INSERT FOR MOLDING CONVEX SURFACES OF PROGRESSIVE LENSES AND RETAINER THEREFOR

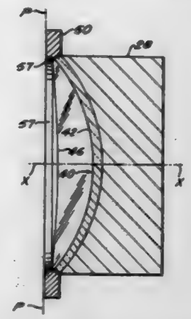
Russell F. Weymouth, Jr., Charlton Depot, Mass., assignor to Gentex Optics, Inc., Carbondale, Pa.

Continuation of Ser. No. 958,508, Oct. 8, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,328

Int. Cl.[6] B29C *33/30;* B29D *11/00*

U.S. Cl. 425—183 4 Claims

1. Apparatus for molding the convex surface of a progressive lens including in combination an insert having a progressive concave front surface, a generally spherical convex rear surface, a mechanical axis, and a periphery; said periphery comprising a first cylindrical surface of a first diameter axially extending rearwardly from the front surface, a second cylindrical surface of a second and larger diameter axially extending forwardly from the rear surface, and a shoulder disposed in a plane orthogonal to the insert axis and connecting the first and second cylindrical surfaces; and a retainer having a mechanical axis and respective front and rear surfaces disposed in respective planes extending orthogonally to the retainer axis; the retainer comprising a first cylindrical bore of a diameter slightly larger than the first diameter and axially extending rearwardly from its front surface, a second cylindrical bore of a diameter slightly larger than the second diameter and axially extending forwardly from its rear surface, and a shoulder disposed in a plane orthogonal to the retainer axis and connecting the first and second cylindrical bores; the insert and the retainer being mated with common axes and with respective shoulders generally abutting one another.



5,441,399

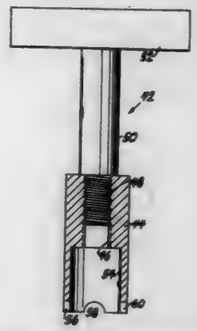
METHOD OF REMOVING STUCK SPRUE AND TOOL FOR REMOVAL THEREIN

Norman B. Campbell, Chino; Francisco Garcia, Los Angeles, and Stefan Diosan, Norwalk, all of Calif., assignors to Wes Manufacturing Inc., Olyphant, Pa.

Division of Ser. No. 171,097, Dec. 21, 1993, Pat. No. 5,391,332. This application Aug. 26, 1994, Ser. No. 297,260

Int. Cl.[6] B29C *45/42*

U.S. Cl. 425—556 5 Claims



1. A tool for use in removing a stuck sprue from the sprue ejector mechanism of an injection molding machine including a body of thermally conductive material, said body having a hollow lower portion with an open lower end, the edge of said lower end of said hollow lower portion having at least one axially extending indentation therein and a handle attached to said body.

5,441,400

SPRING BIASED CHECK VALVE FOR AN INJECTION MOLDING MACHINE

Donald J. Zeiger, 26 Cheyenne Trail, Malvern, Ohio 44644

Filed Apr. 7, 1994, Ser. No. 224,334

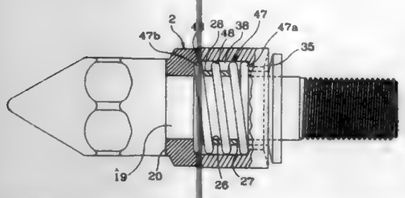
Int. Cl.[6] B29C *45/23*

U.S. Cl. 425—562 13 Claims

1. A check valve assembly for mounting in an injection molding machine having a heated cylindrical barrel containing

a rotating and reciprocating feedscrew therein for feeding heated thermoplastic material therethrough past the check valve assembly toward a discharge chamber at a forward end of the barrel, said check valve assembly including:

front and rear valve seats and a check ring slidably mounted therebetween and forming a material flow area along an inner periphery of the check ring and through the front valve seat for feeding material therethrough, the front valve seat including a plurality of spaced projections



forming portions of the material flow area therebetween, and a plurality of spaced projections being formed on the check ring and slidably received between corresponding front valve seat projections whereby said front valve seat and said check ring rotate in unison when the check ring is in an open position; and

spring means mounted within the material flow area for biasing the check ring toward a closed position and into engagement with the rear valve seat.

5,441,401

METHOD OF DECREASING NITROGEN OXIDES IN COMBUSTION DEVICE WHICH PERFORMS CONTINUOUS COMBUSTION, AND APPARATUS THEREFOR

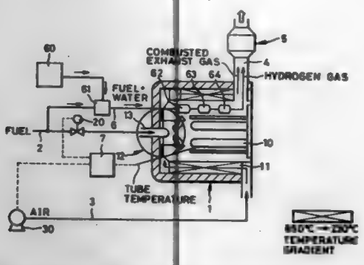
Akira Yamaguro, Chiryu, Japan; Shigenori Haramura, East Sussex, United Kingdom; Naoki Minamoto, Toyota, Japan; Yujiro Oshima, Nagoya, Japan; Hideaki Muraki, both of Nagoya, Japan; Katsushi Abe, Aichi, Japan; Koji Yokota, and Kazuo Kawahara, both of Nagoya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 10, 1992, Ser. No. 943,015

Claims priority, application Japan, Sep. 13, 1991, 3-235036

Int. Cl.[6] F23J *7/00*

U.S. Cl. 431—4 **1 Claim**



1. An apparatus for reducing nitrogen oxides from a combustion exhaust gas comprising:

a combustion chamber;

a first supply means for supplying said combustion chamber with fuel and air;

an exhaust gas passageway for discharging exhaust gas produced by combustion of said fuel in said combustion chamber;

a catalytic means arranged in said element exhaust passageway for purging toxic components contained in the exhaust gas discharged; and

a second supply means for supplying reformed gas produced by a steam reforming process to contact with said exhaust gas which enters said catalytic means, said second supply means comprising:

a deionized-water supply means for supplying deionized water;

a mixing means for mixing the deionized water from said deionized-water supply means with fuel from said first supply means;

a steam reformer, which is supplied with the mixture of deionized water and fuel from said mixing means, mounted in said combustion chamber at a position where a predetermined temperature will be attained; and

hot- and cold-shift converters connected to a water-vapor modifying means for producing reformed gas that is supplied to the exhaust gas in said exhaust passageway.

5,441,402

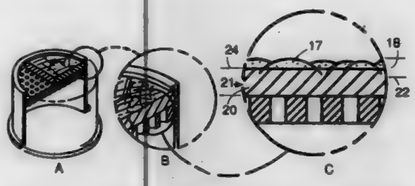
EMISSION REDUCTION

James J. Reuther, Worthington, Ohio, and Irwin H. Billick, Prospect Heights, Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 28, 1993, Ser. No. 144,680

Int. Cl.[6] F23D *3/40*

U.S. Cl. 431—7 **11 Claims**



1. A method for burning a mixture of gaseous fuel and air in a burner, with substantially minimal emission of gaseous pollutants containing nitrogen, hydrogen, or carbon; comprising

A. providing in the burner a refractory porous member having a porosity of at least about 92 percent;

B. providing along a predetermined path through the porous member, a mixture of gaseous fuel and air in a ratio that is slightly fuel rich to slightly fuel lean; and

C. ignited the mixture to provide a flame in a predetermined burning region that includes at least a substantial portion of the porous member;

D. wherein the mixture is provided at a rate such that the porous member extends into the flame to a level at about 25 to 50 percent of the height of the flame and such that the porous member does not become incandescent.

5,441,403

METHOD OF LOW-NOX COMBUSTION AND BURNER DEVICE FOR EFFECTING SAME

Ryoichi Tanaka; Mamoru Matsuo; Hitoshi Yahara, and Jun Sudo, all of Yokohama, Japan, assignors to Nippon Furnace Kogyo Kaisha, Ltd., Kanagawa, Japan

Division of Ser. No. 69,590, Jun. 1, 1993, Pat. No. 5,403,181.

This application Jan. 13, 1995, Ser. No. 372,551

Claims priority, application Japan, Jun. 5, 1992, 4-169894

Int. Cl.[6] F23C *5/28*

U.S. Cl. 431—175 **13 Claims**

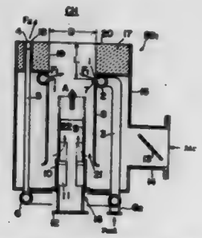
1. A burner device for a low-NOx combustion in a two-stage manner for a furnace, said burner device comprising:

burner throat means for creating a flame and having an inner wall with a central axis and an exit end facing into an inside of the furnace;

means for injecting a body of combustion air in a downstream direction into said burner throat means and through said exit end, into the furnace, said burner throat being substantially unobstructed to provide a linear flow of air therethrough;

first fuel injection means for injecting a primary fuel into burner throat means and around a periphery of said body of combustion air, said first fuel injection means being structured and positioned on the inner wall of said burner throat means and at a location spaced upstream from said exit end by a distance which is selected to create a primary flame in said burner throat means which is confined to the periphery of the body of combustion air and which expands from said exit end into the furnace, said first fuel injection means being further structured and positioned in said burner throat means so that said primary fuel flows in contact only with the periphery of the body of combustion air to mix only with an outer layer of the combustion air for subjecting said primary fuel to a first combustion in such a way that the primary flame is formed into a shape conforming to said inner wall of said of said burner throat means, and circumscribing the body of combustion air in a downstream direction toward the inside of the furnace to leave an unmixed portion of said body of combustion air which penetrates downstream through said primary flame into the furnace, NOx being generated in said primary flame, said first fuel injection means further having an injection axis oriented substantially along the central axis of said burner throat means; and

secondary fuel injection means structured and positioned for injecting a secondary fuel around an outer periphery of



the primary flame, said secondary fuel injection means being at a location adjacent said exit end of said burner throat means and spaced from the location of said first fuel injection means so that said secondary fuel flows in contact with the primary flame to positively deoxidize the NOx which was generated in said primary flame, and said secondary fuel injection means being further structured and positioned for thereafter subjecting said secondary fuel to a second complete combustion with the unmixed portion of said body of combustion air which penetrated downstream through said primary flame into the furnace, thereby creating a secondary flame in the furnace at a second stage of combustion;

said first and secondary fuel injection means being further structured so that at said first combustion, said body of combustion air is initially covered by said primary flame upstream a location where said secondary fuel is injected, so that said secondary fuel, immediately after being injected toward said combustion air, is intercepted by said primary flame and shielded from said unmixed portion of said body of combustion air and then, at the second stage of combustion, through operation and structure of said second fuel injection means, said secondary fuel is firstly contacted with said primary flame covering said combustion air, to thereby positively deoxidize NOx generated in said primary flame, while said injected secondary fuel is further contacted with the unmixed portion of said combustion air penetrating through said primary flame so as to create said secondary flame.

5,441,404

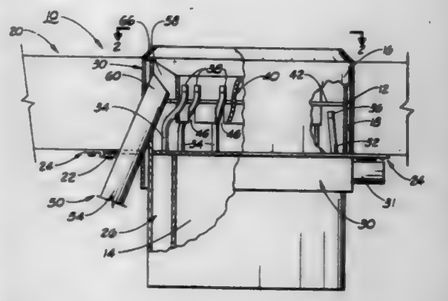
BURNER ASSEMBLY FOR REDUCING NITROGEN OXIDES DURING COMBUSTION OF GASEOUS FUELS

Dan L. Christenson, Mulvane, Kans., assignor to Gordan-Piatt Energy Group, Inc., Winfield, Kans.

Filed Jan. 29, 1993, Ser. No. 11,455

Int. Cl.[6] F23D *14/20, 14/26*

U.S. Cl. 431—187 **2 Claims**



1. A diluent injection burner apparatus comprising:

a burner head assembly having an air flow passage extending therethrough;

fuel supply means for supplying a first gaseous fuel portion to a first burner zone and for supplying a second gaseous fuel portion to a second burner zone, the fuel supply means operably connected to a fuel source and adapted to inject the fuel portions into the air flow passageway of the burner head assembly, the second burner zone being downstream of the first burner zone, the fuel supply means comprising:

a fuel manifold disposed substantially about the air flow passage;

a plurality of primary fuel dispensing nozzles in fluid communication with the fuel manifold, the primary fuel dispensing nozzles disposed to inject the first gaseous fuel portion into the first burner zone; and

a plurality of secondary fuel dispensing nozzles in fluid communication with the fuel manifold, the secondary fuel dispensing nozzles disposed to inject the second gaseous fuel portion into the second burner zone;

pilot means for igniting the fuel injected into the burner head assembly by the fuel supply means to form a flame envelope;

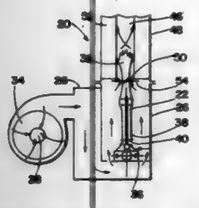
diluent manifold means surrounding the burner head assembly and disposed for injecting an inert diluent tangentially about the flame envelope, the manifold means operably connected to a diluent source and adapted to provide a shroud of diluent completely about and surrounding the base portion of the flame envelope;

a shield supported by the burner head in shielding relationship between the pilot means and the fuel supply means;

baffle means for separating the primary fuel dispensing nozzles and the secondary fuel dispensing nozzles in the burner head assembly; and

air diffuser means supported by a downstream end portion of the burner head assembly to extend across a portion of the air flow passage for diffusing combustion air supplied through the air flow passage prior to admixture with fuel discharged by the primary fuel dispensing nozzles and the secondary fuel dispensing nozzles.

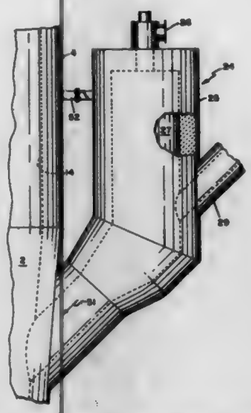
5,441,405
POWER GAS BURNER SYSTEM
James P. Bedford, Willoughby, Ohio, and Wayne Hollingshead, Guelph, Canada, assignors to Cleveland Range, Inc., Cleveland, Ohio
Filed May 14, 1993, Ser. No. 62,302
Int. Cl.[6] F23D *14/58*
U.S. Cl. 431—286 **2 Claims**



1. A gas burner system, comprising:
a burner, a combustion chamber defining an opening aligned with said burner, and a turbulator disk defining a central port and a plurality of voids adjacent to said central port, said disk arranged between said burner and said chamber opening such that a burner flame resulting from ignition of a fuel gas and a first quantity of air at said burner is directed through said central port into said combustion chamber and a second quantity of air is directed through said voids into said combustion chamber, said burner, said chamber, and said disk together defining a first burner system;
at least one additional burner system arranged in a predetermined location relative to said first burner system, said additional burner system comprising a burner, combustion chamber, and disk arranged in substantially the same way as in said first burner system; and
a cross-lighting mechanism associated with the burner of said first burner system and the burners of each of said additional burner systems such that a single ignition source may ignite sequentially each of said burners.

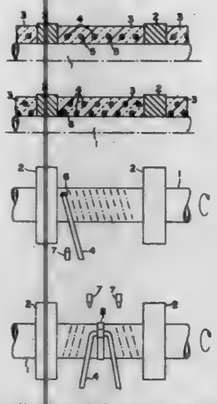
5,441,406
FIRING LIQUID AND GASEOUS FUELS FOR A CIRCULATING FLUIDIZING BED REACTOR
Stanley A. Bunk, Stamford, Conn., and George Tomasicchio, Milan, Italy, assignors to Dorr-Oliver Incorporated, Milford, Conn.
Continuation of Ser. No. 120,599, Sep. 13, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,557
Int. Cl.[6] F23D *19/00*
U.S. Cl. 432—15 **21 Claims**

1. A method for providing a combustion gas to a circulating fluidized bed reactor comprising a shell having a lower portion and an upper portion, said reactor further comprising a dense phase portion located in said lower portion and a dilute phase portion located in said upper portion, comprising the steps of:
(a) providing a mixture comprised of air and fuel;
(b) initiating and maintaining combustion of said mixture external to said shell to produce combustion gases;
(c) quenching said combustion gases external to said shell to reduce the temperature of said combustion gases; and



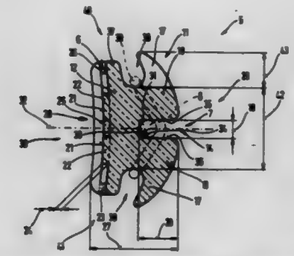
(d) thereafter introducing said quenched combustion gases to said dense phase portion of the circulating fluidized bed reactor.

5,441,407
ROLLER FOR ROLLER-HEARTH FURNACES
Dietrich Stamm, Essen; Alwin Vogel, Eisenberg, and Hermann Stein, Dürkheim, all of Germany, assignors to LOI Essen Industrieofenanlagen GmbH, Essen, Germany
Continuation of Ser. No. 989,031, Dec. 10, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 344,518
Claims priority, application Germany, Dec. 14, 1991, 41 41 250.8
Int. Cl.[6] F27D *3/00*
U.S. Cl. 432—246 **9 Claims**



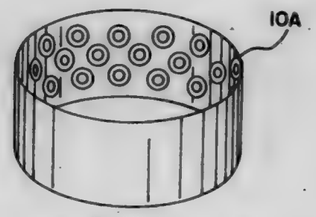
1. A roller for roller-hearth furnaces, said roller exhibiting a rotatable support body, a plurality of support disks mounted on the support body and adjacent to the support disks heat-insulated areas in each of which the support body is surrounded by at least one insulating layer made of fibre material, wherein at least one heat-resistant cable is embedded in the insulating layer of fibre material, further wherein said cable is fixed at least at one point to the support body, said cable being wound around the support body in several coils, wherein the cable forms at least two layers, the one arranged on top of the other.

5,441,408
ORTHODONTIC DEVICE WITH A CERAMIC TOOTH ATTACHMENT
Erich Moschik, St. Veit/Glan, Austria, assignor to Hirsch Advanced Ceramics Gesellschaft m.b.H., Klagenfurt, Austria
PCT No. PCT/AT92/00088, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/00865, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 9, 1992, Ser. No. 178,267
Claims priority, application Austria, Jul. 9, 1991, 1365/91
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—8 **19 Claims**



1. An orthodontic device comprising a ceramic tooth attachment, the ceramic tooth attachment comprising a base body having an in-line transmittance of visible light in the range of 5% to 60% through a thickness of 0.5 mm and the base body consisting of
(a) polycrystalline grains comprising a substance selected from the group consisting of high purity zircon, high purity yttrium oxide, lead titanate zirconate and an aluminum oxide, and
(b) X-ray visible precipitations arranged on grain boundaries between the polycrystalline grains, the precipitations comprising ytterbium fluoride in a concentration range of 3 to 150 ppm.

5,441,409
ORTHODONTIC BAND
Lee H. Tuneberg, Sheboygan, Wis., assignor to American Orthodontics Corporation, Sheboygan, Wis.
Continuation of Ser. No. 10,416, Jan. 28, 1993, abandoned. This application Feb. 23, 1994, Ser. No. 200,371
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—23 **27 Claims**



1. Metal band material adapted to be cut into circular blanks and die-worked for making tubular orthodontic bands, said material being in flat sheet or strip form of a thickness such that it will function as an orthodontic band when die-worked into a tubular band and being photoetched on one side which becomes the inside surface of the band and the side to be engaged by dies during die-working into tubular bands, and said photoetched side including a plurality of spaced apart indentations each having a centrally disposed island, whereby said indentations coact with cement when attaching the band to a tooth with a dental cement to materially enhance the strength of the cement bond between the band and the tooth.

5,441,410
DISPOSABLE SALIVA EJECTOR
Michael J. Segerdal, 4643 Alveo Rd., LaCanada, Calif. 91011
PCT No. PCT/US92/02986, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO93/20776, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 13, 1992, Ser. No. 39,162
Int. Cl.[6] A61C *17/06*
U.S. Cl. 433—93 **19 Claims**

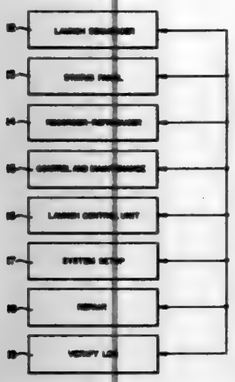


1. A disposable saliva ejector comprising:
a formable hollow tube having a first end and a second end, with the first end having a tip with openings therein for drawing in saliva and the second end for connection to a vacuum source,
said tube having a beveled hole therein,
said hole further comprises a concave dish like surface on the tube exterior with the hole penetrating the tube at a sharp angle permitting dental tools to be inserted into the hole without binding on the tube exterior and jointly permitting a dental practitioner to place a finger over the hole for vacuum regulation,
said tip having a tip guard integrally formed therewith to prevent tissue aspiration from a patient into the openings of the tip, and
debris retaining means within the formable hollow tube positioned such that waste materials and tartar are retained therein for disposal when use of the saliva ejector is completed on a singular patient.

5,441,411
SIMULATION OF OPERATION FOR FAULT ISOLATION AND TRAINING
Paul L. Hasse, St. Paul, Minn., assignor to FMC Corporation, Chicago, Ill.
Filed Jun. 24, 1992, Ser. No. 903,688
Int. Cl.[6] F41G *7/30*
U.S. Cl. 434—34 **6 Claims**

1. An apparatus for simulating a system, comprising:
a monitor;
an input means; and
a central processing unit which is connected to the monitor and the input means and which is programmed, wherein the central processing unit comprises:
means for providing a simulation mode which provides at least one screen display on the monitor with the screen display having at least one switch and one indicator;
a log memory;
means for recording when a switch is selected in the log memory;

means for recording when the indicator is selected in the log memory; and



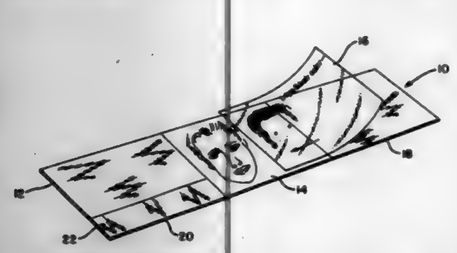
means for providing a log mode which displays the data in the log memory.

5,441,412

MAKE-UP KIT HAVING OVERLAYS WHICH FORM COMPOSITE MAKE-UP PATTERN AND METHOD OF USE

Mark C. Hayles, 822 Greenwich St.-Apr. GC, New York, N.Y. 10014

Continuation of Ser. No. 36,805, Mar. 25, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,533
Int. Cl.[6] G09B *19/18*
U.S. Cl. 434—100 37 Claims



1. A make-up kit comprising:

a plurality of overlays positioned one on top of the other, each of said plurality of overlays including make-up information for at least one or more facial features of the human face, said make-up information being positioned on said overlays such that when said overlays are selectively positioned one on top of the other said make-up information at least depicts and forms a composite make-up pattern for the corresponding facial features of the human face.

5,441,413

TEACHING AID FOR SPINAL MOBILIZATION AND MANIPULATION THERAPY

Shrawan Kumar, Edmonton, Canada, assignor to The Governors of the University of Alberta, Edmonton, Canada

Filed May 4, 1994, Ser. No. 238,054
Int. Cl.[6] G09B *23/28*
U.S. Cl. 434—275 2 Claims

1. A teaching aid for spinal mobilization and manipulation therapy, comprising:

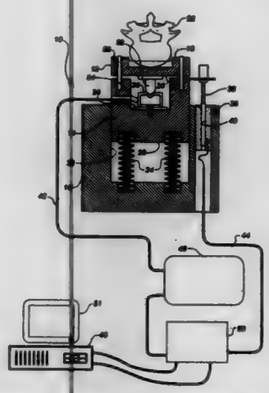
a. a first support on which is mounted a spinal model;

b. a second support underlying the first support;

c. a third support underlying the second support, the third support having a cavity into which the second support is telescopically received such that telescopic movement of the second support relative to the third support occurs when a force is applied to the first support;

d. a load sensor disposed between the first support and the second support whereby a force with which the first support is pressed toward the second support is measured;

e. a plurality of springs disposed between the second support and the third support to provide resistance to telescopic movement of the second support relative to the third support;



f. a displacement sensor secured between the second support and the third support whereby the displacement of the second support relative to the third support is measured; and

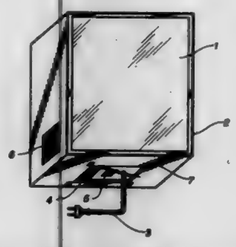
g. a microprocessor linked to the load sensor and the displacement sensor, the microprocessor being programmed to receive signals from the load sensor and the displacement sensor, convert the signals into values, and compare the values as to the amount of displacement occurring and the amount of force being applied to a therapeutic range of values and provide human readable feedback as to whether the measured values for force and displacement are within the therapeutic range.

5,441,414

AUDIO-VISUAL DUMMY

Nicolas Chretien, 26, rue Auguste-Renoir, F-30400, Villeneuve-les-Avignon, France

Filed Oct. 18, 1993, Ser. No. 137,107
Claims priority, application France, Apr. 19, 1991, 91 04837
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—307 R 11 Claims



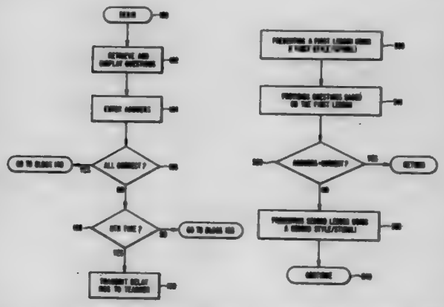
1. An audio-visual dummy comprising a rigid structure in a form of a human body, said rigid structure receiving a video monitor in place of a head of said human body, said video monitor displaying an audio-visual message of an animated face, said monitor being connected to a system for reading said audio-visual message.

5,441,415

INTERACTIVE COMPUTER AIDED NATURAL LEARNING METHOD AND APPARATUS

John R. Lee, 912 Constantinople St., New Orleans, La. 70115, and John Alvendia, Metairie, La., assignors to John R. Lee, New Orleans, La.

Continuation-in-part of Ser. No. 833,905, Feb. 11, 1992, Pat. No. 5,267,568. This application Dec. 6, 1993, Ser. No. 161,511
Int. Cl.[6] G09B *3/00*
U.S. Cl. 434—350 8 Claims



1. An educational method using an interactive audio-visual system having at least one workstation comprising the steps of:

presenting, at said workstation, a first lesson for teaching a first group of concepts, said first lesson using at least a first one of a plurality of styles and stimuli;

providing, after said first presenting step, a plurality of questions based on said first lesson;

comparing answers to said questions to correct answers; and

presenting, based on said comparing step, a second lesson for teaching said first group of concepts, said second lesson using at least a second one of said plurality of styles and stimuli different from said at least first one of a plurality of styles and stimuli.

3. An educational system comprising:

at least one student workstation;

a database including a plurality of presentations associated with each lesson, wherein at least two of said plurality of presentations use a different at least one of a plurality of styles and stimuli;

means, at said student workstation, for accessing and presenting a first of said plurality of presentations;

means for determining a comprehension level of a lesson associated with said first presentation; and

means, based on a result of said determining means, for selectively accessing and presenting a second of said plurality of presentations associated with said lesson.

5,441,416

TELESCOPING ELECTRICAL CONNECTOR

Kenneth J. Gajewski, Woodhaven, and Ralph T. Nichols, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 130,826
Int. Cl.[6] H01R *41/00*
U.S. Cl. 439—32 16 Claims

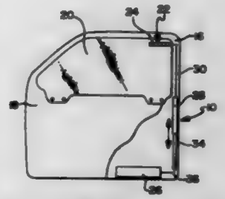
1. A telescoping electrical connector for an automotive vehicle to provide an electrical connection between a vehicle stationary object and a vehicle moveable object comprising:

a tubular first connector member electrically connected to a vehicle stationary object mounted to vehicle structure;

a tubular second connector member electrically connected to a vehicle moveable object moveable relative to the vehicle stationary object;

means for conducting electrical power between said first and second connector members; and

said first and second connector members disposed telescopingly within one another and slidingly engaging each other during entire movement of the vehicle moveable object relative to the vehicle stationary object to provide an electrical connection therebetween and allow electrical power to flow between the vehicle stationary object and the vehicle moveable object.

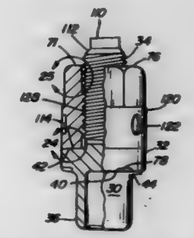


5,441,417

ELECTRICAL GROUNDING STUD

Harold A. Ladouceur, Livonia, Mich., and Rudolf R. M. Muller, Frankfurt, Germany, assignors to Multifastener Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 786,243, Oct. 31, 1991, Pat. No. 5,207,588, which is a continuation-in-part of Ser. No. 491,925, Mar. 12, 1990, Pat. No. 5,092,724, which is a division of Ser. No. 196,209, May 19, 1988, Pat. No. 4,915,558, which is a division of Ser. No. 892,017, Aug. 1, 1986, Pat. No. 4,765,057, which is a division of Ser. No. 773,387, Sep. 6, 1985, Pat. No. 4,633,560, which is a division of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 485,099, Mar. 28, 1983, Pat. No. 4,459,073, and a continuation-in-part of Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, Ser. No. 485,099, Jun. 14, 1983, which is a division of Ser. No. 229,274, Jan. 28, 1981, abandoned, Ser. No. 504,074, Jan. 28, 1981, which is a continuation of Ser. No. 229,274, Jan. 28, 1981. This application Dec. 9, 1992, Ser. No. 988,066
Int. Cl.[6] H01R *4/06, 4/26*
U.S. Cl. 439—84 17 Claims



1. An electrical grounding connector assembly for attachment to a panel, said assembly including a stud fastener having a riveting portion for riveting attachment to said panel, a body portion having a flange extending radially therefrom and a threaded stud portion extending generally perpendicular to said radial flange portion, and said assembly including a nut member having a threaded bore threadably received on said threaded stud portion, said radial flange having an annular bearing surface surrounding said stud portion for receiving an annular electrical connector, and said nut having an opposed annular bearing surface, said annular bearing surfaces converging radially to a generally circular line contact between said bearing surfaces spaced from said stud portion, said line

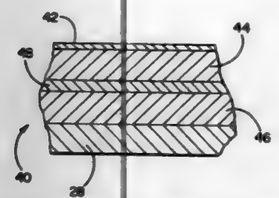
contact sealing said annular bearing surfaces and preventing entry of paint, undercoating and other debris from entering the space between said bearing surfaces when said stud fastener is riveted to said panel and said nut member is threadably received on said stud portion.

5,441,418

THERMOCHROMIC DRAWING DEVICE

William E. Brown, Blue Springs, Mo.; Charles W. Dietterich, Brodheadsville, Pa., and Richard M. Mandle, Woodcliff Lake, N.J., assignors to Binney & Smith Inc., Easton, Pa.

Filed May 20, 1993, Ser. No. 65,549
Int. Cl.[6] G09B *11/00*
U.S. Cl. 434—85 **29 Claims**



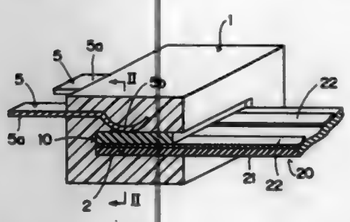
1. A thermochromic drawing surface for marking and erasing comprising:
a flexible substrate having a drawing side and a bottom side wherein the flexible substrate has low thermal mass for quickly assimilating temperatures applied to the drawing side;
at least one thermochromic ink applied to the flexible substrate having a first color state when the temperature induced in the flexible substrate falls below a first transition temperature and a second color state when the temperature of the flexible substrate exceeds a second transition temperature; and
an insulating layer adjacent to the bottom side of the flexible substrate for preventing heat transfer to or from the bottom side of the flexible substrate thereby facilitating the flexible substrate's assimilation of the temperatures applied to the drawing side.

5,441,419

CONNECTOR FOR A FLEXIBLE CABLE

Tomoo Takazawa; Toshio Hori, and Iwao Fukutani, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,169
Claims priority, application Japan, Feb. 4, 1993, 5-017139
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—86 **10 Claims**



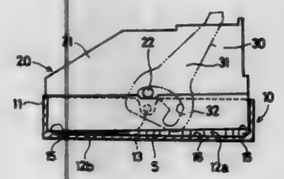
1. A connector comprising:
an insulating housing which has a cavity in which an end portion of a flexible cable having a signal-transmitting conductor on a flexible insulating base is to be inserted:
a terminal fixed in the housing such that one end of the terminal protrudes from the housing and that another end faces the cavity; and
an elastic resistance board, which is inserted in the cavity of the housing so as to lie on the end portion of the flexible cable, electrically connecting the signal-transmitting conductor of the flexible cable with the terminal to reduce noise in signals transmitted between the signal-transmitting conductor and the terminal, the resistance board having an insulating board and a number of conductors which are provided in the insulating board such that each of the conductors is exposed on an upper surface and a lower surface of the insulating board.

5,441,420

LEVER-TYPE CONNECTOR

Hitoshi Okumura; Osamu Taniuchi, and Hajime Kawase, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Mar. 17, 1994, Ser. No. 214,238
Claims priority, application Japan, Mar. 19, 1993, 5-018643
U
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **13 Claims**



1. A lever-type connector comprising:
a lever pivotally mounted on one of two connector housings, wherein connection and disconnection of the two connector housings is effected using said lever;
a recessed portion formed on an opposed surface of one of the two connector housings; and
a step portion formed on the one of the two connector housings, the step portion contacting a portion of the other one of the two connector housings and allowing at least one of the two connector housings to deform in a central location when said lever effects connection of the two connector housings, the step portion allowing one connector housing to move into a level position relative to the other connector housing.

5,441,421

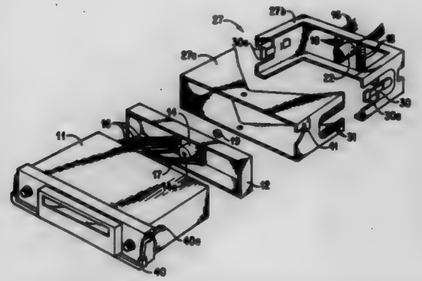
ANTI-THEFT MOUNTING SYSTEM FOR VEHICLE RADIO OR STEREO EQUIPMENT

Pasco Ponticelli, Jr.; Robert J. Ponticelli, both of Camarillo, and William C. Stevenson, Calabasas, all of Calif., assignors to American International Pacific Industries Corporation, Camarillo, Calif.

Filed Jun. 11, 1993, Ser. No. 75,782
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—284 **11 Claims**

1. A system for removably mounting electrical equipment having wire leads thereon in a vehicle having wire leads to be connected to said equipment comprising:
a first solderless wire terminal for receiving said equipment wire leads, said terminal having a plurality of solderless spring connectors, each of said leads being installed in one of said connectors and retained thereto by the spring action of its associated connector, said first wire terminal being connected to the rear portion of said equipment,
a mounting frame having separable rear and forward sections, a second solderless wire terminal being installed in the back portion of said rear frame section, said second wire terminal having solderless spring wire connectors similar to those of said first terminal, the wire connectors of said second terminal receiving the vehicle wire leads, the first and second terminals being joined together in mating engagement to provide electrical connections therebetween, and
means on said rear and forward frame sections for adjusting the relative longitudinal position therebetween thereby to adjust the depth of said frame to accommodate equipments having different depths.

8. A solderless spring metal connector for receiving a wire in physical retention thereto and electrical connection therewith comprising:
a pair of fingers joined together in opposing relationship, said fingers having similar tabs formed on the free ends thereof, said tabs having apertures formed therein and



extending substantially normally from the main body of said fingers,
said tabs being urged apart by the spring action of said connector when said fingers are not being externally urged towards each other, said tabs being capable of being manually urged together against said spring action in overlapping relationship and with said apertures in alignment with each other,
one of the fingers of said connector having a curved recessed portion which is adapted to matingly engage the corresponding recessed portion of one of the fingers of another of said connectors to make firm electrical contact therebetween when said contacts are installed in a pair of wire terminals,
whereby when said apertures are in alignment with each other, the wire is inserted in said apertures and retained therein when the tabs are left free to be urged apart by the spring action.

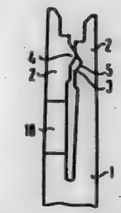
5,441,422

CUTTING CLAMP FOR CONNECTING AN INSULATED CONNECTING WIRE

Ewald Steiner, Berg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE92/00913, § 371 Date May 13, 1994, § 102(e) Date May 13, 1994, PCT Pub. No. WO93/10574, PCT Pub. Date May 27, 1993
PCT Filed Nov. 2, 1992, Ser. No. 244,063
Claims priority, application Germany, Nov. 14, 1991, 41 37 507.6
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—395 **11 Claims**

1. A cutting clamp constructed of a flat material, having at least two clamping legs and a clamping slot that is formed by a shearing cut and extends between said legs essentially in the longitudinal direction of said cutting clamp, so that an insulated connecting wire can be pushed into said slot to produce a contact, said clamping slot having a constriction near its free end, wherein said clamping slot further comprises an obliquely extending section near its free end to produce a first shoulder at a first clamping leg which points towards said free end and a second shoulder at a second clamping leg which points in the opposite direction, said second shoulder being oriented longitudinally in relation to said first shoulder towards said free end,



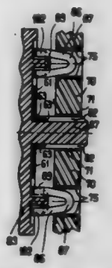
so that said connecting wire can be pushed into said obliquely extending section, said shoulders after the shearing operation being shifted away from each other in the longitudinal direction of the clamp by deformation of at least one of said legs.

5,441,423

REMOVABLE ATTACHMENT TO INTEGRALLY JOIN A FLAT SUPPORT TO AN ELEMENT

Patrick Champion, and Jacky Thenaisie, both of Le Mans, France, assignors to Framatome Coanectors France, Versailles, France

Filed Oct. 12, 1993, Ser. No. 134,963
Claims priority, application France, Oct. 13, 1992, 92 12208
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—567 **7 Claims**



1. Removable attachment to integrally join at least one flat support, such as a circuit support, to an element, characterized in that the attachment comprises an axial retention device (60) having a first retention means (63) assuring the attachment's retention on a first piece (81) borne by said element (31) and at least one second retention means (86) assuring the retention of the flat support (70), wherein the first (63) and second (86) retention means are laterally shifted with respect to one another, are adapted to function independently of one another, and the second retention means (86) is displaced on at least one part of the periphery of at least one second piece (182, 83) borne by said element.

5,441,424

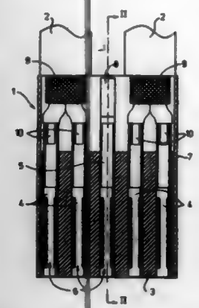
CONNECTOR FOR COAXIAL AND/OR TWINAXIAL CABLES

Danny L. Morlion, St-Amandsberg, and Luc O. Jonckheere, Dilbeek, both of Belgium, assignors to Framatome Connectors International, Paris, France

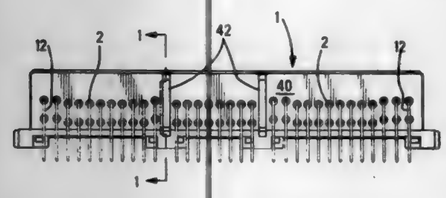
Filed Apr. 11, 1994, Ser. No. 225,536
Claims priority, application Netherlands, Apr. 15, 1993, 9300641
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—581 **7 Claims**

1. Connector for coaxial and/or twinaxial cables for con-

necting the cables to regularly arranged signal contact pins and ground contact pins, comprising a housing of insulating material and female signal contacts and female ground contacts regularly arranged in the housing and an outer conductor enclosing at least one of the female signal contacts, wherein the female signal contacts and female ground contacts are provided with identical parts to be plugged on said signal contact pins and ground contact pins, respectively, the outer conductor enclosing at least one of the female signal contacts and at least one of the female ground contacts, said at least one female ground contact being connected with the inner side of the outer conductor.

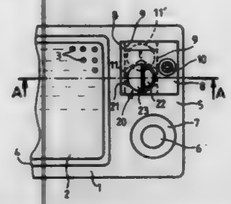


5,441,425
ELECTRICAL CONNECTOR WITH THROUGH CONDENSER
Hiroshi Kitamura, Kawasaki, Japan, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 29, 1993, Ser. No. 84,671
Claims priority, application Japan, Jul. 7, 1992, 4-053131 U; Jul. 13, 1992, 4-207049
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **12 Claims**



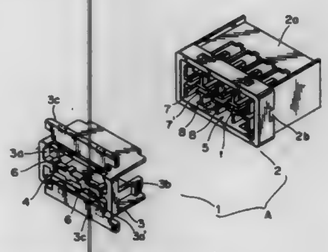
1. An electrical connector for receiving a plurality of electrical terminals, comprising:
a dielectric housing with a plurality of electrical terminals which pass through rows of condensers;
said condensers are disposed in a ground plate having a longitudinal axis, the ground plate being disposed on the housing;
wherein the ground plate has at least one slit comprising an elongate which extends between said condensers in a direction generally transverse to said longitudinal axis, said gap not having a condenser therein;
whereby a width of said gap expands and contracts to accommodate expansion and contraction of the housing.

5,441,426
INDEXABLE CODING DEVICE AND A CONNECTION DEVICE COMPRISING THE SAME
Guillaume Boulais, Boulogne Billancourt, France, assignor to Framatome Connectors International, Paris, France
Filed Dec. 9, 1993, Ser. No. 164,205
Claims priority, application France, Dec. 16, 1992, 92 15155
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—681 **7 Claims**



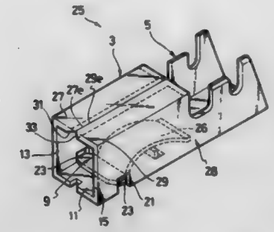
1. An indexable coding device for an electronic connector, the coding device having a correction component having a rear part comprising a right prism of which at least one of the lateral faces constitutes an angular indexing positioning reference surface, and an extended front part extending in a longitudinal direction and having a correction profile, characterized in that the coding device has a holding element (3) for the correction component (30), said holding element (3) comprising a lateral indexing means (35, 36) having at least two lateral indexing openings displaced laterally with regard to one another to hold the correction component (30) according to one of the at least two lateral indexing positions, the holding element having a laterally extending angular indexing groove (39).

5,441,427
CONNECTOR HOUSING
Satoshi Yamada, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Mar. 4, 1994, Ser. No. 205,633
Claims priority, application Japan, Mar. 8, 1993, 5-009446 U
Int. Cl.[6] H01R *13/506*
U.S. Cl. 439—686 **5 Claims**



1. An electrical connector including:
a connector housing having a plurality of terminal receiving chambers,
a rear holder, and
terminals for disposition in said terminal receiving chambers, characterized by:
means in said connector housing forming a dividing wall means between adjacent terminal receiving chambers;
means forming a partition in said rear holder, said partition having a guide projection in correspondence with each of said terminal receiving chambers, and
means on said dividing wall means forming a groove for reception of each of said guide projections.

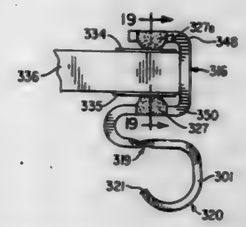
5,441,428
FEMALE TERMINAL PARTS
Tsuyoshi Hamai, and Tamio Watanabe, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Sep. 28, 1994, Ser. No. 314,382
Claims priority, application Japan, Sep. 28, 1993, 5-241164
Int. Cl.[6] H01R *15/10*
U.S. Cl. 439—843 **5 Claims**



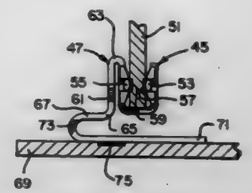
1. An electrical connector including a group of female terminal parts, comprising:
a terminal body formed with:
a wire connecting portion; and
an electric contact portion, having:
a bottom plate portion having two sides;
a pair of opposing side plate portions extending upward from both sides of the bottom plate portion and further outward away from each other, two lug engagement holes being formed on both of the side plate portions, respectively; and
a pair of opposing top plate half portions extending upward from upper ends of the side plate portions and further inward toward each other and terminating in respective cut-off end surfaces, the top plate portions having a chamfered surface at a ridgeline formed between an inside surfaces and the cut-off end surface; and
a plate spring piece formed with:
a spring body; and
a pair of lug portions engaged with the lug engagement holes formed in the two side plate portions, respectively when assembled with the terminal body, a distance between two outer ends of the lug portions being determined slightly smaller than a distance between the two chamfered surfaces of the two top plate half portions.

5,441,429
SOLDER-BEARING LAND
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.
Continuation-in-part of Ser. No. 927,415, Sep. 21, 1992, Pat. No. 5,344,343, which is a continuation-in-part of Ser. No. 510,004, Apr. 13, 1990, Pat. No. 5,030,144, and a continuation-in-part of Ser. No. 661,252, Feb. 26, 1991, Pat. No. 5,090,926. This application Aug. 18, 1993, Ser. No. 108,930
Int. Cl.[6] H01R *4/02*
U.S. Cl. 439—876 **36 Claims**

1. A blank for leads for connection to electrical apparatus, comprising
an elongated strip of electrically conductive material, one longitudinally extending portion of,
said strip constituting a carrier portion, said strip also including a series of parallel supporting strips integral with and extending laterally from said carrier portion, and a lead body parallel to and between each pair of consecutive supporting strips, each lead body being supported from the ends of its adjacent supporting strips by severable joins at respective points of said lead body spaced from both ends of said lead body, so that one portion of said lead body is between said supporting strips and another portion is not.



5,441,430
ELECTRICAL LEAD FOR SURFACE MOUNTING OF SUBSTRATES
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.
Filed Apr. 6, 1994, Ser. No. 223,716
Int. Cl.[6] H01R *4/02*
U.S. Cl. 439—876 **5 Claims**

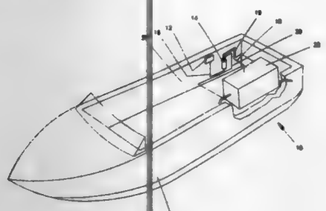


1. A lead having a clip and terminal for surface-mounting a first substrate perpendicularly to a second substrate, comprising:
an elongated flat strip of conductive resilient material, said strip having adjacent one end a U-shaped configuration with first and second substantially parallel side arms and a joining section forming a clip,
at least one side arm carrying a solder mass on its side facing the other side arm,
said clip being adapted to engage a first substrate having a contact pad in register with said solder mass,
said strip having a first straight section joined to said clip first arm and folded to be substantially parallel to said clip arms,
said strip having a terminal straight section substantially at right angles to said first section and to said clip arms, and adapted to be surface-mounted on a second substrate,
said terminal straight section being longer than said clip-joining section and extending beyond said clip on either side thereof.

5,441,431
FRESH WATER FLUSHING SYSTEM
Douglas Brogdon, 10570 Front Beach Rd., Panama City Beach, Fla. 32407
Continuation-in-part of Ser. No. 79,877, Jun. 23, 1993, abandoned. This application Feb. 24, 1994, Ser. No. 201,269
Int. Cl.[6] B63H *21/10*
U.S. Cl. 440—88 **10 Claims**

1. A fresh water flushing system for a marine engine in a boat for use whether said boat is in or out of a body of water comprising in combination:
a control panel;
said control panel is mounted interiorly on said boat;

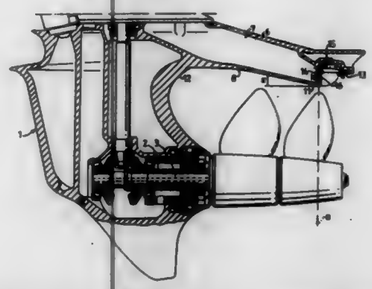
said control panel includes a fresh water supply connector and a gate valve;
said fresh water supply connector includes a means for attaching and detaching a pressurized fresh water fluid line in order to allow for a flow of fresh water to enter into said control panel when said pressurized fresh water fluid line is attached to said fresh water supply connector;
said gate valve regulates said flow of fresh water;
a fresh water flush valve;
said fresh water flush valve has a fresh water inlet port for receiving said flow of fresh water and a plurality of outlet ports for discharging said flow of fresh water;
said fresh water valve includes an upper body, a lower body, and a valve interface;
said valve interface includes an outer surface and an inner surface;
said upper body and said lower body are permanently attached to said outer surface of said valve interface;
said upper body and said lower body completely surround and house said valve interface;
said upper body has an interior chamber and includes said plurality of outlet ports;



said lower body has a cavity;
said cavity houses a valve plunger;
a biased helical spring surrounds said valve plunger;
a fresh water conduit;
said fresh water conduit is adapted for urging said flow of fresh water between said control panel and said fresh water flush valve;
a plurality of tubular interconnection fittings;
each of said plurality of tubular interconnection fittings have a T-shape for urging said flow of fresh water between said fresh water flush valve to a raw water cooling conduit of said marine engine;
said raw water cooling conduit contains and maintains water flow from said body of water;
a plurality of hoses;
said plurality of hoses are connected to said plurality of outlet ports of said fresh water flush valve;
said plurality of hoses are connected to said plurality of tubular interconnection fittings; and
said plurality of hoses are adapted for urging said flow of fresh water between said fresh water flush valve to said raw sea water cooling conduit.

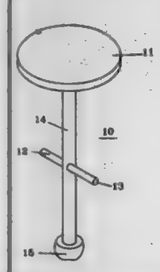
5,441,432
BOAT PROPELLER DRIVE UNIT
Christian Rodskier, Torslanda, and Lennart Sellman, Onsala, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden
PCT No. PCT/SE92/00319, § 371 Date Jan. 13, 1994, § 102(e) Date Jan. 13, 1994, PCT Pub. No. WO92/20574, PCT Pub. Date Nov. 26, 1992
PCT Filed May 15, 1992, Ser. No. 146,156
Claims priority, application Sweden, May 15, 1991, 9101466
Int. Cl.[6] B63H *21/32*
U.S. Cl. 440—89 **9 Claims**

1. In a boat propeller drive unit comprising a gear housing, in which at least one propeller shaft with a propeller is rotatably mounted, and an anti-cavitation plate, which extends out over the propeller from the gear housing, has a distal end located aft of the sweep of the tips of the propeller blades and contains an exhaust duct with an outlet port for exhaust from an engine coupled to the drive unit, the improvement wherein the outlet port (11) of the exhaust duct (7) opens on the underside of the cavitation plate (6) and is directed towards and is



spaced (5) from the distal end of the cavitation plate, said spacing (5) being at least equal to the distance from said end to the sweep of the top of the propeller blades, and said outlet port being located so that exhaust flow lies completely outside the sweep of the propeller on a suction side of the propeller.

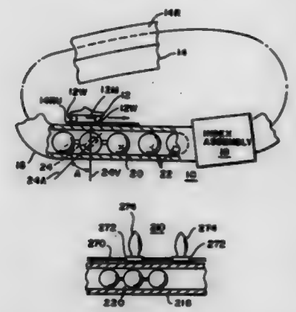
5,441,433
FLOATING STOOL
David L. Stanley, 1616 Glenwick, Plano, Tex. 75075
Filed Apr. 21, 1994, Ser. No. 230,646
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—130 **17 Claims**



1. A floating stool for use in a swimming pool, comprising:
a seat,
a single leg attached to and extending from said seat, and
a suction gripping device on said single leg for gripping the bottom of the swimming pool when a person is sitting on the stool.

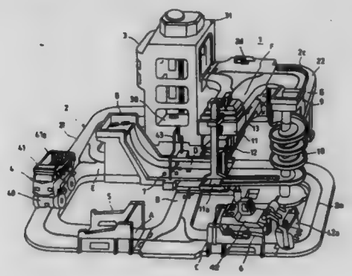
5,441,434
MAGNETIC CONVEYANCE SYSTEM
Kenneth B. Caulkins, 4218 Jessup Rd., Ceres, Calif. 95307
Filed Apr. 8, 1994, Ser. No. 224,876
Int. Cl.[6] A63H *33/26;* **B65G** *35/00*
U.S. Cl. 446—130 **21 Claims**

1. A magnetic conveyance system comprising: a fluid tube driver for movement in a tube filled with pressurized fluid and having a first front wheel, a first back wheel, a support structure mounted between and to said first front and back wheels with said first front and first back wheels rotatable with respect to said support structure, and a driver magnet mounted to said support structure and having a polarity axis which is angularly offset in a front-to-back direction from a vertical axis central to said fluid tube driver, and wherein said support structure includes a support between said first front wheel and said first back wheel, said driver magnet centrally disposed between said first front wheel and said first back wheel, a front member having a hole therein with a front axle supported therein, and a back member having a hole therein with a back axle sup-



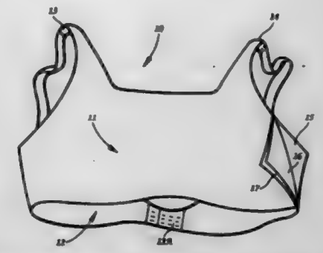
ported therein; and wherein said first front wheel is mounted to said front axle, and said first back wheel is mounted to said back axle.

5,441,435
TRACKWAY TOY
Hisashi Shiraishi, Tokyo, Japan, assignor to Tomy Company, Ltd., Katsushika, Japan
Filed Mar. 22, 1994, Ser. No. 216,048
Claims priority, application Japan, Mar. 24, 1993, 5-019426
Int. Cl.[6] A63H *18/00*
U.S. Cl. 446—424 **5 Claims**



1. A toy, comprising:
a trackway,
a vehicle,
power means for propelling said vehicle along said trackway,
an action station, in the vicinity of said trackway, provided with a movable structure,
means for stopping the vehicle at the action station, and means for activating movement of the movable structure by the power means of said vehicle,
wherein said means for activating movement of said movable structure of said action station includes,
a pinion on said action station driven by said power means of said vehicle,
a rack provided within said action station which meshes with said pinion such that movement of said rack results in movement of said movable structure of said action station, and
a crane, said rack being provided on said crane such that the movement of said pinion along the rack causes said crane to move.

5,441,436
MOISTURE MANAGING BRASSIERE FOR SPORTS AND GENERAL WEAR
Herbert L. Moretz, Davidson, N.C., and Daniel L. Brier, Key Largo, Fla., assignors to Intelpro Corporation, Lincolnton, N.C.
Division of Ser. No. 72,522, Jun. 4, 1993, Pat. No. 5,385,502, which is a continuation-in-part of Ser. No. 3,263, Jan. 12, 1993, Pat. No. 5,269,720, which is a continuation-in-part of Ser. No. 991,761, Dec. 17, 1992, Pat. No. 5,297,296, which is a continuation-in-part of Ser. No. 945,677, Sep. 16, 1992, Pat. No. 5,291,617, which is a continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, Pat. No. 5,210,882, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Jul. 7, 1994, Ser. No. 271,510
The portion of the term of this patent subsequent to Jan. 31, 2012, has been disclaimed.
Int. Cl.[6] A41C *3/00, 3/04*
U.S. Cl. 450—93 **8 Claims**

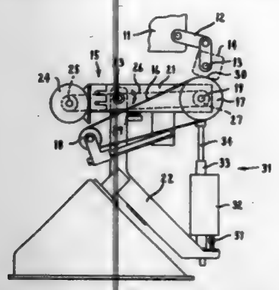


1. A moisture managing brassiere having a breast supporting front portion, a back portion connected to said front portion, and a pair of shoulder straps connected respectively at one end to said front portion and at respective opposite ends to said back portion, said brassiere constructed of a composite stretch fabric comprising:
(a) an inner fabric layer including hydrophobic moisture wicking fibers for residing in skin contact during garment wear and for wicking moisture away from the skin of the wearer;
(b) an intermediate fabric layer residing adjacent to said inner fabric layer for receiving, dispersing, and transporting moisture outwardly away from said inner fabric layer, said intermediate fabric layer comprising a moisture transport insert located in the front portion of said brassiere for residing next to the breasts of the wearer during garment wear; and
(c) an outer fabric layer residing adjacent said intermediate fabric layer for receiving and dispersing moisture wicked outwardly from said inner and intermediate fabric layers, said outer fabric layer comprising the outer shell fabric of said brassiere.

5,441,437
COMPLIANT CONSTANT-FORCE FOLLOWER DEVICE FOR SURFACE FINISHING TOOL
Bryan A. Hulstedt, 6280 White Buck Trail, Rockford, Ill. 61102
Filed Feb. 18, 1993, Ser. No. 19,421
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—1 **10 Claims**

5. In a finishing tool assembly for permitting finishing of a surface on a workpiece, said finishing tool assembly including a rotatable tool adapted for contact with a, workpiece surface to effect finishing thereof, a tool-driving motor for drivingly rotating the tool, and a compliant follower device cooperating with the tool for enabling back-and-forth floating movement of the tool according to the surface of the workpiece while maintaining contact between the workpiece and tool, the improvement wherein said compliant follower device includes a fol-

lower member which is engaged with the tool for normally urging the tool into engagement with the surface of the workpiece, the follower member being floatingly supported for generally back-and-forth movement in a direction which extends transverse with respect to the surface of the workpiece, a rotary-to-linear motion and force transfer device coupled to



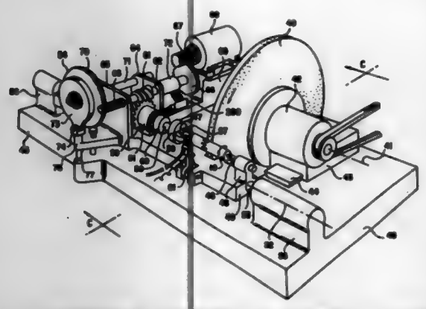
said follower member, said motion transfer device being capable of being movably back driven by the follower member due to the tool reacting against the workpiece surface, and constant-torque rotary motor means having a rotary output coupled to the rotary-to-linear transfer device for applying constant force to said follower member irrespective of reciprocating back-and-forth movement thereof.

5,441,438

MEASURING AND RECORDING APPARATUS USING FLUID AS THE MEASURING MEDIA FOR USE IN THE MANUFACTURE OF HYDRAULIC POWER STEERING VALVES

Arthur E. Bishop, Sydney, Australia, assignor to A.E. Bishop & Associates PTY LTD., North South Wales, Australia

PCT No. PCT/AU91/00496, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO93/09397, PCT Pub. Date May 13, 1993
PCT Filed Oct. 28, 1991, Ser. No. 90,160
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **9 Claims**



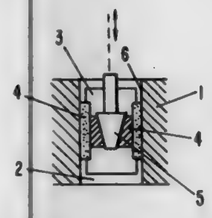
1. An apparatus for measuring and recording an angular position of edges of axially extending grooves disposed on an inside cylindrical bore surface or outside cylindrical surface of a workpiece, said apparatus comprising:
- a shoe having an arcuate surface;
- a plenum chamber;
- means to press said arcuate surface of said shoe into intimate contact with said workpiece cylindrical surface;
- a slit incorporated within said arcuate surface, said slit extending longitudinally parallel to an axis of said workpiece and away from said arcuate surface towards said plenum chamber and communicating with said plenum chamber;
- means to supply fluid to said plenum chamber;
- means to cause relative rotation between said workpiece and said shoe;
- means to measure the degree of restriction to flow of said fluid from said slit as said edges traverse said slit during said relative rotation;
- angular positional measurement means to measure said relative rotation, wherein said relative angular position of said workpiece is recorded at each relative rotational position corresponding to a predetermined degree of restriction of said slit as successive edges traverse said slit.

5,441,439

METHOD OF FINISHING A SURFACE OF A WORKPIECE

Hans Grimm, Esslingen; Walter Lang, Fellbach; Karl-Heinz Bergen, Filderstadt; Ernst Lang, Ostfildern, and Ulrich Klink, Neuffen, all of Germany, assignors to Maschinenfabrik Gehring GmbH & Co., Ostfildern, Germany

Filed Apr. 9, 1993, Ser. No. 45,421
Claims priority, application European Pat. Off., Apr. 11, 1992, 92106305
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **28 Claims**



1. A method of finishing a surface of a workpiece for producing a finished workpiece surface that is highly resistant with respect to friction and temperature and has means for receiving a lubricant during operation of the workpiece, said method of finishing comprising a step of providing the workpiece surface with a minimal roughness and treating the workpiece surface with a laser beam for generating grooves, having a depth that is greater than the depth of said minimal roughness, for forming said means for receiving a lubricant.

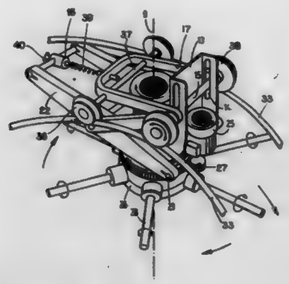
5,441,440

METHOD AND MACHINING APPARATUS FOR USE ESPECIALLY IN THE SANDING OF ITEMS OF WOOD IN A SANDING MACHINE

Keld O. Hundebol, Ansager, Denmark, assignor to HH Patent A/S, Ansager, Denmark

Continuation-in-part of Ser. No. 154,921, Nov. 18, 1993, which is a division of Ser. No. 950,416, Sep. 23, 1992, Pat. No. 5,291,689, which is a division of Ser. No. 699,181, May 13, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,901
Claims priority, application WIPO, May 22, 1990, PCT/DK90/01271
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—28 **21 Claims**

1. Sanding apparatus comprising: spindle drive means, means for rotating said spindle drive means;
- a plurality of spindles each extending radially from said spindle drive means, a sanding roller on each said spindle, the spindle drive means being suspended at one end of two first arms, each of the first arms at their opposite ends connected together by a first shaft, two second arms, a second axle mounted to one end of the two second arms, the second axle supporting a first wheel pair, a yoke at one end thereof supporting a second wheel pair, said yoke at an opposite end connected to second axle the second arms at their opposite ends being linked to the first arms;
- means for rotating each of said spindles with the sanding roller thereon;



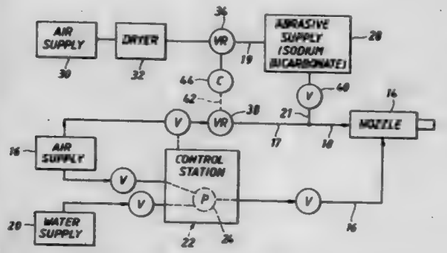
means for conveying the articles to be sanded beneath the sanding rollers along a path in a first direction; and means for moving the spindle drive means and the rotating spindles thereon in a circular direction about said path.

5,441,441

METHOD FOR REMOVAL OF SURFACE CONTAMINANTS FROM CONCRETE SUBSTRATES

Jack R. Cook, P.O. Box 1409, Farmington, N. Mex. 87499, and Loren L. Hatle, 1903 Central Blvd., Rapid City, S. Dak. 57702

Continuation-in-part of Ser. No. 9,283, Jan. 26, 1993, Pat. No. 5,317,841, which is a continuation-in-part of Ser. No. 938,202, Aug. 28, 1992, abandoned. This application Mar. 15, 1993, Ser. No. 31,695
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[6] B24C *1/00*
U.S. Cl. 451—36 **6 Claims**



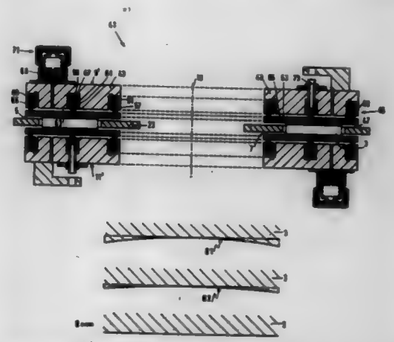
1. A method for removing salts from a concrete substrate utilizing a source of pressurized water, and a source of a bicarbonate abrasive; said method comprising the steps of:
- applying pressurized water and the bicarbonate abrasive against the surface of said concrete substrate at a predetermined high pressure so that water soluble salts on the surface of said concrete substrate are physically removed or chemically neutralized or both physically removed and chemically neutralized; and
- then applying pressurized water at a predetermined pressure against the surface of said concrete substrate so that any neutralized salts are removed from the surface of said concrete substrate.

5,441,442

METHOD OF MANUFACTURING A PLATE HAVING A PLANE MAIN SURFACE, METHOD OF MANUFACTURING A PLATE HAVING PARALLEL MAIN SURFACES, AND DEVICE SUITABLE FOR IMPLEMENTING SAID METHODS

Jan Haisma; Peter W. De Haas; Franciscus J. H. M. Van Der Kruis, and Jakob Vijfvinkel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 3, 1993, Ser. No. 71,908
Claims priority, application European Pat. Off., Jun. 5, 1992, 92201739
Int. Cl.[6] B24B *7/04, 7/22*
U.S. Cl. 451—63 **30 Claims**



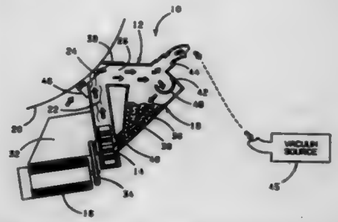
1. A method of manufacturing a plate having a planar main surface through polishing of the main surface of the plate comprising:
- polishing the main surface of the plate until the main surface has a concave initial shape, and
- performing a bulk-reduction cycle which comprises polishing the concave initial shape so that the main surface is given consecutively a substantially planar shape, a convex shape and again a substantially planar shape.

5,441,443

APPARATUS FOR BLAST CLEANING SURFACES DISPOSED AT ANGLES WITHIN 45 DEGREES OF VERTICAL

Jerry W. Roberts, Oklahoma City, Okla., assignor to Nelco Manufacturing Corp., Oklahoma City, Okla.

Filed Nov. 10, 1993, Ser. No. 150,511
Int. Cl.[6] B24C *3/06*
U.S. Cl. 451—91 **19 Claims**



1. An apparatus for blast cleaning a surface, the apparatus comprising:
- a housing having a blast corridor, a return corridor and a blast opening, the blast opening communicating with the blast corridor and the return corridor;
- blast means for propelling abrasive material through the blast corridor and the blast opening against a surface to be blast cleaned; and

a hopper communicating with the return corridor to recover spent abrasive material and communicating with the blast corridor to supply abrasive material to said blast means, said hopper having a rear wall positioned to be substantially parallel with the blast opening and extending in a substantially straight line to said blast means;

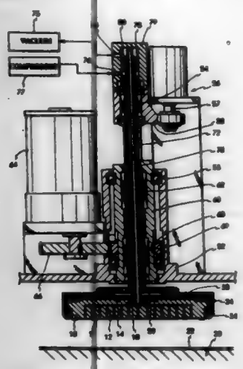
wherein said housing and said hopper cooperate to gravity feed abrasive material from said hopper to said blast means when the blast opening is disposed against a surface oriented between about forty-five degrees over verticality and about forty-five degrees under verticality.

5,441,444

POLISHING MACHINE

Makoto Nakajima, Nagano, Japan, assignor to Fujikoshi Kikai Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Oct. 1, 1993, Ser. No. 130,473
Claims priority, application Japan, Oct. 12, 1992, 4-299190
Int. Cl.[6] B24B 7/22
U.S. Cl. 451—289 **11 Claims**



1. A polishing machine, comprising:

a polishing plate, whose upper face is formed as a polishing face, for polishing a wafer, whose bottom face is pressed onto the polishing face;

a holding section having a concave section, whose bottom face is open, said holding section being capable of horizontally moving toward a position above said polishing plate, vertically moving with respect thereto, and rotating in a plane parallel thereto;

a carrying plate, which is provided in the concave section of said holding section, for holding said wafer on a bottom face, said carrying plate being capable of vertically moving in the concave section, said carrying plate having a circumferential step section formed in an upper outer edge portion of said carrying plate; and

a press mechanism for pressing said carrying plate toward said polishing plate by fluid pressure,

said press mechanism comprises:

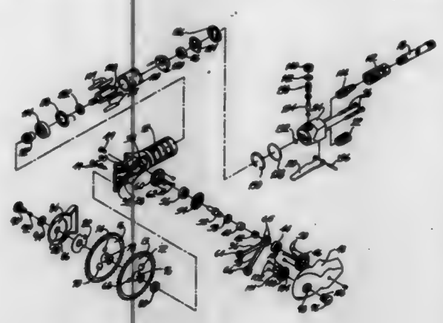
an elastic plate being provided above said carrying plate in the concave section to divide an inner space of the concave section into an upper space, which is formed as an air tight chamber, and a lower space, whose bottom face is open, an edge section of said elastic plate being fixed to an inner upper face of the concave section by a fixing member provided in a space between the inner upper face of the concave section and a horizontal portion of the circumferential step section of said carrying plate, and another section of said elastic plate being fixed to said carrying plate, whereby said elastic plate allows said carrying plate to move in the vertical and the horizontal directions by elastic transformation, said elastic plate being parallel to said polishing plate when no force is applied to said elastic plate.

5,441,445

DE-HIDING TOOL

Ralph K. Karubian, Los Angeles, Calif., and Thomas G. Surman, West Point, Nebr., assignors to Kentmaster Manufacturing Company, Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 119,435, Sep. 9, 1993, abandoned. This application Feb. 15, 1994, Ser. No. 196,410
Int. Cl.[6] A22B 5/16
U.S. Cl. 452—133 **12 Claims**



1. A de-hiding tool comprising:

a pair of cutting blades,

an elongated handle section containing an air motor for connection to a source of air under pressure,

a rigid upright cover supporting plate carried on the handle section, the cover supporting plate having an air motor drive arm bearing support and having a top edge above which the pair of cutting blades are supported,

a first blade cover rigidly affixed to the cover supporting plate and extending above the top edge thereof, the first blade cover having an inside face spaced above the top edge of the cover supporting plate and having an opening extending entirely through the first blade cover above said top edge,

a second blade cover mounted above the handle section and extending above the top edge of the cover supporting plate, the second blade cover having an inside face facing toward the inside face of the first blade cover so the inside faces of the blade covers confront one another on opposite sides of a gap in which the cutting blades are mounted, the second blade cover having an opening extending entirely through it in alignment with the opening through the first blade cover,

a blade supporting shaft extending through the aligned openings in the first and second blade covers so that the shaft is rigidly supported by the blade covers and is spaced above the top edge of the cover supporting plate, and

blade mounting means carried on the blade supporting shaft to support the pair of cutting blades on the shaft in the gap between the confronting inside faces of the first and second blade covers,

the air motor including drive arms mounted on said bearing support and connected internally to the cutting blades for driving the blades in an oscillating and counter-rotating fashion while the blades are supported on the mounting means of the blade supporting shaft.

5,441,446

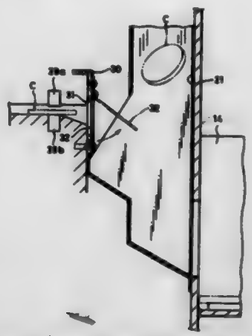
Patent Not Issued For This Number

5,441,447

COIN DISPENSER AND COIN PAY-OUT METHOD

Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Jun. 21, 1993, Ser. No. 79,520
Claims priority, application Japan, Jun. 19, 1992, 4-161211
Int. Cl.[6] G07D 9/04
U.S. Cl. 453—32 **15 Claims**



14. A method of paying a coin out of a coin dispenser in which said coin is discharged through a discharge port by driving a discharge section upon receiving a pay-out instruction, comprising:

generating a detection signal upon detecting said coin at said discharge port;

counting said detection signal;

stopping said discharge section from operating to complete said pay-out when the counted detection signals equal a predetermined number of coins to be paid out; and

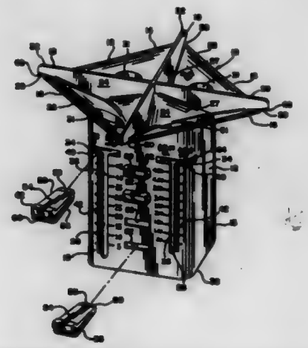
preventing said discharging section from commencing operation if said detection signal is received before said discharge section has been driven.

5,441,448

COIN COUNTING AND HOLDING DEVICE

John S. Yang, Northbrook, Ill., assignor to Block and Company, Inc., Wheeling, Ill.

Filed Oct. 8, 1993, Ser. No. 134,525
Int. Cl.[6] G07D 9/06
U.S. Cl. 453—60 **24 Claims**



1. A device for counting, stacking, and storing coins and for filing standard tubular coin wrappers, the device comprising:

a plurality of coin tubes clustered in a parallel relationship within a substantially square base housing, each coin tube comprising a hollow cylindrical tube having a diameter sized to receive and hold coins of a given denomination in a stack and having a length sized to receive and hold a predetermined number of stacked coins, each tube having a bottom support surface and an open top;

each tube including a transverse slot perpendicular to the longitudinal axis of the coin tube, the transverse slot having a transverse bottom edge positioned so that a stack of coins between the bottom support surface of the tube and the transverse bottom edge of the transverse slot fills a standard coin wrapper for that denomination of coin, the transverse slot being dimensioned to allow extra coins stacked above the transverse bottom edge to slide out of the tube through the transverse slot;

a plurality of funnels, one funnel being associated with the open top of each coin tube; and

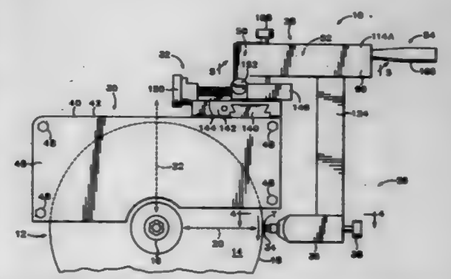
a substantially square top located over said base housing, said top having an area significantly greater than the area of the cross-section of said base housing and positioned at an angle of about forty-five degrees with respect to the orientation of said base housing, said funnels being formed in said top.

5,441,449

INTEGRATABLE GRINDING WHEEL DRESSER

Glen B. Hart, 22031 S. Kamrath Rd., Beaver Creek, Oreg. 97004

Filed Jun. 16, 1994, Ser. No. 261,845
Int. Cl.[6] B24B 9/00
U.S. Cl. 451—72 **25 Claims**



1. A grinding wheel dresser for dressing, to a selected contour, the face of a grinding wheel of a grinding apparatus, the grinding wheel having radial and transverse axes, the grinding wheel dresser comprising:

a dressing mechanism;

a dressing control mechanism coupled to said dressing mechanism so as to both rotate and displace said dressing mechanism relative to the face of the grinding wheel, said rotation having components along the radial and transverse axes of the grinding wheel, and said displacement having components along the radial axis of the grinding wheel; and

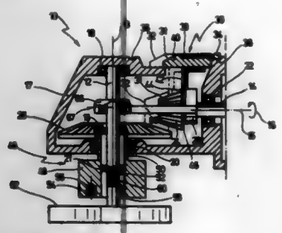
an integration mechanism, coupled to said dressing control mechanism and to the grinding apparatus, so as to integrate said grinding wheel dresser with the grinding apparatus and to form a rotational axis about which said rotation of said dressing mechanism occurs and relative to which said displacement occurs.

5,441,450

POWER TOOL HAVING MEANS TO SWITCH FROM OSCILLATORY MOVEMENT TO ROTARY MOVEMENT

Hans W. Fein, and Andreas Peisert, both of Stuttgart, Germany, assignors to C.&E. Fein GmbH & Co., Stuttgart, Germany

Filed May 4, 1994, Ser. No. 237,754
Claims priority, application Germany, May 5, 1993, 43 14 799.2
Int. Cl.[6] B24B *23/02*
U.S. Cl. 451—357 14 Claims



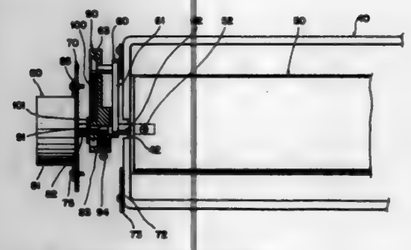
1. Power tool comprising:
a motor having a drive shaft;
an oscillation drive for driving an oscillation tool in an oscillating manner about a pivot axis;
a rotary drive for rotationally driving a rotary tool;
engaging means coupling said drive shaft to said oscillation drive when in a first switching position, and coupling said drive shaft to said rotary drive when in a second switching position; and
a switching element for moving said engaging means between said first and second switching positions.

5,441,451

AIR VENT CONTROL APPARATUS

Choon N. Jeung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 18, 1994, Ser. No. 274,715
Claims priority, application Rep. of Korea, Jul. 20, 1993, 1993-13450 U
Int. Cl.[6] F24F *13/10*
U.S. Cl. 454—313 13 Claims



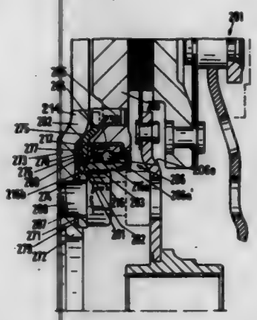
1. An air vent mechanism comprising:
a housing;
a louver blade mounted to said housing for movement relative thereto;
a power generator;
a driving link connected to said power generator to be rotated thereby;
a driven link mounted for rotation and connected to said louver blade; and
an elastic member interconnecting said driving link and said driven link to rotate said driven link in the same direction as said driving link, said elastic member being elastically yieldable to permit relative rotation between said driving link and said driven link in response to the application of an external force to said louver blade.

5,441,452

ANTIFRICTION BEARING FOR USE IN APPARATUS FOR DAMPING FLUCTUATIONS OF TORQUE IN POWER TRAINS OF MOTOR VEHICLES

Johann Jäckel, Baden-Baden, and Albert Albers, Bühl, both of Germany, assignors to Luk lamellen und Kupplungsbau GmbH, Bühl, Germany

Continuation of Ser. No. 191,791, Feb. 1, 1994, abandoned, which is a division of Ser. No. 891,599, Jun. 1, 1992, Pat. No. 5,310,267. This application Jan. 26, 1995, Ser. No. 378,943
Claims priority, application Germany, Jun. 1, 1991, 41 18 079; Aug. 2, 1991, 41 25 656
Int. Cl.[6] F16D *3/66*
U.S. Cl. 464—61 14 Claims



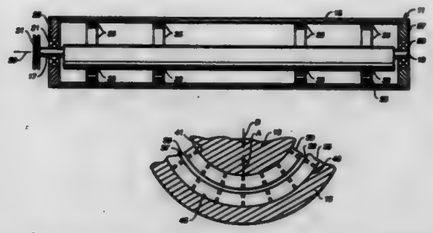
1. A composite flywheel comprising:
a primary flywheel (202) having a radially extending portion (214), said primary flywheel (202) being fastenable to an engine;
a secondary flywheel (203) rotatable relative to said primary flywheel (202), said secondary flywheel being connectable to an input shaft of a transmission;
a component (216) having an axially extending portion (216*a*), said component (216) being supported by an inner portion of the radially extending portion (214) of said primary flywheel;
a bearing (206) disposed between said primary flywheel (202) and the component (216), said bearing being arranged to provide rotation of said primary flywheel and said secondary flywheel relative to each other;
a damper (9) disposed between said primary flywheel (202) and said secondary flywheel (203); and
a second damper (273) disposed between said primary flywheel (202) and said secondary flywheel (203) comprising a friction ring (276) disposed axially between the radially extending portion (214) of said primary flywheel and an annular portion (275) of a disk (274), said disc (274) further having radially extending portions (279) disposed radially inwardly of said annular portion (275) and being clamped axially between said component (216) and said radially extending portion (214) of said primary flywheel (202).

5,441,453

VIBRATING SHAFT ASSEMBLY HAVING MAGNETIC COMPENSATION FOR REDUCING SHAFT BEARING LOADS

Greg F. Lach, Dublin, Calif., assignor to W.S. Tyler, Incorporated, Gastonia, N.C.

Filed Jun. 3, 1993, Ser. No. 71,240
Int. Cl.[6] F16F *15/10*
U.S. Cl. 464—180 27 Claims



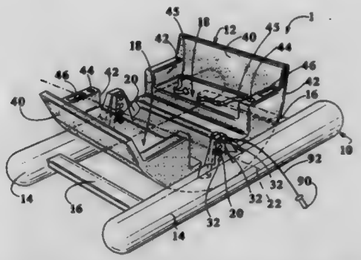
1. A vibrating shaft assembly having a magnetic compensation system for reducing bearing loads comprising
a shaft having an unbalanced mass which provides a heavy side to the shaft,
bearing means for rotatably supporting said shaft,
at least one permanent magnet disposed on the heavy side of said shaft so as to rotate therewith,
magnetic means external to said shaft for producing a magnetic repelling force on said permanent magnet whereby as said shaft rotates an inward radial force is produced thereon which opposes the outward radial centrifugal force created by the rotation of said unbalanced mass, said external magnetic means being disposed such that said inward radial force counteracts the centrifugal for acting on said bearing means.

5,441,454

WATER TOTTER

Elizabeth C. Race, 17 Fenner St., Cazenovia, N.Y. 13035, assignor to Elizabeth C. Race, Cazenovia, N.Y.

Filed Aug. 8, 1994, Ser. No. 286,925
Int. Cl.[6] A63G *11/00*
U.S. Cl. 472—129 20 Claims



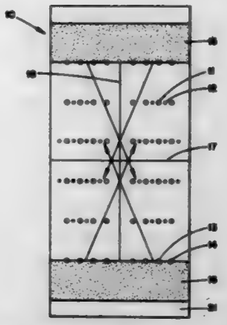
1. A water recreation device comprising: a seating body member defining seats; a floating platform member defined by at least one buoyant support member and adapted to mountably secure the seating body member; and means for pivotally mounting the seating body member to the floating platform member, whereby the seating body member is rockable with respect to the floating platformmember in a seesaw motion.

5,441,455

TABLE GAME HAVING A CURVED PLAYING SURFACE

William J. Carruthers, 16 Chambers Rd., Dundee, N.Y. 14837

Filed Dec. 1, 1994, Ser. No. 352,694
Int. Cl.[6] A63D *15/02*; A63F *7/00*
U.S. Cl. 473—20 12 Claims



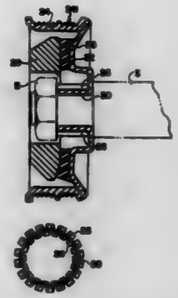
2. A game surface comprising:
a plurality of openings arranged in rows thereon; and
wherein said surface has a curvature such that a center portion of said surface is lower than an outer perimeter of said surface.

5,441,456

PRESS-FORMED PULLEY

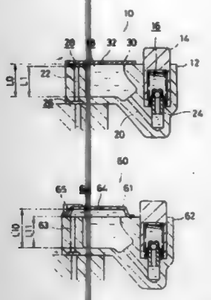
Satomi Watanabe; Takeshi Miyazaki; Yutaka Ito, and Toshikazu Amano, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jun. 30, 1993, Ser. No. 83,696
Claims priority, application Japan, Jul. 9, 1992, 4-206070
Int. Cl.[6] F16D *3/00*
U.S. Cl. 474—94 8 Claims



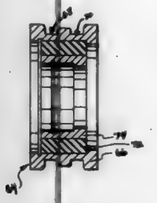
1. A pulley comprising:
a cylindrical boss portion adapted to receive a rotary shaft;
a ring-shaped belt retaining portion concentrically disposed about said boss portion, said belt retaining portion having belt retaining grooves in an outer peripheral surface thereof; and
a plate-shaped main portion connecting said boss portion and said belt retaining portion,
at least said boss portion and said main portion being integrally formed from a metal plate, by press-forming, said boss portion including a plurality of integral ribs which are alternately bent inwardly and outwardly in the circumferential direction thereof.

5,441,457
TENSIONER HAVING RESERVOIR COVER PLATE
Kazuhiko Tsutsumi, Nagoya; Masaaki Takahashi, Hidaka, and Sadao Miki, Isehara, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan
Filed Oct. 14, 1994, Ser. No. 323,143
Claims priority, application Japan, Oct. 15, 1993, 5-060387 U
Int. Cl.[6] F16H *7/00*
U.S. Cl. 474—110 3 Claims



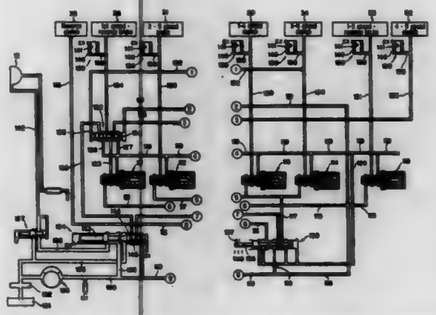
1. An improved oil-operated tensioner comprising a housing having an oil reservoir formed therein, said reservoir having an opening, a plunger protruding from the housing and forming an oil chamber with said housing, means urging the plunger in a direction such that it protrudes further from the housing, means providing an oil passage from said oil reservoir to said chamber, and means providing a passage for supplying oil to said reservoir, the improvement comprising a flat plate fixed to the housing and covering the opening of the reservoir.

5,441,458
GROOVED ROLLER CHAIN IDLER
Thomas E. Rogus, Rt. 2 Box 99, Strandquist, Minn. 56758
Filed Jan. 14, 1994, Ser. No. 182,752
Int. Cl.[6] F16H *55/36*
U.S. Cl. 474—189 1 Claim



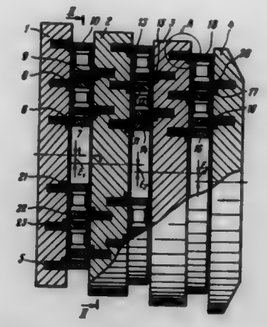
1. An idler roller comprising a central axis about which a rigid non-resilient material is arranged, the rigid material defining a rigid idler roller having a smooth outer circular circumference, the outer circumference of said rigid idler roller including a pair of spaced circumferential grooves in the rigid material, said rigid material being steel and describing a circular steel circumference, said idler roller including a layer of resilient rubber underneath said steel circumference.

5,441,459
HYDRAULIC CONTROL APPARTUS FOR AUTOMATIC TRANSMISSION
Seiichi Inukai, Kyoto; Kenjiro Fujita, Kusatsu; Akihiro Kondo, Kyoto, and Katsutoshi Usuki, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kaubshiki Kaisha, Tokyo, Japan
Filed Dec. 28, 1993, Ser. No. 174,259
Claims priority, application Japan, Dec. 28, 1992, 4-347662
Int. Cl.[6] B60K *41/04*
U.S. Cl. 475—127 3 Claims



1. A hydraulic control apparatus for an automatic transmission comprising:
- a plurality of frictional engaging elements including a first frictional engaging element for achieving a low-speed side position, a second frictional engaging element for achieving a position higher in speed than the low-speed side position, a third frictional engaging element for achieving a position even higher in speed than the high-speed side position;
- a regulator valve for regulating hydraulic pressure of hydraulic pressure of hydraulic oil discharged from an oil pump to a predetermined pressure and reducing the predetermined hydraulic pressure in response to supply of a pilot pressure;
- a control valve for controlling the hydraulic pressure from said regulator valve to a desired hydraulic pressure, for controlling hydraulic pressures to said plurality of frictional engaging elements; and
- a multifunction change-over valve for making said control valve in communication with one of said first frictional engaging element and said third frictional engaging element and supplying and discharging the pilot pressure to said regulator valve,
  - wherein said change-over valve is operated by hydraulic pressure supplied to said second frictional engaging element and takes a first position where said control valve communicates with said first frictional engaging element and blocks supply of the pilot pressure to said regulator valve when the hydraulic pressure supplied to said second frictional engaging element is lower than a predetermined value, and takes a second position where said control valve communicates with said third frictional engaging element and supplies the pilot pressure to said regulator valve when the hydraulic pressure supplied to said second frictional engaging element is higher than a predetermined value.

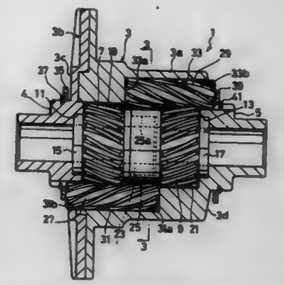
5,441,460
GEAR BOX WITH ECCENTRIC PIEZOELECTRICALLY LINKED RING GEARS
Valery V. Djudin, ulitsa D. Bednogo, 110, Omsk, Russian Federation
Filed Dec. 10, 1993, Ser. No. 166,110
Int. Cl.[6] F16H *3/093*; F16D *27/102*; H01L *41/053*
U.S. Cl. 475—149 4 Claims



1. A gear-box comprising a casing which accommodates a drive shaft with cylindrical rings (6, 8, 10) mounted concentric with the shaft axis, the outer and inner cylindrical surfaces of the rings carrying meshing members in cooperation, respectively, with the inner and outer meshing members of similar concentric rings (7, 9); the common axis of the rings having an eccentricity (E) to the drive shaft axis; and a driven shaft, characterized in that said drive shaft and said driven shaft are formed as parallel discs (1, 2) with their diametral plane facing each other, said discs having their axes of rotation displaced relative to each other by the value of the above-mentioned eccentricity; and having support members (21), concentrically disposed on the diametral planes, for cylindrical rings (6, 7, 8, 9, 10), the bases of said rings being mounted in said support members (21) so that each ring (6, 8, 10) is freely rotatable relative to its disc (1); and the tops of said rings, carrying said meshing members that are in constant cooperation, being disposed in the space between the discs (1, 2); the bases of said rings (6, 7, 8, 9, 10) or the support members, or both of them, being provided with means (23) for locking said rings (6, 7, 8, 9, 10) with respect to their discs (1, 2), said locking means being connected to a locking control system.

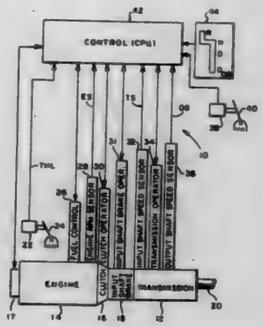
5,441,461
LIMITED SLIP DIFFERENTIAL GEAR ASSEMBLY
Masao Terasoka, Tochigi, Japan, assignor to Tochigifujisangyo Kabushiki Kaisha, Japan
Filed Jul. 19, 1993, Ser. No. 93,938
Claims priority, application Japan, Jul. 20, 1992, 4-191950; Jul. 21, 1992, 4-194008
Int. Cl.[6] F16H *48/10*
U.S. Cl. 475—252 31 Claims

1. A differential gear assembly comprising:
- a case being rotatable around a rotation axis in response to a driving force of a power source and having a pair of walls extending substantially radially and defining axial ends of the case;
- first and second side gears coaxially arranged within the case and supported in such a manner that the first and the second side gears are individually rotatable with respect to the rotation axis of the case relative to the case, the first and the second side gears being adapted to be connected to first and second output shafts, respectively;
- at least one pair of first and second pinion gears, each of which has a center axis parallel to the rotation axis of the case, the first pinion gear having first and second gearing portions, the second pinion gear having third and fourth gearing portions, the first gearing portion being engaged with the third gearing portion, the second gearing portion being engaged with the first side gear, and the fourth gearing portion being engaged with the second side gear; and
- a first opening for fittingly receiving the first pinion gear and a second opening for fittingly receiving the second pinion gear, each of the openings being formed in either one of the walls of the case in such a manner that an outer circumferential portion of the first pinion gear is surrounded



by the first opening and an outer circumferential portion of the second pinion gear is surrounded by the second opening, wherein each of the walls of the case has a guide boss on which each of the first and second side gears is rotatably supported, respectively, and each of the first and second pinion gears is arranged in an axial bore formed in the case and is axially positioned by positioning means which is provided on either of the walls of the case, said positioning means including a stopper device standing on the case along the radial direction for preventing the first and second pinion gears from axial movement.

5,441,462
CLUTCH DISENGAGE LOGIC
Kwok W. Chan, Chorley, England, assignor to Eaton Corporation, Cleveland, Ohio
Filed May 16, 1994, Ser. No. 242,826
Claims priority, application United Kingdom, Jun. 10, 1993, 9312013
Int. Cl.[6] B60K *41/22*, *41/28*
U.S. Cl. 477—74 36 Claims



1. A method for controlling an automated mechanical transmission system (10) comprising a fuel controlled engine (14), a multiple-speed mechanical transmission (12), a selectively engaged and disengaged friction master clutch (16) drivingly interposed between said engine and said transmission, sensing means (22, 28, 32, 34, 36) for providing input signals indicative

of monitored system parameters including engine speed (ES) and engagement condition (GR/GN) of the transmission, a control unit (42) for receiving said input signals and for processing same according to predetermined logic rules to issue command output signals to system actuators including a fuel control (26), a master clutch operator (30), and a transmission operator (34), said control unit issuing command output signals to said actuators to initiate a downshift from a currently engaged gear ratio (GR_c) into a target gear ratio (GR_T) by a downshift sequence including manipulation of the fueling of said engine to increase and decrease the speed of said engine while the master clutch is engaged and said transmission is in a not-engaged (GN) condition to cause substantially synchronous conditions for engagement of said target gear ratio, said method characterized by:

after selection of a downshift from the currently engaged gear ratio into the target gear ratio;

sensing the engaged or not-engaged condition of said transmission;

Upon sensing a not-engaged condition of said transmission, causing said master clutch to assume and remain in the fully-engaged condition thereof; and

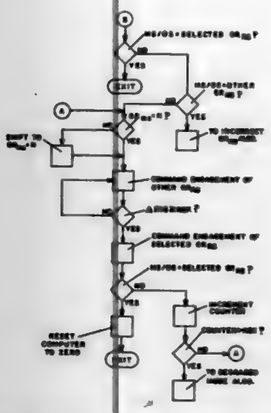
after a predetermined period of time, causing said master clutch to disengage if a not-engaged condition of said transmission is not sensed.

5,441,463

SELECTED SPEED RATIO NOT-ENGAGED RANGE SECTION RECOVERY BY SHIFTING TO A NON-SELECTED SPEED RATIO AND IF PERMITTED, SHIFTING TO THE SELECTED SPEED RATIO

Jon A. Steeby, Schoolcraft, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 28, 1993, Ser. No. 142,033
Int. Cl.[6] F16H *61/16*
U.S. Cl. 477—79 **9 Claims**



1. A control system for controlling shifting of a two-speed transmission section (**14**) comprising a double-acting synchronized jaw clutch assembly (**92**), including an axially movable two-sided jaw clutch member (**93**) fixed for rotation with a first shaft (**90**) and having a first axial position relative to said first shaft for engaging a first selectable ratio (**88**) and a second axial position relative to said first shaft for engaging a second selectable ratio (**86**), movement of said axially movable jaw clutch member toward each of said first and second axial positions initially causing engagement of synchronizer friction surfaces (**93A**) carried by said axially movable jaw clutch member with synchronizer friction surfaces (**86A, 88A**) carried by second jaw clutch members rotating with a second shaft (**28**) prior to positive engagement of the engaging first and second jaw clutch members, said system including:

means to sense selection of one of said transmission section ratios;

means for sensing signals indicative of rotational speed of said first and second shafts and determining if either of said selectable ratios is engaged;

means effective, if neither of said selectable ratios is engaged, for causing said axially movable jaw clutch member to move axially toward the axial position thereof associated with engagement of the non-selected ratio;

means for then sensing for engagement of the synchronizer friction surfaces engageable upon axial movement of said axially movable jaw clutch member toward the axial position thereof associated with engagement of the non-selected ratio; and

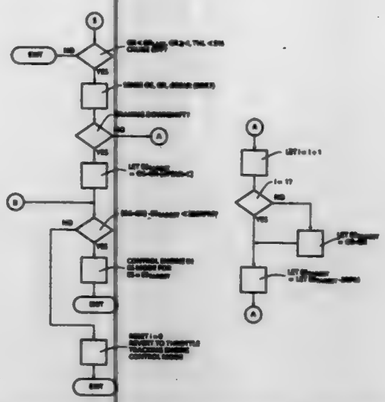
means for, upon sensing engagement of the synchronizer friction surfaces engageable upon axial movement of said axially movable jaw clutch member toward the axial position thereof associated with engagement of the non-selected ratio, causing said axially movable jaw clutch member to move toward the axial position thereof associated with engagement of said selected speed ratio.

5,441,464

NON-POWER DOWNSHIFT THROTTLE RECOVERY

Ronald K. Markyvech, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 14, 1994, Ser. No. 195,001
Int. Cl.[6] B60K *41/08*
U.S. Cl. 477—109 **30 Claims**



1. A non-power downshift throttle recovery control method for vehicular automated mechanical transmission systems of the type comprising an operator-actuated throttle device, a fuel-controlled engine (E), an electronic engine controller for controlling fueling of the engine in at least a first engine control mode wherein the engine is fueled in accordance with current operator setting of said throttle device and a second engine control mode wherein the engine is fueled to cause engine speed (ES) to equal a requested target engine speed (ES_{TARGET}), regardless of the setting of the throttle device, a multi-speed change gear mechanical transmission (**10**) having an input shaft (**16**) and an output shaft (**90**) adapted to drive vehicular drivewheels, a master friction clutch (C) drivingly interposed between the engine and the transmission, sensing means for providing input signals indicative of engine speed (ES), output shaft speed (OS) and engaged gear ratio (GR), a control unit (**106**) for receiving said input signals and processing same according to logic rules to issue command signals to said engine controller and a transmission actuator, said control unit causing said transmission to be shifted without disengagement of said master clutch, said method characterized by:

sensing completion of a non-power downshift;

causing the electronic engine controller to operate in said second control mode with a requested target engine speed (ES_{TARGET}) having a value continuously decrement downwardly from a value less than engine speed at completion of the non-power downshift (ES_i) until sensed engine speed (ES) exceeds said target engine speed by at least an engine speed difference value ($ES—ES_{TARGET} \geq REF$); and

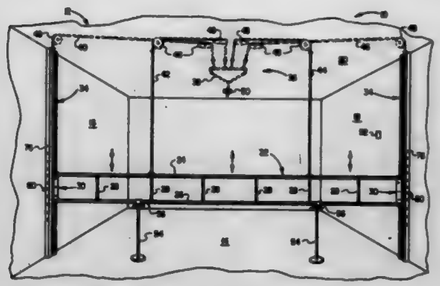
upon sensing that sensed engine speed exceeds said target engine speed by at least said reference value, causing the electronic engine controller to operate in said first control mode.

5,441,465

FLYING BALLET BARRE

Teresa C. Hefner, 12121 Cromwell, Dallas, Tex. 75234, and David M. Jones, 2825 Lake Gardens, Irving, Tex. 75060

Filed Oct. 11, 1994, Ser. No. 321,213
Int. Cl.[6] A63B *1/00*
U.S. Cl. 482—39 **20 Claims**



10. A flying ballet barre assembly which is installed across the open space of a dance studio room having an open space defined by a floor, a ceiling and opposite walls, comprising:

a ballet barre extending substantially from wall to wall across the open space of the room;

a pair of side assemblies comprising a side assembly connected to each end of said ballet barre, each side assembly having a glide block adapted to slide in an upright support;

a pair of said upright supports for the ballet barre comprising an upright support mounted at opposite walls of the room and extending a substantial distance upwardly toward the ceiling, each upright support having a glide channel extending therealong in which one of said glide blocks is slidingly received so that said ballet barre can be guided and supported;

means for securing the ballet barre in a selected elevation suitable for exercising; and

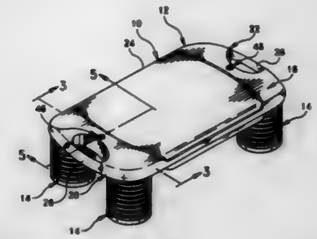
a lifting system connected to said side assemblies and/or the ballet barre for selectively raising and lowering the ballet barre while it is being guided and supported by the upright supports thereby positioning the ballet barre across the open space of the room at a selected elevation suitable for exercises or raising it up to a storage position near the ceiling so that the open space of the room is unobstructed for other uses.

5,441,466

EXERCISE STEP WITH ADJUSTABLE LEG BELLOWS

Gary Piaget, 1435 W. Silvermeadows Dr. #48, and Trace O. Gordon, 3880 W. Lariat Rd., both of Park City, Utah 84060

Filed Feb. 3, 1994, Ser. No. 191,854
Int. Cl.[6] A63B *22/04*
U.S. Cl. 482—52 **7 Claims**



1. An exercise step comprising:

a single, substantially rigid stepping platform having first and second ends;

first and second pairs of spaced leg bellows respectively mounted at said first and second ends of said platform for supporting said stepping platform above a supporting surface, each of said leg bellows having a flexible air tube extending outwardly therefrom for inflating and deflating said leg bellows, to a predetermined height so as to adjust a height of said stepping platform above said supporting surface, said platform further including a first channel extending between said first pair of spaced leg bellows and a second channel extending between a second pair of spaced leg bellows, said air tubes of said first pair of spaced leg bellows being received in said first channel and said air tubes of said second pair of spaced bellows being received in said second channel;

a first valve for simultaneously controlling air flow in said air tubes of said first pair of spaced leg bellows; and

a second valve for simultaneously controlling air flow in said air tubes of said second pair of spaced leg bellows, said first and second valves each comprising:

a valve stem having a slotted opening in one end thereof, said slotted end of said valve stem extending into a respective channel wherein said air tubes extend through said slotted opening, said valve stem being slidably movable in said channel between a first position wherein said air tubes are pinched against a wall of said channel and a second position wherein said air tubes are open to allow air flow; and

means for normally biasing said valve stem to said first position.

5,441,467

TWO-PIVOTAL-SECTION HANDLE ASSEMBLY FOR AN EXERCISER

Clive G. Stevens, 2F, No. 3, Alley 25, Lane 208, Jui-An St., Taipei City, Taiwan

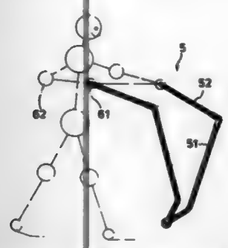
Filed Jun. 29, 1994, Ser. No. 268,026
Int. Cl.[6] A63B *22/10*
U.S. Cl. 482—54 **1 Claim**

1. An exerciser with a handle assembly, said exerciser having a base frame, said handle assembly comprising two handle units disposed on said base frame, each of said handle units including a lower handle section mounted pivotally on and above said base frame and an upper handle section having a lower end connected pivotally to an upper end of said lower handle section,

wherein said lower handle section of each of said handle units includes:
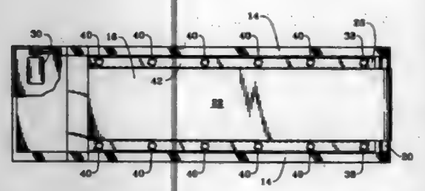
a metal lower tube having a lower end portion pivoted on

and above said base frame, and an upper end portion with a threaded radial hole formed therethrough;
a plastic lower connecting having a pivoting upper portion, and a cylindrical hollow portion having an open lower end and a closed upper end integrally formed with said pivoting upper portion so as to receive said upper end portion of said lower tube within said cylindrical hollow lower portion, said cylindrical hollow lower portion having a radial lock hole formed through a wall thereof; and
a lower lock bolt extending through said lock hole of said lower connector to engage threadably within said threaded radial hole of said lower tube;
and said upper handle section of each of said handle section of each of said handle units includes:



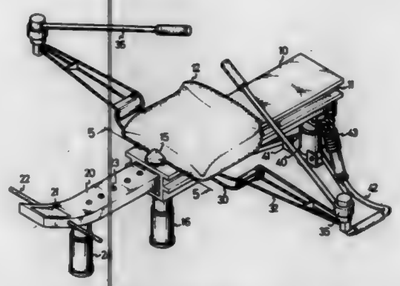
a metal upper tube having a lower end portion with a threaded radial hole formed therethrough;
a plastic upper connector having a pivoting lower portion connected pivotally to said pivoting upper portion of said lower connector, and a cylindrical hollow portion having an open upper end and a closed lower end integrally formed with said pivoting lower portion so as to receive said lower end portion of said upper tube within said cylindrical hollow portion, said cylindrical hollow portion having a radial lock hole formed through a wall thereof; and
an upper lock bolt extending through said lock hole of said upper connector to engage threadably within said threaded radial holes of said upper tube.

5,441,468
RESILIENTLY MOUNTED TREADMILL DECK
Stephen V. Deckers, Redmond; Russell F. Pasic, Seattle, and Stanley Peterman, Jr., Kirkland, all of Wash., assignors to Quinton Instrument Company, Bothell, Wash.
Continuation of Ser. No. 205,538, Mar. 4, 1994, abandoned. This application Sep. 30, 1994, Ser. No. 315,666
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **25 Claims**



1. An exercise device comprising;
an elongate frame having a pair of generally elongate and parallel side members;
one or more rollers extending generally between said side members;
a deck member operatively positioned between said side members and said one or more rollers, said deck member having a width dimension extending between said side members and a lengthwise dimension extending generally parallel to said side members and wherein said deck member includes a forward end portion and a rearward end portion;
a plurality of generally rigid spacers extending between said deck member and said side members, and said rigid spacers being positioned generally adjacent said rearward end portion of said deck member; and
a plurality of compressible spacers extending between said deck member and said side members and said compressible members being positioned forwardly of said rigid spacers.

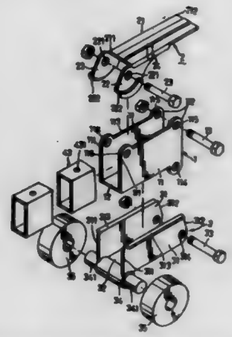
5,441,469
EXERCISE MACHINE FOR REALISTIC SIMULATION OF BOAT ROWING
Minghwa Chern, 3Fl., No. 11, Alley 2, Lane 40, Sec. 3, Chungyang N. Rd., Peitou Dist., Taipei, Taiwan
Filed Jan. 12, 1995, Ser. No. 372,017
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—72 **6 Claims**



1. An exercise machine comprising a bench having an aperture, a seat slidably mounted on the bench, first and second columns on which the bench is mounted, a board slidably received in said bench a series of apertures, a bolt insertable through the aperture defined in the bench into one of the apertures defined in the board for retaining the board with position in respect to the bench, a third column on which the board is mounted, two rods transversely projecting from the board in opposite directions for supporting the feet of an exerciser, two wings pivotably linked to the bench between a folded position and an extended position, two resistance devices each secured to a corresponding one of the wings, two oars each linked to a corresponding one of the resistance devices providing resistance when the oars are rowed, two feet pivotably linked to the second column, two hydraulic cylinders each connected between the bench and a corresponding one of the feet so that the exercise machine is rockable.

5,441,470
HEIGHT-ADJUSTING DEVICE FOR AN EXERCISE APPARATUS
Tsung-Yu Chen, Ting-Liao No. 23-4, San-Ho Tsun, Shiu-Shang Hsiang, Chia-Yi Hsien, Taiwan
Filed Oct. 27, 1994, Ser. No. 329,999
Int. Cl.[6] A63B *21/068*
U.S. Cl. 482—96 **1 Claim**

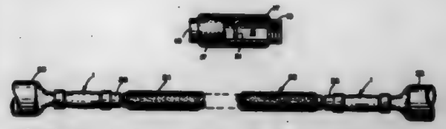
1. A height-adjusting device for an exercise apparatus, the exercise apparatus including a frame, an elongated load-carrying member with one end pivoted to the frame, and a pair of parallel lifting levers having first ends thereof pivoted to the frame and lying normally adjacent and below the load-carrying member in a substantially parallel position with respect to the lifting levers, second ends of the lifting levers being movable upwardly by manipulation of an exerciser,
said height-adjusting device comprising a wedge unit adapted to be positioned adjustably between the load-carrying member and the lifting levers to incline the load-carrying member with respect to the lifting levers when the lifting levers are moved upwardly,
wherein said wedge unit includes:
a U-shaped inner body, adapted to be sleeved, on a portion of the load-carrying member, having two opposed first vertical plates, and a first bottom plate interconnecting bottom ends of said first vertical plates, each of said first vertical plates having a first end portion, a second end portion opposite to said first end portion, and a top end extending between said first and second end portions;
a U-shaped outer body having two opposed second vertical plates disposed outwardly of said first vertical plates, and a second bottom plate interconnecting bottom ends of said second vertical plates, each of said second vertical plates having a first end portion, a second end portion opposite to said first end portion and pivoted to a lower section of said second end portion of a respective one of said first vertical plates, and a top bearing end lower than said top end of a respective one of said first vertical plates;



a roller assembly including a shaft which is mounted and which extends transversely between said second vertical plates near said first end portions of said second vertical plates and said second bottom plate, said shaft having two end portions extending outwardly of said second vertical plates, said roller assembly further including a pair of rollers mounted on said end portions of said shaft;
a stop bolt bridging and interconnecting said top ends of said first vertical plates at said second end portions of said first vertical plates;
a lever plate having a first end portion provided with a pair of pivot lugs that are pivoted respectively to said first end portions of said first vertical plates at said top ends of said first vertical plates, a second end portion extending toward said stop bolt, and a locking pin projecting downwardly from said lever plate and being extensible into said load-carrying member when said lever plate bears against said stop bolt, said pivot lugs having bottom cam surfaces which are engageable with said top bearing ends of said outer body respectively to immobilize said lever plate when said lever plate bears against said stop bolt.

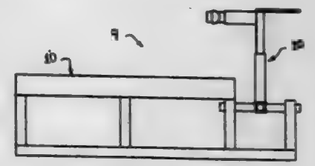
5,441,471
UNIVERSAL SPORT HANDLE
Bernard J. Passer, 1420 W. 240th St., Harbor City, Calif. 90710
Filed Nov. 4, 1994, Ser. No. 334,764
Int. Cl.[6] A63B *11/00, 21/02*
U.S. Cl. 482—106 **4 Claims**

1. A handle-support assembly comprising a sport exercise handle and first means for securing a multiplicity of bungee cords to the end of said handle; said handle comprising a molded plastic tubular member having a convex shaped outer surface, said outer surface being sized to fit the grasp of a hand, said tubular member including a female screw threaded portion inside each end;
said first means including two metal plate members and two screws, each said metal plate member being half-moon shaped and having a first hole cut in its center, said first hole being sized to accommodate one of said screws, said metal plate member also including at least three second holes, said second holes being located near the straight edge of said plate member and sized to accommodate the



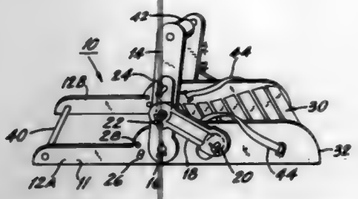
hooked end of a bungee cord, said second holes being separated and arranged in a manner to balance the pull of attached bungee cords; each said screw having a male threaded portion sized to couple with said female threaded portions in the ends of said tubular member; said plate members being attached by said screws, one to each end of said handle so that the plane of each said plate is at 90 degrees to the longitudinal axis of said handle, and the straight edge of each plate is in the same direction; two said handle-support assemblies able to be connected with at least six bungee cords to form an arm-exerciser equipment.

5,441,472
PIVOTING THIGH ENGAGING EXERCISE APPARATUS HAVING FRICTIONAL RESISTANCE
Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321
Filed Apr. 28, 1994, Ser. No. 234,544
Int. Cl.[6] A63B *21/015*
U.S. Cl. 482—118 **17 Claims**



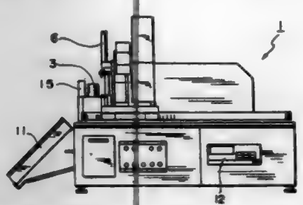
1. An exercise apparatus comprising:
a structural frame means comprising a rigid frame, a back support means mounted on said rigid frame, and an assembly support means turnably coupled to said rigid frame; and
a thigh engagement means comprising at least one upwardly extending support member turnably coupled near its lower end to said assembly support means of said structural frame means in such a manner that the turning motion of said support member is generally perpendicular to the turning motion of said assembly support means, and an engagement member mounted near the top of said support member; whereby
a user may position themself in a relatively reclined position upon said back support means of said structural frame means, engage said engagement member of said thigh engagement means with the thigh portion of their legs, and turn said thigh engagement means in the forward, backward, and side directions.

5,441,473
COMPACT BACK EXERCISER
Alan K. Safani, 15 W. 84th St., Apt. 5B, New York, N.Y. 10024, and Roy Slack, 30595 NE. Trails End La., Newberg, Oreg. 97132
Filed Nov. 16, 1993, Ser. No. 153,829
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—130 15 Claims



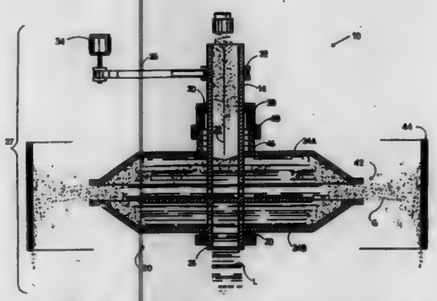
1. An apparatus for exercising the back, comprising:
a base including a seat for a user;
a movable arm pivotally mounted at a position on said base, said arm having a crosspiece extending across said base for engaging the user's back; and
a resistance device associated with said base and said arm for providing a force which opposes pivoting exercise movement of said arm;
wherein said arm has a storage position; and
wherein a predetermined space is defined by a first portion of said base, and said arm is within said defined space when in said storage position.

5,441,474
PCB WORKING MACHINE AND METHOD
Yoshihisa Morofuji, Hino, Japan, assignor to Osaki Engineering Co., Ltd, Shinagawa and Pioneer Electric Corporation, Tokyo, both of Japan
Filed Nov. 19, 1993, Ser. No. 155,444
Claims priority, application Japan, Nov. 25, 1992, 4-315000
Int. Cl.[6] B23B *35/00*; B23C *9/00*; H05K *3/00*
U.S. Cl. 483—55 4 Claims



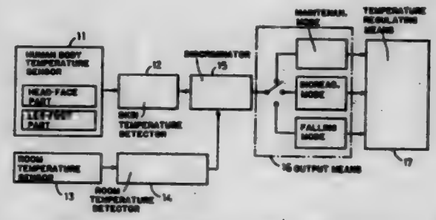
1. A PCB working machine, comprising:
a work table for holding a PCB substrate;
a spindle having a distal end and a chuck provided at said distal end for carrying a tool for cutting the PCB substrate;
control means for moving the spindle in accordance with a predetermined pattern;
a floating head encircling said chuck at a distance therefrom for adjusting a depth of a cut made with the cutting tool into the PCB substrate, said floating head having an end plate defining a floating surface, and the amount of extension of a cutting edge of the cutting tool from said floating surface determining the depth of the cut made by the cutting tool into the PCB substrate;
means for floating said floating head above the PCB substrate during cutting of the PCB substrate by forming an air layer between said floating surface and the PCB substrate, said floating means including hole means formed in said end plate of said floating head for blowing air therethrough;
means for adjusting the positional relationship between said floating surface and a cutting edge of the cutting tool and means for adjusting the positional relationship between said floating surface and said PCB substrate.

5,441,475
CENTRIFUGAL SEPARATOR WITH AXIALLY SEPARABLE BOWL ELEMENTS
Steinar Storruste, Salina, and Mark A. Preisser, Haven, both of Kans., assignors to Haahjem North America, Inc., Salina, Kans.
Filed Jun. 23, 1994, Ser. No. 264,774
Int. Cl.[6] B04B *1/14*
U.S. Cl. 494—48 3 Claims



1. A centrifugal separator for separating mixed materials having relatively greater and lesser densities from a fluent mixture thereof comprising:
a stationary frame;
a housing supported by said stationary frame, said housing further comprising:
a separable upper member rotatably movable about a vertical axis and an axially stationary lower member defining an enclosed centrifugal separation chamber therebetween, there being a gap defined between said upper member and said stationary lower member when separated;
an inlet pipe penetrating said upper member and being coaxial with said vertical axis and defining an inlet into said separation chamber for admitting a fluent mixture thereinto for subsequent separation; said fluent mixture containing a material of lesser relative density and a material of greater relative density, said inlet constraining the fluent mixture to flow into said chamber in a predetermined direction parallel to said vertical axis;
an outlet pipe attached to said stationary lower member and being coaxial with said vertical axis and defining an outlet for discharging said material of lesser relative density from said separation chamber after separation;
a motor and a drive coupled to and rotating said inlet pipe; and
a baffle disposed within said separation chamber attached to said inlet pipe and said outlet pipe, oriented to direct the incoming fluent mixture to flow away from said vertical axis, thus subjecting the fluent mixture to centrifugal forces when said upper member and said stationary lower member are rotated by said drive and said motor, whereby said material of greater relative density is discharged by centrifugal action through said gap, and said material of lesser relative density is displaced by the material of greater relative density, and is constrained to be discharged through said outlet;
said centrifugal separator further comprising a spring retained against said frame and disposed to bear against said separable upper member about said vertical axis, said spring thus yieldingly opposing separation of said upper member from said stationary lower member when said upper member and said stationary lower member are rotated.

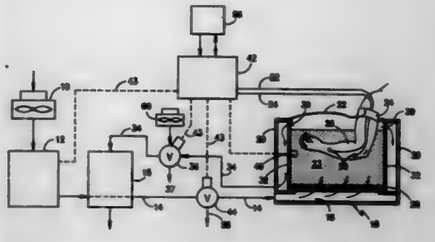
5,441,476
BODY TEMPERATURE REGULATION SYSTEM
Masako Kitsdo; Hiroyuki Inbe; Koichi Yoshida, and Izumi Mihara, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed May 11, 1993, Ser. No. 60,037
Claims priority, application Japan, May 22, 1992, 4-130716; Aug. 26, 1992, 4-227597
Int. Cl.[6] A61M *21/00*
U.S. Cl. 600—26 17 Claims



1. A system for regulating a user's body temperature for assuring smooth and good sleep of the user, the system comprising:
means for sensing the body temperature of the user in an objective region of the system, means for detecting from said body temperature a skin temperature of the user, means for detecting a room temperature in the objective region, means for discriminating a required control mode for attaining a regulated temperature through selected one of a plurality of temperature patterns in the objective region in response to outputs from said skin temperature detecting means and said room temperature detecting means, an output means for providing a control signal on the basis of said control mode discriminated at said discriminating means, and means for regulating said room temperature at said objective region in accordance with said control signal from said output means, wherein said room temperature detecting means includes a memory and a first timer, said memory storing data for monitoring variation with time in said room temperature for a first period determined by said first timer prior to the user's bedtime, and said body temperature sensing means includes a sensor for detecting the presence and absence of the user within said objective region during said first period.

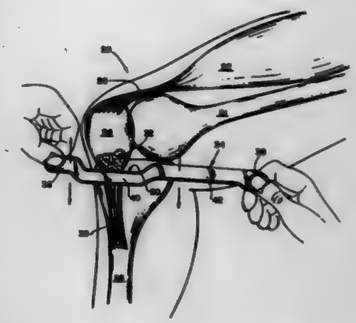
5,441,477
METHOD AND APPARATUS FOR TREATING A PATIENT BY ELECTRO/FLUIDIZED BED THERAPY
Thomas S. Hargest, P.O. Box 21118, Charleston, S.C. 29413
Filed Dec. 13, 1991, Ser. No. 808,203
Int. Cl.[6] A61F *7/00*
U.S. Cl. 601—16 9 Claims

1. A method of treating a patient by combined application of electrotherapy and a thermally controlled fluidizable particulate material comprising the steps
(a) creating a fluidizable bed of solid particles,
(b) submerging at least a portion of the body of a patient in the bed of solid particles,
(c) selectively fluidizing and de-fluidizing the bed of solid particles, as desired, while controlling the temperature of the bed of solid particles, and



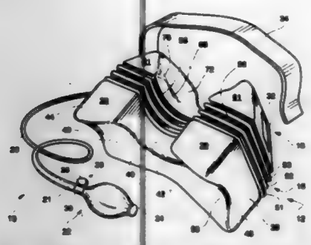
(d) selectively applying electrotherapy treatment to the portion of the body of the patient submerged in the bed of solid particles.

5,441,478
TOOLS AND METHOD FOR PERFORMING SOFT TISSUE MASSAGE
David A. Graston, Indianapolis, Ind., assignor to Graston and Hall, L.P., Indianapolis, Ind.
Continuation of Ser. No. 83,029, Jun. 25, 1993, Pat. No. 5,366,437. This application Aug. 31, 1994, Ser. No. 299,201
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—137 5 Claims



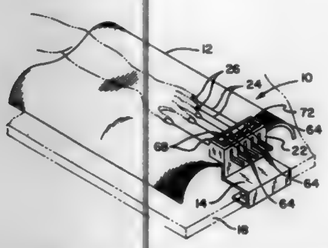
1. A massage tool for use by a trainer to apply pressure to the skin of a patient for the removal of fibrous scar tissue adhesions from underlying soft tissue, comprising:
an elongate unitary rigid body having a first end and a second end, a first flat surface and a second flat surface opposite from said first flat surface, and a peripheral edge extending about the circumference of said body, wherein a portion of said peripheral edge is configured in the shape of an arc corresponding to the shape of a contour of a selected part of a patient's body from which a scar tissue adhesion is to be loosened from the underlying soft tissue, wherein said peripheral edge includes a tapered surface extending from said first flat surface to said second flat surface to define a blade edge.

5,441,479
CERVICAL TRACTION DEVICE
Ralph Chitwood, Kalispell, Mont., assignor to Glacier Cross, Inc., Whitefish, Mont.
Filed Sep. 13, 1993, Ser. No. 120,602
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—18 **28 Claims**



1. A cervical traction device comprising: a body including a shoulder portion, a head portion and a bellows which extends substantially across the width and height of said body between and connected to said head portion and to said shoulder portion and acting against and between substantially the full inner end surface of said head portion and the full inner end surface of said shoulder portion; said bellows, said shoulder portion and said head portion having aligned U-shaped openings therein adapted to receive a patient's neck; and, means, connected to said bellows, for pumping air into said bellows and for relieving or pumping air out of said bellows.

5,441,480
SURGICAL TRACTION DEVICE
John P. Kane, and Hector A. Alvarez, both of 1316 F. Gateview Ave., T.I. San Francisco, Calif. 94130
Filed Feb. 22, 1994, Ser. No. 199,426
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—36 **5 Claims**



1. Apparatus for applying traction forces to the fingers, wrist and forearm of a patient during orthopedic surgery comprising, in combination:
- a cradle for the arm of the patient, the cradle being radiolucent;
- a clamp adapted to releasable secure the cradle to an operating table during surgery;
- a traction box secure with respect to the cradle, the traction box having wires extending therefrom with their outboard ends extending over the cradle and attaching to finger straps, by means of an "S" hook, for holding the fingers of the patient and with their inboard ends extending to within the traction box;
- tensioning means within the traction box, the tensioning means including a shaft supported about a horizontal axis perpendicular to the wires, a plurality of spools mounted for rotation upon the shaft with the inboard end of each wire secured to an associated spool, a rachet wheel coupled to each spool and a pawl operatively coupled to each rachet wheel;
- control means operatively coupled to each spool and rachet wheel, the control means including a wrench to pivot the axis of the pawl about an axis consistent with the axis of the shaft to move the pawl in a reciprocating arcuate path to advance its associated rachet wheel and spool to wind up its associated wire and to apply a traction force to a finger of a patient, each control means also including a rod extending through its associated wrench and a spring mounted on the rod to pull the pawl against the action of the spring away from its rachet wheel for releasing the traction; and
- a gauge associated with each spool to sense and display the pressure applied to each finger through its wire, spool and wrench.

5,441,481
MICRODIALYSIS PROBES AND METHODS OF USE
Pravin Mishra, 3303 W. Reservoir Blvd., Peoria, Ill. 61615; John Lehmann, 486 Church Rd., Devon, Pa. 19333, and Somnath Nair, 5 Oakwood Pl., Voorhees, N.J. 08043
Filed May 27, 1994, Ser. No. 250,121
Int. Cl.[6] A61M *1/00*; A61B *5/00*
U.S. Cl. 604—29 **30 Claims**



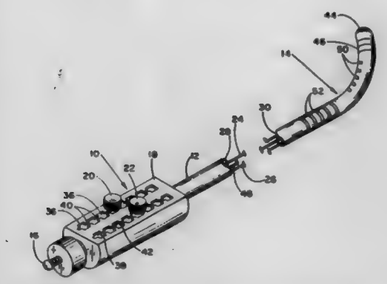
1. A microdialysis probe arranged to have a primary probe releasably secured to it to enable the microdialysis probe and the primary probe to be extended as a unit through a common opening into the body of a living being, whereupon the microdialysis probe can be used for selective sampling and/or administration of dialyzable compounds in biological fluids from living tissue within the body of the being and the primary probe can be used for some other function within the body of the being, said microdialysis probe comprising means for releasably mounting said primary probe to said microdialysis probe, a dialysis chamber having a wall formed of a semipermeable material having a pore size larger than the molecular weight of the dialyzable compounds, an inlet passageway to said chamber and an outlet passageway from said chamber.

5,441,482
JET DRIVEN SURGICAL SUCTION DEVICE AND METHOD OF USING
Cynthia T. Clague, Minneapolis, and Perry L. Blackshear, Jr., Mahtomedi, both of Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed May 11, 1994, Ser. No. 241,284
Int. Cl.[6] A61M *1/00, 25/00*
U.S. Cl. 604—35 **24 Claims**

1. A suction device for medical purposes for suctioning a material having heavier and lighter components employing a source of pressurized drive fluid, said device comprising:
- an elongated tubular member having a mixing chamber formed therein having a central axis, a tubular side wall and proximal and distal end openings;
- an evacuation tube disposed axially within said mixing chamber aligned with said central axis;
- an inlet formed in communication with said distal end opening for introducing the material to be suctioned into said mixing chamber axially along said center axis; and
- injecting means for injecting said drive fluid into said mixing chamber in a swirling vortex flow around said inlet and said tubular side wall for inducing a suction pressure to draw said material through said inlet into said mixing chamber such that said swirling vortex flow effects the mixture of said heavier components of said material with said drive fluid and the ejection of said mixture through said proximal end opening while concentrating said lighter components axially to be evacuated through said evacuation tube.



5,441,483
CATHETER DEFLECTION CONTROL
Boaz Avitall, 4868 N. Ardmore Ave., Milwaukee, Wis. 53217
Continuation-in-part of Ser. No. 976,784, Nov. 16, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,598
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 **61 Claims**



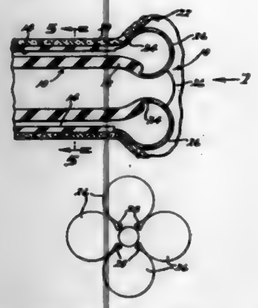
1. A deflection system for precisely controlling the shape of a distal catheter section, including a flexible distal working catheter area, of a tubular vascular catheter comprising:
- (a) a distal catheter section having an outer wall, a distal end, and a proximal end and including a distal working tip area, the shape of which is sought to be controlled;
- (b) a plurality of relatively weaker or more flexible wall areas aligned in radially diverse directions serially spaced for producing greater flexibility in a preferred direction in the outer wall of the distal catheter section proximally spaced from the distal end of the distal section, each weaker wall area producing a tendency for the catheter to bend preferentially in the direction of and in the vicinity of the weaker wall segment; and
- (c) flexure control means including reciprocally operable means for applying an adjustable tension or pulling force to the distal catheter section from distal of the weaker wall area in a manner that produces curvature of the catheter at the one or more weaker wall areas in the desired direction of and in the vicinity of the weaker wall areas.

5,441,484
BALLOON DILATATION CATHETER HAVING A FREE CORE WIRE
Robert Atkinson, St. Anthony, and Carol Loney, St. Louis Park, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Continuation of Ser. No. 852,545, Mar. 17, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 162,835
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **22 Claims**



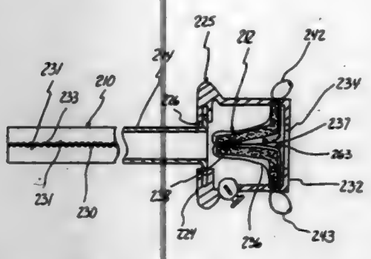
1. A catheter adapted to be inserted into a patient's vascular system, the catheter comprising:
- an elongate flexible tubular member having an interior passage extending from a proximal end to a distal end;
- a guiding member having a proximal end and a distal end, the proximal end of the guiding member being coupled to and fixed against rotational movement relative to the tubular member, the guiding member extending distally beyond the distal end of the tubular member;
- a flexible waist tube having a proximal end and a distal end, the waist tube being more flexible than the tubular member, the waist tube having its proximal end sealably connected to the tubular member, the waist tube extending distally beyond the distal end of the tubular member about the guiding member to define a distal interior passage in fluid communication with the interior passage of the tubular member;
- an inflatable balloon member extending around a section of the guiding member and having an interior in fluid communication with the interior passages, the balloon member including a proximal end sealably connected to the distal end of the waist tube and a distal end free from any fixed connection to the guiding member;
- an axially stiff component coupled to the balloon member so as to allow rotational movement of the guiding member relative to the balloon member such that torque applied through the guiding member is not readily transmitted to the balloon member from the guiding member, the axially stiff component is an inner sleeve having a proximal end, a distal end, and a through lumen that extends between the proximal and distal ends of the inner sleeve, the inner sleeve exhibiting a substantial degree of column strength to resist axial buckling when the catheter is advanced through a patient's vascular system, and the distal end of the inner sleeve is secured to the distal end of the balloon member, and the through lumen of the inner sleeve is dimensioned to freely receive the guiding member and to define a cylindrical gap between an interior wall of the inner sleeve and an exterior surface of the guiding member, the cylindrical gap having minimum radial dimension to provide resistance to flow of pressurized balloon fluid, to minimize leakage through the inner sleeve and distal end of the balloon member; and
- push means associated with the guiding member and cooperable with the axially stiff component for preventing a longitudinal collapse of the balloon member in a proximal direction when the catheter is advanced through a patient's vascular system.

5,441,485
BLADDER CATHETER
Michael J. Peters, 2196 Wycliffe, West Bloomfield, Mich. 48323
Filed Feb. 24, 1994, Ser. No. 201,274
Int. Cl.[6] A61M *25/14*
U.S. Cl. 604—101 3 Claims



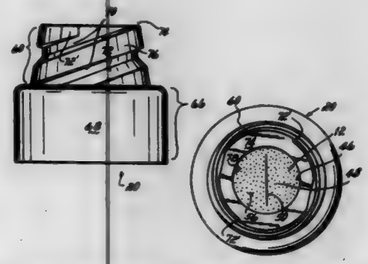
1. A catheter comprising:
a relatively stiff tube having an insertion end for insertion into the urethra of a patient and an opposite end;
an inflatable sheath telescoped over said tube and sealed thereto at both the insertion end and the opposite end of said tube;
means at the opposite end of said catheter for inflating said sheath after insertion of said catheter into the urethra of a patient; and
a plurality of circumferentially spaced sections of reduced thickness at the insertion end thereof that are inflatable to define circumferentially spaced retention balloons when said sheath is inflated.

5,441,486
ENDOSCOPIC PORTAL FOR USE IN ENDOSCOPIC PROCEDURES AND METHODS THEREFOR
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Division of Ser. No. 40,560, Mar. 31, 1993, Pat. No. 5,389,080, which is a continuation-in-part of Ser. No. 557,869, Jul. 26, 1990, Pat. No. 5,395,342. This application Nov. 9, 1994, Ser. No. 338,122
Int. Cl.[6] A61M *25/16, 39/26*
U.S. Cl. 604—167 7 Claims



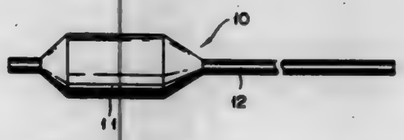
1. An endoscopic portal for establishing communication with an anatomical cavity through a wall of the anatomical cavity comprising
an elongate tubular portal sleeve for being inserted through the cavity wall and having an open distal end for being positioned within the anatomical cavity, an open proximal end for being positioned externally of the cavity and a lumen extending from said distal end to said proximal end, said lumen being expandable in size to receive instruments larger than the inner diameter of said portal sleeve; and
a valve assembly disposed adjacent said portal sleeve proximal end and including a single passage therethrough for being opened as wide as said lumen to permit insertion of the instruments in said portal sleeve through said passage in sealing relation with said valve assembly.

5,441,487
PLASTIC NEEDLELESS VALVE HOUSING FOR STANDARD MALE LUER LOCKS
Kent B. Vedder, Columbus, Ohio, assignor to Medex, Inc., Hilliard, Ohio
Continuation of Ser. No. 216,669, Mar. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 160,047, Nov. 30, 1993. This application Jan. 23, 1995, Ser. No. 376,969
Int. Cl.[6] A61M *39/00*
U.S. Cl. 604—167 45 Claims



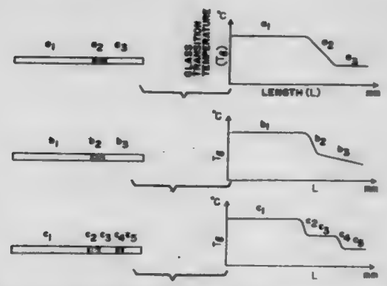
1. In a medical device for coupling to a standard male luer lock having a luer taper and an internally threaded locking nut thereabout wherein the medical device includes a normally-closed valve being openable by the taper of the male luer lock, the improvement comprising:
a plastic housing surrounding the valve and having an opening sized to receive the luer taper therethrough, a top surface of the valve being situated at the opening of the housing, the housing including a tapered exterior surface which is (i) narrow adjacent the opening and sized to be received into the interior of the locking nut of the male luer lock, and (ii) wider spaced from the opening such that the tapered exterior surface wedgingly interacts with the interior of the locking nut of the male luer lock to hold the male luer lock to the device with the valve opened by the luer taper.

5,441,488
MEDICAL TOOL HAVING LUBRICIOUS SURFACE IN A WETTED STATE AND METHOD FOR PRODUCTION THEREOF
Kenichi Shimura; Naoki Ishii, and Makoto Onishi, all of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1994, Ser. No. 192,574
Claims priority, application Japan, Feb. 8, 1993, 5-020171
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—265 15 Claims



1. A medical tool comprising:
a water-swellable polymer comprising a moiety manifesting lubricity and another moiety having a first reactive functional group selected from the group consisting of an epoxy group, an acid halide group, and an isocyanate group in the molecular unit thereof; and
a material, chemically bonded to said water-swellable polymer by means of a proton-donating group of said material, capable of reacting with said first reactive functional group, said proton-donating group selected from the group consisting of an amino group, an imino group, a hydroxy group, a carboxyl group, a mercapto group, or mixtures thereof;
said medical tool exhibiting lubricity in a wetted state.

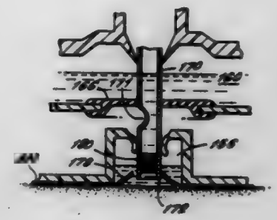
5,441,489
CATHETER WITH BODY TEMPERATURE GLASS TRANSITION REGION
Atsushi Utsumi; Yukio Morita, both of Itami; Tamotsu Kaide; Kazuo Onishi, both of Amagasaki, and Shunichi Hayashi, Chita, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan
PCT No. PCT/JP90/00488, § 371 Date Feb. 14, 1991, § 102(e) Date Feb. 14, 1991, PCT Pub. No. WO90/11793, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 11, 1990, Ser. No. 623,414
Claims priority, application Japan, Apr. 13, 1989, 1-43371 U; Apr. 13, 1989, 1-43372 U
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 16 Claims



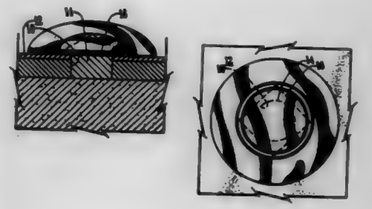
1. A catheter for insertion into one of a human and an animal body comprising a torque transmitting tubular section (a) which has rigidity sufficient for torque transmission, a flexible tubular section (b) made of a material having a glass transition temperature between 21.5° C. and 51.5° C. and a middle tubular section (c) arranged between said section (a) and said section (b) having a glass transition temperature between that of said section (a) and that of said section (b), wherein said section (b) has a length of 5–500 mm, said section (a) has a length greater than said section (b), and said section (a) maintains its rigidity for torque transmission after insertion into said body.

5,441,490
TRANSDERMAL PERFUSION OF FLUIDS
Pal Svedman, Malmoe, Sweden, assignor to Principal AB, Malmo, Sweden
PCT No. PCT/EP92/00029, § 371 Date Nov. 23, 1993, § 102(e) Date Nov. 23, 1993, PCT Pub. No. WO92/11879, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 7, 1992, Ser. No. 84,267
Claims priority, application Sweden, Jan. 9, 1991, 9100058; Apr. 8, 1991, 9101022
Int. Cl.[6] A61M *35/00*
U.S. Cl. 604—289 25 Claims

1. Apparatus for use in transdermal perfusion of fluids through the skin of the human or animal body, the apparatus comprising a housing attachable to the body and having a contact surface which in use is held in contact with a portion of skin, the housing defining a chamber and the contact surface defining an aperture communicating with the chamber, and fluid supply means operable during a perfusion phase of operation of the apparatus to supply fluid to the chamber wherein the apparatus further comprises de-epithelializing means for removing a portion of the skin's epidermis from the skin's underlying dermis, the de-epithelializing means being operable during a preparatory phase of operation of the apparatus to expose an area of dermis of the skin at a treatment site which is accessible via the aperture such that subsequently during the pension phase direct contact is made between fluid in the chamber and the dermis.



5,441,491
METHOD AND COMPOSITION FOR TREATING BIOPSY WOUNDS
Jacob Verschoor, 4847 CH Teteringen, and Wiete Westerhof, Kanaalweg 23a, 1121 DP Landsmeer, both of Netherlands
Filed Feb. 4, 1994, Ser. No. 192,557
Int. Cl.[6] A61F *13/00*
U.S. Cl. 604—304 17 Claims



1. A method of treating a biopsy wound in a human patient comprising:
filling said wound with a disc of fibrous collagenous tissue material from which non-fibrous tissue proteins and glycoproteins as well as lipids and lipid residues have been removed and which has been crosslinked chemically.

5,441,492

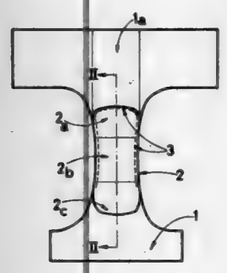
Patent Not Issued For This Number

5,441,493

DISPOSABLE PANTIES

Juan C. Gonzalez-Anguiano Marsel, and M. Teresa Fernandez Gonzalez, both of Córcega 659-661, 08026-Barcelona, Spain

Filed May 10, 1994, Ser. No. 240,250
Claims priority, application Spain, Apr. 18, 1994, 9401024 U
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—394 **15 Claims**



1. Disposable underpants comprising:

an underpant body having an inner surface and an outer surface and including a longitudinal undercrotch portion and front and rear end portions positioned at opposing ends of the longitudinal undercrotch portion and transverse thereto;

a sanitary napkin member positioned over the longitudinal undercrotch portion and extending substantially a length of the longitudinal undercrotch portion, said sanitary napkin including front, rear, and longitudinal edges; and

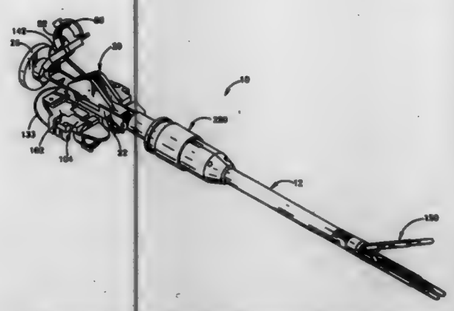
means for preventing tearing of said underpant body at the front edge of said sanitary napkin by securing said sanitary napkin to the longitudinal undercrotch portion of said underpant body only at the rear and longitudinal edges thereof.

5,441,494

MANIPULABLE HAND FOR LAPAROSCOPY

Mark Ortiz, Milford, Ohio, assignor to Ethicon, Inc., Somerville, N.J.

Filed Jul. 29, 1993, Ser. No. 99,675
Int. Cl.[6] B25J *1/00*
U.S. Cl. 606—1 **27 Claims**



1. A manipulable surgical hand for performing laparoscopic surgical techniques comprising at least one master control finger, means for releasably attaching said master control finger to a finger of a human hand, said master control finger having at least one interphalangeal joint hinge dividing said control finger into first and second phalanges, all of which correspond to an interphalangeal joint and phalanges of a human hand, said control finger being articulable between extended and flexed positions corresponding to extended and flexed positions of a human finger, an elongated tube having base means for mounting said master control finger at a proximal end thereof, at least one controlled slave finger mounted on finger mounting means mounted on a distal end of said tube, said tube having means for mounting said controlled slave finger at the distal end thereof, said controlled slave finger having at least one interphalangeal joint hinge dividing said slave finger into first and second phalanges, said slave finger being articulable between extended and flexed positions corresponding to the extended and flexed positions of said control finger, motion transmission means carried by said tube connecting said master control finger to said controlled slave finger and being responsive to movement of the phalanges of the control finger to independently transmit movements of each of the phalanges of the control finger to each of the phalanges of the controlled finger with a one-for-one correspondence of movements between the control finger phalanges and the controlled finger phalanges.

5,441,495

ELECTROMAGNETIC TREATMENT THERAPY FOR STROKE VICTIM

Abraham R. Liboff, Birmingham, Mich.; Bruce R. McLeod, Bozeman, Mont., and Stephen D. Smith, Lexington, Ky., assignors to Life Resonances, Inc., Bozeman, Mont.

Continuation of Ser. No. 395,247, Aug. 17, 1989, abandoned. This application Oct. 13, 1993, Ser. No. 136,474
Int. Cl.[6] A61N *2/04*
U.S. Cl. 600—9 **15 Claims**

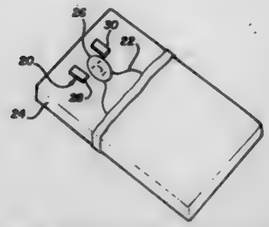
1. A method for the therapeutic treatment of stroke victims, comprising:

generating with a magnetic flux generator an applied magnetic flux parallel to an application axis and projecting through a stroke victim,

said flux generator having at least two field coils, said field coils having a coil axis extending there through parallel to said application axis, each of said field coils further having at least two windings, one of said windings of each coil being an ac winding and the other of said windings being a dc winding, said ac winding having an associated full-wave rectifier and an oscillator;

measuring an ambient field existing along said application axis in the region of said stroke victim;

said applied magnetic flux generating step including the steps of generating with said dc winding a magnetic flux



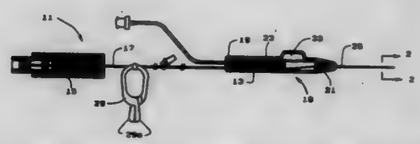
which reduces said ambient field to substantially zero and generating with said ac windings an ac magnetic field having a component along said application axis, said ac magnetic field component having an rms value which therapeutically treats post-stroke sequelae of said stroke victim by at least partially reducing ion imbalance in tissues affected by said stroke.

5,441,496

LASER DELIVERY SYSTEM WITH SOFT TIP

James C. Easley, St. Charles, Mo., and Stanley Chang, Scarsdale, N.Y., assignors to Infinitech, Inc., St. Louis, Mo.

Filed Apr. 15, 1993, Ser. No. 48,149
Int. Cl.[6] A61B *17/36*; A61F *9/00*
U.S. Cl. 606—15 **6 Claims**



1. A laser delivery system for ophthalmic surgery and the like comprising:

a handpiece having a handpiece body and a hollow probe of a size suitable for insertion into a human eye, said hollow probe extending distally from the handpiece body and having a proximal portion and a distal end, said hollow probe including a metal tube forming the proximal portion of the probe, said metal tube being fixedly secured against longitudinal and rotational movement with respect to the handpiece body;

a laser connector for connection to a laser source;

an optical fiber terminating at one end in the laser connector and terminating at another end in the handpiece for transmitting laser light from said laser source to an eye to be treated; and

a relatively straight soft tip forming the distal end of said probe, said soft tip being fixedly secured against longitudinal and rotational movement with respect to said metal tube;

wherein said soft tip comprises a tube frictionally held in said probe and which is made of a soft pliable material, said soft pliable material being received at least partly in said metal tube and extending distally beyond said metal tube;

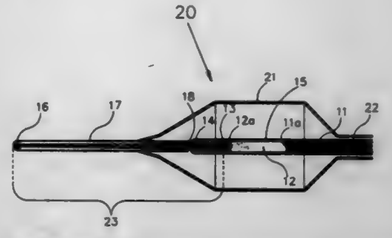
said soft pliable tube being received over a bushing, said bushing frictionally holding said soft pliable tube in said metal tube with the soft pliable tube captured between the bushing and the metal tube.

5,441,497

LIGHT DIFFUSING GUIDEWIRE

Hugh L. Narciso, Jr., Santa Barbara, Calif., assignor to PDT Cardiovascular, Inc., Santa Barbara, Calif.

Filed Jul. 14, 1994, Ser. No. 275,029
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 **11 Claims**



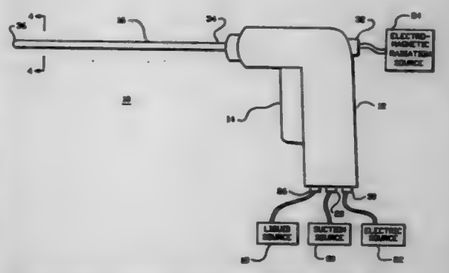
1. A light diffusing guidewire comprising a substantially cylindrical elongate member having a proximal end and a distal end and a body portion therebetween and wherein said body portion comprises an optically transparent outer sheath surrounding and enveloping a fiber optic having a proximal end and a distal end, said fiber optic distal end having a light diffusing element affixed thereto and wherein said distal end of said body portion has a guidewire tip extending distally therefrom.

5,441,498

METHOD OF USING A MULTIMODALITY PROBE WITH EXTENDABLE BIPOLAR ELECTRODES

Rodney C. Perkins, Woodside, Calif., assignor to Envision Surgical Systems, Inc., Palo Alto, Calif.

Continuation of Ser. No. 197,357, Feb. 16, 1994, Pat. No. 5,401,272. This application Sep. 8, 1994, Ser. No. 302,550
Int. Cl.[6] A61B *17/36, 17/39*
U.S. Cl. 606—15 **3 Claims**



1. An electrosurgical method for treating body tissue using a probe, said probe including an elongated member having a proximal end and a distal end, said method comprising the steps of:

positioning the distal end of the elongated member near body tissue to be treated, the elongated member further including a pair of elongated electrodes, each electrode having a proximal end and a distal end, the elongated electrodes being slidably secured to the elongated member so as to slide in a direction substantially parallel to the elongated member, and an energy delivery device secured to the elongated member, the energy delivery device being operably attached to the elongated member for communicating energy to the distal end of the elongated member;

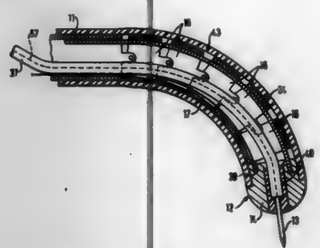
treating body tissue by communicating energy from the

energy delivery device to the distal end of the elongated member;
sliding the pair of elongated electrodes from a retracted position to an extended position, wherein the distal ends of the elongated electrodes, when in the extended position, extend beyond the distal end of the elongated member;
placing the distal ends of the elongated electrodes in the extended position in contact with the body tissue to be treated; and
applying an electric potential to the distal ends of the elongated electrodes in order to cauterize the body tissue by applying an electric current.

5,441,499
BIPOLAR RADIO-FREQUENCY SURGICAL INSTRUMENT

Gernod Fritzsch, Tuttlingen, Germany, assignor to Dekna elektro-u. medizinische Apparatebau Gesellschaft mbH, Tuttlingen, Germany

Filed Jul. 13, 1994, Ser. No. 275,059
Claims priority, application Germany, Jul. 14, 1993, 43 23 585.9
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—45 **13 Claims**



1. Bipolar radio-frequency surgical instrument comprising a rigid tube shaft having a longitudinal axis, a working tip having a longitudinal axis and substantially the same cross-section as an adjoining part of the tube shaft, the working tip being provided with at least one working electrode which can be energized with a radio-frequency voltage and a neutral electrode, means connecting the working tip with a front end of the rigid tube shaft so that the longitudinal axis of the working tip can be angularly moved about an axis transverse to the longitudinal axis of the tube shaft from a position in which it is axially aligned with the longitudinal axis to a position in which it is angularly inclined relative to the longitudinal axis, and a spring arranged eccentrically to the transverse axis and a diametrically oppositely disposed draw member for moving the working tip between the position in which its axis is angularly inclined and the position in which it is axially aligned with the longitudinal axis of the tube shaft.

5,441,500
BONE NAIL

Hartmut R. A. Seidel, Hamburg, and Andreas W. Speitling, Kiel, both of Germany, assignors to Howmedica GmbH, Schoenkirchen, Germany

Filed Jan. 30, 1992, Ser. No. 828,400
Claims priority, application Germany, Jan. 30, 1991, 9101035 U
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—67 **1 Claim**

1. A bone nail for upper arm fractures, comprising
(a) A hollow first shank adapted to be inserted into the proximal end portion of a medullary canal, said first shank having a distal end having a slotted portion provided with a plurality of slots and an internal thread extending beyond said slotted portion; and
(b) A threaded element having
(1) a second shank with a threaded portion cooperating with said internal thread and having further
(2) a head portion having an expansion body, said expansion body being able to be drawn into said first shank and expanding said slotted portion radially upon a rotation of said threaded element, wherein said expansion body is rotatably supported by said head portion of said threaded element so as to allow rotation of said expansion body relative to said threaded element and wherein said expansion body is axially secured relative to said threaded element so as to prevent axial movement of said expansion body relative to said threaded element upon rotation of said threaded element,
wherein said expansion body has a radially inwardly extending support surface which engages the rear end of said



head facing said second shank of said threaded element, wherein said expansion body has a radially inwardly projecting edge, preferably a crimped portion, which overlaps the front end of said head facing away from the shank of said threaded element, wherein said head of said threaded element is located between said projecting edge and said support surface of said expansion body with an axial clearance, wherein said expansion body is guided along the circumference of said threaded element, preferably along the circumference of said head, with a small clearance, wherein said head of said threaded element is cylindrical, wherein said expansion body has an outer cone which tapers towards said shank of said threaded element, and wherein said hollow shank has alternating internal elevations and depressions, and wherein the inner radius defined by said elevations in said slotted portion of said shank decreases from the distal to the proximal end.

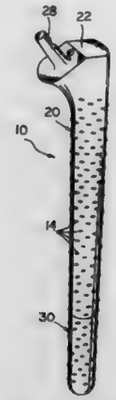
5,441,501
INTERMEDULLARY RASP WITH DETACHABLE EXTENSION END

Roger R. Kenyon, Fort Wayne, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jun. 20, 1994, Ser. No. 263,361
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—85 **3 Claims**

1. An apparatus for preparing a first cavity in a bone in preparation for an initial implant prosthesis and for preparing an extended second cavity in said bone in preparation for a revision implant prosthesis, wherein the second cavity is longer than the first cavity, said apparatus comprising:
an elongated body part adapted to conform to the shape of a prosthesis to be implanted in said bone,
said body part having a proximal end and a distal end,

and an elongated extension part for connection to the distal end of the body part to lengthen the body part,
means for longitudinally connecting said extension part to said body part for forming the second cavity,

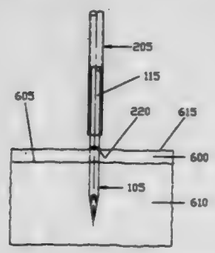


teeth means carried by said body part and said extension part for cutting a portion of said bone to produce said second cavity,
said extension part connected to said body part by said connecting means when said apparatus is used for preparing said second cavity.

5,441,502
SYSTEM AND METHOD FOR RE-ATTACHING SOFT TISSUE TO BONE

Edwin C. Bartlett, Greenville, N.C., assignor to Mitek Surgical Products, Inc., Westwood, Mass.

Filed Feb. 17, 1993, Ser. No. 18,929
Int. Cl.[6] A61F *5/00*; A61B *17/18*
U.S. Cl. 606—104 **9 Claims**



1. A system for use in attaching an object to bone, said system comprising:
pin means for pinning said object to bone and sleeve means for mounting on said pin means;
said pin means being adapted to penetrate through said object and into said bone to a desired depth, said pin means comprising an elongate, rigid pin having a first longitudinal axis, a first outer surface, a distal end, a distal portion adjacent said distal end, a proximal end, a proximal portion adjacent said proximal end, and marker means located on said outer surface of said pin for providing a visual reference indicative of the depth of penetration of said distal end through said object and into said bone, said distal end defining a pointed tip;
said sleeve means comprising an elongate, tubular sleeve having an inner surface, an outer surface, a distal end, a distal portion adjacent said distal end, a proximal end, and a proximal portion adjacent said proximal end;
the inner surface of said proximal portion of said sleeve defining an internal, longitudinally-extending first lumen, said first lumen being further defined by internal longitudinal walls, each said wall having a pair of opposing longitudinally extending side edges and being joined at an angle to adjacent ones of said walls along one or the other of said side edges;
the inner surface of said distal portion of said sleeve defining an internal, longitudinally-extending second lumen having a substantially circular cross-section;
said proximal portion of said sleeve and said distal portion of said sleeve being joined together end to end such that said first and second lumens define a passageway centered on said longitudinal axis of said sleeve, with said passageway being sized to receive said pin, and said passageway extending from said proximal end of said sleeve to said distal end of said sleeve, and such that an internal, proximally-facing shoulder and an external, distally-facing shoulder are formed in the inner and outer surfaces of said sleeve, respectively, at the point where said proximal portion of said sleeve joins said distal portion of said sleeve;
said distal portion of said sleeve having a longitudinal length substantially shorter than the longitudinal length of said proximal portion of said sleeve; and
said distal end of said sleeve defining distally facing cutting means for cutting through said object and bone.

5,441,503
APPARATUS FOR REMOVING TUMORS FROM HOLLOW ORGANS OF THE BODY

John Considine, 8 Reddings Rd., Moseley, Birmingham B13 8LN, England, and Colin J. Bunce, 49 Elderpark Gardens, Govet, Glasgow G51 3NX, Wales

Continuation of Ser. No. 671,787, May 20, 1991. This application Jan. 14, 1994, Ser. No. 181,886
Claims priority, application United Kingdom, Sep. 24, 1988, 8822492
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—115 **16 Claims**



1. An apparatus for use in the removal of a tumour from a hollow body organ accessible to an endoscope comprising, in combination,
an endoscope having a first end through which a telescope passes, which end is seated against the egress of fluid, a second open operative end, means for the continuous introduction of an irrigation fluid into the said endoscope adjacent the said first end thereof for passage therethrough and out of the second open operative end, and a diathermy suction tube extending through the said first end of the said endoscope to the said open end,
said diathermy suction tube having an electrode with an exposed tip portion attached to a first operative end, said tip portion being located immediately adjacent an opening at the said operative end of the said tube, the said electrode being connected to a source of electrical power, a second end of said diathermy suction tube remote from said operative end of said diathermy suction tube connected to a vacuum source,
means for retracting said diathermy suction tube into said endoscope, and means for biasing said suction diathermy

tube to a forward operative position relative the endoscope whereby the operative end thereof including the exposed portion may be withdrawn within the endoscope during insertion of the said endoscope into the body organ and thereafter advanced into the tumour whilst maintaining an exit for the severed tumour and irrigating fluid,

the relative locations of the electrode tip and the said opening in the diathermy suction tube being such that the severed tumour, irrigation fluid and body fluids are immediately and continuously withdrawn through the said tube, the electrode tip and opening in the operative end of the said suction tube being at the side and instant of severance of the tumour from the hollow organ thereby reducing the likelihood of tumour cells gaining attachment to the organ mucosa.

5,441,504

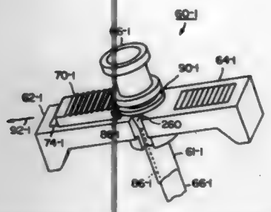
SPLITTABLE LEAD INTRODUCER WITH MECHANICAL OPENING VALVE

Peter J. Pohndorf, Stillwater; Corinne A. Greene, Roseville, and Linda L. Lach, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 865,578, Apr. 9, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 157,751

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—129 **16 Claims**



1. An introducer for introducing a lead or catheter comprising:

an introducer sheath having a hollow cylindrical body configured to permit the introduction of a lead or catheter therethrough, said sheath open at its proximal and distal ends;

a tab disposed at the proximal end of said introducer sheath, extending radially outward therefrom;

sliding valve means disposed on said tab, said sliding valve means adapted to slide from a first, open position wherein a forward end of said sliding valve means is disposed over said tab, to a second, closed position wherein said forward end of said sliding valve means is disposed over said open proximal end of said introducer sheath;

such that said sliding valve means, in said closed position, substantially prevents the passage of air and blood through said introducer sheath; and

means for permitting removal of said introducer from said lead or catheter without requiring said introducer to be removed over an end of said lead or catheter.

5,441,505

MEDICAL LOCATING APPARATUS

Katsushige Nakamura, Tokyo, Japan, assignor to Mitaka Kohki Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,979

Claims priority, application Japan, Jan. 28, 1993, 5-031123

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **2 Claims**

1. A medical locating apparatus, comprising:

a first support;

an elongate first link pivotally supported intermediate its ends by a pivot operatively connected to said first support;

a second link pivotally connected to an upper end portion of said first link;

a third link pivotally connected to a distal end portion of said second link, and rotatable about a longitudinal axis;

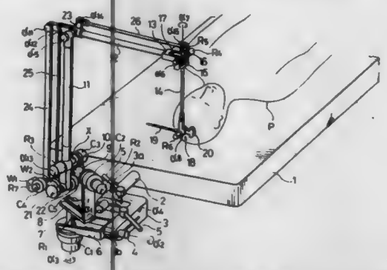
a connection shaft connecting said first link with said second link;

a crank member pivotally connected to said connection shaft;

a first auxiliary link and a second auxiliary link, both pivotally connected to respective first end portions to a lower end portion of said first link;

a first sub-link, disposed to be parallel with said first link, connecting a second end portion of said first auxiliary link with a proximal end portion of said second auxiliary link;

a second sub-link, disposed to be parallel with said first link, connecting a second end portion of said second auxiliary link to a first end portion of said crank member;



a third sub-link, disposed to be parallel with said second link, connecting a proximate end portion of said third link with a second end portion of said crank member;

an indicating unit mounted at a lower end of the third link;

a first magnetic clutch and a first rotary encoder provided on said pivot and a second magnetic clutch and a second rotary encoder on a connection shaft connecting said first auxiliary link with said first sub-link for enabling selected rotational engagements thereat;

a third magnetic clutch provided on a connection shaft connecting said second auxiliary link with said second sub-link for enabling engagement therebetween; and

a rotary encoder provided on each of a connection shaft connecting said second link with said third link, third link along its longitudinal axis, and a rotary shaft of said indicating unit for providing outputs corresponding to their respective, rotational orientations.

5,441,506

EPILATING APPLIANCE WITH GRIPPING FORCE ADJUSTMENT MEANS

Georges Gabion; Aimé Clevet, and Robert Roger, all of Lyons, France, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/DE92/01974, § 371 Date Feb. 23, 1994, § 102(e) Date Feb. 23, 1994, PCT Pub. No. WO93/04608, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 27, 1992, Ser. No. 196,187

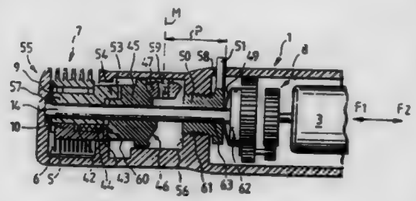
Claims priority, application France, Aug. 28, 1991, 91 10696

Int. Cl.[6] A45D *26/00*

U.S. Cl. 606—133 **26 Claims**

1. An epilating appliance for the removal of human body hair comprising casing structure adapted to be held in the user's hand, a motor and rotary cylinder structure carried by said casing structure, said rotary cylinder structure being driven by said motor and including a plurality of pincer elements disposed in cooperating pairs that are adapted to provide gripping forces therebetween, at least one actuator element extending through said rotary cylinder structure and coupled to said pincer elements for actuating said pincer elements, structure for operatively moving said one actuator element to

actuate said pincer elements, biasing structure, said at least one actuator element being displaceable against the pressure of said



biasing structure, and adjusting device structure acting upon said at least one actuator element for varying the gripping force between a pair of cooperating pincer elements.

5,441,507

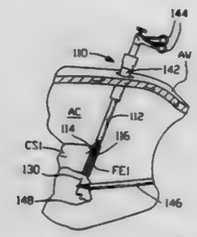
LAPAROSCOPIC OR ENDOSCOPIC ANASTOMOSIS TECHNIQUE AND ASSOCIATED INSTRUMENTS

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Division of Ser. No. 981,251, Nov. 25, 1992, Pat. No. 5,330,486, which is a continuation-in-part of Ser. No. 921,510, Jul. 29, 1992, Pat. No. 5,258,008. This application Apr. 11, 1994, Ser. No. 212,104

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—139 **9 Claims**



1. A surgical method for performing an anastomosis, comprising the steps of:

disposing a laparoscopic trocar sleeve in a patient's abdominal wall;

inserting a distal end of a laparoscopic instrument into an abdominal cavity of the patient through said trocar sleeve;

manipulating said instrument from outside the patient to loop a purse-string-type suture through a free end of a first severed intestinal segment of the patient;

moving a flexible anastomosis-forming device through the patient's rectum so that an end cap at a distal end of said anastomosis device protrudes from a free end of a second severed intestinal segment of the patient;

shifting said anastomosis-forming device further through the patient's rectum so that said end cap is inserted into said first severed intestinal segment through the free end thereof;

during said step of shifting, holding said first severed intestinal segment with a laparoscopic tool from outside the patient to facilitate insertion of said end cap into said first severed intestinal segment;

upon insertion of said end cap into said first severed intestinal segment, drawing said purse-string-type suture via a laparoscopic member to close the free end of said first severed intestinal segment about said end cap; and

operating said anastomosis-forming device from outside the patient to connect said first and said second severed intestinal segment to one another in an anastomosis.

5,441,508

REINFORCEMENT AND SUPPORTING DEVICE FOR THE ROTATOR CUFF OF A SHOULDER JOINT OF A PERSON

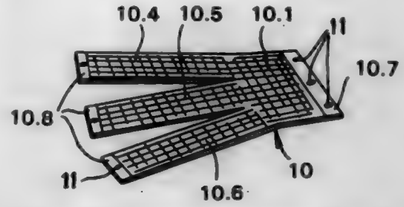
Dominique Gazielly, 47 Rue Henri Dechaud, 42100 Saint Etienne, and Pierre Blondel, La Forie, 63600 Ambert, both of France

Continuation-in-part of Ser. No. 623,641, Dec. 13, 1990, Pat. No. 5,195,542. This application Mar. 22, 1993, Ser. No. 35,372

Claims priority, application France, Apr. 27, 1989, 89 06005

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—151 **14 Claims**



1. A rotator cuff reinforcement device adapted for surgical implantation in a shoulder of a person, comprising:

a strip consisting of a single layer of braided polypropylene material having a base portion for fixation to a trochiter and at least two divergent legs extending from said base portion for fixation to at least two tendons of such a rotator cuff, said at least two divergent legs defining at least two respective divergent ends, said strip being flexible, non-tubular and flat, wherein said base portion and said at least two divergent legs are substantially planar and extend along the substantially same plane, and two of said at least two divergent legs diverge from each other by an angle in said plane.

5,441,509

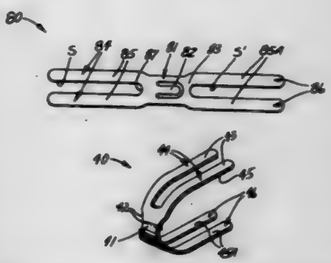
VESSEL CLIPS

Claude Vidal, Santa Barbara; Russell J. Redmond, Goleta; John M. Barker, Ventura; Mike Collinson, Goleta, all of Calif.; Eric J. Donaldson, St. Paul, Minn.; Alan J. Solynties, Richfield, Minn., and Robert M. Eyerly, Lino Lakes, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 875,060, Apr. 28, 1992, abandoned. This application Nov. 9, 1994, Ser. No. 336,565

Int. Cl.[6] A61B *17/08*

U.S. Cl. 606—151 **16 Claims**



1. A surgical clip for occluding a tubular tissue structure, said clip comprising:

a monolithic hinge portion having surfaces adapted to be engaged by a clip removal tool for removing the clip from the tubular tissue structure,

a first leg portion having a pair of first legs projecting from

the hinge portion, said first legs having proximal and distal ends, tissue engaging surfaces, and clip applier bearing surfaces opposite said tissue engaging surfaces,

said pair of first legs being spaced apart a first distance to provide a tissue extrusion slot extending between and opening through said tissue engaging and clip applier bearing surfaces, said tissue extrusion slot having a first end with said first end being a closed end formed by said hinge portion,

a second leg portion having at least one second leg projecting from said hinge portion, said at least one second leg having proximal and distal ends, a tissue engaging surface, and a clip applier bearing surface opposite said tissue engaging surface,

said clip being generally plastically deformable between an unclamped position with said tissue engaging surface of said second leg portion being spaced from said tissue engaging surfaces of said first leg portion and a clamped position with said tissue engaging surfaces of said first and second leg portions being spaced closer together than in said unclamped position, with the tubular tissue structure compressed between said tissue engaging surfaces of said first and second leg portions, and with tissue situated within said tissue extrusion slot,

said hinge portion having structure located between said first legs to define said closed first end of said tissue extrusion slot, and said surfaces adapted to be engaged by a clip removal tool being situated so that the clip removal tool may provide a removal force to afford removal of said clip from said tubular tissue structure when said clip is in said clamped position, and

wherein said tissue extrusion slot has a second end, and said second end of said slot is an open end.

5,441,510

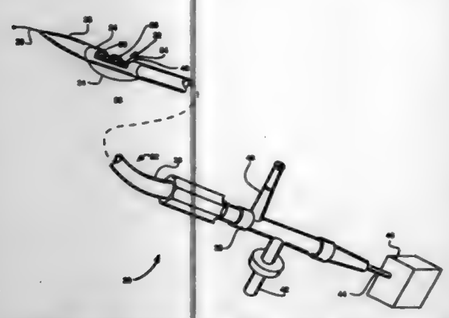
BI-AXIAL CUTTER APPARATUS FOR CATHETER

John B. Simpson, Woodside; Scott C. Anderson, Mountain View; John J. Frantzen, Copperopolis; Peter S. Brown, Mountain View; James M. Cannon, Jr., Santa Clara, and Geoffrey A. Orth, San Jose, all of Calif., assignors to Technology Development Center, Redwood City, Calif.

Continuation of Ser. No. 115,206, Sep. 1, 1993, abandoned. This application May 27, 1994, Ser. No. 250,319

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—159 **12 Claims**



1. A cutter apparatus for use with a catheter within a biological conduit, comprising:

a tubular member defining a housing, the housing having a window for intimate contact with tissue in the biological conduit, the window including a distal edge and a proximal edge and having an edge between the distal and proximal edges having at least one contiguous submultiple edge defining a parting edge, each submultiple edge including at least one spiral increment; and

a cutter assembly including:

cutting means for cutting tissue within the biological conduit,

means for rotating the cutting means within the housing, and

means for translating the cutting means within the housing,

whereby the cutting means is adapted to remove a slice of tissue from within the biological conduit by rotating and translating the cutting means.

5,441,511

KERATOTOME FOR PERFORMING ARCUATE INCISIONS

Khalil Hanna, 19, rue las Cazes, 75007 Paris, France

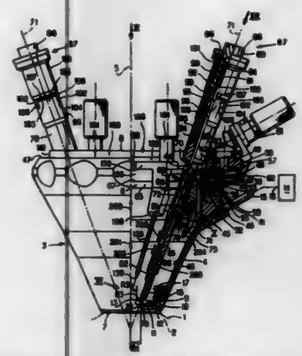
PCT No. PCT/FR91/00300, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO91/16023, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 11, 1991, Ser. No. 934,740

Claims priority, application France, Apr. 12, 1990, 90 04722

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—166 **9 Claims**



1. A keratotome for making an incision in a cornea, and comprising, for this purpose:

an envelope-forming tubular outer support having a determined axis and including, for application against a cornea, an annular base portion that is circularly symmetrical about the axis of the support and that defines a reference geometrical surface determined by the shape presented by the cornea when the support has its base portion pressed thereagainst;

a tubular inner body disposed coaxially inside the support and set back towards the inside of the support relative to the reference surface;

guide means for guiding the body in rotation about the axis relative to the support;

drive means for driving the body in rotation about the axis relative to the support;

at least a blade disposed inside the body and extending along a longitudinal direction, the blade having a sharp tip in a determined direction relative to its longitudinal direction; and

means for providing a connection between the blade and the body, said means including means for displacing the blade in controlled manner in translation along its longitudinal axis relative to the body between a rest position, in which it is set back towards the inside of the support relative to the reference surface, and in which the tip is directed towards said reference surface, and in a cutting position where the tip projects outside from the support relative to the reference surface, in a manner that is offset relative to the axis of the support;

wherein, in order to perform arcuate incisions of determined angular position and of determined angular length, the support and the body have determining means for determining their relative angular position which include abutments defining two limiting relative angular positions between the support and the body and carried respectively by the support and by the body.

5,441,512

HIGH INCISION VELOCITY VIBRATING SCALPEL STRUCTURE AND METHOD

George H. Muller, Apt. 508 M2, 1945 Gulf of Mexico Dr., Longboat Key, Fla. 34228

Continuation-in-part of Ser. No. 756,422, Sep. 9, 1991, Pat. No. 5,306,282. This application Aug. 6, 1993, Ser. No. 102,849

The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—169 **20 Claims**



1. Scalpel structure comprising a body member, motor means within the body members, said motor means having a longitudinal axis and including a motor, a scalpel blade support structure rigidly secured to the motor, a substantially flat scalpel blade rigidly secured to the scalpel blade support structure, said blade support structure extending exteriorly of the body member and having a longitudinal axis parallel to a longitudinal axis of the body member, means for vibrating the motor means on energizing the motor, said means for vibrating being connected to the motor means, pivot means including a fixed pivot axis extending perpendicularly of the longitudinal axis of the motor means, said pivot means pivotally supporting the motor means from the body member for reciprocating pivotal movement of the motor means and scalpel blade in the plane of the scalpel blade and in a plane perpendicular to the axis of the pivot means on energizing the motor, and means connected to the motor for energizing the motor.

5,441,513

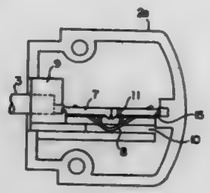
RETRACTING TIP TROCAR ASSEMBLY

Alex T. Roth, Foster City, Calif., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 12, 1992, Ser. No. 850,089

Int. Cl.[6] A61B *5/00*

U.S. Cl. 606—185 **34 Claims**



1. A retracting tip trocar assembly comprising:

an elongated trocar obturator extending in an axial direction and having a proximal end and a piercing tip at a distal end thereof;

an elongated trocar tube in which the trocar obturator is housed, the piercing tip being movable in the axial direction from a cutting position at which the piercing tip is outside a distal end of the trocar tube to a shielded position at which the piercing tip is entirely within the trocar tube;

a trocar handle housing which receives the proximal end of the elongated trocar obturator and which includes a catch;

a first link pivotally attached to the trocar obturator and to a second link, the second link being pivotally attached to the trocar handle housing, the links being in a first configuration when the piercing tip is in a cutting position outside the distal end of the trocar tube and the links being in a second configuration when the piercing tip is in the shielded position; and

retracting means mounted within the trocar handle for retracting the piercing tip from the cutting position to the shielded position, the retracting means acting on at least one of the first and second links;

wherein the catch releasably maintains the links in the first configuration.

5,441,514

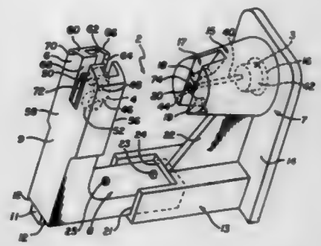
APPARATUS AND METHOD FOR PIERCING EARS

Tony Durham, High Wycombe, United Kingdom, assignor to Perfex (U.K.) Limited, Aylesbury, United Kingdom

Filed Nov. 23, 1993, Ser. No. 156,581

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—188 **20 Claims**



1. A cartridge for an ear piercing apparatus of the type comprising means to propel a stud through an ear and into engagement with a clasp, said cartridge comprising a clasp-holding member having means for holding the clasp, and a stud-holding member having means for holding the stud, one of said members having a guide formation which cooperates with a complimentary guide formation provided on the other of said members so as to facilitate relative movement of said members in a direction generally parallel to the direction of propulsion of the stud, said means for holding the clasp comprising means defining a slot within the clasp holding member for the receipt of the clasp and retaining means for releasable engagement with the clasp when the clasp is received within the slot said retaining means comprising a resilient projecting finger which overlies at least a portion of the slot and which is stressed by the receipt of the clasp within the slot, the restoring force acting on the finger causing the finger to engage the clasp in such a way as to retain the clasp within the slot.

5,441,515

RATCHETING STENT

Farhad Khosravi, Belmont, Calif., and Michael S. Williams, Chapel Hill, N.C., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Apr. 23, 1993, Ser. No. 52,410

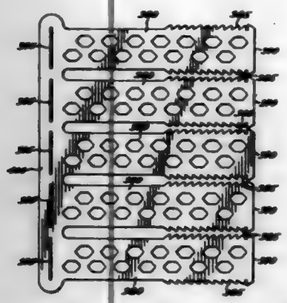
Int. Cl.[6] A61M *29/00*; A61F *2/06*

U.S. Cl. 606—194 **15 Claims**

1. An intraluminal stent implantable in a body lumen, comprising:

a cylindrical body portion having an axial length extending along a longitudinal direction, said cylindrical body por-

tion formed of a sheet having a first longitudinal edge and a second longitudinal edge,



an elongated slot in said sheet on said first longitudinal edge, said elongated slot receiving said second longitudinal edge allowing said cylindrical body portion to be selectively expanded in the body lumen.

5,441,516
TEMPORARY STENT

Lixiao Wang; Martin R. Willard, both of Maple Grove, Minn.; Thomas T. Tran, Coon Rapids, Minn.; Roger Hastings, Maple Grove, Minn.; Dale F. Schmaltz, Boulder, Colo., and Thomas J. Holman, Minneapolis, Minn., assignors to Scimed Lifesystems Inc., Maple Grove, Minn.

Filed Mar. 3, 1994, Ser. No. 206,139
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 32 Claims



1. Removable apparatus for temporarily supporting a region of a vessel in a body, the apparatus comprising a catheter having proximal and distal end portions, an elongate flexible shaft portion and a stent portion carried by a distal end portion of the shaft portion

the shaft portion including an elongate inner tubular member having an exterior, and an elongate outer tubular member concentrically positioned around the exterior of the inner tubular member, each of said tubular members having a proximal end and a distal end, the tubular members being movable axially with respect to each other and the distal end of the inner tubular member extending distally beyond the distal end of the outer tubular member, wherein at least the distal elongate portions of the inner and outer tubular members are comprised of closely wound helices of metal wire;

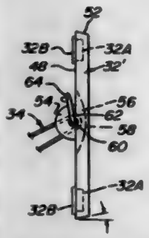
the stent portion being comprised of a spring-like spiral coil body having proximal and distal end portions, the coil body being positioned with respect to the shaft portion of the catheter so that the distal end portion of the inner tubular member extends longitudinally through the coil body, the distal end portion of the coil being fixedly secured to the inner tubular member and the proximal end portion of the coil body being fixedly secured to the outer tubular member whereby axial rotation of at least one tubular member effects rotation of at least one of the ends of the coil body with respect to the other and, depending on the direction of the rotation, enlarges or decreases the diameter of the spiral coil body, and

means at the proximal end portion of the catheter operatively connected to the shaft portion for effecting the axial rotation of the at least one tubular member and controlling same.

5,441,517
HEMOSTATIC PUNCTURE CLOSURE SYSTEM AND METHOD OF USE

Kenneth Kensey, Chester Springs; John E. Nash, Downingtown, and Douglas Evans, Devon, all of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Continuation of Ser. No. 846,322, Mar. 5, 1992, Pat. No. 5,282,827, which is a continuation-in-part of Ser. No. 789,704, Nov. 8, 1991, Pat. No. 5,222,974. This application Nov. 18, 1993, Ser. No. 154,882
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—213 13 Claims

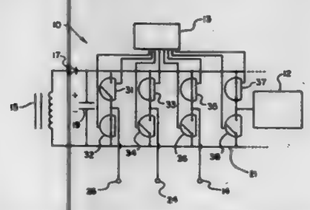


1. A closure device for sealing an opening in a blood vessel in a living being to preclude the flow of blood through the opening, the opening in the blood vessel communicating with the outside of the being's body via a percutaneous puncture, the closure device being configured for insertion through the percutaneous puncture and comprising a resorbable material, the closure device further comprising at least a portion of a radiopaque means for facilitating the radiographic imaging of the closure device.

5,441,518
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR SYSTEM HAVING INDEPENDENTLY CONTROLLABLE ELECTRODE DISCHARGE PATHWAY

Theodore P. Adams, Edina; Charles G. Supino, Arden Hills, and Mark W. Kroll, Minnetonka, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Jul. 22, 1993, Ser. No. 96,170
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 28 Claims



5. An implantable cardioverter defibrillator system for generating and delivering cardioversion or defibrillation counter-

shocks of greater than about 0.1 joules to a human patient in response to a sensing of a myocardial dysrhythmia in the patient, comprising:

at least three implantation electrodes for implantation in the patient in which the at least three implantation electrodes comprise two intravascular electrodes for implantation within the heart and one electrode for implantation in the subcutaneous space proximate to the heart;

an implantable housing to which the implantation electrodes are electrically connected, the implantable housing including:

capacitor means for storing an electrical charge;

means for charging the capacitor means to produce the electrical charge; and

means for selectively controlling a discharge of the electrical charge stored in the capacitor means in response to the sensing of the myocardial dysrhythmia to generate a cardioversion/defibrillation countershock waveform, including:

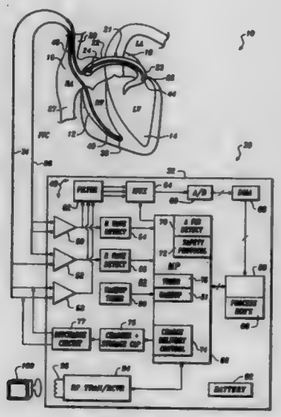
switch means for each implantation electrode for selectively electrically connecting the implantation electrode to either polarity of the capacitor means independent of the switch means for any other implantation electrode; and

control means for selectively controlling all of the switch means to create in response to the sensing of the myocardial dysrhythmia one or more selected discharge pathways through which to deliver all or part of the waveform.

5,441,519
IMPLANTABLE ATRIAL DEFIBRILLATOR HAVING DELAYED INTERVENTION THERAPY

Gene K. Sears, Seattle, Wash., assignor to InControl, Inc., Redmond, Wash.

Filed Feb. 6, 1995, Ser. No. 383,894
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 7 Claims



1. An implantable atrial defibrillator for applying cardioverting electrical energy to the atria of a human heart in need of cardioversion, said atrial defibrillator comprising:

sensing means for sensing electrical activity of the heart;

atrial fibrillation detecting means responsive to said sensed electrical activity of the heart for detecting if the heart is in atrial fibrillation and providing a first detect signal upon detecting atrial fibrillation;

timing means for timing a delay time period responsive to said first detect signal and providing a time-out signal upon timing said delay time period;

said atrial fibrillation detection means being further responsive to said time-out signal for redetecting for atrial fibrillation of the heart and providing a second detect signal upon redetecting atrial fibrillation; and,

cardioverting means responsive to said second detect signal provided by said atrial fibrillation detecting means for applying cardioverting electrical energy to the atria of the heart.

5,441,520
DEFIBRILLATOR PATIENT CONNECTION SYSTEM WITH AUTOMATIC IDENTIFICATION

Kurt F. Olsen, McMinnville, Oreg.; Phillip H. Salvatori, N. Andover, Mass., and Daniel J. Powers, McMinnville, Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Apr. 6, 1993, Ser. No. 43,421
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—6 15 Claims



1. A defibrillator system comprising:

a defibrillator base unit for providing electrical energy to shock a patient;

at least two available types of means for administering the electrical energy to the patient;

for each type of administering means, a respective cable assembly for connecting the corresponding type of administering means to the base unit;

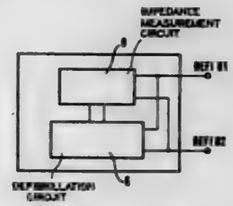
for each type of administering means, a respective identifying means disposed in the corresponding type of administering means or in the corresponding cable assembly for providing a corresponding analog voltage level to the base unit for identification when the administering means is connected to the base unit; and

means for automatically detecting that no administering means is connected to the base unit.

5,441,521
HEART DEFIBRILLATOR

Sven-Erik Hedberg, Kungsaengen, Sweden, assignor to Pacesetter AB, Solna, Sweden

Filed Sep. 2, 1993, Ser. No. 114,825
Claims priority, application Sweden, Sep. 16, 1992, 9202663
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—6 12 Claims



1. A cardiac defibrillator comprising:

pulse generator means for delivering electrical pulses in vivo to a heart via a plurality of electrodes, including at least one pulse having an intensity for effecting defibrillation of said heart;

control means for controlling said pulse generator means for

generating and delivering a pre-pulse via electrodes in said plurality of electrodes, prior to said pulse for effecting defibrillation, having lower intensity than said pulse for effecting defibrillation and of sufficient intensity for inducing mechanical contraction of muscles in the thorax;

impedance measuring means for measuring an impedance situation, after delivery of said pre-pulse, between said electrodes in said plurality of electrodes via which said pre-pulse was delivered for identifying an optimum impedance situation for delivering said at least one pulse having an intensity for effecting defibrillation; and

said control means comprising means for controlling said pulse generator means for delivering said at least one pulse having an intensity for effecting defibrillation of said heart at a predetermined time relative to when said optimum impedance situation measured by said impedance measuring means is present in said heart.

5,441,522
PACEMAKER
Hans Schüller, Lund, Sweden, assignor to Hans Schuller, Lund, Sweden
Filed Sep. 13, 1993, Ser. No. 120,561
Claims priority, application Sweden, Sep. 14, 1992, 9202630
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—9 **7 Claims**



1. A pacemaker, comprising:

a first electrode lead means adapted to be disposed in an atrium of a heart for stimulating atrial reactions;

a second electrode lead means adapted to be disposed in a chamber of the heart for stimulating and sensing chamber reactions;

a stimulating pulse generator means for generating and emitting stimulating pulses to the atrium and the chamber via said first and second electrode lead means respectively; and

a control device means for controlling the emission of the stimulating pulses and for the sensing of the chamber reactions, said control device means, after each emitted atrial stimulating pulse, starting an AV interval having a first duration, emitting a chamber stimulating pulse after expiration of the AV interval when no chamber reaction has been sensed during said AV interval, and, when the chamber stimulating pulse is emitted, replacing said first duration of said AV interval with a second duration which is shorter than said first duration.

5,441,523
FORCED ATRIOVENTRICULAR SYNCHRONY DUAL CHAMBER PACEMAKER
Tibor A. Nappholz, Englewood, Colo., assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.
Filed Apr. 12, 1994, Ser. No. 226,654
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—14 **40 Claims**

1. A dual-chamber pacemaker comprising:

means for sensing an atrial heartbeat (A-sense);

means for sensing a ventricular heartbeat (V-sense);

means for generating an atrial pacing pulse (A-pace);

means for generating a ventricular pacing pulse (V-pace);

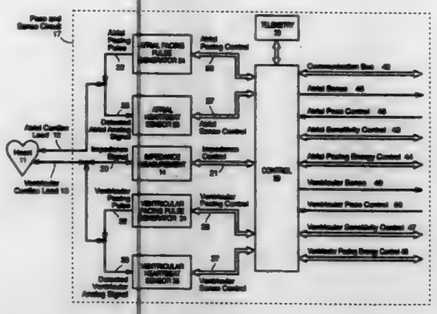
timer means for timing

(i) a ventricular event to ventricular event interval (VV), such VV interval beginning with either a V-sense or a V-pace,

(ii) an atrial event to V-pace interval (AV delay), such AV delay interval beginning with either an A-sense or an A-pace,

(iii) an atrial protection interval (API),

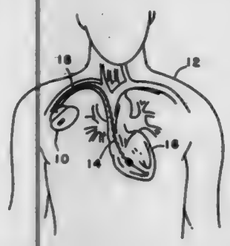
(iv) a post ventricular atrial refractory period (PVARP), and



(v) an Alert interval (Alert); and

controller means for providing a normal loop timing sequence of AV delay, PVARP, API, and Alert, with minimum time values for AV delay and API, and a maximum time value for AV delay; said controller means operating such that if an A-sense occurs during said API or PVARP and the remaining time in the VV interval is longer than said maximum AV delay, then an API is timed, at the end thereof an Apace is generated, and thereafter an appropriate AV delay is timed so as to stabilize the VV interval.

5,441,524
ENERGY EFFICIENT MULTIPLE SENSOR CARDIAC PACEMAKER
John C. Rueter, Shoreview, Minn., and Bruce L. Wilkoff, South Russell, Ohio, assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 30, 1993, Ser. No. 113,950
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—18 **22 Claims**



1. A method of pacing a patient's heart, comprising the steps of:

(a) applying a respiration sensor which provides a respiration signal indicative of respiratory activity to said patient and activating said respiration sensor to produce said respiration signal;

(b) applying an activity sensor which provides an activity signal indicative of physical activity to said patient and activating said activity sensor to produce said activity signal;

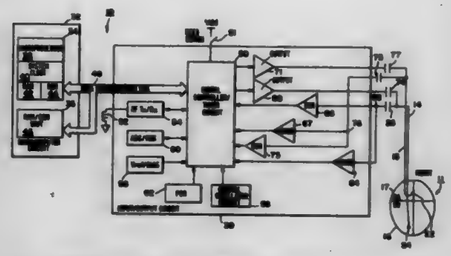
(c) computing an average value of said respiration signal over a predetermined interval;

(d) comparing said activity signal and said average value with minimum values;

(e) delivering cardiac pacing pulses to said heart at a rate determined as a function of said activity signal and said respiration signal, when said activity signal and said average value are not at or below said minimum values simultaneously; and

(f) disabling said respiration sensor when said activity signal and said average value are at or below said minimum values, simultaneously.

5,441,525
PACEMAKER WITH VASOVAGAL SYNCOPE DETECTION
Michael B. Shelton, Minneapolis; Kenneth M. Riff, Plymouth, and Michael F. Hess, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed May 20, 1994, Ser. No. 246,903
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—23 **16 Claims**



1. A cardiac pacemaker for detecting the onset of a cardioinhibitory episode comprising:

heart rate drop determination means for determining the size of a drop in heart rate;

minimum rate drop storage means for storing a programmable minimum rate drop;

minimum rate storage means for storing a programmable maximum drop ending rate;

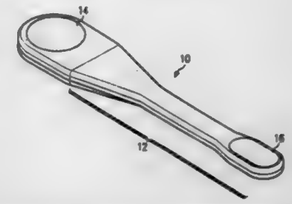
comparator means coupled to said heart rate drop determination means, said minimum rate drop storage means, and said minimum rate storage means for comparing the size of said drop in rate to said minimum rate drop, and for comparing an ending rate to said maximum drop ending rate, said ending rate being defined as the heart rate at the time said rate drop is determined; and

cardioinhibitory indication means coupled to said comparator means for indicating the occurrence of a cardioinhibitory episode when said rate drop exceeds said minimum rate drop and said ending rate is below said maximum drop ending rate.

5,441,526

Patent Not Issued For This Number

5,441,527
IMPLANTABLE BONE GROWTH STIMULATOR AND METHOD OF OPERATION
John H. Erickson, Plano; John C. Tepper, Carrollton; Ike C. Thacker, Dallas, all of Tex.; Gregg Turi, Wood-Ridge, N.J.; Anthony J. Varrichio, Flanders, N.J., and Arthur A. Pilla, Ridgewood, N.J., assignors to AMEI Technologies Inc., Wilmington, Del.
Continuation of Ser. No. 839,199, Feb. 20, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 186,230
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—51 **22 Claims**



1. An implantable growth stimulator having a status, the stimulator comprising:

first and second plate electrodes for subcutaneous implantation at a predetermined distance from a tissue site;

a thin elongate member of elastomer connecting and generally maintaining a predetermined distance between said first and second electrodes;

a portion of each electrode being exposed to allow current flow therethrough; and

a driver circuit having means for generating for a duration of time, an alternating current between said first and second electrodes thereby producing first and second monitorable voltages on said first and second electrodes, respectively, said alternating current operative to stimulate tissue growth at the tissue site.

5,441,528
METHOD AND SYSTEM FOR APPLYING LOW ENERGY EMISSION THERAPY
Rea-Woun Chang, Singapore, Singapore; Jean-Pierre Lebet, Montreaux, Switzerland; Alexandre Barbault, Colmar, France; Niels Kuster, Zurich; Henry Kunz, Zürich, both of Switzerland, and Boris Pasche, New York, N.Y., assignors to Symtonic, S.A., Switzerland
Filed Sep. 25, 1992, Ser. No. 951,563
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—69 **15 Claims**

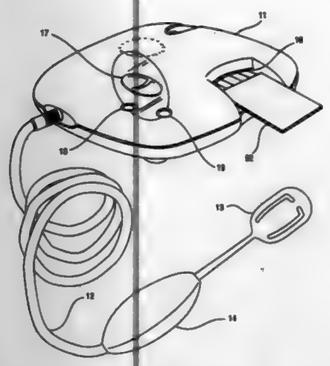
1. A system for applying a modulated low energy electromagnetic emission to a patient, comprising:

a controllable electromagnetic energy generator means for generating a high frequency low energy carrier signal, and for modulating an amplitude of the carrier signal with a plurality of programmable modulation signals to generate a modulated carrier signal;

a data processor means, connected to said generator means for controlling said generator means to produce said modulated carrier signal;

an interface means for an application storage device, connected to said data processor means and adapted for connection to an application storage device, for receiving control information, including modulation signal control information, from the application storage device, and for

transferring said control information to said data processor means; and



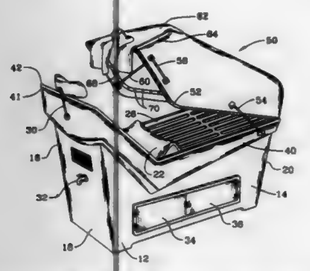
a probe, connected to the generator means to receive said modulated carrier signal, for applying said modulated carrier signal to a patient.

5,441,529

THERAPEUTIC BATHING APPARATUS

Erwin Dorsch, 11214 Pines Blvd., No. 168, Pembroke Pines, Fla. 33025

Filed Sep. 6, 1994, Ser. No. 300,960
Int. Cl.[6] A61H *33/14*
U.S. Cl. 607—82 **17 Claims**



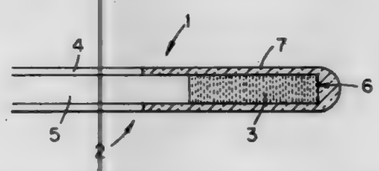
1. A therapeutic bathing apparatus for rinsing the body of an individual without submersion of the individual beneath the bathing water, said apparatus comprising:
- an enclosure having a lower member pivotally coupled to an upper member, said lower member having an elevated seating position for supporting the torso of an individual in a reclined position;
- a drain floor mounted on said lower member oriented in a horizontal plane for supporting the legs of the individual;
- a reservoir positioned in said lower member beneath said drain floor and fluidly communicated to said floor drain;
- a pressurization pump having a inlet port coupled to said reservoir for directional pressurization of raw water placed within said reservoir through a delivery port;
- a cartridge filter means having an inlet port fluidly coupled to said delivery port of said repressurization pump and an outlet port, said filter means for removal of particles from the pressurized raw water;
- a portable exchange demineralizer having a mixed bed of cation and anion resin bed with an inlet port fluidly coupled to said outlet port of said filter for passage of the raw water through contact with said resin bed and a purified water outlet port producing purified water through ion exchange;
- a heating element operatively connected to said purified water outlet port for raising the temperature of the purified water;
- ozone generation means having an injector for insertion of a predetermined amount of ozone into the purified water;
- a spraying means located in said lower and upper housings for directing pressurized purified ozonated water against the body of the individual situated within said enclosure providing a therapeutic bath wherein excess water flows through said drain floor for collection in said reservoir for repeating of water pressurization and purification.

5,441,530

PHOTOCHEMOTHERAPY DOSIMETER

Robert J. Landry, Mt. Airy; Stephanie Matchette, Silver Spring, and Glenn N. Merberg, Gaithersburg, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 25, 1994, Ser. No. 188,331
Int. Cl.[6] A61B *5/00*
U.S. Cl. 607—88 **17 Claims**



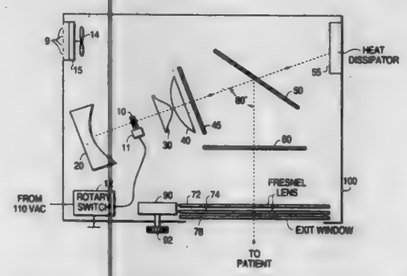
1. In a photochemotherapy dosimeter having an optical fiber with a proximal end and a distal end, the improvement comprising:
- a chemical cell attached to the distal end of the optical fiber, said chemical cell having a reflective surface which faces said optical fiber; and
- a photobleachable chemical provided within said chemical cell, which photobleachable chemical has a light absorptivity which changes in response to receiving photochemotherapy radiation.

5,441,531

ILLUMINATOR AND METHODS FOR PHOTODYNAMIC THERAPY

Carlos E. Zarate, and H.Graciela Zarate, both of Hamilton, Canada, assignors to DUSA Pharmaceuticals Inc., Toronto, Canada

Filed Oct. 18, 1993, Ser. No. 136,831
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—90 **35 Claims**



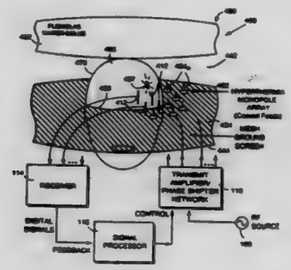
1. A method of photodynamic therapy for a patient to whom has been administered a drug which is activated by light having wavelengths between 600 nanometers and 700 nanometers comprising the step of generating light and performing the following steps (a), (b), (c), and (d), including performing steps (a), (b), and (c) in any order:
- (a) passing the light through a high-pass filter having a cutoff at a wavelength of about 600 nanometers;
- (b) passing the light through a low-pass dichroic filter having a cutoff at a wavelength of about 700 nanometers;
- (c) removing any infrared wavelengths from the light using a dichroic mirror which reflects non-infrared light and which transmits infrared light; and
- (d) directing light transmitted through the high-pass filter and the low-pass dichroic filter and reflected by the dichroic mirror to the patient as a broadband beam to activate the drug.

5,441,532

ADAPTIVE FOCUSING AND NULLING HYPERTHERMIA ANNULAR AND MONOPOLE PHASED ARRAY APPLICATORS

Alan J. Fenn, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 722,612, Jun. 26, 1991, Pat. No. 5,251,645. This application Mar. 4, 1992, Ser. No. 846,808
Int. Cl.[6] A61N *5/00*
U.S. Cl. 607—101 **56 Claims**



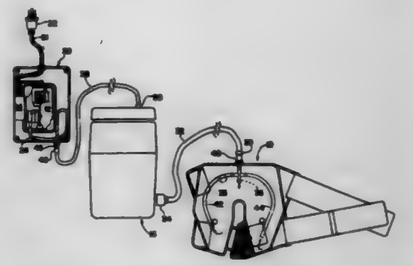
1. A hyperthermia applicator for inducing a temperature rise in a target within a body, comprising
- a plurality of electric field radiators, each for transmitting electric field radiation, comprising a phased-array of monopole antenna elements;
- an RF reflecting groundplane surface for mounting the monopole antenna elements, wherein the monopole antenna elements are substantially perpendicularly mounted on a side of the RF reflecting groundplane surface, wherein the body containing the target is adapted to be disposed on the same side of the groundplane surface as the monopole antenna elements;
- a plurality of controllable transmit weighting networks, each such network coupled to a respective electric field radiator, each weighting network controlling the phase and amplitude of the electric field radiation transmitted by the respective electric field radiator in response to a respective feedback signal;
- a source of electric field radiation coupled to each electric field radiator through a respective weighting network;
- at least one electric field probe adapted to be disposed outside the body for detecting electric field radiation from the plurality of radiators; and
- a controller coupled to the electric field probe for receiving the detected electric field radiation outside the body and generating the respective feedback signals, and for adjusting the feedback signals in response to the detected electric field radiation outside the body so that the electric field radiation is controlled at the target inside the body.

5,441,533

AUTOMATIC FLUID CIRCULATING SYSTEM AND METHOD

Glenn W. Johnson, Summit; Henry J. McVicker, Chatham, both of N.J., and E. P. Erez Pick, Bayside, N.Y., assignors to Aircast, Inc., Summit, N.J.

Continuation of Ser. No. 968,287, Oct. 29, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 180,706
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **10 Claims**



1. A system for the automatic transfer of chilled fluid at a non-ambient temperature from a single fluid-holding container to a hollow body compress to be applied to a mammal, and back to said fluid-holding container to provide oscillating pressure to said hollow body compress, the system comprising:
- a fluid-holding container;
- a hollow body compress suitable for application to a mammal;
- a fluid conduit for providing two-way fluid communication directly between said container and said compress;
- a motor driven air pump operatively coupled with said container to provide pressurized air thereto;
- an automatic pressure relief means operatively coupled between said air pump and said container for continuously relieving the pressure; and
- means coupled to the air pump motor to cause the air pump to cycle "on" and "off" for predetermined periods of time; said pressure relief means having a capacity small enough such that during the "on" cycles said air pump is able to pressurize said container to force chilled fluid from said container into said compress and to increase the pressure in said compress, and said pressure relief means having a capacity large enough such that during the "off" cycle said container is at least partially depressurized through said pressure relief means so that fluid is allowed to flow back to the container from the compress through the fluid conduit to decrease the pressure in said compress, and to allow the fluid which flows back to the container to be rechilled, whereby said system provides oscillating pressure to said compress.

5,441,534

HEAT PACK FOR THERMAL TREATMENT OF BREAST

Virginia MacWinnie, and John V. MacWhinnie, both of R.R. 519 Deerfield Rd., Water Mill, N.Y. 11976

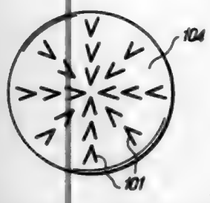
Filed Feb. 9, 1993, Ser. No. 15,213
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—108 **17 Claims**

1. A thermal heat pack adapted to closely correspond to the contours of various sized female breasts to heat the adjacent skin area; said thermal heat pack comprising:
- a sealed generally flattened conforming member;
- a bottom foundation member forming one side of said thermal heat pack;
- said flattened conforming member including a plurality of radially extending geometrically extending portions radi-

ating from a common central portion within said flattened conforming member;

said conforming member including pliant heat conducting material, said heat pack bendable over said breast, such that said bottom foundation member is removably adjacent to said breast, thus permitting uniform application of heat to said breast,

wherein said conforming member further comprises a plurality of radially extending indentations,



said conforming member includes an outer wall extending about an exterior edge of said conforming member of said heat pack; and

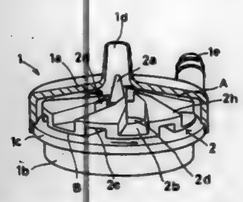
said heat pack defining a fluid flow chamber therebetween; said chamber including a plurality of segmented recesses positioned within said heat pack for the circulation of the said pliant heat conducting material within said heat pack.

5,441,535

BLOOD PUMP

Katsumi Takahashi, and Hiroshi Sasagawa, both of Koga, Japan, assignors to Urawa Kokyo Co., Ltd., Kuki, Japan

Filed Nov. 12, 1993, Ser. No. 150,878
Claims priority, application Japan, Nov. 27, 1992, 4-339526
Int. Cl.[6] A61M *1/10*; F03B *13/00*; F04D *7/00*
U.S. Cl. 623—3 **7 Claims**



1. A blood pump for circulating blood by a rotor rotating in a space of a casing which is formed substantially in a flat shape and has a suction port and a discharge port, the blood pump comprising:

a conical projecting portion provided at a central portion of said rotor;

a blade body extending from an outer periphery of a base portion of said projecting portion, said blade body having upper side recessed passages and lower side passages which are alternately and radially formed on said blade body; and

communicating passages formed on a radially inward portion of said blade body interconnecting said upper side recessed passages to said lower side recessed passages.

5,441,536

METHOD FOR THE PRODUCTION OF AN IMPLANT HAVING AN APATITE COATING LAYER USING A HYDROTHERMAL TREATMENT

Hideki Aoki, Tokyo; Masaru Akao, Kawasaki; Yoshiharuyama Shin, Higashimurayama; Osamu Hayashi, Fuchu, and Masahiko Yoshizawa, Sagamihara, all of Japan, assignors to Kabushiki Kaisya Advance, Tokyo, Japan

PCT No. PCT/JP92/00769, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/22335, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 16, 1992, Ser. No. 969,227
Claims priority, application Japan, Jun. 18, 1991, 3-242899
Int. Cl.[6] A61F *2/02*; C23C *22/00*
U.S. Cl. 427—2.27 **5 Claims**

1. A method for the production of an implant, consisting essentially of coating a core material with at least one calcium phosphate type compound selected from the group consisting of α-tricalcium phosphate and β-tricalcium phosphate by plasma spraying to form a coating layer on the core material and then, converting said coating layer into an apatite type ceramic layer by subjecting the coated core material to a hydrothermal treatment at a temperature of from 120° C. to 200° C. for from 0.5 to 100 hrs.

5,441,537

BONE PROSTHESIS WITH POROUS COATING

Robert V. Kenna, Hackensack, N.J., assignor to Howmedica Inc., New York, N.Y.

Continuation of Ser. No. 635,394, Jan. 2, 1990, Pat. No. 5,192,324, which is a continuation of Ser. No. 356,976, May 25, 1989, abandoned, which is a continuation of Ser. No. 786,978, Oct. 15, 1985, Pat. No. 4,834,756, which is a division of Ser. No. 350,130, Feb. 18, 1982, Pat. No. 4,550,448. This application Dec. 4, 1992, Ser. No. 988,085
The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.
Int. Cl.[6] A61F *2/02*
U.S. Cl. 419—2 **14 Claims**



1. A method for affixing a porous coating having two layers to at least a portion of the surface of a substrate of a solid metallic material, with each of the two layers of said porous coating consisting essentially for a multiplicity of ball-shaped particles of said metallic material bonded together at their points of contact, comprising the steps of

(a) applying a binder to at least a portion of the surface of said substrate;

(b) applying a first monolayer of said particles to the surface of said substrate, said first monolayer being adhered thereto by said binder;

(c) heating the coated substrate resulting from step (b) under vacuum for a time and at a temperature sufficient to establish point bonding between different particles in said first monolayer and between the particles in said first monolayer and the surface of said substrate;

(d) applying a binder to the surface of said first monolayer;

(e) applying a second monolayer of said particles to the surface of said first layer, said second monolayer being adhered to said first layer by said binder;

(f) heating the coated substrate resulting from step (e) under vacuum for a time and at a temperature sufficient to establish point bonding between particles in said first layer and particles in said second monolayer, said second monolayer inherently having a greater porosity than said first monolayer; and

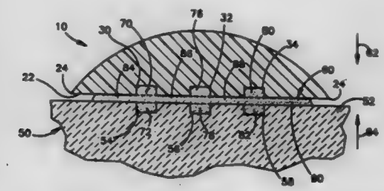
(g) sintering the coated substrate resulting from step (f) under vacuum for a time and at a temperature sufficient to promote formation of secure junctions between different particles in said porous coating and between particles in said first monolayer and said substrate.

5,441,538

BONE IMPLANT AND METHOD OF SECURING

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401

Filed Apr. 12, 1993, Ser. No. 46,220
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—66 **6 Claims**



1. A method of securing an implant to bone comprising the steps of:

providing an implant having a bone engagement portion for engagement with the bone and having surfaces defining a first plurality of spaced apart cement compartments in the bone engagement portion;

making a second plurality of spaced apart cement compartments in the bone;

placing the bone engagement portion of the implant adjacent the bone;

aligning the spaced apart cement compartments in the implant with the spaced apart cement compartments in the bone to form spaced apart cement cells extending between the implant and the bone, said step of aligning the cement compartments in the implant with the cement compartments in the bone includes placing an alignment marker on the bone and aligning it with a second alignment marker on the implant; and

placing cement in the cement cells to form spaced apart plugs of cement extending between the implant and the bone to secure the implant to the bone.

5,441,539

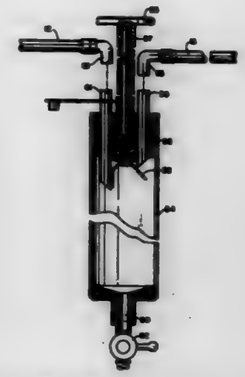
ENDOTHELIAL CELL DEPOSITION DEVICE

Paul G. Aichas, Wayne; Jonathan B. Gabel, Clifton, both of N.J.; Stuart K. Williams, Wilmington, Del.; Bruce E. Jarrell, Philadelphia, Pa.; Deborah G. Rose, Warrington, Pa.; Pauline K. Park, Philadelphia, Pa.; Thomas L. Carter, Philadelphia, Pa.; Frank A. Augello, Cedar Knolls, N.J., and Joseph A. DiPisa, Jr., Wyckoff, N.J., assignors to Thomas Jefferson University, Philadelphia, Pa. and Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 763,875, Sep. 20, 1991, abandoned, which is a continuation of Ser. No. 485,298, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 356,431, May 24, 1989, Pat. No. 5,035,708, which is a continuation-in-part of Ser. No. 244,496, Sep. 12, 1988, abandoned, which is a division of Ser. No. 742,086, Jun. 6, 1985, Pat. No. 4,820,626. This application Jul. 22, 1993, Ser. No. 96,216
Int. Cl.[6] A61F *2/06*; A01N *1/02*
U.S. Cl. 623—66 **10 Claims**

1. A cell product deposition device for retaining a graft and directing cell product into the graft for deposition on the graft comprising:

a tunneler tube means for housing and supporting the graft, wherein the tunneler tube means comprises a tunneler tube lumen and the graft is disposed within the tunneler tube lumen, and wherein the tunneler tube means comprises at least one aperture; and



a handle means detachably connected to said tunneler tube means comprising a handle lumen in fluid communication with a graft lumen of said graft and a source of cell product, whereby cell product is introduced into said graft lumen through said handle means and flows through the graft and through said at least one aperture.

5,441,540

METHOD AND APPARATUS FOR SKIN TISSUE EXPANSION

Paul S. Kim, 760 Drovers La., Chester Springs, Pa. 19425

Filed Sep. 20, 1993, Ser. No. 123,649
Int. Cl.[6] A61F *2/02, 2/10*
U.S. Cl. 623—66 **6 Claims**



1. Apparatus for reducing an area of a non-hair bearing area of a scalp overlying a skull of a patient in relation to hair bearing areas of the scalp extending along oppositely disposed side edges of the non-hair bearing area comprising:

a pair of elongated anchor plates dimensioned and configured to be implanted under the scalp of the patient along the oppositely disposed edges of the non-hair bearing area;

each of said anchor plates having suture anchor means for suturing the anchor plates to the scalp and further having spaced projections extending from an upper surface thereof, said spaced projections being dimensioned and configured to extend through incisions in the scalp;

adjustable tensioning means interconnecting the projections on one of said anchor plates with the projections on the other of said anchor plates, said adjustable tensioning means applying tension to the anchor plates sufficient to

produce a predetermined tissue expansion in hair and non-hair bearing regions; and

guide plate means dimensioned and configured to be spaced exteriorly of the scalp, said guide plate means having a length extending at least from one of said anchor plates to the other of said anchor plates and further having oppositely disposed slots slidably engaging said spaced projections.

5,441,541

ANIONIC/CATIONIC SURFACTANT MIXTURES

Ammanuel Mehreteab, Piscataway, N.J., and Frank J. Loprest, Langhorne, Pa., assignors to Colgate Polmolive Co., Piscataway, N.J.

Continuation of Ser. No. 382,137, Jul. 19, 1989, abandoned. This application Jan. 31, 1992, Ser. No. 829,120

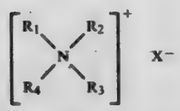
Int. Cl.[6] C11D *1/18, 1/12, 1/38*

U.S. Cl. 8—137 **5 Claims**

1. A method for removing oily soils from fabrics comprising:

contacting said fabrics containing oily soils with an aqueous solution of a detersively effective amount of a water-soluble complex of at least one anionic surfactant and at least one cationic surfactant;

said at least one cationic surfactant having the formula:

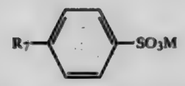


where R_1 is an alkyl or alkenyl radical containing from about 8 to about 22 carbon atoms,

R_2 is an alkyl group of not more than 6 carbon atoms,

R_3 and R_4 each represent $(R_5O)n$ H, wherein n is 1 to 25, R_5 is an alkylene of 2 to 4 carbon atoms and the total number of R_5O groups is at least 5, and X is halide; and

said at least one anionic surfactant having the formula:



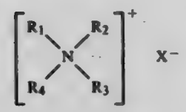
wherein R_7 is an alkyl radical of from 8 to about 18 carbon atoms, and

M is an alkali metal, ammonium or amine, wherein the ratio of anionic surfactant to cationic surfactant is about 1:1.

2. A method for removing oily soils front fabrics comprising:

contacting said fabrics containing oily soils with an aqueous solution of a detersively effective amount of a water-soluble complex of at least one anionic surfactant and at least one cationic surfactant;

said at least one cationic surfactant having the formula:

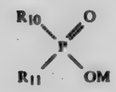


where R_1 is an alkyl or alkenyl radical containing from about 8 to about 22 carbon atoms,

R_2; R_3 and R_4, which may be the same or different, each represent an alkyl group of not more than 6 carbon atoms, and

X is halide; and

said at least one anionic surfactant is of the formula:



wherein R_{10} is R_{12} —$O(R_5O)_o$,

R_{11} is R_{12} —$O(R_5O)_o$ or —OM

R_5 is an alkylene of 2 to 4 carbon atoms,

o is an integer of I to 25,

R_{12} is an alkyl or alkenyl radical of from about 10 to about 20 carbon atoms, and

M is a hydrogen atom or an alkali metal, ammonium or amine;

wherein the total number of R_5O groups is at least 6, wherein the ratio of anionic surfactant to cationic surfactant is about 1:1.

5,441,542

PROCESS AND KIT FOR POST-OXIDATIVE TREATMENT OF PERMANENTLY DYED HAIR

Giuseppe Prota, Naples, Italy, and Gottfried Wenke, Woodbridge, Conn., assignors to Clairol Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 159,988, Nov. 30, 1993, and a continuation-in-part of Ser. No. 766,606, Sep. 26, 1991, Pat. No. 5,273,550, and a continuation-in-part of Ser. No. 909,371, Jul. 13, 1992, Pat. No. 5,279,617, and a continuation-in-part of Ser. No. 923,078, Jul. 31, 1992, Pat. No. 5,279,618. This application Dec. 27, 1993, Ser. No. 174,487

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—406 **12 Claims**

1. A method of increasing the amount of melanin formation in hair which has been permanently dyed with melanin comprising the steps of

(a) forming a melanin precursor by reacting a dopa species selected from the group consisting of dopa, epinephrine, alpha alkyl dopa having 1 to 4 carbon atoms in the alkyl group and dopa alkyl esters having 1 to 6 carbon atoms in the alkyl group with a soluble ammonium, alkali metal or alkaline earth metal ferricyanide salt in an aqueous medium containing a buffering agent, the concentrations of the dopa species and the ferricyanide salt being in amounts effective to provide a hair coloring concentration of a melanin precursor in the aqueous reaction medium, said dopa species and ferricyanide salt being present in a stoichiometric equivalent ratio of from about 1:1 to 2:1 dopa to ferricyanide salt, said buffering agent being in an amount to maintain the pH of the aqueous reaction medium between about 6 to about 11;

(b) contacting the hair with the aqueous reaction medium and allowing the melanin precursor to diffuse into the hair in an amount sufficient to generate a hair coloring amount of melanin;

(c) permanently coloring the hair by allowing melanin precursor present in the hair to form melanin, and

(d) contacting the hair with an aqueous solution of a post-oxidant at a pH of from about 2 to about 11 for a period or from about 1 to about 10 minutes, the concentration of the post-oxidant being from about 0.1% to about 10% thereby to oxidize previously unoxidized melanin precursor to melanin, said post-oxidatively treated hair having a more intense coloration than hair not so treated.

5,441,543

METHOD OF DYEING A SYNTHETIC FIBER-MATERIAL AND DYED SYNTHETIC FIBER MATERIAL

Shigenobu Kobayashi, Toyonaka, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Sep. 1, 1993, Ser. No. 114,699

Claims priority, application Japan, Sep. 3, 1992, 4-235638

Int. Cl.[6] C08J *3/20;* **C08K** *5/00;* **C09B** *67/00*

U.S. Cl. 8—585 **18 Claims**

1. A method of dyeing a synthetic fiber material, comprising immerse-dyeing a synthetic fiber material having a melting or softening temperature of 160° C. or more in a dyeing liquid containing an organic coloring material having a molecular weight of 370 or more at a temperature of 150° C. or more.

164–708 O.G.–95–12

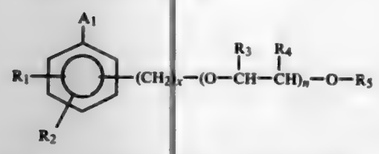
5,441,544

FUEL COMPOSITIONS CONTAINING SUBSTITUTED POLY(OXYALKYLENE) AROMATIC ETHERS

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Dec. 23, 1993, Ser. No. 173,817
Int. Cl.[6] C10L 1/18
U.S. Cl. 44—384 **41 Claims**

1. A compound of the formula:



wherein A_1 is selected from the group consisting of SR^{I}, SOR^{II}, SO_2R^{III}, wherein R^{I}, R^{II} and R^{III} are independently lower alkyl of 1 to 6 carbon atoms; $SO_2NR^{IV}R^{V}$, wherein R^{IV} and R^{V} are independently hydrogen, lower alkyl of 1 to 6 carbon atoms, or aminoalkyl of 1 to 6 carbon atoms, provided that R^{IV} and R^{V} may not both be aminoalkyl; CN; and C(O)N-$R^{VII}R^{VIII}$, wherein R^{VII} and R^{VIII} are independently hydrogen, lower alkyl of 1 to 6 carbon atoms or aminoalkyl of 1 to 6 carbon atoms, provided that R^{VII} and R^{VIII} may not both by aminoalkyl;

R_1 and R_2 are independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

R_3 and R_4 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms and each R_3 and R_4 is independently selected in each —O—CHR_3—CHR_4— unit;

R_5 is hydrogen, alkyl having 1 to 100 carbon atoms, phenyl, aralkyl having 7 to 100 carbon atoms, alkaryl having 7 to 100 carbon atoms, or an acyl group having the formula:



wherein R_6 is alkyl having 1 to 30 carbon atoms, phenyl, aralkyl having 7 to 36 carbon atoms or alkaryl having 7 to 36 carbon atoms;

n is an integer from 5 to 100; and x is an integer from 0 to 10.

5,441,545

MIDDLE DISTILLATE COMPOSITIONS WITH IMPROVED LOW TEMPERATURE PROPERTIES

Kenneth Lewtas, Wantage; Robert D. Tack, Oxford; Jacqueline D. Bland, Wantage, all of United Kingdom, and Albert Rossi, Warren, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 731,685, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 509,977, Apr. 16, 1990, abandoned, which is a continuation of Ser. No. 356,544, May 24, 1989, abandoned, which is a continuation of Ser. No. 901,233, Aug. 28, 1986, abandoned. This application Jul. 6, 1993, Ser. No. 89,630

Claims priority, application United Kingdom, Aug. 28, 1985, 8521393

Int. Cl.[6] C10L 1/18
U.S. Cl. 44—393 **7 Claims**

1. A narrow boiling point distillate fuel exhibiting at least one improved low temperature property containing at least one low temperature property improving additive composition consisting essentially of (A) 0.0001 to 0.5 wt. % of a copolymer of straight chain alpha-olefin and maleic anhydride esterified with an alcohol wherein said alpha-olefin is represented by the formula

$$R—CH=CH_2$$

and the alcohol is represented by the formula:

$$R^1OH$$

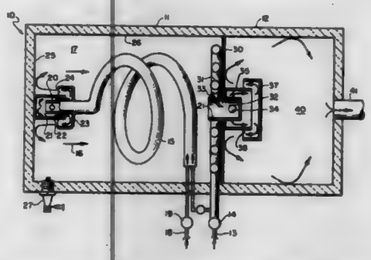
where R and R^1 are independently selected from alkyl radicals with the proviso that (i) at least one of R and R^1 contains more than 10 carbon atoms (ii) the sum of the number of carbon atoms present in R and R^1 is from 18 to 38, and (iii) R^1 is linear or contains a methyl branch at the 1 or 2 position; and (B) ethylene-vinyl acetate.

5,441,546

APPARATUS AND METHOD FOR DECREASING NITROGEN OXIDE EMISSIONS FROM INTERNAL COMBUSTION POWER SOURCES

David Moard, and Leonard Greiner, both of 1310 Logan Ave., Suite E, Costa Mesa, Calif. 92626-4023

Filed Nov. 8, 1993, Ser. No. 148,472
Int. Cl.[6] C10G 9/04
U.S. Cl. 48—107 **7 Claims**



1. In an internal combustion apparatus, the improvement which comprises:

a burner means having a pair of combustion chambers for combusting air and hydrocarbons at fuel-rich stoichiometric air/fuel ratios from 0.3 to 1.0 to provide air/fuel vapors;

each combustion chamber includes a mixer means intimately combining said air/fuel vapors for injection into said internal combustion apparatus;

said burner means having an inlet means communicating with each combustion chamber of said pair for receiving a supply of fuel and air;

a pre-heater means connected with each of said inlet means for heating the supply of fuel and air;

means for supplying fuel and air to one of said pre-heater means and air to another of said pre-heater means;

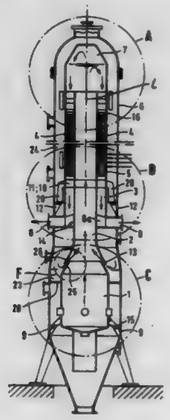
said mixer means in each of said burner means combustion chambers includes a baffle wall; means for directing fuel and air from one of said pre-heater means at one of said baffle walls; means for directing air from said other pre-heater means in combination with gases from a first of said combustion chambers into said inlet of said other walls; of said combustion chambers and at another of said baffle walls; said baffle wall of each of said mixer means including wall means for reversing the flow of air, fuel or gases directed at said baffle walls; and said other of said combustion chambers including an outlet for the discharge of gases.

5,441,547

METHOD FOR GASIFICATION OF A FINELY DIVIDED COMBUSTIBLE MATERIAL

Rainer Durrfeld, Essen; Johannes Kowoll, Bochum; Eberhard Kuske, Essen; Hans Niermann, Essen; Gerhard Wilmer, Hattinger, and Joachim Wolff, Essen, all of Germany, assignors to Krupp Koppers GmbH, Essen, Germany

Filed Feb. 24, 1994, Ser. No. 201,364
Claims priority, application European Pat. Off., Mar. 16, 1993, 93104291
Int. Cl.[6] C10J 3/46
U.S. Cl. 48—197 R **5 Claims**



1. Gasification process for gasification of a finely divided combustible material under pressure, said process comprising the steps of:

a) providing a gasification reactor having means for gasifying the finely divided combustible material under pressure to form a crude gas and cinder and ash components, a quenching pipe positioned concentrically above the gasification reactor, a convection-heated boiler concentrically surrounding the quenching pipe, the convection-heated boiler having a gas outlet device, and a gas flow guide device above the quenching pipe, the gas flow guide device being rotationally symmetric with respect to a longitudinal axis of the quenching pipe and connecting the quenching pipe and the convection-heated boiler;

b) conducting the crude gas and the cinder and ash components produced during the gasifying from the gasification reactor into the quenching pipe positioned above the gasification reactor;

c) feeding a quenching gas into the quenching pipe during the gasifying to form a mixed flow, said mixed flow comprising said crude gas, said cinder and ash components and said quenching gas;

d) guiding said mixed flow about a 180° turn by said gas flow guide device above said quenching pipe;

e) conducting the mixed flow into the convection-heated boiler from the gas flow guide device;

f) feeding said mixed flow from said convection-heated boiler with the help of the gas outlet device; and

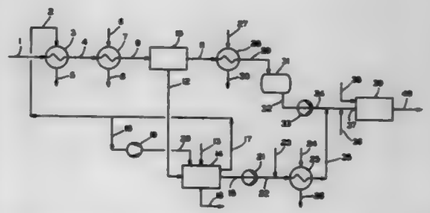
g) adjusting a gas flow speed of said mixed flow so that said cinder and ash components travelling in said mixed flow in said convection-heated boiler experience a cooling in said convection-heated boiler so that said cinder and ash components loose adherence ability and are conducted through said gas outlet device from said convection-heated boiler.

5,441,548

PROCESS FOR THE PARTIAL OXIDATION OF BITUMINOUS OIL

Adrian Brandl, Schwerte; Karl-Heinz Jah, Lünen, and Gerd Kronsbein, Dortmund, all of Germany, assignors to UHDE GmbH, Dortmund, Germany

Continuation of Ser. No. 149,003, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 761,633, Sep. 18, 1991, abandoned. This application Jul. 25, 1994, Ser. No. 279,630
Claims priority, application Germany, Oct. 9, 1990, 40 32 045.6
Int. Cl.[6] C10J 3/00
U.S. Cl. 48—215 **24 Claims**



1. Process for the partial oxidation of bituminous oil of secondary bituminous oil emulsions by means of oxygen or air, characterized in that the bituminous oil emulsion is separated into bituminous oil and emulsion water using heat and separation techniques to separate the oil and water, concentrating the separated emulsion water and using the concentrating water as moderator for the partial oxidation of bituminous oil.

5,441,549

ABRASIVE ARTICLES COMPRISING A GRINDING AID DISPERSED IN A POLYMERIC BLEND BINDER

Harvey J. Helmin, Golden Valley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 19, 1993, Ser. No. 48,849
Int. Cl.[6] B24B 3/02
U.S. Cl. 51—298 **14 Claims**

1. A coated abrasive article comprising a backing, an abrasive surface comprising a plurality of abrasive particles and a binder, said abrasive particles are adhered to the backing by the binder, and a peripheral coating over the abrasive surface, said peripheral coating comprising a grinding aid composition comprising:

a) a cured binder comprising a thermoset resin having a thermoplastic resin dispersed therein, said thermoplastic resin and said thermoset resin are present at a weight ratio sufficient to improve at least one of rheological and grinding efficiency effects of the grinding aid composition; and

b) a plurality of grinding aid particles dispersed in said cured binder, said grinding aid particles present in said grinding aid composition in an amount effective to increase grinding efficiency.

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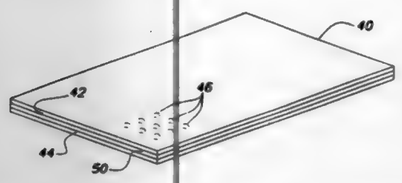
POST-TREATMENT OF LAMINATED NONWOVEN CELLULOSIC FIBER WEBS

Charles B. Hassenboehler, Jr., and Larry C. Wadsworth, both of Knoxville, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation of Ser. No. 37,228, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 858,182, Mar. 26, 1992, Pat. No. 5,244,482. This application Mar. 28, 1994, Ser. No. 218,984
Int. Cl.[6] B01D 39/16
U.S. Cl. 55—486 **45 Claims**

1. A planar consolidated multilayered nonwoven web which

is consolidated in the cross-direction having a reduced maximum pore size which is at least 20% less than that of the web prior to consolidation, wherein the web comprises first and third layers which each comprise a layer of randomly organized, nonelastomeric thermoplastic man-made fibers bonded to each other, said thermoplastic fibers having a crystallinity



prior to consolidation of at least 30%, and a second layer, sandwiched between said first and third layers, which second layer comprises non-wood cellulose-based staple fibers, and wherein in at least one of said first or third layers a majority of the fibers are aligned generally in the direction of draw and a minority of the fibers are disposed in a cross-direction transverse to the direction of draw.

5,441,551

BENDING PRESS FOR THE PRODUCTION OF CURVED GLASS PANES

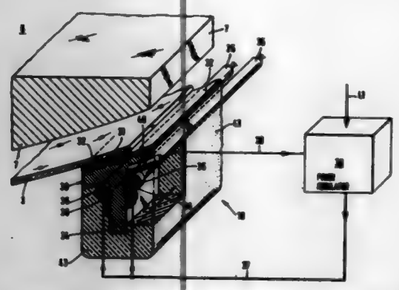
Karl-Josef Ollfisch; Hans-Werner Kuster; Hans-Werner Nowoczyn; Horst Mucha, all of Aachen, and Eberhard Taubert, Herzogenrath, all of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 31,723, Mar. 15, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 269,622

Claims priority, application Germany, Mar. 14, 1992, 42 08 219.6

Int. Cl.[6] C03B *11/17, 35/20*

U.S. Cl. 65—162 **9 Claims**



1. A device for the production of curved glass panes, comprising:

a bending press having an upper solid-faced bending mold and a lower horizontally traversable ring mold for bending a glass sheet; and

a cooling station for cooling the bent glass sheet while the glass sheet rests on the lower traversable ring mold, wherein said ring mold transfers said bent glass sheet from said bending press to said cooling station; wherein;

the lower ring mold comprises an electrical heating resistor for heating the lower ring mold to a specified temperature, and said specified temperature is maintained during a pressing of said glass sheet by said bending press and during the transfer of the bent glass sheet from the bending press to the cooling station; and

the ring mold further comprises a metal core having a vertical central part, and an additional electrical heating resistor, wherein such electrical heating resistors are disposed on each side of the vertical central part of the ring mold.

5,441,552

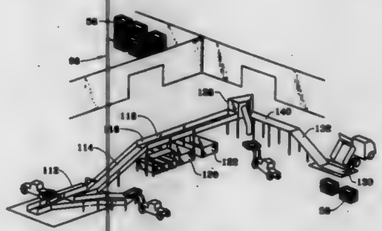
METHOD AND APPARATUS FOR COMPOSTING SOLID WASTE AND SLUDGE

Joseph DeLillo, 4272 Royal Oak Dr., Palm Beach Gardens, Fla. 33410

Continuation of Ser. No. 799,373, Nov. 27, 1991, abandoned. This application Oct. 27, 1993, Ser. No. 144,296

Int. Cl.[6] C05F *9/04*

U.S. Cl. 71—9 **13 Claims**



9. A method for composting municipal solid waste and dried sludge, comprising: removing non-compostable matter from a supply of solid waste, screening said solid waste for material having a size less than 6 inches, adding a sludge having a moisture content less than 60% to said solid waste, mixing said solid waste and said sludge thoroughly into a consistent mixture, providing a plurality of modular containers having aerated bottoms and at least three aerated sides and an open top, depositing the mixture in said modular container forming a controlled depth of said mixture, stacking said containers in a vertical format under a covered enclosure as to prevent rain from changing the moisture content of said mixture, allowing said mixture to cure for approximately 14 days, removing said mixture from said containers, screening composted material from said mixture, removing the composted material for packaging or bulk distribution, shredding the mixture, screening shredding material so that smaller material is added to composted material, returning remaining mixture to municipal solid waste for revisiting of composting process.

5,441,553

METAL ARTICLE AND METHOD FOR PRODUCING THE SAME

Richard S. Polizzotti, Milford; Larry E. McCandlish, Highland Park, both of N.J.; Edwin L. Kugler, Morgantown, W.Va., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 735,212, Jul. 24, 1991, Pat. No. 5,338,330, which is a continuation-in-part of Ser. No. 377,653, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 53,267, May 22, 1987, Pat. No. 4,851,041. This application Sep. 29, 1993, Ser. No. 128,182

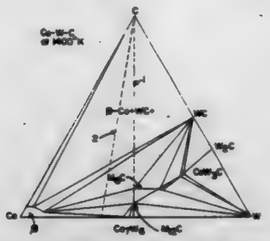
The portion of the term of this patent subsequent to Jul. 25, 2005, has been disclaimed.

Int. Cl.[6] C22C *29/08*

U.S. Cl. 75—230 **10 Claims**

1. A compacted multiphase composite article comprising diamonds and multiphase composite particles, said multiphase composite particles consisting of a metal matrix, having therein a volume fraction greater than about 0.15 of substantially uniform and homogeneous distribution of hard phase non-metallic compound particles that are no larger than about 0.1 micron.

6. A compacted, multiphase composite article comprising multiphase composite particles consisting of a metal matrix having therein a volume fraction greater than about 0.15 of



substantially uniform and homogeneous distribution of non-metallic compound particles no larger than about 0.1 micron.

5,441,554

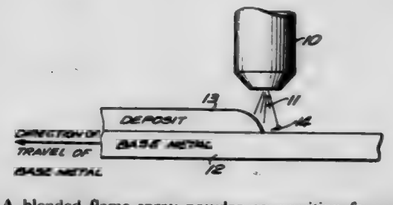
ALLOY COATING FOR ALUMINUM BRONZE PARTS, SUCH AS MOLDS

Eduardo Romero, Coram, and Richard J. DuMola, Centereach, both of N.Y., assignors to Eutectic Corporation, Charlotte, N.C.

Filed Sep. 2, 1993, Ser. No. 116,003

Int. Cl.[6] B05D *1/08*

U.S. Cl. 75—255 **9 Claims**



1. A blended flame spray powder composition for use in producing a bonded wear resistant coating on an aluminum bronze substrate, said blended composition consisting essentially of a copper-base alloy mixed with a nickel-base alloy,

said copper-base alloy powder comprising by weight about 5% to 15% aluminum, about 5% to 30% nickel, 0 to about 1% iron, about 0.1 to 1% silicon and the balance essentially copper,

said nickel-base alloy powder comprising by weight 0 to about 0.5% carbon, 0 to about 1% manganese, 0 to about 21.5% chromium, 0 to about 7.5% iron, 0 to about 3.75% columbium, about 0.5% to 3% silicon, 0 to about 9% molybdenum, 0 to about 2% boron, 0 to about 2.5% phosphorus and the balance essentially nickel,

the blending ratio of one powder to the other being such that a bonded coating produced therefrom on an aluminum bronze substrate contains at least about 9% copper and at least about 1.25% aluminum.

5,441,555

POWDER METALLURGY COMPOSITIONS

Paul Matthews, and Thomas Pelletier, II, both of Flemington, N.J., assignors to United States Bronze Powders, Inc., Flemington, N.J.

Continuation of Ser. No. 930,698, Sep. 29, 1992, abandoned. This application Jul. 22, 1994, Ser. No. 279,223

Claims priority, application United Kingdom, Mar. 6, 1990, 9005036; Jan. 29, 1991, 9101829

Int. Cl.[6] C22C *9/02, 9/04*

U.S. Cl. 75—255 **22 Claims**

15. A metallurgy powder for use in manufacturing a shaped bronze part by powder metallurgy techniques, the powder consisting essentially of a substantially homogeneous blend that comprises about 90 parts copper, about 10 parts tin and an amount of bismuth in the range from an amount effective to improve the machinability of the shaped bronze part up to about 5% weight, wherein the powder is substantially free of lead, and the total weight of the powder consists of copper and tin except for up to about 5.9%.

5,441,556

METAL PROCESSING OR RECOVERY AND APPARATUS

Keith C. Lewis, Telford, and Ophneil H. Perry, Kingswinford, both of United Kingdom, assignors to Stein Atkinson Stordy Ltd., West Midlands, United Kingdom

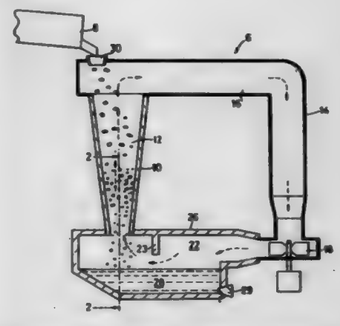
PCT No. PCT/GB92/01604, § 371 Date Jun. 24, 1994, § 102(e) Date Jun. 24, 1994, PCT Pub. No. WO93/06253, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 2, 1992, Ser. No. 204,373

Claims priority, application United Kingdom, Sep. 13, 1991, 9119543

Int. Cl.[6] C22B *7/00*

U.S. Cl. 75—414 **15 Claims**



1. A method of continuous melting of metallic or metal-containing material in the form of low density flakes, shreds, particles or other lightweight portions characterised by the steps of providing structure defining a melting chamber, inducing a continuous upward flow of hot gases through the chamber at a controlled velocity and at a temperature in excess of the melting point of the material or constituents thereof, and feeding said portions into the chamber so that the portions are borne in said flow until melting occurs to transform the material of the portions or at least said constituents thereof into denser and more compact liquid droplets or globules dropping from the flow for collection from the chamber.

5,441,557

ENHANCED GAS SEPARATIONS AND ZEOLITE COMPOSITIONS THEREFOR

Joseph T. Mullhaupt, Williamsville, and Paula C. Stephenson, East Amherst, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 14, 1993, Ser. No. 165,876

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—96 **11 Claims**

1. An enhanced process for the selective adsorption of a more readily adsorbable component of a gas mixture containing said component and a less readily adsorbable component in an adsorption system containing at least one bed of adsorbent material capable of selectively adsorbing the more readily adsorbable component from the gas mixture, each bed in said adsorption system undergoing, on a cyclic basis, a processing sequence comprising:

(a) introducing the gas mixture at an upper adsorption pressure to said bed containing adsorbent material comprising

an X or A type zeolitic adsorbent composition having true unit cells of 8 β-cages, each true unit cell having a symmetrical framework composition and a symmetrical cation composition, said symmetrical cation composition being monovalent, divalent, or mixtures thereof, said symmetrical framework composition having an equal average number of Al atoms per β-cage in all 8 β-cages of each true unit cell and said symmetrical cation composition having the same average number of either monovalent or divalent cations, or of mixtures of each type, distributed in each β-cage of the true unit cell, said symmetrical framework composition having a SiO_2/Al_2O_3 ratio of about 2.364;

(b) depressurizing the bed by the release of gas therefrom so as to decrease the pressure in the bed from said upper adsorption pressure to a lower desorption pressure so as to desorb said more readily adsorbable component and pass it from the bed;

(c) repressurizing the bed from the lower desorption pressure to said upper adsorption pressure; and

(d) introducing additional quantities of the feed gas mixture to the bed as the cyclic processing sequence is carried out in each bed in the adsorption system, whereby enhanced equilibrium selectivity for the adsorption of the more readily adsorbable component of the gas mixture is achieved.

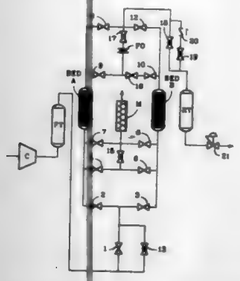
5,441,558

HIGH PURITY NITROGEN PSA UTILIZING CONTROLLED INTERNAL FLOWS

Sang K. Lee, Allentown; Andrew W. Wang, Alburtis, and Robert Paul, Nesquehoning, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 9, 1994, Ser. No. 287,985

U.S. Cl. 95/100 **16 Claims**



1. A process for separating a nitrogen-enriched gas from a feed gas mixture containing at least nitrogen and oxygen using a plurality of beds of adsorbent that preferentially adsorb oxygen more readily than nitrogen, comprising the steps of:

(a) introducing said feed gas mixture into a feed end of a first bed of said plurality of beds of adsorbent at an elevated feed pressure and adsorbing oxygen while removing unadsorbed nitrogen-enriched gas as a product from a product end of said first bed;

(b) discontinuing the introduction of said feed gas mixture into said first bed and connecting the product end of said first bed to the product end of a second bed of said plurality of beds which is at lower pressure and transferring gas from the product end of said first bed to the product end of said second bed short of equalizing the pressure in the two beds;

(c) connecting the feed end of said first bed to the feed end of said second bed, during a latter portion of the transfer of gas from the product ends of said beds in step (b), to transfer gas from the feed end of said first bed to the feed end of said second bed short of equalizing the pressure in the two beds;

(d) countercurrently depressurizing said first bed at a main rate of depressurization to a lowest pressure;

(e) passing nitrogen-enriched gas countercurrently through said first bed to purge oxygen from said bed;

(f) isolating said first bed for a predetermined period of time while supplying nitrogen-enriched gas to said first bed at a reduced flow rate compared to step (e);

(g) connecting the product end of said first bed to the product end of another bed of said plurality of beds which is at elevated feed pressure and transferring gas from the product end of said other bed to the product end of said first bed short of equalizing the pressure in the two beds;

(h) connecting the feed end of said first bed to the feed end of said other bed, during a latter portion of the transfer of gas from the product ends of said beds in step (g), to transfer gas from the feed end of said other bed to the feed end of said first bed short of equalizing the pressure in the two beds;

(i) further repressurizing said first bed by the introduction of product gas at the product end of said first bed; and

(j) repeating these process steps in each of said plurality of beds.

5,441,559

ROTATABLE DEVICE FOR THE SEPARATION BY ADSORPTION OF AT LEAST ONE CONSTITUENT OF A GASEOUS MIXTURE

Pierre Petit, Buc; Michel Poteau, Dammartin en Goele; Jean-Marc Scudier, Chatel-Guyon, and Xavier Vigor, Viroflay, all of France, assignors to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

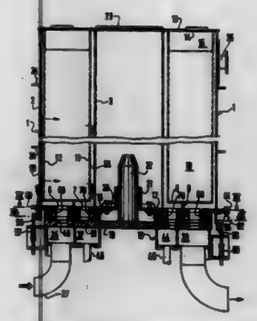
PCT No. PCT/FR93/00288, § 371 Date Dec. 1, 1993, § 102(e) Date Dec. 1, 1993, PCT Pub. No. WO93/20925, PCT Pub. Date Oct. 28, 1993

PCT Filed Mar. 23, 1993, Ser. No. 162,029

Claims priority, application France, Apr. 13, 1992, 92 04487

Int. Cl.[6] B01D *53/06*

U.S. Cl. 96—125 **10 Claims**



1. In a rotatable device for the separation by adsorption of at least one constituent of a gaseous mixture, comprising a rotatable assembly of a plurality of adsorption units each constituted by a vertical sector enclosing a mass of adsorbent extending between a vertical outer collector and a vertical inner collector that are selectively connectable, during rotation of the assembly, to gas supply and withdrawal means; the improvement wherein the sectors are mounted on a first annular flat plate comprising a first and a second series of gas passages communicating with the outer collectors and inner collectors of the sectors and coacting with a second flat annular plate mounted on a stationary housing defining a set of sectorial chambers, the second plate having two series of openings communicating with corresponding chambers of the set of chambers and respectively distributed along the path of the first and second series of gas passages of the first plate so as to provide an adsorption/desorption cycle by pressure variation in the adsorbent masses.

5,441,560

FLAME RETARDED GEL COMPOSITIONS

Achilles Chiotis, Mountain View; Rejendra S. Cornelius, Los Altos, and Pravin L. Soni, Union City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 710,489, Jun. 5, 1991, abandoned. This application Dec. 1, 1993, Ser. No. 157,018

Int. Cl.[6] C09K *21/06, 21/08*

U.S. Cl. 106—18.12 **12 Claims**

1. A flame retarded gel composition comprising:

(i) an organopolysiloxane gel comprising repeat units of the structure



wherein each R group is independently phenyl or C_1–C_4 alkyl or fluoroalkyl, at least 40% of the R groups being phenyl; and

(ii) an additive package mixed with the organopolysiloxane, in an amount between about 10 and about 60 parts by weight per 100 parts by weight of organopolysiloxane, the additive package being

(a) zinc oxide or antimony oxide or combinations thereof; and

(b) a brominated compound having a molecular weight of at least 450 and a bromine content of at least 40 weight %.

5,441,561

INK-JET RECORDING INK AND INK-JET RECORDING METHODS THEREOF

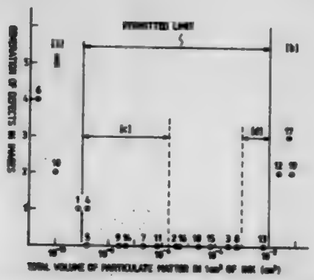
Akihiko Chujo; Toshitake Yui; Ken Hashimoto; Yoshiro Yamashita; Fuminori Koide; Yasuharu Endo, and Etsuo Sagara, all of Minami-ashigari, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 200,019 Feb. 22, 1994, abandoned. This application Jun. 24, 1994, Ser. No. 264,913

Claims priority, application Japan, Feb. 23, 1993, 5-33548; Jun. 25, 1993, 5-177629

Int. Cl.[6] G09D *11/02*

U.S. Cl. 106—20 C **12 Claims**



1. An ink-jet recording ink comprising water, a water-soluble organic solvent and a color material, wherein the total volume of particulate matter existing in 1 cm^3 of the ink ranges from 1×10^{-9} to 1×10^{-2} cm^3.

5,441,562

WATER-CONTAINING ADHESIVE

Ludwig Broich, Duesseldorf; Bernhard Herlfterkamp, Bottrop, and Hermann Onusselt, Haan, all of Germany, assignors to Henkel Kommanditgesellschaft aug Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01721, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO93/03111, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 29, 1992, Ser. No. 190,133

Claims priority, application Germany, Aug. 7, 1991, 41 26 074.0

Int. Cl.[6] C08L *89/00*

U.S. Cl. 106—144 **19 Claims**

1. An adhesive composition consisting essentially of:

A) 3 to 50% by weight of a casein glue;

B) 3 to 75% by weight of at least one resin selected from the group consisting of rosin, rosin derivatives, and synthetic resins;

C) 3 to 50% by weight of an alcohol selected from the group consisting of monohydric alcohol, polyhydric alcohols and mixtures thereof;

D) water; and,

E) 0–25% by weight of adhesive additives.

5,441,563

HIGHLY INSOLUBLE AZOLE EMBOSSING INHIBITOR AND THE USE THEREOF

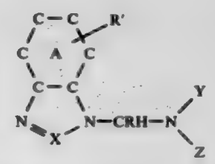
Carl E. Sideman, Lititz, Pa.; Donald M. Snyder, Ypsilanti, Mich.; Anthony L. Wiker, Lancaster, Pa.; John E. Herweh, Lancaster, Pa., and Joseph F. Remar, Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 87,488, Jul. 6, 1993, abandoned. This application Jul. 7, 1994, Ser. No. 271,633

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—224 **17 Claims**

1. A printing ink composition comprising a resin, a solvent and an inhibitor; the inhibitor being a compound having the general formula



wherein the A ring is benzenoid, napthenoid or saturated cycloaliphatic, the A ring being unsubstituted or substituted with R' which is an alkyl group of 1 to 4 carbon atoms; R is a hydrogen atom or methyl radical; X is a nitrogen atom or the

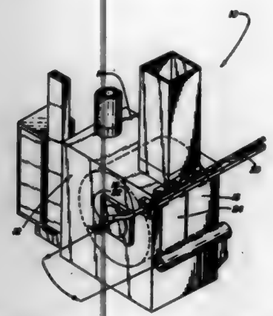


group, wherein R" is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms; and Y and Z are organic moieties or when taken together with the nitrogen to which they are attached form an organic ring structure; the inhibitor having a 24 hour room temperature isopropyl alcohol solubility of less than 5% by weight.

5,441,564
PIGMENT MIXTURE
Reiner Vogt, Wixhausen, Germany, assignor to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany
Filed Dec. 2, 1993, Ser. No. 160,642
Claims priority, application Germany, Dec. 2, 1992, 42 40 511.4
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—417 8 Claims

1. A pigment mixture containing a component A comprising at least one platelet-shaped interference pigment and a component B comprising at least one platelet-shaped color pigment consisting of a transparent, inorganic matrix containing a soluble or insoluble colorant.

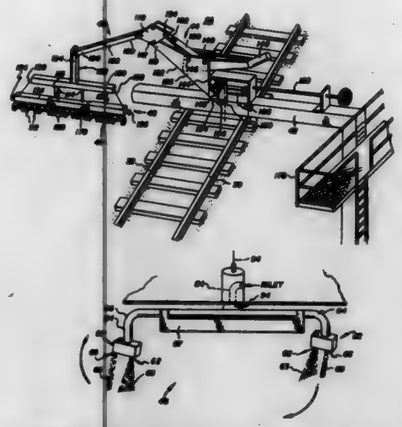
5,441,565
SYSTEM FOR COATING PHARMACEUTICAL PRODUCTS
Miguel A. Velez, Guaynabo, Puerto Rico, assignor to McNeil-PPC, Inc., Milltown, N.J.
Filed Dec. 15, 1992, Ser. No. 991,069
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—24 17 Claims



1. A spray arm assembly for coating ingestible pharmaceutical products, comprising:
at least one spray nozzle for producing an aerosol mist from a liquid solution and pressurized gas, said spray nozzle including a pneumatically-controlled on-off valve; and
a support arm on which said spray-nozzle is mounted, said support arm having a first bore defined therein for carrying liquid solution to said spray nozzle, a second bore defined therein for carrying pressurized gas to said spray nozzle, a third bore defined therein for supplying a pneumatic input pressure to said spray nozzle, and a removable cap at the distal end thereof for providing access to said first and second bores.

5,441,566
EQUIPMENT FOR APPLYING CRUSTING AGENTS TO COAL LOADS
Jack M. Vaughan, 107 Rider Dr., Beckley, W. Va. 25801
Filed Jan. 28, 1994, Ser. No. 187,977
Int. Cl.[6] B05B *3/12, 7/08;* B05C *5/00;* B05D *7/00*
U.S. Cl. 118—300 5 Claims

1. An injection unit for injecting a binder composition into a load of coal and for controlling mist generated by said injecting, said unit comprising:
(a) a pair of diametrically spaced apart spray blocks carried by a pipe and located at opposite ends of the pipe, said pair of spaced apart spray blocks being rotatable in a circular motion about a central vertical axis, said pair of blocks being diametrically spaced apart about said central axis, wherein each of Said spray blocks comprises
(i) a high velocity nozzle for providing a vertical, high velocity cylindrical stream of said binder composition, said stream having a diameter of between ¼ inch and ½ inch;
(ii) a mist control nozzle for providing a downwardly outwardly tapering planar spray.
2. A device for injecting a binder composition into a load of coal carried in an elongated compartment of a transport vehicle, said device comprising:
(a) an apparatus comprising a horizontal spray bar comprising:
(1) a plurality of horizontally spaced injection units, at least one of said injection units comprising a pair of diametrically spaced apart spray blocks carried by a

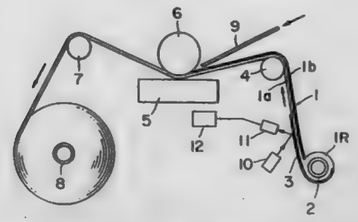


pipe and located at opposite ends of the pipe, said pair of spaced apart spray blocks being rotatable in a circular motion about a central vertical axis, said pair of blocks being diametrically Spaced apart about said central axis, wherein each of said spray blocks comprises (A) a high velocity nozzle for providing a substantially vertical, high velocity cylindrical stream of said binder composition, and (B) a mist control nozzle for providing a planar vertical spray,
(b) means for positioning said apparatus above said compartment,
(c) means for moving said apparatus along a longitudinal axis of said elongated compartment.

5,441,567
APPARATUS FOR MANUFACTURING STRIPS OF THERMAL TRANSFER RECORDING SHEETS
Shigeki Umise, Kawaguchi, and Hirokatsu Imamura, Nerima, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Continuation of Ser. No. 841,513, Feb. 26, 1992, Pat. No. 5,180,607, which is a continuation of Ser. No. 614,212, Nov. 15, 1990, Pat. No. 5,109,795, which is a division of Ser. No. 265,679, Oct. 19, 1988, Pat. No. 4,985,292. This application Oct. 30, 1992, Ser. No. 968,676
Claims priority, application Japan, Feb. 23, 1987, 62-25204; Sep. 26, 1987, 62-239939
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[6] B05C *11/00*
U.S. Cl. 118—669 3 Claims

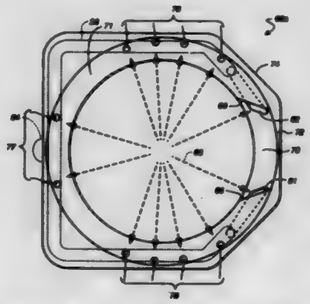
1. An apparatus for manufacturing strips of thermal transfer type recording sheet, comprising:
web supply means for supplying a continuous web of base film having a hot melt ink layer formed on one side thereof;

feed means for continuously feeding the web along a path from the web supply means;
sensor means for sensing the length of the web which has been fed;
printing means for printing end marks on the web being fed along said path, said end marks being spaced from each other in a direction transverse to the direction of the feed of the web;
means responsive to said sensor means for controlling said printing means so as to print the end marks when a predetermined length of the web has been fed;
slitting means for longitudinally slitting the web into a plurality of strips of recording sheet having the end marks printed respectively thereon, said slitting means including a stationary slitter roll having annular slitting blade means



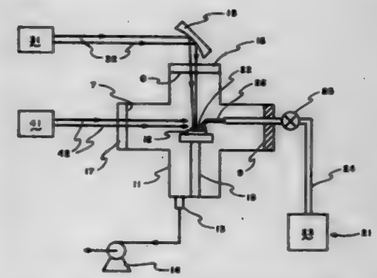
thereon and a movable slitter roll displaceable toward and away from the stationary slitter roll, said stationary and movable slitter rolls cooperating to slit the web passing therebetween by means of said blade means;
drier means for applying drying action to the end marks printed on the web during passage of the end marks past the drier means, said drier means being responsive to said sensor means for applying its drying action to the end marks only when a predetermined length of the web has been fed so as to cause the printed end marks to face the drier means;
dividing rolls for passing said slitted strips of recording sheet thereover respectively; and
winding means having roll shafts for rolling up the strips of recording sheet, respectively, which have passed over the dividing rolls.

5,441,568
EXHAUST BAFFLE FOR UNIFORM GAS FLOW PATTERN
Tom Cho, San Francisco, and Christopher Ngai, Burlingame, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Jul. 15, 1994, Ser. No. 276,152
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—715 19 Claims



1. An apparatus for controlling process gas distribution across the surface of a semiconductor substrate in a semiconductor process chamber, comprising:
an arc shaped exhaust plenum that is coupled to a process chamber vacuum system, and through which said process gas is evacuated from said process chamber, said exhaust plenum having two ends that define a gap therebetween which is not directly accessible by said exhaust plenum;
a baffle overlying said exhaust plenum, said baffle having at least one set of apertures formed therein through which said process gas may be drawn from said process chamber directly to said exhaust plenum; and
said baffle comprising at least one passage that is in communication with, and offset from, said exhaust plenum to draw said process gas from said gap;
whereby said apertures and said passage communicate with said underlying exhaust plenum to improve gas flow uniformity across said substrate surface during substrate processing.

5,441,569
APPARATUS AND METHOD FOR LASER DEPOSITION OF DURABLE COATINGS
James T. Veligdan, Manorville; Peter Vanier, Coram, and Robert E. Barletta, Wading River, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Nov. 29, 1993, Ser. No. 158,862
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 MP 11 Claims

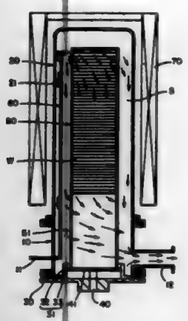


1. A multi-laser deposition apparatus comprising:
a deposition chamber for enclosing a substrate upon which a coating is to be deposited;
at least one gas delivery means for directing a flow of deposition gas on the substrate;
at least one first laser means for heating the substrate; and
at least one second laser means for irradiating the deposition gas to dissociate said deposition gas.

5,441,570
APPARATUS FOR LOW PRESSURE CHEMICAL VAPOR DEPOSITION
Chul-Ju Hwang, Kyungki-Do, Rep. of Korea, assignor to Jein Technics Co., Ltd., Rep. of Korea
Filed Jun. 21, 1994, Ser. No. 263,930
Claims priority, application Rep. of Korea, Jun. 22, 1993, 11063/1993; Jan. 27, 1994, 1546/1994; Jun. 14, 1994, 137J2/1994
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—725 21 Claims

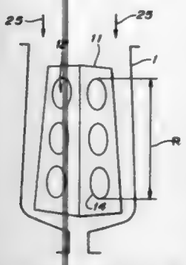
1. Apparatus for low pressure chemical vapor deposition comprising:
a deposition base having a compound source gas inlet and a reaction product outlet at opposed sides thereof;
a reactor airtightly coupled to a top end of said deposition base at its bottom end;
a closing plate provided on the bottom of said deposition

base for selectively closing a bottom opening of said deposition base;
a boat lifting ram movably penetrating a center opening of said closing plate, said ram being provided with a boat support on its top end;
a boat seated on said boat support of the ram and supporting a plurality of wafers thereon;



means for introducing a compound source gas to a top section of said reactor and ejecting said source gas at that top section of the reactor, said gas introducing means being connected to said compound source gas inlet of the base at its bottom end and positioned about a top section of said boat at its top end; and
heating means for heating said reactor, said heating means surrounding said reactor.

5,441,571
CYLINDRICAL APPARATUS FOR GROWTH OF EPITAXIAL LAYERS
Yutaka Ohta; Yusho Hoshina, and Takeshi Arai, all of Gunma, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1993, Ser. No. 127,729
Claims priority, application Japan, Sep. 28, 1992, 4-282552
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—730 **2 Claims**



1. A cylindrical apparatus for the growth of epitaxial layers having disposed inside a bell jar a susceptor provided thereon with pockets for retaining a substrate disposed in a plurality of horizontal levels, characterized in that the cross sectional area of a gap lying in a plane normal to the axis of rotation and between a peripheral surface of said susceptor and an internal wall surface of said bell jar is equalized at least at any level of said hell jar confronting the substrates on said susceptor, and wherein said susceptor is formed in the shape of a prismatoid and said bell jar is formed in the shape of a cylinder downwardly enlarged at least in the lateral wall portions of said bell jar confronting the substrates set in place on said susceptor.

5,441,572
AMBIENT CLEANERS FOR ALUMINUM
Edward A. Rodzewich, Flourtown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Nov. 19, 1993, Ser. No. 155,398
Int. Cl.[6] B08B *3/08*; C23G *1/14*
U.S. Cl. 134—2 **10 Claims**

1. A method for preventing oxide buildup on an aluminum surface at ambient temperature which comprises contacting the aluminum surface with a treatment comprising potassium hydroxide, a silicate compound and an iminodipropionate amphoteric surfactant, wherein the surface is contacted with the treatment at a pH of from about 10–13, said treatment dissolved in an aqueous medium in a concentration of from about 1.75% to about 10% by volume.

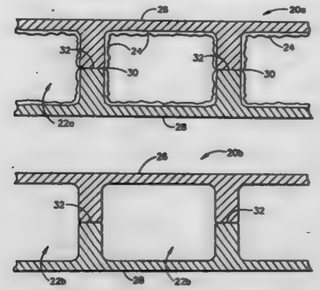
5,441,573
METHOD FOR CLEANING A METAL MOLD
Hitoshi Kondo, Hamura; Hirokazu Taniguchi, Kodaira, and Yuzo Sakai, Hachioji, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Division of Ser. No. 988,843, Dec. 10, 1992, Pat. No. 5,393,816.
This application Oct. 24, 1994, Ser. No. 328,056
Claims priority, application Japan, Dec. 10, 1991, 3-349749; Mar. 5, 1992, 4-083068; Apr. 2, 1992, 4-108373; Oct. 20, 1992, 4-281457
Int. Cl.[6] B08B *9/04*
U.S. Cl. 134—8 **16 Claims**

1. A method for cleaning a metal mold for rubber dirtied by repeating vulcanization of non-vulcanized rubber articles which comprises:
inserting into the metal mold a cleaning rubber article composed of the non-vulcanized rubber article having a sheet attached to the surface facing the metal mold, the sheet being composed of a cleaning rubber composition comprising 100 parts by weight of a rubber selected from the group consisting of natural rubber, synthetic rubber and a blend thereof, 2–30 parts by weight of an aminoalcohol, 5–50 parts by weight of a glycol and 30–90 parts by weight of an adsorptive;
heating the cleaning rubber article to adsorb the dirt to the cleaning rubber article; and
then taking the cleaning rubber article out of the metal mold resulting in the removal of the dirt from the surface of the metal mold.

5,441,574
HOLLOW AIRFOIL CAVITY SURFACE TEXTURE ENHANCEMENT
Kurt L. Hansen; Johnny F. Hill, II, both of Cincinnati, and Arthur L. Ludwig, Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 43,110, Apr. 5, 1993, Pat. No. 5,391,256.
This application Aug. 5, 1994, Ser. No. 286,616
Int. Cl.[6] B08B *9/00*; B44C *1/22*
U.S. Cl. 134—22.1 **4 Claims**

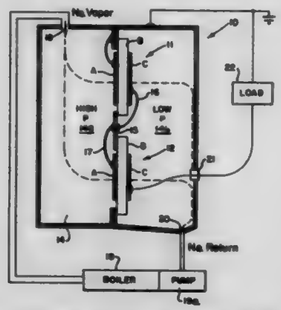
1. A method of cleaning the interior of a hollow structure, the method comprising the steps of:

joining a plurality of pieces to form a single structure having a hollow interior portion;
superplastically forming the plurality of pieces; and



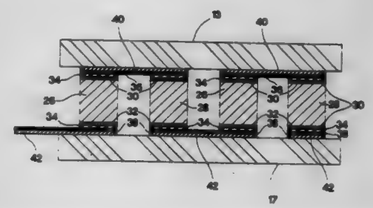
pumping an abrasive solution through the hollow interior portion at a high speed.

5,441,575
AMTEC VAPOR-VAPOR SERIES CONNECTED CELLS
Mark L. Underwood, Monrovia; Roger M. Williams, Azusa; Margaret A. Ryan, Pasadena; Barbara J. Nakamura, San Marino, and Dennis E. O'Connor, Upland, all of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Filed Jan. 11, 1993, Ser. No. 4,162
Int. Cl.[6] H01L *37/00*
U.S. Cl. 136—202 **4 Claims**



1. An array of alkali metal thermoelectric converter cells electrically connected in series utilizing a metal alkali vapor at a high temperature and desired vapor pressure from a boiler into a plenum separated into two chambers by a wall of said cells, said metal alkali vapor passing through said cells from a chamber in said plenum on one side of said wall and returning after condensation at a chamber on an opposite side of said wall at a lower pressure than said vapor pressure at said chamber in said plenum at said one side of said wall, each cell comprising,
a porous solid electrolyte plate,
a first porous metal layer deposited on one side of said solid electrolyte plate, said first metal layer functioning as an anode,
a second porous metal layer deposited on a side of said solid electrolyte plate opposite said first metal layer, said second metal layer functioning as a cathode,
conductive metal plates between said cells, one metal plate between each pair of adjacent cells for bridging gaps between solid electrolyte plates of said series-connected cells, said metal plates being connected to said solid electrolyte plates by seals, thereby forming a sealed wall in said plenum with said cells, said wall being sealed to said chamber along all edges thereof with walls of said plenum,
means for electrically connecting said cells in series comprising an electrical connection of each cathode of a cell to said metal plate between adjacent cells and each anode of a cell to said metal plate between said adjacent cells,
means for providing an electrical connection from said anode of a first cell of said array to said load, and
means for providing an electrical connection to said load from said cathode of a last cell of said array.

5,441,576
THERMOELECTRIC COOLER
James L. Bierschenk, 4805 Highgate La., Rowlett, Tex. 75088; Richard A. Howarth, 915 Spring Brook, Allen, Tex. 75002, and Norbert J. Socolowski, 215 Fox Hill Rd., Denville, N.J. 07834-2507
Continuation-in-part of Ser. No. 11,869, Feb. 1, 1993, abandoned. This application May 24, 1994, Ser. No. 248,537
Int. Cl.[6] H01L *35/08*
U.S. Cl. 136—203 **5 Claims**

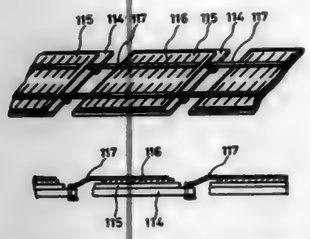


1. A thermoelectric heat pump for a thermal cycler comprising:
first and second type thermoelectric legs;
tin-silver-indium or tin-silver-cadmium bonding means connected to the first and second type thermoelectric legs being cycled alternately between cold and hot temperatures of about 0° C. up to about 100° C. at a ramping rate of about 1° C. per second;
conductive tab means attached to the bonding means for connecting the legs in series to form a thermocouple, and
insulator means connected to the conductive tab means for preventing shorts when the thermoelectric heat pump is connected to a sample holder of a thermal cycler.

5,441,577
THIN FILM SOLAR CELL AND PRODUCTION METHOD THEREFOR
Hajime Sasaki; Hiroaki Morikawa; Kazuhiko Satoh, and Mikio Deguchi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 115,720, Sep. 3, 1993, Pat. No. 5,344,500, which is a division of Ser. No. 846,793, Mar. 5, 1992, Pat. No. 5,273,911. This application Jun. 17, 1994, Ser. No. 261,948
Claims priority, application Japan, Mar. 7, 1991, 3-061908; May 10, 1991, 3-135840; May 22, 1991, 3-149965; Dec. 26, 1991, 3-359749; Feb. 7, 1992, 4-056745
Int. Cl.[6] H01L *31/05, 31/18*
U.S. Cl. 136—244 **17 Claims**

1. A thin-film solar cell array having a structure including a plurality of solar cells, each solar cell including a thin-film semiconductor layer having a light incident surface, a conductive substrate on which the semiconductor layer is disposed and including a hole, and a metal lead wire for collecting current, a first end of each metal lead wire being fixed to the light incident surface of a respective solar cell and including a second end extending from the light incident surface wherein second end extending lead wires are electrically and mechani-

cally connected to respective adjacent solar cells, the second ends of the metal lead wires penetrating through the holes in



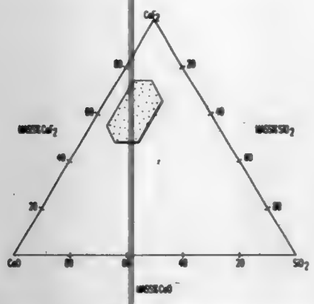
the respective adjacent solar cells, and including respective bends for retaining the metal lead wires in the substrates.

5,441,578

METHOD FOR PRODUCING SOFT MAGNETIC ALLOYS WITH VERY HIGH PERMEABILITY AND ALLOYS RESULTING THEREFROM

Georges Couderchon; Lucien Coutu, both of Sauvigny les Bois, and Michel Faral, Nevers, all of France, assignors to Imphy S. A., Puteaux, France

Filed Jul. 29, 1993, Ser. No. 98,938
Claims priority, application France, Jul. 30, 1992, 9209462
Int. Cl.[6] C21C *7/076*
U.S. Cl. 148—120 1 Claim



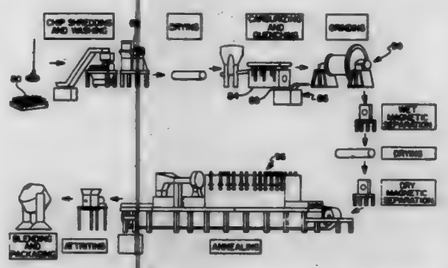
1. A method for producing a soft magnetic alloy with high permeability, comprising:
(i) casting an ingot of an alloy, comprising more than 70% nickel or more than 45% cobalt,
(ii) remelting said ingot under an electroconductive slag;
(iii) converting the remelted ingot into strips after hot rolling then cold rolling;
(iv) subjecting said strips to a treatment for developing magnetic characteristics,
wherein said slag comprises at least the first three components of the system CaF_2, CaO, SiO_2, Al_2O_3 and defining a zone in a ternary phase diagram delimited by the following proportions by weight:
CaF_2 (56–67)%
CaO (22–28)%
SiO_2 (9–15)%
with $Al_2O_3 < 3\%$.

5,441,579

METHOD OF RECYCLING SCRAP METAL

Sydney M. Kaufman, 37725 Lakewood Cir., #201, Westland, Mich. 48185, and Stephen E. LeBeau, 41512 Ladywood Ct., Northville, Mich. 48167

PCT No. PCT/US92/00807, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO92/13664, PCT Pub. Date Aug. 20, 1992
Continuation-in-part of Ser. No. 650,364, Feb. 1, 1991, abandoned, Ser. No. 650,365, Feb. 1, 1991, Pat. No. 5,152,847, and Ser. No. 650,378, Feb. 1, 1991, abandoned. This PCT application Jan. 31, 1992, Ser. No. 94,065
Int. Cl.[6] B22F *1/00, 3/00*
U.S. Cl. 148—233 23 Claims



1. A method for producing abrasive grit from steel particles comprising the steps of:
(a) heating clean, dry steel particles in a non-oxidizing protective atmosphere at a temperature of about 1500° F. to about 1800° F.;
(b) transporting the particles through a chute submerged below a quenching solution, the quenching solution forming an atmospheric seal;
(c) bathing the heating steel particles in the quenching solution which comprises water to embrittle the particles, and
(d) grinding the steel particles in a mill to form the grit.

5,441,580

HYDROPHILIC COATINGS FOR ALUMINUM

Charles E. Tomlinson, Martinsville, Ind., assignor to Circle-Prosco, Inc., Bloomington, Ind.

Filed Oct. 15, 1993, Ser. No. 138,136
Int. Cl.[6] C23C *22/44*
U.S. Cl. 148—247 28 Claims

1. An aqueous composition for coating aluminum finstock, comprising:
(a) between about 1,000 ppm and about 15,000 ppm, based on the aqueous composition, of dissolved Group IV ions;
(b) between about 1,000 ppm and about 10,000 ppm, based on the aqueous composition, of dissolved Group I ions;
(c) between about 5,000 ppm and about 20,000 ppm, based on the aqueous composition, of dissolved fluoride, ions;
(d) sufficient mineral acid to adjust the pH of the solution to less than about 1.0; and
(e) water; said aqueous composition being chromium free.

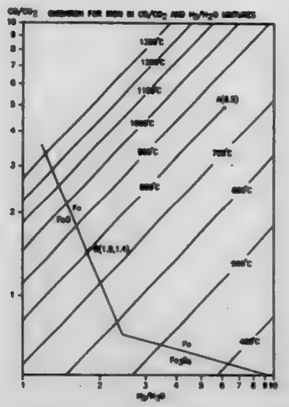
5,441,581

PROCESS AND APPARATUS FOR PRODUCING HEAT TREATMENT ATMOSPHERES

Jaak S. Van den Sype, Scarsdale, N.Y., and Alan R. Barlow, Ridgefield, Conn., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 6, 1994, Ser. No. 254,796
Int. Cl.[6] C01B *21/00*
U.S. Cl. 148—634 15 Claims

1. A method for the endothermic generation of carbon monoxide and hydrogen atmospheres for the heat treating of ferrous metals, non-ferrous metals, alloys and metal and/or ceramic powders comprising the steps of:
Step 1. disposing a catalyst means containing a noble metal on a porous ceramic carrier means;
Step 2. directing input gases, including hydrocarbon gas and



oxygen (O_2), through a conduit and onto said noble metal catalyst means at a temperature in the range of from about 750° to about 900° C., wherein said hydrocarbon gas oxidizes to produce output gases consisting essentially of carbon monoxide and hydrogen wherein the space velocity of said output gases is at least 10,000 units per hour.

5,441,582

METHOD OF MANUFACTURING NATURAL AGING-RETARDATED ALUMINUM ALLOY SHEET EXHIBITING EXCELLENT FORMABILITY AND EXCELLENT BAKE HARDENABILITY

Takeshi Fujita; Shinji Mitao; Kohei Hasegawa, and Masataka Suga, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jan. 27, 1994, Ser. No. 188,155
Claims priority, application Japan, Sep. 30, 1993, 5-245195
Int. Cl.[6] C22C *21/08*
U.S. Cl. 148—693 12 Claims

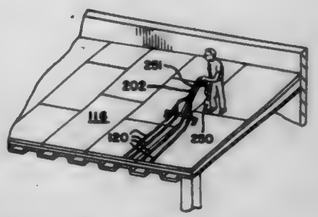
1. A method of manufacturing a natural aging retardated aluminum alloy sheet exhibiting excellent formability and an excellent bake hardenability, said method comprising the steps of:
(a) preparing an aluminum alloy ingot consisting essentially of 1.5 to 3.5% by weight of Mg, 0.3 to 1.0% by weight of Cu, 0.05 to 0.35 by weight of Si, 0.03 to 0.5% by weight of Fe, 0.005 to 0.15% by weight of Ti, 0.0002 to 0.05% by weight of B, and optionally containing at least one element selected from the group consisting of Mn, Cr, Zr, V, Zn and Be; and a balance of Al, in which Mg and Cu are in a weight ratio of Mg/Cu of 2 to 7;
(b) homogenizing the ingot in one step or in multiple steps, at a temperature of 400° to 580° C.;
(c) preparing an alloy sheet having a desired sheet thickness by subjecting the ingot to a hot rolling and a cold rolling;
(d) subjecting the alloy sheet to a heat treatment including heating the sheet up to 500° to 580° C. at a heating rate of 3° C./second or more, keeping the alloy sheet at the temperature reached for 0 to 60 seconds, and cooling at a cooling rate of 2° C./second or more;
(e) subjecting the alloy sheet to a preliminary aging treatment at a temperature of 45° to 100° C. for 2 to 48 hours after keeping the alloy sheet at room temperature, or immediately after said heat treatment; and
(f) subjecting the alloy sheet to a restoring treatment at a temperature of 180° to 300° C. for 3 to 60 seconds.

5,441,583

METHOD OF USE OF MULTIPLE ADHESIVE FOAM BEAD APPLICATOR

Robert Eaton, Minooka; Ross Wilson, Utica, both of Ill., and Donald Partyka, Heath, Ohio, assignors to Insta-Foam Products, Inc., Joliet, Ill.

Division of Ser. No. 835,195, Feb. 13, 1992. This application Aug. 26, 1993, Ser. No. 112,650
Int. Cl.[6] B32B *7/14*
U.S. Cl. 156—71 11 Claims



1. A method of adhering at least one cover member to a roofing substrate, comprising the steps of:
dispensing, under pressure, multiple beads of an adherent compound in equal amounts onto the roofing substrate in a single pass from an application apparatus having a primary distribution tube in fluid communication with multiple secondary distribution tubes, the multiple secondary distribution tubes being in fluid communication with multiple application tubes, each of said secondary distribution tubes being of substantially the same length to promote distribution of said equal amounts of said adherent compound multiple beads onto said roofing substrate, the apparatus receiving said adherent compound under pressure from a pressurized adherent compound supply source, and
applying the covering member to the roofing substrate such that said cover member contacts the adherent compound multiple beads before said adherent compound multiple beads cure,
and allowing said adherent compound multiple beads to cure such that an adhesive bond is established between said cover member and said roofing substrate.

5,441,584

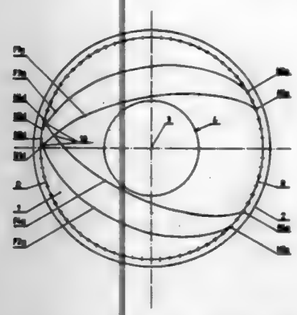
METHOD FOR LAYING FILAMENTS ON A CONVEX AXISYMMETRIC SURFACE

Gérard Mathieu, Toulouse, and François Monget, Merignac, both of France, assignors to Societe Anonyme Dite Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Oct. 4, 1993, Ser. No. 130,723
Claims priority, application France, Oct. 15, 1992, 92 12617
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—175 14 Claims

1. A method for laying filaments comprising single filaments or sets of filaments on a convex axisymmetric surface having at least one of an opening and a circular dead zone centered on a pole of the axisymmetric surface, the method comprising:
(a) defining a reference circle parallel to an external edge of the surface and situated at a specific distance from a plane passing through the external edge, and defining a regular series of points on the reference circle;
(b) laying a filament along a first substantially geodesic path on the surface from the external edge up to a first departure point of the reference circle;
(c) laying the filament from the first departure point up to a

first arrival point of the reference circle along a second substantially geodesic path;
(d) laying the filament beyond the first arrival point up to the external edge along a third substantially geodesic path;
(e) repeating laying steps (b)–(d) by passing at least one additional filament through at least one additional departure point and through at least one corresponding additional arrival point, both the at least one additional departure point and the at least one corresponding additional arrival point being on the reference circle, so as to lay a lap of filaments; and
(f) repeating layering of laps, with successive shifting on the points defined on the reference circle, so as to obtain a layer wherein each point defined on the reference circle within the layer comprises only one departure point and arrival point.



5,441,585

METHOD OF MAKING A PATTERN FROM A BLEND OF WATER, PLASTER OF PARIS AND POLYVINYL ACETATE

Philip A. Rodda, Sun River, and Alan L. Earnest, 0, Culver, both of Oreg., assignors to The Confederated Tribes of Warm Springs Reservation, Warm Springs, Oreg.

Filed May 10, 1994, Ser. No. 240,143
Int. Cl.[6] B29C *37/00*; C04B *24/24*
U.S. Cl. 156—256 **5 Claims**

1. In the making of a pattern, the method comprising:
preparing a blend of water, from 50 to 70 parts by weight plaster of paris and from 30 to 50 parts by weight polyvinyl acetate,
pouring said blend into a form such that the pouring is done without the capture of air into the blend,
allowing said blend to set up with solidification in said form to produce a solid product,
removing the product from the form, and
cutting said product with a cutting tool, wherein the tool removes the product in chip form, to shape the product and produce the pattern.

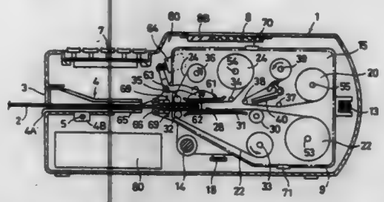
5,441,586

LABEL ADHESION DEVICE AND PRINTER FOR INDEX LABELS

Yuzo Fukunaga, Kawasaki; Tsuneo Yasui, and Takashi Okumura, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 27, 1993, Ser. No. 172,917
Claims priority, application Japan, Jan. 5, 1993, 5-000300
Int. Cl.[6] B65C *1/02*
U.S. Cl. 156—387 **20 Claims**

9. An index label adhesion device for adhering a plurality of index labels on a plurality of adhered to members, comprising:
a casing having a portion for receiving the plurality of adhered to members;
a carriage mounted in said casing to be movable along one edge of one of the adhered to members received in said casing;
a first support member on which a plurality of print labels are temporarily adhered, each print label comprising a base portion which can be adhered on one side of the adhered to member and a projected portion connecting to the base portion and on which a desired image can be printed;
a second support member on which a plurality of cover labels are temporarily adhered;



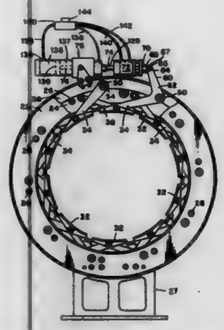
print means for printing a desired image on the projected portion of the print label;
feeding means for feeding said first support member and said second support member in a predetermined direction;
pressing means for adhering and pressing the print label and the cover label holding the one edge of the received adhered to member therebetween; and
control means for controlling said carriage to move so that a label adhering position on successive adhered to members may be shifted in a direction along the one edge of the successive adhered to members.

5,441,587

TRANSFER RING HAVING SELECTIVE ADJUSTABILITY OF SHOE MOVEMENT

Mark S. Byerley, Greenback, Tenn., assignor to WYKO, Inc., Greenback, Tenn.

Filed Aug. 12, 1994, Ser. No. 289,766
Int. Cl.[6] B29D *30/30*
U.S. Cl. 156—406.2 **15 Claims**



1. In a transfer ring for use in a system for the manufacture of vehicle tires wherein said ring includes a plurality of shoes radially movable between a position of engagement with a belt and tread package about the outer circumference thereof and a position out of engagement with said belt and tread package, said transfer ring including means for actuating said shoes for movement between said positions of engagement and disengagement with said belt and tread package, the improvement comprising first and second motive means disposed in operative alignment with one another, means linking said first and second motive means to said shoes of said transfer ring for

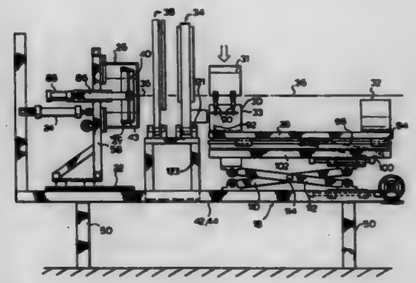
effecting radial movement of said shoes upon actuation of said first and second motive means, means actuating said first motive means for causing said shoes to move radially inwardly of said transfer ring and initially grasp said belt and tread package, and means actuating said second motive means, after said first motive means has achieved its most radially inwardly limit of movement of the shoes of said transfer ring, to thereby move said shoes a further radial distance inwardly.

5,441,588

APPARATUS FOR PRODUCING A BELL JOINT

Geofrey G. Kime, London, and Carl D. Chapman, Stratford, both of Canada, assignors to Big 'O' Inc., Exeter, Canada

Filed Jan. 10, 1994, Ser. No. 179,292
Int. Cl.[6] B29C *65/20*
U.S. Cl. 156—499 **5 Claims**



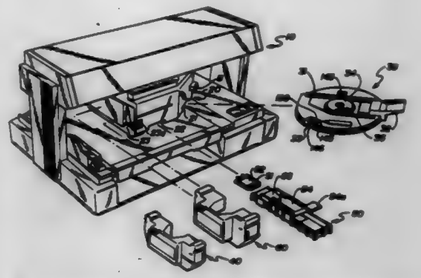
1. An apparatus for producing a bell joint on an end of a thermoplastic corrugated pipe having a circumferential flange comprising, in combination: a supporting framework; bell support means having a longitudinal axis disposed at an end of said supporting framework for internally gripping and supporting a bell concentric with said longitudinal axis, said bell support means comprising a mandrel frame mounted on the supporting framework for reciprocal linear travel; piston and cylinder means connected to the supporting framework and to the mandrel frame for moving said mandrel frame linearly on the supporting frame; an expandable cylindrical mantel mounted on the mandrel frame, said expandable cylindrical mandrel having a plurality of radially contractible or expansible segments; and means for symmetrically contracting or expanding said mandrel segments about the bell support means longitudinal axis; pipe securing means disposed at another end of the supporting framework for externally gripping and supporting a corrugated pipe; means for raising and lowering one of said pipe securing means or bell support means on said supporting framework for aligning the bell on the bell support means and the pipe in the pipe support means co-axial with said longitudinal axis; means for extending and retracting said pipe securing means axially towards and away from the bell support means; and heating means mounted on the supporting framework for movement towards and away from the said longitudinal axis for heating opposed faces of the end of the pipe and the end of the bell to a desired melting temperature upon extension of the bell support means and the pipe securing means, whereby upon heating of the opposed faces of the bell and the pipe to a desired melting temperature the bell support means and the pipe support means can be retracted to permit withdrawal of the heating means, and said faces of the bell and the pipe can be abutted against each other at a desired pressure by concurrent extension of at least one of the bell support means and the pipe securing means for a time sufficient to fuse the bell and pipe together.

5,441,589

FLAT BED DAISY WHEEL HOT DEBOSSING STAMPER

Charles T. Groswith, III, Los Altos, Calif.; William A. Banks, Carrollton, Tex.; Eugene F. Duval, Menlo Park, Calif.; Roger M. Gray, Lewisville; Raymond D. Heistand, II, Flower Mound; Barry C. Kockler, Lewisville; Warren K. Shannon, Highland Village, all of Tex.; Robert E. Smith, Woodside, Calif., and William J. Usitalo, Farmers Branch, Tex., assignors to Taurus Impressions, Inc., Moutain View, Calif.

Filed Jun. 17, 1993, Ser. No. 78,792
Int. Cl.[6] B41J *1/30, 3/28*
U.S. Cl. 156—542 **102 Claims**



1. In combination a dual station flat bed daisy wheel hot debossing stamper comprising:
a chassis having a flat platen for mounting a workpiece to be debossed;
a gantry connected to said chassis said gantry including a gantry frame having an upper load beam, a lower anvil load beam and pair of tensionable spaced side plates connecting said load beams; and
a debossment print engine movable with respect to said upper load beam for debossing the workpiece mounted on a portion of said platen, said chassis, said gantry and said engine forming a debossment assembly comprising:
means for moving said print engine with respect to said upper load beam parallel to an Y-axis of said platen;
a daisy wheel first debossment station in said engine including a rotating character wheel generally extending in a plane parallel to said platen and having a series of character fingers thereon individually movable out of a plane of storage, means including a motor for rotating said wheel, said wheel being removable from said first debossment station;
a high force second debossment station in said engine including a debossment die;
a foil tape having a heat and pressure transferable material thereon, said tape being on a tape reel in at least one cartridge mounted in said assembly such that said transferable material extends between a workpiece on said platen and a character on an end of a finger of said character wheel or the debossment die at a debossment zone;
first heating means for individually heating said character on said wheel;
second heating means for heating said debossment die;
first force means operable for exerting force on said finger end, on said heated character and on said transferable material to transfer said transferable material from said foil tape to the workpiece and to deboss said transferable material representative of said character onto the workpiece on said platen;
second force means operable for exerting high force on said debossment die and said transferable material to simultaneously transfer said transferable material from said foil tape to the workpiece and to deboss said transferable material representative of indicia on said debossment die into the workpiece; and
a keyboard and control unit for controlling debossment of a

line of individual character debossments across the workpiece; for controlling relative movement of the workpiece and said assembly line-by-line; for controlling movement of said character wheel with respect to said first force means; and for controlling movement of said first and second force means interchangeably to deboss said transferable material from said tape.

5,441,590

METHOD FOR THE PREPARATION OF PREPREG OF THERMOPLASTIC COMPOSITE RESIN

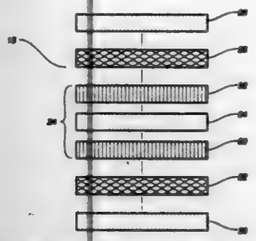
Dae W. Ihm; Soon S. Kim, both of Seoul; Hee S. Ihm; Iee K. Kim, both of Kyunggi-do, and Seon H. Cho, Seoul, all of Rep. of Korea, assignors to Cheil Synthetics Incorporation, Kyongsangbuk-do, Rep. of Korea

Filed May 12, 1994, Ser. No. 241,568

Claims priority, application Rep. of Korea, Dec. 10, 1993, 93-27249

Int. Cl.[6] B32B *17/10*

U.S. Cl. 156—148 **5 Claims**



1. A method for the preparation of prepreg of thermoplastic composite resin, comprising the steps of:

laminating a first, non-oriented glass fibrous mat on a base layer of a first polypropylene film, said first non-oriented glass fibrous mat experiencing needle punching;

forming a complex layer on the first non-oriented glass fibrous mat atop the base layer, said complex layer comprising a plurality of yarns which are unidirectionally oriented on the both sides of a second polypropylene film by winding them around the film with the tensile strength of the yarns uniform;

overlying a second, non-oriented glass fibrous mat on the complex layer of the unidirectionally oriented glass fibrous yarn/polypropylene film/unidirectionally oriented glass fibrous yarn, said second non-oriented glass fibrous mat being needle-punched;

covering a top layer of a third polypropylene film over the second, non-oriented glass fibrous mat, to form a laminate; and

pressing the laminate at high temperatures under high pressures.

5,441,591

SILICON TO SAPPHIRE BOND

George P. Imthurn, and Howard Walker, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 7, 1993, Ser. No. 74,515

Int. Cl.[6] H01L *21/304*

U.S. Cl. 156—153 **14 Claims**

1. A method for bonding silicon to sapphire without the addition of heat and comprising the steps of:

directly polishing one side of a sapphire wafer to a mirror surface;

directly polishing one side of a silicon wafer to a mirror surface;

cleaning said wafers; and

stacking said wafers so that said mirror surfaces make contact directly without oxide therebetween and without any pressure greater than that due to one wafer resting on another whereby a bond between said silicon wafer and said sapphire wafer is formed.

5,441,592

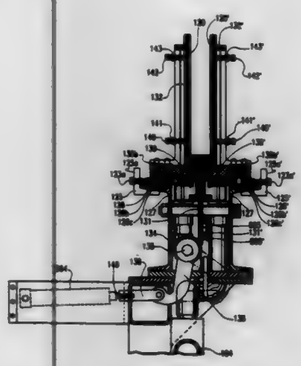
APPARATUS FOR FABRICATING HONEYCOMB INSULATING MATERIAL

Kay L. Ruggles; Bryan K. Ruggles, both of Salt Lake City; Cary L. Ruggles, Mendon; Kerry Strauss, Provo, and Dennis Buehner, Salt Lake City, all of Utah, assignors to Newell Operating Company, Freeport, Ill.

Continuation-in-part of Ser. No. 773,843, Oct. 7, 1991, Pat. No. 5,308,435. This application Apr. 17, 1992, Ser. No. 870,574

Int. Cl.[6] B32B *35/00*; B65G *57/30*

U.S. Cl. 156—563 **3 Claims**



1. In an apparatus for stacking flexible strips forming a flat expandable tube when secured to a similar adjacent strip and stacked with other strips similarly secured together to form an expandable honeycomb panel, said stacking apparatus including an inlet station for receiving said strips at spaced time intervals; a stacking chamber elevated above an inlet station, said stacking chamber having a bottom floor for supporting said strips to be stacked above it and said floor providing a longitudinally extending strip pass-through opening overlying said inlet station; pusher means mounted for movement from a lowered position beneath said inlet station to a raised position for pushing a strip delivered to said inlet station through said opening into said stacking chamber so as to elevate the strip above the floor thereof and to push it against the strip previously delivered to said chamber to effect adherence of the strips; the bottom portion of said stacking chamber above the floor thereof being formed by a first pair of spaced confronting wall surfaces which are parallel vertical surfaces spaced apart a distance slightly greater than the width of the strips to be fed into said chamber so that said strips closely fit between said spaced confronting surfaces without jamming therein, the improvement wherein said stacking chamber immediately above said first pair of spaced confronting wall surfaces is defined by a second pair of spaced confronting wall surfaces merging with said confronting first pair of wall surfaces in the bottom portion of the stacking chamber and diverging upwardly therefrom relative to each other from the points of merger therewith so that the chamber width gradually increases from the top of said parallel vertical surfaces.

5,441,593

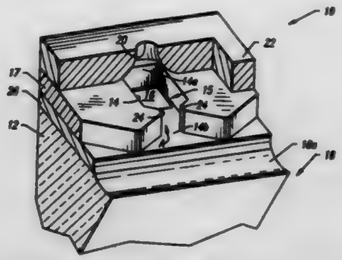
FABRICATION OF INK FILL SLOTS IN THERMAL INK-JET PRINTHEADS UTILIZING CHEMICAL MICROMACHINING

Kit C. Baughman; Jeffrey A. Kahn, both of Corvallis; Paul H. McClelland, Monmouth; Kenneth E. Trueba, and Ellen R. Tappon, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Continuation of Ser. No. 9,151, Jan. 25, 1993, Pat. No. 5,387,314. This application Oct. 14, 1994, Ser. No. 323,185

Int. Cl.[6] G01D *15/00*; B44C *1/22*

U.S. Cl. 216—27 **7 Claims**



1. A method for fabricating ink fill slots in thermal ink jet printheads, comprising the steps of:

(a) providing a crystalline substrate having two opposed, substantially parallel major surfaces, defining a primary surface and a secondary surface;

(b) forming an insulating dielectric layer on both said surfaces;

(c) patterning said insulating dielectric layer on said secondary surface to expose underlying portions of said crystalline substrate;

(d) etching part way through said crystalline substrate with an anisotropic etchant at said exposed portions to thereby form a portion of said ink fill slot;

(e) forming and defining thin film resistor elements and conductive traces on said insulating dielectric layer on said primary surface; and

(f) etching from said primary surface to connect with said portion of said ink fill slot to thereby completely form said ink fill slot.

5,441,594

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

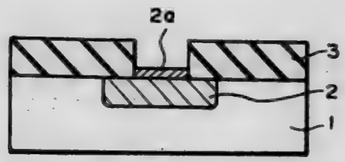
Masanobu Zenke, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 24, 1993, Ser. No. 22,722

Claims priority, application Japan, Feb. 28, 1992, 4-044119

Int. Cl.[6] H01L *21/306*; B44C *1/22*; C23F *1/00*; C03C *15/00*

U.S. Cl. 156—643.1 **10 Claims**



1. A method of manufacturing semiconductor devices comprising the steps of:

forming an insulating film on a surface of an electric conductor lying on a semiconductor substrate;

removing a part of the insulating film by etching to expose a part of a surface of the electric conductor;

removing by chlorine trifluoride gas both a naturally oxidized film and a surface layer of the exposed part of the electric conductor, the surface layer including possible damage and contaminated substances caused by said etching, said contaminated substances comprising heavy metals and hydrocarbon polymers; and

forming a film connected to the electric conductor on at least the exposed part of the surface thereof.

5,441,595

DRY ETCHING APPARATUS AND METHOD OF FORMING A VIA HOLE IN AN INTERLAYER INSULATOR USING SAME

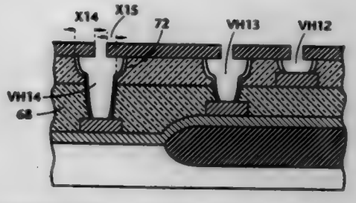
Yasushi Yamagata, and Fumihide Sato, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Division of Ser. No. 61,440, May 14, 1993, Pat. No. 5,362,358. This application May 5, 1994, Ser. No. 238,370

Claims priority, application Japan, May 14, 1992, 4-121509

Int. Cl.[6] B44C *1/22*

U.S. Cl. 156—643.1 **6 Claims**



1. A method of forming a via hole in an interlayer insulator on a semiconductor wafer, said via hole being used to interconnect aluminum lines located at opposite ends of said via hole, said method comprising the steps of:

(a) forming a semiconductor device having a plurality of said aluminum lines formed at different depths in said device, said depths being relative to an upper surface of said semiconductor device;

(b) forming said via holes at different locations on said upper surface of said semiconductor and over individually associated ones of said aluminum lines, each of said holes penetrating said semiconductor device to a depth corresponding to the depth of said individually associated aluminum lines;

(c) implementing isotropical etching (Di) said interlayer insulator by using etching gas including Ar and F; and

(d) implementing anisotropical etching (Da) said interlayer insulator by using said etching gas, said isotropical and anisotropical etching being cyclically executed.

5,441,596

METHOD FOR FORMING A STABLE PLASMA

James E. Nulty, San Jose, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Jul. 27, 1994, Ser. No. 281,438

Int. Cl.[6] H05H *1/00*

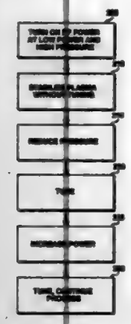
U.S. Cl. 156—643.1 **36 Claims**

1. A method of forming a plasma comprising the steps of:

introducing a gas into a chamber at a first pressure;

applying a radio frequency power between two electrodes in said chamber at a first power level to form a plasma;

tuning said radio frequency power at said first power level; and,



increasing said radio frequency power to a second power level greater than said first power level.

5,441,597

MICROSTRUCTURE GAS VALVE CONTROL FORMING METHOD

Ulrich Bonne, Hopkins, and Thomas R. Ohnstein, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 955,377, Dec. 1, 1992, Pat. No. 5,323,999. This application Apr. 21, 1994, Ser. No. 230,996

Int. Cl.[6] H01L *21/306*; **B44C** *1/22*; **C23F** *1/00*

U.S. Cl. 216—2 **3 Claims**



1. A process for forming a microminiature valve, including the steps of:

forming an orifice through a semiconductor substrate having a planar and lateral substrate surface;

depositing a first dielectric thin film layer on a portion of the substrate surface surrounding the orifice to form a mesa;

depositing a second dielectric thin film layer over the mesa and onto a portion of the substrate surface surrounding the mesa;

depositing a first electrically conductive thin film onto the second dielectric layer to form a first electrode;

depositing a third dielectric layer over the first electrode and onto portions of the second dielectric layer around the first electrode, to substantially encapsulate the first electrode;

forming an opening through the first, second and third dielectric thin film layers at the orifice;

forming a thin film sacrificial layer of a sacrificial material over a portion of the third dielectric thin film layer in a region surrounding the orifice;

depositing a fourth dielectric thin film layer over the sacrificial layer and over a portion of the third dielectric thin film layer surrounding the sacrificial layer, said portion of the third dielectric thin film layer being laterally offset from and surrounding said first dielectric layer;

depositing a second electrically conductive thin film on the fourth dielectric thin film layer to form a second electrode;

depositing a fifth dielectric layer over the second electrode and on a portion of the fourth dielectric thin film layer around the second electrode, to substantially encapsulate the second electrode, thus to complete the formation of an intermediate semiconductor product including the substrate, dielectric layers, sacrificial layer and electrodes;

heating the semiconductor product to a temperature of about 700 degrees C. to anneal the semiconductor product, thereby to create a residual tensile stress in the fourth and fifth dielectric thin film layers; and

removing the sacrificial material by etching, to form a gap between the third dielectric thin film layer and the fourth dielectric thin film layer.

5,441,598

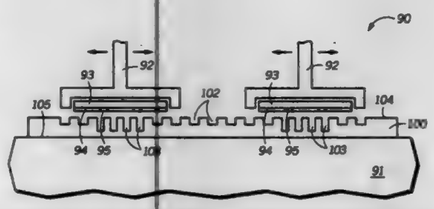
POLISHING PAD FOR CHEMICAL-MECHANICAL POLISHING OF A SEMICONDUCTOR SUBSTRATE

Tat-Kwan Yu, and Chris C. Yu, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1993, Ser. No. 167,008

Int. Cl.[6] H01L *21/461*

U.S. Cl. 156—645.1 **19 Claims**



1. A process for polishing a semiconductor substrate having a primary surface and a first layer adjacent to the primary surface, wherein the process comprises the steps of:

placing the semiconductor substrate within a polisher including a polishing pad attached to a platen, wherein:

the first layer is adjacent to the polishing pad;

the polishing pad has a polishing side for polishing the semiconductor substrate;

the polishing side has a plurality of features each having a height; and

a standard deviation of the heights is less than 20 microns; and polishing the first layer to remove at least a portion of the first layer.

5,441,599

LIGHTLY DOPED DRAIN ETCH METHOD FOR SEMICONDUCTOR MANUFACTURE

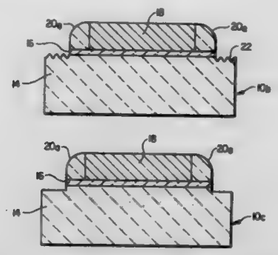
Karen Reinhardt, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Jan. 30, 1992, Ser. No. 828,013

Int. Cl.[6] H01L *21/306*

U.S. Cl. 156—646.1 **5 Claims**

1. A method of manufacturing a semiconductor device from a workpiece formed in part of a silicon substrate base, comprising an etch procedure of etching, in a manner and under conditions which limit the extent of damaged portions to the silicon substrate base, said etch procedure being performed using a gas composition essentially devoid of a noble gas, resulting, at least in part, in a first-etch-step semiconductor device characterized by bevelled ridges of a spacer oxide layer linearly abutting a poly gate strip lying atop a gate oxide layer which tops the silicon substrate base only where sandwiched between the poly gate strip and the silicon substrate base, wherein said etch procedure of etching said workpiece is performed at an initial power of less than about 325 Watts for a time period to sufficiently form bevelled ridges of spacer oxide layer and to sufficiently remove gate oxide layer, then at a power of less than about 165 Watts for about 5 to 15 seconds, then at a power of less than about 85 Watts for about 5 to 15 seconds, and finally



at a power of less than about 45 Watts for about 5 to 15 seconds.

5,441,600

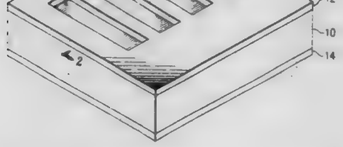
METHODS FOR ANISOTROPIC ETCHING OF (100) SILICON

Jan G. Smits, Quincy, Mass., assignor to Boston University, Boston, Mass.

Filed Jul. 9, 1993, Ser. No. 89,241

Int. Cl.[6] H01L *21/308*

U.S. Cl. 216—51 **4 Claims**



1. A method for forming a structure in a substrate, comprising the steps of:

providing a crystalline substrate having (100) crystal orientation and a substantially planar outer surface:

forming a wall in the substrate at an angle to the outer surface of greater than $\cos^{-1}(1/\sqrt{3}ee)$ degrees by etching with an alkali hydroxide

wherein said step of forming a wall comprises the step of forming a wall in the (100) plane perpendicular to the outer surface; and

forming a mask, which has edges aligned with the (100) crystal orientation, disposed outwardly from the outer surface and covering portions of the outer surfaces; and

etching the substrate not covered by the mask;

wherein said step of etching comprises the step of etching the substrate at a temperature of about 25 degrees centigrade and subsequently etching the substrate at a temperature of about 50 degrees centigrade.

5,441,601

RECYCLING OF XEROGRAPHIC WASTE PAPER USING ORGANIC PARTICULATES

David R. Cosper, Downers Grove, and Karen R. Tubergen, Mt. Prospect, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 87,172, Jul. 2, 1993, Pat. No. 5,405,495. This application Aug. 8, 1994, Ser. No. 286,235

The portion of the term of this patent subsequent to Apr. 11, 2012, has been disclaimed.

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **17 Claims**



1. A method for deinking of repulped xerographic paper comprising:

adding an organic polymeric particulate and a substantially water insoluble agglomerating agent selected from the group consisting of diisobutyl succinate, diisobutyl glutarate, diisobutyl adipate, trans-methyl cinnamate and combinations thereof to a repulped aqueous slurry containing xerographic toner particles in an amount sufficient to at least partially agglomerate the xerographic toner particles within the slurry to larger particle sizes; and

removing the xerographic toner particles from the slurry by one or more liquid/solid separation techniques.

5,441,602

PROCESS FOR THE PREVENTION OF SCALE FORMATION IN WOOD PULP PRODUCTION

Arthur Harris; John Burrows, both of Cheshire, and David Wilson, Manchester, all of England, assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 448,785, Dec. 11, 1989, abandoned. This application Aug. 18, 1993, Ser. No. 108,844

Claims priority, application United Kingdom, Dec. 21, 1988, 8829629

Int. Cl.[6] D21C *3/20*

U.S. Cl. 162—48 **23 Claims**

1. An improved process for inhibiting the formation of calcium carbonate scale in wood pulp production wherein the improvement comprises.

adding to a white liquor used to extract lignin from wood 1–100 ppm of a hydrolysed copolymer of (A) maleic anhydride with (B) at least one mono-ethylenically unsaturated monomer other than acrylic acid or methacrylic acid, or with a mixture of (B) and (C) acrylic acid or methacrylic acid.

5,441,603

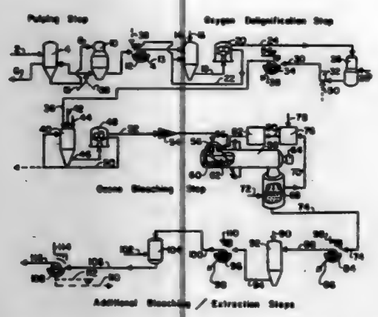
METHOD FOR CHELATION OF PULP PRIOR TO OZONE DELIGNIFICATION

Bruce F. Griggs, Columbia, S.C.; Thomas P. Gandek, Trenton, N.J.; Michael A. Pikulin, Bound Brook, N.J., and Allen Rosen, Lawrenceville, N.J., assignors to Union Camp Patent Holding, Inc., Princeton, N.J.

Continuation of Ser. No. 895,481, Jun. 2, 1992, which is a continuation of Ser. No. 525,808, May 2, 1990, abandoned. This application Jul. 27, 1993, Ser. No. 97,699

Int. Cl.[6] D21C *9/153*

U.S. Cl. 162—57 **22 Claims**



1. A process for the manufacture of a bleached pulp having a certain GE brightness and a certain strength as indicated by a certain viscosity which comprises:

chemically digesting a lignocellulosic material to initially form a pulp;

oxygen delignifying the pulp to remove a substantial portion of the lignin therefrom, with the combination of the digesting and oxygen delignifying steps being conducted to form an intermediate pulp having a specified amount of lignin and a specified viscosity;

treating the pulp at a pH of about 1 to 4 with a chelating agent to complex metal ions in the pulp and render such ions substantially non-reactive to ozone; and

bleaching the treated pulp with a gaseous mixture that contains ozone by adjusting the consistency of the pulp to a high consistency of above about 28%, adjusting the pH of the pulp to below about 9, and treating the pulp with an amount of the ozone containing gaseous mixture sufficient to remove a substantial portion, but not all, of the lignin of the pulp by intimately contacting and turbulently mixing the pulp particles with the gaseous mixture in a dynamic reaction zone by introducing the high consistency pulp into the reaction zone to fill the zone to at least about 10% by volume, dispersing the pulp substantially completely throughout the reaction zone while simultaneously conveying the pulp therethrough in a plug flow-like manner at a dispersion index of about 7 or less thus exposing substantially all of the pulp to the ozone for reaction therewith for a sufficient time and at a temperature sufficient to allow access of the ozone to substantially all of the pulp for reaction therewith while the pulp advances through substantially all of the reaction zone, thus obtaining substantially uniform delignification of a significant portion of the pulp and forming a delignified pulp having a reduced amount of lignin and a certain strength, viscosity and GE brightness;

wherein the specified amount of lignin of the intermediate pulp is such that, after ozone delignification, the delignified pulp attains the certain GE brightness, and wherein the specified viscosity of the intermediate pulp is sufficiently high to permit the delignified pulp, after ozone delignification, to attain the certain strength as evidenced by the certain viscosity.

5,441,604

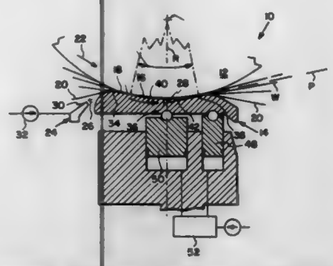
EXTENDED NIP PRESS APPARATUS

Brian G. Sandberg, Janesville, Wis.; David A. Brandt, Rockton, Ill.; Dale A. Brown, Milton, Wis.; Robert E. Collins, Rockton, Ill.; David V. Lange, Beloit, Wis.; Bruce L. Lindstrand, Roscoe, and Michael A. Radtke, South Beloit, both of Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Feb. 17, 1994, Ser. No. 198,803

Int. Cl.[6] D21F *3/02*

U.S. Cl. 162—205 **13 Claims**



13. A method of pressing water from a web in an extended nip press, said method including the steps of:

applying lubricant from a lubricant supply disposed upstream relative to a concave surface defined by a hydrodynamic shoe, the lubricant being supplied to an upstream end of the shoe between the shoe and a bearing blanket such that only the lubricant flows into a pocket encompassed by the concave surface of the shoe, the blanket and concave surface cooperating together to seal the pocket;

the concave surface cooperating with a backing roll for defining therebetween an extended nip, the arrangement being such that in the event of a wad of the web entering the extended nip, the wad is yieldingly received within the pocket so that damage to the blanket by the wad is minimized.

5,441,605

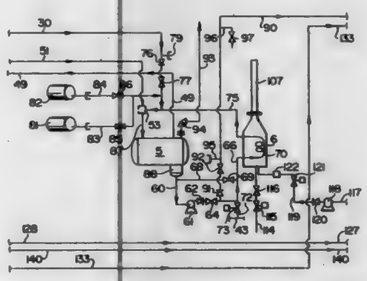
APPARATUS FOR RECLAIMING WASTE GAS TREATING CHEMICAL

Todd Beasley, Brooks, and Dwight A. Merritt, Calgary, both of Canada, assignors to Canadian Chemical Reclaiming Ltd., Brooks, Canada

Division of Ser. No. 928,365, Aug. 12, 1992, Pat. No. 5,389,208, which is a continuation-in-part of Ser. No. 835,076, Feb. 18, 1992, Pat. No. 5,152,877, which is a continuation of Ser. No. 433,159, Sep. 13, 1990, abandoned. This application Oct. 19, 1994, Ser. No. 325,504

Int. Cl.[6] B01D *3/02, 3/10*

U.S. Cl. 202—176 **8 Claims**



1. Apparatus for concentrating or reclaiming a waste aqueous solution of a chemical having a decomposition temperature, said apparatus comprising:

a still for subjecting said solution, heated to a temperature below said decomposition temperature, to a high vacuum of at least 16 inches of mercury in order to produce a vapor and a liquid residue;

vacuum generating means communicating with said still to generate said high vacuum in said still;

a heater for heating a portion of said liquid residue received from said still, said heater comprising an internal space, at least one burner for producing combustion gases which pass through said internal space, and tube means for conveying said portion of said liquid residue in a single pass through said internal space in a direction generally co-current to said combustion gases;

pump means for moving said portion of said liquid residue from said still through said tube means at a velocity high enough to prevent a film of said liquid residue immediately adjacent to inner surfaces of said tube means from being heated to a temperature exceeding said decomposition temperature;

mixer means for thoroughly mixing said portion of said liquid residue from said heater with a feed of said waste aqueous solution of said chemical to effect heating of said feed solution;

cooler means for condensing vapor from said still to produce a liquid condensate; and

a plurality of pipe means for conveying said feed of said waste aqueous solution of said chemical to said mixer means, heated liquid residue from said heater to said mixer means, liquid from said mixer means to said still said portion of said liquid residue from said still to said pump means and from said pump means to said tube means of said heater, and vapor from said still to said cooler means.

5,441,606

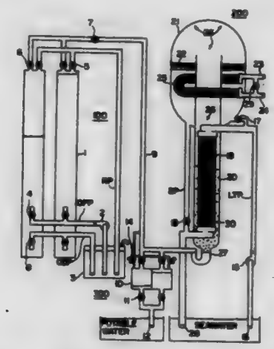
LIQUID PURIFYING AND VACUUM DISTILLATION PROCESS

Barry Schlesinger, and Harold Rapp, both of Marina Del Rey, Calif., assignors to FSR Patented Technologies, Ltd., Las Vegas, Nev.

Continuation-in-part of Ser. No. 855,979, Mar. 23, 1992, Pat. No. 5,248,394. This application Jul. 19, 1992, Ser. No. 913,694

Int. Cl.[6] B01D *3/10, 3/42*

U.S. Cl. 203—39 **12 Claims**



1. A method for distilling and purifying a fluid comprised of:

bringing the fluid to be distilled and purified into a vacuum pressured distillation and purifying system;

subjecting said fluid to heat and vacuum pressure by means of heating means and vacuum means to cause said fluid to separate into vapor and non vaporized matter;

removing said non vaporized matter from said distillation and purifying system;

passing said vapor over heat exchange coils to cause said vapor to condense into distillate;

collecting said distillate through a trap into a collection means;

such that when said trap fills with said distillate, the vacuum requirement of said system diminishes, said vacuum means generating a vacuum pressure that is controlled such that the latent heat of vaporization point under vacuum pressure corresponds to a temperature greater than the temperature of said distillate in said trap so that said distillate in said trap remains in a condensed state and does not vaporize, said vacuum being effectively applied only to said distillate in said trap once said trap is filled with said fluid, activating said heating means only after the vacuum level in said system corresponds to a latent heat of vaporization point which represents a set relationship with respect to the temperature of the fluid to be distilled and purified.

5,441,607

RECOVERY OF CAPROLACTAM FROM DISTILLATION RESIDUES OBTAINED IN THE PURIFICATION OF CAPROLACTAM

Hugo Fuchs; Josef Ritz, both of Ludwigshafen; Hans J. Wilfinger, Schifferstadt, and David Weatherford, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 27, 1994, Ser. No. 265,740

Claims priority, application Germany, Jul. 9, 1993, 43 22 953.0

Int. Cl.[6] B01D *3/34;* **C07D** *201/16*

U.S. Cl. 203—49 **6 Claims**

1. A process for recovering caprolactam and an alkali metal carbonate from distillation residues which are obtained in the purification of caprolactam and contain caprolactam and oligomers of caprolactam and also alkali metal hydroxides, which comprises

(a) melting the distillation residues, the caprolactam and obligomers of caprolactam and alkali metal hydroxides,

(b) continuously removing caprolactam from the melt,

(c) cooling the melt to obtain a residue,

(d) dissolving the residue in water and

(e) subjecting the aqueous solution thus obtained to combustion with the formation of an alkali metal carbonate.

5,441,608

SEPARATION OF XYLENES BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

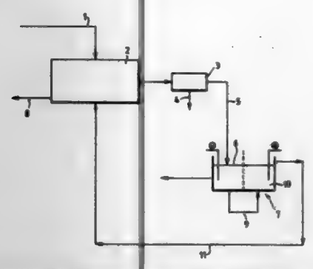
Filed May 23, 1994, Ser. No. 247,898

Int. Cl.[6] B01D *3/40;* **C07C** *7/08*

U.S. Cl. 203—51 **4 Claims**

1. A method for recovering p-xylene from a mixture of p-xylene and m-xylene which comprises distilling a mixture of p-xylene and m-xylene in the presence of from one to ten parts by weight of an extractive agent per part of p-xylene - m-xylene mixture, recovering the p-xylene as overhead product and obtaining the m-xylene and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of o-cresol, 3-ethyl phenol, and 2,4-dimethyl phenol.

5,441,609
PROCESS FOR CONTINUOUS ELECTROCHEMICAL LEAD REFINING
Marco Olper, Monza, Italy, assignor to B.U.S. Engitec Servizi Ambientali S.R.L., Milan, Italy
Filed Aug. 12, 1993, Ser. No. 105,062
Int. Cl.[6] C25B *1/24*; C25C *1/18*
U.S. Cl. 204—94 15 Claims

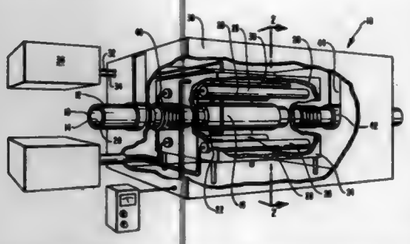


1. A process for electrochemical lead refining, comprising the following steps:
(a) leaching lead with a solution of ferric fluoroborate in fluoroboric acid and without any preliminary treatment, to cause the lead to be dissolved according to the following reaction:

$$2Fe(BF_4)_3 + Pb \rightarrow Pb(BF_4)_2 + 2Fe(BF_4)_2$$

(b) filtering the resulting solution;
(c) feeding the filtered solution to an electrolytic cell having a diaphragm, in which lead is deposited in pure form at the cathode and ferrous ions are oxidized to ferric ions at the anode, to generate a solution of ferric fluoroborate; and
(d) recycling said ferric fluoroborate solution to said step (a), to leach more lead.

5,441,610
OXYGEN SUPPLY AND REMOVAL METHOD AND APPARATUS
Gary M. Renlund, 2094 E. Worchester Dr., Salt Lake City, Utah 84121; Mustafa A. Syammach, 1156 E. Browning Ave., Salt Lake City, Utah 84105, and Richard R. Mackerell, 8150 S. Stonehill La., Salt Lake City, Utah 84121
Continuation-in-part of Ser. No. 843,463, Feb. 28, 1992, Pat. No. 5,302,258, and a continuation-in-part of Ser. No. 112,595, Aug. 26, 1993, Pat. No. 5,385,874. This application Apr. 12, 1994, Ser. No. 226,769
Int. Cl.[6] C25B *1/02, 9/00, 15/02*
U.S. Cl. 204—129 45 Claims

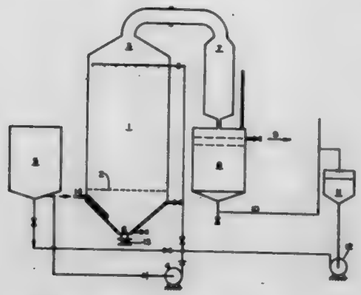


44. A method of removing oxides from objects comprising the steps of:
(a) placing an object containing surface oxides in a gas-tight compartment in gaseous communication with an oxygen removal device, said oxygen removal device comprising:
a solid electrolyte having an oxygen input side and an oxygen output side, said oxygen input side being in gaseous communication with the gas-tight compartment, said solid electrolyte comprising a ceramic oxide, a first dopant incorporated within said ceramic oxide, a second dopant incorporated within said ceramic oxide;
a first metallic coating applied to the oxygen input side of the electrolyte; and
a second metallic coating applied to the oxygen output side of the electrolyte;
(b) creating an electrical potential between the oxygen input side and the oxygen output side of the electrolyte sufficient to cause oxygen within the gas-tight compartment to pass from the oxygen input side of the electrolyte to the oxygen output side of the electrolyte; and
(c) controlling the electrical potential between the oxygen input and oxygen output sides of the electrolyte to prevent damaging the electrolyte.

5,441,611
METHOD FOR DETERMINING AND CONTROLLING THE CONCENTRATION OF ACTIVE SUBSTANCES INCLUDED FOR CLEANING AND DISINFECTION IN AQUEOUS CLEANING AND DISINFECTING SOLUTIONS
Alfred Laufenberg, Leobendorf, Austria; Mike Varpins, Viersen, Germany; Alfred Werner-Busse, Duesseldorf, Germany, and Friedhelm Siepmann, Essen, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
PCT No. PCT/EP92/01846, § 371 Date Apr. 22, 1994, § 102(e) Date Apr. 22, 1994, PCT Pub. No. WO93/04361, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 13, 1992, Ser. No. 196,149
Claims priority, application Germany, Aug. 22, 1991, 41 27 663.9
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—153.13 20 Claims

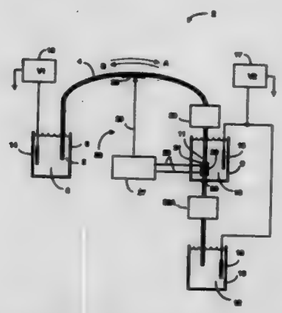
1. A method for determining the concentration of an iodine or iodide-containing active substance in aqueous active-substance solutions which are used for the cleaning and disinfection of containers, bottles, casks, kegs, boxes and tanks, pipes in a food-processing industry and for industrial cleaning in continuous washing installations, comprising measuring the concentration of the active substance in the solutions by determination of their iodine or iodide content, wherein the concentration of iodine ions in the solutions is measured potentiometrically by electrodes which respond selectively to iodine ions and the concentration of the active substance is determined from the measurements obtained, the iodine or iodide concentration in the solutions being between 0.1 and 1,000 ppm.

5,441,612
RADIATION-ENHANCED RECOVERY OF MALTOL
Alexander Fleisher, Wayne; Ian Gorenstein, Edgewater; Olga Vselyubskaya, Leonia, and Ilya Nakhimovich, Bloomfield, all of N.J., assignors to Florasynth, Inc., Teterboro, N.J.
Filed Jun. 30, 1994, Ser. No. 268,649
Int. Cl.[6] C07C *7/00*
U.S. Cl. 204—157.15 16 Claims



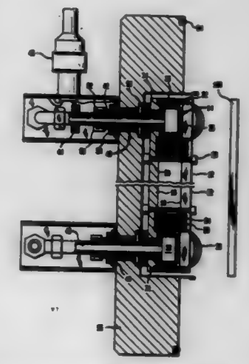
1. A process for recovering maltol from source material containing maltol, comprising:
(a) irradiating said source material with gamma irradiation; and
(b) extracting maltol from said irradiated source material.

5,441,613
METHODS AND APPARATUS FOR REAL-TIME MONITORING, MEASUREMENT AND CONTROL OF ELECTROOSMOTIC FLOW
Randy M. McCormick, Santa Clara, and Roy D. Rocklin, Sunnyvale, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.
Filed Dec. 3, 1993, Ser. No. 161,942
Int. Cl.[6] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 29 Claims



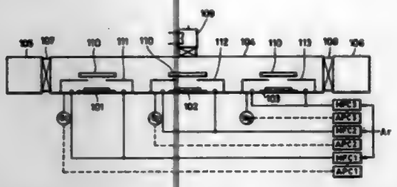
1. A real-time method for determining electroosmotic flow rate during separation by capillary electrophoresis, the method comprising the following steps:
(a) applying an electric field between inlet and outlet ends of a separation capillary containing a source electrolyte solution, said field inducing an electroosmotic plug-like flow of said electrolyte through said separation capillary;
(b) series-coupling an electrically-conductive junction to said outlet end of said separation capillary such that by at least a downstream region of said electrically-conductive junction essentially zero axial incremental voltage from said electric field remains and said plug-like flow is converted to parabolic flow;
wherein electrolyte entering said electrically-conductive junction is subject to electroosmotic forces and to electrical forces, but electrolyte downstream from said downstream region of said electrically-conductive junction flows passively due to said electroosmotic forces; and
(c) coupling flow detection means for detecting at least one parameter associated with flow of said electrolyte through said electrically-conductive junction;
wherein said flow detection means provides a real-time measure of electroosmotic flow through said separation capillary.

5,441,614
METHOD AND APPARATUS FOR PLANAR MAGNETRON SPUTTERING
Dennis L. Krause, Atkinson, and David C. Wojewoda, Londonderry, both of N.H., assignors to AT&T Corp., Murray Hill, N.J.
Filed Nov. 30, 1994, Ser. No. 346,810
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 20 Claims



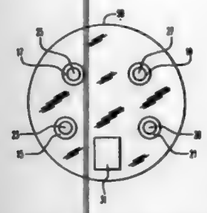
17. A method of sputtering material onto a substrate in a sputtering chamber, which comprises the steps of:
disposing a target of the sputtering material in the sputtering chamber such that first and second pole pieces are positioned within first and second grooves in a first surface of the target, the first surface of the target facing a first surface of a cooling block and first and second magnets, the first and second magnets producing a magnetic flux;
bringing the first surface of the target into abutment with the cooling block such that the first and second magnets are in contact with the first and second pole pieces, the first and second pole pieces conducting the magnetic flux to a second opposite surface of the target;
bringing a plate into contact with a second surface of the cooling block and the first and second magnets;
disposing the substrate in the sputtering chamber in opposed relationship to the second surface of the target to define a sputtering area within the sputtering chamber between the substrate and the second surface of the target; and
sputtering material from the second surface of the target across the sputtering area in the sputtering chamber such that the sputtering material is deposited on the substrate.

5,441,615
SPUTTERING APPARATUS AND METHOD
Yasuo Mukai, Yokohama, and Hideo Takakura, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 970,783, Nov. 3, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 350,591
Claims priority, application Japan, Nov. 11, 1991, 3-29503
Int. Cl.[6] C23C *14/34, 14/56*
U.S. Cl. 204—192.12 **8 Claims**



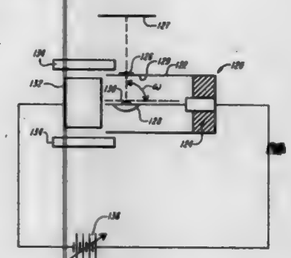
8. A sputtering method for forming a deposition-film on a substrate by using a sputtering apparatus in which a plurality of deposition-shield members surround corresponding targets, each shield having an opening enabling sputtered particles to be emitted from the respective target onto the substrate in the film-forming vacuum chamber connected to at least one vacuum means, wherein the pressure in each sputtering space formed by the corresponding deposition-shield member and the substrate is stabilized by changing the amount of gas flow from a corresponding mass flow controller in accordance with information provided by an automatic pressure controller so as to form a uniform deposited film on said substrate in each said sputtering space.

5,441,616
INTEGRATED CIRCUIT FABRICATION METHOD
Arun K. Nanda, Bethlehem; Mark J. Sundahl, Emmaus, and Edward J. Vajda, Allentown, all of Pa., assignors to AT&T Corp., Murray Hill, N.J.
Division of Ser. No. 991,806, Dec. 16, 1992, Pat. No. 5,312,780. This application Dec. 21, 1993, Ser. No. 171,123
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] C23C *14/34*; H01L *21/302*
U.S. Cl. 204—192.23 **3 Claims**



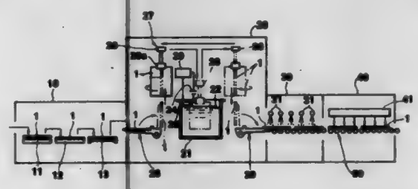
1. A method of integrated circuit fabrication comprising:
introducing a silicon semiconductor wafer into a multi-chamber machine;
forming a material layer overlying said wafer in a first chamber, said material being chosen from the group consisting of aluminum, spin-on glass, silicon dioxide;
moving said wafer to a second chamber maintained at a constant temperature;
allowing said wafer to come to thermal equilibrium in said second chamber;
moving said wafer to third chamber, said third chamber being maintained at the same said constant temperature as the said second chamber;
depositing an anti-reflective coating upon said layer of material by sputter deposition in said third chamber.

5,441,617
ANODIC ARC SOURCE CONTAINMENT MECHANISMS
Chung Chan, Newton, and Ryne C. Allen, West Roxbury, both of Mass., assignors to Northeastern University, Boston, Mass.
Continuation-in-part of Ser. No. 934,925, Aug. 25, 1992, Pat. No. 5,302,271. This application Apr. 11, 1994, Ser. No. 226,178
Int. Cl.[6] C23C *14/32*
U.S. Cl. 204—192.38 **16 Claims**



11. A method to recover anodic arc deposition coating material, comprising:
providing an anode assembly comprising anode source material;
providing an anode shield surrounding said anodic source material, said anode shield defining an aperture, said aperture aligned between said anodic source material and a substrate;
vaporizing said anode source material, a first portion of said vaporized anode source material flowing through said aperture and depositing on said substrate, a second portion of said vaporized anode source material depositing on the inner surface of said anode shield;
recovering said second portion of said vaporized anode source material; and
reprocessing said recovered second portion of said vaporized anode source material into said anode source material.

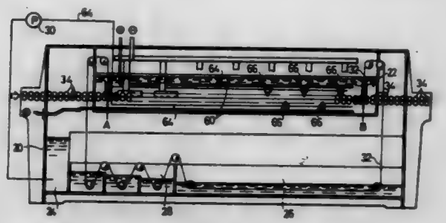
5,441,618
ANODIZING APPARATUS AND AN ANODIZING METHOD
Kunihiro Matsuda, Sagamihara, and Hisatoshi Mori, Hachioji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 2, 1993, Ser. No. 147,129
Claims priority, application Japan, Nov. 10, 1992, 4-323834; Nov. 10, 1992, 4-323835; Nov. 10, 1992, 4-323836; Nov. 10, 1992, 4-323837
Int. Cl.[6] C25D *11/02*
U.S. Cl. 204—203 **27 Claims**



1. An anodizing apparatus for oxidizing a conducting film on a substrate in an electrolyte by an anodization treatment, comprising:

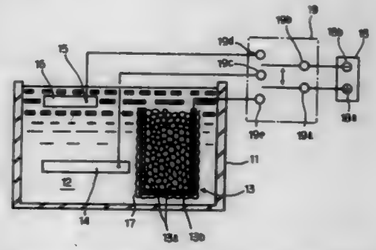
anodization treatment means including:
an electrolyte tank having an electrolyte therein, and wherein only one substrate at a time is dipped into said electrolyte; and
a single cathode arranged in the electrolyte so that a conducting film to be anodized on the only one substrate and the single cathode face each other with a predetermined distance therebetween, a formation voltage being applied between the single cathode and the conductive film of the only one substrate to form an anodized film on said conducting film of the only one substrate;
pretreatment means for pretreating a substrate, the substrate having the conducting film on a surface thereof, the pretreatment means being disposed in a stage preceding the anodization treatment means;
post-treatment means for post-treating the substrate, the post-treated substrate carrying the conducting film with the anodized film thereon, the post-treatment means being disposed in a stage succeeding the anodization treatment means; and
substrate transportation means for serially transporting substrates, each substrate having the conducting film thereon, the substrates being transported one by one, from the pretreatment means to the post-treatment means via the anodization treatment means.

5,441,619
ELECTROPLATING APPARATUS
Norio Kawachi, Hiratsuka; Midori Ito, Tokyo; Toshiharu Naka, Abiko, and Hidenori Tsuji, Fujisawa, all of Japan, assignors to Ebara-Udylite Co., Ltd., Japan
Filed Dec. 6, 1993, Ser. No. 163,069
Claims priority, application Japan, Dec. 7, 1992, 4-351141; Nov. 26, 1993, 5-319237
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—206 **17 Claims**



1. An electroplating apparatus comprising:
an electroplating tank for receiving an electroplating solution, said electroplating tank defining a transfer passage
transfer means for transferring a substantially thin sheet to be electroplated along said transfer passage in said electroplating tank;
a plurality of insoluble anode plates arranged in a plurality of pairs in said electroplating tank so as to extend along said transfer passage;
in each said pair said insoluble anode plates being arranged so as to be spaced from each other at a predetermined interval with said transfer passage being interposed therebetween;
in each said pair said insoluble anode plates being arranged to be electrically independent from each other;
said insoluble anode plates in said pairs being juxtaposed to each other in a direction substantially perpendicular to said transfer passage
electricity feeding means for independently feeding electricity to said insoluble anode plates of each said pair, said electricity feeding means being adapted to feed electricity to a predetermined number of said pairs of the insoluble anode plates according to a size of said substantially thin sheet to be electroplated; and
an electrical connection means for electrically connecting the substantially thin sheet to said electricity feeding means;
whereby electroplating on the substantially thin sheet is carried out by feeding electricity to only the pairs of said insoluble anode plates contained in a plane of projection of the substantially thin sheet defined in a direction substantially perpendicular to a surface of the substantially thin sheet being transferred.

5,441,620
ELECTROPLATING APPARATUS
Seiya Nishimura; Yoshihisa Maejima, and Tokuyoshi Ohta, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan
Filed Feb. 7, 1994, Ser. No. 192,425
Claims priority, application Japan, Feb. 10, 1993, 5-023046
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—231 **9 Claims**



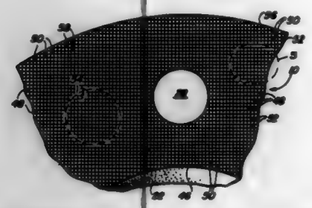
1. An electroplating apparatus used for electroplating a substance on a work, comprising:
a) an electrolysis vessel having an electrolyte receiving space which is adapted to contain an electrolyte;
b) a soluble conductive member containing said substance located in said electrolyte receiving space;
c) an insoluble conductive member spaced apart from said soluble conductive member in said electrolyte receiving space;
d) a cathode member retaining said work and located in said receiving space in spaced relation to said insoluble conductive member;
e) an electric power source having a positive electrode and a negative electrode; and
f) a switching unit having a first input port connected with said positive electrode, a second input port connected with said negative electrode, a first output port connected with said insoluble conductive member, a second output port connected with said cathode member and a third output port connected with said soluble conductive member, and shifted between a first position and a second position, said switching unit connecting said first and second input ports with said first and second output ports in said first position and with said third and second output ports.

5,441,621
ELECTROCHEMICAL CELL HAVING CROSSED-RIDGE SEALING SURFACE
Trent M. Molter, Enfield; David L. Faye, East Hartford, and Wilford J. Armstrong, Bolton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 22, 1993, Ser. No. 171,730
Int. Cl.[6] C25B *9/00, 13/02*
U.S. Cl. 204—252 **10 Claims**

5. A crossed-ridge sealing surface for restricting leakage of fluids in an electrochemical cell having sequentially an anode

electrode, an anode chamber, a solid polymer electrolyte, a cathode chamber, a cathode electrode, and at least one cell frame surrounding the electrodes and chambers to seal fluids within the chambers, comprising:

a. a sealing surface on a stacking side of one of the layers of the system that defines a plurality of through apertures passing through the sealing surface;



b. a first plurality of aligned ridges on the sealing surface; and,

c. a second plurality of aligned ridges on the sealing surface that crosses the first plurality of aligned ridges to define a plurality of sealing cells by the crossing of the first and second pluralities of aligned ridges, so that at least two sealing cells are defined between any two of the plurality of through apertures.

5,441,622

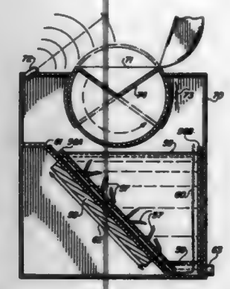
SHARPS DESTRUCTION APPARATUS

Terrence R. Langford, Tucson, Ariz., assignor to KEW Import-/Export, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 957,722, Oct. 6, 1992, Pat. No. 5,277,868. This application Apr. 14, 1993, Ser. No. 48,276

Int. Cl.[6] C25C *7/00*; A61L *2/00, 2/02*

U.S. Cl. 204—275 **44 Claims**



1. A sharps destruct apparatus comprising:

a) a chamber for receipt of said sharps;

b) an electrolytic solution contained in said chamber;

c) an anode positioned along an interior portion of a first wall of said chamber;

d) a cathode positioned along an interior portion of a second wall of said chamber;

e) a magnet positioned along an exterior portion of said first wall;

f) means for supplying electrical current between said anode and said cathode via said electrolytic solution such that said sharps are dissolved into said electrolytic solution;

g) an opening for receipt of said sharps;

h) means for withdrawing said sharps from a handle portion when said sharps are inserted through said opening;

i) means for depositing removed sharps in said chamber; and,

j) a means for discharging sludge containing said electrolytic solution and said dissolved sharps.

5,441,623

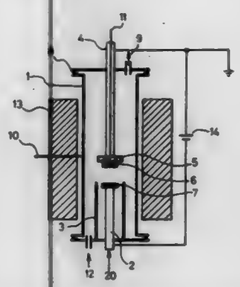
SPUTTERING APPARATUS FOR MAKING HIGH TEMPERATURE SUPERCONDUCTING OXIDE FILMS

Ran-Jin Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Jan. 3, 1994, Ser. No. 176,725

Int. Cl.[6] C23C *14/34*; H01L *39/24*

U.S. Cl. 204—298.09 **7 Claims**



1. An apparatus for the preparation of high temperature superconducting oxide films, comprising:

(a) a circular tube deposition chamber;

(b) an anode connected to a substrate holder at one end thereof in the deposition chamber;

(c) a cathode connected to a sputtering target at one end thereof in the deposition chamber;

(d) a cathode shield surrounding the cathode and the sputtering target; and

(e) a furnace surrounding the outside of the tubular deposition chamber to heat a substance mounted on the substrate holder in the deposition chamber.

5,441,624

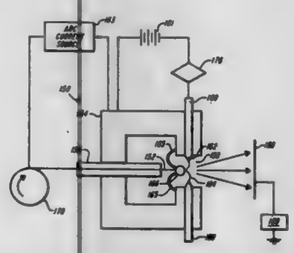
TRIGGERED VACUUM ANODIC ARC

Chung Chan, Newton; Ryne C. Allen, West Roxbury, and Zhong-Yi Xia, Brookline, all of Mass., assignors to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 934,925, Aug. 25, 1992, Pat. No. 5,302,271. This application Apr. 11, 1994, Ser. No. 225,844

Int. Cl.[6] C23C *14/32*

U.S. Cl. 204—298.41 **25 Claims**



1. A low current anodic vacuum arc assembly, comprising:

a cathode assembly comprising:

a high voltage cathode defining a cavity and an orifice extending through said high voltage cathode to said cavity; and

an initiator electrode positioned proximate said high voltage cathode and insulated from said high voltage cathode; and

an anode assembly comprising:

a continuous, consumable anode having a free end, said free end of said anode positioned within said cavity of said high voltage cathode in close juxtaposition with said initiator electrode and said orifice.

5,441,625

ELECTRODE ARRANGEMENT

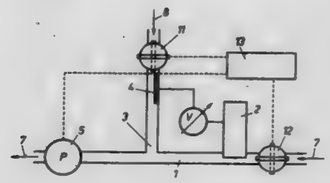
Christoph Ritter; Helmut Zach, both of Graz; Wolf-Dietrich Steinböck, Graz; Susanne Lang, Lannach, and Wolfgang Huber, Lieboch, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Jan. 26, 1994, Ser. No. 186,587

Claims priority, application Austria, Jan. 27, 1993, 139/93

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—409 **5 Claims**



1. An electrode arrangement comprising at least one potentiometric measuring electrode located in a sample channel and a reference electrode located in a branch line branching off from said sample channel with a diaphragmless entrance opening having a diameter greater than 0.2 mm, a single suction pump provided in said sample channel downstream of said diaphragmless entrance opening of said branch line into said sample channel to suck at least one of a liquid sample through said sample channel and a reference liquid through said branch line, wherein a valve is provided each in said branch line and said sample channel, and wherein said valves together with said suction pump are connected to a control unit, and wherein said reference electrode is configured as an ion-sensitive membrane electrode.

5,441,626

PARTIALLY PLATED RESIN PRODUCTS AND PARTIAL PLATING PROCESS THEREFOR

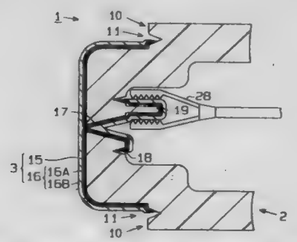
Ysauhiko Ogisu; Mamoru Kato; Shigeyuki Takahashi; Toshiya Uemura, and Toshikazu Funahashi, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 8, 1994, Ser. No. 225,066

Claims priority, application Japan, Apr. 9, 1993, 5-083603; Jul. 27, 1993, 5-185236; Jul. 27, 1993, 5-185238; Jul. 27, 1993, 5-185239; Sep. 17, 1993, 5-231834; Oct. 18, 1993, 5-260221; Dec. 20, 1993, 5-320298

Int. Cl.[6] C25D *5/02, 7/00*

U.S. Cl. 205—50 **18 Claims**



1. A resin product partially having a decorative plating, comprising:

a resin base material having a front surface and a rear surface, provided with to-be-plated portions and to-be-unplated portions on said front surface;

boundaries formed by groves on said base material so as to demarcate said to-be-plated portions from said to-be-unplated portions, said boundaries defining contour lines;

a decorative plating layer formed on said to-be-plated portions on said base material, said decorative plating layer having a chemical plating layer formed on said base material and an electroplating layer formed on said chemical plating layer;

wherein said resin product contains an opening which permits communication between the front surface of the base material and the rear surface thereof for electrically coupling said front and rear surfaces when said electroplating layer is formed and also contains a protrusion which protrudes from the rear surface of the base material and serves as a part of electrode when said electroplating layer is formed.

5,441,627

METAL FOIL MANUFACTURING METHOD AND AN ANODIZED FILM FORMING APPARATUS USED THEREFOR

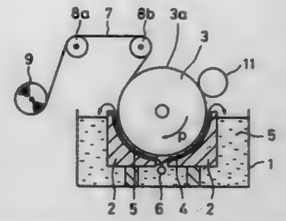
Hitoshi Kato, Utsunomiya; Toshio Horie, Tokyo, and Koichi Ashizawa, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd and Circuit Foil Japan Co., Ltd., both of Tokyo, Japan

Filed May 20, 1994, Ser. No. 247,144

Claims priority, application Japan, Jun. 2, 1993, 5-132017; Sep. 8, 1993, 5-222919; Dec. 6, 1993, 5-305345; Dec. 24, 1993, 5-327584

Int. Cl.[6] C25D *1/20*; C25C *7/08*

U.S. Cl. 205—77 **21 Claims**

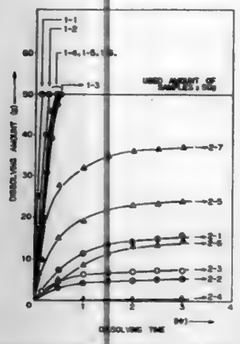


1. A metal foil manufacturing method comprising:

(A) immersing an anode and part of a drum-shaped cathode in an electrolytic solution containing metal ion, and supplying current between the anode and the drum-shaped cathode while rotating the drum-shaped cathode, thereby causing an electrolytic reaction; electrodepositing a metal on a surface of the drum-shaped cathode by means of the electrolytic reaction, thereby continuously forming a thin metal layer; and separating the thin metal layer from the surface of the drum-shaped cathode, thereby continuously recovering the thin metal layer as metal foil and leaving an exposed surface of the drum-shaped cathode;

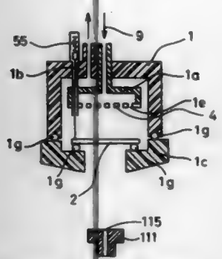
(B) subjecting the exposed surface of the drum-shaped cathode to electrolytic oxidation to form an anodized film thereon, without suspending the manufacture of the metal foil, by supplying an electrolytic agent from a supply means to a retaining means for retaining the electrolytic agent in contact with the exposed surface of the drum-shaped cathode, and an electrode and by setting operating potentials of the anode, the drum-shaped cathode and the electrode such that the operating potential of the drum-shaped cathode is lower than that of the anode and higher than that of the electrode.

5,441,628
METHOD FOR PREPARATION FOR A ZN-NI ELECTROPLATING OR HOT-DIP GALVANIZING BATH USING A ZN-NI ALLOY, AND METHOD FOR PRODUCING A ZN-NI ALLOY
Hiroshi Tasaki, and Eiji Nishimura, both of Saitama, Japan, assignors to Japan Energy Corporation, Tokyo, Japan
Division of Ser. No. 944,920, Sep. 15, 1992, Pat. No. 5,336,392. This application Feb. 25, 1994, Ser. No. 202,173
Int. Cl.[6] C25D *21/18*
U.S. Cl. 205—101 4 Claims



1. A method for supplying Ni^{2+} and Zn^{2+} ions into an acidic electroplating bath by using a Zn-Ni alloy, comprising supplying simultaneously Zn^{2+} and Ni^{2+} ions to an acidic electroplating bath for plating a Zn-Ni alloy layer consisting essentially of Zn and Ni, by chemical dissolution of Zn-Ni alloy particles wherein said alloy particles have a particle diameter of 1 mm or less and comprise 2 to 50% by weight of Ni, the balance being essentially Zn.

5,441,629
APPARATUS AND METHOD OF ELECTROPLATING
Katsuya Kosaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1994, Ser. No. 192,853
Claims priority, application Japan, Mar. 30, 1993, 5-071379
Int. Cl.[6] C25D *5/08, 5/48, 17/00*
U.S. Cl. 205—148 16 Claims



16. An electroplating method comprising:
circulating a plating solution through a closed circulation path including a plating solution storage tank and a pump while not electroplating;
after washing the inside of a casing with water, introducing an inert gas into the casing and draining the water from the casing through a first exhaust port;
introducing the plating solution into the casing through the circulation path, and electroplating while circulating the plating solution;
after electroplating, introducing an inert gas into the casing and draining the plating solution through a second exhaust port into the storage tank; and
after washing the casing with water, introducing an inert gas into the casing and draining the water through the first exhaust port.

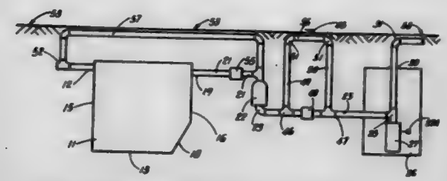
5,441,630
HYDRODESULFURIZATION PROCESS
Eugene P.-S. Dai, Port Arthur; David E. Sherwood, Jr.; Bobby R. Martin, both of Beaumont, and Randall H. Petty, Port Neches, all of Tex., assignors to Texaco, Inc., White Plains, N.Y.
Filed Apr. 12, 1993, Ser. No. 45,151
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] C10G *45/60, 45/08*
U.S. Cl. 208—216 PP 16 Claims

1. The process for selective hydrodesulfurization comprising removing greater than 35% of the sulfur of a cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins while reducing olefin saturation which comprises
maintaining in a reaction zone a bed of catalyst wherein the catalyst contains 0.1–6 wt % of a non-noble Group VIII metal oxide selected from an oxide of iron, cobalt or nickel and 0.1–25 wt % of a Group VIB metal oxide selected from chromium, molybdenum or tungsten, on an inert support consisting essentially of 1–70 wt % hydrotalcite composition and 30–99 wt % gamma alumina wherein the hydrotalcite composition has the formula:

$$[X_aY_b(OH)_c]_m[A]_d.eH_2O$$

a=1–10
b=1–10
c=2(a+b)=4–40
A is an anion of formal negative charge n selected from the group consisting of carbonate, halogen, acetate, oxalate, nitrate sulfate and chlorate,
n=an integer 1–4
d is the formal positive charge of $[X_aY_b(OH)_c]$
e=1–10
X is a divalent metal selected from the group consisting of beryllium, magnesium, calcium, strontium, barium and radium,
Y is a trivalent metal of Group VIII or Group VI-B or non-noble Group VIII of the Periodic Table, subject to the qualification that when one of d or n is an integral multiple of the other, they are both reduced to lowest integral terms;
passing hydrogen and said cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins to said reaction zone and into contact with said bed of catalyst;
maintaining said bed of catalyst at hydrodesulfurizing conditions including a temperature of 500°–670° and pressure of 350–500 psig, thereby producing a product stream of hydrodesulfurized cracked naphtha; and
recovering said product stream of hydrodesulfurized cracked naphtha and wherein the olefin content of said product stream is at least about 75 wt % of the olefin content of said charge cracked naphtha charged to said reaction zone.

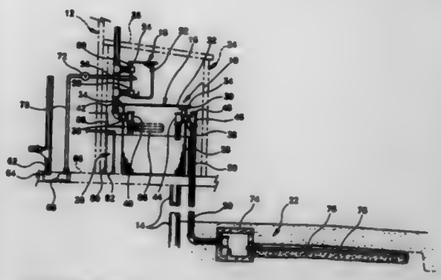
5,441,631
WASTE TREATMENT SYSTEM
William A. Stegall, Sr., P.O. Box 96, Denham Springs, La. 70726, and Marty Tittlebaum, 857 High Plains Ave., Baton Rouge, La. 70810
Continuation-in-part of Ser. No. 874,057, Apr. 24, 1992, Pat. No. 5,269,911. This application Dec. 14, 1993, Ser. No. 167,529
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[6] B01D *29/68*
U.S. Cl. 210—108 10 Claims



1. A wastewater treatment system comprising:
a) a treatment vessel having an interior area for containing a wastewater product to be treated;
b) an influent line arranged for adding wastewater to be treated into the interior of said treatment vessel;
c) an effluent line arranged for discharging treated wastewater from said treatment vessel;
d) a filter for filtering treated wastewater effluent from said treatment vessel;
e) said filter connected to said effluent line in order to receive treated wastewater via said effluent line;
f) a filter discharge line arranged for transmitting filtered discharge to a collection vessel;
g) said collection vessel arranged for collecting said filtered discharge;
h) a pump arranged for emptying said collection vessel when it is filled with the filtered discharge;
i) a means for controlling a flow of filtered discharge located within the discharge line for enabling a partial volume of liquid to flow in reverse direction through the filter discharge line to backwash the filter upon activation of said pump;
j) a final discharge line arranged to receive pumped liquid from the collection vessel that does not flow in reverse direction to backwash the filter;
k) a check valve located in the effluent line;
l) a bypass line connecting the effluent line downstream of said check valve to the influent line; and
m) said bypass line arranged to receive filter backwash flow from the backwash of the filter upon activation f said pump, and direct said backwash flow into said treatment vessel via said influent line for subsequent treatment in the treatment vessel.

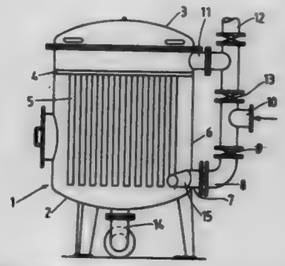
5,441,632
SEPTIC SYSTEM WITH ABOVE-GROUND SEPTIC TANK
Richard J. Charon, Rochester, Mass., assignor to Sep-Tainer Systems Corporation, Rochester, Mass.
Filed Jan. 25, 1994, Ser. No. 186,124
Int. Cl.[6] B01D *21/00*
U.S. Cl. 210—170 2 Claims

1. A septic system comprising:
a self-contained, above-ground septic tank which is positionable within an enclosed area of a building structure, said septic tank comprising an open-ended container having a sealed, removable cover, an inlet for receiving sewage, and an outlet for discharging liquid effluent from said septic tank, said outlet pipe being connected to an in-ground leaching field;
a containment sump surrounding said septic tank for containing leakage of the contents of said septic tank, said containment sump having a larger volume than said septic tank;
a device mounted adjacent a bottom of said containment sump for detecting the presence of fluid in said containment sump;
an alarm device coupled to said detecting device for signaling the presence of fluid in said containment sump;
a temperature measuring device external of said tank for monitoring an air temperature in the vicinity of said septic tank;
a heating device, external of said tank, coupled to said temperature measuring device for heating said enclosed area



of said building structure when said temperature falls below a predetermined temperature;
a collection basin for receiving sewage from a plumbing waste pipe, said collection basin being arranged at a different location within said building structure and at an elevation which is below an elevation of said septic tank,
a surge tank positioned above said septic tank, said surge tank having an outlet connected to said inlet of said septic tank; and
an ejector pump for pumping said sewage from said collection basin to an inlet of said surge tank, said sewage flowing from said surge tank into said septic tank by means of gravity.

5,441,633
LIQUID FILTER USING FILTRATION AID
Jonathan Schewitz, 82 Devereax Avenue, Vincent, East London, Cape Province, South Africa
Filed Sep. 7, 1993, Ser. No. 117,609
Claims priority, application South Africa, Sep. 25, 1992, 92/7364; Feb. 4, 1993, 93/0761
Int. Cl.[6] B01D *37/02, 29/90*
U.S. Cl. 210—193 9 Claims



1. A liquid filter assembly comprising a filter container having a generally cylindrical shape, an inlet through the side of the container towards the lower end thereof for inlet liquid, an outlet from the container, and a filter medium interposed between the inlet and outlet for filtering liquid that flows from

said inlet to said outlet and adapted to be utilized in combination with a filtration aid and wherein operation of the filter results, at termination of an operating cycle, in filtration aid and dirt associated therewith falling to the bottom of the container, the inlet is fitted with a cowl which defines an inlet opening, the inlet opening is directed downwardly towards the bottom of the container at an angle β with respect to a horizontal plane and into the container at an angle α with respect to a radius of the container, wherein α and β each define an angle of from 30° to 60°.

5,441,634

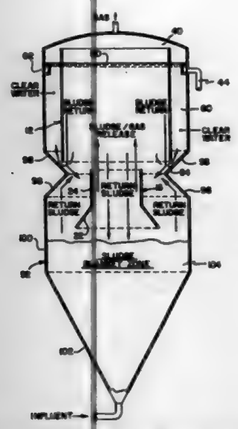
APPARATUS AND METHOD OF CIRCULATING A BODY OF FLUID CONTAINING A MIXTURE OF SOLID WASTE AND WATER AND SEPARATING THEM

Haskell Edwards, Exeter, Calif., assignor to Edwards Laboratories, Inc., Exeter, Calif.

Filed Jul. 6, 1993, Ser. No. 88,192

Int. Cl.[6] C02F *3/00*

U.S. Cl. 210—194 **15 Claims**



1. An apparatus for circulating and separating a body of fluid containing a mixture of solid waste, the apparatus comprising:

an elongated vessel with a housing having an internal volume defined by an inwardly facing surface of the vessel, the housing having an influent opening for introducing influent into the internal volume of the vessel and an effluent opening for discharging effluent out of the internal volume of the vessel;

means for creating circulation of the body of fluid within the internal volume of said vessel, said creating circulation means including means for gassifying the body of fluid to produce a gasborne mixture and an upward flow of the gasborne mixture within the internal volume, means for degassing the gasborne mixture to produce a degassed mixture and permit a downward flow of the degassed mixture within the internal volume; and

means for guiding circulation of the body of fluid within the internal volume of the vessel along a predetermined route before discharging through the effluent opening, said guiding means including means for channeling said gasborne mixture upwardly from said gassifying means to reach said degassing means, means for deflecting the downward flow of the degassed mixture with a deflection surface to promote settling of solids out of the degassed mixture and leaving a remainder of the degassed mixture substantially free of the settled solids, means for containing said remainder of the degassed mixture within a containment zone, said channeling means having a constriction element configured for constricting the upward flow of the gasborne mixture, said containment zone being interposed between said deflection surface and said vessel surface, and said effluent opening being in communication with said containment zone, said constriction element having an, inverted funnel configuration with a bell portion and a hollow neck portion, said neck portion extending upwardly from said bell portion to terminate at an open top end that is at an elevation spaced from and beneath that of said degassing means, said open end terminating said inverted funnel configuration, said bell portion having an open bottom end that is wider than said open top end of said neck portion, said bell portion having an exterior facing surface that extends from said hollow neck and in a direction such that a projection of said exterior facing surface is toward said deflection surface.

5,441,635

PACKING MATERIAL FOR LIQUID CHROMATOGRAPHY

Takeshi Ichitsuka; Tetsuro Ogawa, and Masaya Sumita, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 908,740, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 654,982, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 461,854, Jan. 8, 1990, Pat. No. 5,039,408, which is a continuation-in-part of Ser. No. 69,734, Jul. 6, 1987, abandoned, Ser. No. 69,742, Jul. 6, 1987, abandoned, Ser. No. 216,575, Jul. 8, 1988, abandoned, and Ser. No. 397,360, Aug. 23, 1989, abandoned, which is a continuation of Ser. No. 69,740, Jul. 6, 1987, abandoned. This application Mar. 10, 1993, Ser. No. 29,940

Claims priority, application Japan, Jul. 5, 1986, 61-158410; Jul. 5, 1986, 61-158411; Jul. 5, 1986, 61-158412; Jul. 8, 1987, 62-170715

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **6 Claims**



1. A packing for liquid chromatography comprising hydroxyapatite particles having a surface layer comprising fluoroapatite represented by formula (I):

$$Ca_{10}(PO_4)_6(OH)_{2-2x}F_{2x} \quad (I)$$

wherein x is a number of from about 0.1 to 1 and a specific surface area of from about 0.01 to 20 m^2/g.

5,441,636

INTEGRATED BLOOD TREATMENT FLUID MODULE

Jacques Chevallet, Serezin Du Rhone, France; Paul Priest, and Keith Manica, both of Lakewood, Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Feb. 12, 1993, Ser. No. 16,842

Int. Cl.[6] B01D *35/00, 36/00, 61/28, 61/30*

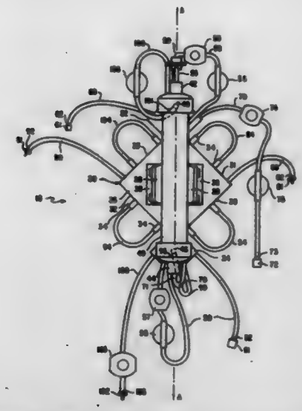
U.S. Cl. 210—232 **13 Claims**

1. An integrated blood treatment fluid module for continuous in-line, extra-corporeal blood treatment on a blood treatment apparatus comprising:

a rectangular support member having side edges defining a rectangular shape and having means for selective interconnection of the module to and selective disconnection of the module from a blood treatment apparatus;

a blood treatment device defined apart from and mounted on said support member, said blood treatment device being centered about an axis lying in a plane that dingonally bisects the rectangular support member; and,

a plurality of fluid circuits supportably interconnected with and oriented in predetermined positions relative to said support member, at least two of the fluid circuits being



supportably interconnected to and thereby disposed in an outwardly extending U-shape relative to said support member with each U-shape portion extending from a different one of said side edges and in a different direction, and at least two of the fluid circuits being fluidly connected to said blood treatment device.

5,441,637

SUCTION HEAD FILTER FOR A FUEL TANK

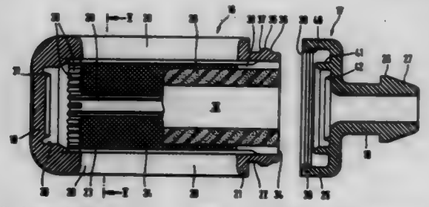
Kurt Gutjahr, Waiblingen, and Hansjörg Bossler, Backnang, both of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Oct. 29, 1993, Ser. No. 144,788

Claims priority, application Germany, Oct. 29, 1992, 42 36 490.6

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—232 **19 Claims**



1. A suction head for a fuel line of a fuel tank of a hand-held working tool, said suction head comprising:

a cup-shaped housing made of plastic comprising a mantle wall with cutouts and an end face with an opening;

a filter mesh for covering said cutouts;

a filter insert inserted into said housing through said opening;

a cap made of plastic and having a connector for a fuel line, said cap sealingly connected to said end face with said opening;

wherein said filter insert is made of a sintered plastic material and is secured within said housing such that at all times a space is maintained between said filter insert and said filter mesh; and

said sintered plastic material having a plurality of pores each having a pore size of substantially 80 μm to form a reservoir for storing an amount of fuel such that a fuel supply for the drive motor is secured even when due to an abrupt movement of the working tool said suction head is momentarily removed from the fuel contained within the fuel tank.

5,441,638

APPARATUS FOR SEPARATING PARTICLES SUSPENDED IN A FLOWING LIQUID

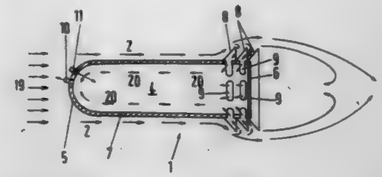
Dirk Tillich, Gutshof 2A, D-3305 Lucklum, Germany

Filed Jun. 4, 1993, Ser. No. 72,576

Claims priority, application Germany, Jun. 4, 1992, 42 18 379.0

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—242.1 **9 Claims**



1. An apparatus for separating particles suspended in a flowing liquid for cleaning a current component, comprising

a hollow body having an upstream end and a downstream end;

the upstream end of the body is closed and shaped substantially hemispherical;

the downstream end of the body is closed;

an essentially smooth, substantially cylindrical shaft connecting the upstream end of the body to the downstream end and having a longitudinal axis;

the downstream end of the body is surrounded by a series of baffles having a gap between each baffle;

intakes in said gaps between said baffles in the shaft for guiding said current component into the interior of the body;

at least one outlet for the liquid of said current component to be removed through;

means for suspending the body in the flowing liquid such that the body is submerged below a surface of the flowing liquid and such that its longitudinal axis is substantially parallel with the direction of flow of the flowing liquid.

5,441,639

CONVECTIVE ELECTROHYDRODYNAMIC FLUID MEMBRANES

Richard D. Noble, and Noel A. Clark, both of Boulder, Colo., assignors to The Regents of the University of Colorado, Boulder, Colo.

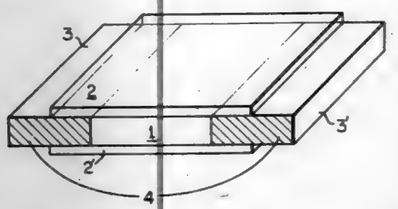
Continuation-in-part of Ser. No. 963,480, Oct. 16, 1992. This application Aug. 23, 1993, Ser. No. 110,409

Int. Cl.[6] B01D *63/08*

U.S. Cl. 210—243 **3 Claims**

1. A fluid membrane comprising a fluid layer contained between two gas permeable electrodes thereby forming a sandwich-like fluid membrane separating distinct volumes containing diffusant species, said fluid layer comprising a polar solvent capable of exhibiting electrohydrodynamic (EHD) flow, said electrodes capable of being accessed by the diffusant

species, and means for applying and electric field to the fluid layer, said electric field inducing an EHD flow within the fluid



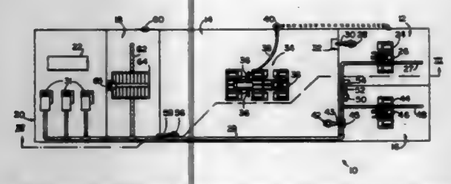
layer, said flow altering the passage of diffusant species across the fluid membrane.

5,441,640

MOBILE WASTE TREATMENT APPARATUS

Richard C. Baxter, 4375 Mary St., Moline, Mich. 49335

Continuation-in-part of Ser. No. 918,589, Jul. 22, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 206,325
Int. Cl.[6] C02F *3/12*
U.S. Cl. 210—607 24 Claims



16. A method of batch waste treatment, comprising the steps of:

(a) receiving a batch of waste in a receiving receptacle;

(b) mixing solid and liquid components of the batch of waste together in said receiving receptacle to form a batch of generally homogenized waste slurry;

(c) selectively breeding a first colony of bacteria to be particularly adapted to digest the waste being treated such that said first colony of bacteria is defined by relatively young bacteria;

(d) mixing a portion of said first colony of bacteria with said batch of waste slurry in said receiving receptacle to form a batch of equalized waste slurry;

(e) transferring said batch of equalized waste slurry to a treatment receptacle;

(f) isolating and treating said batch of equalized waste slurry in said treatment receptacle by mixing, oxygenation, and bacterial decomposition;

(g) discharging liquid effluent from said treatment receptacle;

(h) discharging a portion of sludge from said treatment receptacle while maintaining a second colony of bacteria, distinct from said first colony, in said treatment receptacle, wherein said second colony of bacteria is defined by established, mature bacteria relative to said first colony of bacteria;

(i) receiving a subsequent batch of waste in said receiving receptacle; and

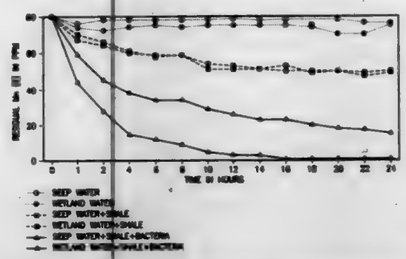
(j) repeating steps (a) through (h) until the desired waste treatment is completed.

5,441,641

PROCESS FOR REMOVING MANGANESE FROM SOLUTIONS INCLUDING AQUEOUS INDUSTRIAL WASTE

William J. Vail, 102 Winslow St., Cumberland, Md. 21502, and Robert K. Riley, P.O. Box 284, Midland, Md. 21542

Continuation of Ser. No. 912,814, Jul. 13, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 169,741
Int. Cl.[6] C02F *3/34*
U.S. Cl. 210—611 25 Claims



1. A process for reducing the concentration of water soluble manganese ions in an aqueous solution containing the same, said process comprising the steps of:

providing an aqueous solution having contained therein a concentration of water soluble manganese ions;

providing a porous matrix containing cultured populations of aerobic manganese oxidizing bacteria from the genus Metallogenium, said bacteria being capable of metabolizing said water soluble manganese ions in said aqueous solution into water insoluble manganese oxides, said porous matrix being provided under aerobic conditions; and

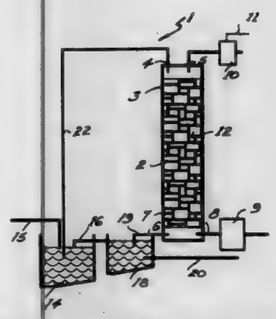
passing said aqueous solution through said porous matrix in a continuous fashion so as to allow said bacteria to metabolize said manganese ions in said aqueous solution into water insoluble manganese oxides, which are substantially retained on said porous matrix, thereby resulting in a reduction in the concentration of said water soluble manganese ions in said aqueous solution.

5,441,642

METHOD AND APPARATUS FOR CONTROLLED BIOLOGICAL TREATMENT OF WASTE WATER

Denys Wickens, Kellyville, Australia, assignor to The Commonwealth Industrial Gases Limited, Australia

Filed Jun. 22, 1994, Ser. No. 263,696
Claims priority, application Australia, Jun. 24, 1993, PL9606
Int. Cl.[6] C02F *3/04*
U.S. Cl. 210—614 21 Claims



1. A method for controlled biological treatment of waste water comprising the steps of:

(a) feeding waste water to a substantially airtight supported growth biological filter unit that includes an exhaust gas vent,

(b) supplying gaseous oxygen to the filter unit,

(c) measuring the oxygen consumption across the filter by comparing the flow rate of oxygen into the filter to the flow rate of oxygen exiting the filter through said gas vent, and

(d) adjusting the feed rate of waste water to maintain a predetermined oxygen consumption.

5,441,643

PROCESS FOR RECOVERING METALS FROM SOLUTION UTILIZING METALLOPROTEIN AFFINITY CHROMATOGRAPHY

Dennis R. Spears, and John B. Vincent, both of Tuscaloosa, Ala., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 29, 1993, Ser. No. 158,553
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 3 Claims

1. A process for recovering metals from an aqueous metal-ion bearing solution, comprising the steps of:

(a) forming an affinity chromatography matrix by providing conalbumin, a metalloprotein, bound to a carbohydrate-based support, an insoluble support material, to form an immobilized metalloprotein material;

(b) placing in contact with said affinity chromatography matrix a quantity of an aqueous metal-containing solution having a pH and ionic strength adjusted to cause selected metal ions within said aqueous metal-ion bearing solution to tightly bind to said immobilized metalloprotein material;

(c) placing in contact with said affinity chromatography matrix a quantity of an aqueous solution having a pH, ionic strength, and/or chelating agent to remove all metal ions within said aqueous metal-ion bearing solution except said selected metal ions tightly bound to said immobilized metalloprotein material; and

(d) placing in contact with said affinity chromatography matrix a quantity of an aqueous solution having a pH, ionic strength, and/or chelating agent to remove said selected metal ions tightly bound to said immobilized metalloprotein material.

5,441,644

METHOD OF ISOLATION AND PURIFICATION OF TREHALOSE

Naoyuki Kinouchi, Kawasaki, Japan, assignor to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 190,449
Claims priority, application Japan, Feb. 2, 1993, 5-015614; Feb. 2, 1993, 5-015616
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—651 9 Claims



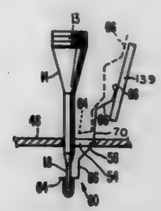
1. A method of isolating and purifying trehalose dihydrate from a trehalose-containing solution, comprising the steps of subjecting the trehalose-containing solution to ultrafiltration obtain a permeate and concentrating the permeate to crystallize crystals of trehalose dihydrate therefrom.

5,441,645

COLUMN ANALYZER SYSTEM AND IMPROVED CHROMATOGRAPH COLUMN FOR USE IN THE SYSTEM

James R. M. Sanford, Vidor; Patrick M. Frank, Beaumont; Joseph H. Golias, Beaumont, and William C. Jennings, Beaumont, all of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Division of Ser. No. 58,364, May 10, 1993, Pat. No. 5,358,641, which is a division of Ser. No. 779,186, Oct. 22, 1991, Pat. No. 5,228,988, which is a continuation-in-part of Ser. No. 733,714, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,298, May 31, 1991, Pat. No. 5,207,918, which is a division of Ser. No. 427,346, Oct. 27, 1989, Pat. No. 5,045,208.
This application Sep. 16, 1994, Ser. No. 285,014
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—656 8 Claims



1. A method for conducting column chromatography, comprising the steps of:

(a) mounting a chromatographic column having a tip portion in a rack, the tip portion having a removable cap thereon, the rack having a plate with an aperture which is configured to receive the tip portion and which additionally provides a bearing surface;

(b) lowering a decapper member having a forked end through the aperture;

(c) moving the forked end into engagement with the tip portion while step (b) is conducted by deflecting the spring member with the bearing surface;

(d) pressing the forked end against the cap while step (b) is conducted to remove the cap from the tip portion of the column; and

(e) introducing fluid into the column to produce an eluate which leaves the column through its tip portion.

5,441,646

PROCESS OF REMOVING SULFATE IONS FROM WATER WITH A POLY(METH)ACRYLAMIDE EXCHANGE RESIN

Harold Heller, Köln; Franz-Rudolf Minz, Dormagen; Reinhold M. Klipper, Köln; Alfred Mitschker, Odenthal-Holz, and Heiko Hoffmann, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 931,165, Aug. 17, 1992, abandoned.
This application Jul. 19, 1994, Ser. No. 277,383
Claims priority, application Germany, Aug. 22, 1991, 41 27 861.5
Int. Cl.[6] C02F *1/42*; B01J *41/04, 41/12*; C08F *8/32*
U.S. Cl. 210—683 8 Claims

1. A method for removing sulphate ions from a sulphate ion-containing aqueous liquid which comprises contacting said liquid with a weakly basic poly(meth)acrylamide porous anion exchanger having polyamino groups having sulphate ion absorption capacity of at least 48 g of sulphate per kg of anion exchanger (dry, based on the OH form and measured on an aqueous solution of 100 g of sodium chloride and 4.5 g of sodium sulphate per liter of solution; flow rate: 5 bed volumes per hour at 25° C.), the exchanger having been produced by aminolysis of poly(meth)acrylate resin with a polyamine which

a) contains 4 to 8N atoms per molecule,

b) carries at least i primary amino group per molecule and

c) contains an amount of heterocyclic isomer below a value of

$$x = 100 - (A \times B^{n-4})\ [\%]$$

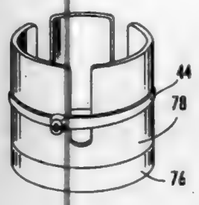
wherein
A denotes 70 to 99,
B denotes 0.7 to 0.9 and
n denotes the number of N atoms per molecule.

5,441,647

MAGNETIC DEVICE FOR REMOVING METALLIC MATTER FROM LUBRICATING FLUIDS

Rick R. Wascher, P.O. Box 198468, Hermitage, Tenn. 37076; Roy L. Neuhauser, III, P.O. Box 10613, Knoxville, Tenn. 37939, and Ray Fairbanks, Jr., 1806 E. Main St., Murfreesboro, Tenn. 37130

Filed Feb. 17, 1994, Ser. No. 197,648
Int. Cl.[6] B01D *35/06*
U.S. Cl. 210—695 **3 Claims**



1. A device for increasing the efficiency of an oil filter having a canister including an open top end, a closed bottom wall, and a continuous sidewall extending between said open top and closed bottom wall, said continuous sidewall and closed bottom wall defining an exterior surface of said oil filter, the device comprising:
magnetic means for attracting metallic particles; and means for holding the magnetic means adjacent said closed bottom wall;
wherein the means for holding is a sleeve having an axis, said sleeve including a flexible wall having axially opposite first and second end portions, wherein said magnetic means is located at said first end portion, and wherein said second end portion includes a plurality of axially extending finger portions, each said finger portion having a free end and a radially inner surface for engagement of the exterior surface of said continuous side wall.

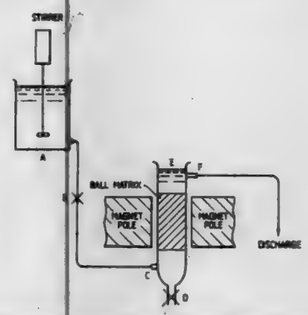
5,441,648

SEPARATION OF HEAVY METALS FROM AQUEOUS MEDIA

Raymond G. Lidzey, London, United Kingdom, assignor to Bio-Separation Limited, Middlesex, United Kingdom

PCT No. PCT/GB93/02003, § 371 Date May 16, 1994, § 102(e) Date May 16, 1994, PCT Pub. No. WO94/07800, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 24, 1993, Ser. No. 244,027
Claims priority, application United Kingdom, Sep. 25, 1992, 9220269
Int. Cl.[6] C02F *1/48, 1/62*
U.S. Cl. 210—695 **8 Claims**

1. Process for the separation of a heavy metal from an aqueous medium containing the same which comprises contacting the said medium with ferrous sulfide physically attached to finely divided synthetic iron oxide (Fe_3O_4) having a particle size less than about 1 micron, maintaining said contact until at least about 90% of said heavy metal has become bound to said ferrous sulphide, and then separating magnetically the iron



oxide and ferrous sulphide having heavy metal bound thereto from the aqueous medium.

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VINYLAMINE COPOLYMER FLOCCULANGTS FOR USE IN COAL REFUSE THICKENING

Anthony G. Sommese, Naperville, and Krishnan J. Pillai, Aurora, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 6, 1993, Ser. No. 162,249
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—735 **4 Claims**

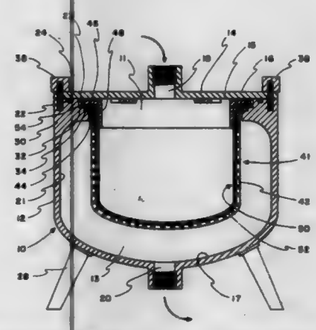
1. A method for thickening and dewatering coal tailing aqueous slurries in a thickener, the method including the steps of:
adding to the slurry in a thickener a coal tailing thickening amount of a flocculant composition including a vinylamine polymer having from about 50 to about 99 mole percent vinylamine and from about 1 to about 50 mole percent of vinylformamide, and a molecular weight of at least about 750,000 daltons;
thickening the coal tailing aqueous slurry; and
dewatering the coal tailings.

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METHOD AND APPARATUS FOR A NON-SEALING FILTER ELEMENT

Richard D. Kirsgalvis, Michigan City, Ind., assignor to Le Sac Corporation, Michigan City, Ind.

Filed Oct. 15, 1993, Ser. No. 137,298
Int. Cl.[6] B01D *29/27*
U.S. Cl. 210—767 **8 Claims**



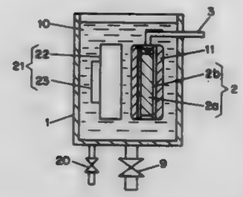
7. A method for filtering a material flowing through a non-sealing filter element disposable in a filter housing, the non-sealing filter element having a fluid pervious annular filter element and a fluid pervious filter bag fixedly disposed on a shape retaining filter collar assembly having an outturned annular flange and an annular sleeve, the filter housing having a housing chamber, a material inlet port, a material outlet port, and an annular shoulder for supporting the outturned annular flange of the shape retaining filter collar assembly, the method comprising steps of:
filtering a material flowing through the annular sleeve of the shape retaining filter collar assembly with the fluid pervious filter bag; and
filtering material not filtered with the fluid pervious filter bag with the fluid pervious annular filter element.

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METHOD AND APPARATUS FOR PROCESSING SLUDGE

Mikimasa Yamaguchi, Yokusuka; Hiroshi Fukuzawa, Yokohama, and Toshitaka Arai, Kamagaya, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 6, 1994, Ser. No. 178,058
Claims priority, application Japan, Jan. 7, 1993, 5-000867
Int. Cl.[6] B01D *24/28*
U.S. Cl. 210—780 **15 Claims**



1. A method for processing sludge in a sludge tank comprising flow regulating means disposed within said tank and one or more filter plates disposed within said tank, said method comprising the steps of:
processing non-condensed sludge to form first condensed sludge, said processing step comprising the step of drawing filtrate from said non-condensed sludge through said one or more filter plates, and the step of operating said flow regulating means to regulate the flow of said non-condensed sludge in close proximity to said filter plates within said sludge tank; and
drawing additional filtrate from the first condensed sludge formed on said one or more filter plates to form second condensed sludge which is more condensed than the first condensed sludge.

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PROCESS FOR THE PRODUCTION OF A LUBRICATING OIL ADDITIVE CONCENTRATE

Sean P. O'Connor, and Charles Cane, both of Hull, England, assignors to BP Chemicals (Additives) Limited, London, England

Continuation of Ser. No. 686,873, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 363,547, Jun. 8, 1989, abandoned. This application Nov. 24, 1993, Ser. No. 158,143
Claims priority, application United Kingdom, Jun. 14, 1988, 8814813
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[6] C10M *159/22*
U.S. Cl. 252—18 **18 Claims**

1. A process for the production of a lubricating oil additive concentrate having a TBN greater than 300 which process comprises reacting at a temperature in the range of from 40° to 100° C.:
component (A) at least one compound which is (i) an alkaline earth metal hydrocarbyl-substituted phenate, (ii) a hydrocarbyl-substituted phenol, (iii) an alkaline earth metal hydrocarbyl-substituted phenate and a source of sulphur, (iv) a hydrocarbyl-substituted phenol and a source of sulphur, (v) an alkaline earth metal sulphurized hydrocarbyl-substituted phenate or (vi) a sulphurized hydrocarbyl-substituted phenol,
component (B) an alkaline earth metal base added either in a single addition or in a plurality of additions during the reaction,
component (C) a combination of an inert hydrocarbon and at least one compound which is (i) water, (ii) a C_1 to C_{10} monohydric alcohol, (iii) a C_1 to C_{20} ketone, (iv) a C_1 to C_{10} carboxylic acid ester or (v) a C_1 to C_{20} ether, wherein neither (ii) nor (v) is an alkylene glycol alkyl ether or a polyalkylene glycol alkyl ether,
component (D) a lubricating oil,
component (E) carbon dioxide added subsequent to the, or each, addition of component (B),
component (F) sufficient to provide 2 to 40% by weight based on the weight of the concentrate of at least one compound which is (i) a carboxylic acid or an acid anhydride, an acid chloride or ester thereof, said acid having the formula (I)

$$R^1—CH(R^2)—COOH \quad (I)$$

wherein R^1 is a C_{10} to C_{24} alkyl or alkenyl group and R^2 is hydrogen, a C_1 to C_4 alkyl group or a CH_2COOH group, or (ii) a di- or poly-carboxylic acid containing from 36 to 100 carbon atoms or an acid anhydride, acid chloride or ester thereof, and
component (G) at least one compound which is (i) an inorganic halide or (ii) an ammonium alkanoate or a mono-, di-, tri-, or tetra-alkyl ammonium formate or alkanoate provided that, when component (G) is (ii), component (F) is not an acid chloride,
the weight ratios of all components being such as to produce a concentrate having a TBN greater than 300.

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TWO-STROKE CYCLE ENGINE LUBRICANT AND METHOD OF USING SAME

William K. S. Cleveland, Mentor on the Lake; Paul E. Adams, Willoughby Hills, and Marvin B. De Tar, Wickliffe, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 9, 1994, Ser. No. 287,996
Int. Cl.[6] C10M *129/38, 129/40*; C10L *1/18, 1/22*
U.S. Cl. 252—34 **110 Claims**

1. A 2-stroke cycle engine lubricant composition comprising a major amount of an oil of lubricating viscosity and a minor amount of at least one carboxylic composition prepared by reacting
(a) at least one reactant of the formula

$$R_m—Ar(H)_s—Z_c \quad (I)$$

wherein R is a hydrocarbyl group, m ranges from 0 to about 6, Ar is an aromatic group containing from 5 to about 30 carbon atoms and having from 0 to 3 optional substituents selected from the group consisting of polyalkoxyalkyl, lower alkoxy, nitro or combinations of two or more of said optional substituents, wherein s is a number of at least 1, each Z is independently OH or $(OR^5)_bOH$, wherein R^5 is independently a divalent hydrocarbyl group and b is a number ranging from 1 to about 30 and c is a number ranging from 1 to about 3, wherein the sum s+m+c does not exceed the number of valences of Ar available for substitution, and
(b) a carboxylic reactant of the formula

$R^1CO(CR^2R^3)_xCOOR^{10}$

wherein each of R^1, R^2 and R^3 is independently H or a hydrocarbyl group, R^{10} is H or an alkyl group and x is a number ranging from 0 to about 8; and optionally,

(c) ammonia or an amine having at least one N—H group.

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COMPOSITION FOR INHIBITING STRESS CRACKS IN PLASTIC ARTICLES AND METHODS OF USE THEREFOR

Charles E. Rossio, Carleton, Mich., assignor to Diversey Corp., a Corp. of Canada, Mississauga, Canada

Continuation-in-part of Ser. No. 802,842, Dec. 6, 1991, Pat. No. 5,223,162, which is a continuation-in-part of Ser. No. 535,473, Jun. 8, 1990, Pat. No. 5,073,280, which is a continuation-in-part of Ser. No. 398,542, Aug. 25, 1989, Pat. No. 5,009,801, which is a continuation-in-part of Ser. No. 218,893, Jul. 14, 1988, Pat. No. 4,929,375. This application Jun. 28, 1993, Ser. No. 83,632
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[6] C10M *173/02*
U.S. Cl. 252—49.3 6 Claims

1. In an aqueous lubricant composition of the type having a pH greater than 8 and a lubricant component which must be either hydrotroped or saponified, the improvement which comprises: a water-soluble amine as a hydrotrope-saponifying agent, the water-soluble amine having at least six carbon atoms, and wherein the lubricant component is not neutralized.

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PHOSPHAZENE DERIVATIVES AND USE OF SAME AS STABILIZERS FOR OILS AND GREASES BASED ON PERFLUOROPOLYETHERS

Paolo Odello, Turin; Walter Navarrini, Boffalora Ticino, both of Italy; Richard D. Chambers, Durham, Great Britain, and Costante Corti, Milan, Italy, assignors to Ausimont, S.p.A., Milan, Italy

Filed Nov. 8, 1993, Ser. No. 149,034
Claims priority, application Italy, Nov. 10, 1992, MI92A2569
Int. Cl.[6] C10M *137/16*
U.S. Cl. 252—49.9 10 Claims

1. Lubricating compositions comprising

(a) an oil or a grease based on perfluoropolyethers;

(b) from 0.05 to 3% by weight of a phosphazene derivative of cyclic or linear structure having the following formula:

$$[(A)_4P]_n{+}N{=}P\frac{(A)_2}{(A)_m}(A)_n$$

where:

n is 0 in the case of a cyclic structure and n is 1 in the case of a linear structure;

m is an integer from 3 to 7; and

the A groups, like or different from each other, are selected from the group consisting of:

(i) R—Q—, where

Q is a divalent group selected from the group consisting of —O—, —S—, —NH—NH—, and $—NR_1—$, where R_1 is hydrogen or a C_1–C_4 alkyl group; and

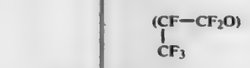
R is selected from the group consisting of C_6–C_{12} aryl groups, and C_6–C_{12} aryl groups substituted by one or more groups selected from the group consisting of C_1–C_4 alkyls, $—OR_2$, $—NR_3R_4$, $—NO_2$, —F, and —Cl, where R_2, R_3, and R_4 are selected from the group consisting of hydrogen or C_1–C_4 alkyls; and

(ii) $R_f—CH_2O(CH_2CH_2O)_s—$, where

s is equal to 0, 1, or 2; and

R_f is a perfluoropolyethereal chain having a molecular weight ranging from 400 to 10,000 and composed of repeating units selected from the group consisting of:

(1)

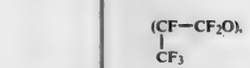


and (CFXO)

where X is —F or $—CF_3$;

(2) (CF_2CF_2O) and (CF_2O);

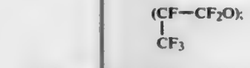
(3)



(CF_2CF_2O) and (CFXO),

where X is —F or $—CF_3$;

(4)

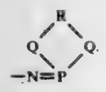


(5) $(CYZ—CF_2CF_2O)$, where Y and Z, equal or different to each other, are F, Cl, or H;

(6) (CF_2CF_2O);

the various repeating units being statistically distributed along the chain;

such that at least one group of type (i) and at least one group of type (ii) are present in the phosphazene derivative molecule; and such that groups —R—Q, if linked to the same phosphorus atom, are capable of forming a cyclic structure with the following formula:

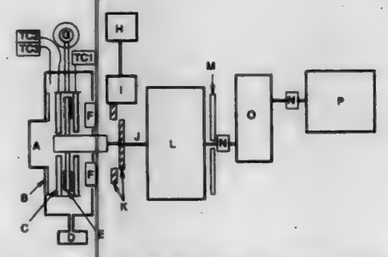


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AUTOMATIC TRANSMISSION FLUIDS AND ADDITIVES THEREFOR

Hiroko Ohtani, Sapporo, Japan, and Rolfe J. Hartley, Glen Allen, Va., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 195,860, Feb. 10, 1994, Pat. No. 5,372,735. This application Jul. 25, 1994, Ser. No. 236,524
The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.
Int. Cl.[6] C10M *133/04*
U.S. Cl. 252—51.5 R 27 Claims



1. An automatic transmission fluid which has a friction modifier content, said automatic transmission fluid being characterized in that:

a) the friction modifier content of said automatic transmission fluid consists essentially of (i) an N-aliphatic hydrocarbyl-substituted diethanolamine in which the N-aliphatic hydrocarbyl-substituted is at least one straight chain aliphatic hydrocarbyl group free of acetylenic unsaturation and having in the range of 14 to 20 carbon atoms, and (ii) an N-aliphatic hydrocarbyl-substituted trimethylenediamine in which the N-aliphatic hydrocarbyl-substituent is at least one straight chain aliphatic hydrocarbyl group free of acetylenic unsaturation and having in the range of about 14 to about 20 carbon atoms;

b) the friction modifier is devoid of any tertiary amine friction modifier component and any C_{12-36} aliphatic hydrocarbyl succinimide or succinamide;

c) the relative proportions of (i) to (ii) are such that there are from about 7 to about 340 parts by weight of (i) per part by weight of (ii); and

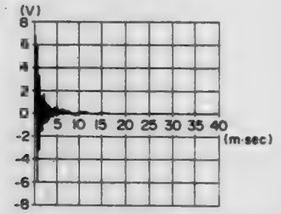
d) the automatic transmission fluid contains 0.08 to 0.17 wt % of (i) and 0.0005 to 0.02 wt % of (ii) proportioned as in c) hereof.

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VIBRATION-ISOLATING COMPOSITE MATERIAL

Kikuo Wakino, Mukou, Japan, assignor to Murata Mfg. Co., Ltd., Japan

Continuation-in-part of Ser. No. 125,424, Sep. 22, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 327,985
Claims priority, application Japan, Mar. 24, 1991, 4-65990
Int. Cl.[6] E04B *1/74*
U.S. Cl. 252—62 13 Claims



1. A vibration-isolating composite material consisting essentially of, by weight, 40 to 95% of powder of an inorganic elastic material and 5 to 60% of a synthetic polymer mixed thereto, said inorganic elastic material being at least one inorganic elastic material selected from the group consisting of NdP_5O_4, $BiVO_3$, $Gd_2(MoO_4)_3$, $GdNbO_4$ and KH_2PO_4.

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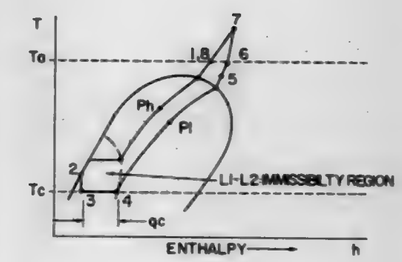
CRYOGENIC MIXED GAS REFRIGERANT FOR OPERATION WITHIN TEMPERATURE RANGES OF 80°K- 100°K

Mikhail Boyarsky; Boris Yudin; Victor I. Mogorychny, all of Moscow, Russian Federation, and Larry Klusmier, Allentown, Pa., assignors to APD Cryogenics, Inc., Allentown, Pa.

Filed Nov. 9, 1993, Ser. No. 149,203
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 2 Claims

1. A mixed gas cryogenic refrigerant for use in a throttle refrigerator having an oil-lubricated compressor, which provides high pressure up to about 30 Atms at temperatures from 80° K. to 100° K., consisting of:

nitrogen	30–50 molar percent
methane	at least some but less than 20 molar percent
propane	more than 30 molar percent
ethane or ethylene	balance.



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COMPOSITIONS INCLUDING A FLUOROAMINE AND A SECOND COMPONENT

Barbara H. Minor, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 12, 1993, Ser. No. 150,904
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 3 Claims

1. An azeotropic or azeotrope-like composition consisting essentially of 1–47 weight percent tris(trifluoromethyl)amine and 53–99 weight percent trifluoromethane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 643–669 psia; 20–74 weight percent tris(trifluoromethyl-)amine and 26–80 weight percent difluoromethane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 273–277 psia; 1–66 weight percent tris(trifluoromethyl)amine and 34–99 weight percent 1,1,1,2-tetrafluoroethane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 97–104 psia; 1– 78 weight percent tris(trifluoromethyl)amine and 22–99 weight percent 1,1-difluoroethane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 87–101 psia; 20–76 weight percent tris(trifluoromethyl)amine and 24–80 weight percent monofluoroethane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 147–148 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent 1,1,1,2,2,3-hexafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 34–46 psia; 32–99 weight percent tris(trifluoromethyl)amine and 1–68 weight percent 1,1,2,3,3,3-hexafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 42–47 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent 1,1,1,3,3,3-hexafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 40–50 psia; 52–99.2 weight percent tris(trifluoromethyl)amine and 0.8–48 weight percent 1,1,1,3,3-pentafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 39–46 psia; 65–99.5 weight percent tris(trifluoromethyl)amine and 0.5–35 weight percent 1,2,2,3-tetrafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 41–46 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent 1,1,2,2-tetrafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 34–48 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent 1,1,1,2-tetrafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 35–49 psia; 60–99 weight percent tris(trifluoromethyl-)amine and 1–40 weight percent 1,2,2-trifluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 43–47 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent 1,1,1-trifluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 46–58 psia; 44–99 weight percent tris(trifluoromethyl)amine and 1–56 weight percent

2,2-difluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 47–53 psia; 62–99 weight percent tris(trifluoromethyl)amine and 1–38 weight percent 1,2-difluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 45–48 psia; 56–99 weight percent tris(trifluoromethyl)amine and 1–44 weight percent 1,1-difluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 46–50 psia; 39–99 weight percent tris(trifluoromethyl)amine and 1–61 weight percent 2-fluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 48–76 psia; 48–99 weight percent tris(trifluoromethyl)amine and 1–52 weight percent 1-fluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 47–56 psia; 1–99 weight percent bis(difluoromethyl)trifluoromethylamine and 1–99 weight percent 1,1,2,2,3-pentafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–15 psia; 1–99 weight percent bis(difluoromethyl)trifluoromethylamine and 1–99 weight percent 1,1,2,3,3-pentafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–15 psia; 1–99 weight percent bis(difluoromethyl)trifluoromethylamine and 1–99 weight percent 1,2,2,3-tetrafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–15 psia; 1–99 weight percent bis(difluoromethyl)trifluoromethylamine and 1–99 weight percent 1,2,2-trifluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–19 psia; 1–99 weight percent bis(difluoromethyl)trifluoromethylamine and 1–99 weight percent 1,2-difluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–21 psia; 1–99 weight percent fluoromethylbis(trifluoromethyl)amine and 1–99 weight percent 1,1,2,2,3-pentafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–15 psia; 1–99 weight percent fluoromethylbis(trifluoromethyl)amine and 1–99 weight percent 1,1,2,3,3-pentafluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–15 psia; 1–99 weight percent fluoromethylbis(trifluoromethyl)amine and 1–99 weight percent 1,2,2-trifluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–19 psia; 1–99 weight percent fluoromethylbis(trifluoromethyl)amine and 1–99 weight percent 1,2-difluoropropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 14–21 psia; 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent butane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 35–48 psia; 1–80 weight percent tris(trifluoromethyl)amine and 20–99 weight percent cyclopropane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 100–108 psia; 30–83 weight percent tris(trifluoromethyl)amine and 17–70 weight percent dimethylether, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 99–103 psia; or 1–99 weight percent tris(trifluoromethyl)amine and 1–99 weight percent isobutane, wherein when the temperature is adjusted to about 25° C., the vapor pressure is about 46–53 psia; wherein when 50 wt. % of an original composition is evaporated or boiled off, the vapor pressure of the remaining composition is within about 10% of the vapor pressure of the original composition, at a temperature of 25° C.; and wherein each of the azeotropic or azeotrope-like compositions consists essentially of the two named components.

5,441,660

COMPOSITIONS COMPRISING CAPSULE COMPRISING OIL SURROUNDING HYDROPHOBIC OR HYDROPHILIC ACTIVE AND POLYMERIC SHELL SURROUNDING OIL

Liang S. Tsaur, Norwood; Shiji Shen, River Edge, both of N.J.; Michael P. Aronson, West Nyack, N.Y., and David J. Pocalyko, Lincoln Park, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,605

Int. Cl.[6] C11D *3/386, 3/37, 3/395*

U.S. Cl. 252—95 **13 Claims**

1. An aqueous liquid detergent composition comprising:

(a) 2 to 60% by weight of a surfactant selected from the group consisting of anionic, nonionic, cationic, zwitterionic, soap and mixtures thereof; and

(b) a capsule composition for use in said composition comprising:

(i) an detergent active subject to degradation by components in an aqueous liquid composition;

(ii) an oil dispersion containing said active, wherein said oil is defined: (1) by its ability to retain greater than 80% active in oil after an hour when the dispersion of active in oil is added to an aqueous solution containing 0.5 wt. % sodium lauryl sulfate; (2) the ability to suspend said active with less than 10% phase separation when stored at 37° C. for 1 week; and (3) by the ability to release more than 50% active after 5 minutes of a wash cycle when measured at 40° C.; and

(iii) a polymer shell surrounding the oil dispersion of (b), wherein said polymer shell is a water soluble polymer or water dispersible polymers selected from at least one of the group consisting of polyvinyl alcohol, a polyacrylamide, polyvinyl pyrrolidone, carrageenan, guar gum, xanthan gum, cellulose and protein;

wherein the active of (b)(i) is not modified or mixed with a matrix polymer.

9. A liquid detergent composition comprising:

(a) 2 to 60% by weight of a surfactant selected from the group consisting of anionic, nonionic, cationic, zwitterionic, soap and mixtures thereof;

(b) 1% to 20% by weight of peroxyacid selected from the group consisting of N,N'-Terephthaloyl-di(6-aminopercarboxycaproic acid) (TPCAP); N,N'-Di(4-percarboxybenzoyl)piperazine (PCBPIP); N,N'-Di(4-Percarboxybenzoyl)ethylenediamine (PCBED); N,N'-di(4-percarboxybenzoyl)-1,4-butanediamine (PCBBD); N,N'-Di(4-Percarboxyaniline)terephthalate (DPCAT); N,N'-Di(4-Percarboxybenzoyl)-1,4-diaminecyclohexane (PCBHEX); N,N'-Terephthaloyl-di(4-amino peroxybutanoic acid) (TPBUTY); N,N'-Terphthaloyl-di(8-amino peroxyoctanoic acid) (TPOCT); N,N'-Di(percarboxyadipoyl)phenylenediamine (DPAPD); N,N'-Succinoyl-di(4-percarboxy)aniline (SDPCA); and phthalamidoperoxycaproic acid (PAP); and

(c) a capsule composition for use in said composition comprising:

(i) an detergent active subject to degradation by components in an aqueous liquid composition;

(ii) an oil dispersion containing said active, wherein said oil is defined: (1) by its ability to retain greater than 80% active in oil after an hour when the dispersion of active in oil is added to an aqueous solution containing 0.5 wt. % sodium lauryl sulfate; (2) the ability to suspend said active with less than 10% phase separation when stored at 37° C. for 1 week; and (3) by the ability to release more than 50% active after 5 minutes of a wash cycle when measured at 40° C.; and

(iii) a polymer shell surrounding the oil dispersion of (b), wherein said polymer shell is a water soluble polymer or water dispersible polymers selected from at least one of the group consisting of polyvinyl alcohol, a polyacrylamide, polyvinyl pyrrolidone, carrageenan, guar gum, xanthan gum cellulose and protein;

wherein the active of (b)(i) is not modified or mixed with a matrix polymer.

5,441,661

NON-AQUEOUS LIQUID DETERGENT PREPARATIONS CONTAINING A HYDRATED ZEOLITE A STABILIZED BY A POLAR DEACTIVATING AGENT

Hans-Josef Beaujean, Dormagen; Rene-Andres Artiga Gonzalez, Duesseldorf, and Jens Bode, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/02117, § 371 Date Mar. 23, 1994, § 102(e) Date Mar. 23, 1994, PCT Pub. No. WO93/06201, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 16, 1992, Ser. No. 211,187

Claims priority, application Germany, Sep. 25, 1991, 41 31 906.0

Int. Cl.[6] C11D *1/72, 3/12, 3/395, 17/08*

U.S. Cl. 252—95 **11 Claims**

1. A process for producing a stabilized, synthetic, hydrated zeolite NaA, comprising impregnating, at a temperature below 40° C., said zeolite having a water content of from about 17% to about 25% by weight with 3 to 10 times its quantity by weight, of an organic, polar, non-surfactant deactivating agent which is liquid at room temperature and normal pressure and has a dielectric constant at 20° C. of at least 2.3.

3. A process for producing a paste-form, stable, bleach-containing and substantially water-free cleaning composition, comprising;

a) impregnating at a temperature below 40° C. from 10 to 30 parts by weight of synthetic, hydrated zeolite NaA having water content of from about 17% to about 25% by weight with

b) 3 to 10 times the quantity by weight of zeolite, of an organic, polar, non-surfactant deactivating agent which is liquid at room temperature and normal pressure and has a dielectric constant at 20° to 25° C. of at least 2.3,

c) removing said deactivating agent at a temperature below 40° C. until the ratio by weight of zeolite to deactivating agent is 1:1 to 1:5, and

d) blending the mixture prepared in step (c) with 100 to 150 parts by weight of a nonionic or anionic surfactant, 10 to 30 parts by weight of a bleaching agent, and up to 10 parts by weight of a bleach activator, based on the weight of said composition.

5,441,662

LIQUID DETERGENT

Karl Schwadtke, Leverkusen, and Eric Sung, Monheim, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/00913, § 371 Date Nov. 3, 1993, § 102(e) Date Nov. 3, 1993, PCT Pub. No. WO92/19711, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 25, 1992, Ser. No. 140,146

Claims priority, application Germany, May 3, 1991, 41 14 491.0

Int. Cl.[6] C11D *9/32, 1/12*

U.S. Cl. 252—108 **3 Claims**

1. An aqueous liquid detergent comprising from about 3 to about 10% by weight of the sodium salt of a fatty alkyl sulfate; from about 15 to about 30% by weight of a fatty alcohol ethoxylate; from about 1 to about 4% by weight of an alkyl glucoside of the formula $RO(G)_x$, wherein R is an alkyl radical, G is a glucose unit and x has a value of 1.10 to 1.45; from about 5 to about 10% by weight of a polyhydric alcohol; from about 12 to about 18% by weight of citric acid or an alkali metal salt thereof; and a soap of an unsaturated or saturated fatty acid.

5,441,663

COMPOSITION

Ravi Subramanyam, North Brunswick; Ben Gu, East Brunswick, and AnBen Hwang, Verona, all of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Dec. 20, 1993, Ser. No. 172,621

Int. Cl.[6] C11D *9/32, 9/22*

U.S. Cl. 252—108 **10 Claims**

1. A solid composition consisting essentially of

a. about 25 to 60 wt % of an acyl isethionate salt,

b. about 35 to 70 wt % of a long chain fatty acid salt, and

c. free fatty acid in an amount sufficient to increase lather performance and skin feel,

d. an effective amount of a metal chelating agent consisting solely of an agent selected from the group consisting of ethylene diamine tetra acetic acid, water soluble salts of said acid, and mixtures thereof, said composition having a pH of from about 7.2 to 10.

5,441,664

GELLED HARD SURFACE CLEANING COMPOSITION

Claude Blanvalet, Angleur, Belgium; Mary C. Brauchli, Maplewood, N.J.; Jolanta Dautas, Kirtland, Ohio, and Constance A. Marchese, Edison, N.J., assignors to Colgate Palmolive Co., Piscataway, N.J.

Filed Nov. 15, 1993, Ser. No. 151,621

Int. Cl.[6] C11D *9/24, 9/30, 9/32, 9/44*

U.S. Cl. 252—117 **24 Claims**

1. A cleaning composition which comprises approximately by weight:

a) 2 to 35% of at least one unsaturated fatty acid having about 8 to 24 carbon atoms;

b) 0.01 to 1.5% of an trialkanolamine;

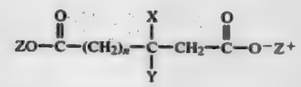
c) 0.01 to 1.5% of an alkanol having about 1 to about 5 carbon atoms;

d) 1.0 to 5.0% of an alkali metal hydroxide;

e) 0.02 to 2.0% of an amine oxide;

f) 0.02 to 2.0% of a sultaine; and

g) 0.05 to 3.0wt %, more preferably 0.1 to 2.5 wt %, of an acidic gelling agent having the formula:



wherein n=0, 1 or 2, X is selected from the group consisting of hydrogen, an alkoxy group having 1 to 4 carbon atoms, and a hydroxy group, Z is selected from the group consisting of hydrogen and an alkali metal cation, and mixtures thereof, and Y is selected from the group consisting of hydrogen, CO_2H and $CO_2^-Z^+$; and

h) the balance being water, said composition having a Brookfield viscosity at room temperature, #2 spindle, 20 rpms greater than 2000 cps.

5,441,665

PHOTOGRAPHIC EQUIPMENT CLEANER

Daniel W. Massaioli, Blacktown, Australia, assignor to Medefield Pty Ltd, Artarmon NSW, Australia

Filed Aug. 19, 1993, Ser. No. 109,127

Claims priority, application Australia, Aug. 19, 1992, PL4194

Int. Cl.[6] C23G *1/02;* **C01B** *15/08*

U.S. Cl. 252—142 **7 Claims**

1. A method of cleaning photographic apparatus contacting the apparatus with an aqueous composition containing by weight of the active ingredients, 50 to 98.9% of a persulfate salt, 1 to 40% of sulfamic acid and 0.1 to 10% at least one catalyst or accelerator compound chosen from ammonium metavanadate, potassium permanganate, potassium ferricyanide, boric acid, potassium metaperiodate,

sodium periodate, sodium tetraborate, potassium dichromate or mixtures thereof; and
precipitating silver deposits on said photographic apparatus with said aqueous composition.

5,441,666
HAND CLEANER

Vincent A. Dotolo, Clearwater, Fla., assignor to Citra Science Ltd., Largo, Fla.

Filed Aug. 2, 1994, Ser. No. 284,380
Int. Cl.[6] C11D *10/04*
U.S. Cl. 252—170 **19 Claims**

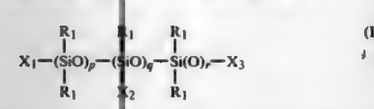
1. A hand cleaner, consisting of:
d-limonene;
C-11 alcohol ethoxylate;
butylated hydroxytoluene;
polyoxyethylene (20) sorbitan monooleate;
disodium EDTA;
acrylic copoiymer emulsifier;
propylene glycol;
optionally, pumice; and
the balance, water.

5,441,667
DETERGENT COMPOSITION

Manabu Tonomura, Utsunomiya, and Yasushi Kajihara, Kasukabe, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 989,937, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 717,077, Jun. 18, 1991, abandoned. This application Apr. 18, 1994, Ser. No. 229,100
Claims priority, application Japan, Jun. 28, 1990, 2-170882
Int. Cl.[6] C11D *3/37, 3/02*
U.S. Cl. 252—174.15 **4 Claims**

1. An aqueous, non-emulsion skin cleansing composition consisting essentially of
(A) 5 to 30 wt. % of a polyether-modified silicone, having a molecular weight of 1600 or smaller and an HLB value of 5–17, represented by the following formula (I):



(I)

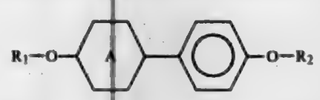
wherein R_1s may be the same or different and each independently represents a methyl or phenyl group, p is a mean value of 0–9, q is a mean value of 1–5, r is 0 or 1, and X_1, X_2, and X_3 may be the same or different and each independently represents a methyl or phenyl group or a group $R_2(OC_3H_6)_b(OC_2H_4)_aO(CH_2)_c$— wherein R_2 is a hydrogen or a lower alkyl group, a is a mean value of 0–16, b is a mean value of 0–12, and c is a number of 1–6, provided that a+b≧1, or X_1 and X_3 may form a single bond together, provided that at least one of X_1, X_2, and X_3 is a group $R_2(OC_3H_6)_b(OC_2H_4)_aO(CH_2)_c$—,
(B) a nonionic or ionic surface active agent, and
(C) water,
wherein the ratio of (A) to (B) is equal to or larger than 1.

5,441,668
SMECTIC LIQUID-CRYSTAL MIXTURE

Barbara Hornung, Hasselroth; Dietmar Jungbauer, Weiterstadt, and Javier Manero, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

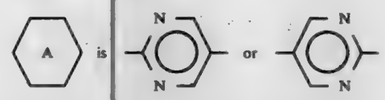
Filed Apr. 7, 1994, Ser. No. 224,145
Claims priority, application Germany, Apr. 10, 1993, 43 11 567.0
Int. Cl.[6] C09K *19/52, 19/34;* G02F *1/13*
U.S. Cl. 252—299.01 **10 Claims**

1. A liquid-crystalline mixture comprising
A. at least one compound of the formula I

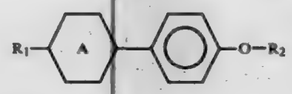


(I)

in which
R_1 and R_2 are identical or different, straight-chain or branched alkyl groups having 1 to 18 or 3 to 18 carbon atoms respectively, where a CH_2 group adjacent to the oxygen can be replaced by —CO—,

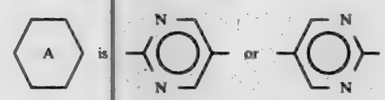


and/or at least one compound of the formula (II)



(II)

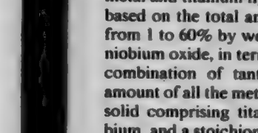
in which
R_1 and R_2 are identical or different, branched or unbranched alkyl groups having 1 to 18 or 3 to 18 carbon atoms respectively, where a CH_2 group adjacent to the oxygen can also be replaced by —CO—, and



B. at least one compound of the formula (III)

$$R^1(-A^1)_a(-M^1)_b(-A^2)_c(-M^2)_d(-A^3)_e(-M^3)_f(-A^4)-H \quad \text{(III)}$$

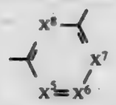
in which
R^1 is a straight-chain or branched alkyl radical having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two non-adjacent CH_2 groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO—, —O—CO—O— or —$Si(CH_3)_2$—,
A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, in which one or two H atoms can be replaced by F or CN, pyridine-2,5-diyl, in which one or two H atoms can be replaced by F, pyrimidine-2,5-diyl, in which one or two H atoms can be replaced by F, trans-1,4-cyclohexylene, 1,3,4-thiadiazole-2,5-diyl or naphthalene-2,6-diyl,
M^1, M^2 and M^3 are identical or different and are —CO—O—, —O—CO—, —CH_2—O—, —O—CH_2— or —CH_2—CH_2—, and
a, b, c, d, e and f are zero or one, with the proviso that the sum of a+c+e is 0, 1, 2 or 3;
C. and at least one compound of the formula (IV)



(IV)

in which
R^1 and R^2 are identical or different, straight-chain or branched alkyl radicals having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two non-adjacent —CH_2— groups can be replaced by —O—, —CO—,

—CO—O—, —O—CO—, —O—CO—O— or —$Si(CH_3)_2$—,
A^1, A^2 and A^3 are identical or different and are 1,4-phenylene, in which one or two H atoms can be replaced by F, pyridine-2,5-diyl, in which one or two H atoms can be replaced by F, pyrimidine-2,5-diyl, in which one or two H atoms can be replaced by F, trans-1,4-cyclohexylene, in which one or two H atoms can be replaced by —CN and/or —CH_3, or 1,3,4-thiadiazole-2,5-diyl,
and A^1 is alternatively



M^1, M^2 and M^3 are identical or different and are —O—, —CO—O—, —O—CO—, —CH_2—O—, —O—CH_2— or —CH_2—CH_2—,
X^1, X^2, X^3, X^4, X^5, X^6, X^7 and X^8 are CH or N, where the number of N atoms in a six-membered ring is 0, 1 or 2, and
a, b, c, d, e and f are zero or one, with the proviso that the sum a+c+e is 0, 1, 2 or 3.

5,441,669
PREVENTING POTASSIUM BICARBONATE FROM CAKING

Karl W. Seper, 412 Riverview Dr.; Robert L. Zeller, III, 425 Hawthorne Pl., both of Youngstown, N.Y. 14174, and Russell J. Morgan, 2276 Center Ct. N., Grand Island, N.Y. 14072

Filed Jul. 5, 1994, Ser. No. 270,604
Int. Cl.[6] C11D *3/48;* C01D *7/10*
U.S. Cl. 252—385 **9 Claims**

1. A method of making a composition which comprises potassium bicarbonate comprising
(A) reacting potassium carbonate with carbon dioxide and liquid water to produce wet potassium bicarbonate;
(B) heating said wet potassium bicarbonate to produce dry potassium bicarbonate; and
(C) uniformly dispersing about 0.1 to about 25 wt % anhydrous potassium carbonate throughout said potassium bicarbonate.

5,441,670
PROCESS FOR PRODUCING AN ELECTRICALLY CONDUCTIVE MIXED OXIDE OF TITANIUM AND TANTALUM OR NIOBIUM

Takayuki Shimamune, and Yasuo Nakajima, both of Tokyo, Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Division of Ser. No. 992,053, Dec. 17, 1992, abandoned. This application Sep. 15, 1993, Ser. No. 121,258
Claims priority, application Japan, Dec. 18, 1991, 3-354578
Int. Cl.[6] H01B *1/16*
U.S. Cl. 252—520 **4 Claims**

1. A process for producing an electrically conductive mixed oxide which comprises sintering a powder mixture comprising from 30 and 98% by weight of titanium oxide, in terms of the amount of titanium based on the total amount of all the metallic elements, from 1 to 10% by weight of at least one of titanium metal and titanium hydride, in terms of the amount of titanium based on the total amount of all of the metallic elements, and from 1 to 60% by weight of at least one of tantalum oxide and niobium oxide, in terms of the amount of tantalum, niobium, or combination of tantalum and niobium based on the total amount of all the metallic elements, to thereby obtain a sintered solid comprising titanium, at least one of tantalum and niobium, and a stoichiometrically deficient amount of oxygen, the content of titanium in the sintered solid being from 40 to 99% by weight and the content of tantalum, niobium, or tantalum and niobium in the sintered solid being from 1 to 60% by weight, respectively, based on the total amount of all of the metallic elements in the mixed oxide.

5,441,671
SKIN CLEANSING COMPOSITION

Michael Chesney, Fairfield; Donald Feliciano, Milford, and Susan Wivell, Madison, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 1, 1994, Ser. No. 204,687
Int. Cl.[6] C11D *1/12*
U.S. Cl. 252—549 **10 Claims**

1. A toilet bar composition comprising:
(i) from about 0.01 to 0.8% by weight of a behenyl lactylate salt; and
(ii) from about 10% to 90% by weight of a C_8–C_{12} acyl isethionate,
wherein the composition exhibits improved firmness with less mush and lower wear rates.

5,441,672
CONCENTRATED WATER-CONTAINING LIQUID DETERGENT

Karl Schwadtke, Leverkusen, and Eric Sung, Monheim, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

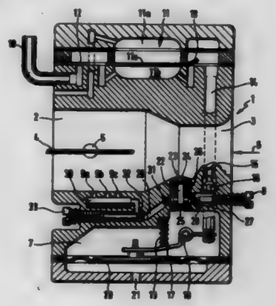
PCT No. PCT/EP92/01055, § 371 Date Nov. 24, 1993, § 102(e) Date Nov. 24, 1993, PCT Pub. No. WO92/20769, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 142,413
Claims priority, application Germany, May 23, 1991, 41 16 807.0
Int. Cl.[6] C11D *1/122, 3/37, 1/12*
U.S. Cl. 252—550 **13 Claims**

1. A concentrated water-containing liquid detergent comprising: (a) from about 8 to about 25% by weight of a C_{12-18} alkane sulfonate; (b) from 25 to about 32% by weight of a C_{13-18} fatty alcohol; (c) from about 5 to about 20% by weight of the partly esterified copolymer of (i) a C_{4-20} olefin or a mixture of a C_{4-20} olefin and up to 20 mole percent of a C_{1-20} alkyl vinyl ether, and (ii) an ethylenically unsaturated dicarboxylic anhydride having from 4 to 8 carbon atoms, wherein the comonomer molar ratio of (i) to (ii) is about 1:1.

5,441,673
CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

Reinhard Gerhardy, Korb, Germany, assignor to Andreas Stihl, Waiblingen, Germany

Continuation-in-part of Ser. No. 11,516, Feb. 1, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 325,939
Claims priority, application Germany, Jan. 30, 1992, 42 02 538.9; Nov. 26, 1992, 42 39 673.5
Int. Cl.[6] F02M *17/04*
U.S. Cl. 261—34.1 **20 Claims**



1. A carburetor for an internal combustion engine, the carburetor comprising:
a carburetor housing defining an air-intake channel communicating with the engine and through which a stream of air

flowing in an intake direction is drawn by suction when the engine is operating;
a throttle flap pivotally mounted in said air-intake channel so as to be pivotable between an idle position wherein said throttle flap permits a minimal quantity of air to pass through said air-intake channel and a full-load position wherein said throttle flap permits a maximum quantity of air to pass through said air-intake channel;
a main nozzle opening into said air-intake channel ahead of said throttle flap when viewed in said flow direction for metering fuel into said channel;
said housing including a control chamber for holding fuel;
main-nozzle fuel channel means connecting said main nozzle to said control chamber;
an idle nozzle opening into said air-intake channel in the region of said throttle flap for metering fuel into said channel when said throttle flap is in said idle position;
said housing further including an idle chamber;
an idle-nozzle fuel channel connecting said idle nozzle to said idle chamber;
fixed throttle means arranged in said main-nozzle fuel channel means between said main nozzle and said control chamber;
said idle chamber being connected into said main-nozzle fuel channel means downstream of said fixed throttle means;
said fixed throttle means being configured to define the maximum flow cross section for the fuel throughput supplied from said control chamber to said main nozzle and to said idle chamber;
adjustable throttle means for adjusting said flow cross section from said maximum flow cross section down to a pregiven minimum flow cross section; and,
said adjustable throttle means being adjustable between a first end position wherein said adjustable throttle means is fully closed and a second end position wherein said throttle means is fully open to effect a change of the total quantity of said fuel throughput between said first and second end positions with said change being a portion of said total quantity which corresponds to a maximum of 25% of said total quantity.

5,441,674

Patent Not Issued For This Number

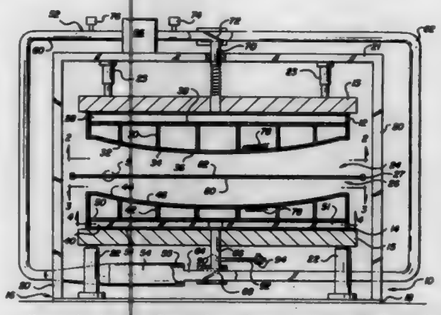
5,441,675

FORMING METHOD AND APPARATUS

Steven L. Souders, Portsmouth, N.H., assignor to Davidson Textron, Inc., Dover, N.H.

Filed Nov. 1, 1993, Ser. No. 147,934
Int. Cl.[6] B29C *33/02, 33/43, 43/02*
U.S. Cl. 264—25 **5 Claims**

1. A method of forming a workpiece in a mold cavity between a top mold, with a formed top die and a gas manifold, and a bottom mold, with a formed bottom die and a gas manifold, and a gas heater chamber including:
a. placing an unformed workpiece between the top and bottom dies;
b. closing the mold cavity to form the workpiece;
c. supplying hot gas from the gas heater chamber to one of the gas manifolds for passage through the workpiece and into the other gas manifold;
d. returning the gas from the other gas manifold to the gas heater chamber for reheating and recirculation through the mold cavity;



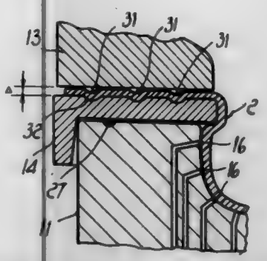
e. discontinuing the flow of gas through the workpiece after the workpiece has been heated to a temperature required to treat the workpiece:
f. continuously recirculating gas through the gas heater chamber in a closed circuit when the supply of hot gas to the workpiece is discontinued;
g. opening the mold cavity; and
h. removing the formed workpiece from between the top mold and the bottom mold after the mold cavity is opened.

5,441,676

METHOD FOR MANUFACTURING INTEGRAL ELASTIC SUPPORTS USING AN EXPANDABLE RESIN

Riccardo Bigolin, San Zenone Degli Ezzelini, Italy, assignor to Selle Royal S.p.A., Pozzoleone, Italy

Filed Dec. 17, 1993, Ser. No. 168,211
Claims priority, application Italy, Oct. 19, 1933, VI93A0163
Int. Cl.[6] B29C *44/14*
U.S. Cl. 264—25 **27 Claims**



1. A method for manufacturing an integral elastic support formed by an upper covering, by an intermediate filler and by a lower semirigid shell, employing a mold formed of a lower part having an upwardly open cavity and reproducing the resting surface of the support, a substantially flat upper part reproducing the bottom of the support, and a first locking plate intermediate the upper part and the lower part for engaging and retaining the covering, said method comprising the steps of:

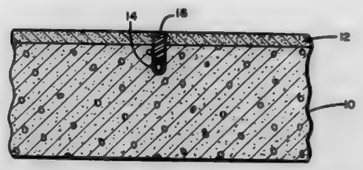
a) opening the mold so as to expose the cavity of the lower part of the mold;
b) depositing on said lower part a substantially airtight covering sheet having an excess border which exceeds the contour of said cavity;
c) securing said excess border against said lower part by superimposing said first locking plate thereon with the excess border located therebetween;
d) vacuum forming the covering sheet to produce a deformed sheet by producing a vacuum on an internal wall of said cavity;
e) pouring a first layer of a gel compound in a fluid state onto the bottom of the deformed sheet;
f) detachably coupling a shell made of semirigid plastic to the upper part of the mold;
g) pouring a second layer of an expandable resin in the fluid state onto said first gel layer;
h) closing the mold by superimposing and locking the upper part of the mold on said first locking plate and on said lower part of the mold;
i) maintaining the mold in such closed condition to allow the foaming and complete polymerization of the resin and of the gel compound; and
k) opening the mold and removing the finished support;
wherein the expandable resin is poured onto the gel compound after a period of time that is sufficient to allow the gel compound to assume a certain consistency and shape of its own but which is shorter than the full polymerization time of the compound, so as to allow the gel compound to react at least partially with said expandable resin.

5,441,677

METHOD OF MAKING HIGH GLOSS, HARDENED CONCRETE FLOORS

David L. Phillips, Sr., Prior Lake, Minn., assignor to Hi-Tech Floors, Inc., Burnsville, Minn.

Filed Sep. 1, 1993, Ser. No. 115,882
Int. Cl.[6] B28B *1/16, 1/48;* **E04B** *1/16*
U.S. Cl. 264—31 **21 Claims**



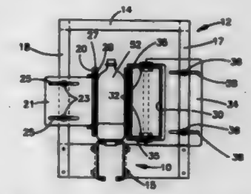
21. A method of fabricating a concrete floor having a very hard, autogenous, high gloss surface finish comprising the steps of:
(a) pouring a specifically formulated design concrete mix containing coarse aggregate to establish a poured slab of a predetermined slab thickness having an upper surface and an upper surface distributed level slightly below a level determined for the finished floor;
(b) creating a floor surface layer on said upper surface of said slab by applying an amount of dry shake dressing material having no coarse aggregate, to said upper surface and floating said dry shake dressing material on said upper surface until a predetermined amount of dry shake material is applied, such that said floor surface layer forms a generally monolithic floor with the concrete of said slab upon curing but which floor surface layer has a higher compressive strength than a compressive strength of said concrete of said slab when fully cured;
(c) allowing said floor to cure approximately 30 days or until it reaches a predetermined compressive strength;
(d) mechanically reducing surface roughness of said floor by sanding said floor surface layer; and
(e) polishing the surface of said floor surface layer until a final level of floor surface shine is achieved.

5,441,678

METHOD FOR REMOVING DENTS FROM PLASTIC BOTTLES

Dana J. Liebhart, Cuyahoga Falls, Ohio, assignor to Automated Label Systems Company, Twinsburg, Ohio

Filed Sep. 30, 1993, Ser. No. 129,657
Int. Cl.[6] B32B *35/00;* **B28B** *1/02*
U.S. Cl. 264—36 **14 Claims**



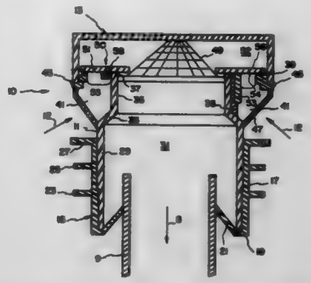
1. A method of assuring sufficient roundness of a plastic bottle to enable automatic label application comprising:
a) rotating the plastic bottle about an axis thereof while maintaining substantially line contact of an outer surface of the bottle against an opposing generally planar and stationary surface which is parallel to the axis of rotation;
b) relatively moving the axis of rotation and the opposing surface while the bottle rotates and the distance between the axis of rotation and the line contact is maintained substantially constant; and
c) continuing the relative motion and bottle rotation while maintaining surface contact for at least one revolution of the bottle to apply dent modifying pressure thereby effecting rounding of the bottle and a reduction in severity of dents in the bottle.

5,441,679

METHOD OF ASSEMBLING A VALUE HEAD

Daniel Chalich, Seminole, Fla., assignor to Studor, Inc., Dunedin, Fla.

Filed Jun. 3, 1993, Ser. No. 72,031
Int. Cl.[6] B29C *45/10, 45/14*
U.S. Cl. 264—39 **3 Claims**



1. A method of assembling a valve head including a valving plate and valve guide, including the steps of:
(a) molding said valve guide from a plastic material in a first mold and providing said first mold with a sand blasted surface juxtaposed to a top surface of the molded valve guide whereby said top surface is formed with a roughened surface;
(b) placing the molded valve guide in a second mold capable of receiving a soft elastomer;
(c) injection molding in said second mold said valving plate

from the soft elastomer and simultaneously engaging said roughened top surface of said valve guide to a surface of the valving plate;

(d) heating together in said second mold said valve guide and said valving plate to a temperature of over 400 degrees F. while pressing said valve guide and valving plate together at 12,000 to 15,000 psi, thereby causing a portion of said valve guide in engagement with said valving plate to soften so that said top surface of said valve guide is fused to said valving plate, said roughened top surface of said valve guide enhancing fusion between said top surface and said valving plate; and

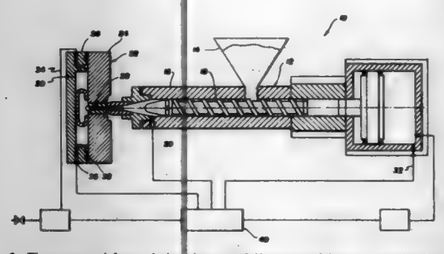
(e) cooling said guide as fused to said valving plate.

5,441,680

METHOD AND APPARATUS FOR INJECTION MOLDING

Milko G. Guergov, 615 Washington, #5, Monroe, Mich. 48161

Filed May 2, 1994, Ser. No. 236,471
Int. Cl.[6] B29C *45/34*
U.S. Cl. 264—40.1 **21 Claims**



1. For use with an injection molding machine, a method of injection molding, comprising:

generating internal counterpressure within molten plastic as plastic pellets are plasticized in the injection molding machine; and

pressurizing air within a cavity of a mold in the injection molding machine to an air pressure level which is substantially equal to said internal counterpressure in order to counterbalance said internal counterpressure as said molten plastic is injected into said cavity, thus providing a substantially pressure-balanced molding environment for the plastic; and

injecting said molten plastic into said cavity.

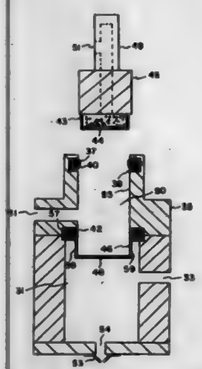
5,441,681

PROCESS FOR MANUFACTURE OF CONTAINERS FOR MATERIALS BEING HEATED

James E. Thomas, Monroe, N.C., assignor to CEM Corporation, Matthews, N.C.

Continuation-in-part of Ser. No. 867,891, Apr. 13, 1992, Pat. No. 5,252,274. This application Oct. 4, 1993, Ser. No. 130,752
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] B28B *1/26*
U.S. Cl. 264—56 **8 Claims**

1. A process for manufacturing a container for holding materials which comprises: depositing a dispersion of fibers in a liquid onto an interior wall of a liquid permeable female mold; removing liquid from the deposited dispersion by applying a pressure differential across the mold, with a higher pressure being interior of the mold and a lower pressure being exterior of the mold; moving a liquid permeable male mold into the female mold; terminating the differential pressure across the female mold; applying a pressure differential across the male mold, with a higher pressure being exterior of the mold and a lower pressure being interior of the mold, to press the container onto the male mold; withdrawing the male mold



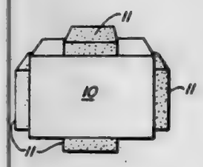
from the female mold, with the container being held to the male mold; and releasing the container from the male mold.

5,441,682

METHOD OF FORMING A CERAMIC COMPOSITE

Anna L. Baker, and Darryl F. Garrigus, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 527,600, May 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,498, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 698,496, Feb. 5, 1985, Pat. No. 5,041,321, which is a continuation-in-part of Ser. No. 667,563, Nov. 2, 1984, abandoned. This application Jul. 28, 1993, Ser. No. 124,419
Int. Cl.[6] C04B *40/00*; B28B *1/26*
U.S. Cl. 264—82 **16 Claims**



1. A method for making a ceramic composite, comprising the steps of:

(a) forming a slurry of ceramic components in a liquid, the components including microparticles in the size range between about 5–200 micrometers and selected from the group consisting of hollow microballoons, diatoms, solid microparticles and mixtures thereof;

(b) felting a wet mat of the ceramic components from the slurry;

(c) drying the wet mat;

(d) infusing a glass-forming ceramic sol-gel binder into the dry mat;

(e) gelling and curing the binder at a temperature of no more than about 600° F. to form a glass to hold the felted ceramic components in a rigid, porous, low-density, ceramic form;

(f) optionally, infusing additional binder into the mat; and

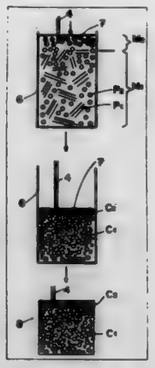
(g) optionally, gelling and curing the subsequent infusions of binder to form said ceramic composite, said ceramic composite having a strength.

5,441,683

SIMPLIFIED PROCESS FOR THE PRODUCTION OF CARBON MOTOR BRUSHES

Eric Kammerer; Christine Lietard, and Jean-Bernard Deboves, all of Amiens, France, assignors to Le Carbone Lorraine, Courbevoie, France

Filed May 31, 1994, Ser. No. 251,183
Claims priority, application France, Jun. 4, 1993, 93 06962
Int. Cl.[6] C04B *35/00*
U.S. Cl. 264—105 **17 Claims**



1. A process for producing a brush for an electric motor of predetermined final dimensions comprising a wearing block and a connecting braid, comprising the steps of:

a) preparing at least one mixture comprising at least one conductive graphite powder in the form of solid particles of a mean thickness less than 25 μm and a mean shape factor greater than 5, encased with a distillation binder;

b) a molding said at least one mixture together with a connecting braid in a mold to form a crude brush of said final dimensions; and

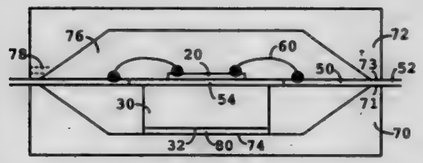
c) baking said crude brush.

5,441,684

METHOD OF FORMING MOLDED PLASTIC PACKAGES WITH INTEGRATED HEAT SINKS

Sang S. Lee, Sunnyvale, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 24, 1993, Ser. No. 126,346
Int. Cl.[6] B29C *45/14, 33/56*
U.S. Cl. 264—135 **23 Claims**



1. A method of forming a molded plastic package encasing at least one integrated circuit die, a portion of a structure upon which said at least one integrated circuit die is attached, and a heat sink attached to said portion of said structure and thermally connected to said at least one integrated circuit die, wherein said heat sink includes a base portion having an external surface which is level with and exposed through one surface of said molded plastic package, said method comprising the steps of:

applying a protective layer capable of withstanding a selected temperature to said external surface of said heat sink;

inserting said at least one integrated circuit die, said portion of said structure, and said heat sink into a mold in such a fashion that an exposed surface of said protective layer rests on and is level with a lower internal surface of said mold;

closing said mold such that a top portion of said mold engages said portion of said structure in such a fashion that said engagement causes said structure to be held in place; and

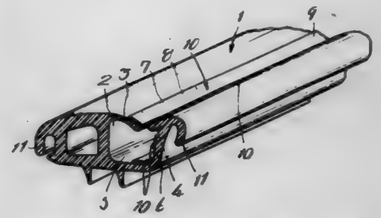
forming said molded plastic package by forcing a liquified plastic into said mold, and thence, solidifying said plastic by baking said plastic at said selected temperature.

5,441,685

METHOD FOR PRODUCING A WINDOW GLASS EDGING MEMBER FOR A VEHICLE SUCH AS AN AUTOMOBILE

Naohisa Miyakawa, Shiroi; Minoru Masuzawa, Kashiwa, and Katsuhisa Kato, Moriya, all of Japan, assignors to Tokiwa Chemical Industries Co., Ltd.; Masuzawa Chemical Sales Co., Ltd., both of Chiba and System Technical Co., Ltd., Ibaragi, all of Japan

Continuation-in-part of Ser. No. 827,114, Jan. 28, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,796
Claims priority, application Japan, Jan. 28, 1991, 3-091797; Mar. 29, 1991, 3-042009
Int. Cl.[6] B29C *47/06*
U.S. Cl. 264—148 **11 Claims**



1. A method of manufacturing an edging member for a window glass of an automobile door, comprising the steps of:

forming, from a mixture of a first synthetic resin material, selected from the group consisting of nylon and polyolefin resin, and particles or grains of at least one of mica, molybdenum and graphite, a contacting layer having a rough surface of projections and recesses formed by the presence of said particles or grains; and

co-extruding said contacting layer simultaneously with a second synthetic resin material, comprising a thermoplastic flexible synthetic resin, by extruding said mixture together with said second synthetic resin material through a single die to form a unitary edging member having said rough contacting surface adapted to contact the window glass of the automobile door.

5,441,686

METHOD OF FORMING AND ASSEMBLING TOP SHELLS ONTO THE LINKS OF METALLIC WATCHBANDS

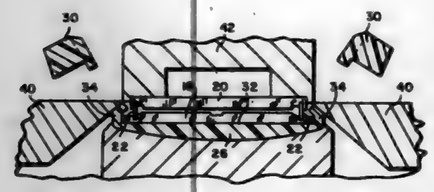
Werner Jackl, Coventry, R.I., and Richard E. Ripley, Atteboro, Mass., assignors to Textron Inc., Providence, R.I.

Filed Dec. 17, 1993, Ser. No. 169,333
Int. Cl.[6] B29C *65/64*
U.S. Cl. 264—152 **15 Claims**

1. A method of assembling top shells onto the links of a flexible linkage, said top shells being configured and dimensioned to overlie said links and having bendable end tabs, said method comprising the steps of:

forming an elongated framework which includes a plurality of said top shells arranged in an integrally interconnected parallel array;

combining a section of said linkage with said framework in a manner such that the links of said section are aligned with said top shells; and



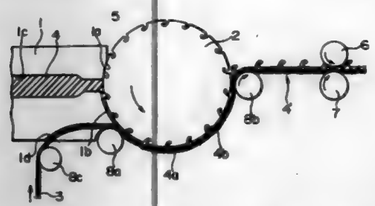
subdividing said framework to separate said top shells one from the other while deforming said end tabs around and into mechanical interengagement with the ends of said links to thereby secure said top shells to said links.

5,441,687

METHOD AND APPARATUS FOR MANUFACTURING A MATERIAL-BACKED ENGAGING MEMBER FOR SURFACE FASTENER

Ryuichi Murasaki, and Hisai Nishiyama, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 93,951
Claims priority, application Japan, Jul. 22, 1992, 4-195434
Int. Cl.[6] B29C *47/02, 47/32*
U.S. Cl. 264—167 **10 Claims**



1. A method of manufacturing a continuous length of surface fastener engaging member including a base layer on the front surface of which a multiplicity of coupling elements are molded and on the back surface of which a backing material is attached, comprising the steps of:

(a) extruding from an extrusion nozzle a width of molten resin;

(b) introducing the molten resin, which is extruded from the extrusion nozzle, into a gap between the extrusion nozzle and a die wheel, said gap having a constant depth extending around a partial circumference of said die wheel, which has a multiplicity of coupling element molding cavities on its circumferential surface and a cooling unit inside, to fill up the coupling element molding cavities with the molten resin as the die wheel rotates in one direction;

(c) continuously molding a multiplicity of coupling elements integrally on the front surface of a continuous board-shaped base layer as the die wheel is rotated in such a direction as to extrude the molten resin;

(d) applying a porous backing material, which is supplied separately from the molten resin and adjacently to the extrusion nozzle while being heated, to the board-shaped base layer under pressure while the board-shaped base layer is moved in response to the rotation of the die wheel;

(e) cooling the die wheel to a predetermined temperature; and

(f) positively pulling a resulting engaging member, which includes the board-shaped base layer with the backing material attached thereto as cooled, from the die wheel in the molten resin extruding direction as the molded coupling elements of the engaging member are removed off the coupling element molding cavities.

8. An apparatus for manufacturing a continuous length of surface fastener engaging member including a base layer on the front surface of which a multiplicity of coupling elements are molded and on the back surface of which a backing material is attached, comprising:

(a) a die wheel having a multiplicity of coupling element molding cavities on its circumferential surface and a built-in cooling means;

(b) a drive means for rotating said die wheel in one direction;

(d) an extrusion nozzle situated adjacent to and confronting said die wheel, said extrusion nozzle having inside an extrusion flow channel through which a width of molten resin is to be extruded, said extrusion nozzle shaped to provide a substantially constant depth gap around a partial circumference of said die wheel, said gap open to said flow channel, said extrusion nozzle having a backing material guide means for guiding a backing material, which is supplied separately from the molten resin, in contact with the molten resin; and

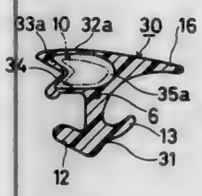
(e) coacting puller rollers situated downstream of said die wheel in its rotating direction.

5,441,688

MANUFACTURING METHOD FOR FORMING AN ELONGATE BODY HAVING A THICKNESS CHANGE

Shinichi Goto; Chiaki Komiyama; Hiroshi Iwasaki, and Kazukiyo Hayashi, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Sep. 13, 1993, Ser. No. 119,686
Claims priority, application Japan, Oct. 30, 1992, 4-293314
Int. Cl.[6] B29C *47/22*
U.S. Cl. 264—167 **7 Claims**



1. A method for forming an elongate window molding having a longitudinal axis and variations in wall thickness along the length thereof, the method comprising the steps of:

extruding a first elongate member having a tubular portion of a predetermined thickness, said first elongate member having a first outline in a first extruding step, said first outline consisting of a retaining leg having an inner support extending outwardly therefrom on one side and an inner retaining lip extending outwardly therefrom on an opposite side, an outer seal lip, a head portion, an outer support and a folding piece, said outer support, said folding piece, said head portion and said outer seal lip collectively extending from an upper part of said retaining leg and defining said tubular portion and an enclosed hollow tubular cavity therebetween;

extruding, successively to the first portion, a second elongate member having a tubular portion in a second extruding step, said second elongate member having a second outline substantially similar to said first elongate member, said second elongate member having said head portion, said outer support and said folding piece formed with a wall thickness less than a comparable thickness thereof in said first elongate member thereby enlarging the enclosed hollow tubular cavity by disproportionately varying wall thicknesses of the structure bounding said cavity; and

pressing the folding piece of said second elongate member in a direction transverse to the longitudinal axis and into engagement with the outer seal lip to deform the second elongate member so as to have a cross-sectional height less than a cross-sectional height of the first elongate member.

5,441,689

PROCESS OF MAKING REGENERATED CELLULOSE ARTICLES

Peter R. Laity, Coventry, United Kingdom, assignor to Courtaulds PLC, London, United Kingdom

PCT No. PCT/GB92/02233, § 371 Date May 9, 1994, § 102(e) Date May 9, 1994, PCT Pub. No. WO93/11287, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 1, 1992, Ser. No. 240,696
Claims priority, application United Kingdom, Dec. 2, 1991, 9125594
Int. Cl.[6] B01D *15/04;* D01F *2/00, 13/02*
U.S. Cl. 264—179 **18 Claims**

1. A process for the manufacture of a regenerated cellulose article comprising the steps of:

(a) dissolving cellulose in a tertiary amine N-oxide to form a solution;

(b) contacting the solution with an aqueous bath to precipitate said regenerated cellulose article and to form spent bath;

(c) purifying the spent bath by treatment with a strongly basic anion-exchange resin in hydroxide form,

in which process the resin is regenerated by successive treatment with:

(1) an aqueous solution of a strong inorganic acid; and

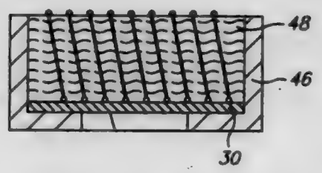
(2) an aqueous solution of sodium hydroxide.

5,441,690

PROCESS OF MAKING PINLESS CONNECTOR

Juan Ayala-Esquilin, San Jose, Calif.; Brian S. Beaman, Hyde Park; Rudolf A. Haring, Cortlandt Manor, both of N.Y.; James L. Hedrick, Pleasanton, Calif.; Da-Yuan Shih, Poughkeepsie, and George F. Walker, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 6, 1993, Ser. No. 88,016
Int. Cl.[6] B29C *33/42;* B32B *15/02*
U.S. Cl. 264—277 **3 Claims**



1. A process for making an electrical connector comprising a dielectric composition having first and second opposing surfaces and a plurality of electrically conducting wires having a diameter less than 10 mils extending from the first to the second opposing surface of the electrical connector, the dielectric composition comprising a crosslinked polysiloxane composition having a tensile strength greater than 170 psi, the process comprising the steps of:

(a) disposing uncrosslinked polysiloxane composition having a viscosity less than 5500 centipoise around a plurality of unsupported electrically conducting wires bonded to a sacrificial substrate, said uncrosslinked polysiloxane composition comprising (i) about 70 to 90 weight % of random copolymer of dimethylsiloxane and diphenylsiloxane and (ii) about 10 to 30 weight % of filler comprising zinc oxide and a lanthanide oxide;

(b) hydrosilation crosslinking of the polysiloxane composition and

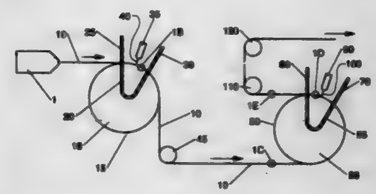
(c) removing the sacrificial substrate.

5,441,691

PROCESS FOR MICROAPERATURING AND MICROEMBOSSING A POLYMERIC WEB

G. Chris Dobrin, and Donna S. Phillips, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 30, 1993, Ser. No. 129,532
Int. Cl.[6] B29C *59/02, 69/02*
U.S. Cl. 264—504 **18 Claims**



1. A continuous, multi-phase process for perforating and embossing a substantially continuous web of substantially planar polymeric film to form a microapertured and microembossed polymeric web, said process comprising the steps of:

(a) continuously supporting said web of film on a first forming structure exhibiting a multiplicity of fine-scale apertures which place the opposed surfaces of said first forming structure in fluid communication with one another, said first forming structure moving in a direction parallel to the direction of travel of said web of film and carrying said web of film in said direction, said first forming structure including a woven wire mesh having a predetermined mesh count;

(b) substantially continuously applying a first fluid pressure differential across the thickness of said web of film along said direction of movement of said first forming structure exhibiting said fine-scale apertures, said first fluid pressure differential being sufficiently great to cause said web of film to rupture in those areas coinciding with said fine-scale apertures in said forming structure forming a microapertured web;

(c) continuously supporting said microapertured web of film on a second forming structure exhibiting a multiplicity of fine-scale apertures which place the opposed surfaces of said second forming structure in fluid communication with one another, said second forming structure moving in a direction parallel to the direction of travel of said microapertured web of film and carrying said microapertured web of film in said direction, said second forming structure including a woven wire mesh having a predetermined mesh count, said predetermined mesh count of said second forming structure being at least about 20 filaments per square inch less than said predetermined mesh count of said first forming structure; and

(d) substantially continuously applying a second fluid pressure differential across the thickness of said microapertured web of film along said direction of movement of said second forming structure, said second fluid pressure differential being sufficiently great to cause said microapertured web of film to be urged into substantial conformance with the fine-scale apertures of said second forming structure to form a pattern of fine-scale microembossments superimposed upon a pattern of fine-scale microapertures, said pattern of fine-scale microembossments having a pattern density of at least about 20 filaments per square inch less than a corresponding pattern density of said

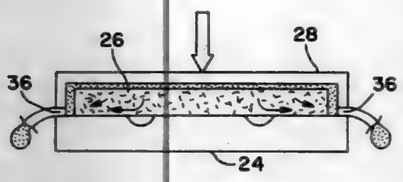
pattern of fine-scale microapertures, while substantially maintaining the integrity of said fine-scaleapertures formed by said first fluid pressure differential forming a microapertured and microembossed web of film.

5,441,692

PROCESS AND APPARATUS FOR AUTOCLAVE RESIN TRANSFER MOLDING

Todd Taricco, Zephyr Cove, Nev., assignor to Thermal Equipment Corporation, Torrance, Calif.

Filed Feb. 14, 1994, Ser. No. 196,409
Int. Cl.[6] B29C *70/48*
U.S. Cl. 264—571 **14 Claims**



8. A method for forming a composite part from a material and a resin, comprising the steps of:

a) placing the material on a tool;

b) attaching a cover to said tool to encapsulate the material, said tool and said cover defining an inner cavity that has a tool pressure;

c) placing said cover, said tool and the material within an inner chamber of an autoclave, said inner chamber having an autoclave pressure;

d) varying the tool pressure of said inner cavity and the autoclave pressure of said inner chamber so that a net pressure across said cover is approximately zero; and,

e) introducing a resin to said inner cavity.

5,441,693

METHOD OF MAKING CEMENTED CARBIDE ARTICLES AND THE RESULTING ARTICLES

Stefan Ederyd, Saltsjö-Boo; Jan Akerman, Stockholm, both of Sweden; Robert Beaufoy, Coventry; Michael Carpenter, Nuneaton, both of England; Maxime Bonneau, Le Fontanil, and Jacques Pillot, La Tronche, both of France, assignors to Sandvik AB, Sandviken, Sweden

Filed Apr. 10, 1992, Ser. No. 866,494
Claims priority, application Sweden, Apr. 10, 1991, 9101078; France, May 23, 1991, 91 06211
Int. Cl.[6] B22F *3/00*
U.S. Cl. 419—10 **20 Claims**

1. A method of making a sintered body comprising:

mixing powders comprising a hard constituent and a metallic binder selected from the group consisting of cobalt, nickel., iron and mixtures thereof, said metallic binder comprising non-agglomerated spherical particles having dimensions smaller than 1 μm, at least 80% of said particles having dimensions in the range x±0.2x and the range of variation of 0.4x being not smaller than 0.1 μm, said binder particles being made by chemical reaction in a reaction mixture of a metallic oxide, hydroxide or salt with at least one polyol and subsequent separation of the precipitated particles;

pressing the mixed powders into a compact; and

sintering the pressed compact at a temperature and time sufficient to form a sintered compact having less than 0.5 binder phase lakes per cm^2 with a maximum dimension of >25 μm and less than 5 carbide grains per cm^2 with a grain size of more than 5 times an average grain size of a matrix of the sintered compact.

5,441,694

PREPARATION OF HIGH α-TYPE SILICON NITRIDE POWDER

Masanori Fukuhira, Takasaki; Hirofumi Fukuoka, Annaka; Yoshiharu Konya, Annaka, and Masaki Watanabe, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,035
Claims priority, application Japan, Jun. 11, 1993, 5-166183
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—57 **19 Claims**

1. A method for preparing a high alpha-type silicon nitride powder comprising the steps of:

adding to metallic silicon powder at least one member selected from copper and copper compounds in an amount of from 0.05% to less than 0.5% by weight of copper based on the weight of the metallic silicon,

mixing said member with metallic silicon so that the degree of mixing reaches 0.9 or more, and

nitriding the mixture in a non-oxidizing gas atmosphere containing nitrogen or ammonia at a temperature in the range of 1,000° to 1,500° C. to obtain a silicon nitride powder having an d-conversion of 90% or higher.

5,441,695

PROCESS FOR THE MANUFACTURE BY SINTERING OF A TITANIUM PART AND A DECORATIVE ARTICLE MADE USING A PROCESS OF THIS TYPE

Thomas Gladden, Cormondrèche, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jul. 22, 1994, Ser. No. 277,306
Claims priority, application Switzerland, Jul. 23, 1993, 02246/93; France, Jul. 30, 1993, 93 09530
Int. Cl.[6] B22F *1/00, 3/16*
U.S. Cl. 419—37 **13 Claims**

1. A process for the manufacture by sintering of a titanium part, comprising the steps of:

(a) mixing a titanium hydride powder with a temporary binding agent,

(b) injecting the mixture obtained into a mould; to obtain a part in the desired shape,

(c) removing the binding agent,

(d) gradually heating the part in a hydrogen atmosphere up to a desired sintering temperature,

(e) replacing the hydrogen atmosphere by a non-reactive atmosphere once the sintering temperature has been reached, while keeping the part at said sintering temperature for between 5 and 60 minutes, and

(f) gradually cooling the part in a non-reactive gas atmosphere.

5,441,696

COPPER-NICKEL BASED ALLOY

Kenji Kubosono; Iwao Asamizu; Masazumi Iwase, and Toshihiro Kurita, all of Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 903,968
Claims priority, application Japan, Jul. 9, 1991, 3-168230
Int. Cl.[6] C22C *9/00*
U.S. Cl. 420—469 **4 Claims**

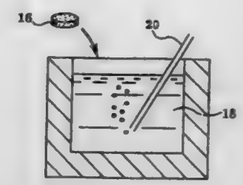
1. A copper-nickel based alloy, having reduced break-out during casting and reduced cracking during processing in solid state, which consists essentially of 3.1 to 25 wt. % of Ni, 0.1 to 1.5 wt. % of Mn, 0.0001 to 0.0093 wt. % of B, and 10 to 30 wt. % of Zn or 1 to 6 wt. % of Al or both, and the rest being Cu and unavoidable elements.

5,441,697

METHOD OF PRODUCING TIC WHISKERS AND METALLIC COMPOSITES REINFORCED BY TIC WHISKERS

Tetsuya Nukami, Susono, and Tetsuya Seganuma, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Aug. 5, 1993, Ser. No. 102,211
Claims priority, application Japan, Aug. 6, 1992, 4-231383; Jul. 9, 1993, 5-194052
Int. Cl.[6] C22C *21/00*
U.S. Cl. 420—528 **22 Claims**



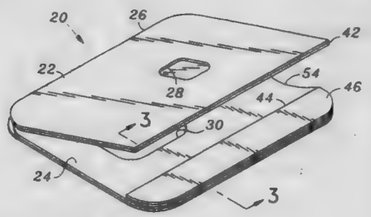
1. A method of producing a TiC microstructure, comprising the steps of adding a Ti powder and a graphite powder to a molten mass of pure Al or an Al alloy, injecting a supply of an inactive gas into said molten mass to generate void spaces formed by bubbles of said gas in said molten mass wherein TiC is formed as TiC whiskers in said void spaces, and cooling down said molten mass to solidify said molten mass containing said TiC whiskers.

5,441,698

BEVEL CLOSURE AND DEVICE

Joyce L. Norell, Boulder Creek, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 10, 1993, Ser. No. 119,466
Int. Cl.[6] G01N *21/00*
U.S. Cl. 422—58 **43 Claims**



1. A reclosable testing device, comprising:

a base member;

a cover member;

a fixed member fixed to the base member, the fixed member having an undercut edge;

a hinge between the base member and cover member;

a testing element fixed to at least one of the base member or the cover member; and,

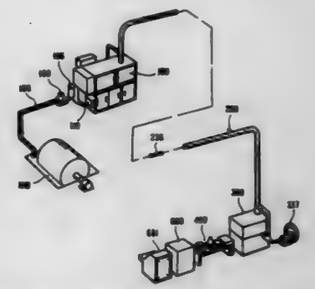
closure means comprising a beveled edge on the cover member, the beveled edge being supplementary to the undercut edge and being adapted to be received and retained in a closed position with the undercut edge of the fixed member in an edge-to-edge to-edge engagement, the base member, cover member, and fixed member being formed of a sufficiently rigid material to minimize bowing on the closure thereby to ensure that a sample for testing and the testing element come into operative contact for effecting a test, and that a force is distributed substantially evenly over the cover member, and thereby further ensuring that, together with the hinge between the base member and the cover member, and with the closure means, the closure force is substantially equally distributed along the length of the closure means.

5,441,699

APPARATUS FOR AUTOMATICALLY ANALYZING LIQUID TEST SAMPLES

Jai-Choon So; Hae-Il Kwak; Kyu-Hae Kwang; Yong-Hwan Cho; Ki-Jin Eom, and Sa-Ryong Pack, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd. and Research Institute of Industrial Science & Technology, both of Kyong Sang Book-Do, Rep. of Korea

Filed Dec. 28, 1993, Ser. No. 174,144
Claims priority, application Rep. of Korea, Dec. 28, 1992, 1992-25813; Dec. 29, 1992, 1992-25993; Dec. 30, 1992, 1992-27641 U; Dec. 16, 1993, 1993-27975
Int. Cl.[6] G01N *35/10, 35/00*
U.S. Cl. 422—63 **11 Claims**



1. A liquid test sample analyzing apparatus comprising:

a test sample taking section (**100**) for taking a test sample from a liquid test sample solution (**120**) storing tank (**1010**) of a production line and for filling the taken test sample into a sampling bottle (**173**);

a test sample carrying section (**200**) for carrying said sampling bottle (**173**) containing said test sample from said test sample taking section (**100**) to an analyzing room;

a test sample readying section (**300**) for opening or closing an upper plug (**184**) of said sampling bottle (**173**) from said test sample carrying section (**200**) including means to draw said test sample;

a test sample pre-treating section (**400**) including means for drawing said test sample solution from said test sample readying section (**300**) to dilute, or to add additives or extract a selected amount of test sample solution;

a filtered test sampling preparing section (**500**) for preparing said test sample from said test sample pre-treating section (**400**), wherein solid materials from said test sample solution are deposited on a filtering paper (**530**); and

analyzing instruments (**600**) for analyzing said test sample supplied from said test sample pre-treating section (**400**) and said filtered test sample preparing section (**500**), and wherein said test sample taking section (**100**) includes:

a pipe conduit (**108**) return-connected to said liquid test sample storing tank (**1010**);

a pump (**109**) and a filter (**106**) installed at intermediate positions of said pipe conduit (**108**) for filtering the test sample solution;

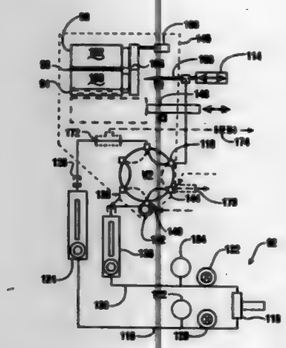
a test sample taking container (**110**) and a washing water storing container (**118**) installed below said test sample taking section (**100**);

pneumatic cylinders (**112**) and (**113**) secured on a supporting device (**111**) of said test sample taking container (**110**) for moving up and down a tube (**114**), and a filter (**115**) installed on said tube (**114**) for filtering the test sample solution a second time;

a sampling bottle storing barrel (**123**) installed on the middle of the top of a supporting plate (**122**);

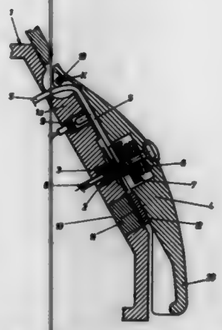
a pneumatic cylinder (124) installed at a first side of said sampling bottle storing barrel (123);
a robot elbow (127) installed at a second side of said sampling bottle storing barrel (123), and for securing said sampling bottle (173) by means of a sampling bottle insertion slot (125) and a pneumatic cylinder (174);
a pneumatic cylinder (130) connected to a tube securing unit (129) and installed above said supporting plate (122);
a pneumatic cylinder (134) having a plug opening/closing device (133) and installed upon a supporting device (132); and
an interlocking pump (131) installed at an intermediate position of said tube (114),
whereby the blocking of said pipe conduit (108) due to the precipitation of the test sample solution is prevented, and the taking of said test sample is automatically carried out.

5,441,700
HEADSPACE AUTOSAMPLER APPARATUS
Michael Markelov, 7276 Greenfield, Chesterland, Ohio 44026
Filed Jun. 7, 1995, Ser. No. 72,822
Int. Cl.[6] G01N *35/00*
U.S. Cl. 422—83 **6 Claims**



1. A headspace autosampling apparatus for generating and delivering gaseous samples from headspaces in vials holding substances for analysis to an inlet of an analytical instrument for analysis, comprising:
a plurality of generally cylindrical vials having an interior area which contains a substance therein, at least a portion of which is liquid and including a headspace above said substance;
means for rotating said vials about an axis extending longitudinally through said interior area and wherein said axis extends generally horizontally such that a film of said substance coats an interior surface of the vials whereby the rate of diffusion of the substance into the headspace is increased;
holding means for holding the plurality of vials, wherein said holding means holds said vials in a vertically stacked relation and with the longitudinal axis of each vial extending in a generally horizontal direction;
heating means for heating a heated zone;
means for delivering said vials one at a time from said holding means to the heated zone; and,
means for placing the headspace of the vials in said heated zone in fluid communication with said inlet.

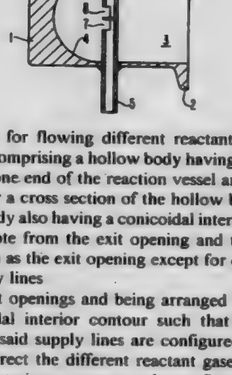
5,441,701
FEEDER UNIT FOR SELECTIVELY CHARGING AN ANALYZING APPARATUS
Hermann Marsoner, Steinberg; Erich Kleinhappl, Weinitzen, and Reinhard Löschnigg, Graz, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland
Continuation of Ser. No. 41,178, Apr. 1, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 330,916
Claims priority, application Austria, Apr. 2, 1992, 683/92
Int. Cl.[6] G01N *21/84*
U.S. Cl. 422—63 **5 Claims**



1. A feeder unit for delivering fluid samples to an analyzing apparatus, said feeder unit comprising a mounting means, sample inlet means mounted on said mounting means, said sample inlet means including a flexible feeder funnel which defines a central flow axis, a fixed hinge pin which defines a pivot axis which is perpendicular to said central flow axis, a cover flap which is pivotally movable about said pivot axis of said hinge pin, a support means elastically attached to said cover flap, a washing element mounted to said support means, an intake passage means connected to said washing element to supply at least one of cleaning media, liquid reference media and gaseous reference media to said washing element, said cover flap being pivotally exclusively moveable about said pivot axis of said fixed hinge pin so as to move towards said sample inlet means to a closed position wherein said washing element is located in said sample inlet means for the supply of at least one of cleaning media, liquid reference media and gaseous reference media to said sample inlet means, or away from said sample inlet means to an open position whereby said sample inlet means is uncovered and fluid samples can be supplied thereto.

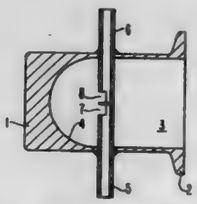
5,441,702
REFILL PACK FOR PIPETTE TIP RACKS
David J. Lemieux, Middleton, Mass.; Paul K. Chadwick, San Francisco, Calif.; Christopher Kelly, Larkspur, Calif.; James S. Petrek, Danville, Calif.; Kenneth Rainin, Piedmont, Calif.; Haakon T. Magnussen, Jr., Orinda, Calif., and William D. Homberg, Oakland, Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.
Filed Sep. 21, 1993, Ser. No. 125,019
Int. Cl.[6] B01L *3/02*; B65D *55/00, 1/34*
U.S. Cl. 422—100 **29 Claims**

1. For use with an empty reusable pipette tip rack including an open top and side support members extending vertically from a base support surface for the rack to vertically receive and horizontally position an array of pipette tips within the rack, a refill pack comprising:
a plurality of pipette tips;
pipette tip organizing means for vertically supporting the pipette tips in a horizontally spaced array, the organizing means being free of vertical support structure capable of engaging the base support surface for the tip rack when the organizing means is supporting the pipette tips;
hand-gripable carrier means secured to the organizing means for hand positioning the array of pipette tips over the open top of the empty pipette tip rack; and



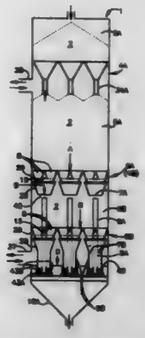
releasable means engaging the organizing means for downwardly dispensing the array of pipette tips from the carrier means into the empty pipette tip rack.

5,441,703
GAS INLET FOR A PLURALITY OF REACTANT GASES INTO REACTION VESSEL
Holger Jürgensen, Aachen, Germany, assignor to Aixtron GmbH, Germany
Continuation of Ser. No. 41,347, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 911,366, Jul. 13, 1992, abandoned, which is a continuation of Ser. No. 652,400, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 334,701, Apr. 6, 1989, abandoned. This application Mar. 29, 1994, Ser. No. 219,415
Claims priority, application Germany, Jun. 30, 1987, 37 21 637.6
Int. Cl.[6] B05B *7/00, 7/04*
U.S. Cl. 422—129 **2 Claims**



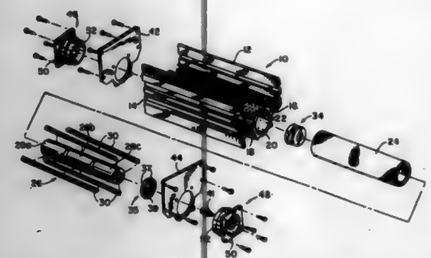
1. A gas inlet for flowing different reactant gases into a reaction vessel, comprising a hollow body having an exit opening arranged at one end of the reaction vessel and
extending over a cross section of the hollow body,
said hollow body also having a conicoidal interior contour at an end remote from the exit opening and the same free cross-section as the exit opening except for cross sections of the supply lines
having gas exit openings and being arranged in relation to the conicoidal interior contour such that the gas exit openings of said supply lines are configured to partially spray and direct the different reactant gases toward the conicoidal interior contour so that a flow of different reactant gases toward the exit opening is homogeneously widened by the conicoidal interior contour and is further atomized by the flow of the different reactant gases from the supply lines.

5,441,704
FLUIDIZED BED REACTOR ARRANGEMENT
Horst Grochowski, Hafenstrabe 25, D-4200 Oberhausen, Germany
PCT No. PCT/EP90/00768, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO90/14156, PCT Pub. Date Nov. 29, 1990
Continuation of Ser. No. 776,345, Nov. 19, 1991, abandoned. This PCT application May 12, 1990, Ser. No. 182,667
Claims priority, application Germany, May 19, 1989, 39 16 325.3
Int. Cl.[6] B01J *8/12, 8/28*
U.S. Cl. 422—145 **19 Claims**



1. A moving bed reactor for treating a fluid by means of a downwardly flowable bulk material, comprising:
a) a pair of upright reaction chambers comprising an upper reaction chamber and a lower reaction chamber arranged below the upper reaction chamber;
b) a bulk material intake means and a bulk material outlet means for the throughput of bulk material downwards through said reaction chambers;
c) a fluid intake means and a fluid outlet means for the throughput of fluid through the bulk material within each reaction chamber;
d) a bulk material distribution base for said upper reaction chamber for distributing bulk material over the cross section of said upper reaction chamber;
e) a flow-past base contiguous with the bottom of each reaction chamber for distributing fluid across the cross-section of each reaction chamber, each flow-past base comprising means to accommodate the downward-throughput of bulk material past the base;
f) a bulk material discharge means arranged below the upper reaction chamber flow-past base for discharging a part of the bulk material from the upper reaction chamber, said bulk material discharge means extending downwardly through the lower reaction chamber and the lower reaction chamber flow-past base; and
g) a control means comprising;
i) a first actuatable control associated with said bulk material discharge means of the upper reaction chamber to control the discharge of bulk material from said bulk material discharge means,
ii) a second actuatable control associated with said lower reaction chamber to control the discharge of bulk material from said lower reaction chamber, said first and second controls being independently actuatable.

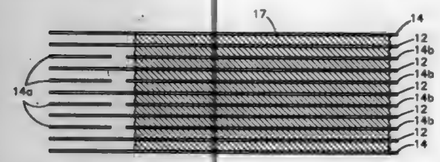
5,441,705
COMBINED REACTION CAN AND INFLATOR WITH EXTRUDED GENERANT
Donald R. Lauritzen, Hyrum; David J. Green, Brigham City, and Larry D. Rose, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Mar. 14, 1994, Ser. No. 213,176
Int. Cl.[6] B60R *21/26*
U.S. Cl. 422—166 11 Claims



1. In a vehicle occupant restraint system including a trough-shaped main body having first and second ends, first and second end plates attached to said main body to form a reaction canister, an ignition chamber in gas flow communication with the interior of said canister, a gas generant within said ignition chamber, said reaction canister being adapted to enclose an airbag to be filled with gas from said gas generant upon ignition, and means for igniting said gas generant, the improvement of which comprises:

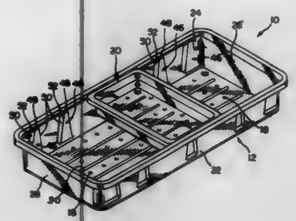
said gas generant comprising an extruded, elongated substantially cylindrical member having an elongated length and a substantially circular cross-section partially subdivided by radial grooves extending along the length of said member and wherein igniter strips are retained within a plurality of said radial grooves.

5,441,706
COMBINED ELECTRICALLY HEATABLE CONVERTER BODY
William A. Whittenberger, Leavittsburg, Ohio, assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation-in-part of Ser. No. 66,887, May 5, 1993, abandoned. This application Jul. 28, 1994, Ser. No. 282,074
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—174 49 Claims



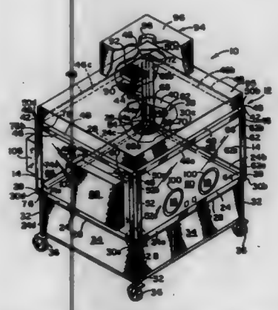
1. A metallic electrically heatable converter body comprising a tubular housing and a multicellular metallic honeycomb core element contained in said housing, said core element formed of thin sheet metal layers defining a plurality of cells, each layer having marginal edges, said metal layers of said multicellular metallic honeycomb core element defining an electrically heatable portion and a "light-off" portion wherein the electrically heatable portion and the "light-off" portion are intertwined and integral, and means for supplying electric power connected to said electrically heatable portion.

5,441,707
STERILIZATION CONTAINER
Paul P. Lewis, Warsaw; Daniel Owens, and Daniel L. Sands, both of Silver Lake, all of Ind., assignors to Paragon Group of Plastics Companies, Inc., Warsaw, Ind.
Filed Oct. 3, 1994, Ser. No. 317,236
Int. Cl.[6] A61L *2/00*
U.S. Cl. 422—300 13 Claims



7. Sterilization container for sterilizing and storing medical instruments comprising a base tray and a perforated insert tray, said perforated base tray having a base tray bottom and cooperating joining pairs of base tray side walls extending upwardly form said base tray bottom, said base tray side walls cooperating with said base tray bottom to define a base tray cavity receiving said insert tray, said insert tray having an insert tray bottom and cooperating joining pairs of insert tray side walls cooperating with the insert tray bottom to define an insert tray cavity which is smaller than said base tray cavity, one pair of said cooperating pairs of base tray walls having spaced ribs projecting into said cavity from each of said one pair of base tray walls, each of said ribs having a protruding peak cooperating with the wall from which the rib projects to define a gap therebetween, one of said corresponding pairs of said insert tray side walls having a portion defining a groove receiving said peaks to thereby support said insert tray.

5,441,708
COVED CORNER FACILITY FOR PROVIDING A SEALED WORK AREA TO HANDLE, MANIPULATE AND FORMULATE MATERIALS
Anthony M. Diccianni, 330 Knoll Rd., Norristown, Pa. 19401, and Eric A. Diccianni, 209 Lincoln Woods, Lafayette Hill, Pa. 19444
Filed Feb. 7, 1994, Ser. No. 192,466
Int. Cl.[6] A61L *2/00*; E04B *1/343*
U.S. Cl. 422—292 16 Claims



9. A coved corner facility for providing a sealed work area to handle, manipulate and formulate materials, said facility comprising:

a first pan including a first wall having a periphery defining first, second, third and fourth corners, said first pan including a first flange portion extending generally perpendicularly from said periphery between said first and second corners, a second flange portion extending generally perpendicularly from said periphery between said second and third corners, a third flange portion extending generally perpendicularly from said periphery between said third and fourth corners, and a fourth flange portion extending generally perpendicularly from said periphery between said fourth and first corners, said first pan including preformed generally arcuate transition areas extending continuously between said periphery and said first, second, third and fourth flange portions, said first and second flange portions, said second and third flange portions, said third and fourth flange portions, and said fourth and first flange portions;

a second pan spaced from said first pan and including a second wall having a periphery defining fifth, sixth, seventh and eighth corners, said second pan including a fifth flange portion extending generally perpendicularly from said periphery of said second wall between said fifth and sixth corners, a sixth flange portion extending generally perpendicularly from said periphery of said second wall between said sixth and seventh corners, a seventh flange portion extending generally perpendicularly from said periphery of said second wall between said seventh and eighth corners, and an eighth flange portion extending generally perpendicularly from said periphery of said second wall between said eighth and fifth corners, said second pan including preformed generally arcuate transition areas extending continuously between said periphery of said second wall and said fifth, sixth, seventh, and eighth flange portions, said fifth and sixth flange portions, said sixth and seventh flange portions, said seventh and eighth flange portions, and said eighth and fifth flange portions;

a first strut extending between said transition area between said first and fourth flange portions and said transition area between said fifth and eighth flange portions, said first strut being generally arcuate in cross section with a curvature duplicating curvatures of the preformed arcuate transition areas between said first and fourth flange portions and between said fifth and eighth flange portions such that said first strut arcuately complements said transition area between said first and fourth flange portions and said transition area between said fifth and eighth flange portions;

a second strut extending between said transition area between said first and second flange portions and said transition area between said fifth and sixth flange portions, said second strut being generally arcuate in cross section with a curvature duplicating curvatures of the preformed arcuate transition areas between said first and second flange portions and between said fifth and sixth flange portions such that said second strut arcuately complements said transition area between said first and second flange portions and said transition area between said fifth and sixth flange portions;

a third strut extending between said transition area between said second and third flange portions and said transition area between said sixth and seventh flange portions, said third strut being generally arcuate in cross section with a curvature duplicating curvatures of the preformed arcuate transition areas between said second and third flange portions and between said sixth and seventh flange portions such that said third strut arcuately complements said transition area between said second and third flange portions and said transition area between said sixth and seventh flange portions;

a fourth strut extending between said transition area between said third and fourth flange portions and said transition area between said seventh and eighth flange portions, said fourth strut being generally arcuate in cross section with a curvature duplicating curvatures of the preformed arcuate transition areas between said third and fourth flange portions and between said seventh and eighth flange portions such that said fourth strut arcuately complements said transition area between said third and fourth flange portions and said transition area between said seventh and eighth flange portions;

a first panel extending between said first pan, second pan, first strut, and second strut;

a second panel extending between said first pan, second pan, second strut, and third strut;

a third panel extending between said first pan, second pan, third strut, and fourth strut;

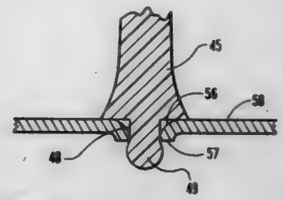
a fourth panel extending between said first pan, second pan, fourth strut, and first strut, said first pan, second pan, first strut, second strut, third strut, fourth strut, first panel, second panel, third panel, and fourth panel forming a walled enclosure having an internal work area;

an inlet port in said walled enclosure for allowing air to flow into said work area;

an outlet port in said walled enclosure for allowing air to flow out of said work area; and

an air flow control device for causing air to flow through said inlet port into said work area and out of said enclosure work area through said outlet port.

5,441,709
SELECTIVE HOLDER DESIGN AND POSITIONING PATTERN
Bernie B. Berry, Jr., Indianapolis, Ind., assignor to Carr Metal Products, Inc., Indianapolis, Ind.
Filed May 27, 1994, Ser. No. 250,298
Int. Cl.[6] A61L *2/00, 2/26*
U.S. Cl. 422—297 18 Claims

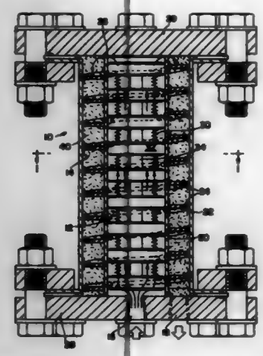


1. A combination comprising:

an autoclave tray for medical components which is arranged with a substantially planar main panel which defines a plurality of crossed-slot sterilant apertures, each sterilant aperture having a geometric center and being positioned in a substantially uniform pattern of staggered rows with substantially uniform spacing between said geometric centers within each row; and

a plurality of integral holder panels which are constructed and arranged to receive said medical components and to assemble into said main panel by using selected ones of said plurality of sterilant apertures, each of said plurality of holder panels having a main body portion positioned on a first side of said main panel, an elongated base portion positioned on a second side of said main panel, said second side being oppositely positioned relative to said first side, and a web portion positioned between said main body portion and said elongated base portion, said web portion being captured by a corresponding one of said crossed-slot sterilant apertures, each elongated base portion including a plurality of spaced-apart insert ribs, the assembly of each holder panel of said plurality into said main panel being achieved by each of said plurality of spaced-apart insert ribs being inserted through a different one of said crossed-slot sterilant apertures.

5,441,710
AIR FLOW STERILIZER
Jean-Luc Marois, P.O. Box 304, St-André East Province of Quebec, Canada J0V 1X0
Filed Dec. 17, 1993, Ser. No. 169,305
Int. Cl.[6] B01D *50/00*
U.S. Cl. 422—307 14 Claims



1. A sterilization apparatus for a microorganism-containing air flow, the apparatus comprising:
means for heating said air flow to a sufficient temperature to weaken cellular walls of microorganisms, said heating means comprising a cylindrical chamber having an outer cylindrical wall, and a plurality of electric resistance heating elements provided in said chamber, said chamber having an inlet port on one end and an outlet port at another end, and a turbulence means comprising a cylindrical spiral chamber having an inner wall defined by the outer cylindrical wall of the cylindrical chamber, and having one end communicating with said outlet port and another end said turbulence means including a turbulence promoting insert material; and
said turbulence means being connected to said heating means for providing in said air flow turbulence and for providing contact surface against which said microorganisms hit and are destroyed at said temperature and at a flow rate of said air flow, said turbulence means having an outlet for said air flow containing destroyed microorganisms which communicates with said another end of said cylindrical spiral chamber.

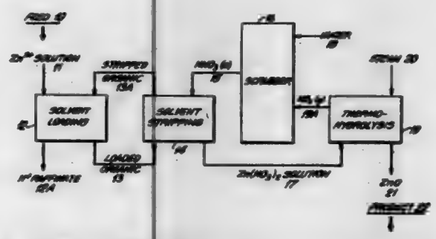
5,441,711
TABLET CHLORINATOR APPARATUS
T. Gig Drewery, Rte. 2 Box 464, Kountze, Tex. 77625-9319
Filed Oct. 8, 1993, Ser. No. 133,455
Int. Cl.[6] B01D *11/02*
U.S. Cl. 422—264 14 Claims

1. A chlorinator apparatus comprising:
a cannister means having an interior for receiving a plurality of tablets therein;
a plate affixed within said cannister means;
a fluid inlet means positioned on said cannister means adjacent said plate, said fluid inlet means for directing a fluid flow toward a bottom surface of a tablet supported on the plate, said fluid inlet means comprising:
a first fluid inlet extending through a wall of said cannister means; and
a second fluid inlet extending through said wall of said cannister means approximately 180° from said first fluid inlet, each of said first and second fluid inlets for directing fluid flow toward each other;
a fluid outlet means formed in said cannister means, said fluid outlet means for passing said fluid flow from said cannister means; and
a diverter means affixed to said plate adjacent said fluid inlet means, said diverter means for diverting fluid flow from said fluid inlet means, said diverter means comprising:



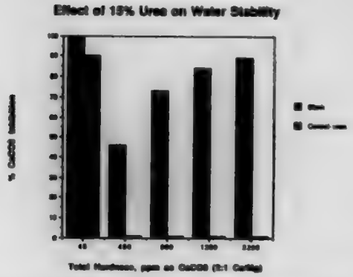
a generally V-shaped member having a narrow end adjacent said fluid inlet means, said V-shaped member extending above a top surface of said plate.

5,441,712
HYDROMETALLURGICAL PROCESS FOR PRODUCING ZINC OXIDE
Willem P. C. Duyvesteyn, Reno, Nev.; Teun Bakker, Delft, Netherlands, and Manuel R. Lastra, Antioch, Calif., assignors to BHP Minerals International Inc., Sunnyvale, Calif.
Filed Oct. 15, 1993, Ser. No. 137,591
Int. Cl.[6] C01G *9/00, 9/02;* C22B *19/00;* C01B *21/38*
U.S. Cl. 423—99 2 Claims



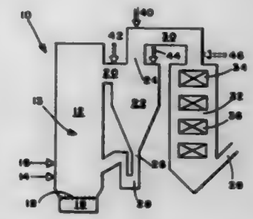
1. A hydrometallurgical process for recovering zinc from a zinc-containing brine in the form of substantially pure zinc oxide which comprises:
contacting said zinc-containing brine with a water-insoluble anionic organic solvent selective to the extraction of zinc to produce a spent brine and a zinc loaded anionic organic solvent,
said anionic organic solvent being selected from the group consisting of secondary, tertiary and quaternary amines,
selectively extracting zinc from said zinc loaded anionic organic solvent by contacting with water to produce an aqueous solution of zinc chloride,
extracting zinc from said aqueous solution of zinc chloride by contacting with a cationic organic solvent selective to the extraction of zinc, to produce a zinc-loaded cationic organic solvent,
said cationic organic solvent being selected from the group consisting of mono-(2-ethylhexyl) phosphoric acid, di-(2-ethylhexyl) phosphoric acid, mono-(2-ethylhexyl) phosphonic acid, di-(2-ethylhexyl) phosphonic acid, di-(2,4,4-trimethyl-pentyl) phosphinic acid and di-(2-ethylhexyl) phosphinic acid,
stripping said zinc from said zinc-loaded cationic organic solvent by contacting with nitric acid to form an aqueous solution of zinc nitrate in a solvent stripping stage,
subjecting said zinc nitrate solution to thermal hydrolysis at an elevated temperature ranging from about 150° C. to 300° C. in the presence of pressurized water vapor, to decompose zinc nitrate to zinc oxide and to produce an acid-forming nitric oxide gas,
recovering said zinc oxide,
passing said acid-forming nitric oxide gas to a water scrubber to form nitric acid, and
recycling said nitric acid to said solvent stripping stage.

5,441,713
HARDNESS SUPPRESSION IN UREA SOLUTIONS
Leonard Dubin, Skokie, Ill.; W. Robert Epperly, New Canaan; Barry N. Sprague, Bethlehem, both of Conn., and Thure von Harpe, Meerbusch, Germany, assignors to Nalco Fuel Tech, Naperville, Ill.
Continuation-in-part of Ser. No. 576,424, Nov. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 187,943, Apr. 29, 1988, abandoned. This application Oct. 3, 1991, Ser. No. 770,857
Int. Cl.[6] C01B *21/00*
U.S. Cl. 423—235 12 Claims



1. In a process for reducing the concentration of nitrogen oxides in a gas stream by preparing an aqueous solution of NO_x-reducing agent, which comprises an NH-containing composition selected from the group consisting of ammonia, urea, urea precursors, urea hydrolysis products, carbamates, ammonium carbonate, ammonium bicarbonate, cyanurates, ammonium sales of organic acids, other amidozine-generating compositions and mixtures of these; transporting the solution to the gas stream through conduits effective for this purpose; and introducing the solution into the gas stream at a concentration and at a rate effective to reduce NO_x by selective gas-phase reaction under the conditions prevailing in the gas stream, the improvement comprising:
incorporating in the solution a hardness suppressing composition selected from the group of water soluble polymers effective to suppress hardness, water soluble phosphonates comprising a member selected from the group consisting of organo phosphonates, amino phosphonates and amino polyphosphonates effective to suppress hardness, water soluble chelants effective to suppress hardness, water soluble phosphates effective to suppress hardness and mixtures of these, in amounts effective to reduce the tendency for precipitation of hardness factors in the conduits.

5,441,714
REDUCING N_2O EMISSIONS WHEN BURNING NITROGEN-CONTAINING FUELS IN FLUIDIZED BED REACTORS
Eric J. Oakes, Del Mar; Yam Y. Lee, San Diego, both of Calif., and Matti A. Hiltunen, Karhula, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland
Division of Ser. No. 694,206, May 3, 1991, Pat. No. 5,133,950, which is a continuation-in-part of Ser. No. 509,373, Apr. 17, 1990, Pat. No. 5,043,150. This application Jan. 8, 1992, Ser. No. 818,104
Int. Cl.[6] C01B *21/22*
U.S. Cl. 423—235 11 Claims



1. A process for the reduction of nitrous side in the effluent from the combustion of a carbonaceous fuel, the process comprising:
(a) forming an effluent in a circulating fluidized bed boiler; and
(b) raising the temperature of said effluent to a temperature of at least about 1742° F., when said effluent is at a temperature below about 1742° F.

5,441,715
METHOD FOR THE SEPARATION OF HYDROGEN ISOTOPES USING A HYDROGEN ABSORBING ALLOY
Takaharu Gamo, Fujiidera; Noboru Taniguchi, Osaka; Junji Niikura, Hirakata, and Kazuhito Hatoh, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 857,529, Mar. 25, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 4,491
Claims priority, application Japan, Mar. 26, 1991, 3-061624; Oct. 8, 1991, 3-260035
Int. Cl.[6] C01B *3/04*
U.S. Cl. 423—249 24 Claims

1. A method for separating light hydrogen and a heavy hydrogen, comprising the steps of:
a) allowing a mixed gas of light and heavy hydrogens to contact a hydrogen absorbing alloy comprising Laves phases with a C14 hexagonal crystal structure at a predetermined temperature and at a pressure lower than the equilibrium absorption pressure of light hydrogen and higher than that of the heavy hydrogen, thereby allowing the hydrogen absorbing alloy to absorb the heavy hydrogen, said hydrogen absorbing alloy being of the following formula I:

$$AB_\alpha \quad (I)$$

wherein A is at least one selected from the group consisting of Ti, Zr, and Hf; B is at least one selected from the group consisting of Mn,. V, Fe, Ni, Cr, Co, Cur Zn, Al, Si, Nb, Mo, W, Mg, Ca, Y, Ta, Pd, Ag, Au, Cd, In, Sn, Bi, La, Ce, Mm (misch metal), Pr, Nd, Th, and Sm; α is a number in the range of 1.5 to 2.5; and said hydrogen absorbing alloy having a lattice constant a of 4.75 to 5.05 Å and a lattice constant c of 7.85 to 8.25 Å;
b) separating the light hydrogen remaining outside the hydrogen absorbing alloy from the system; and

c) maintaining the pressure in the system at a level lower than the equilibrium desorption pressure of the heavy hydrogen to allow the hydrogen absorbing alloy to release the heavy hydrogen.

5,441,716

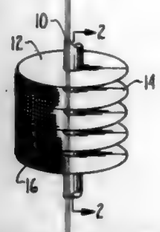
METHOD AND APPARATUS FOR ACHIEVING HIGH REACTION RATES

Uwe Rockenfeller, Boulder City, Nev., assignor to Rocky Research, Boulder City, Nev.

Continuation-in-part of Ser. No. 931,036, Aug. 14, 1992, Pat. No. 5,328,671, and Ser. No. 975,973, Nov. 13, 1992, Pat. No. 5,298,231, which is a continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 104,427

Int. Cl.[6] B01D *53/04, 53/14*

U.S. Cl. 423—299 **116 Claims**



1. An improved chemisorption reaction process in which a polar gas is repeatedly alternately adsorbed and desorbed on a complex compound formed by adsorbing said polar gas on a metal salt comprising a halide, nitrate, nitrite, oxalate, perchlorate, sulfate or sulfite of an alkali metal, alkaline earth metal, transition metal, zinc, cadmium, tin, aluminum, sodium borofluoride, or double metal chloride, said process comprising

carrying out said reaction process at half-cycle reaction periods of less than about 30 minutes in a reactor having one or more reaction chambers having a maximum thermal diffusion path length of less than about 4.5 mm and a maximum mean mass diffusion path length of less than about 15 mm, and restricting the volumetric expansion of said complex compound formed during said chemisorption reaction.

5,441,717

PROCESS FOR PRODUCING ANTIMICROBIAL COMPOUNDS

Shuichi Ohsumi, Osaka; Koji Sugiura, Nagoya, and Hideki Kato, Kuwana, all of Japan, assignors to Toagosei Chemical Industry Co., Inc., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 63,704

Claims priority, application Japan, May 21, 1992, 4-154356; May 22, 1992, 4-155696

Int. Cl.[6] C01B *25/45*

U.S. Cl. 423—306 **10 Claims**

1. In a process for producing an antimicrobial compound represented by the following formula [1]:

$$M^1_aH_bA^1_cM^2_2(PO_4)_3.nH_2O \quad [1]$$

wherein M^1 is at least one metal ion selected from the group consisting of silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium, A^1 is at least one ion selected from the group consisting of alkali metal ion and alkaline earth metal ion, M^2 is a tetravalent metal, n is a number which satisfies $0 \leqq n \leqq 6$, a and b are positive numbers and c is 0 or a positive number, and a, b and c satisfy $ka+b+mc=1$ where k is a valence of M^1 and m is a valence of A^1, by adding at least one metal ion selected from the group consisting of silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium to a phosphate represented by the following formula [2]:

$$A^2_dM^2_2(PO_4)_3.nH_2O \quad [2]$$

wherein A^2 is at least one ion selected from the group consisting of alkali metal ion, alkaline earth metal ion and ammonium ion, M^2 and n are as defined above and d is $1/m'$ where m' is a valence of A^2, the improvement comprising synthesizing said phosphate of formula 2 by a wet process, adding hydrogen ion to said phosphate, adding said at least one metal ion M^1 to said phosphate to produce an antimicrobial phosphate and, firing the antimicrobial phosphate at 500° to 1300° C.

6. In a process for producing an antimicrobial compound represented by the following formula:

$$M^1_aH_bA^1_cM^2_2(PO_4)_3.nH_2O \quad [1]$$

wherein M^1 is at least one metal ion selected from the group consisting of silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium, A^1 is at least one ion selected from the group consisting of alkali metal ion and alkaline earth metal ion, M^2 is a tetravalent metal, n is a number which satisfies $0 \leqq n \leqq 6$, a and b are positive numbers and c is 0 or a positive number, and a, b, and c satisfy $ka+b+mc=1$ wherein k is the valence of M^1 and m is the valence of A^1, by adding at least one metal ion selected from the group consisting of sliver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium to a phosphate represented by the following formula:

$$A^2_dM^2_2(PO_4)_3.nH_2O \quad [2]$$

wherein A^2 is at least one ion selected from the group consisting of alkali metal ion, alkaline earth metal ion and ammonium ion, M^2 and n are as defined above and d is $1/m'$, where m' is the valence of A^2,

the improvement comprising synthesizing the phosphate of formula [2] by a wet process, adding said at least one metal ion M1 and hydrogen ion simultaneously to said phosphate to produce an antimicrobial phosphate, then firing said antimicrobial phosphate at a temperature of from 500° to 1300° C.

5,441,718

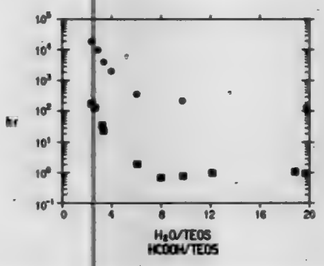
PROCESS FOR MAKING INORGANIC GELS

Kenneth G. Sharp, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 885,793, May 20, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 128,437

Int. Cl.[6] C01B *33/12*

U.S. Cl. 423—338 **9 Claims**



1. A process for making open pore, inorganic gel, comprising:

(1) intimately mixing together the following components (A) and (B), either in a liquid state or in solution in an organic liquid:

(A) at least one compound selected from the group consisting of $Si(OR^1)_4$, $Ti(OR^2)_4$, $Zr(OR^3)_4$, $Ti^a(OR^4)_nX^d_p$, and $Zr^b(OR^5)_aX^d_p$ wherein

each one of R^1, R^2, R^3, R^4, and R^5 independently is a C_1–C_8 alkyl;

X is a chelating ligand;

a and b is a coordination number having an integer value of 4–6;

d is a number corresponding to the chelating ability of ligand X, being 2 for bidentate chelating ligands and 3 for tridentate chelating ligands;

p is either 1 or 2, with the proviso that p is 1 for tridentate chelating ligands;

n=a−dop; and

(B) a strong carboxylic acid, having a pK_a value not higher than about 4.0, and containing from 0 to 40 mole % water, the amount of carboxylic acid being at least 1.5 moles of —COOH groups per mole of compound (A), and the total amount of water from any source initially present in the reaction medium being less than 5 moles per mole of Component (A);

(2) agitating the above mixture while maintaining the mixture at a temperature within the range of about 0° to 100° C.; and

(3) isolating the inorganic gel.

5,441,719

ULTRA-HIGH PURITY NITROGEN GENERATING METHOD

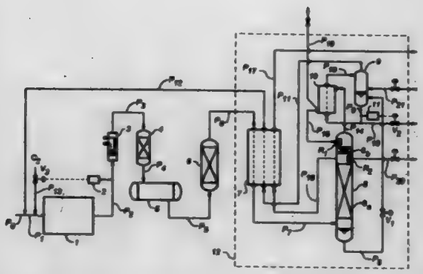
Takashi Nagamura; Takao Yamamoto, and Shinji Tomita, all of Hyogo, Japan, assignors to American Air Liquide, Walnut Creek, Calif.

Filed Aug. 5, 1993, Ser. No. 102,669

Claims priority, application Japan, Aug. 6, 1992, 4-229468

Int. Cl.[6] C01B *21/04*

U.S. Cl. 423—351 **7 Claims**



1. An ultra-high purity nitrogen generating method comprising the steps of:

adding oxygen to feed nitrogen gas containing carbon monoxide and hydrogen to form a resulting gas mixture;

increasing the pressure and temperature of the resulting mixture;

contacting the resulting gas mixture with oxidizing catalyst under oxidizing conditions to convert a major portion of the carbon monoxide to carbon dioxide and a major portion of the hydrogen to water to form a converted gas mixture;

cooling and drying at least a portion of the converted gas mixture to remove the major amount of the carbon dioxide and water and form a remaining gas mixture comprising unreacted oxygen and nitrogen gas;

introducing the remaining gas mixture to a nitrogen rectification column under low temperature conditions;

withdrawing liquid nitrogen comprising at least a portion of the unreacted oxygen from the lower portion of the nitrogen rectification column;

expanding at least a portion of the liquid nitrogen and separating the nitrogen to form gas comprising nitrogen and unreacted oxygen and liquid in a gas-liquid separator;

recycling the gas comprising nitrogen and unreacted oxygen gas in the gas-liquid separator to the feed nitrogen gas;

bringing high purity nitrogen gas obtained from the top portion of the nitrogen rectification column into heat exchange with low purity liquid nitrogen from the gas-liquid separator by way of a condenser so that at least a portion of the high purity nitrogen gas is liquefied;

returning the liquefied nitrogen gas to the upper portion of the nitrogen rectification column, wherein a part thereof is refluxed as a reflux liquid and the remaining part thereof is taken out as ultra-high purity nitrogen gas obtained by rectification from a rectifying tray several stages below the uppermost portion of the rectifying trays of the nitrogen rectification column; and

discharging uncondensed gas in the high purity nitrogen gas which has been not liquefied in the condenser from the condenser.

5,441,720

PENTAFLUOROSULFANYLNITRAMIDE SALTS

William M. Koppes, and Michael E. Sitzmann, both of Adelphi, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 13, 1993, Ser. No. 93,422

Int. Cl.[6] C01B *17/45*

U.S. Cl. 423—386 **6 Claims**

1. A pentafluorosulfanylnitramide salt of the formula

$$Z^+[SF_5N(NO_2)]^-$$

wherein Z^+ is NH_4^+, Na^+, K^+, Li^+, or Cs^+.

5,441,721

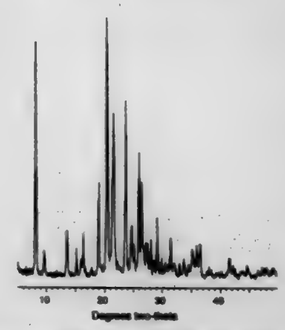
SYNTHESIS OF POROUS CRYSTALLINE MCM-58

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 205,437, Mar. 4, 1994, which is a continuation-in-part of Ser. No. 137,705, Oct. 18, 1993, abandoned. This application Dec. 1, 1994, Ser. No. 347,919

Int. Cl.[6] C01B *39/04*

U.S. Cl. 423—706 **17 Claims**



1. A method for synthesizing crystalline material exhibiting a characteristic X-ray diffraction pattern including d-spacing maxima values shown in Table I which comprises (i) preparing a mixture capable of forming said material, said mixture comprising sources of potassium or potassium and alkali or alkaline earth metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), water, and directing agent (R) com-

prising benzyltropanium cations, and having a composition, in terms of mole ratios, within the following ranges:

YO_2/X_2O_3	15 to 60
H_2O/YO_2	5 to 200
OH^-/YO_2	0 to 3
M/YO_2	0 to 3
R/YO_2	0.02 to 1.0,

(ii) maintaining said mixture under sufficient conditions including a temperature of from about 80° C. to about 250° C. until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii).

5,441,722

SHORT SYNTHESIS OF 5,6-DIHYDRO-(S)-4-(ETHYLAMINO)-(S)-6-[C^3H_3]-4H-THIENO[2,3-B]THIOPYRAN-2-SULFONAMIDE 7,7-DIOXIDE AND RELATED NON RADIOACTIVE COMPOUNDS

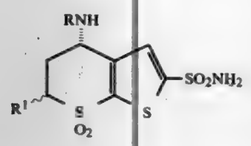
Wai-Si Eng, Maple Glen; Donald H. Burns, Harleysville; Gerald S. Ponticello, Lansdale, and Harold G. Selnick, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 18, 1994, Ser. No. 198,248

Int. Cl.[6] A61K *51/04, 31/38;* C07D *495/02*

U.S. Cl. 424—111 **9 Claims**

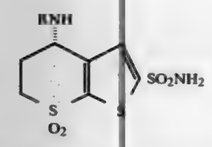
1. A process for the preparation of a Compound of structural formula I:



I

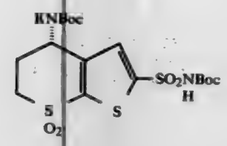
and its hydrochloride salt wherein R is C^1–C^3 alkyl and R^1 is C^1–C^3 alkyl or a radio-labeled C^1–C^3, which comprises the steps of:

A) protecting the nitrogen substituents of a compound of structual formula II



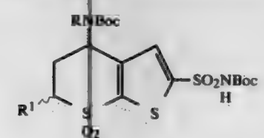
II

by treating the compound of structual formula II with an excess of a blocking agent from about 4 eq to about 8 eq, belonging to a group consisting of di-t-butyl dicarbonate, or carbobenzyloxy chloride or in the presence of from about 2 eq to about 3 eq (each) Et_3N/DMAP to form a compound of structural formula III:



III

B) methylating the compound of structural formula III at the C-6 position, treating the compound of structural formula III with an excess of a base, from about 2.0 eq to about 3.0 eq, selected from the group consisting of lithium bis(trimethylsilyl)amide, n-butyl lithium, tert-butyl lithium, or lithium diisopropylamide in the presence of an anhydrous solvent selected from the group consisting of THF, ether, or dioxane, and adding from about 0.5 eq to about 1.5 eq of methyl iodide in the presence of an anhydrous THF to form a compound of Structural formula IV:



IV

C) deprotecting the nitrogen substituents of the compound of structural formula IV, and purifying and isolating the compound of structural formula I, wherein R and R^1 are as above.

5,441,723

NON-TOXIC HYPOCOMPATIBLE BIODEGRADABLE GERMICIDE

Paul L. Simmons, Gulfport, Fla., assignor to Rost, Incorporated, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 846,249, Feb. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 642,709, Jan. 17, 1991, Pat. No. 5,145,663, which is a continuation of Ser. No. 304,312, Jan. 31, 1989, abandoned. This application Jul. 16, 1993, Ser. No. 92,556

Int. Cl.[6] A61L *2/18, 9/14;* A61K *31/045, 9/12*

U.S. Cl. 424—47 **8 Claims**

1. A non-toxic, hypocompatible, biodegradable germicide effective for contact and killing of a challenge of pathogenic organisms comprising *Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella choleraesuis,* HIV I, HIV-II, tuberculosis, polio, herpes simplex type 2, *Trichophyton mentagrophytes* or mold, said germicide comprising;

(i) a disinfecting amount of at least about 65% to about 75% by weight of at least one monohydric alcohol selected from the group consisting of isopropyl, methyl, ethyl, n-propyl, n-butyl, fert-butyl, allyl alcohols and mixtures thereof;

(ii) a surface glaze reducing amount of from about 4% to about 16% by weight of at least one polyhydric alcohol, selected from the group consisting of isopropyl, methyl, ethyl, n-propyl, n-butyl, tert-butyl, allyl alcohols, and mixtures thereof;

(iii) from at least about 9% to about 20% by weight water in an organic azeotropic combination with the monohydric alcohol; and

wherein components (i), (ii) and (iii) are mixed homogeneously with a pH of from about 5 to about 7 and in proportions effective to interact in a manner to reduce surface glaze formed on pathogenic organisms to be disinfected and reduce the surface tension of water or water-based body fluids containing the pathogenic organisms found on a surface to be disinfected, such that the pathogenic organisms of said challenge can be contacted and killed before evaporation of said monohydric alcohol.

5,441,724

Patent Not Issued For This Number

5,441,725

COSMETIC COMPOSITIONS CONTAINING A POLYETHOXYLATED VITAMIN E

Young D. Kim; Chang K. Kim; Choong N. Lee, and Byung J. Ha, all of Seoul, Rep. of Korea, assignors to Pacific Corporation, Seoul, Rep. of Korea

Filed Sep. 21, 1992, Ser. No. 948,004

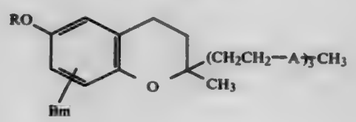
Claims priority, application Rep. of Korea, Apr. 14, 1992, 6157/1992

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[6] A61K *71/42, 7/06*

U.S. Cl. 424—59 **21 Claims**

1. A cosmetic composition comprising a polyethoxylated vitamin E, which has the formula(I):



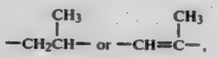
(I)

wherein,

R is $(CH_2CH_2O)_n$ H,

n is an integer from 2 to 100, inclusive,

A is



B is $-CH_3$ at the 5-, 7- or 8-position, and

m is 1, 2 or 3, in an amount of 0.01 to 50% by weight.

5,441,726

TOPICAL ULTRA-VIOLET RADIATION PROTECTANTS

Mark Mitchnick, Wainscott, N.Y., and Mamoun Muhammed, Djursholm, Sweden, assignors to SunSmart, Inc., Wainscott, N.Y.

Filed Apr. 28, 1993, Ser. No. 54,038

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **13 Claims**

1. A sunscreen composition for application to human skin, said composition comprising

a plurality of zinc oxide particles, each said particle having a substantially rod shape comprising a substantially spherical cross-section, smooth and rounded ends, and an aspect ratio of at least two, wherein said plurality of particles does not clump upon spreading on human skin; and

an emollient for spreading on human skin,

said plurality of particles being dispersed within said emollient in an amount effective to shield substantially all of said skin over which said composition is applied from hazardous effects of ultraviolet radiation.

5,441,727

DIKETONE DEODORANT COMPOSITION AND METHOD OF DEODORIZATION

Ranjit Chatterjee, Cincinnati, and Rodney D. Bush, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

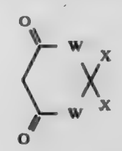
Continuation-in-part of Ser. No. 369,380, Jun. 21, 1989, abandoned. This application Jul. 30, 1990, Ser. No. 557,174

Int. Cl.[6] A61K *7/32;* B32B *3/00;* C11D *3/48, 9/50*

U.S. Cl. 424—65 **8 Claims**

1. A deodorant composition for preventing the formation of malodor from perspiration comprising:

a) from about 0.01% to about 20% of a 1,3-diketone compound having the general formula:



wherein each W is independently selected from the group consisting of O, S and $(CH_2)_n$, wherein n=1–3;

and each X is independently selected from the group consisting of hydrogen, halogen, substituted and unsubstituted alkyl having from about 1 to about 5 carbon atoms,

or two X moieties are covalently bonded to form a structure selected from the group consisting of

substituted and unsubstituted alkyl, and aryl wherein the aryl is selected from the group consisting of substituted phenyl, substituted naphthyl, unsubstituted phenyl and unsubstituted naphthyl,

and wherein the substituents of any substituted alkyls, substituted phenyl and substituted naphthyl are independently selected from the group consisting of halogen, alkyl, hydroxy, amino, phenyl, naphthyl, carboxylate, nitro, $-CF_3$ and $-OR$ wherein R is an unsubstituted alkyl having from about 1 to about 3 carbon atoms; and

b) a topical carrier comprising an emollient.

5,441,728

HAIRSPRAY COMPOSITIONS

Liang S. Tsaur, Norwood, N.J.; Michael P. Aronson, West Nyack, N.Y.; Frank Jones, Orange, and G. Jae Lee, Trumbull, both of Conn., assignors to Chesebrough-Pond's USA Co., a division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 22, 1994, Ser. No. 263,849
Int. Cl.[6] A61K *7/11*
U.S. Cl. 424—70.11 12 Claims

1. An aqueous hairspray composition comprising:

(i) a water-soluble polymer having a solution viscosity at 10% in water of less than about 20,000 cps at 25° C., the polymer being selected from the group consisting of non-ionic, anionic, cationic and amphoteric hair fixatives; and

(ii) a latex of water-insoluble polymeric particles dispersed in water, the average particle size being no larger than about 3 microns, the particles having a glass transition temperature from 250° to 300° K. and being formed of monomers selected from the group consisting of styrene, α-methylstyrene, divinylbenzene, C_1–C_{20}ester of acrylic acid, methacrylic acid, methylmethacrylate, acrylamide, methacrylamide, crotonic acid, maleic acid, vinyl acetate, vinyl neodecanoate and combinations thereof, and the water-soluble polymer to latex particles being present in a weight ratio ranging from about 10:1 to about 1:10.

5,441,729

LOTION FOR REDUCTION OF POST PERMANENT WAVE ODORS

Ludwig Salce, Greenwich, and Ronald F. Verdi, Norwalk, both of Conn., assignors to Conair Corporation, Stamford, Conn.

Filed Feb. 14, 1994, Ser. No. 194,915
Int. Cl.[6] A61K *7/06, 7/09*
U.S. Cl. 424—70.2 8 Claims

1. The method of reducing post permanent wave odors from hair, the odors having resulted from a permanent waving treatment which includes a reduction step using a mercaptan reducing solution followed by an oxidation step and rinsing said reducing solution from the hair, said method including the steps of

treating the hair with an aqueous 0.1 to 50% solution of a salt from the group consisting of water-soluble carbonate salt and water-soluble bicarbonate salts, leaving said aqueous salt solution on the hair for a sufficient time to allow the lotion to penetrate the hair fibers, and

thereafter treating the hair with an aqueous acid solution which is tolerable by the skin, hair, and scalp to release carbon dioxide gas, said two treatments occurring after the reduction step and before or during the oxidation step, wherein when said acid application and oxidation steps occur simultaneously hydrogen peroxide is contained in said acid solution,

thereby reducing said odors.

5,441,730

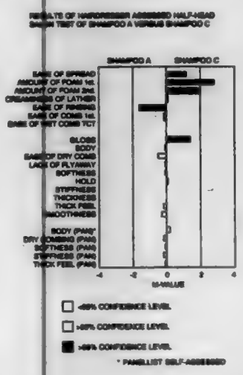
COSMETIC COMPOSITION AND PROCESS FOR MAKING IT

Anthony D. Gough, Merseyside; Joanne M. de Groot, Wirral, and Jeffrey Price, Merseyside, all of United Kingdom, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Apr. 16, 1993, Ser. No. 49,095
Claims priority, application United Kingdom, Apr. 22, 1992, 9208653
Int. Cl.[6] A61K *7/06, 7/075, 7/08*
U.S. Cl. 424—70.11 10 Claims

1. A process for preparing a shampoo composition comprising particles of per-alk(en)yl hydrocarbon resin material, the process comprising the steps of:

(i) emulsifying particles of the resin material in a medium containing little or no organic solvent by low shear rate, high shear stress mixing to form emulsified particles;



(ii) adding the emulsified particles to a shampoo base thereby forming the shampoo composition in which the resin material is present as insoluble particles.

5,441,731

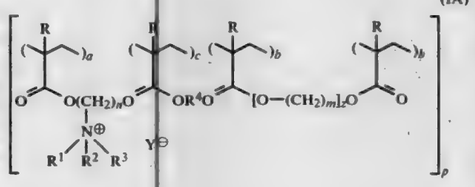
COMPOUNDS

Albert A. Jaxa-Chamiec, Rickmansworth; Deirdre M. B. Hickey, Sawston, and David Alston, Hull, all of England, assignors to SmithKline & French Laboratories Ltd., Hertfordshire, England

Continuation of Ser. No. 449,013, Dec. 11, 1989, abandoned.
This application Feb. 18, 1992, Ser. No. 837,793
Claims priority, application United Kingdom, Dec. 13, 1988, 8829088
Int. Cl.[6] A61K *31/74*
U.S. Cl. 424—78.1 21 Claims

1. A polymer of structure (IA)

(IA)



in which

(a), (b) and (c) indicate the relative molar percentages of the units present in the polymer, (a) being from about 60 to about 99.5 molar percent and (b) being from about 0.5 to about 8 molar percent;

R, is C_{1-4}alkyl;

R^1 and R^2 are the same or different and are each C_{1-4}alkyl, and R^3 is C_{1-20}alkyl or C_{1-20}aralkyl; or R^1 is C_{1-4}alkyl and R^2 and R^3 together with the nitrogen atom to which they are attached form a saturated ring, optionally containing one or more further heteroatoms; or R^1 to R^3 together with the nitrogen atom to which they are attached form an unsaturated ring, optionally containing one or more further heteroatoms;

n is 1 to 20; and

R^4 is C_{1-20}alkyl;

m is 2 to 6;

z is 1 to 4;

Y^- is a physiologically acceptable counter ion; and

p is a number indicating the degree of polymerisation of said polymer; provided that,

(i) when n is 1 to 5, R^1, R^2, and R^3 are not all C_{1-4}alkyl,

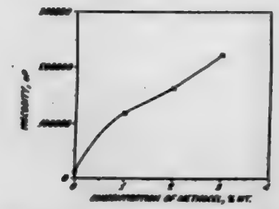
(ii) when n is 1 to 5, R^1, R^2, and R^3, do not together form an unsaturated ring.

5,441,732

REVERSIBLE GELATION EMULSION COMPOSITIONS AND METHODS OF USE

Anne L. Hoeg, Havnegaten, Norway, and David L. Meadows, Mission Viejo, Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 539,061, Jun. 15, 1990, Pat. No. 5,252,318. This application Mar. 18, 1992, Ser. No. 853,135
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] A61K *31/19, 31/745, 47/38;* A01N *25/04*
U.S. Cl. 424—78.04 22 Claims



1. A method for delivering a pharmaceutical compound over an extended period of time to the surface of an eye needing treatment, said method comprising the steps of:

preparing a drop instillable aqueous and oil emulsion exhibiting the property of reversible gelation in response to substantially simultaneous variations in temperature and pH value over respective ranges between approximately 0° C. to 60° C. and pH 2.5 to pH 7.4, comprising an effective amount of a pharmaceutical compound and a stable combination of approximately 0.1% to 40% by weight of at least one thermally-sensitive gelling polymer, approximately 0.01% to 10% by weight of at least one pH-sensitive gelling polymer, and approximately 1% to 20% by weight of at least one organic oil, wherein said aqueous and oil emulsion possesses a sol-gel viscosity ranging from approximately 95 to 1,000,000 cP; and

introducing said emulsion into the lacrimal secretions of the eye.

5,441,733

TREATMENT AGENT FOR OPHTHALMOLOGY AND USE THEREOF

Hasso Meinert, Neu-Ulm, Germany, assignor to PharmPur GmbH, Augsburg, Germany

Filed Jan. 15, 1993, Ser. No. 4,005
Int. Cl.[6] A61K *31/74, 31/03*
U.S. Cl. 424—78.04 5 Claims

1. A method of using a modified perfluorocarbon liquid compound selected from the group consisting of $R_F(CH_2)_nR_F$, R_FR_H, (where n>3 and R_F=CF_3 or C_2F_5 and R_H=$CH_3(CH_2)_n$, where n=2–10), $R_FO(CH_2)_nOR_F$, $R_FO(CH_2)_nO(CH_2)_nOR_F$, $R_F(CH_2)_nO(CH_2)_nR_F$ and $R_F(CH_2)_mO(CH_2)_nO(CH_2)_mR_F$ (where R_F=CF_5 or $CF_3(CF_2)_n$, n=1–4, and where in $(CH_2)_n$, n=2–6 and in $(CH_2)_{(m)}$, m=1–4), as a treatment agent in ophthalmology for repairing a retina.

5,441,734

METAL-INTERFERON-ALPHA CRYSTALS

Paul Reichert, Montville; Charles McNemar, Basking Ridge; Nagamani Nagabhushan; Tattanahalli L. Nagabhushan, both of Parsippany; Stephen Tindall, Madison, and Alan Hruza, Hackettstown, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Feb. 25, 1993, Ser. No. 24,330
Int. Cl.[6] A61K *37/66, 9/14;* C07K *15/26*
U.S. Cl. 424—85.7 23 Claims

13. A method for administering interferon α-2(IFN α-2) to an individual comprising injecting a crystalline zinc- IFN α-2 to the individual wherein the crystalline zinc- IFNα-2 has a monclinic morphology and wherein the crystalline zinc IFN α-2 diffracts x-rays to about 2.7×10^{-10}(Å) upon x-ray diffraction analysis and wherein the zinc IFN α-2 has a serum half-life of at least about 12 hours when injected subcutaneously in a primate.

5,441,735

METHOD FOR CONTROLLING SOFT ROT, BACTERIAL SEEDLING BLIGHT OF RICE AND BLACK ROT

Yoshiyuki Takahara, Saitama; Tetsuya Iwabuchi, Kawagoe, and Masayuki Shiota, Saitama, all of Japan, assignors to Central Glass Co., Ltd., Ube, Japan

Filed Jun. 25, 1993, Ser. No. 82,675
Claims priority, application Japan, Jul. 31, 1992, 4-205624; Jul. 31, 1992, 4-205625; Sep. 9, 1992, 4-241015; Apr. 27, 1993, 5-101192
Int. Cl.[6] A01C *1/08;* A01N *63/00;* C12M *1/04;* C12N *1/22*
U.S. Cl. 424—93.2 17 Claims

3. A method for controlling soft rot, comprising applying, to soil or a plant, *Erwinia carotovora* subsp. *carotovora* CGE234M403 strain from which the pathogenicity of soft rot is deleted by mutagenesis.

5,441,736

ACTINOBACILLUS PLEUROPNEUMONIAE OUTER MEMBRANE LIPOPROTEIN A AND USES THEREOF

Gerald F. Gerlach; Philip J. Willson, both of Saskatoon, Canada; Amalia Rossi-Campos, Lincoln, Nebr., and Andrew A. Potter, Saskatoon, Canada, assignors to University of Saskatchewan, Saskatoon, Canada

Filed Nov. 5, 1992, Ser. No. 971,558
Int. Cl.[6] A61K *39/02;* C07K *14/285*
U.S. Cl. 424—190.1 14 Claims

11. A vaccine composition comprising:

(a) a pharmaceutically acceptable vehicle;

(b) an immunogenic serotype 1 *Actinobacillus pleuropneumoniae* outer membrane lipoprotein A comprising an amino acid sequence as depicted in FIG. 1 (SEQ ID NO: 1); and

(c) an immunogenic serotype 5 *Actinobacillus pleuropneumoniae* outer membrane lipoprotein A comprising an amino acid sequence as depicted in FIG. 2 (SEQ ID NO: 2).

5,441,737

USE OF APOTRANSFERRIN THAT HAS BOUND ZINC OR COPPER IONS FOR TREATMENT OF TOXIC EFFECTS OF ENDOTOXINS

Dietrich Nitsche, Bismarkallee 2, W-2300 Kiel 1, Germany

PCT No. PCT/DE92/00230, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/16227, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 17, 1992, Ser. No. 952,861
Claims priority, application Germany, Mar. 21, 1991, 41 09 254.6
Int. Cl.[6] A61K *31/28, 31/30, 31/315;* C07K *103/00*
U.S. Cl. 424—193.1 1 Claim

1. Method of reducing blood endotoxin activity in a patient containing endotoxins comprising intravenously administering a therapeutically effective amount to reduce blood endotoxin activity employing apotransferrin bound to divalent zinc or

copper cations forming an apotransferrin-zinc or apotransferrin-copper complex.

5,441,738

PROCESS FOR IMPROVING A GLYCEROLYSED OIL

Jean-Marie Klein, Feyzin, and Joel Denis, Vourles, both of France, assignors to Gattefosse SA, France

PCT No. PCT/FR92/00939, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO93/09211, PCT Pub. Date May 13, 1993

PCT Filed Oct. 8, 1992, Ser. No. 81,355

Claims priority, application France, Oct. 31, 1991, 91 13715

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **19 Claims**

1. A process of preparing a fractionated glycerolyzed oil having improved crystallization stability, consisting essentially of the steps of:

heating the glycerolyzed oil to a temperature of about 80° C. and maintaining the glycerolyzed oil at said temperature until crystals are absent therein, the glycerolyzed oil being richer in monoglycerides and diglycerides than in triglycerides;

cystallizing the heated glycerolyzed oil by simultaneously cooling and slowly stirring for a period of about eight to seventy-two hours until a first end of crystallization temperature of between about 0° and 25° C. is reached; and

removing crystals from the crystallized oil at said first end of crystallization temperature.

5,441,739

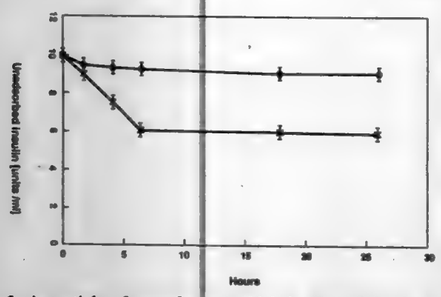
REDUCED AND CONTROLLED SURFACE BINDING OF BIOLOGICALLY ACTIVE MOLECULES

Nir Kossovsky; Andrew E. Gelman, both of Los Angeles, and Edward E. Sponsler, Burbank, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 199, Jan. 4, 1993, Pat. No. 5,334,394, which is a continuation-in-part of Ser. No. 690,601, Apr. 24, 1991, Pat. No. 5,178,882, which is a continuation-in-part of Ser. No. 542,255, Jun. 22, 1990, Pat. No. 5,219,577. This application Mar. 11, 1993, Ser. No. 29,896

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 **8 Claims**



1. An article of manufacture which is adapted for use in contact with one or more biologically active agents, said article of manufacture being selected from the group consisting of containers, implant devices, electrodes, pumps, syringes, needles, conduits, applicators, bio/opto-electric devices, tubing, said article of manufacture comprising a surface, said surface comprising a ceramic, metal or polymer having a high surface energy wherein said surface binds to said biologically active agent or agents with a certain binding energy, the improvement comprising adsorbing directly to said surface a glassy carbohydrate film, said film consisting of an oligosaccharide selected from the group of sugars consisting of cellobiose, trehalose, isomaltose, and nystose or an allosteric effector, selected from the group consisting of pyridoxal-5-phosphate and 2,3-phosphoglycerate said glassy film having a surface energy which is below the surface energy of said surface to thereby provide a reduction in the binding energy between said surface and said biologically active agent or agents.

5,441,740

COSMETIC COMPOSITION CONTAINING ALPHA HYDROXYACIDS, SALICYCLIC ACID, AND ENZYME MIXTURE OF BROMELAIN AND PAPAIN

Susan N. Ozlen, Chatsworth, Calif., assignor to Longevity Network, Ltd., Henderson, Nev.

Filed May 6, 1994, Ser. No. 238,816

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **10 Claims**

1. A composition for topical treatment of cosmetic conditions or dermatologic disorders which comprises an effective amount of at least one alpha hydroxyacid, salicylic acid, and at least one digestive enzyme derived from fruit in a cosmetically acceptable topical carrier for said composition;

wherein said at least one alpha hydroxyacid comprises mixture of glycolic, lactic and citric acids, and

wherein said at least one digestive enzyme is a mixture of bromelain and papain; and

wherein said alpha hydroxyacid is present in an amount of about 5 weight %, said salicylic acid is present in an amount of about 1 weight %, and said digestive enzyme is present in an amount of about 0.20 weight %.

6. A method for treating the skin conditions of skin slackness, wrinkles, and dry skin which comprises topically applying to involved areas of the human body an effective amount of a composition comprising at least one alpha hydroxyacid, salicylic acid, and at least one digestive enzyme derived from fruit in a cosmetically acceptable topical carrier for said composition

wherein said at least one alpha hydroxyacid is a mixture of glycolic, lactic and citric acids; and

wherein said at least one digestive enzyme is a mixture of bromelain and papain; and

wherein said alpha hydroxyacid is present in an amount of about 5 weight %, said salicylic acid is present in an amount of about 1 weight %, and said digestive enzyme is present in an amount of about 0.20 weight %.

5,441,741

FREEZE-DRIED PAD

Catherine L. Cheong, Burnley, United Kingdom, assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Mar. 22, 1993, Ser. No. 35,014

Claims priority, application United Kingdom, Apr. 30, 1992, 9209327

Int. Cl.[6] A61L *15/00*

U.S. Cl. 424—402 **21 Claims**

1. An absorbent, non-adherent, freeze-dried, fibre-free pad comprising from 2 to 6 parts by weight of a water-soluble biocompatible polymer, selected from the group consisting of soluble cellulosics, polyvinyl pyrrolidone, soluble alginates, and mixtures thereof, and from 2 to 15 parts by weight of a liquid humectant, said liquid humectant being a liquid at room temperature, provided that the weight ratio of humectant to polymer is from 0.75:1 to 2.5:1.

5,441,742

CELLULAR CELLULOSIC MATERIAL CONTAINING A BIOCIDE AGENT AND PROCESS FOR PREPARING SAME

Pierre Autant, Commentry; Christophe Chalvin, Beauvais; Claudine Colin, St. Etienne; Rafaël Jorda, Ste.Foy-les-Lyon, and Jean-Luc Wertz, Beauvais, all of France, assignors to Financiere Elysees Balzac, Paris, France

Filed Mar. 21, 1994, Ser. No. 210,455

Claims priority, application France, Mar. 24, 1993, 93 03377

Int. Cl.[6] A61K *9/14, 9/50;* **A01N** *25/00, 25/34*

U.S. Cl. 424—405 **19 Claims**

1. A cellular cellulosic material containing matrix microparticles of an antibacterial and/or antifungal biocide agent or a mixture of antibacterial and/or antifungal biocide agents distributed throughout the cellulosic material, wherein the biocide agent or a mixture of biocide agents is controllably released in the presence of water.

5,441,743

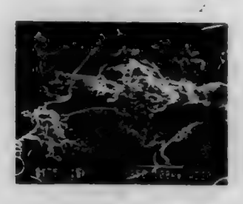
MARINE COMPOSITIONS BEARING PREFERENTIALLY CONCENTRATED DOMAINS OF NON-TIN, ORGANO ANTI-FOULING AGENTS

Vincent D. McGinniss, Sunbury, and Richard J. Dick, Columbus, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation of Ser. No. 702,241, May 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 287,899, Dec. 21, 1988, abandoned. This application Apr. 30, 1993, Ser. No. 56,589

Int. Cl.[6] A01N *25/24*

U.S. Cl. 424—407 **13 Claims**



1. In a non-tin-containing, curable, marine anti-fouling composition consisting of a film of a cured thermoplastic or thermoset binder, and an amount of a non-tin and anti-fouling agent effective for imparting anti-fouling properties to the film of the cured composition when said film is used in a marine environment, the improvement wherein said anti-fouling agent is dispersed in a compound to form a mixture which mixture forms a separate phase of discrete domains of about 0.3 to 500 microns in the film of the cured binder which domains have concentrations of said anti-fouling agent higher than the concentration of said anti-fouling agent in the continuous phase, and wherein said anti-fouling agent consists of a water-insoluble, organo or inorganic compound selected from the group consisting of heterocyclic compounds, aromatic compounds substituted with heteroatom substitutents, amino compounds, carbocyclic vinyl ether ketones, phospho compounds, polychlorinated carbocyclic and acyclic compounds, chlorinated carbocyclic carboxylates, copper (cupric) oleate, alkyl dimethyl benzene, 2,4-d,α-chlorocrotyl ester, 2,3-dichloro-2-methylpropionic acid sodium salt, diphenylacetrontrile, n-dodecyl thiocyanate, ethyl-N,N-dipropylthiolcarbamate, ethyl-N,N-diisobutyl thiolcarbamate, ethylenebis (dithiocarbamato) zinc, ferric dimethyl-dithiocarbamate, isobornyl thiocyanoacetate, manganese ethylenebisdithiocarbamate, disodium ethylene bisdithiocarbamate, s-propylbutylethylthiocarbamate, piperonyl-bis(2-[2'-n-butoxyethoxy]ethyl)acetal, piperonyl butoxide alpha[2-(2-n-butoxyethoxy)-ethoxy]4,5-methylenedioxy 2-propyltoluene, piperonyl cyclonen, 3',4'-dichloropropionalide, ethylene-1,2-bis (thiocarbamoyldimethylthiocarbamoyldisulfide), 5,6,7,8-tetrahydro-1-naphthyl methylcarbamate, 2-thiocyanoethyl dodecanoate, tetramethylanecarboxylate, S-propyldipropylthiocarbamate, zinc ethylene bisdithiocarbamate, zinc dimethyldithiocarbamate, antimony tartrate, antimony potassium tartrate, boric acid, ammonium sulfamate, and mixtures thereof, and having a X value of between about 0.01 and 0.5, a Z parameter for vinyl or aromatic compounds of between about 0.01 and 0.08, and an LD50 value of greater than 200 mg/kg body weight against rats or mice, where X is the weight fraction of heteroatoms contained in the monomer or monomer repeat unit of said anti-fouling agent, Z is the weight fraction of π electrons contained in the monomer or monomer repeat unit of said anti-fouling agent, and LD50 is the lethal oral dose of said anti-fouling agent which is expected to kill 50% of the population of a test group of adult male rats or mice.

5,441,744

Patent Not Issued For This Number

5,441,745

METHOD OF DELIVERING MICELLULAR PARTICLES ENCAPSULATING CHEMOTHERAPEUTIC AGENTS TO TUMORS IN A BODY

Cary A. Presant, San Marino; Richard T. Proffitt, Arcadia; Raymond L. Teplitz, Pasadena; Lawrence E. Williams, San Dimas, and George W. Tin, Arcadia, all of Calif., assignors to Vestar, Inc., San Dimas, Calif.

Continuation-in-part of Ser. No. 363,593, Mar. 30, 1982, abandoned. This application Oct. 22, 1984, Ser. No. 663,550

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[6] A61K *9/133*

U.S. Cl. 424—450 **17 Claims**

1. A method of placing a chemotherapeutic agent within a tumor for the treatment of the tumor comprising the steps of:

(a) providing small micellular particles of less than 2000 Å comprising chemically pure phospholipid molecules;

(b) incorporating a chemotherapeutic agent within the micellular particles; and

(c) introducing said micellular particles with said chemotherapeutic agent therein into the bloodstream of the body to place intact said particles and said chemotherapeutic agent in the tumor.

5,441,746

ELECTROMAGNETIC WAVE ABSORBING, SURFACE MODIFIED MAGNETIC PARTICLES FOR USE IN MEDICAL APPLICATIONS, AND THEIR METHOD OF PRODUCTION

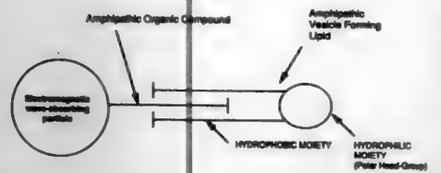
Mark S. Chagnon, Pelham, N.H., assignor to Molecular BioQuest, Inc., Atkinson, N.H.

Continuation-in-part of Ser. No. 958,646, Oct. 7, 1992, Pat. No. 5,389,377, which is a continuation-in-part of Ser. No. 894,260, Jun. 8, 1992, which is a continuation-in-part of Ser. No. 566,169, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,071, Dec. 22, 1989, abandoned. This application May 5, 1993, Ser. No. 57,687

The portion of the term of this patent subsequent to Feb. 14, 2002, has been disclaimed.

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 5 Claims



1. A composition comprising a wave absorbing magnetic core particle wherein said magnetic core particle comprises an oxide of the formula $M_2(+3)M(+2)O_4$ wherein M(+3) is Al, Cr or Fe, M(+2) is Fe, Ni, Co, Zn, Ca, Ba, Mg, Ga, Gd, Mn or Cd, in combination with an oxide selected from the group consisting of LiO, CdO, NiO, FeO, ZnO, NaO, KO and mixtures thereof, characterized in that said core is capable of adsorbing or coordinating with a hydrophilic moiety, coating with a first amphipathic organic compound, characterized in that said first amphipathic organic compound contains a hydrophilic moiety and a hydrophobic moiety and the hydrophilic moiety is adsorbed or coordinated with the core and the hydrophobic moiety thereby extends outwardly from the inorganic core and further coated with a second amphipathic organic compound wherein said second amphipathic compound contains hydrophobic and hydrophilic moiety and the hydropholic moiety associates with the outwardly extending hydrophobic moiety of said first amphipathic compound to form said wave absorbing composition.

5,441,747

STABILIZED SOLID PHARMACEUTICAL COMPOSITION CONTAINING ACID ADDITION SALTS OF A BASIC DRUG AND AN ALKALINE STABILIZER

Pieter de Haan, Oss, and Cornelus J. M. van der Ven, Uden, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 938,325, Aug. 31, 1992, Pat. No. 5,292,520, which is a continuation of Ser. No. 842,278, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 581,859, Sep. 13, 1990, abandoned. This application Feb. 9, 1994, Ser. No. 194,182

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—465 4 Claims

1. A dry pharmaceutical preparation consisting essentially of a water soluble acid addition salt of a poorly soluble basic drug selected from the group consisting of apomorphine, chlorpromazine, imipramine, promethazine, and mianserin;
and excipients selected from the group consisting of microcrystalline cellulose, lactose, and calcium hydrogen phosphate in an amount from about 30 to about 80 percent by weight of the dry pharmaceutical preparation; and
a water soluble alkaline stabilizer in an amount from about 0.5 to about 10 percent by weight of the dry pharmaceutical preparation, wherein said stabilizer is selected from the group consisting of sodium bicarbonate, ammonium carbonate, sodium citrate, dibasic sodium phosphate, anhydrous dibasic sodium biphosphate, diammonium hydrogen phosphate, sodium pyrophosphate and mixtures thereof.

5,441,748

AGENTS FOR DISTRIBUTING GALLSTONES

Akihito Moyiyasu, Sendai, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 823,977, Jan. 23, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,252

Claims priority, application Japan, Jan. 26, 1991, 3-025596

Int. Cl.[6] A61K *33/10, 31/22*

U.S. Cl. 424—686 6 Claims

1. A composition of matter for disintegrating gallstones consisting essentially of an aqueous solution comprising (a) a quantity of water, (b) from approximately 5 to approximately 20 weight percent, based on the quantity of water, of a sodium hydrogen carbonate and (c) from approximately 10 to approximately 25 weight percent, based on the quantity of water, of N-acetylcysteine, wherein the aqueous solution has a pH value of from approximately 7.0 to approximately 10.0.

5,441,749

CHEWING GUM PRODUCTS USING CALCIUM SULFATE

Marc A. Meyers, Naperville; Adebisi A. Campbell, and Jacara R. Muhammad, both of Chicago, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Nov. 30, 1993, Ser. No. 160,029

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 20 Claims

1. A chewing gum composition comprising:
a) about 5% to about 80% gum base;
b) about 5% to about 90% bulking and sweetening agent;
c) about 0.1% to about 10% flavor;
d) about 0.2% to about 6% calcium sulfate; and
e) about 0.2% to about 2.5% of a food grade acidulent.

5,441,750

WAX-FREE CHEWING GUM WITH IMPROVED PROCESSING PROPERTIES

Steven P. Synosky, Greenbrook; Mansukh M. Patel, Downers Grove, Ill.; Michael A. Reed, Merrillville, Ind., and , assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

PCT No. PCT/US93/01922, § 371 Date Aug. 24, 1994, § 102(e) Date Aug. 24, 1994

PCT Filed Mar. 2, 1993, Ser. No. 295,622

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 27 Claims

1. A method of making a wax-free chewing gum having processing and chewing properties similar to a wax-containing chewing gum, comprising the steps of:
selecting a wax-free chewing gum formulation having a composition similar to a wax-containing chewing gum except for the absence of wax;
determining an amount of an extender higher than the amount of extender, if any, present in the wax-containing gum which is sufficient to cause the wax-free chewing gum formulation to have processing and chewing properties similar to the wax-containing chewing gum;
modifying the wax-free chewing gum formulation to include the extender present in the higher determined amount; and
preparing a wax-free chewing gum according to the modified formulation;
whereby the higher amount of extender present in the wax-free chewing gum than in the corresponding wax-containing gum causes the wax-free chewing gum to extrude, sheet, score, and cut like the corresponding wax-containing gum.

5,441,751

PRECOOKED PAN PIZZA DOUGH

Osvaldo E. Vagani, 92-09 78th St., Woodhaven, N.Y. 11421

Continuation-in-part of Ser. No. 101,376, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 872,945, Apr. 21, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 267,967

Int. Cl.[6] A21D *13/00*

U.S. Cl. 426—27 8 Claims

1. A precooked, partially risen storage stable pan pizza dough, said pizza dough comprising;
flour, water, yeast, and oil, said flour comprising at least 30 wt % white spring wheat flour, based on a total weight of flour, said pizza dough being formed by:
mixing said flour, water, yeast and oil to form a dough;
cutting said dough into at least one additional section per 2.6 ounces of dough;
repeating said mixing and cutting at least two additional times to form a mixed dough;
resting said mixed dough for 60 to 120 minutes while maintaining a substantially constant and uniform water content in said dough, during which time said dough is allowed to partially rise;
dividing said dough into portions;
precooking said dough at a temperature of 500° to 700° F., for a period of 4 to 10 minutes, whereby said dough is not fully cooked, to form a precooked dough; and
cooling said precooked dough, at which point said precooked dough is ready for full cooking or storage.

5,441,752

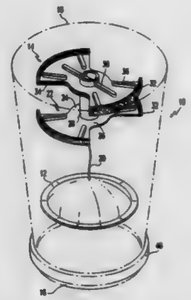
INFUSION BAG DEVICE

Sonja A. Sandin, 105 Alleyne Dr., Pittsburgh, Pa. 15215

Filed Dec. 10, 1993, Ser. No. 164,963

Int. Cl.[6] B65B *29/02;* B65D *81/34*

U.S. Cl. 426—82 13 Claims



1. A beverage infusion device capable of being inserted in a drinking cup for preparing an infusable beverage comprising:
a water permeable infusion bag containing an infusable beverage material and a shield means connected to said infusion bag for isolating said infusion bag within the bottom of said cup, said shield means comprising first and second portions; and first portion being configured and movable relative to said second portion such that the two portions can assume a first position relative to each other wherein the shield means assumes an open configuration with flow channels such that liquid can flow through said shield means and a second position relative to each other wherein the shield means assumes a closed configuration wherein the flow channels are closed and liquid cannot pass through the shield means, the device being dimensioned and configured such that when said device is placed in said cup with said shield means in said open configuration, the infusion bag is allowed to steep in a liquid in said cup and, after the desired infusion has occurred, the device can be pushed to the bottom of the cup so that the shield means covers the bag in the bottom of the cup and the shield means can be manipulated to its closed configuration thus isolating the infusion bag from all the remaining liquid in the cup above the shield means.

5,441,753

COPROCESSED PARTICULATE BULKING AND FORMULATING AIDS: THEIR COMPOSITION, PRODUCTION, AND USE

Emanuel J. McGinley, Morrisville, Pa.; Gregory R. Krawczyk, Princeton Junction, N.J., and Edward Selinger, Langhorne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 28, 1994, Ser. No. 188,513

Int. Cl.[6] A23L *1/0534*

U.S. Cl. 426—96 20 Claims

1. An additive, comprising: a cellulose composite having
50 to 99% particulate cellulose based on the total weight of the composite; and
1 to 50% surfactant coating, based on the total weight of the composite, fixed to the cellulosic surface of the particulate cellulose,
wherein the surfactant in the coating has an HLB within the range of from 1 to 40,
wherein the cellulose composite has a mean particle size within the range of from 1 to 505 microns and wherein no galactomannan is affixed to the surface of the cellulose.

5,441,754

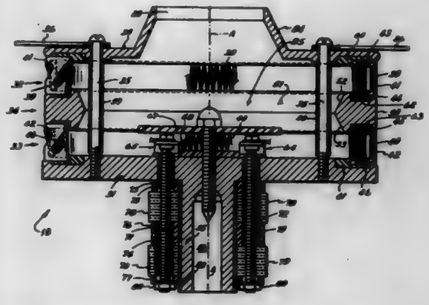
HIGH VOLUME SINGLE COLOR COTTON CANDY MACHINE

John C. Evans, Sr., Cincinnati, Ohio, assignor to Gold Medal Products Co., Cincinnati, Ohio

Filed Nov. 12, 1993, Ser. No. 150,976

Int. Cl.[6] A23G *7/00;* A23P *1/00*

U.S. Cl. 426—483 21 Claims



10. A method of making single color cotton candy in apparatus having a spinner head and including the steps of:
pouring single color sugar into a common sugar chamber in said heat;
spinning said head about an axis;
separating sugar into axially spaced upper and lower portions thereof in said common sugar chamber upon rotation of said head;
melting upper and lower portions of sugar received from said chamber at upper and lower peripheral wall areas of said chamber;
issuing sugar outwardly through apertures in both said axially spaced upper and lower wall portions of said chamber at an axial distance of at least about $\frac{1}{8}$ inch; and

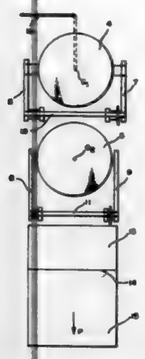
collecting cotton candy issuing from said head.

5,441,755

METHOD OF BAKING USING A PLURALITY OF PIVOTABLE PLATES

Thorsten Höggström, Box 2440 B, S-892 99 Domsjo, Sweden

PCT No. PCT/SE91/00726, § 371 Date Apr. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO92/07469, PCT Pub. Date May 14, 1992
PCT Filed Oct. 29, 1991, Ser. No. 39,493
Claims priority, application Sweden, Nov. 1, 1990, 9003487
Int. Cl.[6] A21C *9/06*
U.S. Cl. 426—502 **14 Claims**



1. A method of baking wherein at least two heated plates are utilized, each of them having a top side, and dough or batter being automatically positioned on the first heated plate after applying a portion of dripping on the plate for easily separating therefrom, for making pastries and pancakes, comprising the combination of the following steps:

baking the dough or batter on its one side on the top side of the first plate which is positioned in a first essentially horizontal position, whereafter the first plate is automatically forced to take a second essentially horizontal position beside the first position and essentially straight above a second heated plate with its top side directed towards the second plate;

positioning the partly baked dough or batter on the second plate which has taken a first essentially horizontal position;

baking the other side of the dough or batter on the second plate at the same time as the first plate automatically returns to its initial position for reception of a new portion of the dough or batter; and

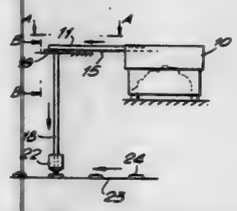
automatically and pivotably transferring the baked dough or batter to a laying off place, placed beside the second plate on a level at least somewhat below the level of the second plate, by the fact that the second plate is automatically forced to take a second essentially horizontal position above the laying off place with its top side directed thereto whereby the finally baked pastry/pancake is positioned on the laying off place wherein the pastry/pancake is automatically folded up in connection with the transfer to the laying off place.

5,441,756

PROCESS FOR DISTRIBUTING OBJECTS

Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 760,487, Sep. 16, 1991, abandoned. This application Nov. 24, 1993, Ser. No. 158,158
Claims priority, application European Pat. Off., Sep. 17, 1990, 90117854
Int. Cl.[6] A21D *13/08*
U.S. Cl. 426—556 **2 Claims**



1. A process for distributing articles onto a food product comprising:

vibrating a vibratory feeder and feeding articles selected from the group consisting of spherical and quasi-spherical objects to a plurality of chutes connected thereto wherein each chute extends to one object-dispensing opening disposed for dispensing the objects vertically downwardly and transporting the objects through the chutes to the chute openings and dispensing the objects from the openings;

horizontally oscillating a first plate, which is positioned beneath the chute openings, which has a top surface positioned adjacent the chute openings, which has pocket passage openings which have a size sufficient for passing the objects therethrough and for containing one object therein and which is positioned above a top surface of a second plate having holes having a size sufficient for passing the objects therethrough, (a) in a first direction relative to the chutes and to the top surface of the second plate and aligning the pocket passages with the chute openings in a one to one relationship and with a solid portion of the top surface of the second plate, receiving the objects from the chute openings and containing the objects in the passages and then, (b) in a second direction away from the chute openings and aligning the pocket passages with the holes in the second plate to pass the objects from the pocket passages through the second plate holes; and

conveying the objects from the second plate holes to a food product for application to the food product.

5,441,757

SAUCES FOR RETORTABLE FOOD PRODUCTS

Victor T. Huang, Moundsview; Laurie E. Kerschner, Minnetonka, and Lorri D. Cullen, Minneapolis, all of Minn., assignors to The Pillsbury Co., Minneapolis, Minn.

Continuation of Ser. No. 3,592, Jan. 13, 1993, abandoned, which is a division of Ser. No. 821,208, Jan. 16, 1992, Pat. No. 5,204,135. This application Dec. 5, 1994, Ser. No. 350,383
Int. Cl.[6] A23L *1/39*
U.S. Cl. 426—589 **10 Claims**

1. A retorted food product having a sauce component and starch-containing and/or vegetable food component of preserved textural qualities prepared by the method comprising the steps of:

a) preparing said sauce component wherein about 0.1 to about 24% by weight of the sauce component is comprised of polysaccharides of MW_w between about 3600 and 250,000, and between about 36% to about 99.9% by weight water;

b) mixing said sauce with a vegetable and/or a starch-containing food in ratios suitable for the food product;

c) thermally treating said mixture at a temperature greater than 212° F. under pressure for a period of time adequate to sterilize said mixture;

d) cooling said mixture wherein after combination of said sauce with said food, and thermal treating of said mixture, said food remains intact and firm without agglomeration until mastication.

5,441,758

PROCESS FOR PREPARING NO OR LOW FAT POTATO CHIPS AND STRAWS

Victor M. Lewis, and David A. Lewis, both of Sydney, Australia, assignors to Byron Agricultural Company Pty. Ltd., Ruschcutters Bay, Australia

Division of Ser. No. 872,070, Apr. 22, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 121,997
Claims priority, application Australia, Apr. 24, 1991, PK5810
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—637 **7 Claims**

1. A process for preparing no or low fat potato chips or straws comprising:

slicing raw potato to form slices having thicknesses of about 2 mm to about 3 mm which will not break or become excessively hard on subsequent dehydration;

blanching and washing the potato slices to remove excessive starch;

dehydrating the blanched potato slices in hot air to a moisture content of 12% to 30%; and

toasting the dehydrated slices at 140° C. to 220° C. to a moisture content below 4%.

5,441,759

METHOD TO STABILIZE TDMAC HEPARIN COATING

Ron Crouther, Chesterfield; Daniel P. Flynn, Florissant, and Elizabeth Lagwinska, Chesterfield, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 940,421, Sep. 3, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,288
Int. Cl.[6] B05D *3/06, 1/18, 3/02*
U.S. Cl. 427—2.3 **19 Claims**

1. A method to stabilize a tridodecylmethyl ammonium chloride (TDMAC) heparin coating on a medical device comprising the steps of:

coating the medical device with a TDMAC heparin solution;

drying the TDMAC heparin solution on the coated medical device;

irradiating the coated medical device with gamma ray radiation; and,

heating the previously gamma ray irradiated medical device.

5,441,760

IMPREGNABLE IN SITU DEICING MATERIAL

Maurice G. Pattengill, Golden, and Martin A. Jones, Boulder, both of Colo., assignors to Western Aggregates, Inc., Boulder, Colo.

Filed Mar. 25, 1994, Ser. No. 218,073
Int. Cl.[6] B05D *5/00;* **C09K** *3/18*
U.S. Cl. 427—138 **6 Claims**

3. A method for renewing a deicing composition incorporated in a thoroughfare, the method comprising:

a) depositing upon the thoroughfare a deicing composition consisting essentially of a lightweight, porous, expanded shale aggregate, the aggregate renewably saturated with a deicer selected from the group consisting of calcium chloride, magnesium chloride, potassium chloride, sodium chloride, magnesium acetate, calcium acetate and calcium magnesium acetate, and the aggregate admixed with a carrier selected from the group consisting of oil, asphalt and concrete; and

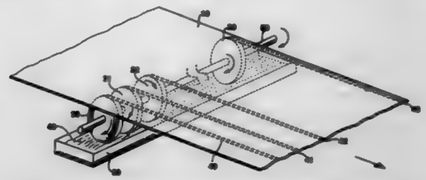
b) replenishing the deicer when it becomes depleted by introducing additional deicer to the deicing composition deposited on the thoroughfare.

5,441,761

METHOD FOR THE PARTIAL METALLIZATION OF A SUBSTRATE

Lee H. Miller, Greenwich, Conn., assignor to Alusit Holdings, L.P., Greenwich, Conn.

Continuation of Ser. No. 90,913, Jul. 12, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 338,277
Int. Cl.[6] B05D *1/28, 5/00;* **B44C** *1/10*
U.S. Cl. 427—146 **3 Claims**



1. A process for the partial metallization of a substrate employing a reusable untreated bi-oriented polypropylene plastic film comprising:

a) depositing on the bi-oriented polypropylene plastic film, metal particles of between 50 and 200 Angstroms in thickness;

b) coating a selected portion of said substrate or said plastic film with varnish, said varnish being utilized with a coating weight of between 8–10 grams per square meter;

c) laminating the substrate and the plastic film together before the varnish is cured so that the metal particles are embedded in the varnish;

d) curing said varnish so that it bonds to the substrate;

e) separating the plastic film from the substrate; and

f) reusing said plastic film; whereupon said substrate is provided with at least one strip of the film of metal particles, and wherein said deposited particles have a thickness substantially less than the wavelength of light and a spacing substantially less than the wavelength of visible light whereby the metallic surface appears continuous and exhibits a specular metallic finish.

5,441,762

COATING A COMPOSITE ARTICLE BY APPLYING A POROUS PARTICULATE LAYER AND DENSIFYING THE LAYER BY SUBSEQUENTLY APPLYING A CERAMIC LAYER

Paul E. Gray, North East, Md., and Mark H. Headinger, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 893,410, Jun. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 673,351, Mar. 22, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,928
Int. Cl.[6] B05D *3/02;* **C23C** *16/00*
U.S. Cl. 427—190 **4 Claims**

1. A process for applying a coating to a composite article having a ceramic matrix said matrix having surface porosity, the process comprising:

a. forming a green coating on the composite article by applying to the surface of the matrix of the composite a mixture of particles having diameters in the range of 0.05 to 50 micrometers and a curable liquid polymeric silicon-containing binder, said binder being present in the mixture in an amount of from about 1 to about 25% by weight of said particles;

b. curing the green coating by heating the coating; and

c. infiltrating and covering the porous layer with a ceramic layer by chemical vapor infiltration; and

wherein said particles are selected from the group consisting of boron carbide, silicon carbide, silicon boride, calcium boride, tantalum boride, niobium boride, hafnium boride, aluminum boride, zirconium boride, rare-earth borides, yttrium boride, germanium boride, germanium silicide, titanium silicide, titanium boride, metallic silicides and mixed phase boride/silicide combinations; and

wherein said ceramic matrix of the composite article is selected from the group consisting of silicon carbide and silicon nitride, said curable binder is selected from the group consisting of polycarbosilanes and polysilazanes, and said ceramic layer is selected from the group consisting of silicon carbide and silicon nitride.

5,441,763

METHOD OF CORROSION PROTECTING STEEL STRUCTURAL COMPONENTS

Ming C. Kuo, Fox Point, Wis., assignor to A.O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 5, 1994, Ser. No. 223,331
Int. Cl.[6] B08B *7/00*; B05D *3/12*
U.S. Cl. 427—195 **14 Claims**



1. A method of corrosion protecting steel structural components, the method comprising:

a steel shot blast mechanical cleaning of the steel structural component to remove scale, rust, and other oxidation residues,

then a glass shot blast mechanical cleaning of the steel structural component to remove any remaining said residues, and to flatten any undesirable metal peaks,

then the application of a corrosion protective coating,

and then the curing of the protective coating,

wherein said method is performed without chemical treatment of the steel structural component prior to the application of said protective coating.

5,441,764

METHOD OF MANUFACTURING A COMPOUND BODY AND THE RESULTING BODY

Marianne Collin, Enskede, Bertil Mattsson, and Jan Nilsson, both of Robertsfors, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Continuation of Ser. No. 833,162, Feb. 10, 1992, abandoned.
This application Jun. 30, 1994, Ser. No. 268,740
Claims priority, application Sweden, Feb. 8, 1991, 9100396
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[6] B05D *3/12*
U.S. Cl. 427—226 **18 Claims**

1. A method of manufacturing a compound body in which at least one, at least partly-covering, layer is applied onto a porous body comprising applying a subpressure to the porous body by means of a suction cup while the body is dipped in a slurry of powdery components of the layer, and densifying the dipped body by heat treatment, the applied layer being more wear resistant than the porous body, the subpressure being



applied to a first external surface of the porous body and the applied layer covering a second external surface.

5,441,765

METHOD OF FORMING SI-O CONTAINING COATINGS

David S. Ballance; Robert C. Camilletti, and Diana K. Dunn, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 22, 1993, Ser. No. 124,529
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—228 **12 Claims**

1. A method of forming an Si—O containing coating on an electronic substrate comprising:

applying a coating comprising hydrogen silsesquioxane resin on an electronic substrate;

heating the coated electronic substrate to a temperature sufficient to convert the hydrogen silsesquioxane resin to an Si—O containing ceramic coating; and

exposing the Si—O containing ceramic coating to an annealing atmosphere containing hydrogen gas for a time and at a temperature sufficient to anneal the coating.

5,441,766

METHOD FOR THE PRODUCTION OF HIGHLY PURE COPPER THIN FILMS BY CHEMICAL VAPOR DEPOSITION

Hyung S. Choi; Young S. Cho; Chong J. Lim, and Soon T. Hwang, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Aug. 25, 1994, Ser. No. 295,423
Int. Cl.[6] C23C *16/18*
U.S. Cl. 427—250 **6 Claims**

1. A method for the production of copper thin films on a substrate with an organic copper compound precursor by chemical vapor deposition, comprising employing, as the precursor, a copper-β-ketoester compound containing β-ketoesters alone or in combination with a Lewis base as ligands, in the presence or the absence of hydrogen.

5,441,767

PACK COATING PROCESS FOR ARTICLES CONTAINING SMALL PASSAGEWAYS

David E. DeSaulniers, North Hampton, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 26, 1994, Ser. No. 187,590
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—252 **4 Claims**

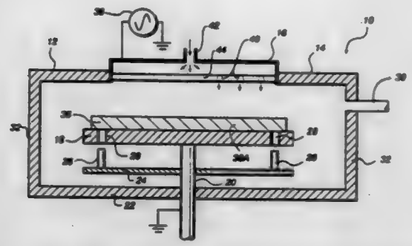
1. In the method of coating metallic articles containing cooling holes with a protective coating by embedding the article in a powder mix which contains a source of the protective coating constituents, a halide activator and an inert ceramic material and heating the article and powder mix to an elevated temperature, such as between about 1,500° F. and about 2,025° F., the improvement which comprises partially filling said cooling holes with an aqueous base organic coating prior to embedding the article in the powder mix, whereby the tendency of the powder mix to sinter within the cooling holes is reduced.

5,441,768

MULTI-STEP CHEMICAL VAPOR DEPOSITION METHOD FOR THIN FILM TRANSISTORS

Kam S. Law, Union City; Robert Robertson, Palo Alto; Michael Kolfrack, Alameda; Angela T. Lee, Sunnyvale; Takako Takehara, Hayward; Guofu J. Feng, San Jose, and Dan Maydan, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 8, 1994, Ser. No. 193,310
Int. Cl.[6] C23C *16/22*
U.S. Cl. 427—255.7 **17 Claims**



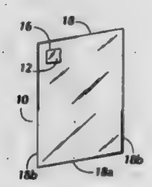
1. A method of depositing at least two layers of electronic materials on a substrate such that an interface between a layer of amorphous silicon and a layer of silicon nitride is formed therein comprising the step of forming at least one of the said two layers by a two-stage deposition process comprising a first chemical vapor deposition process conducted at a first deposition rate for at least one of said two layers is carried out forming said interface followed by a second chemical vapor deposition process conducted at a second deposition rate and is lower than said first deposition rate for forming said interface with a subsequently deposited different material, each of said first and second depositing rates being selected from the respective ranges of between 20 and 300 nm/min.

5,441,769

PAINT MASK

Ryan Ross, by Lorna O. Ross, Legal Representative, 6718 Lockridge Dr., Doraville, Ga. 30360

Filed Feb. 17, 1994, Ser. No. 198,526
Int. Cl.[6] B05D *1/32*
U.S. Cl. 427—282 **16 Claims**



11. A masking method of masking a glass window pane from inadvertent application of paint while painting mullions of a window, comprising:

affixing a flexible sheet to a surface of a glass window pane, the flexible sheet including nonadhesive for attractively holding the sheet to the glass window pane;

abutting perimeter edges of the flexible sheet against respective mullions of a window; and

pressingly contacting a perimeter portion of the flexible sheet to secure same against the glass window pane adjacent the mullion for sealingly closing a gap between the glass window pane and the flexible sheet,

whereby painting the mullion applies overlap paint to an exposed surface of the flexible sheet.

5,441,770

CONDITIONING PROCESS FOR ELECTROLESS PLATING OF POLYETHERIMIDES

James E. Rychwalski, Medway; Paul J. Ciccolo, Ashland; Robert B. Currie, Berkley, and Philip D. Knudsen, Northboro, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Continuation of Ser. No. 525,711, May 18, 1990, abandoned.
This application Aug. 14, 1991, Ser. No. 747,443
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—306 **17 Claims**

1. A process for metal plating a polyetherimide substrate, said process comprising the steps of conditioning said substrate by contact with an inorganic hydroxide solution, etching the substrate with an alkaline permanganate solution, catalyzing the substrate with an electroless plating catalyst and metal plating said catalyzed polyetherimide substrate, said step of conditioning said substrate preceding said step of etching the substrate.

5,441,771

ANTI-FRICTION PAINT FOR ELASTOMERIC PARTS

Hans-Guenter Seltmann, Duesseldorf, and Hartmut Lippert, Monheim, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 689,263, May 23, 1991, abandoned.
This application Nov. 10, 1994, Ser. No. 338,289
Claims priority, application Germany, Nov. 26, 1988, 38 39 937.7
Int. Cl.[6] B05D *3/02*; B32B *7/00*
U.S. Cl. 427—386 **21 Claims**

1. A moisture-hardening single-component polyurethane paint for the coating of an elastomer consisting essentially of a polyurethane prepolymer containing on average two or more isocyanate groups per molecule produced by mixing an alcohol having a functionality of at least 2 with an excess of isocyanate compound having a functionality of at least 2, a solvent, from about 0.1 to about 10% by weight of a reactive polysiloxane consisting essentially of a modified siloxane containing one or more functional groups which are reactive with isocyanate-terminated paint constituents or with the compounds formed therefrom, and from about 0.05 to about 5% by weight of a reactive surfactant, based on the weight of said paint, said reactive surfactant consisting essentially of a modified surfactant containing one or more functional groups which are are active with isocyanate-terminated paint constituents or with the compound formed therefrom, whereby said paint has improved surface-slip properties with respect to glass.

5,441,772

PROTECTING CARBON STEEL FROM CORROSION WITH NONCONDUCTING POLY(ANILINE)

Thomas P. McAndrew; Andrew G. Gilicinski, and Lloyd M. Robeson, all of Macungie, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

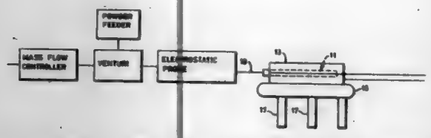
Filed Sep. 29, 1993, Ser. No. 129,699
Int. Cl.[6] B05D *7/14*
U.S. Cl. 427—388.1 **9 Claims**

1. A method of protecting carbon steel from corrosion which comprises applying to a carbon steel surface a coating of nonconducting poly(aniline) to form a coated carbon steel surface and, without protonation, exposing the resultant coated carbon steel surface to an environment which is corrosive for untreated carbon steel.

5,441,773
COMPOSITION AND METHOD OF FORMING A BLACK NO-RINSE CONVERSION COATING ON METAL SURFACES
Edward A. Rodzewich, Fleurtown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Continuation-in-part of Ser. No. 109,115, Aug. 19, 1993, which is a continuation-in-part of Ser. No. 823,216, Jan. 21, 1992, abandoned. This application Aug. 24, 1994, Ser. No. 295,309
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—388.4 1 Claim

1. A method of forming a black conversion coating on aluminum or alloys thereof comprising: an aqueous coating the surface with a coating solution having a pH below 7 said aqueous coating solution consisting essentially of from about 0.01 to about 0.20% wt. hexavalent chromium; from about 2.0 to about 10% wt. modified styrene acrylic resin (as solid); from about 0.5 to about 3.0% wt. carbon black pigment; a thickening agent selected from the group consisting of guar gum and xanthan gum to provide a viscosity of from about 300–700 cps; about 0.3% wt. a nonionic dispersant; and from about 0.02% wt. a slow evaporating coalescent and; drying said coating on said surface without rinsing.

5,441,774
METHOD OF COATING PHOSPHORS OF FLUORESCENT LAMP GLASS
Arunava Dutta, Winchester, and Leonard V. Dullea, Peabody, both of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.
Continuation-in-part of Ser. No. 895,762, Jun. 9, 1992, Pat. No. 5,314,723. This application May 23, 1994, Ser. No. 247,919
Int. Cl.[6] B05D 5/06
U.S. Cl. 427—476 7 Claims

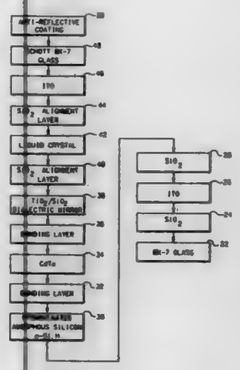


1. A method for forming a coating of a blend of phosphor particles on a fluorescent lamp glass, comprising:
(a) forming a polymer coated fluorescent lamp glass by the steps of entraining polymer particles in a carrier gas, said polymer having a decomposition temperature and a polymer softening temperature, applying a sufficient charge to the polymer particles for attracting the polymer particles to the fluorescent lamp glass, heating the fluorescent lamp glass to a temperature above the polymer softening temperature for adhering the polymer to the fluorescent lamp glass, and depositing the polymer particles on the fluorescent lamp glass to obtain a polymer coated fluorescent lamp glass; and
(b) applying the blend of phosphor particles to the polymer coated fluorescent lamp glass by the steps of entraining a blend of polymer treated phosphor particles in a carrier gas, heating the polymer coated fluorescent lamp glass to a temperature above the polymer softening temperature for adhering the blend of polymer treated phosphor particles to the polymer coated fluorescent lamp glass, depositing the blend of polymer treated phosphor particles on the polymer coated fluorescent lamp glass, and heating the polymer coated fluorescent lamp glass to a temperature above the decomposition temperature of the polymer for removing the polymer and forming a coating of the blend phosphor particles on the fluorescent lamp glass.

5,441,775
RADIATION-CURABLE, AQUEOUS DISPERSION
Erich Beck, Schriesheim; Gregor Ley, Wattenheim; Erich Gulbins, Heidelberg; Bernhard Schlarb; Edmund Keil, both of Ludwigshafen, and Matthias Lokai, Enkenbach-Alsenborn, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed May 6, 1994, Ser. No. 238,880
Claims priority, application Germany, May 12, 1993, 43 15 831.5
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—496 7 Claims

1. An aqueous dispersion containing
A) from 20 to 90% by weight of a dispersed polymer having a glass transition temperature above 30° C. and
B) from 10 to 80% by weight of a tri-, tetra-, penta-or hexa(-meth)acrylate of an alkoxylated, trivalent to hexavalent alcohol having a mean degree of alkoxylation of the hydroxyl groups of the alcohol, defined as the quotient of the number of alkoxy groups to the number of hydroxyl groups, ie. the functionality of the alcohol prior to the alkoxylation, of at least 0.5,
the stated weights being based on the sum of A) and B).

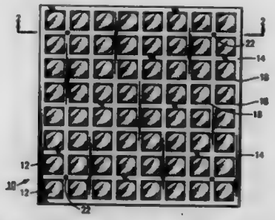
5,441,776
SILICON DIOXIDE BONDING LAYERS AND METHOD
Rodney D. Sterling, 2609 Via Masada, Carlsbad, Calif. 92008, and Yu-Tai Lee, 8419 Florissant Ct., San Diego, Calif. 92129
Filed Nov. 8, 1993, Ser. No. 149,195
Int. Cl.[6] G02F 1/135
U.S. Cl. 428—1 7 Claims



1. A liquid crystal light valve comprising:
first substrate means and an indium tin oxide primary electrode, said substrate means supporting the said primary electrode;
a silicon dioxide bonding layer deposited on said primary electrode,
a hydrogenated amorphous silicon layer deposited on said silicon dioxide layer,
a dielectric mirror deposited on said hydrogenated amorphous silicon layer,
a first silicon dioxide alignment layer deposited on said dielectric mirror,
a second substrate means, said second substrate means having an indium tin oxide counter electrode deposited therein,
a second silicon dioxide alignment layer deposited on said counter electrode,
said first and second alignment layers forming the top side and bottom side of a liquid crystal layer,

said liquid crystal layer adapted to contain liquid crystal material.

5,441,777
SCREEN OR PANEL WITH MARBLES SANDWICHED BETWEEN GRIDS
David Howell, 333 Hook Rd., Katonah, N.Y. 10536
Filed Jun. 29, 1993, Ser. No. 83,176
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[6] B44F 1/00
U.S. Cl. 428—11 11 Claims



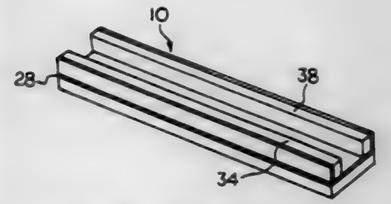
1. A decorative structural panel comprising a matrix defining an array of grid openings and an array of bead members situated respectively in said grid openings with at least a portion of each of said bead members being exposed through its respective grid opening, said matrix including bead retaining means for retaining said bead members in said openings and said means allowing light to pass through said bead members in said matrix.

5,441,778
3-D ILLUSTRATION
Mykos M. Gilbreath; Jonathon L. Gilbreath, and Jeremy C. Gilbreath, all of 908 Town & Country Blvd., Ste. 120, Houston, Tex. 77024
Filed Sep. 2, 1993, Ser. No. 116,062
Int. Cl.[6] B44C 5/04; G09F 1/00
U.S. Cl. 428—13 10 Claims



1. An article comprising
a base structure formed from card paper stock having a first two dimensional graphic design imprinted on a portion thereof against a background design;
a superstructure having an outer periphery in the shape of the first two dimensional graphic design, said superstructure positioned in covering relationship with the first two dimensional graphic design on the base structure, the outer periphery of the superstructure having pigmentation to blend with the coloration of the background design and with the coloration of the superstructure: and
mounting means for so positioning the superstructure, wherein the outer periphery of said superstructure remains spaced apart from said base structure.

5,441,779
INSULATED ASSEMBLY INCORPORATING A THERMOPLASTIC BARRIER MEMBER
Luc Lafond, 225 Donlea Drive, Toronto, Ontario, Canada M4G 2N3
Filed Apr. 20, 1992, Ser. No. 871,016
Claims priority, application Canada, Apr. 22, 1991, 2040636
Int. Cl.[6] E06B 3/24
U.S. Cl. 428—34 5 Claims



1. An insulated glass assembly including a first glass substrate and a second glass substrate, said assembly comprising:
a first length of sealant means and a second length of sealant means in spaced facing relation defining a space therebetween, each said length contacting a glass substrate;
a continuous polymeric self-supporting support layer contacting the first and second lengths oft said sealant means, said continuous self-support layer and said sealant means being arranged between said glass substrate for forming an axial channel between said substrates; and
desiccant means positioned within said space and separate from said sealant means and said support layer; said desiccant means being between the first and second lengths of said sealant means.

5,441,780
PAPER TUBE WITH INTEGRAL END SUPPORTS
Victor Bushell, Atlantic Beach, and Robert Dissen, Orange Park, all of Fla., assignors to Jefferson Smurfit Corporation, St. Louis, Mo.
Filed Mar. 7, 1994, Ser. No. 206,164
Int. Cl.[6] F16L 9/16, 57/00
U.S. Cl. 428—34.2 1 Claim



1. A paper tube comprising:
an elongated hollow tube section having a first end and second end, each said end having an annular rabbet formed therein;
a first end support ring having a body section and an integral concentric collar section extending from said body section, said collar section seated on said rabbet at said first end of said tube;
a second end support ring having a body section and an integral concentric collar section extending from said body section, said collar section seated on said rabbet formed at said second end of said tube section;
said tube section being comprised of a wound paper wall, forming the tube, said wall having a poly-coated ply provided at its mid-point therein and said poly-coated ply arranged at said mid-point of said paper tube and located in alignment within said tube at the depth of said formed

rabbet provided within each said end of said elongated hollow tube section;

each said end support ring body having an outside diameter equal to an outside diameter of said tube section, each said collar having an outside diameter equal to the inside diameter of said rabbet, and each said ring having a bore formed therethrough, said bore having an inside diameter equal to the inside diameter of said tube section, wherein said end support rings are formed from high impact plastic;

the combination paper tube and end support rings having uniform inside diameter, from end-to-end, and a uniform outside diameter from end-to-end, including the said end support rings thereon, and said end support rings being seated interiorly of the rabbeted tube.

5,441,781

MULTI-LAYER PLASTIC FUEL TANK

Masaaki Uchida, Kanagawa, and Nobuyuki Shimizu, Okayama, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,752

Claims priority, application Japan, Aug. 31, 1992, 4-255914; Jun. 30, 1993, 5-162704

Int. Cl.[6] B32B *27/34;* **B65D** *65/40*

U.S. Cl. 428—35.7 **4 Claims**

1. A multi-layer plastic fuel tank comprising (A) a gas barrier layer having on at least one side thereof (B) an adhesive layer and further thereon (C) a high-density polyethylene layer,

said gas barrier layer (A) comprising a modified polyamide composition comprising (1) an α,β-unsaturated carboxylic acid-modified ethylene-α-olefin copolymer prepared by grafting an α,β-unsaturated carboxylic acid or a derivative thereof to an ethylene-α-olefin copolymer at a grafting ratio of from 0.05 to 1% by weight based on said ethylene-α-olefin copolymer, and (2) polyamide,

the amount of said ethylene-α-olefin copolymer (1) being from 10 to 50 parts by weight per 100 parts by weight of said polyamide (2),

said adhesive layer (B) comprising a modified polyethylene prepared by grafting an unsaturated carboxylic acid or a derivative thereof,

said high-density polyethylene layer (C) comprising high-density polyethylene having an intrinsic viscosity of from 2 to 6 dl/g, a density of from 0.940 to 0.970 g/cm^3, and a zero shear viscosity of from 2.0×10^7 to 1.0×10^8 poise at 190° C.

5,441,782

PLASTIC LAMINATE HAVING POLYAMIDE RESIN SURFACE LAYER AND FLUORORESIN SURFACE LAYER

Chikashi Kawashima, Tokyo; Seiichi Yoshida, Saitama; Sunao Koga, Saitama; Satoshi Nakahata, Saitama, and Fumiyoshi Yoshikawa, Saitama, all of Japan, assignors to Central Glass Company, Limited, Yamaguchi, Japan

Filed Jul. 13, 1992, Ser. No. 912,197

Claims priority, application Japan, Jul. 16, 1991, 3-175525; Jan. 22, 1992, 4-009487; Feb. 14, 1992, 4-28337

Int. Cl.[6] B32B *7/00, 27/00;* **F16L** *11/00*

U.S. Cl. 428—36.9 **17 Claims**

1. A plastic laminate comprising:

a first surface layer formed of an aliphatic polyamide resin having a melting temperature not higher than 280° C.;

a second surface layer formed of a fluororesin selected from the group consisting of polyvinylidene fluoride, a vinylidene fluoride copolymer, a fluorine-containing graft copolymer, a blend of polyvinylidene fluoride with said graft copolymer, and a blend of said vinylidene fluoride based copolymer with said graft copolymer, said vinylidene fluoride based copolymer being a copolymer of vinylidene fluoride with at least one other fluorine-containing monomer, said graft copolymer consisting of a trunk polymer and a branch polymer which is polyvinylidene fluoride, said trunk polymer consisting of an elastomeric copolymer of vinylidene fluoride, chlorotrifluoroethylene and another monomer, said another monomer having at least one double bond and peroxy group and amounting to about 0.05 to 5 wt % of a mixture of said vinylidene fluoride, said chlorofluoroethylene and said another monomer to be copolymerized, said trunk polymer having a glass transition temperature lower than 25° C.; and

an intermediate layer which is interposed between said first and second surface layers and welded to the first and second surface layers, said intermediate layer being formed of a resin blend consisting of an aliphatic polyamide resin, said fluorine-containing graft copolymer and an optional component, said optional component being a member selected from the group consisting of polyvinylidene fluoride and a copolymer of vinylidene fluoride with at least one other fluorine-containing monomer.

5,441,783

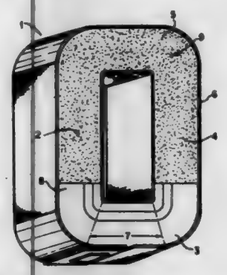
EDGE COATING FOR AMORPHOUS RIBBON TRANSFORMER CORES

John Silgailis, Cedar Grove, and Mark Rand, Chester, both of N.J., assignors to AlliedSignal Inc., Morris Township

Filed Nov. 17, 1992, Ser. No. 977,378

Int. Cl.[6] H01F *41/00*

U.S. Cl. 428—37 **10 Claims**



1. A magnetic core comprising:

a plurality of layers of amorphous alloy strip, arranged such that the core has two edges, oriented such that the edges define top and bottom faces, each face having a discontinuity defining a distributed gap portion extending from the top face to the bottom face; and

a coating, applied to at least one face of the core exclusive of the distributed gap portion, the coating comprising a first porous material having a porosity sufficient to permit a liquid having a viscosity greater than about 100,000 cps to impregnate the first porous material and a bonding material having a viscosity of at least about 100,000 cps applied to the first porous material such that the bonding material substantially contacts the at least one face of the core.

5,441,784

PAPER BASE WALLCOVERINGS

John R. Smith, Gansevoort, N.Y., assignor to Decora, Incorporated, Fort Edward, N.Y.

Filed Apr. 4, 1994, Ser. No. 222,286

Int. Cl.[6] D21H *27/20*

U.S. Cl. 428—40 **12 Claims**

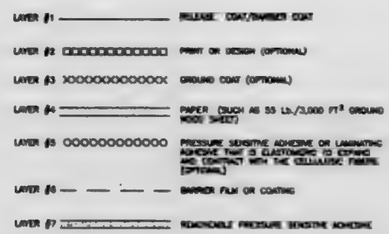
1. An article of manufacture comprising paper-based wallcovering for application to a wall to be decorated, said wallcovering comprising

(i) a paper substrate having an outwardly facing surface and an inwardly facing surface, said paper substrate comprising cellulosic fibers and having a weight of between about 15 lbs and about 125 lbs per 3,000 square feet;

(ii) an optional decorative surface (a) attached to said outwardly facing surface or (b) attached to an optional ground coat layer on said outwardly facing surface;

(iii) a transparent flexible layer having moisture barrier and release properties attached to said outwardly facing surface of said paper substrate or attached to said optional decorative surfaces, said layer weighing between about 0.05 lbs and about 10.0 lbs per 3,000 square feet and comprising a synthetic resin material;

(iv) an optional elastomeric adhesive layer adhered to said inwardly facing surface comprising a pressure sensitive adhesive, a remoistenable adhesive or a laminating adhesive, said layer expands and contracts with environmental moisture induced expansion and contraction of the cellu-



losic fibers in said paper substrate layer (i), said layer weighing between about 0.05 oz and about 1.0 oz per yard;

(v) a flexible layer having moisture barrier properties (a) attached to said inwardly facing surface of said paper substrate or (b) adhered to said optional elastomeric layer (iv), said layer weighing between about 0.05 oz and about 2.0 oz per square yard and consisting of a synthetic resin material; and

(vi) a layer of a tacky pressure sensitive adhesive adhered to the surface of flexible barrier layer (v), said adhesive being adapted to affix said wallpaper repositionably to said wall with zero peel strength which increases to a maximum bonding strength of not in excess of about 1,000 g per inch pull adhesion on a conventionally acrylic painted wall board and being present in an amount of between about 0.3 oz and about 0.9 oz per square yard.

5,441,785

COMPOSITE ALIGNMENT-MAINTAINING PLASTIC LETTERING MATERIAL

Robert J. Liebe, Jr., 1577 Kehrs Mill Rd., Chesterfield, Mo. 63005

Continuation-in-part of Ser. No. 856,128, Mar. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 636,877, Jan. 2, 1991, Pat. No. 5,112,423. This application Oct. 8, 1993, Ser. No. 134,184

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—41 **15 Claims**

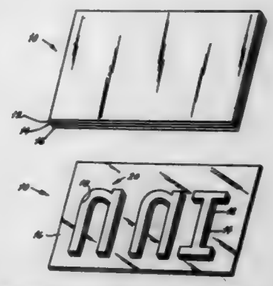
1. A layered composite sheet material for temporarily retaining a plurality of lettering elements to be cut therefrom in alignment for subsequent application to a substrate, comprising

a release sheet,

a pigmented display layer of at least 2 mil thickness fused directly onto one side of said release sheet and covering an area at least larger than such lettering elements to be cut therefrom, the adherence of said display layer to said release sheet being weaker than its adherence to such substrate through the action of

an adhesive layer which covers the surface of said display layer opposite said release sheet,

whereby on cutting outlines of such lettering elements through said adhesive and display layers only and stripping away from said release sheet the portions of said layers not within the outlines, such plurality of lettering elements which remain on said release sheet retain their



relative position for adherence thereafter by their adhesive layer portions to a chosen substrate.

5,441,786

WOOD FLOORING SYSTEM

Michael Manassa, Unit 4 3 St. Ninians Road, Brighton Victoria 3186, Australia

Filed Mar. 31, 1994, Ser. No. 220,842

Int. Cl.[6] B32B *3/16*

U.S. Cl. 428—50 **12 Claims**



1. A flooring system including a first layer comprising a cushioning material with structural integrity, a second layer comprising masonite having a thickness of about 2.5 mm and adapted to receive a third layer comprising wooden boards wherein the second layer is adhered to the first layer and the third layer is adhered to the second layer.

5,441,787

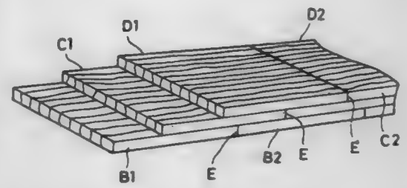
COMPOSITE WOOD PRODUCT AND METHOD FOR MANUFACTURING SAME

Tsuyoshi Fujii, and Atsushi Miyatake, both of Inashiki, Japan, assignors to The Forestry and Forest Products Research Institute, Ibaragi, Japan

Filed Feb. 14, 1994, Ser. No. 195,750

Int. Cl.[6] B32B *5/12*

U.S. Cl. 428—57 **8 Claims**



1. A manufactured wood product comprising:

a pile of single layers impregnated with a phenolic resin adhesive, each single layer comprising a plurality of sequential sections at a single level in the pile, each sequential section formed from a plurality of wood pieces that are split and disrupted in a lengthwise direction and adhered together in horizontal and vertical directions;

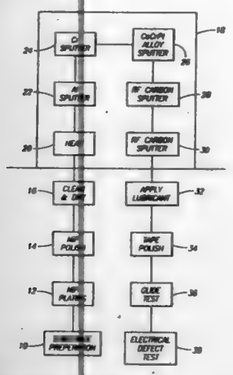
wherein abutting ends of sequential sections in each single level in the pile do not overlap abutting ends of sequential sections in any adjacent single level in the pile and an adhesive portion is disposed between each of said single layer thereby forming a substantially flat, substantially even surfaced and substantially voidless wood product.

5,441,788

METHOD OF PREPARING RECORDING MEDIA FOR A DISK DRIVE AND DISK DRIVE RECORDING MEDIA

Darrel R. Bloomquist, Meridian; Stephan P. Howe, Boise, both of Id., and Arun K. Agarwal, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 3, 1993, Ser. No. 148,136
Int. Cl.[6] B32B *3/02, 3/10;* **G11B** *5/66*
U.S. Cl. 428—65.6 **7 Claims**



1. A recording disk comprising:
a metal substrate base;
a layer of NiP contacting and overlying the metal substrate, the NiP layer including an outer surface having a roughness which is less than 2.0 nanometers RMS;
a texture enhancing sputter deposited first metal layer contacting and overlying the NiP layer outer surface, the texture enhancing sputter deposited first metal layer including a desired textured outer surface from a mean plane as a result of the sputter deposition, the textured outer surface being characterized by a metallic grain structure with between 10 and 100 grains per square micron, an RMS surface roughness of between 1.0 and 8.0 nanometers, and with peak heights as measured from the mean plane of the surface over a 10 micron square area of between 2.0 and 20.0 nanometers;
a second metal layer atop the texture enhancing sputter deposited first metal layer; and
a magnetic recording media layer provided atop the second metal layer.

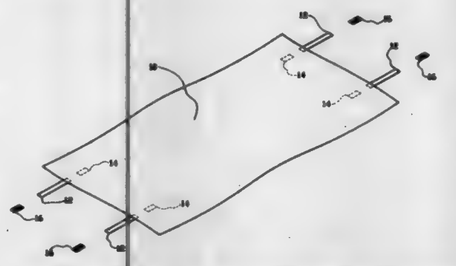
5,441,789

ATTACHABLE TYPE BEACH TOWEL FOR UNIVERSAL USE

Gary A. Walker, 513 E. Toledo Pl., Broken Arrow, Okla. 74012

Filed Jan. 21, 1994, Ser. No. 183,815
Int. Cl.[6] B32B *3/14, 3/06;* **A47C** *27/00*
U.S. Cl. 428—78 **8 Claims**

1. A beach towel package for universal use, comprising:
(a) a main body portion of towel material, said main body portion being of a predetermined elongated substantially rectangular shaped moisture absorbent fabric having a pair of side edges and a pair of ends wherein each of the pair of ends has attached thereto a plurality of elongated attaching straps; wherein the plurality of elongated attaching straps each have two ends and one end of each provides permanent attachment to the main body portion, and wherein located adjacent to and corresponding with said plurality of attaching straps are a plurality of elongated attaching tabs permanently attached to said main body portion, said plurality of attaching straps and plural-



ity of elongated attaching tabs being mating components of a hook and loop fastening means; and
(b) a plurality of elongated peel and stick attaching tabs capable of being applied to a seating apparatus when subsequently needed for attachment of said plurality of attaching straps to said seating apparatus.

5,441,790

ROPE ABRASION PROTECTION DEVICE

Edward Ratigan, P.O. Box 114, APO AP 96555, Marshall Islands

Filed Feb. 16, 1993, Ser. No. 18,154
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—100 **7 Claims**



1. A rope abrasion protection device comprising a flexible sheet material having two sides, a synthetic fiber material on one side and a backing on a reverse side, said device having two opposite borders, and hooks along said borders on the side having said backing.

5,441,791

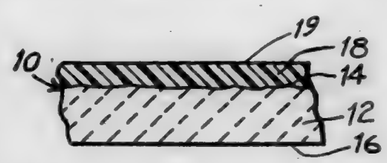
LAMINATED DIAMOND SUBSTRATE

Richard C. Eden, Thousand Oaks, Calif., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 642,244, Jan. 15, 1991, Pat. No. 5,244,712.
This application May 24, 1993, Ser. No. 66,753
Int. Cl.[6] H01L *21/58*
U.S. Cl. 428—162 **8 Claims**

1. A diamond member, comprising:
a diamond film wafer having a first and a second face;
a coating on the second face, the coating being thick enough

to at least fill any valleys of the second face and having an exposed coating surface which is sufficiently parallel to the first face to readily permit photolithographic processing.

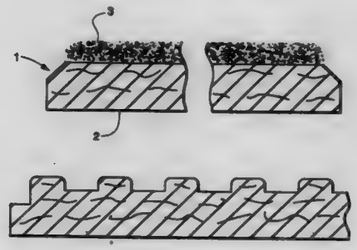


5,441,792

TWO LAYERED COMPOSITE EMBOSSED BOARD

David S. Brown, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 17, 1994, Ser. No. 291,855
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—170 **6 Claims**



1. A composite two layer ceiling board comprising:
(a) a first layer base board with an upper surface made of conventional mineral fiber material used for ceiling boards;
(b) a second layer powder of fibrous material deposited and compressed on said upper surface; and
(c) said powder layer forms a dense powder layer skin of greater hardness than said first layer.

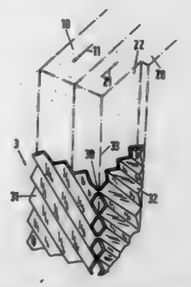
5,441,793

ORDERLY PACKING FOR A COLUMN

Philipp Süess, Neftenbach, Switzerland, assignor to Sulzer Chemtech AG, Winterthur, Switzerland

Filed Feb. 24, 1994, Ser. No. 201,434
Claims priority, application European Pat. Off., Mar. 10, 1993, 93810177
Int. Cl.[6] B32B *23/02, 3/28;* **B01D** *47/00*
U.S. Cl. 428—192 **12 Claims**

1. An orderly packing for a column for mass transfer between a trickling film (14) and a gas, comprising alternately arranged layers (10, 20), first layers (10) being adapted to steer the trickling film towards a vertical edge (13) of the layers and second layers (20) being adapted to steer the trickling film away from the edge, redirector elements forming liquid guiding surfaces fluidly coupling the first and second layers and



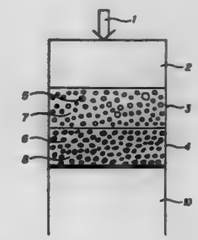
transferring edge-seeking liquid (15) flowing on the first layer (10) at least partially to the second layer (20).

5,441,794

THERMAL MELT TRANSFER COLOR INK SHEET

Chiyoji Hitomi, Ibaraki, Japan; Akinari Kaneko, Essex, England, and Jun Hoshikawa, Ibaraki, Japan, assignors to Imperial Chemical Industries, PLC, London, England

Filed Aug. 28, 1992, Ser. No. 936,050
Claims priority, application Japan, Aug. 29, 1991, 3-218833
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **4 Claims**



1. In a thermal melt transfer colour ink sheet comprising a support film having thereon at least one conversion layer to generate heat by absorbing a laser beam, and a thermal melt transfer ink layer on said conversion layer consisting essentially of a thermal melt wax component and a colouring agent dispersed or dissolved in the wax component, the improvement wherein conversion layer is 5 μm thick or less, 3–90 weight % of the conversion layer consists of at least one material which generates heat by absorbing a laser beam and in the wavelength region of 700 nm to 900 nm has a laser beam transmittance of 5% or less, said material comprising carbon black particles having a mean particle size within a range of 0.015–0.07 μm; and the mean particle size of a coagulate of a melt bonded product of the carbon black is 0.4 μm or less.

5,441,795

RECORDING SHEETS CONTAINING PYRIDINIUM COMPOUNDS

Shadi L. Malhotra, Mississauga, and Brent S. Bryant, Milton, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1993, Ser. No. 33,917
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **36 Claims**

1. An imaged recording sheet which comprises (a) a base sheet; and (b) a coating which comprises (i) a material selected

from the group consisting of piperazinium compounds and mixtures thereof; (ii) an optional pigment; and (iii) an optional binder, said coating containing an image applied from an aqueous ink.

5,441,796

LABEL-EQUIPPED PLY WITH READABLE LINER AND METHOD

David J. Steidinger, Lake Zurich, and Mark S. Steidinger, McHenry, both of Ill., assignors to Tamarack Products, Inc., Wauconda, Ill.

Filed Jun. 10, 1994, Ser. No. 258,350
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 16 Claims



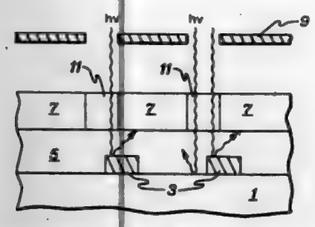
1. A label-equipped ply comprising a ply having a label diecut therein and constituting only a portion of the area of said ply, said ply having front and back surfaces, pressure sensitive adhesive at least over the portion area of said back surface, imaging on said front surface, a release backer adhered to the back surface of said ply and having an exposed face, said backer carrying reverse orientation data imaging on said exposed face and composed of a material capable of being read through said backer.

5,441,797

ANTIREFLECTIVE POLYIMIDE DIELECTRIC FOR PHOTOLITHOGRAPHY

Dennis P. Hogan, Jericho; Harold G. Linde, Richmond, and Ronald A. Warren, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 54,500, Apr. 27, 1993, Pat. No. 5,397,684.
This application Sep. 30, 1994, Ser. No. 315,801
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 10 Claims



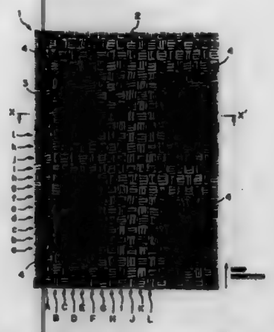
1. A thermostable polyimide film comprising a polyimide and a thermostable dye, said dye having a molar extinction coefficient (ε) greater than 5000 between 400 and 450 nm and a solubility of at least 2 g/L in an inert organic solvent, said film exhibiting less than 1% decrease in weight when heated at 450° for 20 minutes.

5,441,798

FILTER CLOTH FOR AIR BAGS

Kunio Nishimura; Shiro Kumakawa, both of Ibaraki, and Hideo Nakagawa, Takatsuki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 1, 1994, Ser. No. 331,619
Claims priority, application Japan, Mar. 3, 1993, 5-042610
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—229 24 Claims



1. A filter cloth for air bags, comprising a woven fabric formed from synthetic fiber yarns, and characterized in that the woven fabric comprises

(1) a ground weave structure segment having a single plain weave structure or a single twill weave structure; and

(2) a plurality of high gas permeability weave structure segments formed in the ground weave structure segment at a substantially constant distribution density, exhibiting a higher air permeability than that of the ground weave structure segment, and having

(A) a mock leno weave structure having pinhole-like openings,

(B) a double plain weave structure; or

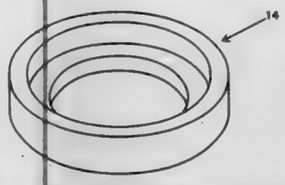
(C) a double twill weave structure.

5,441,799

POROUS SILICON CARBIDE

Dean P. Owens, Tonawanda, and Irving B. Ruppel, Kenmore, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 898,122, Jun. 12, 1992, abandoned.
This application Jan. 4, 1994, Ser. No. 177,642
Int. Cl.[6] C04B *35/56*
U.S. Cl. 428—312.6 10 Claims



1. A mechanical seal member comprising about 91 wt. % to about 99 wt. % sintered silicon carbide having a porosity in the range of about 3 vol. % to about 25 vol. %, the pores therein being uniformly distributed throughout the body and of generally irregular shape, about 3–5 microns in the largest dimension, with an aspect ratio between about 1/1 and 3/1, the silicon carbide particles exhibiting a multimodal grain size distribution and comprised of at least a first set of particles having one average grain size and a second set of particles having another average grain size larger than the first set of particles, the weight ratio of the first set to the second set lying in the range of about 25/25 to about 75/25.

5,441,800

LAMINATED POLYESTER FILM FOR MAGNETIC TAPE

Shigeo Utsumi, Yamato, Japan, assignor to Diafoil Hoechst Company, Limited, Tokyo, Japan

Continuation of Ser. No. 845,424, Mar. 5, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 173,461
Claims priority, application Japan, Mar. 6, 1991, 3-040234
The portion of the term of this patent subsequent to Nov. 22, 2011, has been disclaimed.
Int. Cl.[6] B32B *27/06*; G11B *5/66*
U.S. Cl. 428—323 22 Claims

1. A laminated polyester film for a magnetic tape, comprising a layer of a crystalline polyester (A) and a layer of a polyester (B) which is laminated on at least one surface of the layer of the polyester (A), wherein said polyester (B) has a melting point lower than that of said polyester (A),

said film having a Young's modulus of at least 600 kg/mm^2 in both longitudinal and transverse directions, and

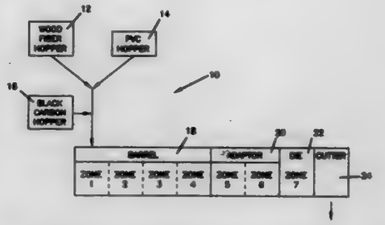
wherein said layer of polyester (B) has a planar orientation of not greater than 0.050.

5,441,801

ADVANCED POLYMER/WOOD COMPOSITE PELLET PROCESS

Michael J. Deaner, Osceola, Wis.; Giuseppe Puppin, Bayport, and Kurt E. Heikkila, Circle Pines, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

Filed Feb. 12, 1993, Ser. No. 17,240
Int. Cl.[6] B32B *23/00, 23/08*
U.S. Cl. 428—326 9 Claims



1. A pellet comprising a thermoplastic polymer and cellulosic fiber, the pellet comprising about 35–50 parts of fiber and 45–70 parts of polymer per each 100 parts of composite wherein (i) the fiber length ranges from 1–10 mm and the fiber has an aspect ratio of at least 1.8, (ii) the ratio of the density of the physical mixture of the fiber and the polymer to the density of the pellet is less than 0.8 and (iii) the pellet is a right circular cylinder having a length 1 to 10 mm and a radius of 1 to 5 mm.

5,441,802

BIAXIALLY-ORIENTED MULTI-LAYER FILMS

Hajime Mizuno, and Hiroshi Omori, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 15, 1994, Ser. No. 228,381
Claims priority, application Japan, Apr. 15, 1993, 5-088614
Int. Cl.[6] B32B *5/16, 27/32*
U.S. Cl. 428—327 5 Claims

1. A biaxially-oriented multi-layer film comprising:

a substrate layer comprising as a main component a crystalline propylene polymer; and

a layer of a composition laminated on at least one surface of the substrate layer, the composition comprising the following components A, B and C;

component A: 100 parts by weight of a propylene random copolymer,

component B: 0.05 to 0.6 parts by weight of inorganic or organic fine particles having an average particle diameter of 0.5 to 5 μm, and

component C: 0.5 to 10 parts by weight of a polypropylene modified with an unsaturated carboxylic acid and/or an anhydride thereof, having a number-average molecular weight of 800 to 20,000, wherein said layer of said composition has a thickness of 0.2 to 3 μm.

5,441,803

COMPOSITES MADE FROM SINGLE CRYSTAL SUBSTANCES

Helmuth E. Meissner, Pleasanton, Calif., assignor to Onyx Optics, Pleasanton, Calif.

Continuation of Ser. No. 672,251, Mar. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 597,987, Oct. 15, 1990, abandoned, which is a continuation of Ser. No. 446,214, Dec. 5, 1989, abandoned, which is a division of Ser. No. 238,563, Aug. 30, 1988, abandoned. This application Jul. 29, 1992, Ser. No. 919,374
Int. Cl.[6] B32B *31/00*; C30B *33/00*
U.S. Cl. 428—220 9 Claims



1. A device having optical homogeneity, prepared by a process comprising the steps of:

(a) optically contacting surfaces of first and second single crystal materials to form an assembly;

(b) bonding said optically contacted surfaces of step (a), by gradually heating said surfaces to a temperature below the fusion temperature of said surfaces, but at a temperature and for a time sufficient to diffusion bond said surfaces of said first and second materials; and

(c) cooling the bonded structure of step (b) at a rate which allows the removal of stress by annealing, wherein a bonding agent or bonding film is not present between said bonded first and second single crystal materials.

5,441,804

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD FOR PRODUCTION THEREOF

Toshiyuki Akitake, and Shingetsu Yamada, both of Hiratsuka, Japan, assignors to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 26,194, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 654,011, Feb. 12, 1991, abandoned. This application Aug. 4, 1994, Ser. No. 285,516
Int. Cl.[6] B05D *5/12*
U.S. Cl. 428—336 13 Claims

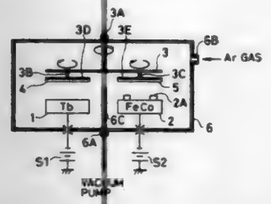
1. A magneto-optical recording medium comprising:

a transparent substrate; and

a recording layer formed on said substrate;

wherein said recording layer is a multi-layered metallic thin film comprising a first unit layer composed of (Fe_xCo_1.

$x)_{1-y}M_y$ where M is Pt, Pd or Au, $0.5 \leqq X \leqq 1.0$, and $0.01 \leqq y \leqq 0.1$, and a second unit layer of Nd, Dy, Gd or



Tb, and said first unit layer and said second unit layer being superimposed alternately one on another.

5,441,805
SOLUBLE LAMINATES

John Kwok, Holden, Mass., assignor to Camelot Technologies Inc., Leominster, Mass.

Filed Jun. 30, 1993, Ser. No. 85,025
Int. Cl.[6] B32B *27/08*
U.S. Cl. 428—339 **25 Claims**

1. A laminate comprising one or more layers of a relatively water insoluble polymer comprising polyvinyl acetate which has been hydrolysed to not less than 98% and one or more layers of water soluble polymer comprising a sulphonated noncrosslinked polymer selected from the group consisting of:
(a) polymers of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by C_{1-4} alkyl radicals;
(b) copolymers comprising from 10 to 40 weight % of a copolymer comprising 40 to 60 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine atom and from 60 to 40 weight % of one or more C_{3-8} vinyl nitriles which have been grafted onto from 90 to 60 weight % of a homopolymer of one or more C_{4-6} conjugated diolefins;
(c) copolymers comprising from 40 to 60 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine atom and from 60 to 40 weight % of one or more C_{4-6} conjugated diolefins;
(d) copolymers comprising from 95 to 60 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical or a chlorine atom and from 5 to 40 weight % of one or more C_{3-8} vinyl nitriles; and
(e) copolymers comprising from 50 to 90 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical and from 50 to 10 weight % of one or more alkyl or hydroxy alkyl esters of C_{3-6} ethylenically unsaturated carboxylic acids;
which polymers have been sulphonated to an extent to provide one sulphonate group per aromatic ring in the polymer.

5,441,806
MULTILAYER, STRETCHED HEAT-SEALABLE POLYPROPYLENE FILM

Rainer Brandt, Walsrode; Ulrich Reiners, Neuenkirchen; Anton Krallmann, Fallingbostel; Jürgen Böhner, Bomlitz, and Neele Neelen, Fallingbostel, all of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Mar. 3, 1994, Ser. No. 205,977
Claims priority, application Germany, Mar. 10, 1993, 43 07 442.1
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—349 **8 Claims**

1. An oriented, more particularly biaxially oriented, sealable polypropylene film combining improved water vapor barrier properties with considerably reduced global migration for packaging purposes, having the following structure:

A B C B A

where
a) C is a base layer of polypropylene and a hydrocarbon resin which has a molecular weight of up to about 2000 g/mol and a softening point above 130° C.,
b) the B's are jacket layers of highly isotactic polypropylene (isotacticity >94%) free from hydrocarbon resin, the ratio between the thickness of a jacket layer and the thickness of the base layer being between 0.01 and 0.1,
c) the A's are two surface layers of a heat-sealable polyolefin copolymer or terpolymer, these surface layers containing at least one antiblocking agent, a lubricant and an antistatic agent.

5,441,807
MULTILAYER, STRETCHED HEAT-SEALABLE POLYPROPYLENE FILM

Rainer Brandt, Walsrode; Ulrich Reiners, Neuenkirchen; Anton Krallmann; Neele Neelen, both of Fallingbostel, and Jürgen Böhner, Bomlitz, all of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Mar. 3, 1994, Ser. No. 206,305
Claims priority, application Germany, Mar. 10, 1993, 43 07 440.5
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—349 **8 Claims**

1. A biaxially oriented, sealable polypropylene film having an improved water vapor barrier effect, having the following structure:

ABCBA

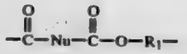
where
a) C is the base layer of highly isotactic polypropylene with an isotacticity of >94% and a hydrocarbon resin which has a molecular weight of up to about 2000 g/mol and a softening point above 130° C.,
b) the B's are two jacket layers of highly isotactic polypropylene (isotacticity >94%) free from hydrocarbon resin, the ratio between the thickness of the jacket layer and the thickness of the base layer being between 0.01 and 0.1,
c) the A's are two surface layers of a heat-sealable polyolefin homopolymer, copolymer or terpolymer, these surface layers containing at least one antiblocking agent, a lubricant and an antistatic agent.

5,441,808
THERMALLY STABLE HOT MELT MOISTURE-CURE POLYURETHANE ADHESIVE COMPOSITION

Gregory J. Anderson, Brooklyn Park, and John M. Zimmel, St. Paul, both of Minn., assignors to H.B. Fuller Fuller Licensing & Financing Inc., Wilmington, Del.

Continuation of Ser. No. 100,696, Jul. 30, 1993, which is a continuation of Ser. No. 918,948, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 502,980, Mar. 30, 1990, abandoned. This application Aug. 23, 1994, Ser. No. 294,558
Int. Cl.[6] B32B *7/12, 27/40*
U.S. Cl. 428—349 **11 Claims**

1. A method of sealing substrates comprising:
(1) applying at about 95° to 175° C. onto a substrate a solvent free, moisture curable urethane hot-melt adhesive composition having thermal stability to form an initial high green strength hot melt bond, which composition comprises:
(a) about 5–80 wt-% of a polyester polyether copolymer comprising a polymer having the formula:

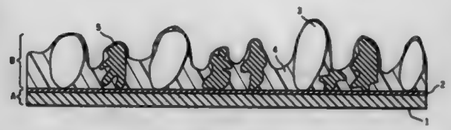


wherein Nu is a predominately cyclic nucleus and R_1 is randomly selected from either a C_{2-6} alkylene or an amorphous, long-chain polyether subunit comprising a polyoxyalkylene group; and
(b) about 20–95 wt-% of a polyisocyanate prepolymer comprising the reaction product of:
(i) a polyol and
(ii) a polyfunctional isocyanate having an isocyanate functionality of about two or more;
(2) contacting the adhesive disposed on the substrate to a second substrate such that a green bond is formed, and
(3) exposing the adhesive bond to water vapor causing a cross-linking reaction within the adhesive, thereby forming a moisture-cured bond.

5,441,809
DISSIPATIVE COVER TAPE SURFACE MOUNT DEVICE PACKAGING

Sohail Akhter, Brown Deer, Wis., assignor to Brady U.S.A., Inc., Milwaukee, Wis.

Filed Oct. 28, 1993, Ser. No. 144,650
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—354 **16 Claims**



1. A transparent, static dissipative, heat-sealable cover tape with a haze of less than about 40 percent and a peel force of between about 30 and 80 grams after heat-sealed to a carrier tape to form a two-piece package for electronic parts, the cover tape comprising:
A. A polymeric film, one side of which is coated with a layer of metal such that the metal reduces the transparency of the film by less than about 60 percent, and
B. A heat-sealable adhesive laminated to the metal-coated side of the film, the adhesive comprising less than 7 weight percent, based upon the weight of the adhesive, of a conductive material such that the conductive material and the metal coating are in contact with one another to form a conductive pathway with a resistivity of less than 10^9 ohms/square.

5,441,810
ADHESIVE SHEET

Kaoru Aizawa; Toshiyuki Ohshima; Hiroomi Hanai, and Naoki Okochi, all of O[illegible], Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Feb. 28, 1994, Ser. No. 203,031
Claims priority, application Japan, Feb. 26, 1993, 5-038457; Aug. 19, 1993, 5-226527
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—354 **10 Claims**



1. An adhesive sheet comprising a substrate having formed on one surface or both surfaces thereof an elastic layer, a heat-expandable layer, and an adhesive layer in the order from the substrate side.

5,441,811
HIGH TEMPERATURE PRESSURE SENSITIVE ADHESIVES

Shaow B. Lin, Schenectady, and William E. Cooper, Kinderhook, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 895,297, Jun. 8, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 172,673
Int. Cl.[6] C08L *83/06;* **B32B** *15/04*
U.S. Cl. 428—355 **1 Claim**

1. An article of manufacture comprising a silicone pressure sensitive adhesive comprising
(a) an aromatic hydrocarbon soluble resin copolymer comprising $R_3SiO_{1/2}$ units and $SiO_{4/2}$ units where each R individually represents a monovalent hydrocarbon radical containing no more than six carbon atoms, there being from about 0.6 to about 0.9 $R_3SiO_{1/2}$ units for every $SiO_{4/2}$ unit;
(b) a hydroxyl, vinyl or hydride end-stopped diorganopolysiloxane; and
(c) from about 200 to about 500 parts per million metal of oil or organic soluble metal salts based on the total silicone weight of (a) and (b).

5,441,812
OLEOPHILIC STAPLE FIBERS USEFUL IN PAVEMENT FOR MAKING AND REPAIRING GEOWAYS

James P. Modrak, Conyers, Ga., assignor to Hercules Incorporated, Wilmington, Del.

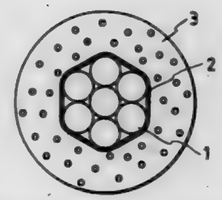
Filed Aug. 3, 1994, Ser. No. 285,556
Int. Cl.[6] D07G *3/00*
U.S. Cl. 428—359 **11 Claims**

1. A polyolefin staple fiber suitable for reinforcing pavement having on its surface an antistatic finish in an amount effective to prevent clumping when a multiplicity of the staple fibers are airveyed, and wherein the fiber with the finish on its surface is oleophilic.

5,441,813
COMMUNICATION LINE MATERIAL

Hiroaki Sano; Tatsuya Kakuta, and Toru Yamanishi, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 998,641, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 654,887, Feb. 13, 1991, abandoned. This application Aug. 16, 1994, Ser. No. 291,732
Claims priority, application Japan, Feb. 16, 1990, 2-33866
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—375 **10 Claims**



1. A communication line material comprising:
a fiber or a group of fibers;
an under-coating surrounding said fiber or group of fibers; and
an outer coating surrounding said under-coating, said outer

coating comprising a mixture of an energy-beam setting resin and a plurality of heat-expanding, fluid-encapsulating hollow spheres.

5,441,814

METHOD FOR USE OF PREFLUX, PRINTED WIRING BOARD, AND METHOD FOR PRODUCTION THEREOF

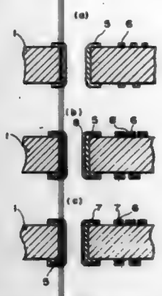
Hiroshi Gunji, Fukushima; Kenichi Yamaguchi, Saitama, and Daikichi Tachibana, Tokyo, all of Japan, assignors to Hitachi Telecom Technologies Ltd., Koriyama and Sanwa Laboratory Ltd., Tokyo, both of Japan

Division of Ser. No. 880,198, May 8, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,212

Claims priority, application Japan, May 17, 1991, 3-167363; Sep. 4, 1991, 3-250313

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—457 **6 Claims**



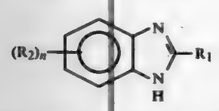
1. A printed wiring board comprising:

(a) a copper layer serving to form circuits,

(b) a coating layer comprising a benzimidazole-copper complex deposited on the surface of said copper layer,

said coating layer obtained by a chemical reaction between said copper surface and a preflux applied to the copper surface which comprises a chemical represented by

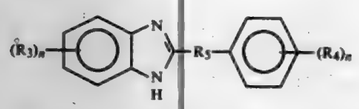
(1)



wherein R_1 stands for H or an alkyl group of three to 17 carbon atoms, R_2 stands for H or an alkyl group of one to six carbon atoms, and n stands for 0, 1, 2 or 3,

or (2):

(2)



wherein R_3 stands for H or an alkyl group of one to six carbon atoms, R_4 stands for H or an alkyl group of one to six carbon atoms, R_5 stands for an alkyl group of zero to seven carbon atoms, and n stands for 0, 1, 2 or 3,

and wherein said preflux applied to said copper surface is subjected to an oxidizing treatment such that a chemical reaction of at least 96% of said preflux with said copper surface occurs thereby forming the benzimidazole-copper complex, and

(c) free benzimidazole compound which has escaped said reaction of said copper reflux and said preflux, on the surface of the coating layer (b).

5,441,815

PROCESS FOR PRODUCING EASILY REMOVABLE POLYIMIDE RESIN FILM

Chien-Hui Li, and Syh-Ming Ho, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, China

Filed Aug. 29, 1994, Ser. No. 297,176

Int. Cl.[6] B32B *15/08, 15/20, 27/34;* **B05D** *7/16*

U.S. Cl. 428—473.5 **10 Claims**

1. A process for producing an easily removable polyimide film comprising the steps of:

(1) coating on a substrate a first layer of polyamic acid resin having no metallic salt;

(2) coating on said first layer of polyamic acid resin a second layer of polyamic acid resin which is pre-mixed with a salt of a metal selected from the group consisting of Cu, Cr, Ni and Fe, and

(3) baking said first layer of polyamic acid and said second layer of polyamic acid, whereby polyamic acids in both layers are cyclized to form a polyimide film.

10. An easily removable polyimide resin film prepared by the process of claim **1**.

5,441,816

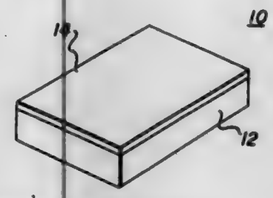
COEXTRUDED MULTILAYER VINYL CHLORIDE POLYMER LAMINATES

Martin Grohman, Marietta, Ohio, assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 53,929, Apr. 27, 1993. This application Oct. 25, 1994, Ser. No. 328,208

Int. Cl.[6] B32B *27/08*

U.S. Cl. 428—520 **4 Claims**



1. A coextruded laminate comprising:

(a) a superstrate layer of a polymeric composition comprising

(i) 50 to 98 percent by weight vinyl chloride polymer based on the total weight of the polymeric composition,

(ii) 1 to 10 percent by weight butylacrylate rubber graft copolymer based on the total weight of the polymeric composition, and

(iii) 1 to 20 percent by weight titanium dioxide based on the total weight of the polymeric composition, and

(b) a substrate layer attached to said superstrate, said substrate being of a resin composition comprising

(i) 50 to 99 percent by weight vinyl chloride polymer based on the total weight of the resin composition.

(ii) 1 to 10 percent by weight of a butadiene rubber graft copolymer based on the total weight of the resin composition, and

(iii) 0 to 20 percent by weight of titanium dioxide based on the total weight of the resin composition.

5,441,817

DIAMOND AND CBN CUTTING TOOLS

Ghanshyam Rai, Sandy, Utah, assignor to Smith International, Inc., Houston, Tex.

Continuation of Ser. No. 964,672, Oct. 21, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,365

Int. Cl.[6] B22F *3/14*

U.S. Cl. 428—551 **4 Claims**



1. A sintered polycrystalline diamond composite comprising:

a mass of fine diamond particles bonded to a cermet substrate support having a planar face;

said cermet is cobalt cemented tungsten carbide, said cermet support having proximate the diamond mass, an intermediate thin solid monolithic diffusion barrier layer of titanium carbide material, said material being from about 7 microns to 10 microns thick applied to said planar face by physical vapor deposition or chemical vapor deposition processes; and

a small quantity from about 1.0% to 8.0% of fine titanium carbonitride powder admixed in the diamond particles, said diffusion barrier of titanium carbide material serves to inhibit the flow of a cobalt tungsten eutectic from said cermet substrate into the mass of diamond in the form of tungsten carbide eruptions into the diamond mass which is detrimental to the sintered polycrystalline diamond composite.

5,441,818

ELECTRO-DEPOSITION COATED MEMBER, PROCESS FOR PRODUCING ELECTRO-DEPOSITION COATED MEMBER, AND ELECTRO-DEPOSITION COATING USE THEREFOR

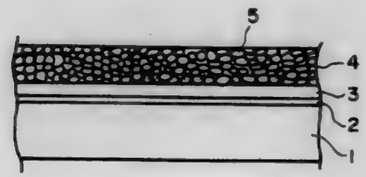
Susumu Kadokura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 61,050, May 14, 1993, which is a division of Ser. No. 611,651, Nov. 13, 1990, Pat. No. 5,238,544. This application Jan. 10, 1995, Ser. No. 370,840

Claims priority, application Japan, Nov. 14, 1989, 1-296786

Int. Cl.[6] B22F *7/04*

U.S. Cl. 428—551 **20 Claims**



1. An electro-deposition coated member comprising a substrate having thereon an electro-deposition coating film wherein

said electro-deposition coating film comprises a ceramic powder whose particle surfaces are coated with a metal to provide said film with an electro-conductivity to intercept an electromagnetic noise.

5,441,819

METHOD AND APPARATUS FOR REMOVING WATER FROM ELECTROCHEMICAL FUEL CELLS BY CONTROLLING THE TEMPERATURE AND PRESSURE OF THE REACTANT STREAMS

Henry H. Voss; David P. Wilkinson, both of North Vancouver, and David S. Watkins, Coquitlam, all of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Continuation of Ser. No. 641,601, Jan. 15, 1991, Pat. No. 5,260,143. This application Oct. 19, 1993, Ser. No. 138,714

Int. Cl.[6] H01M *8/00, 8/04, 8/10*

U.S. Cl. 429—13 **32 Claims**

1. A method of removing water accumulated at the cathode of an electrochemical fuel cell, said fuel cell comprising an anode having a catalyst associated therewith for producing cations from a hydrogen-containing gas supply, said hydrogen-containing gas supply having an inlet, an outlet and a fluid flow passage communicating with said anode along its extent; a cathode having a catalyst associated therewith for producing anions from an oxygen-containing gas supply, said anions reacting with said cations to form liquid water at said cathode; a solid polymer ion exchange membrane disposed between said anode and said cathode, said membrane facilitating the migration of cations from said anode to said cathode and isolating said hydrogen-containing gas supply from said oxygen-containing gas supply, said membrane permeable to water; and an electrical path for conducting the electrons formed at said anode to said cathode; said method comprising:

removing liquid water accumulated at said cathode by controlling the temperature of said hydrogen-containing gas supply between said inlet and said outlet such that said temperature remains above the condensation temperature of water vapor contained therein, whereby water accumulated at said cathode is drawn by a concentration gradient toward said anode across said membrane and is absorbed as water vapor into said hydrogen-containing gas supply.

5,441,820

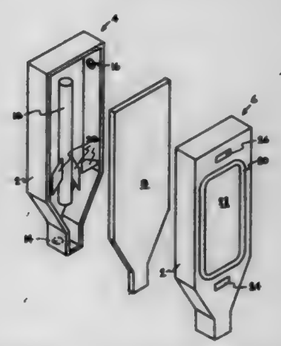
ELECTRICALLY RECHARGED BATTERY EMPLOYING A PACKED/SPOUTED BED METAL PARTICLE ELECTRODE

Stanley C. Siu, Alameda; James W. Evans, Piedmont, and Juan Salas-Morales, Berkeley, all of Calif., assignors to Regents, University Of California, Berkeley, Calif.

Filed Oct. 26, 1993, Ser. No. 143,570

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—17 **12 Claims**



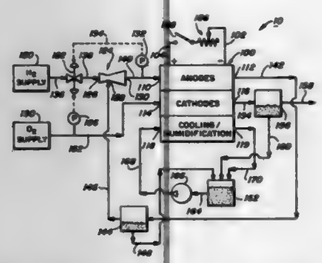
1. A hydraulically and electrically rechargeable metal air battery comprising:

a) A cell casing with a separating membrane which defines cell anode and cathode sides,

b) A metal particle bed disposed uniformly within the anode side of the cell casing,

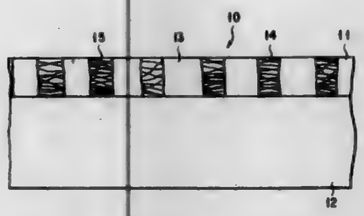
c) A current collector/feeder located within the anode side,
d) An air electrode provided within the cathode side,
e) A current collector/feeder disposed within the cathode side,
f) An electrolyte provided uniformly within the anode and cathode sides, and
g) A series of flow baffles connected to the cell casing within the anode side.

5,441,821
ELECTROCHEMICAL FUEL CELL SYSTEM WITH A REGULATED VACUUM EJECTOR FOR RECIRCULATION OF THE FLUID FUEL STREAM
Robert D. Merritt, Vancouver, and Brian N. Gorbell, North Vancouver, both of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada
Filed Dec. 23, 1994, Ser. No. 363,706
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—17 26 Claims



1. An electric power generation system comprising:
(a) a fuel cell stack comprising a fuel stream inlet, a fuel stream outlet, an oxidant stream inlet, and at least one fuel cell for promoting an electrocatalytic reaction of a fuel stream introduced at said fuel stream inlet with an oxidant stream introduced at said oxidant stream inlet to produce electricity, reaction product, and heat;
(b) a pressurized fuel supply having a pressure control valve for regulating the pressure of said fuel supply;
(c) a vacuum ejector interposed between said fuel supply and said fuel stream inlet, said ejector comprising a motive inlet, a suction inlet, and a discharge outlet, said motive inlet fluidly connected to said fuel supply, said suction inlet fluidly connected to said fuel stream outlet, and said discharge outlet fluidly connected to said fuel stream inlet;
(d) a pressure transducer interposed in said fuel stream between said discharge outlet and said suction inlet, said pressure transducer detecting the pressure of said fuel stream and transmitting a corresponding signal to said pressure control valve; and
(e) a pressurized oxidant supply fluidly connected to said oxidant stream inlet;
whereby said pressure transducer transmits a signal to said pressure control valve to increase the pressure of said fuel supply when the detected pressure of said fuel stream falls below a predetermined value and said pressure transducer transmits a signal to said pressure control valve to decrease the pressure of said fuel supply when the detected pressure of said fuel stream exceeds a predetermined value.

5,441,822
ELECTRODE USED IN ELECTROCHEMICAL REACTION AND FUEL CELL USING THE SAME
Keijiro Yamashita, Yokohama, and Nobukazu Suzuki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 29, 1994, Ser. No. 366,099
Claims priority, application Japan, Dec. 29, 1993, 5-349640
Int. Cl.[6] H01M *4/86*
U.S. Cl. 429—34 17 Claims

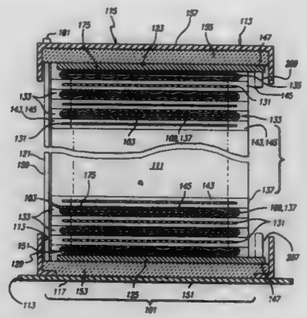


1. An electrode to be used in an electrochemical reaction while being arranged between a gas passage for flowing a gas as a reactant and an electrolyte layer containing an electrolyte, comprising:
a diffusion layer comprising a conductive porous body in contact with the gas passage, for flowing the gas from the gas passage along a direction of thickness of said electrode; and
a catalyst layer arranged between said diffusion layer and said electrolyte layer and in contact therewith;
wherein said catalyst layer comprises
a plurality of agglomerate portions each comprising a conductive porous body which extends in the direction of thickness of said electrode and has pores containing an electrolyte; and
a plurality of gap portions arranged alternately with said agglomerate portions, each gap portion defining a bore extending through said catalyst layer in the direction of thickness of said electrode, and including in the bore a plurality of liquid-repellent fibers which connect two adjacent agglomerate portions.

5,441,823
PROCESS FOR THE PREPARATION OF GAS DIFFUSION ELECTRODES
Neal Naimer, and Jonathan R. Goldstein, both of Jerusalem, Israel, assignors to Electric Fuel (E.F.L.) Ltd., Jerusalem, Israel
Filed Jul. 1, 1994, Ser. No. 269,845
Int. Cl.[6] H01M *4/86*; B05D *5/12*; C04B *35/00*; C25B *11/00*
U.S. Cl. 429—42 13 Claims

1. In a process for preparing a gas-diffusion electrode for metal-air batteries and fuel cells of the type having a blocking layer formed from a precursor containing carbon black and particulate hydrophobic polymeric binders, the improvement comprising heating said carbon black at a temperature of about 400°–1,200° C. for a period of about 1–10 hours in a reducing environment, prior to the formation of said precursor, whereby hydrophilic centers in said pre-treated carbon black are minimized without increasing its corrosivity/surface area and thereby increasing the stability in concentrated KOH at high-cell operating temperatures of a blocking layer formed from said pre-treated carbon black.

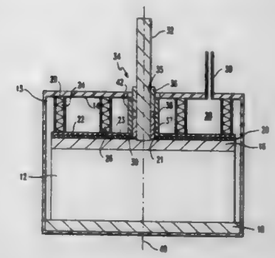
5,441,824
QUASI-BIPOLAR BATTERY REQUIRING NO CASING
Wally E. Rippel, Altadena, Calif., assignor to Aerovironment, Inc., Monrovia, Calif.
Filed Dec. 23, 1994, Ser. No. 363,242
Int. Cl.[6] H01M *6/48*, *10/18*
U.S. Cl. 429—53 13 Claims



1. A battery, comprising:
two stack end plates;
a battery cell stack between the two stack end plates, the battery cell stack having a repeating pattern of cell layers stacked along an axis and a terminal associated with each end of the battery cell stack, including
a conductive separator sheet,
a first active material,
a biplate having first and second sides,
a compliant sealing material on the first side of the biplate, and a compliant sealing material on the second side of the biplate, and
a second active material;
wherein each compliant sealing material forms a framed, middle region on the biplate, and each compliant sealing material also forms an engagement between the biplate and at least one of a separator sheet and a stack end plate, each compliant sealing material effective upon compression of the battery cell stack along the axis to form a gas-tight seal and retain gasses and active materials within boundaries associated with the engagement; and
a compression mechanism that axially compresses the battery cell stack to thereby create the gas-tight seals and isolate each cell of the battery cell stack, and thereby retain the active materials of the battery cell stack in a gas-tight, sealed relationship within the battery cell stack.

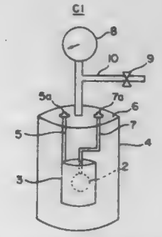
5,441,825
BATTERY ELECTRODE COMPRESSION MECHANISM
Geoffrey Barlow, South Russell, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 24, 1994, Ser. No. 185,357
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—66 16 Claims

1. A multicell battery comprising:
a battery case;
a cell stack disposed within the battery case; and
a device for compressing the cell stack, the device being expandable and being disposed between the cell stack and a surface of the battery case, the device having a cavity disposed therein and a sealable port through which a pressurized fluid may be provided to the cavity thereby expanding the device, wherein the device has at least two bellows of different widths such that one bellows surrounds an adjacent bellows, one face of each bellows being connected to the cell stack and the opposite face of each bellows being connected to the battery case, so that



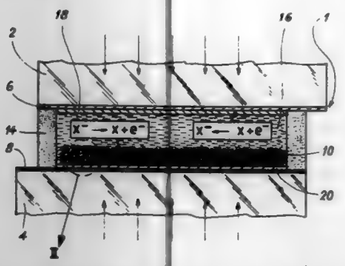
a cavity lies between adjacent bellows and between the cell stack and the battery case.

5,441,826
HYDROGEN-ABSORBING ALLOY ELECTRODE
Hiroshi Watanabe, Hirakata; Akio Furukawa, Osaka; Shin Fujitani, Hirakata; Ikuo Yonezu, Hirakata, and Takahiro Isono, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jan. 31, 1994, Ser. No. 189,172
Claims priority, application Japan, Apr. 28, 1993, 5-125167; Apr. 28, 1993, 5-125168; Apr. 28, 1993, 5-125169; Apr. 28, 1993, 5-125170
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—101 18 Claims



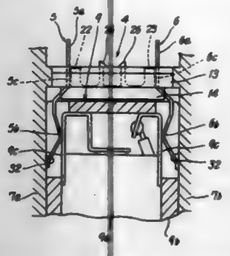
1. A hydrogen-absorbing alloy electrode containing an electrode material of a hydrogen-absorbing alloy having a body-centered cubic structure represented by the general formula AB_x wherein:
A consists essentially of Ti, or A is a mixture of elements that consists essentially of Ti in combination with Zr, Hf, Nb or Ta, and wherein A generates heat upon absorption of hydrogen,
B consists essentially of Mo and Ni, or B is a mixture of elements that consists essentially of Mo and Ni in combination with Cr, W, Co or Cu, and wherein B absorbs heat upon absorption of hydrogen and $0.5 \leqq X \leqq 2$,
said alloy being obtained by quenching and solidifying an alloy melt under an atmosphere of a reducing gas containing hydrogen at a cooling rate of at least 1×10^3° C./sec and having on the surface thereof a hydride layer.

5,441,827
TRANSPARENT REGENERATING PHOTOELECTROCHEMICAL CELL
Michael Gratzel, St-Sulpice, and Eric Saurer, Bevaix, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland
PCT No. PCT/CH93/00068, § 371 Date Dec. 30, 1993, § 102(e) Date Dec. 30, 1993, PCT Pub. No. WO93/19479, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 12, 1993, Ser. No. 142,407
Claims priority, application Switzerland, Mar. 26, 1992, 0962/92
Int. Cl.[6] H01M *6/36*
U.S. Cl. 429—111 **20 Claims**



1. A regenerating photoelectrochemical cell comprising a first transparent substrate which has thereon a first transparent electrode, and a second transparent substrate which has thereon a second transparent electrode on which is deposited a first layer of a photoelectrochemically active semiconductor oxide in the form of a porous nanostructure of sintered colloidal particles, said substrates being so disposed in relation to one another as to define a space filled with electrolyte, said electrolyte impregnating said porous structure in a manner such that it is in electrical contact on the one hand with the first transparent electrode disposed on the first transparent substrate and on the other hand with the second transparent electrode disposed on the second transparent substrate, and said second transparent substrate also having thereon a second semiconductor oxide layer which is compact, continuous, and extends between the second electrode and the first semiconductor oxide layer.

5,441,828
ELECTRODE TERMINAL HOLDER FOR BATTERY DRIVE TOOL
Shumi Akazawa, Fuchu, Japan, assignor to Ryobi Limited, Tokyo, Japan
Continuation of Ser. No. 11,967, Feb. 1, 1993, abandoned. This application May 31, 1994, Ser. No. 251,629
Claims priority, application Japan, Feb. 26, 1992, 4-008815 U
Int. Cl.[6] H01M *2/20*
U.S. Cl. 429—121 **14 Claims**



1. An electrode terminal holder for holding two electrode terminals in contact with battery terminals of a power unit and for fixing said electrode terminals to a housing of the power unit, said electrode holder comprising:

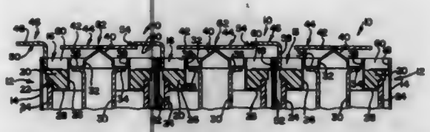
a first electrode terminal holding portion and a second electrode terminal holding portion, said first electrode terminal holding portion having at least one electrode terminal insertion hole provided, at its inner surface, with a pair of support walls and said second electrode terminal holding portion having a pair of pressure pieces;

an electrode terminal holder wherein said second electrode terminal holding portion has a pair of slanted surfaces, provided at positions corresponding to the support walls, for receiving two bent portions of the electrode terminals for supplementarily supporting them, each slanted surface defining a position of one electrode terminal along its longitudinal direction;

said first and second electrode terminal holding portions having engaging portions for integrally coupling said first and second electrode terminal holding portions; and

wherein the two electrode terminals are disposed on opposite support walls from each other, said first electrode terminal holding portion is assembled with said second electrode terminal holding portion in such a manner that each of the pressure pieces presses one electrode terminal against one support wall, and, at the same time, said engaging portions are engaged to hold said first electrode terminal holding portion, said second electrode terminal holding portion, and the pair of electrode terminals to form integrally one part.

5,441,829
ELECTROCHEMICAL CELL
Geoffrey Attwood, Alderwasley, England, and Werner G. Grasse, Berlin, Germany, assignors to AABH Patent Holdings Societe Anonyme, Luxembourg
Filed Sep. 15, 1993, Ser. No. 121,941
Claims priority, application United Kingdom, Sep. 17, 1992, 9219704
Int. Cl.[6] H01M *2/30*
U.S. Cl. 429—158 **10 Claims**



1. An electrochemical cell having a housing in the form of a canister having an end provided with a floor, at least one side wall, and an open end opposite the floor, each side wall of the canister extending longitudinally from the floor to the open end of the canister, the open end being closed off by a closure, the closure having a periphery connected to the canister at its open end, the cell having a pair of electrodes respectively provided, at the open end of the housing, with electrode terminals, one of said terminals being an outer terminal having a first portion electronically continuous with the housing at the periphery of the closure and radially inwardly, relative to the longitudinal direction, of each side wall of the canister, the housing forming the current collector for one of the electrodes, and the other of the terminals being a central terminal electronically continuous with a separate current collector for the other electrode, which separate current collector projects longitudinally inwardly from the cell closure, radially inwardly of the periphery of the closure, being electronically insulated from the housing, the outer terminal having a second portion projecting radially outwardly from the periphery of the closure to overhang, at a position spaced longitudinally outwardly from the closure, a side wall of the housing, the terminals being arranged so that the cell can be arranged side by side with an identical cell with its outer terminal in contact with the central terminal of said identical cell.

5,441,830
ELECTRICALLY-CONDUCTING ADHESION-PROMOTERS ON CONDUCTIVE PLASTIC
Russell D. Moulton, 6316 Felder Dr., San Jose, Calif., and Milton N. Golovin, 145 Manton Dr., San Jose, Calif. 95123
Continuation of Ser. No. 968,172, Oct. 29, 1992, abandoned. This application Sep. 13, 1994, Ser. No. 305,684
Int. Cl.[6] H01M *4/60*
U.S. Cl. 429—212 **3 Claims**

1. An electrode/current collector composite comprising:

a conductive plastic foil suitable for use as a current collector;

a layer of a solid polymeric matrix, electrically-conducting, adhesion-promoter formed on at least one surface of the foil which comprises from about 30 to 80 weight percent of a conductive material; from about 20 to about 70 weight percent of a polymer derived from a solid matrix forming monomer or partial polymer thereof; and an effective amount of acid functionalities so as to enhance the adherence of this layer of electrically-conducting adhesion-promoter to the surface of the foil; and

a composite electrode paste selected from the group consisting of a cathode paste and an anode paste,

wherein the cathode paste comprises from about 1 to about 20 weight percent of a conductive material, from about 35 to about 60 weight percent of a compatible cathodic material, from about 10 to about 50 weight percent of an electrolytic solvent and from about 5 to 30 weight percent of a cathode prepolymer all based on the total weight of the paste, and

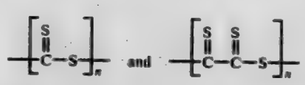
further wherein the anode paste comprises from about 1 to about 20 weight percent of a conductive material, from about 35 to about 60 weight percent of a compatible anodic material, from about 10 to about 50 weight percent of an electrolytic solvent and from about 5 to about 30 weight percent of an anode prepolymers all based on the total weight of the paste wherein said adhesion-promotor is interposed between said plastic foil and said composite electrode.

5,441,831
CELLS HAVING CATHODES CONTAINING POLYCARBON DISULFIDE MATERIALS
Yoshi Okamoto, Fort Lee, N.J.; Terje A. Skotheim, Shoreham, and Hung S. Lee, Rocky Point, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.
Continuation-in-part of Ser. No. 991,948, Dec. 17, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,091
Int. Cl.[6] H01B *1/10, 1/12*; H01M *4/60*
U.S. Cl. 429—213 **16 Claims**

1. An electric current-producing cell, comprising:

(a) a solid anode including an anode-active material selected from the group consisting of one of more alkali metals, a mixture of one or more alkali metals, one or more alkaline earth metals, lithium-aluminum alloys, sodium alloys and lithium or sodium intercalated carbon;

(b) a composite cathode comprising a cathode-active material including a mixture of one or more conjugated, solid poly(carbon disulfide) polymers including



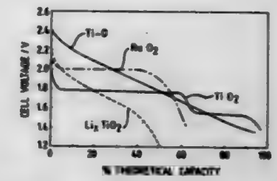
groups generically represented by the formula:

$(CS_x)_n$

wherein x is from about 1.2 to about 2.3 and n is greater or equal to 2; and

(c) an electrolyte containing an alkali metal salt, said electrolyte being chemically inert with respect to said anode and said cathode.

5,441,832
ELECTROCHEMICAL CELL
William J. Macklin, Oxford; Andrew Davies, and Richard J. Hobson, both of Reading, all of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Harwell, United Kingdom
Filed Aug. 2, 1993, Ser. No. 100,441
Claims priority, application United Kingdom, Aug. 1, 1992, 9216393
Int. Cl.[6] H01M *4/48*
U.S. Cl. 429—218 **8 Claims**



1. A cathode for a reversible electrical cell comprising a layer comprising, as active material, only a first insertion material, with a surface coating comprising both the first insertion material and a minor proportion of a second insertion material whose discharge commences at a cell voltage above that at which irreversible changes occur to the first insertion material which cause a decline in cell cycling capacity.

5,441,833
PASTE NICKEL ELECTRODE PLATE AND A STORAGE BATTERY INCLUDING AN ELECTROCONDUCTIVE MATERIAL
Jun Furukawa, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Japan
Filed Dec. 27, 1993, Ser. No. 173,075
Claims priority, application Japan, Dec. 24, 1992, 4-357501
Int. Cl.[6] H01M *10/28*
U.S. Cl. 429—223 **9 Claims**

1. A paste nickel electrode plate for a storage battery, comprising a porous metal substrate having the pores thereof filled with a mixture comprising a nickel hydroxide powder and a cobalt oxide powder, said cobalt oxide powder having a covering layer of $Co(OH)_2$ on the surface of the cobalt oxide powder particles.

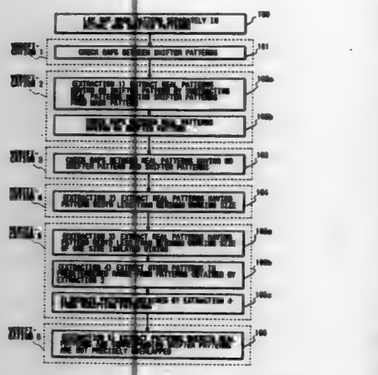
5,441,834
PROCESS FOR FABRICATING PHASE SHIFT MASK AND PROCESS OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Toshitsugu Takekuma, Ohme; Ii: Haruo, Akishima, and Kazuya Ito, Hamura, all of Japan, assignors to Hatachi, Ltd. and Hatachi VLSI Engineering Corp., Tokyo, Japan
Filed Sep. 10, 1992, Ser. No. 943,002
Claims priority, application Japan, Jul. 20, 1992, 4-192019
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **18 Claims**

1. A process comprising the steps of:

(a) separating the data of a mask pattern of a phase shift mask having phase shift patterns into (1) a real pattern data layer having the data of real patterns and (2) a phase shift pattern data layer having the data of said phase shift patterns;

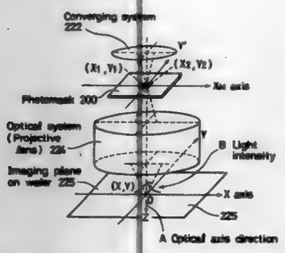
(b) verifying the propriety of the data of the real patterns having said phase shift patterns arranged thereon, by using the data of said phase shift patterns;

(c) making a shielding pattern drawing data and a phase shift pattern drawing data individually on the basis of the data of the real patterns and the data of said phase shift patterns;



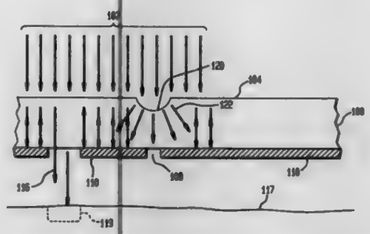
(d) forming shielding patterns on a mask substrate on the basis of said shielding pattern drawing data; and
(e) forming said phase shift patterns on said mask substrate on the basis of said phase shift pattern drawing data.

5,441,835
PHOTOMASK AND PROJECTION EXPOSURE MECHANISM USING THE SAME
Katsuhiko Harazaki, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 856,994, Mar. 24, 1992. This application Oct. 18, 1993, Ser. No. 137,802
Claims priority, application Japan, Mar. 27, 1991, 3-063321
Int. Cl.⁶ G03F *9/00*
U.S. Cl. 430—5 **13 Claims**



1. A photomask for receiving light for exposure emitted from a light source and for projecting the emitted light through a projection lens onto a resist film on a wafer so as to pattern the resist film, the photomask comprising:
a glass substrate including a plurality of light transmitting portions for receiving and transmitting the emitted light for exposure and a light interception portion;
a convex portion, made of a transparent or translucent material and formed protruding from a side of the glass substrate on which the wafer is provided, covering the light transmitting portions and a surrounding portion thereof, for utilizing refractive effects to gather vertical and oblique incident components of the emitted light for exposure emitted as transmitted light, for projection through a projection lens to form an image on the imaging plane of the wafer.

5,441,836
LASER ABLATION MASK REPAIR METHOD
James G. Balz, Maybrook; John R. Lankard, Sr., Mahopac, and Mark J. LaPlante, Walden, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 30, 1994, Ser. No. 220,776
Int. Cl.⁶ G03F *9/00*
U.S. Cl. 430—5 **13 Claims**

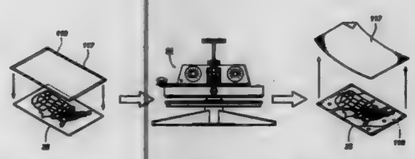


1. A dielectric mask repair method comprised of forming a lens in a surface of a mask, said lens being formed opposite a mask defect area, wherein said defect is in a dielectric mask pattern at a surface of said mask opposite the surface where said lens is formed.

5,441,837
PHOTOCONDUCTIVE IMAGING MEMBERS WITH ACETOXYMETAL PHTHALOCYANINES
Beng S. Ong, and Cheng-Kuo Hsiao, both of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 29, 1994, Ser. No. 283,082
Int. Cl.⁶ G03G *5/06*
U.S. Cl. 430—58 **15 Claims**

1. An imaging member consisting of a supporting substrate, a bis(trifluoroacetoxy)germanium phthalocyanine-containing photogenerator layer, and a charge transport layer.

5,441,838
SIMULATED GLOSS PROCESS
Sharon G. Pane, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 18, 1994, Ser. No. 228,840
Int. Cl.⁶ G03G *13/20*
U.S. Cl. 430—97 **23 Claims**



1. Method of forming a high-gloss xerographic image, comprising the steps of:
xerographically forming a toner image on an opaque sheet;
providing a transparent carrier substrate with an adhesive coating on one side thereof;
contacting said toner image on said opaque sheet with said one side of said transparent carrier substrate;
simultaneously applying heat and pressure at predetermined values to said transparent carrier substrate and said opaque sheet whereby said adhesive coating of said transparent carrier substrate melts and adheres to said toner image on said opaque sheet to form said high-gloss xerographic image; and

separating said transparent carrier substrate from said opaque sheet.

5,441,839
NEGATIVELY CHARGEABLE DEVELOPER WITH CARRIER CONTAINING MAGNESIUM OXIDE
Michiaki Ishikawa; Keiko Ogawa; Meizo Shirose, and Hiroyuki Takagiwa, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Apr. 5, 1994, Ser. No. 222,933
Claims priority, application Japan, Apr. 14, 1993, 5-109803
Int. Cl.⁶ G03G *9/113*
U.S. Cl. 430—108 **13 Claims**

1. A negative charge developer for electrophotography comprising:
a toner, a carrier having a core coated with a resin which contains at least one magnesium compound selected from the group consisting of a magnesium oxide, a magnesium hydroxide and a magnesium carbonate, wherein
the magnesium compound has a single crystal structure.

5,441,840
CAPSULE TONER AND PROCESS FOR PRODUCING THE SAME
Takashi Imai; Takeshi Agata; Tadeshi Mikami, and Yoshihiro Inaba, all of Minami-Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1993, Ser. No. 160,168
Claims priority, application Japan, Dec. 2, 1992, 4-345092
Int. Cl.⁶ G03G *9/093*
U.S. Cl. 430—109 **15 Claims**

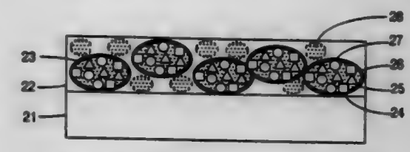
1. A capsule toner comprising binder resin, colorant, toner additive and shell obtained by dispersing an oil phase containing a binder resin and a colorant in an aqueous medium in the form of oil droplets and effecting a reaction of one or more capsule shell-forming monomers inside and/or on the interface of the oil droplets to form capsule shells, wherein a silylisocyanate compound is added in the oil phase as a capsule shell-forming monomer.

5,441,841
LIQUID DEVELOPER COMPOSITIONS WITH BLOCK COPOLYMERS
James R. Larson, Fairport; John W. Spiewak, Webster, and George A. Gibson, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 26, 1994, Ser. No. 249,827
Int. Cl.⁶ G03G *9/135*
U.S. Cl. 430—115 **28 Claims**

1. A liquid developer consisting essentially of a liquid, thermoplastic resin particles, optional pigment, a nonpolar liquid soluble charge director comprised of an ionic or zwitterionic quaternary ammonium block copolymer, and wherein said charge director possesses a molecular weight distribution that is bimodal comprising a first AB diblock copolymer with a number average molecular weight of from about 70,000 to about 200,000, and a second AB diblock copolymer with a number average molecular weight of from about 2,200 to about 60,000.

5,441,842
Patent Not Issued For This Number

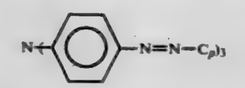
5,441,843
LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND COLOR IMAGE FORMING SUBSTANCE
Hiroshi Hara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 913,007, Jul. 14, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 321,889
Claims priority, application Japan, Jul. 15, 1991, 3-198245
Int. Cl.⁶ G03C *1/72*
U.S. Cl. 430—138 **4 Claims**



1. A light-sensitive material comprising a support and a light-sensitive layer which contains silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound and a color image forming substance, said silver halide, said reducing agent, said polymerizable compound and said color image forming substance being contained in light-sensitive microcapsules which are dispersed in the light-sensitive layer, wherein the light-sensitive layer further contains an ethylenically unsaturated polymerizable compound outside the light-sensitive microcapsules, said polymerizable compound outside the light-sensitive microcapsules being dispersed in the light-sensitive layer without use of microcapsules.

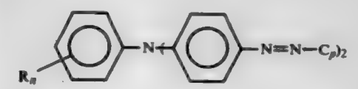
5,441,844
OPTICAL INFORMATION RECORDING MEDIUM USING BISAZO OR TRISAZO COMPOUNDS
Masakatsu Shimoda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Division of Ser. No. 919,593, Jul. 24, 1992, Pat. No. 5,312,906. This application Jan. 24, 1994, Ser. No. 185,778
Claims priority, application Japan, Jul. 25, 1991, 3-186306; Aug. 2, 1991, 3-194166
Int. Cl.⁶ G03F *7/008*
U.S. Cl. 430—167 **4 Claims**

1. An optical information recording medium which is directly optically readable, comprising a substrate and a recording layer comprising a trisazo compound of formula (IV):



wherein C_p represents a coupling component residue.

2. An optical information recording medium which is directly optically readable, comprising a substrate and a recording layer comprising a bisazo compound of formula (I):



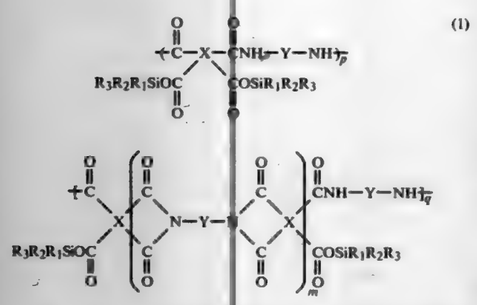
wherein
R represents hydrogen; an alkyl group having 1 to 20 carbon atoms, with or without a phenyl group as a substituent; an aryl group selected from the group consisting of phenyl group, naphthyl group, mesityl group, and tri-t-butyl

phenyl group; an alkoxyl group having 1 to 4 carbon atoms; a nitro group; a cyano group; chlorine; or bromine;
n is an integer of 1, 2 or 3; and
C_p represents a coupler residue.

5,441,845
PHOTOSENSITIVE RESIN COMPOSITION COMPRISING A POLYIMIDE PRECURSOR AND A PHOTOSENSITIVE DIAZOQUINONE
Hiroshige Okinoshima, Annaka, and Hideto Kato, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Feb. 16, 1994, Ser. No. 197,519
Claims priority, application Japan, Feb. 17, 1993, 5-051418
Int. Cl.[6] G03F *7/023*
U.S. Cl. 430—191 **9 Claims**

1. A photosensitive resin composition which comprises in admixture:

100 parts by weight of a polyimide precursor of the following general formula (1)



(1)

wherein each X individually represents a tetravalent organic group having an aromatic ring or an aliphatic ring, i.e. an alicyclic group, each Y individually represents a divalent organic group, R^1, R^2 and R^3 may be the same or different and represents a hydrogen atom or a monovalent organic group having form 1 to 10 carbon atoms, and p, q and m are, respectively, an integer of 1 or over provided that $1/20 \leqq q/p \leqq 9$; and

from 2 to 100 parts by weight of a photosensitive diazoquinone compound.

5,441,846
SYSTEM FOR PREPARATION OF LIGHT-SENSITIVE MATERIAL
Hiroshi Nagate; Kenichi Miyata, both of Shizuoka, and Masahiko Tsuda, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 12, 1995, Ser. No. 372,026
Claims priority, application Japan, Jan. 12, 1994, 6-001767
Int. Cl.[6] G03C *11/12;* **B65C** *3/12;* **B31F** *1/00;* **B32B** *31/00*
U.S. Cl. 430—259 **4 Claims**

1. A system for the preparation of a light-sensitive material comprising a substrate, a light-sensitive layer and a base film in order which comprises:

a roller for providing a continuous light-sensitive sheet comprising the base film, the light-sensitive layer and a protective film;

means for cutting the light-sensitive layer and protective layer in the direction traversing the continuous light-sensitive sheet which is supplied by the roller;

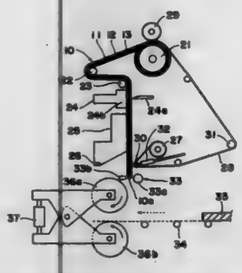
fixing means for temporarily fixing thereto the continuous light-sensitive sheet, said means having a heater at its bottom and being capable of going up and down;

a roller for providing an adhesive tape for removing the protective film from the continuous light-sensitive sheet;

a roller for collecting the adhesive tape which has been employed for removing the protective film;

a bar which is movable for pressing the adhesive tape by its tip to the front end of the continuous light-sensitive sheet so as to press the front end of the sheet against the bottom of the fixing means and for withdrawing to peel the protective film from the light-sensitive sheet;

a dancer roll which is arranged in contact with the adhesive



tape on the path between the tip of bar and the collecting roller;

a cutter for cutting the light-sensitive sheet the direction traversing the continuous light-sensitive sheet which is supplied by the fixing means;

means for supplying the substrate to the position below the fixing means; and

heat rollers for laminating the base film and light-sensitive layer on the substrate.

5,441,847
METHOD FOR PROCESSING A BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Junichi Fukawa; Takeshi Sampei, and Kenji Goto, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed May 26, 1994, Ser. No. 249,455
Claims priority, application Japan, Jun. 10, 1993, 5-138704
Int. Cl.[6] G03C *5/31*
U.S. Cl. 430—264 **17 Claims**

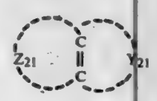
1. A method of processing, by use of an automatic processor, a black-and-white silver halide photographic light-sensitive material comprising a support having thereon photographic component layers comprising a light-sensitive silver halide emulsion layer and nonlight-sensitive hydrophilic colloid layer, at least one of the component layers containing a hydrazine compound and a redox compound capable of releasing an inhibitor upon oxidation, the method comprising the steps of:

exposing the photographic material to light,

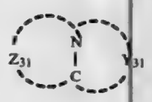
developing the exposed photographic material with a developer, said developer being replenished by a developer replenisher at a rate of not more than 200 ml per m^2 of the photographic material, and

fixing the developed photographic material with a fixer, wherein said developer has a pH of 9.5 to 10.8 and contains a compound represented by the following formulas (2) or (3) ,

Formula 2

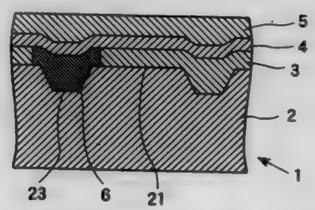


Formula 3



wherein Z represents an alkyl, an aryl or heterocyclic group, each of which has at least one group selected from hydroxy, $-SO_3M^1$, $-COOM^1$, an amino group and an ammonio group, or a group having at least one of hydroxy, SO_3M^1, $COOM^1$, an amino group and an ammonio group, in which M_1 represents a hydrogen atom, an alkali metal atom or an ammonium group; M represents a hydrogen atom, an alkali metal atom or an amidino group; Y_{21} and Z_{21} each represent an atomic group necessary to form an unsaturated 5- or 6-membered ring, and thus formed rings contain together three or more nitrogen atoms, being substituted by a mercapto group; and Z_{31} each represent an atomic group necessary to form an unsaturated 5- or 6-membered ring, and thus formed rings contain together three or more nitrogen atoms, being substituted by a mercapto group.

5,441,848
OPTICAL RECORDING/REPRODUCING METHOD
Toshiki Aoi; Atsuko Motai, and Akio Ogawa, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Apr. 12, 1994, Ser. No. 226,358
Claims priority, application Japan, May 25, 1993, 5-145660
Int. Cl.[6] G11B *7/00*
U.S. Cl. 430—269 **4 Claims**



1. A recording/reproducing method with an optical recording medium, comprising:

a polycarbonate resin substrate having a groove formed in one surface thereof, said groove having a bottom surface and a depth of 1,100 to 2,300 Å;

a recording layer disposed on a face surface of the substrate opposite said bottom surface and containing an organic dye, said recording layer having a thickness of 1500 to 3000 Å on average; and

a reflective layer disposed on said recording layer; and

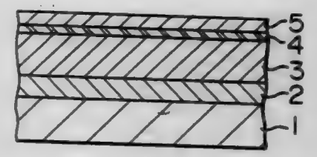
said method comprising the steps of:

directing recording light to said recording layer within said groove from a backside of said substrate opposite said one surface and at a relative linear velocity Vw of at least 3.6 m/s;

modulating the recording light with an EFM signal having a pulse width represented by $(n+p)T$ Vr/Vw, wherein n is an integer of 3 to 11, p is a recording signal pulse factor having a value of $-0.7 \leqq p \leqq +0.2$, where $T=231.4$ ns, Vr is a standard compact disk reproduction linear velocity in the range of 1.2 to 1.4 m/s;

forming a record mark in said recording layer as a result of partial decomposition of said organic dye while deforming the groove bottom surface, the deformation of the groove bottom surface being up to 18% of the groove depth.

5,441,849
METHOD OF FORMING PATTERN AND MAKING SEMICONDUCTOR DEVICE USING RADIATION-INDUCED CONDUCTIVE RESIN BOTTOM RESIST LAYER
Hiroshi Shiraishi; Takumi Ueno, both of Hachioji; Fumio Murai, Tokyo; Hajime Hayakawa, Kunitachi, and Asao Isobe, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, both of Tokyo, Japan
Continuation of Ser. No. 908,746, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 686,448, Apr. 17, 1991, abandoned, which is a division of Ser. No. 377,375, Jul. 10, 1989, abandoned.
This application Sep. 8, 1993, Ser. No. 117,969
Claims priority, application Japan, Jul. 11, 1988, 63-170953
Int. Cl.[6] G03C *5/00;* **B44C** *1/22*
U.S. Cl. 430—296 **22 Claims**



1. A method of forming a pattern comprising the steps of:
1) forming an electroconductive layer on a substrate;
2) grounding said electroconductive layer;
3) forming a cross-linked bottom resist layer composed of a radiation-induced conductive resin composition on said electroconductive layer;
4) forming a top resist layer, which acts as a mask for said bottom resist layer, on said bottom resist layer;
5) irradiating said top resist layer with an electron beam followed by development to form a patterned top resist layer;
6) discharging the electric charges, which are generated by the irradiation of the electron beam, through said electroconductive layer; and
7) patterning said bottom resist layer by etching said bottom resist layer using said patterned top resist layer as a mask.

5,441,850
IMAGING MEDIUM AND PROCESS FOR PRODUCING AN IMAGE
John L. Marshall, Somerville; Larry C. Takiff, and Stephen J. Telfer, both of Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 25, 1994, Ser. No. 232,725
Int. Cl.[6] G03C *1/725, 1/73, 5/00, 1/735*
U.S. Cl. 430—336 **19 Claims**

1. A process for producing an image, which process comprises:

providing an imaging medium comprising an acid-generating layer or phase, said acid-generating layer or phase comprising a mixture of a superacid precursor, a sensitizing dye and a secondary acid generator, and a color-change layer or phase comprising an image dye;

the sensitizing dye having a unprotonated form and a protonated form, the protonated form having substantially greater substantial absorption in a first wavelength range than the unprotonated form;

the superacid precursor being capable of being decomposed to produce superacid by actinic radiation in a second wavelength range different from the first wavelength range, but not, in the absence of the sensitizing dye, being capable of being decomposed to produce superacid by actinic radiation in the first wavelength range;

the secondary acid generator being capable of thermal decomposition to form a secondary acid, the thermal

decomposition of the secondary acid generator being catalyzed by unbuffered superacid; and

the image dye undergoing a change in its absorption of radiation upon contact with the second acid;

while at least part of the sensitizing dye is in its protonated form, imagewise exposing the medium to actinic radiation in the first wavelength range, thereby causing, in the exposed areas of the acid-generating layer or phase, the sensitizing dye to decompose at least part of the superacid precursor, with formation of unbuffered superacid;

thereafter, heating the medium to cause, in the exposed areas of the acid-generating layer or phase, acid-catalyzed thermal decomposition of the secondary acid generator and formation of the secondary acid;

admixing the components of the acid-generating and color-change layers or phases, thereby causing, in the exposed areas of the medium, the secondary acid to bring about the change in absorption of the image dye and thereby form the image; and

providing, in the non-exposed areas of the medium, sufficient base to restore the sensitizing dye to its unprotonated form.

5,441,851

USE OF HETEROCYCLIC NITROGEN ADDENDA TO REDUCE CONTINUED COUPLING OF MAGENTA DYE-FORMING COUPLERS

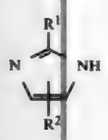
Stephen P. Singer, Spencerport, and Paul B. Merkel, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1991, Ser. No. 797,660

Int. Cl.[6] G03C *7/384, 7/392*

U.S. Cl. 430—372 **26 Claims**

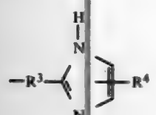
1. A photographic element comprising a support and a silver halide emulsion layer having associated therewith a two-equivalent pyrazolone magenta dye-forming coupler, wherein said element further comprises a heterocyclic nitrogen compound selected from the group consisting of protic imidazoles represented by general formula I, and pyridines represented b general formula IV:



I

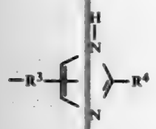
in which

R^1 or R^2 is hydrogen and the other one is unsubstituted or substituted straight-chain or branched alkyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkoxy groups, unsubstituted or substituted aryl groups, or groups of the formulae II



II

or III

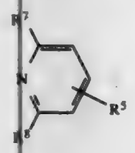


III

wherein

R^3 is unsubstituted or substituted alkylene and

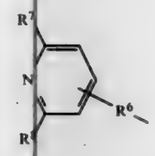
R^4 is hydrogen, unsubstituted or substituted straight-chain or branched alkyl, or unsubstituted or substituted alkenyl, with the proviso that no more than one or R^1 and R^2 is a group of the formulae II or III;



IV

in which

R^5 is hydrogen, unsubstituted or substituted straight-chain or branched alkyl, unsubstituted or substituted alkenyl, or a group of the formula V



V

wherein

R^6 is unsubstituted or substituted alkylene and

R^7 and R^8 are individually hydrogen or substituted or unsubstituted alkyl;

and wherein when said groups R^1–R^4 are substituted groups as defined, they are individually substituted with one or more alkyl, phenyl, alkoxy, aryloxy, halogen, acyl, acyloxy, alkoxycarbonyl, acylamino, carbamoyl, sulfonamido,sulfamoyl, sulfonyl or sulfoxy group.

5,441,852

METHOD OF STABILIZING A COLOR SILVER HALIDE IMAGE

Moeko Hagiwara, and Hiroaki Kobayashi, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 986,869, Dec. 4, 1992, abandoned. This application May 4, 1994, Ser. No. 237,248

Claims priority, application Japan, Dec. 27, 1991, 3-360631

Int. Cl.[6] G03C *5/39*

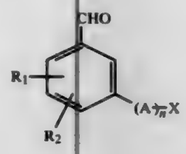
U.S. Cl. 430—372 **9 Claims**

1. A method of processing a silver halide color photographic light-sensitive material comprising:

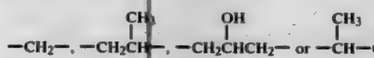
imagewise exposing to light, color developing, bleaching, fixing and thereafter, stabilizing said material,

wherein said stabilizing step is carried out with a stabilizer solution comprising a compound represented by formula I,

Formula I



wherein A represents



X represents a hydroxyl group, a sulfonic acid group, a carboxylic acid group, an amino group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, a sulfinic acid group or a sulfonyl group; n is an integer of 0 or 1 through 3; R_1 and R_2 represent each a hydrogen atom, an alkoxy group, a C_1 or C_2 alkyl group which may have a hydroxy or carboxy group, an aldehyde group, a hydroxyl group, a carboxylic acid group or a sulfonic acid group, and R_1 and R_2 may be the same or different.

5,441,853

METHOD OF MAKING STABLE COLOR PHOTOGRAPHIC PRINTS

John R. Fyson, London, England, and Roland G. Willis, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/02850, § 371 Date Nov. 26, 1993, § 102(e) Date Nov. 26, 1993, PCT Pub. No. WO93/12464, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 10, 1992, Ser. No. 98,301

Claims priority, application United Kingdom, Dec. 12, 1991, 9126386

Int. Cl.[6] G03C *11/00*

U.S. Cl. 430—373 **11 Claims**

1. A method of making a photographic colour print using a photographic colour material containing low levels of silver halide, comprising:

forming an image on the photographic colour material;

washing the photographic colour material and/or treating the photographic colour material in a stop bath after said forming of said image;

uniformly exposing the photographic colour material to a light source after said washing and/or said treating, whereby undeveloped silver halide in said photographic colour material prints out uniformly; and

non-uniformly exposing the photographic colour material to adventitious light.

5,441,854

PHOTOGRAPHIC IMAGE FORMING PROCESS UTILIZING A BARRIER LAYER FOR DIFFUSIBLE DYE CONTAINMENT

John Texter, Rochester; Wayne A. Bowman, Walworth, and Glenn T. Pearce, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 952,447, Sep. 28, 1992, Pat. No. 5,370,967. This application Jul. 18, 1994, Ser. No. 276,294

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[6] G03C *8/10, 8/20, 8/32, 8/56*

U.S. Cl. 430—376 **20 Claims**



1. A process for forming a color photographic image comprising the steps of:

(a) providing an integral element comprising one and only one dimensionally stable layer comprising a coating support, and coated thereon in reactive association an imaging layer comprising radiation sensitive silver halide, a diffusible dye forming layer comprising a diffusible dye forming compound, and a barrier layer overlaying said diffusible dye forming layer,

wherein said support is selected from the group consisting of reflection base and transparent base materials,

wherein said diffusible dye forming layer is the same or different than said imaging layer,

wherein said barrier layer comprises a polymer that allows the passage of solutions for processing said element when said element is contacted with an external processing bath,

wherein said barrier layer impedes the diffusion out of said element of the diffusible dye formed from said diffusible dye forming compound to an extent such that an increase in dye-density Dmax of at least 20% is obtained relative to a control barrier layer of gelatin of equivalent weight per unit area when said element after exposure to light is processed at 95° F. for at least 45 seconds in a pH 10 color developing bath and where said control barrier layer is devoid of said polymer, where the volume of said pH 10 color developing bath is greater than 200 mL per square meter of said element in contact with said bath,

wherein said polymer contains from 1×10^{-5} to 4×10^{-3} moles of ion forming functional groups per gram of said polymer,

wherein said polymer comprises repeating units derived from ethylenically unsaturated monomers, and

wherein said monomers comprise monomers derived from hydrophobic acrylate, methacrylate, acrylamide, or methacrylamide monomers;

(b) exposing said element to actinic radiation

(c) processing said element by contacting said element with an external bath containing compounds selected from the group consisting of color developer compounds, compounds which activate the release of color developers, and compounds which activate development by dye developers, wherein the volume of said external bath is greater than 200 mL per square meter of said element in contact with said external bath; and

(d) washing said element to remove compounds imbibed in step (c).

5,441,855

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Beate Weber, Leichlingen; Jörg Hagemann, Cologne; Günter Helling, Odenthal, and Markus Geiger, Langenfeld, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

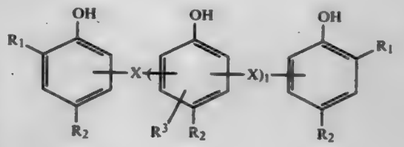
Filed Jun. 9, 1994, Ser. No. 257,165

Claims priority, application Germany, Jun. 21, 1993, 43 20 445.7

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—503 **6 Claims**

1. A color photographic material which contains on a support at least one blue-sensitive silver halide emulsion layer containing at least one yellow coupler, at least one green-sensitive silver halide emulsion layer containing at least one magenta coupler, at least one red-sensitive silver halide emulsion layer containing at least one cyan coupler, at least one non-light-sensitive layers, characterized in that at least one blue-sensitive layer containing a yellow coupler contains a compound of the formula (I)



(I)

in which

R_1 means hydrogen or alkyl,

R_2 means hydrogen or alkyl,

R_3 means hydrogen or alkyl,
means 1 to 20,
X means



R_4 means hydrogen or alkyl,
R_5 means hydrogen or alkyl and
n means 1 to 6.

5,441,856

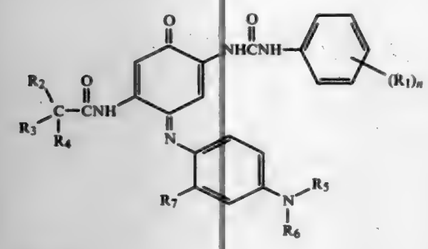
PHOTOGRAPHIC ELEMENTS CONTAINING INDOANILINE DUMMY DYES

Paul B. Merkel, and David Hoke, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,089
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—504 **20 Claims**

1. A photographic element having a support and a silver halide emulsion layer, the element comprising a cyan dummy dye present in the element prior to exposure and development, the dye having the formula:

I



wherein:
n is 1, 2 or 3;
each R_1 is an electron-withdrawing group which may be the same or different when n is 2 or 3;
R_2 is an alkyl group having from one to 20 carbon atoms, a cycloalkyl group having from 3 to 8 carbon atoms in the ring, or an aryl group;
R_3 is an alkyl group having from one to 20 carbon atoms, a cycloalkyl group having from 3 to 8 carbon atoms in the ring, or an aryl group, or is hydrogen;
R_4 is selected from the group consisting of alkylsulfonyl, arylsulfonyl, alkylsulfoxyl, arylsulfoxyl, sulfamoyl, alkylsulfonate, carbamoyl, alkoxycarbonyl and acyl groups;
R_5 is an alkyl group;
R_6 is hydrogen, or an alkyl group, and
R_7 is hydrogen or an alkyl group.

5,441,857

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Heinrich Odenwälder, Leverkusen; Peter Bell, Cologne, and Johannes Willsau, Leverkusen, all of Germany, assignors to Agfa Gevaert AG, Leverkusen, Germany

Filed Oct. 27, 1994, Ser. No. 329,847
Claims priority, application Germany, Nov. 8, 1993, 43 38 104.9
Int. Cl.[6] G03C *7/305, 7/32*
U.S. Cl. 430—506 **8 Claims**

1. Color photographic silver halide material of the negative type, comprising at least one silver halide emulsion layer contains a compound of the formula

$$A\text{-}B\text{-}(T_1)_m\text{-}(COUP\text{-}D\text{-})\text{-}(T_2)_n \quad (I),$$

wherein
A represents a ballast group,
B represents the radical of a compound which reacts to release $(T_1)_m$-(COUP-D)-$(T_2)_n$ during development,
T_1 and T_2 represent time-regulating units which can be released during development,
m, n are 0 or 1,
COUP represents the radical from a 4-equivalent coupler and
D represents a group with an affinity for silver and wherein
A-B is the radical from a 2-equivalent coupler which contains the group $(T_1)_m$-(COUP-D)-$(T_2)_n$ bonded at the coupling site, which is linked to B via the group D which has an affinity for silver, wherein COUP-D contains no ballast radicals which make it diffusion-resistant.

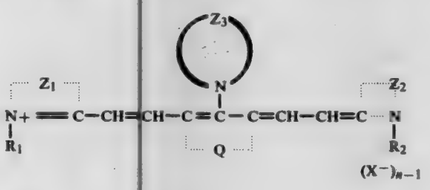
5,441,858

PHOTOGRAPHIC SILVER HALIDE ELEMENTS COMPRISING INFRARED SENSITIZING DYES

Ivano Delprato, Rocchetta Di Cairo Montenotte; Sergio Massirio, Finale Ligure, and Massimo Bertoldi, Fossano, all of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 126,984, Sep. 27, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 302,224
Claims priority, application Italy, Oct. 30, 1992, MI92A02499
Int. Cl.[6] G03C *1/20*
U.S. Cl. 430—508 **10 Claims**

1. A silver halide photographic element comprising a support and at least one silver halide emulsion layer, characterized in that said at least one silver halide emulsion layer is spectrally sensitized to infrared radiation with a tricarbocyanine dye having the formula:



wherein,
Z_1 and Z_2 each independently represents the atoms necessary to complete a thiazole nucleus or an oxazole nucleus,
Z_3 forms a non-fused 5-membered N-containing aromatic ring,
Q represents the atoms necessary to complete a 5- or 6-membered carbocyclic ring,
R_1 and R_2 each independently represents an alkyl group,
X^- represents an anion, and
n represents an integer of 1 to 2, provided that n is 1 when the dye forms an intramolecular salt.

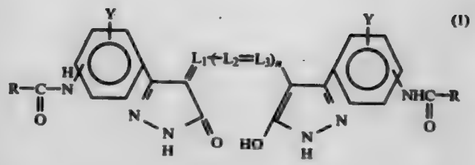
5,441,859

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yoshiharu Yabuki, and Keiichi Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1994, Ser. No. 305,451
Claims priority, application Japan, Sep. 14, 1993, 5-228397
Int. Cl.[6] G03C *1/40*
U.S. Cl. 430—522 **5 Claims**

1. A silver halide photographic material having a hydrophilic colloid layer containing a dispersion of fine solid grains of at least one compound represented by formula (1)



(I)

wherein
R represents an alkyl group, an aryl group, an amino group, an alkoxy group, an aryloxy group or a heterocyclic group;
L_1, L_2 and L_3 each represents a methine group;
Y represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom;
R and Y may be bonded to each other to form a ring; and
n represents an integer of from 0 to 2;
provided that R, Y, L_1, L_2 and L_3 do not have a group having an ionizable proton or its salt.

5,441,860

SILVER HALIDE PHOTOGRAPHIC MATERIAL HAVING IMPROVED ANTISTATIC PROPERTIES

Brunella Fornasari, Ferrania; Giuseppe Busoi, Saliceto, and Renzo Torterolo, Bragno/Cairo Montenotte, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1994, Ser. No. 203,343
Claims priority, application European Pat. Off., Mar. 30, 1993, 93105229
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—537 **12 Claims**

1. A silver halide photographic material comprising a support having coated thereon at least one silver halide emulsion layer and at least one light-insensitive hydrophilic colloid layer comprising gelatin wherein at least one of said layers comprises a gelatin hardening agent and said hydrophilic colloid layer comprises alkali-insoluble acrylic polymer particles having an average particle size of from 0.5 to 6 μm and wherein at least 95% by number of said polymer particles have a particle size within ±15% of the average particle size.

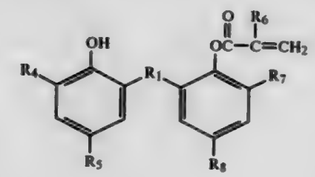
5,441,861

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Beate Weber, Leichlingen; Günter Helling, Odenthal; Klaus Walz, Leverkusen; Markus Geiger, Langenfeld; Kaspar Wingender, Leverkusen, and Jörg Hagemann, Cologne, all of Germany, assignors to Agfa-Gevaert AB, Leverkusen, Germany

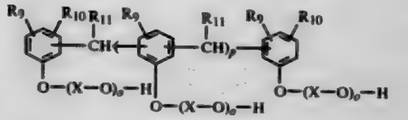
Filed Aug. 26, 1993, Ser. No. 112,192
Claims priority, application Germany, Sep. 8, 1992, 42 29 928.4; Mar. 10, 1993, 43 07 439.1
Int. Cl.[6] G03C *1/08, 7/26, 7/32*
U.S. Cl. 430—551 **14 Claims**

1. Color photographic material comprising at least one silver halide emulsion layer which contains a color coupler distributed in a polymeric oil former and at least one bisphenol compound of the formula (II)



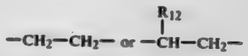
(II)

in which
R_1 is alkylene, alkylidene or sulphonyl,
R_4, R_5, R_7, R_8 are the same or different and are alkyl or aryl and R_6 is hydrogen or aryl, wherein the polymeric oil former corresponds to formula (III)



(III)

in which
R_9 means hydrogen or alkyl
R_{10} means alkyl
R_{11} means hydrogen alkyl
X means



R_{12} means alkyl
o means an integer from 1 to 5
p means an integer from 0 to 5.

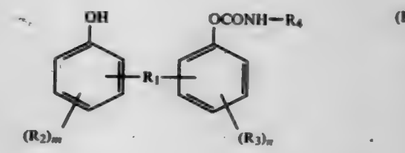
5,441,862

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Beate Weber, Leichlingen; Günter Helling, Odenthal, and Markus Geiger, Langenfeld, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

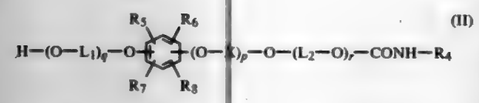
Filed Oct. 27, 1994, Ser. No. 329,886
Claims priority, application Germany, Nov. 8, 1993, 43 38 105.7
Int. Cl.[6] G03C *7/392*
U.S. Cl. 430—551 **11 Claims**

1. A color photographic recording material comprising at least one silver halide emulsion layer and a color coupler associated with that layer, characterized in that, in the silver halide emulsion layer or in a non-photosensitive binder layer adjacent thereto, it contains a combination of a color coupler and a compound corresponding to general formula (I) or (II):



(I)

in which
R_1 is a chemical bond or a difunctional bridge member,
R_2 and R_3 are the same or different and are alkyl, alkoxy, alkenyl, cycloalkyl, aryl or aryloxy or two substituents R_2 and R_3 represent the remaining atoms of a benzene ring condensed with the phenyl group
m and n are the same or different and are a number from 0 to 3, and one of the substituents R_1 or R_2 or R_3 in each of the two phenyl rings corresponding to formula (I) being in the p-position to the oxygen and
R_4 is the residue of a polymer produced by polycondensation,



(II)

in which

L_1 and L_2 are the same or different and represent an optionally substituted, difunctional organic radical attached to the oxygen atoms by aliphatic or aromatic carbon atoms,

X is an optionally substituted difunctional organic radical attached to the oxygen atoms by aliphatic or aromatic carbon atoms,

p is the number 0 or 1

q and r are the same or different and are a number from 0–20,

R_5, R_6, R_7 and R_8 are the same or different and represent H, alkyl, aryl, acyl, aralkyl, alkylamino, arylamino, halogen, alkoxy, aryloxy, $—SO_2—NR_9R_{10}$, $—NR_9—SO_2—R_{10}$, $—CONR_9R_{10}$, $—NR_9COR_{11}$, $—OCOR_{10}$ or $—COOR_9$,

R_9 presents H or alkyl,

R_{10} represents H, alkyl, aralkyl or aryl,

R_{11} represents alkoxy, aroxy, alkylamino, arylamino, H, alkyl, aryl, acyl, aralkyl, halogen, aryloxy, $—SO_2—NR_9R_{10}$, $—NR_9—SO_2R_{10}$, $—CONR_9R_{10}$, $—OCOR_{10}$ or $—COOR_9$,

X may optionally form a 5- or 6-membered ring with R_5, R_6, R_7 or R_8 and

R_4 is the residue of a polymer produced by polycondensation.

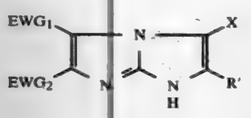
5,441,863

PHOTOGRAPHIC ELEMENTS WITH HETEROCYCLIC CYAN DYE-FORMING COUPLERS

Ping W. Tang; Thomas H. Jozefiak, and David J. Decker, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1994, Ser. No. 281,898
Int. Cl.[6] G03C *7/38*
U.S. Cl. 430—558 **9 Claims**

1. A light-sensitive photographic element comprising a support bearing a silver halide emulsion associated with a imidazo[3,2-a]imidazole cyan dye-forming coupler having the structure:



wherein:

EWG_1 and EWG_2 each independently represent an electron withdrawing group;

X is hydrogen or a coupling-off group; and

R^1 is hydrogen or a substituent group; and

the dye formed on coupling with an N-{2-[(4-amino-3-methylphenyl)ethylamino]ethyl}methanesulfonamide sesquisulfate developing agent has a spectral absorption peak in the region of the spectrum from 650 to 710 nm with a half band width of less than 195 nm.

5,441,864

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL WITH HIGH SENSITIVITY AND SUPERIOR STABILITY

Yorihiro Yamaya, Hino, Japan, assignor to Konica Corporation, Japan

Filed Mar. 1, 1994, Ser. No. 204,649
Claims priority, application Japan, Mar. 5, 1993, 5-045340
Int. Cl.[6] G03C *1/005, 1/015*
U.S. Cl. 430—567 **6 Claims**

1. A silver halide light-sensitive photographic material comprising a support having on at least one side thereof a silver halide emulsion layer comprising a silver halide emulsion, said silver halide emulsion being prepared by a process comprising formation of silver halide grains, and chemical ripening of said silver halide grains in the presence of iodide-containing silver halide fine grains in an amount of 1×10^{-2} mole or less per mole of said silver halide grains,

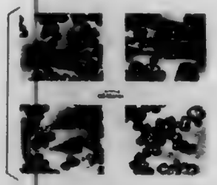
wherein at the time of said chemical ripening, said silver halide emulsion contains said silver halide grains in an amount of 7% to 13%, by volume, and a hydrophilic colloid in an amount of at least 5%, by weight.

5,441,865

GELATIN-GRAFTED-POLYMER PARTICLES AS PEPTIZER FOR SILVER HALIDE EMULSIONS

John D. Lewis; Mark A. Whitson, both of Webster; Thomas J. Dannhauser, Pittsford; Tienteh Chen, Penfield, and Pranab Bagchi, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 7, 1993, Ser. No. 1,361
Int. Cl.[6] G03C *1/005*
U.S. Cl. 430—569 **17 Claims**



1. A photosensitive silver halide crystalline emulsion composition comprising silver halide crystals with adsorbed gelatin-grafted-polymer particles attached to the surface of the silver halide crystals wherein said silver halide crystals with adsorbed gelatin-grafted-polymer particles attached to the surface are formed in a solution of said gelatin-grafted-polymer particles with substantially all gelatin in said solution bound to said polymer particles.

5,441,866

SENSITIZERS FOR PHOTOTHERMOGRAPHIC ELEMENTS

James R. Miller, Hudson, Wis.; Sam Kalousdian, Maplewood, Minn.; Brian C. Willett, Stilwater, Minn.; John M. Winslow, South St. Paul, Minn.; Pu Zhou, Woodbury, Minn., and Chaofeng Zou, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 202,941, Feb. 28, 1994, abandoned. This application Jan. 26, 1995, Ser. No. 377,619
Int. Cl.[6] G03C *1/498*
U.S. Cl. 430—619 **14 Claims**

1. A heat-developable, photothermographic element comprising a support bearing at least one photosensitive, image-forming photothermographic emulsion layer comprising:

(a) a photosensitive silver halide;

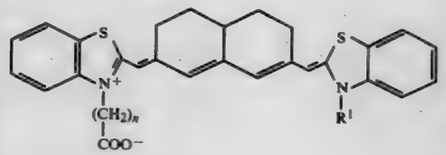
(b) a non-photosensitive, reducible silver source;

(c) a reducing agent for silver ions;

(d) a binder;

(e) a supersensitizer; and

(f) a spectrally sensitizing amount of an infrared absorbing dye compound having the central nucleus:



wherein:

R^1 represents a $(CH_2)_n—COO^-$ group of from 1–20 carbon atoms, or an alkyl group of from 1 to 20 carbon atoms; and

n is an integer from 1 to 20.

5,441,867

PRE-ACTIVATED PROTEINS FOR LABELLING OLIGONUCLEOTIDE PROBES

Andrew J. Garman, Chester, and John R. Parker, Cheshire, both of England, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 620,866, Dec. 4, 1990, abandoned. This application Jan. 7, 1992, Ser. No. 815,881
Claims priority, application United Kingdom, Dec. 4, 1989, 8927365
Int. Cl.[6] C12N *11/02*; G01N *33/535*; A61K *39/44, 39/385*
U.S. Cl. 435—6 **19 Claims**

1. An antibody or an enzyme reagent, pre-activated for covalent coupling to a thiol group of a thiolated polynucleotide or to a thiol group of a thiol containing protein, said reagent being lyophilized from a buffered carbohydrate solution having a pH of from 6 to 8 which buffered solution has concentration of non-volatile salts of not more than 10 mM, so as to provided said reagent in dry solid form and being stable for at least 3 months against hydrolysis, polymerization and loss of label activity and of capacity to form conjugate by said covalent coupling.

5,441,868

PRODUCTION OF RECOMBINANT ERYTHROPOIETIN

Fu-Kuen Lin, Thousand Oaks, Calif., assignor to Kirin-Amgen, Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 675,298, Nov. 30, 1984, Pat. No. 4,703,008, which is a continuation-in-part of Ser. No. 561,024, Dec. 13, 1983, abandoned, and a continuation-in-part of Ser. No. 582,185, Feb. 21, 1984, abandoned, and Ser. No. 635,841, Sep. 28, 1984, abandoned. This application Oct. 23, 1987, Ser. No. 113,179
Int. Cl.[6] C12P *21/02*; C12N *15/27*
U.S. Cl. 435—69.4 **5 Claims**

1. A process for the production of a glycosylated erythropoietin polypeptide having the in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells comprising the steps of:

(a) growing, under suitable nutrient conditions, mammalian host cells transformed or transfected with an isolated DNA sequence encoding human erythropoietin; and

(b) isolating said glycosylated erythropoietin polypeptide therefrom.

5,441,869

METHOD FOR THE DETERMINATION OF FIBRIN

Andreas Dessauer, Tutzing; Helmut Lill, Wielenbach; Werner Naser, Weilheim, and Bentus Ofenloch-Hähnle, Haunshofen, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Sep. 14, 1992, Ser. No. 944,691
Claims priority, application Germany, Sep. 25, 1991, 41 31 953.2; Oct. 22, 1991, 41 34 833.8
Int. Cl.[6] G01N *33/53, 33/68, 33/577, 33/536*
U.S. Cl. 435—7.1 **24 Claims**

1. Process for improving the sensitivity of a fibrin assay which uses a fibrin specific capture monoclonal antibody , comprising;

(a) adding at least one ion selected from the group consisting of a thiocyanate ion, an iodide ion, a magnesium ion, and a guanidinium ion to a sample containing fibrin in an amount sufficient to increase the selectivity of said fibrin specific capture monoclonal to fibrin,

(b) incubating said sample,

(c) contacting said sample with said fibrin specific capture monoclonal antibody, and

(d) determining a reaction between said fibrin specific capture monoclonal antibody and fibrin, whereby said reaction corresponds to the quantity of fibrin in the sample.

5,441,870

METHODS FOR MONITORING CELLULAR PROCESSING OF β-AMYLOID PRECURSOR PROTEIN

Peter A. Seubert, South San Francisco; Dale B. Schenk, Pacifica, and Lawrence C. Fritz, San Francisco, all of Calif., assignors to Athena Neurosciences, Inc., South San Francisco, Calif. and Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 868,949, Apr. 15, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 965,971
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.1 **26 Claims**

1. A method for monitoring the processing of β-amyloid precursor protein (βAPP) in cells, said method comprising detecting a soluble βAPP fragment secreted from said cells, and a substance which specifically binds to said soluble βAPP fragment, wherein the amino acid sequence of said βAPP fragment extends substantially from the amino-terminus of βAPP to the amino-terminus of β-amyloid peptide (βAP).

5,441,871

MONOCLONAL ANTIBODY REACTIVE TO HUMAN LEUKEMIA AND LYMPHOMA CELLS AND METHODS OF USING SAME FOR DIAGNOSIS AND TREATMENT

Ben K. Seon, Williamsville, N.Y., assignor to Health Research, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 848,911, Mar. 10, 1992, which is a continuation-in-part of Ser. No. 359,505, Jun. 1, 1989, abandoned. This application May 8, 1992, Ser. No. 880,518
Int. Cl.[6] C07K *15/28*; G01N *33/574, 33/577*
U.S. Cl. 435—7.23 **4 Claims**

1. A monoclonal antibody, or fragments thereof, produced by hybridoma cell line 2B-4G9, having ATCC designation number HB 11101 or subclones thereof which react with representatives from each of the leukemia lymphoma cell specimens selected from the group consisting of B non-Hodgkin's lymphoma cells, B chronic lymphocytic leukemia cells, B prolymphocytic leukemia cells, B hairy cell leukemia cells, and B acute lymphoblastic leukemia cells.

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5,441,872

METHOD FOR THE ANALYSIS OF VITAMIN C

Richard T. Tulley, Baton Rouge, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Jun. 4, 1993, Ser. No. 72,595

Int. Cl.[6] C12Q *1/26, 1/28;* C12C *1/00;* C12N *1/00*

U.S. Cl. 435—25 **14 Claims**

1. A method for assaying total Vitamin C in a sample wherein the Vitamin C is present as ascorbic acid, dehydroascorbic acid, or both; wherein the sample my also contain one or more proteins; wherein the sample may also contain one or more substances other than dehydroascorbic acid which will react with o-phenylenediamine to form a quinoxaline; and wherein the sample may also contain one or more substances which will interfere with the spectrometry of 3-(1,2-dihydroxyethyl)furo[3,4-b]quinoxaline-1-one; the method comprising the sequential steps of:

(a) first, reacting the sample with metaphosphoric acid and dithiothreitol, whereby the sample is deproteinized and whereby any dehydroascorbic acid in the sample is reduced to ascorbic acid;

(b) second, reacting the sample with o-phenylenediamine and then measuring the absorbance or fluorescence of the sample at a wavelength characteristic of 3-(1,2-dihydroxyethyl)furo[3,4-b]quinoxaline-1-one, whereby a blank measurement is made corresponding to any interfering quinoxalines and to any other spectrometric interferences that may then be present in the sample; and

(c) third, reacting the sample with an ascorbate oxidase and measuring the increase, as compared to the blank measurement of any interfering quinoxalines and any other spectrometric interferences, in absorbance or fluorescence at the same wavelength; whereby ascorbic acid in the sample is oxidized to dehydroascorbic acid; whereby the resulting dehydroascorbic acid reacts with the o-phenylenediamine to form 3-(1,2-dihydroxyethyl)furo[3,4-b]quinoxaline-1-one; and whereby the measured increase in the absorbance or fluorescence is a measure of the total Vitamin C in the sample.

5,441,873

APPARATUS FOR MONITORING LIQUIDS

Jan H. Knight, and Robert H. Knight, both of The Laboratory, 18 Western College Road, Plymouth, England PL4 7AG

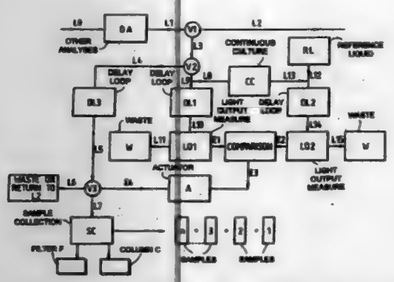
PCT No. PCT/GB92/01638, § 371 Date Mar. 10, 1994, § 102(e) Date Mar. 10, 1994, PCT Pub. No. WO93/05142, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 8, 1992, Ser. No. 204,303

Claims priority, application United Kingdom, Sep. 11, 1991, 9119382

Int. Cl.[6] C12M *1/34;* C12Q *1/02, 1/04*

U.S. Cl. 435—34 **16 Claims**



1. Apparatus for substantially continuously monitoring for the presence of toxic substances or bacteria in liquids comprising: (i) sampling means for obtaining a sample liquid; (ii) means for providing a continuous culture organisms or cells for supplying luminescence reagents such that the characteristics of the population of organisms or cells remain substantially constant; (iii) means for allowing the luminescence reagents to come into contact with at least a portion of the sample to form a mixture; and (iv) detection means for detecting any light emitted from the mixture.

5,441,874

METHOD FOR THE ACYLATION OF THE 7-AMINO GROUP OF THE CEPHALOSPORANIC RING

Maurizio Zenoni, Leffe, and Claudio Fuganti, Milan, both of Italy, assignors to Finpael S.p.A., Milan, Italy

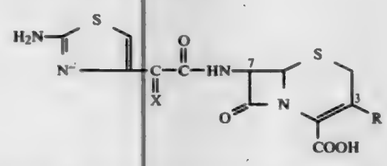
Filed Jul. 7, 1993, Ser. No. 86,849

Claims priority, application United Kingdom, Aug. 7, 1992, 9216759

Int. Cl.[6] C12P *35/00*

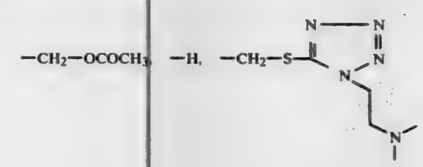
U.S. Cl. 435—47 **2 Claims**

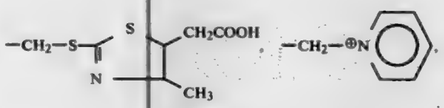
1. A method for producing a 7-aminothiazolyl cephalosporanic compound of formula (I):

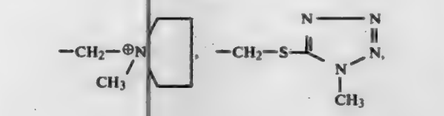


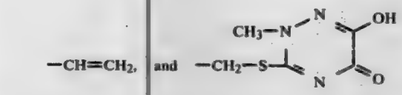
(I)

wherein R is selected from the group consisting of

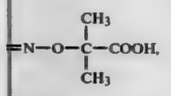






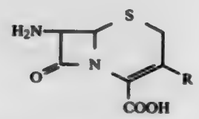


and X is selected from the group consisting of hydrogen, =N—O—CH$_3$, =N—O—H, =N—O—CH$_2$—COOH,



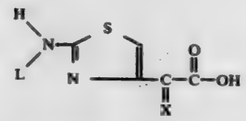
and —CH—CH$_2$—COOH;

comprising reacting the 7-amino group of a compound of formula (II):



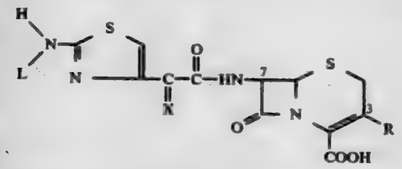
(II)

wherein R is defined as above, with the compound of formula (III):



(III)

wherein L is a phenylacetyl or phenoxyacetyl group and X is defined as above, to form an N-protected aminothiazolyl cephalosporanic compound of formula (IV):



(IV)

wherein R, L and X are defined as above;

hydrolysing said compound of formula (IV) with an enzyme selected from the group consisting of penicillin G amidase and penicillin V amidase in an aqueous solution at a temperature of from 0° C. to 50° C. at a pH from 5 to 9 to provide said compound of formula (I).

5,441,875

UREA TRANSPORTER POLYPEPTIDE

Matthias A. Hediger, Brookline, Mass., assignor to Brigham and Women's Hospital, Boston, Mass.

Filed Jul. 23, 1993, Ser. No. 98,141

Int. Cl.[6] C12P *21/06*

U.S. Cl. 435—69.1 **9 Claims**

1. An isolated nucleic acid comprising SEQ ID NO.: 1, wherein said isolated nucleic acid sequence, when expressed in a cell, is capable of facilitating urea transport across a membrane of said cell in a manner that is inhibitable by phloretin, inhibitable by a urea analogue, and substantially independent of sodium ion and chloride ion concentrations, said sequence encoding a polypeptide that is a urea transporter polypeptide of apparent molecular weight on SDS-PAGE of about 40 kDA in non-glycosylated form and at least 45 kDA in glycosylated form, said urea transporter polypeptide having at least two hydrophobic domains at least 75 amino acids in length, each hydrophobic domain lacking any interspersed hydrophilic domain.

5,441,876

PROCESS FOR THE PREPARATION OF HEADGROUP-MODIFIED PHOSPHOLIPIDS USING PHOSPHATIDYLHYDROXYALKANOLS AS INTERMEDIATES

Alok Singh, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1993, Ser. No. 99,639

Int. Cl.[6] C12P *9/00*

U.S. Cl. 435—131 **17 Claims**

1. A method for the preparation of phospholipids having modified headgroups, said method comprising the steps of:

a) preparing a first mixture of a diacetylenic phospholipid, a crude extract of phospholipase D from white leaves of cabbage, and an alcohol containing at least two primary hydroxyl groups per molecule;

b) reacting said first mixture, in the presence of calcium ions, so as to form, by a phospholipase D enzyme-mediated reaction, a reacted mixture including phosphatidylhydroxyalkanol, said calcium ions being present at a concentration effective to promote said phospholipase D enzyme-mediated formation of said phosphatidylhydroxyalkanol from said diacetylenic phospholipid;

c) extracting said phosphatidylhydroxyalkanol from said reacted mixture;

d) preparing a third mixture of said phosphatidylhydroxyalkanol and a halogenating reagent selected from the group consisting of sulfuryl halide and 1-halo-N,N,2-trialkylpropenylamine;

e) reacting said third mixture so as to form a diacetylenic phospholipid having a reactive halo headgroup; and

f) extracting said diacetylenic phospholipid having said reactive halo headgroup from said third mixture.

5,441,877

SUBSTRATE CONTAINING CYANOPHYCEA AND BRYOPHYTE PROTONEMAS FOR PRODUCING VEGETATION ON BARE TERRAIN

Michel Chiaffredo, Les Essarts, Pouilly le Monial, France 69400 , and Claude Figureau, rue Stanislas Baudry, Nantes, both of France 4400

Continuation of Ser. No. 761,496, Sep. 18, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,410

Claims priority, application France, Sep. 18, 1990, 90 11714

Int. Cl.[6] C12N *11/14, 5/00, 1/12, 11/02*

U.S. Cl. 435—176 **21 Claims**

1. A biologically enriched substrate comprising:

(i) 20–30% of a material rich in organic matter selected from the group consisting of black peat of Carex, blond sphagnum bog, Briere black, composts, straw, leaves, manure, barks of different trees, vine shoots, marc of grapes, seaweed, wood chips, sawdust, Paris mushroom grindings, river mud and marsh mud;

(ii) 40–60% of a synthetic polymer having water retaining properties; and

(iii) 10–20% of a clay material inoculated with a combination of

(A) colonies of Cyanophycea; and

(B) colonies of Bryophytes in the form of protonemas.

5,441,878

PREPARATION OF UNIFORM DROPLETS BY USING GAS PRESSURE TO FORCE LIQUID FROM A SYRINGE AND FLOWING GAS TO DETACH DROPLETS

Curt Thies, Ballwin, Mo., and Andrew Stanisz, Dundas, Canada, assignors to Thies Technology, Inc., Ballwin, Mo.

Filed Dec. 8, 1987, Ser. No. 130,353

Int. Cl.[6] C12N *11/10, 11/04;* C12M *1/40;* B29B *9/00*

U.S. Cl. 435—178 **7 Claims**

2. Apparatus for providing uniformly sized droplets of desired diameter from a liquid which comprises:

a tubular barrel for containing a liquid, to which is attached a narrow needle having an orifice corresponding to a 12–30 gauge needle at the tip;
fitting inside the barrel, a retractable plunger for extrusion of the liquid through the needle past the orifice;
a block member with a cavity, said barrel/needle/plunger being inserted into the cavity of the block member so that the needle extends through an opening at the bottom of the block;
said block member having a gas flow inlet into a side of the cavity for flowing gas past the needle orifice; and
a support in which said block member is mounted, said support providing a piston means above said plunger for exerting uniform pressure on the plunger when said plunger is in the vertical position by means of gas pressure applied to said piston means.

6. A method of forming uniformly sized droplets of desired diameter with a liquid from an apparatus having:
a tubular barrel for containing a liquid, to which is attached a narrow needle having an orifice corresponding to a 12–30 gauge needle at the tip;
fitting inside the barrel, a retractable plunger for extrusion of the liquid through the needle past the orifice;
a block member with a cavity, said barrel/needle/plunger being inserted into the cavity of the block member so that the needle extends through an opening at the bottom of the block;
said block member having a gas flow inlet into a side of the cavity for flowing gas past the needle orifice; and
a support in which said block member is mounted, said support providing a piston means above said plunger for exerting uniform pressure on the plunger when said plunger is in the vertical position by means of gas pressure applied to said piston means,
said method comprising,
providing a liquid in the tubular barrel,
extruding the liquid from the tubular barrel through said needle orifice by exerting steady constant pressure on the liquid contained in the barrel by means of steady constant gas pressure applied to said piston means,
and passing a measured flow of gas from said gas flow inlet means past said orifice to dislodge liquid exiting through said orifice to form said uniformly sized droplets.

5,441,880

HUMAN CDC25 GENES, ENCODED PRODUCTS AND USES THEREOF

David H. Beach, Huntington Bay, and Konstantin Galaktionov, Cold Spring Harbor, both of N.Y., assignors to Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.
Continuation of Ser. No. 793,601, Nov. 18, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,569
Int. Cl.[6] C12N *9/10, 15/00;* C12Q *1/68;* C07H *19/00*
U.S. Cl. 435—193 **22 Claims**

1. Purified CDC25A protein which is of human origin.

5,441,881

NSP7524V RESTRICTION-MODIFICATION GENES

Takashi Ueno, Otsu; Hiroyuki Ito, Sapporo; Hirokazu Kotani, Moriyama, and Kazuo Nakajima, Kyoto, all of Japan, assignors to Takara Shuzo Co., Ltd., Japan
Continuation of Ser. No. 14,468, Feb. 5, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 285,439
Claims priority, application Japan, Feb. 21, 1992, 4-069985
Int. Cl.[6] C12N *9/22, 15/55, 15/70*
U.S. Cl. 435—199 **8 Claims**

1. Isolated DNA coding for the Nsp7524V restriction enzyme, wherein the isolated DNA is obtainable from the vector pNsp7524V.

5,441,882

METHOD FOR PREPARING MODIFIED SUBTILISINS

David A. Estell, Mountain View; James A. Wells, San Mateo, and Richard E. Bott, Burlingame, all of Calif., assignors to Genencor, Inc., South San Francisco, Calif.
Continuation of Ser. No. 91,235, Aug. 31, 1987, abandoned, which is a division of Ser. No. 614,612, May 29, 1984, Pat. No. 4,760,025. This application May 9, 1990, Ser. No. 521,010
Int. Cl.[6] C12N *15/00, 15/57, 15/75*
U.S. Cl. 435—222 **7 Claims**



1. A method for making a mutant subtilisin, the method comprising the steps:
a) obtaining a DNA fragment comprising a region encoding a Bacillus subtilisin or subtilisin precursor;
b) introducing a mutation into said DNA which, upon expression of said DNA, results in the substitution of at least one amino acid, said mutation being introduced into the subtilisin at one or more amino acid positions in the subtilisin equivalent to tyr-1, asp+32, asn+155, tyr+104, met+222, gly+166, his+64, ser+221, ser+33, phe+189, tyr+217, ala+152, glu+156 or gly+169, in the corresponding amino acid sequence of the mature subtilisin naturally produced by *Bacillus amyloliquefaciens;*
c) transforming a suitable Bacillus host cell with said mutated DNA of step b);
d) recovering a mutant subtilisin expressed by the host cell transformed with said mutated DNA; and
e) screening said mutant subtilisin recovered in step d) for alterations of the enzyme characteristics of substrate specificity, oxidative stability, pH-activity profile, or the rate of formation of mature subtilisin from a subtilisin precursor.

5,441,879

METHOD FOR STABILIZING ANTIGENICITY OF MYELOPEROXIDASE BY INCUBATING WITH CYCLODEXTRIN

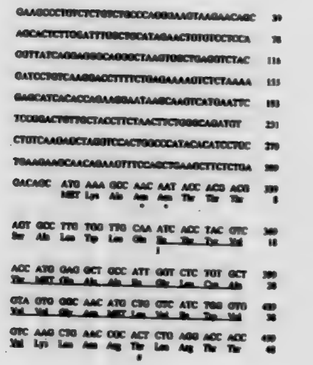
Nobuo Nishiki, Otsu, and Kazumi Horiuchi, Hikone, both of Japan, assignors to Nissho Corporation, Osaka, Japan
Filed Jan. 26, 1994, Ser. No. 186,646
Claims priority, application Japan, Jan. 29, 1993, 5-34271
Int. Cl.[6] C12N *9/96, 9/08;* C08B *37/16;* A61K *31/735*
U.S. Cl. 435—188 **5 Claims**

1. A method for stabilizing the antigenicity of a myeloperoxidase, by maintaining the ability of the myeloperoxidase to bind to an anti-myeloperoxidase antibody, consisting essentially of incubating the myeloperoxidase with a solution of an α-, β- or γ-cyclodextrin in an amount of the cyclodextrin effective to stabilize the myeloperoxidase.

5,441,883

A3 ADENOSINE RECEPTOR, DNA, AND USES

Olivier Civelli, and Qun-Yong Zhou, both of Portland, Oreg., assignors to State of Oregon, Acting by and Through the Oregon State Board of Higher Education on Behalf of the Oregon Health Sciences University, Portland, Oreg.
Continuation of Ser. No. 847,563, Mar. 3, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 101,435
Int. Cl.[6] C12N *15/12*
U.S. Cl. 435—257.13 **7 Claims**



1. A cloned nucleic acid having a nucleotide sequence encoding an adenosine receptor, the adenosine receptor having the amino acid sequence in FIG. 1 (SEQ ID NO:4).

5,441,884

BACILLUS THURINGIENSIS TRANSPOSON TN5401

James A. Baum, Doylestown, Pa., assignor to Ecogen Inc., Langhorne, Pa.
Filed Jul. 8, 1993, Ser. No. 89,986
Int. Cl.[6] A01N *63/00;* C12N *1/21, 15/61, 15/75*
U.S. Cl. 435—252.31 **35 Claims**

1. An isolated, purified DNA sequence designated as transposon Tn5401 and having the nucleotide base sequence shown in FIG. 1 (SEQ ID NO:1).

5,441,885

BACTERIAL STRAINS FOR BIOREMEDIATION

Ina Goldberg, Basking Ridge; Paul Allenza, Flemington, both of N.J., and Francis S. Lupton, Evanston, Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 49,281, Apr. 13, 1993, abandoned. This application Nov. 5, 1993, Ser. No. 148,122
Int. Cl.[6] C12N *1/21, 15/03, 15/23, 15/74*
U.S. Cl. 435—252.34 **16 Claims**

1. A plasmid for transformation of a host microorganism, said plasmid comprising a polydeoxyribonucleotide insert obtained from an *Alcaligenes faecalis* donor, wherein said polydeoxyribonucleotide insert codes for ammonia monooxygenase and hydroxylamine oxidoreductase as found in the microorganism with the accession number NRRLB-18893.

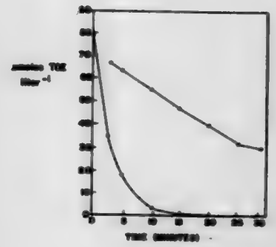
5,441,886

Patent Not Issued For This Number

5,441,887

RAPID DEGRADATION OF HALOGENATED HYDROCARBONS BY SOLUBLE METHANE MONOOXYGENASE

Richard S. Hanson; John D. Lipscomb, both of Wayzata, Minn., and Brian G. Fox, Madison, Wis., assignors to Regents of the University of Minnesota, Minneapolis and BioTrol, Inc., Eden Prairie, both of Minn.
Continuation of Ser. No. 886,608, May 20, 1992, abandoned, which is a division of Ser. No. 814,202, Dec. 20, 1991, Pat. No. 5,196,339, which is a continuation of Ser. No. 384,859, Jul. 21, 1989, abandoned, which is a continuation of Ser. No. 272,538, Nov. 17, 1988, abandoned. This application Apr. 29, 1994, Ser. No. 235,193
Int. Cl.[6] C12S *13/00;* B09B *3/00;* C12N *1/30;* C02F *3/00*
U.S. Cl. 435—262.5 **7 Claims**



1. A method of degrading a halogenated aliphatic hydrocarbon compound, said method comprising:
(a) culturing a methane-oxidizing bacterium under continuous culture conditions comprising exposing said bacterium to a continuous-flow gas mixture comprising air and methane in a ratio of about 25:1–1:20, respectively, the continuously cultured methane-oxidizing bacterium producing a soluble methane monooxygenase in an amount from about 5–30% of the weight of dry bacterium cells;
(b) separating said soluble methane monooxygenase from the continuously cultured methane-oxidizing bacterium;
(c) purifying the separated soluble methane monooxygenase to yield purified components comprising reductase, component B, and hydroxylase;
(d) adding each of said purified components to an aqueous mixture of said halogenated aliphatic hydrocarbon compound to form a second mixture; the amount of each of said purified components, when combined with the other two components in said second mixture, being effective to completely degrade said halogenated aliphatic hydrocarbon compound; and
(e) reacting said second mixture under conditions and for a

period of time sufficient for said purified components to completely degrade said halogenated aliphatic hydrocarbon compound.

5,441,888

PROCESS FOR PRODUCING D-MANDELIC ACID FROM BENZOYLFORMIC ACID

Takao Mori; Masakatsu Furui, both of Takatsuki; Katsuhiko Nakamichi, Sakai, and Eiji Takahashi, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Oct. 29, 1993, Ser. No. 142,914
Claims priority, application Japan, Nov. 5, 1992, 4-295536
Int. Cl.[6] C12P *39/00, 41/00, 7/42, 7/58*
U.S. Cl. 435—280 **12 Claims**

1. A process for preparing D-mandelic acid which comprises the steps of:

(1) treating racemic mandelic acid with a culture broth or cells of a first microorganism having the ability of converting L-mandelic acid into benzoylformic acid, said first microorganism being selected from the group consisting of *Gibberella fujikuroi, Pseudomonas aeruginosa, Pseudomonas fluorescens, Pseudomonas polycolor, Pseudomonas putida, Brevibacterium ammoniagenes, Rhodotorula glutinis, Rhodotorula rubra,* and *Rhodosporidium toruloides;*

(2) treating the reaction mixture of the step (1) with a culture broth or cells of a second microorganism having the ability of stereoselectively reducing benzoylformic acid into D-mandelic acid, said second microorganism being selected from the group consisting of *Micrococcus freudenreichii, Micrococcus luteus, Enterococcus faecalis,* and *Streptomyces lavendulae;* and

(3) isolating and collecting the D-mandelic acid from the reaction mixture.

5,441,889

MHC EUKARYOTIC PROMOTER

Jerome S. Harms, Madison, and Gary A. Splitter, Brooklyn, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 11, 1994, Ser. No. 180,187
Int. Cl.[6] C12N *15/85, 15/11*
U.S. Cl. 435—320.1 **2 Claims**

2. A recombinant vector comprising:

a nucleotide sequence (SEQ ID NO: 1, positions 1–27) or a portion thereof which retains promoter function encoding a promoter for a bovine MHC class I gene;

a vector backbone; and

a cloning site positioned so as to be suitable to receive a foreign gene so that the foreign gene can be expressed under the regulation of the bovine promoter.

5,441,890

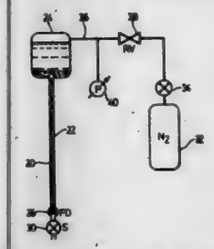
DYNAMICAL DESTABILIZATION OF SYSTEMS CHARACTERIZED BY KINETICALLY COUPLED COMPONENTS USING A DIFFERENTIAL FLOW

Michael Menzinger, 46 Brunswick Avenue, Toronto, Ontario, Canada M5S 2L7 , and Arkady Rovinsky, Toronto, Canada, assignors to Michael Menzinger and Arkady B. Rovinsky, both of Toronto, Canada

Continuation-in-part of Ser. No. 932,560, Aug. 20, 1992, Pat. No. 5,332,677. This application May 28, 1993, Ser. No. 68,706
The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.
Int. Cl.[6] G01N *33/00, 37/00*
U.S. Cl. 436—35 **43 Claims**

1. A method of destabilizing a spatially extended dynamic system having two variables which are dynamically coupled, the method comprising:

providing a spatially extended dynamic system having two variables which are dynamically coupled with one of said two variables being an activator variable and the other being an inhibitor variable, said dynamic system being an exothermic reaction system in which said activator variable comprises heat flow generated by the exothermic reaction system and the inhibitor variable comprises mass flow of reactants and reaction products, and whereby the differential flow causing the destabilization is induced by selective retardation of the heat flow relative to a mass flow through the spatially extended system; and



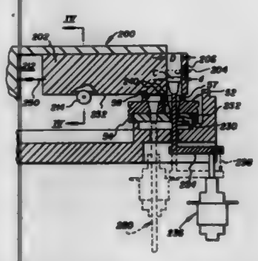
producing a differential flow in the spatially extended dynamic system between said activator variable and said inhibitor variable, and whereby the differential flow causing the destabilization is induced by selective retardation of the heat flow relative to a mass flow through the spatially extended system, the differential flow being greater than a threshold flow.

5,441,891

TRANSFER MECHANISM WITHIN AN INCUBATOR

Robert A. Burkovich, and James D. Riall, both of Eastman Kodak Company, Rochester, N.Y. 14650

Filed May 26, 1994, Ser. No. 249,501
Int. Cl.[6] G01N *35/00, 37/00*
U.S. Cl. 436—48 **16 Claims**



15. A method for incubating a reaction vessel containing incubating liquid, said vessel being held sequentially in each of two rotors having plural stations, the method comprising the steps of

a) incubating liquid in a vessel in both of said rotors,

raising a reaction vessel from a station in one of said rotors to a position above said one rotor within an aperture of a shuttle, said aperture being sufficiently large as to receive, but not retain by friction, one of said vessels,

c) moving said shuttle linearly while retaining the reaction vessel within said aperture from said one rotor to the other of said rotors

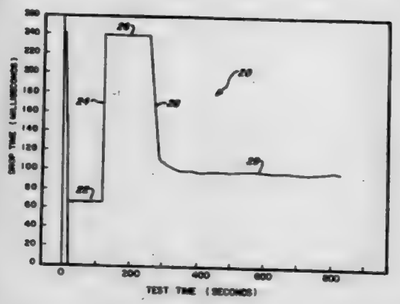
d) and aligning said shuttle aperture with an unoccupied station of said other rotor, so that said vessel within said shuttle aperture falls into said unoccupied station.

5,441,892

BLOOD CLOT MASS MEASURING TECHNIQUE

Robert F. Baugh, Parker, Colo., assignor to Medtronic HempTec, Inc., Englewood, Colo.

Filed Oct. 15, 1992, Ser. No. 962,486
Int. Cl.[6] G01N *33/86*
U.S. Cl. 436—69 **18 Claims**



1. A method of evaluating one of a mass attribute of a clot formed from a sample of blood or the fibrinogen content of the clot formed from the sample of blood, comprising the steps of:

forming a clot in the sample of blood;

allowing the clot to condense immediately following the formation of the clot;

moving the clot in the sample during the steps of forming the clot and allowing the clot to condense;

applying fluid dynamic pressure on the clot during the moving step;

measuring a predetermined characteristic of the clot related to the volume of the clot when the clot is formed;

measuring a predetermined characteristic of the clot related to the volume of the clot when the clot is condensed;

comparing the measured predetermined characteristic at clot condensation relative to the measured predetermined characteristic at clot formation; and

evaluating one of the mass attribute of the clot or the fibrinogen content from the comparison.

5,441,893

METHOD FOR MONITORING THE BORON CONTENT OF BOROPHOSPHOSILICATE

Alain Y. P. Charpentier, Nantes, France, assignor to Matra MHS, Nantes, France

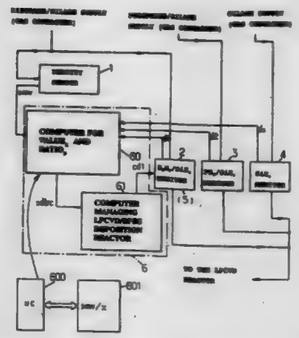
Filed Apr. 4, 1994, Ser. No. 221,965
Claims priority, application France, Apr. 6, 1993, 93 04069
Int. Cl.[6] G01N *35/06*
U.S. Cl. 436—144 **2 Claims**

1. A method for monitoring the boron content of the borophosphosilicate obtained by oxidation of silane, of diborane and of phosphine in a reactor, starting with a first, diborane/silane gas mixture and a second, phosphine/silane gas mixture by monitoring the ratio ρ=diborane/(diborane+silane) of the mixture resulting from the mixing of the first and second gas mixtures, wherein said method comprises:

measuring the density of said first mixture,

determining the amount of residual hydrogen H_2 in said first mixture from the measured density,

calculating the ratio ρ=diborane/(diborane+silane) using the determined amount of residual H_2,



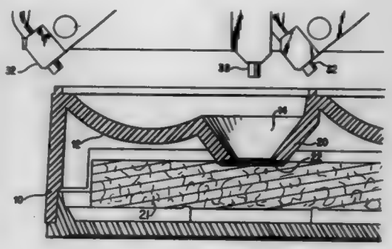
modulating the mass flow rate of said first mixture, in response to the calculated ratio ρ, to regulate the boron content of the borophosphosilicate.

5,441,894

DEVICE CONTAINING A LIGHT ABSORBING ELEMENT FOR AUTOMATED CHEMILUMINESCENT IMMUNOASSAYS

Carole L. Coleman, Lindenhurst; Kevin R. Genger, Chicago; Hugh W. Graham, Waukegan; Charles F. Hanna; Omar S. Khalil, both of Libertyville, and David C. Wender, Mundelein, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 30, 1993, Ser. No. 56,219
Int. Cl.[6] G01N *33/543*
U.S. Cl. 436—518 **11 Claims**



1. An assay performing diagnostic device comprising:

(a) a housing;

(b) a well on the housing;

(c) an opening in the well;

(d) an absorbent pad supported by the housing and located underneath the opening;

(e) a fibrous matrix supported by the housing and disposed between the opening in the well and the absorbent pad; and

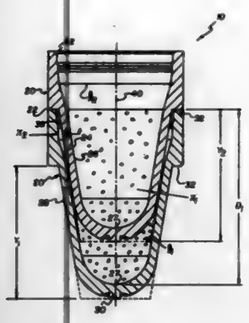
(f) a non-white pigmented light absorbing material located between the fibrous matrix and absorbent pad, wherein said light absorbing material absorbs light radiated from the absorbent pad.

5,441,895

REAGENT CUP SHAPE ALLOWING STACKING WITHOUT DISLODGING REAGENT

Raymond F. Jakubowicz, and Johannes J. Porte, both of Eastman Kodak Company, Rochester, N.Y. 14650

Filed Dec. 7, 1993, Ser. No. 163,104
Int. Cl.[6] G01N *33/543, 33/545, 33/552*
U.S. Cl. 436—518 4 Claims



1. A stacked plurality of reaction vessels, each of said vessels having a cup shape with an open top and an inside surface forming a closed bottom, and each comprising

a) an outside surface shaped sufficiently to nest the vessel partially within an adjacent vessel so that said each vessel occupies more than 50% of the depth of said adjacent vessel, as measured from said open top of said adjacent vessel, and

b) a reagent pre-incorporated onto said inside surface of said each vessel at a portion of said inside surface disposed adjacent said bottom of said each vessel,

a portion of each vessel that is nested within the adjacent vessel being spaced from the inside surface of said adjacent vessel by a distance that is at least 0.025 mm.

5,441,896

SOLID PHASE ASSAY FOR USE WITH A PHYSICAL DEVELOPER

Marcus J. M. Noppe, Pater Antonissenstraat 14, B-2180-Kalmthout, Belgium, and Theo C. Garrevoet, Kampioenstraat 14, B-2020-Antwerpen, Belgium

Continuation of Ser. No. 809,030, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 532,702, Jun. 4, 1990, abandoned. This application Jun. 8, 1993, Ser. No. 73,961
Claims priority, application European Pat. Off., Jun. 5, 1989, 89201429
Int. Cl.[6] G01N *33/553, 33/537, 21/77*
U.S. Cl. 436—525 7 Claims

1. A method of detecting the presence of analyte in a fluid sample using a tracer having a colloidal metal label and in which the signal of the tracer is enhanced by applying a physical developer comprising:

a) directing the fluid sample and the tracer through a porous medium into contact with a test area containing a binder specific for the analyte to be detected, at a controlled flow rate to allow reaction of the analyte with the binder and the tracer to the analyte;

b) directing a physical developer through said porous medium and through said test area to amplify the signal generated by the tracer;

c) washing the porous medium; and

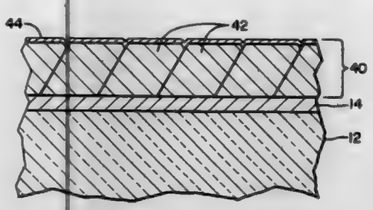
d) observing the signal generated by the tracer in the test area.

5,441,897

METHOD OF FABRICATING HIGH-EFFICIENCY CU(IN,GA)(SES)$_2$ THIN FILMS FOR SOLAR CELLS

Rommel Noufi, Golden; Andrew M. Gabor, Boulder; John R. Tuttle; Andrew L. Tennant, both of Denver; Miguel A. Contreras, Golden; David S. Albin, Denver, and Jeffrey J. Carapella, Evergreen, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 45,860, Apr. 12, 1993, Pat. No. 5,356,839. This application Feb. 16, 1994, Ser. No. 197,204
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—5 27 Claims



1. A process for fabricating thin film semiconductor devices, comprising the steps of:

depositing a layer of $(In,Ga)_x(Se,S)_y$ on a substrate, and

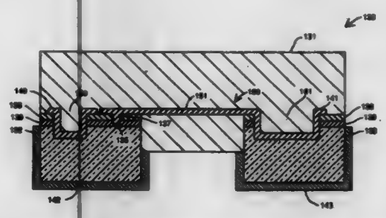
depositing a sufficient amount of Cu+(Se,S) or $Cu_x(Se,S)$ onto the layer of $(In,Ga)_x(Se,S)_y$ to produce a slightly Cu-poor thin film of $Cu(In,Ga)(Se,S)_2$ on the substrate wherein said slightly Cu-poor thin film comprises a ratio of Cu to (In,Ga) in the range of about $0.8<Cu/(In,Ga)<0.99$.

5,441,898

FABRICATING A SEMICONDUCTOR WITH AN INSULATIVE COATING

John G. Richards; Hector Flores, both of San Jose, and Wendell B. Sander, Los Gatos, all of Calif., assignors to Micro Technology Partners, San Jose, Calif.

Division of Ser. No. 889,832, May 27, 1992, Pat. No. 5,403,729. This application Dec. 29, 1994, Ser. No. 363,732
Int. Cl.[6] H01L *29/00*
U.S. Cl. 437—15 9 Claims



1. A method of fabricating an electrical apparatus, comprising the steps of:

forming a first layer of a first type of semiconductor material on a substrate of a wafer of a second type of semiconductor material;

forming a first opening in the first layer, wherein the first opening does not run through the first layer;

forming a diode in the first opening, wherein the diode has a top;

forming a first well through the first layer and in the substrate, wherein the first well has a bottom;

covering the diode, the first well, and the layer of the first type of semiconductor material with a first insulating layer;

forming a second opening through the first insulating layer to the top of the diode;

removing the first insulating layer above the first well to expose the bottom of the first well;

forming a metallic interconnecting structure that electrically couples the bottom of the first well to the top of the diode over a portion of the first insulating layer between the diode and the first well;

removing the first insulating layer between the diode and the first well to expose a portion of the first layer;

forming a second well in the substrate through the exposed portion of the first layer between the diode and the first well, wherein the second well resides below the metallic interconnecting structure, wherein the second well is deeper than the first well;

covering the metallic interconnecting structure, the first insulating layer, and the first and second wells with a second insulating layer, wherein both the first and second wells are filled with the second insulating layer, wherein the metallic interconnecting structure is sandwiched by the second insulating layer;

removing the second type of semiconductor material residing below a bottom of the second well in order to form a first discrete region of the first type and the second type of semiconductor materials that includes the first well and a second discrete region of the first type and the second type semiconductor materials that includes the diode; and

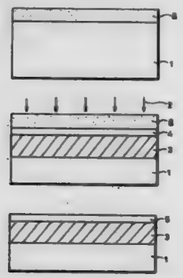
applying a metal layer to a bottom of the first discrete region and a bottom of the second discrete region.

5,441,899

METHOD OF MANUFACTURING SUBSTRATE HAVING SEMICONDUCTOR ON INSULATOR

Tetsuya Nakai, Saitama; Yasuo Yamaguchi, and Tadashi Nishimura, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Materials Corporation, both of Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,257
Claims priority, application Japan, Feb. 18, 1992, 4-030606; Dec. 11, 1992, 4-331426
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—24 14 Claims



1. A method of manufacturing a substrate having a semiconductor on an insulator, comprising the steps of:

forming a covering layer on a main surface of a semiconductor substrate;

forming an insulating layer in said semiconductor substrate at a position in a prescribed depth from said main surface by implanting ions into said semiconductor substrate through said covering layer; and

performing a heat treatment to a region of said semiconductor substrate between said covering layer and said insulating layer; wherein

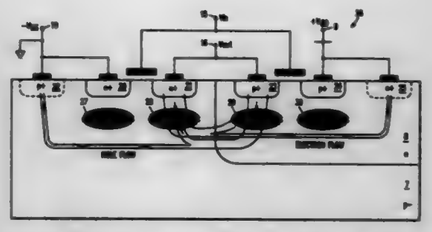
said covering layer includes polycrystalline silicon.

5,441,900

CMOS LATCHUP SUPPRESSION BY LOCALIZED MINORITY CARRIER LIFETIME REDUCTION

Constantin Bulucea, Milpitas; Esin Dermirlioglu, Cupertino, and Sheldon Aronowitz, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 28,456, Mar. 9, 1993, Pat. No. 5,384,477. This application Sep. 19, 1994, Ser. No. 308,698
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—24 6 Claims



1. A method of manufacturing a CMOS integrated circuit with latchup suppression, said method comprising the steps of:

defining a subsurface region of a silicon substrate, wherein the subsurface region is located beneath and is generally parallel to an upper surface of the silicon substrate;

implanting minority carrier lifetime reducing impurities into the subsurface region of the silicon substrate, wherein the impurities are selected from the group consisting of calcium and strontium; and

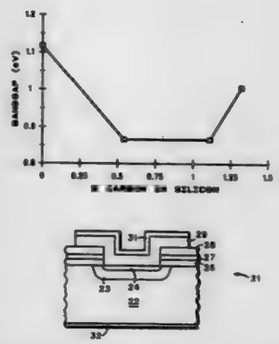
forming a plurality of transistors within the silicon substrate, wherein each transistor includes a source region and a drain region.

5,441,901

METHOD FOR FORMING A CARBON DOPED SILICON SEMICONDUCTOR DEVICE HAVING A NARROWED BANDGAP CHARACTERISTIC

Jon J. Candelaria, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 131,541, Oct. 5, 1993, Pat. No. 5,360,986. This application Jun. 10, 1994, Ser. No. 257,972
Int. Cl.[6] H01L *21/331*
U.S. Cl. 437—31 21 Claims



1. A method for making a heterojunction device comprising the steps of:

providing a first layer made substantially of silicon of a first conductivity type;

forming a second layer on the first layer, the second layer made substantially of silicon and a dopant substitutionally present in the second layer to provide a narrowed band-gap, wherein the second layer is of a second conductivity type, and wherein the dopant consists essentially of carbon present at a concentration less than 1.5%; and

forming a third layer made substantially of silicon of the first conductivity type on the second layer, wherein the first layer forms a collector region, the second layer forms a base region, and the third layer forms an emitter region.

5,441,902

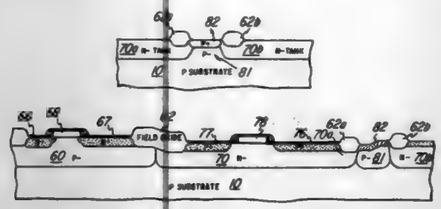
METHOD FOR MAKING CHANNEL STOP STRUCTURE FOR CMOS DEVICES

Shiow-Ming Hsieh, Plano; Ching-Yuh Tsay, Richardson, and William R. McKee, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 737,733, Jul. 31, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 116,103

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—34 7 Claims



1. A method of making a channel stop to prevent phosphorous surface pile up in a semiconductor substrate having a boron doped P− type region located between phosphorous doped, adjacent N− type tank regions, comprising the steps of:

forming oxide isolators in the surface of the semiconductor substrate surrounding the N− type tank regions, said oxide isolators do not completely cover the p− type region located between the phosphorous doped, adjacent N− tank regions, thereby leaving a p− type channel region between said oxide isolators; and

forming a P+ region in the surface of the semiconductor substrate in the P− type channel region extending between the oxide isolators.

5,441,903

BICMOS PROCESS FOR SUPPORTING MERGED DEVICES

Robert H. Eklund, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1993, Ser. No. 161,960

The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.[6] H01L *21/8248*

U.S. Cl. 437—34 19 Claims

1. A method for forming a semiconductor device comprising the steps of:

a. forming a first insulator layer over a surface of a semiconductor body having a first well region;

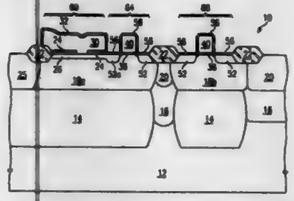
b. implanting a base region in a first portion of said first well region;

c. etching said first insulator layer to expose a portion of said base region;

d. forming a first doped conductive layer over the surface of said semiconductor body;

e. depositing a tungsten-silicide layer over said first conductive layer; and

f. etching said tungsten-silicide layer and said first conductive layer to form an emitter electrode over said portion of said base region and a first portion of said first insulator layer and to expose a second portion of said first insulator layer; and



g. forming a plurality of PMOS transistors, wherein at least one of said PMOS transistors has a first source/drain region formed in said first well region and in contact with said base region.

5,441,904

METHOD FOR FORMING A TWO-LAYERED POLYSILICON GATE ELECTRODE IN A SEMICONDUCTOR DEVICE USING GRAIN BOUNDARIES

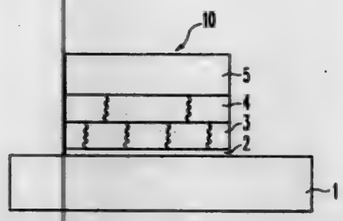
Jong C. Kim, Seoul, and Sang H. Woo, Kyungki-Do, both of Rep. of Korea, assignors to Hyundai Electronics Industries, Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 15, 1994, Ser. No. 341,892

Claims priority, application Rep. of Korea, Nov. 16, 1993, 93-24301

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 11 Claims



1. A method for forming a gate electrode of a semiconductor device comprised of:

sequentially forming a gate oxide film and a first polysilicon layer, respectively, over a silicon substrate;

annealing said first polysilicon layer to enlarge the size of the grains thereof;

forming a second polysilicon layer over said annealed first polysilicon layer;

annealing said second polysilicon layer to enlarge the size of the grains thereof;

forming a tungsten silicide layer over said annealed second polysilicon layer; and

etching said tungsten silicide layer, said second polysilicon layer and said first polysilicon layer by means of a mask process and an etching process, thereby forming a gate electrode.

5,441,905

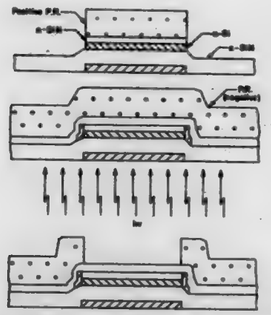
PROCESS OF MAKING SELF-ALIGNED AMORPHOUS-SILICON THIN FILM TRANSISTORS

Bling-Seng Wu, Hsin Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 29, 1993, Ser. No. 52,519

Int. Cl.[6] H01L *21/331, 21/84*

U.S. Cl. 437—41 21 Claims



1. A method of fabricating a thin film transistor having a gate, a channel, a source and a drain, comprising the steps of:

depositing and patterning a gate electrode on a transparent substrate,

depositing successively a gate dielectric layer and an amorphous semiconductor layer on said gate electrode,

depositing a positive photoresist layer on said amorphous semiconductor layer,

patterning said amorphous semiconductor layer with the gate as mask for self-alignment,

depositing a first conducting layer over said substrate,

depositing a negative photoresist over said first conducting layer,

exposing and developing said negative photoresist with light incident from the back of said substrate using said gate electrode as a mask,

removing said first conducting layer in a portion to create source and drain electrodes such that said source and drain electrodes are self-aligned with said gate electrode without overlap between said gate electrode and said source electrode, and between said gate electrode and said drain electrode,

depositing and patterning a second conducting layer over said first conducting layer.

5,441,906

INSULATED GATE FIELD EFFECT TRANSISTOR HAVING A PARTIAL CHANNEL AND METHOD FOR FABRICATING

Vida I. Burger, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1994, Ser. No. 223,398

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 11 Claims

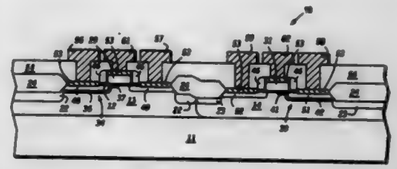
1. A method for fabricating an insulated gate field effect transistor having a partial channel, comprising the steps of:

providing a semiconductor substrate of a first conductivity type having a major surface;

forming a gate structure on a portion of the major surface;

forming, after the step of forming a gate structure on a portion of the major surface, a first dopant region of the first conductivity type in the semiconductor substrate, the first dopant region having first and second portions, the first portion of the first dopant region extending into a portion of the semiconductor substrate on a first side of the gate structure and the second portion of the first dopant region extending into a portion of the semiconductor substrate covered by the gate structure, wherein the first portion is contiguous with the second portion and extends further into the semiconductor substrate than the second portion and the second portion serves as the partial channel;

forming second and third dopant regions of a second conductivity type in the semiconductor substrate, the second dopant region extending into the first portion of the first dopant region and the third dopant region extending into



a portion of the semiconductor substrate on a second side of the gate structure, wherein the third dopant region is spaced apart from the second portion of the first dopant region;

forming a first electrode in contact with the second dopant region;

forming a second electrode in contact with the third dopant region; and

forming a third electrode in contact with the gate structure.

5,441,907

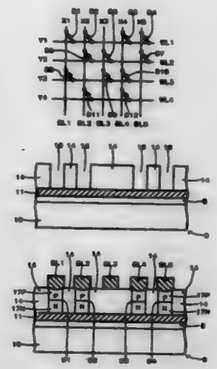
PROCESS FOR MANUFACTURING A PLUG-DIODE MASK ROM

Hung-Cheng Sung, Kaohsiung, Taiwan, and Ling Chen, Sunnyvale, Calif., assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Jun. 27, 1994, Ser. No. 266,505

Int. Cl.[6] H01L *21/329*

U.S. Cl. 437—48 10 Claims



1. A method of manufacture of a Mask ROM on a semiconductor substrate comprising,

formation of a first plurality of conductor lines in a first array,

formation of a dielectric layer upon said substrate with a matrix of openings therein in line with said first array, said openings exposing the surface of said first conductor lines,

formation of semiconductor diodes in said matrix of openings in contact with said first conductor lines,

formation of a second plurality of conductor lines on the surface of said dielectric layer in a second array of con-

ductor lines orthogonal to said first plurality of conductor lines in said first array,

said second plurality of conductor lines being aligned with said matrix, and

said second plurality of conductor lines being in contact with the upper ends of said semiconductor diodes.

5,441,908

CAPACITOR OF A SEMICONDUCTOR DEVICE HAVING INCREASED EFFECTIVE AREA

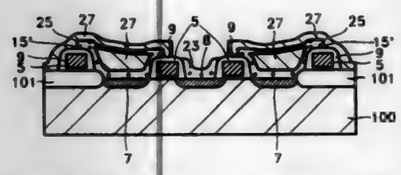
Tae-woo Lee; Yang-goo Lee, both of Seoul; Byung-hak Lim, Anyang, and Dong-gun Park, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 992,659

Claims priority, application Rep. of Korea, Dec. 18, 1991, 91-23394

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—52 **3 Claims**



1. A method for manufacturing a semiconductor memory device including a plurality of memory cells, each said cell having a single transistor and a single capacitor on a semiconductor substrate, comprising the steps of:

(a) forming a field oxide layer for defining an active region and an isolation region on said semiconductor substrate;

(b) forming said transistor on said semiconductor substrate of said active region;

(c) forming a first insulating layer for insulating said transistor;

(d) etching said first insulating layer, thereby forming first and second contact holes for exposing source and drain regions of said transistor;

(e) simultaneously forming a capacitor storage electrode having a tunnel which defines an interior surface therein which is open to an exterior of the storage electrode, and forming a bit line connected to said drain region via said second contact hole, said storage electrode being partially connected to said source region via said first contact hole;

(f) forming a first dielectric layer portion and a second dielectric layer portion over said exterior and interior surfaces of said storage electrode, respectively; and

(g) forming a plate electrode over said first and second dielectric layer portions.

5,441,909

METHOD FOR CONSTRUCTING CHARGE STORAGE ELECTRODE OF SEMICONDUCTOR MEMORY DEVICE

Jae K. Kim, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Dec. 29, 1993, Ser. No. 175,250

Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26890

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 437—52 **20 Claims**

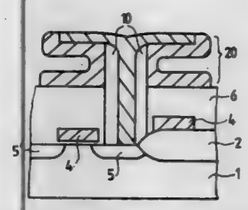
1. A method for constructing a charge storage electrode of a semiconductor memory device wherein a gate electrode atop a gate oxide film is formed over a semiconductor substrate sectioned by a device separation insulating film, the semiconductor substrate having therein a source electrode and a drain electrode that are to be connected with a charge storage electrode and a bit line, respectively, comprising the steps of:

forming an interlayer insulating film covered with a sacrificial film entirely over the gate electrode and the semiconductor substrate;

selectively etching the sacrificial film and the interlayer insulating film using a contact mask for the charge storage electrode so as to form on a portion of the source electrode a contact hole for the charge storage electrode exposing the source electrode therethrough;

forming a spacer insulating film at side walls of the contact hole for the charge storage electrode, so as to reduce the size of the contact hole;

forming a first conductive material for the charge storage electrode on the sacrificial film and in the contact hole, the first conductive material for the charge storage electrode



being connected with the source electrode through the contact hole for the charge storage electrode;

etching the first conductive material for the charge storage electrode to pattern the first conductive material for the charge storage electrode with the aid of a mask for the charge storage electrode;

etching the sacrificial film completely;

coating a second conductive material for the charge storage electrode on an entire surface of a structure resulting from the preceding steps; and

subjecting the second conductive material for the charge storage electrode to etching, so as to form a charge storage electrode having a dual structure the second conductive material for the charge storage electrode coming into contact with the first conductive material for the charge storage electrode.

5,441,910

METHOD FOR MANUFACTURING CCD TYPE SOLID IMAGE PICKUP DEVICE USING SELF-ALIGNMENT PROCESS

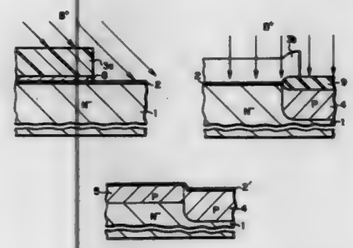
Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 101,315

Claims priority, application Japan, Aug. 3, 1992, 4-206365

Int. Cl.[6] H01L *21/265, 21/70, 27/00*

U.S. Cl. 437—53 **24 Claims**



1. A method for manufacturing a CCD type solid state image

pickup device having at least one vertical transfer portion and a horizontal transfer portion connected to said at least one vertical transfer portion, comprising the steps of:

forming a first mask pattern layer on a semiconductor substrate of a first conductivity type, said first mask pattern layer being formed on said at least one vertical transfer portion;

introducing impurities of a second conductivity type opposite to said first conductivity type into said semiconductor substrate with said first mask pattern layer, to generate a first impurity doped region for said horizontal transfer portion;

forming a second mask pattern layer on said horizontal transfer portion in self-alignment with said first mask pattern layer;

removing said first mask pattern layer; and introducing impurities of said second conductivity type into said semiconductor substrate with said second mask pattern layer, to generate a second impurity doped region for said at least one vertical transfer portion.

5,441,911

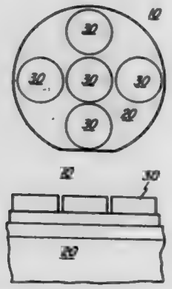
SILICON CARBIDE WAFER BONDED TO A SILICON WAFER

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 20,820, Feb. 22, 1993, Pat. No. 5,349,207. This application Jun. 21, 1994, Ser. No. 263,099

Int. Cl.[6] H01L *21/18*

U.S. Cl. 437—100 **9 Claims**



1. A method for forming a silicon carbide structure comprising the steps of:

a. providing a silicon wafer having a diameter;

b. providing at least one silicon carbide wafer having a maximum width and a maximum length wherein said maximum width and said maximum length are smaller than said diameter;

c. polishing said silicon wafer and said at least one silicon carbide wafer;

d. depositing a first layer of silicon germanium having a melting point on a surface of said silicon wafer;

e. depositing a second layer of silicon germanium having said melting point on a surface of said silicon carbide wafer;

f. contacting said first layer of silicon germanium to said second layer of silicon germanium; and

g. heating said silicon wafer, silicon carbide wafer and first and second silicon germanium layers to a temperature greater than said melting point to bond said at least one silicon carbide wafer to said silicon wafer.

5,441,912

METHOD OF MANUFACTURING A LASER DIODE

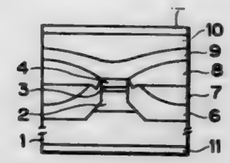
Naoki Tsukiji, Tokyo, and Hiroyuki Aida, Sapporo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,640

Claims priority, application Japan, Jul. 28, 1993, 5-205725

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—129 **2 Claims**



1. A method of manufacturing a laser diode comprising steps of forming a mesa on a p-type compound semiconductor substrate by sequentially forming on the p-type compound semiconductor substrate at least a p-type compound semiconductor cladding layer, an active layer and an n-type compound semiconductor compound layer, burying on the lateral sides of said mesa a p-type compound semiconductor buried layer and an n-type compound semiconductor current blocking layer, partly removing said n-type compound semiconductor current blocking layer at areas contacting each of the lateral sides of said mesa to partly expose the p-type compound semiconductor buried layer in the vicinity of said mesa, and then burying in the remaining space in the areas contacting each of the lateral sides of said mesa a p-type compound semiconductor current blocking layer.

5,441,913

PROCESS OF MAKING A SEMICONDUCTOR EPITAXIAL SUBSTRATE

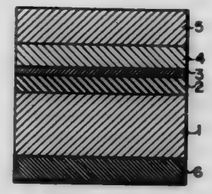
Masahiko Hata; Noboru Fukuhara; Hiroaki Takata, and Katsumi Inui, all of Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 28, 1994, Ser. No. 266,680

Claims priority, application Japan, Jun. 28, 1993, 5-156850

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—133 **7 Claims**



1. A process for producing a semiconductor epitaxial substrate comprising a GaAs single-crystal substrate having thereon an $In_yGa_{(1-y)}As$ ($0<y\leqq 1$) crystal layer as a channel layer, the composition and the thickness of said $In_yGa_{(1-y)}As$ layer being in the ranges within the elastic deformation limit of crystals constituting said $In_yGa_{(1-y)}As$ layer and the vicinity of said $In_yGa_{(1-y)}As$ layer, said semiconductor epitaxial substrate further comprising a semiconductor layer between said channel layer and an electron donating layer for supplying electrons to said channel layer, said semiconductor layer having a thickness of from 0.5 to 5 nm and a bandgap width within the range of from the bandgap width of GaAs to the bandgap width of said electron donating layer,

said process comprising the steps of: epitaxially growing said

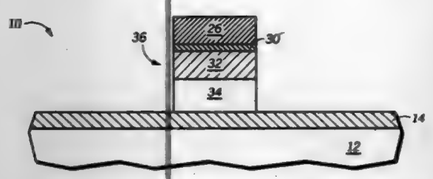
channel layer and said semiconductor layer at a temperature of not higher than 625° C. and epitaxially growing said electron donating layer at a temperature of at least 650° C.

5,441,914

METHOD OF FORMING CONDUCTIVE INTERCONNECT STRUCTURE

Robert C. Taft; Craig D. Gunderson, and Arkalgud R. Sitaram, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 2, 1994, Ser. No. 236,076
Int. Cl.[6] H01L *21/283, 21/314*
U.S. Cl. 437—189 **22 Claims**



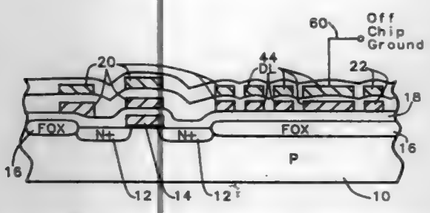
1. A method for forming a conductive interconnect in an integrated circuit comprising the steps of:
providing a semiconductor substrate;
forming a dielectric layer overlying the semiconductor substrate;
forming a conductive metal layer overlying the dielectric layer;
forming a silicon adhesion layer overlying the conductive metal layer;
forming an inorganic anti-reflective layer overlying the silicon adhesion layer;
etching the inorganic anti-reflective layer to form a remaining portion of the inorganic anti-reflective layer; and
etching the conductive metal layer to form the conductive interconnect, wherein the remaining portion of the inorganic anti-reflective layer overlies the conductive interconnect.

5,441,915

PROCESS OF FABRICATION PLANARIZED METALLURGY STRUCTURE FOR A SEMICONDUCTOR DEVICE

Tin-Yuan Lee, Hsin-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsinchu, Taiwan

Continuation of Ser. No. 937,746, Sep. 1, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 214,852
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—195 **16 Claims**



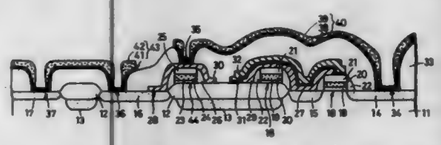
9. A method of producing an integrated circuit semiconductor device provided with a multi-layer interconnection metallurgy system, having a planar global top surface comprising:
forming a level of interconnection metallurgy on a semiconductor substrate having a plurality of close uniformly spaced conductive lines capable of carrying electric signals of a width, and wherein said level of metallurgy will also include conductive lines that are non-uniformly spaced, resulting in large [spaced]areas between said conductive lines;
filling in said areas between the non-uniformly spaced conductive lines with multiple and uniformly wide dummy lines having a width of less than about one micrometer, where the spacing of the conductive lines is equal to or greater than three times the given width of the conductive lines, said dummy line including lines adjacent conductive lines carrying signals,.and other remaining lines;
connecting said dummy lines adjacent to said conductive lines carrying signals to ground potential and leaving the remaining dummy lines floating;
depositing a non-conformal dielectric layer over the metallurgy level having a planar surface; and
repeating the foregoing sequence of method steps to form a second level of dummy lines directly above said multiple and uniformly wide dummy lines and connecting said second level dummy lines adjacent to second level conducting line carrying signals to ground potential and leaving the remaining dummy lines floating to complete said metallurgy system.

5,441,916

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE COMPRISING INTERCONNECTION

Kaoru Motonami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 875,185, Apr. 28, 1992, Pat. No. 5,323,049. This application Apr. 28, 1994, Ser. No. 234,806
Claims priority, application Japan, May 10, 1991, 3-105719
Int. Cl.[6] H01L *21/283, 21/312*
U.S. Cl. 437—195 **6 Claims**



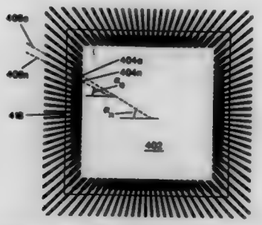
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming an interlayer insulation film having a step-like portion on a substrate, wherein said step-like portion is defined by adjacent lower and higher surfaces of said interlayer insulation film;
depositing a conductive film on said interlayer insulation film; and
patterning said conductive film and forming a first conductive interconnection layer in said lower surface of said interlayer insulation film and a second conductive interconnection layer in said higher surface of said interlayer insulation film,
said first and second conductive interconnection layer forming step comprising the steps of:
forming a first photoresist mask having a pattern covering all regions where said second conductive interconnection layer is to be formed, in addition to the same pattern as the pattern of said first conductive interconnection layer, and using said first photoresist mask as an etching mask, and
forming a second photoresist mask having a pattern covering all regions where said first conductive interconnection layer is to be formed, in addition to the same pattern as the pattern of said second conductive interconnection layer, and using said second photoresist mask as an etching mask.

5,441,917

METHOD OF LAYING OUT BOND PADS ON A SEMICONDUCTOR DIE

Michael D. Rostoker, and Dorothy A. Heim, both of San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 995,644, Dec. 18, 1992, which is a continuation-in-part of Ser. No. 947,854, Sep. 18, 1992, Pat. No. 5,248,903, and Ser. No. 935,449, Aug. 25, 1992, Pat. No. 5,300,815, which is a continuation-in-part of Ser. No. 916,328, Jul. 17, 1992, Pat. No. 5,340,772. This application May 31, 1994, Ser. No. 251,058
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 **1 Claim**



1. A method of laying out bond pads on a semiconductor die, each bond pad having a major axis and an orientation of its major axis, comprising:
providing an array of composite, elongated bond pads along a side of a semiconductor die, each of the bond pads having a major axis; and
arranging the orientation each bond pad such that its major axis aligns with an expected approach angle of a conductive line;
wherein the composite bond pad is formed by:
forming a lower bond pad having a top surface;
forming an insulating component over said top surface of said lower bond pad;
forming at least one opening through said insulating component, said opening extending to said top surface of said lower bond pad, wherein said opening is located above a peripheral region of said lower bond pad;
filling said opening with conductive material;
forming an upper bond pad above said insulating component, wherein said upper bond pad is electrically connected to said conductive material and said lower bond pad and is exposed for receiving the conductive line.

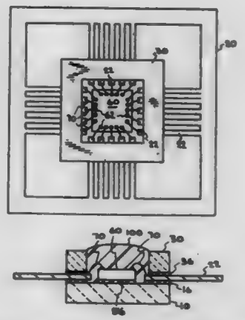
5,441,918

METHOD OF MAKING INTEGRATED CIRCUIT DIE PACKAGE

Maysayuki Morisaki, Tokyo; Hiroshi Matsumoto, and Shoji Uegaki, both of Kyoto, all of Japan, assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 11,659, Jan. 29, 1993. This application Nov. 8, 1993, Ser. No. 148,810
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **20 Claims**

1. A method of forming a package for an integrated circuit die comprising:
a) providing a planar ceramic base having a first surface thereon and capable of functioning as a heat sink to dissipate heat generated by an integrated circuit die subsequently thermally coupled thereto;
b) bonding to the periphery of said first surface of said ceramic base a lead frame with a central opening;
c) bonding to both said lead frame and the peripheral potions of the same surface of said ceramic base exposed between leads on said lead frame a raised frame member having a thickness greater than the thickness of the integrated circuit die to be bonded to said planar ceramic base, and having a central opening therein to thereby form a recessed opening bounded by said planar ceramic base, said lead frame, and said raised frame member;
d) bonding an integrated circuit die to an exposed central portion of said first surface of said ceramic base in said recessed opening surrounded by said lead frame and said raised frame member using a high purity thermally conductive adhesive:
i) containing no more than 10 ppm of any halogen, alkali metal. Or alkaline earth metal impurity;
ii) capable of withstanding a temperature of at least 300° C; and
iii) containing a thermally conductive filler capable of enhancing thermal coupling of said die to said ceramic base; to thereby thermally couple said die to said ceramic base;
e) electrically connecting said die to leads on said lead frame; and



f) placing a curable high purity plastic potting material, containing no more than 10 ppm of any halogen, alkali metal, or alkaline earth metal impurity, in said recessed opening over and around the edges of said integrated circuit die, and in the space between said die and said lead frame and said frame member, and in contact with the exposed portion of said first surface of said ceramic base adjacent said die, whereby said ceramic base and said plastic potting material completely surround said integrated circuit die, said walls of said recessed opening, comprising said lead frame and said raised frame member, acting to form a dam to retain said potting material around and over said die prior to curing of said potting material; and
g) heating said structure to a temperature sufficient to cure said potting material to thereby encapsulate said die without deforming said ceramic base.

5,441,919

CERAMIC FOAMS

Eugene S. Park, Hockessin, Del., and Steven D. Poste, Kingston, Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 14,959, Feb. 8, 1993, Pat. No. 5,296,416, which is a continuation of Ser. No. 783,284, Oct. 28, 1991, Pat. No. 5,185,297, which is a continuation of Ser. No. 494,124, Mar. 15, 1990, Pat. No. 5,061,660, which is a continuation of Ser. No. 278,207, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 89,376, Aug. 26, 1987, Pat. No. 4,808,558, which is a continuation-in-part of Ser. No. 908,116, Sep. 16, 1986, abandoned. This application Mar. 21, 1994, Ser. No. 210,843
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[6] C04B *38/00*
U.S. Cl. 501—80 **15 Claims**

1. A rigid ceramic foam comprising a reticulated body of interlacing hollow ligaments derived from precursor metal

ligaments said hollow ligaments interconnected randomly in three dimensions, the external surfaces of said ligaments defining open channels interconnected randomly in three dimensions, and said hollow ligaments comprising a polycrystalline



ceramic material formed in situ and consisting essentially of (i) the oxidation reaction product of said precursor metal reacted with at least one of a solid oxidant and a liquid oxidant and, optionally, (ii) metallic constituents.

5,441,920

SILICON-BRIDGED TRANSITION METAL COMPOUNDS

Howard C. Welborn, Jr., Houston, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

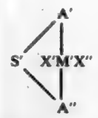
Division of Ser. No. 884,450, May 18, 1992, Pat. No. 5,314,973, which is a continuation of Ser. No. 661,274, Feb. 26, 1991, Pat. No. 5,120,867, which is a division of Ser. No. 405,090, Sep. 7, 1989, Pat. No. 5,017,714, which is a continuation of Ser. No. 170,516, Mar. 21, 1988, abandoned. This application Dec. 2, 1993, Ser. No. 161,828

The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.

Int. Cl.[6] C07F 7/02; C08F 4/42, 4/64

U.S. Cl. 502—103 **37 Claims**

1. A method for producing a compound represented by the formula:



wherein M′ is a Group IVB transition metal;

X′ and X″ are the same or different hydride, halogen, or hydrocarbyl or halohydrocarbyl having up to about 6 carbon atoms;

A′ and A″ are the same or different asymmetrical mononuclear or polynuclear hydrocarbyl or silahydrocarbyl moieties; and

S′ is a bridge of 1–4 atoms selected from the group consisting of silanylene, silaalkylene, oxasilanylene, and oxasilaalkylene,

a) combining:

i) a bridged bis-(substituted cyclopentadienide) dialkali metal compound; and

ii) a transition metal halide, and

b) recovering the represented stereorigid chiral compound.

5,441,921

IMAGE RECEIVING ELEMENT FOR THERMAL DYE DIFFUSION TRANSFER

Emiel Verdonck, Berlaar; Wilhelmus Janssens, Aarschot, and Geert Defieuw, Kessel-Lo, all of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Jun. 3, 1994, Ser. No. 253,351

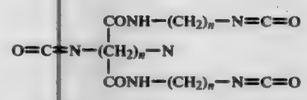
Claims priority, application European Pat. Off., Jun. 21, 1993, 93201778

Int. Cl.[6] B41M 5/035, 5/38

U.S. Cl. 503—227 **6 Claims**

4. A method for making an image according to the thermal sublimation transfer process comprising the steps of:

bringing a dye layer containing one or more thermally transferable dyes of a dye donor element into face-to-face contact with an image receiving layer contained on a support of an image receiving element, said image receiving layer having as a principal component the hardened product of (i) a vinylchloride-based resin containing active hydrogens, (ii) an aliphatic polyisocyanate according to formula (I) and (iii) a polydialkylsiloxane containing active hydrogens:



(I)

wherein n represents an integer from 2 to 12;

image-wise heating a thus obtained assemblage from the back of said dye donor element and

separating said dye donor element from said image receiving element.

5,441,922

COMBINATIONS OF BENZOYL CYCLOHEXANEDIONE HERBICIDES AND CROP-PROTECTING SUBSTANCES

Oswald Ort, Kelkheim; Lothar Willms, Hillscheid; Hans-Joachim Zeiss, Sulzbach/Taunus; Stephan Mller; Herbert Stark, both of Kelkheim; Rainer Schütze, Idstein/Taunus; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 29, 1992, Ser. No. 998,009

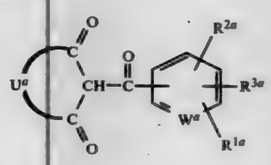
Claims priority, application Germany, Dec. 31, 1991, 41 43 253.3

Int. Cl.[6] A01N 25/32, 43/42, 43/80, 43/56

U.S. Cl. 504—104 **15 Claims**

1. A herbicidal agent which comprises an active amount of

A) one or more herbicides selected from the group of the 2-acylated, 1,3-dicarbonyl compounds of the formula A or salts thereof



(A)

in which

R^{1a} and R^{3a} independently of one another are hydrogen, halogen, (C_1–C_4-alkyl, (C_1–C_4-alkoxy, (C_1–C_4-haloalkyl, (C_1–C_4-haloalkoxy, CN, NO_2, $S(O)_mR^{11a}$, $NR^{12a}R^{13A}$, $NR^{14A}C(O)R^{15a}$, $C(O)R^{16a}$ or $OCH_2CH_2OR^{21a}$,

R^{2a} is halogen, CN, NO_2, (C_1–C_4-alkyl, (C_1–C_4-alkoxy, (C_1–C_4-haloalkyl or (C_1–C_4-haloalkoxy, $S(O)_pR^{10a}$, —O—$S(O)_2R^{10a}$, $N(R^{20a})$—$S(O)_2R^{19a}$,

W^a is CH,

R^{10a} is (C_1–C_4-alkyl, (C_1–C_4-haloalkyl or (C_1–C_4-alkoxy,

R^{11a} is (C_1–C_4-alkyl, (C_1–C_4-haloalkyl, phenyl or benzyl, the last two radicals being unsubstituted or substituted on the phenyl ring, or is $NR^{17a}R^{18a}$,

R^{12a}, R^{13a} independently of one another are hydrogen or (C_1–C_4-alkyl,

R^{14a} is hydrogen or (C_1–C_4-alkyl,

R^{15a} is hydrogen or (C_1–C_4-alkyl,

R^{16a} is hydrogen, (C_1–C_4-alkyl, (C_1–C_4-haloalkyl or (C_1–C_4-alkoxy,

R^{17a} and R^{18a} independently of one another are hydrogen or (C_1–C_4-alkyl,

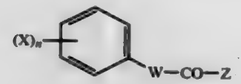
R^{19a} and R^{20a} independently of one another are (C_1–C_4-alkyl or (C_1–C_4-haloalkyl,

R^{21a} is hydrogen or (C_1–C_4-alkyl,

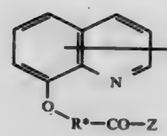
p is zero or one and

U^a is a group of the formula $—CR^{4a}R^{5a}—CR^{6a}R^{7a}—CR^{8a}R^{9a}$—wherein R^{4a}, R^{5a}, R^{6a}, R^{7a}, R^{8a}, and R^{9a} are independently selected from hydrogen or C_1–C_4 alkyl, and

B) one or more safener compounds of the formula B1 and B2,



(B1)



(B2)

in which

X is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, nitro or C_1–C_4-haloalkyl,

Y is halogen, C_1–C_4-alkyl, C_1–C_4alkoxy, nitro or C_1–C_4-haloalkyl,

R^e is $—CH_2—$,

Z is OR^1, SR^1 or NR^1R,

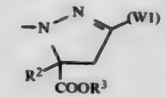
R independently of R^1 is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy or phenyl or substituted phenyl or

R and R^1 together with the nitrogen atom bonded to them are a saturated or unsaturated 3- to 7-membered heterocycle which has at least one nitrogen atom and up to 3 hetero atoms and which is unsubstituted or substituted by radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, phenyl or substituted phenyl,

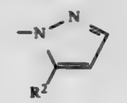
R^1 independently of R is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-cycloalkyl, C_2–C_8-alkenyl or C_2–C_8-alkynyl, where each of the above carbon-containing radicals independently of one another is unsubstituted or mono- or polysubstituted by radicals selected from the group consisting halogen, hydroxyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_2–C_8-alkenylthio, C_2–C_8-alkynylthio, C_2–C_8-alkenyloxy, C_2–C_8-alkynyloxy, C_3–C_7-cycloalkyl, C_3–C_7-cycloalkoxy, cyano, mono- and di-(C_1–C_4-alkyl)-amino, (C_1–C_8-alkoxy)-carbonyl, (C_2–C_8-alkenyloxy)-carbonyl, (C_1–C_8-alkylthio)-carbonyl, (C_2–C_8-alkynyloxy)-carbonyl, (C_1–C_8-alkyl)-carbonyl, (C_2–C_8-alkenyl)-carbonyl, (C_2–C_8-alkynyl)-carbonyl, 1-(hydroxyimino)-C_1–C_6-alkyl, 1-(C_1–C_4-alkylimino)-C_1–C_6-alkyl, 1-(C_1–C_4-alkoxyimino)-C_1–C_6-alkyl, (C_1–C_8-alkyl)-carbonylamino, (C_2–C_8-alkenyl)-carbonylamino, (C_2–C_8-alkynyl)-carbonylamino, aminocarbonyl, (C_1–C_8-alkyl)-aminocarbonyl, di-(C_1–C_6-alkyl)-aminocarbonyl, (C_2–C_6-alkenyl)-aminocarbonyl, (C_2–C_6-alkynyl)-aminocarbonyl, (C_1–C_8-alkoxy)-carbonylamino, (C_1–C_8-alkyl)-aminocarbonylamino, C_1–C_6-alkylcarbonyloxy, which is unsubstituted or substituted by halogen, NO_2, C_1–C_4-alkoxy or optionally substituted phenyl, furthermore consisting of (C_2–C_6-alkenyl)-carbonyloxy, (C_2–C_6-alkynyl)-carbonyloxy, C_1–C_8-alkylsulfonyl, phenyl, phenyl-C_1–C_6-alkoxy, phenyl-(C_1–C_6-alkoxy)-carbonyl, phenoxy, phenoxy-C_1–C_6-alkoxy, phenoxy-(C_1–C_6-alkoxy)-carbonyl, phenylcarbonyloxy, phenylcarbonylamino, phenyl-(C_1–C_6-alkyl)-carbonylamino, the 9 last-mentioned radicals being unsubstituted or mono- or poly-substituted in the phenyl ring by radicals selected from halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C-haloalkoxy and nitro, and furthermore consisting of the formulae $—SiR'_3$, $—OSiR'_3$, $(R')_3Si—C_1—C_6—$alkoxy, —CO—O—NR'_2, —O—N=CR'_2, —N=CR'_2, —O—NR'_2, —$CH(OR')_2$ and —O—$(CH_2)_m$—$CH(OR')_2$, in which the R′ in the above mentioned formulae independently of one another are halogen, C_1–C_4-alkyl or phenyl which is unsubstituted or mono- or polysubstituted by radicals selected from halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and nitro, or the R′, as a pair, are a C_2–C_6-alkylene chain and m is 0to 6, and furthermore consisting of an alkoxy radical of the formula R″O—CR″-′(OR″)—C_1–C_6-alkoxy, in which the R″ independently of one another are C_1–C_4-alkyl or together are a C_1–C_6-alkylene group and R‴ is hydrogen or C_1–C_4-alkyl,

n is an integer from 1 to 5, and

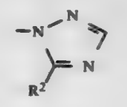
W is a divalent heterocyclic radical having 5 ring atoms, of the formula W1 to W4,



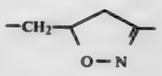
(W1)



(W2)



(W3)



(W4)

in which

R^2 is hydrogen, C_1–C_8-alkyl, C_1–C_8-haloalkyl, C_3–C_{12}-cycloalkyl or optionally substituted phenyl and

R^3 is hydrogen, C_1–C_8-alkyl, C_1–C_8-haloalkyl, (C_1–C_4-alkoxy)-C_1–C_4-alkyl, C_1–C_6-hydroxyalkyl, C_3–C_{12}-cycloalkyl or tri-(C_1–C_4-alkyl)-silyl.

5,441,923

WATER-SOLUBLE OR WATER DISPERSIBLE PESTICIDE GRANULES COMPRISING SULFONYLUREA HERBICIDES IN A POLYETHYLENE OR POLYPROPYLENE COATING

Stanley Tocker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 924,632, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 646,631, Feb. 4, 1991, abandoned, which was filed as PCT/US89/03713, Aug. 13, 1989, which is a continuation of Ser. No. 240,896, Sep. 2, 1988, abandoned. This application Feb. 14, 1994, Ser. No. 195,238

Int. Cl.[6] A01N 25/08, 25/22, 25/26, 47/36

U.S. Cl. 504—125 **10 Claims**

1. A water-soluble or water-dispersible, aqueous-sprayable

pesticidal granular composition comprising at least one layer coating a substrate, said layer comprising:

(a) 0.1 to 50% of a water-soluble or water-dispersible sulfonylurea herbicide; and

(b) 1 to 20% of a solid carrier selected from the class consisting of a water-soluble polyethylene glycol, polypropylene glycol or ester or ether derivative thereof, or a copolymer or mixture thereof having a weight average molecular weight in the range 3000–8000; and the substrate comprising 50 to 98.9% of a water-soluble or water-dispersible granule of a diameter of at least about 500 microns; said foregoing percentages based by weight on the total weight of the layer and the substrate, respectively.

5,441,924

HERBICIDAL SUBSTITUTED TRIAZOLINONES

Kurt Findeisen; Hans-Joachim Santel, both of Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

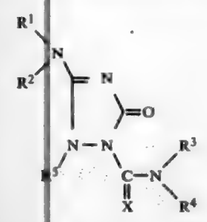
Continuation of Ser. No. 28,469, Mar. 9, 1993, abandoned, which is a division of Ser. No. 852,482, Mar. 16, 1992, Pat. No. 5,238,902, which is a continuation of Ser. No. 606,394, Oct. 31, 1990, abandoned. This application Sep. 30, 1994, Ser. No. 316,198

Claims priority, application Germany, Dec. 9, 1989, 39 39 952.4

Int. Cl.[6] A01N *43/84, 43/653;* **C07D** *413/04, 403/04*

U.S. Cl. 504—225 **3 Claims**

1. A substituted triazolinone of the formula



in which

R^1 and R^2, together with the nitrogen atom to which they are bonded, represent a pyrrolidino, piperidino, morpholino or azacycloheptanyl radical, each of which may be mono-, di- or tri-substituted by identical or different substituents selected from the group consisting of halogen, alkyl and halogenoalkyl, wherein the alkyl moieties in said substituents each have from 1 to 4 carbon atoms,

R^3 represents hydrogen,

R^4 represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, allyl, propargyl, pentyl, hexyl, heptyl, butenyl, pentenyl, butynyl, pentynyl or hexynyl each of which is straight-chain or branched, halogenoalkyl having 1 to 5 carbon atoms and 1 to 9 identical or different halogen atoms, cyclopropyl, cyclopentyl or cylohexyl each of which is optionally mono-, di- or tri-substituted by identical or different substituents from the group consisting of methyl, ethyl, fluorine and chlorine, represents phenyl, benzyl or phenylethyl each of which is optionally mono-, di- or tri-substituted by identical or different substituents selected from the group consisting of fluorine, chlorine, methyl, ethyl, methoxy, ethoxy, methylthio, trifluoromethyl, trifluoromethylthio, benzyl and phenylethyl,

R^5 represents methyl, ethyl, n- or i-propyl, and

X represents oxygen.

5,441,925

1-AMINO-3-(BICYCLIC HETEROCYCLYL)-6-FLUOROALKYLURACILS

George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

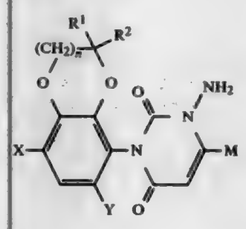
Filed Jun. 28, 1994, Ser. No. 267,271

The portion of the term of this patent subsequent to Aug. 13, 2010, has been disclaimed.

Int. Cl.[6] A01N *43/42;* **C07D** *401/02*

U.S. Cl. 504—243 **13 Claims**

1. A compound of the formula:



in which

M is fluoroalkyl(C_{1-6}); R^1 is hydrogen or alkyl(C_{1-6}); R^2 is hydrogen or alkyl (C_{1-6}); Y is hydrogen, fluorine, chlorine, or bromine; X is hydrogen, fluorine, chlorine, bromine, cyano, alkyl(C_{1-6}), or fluoroalkyl(C_{1-6}); and n is 0 or 1.

5,441,926

SUPERCONDUCTING DEVICE STRUCTURE WITH PR-BA-CU-O BARRIER LAYER

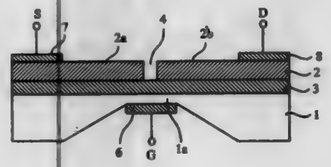
Hiroshi Kimura; Toshiyuki Matsui, both of Tokyo; Takeshi Suzuki, Zushi; Kazuo Mukae, and Akihiko Ohi, both of Yokosuka, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Nov. 12, 1993, Ser. No. 151,024

Claims priority, application Japan, Dec. 29, 1992, 4-362126

Int. Cl.[6] H01L *39/22;* **B05D** *5/12;* **H01B** *12/00*

U.S. Cl. 505—193 **8 Claims**



1. A superconducting device comprising:

a source region and a drain region each comprised of an oxide superconductor;

a barrier layer having a crystalline structure similar to that of said oxide superconductor, said barrier layer having upper and lower opposite major surfaces, said source and drain regions being formed on said upper surface of said barrier layer; and

a gate electrode spanning over said source region and said drain region, said gate electrode being capable of applying an electric field to said barrier layer, wherein said gate electrode is formed below the lower surface of said barrier layer, and an insulation layer is interposed between said gate electrode and said barrier layer wherein said barrier layer is non-superconducting when a gate voltage is not applied to the gate electrode.

5,441,927

FLUID DRILL-HOLE TREATMENT AGENTS BASED ON POLYCARBOXYLIC ACID DIESTERS

Heinz Mueller, Monheim; Claus-Peter Herold, Mettmann; Stephan von Tapavicza, Erkrath, and Johann F. Fues, Grevenbroich, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 958,324, Jul. 1, 1993, abandoned. This application Nov. 9, 1994, Ser. No. 336,726

Claims priority, application Germany, Jun. 16, 1990, 40 19 266.0

Int. Cl.[6] C09K *7/06, 7/02*

U.S. Cl. 507—138 **34 Claims**

1. A drill-hole treatment composition which is fluid and pumpable in the temperature range of from about 5° C. to about 20° C., said composition having an oil phase and an aqueous phase, said oil phase comprising an oleophilic polycarboxylic acid ester based on polycarboxylic acids and oil-soluble monofunctional alcohols or water-soluble or oil-soluble polyfunctional alcohols.

18. The process of treating a drill-hole, comprising contacting said drill-hole with a composition which is fluid and pumpable in the temperature range of from about 5° C. to about 20° C., said composition having an oil phase and an aqueous phase, said oil phase comprising an oleophilic polycarboxylic acid ester based on polycarboxylic acids and oil-soluble monofunctional alcohols or water-soluble or oil soluble polyfunctional alcohols.

5,441,928

AQUEOUS GELLABLE COMPOSITION CONTAINING AN ANTI-SYNERESIS AGENT

Paola Albonico, Milan, and Thomas P. Lockhart, Lodi, both of Italy, assignors to Enitricerche S.p.A. and AGIP S.p.A., both of Milan, Italy

Filed Nov. 25, 1992, Ser. No. 981,761

Claims priority, application Italy, Nov. 26, 1991, MI91A03151; Dec. 6, 1991, MI91A03275; Feb. 6, 1992, MI92A0230

Int. Cl.[6] E21B *33/00*

U.S. Cl. 507—225 **16 Claims**

1. An aqueous gellable composition capable of producing gels resistant to syneresis in the presence of divalent ions, the composition comprising:

water;

a water-soluble acrylamide polymer or copolymer;

a water-soluble aldehyde or a combination of a water-soluble phenol and the water-soluble aldehyde as a crosslinking agent; and

a water-soluble acid, as an anti-syneresis agent, which is an amino acid.

5,441,929

HYDROCHLORIC ACID ACIDIZING COMPOSITION AND METHOD

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 23, 1994, Ser. No. 264,818

Int. Cl.[6] C09K *7/02, 7/04;* **E21B** *43/27*

U.S. Cl. 507—260 **20 Claims**

1. An acidizing composition for treating a well to increase the production of desired materials therefrom comprising:

an aqueous acid solution including at least 2% by weight, based on the total weight of the solution, of hydrochloric acid; and

a corrosion inhibitor for inhibiting corrosion of both ferrous based alloy surfaces and titanium based alloy surfaces contacted by the aqueous acid solution, the corrosion inhibitor including:

an effective amount of a first inhibitor component for inhibiting corrosion of ferrous based alloys, the first inhibitor component including at least one reducing compound; and

an effective amount of a second inhibitor component for inhibiting corrosion of titanium based alloys, the second inhibitor component including at least one source of molybdate ions present in an amount of at least 0.1% by weight based on the weight of said aqueous acid solution, wherein said first inhibitor component and said second inhibitor component are different compounds and said first inhibitor component does not comprise a source of molybdate ions.

5,441,930

ISOMERIC 11-OXATRICYCLO[7.3.02,6]DODECENE DERIVATIVES, THEIR PRODUCTION AND THEIR USE AS FRAGRANCES AND FRAGRANCE COMPOSITIONS CONTAINING THEM

Klaus Bruns, Krefeld-Traar; Michael Diachmann, Krefeld; Werner Faber, Willich, and Michael Meiertoberens, Krefeld-Fischeln, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

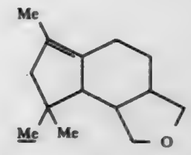
Continuation of Ser. No. 30,233, Mar. 17, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 272,437

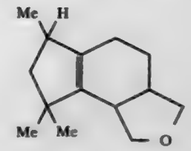
Claims priority, application Germany, Sep. 17, 1990, 40 29 424.2

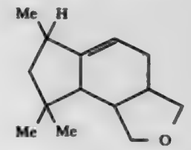
Int. Cl.[6] A61K *7/46*

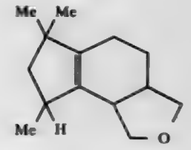
U.S. Cl. 512—13 **8 Claims**

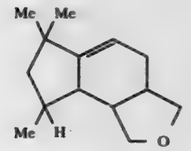
1. A compound selected from the group consisting of a compound of the formula I, II, III, IV, V, and a mixture thereof


(I)


(II)


(III)


(IV)


(V)

wherein the tetrahydrofuran ring is in the trans configuration.

5,441,931

HUMAN AMYLOID PROTEIN PRECURSOR HOMOLOGUE AND KUNITZ-TYPE INHIBITORS

Cindy A. Sprecher, 8206 39th Ave. NE., Seattle, Wash. 98115; Donald C. Foster, 3002 NE. 151st St., Seattle, Wash. 98115, and Kjeld E. Norris, Ahlmanns Alle 34, 2900 Hellerup, Denmark

Continuation-in-part of Ser. No. 985,692, Dec. 2, 1992. This application Nov. 19, 1993, Ser. No. 155,331

Int. Cl.[6] A61K *38/00*; C07K *1/00*; C12N *1/20*; C12P *21/06*

U.S. Cl. 514—2 **3 Claims**

1. An isolated human Kunitz-type inhibitor comprising the amino acid sequence of SEQ ID NO:2 from alanine, amino acid 56 to alanine, amino acid number 110; the amino acid sequence of SEQ ID NO:2 from aspartic acid, amino acid number 53 to alanine, amino acid number 110; or the amino acid sequence of SEQ ID NO:2 from valine, amino acid number 57 to alanine, amino acid number 110 and which further contains a glutamic acid residue on the amino terminus.

5,441,932

SUGAR COMPOUNDS FOR INHIBITION OF THE BIOSYNTHESIS OF SUGAR CHAINS CONTAINING SIALIC ACID

Hitoshi Kodama; Hironobu Hashimoto, and Yasuhiro Kajihara, all of Kanagawa, Japan, assignors to Japan Tobacco, Inc., Tokyo, Japan

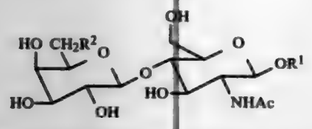
Filed Mar. 2, 1993, Ser. No. 25,051

Claims priority, application Japan, Mar. 3, 1992, 4-045419

Int. Cl.[6] A61K *31/70, 31/715, 31/72, 31/73*

U.S. Cl. 514—8 **15 Claims**

1. A sugar compound of the formula:



wherein R^1 is a hydrogen atom, a substituted or unsubstituted aliphatic hydrocarbon group, a substituted or unsubstituted aromatic hydrocarbon group, a peptide residue or a glycoprotein, and R^2 is a hydrogen atom, a sulfhydryl group, an acyloxy group, an acylthio group, an aryloxy group, an alkyloxy group or a glycothio residue.

5,441,933

PHARMACEUTICAL COMPOSITIONS AND DOSAGE FORMS FOR THE ORAL ADMINISTRATION OF CALCITONIN

Filippo Lattanzi, Siena; Maurizio Cecchettin, Brescia, and Riccardo Vanni, Siena, all of Italy, assignors to Sclavo S.P.A., Siena, Italy

Filed Jan. 14, 1991, Ser. No. 640,811

Claims priority, application Italy, Jan. 19, 1990, 19112/90

Int. Cl.[6] A61K *38/23*; C07K *14/585*

U.S. Cl. 514—12 **1 Claim**

1. A method of administering calcitonin which comprises giving, by perbuccal or sublingual route, a patient in need of calcitonin, a calcitonin composition which consists of

a) calcitonin, a diluent selected from the group consisting of mannitol, lactose, saccharose and a mixture of lactose and saccharose in a quantity of between 20 and 70% with respect to the total weight of the composition, a lubricant selected from the group consisting of magnesium stearate, aluminum stearate, stearic acid, high molecular weight PEG and talc, and a binder selected from the group consisting of gum arabic and cellulose derivatives for the administration by perbuccal route, or

b) calcitonin, a diluent selected from the group consisting of mannitol, lactose, saccharose and a mixture of lactose and saccharose in a quantity of between 20 and 70% with respect to the total weight of the composition, a lubricant selected from the group consisting of magnesium stearate, aluminum stearate, stearic acid, high molecular weight PEG and talc, and a disintegrant selected from the group consisting of starch, sodium carboxymethyl starch, carboxymethylcellulose, microcrystalline cellulose, crospovidone, amberlite and alginic acid for the administration by sublingual route.

5,441,934

INSECTICIDALLY EFFECTIVE PEPTIDES

Karen J. Krapcho; John R. H. Jackson; Janice H. Johnson; Eric G. DelMar, and Robert M. Kral, Jr., all of Salt Lake City, Utah, assignors to FMC Corporation, Philadelphia, Pa. and NPS Pharmaceuticals, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 826,925, Jan. 24, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 171,383

Int. Cl.[6] C12N *15/09*; C12P *21/00*; A61K *38/00*; A01N *63/00*

U.S. Cl. 514—12 **27 Claims**

19. A method of controlling invertebrate pests comprising contacting said pests with an insecticidally effective amount of an insecticidally effective peptide comprising amino acid sequence defined in SEQ ID NO:3.

5,441,935

GROWTH FACTOR RECEPTORS

Enrique Rozengurt; Ian Zachary, and Penella Woll, all of London, England, assignors to Imperial Cancer Research Technology Ltd., London, England

Continuation of Ser. No. 814,064, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 411,536, Nov. 29, 1989, abandoned. This application Sep. 3, 1992, Ser. No. 939,587

Claims priority, application United Kingdom, Mar. 31, 1987, 8707607; Nov. 25, 1987, 8727638

Int. Cl.[6] A61K *37/02*; C07K *15/00*; G01N *33/574, 33/566*

U.S. Cl. 514—15 **3 Claims**

1. A compound of the formula D-Arg-X-Lys-Pro-Y-Gln-D-Trp-Phe-D-Trp-Leu-Leu-NH_2 wherein X is D-Pro or Pro and Y is [D-Phe,] D-Trp [,DTyr or Me Phe, with the proviso that when X is Pro, Y is not D-Phe].

5,441,936

ANTIVIRAL PEPTIDES

Richard A. Houghten, Solana Beach, and Patricia A. Weber, San Diego, both of Calif., assignors to Houghten Pharmaceuticals, Inc., San Diego, Calif.

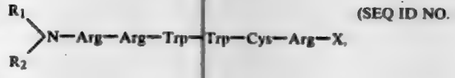
Filed Dec. 7, 1993, Ser. No. 163,370

Int. Cl.[6] A61K *38/08*; C07K *7/06*

U.S. Cl. 514—16 **19 Claims**

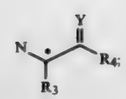


1. An antiviral peptide, comprising:



(SEQ ID NO. 1)

wherein X is



wherein R_1 is H, $COCH_2$, CH_2Ph, CH_2CH_2Ph, COPh, COO-t-butyl, $COOCH_2Ph$ or a linear or branched alkyl having 2 to 6 carbons;

R_2 is H, C_2H_5 or CH_2Ph;

R_3 is H, CH_3, CH_2-Ph, CH_2-pyridyl, CH_2-imidazole, CH_2-indole, $CH_2—(CH_2)_2COOH$, $CH_2—(CH_2)_2CONHR_5$, $CH_2—(CH_2)_nNHR_5$, $CH_2—(CH_2)_nSR_5$, $CH_2—(CH_2)_nNC(NH)NH_2$; or $CH_2—(CH_2)_nOH$;

R_4 is OH, NH_2, SH, $NHCH_3$, $N(CH_3)_2$, $NHCH_2Ph$, or OR_5; and

R_5 is H, CH_3, or a linear or branched alkyl having 2 to 6 carbons; and

wherein Ph is C_6H_5, Y is O or Ha, n is 0, 1, 2 or 3 and "*" denotes a chiral center, which can be R or S.

5,441,937

NEUROTROPHIC FACTOR

Thomas L. Wallace; David E. Potter, and Craig E. Crosson, all of The Woodlands, Tex., assignors to Houston Biotechnology Incorporated, The Woodlands, Tex.

Continuation of Ser. No. 977,760, Nov. 17, 1992, which is a division of Ser. No. 265,043, Oct. 31, 1988, Pat. No. 5,166,317. This application Jan. 21, 1994, Ser. No. 184,790

Int. Cl.[6] A01N *1/02*; A61K *38/18*; C12N *5/06*

U.S. Cl. 514—21 **13 Claims**

1. A method for increasing parasympathetic activity in an ocular parasympathetic nerve cell, said method comprising:

contacting said parasympathetic nerve cell with a composition comprising a neurotrophic factor in an amount sufficient to enhance parasympathetic activity, wherein said neurotrophic factor is characterized as

(a) having a pI in the range of 5.6–7.0;

(b) having a molecular weight as determined by SDS gel electrophoresis of about 31.5 kD;

(c) being obtainable from mammalian lung tissue;

(d) being capable of maintaining viable embryonic ciliary neurons in vitro, as compared to the absence of said composition;

(e) being capable of increasing choline acetyltransferase activity in parasympathetic ciliary neurons in vitro, said increasing being responsive to changes in potassium ion concentration; and

(f) not binding heparin, whereby as a result of said contacting said parasympathetic activity is increased.

5,441,938

FACTORS WHICH REGULATE MACROPHAGE ANTIBACTERIAL ACTIVITY

David Speert; Sameer Barghouthi, both of Vancouver, Canada, and Siamon Gordon, Oxford, United Kingdom, assignors to University of British Columbia, Canada

Filed May 26, 1992, Ser. No. 887,496

Int. Cl.[6] A61K *9/12, 31/70*

U.S. Cl. 514—23 **5 Claims**

1. A method of treating or preventing infection by *Pseudomonas aeruginosa* in a person with cystic fibrosis which comprises administering to said person an effective dose of a pharmaceutical composition comprising, as an active ingredient, D-glucose or D-mannose in admixture with a pharmaceutically acceptable diluent or carrier.

5,441,939

3″-DESMETHOXY DERIVATIVES OF ERYTHROMYCIN AND AZITHROMYCIN

Bingwei V. Yang, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

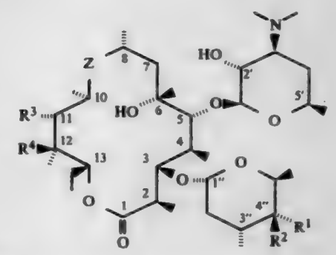
Filed Mar. 4, 1994, Ser. No. 206,551

Int. Cl.[6] A61K *31/70*; C07H *17/08*

U.S. Cl. 514—29 **11 Claims**

1. A compound having the formula

(IV)



wherein

Z is $CH_2—N(CH_3)$, $N(CH_3)—CH_2$, or



R^1 and R^2 are selected from the group consisting of:

1) one of R^1 and R^2 is OH and the other of R^1 and R^2 is $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl, or phenyl, with the proviso that Z is not CO;

2) one of R^1 and R^2 is H and the other of R^1 and R^2 is NR^5R^6 wherein R^5 and R^6 are independently selected from the group consisting of H and $(C_1–C_6)$alkyl, or is OR^7 wherein R^7 is H or $(C_1–C_6)$alkyl; and

3) R^1 and R^2 together form an oxo or oxime group;

R^3 and R^4 are each hydroxyl or together form a carbonate or thiocarbonate group;

or a pharmaceutically acceptable salt thereof.

7. A method of treating a bacterial infection in a mammalian subject, which comprises administering thereto an antibacterially effective amount of a compound as defined in claim 1, or a pharmaceutically acceptable acid addition salt thereof.

5,441,940

PROCESS FOR THE PREPARATION OF WATER SOLUBLE PRIMYCIN AND ITS COMPONENTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Tamás Keresztes, Frzsébet; András Kövér, Erzsébet; Gábor Kulcsár, Szlovák; Katalin Erdödiné, Nagyerdei, and Gergelyné P. Katalin, Közép, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 576,381, filed as PCT/HUS9/00052, Nov. 17, 1989, abandoned.

Claims priority, application Hungary, Nov. 18, 1988, 5948/88

Int. Cl.[6] A61K *31/70*; C07H *15/04*

U.S. Cl. 514—31 **15 Claims**

1. A process for preparing water soluble primycin, which comprises reacting water insoluble primycin having a water solubility of 0.04 mg/ml in a C_{1-3} alcohol with a condensable substance comprising a C—C—C bridge selected from the group consisting of ethyl cyanoacetate, malonic acid dinitrile and acetyl acetone, in the presence of sodium or potassium methoxide or ethoxide, the resulting primycin product having a water solubility of 40–60 mg/ml.

12. An antibacterial pharmaceutical or veterinary composi-

tion, wherein water soluble primycin prepared according to the process of claim 1 is present in an antibacterial-effective amount as active ingredient, together with a pharmaceutically acceptable carrier, diluent or an auxiliary agent.

5,441,941

1,2-DIHYDROELLIPTICINES WITH ACTIVITY AGAINST CNS SPECIFIC CANCER

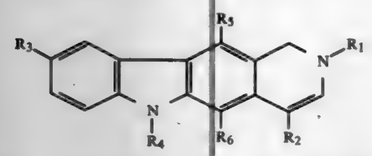
Rudiger D. Haugwitz, Bethesda; Venkatachiala L. Narayanan, Gaithersburg, both of Md.; Mark Cushman, and Jurjus Jurayj, both of West Lafayette, Ind., assignors to The United States of America as represented by the Secretary of DHHS, Washington, D.C. and Purdue Research Foundation, Lafayette, Ind.

Division of Ser. No. 956,903, Oct. 2, 1992, Pat. No. 5,272,146. This application Dec. 21, 1993, Ser. No. 171,234

Int. Cl.[6] A61K *31/435, 31/535;* **C07D** *471/04*

U.S. Cl. 514—43 **24 Claims**

1. A compound having the following structure:



wherein R_1 is alkyl having 1 to about 5 carbon atoms, benzyl, alkenyl having 2 to about 5 carbon atoms, alkyloxyalkyl wherein the alkyl portion has 1 to about 5 carbon atoms, hydroxyalkyl having 1 to about 5 carbon atoms, cyanoalkyl having 1 to about 5 carbon atoms, dialkylaminoalkyl wherein each alkyl has 1 to about 5 carbon atoms, glycosyl residue derived from threose, ribose arabinose, xylose, glucose, mannose, galactose, or acetyl derivatives thereof, acids or alkyl esters selected from the group consisting of $—R_7COOH$ and $—R_7COOR_8$ wherein R_7 is an alkyl having 0 to about 4 carbon atoms and R_8 is an alkyl having 1 to about 5 carbon atoms;

R_2 is hydrogen or formyl;

R_3 is hydrogen, alkyl having 1 to about 5 carbon atoms, or acyloxy having 1 to about 5 carbon atoms;

R_4 is hydrogen, formyl, alkyl having 1 to about 5 carbon atoms, dialkylaminoalkyl wherein the alkyl portion has 1 to about 5 carbon atoms, morpholino N-alkyl or piperidine N-alkyl, wherein the alkyl has 1 to about 5 carbon atoms; and

R_5 and R_6 are the same or different and are hydrogen or methyl.

5,441,942

2'3'-DIDEOXY-2',3'-DIDEHYDRO-7,8-DISUBSTITUTED GUANOSINES AND THEIR IMMUNOSTIMULATIVE EFFECT

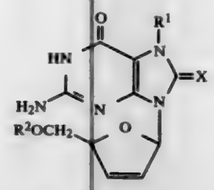
Michael G. Goodman, Rancho Santa Fe, Calif.; Robert Chen, Belle Mead, N.J., and Allen Reitz, Lansdale, Pa., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed May 27, 1994, Ser. No. 250,483

Int. Cl.[6] A61K *31/70;* **C07H** *19/173*

U.S. Cl. 514—45 **17 Claims**

1. A compound of the formula I:



I

wherein X is O or S;

R^1 is a hydrocarbyl or a substituted hydrocarbyl moiety having a length of about one to about seven carbon atoms;

R^2 is hydrogen or C_1–C_8 acyl; and

the pharmaceutically acceptable base addition salts thereof.

9. A method of enhancing an immune response that comprises contacting leukocytes in an aqueous medium with an amount of a compound of claim 1 sufficient to enhance the immune response of those leukocytes.

5,441,943

USES OF ALOE PRODUCTS

Bill H. McAnalley, Grand Prairie; Robert H. Carpenter, Bastrop, and Harley R. McDaniel, Dallas, all of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.

Division of Ser. No. 864,583, Apr. 7, 1992, Pat. No. 5,308,838, which is a division of Ser. No. 558,905, Jul. 27, 1990, Pat. No. 5,118,673, which is a continuation-in-part of Ser. No. 229,164, Aug. 5, 1988, Pat. No. 5,106,616, which is a continuation-in-part of Ser. No. 144,872, Jan. 14, 1988, Pat. No. 4,851,224, which is a continuation-in-part of Ser. No. 869,261, Jun. 5, 1986, Pat. No. 4,735,935, which is a continuation-in-part of Ser. No. 810,025, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 754,859, Jul. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 750,321, Jun. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 649,967, Sep. 12, 1984, abandoned, which is a continuation of Ser. No. 375,720, May 7, 1982, abandoned. This application Dec. 1, 1993, Ser. No. 159,830

Int. Cl.[6] A61K *31/715;* **C07H** *1/08, 13/00*

U.S. Cl. 514—54 **6 Claims**

1. A method for regulating blood cholesterol levels in an animal, comprising:

administering to said animal an amount of polymeric acetylated mannan derivative sufficient to reduce serum cholesterol in said animal.

5,441,944

SUBSTITUTED CYCLODEXTRIN SULFATES AND THEIR USES AS GROWTH MODULATING AGENTS

Paul B. Weisz, State College; William R. Ewing, King of Prussia, and Madeleine M. Joullie, Philadelphia, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 691,168, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 397,559, Apr. 23, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 947,417

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[6] A61K *31/70;* **C08B** *37/02, 37/16*

U.S. Cl. 514—58 **18 Claims**

1. A composition comprising (1) n-tetrapropoxy-β-cyclodextrin sulfate associated with a physiologically acceptable cation in combination with (2) a therapeutically effective amount of a therapeutic agent.

5,441,945

HETEROCYCLIC IMINOBISMETHYLENEBISPHOSPHONIC ACID DERIVATIVES

Katsuhiro Yoshikawa, Kawagoe, Japan, assignor to Hoechst Japan Limited, Tokyo, Japan

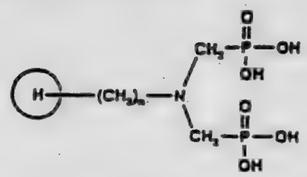
Filed Apr. 13, 1994, Ser. No. 227,351

Claims priority, application Japan, Apr. 15, 1993, 5-087692

Int. Cl.[6] A61K *31/675;* **C07F** *9/06, 9/28*

U.S. Cl. 514—80 **10 Claims**

1. A heterocyclic iminobismethylenebisphoephonic acid compound of the formula (I):



(I)

wherein n is an integer of 1 to 3 and the group of the formula



represents a pyridyl group, an imidazolyl group, a benzimidazolyl group ar an imidazol pyridyl group, or a pharmaceutically acceptable ester or salt thereof.

5,441,946

PHOSPHONATE DERIVATIVES OF LIPOPHILIC AMINES

Henry W. Pauls, Collegeville; Yong-Mi Choi, Jeffersonville, and Dilip V. Amin, Lansdale, all of Pa., assignors to Rhone-Poulenc-Rorer Pharmaceuticals, Inc., Collegeville, Pa.

Filed Apr. 14, 1994, Ser. No. 227,803

Int. Cl.[6] A61K *31/66;* **C07F** *9/40, 9/44*

U.S. Cl. 514—114 **17 Claims**

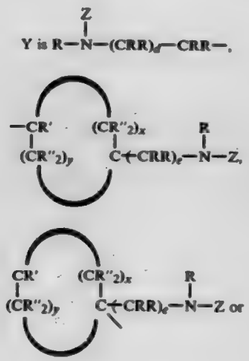
1. A compound of the formula:



where:

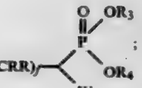
A is O, S, NR, SO, SO_2 or a bond;

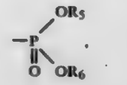
B is $(CRR)_{1\text{-}2}$, O, S, NR, SO, SO_2, RC=CR, C≡C, O=C or a bond;



Y is $R—N—(CRR)_d—CRR—$,







OH, $—COOR_7$ $SO_3R_8R_9$ or;

R is hydrogen or alkyl;

R′ and R″ are independently hydrogen, alkyl, alkoxy, hydroxy, halo, haloalkyl or phenyl;

R′ and R″ together may form a double bond;

R_1 and R_2 are independently hydrogen, alkyl, alkoxy, hydroxy, halo, haloalkyl or phenyl;

R_3, R_4, R_5, R_6, R_7, R_8 or R_9 are independently hydrogen, alkyl, aryl, aralkyl or $—CH_2OCOR$;

Alk is bi- or tri-carbocycloalkane;

Ar I and Ar II are independently a mono- or di-aryl;

a and b are independently 0–3;

a+b is 0–4;

d is 0–3;

a+b+d is 1–3;

e is 0–3;

f is 1–6;

m and n are independently 0–2;

x is 1–6;

y is 0–2;

x+y is 3–6; and

its stereoisomers, enantiomers, diastereoisomers and racemic mixtures; or a pharmaceutically acceptable salt thereof.

5,441,947

METHODS OF INHIBITING VASCULAR RESTENOSIS

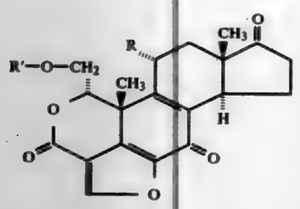
Jeffrey A. Dodge, Indianapolis, and Masahiko Sato, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 25, 1993, Ser. No. 111,796

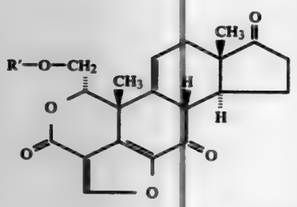
Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—179 **2 Claims**

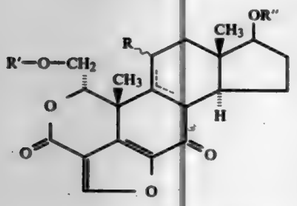
1. A method of inhibiting restenosis in a subject following coronary angioplasty, atherectomy, or arterial bypass graft surgery comprising administering to said subject a pharmaceutically effective dose of a compound selected from the group of



wherein R is hydrogen or acetoxy, and R′ is C_1–C_6 alkyl;



(II)

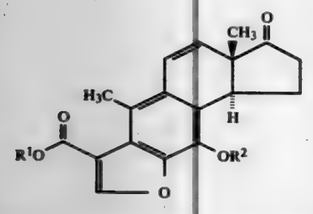


(III)

wherein R and R′are as defined above and R″ is hydrogen, C_1–C_6 alkyl or



wherein R‴ is hydrogen or C_1–C_6 alkyl; and



(IV)

wherein R^1 is hydrogen, methyl or ethyl; and R^2 is hydrogen or methyl; or a pharmaceutically acceptable salt of any of the above.

5,441,948

1,3,4-BENZOTRAIZEPIN-5(4H)-ONE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Ilona Bódi, Eger; Éva Gál, Budapest; Melinda Gál, Budapest; László Jaszlits, Budapest; Andrea Jednákovits, Szentendre; Adrina Kiss, Budapest; Anikó Miklós née Kovács, Budapest; György Máthé, Budapest; István Pallagi, Budapest; György Rabloczky, Budapest; Antal Simai, Budapest, and Endre Tihanyi, Budapest, all of Hungary, assignors to Egis Gyogyszergyar Rt., Budapest, Hungary

Filed Sep. 3, 1993, Ser. No. 115,688
Claims priority, application Hungary, Sep. 4, 1992, 2833/92
Int. Cl.[6] C07D *255/04, 403/06, 401/12*
U.S. Cl. 514—183 **5 Claims**

1. A racemic 1,3,4-benzotriazepin-5(4H)-one selected from the group consisting of

(a) 2-(amino-(1-piperidinyl)-methyleneamino)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one,

(b) 2-(amino-(3,3-dimethyl-2-butylamino)-methyleneamino)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one,

(c) 2-(amino-(1-homopiperazinyl)-methyleneamino)-3-(3-(3,4,5-trimethoxybenzoyloxy)-1-propyl)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one,

(d) 2-(3,3-dimethyl-2-butylamino)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one,

(e) 2-(amino-(1-piperidinyl)-methyleneamino)-3-(2-pyridyl-methyl)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one

(f) 2-(3-pyridylmethylamino)-3-(3-(4-phenyl-1-piperazinyl)-1-propyl)-4-methyl-3,4-dihydro-1,3,4-benzotriazepin-5(4H)-one,

and acid addition salts thereof.

2. A method of treating angina pectoris, which comprises administering to a patient an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof, said amount being effective to treat angina pectoris.

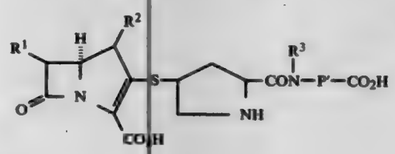
5,441,949

CARBAPENEM ANTIBIOTIC COMPOUNDS

Frederic H. Jung, Rilly La Montagne, and Jean-Claude Arnould, Cormontreuil, both of France, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 86,836, Jul. 7, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,048
Claims priority, application European Pat. Off., Jul. 21, 1992, 92402105
Int. Cl.[6] A01N *43/00*; A61K *31/395*; C07D *487/04*
U.S. Cl. 514—210 **8 Claims**

1. A compound of the formula (I)



(I)

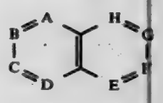
wherein:

R^1 is 1-hydroxyethyl, 1-fluoroethyl or hydroxymethyl;

R^2 is hydrogen or C_1–alkyl;

R^3 is hydrogen or C_1–alkyl;

P^1 is of the formula:



and one or two of A,B,C,D,E,F,G and H are nitrogen and the remainder are CH; and P^1 is bonded to the nitrogen of the

linking carbamoyl group by a carbon atom in either ring, is substituted by a carboxy group on a carbon atom in either ring, and is optionally substituted on one, two or three carbon atoms by a substituent selected from halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, trifluoromethyl, C_{1-4}alkoxycarbonyl, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, C_{1-4}alkylS(O)$_n$— (wherein n is 0–2), C_{1-4}alkanoylamino, C_{1-4}alkanoyl(N—C_{1-4}alkyl)amino, carbamoyl, C_{2-6}alkenyloxy, C_{1-4}alkylcarbamoyl and di-C_{1-4}alkylcarbamoyl; or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof.

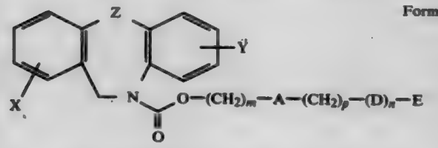
5,441,950

SUBSTITUTED DIBENZOXAZEPINE AND DIBENZTHIAZEPINE CARBAMATE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Joe T. Collins, Manchester, Mo.; Donald W. Hansen, Jr., Skokie, Ill.; Karen B. Peterson, Vernon Hills, Ill.; Barnett S. Pitzele, Skokie, Ill., and David B. Reitz, Chesterfield, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

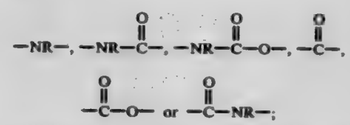
Filed Jun. 9, 1994, Ser. No. 255,634
Int. Cl.[6] A61K *31/55*; C07D *267/20, 281/16*
U.S. Cl. 514—211 **18 Claims**

1. A compound having a structure of the formula:



Formula I

or a pharmaceutically-acceptable salt thereof, wherein:
X is hydrogen, halogen or alkyl;
Y is hydrogen, halogen or alkyl;
Z is oxygen
m is an integer of from 0 to 4;
A is —CW_2—, aryl or —NB—;
W is hydrogen or alkyl;
B is hydrogen or alkyl;
p is an integer of from 0 to 4;
D is aryl,



E is hydrogen, alkyl, aryl, alkylaryl, —NRR or -alkylene-NRR;
R is hydrogen, alkyl, hydroxy or alkoxy; and
n is 0 or 1, with the proviso that A is not —CW_2— when n is 0 and E is hydrogen or alkyl.

5,441,951

LIPOXIN COMPOUNDS

Charles N. Serhan, Boston, Mass., assignor to Brigham & Women's Hospital, Boston, Mass.

Filed Jun. 15, 1994, Ser. No. 260,030
Int. Cl.[6] C09F *7/00*; A01N *37/00*; A61K *31/00*
U.S. Cl. 514—213 **20 Claims**

1. A lipoxin compound having an active region of a natural lipoxin and a metabolic transformation region resistant to in vivo metabolism.

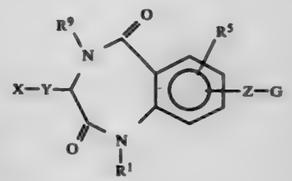
5,441,952

FIBRINOGEN RECEPTOR ANTAGONISTS

David A. Claremon, Maple Glen, and Nigel Liverton, Harleysville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

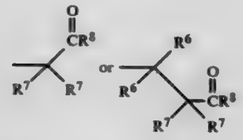
Filed Apr. 5, 1993, Ser. No. 42,963
Int. Cl.[6] C07D *211/62*; A61K *38/00*
U.S. Cl. 514—221 **22 Claims**

1. A fibrinogen receptor antagonist of the following formula:



I

wherein G is



X is
3-piperidinyl;
Y is
C_{1-8} alkylene;
Z is
—$(CH_2)_m$—, —C≡C—CH_2—



wherein m is 0–6;
R^5 is
hydrogen
C_{1-6} alkyl,
C_{0-6} alkylcarboxy C_{0-6} alkyl,
C_{0-6} alkyloxy C_{0-6} alkyl,
hydroxy C_{0-6} alkyl,
aryl C_{0-6} alkyl, or
halogen;
R^6 is
hydrogen,
C_{1-8} alkyl,
aryl C_{0-6} alkyl,
C_{3-8} cycloalkyl C_{0-6} alkyl,
C_{0-6} alkylcarboxy C_{0-6} alkyl, carboxy C_{0-6} alkyl,
C_{1-4} alkyloxy C_{0-6} alkyl, or
hydroxy C_{0-6} alkyl, provided that any of which groups may be substituted or unsubstituted independently with R^1 or R^2, and provided that, when two R^6 groups are attached to the same carbon, they may be the same or different;
R^7 is
hydrogen, fluorine
C_{1-8} alkyl,
C_{3-8} cycloalkyl,
aryl C_{0-6} alkyl,
C_{0-6} alkylamino C_{0-6} alkyl,
C_{0-6} dialkylamino C_{0-6} alkyl,
C_{1-8} alkylsulfonylamino C_{0-6} alkyl,

aryl C_{0-6} alkylsulfonylamino C_{0-6} alkyl,
C_{1-8} alkyloxycarbonylamino C_{0-8} -alkyl,
aryl C_{0-8} alkyloxycarbonylamino C_{0-8} alkyl,
C_{1-8} alkylcarbonylamino C_{0-6} alkyl,
aryl C_{0-6} alkylcarbonylamino C_{0-6} alkyl,
C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
aryl C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl,
C_{1-6} alkylsulfonyl C_{0-6} alkyl,
aryl C_{0-6} alkylsulfonyl C_{0-6} alkyl,
C_{1-6} alkylcarbonyl C_{0-6} alkyl
aryl C_{0-6} alkylcarbonyl C_{0-6} alkyl,
C_{1-6} alkylthiocarbonylamino C_{0-6} alkyl, or
aryl C_{0-6} alkylthiocarbonylamino C_{0-6} alkyl wherein groups may be unsubstituted or substituted with one or more substituents selected from R^1 and R^2, and provided that when two R^7 groups are attached to the same carbon atom, they may be the same or different;

R^8 is
hydroxy,
C_{1-8} alkyloxy,
aryl C_{0-6} alkyloxy,
C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy,
aryl C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, or
an L- or D-amino acid joined by an amino linkage and wherein the carboxylic acid moiety of said amino acid is as the free acid or is esterified by C_{1-6} alkyl; and

R9 is
hydrogen, C_{1-8} alkyl,; phenyl or phenyl C_{1-3} alkyl.

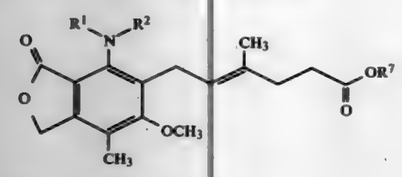
5,441,953

4- AMINO DERIVATIVES OF MYCOPHENOLIC ACID

Eric B. Sjogren, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 198,817, Feb. 18, 1994, Pat. No. 5,389,879. This application Sep. 23, 1994, Ser. No. 311,666
Int. Cl.[6] A61K *31/365, 31/535;* **C07D** *307/88, 413/12*
U.S. Cl. 514—233.5 **10 Claims**

1. A compound represented by the formula:



wherein:
R^1 is hydrogen or lower alkyl;
R^2 is hydrogen, lower alkyl, —C(O)R^3, or —C(O)NR^4R^5, where R^3 is halomethyl, and R^4 and R^5 are independently hydrogen, lower alkyl, or optionally substituted phenyl; and
R^7 is hydrogen, lower alkyl, optionally substituted phenyl, or —$(CH_2)_m$—N=Y, wherein:
m is an integer from two to four; and
Y is lower alkylene of four to six carbon atoms and or lower alkylene of three to five carbon atoms and one member that is —O—, —S—, or —N(R^8)—, where R^8 is hydrogen or lower alkyl;
or a pharmaceutically acceptable salt thereof.

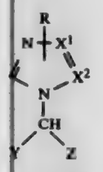
5,441,954

(1H-AZOL-1-YLMETHYL) SUBSTITUTED QUINOLINE DERIVATIVES

Gerard C. Sanz, Garges les Gonesse; Marc G. Venet, Paris, both of France; Eddy J. E. Freyne, Rumst, and Alfons H. M. Raeymaekers, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N. V., Beerse, Belgium

Division of Ser. No. 973,871, Nov. 10, 1992, Pat. No. 5,268,380, which is a division of Ser. No. 704,746, May 23, 1991, Pat. No. 5,185,346, which is a continuation-in-part of Ser. No. 434,205, Nov. 13, 1989, abandoned. This application Oct. 5, 1993, Ser. No. 131,817
Claims priority, application United Kingdom, Nov. 29, 1988, 8827821
Int. Cl.[6] A61K *31/40, 31/45;* **C07D** *215/60*
U.S. Cl. 514—241 **15 Claims**

1. A compound of the formula:

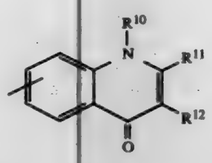


(I)

a pharmaceutically acceptable acid addition salt thereof or a stereochemically isomeric form thereof, wherein:
—X^1=X^2— represents a bivalent radical of formula

—CH=CH—, (x)
—CH=N—, or (y)
—N=CH—; (z)

R represents hydrogen or C_{1-6}alkyl;
Y represents hydrogen, C_{1-10}alkyl, C_{3-7}cycloalkyl, Ar^1, Ar^2—C_{1-6}alkyl, C_{2-6}alkenyl or C_{2-6}alkynyl; and
Z represents a radical of the formula:



(a-4)

wherein:
R^{10} represents hydrogen, C_{1-6}alkyl or Ar^2C_{1-6}alkyl;
R^{12} represents hydrogen, C_{1-6}alkyl or Ar^2; and
R^{11} represents hydrogen or C_{1-6}alkyl;
wherein in the foregoing:
Ar^1 represents phenyl, substituted phenyl, naphthalenyl, pyridinyl, imidazolyl, triazolyl, thienyl, furanyl or thiazolyl, and
Ar^2 represents phenyl or substituted phenyl,
wherein said substituted phenyl in Ar^1 or Ar^2 represents phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, cyano, amino, mono- and di(C_{1-6}alkyl)amino, nitro, carboxyl, formyl and C_{1-6}alkyloxycarbonyl.

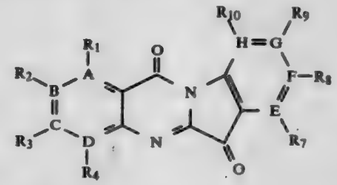
5,441,955

INDOLO[2,1-BIQUINAZOLINE-6,12-DIONE ANTIBACTERIAL COMPOUNDS AND METHODS OF USE THEREOF

William R. Baker, Bellevue, Wash., and Lester A. Mitscher, Lawrence, Kans., assignors to PathoGenesis Corporation, Seattle, Wash.

Filed Nov. 19, 1993, Ser. No. 154,784
Int. Cl.[6] A61K *31/495, 31/53;* **C07D** *487/22, 491/22*
U.S. Cl. 514—250 **19 Claims**

1. A compound of the formula:



wherein A, B, C, D, E, F, G and H are independently selected from carbon and nitrogen, or A and B or C and D can be taken together to be nitrogen or sulfur, with the proviso that at least one of A, B, C, D, E, F, G and H must be other than carbon;
wherein R_1 through R_4, R_8 and R_{10} are independently selected from the group consisting of hydrogen, halogen, loweralkyl, cycloalkyl, heterocycle, substituted heterocycle, amino, imino, haloloweralkyl, alkoxy, nitro, alkylsulfonyl, arylalkyl, arylalkylaryl, arylaryl, aryloxy, arylamino, acylamino, acyloxyamino, alkylaminoacylamino, alkylaminosulfonylamino, alkylamino, alkenylamino, dialkylamino, alkoxyalkylamino, mercaptoalkoxyalkyl, cyano, formyl, —$COOR_{11}$ where R_{11} is hydrogen, loweralkyl, aryl, heterocycle, monosaccharide or disaccharide, and —$CONR_{12}R_{13}$ where R_{12} and R_{13} are independently selected from hydrogen, loweralkyl, aryl, heterocycle, saccharide, peptide and amino acid residues;
R_7 and R_9 are independently selected from hydrogen, halogen, loweralkyl, haloloweralkyl, cycloalkyl, heterocycle, substituted heterocycle and heterocyclicalkyl;
or R_1 through R_{10} are absent when the ring atom to which they would otherwise be bonded is sulfur or double-bonded nitrogen;
and the pharmaceutically acceptable salts thereof.

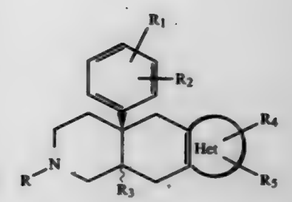
5,441,956

HYDROISOQUINOLINE DERIVATIVES

Vittorio Vecchietti; Giulio Dondio; Silvano Ronzoni, all of Milan, and Roberto Colle, Basiglio, all of Italy, assignors to Smithkline Beecham Farmaceutici S.p.A., Milan, Italy

PCT No. PCT/EP92/01483, § 371 Date Jan. 5, 1994, § 102(e) Date Jan. 5, 1994, PCT Pub. No. WO93/01186, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 1, 1992, Ser. No. 175,371
Claims priority, application Italy, Jul. 5, 1991, MI91A1863; Mar. 11, 1992, MI92A0563
Int. Cl.[6] C07D *471/04;* **A61K** *131/495*
U.S. Cl. 514—250 **12 Claims**

1. A compound, or solvate or salt thereof, of formula (I):



(I)

in which,
R is linear or branched C_{1-5}alkyl, C_{3-7}cycloalkyl, C_{4-6}cycloalkylalkyl, C_{3-5}alkenyl, aryl, aralkyl or furan-2-yl alkyl;
R_1 and R_2, which may be the same or different, are each hydrogen, hydroxy, C_{1-3}alkoxy, or halogen;
R_3 is hydrogen, hydroxy or C_{1-3}alkoxy; "Het" is indolo, N-methylindolo. N-ethylindolo, N-benzylindolo, benzofuro, benzothieno, quino or quinoxalino;
R_4 and R_5, which may be the same or different, are each hydrogen C_{1-5}alkyl, halogen, nitro, CF_3, cyano, C_{1-5}alkoxycarbonyl, NH_2, C_{1-5}alkylcarbonlyamino, hydroxy, C_{1-5}alkoxy, or benzyl.

5,441,957

METHOD FOR REDUCING SICKLE ERYTHROCYTE DEHYDRATION AND DELAYING THE OCCURRENCE OF ERYTHROCYTE SICKLING IN-SITU

Carlo Brugnara, Newton Highlands, and Seth L. Alper, Boston, both of Mass., assignors to Beth Israel Hospital Assoc. Inc., Boston, Mass.

Continuation of Ser. No. 970,929, Nov. 2, 1992, Pat. No. 5,273,992. This application Nov. 18, 1993, Ser. No. 154,114
Int. Cl.[6] A61K *31/495, 31/38, 31/415*
U.S. Cl. 514—252 **7 Claims**

1. A method for reducing sickle erythrocyte dehydration and delaying the occurrence of erythrocyte sickling, said method comprising the steps of:
administering an effective amount of at least one compound selected from the group consisting of N-imidazole and N-nitroimidazole derivatives having an additional heterocyclic moiety in its chemical structure to the sickle erythrocytes in-situ; and
allowing said administered compound to induce inhibition of the Ca-activated potassium channel at the membranes of said sickle erythrocytes in-situ such that sickle erythrocyte dehydration is reduced and the occurrence of erythrocyte sickling is delayed.

5,441,958

OPHTHALMIC COMPOSITIONS COMPRISING EMEDASTINE AND METHODS FOR THEIR USE

John M. Yanni, Burleson; Stella M. Robertson, Arlington, both of Tex.; Shigetoshi Okumura; Hitoshi Tanaka, both of Nara, Japan, and Tadayuki Saito, Osaka, Japan, assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 8, 1993, Ser. No. 163,973
Claims priority, application Japan, Dec. 9, 1992, 4-329216
Int. Cl.[6] A61K *31/50*
U.S. Cl. 514—253 **5 Claims**

1. A method for treating allergic conjuctivitis, comprising topically administering to an affected eye an antihistaminic effective amount of a compound selected from the group consisting of 1-(2-ethoxyethyl)-2-(4-methyl-1-homopiperazinyl)-benzimidazole and its ophthalmically acceptable acid addition salts.

5,441,959

SUBSTITUTED QUINAZOLINONES BEARING ACIDIC FUNCTIONAL GROUPS AS ANGIOTENSIN II ANTAGONISTS

Prasun K. Chakravarty, Edison; Stephen E. de Laszlo, Atlantic Highlands; Tomasz W. Glinka, Westfield; William J. Greenlee, Teaneck, all of N.J.; Nathan B. Mantlo, Ledyard, Conn., and Arthur A. Patchett, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

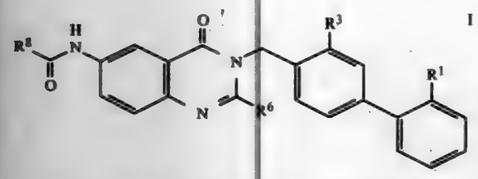
Continuation-in-part of Ser. No. 867,794, Apr. 16, 1992, Pat. No. 5,238,942, which is a continuation-in-part of Ser. No. 698,506, May 10, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,465

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[6] A61K *31/505*; C07D *239/72*, *239/90*

U.S. Cl. 514—259 12 Claims

1. A compound structural formula (I):



I

or a pharmaceutically acceptable salt thereof, wherein:

R^1 is $—SO_2NHCO_2R^{23}$;

R^3 is

(a) halogen (Cl, Br, I, F),

(b) C_1–C_4 alkyl, or

(c) CF_3;

R^6 is straight chain C_1–C_4 alkyl;

R^8 is

(a) $R^{23'}$, or

(b) $NR^{24}R^{23'}$;

R^{23} and $R^{23'}$ are independently

(a) aryl, wherein aryl is defined as phenyl or naphthyl unsubstituted or substituted with one or two substituents selected from the group consisting of: halogen (Cl, Br, I, F), $N(R^{24})_2$, CO_2R^{24}, C_1–C_4 alkyl, C_1–C_4 alkoxyl, NO_2, CF_3, C_1–C_4 alkylthio, OH, $—SO_2N(R^{24})_2$, C_3–C_7 cycloalkyl, C_3–C_{10}-alkenyl and $S(O)_n(C_1$–C_4 alkyl); where n=1 or 2,

(b) heteroaryl, wherein heteroaryl is an unsubstituted or mono-or disubstituted heteroaromatic 5- or 6-membered ring which can contain one or two heteroatoms selected from the group consisting of N, O and S and wherein the substituents are members selected from the group consisting of —OH, —SH, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, halogen (Cl, Br, I, F) and NO_2,

(c) C_3–C_7 cycloalkyl,

(d) C_1–C_6 alkyl which is unsubstituted or substituted with a substituent selected from the group consisting of aryl as defined above, heteroaryl as defined above, —OH, —SH, C_1–C_4 alkyl, $—O(C_1$–C_4 alkyl), C_3–C_7 cycloalkyl, $—S(O)_n(C_1$–C_4 alkyl), $—CF_3$, halogen (Cl, Br, F, I), $—NO_2$, $—CO_2H$, $CO_2—C_1$–C_4 alkyl, $—NH_2$, $—NH(C_1$–C_4 alkyl), $—N(C_1$–C_4 alkyl)$_2$, or

(e) perfluoro-C_1–C_4 alkyl;

R^{24} is

(a) H,

(b) C_1–C_6 alkyl, which is unsubstituted or substituted with aryl as defined above or heteroaryl as defined above, or

(c) aryl; and

$R^{23'}$ and R^{24} when taken together may form a morpholine or piperazine ring, wherein the piperazine ring may be substituted on the nitrogen with C_1–C_4 alkyl or C_1–C_4 acyl.

5,441,960

1-PYRIMIDINYLACETAMIDE HUMAN LEUKOCYTE ELASTATE INHIBITORS

Peter R. Bernstein, Wallingford; Philip D. Edwards; Andrew Shaw, both of Kennett Square, all of Pa.; Royston M. Thomas, Macclesfield, England; Chris A. Veale, Newark, Del.; Peter Warner, Macclesfield, and Donald J. Wolanin, Orange, Conn., assignors to Zeneca Limited, London, England

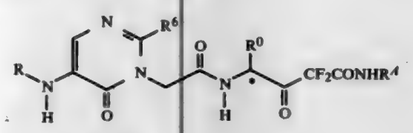
Filed Apr. 8, 1993, Ser. No. 44,866

Claims priority, application United Kingdom, Apr. 16, 1992, 9208383; Aug. 14, 1992, 9217367

Int. Cl.[6] A61K *31/505*; C07D *239/22*

U.S. Cl. 514—269 11 Claims

1. A compound of formula I (formula set out hereinbelow) wherein:



I

R^0 is (1–5C)alkyl;

R is hydrogen; or

R is an acyl group of formula A.X.CO- in which A.X-, taken together, is hydrogen, trifluoromethyl, 2,2,2-trifluoroethoxy, amino, methoxyamino, 2,2,2-trifluoroethylamino, RbRcN.O-, RaOCONH-, R^1SO_2NH-, RaOCO-, RbRcNCO- or RaCO-; or

R is an acyl group of formula A.X.CJ- in which

J is oxygen or sulfur;

X is a direct bond, imino, oxy or thio; and

A is as defined below or

A is tetrahydropyran-4-yl, 1-methylpiperid-4-yl, or 5-methyl-1,3-dioxacyclohex-5-ylmethyl; or

R is a sulfonyl group of formula D.W.SO_2- in which D.W-, taken together, is hydroxy, amino, di(lower alkyl)amino, 2,2,2-trifluoroethylamino, 2,2,2-trifluoroethyl, 3,3,3-trifluoropropyl or trifluoromethyl; or

W is a direct bond, imino, carbonylimino, oxycarbonylimino or iminocarbonylimino; and

D is as defined below; or

R is a group G as defined below;

The group A, D or G is (1–6C)alkyl, (3–6C)cycloalkyl, (3–6C)cycloalkyl-(1–3C)alkyl, aryl, aryl(1–3C)alkyl, heteroaryl or heteroaryl(1–3C)-alkyl wherein an aryl or heteroaryl moiety may bear one or more halogeno, nitro, methyl or trifluoromethyl groups and further wherein the group A, D or G may bear one or more substituents selected from a group consisting of hydroxy, lower alkoxy, lower acyloxy, CORa, CH_2COORa, CONRbRc, $CH_2CONRbRc$, $COO(CH_2)_2NReRf$, cyano, SO_2R^1, CONRdSO_2R^1, NReRf, NRgCHO, $NRgCOR^2$, $NRgCOOR^2$, NRhCONRiRj, $NRkSO_2R^3$, SO_2NRlRm, $SO_2NRnCOR^4$ and $P(O)(ORa)_2$ in which

Q is oxygen or sulfur;

Ra–Rn are independently hydrogen, benzyl or lower alkyl; or, independently, a group NRbRc, NReRf, NRiRj or NRlRm is a cyclic radical selected from a group consisting of 1-pyrrolidinyl, piperidino, morpholino or 1-piperazinyl which may bear a lower alkyl substituent at the 4-position; or independently, a group NReRf is a cyclic radical selected from a group consisting of 2-pyrrolidinon-1-yl, succinimido, oxazolidin-2-on-3-yl, 2-benzoxazolinon-3-yl, phthalimido and cis-hexahydrophthalimido; and

R^1–R^4 are independently trifluoromethyl, (1–6C)alkyl, (3–6C)cycloalkyl, aryl or heteroaryl in which the aryl or heteroaryl may bear one or more substituents selected from a group consisting of lower alkyl, hydroxy, lower alkoxy, halogeno or trifluoromethyl;

R^6 is (1–5C)alkyl which has no tertiary carbon, (3–7C)cycloalkyl, aryl or heteroaryl, which aryl or heteroaryl independently may bear one or more of the substituents defined for the group A or an aryl or heteroaryl moiety thereof;

R^4 is hydrogen, (1–6C)alkyl, (3–6C)cycloalkyl, (3–6C)cycloakyl(1–3C)alkyl, aryl(1–3C)alkyl, or heteroaryl(1–3C)alkyl, wherein an aryl or heteroaryl may bear one or more halogeno, methyl or trifluoromethyl group and further wherein the group R^4 may bear one or more substituents selected from a group consisting of hydroxy, lower alkoxy, CORs, CONRtRu, SO_2Rv, CONHSO$_2$Rv, NRtRu, NRsCHO, NRsCORv, NRsCOORv, NRsCONRtRu, $NRsSO_2Rv$, SO_2NRtRu, $SO_2NRsCORv$, and $P(O)(ORv)_2$ in which Rs-Ru are independently hydrogen, benzyl or lower alkyl, or, independently, a group NRtRu is a cyclic radical selected from a group consisting of 1-pyrrolidinyl, piperidino, morpholino or 1-piperazinyl which may bear a lower alkyl group at the 4-position; and Rv is trifluoromethyl, (1–6C)alkyl, (3–6C)cycloalkyl, aryl or heteroaryl in which the aryl or heteroaryl may bear one or more substituents selected from a group consisting of lower alkyl, hydroxy, lower alkoxy, halogeno or trifluoromethyl; and

provided that no sp^3 carbon is bonded to more than one nitrogen or oxygen, except as part of a cyclic ketal or where the nitrogen bears a carbonyl group; or,

for a compound of formula I which is acidic or basic, a pharmaceutically acceptable salt thereof.

5,441,961

SUBSTITUTED CYCLO OR BICYCLOALKYLAMIDES OF (8β)-6-(SUBSTITUTED) ERGOLINES

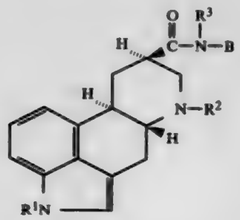
Marlene L. Cohen, Carmel, Ind., and David W. Robertson, Poway, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 27, 1992, Ser. No. 936,684

Int. Cl.[6] A61K *31/48*; C07D *457/00*

U.S. Cl. 514—288 15 Claims

1. A compound of the formula

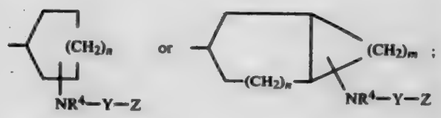


wherein:

R^1 is hydrogen, C_1–C_4 alkyl, $—CH_2—(C_2$–C_4 alkenyl), benzyl, C_3–C_8 cycloalkyl, or substituted C_3–C_6 cycloalkyl;

R^2 is allyl or C_1–C_4 alkyl;

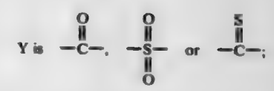
B is



n is 0, 1 or 2;

m is 1, 2, 3, 4 or 5;

Y is



R^3 and R^4 are each independently hydrogen or C_1–C_4 alkyl;

Z is C_1–C_6 alkyl or C_3–C_8 cycloalkyl; and,

the pharmaceutically acceptable acid addition salts thereof.

5,441,962

METHOD FOR TREATING HYPERLIPEMIA

Motoharu Hasegawa; Kohji Shirai; Kiyohiko Matsumoto; Yasuhiko Suzuki; Isao Takahasi; Yuuiti Takarada; Mitsuyo Saito; Kumiko Yamamoto; Yositaka Takayama; Tsutomu Komazawa, all of Tokyo, and Toshiji Sugai, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

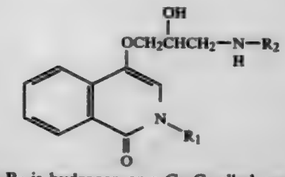
Division of Ser. No. 132,972, Oct. 7, 1993, abandoned. This application Jul. 11, 1994, Ser. No. 272,743

Claims priority, application Japan, Oct. 9, 1992, 4-271480

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—309 3 Claims

1. A method for treating a hyperlipemia which comprises administering to a patient suffering from hyperlipemia an effective amount of a compound of formula



(I)

wherein R_1 is hydrogen or a C_1–C_6 alkyl group and R_2 is a C_1–C_6 alkyl group or the pharmaceutically acceptable salt thereof.

5,441,963

POTENTIATION OF NMDA ANTAGONISTS

Ian A. McDonald, Loveland, and Bruce M. Baron, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

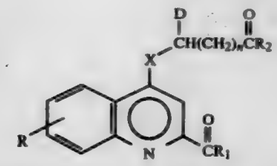
Continuation of Ser. No. 811,203, Dec. 20, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,091

Int. Cl.[6] A61K *31/47*, *31/60*, *31/62*

U.S. Cl. 514—311 4 Claims

1. A method for antagonizing the effects of excitatory amino acids upon the NMDA receptor complex comprising administering to a patient in need thereof, a compound of the formula:

Formula I



in which X is represented by NH; n is represented by an integer from 0 to 6; R_1 and R_2 are each independently represented by a substituent selected from the group consisting of $—NR_3R_4$, —OH, $—OR_5$, and $—OCH_2OCOR_6$ and, $—O—(CH_2)_pNR_7R_8$ in which p is an integer from 1–4; R_3 and R_4 are each independently represented by hydrogen or a C_{1-6} alkyl; R_5 and R_6 are each independently represented by a C_{1-6} alkyl, a phenyl ring, a substituted phenyl ring, or an alkylphenyl substituent in which the phenyl ring may be optionally substituted; R_7 and

Re are independently represented by a C_{1-6} alkyl or together with the adjacent nitrogen atom form a piperidino, morpholino, or pyrrolidinyl group; D is represented by hydrogen or a C_{1-3} alkyl, and; R is represented by a substituent selected from the group consisting of hydrogen, OH, halogen, CN, NO_2, C_{1-6} alkyl, C_{1-6} alkoxy, OCF_3, CF_3, $COOR_3$, and $CONR_3R_4$ in which R_3 and R_4 are each independently as defined above; the pharmaceutically acceptable acid addition salts thereof, and the pharmaceutically acceptable basic addition salts thereof in an amount sufficient to antagonize the effects which excitatory amino acids have upon the NMDA receptor complex and probenecid in an amount sufficient to potentiate said antagonistic effects.

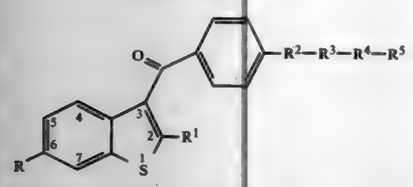
5,441,964

METHODS FOR INHIBITING BONE LOSS USING SUBSTITUTED BENZOTHIOPHENE

Henry U. Bryant, and Timothy A. Grese, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1993, Ser. No. 137,878
Int. Cl.[6] A61K *31/445, 31/40, 31/38*
U.S. Cl. 514—324 **12 Claims**

1. A method of inhibiting bone loss comprising administering to a human in need of treatment an effective amount of a compound having the formula



(I)

wherein R is hydrogen; hydroxy; C_1–C_6 alkoxy; a group of the formula —O—C(O)—R^a, wherein R^a is hydrogen, C_1–C_6 alkyl optionally substituted with amino, halo, carbonyl, C_1–C_6 alkoxycarbonyl, C_1–C_7 alkanoyloxy, carbamoyl and/or aryl; or R^a is C_1–C_6 alkenyl optionally substituted with aryl; or R^a is a C_3–C_7 cycloalkyl; or R^a is aryl optionally substituted with hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, and/or halo; or R^a is —O—aryl, said aryl optionally substituted with hydroxy C_1–C_6 alkyl, C_1–C_6 alkoxy, and/or halo,

or R is a group of the formula —O—SO_2—R^b wherein R^b may be C_1–C_6 alkyl or aryl optionally substituted with C_1–C6 alkyl;

or R is carbamoyloxy wherein the nitrogen may be substituted once or twice with C_1–C6 alkyl;

or R is a group of the formula —O—C(O)R^c—O—(C_1–C_6 alkyl) wherein R^c is a bond or C_1–C_6 alkanediyl;

R^1 is halo, C_1–C_6 alkyl, C_1–C_7 alkyl substituted with C_1–C_6 alkyl, substituted or unsubstituted C_3–C_7 cycloalkyl, or substituted or unsubstituted C_3–C_7 cycloalkenyl;

R^2 is O or CH_2;

R^3 is CH_2 or $(CH_2)_2$;

R^4 is



CH_2, or a bond; and

R^5 is amino, nitrilo optionally substituted once or twice with C_1–C_6 alkyl; or an N-heterocyclic ring which optionally has another hetero atom selected from N, O or S in said ring; or a pharmaceutically acceptable salt or solvate thereof.

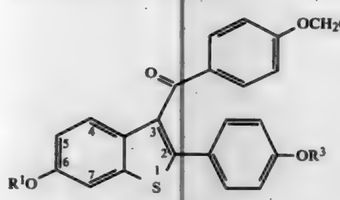
5,441,965

METHODS OF INHIBITING THROMBIN

Daniel J. Sall, Greenwood, and Gerald F. Smith, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1993, Ser. No. 171,394
Int. Cl.[6] A61K *31/445, 31/40*
U.S. Cl. 514—324 **3 Claims**

1. A method of inhibiting thrombin comprising administering to a human in need of treatment an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidino, hexamthylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

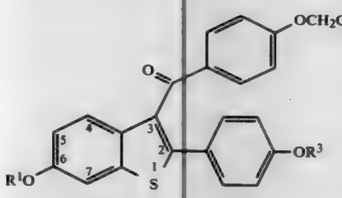
5,441,966

METHODS OF INHIBITING TURNER'S SYNDROME

Jeffrey A. Dodge, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

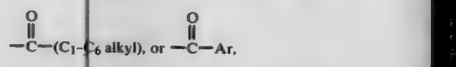
Filed Dec. 21, 1993, Ser. No. 171,328
Int. Cl.[6] A61K *31/445, 31/40*
U.S. Cl. 514—324 **4 Claims**

1. A method of inhibiting Turner's Syndrome comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

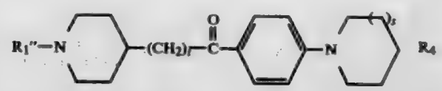
5,441,967

CYCLIC AMINE COMPOUNDS AND THEIR USE

Giichi Goto, Toyono; Hidefumi Yukimasa, Nara, and Tetsuji Imamoto, Katsuragi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 964,851, Dec. 18, 1992, Pat. No. 5,294,625, which is a division of Ser. No. 461,114, Jan. 4, 1990, Pat. No. 5,177,087. This application Dec. 22, 1993, Ser. No. 171,163
Claims priority, application Japan, Jan. 13, 1989, 1-006651; Jul. 12, 1989, 1-179495; Sep. 28, 1989, 1-253162
Int. Cl.[6] A61K *31/445;* **C07D** *401/04*
U.S. Cl. 514—326 **3 Claims**

1. A compound of the formula:



wherein R_1'' is a benzyl group which is unsubstituted or has one to three substituents selected from the group consisting of C_{1-3} alkoxy groups, C_{1-3} alkyl groups, cyano, hydroxy, nitro and halogens, R_4 is a hydrogen, phenyl or benzyl, s is 0, 1 or 2 and l is an integer of 0 to 4, or a physiologically acceptable salt thereof.

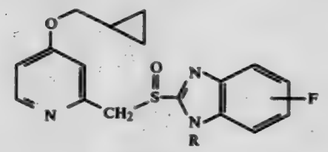
5,441,968

THERAPEUTICALLY ACTIVE FLUORO SUBSTITUTED BENZIMIDAZOLES

Arne E. Brändström, Göteborg; Per L. Lindberg, Askim, and Gunnel E. Sundén, Göteborg, all of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Division of Ser. No. 596,984, Dec. 7, 1990, Pat. No. 5,274,099, which is a division of Ser. No. 454,048, Dec. 20, 1990, Pat. No. 5,049,674. This application Oct. 8, 1993, Ser. No. 134,255
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] C07D *401/12;* **A61K** *31/44*
U.S. Cl. 514—338 **5 Claims**

1. A compound of the formula I



I

wherein F is in 5 or 6 position and

wherein R is the group —CH_2OCOOR^1,

wherein R^1 is a straight or branched alkyl containing 1–6 carbon atoms or benzyl,

and physiologically acceptable salts thereof.

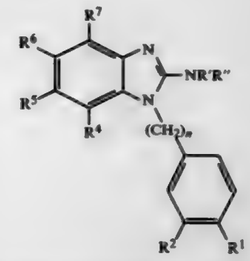
5,441,969

IMIDAZOLE COMPOUNDS, THEIR PREPARATION AND USE

Oskar Axelsson; Dan Peters, both of Malmö , Sweden, and Elsebet O Nielsen, Copenhagen, Denmark, assignors to NeuroSearch A/S, Glostrup, Denmark

Filed Dec. 22, 1993, Ser. No. 172,427
Claims priority, application Denmark, Dec. 23, 1992, 1540/92
Int. Cl.[6] A61K *31/445;* **C07D** *235/30*
U.S. Cl. 514—338 **12 Claims**

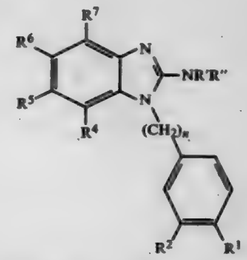
1. A method of treating a disorder, which is responsive to the partial or complete blockade of calcium channels of the central nervous system of a living animal body, which comprises administering to a living animal body in need thereof, a therapeutically-effective amount of a compound selected from those having the formula:



or a pharmaceutically-acceptable addition salt thereof, wherein R′ and R″ independently of each other are hydrogen or C_{1-6}-alkyl, or R′ and R″ together form a 3 to 6 membered alkylene chain; one of R^1 and R^2 is phenyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, oxadiazolyl, thiadiazolyl, imidazolyl, pyrrolyl, furyl, thienyl, pyridyl, benzimidazolyl, indolyl, pyrazolyl, or benzodioxolyl, all of which may be substituted one or more times with halogen, CF_3, CN, OH, C_{1-6}-alkyl, C_{3-7}-cycloalkyl-C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{1-6}-alkoxy, amino, nitro, sulphamoyl, tetrazolyl, CO_2H, or CO_2-C_{1-6}-alkyl and the other of R^1 and R^2 is hydrogen, halogen, C_{1-6}-alkoxy, amino, or C_{1-6}-alkyl; and

R^4, R^5, R^6, and R^7 independently of each other are hydrogen, halogen, amino, nitro, CN, OH, CF_3, C_{1-6}-alkyl, or C_{1-6}-alkoxy; and n is 0 or 1; provided that neither of R^1 and R^2 is phenyl or substituted phenyl when n is 0.

8. A compound having the formula



or a pharmaceutically-acceptable addition salt thereof, wherein R′ and R″ independently of each other are hydrogen or C_{1-6}-alkyl, or R′ and R″ together form a 3 to 6 membered alkylene chain; one of R^1 and R^2 is oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, oxadiazolyl, thiadiazolyl, imidazolyl, pyrrolyl, furyl, thienyl, pyridyl, benzimidazolyl, indolyl, pyrazolyl, or benzodioxolyl, all of which may be substituted one or more times with halogen, CF_3, CN, OH, C_{1-6}-alkyl, C_{3-7}-cycloalkyl-C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{1-6}-alkoxy, amino, nitro, sulphamoyl, tetrazolyl, CO_2H, or CO_2-C_{1-6}-alkyl, OR one of R^1 and R^2 is phenyl which may be substituted one or more times with halogen, CF_3, OH, C_{1-6}-alkyl, C_{3-7}-cycloalkyl-C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{1-6}-alkoxy, or nitro, and the other of R^1 and R^2 in any case is hydrogen, halogen, C_{1-6}-alkoxy, amino, or C_{1-6}-alkyl; and

R^4, R^5, R^6, and R^7 independently of each other are hydrogen, halogen, amino, nitro, CN, OH, CF_3, C_{1-6}-alkyl, or C_{1-6}-alkoxy; and n is 0 or 1; provided that neither of R^1 and R^2 is phenyl or substituted phenyl when n is 0.

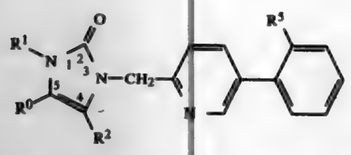
5,441,970

USE OF N-ARYLHETEROARYLALKYL IMIDAZOL-2-ONE COMPOUNDS FOR TREATMENT OF CIRCULATORY DISORDERS

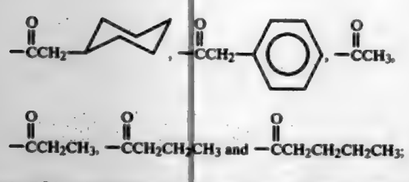
David B. Reitz, Chesterfield, and Robert E. Manning, St. Louis, both of Mo., assignors to G. D. Searle & Co., Chicago, Ill.

PCT No. PCT/US92/02439, § 371 Date Aug. 19, 1993, § 102(e) Date Aug. 19, 1993, PCT Pub. No. WO92/17469, PCT Pub. Date Oct. 15, 1992
Continuation-in-part of Ser. No. 681,011, Apr. 5, 1991, Pat. No. 5,164,403. This PCT application Apr. 1, 1992, Ser. No. 107,742
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—340 16 Claims

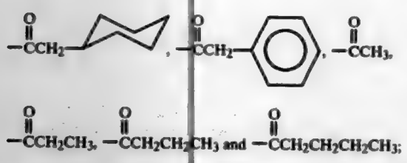
1. A therapeutic method for treating a circulatory disorder, said method comprising administering to a subject susceptible to or afflicted with such disorder a therapeutically-effective amount of an active compound of the formula



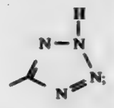
wherein R^1 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, isopentyl, n-pentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, cyclohexanoyl, benzoyl, 2-butenyl, 3-butenyl, 2-butynyl, 3-butynyl, 2-hydroxybutyl,



wherein R^0 is selected from hydrido, methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, isopentyl, tert-butyl, n-pentyl, neopentyl, 1,1-difluoro-2-phenylethyl, 1,1-difluoro-2-cyclohexylethyl, 2-cyclohexylethyl, 1,1-difluoro-3-cyclohexylpropyl, fluoro, chloro, monofluoromethyl, difluoromethyl, trifluoromethyl, formyl, carboxyl, dimethoxymethyl, 1,1-dimethoxybutyl, 1,1-difluoroethyl, 1,1-difluoropropyl, 1,1-difluorobutyl, 1,1-difluoropentyl, benzyl, 2-phenylethyl, 1,1-difluoro-3-phenylpropyl, cyclohexylmethyl, cyclohexylethyl, cyclohexanoyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-butynyl, 2-butynyl, 3-butynyl, propylthio, butylthio,



wherein R^2 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, propylthio, butylthio and hydroxyalkyl; wherein R^5 is COOH or



or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

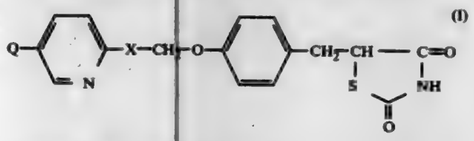
5,441,971

THIAZOLIDINEDIONE DERIVATIVES, PRODUCTION AND USE THEREOF

Takashi Sohda; Hitoshi Ikeda, both of Osaka, Japan; John C. Greenfield, Richland, Mich.; Jerry R. Colca, Texas Township, Mich., and Edgar N. Petzold, Plainwell, Mich., assignors to The Upjohn Company, Kalamazoo, Mich. and Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1993, Ser. No. 137,135
PCT. Filed: Apr. 6, 1992; PCT. No.: PCT/US92/02566; § 371 Date: Oct. 12, 1993; § 102(e) Date: Oct. 12, 1993; PCT Pub. No.: WO92/18501; PCT Pub. Date: Oct. 29, 1992
Claims priority, application Japan, Apr. 11, 1991, 3-078836
Int. Cl.[6] A61K *31/44*; C07D *417/12*
U.S. Cl. 514—342 21 Claims

1. A thiazolidinedione compound of the formula (I):



(I)

wherein X is $—CH_2—$ or —CO—;
wherein Q is $CH_3CO—$, $CH_3CH(OR)—$, $—CH_2COOH$, or $CH_3CH_2—$;
wherein R is a hydrogen atom or a formyl or alkylcarbonyl group having two to six carbon atoms;
with the provisio that Q is $CH_3CO—$, $CH_3CH(OR)—$, or $—CH_2COOH$ only when X is $—CH_2—$ and Q is $CH_3CH_2—$ only when X is —CO—;
or a pharmaceutically acceptable salt thereof, or a pure stereoisomeric form thereof.

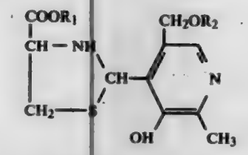
5,441,972

PHARMACEUTICAL USE OF PYRIDOXAL DERIVATIVE

Kazumi Ogata, Toyonaka; Shunji Sogo, Yao, and Eri Inoue, Kobe, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 4, 1994, Ser. No. 222,596
Claims priority, application Japan, Apr. 2, 1993, 5-076490
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—342 9 Claims

1. A method for preventing and treating cataract, comprising administering an effective amount of a compound of the formula (I)



(I)

wherein R_1 is a hydrogen atom or a lower alkyl and R_2 is a hydrogen atom or a phosphoric acid group, or a pharmacologically acceptable salt thereof.

5,441,973

N-ACYL-4-PHENYL-PYRROLIDIN-2-ONES AND METHOD FOR PREPARING

Lothar Zenker, Radebeul; Helmut Wunderlich, Dresden; Dieter Lohmann, Radebeul; Angelika Rostock, Dresden; Christine Siegemund, Weinböhla, all of Germany; Artur V. Valdman, Moskau, U.S.S.R.; Tatjana A. Voronina, Moskau, U.S.S.R.; Ilmira C. Rachmankulova, Moskau, U.S.S.R.; Oleg M. Glozman, Moskau, U.S.S.R.; Taisija L. Garibova, Moskau, U.S.S.R.; Larisa M. Mescerjakova, Moskau, U.S.S.R.; Ljudmila A. Zmurenko, Moskau, U.S.S.R.; Sergej B. Seredenin, Moskau, U.S.S.R., and Grigorij G. Rozancev, Moskau, U.S.S.R., assignors to Arzneimittelwerk Dresden G.m.b.H., Radebeul, Germany

Continuation of Ser. No. 995,329, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 642,053, Jan. 16, 1991, abandoned. This application Jan. 13, 1994, Ser. No. 182,665
Claims priority, application Germany, Jan. 31, 1990, 3 37 440.6
Int. Cl.[6] A61K *31/455, 31/40*; C07D *401/02, 403/02*
U.S. Cl. 514—343 4 Claims

1. The compounds:
N-dipropylacetyl-4-phenyl-pyrrolidin-2-one;
N-dipropylacetyl-4-(4-chlorophenyl-pyrrolidin)-2-oae;
N-(4-methyoxybenzoyl)-4-phenyl-pyrrolidin-2-one;
N-(4-methyoxybenzoyl)-4-(4-chlorophenyl)-pyrrolidin-2-one;
N-(4-chlorophenyoxyacetyl)-4-phenyl-pyrrolidin-2-one;
N-(4-chlorophenoxyacetyl)-4-(4-chlorophenyl)pyrrolidin-2-one;
N-dipropylacetyl-3-carbethoxy-4-phenyl-pyrrolidin-2-one;
N-(4-chlorobenzoyl)-4-phenyl-pyrrolidin-2-one;
N-(4-methoxybenzoyl)-3-carbethoxy-4-phenyl-pyrrolidin-2-one;
N-nicotinoyl-4-phenyl-pyrrolidin-2-one; and
pharmaceutically acceptable salts thereof.

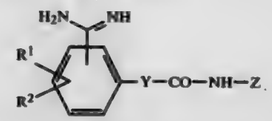
5,441,974

PHENYL AMIDINES LACTONES USEFUL AS PLATELET AGGREGATION INHIBITORS

Philippe R. Bovy, Los Altos, Calif.; Thomas E. Rogers, Ballwin, Mo.; Masatoru Miyano, Salem, S.C., and Joseph G. Rico, Manchester, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

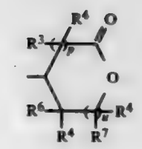
PCT No. PCT/US92/10526, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO93/12103, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 11, 1992, Ser. No. 244,421
Int. Cl.[6] A61K *31/425*; C07D *311/012*
U.S. Cl. 514—365 12 Claims

1. A compound of the formula

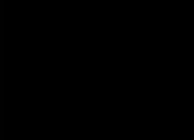


I

or a pharmaceutically acceptable salt thereof, wherein
R^1 and R^2 are independently selected from the group consisting of hydrido, halo, alkoxy having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms and hydroxy;
Y is alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, alkynyl having 2 to 6 carbon atoms wherein each carbon atom of the above defined groups which is capable of further substitution may be further substituted by alkyl having 1 to 6 carbon atoms, phenyl or substituted phenyl wherein each phenyl substituent is selected from halo, alkoxy having 1 to 6 carbon atoms, and alkyl having 1 to 6 carbon atoms or Y is carbonylalkyl wherein the alkyl has 1 to 3 carbon atoms;
Z is a lactone which is represented by the formula



wherein
R^3 and R_4 are each independently selected from the group consisting of hydrido, halo, alkoxy having 1 to 6 carbon atoms, alkyl having 1 to 6 carbon atoms and hydroxy;
R^5, R^6, R^7 and R^8 are each independently selected from the group consisting of hydrido; halo; alkenyl having 2 to 6 carbon atoms; alkynyl having 2 to 6 carbon atoms; alkoxy having 1 to 6 carbon atoms; alkyl having 1 to 6 carbon atoms; phenyl; substituted phenyl wherein each phenyl substituent is selected from halo, alkoxy having 1 to 6 carbon atoms and alkyl having 1 to 6 carbon atoms and heteroaromatic ring having 5 or 6 ring carbon atoms wherein one or two of the ring carbon atoms are replaced by a heteroatom selected from nitrogen, oxygen or sulfur with the understanding that if two hetero atoms are present one of the hetero atoms must be nitrogen;
p is an integer from 1 to 2;
u is an integer from 0 to 2;
or
Z is a lactone which is fused to a benzene ring and represented by the formula



wherein Q is one or more substituents of the benzene ring which may be in any position and is selected from the group consisting of hydrido, halo, hydroxy, alkyl having 1 to 6 carbon atoms and alkoxy having 1 to 6 carbon atoms
and
R^9 is hydrido, alkyl having 1 to 6 carbon atoms or alkoxy having 1 to 6 carbon atoms.

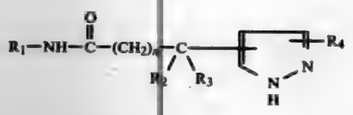
5,441,975

PYRAZOLO-SUBSTITUTED ALKYL AMIDE ACAT INHIBITORS

Helen T. Lee, Ann Arbor; Patrick M. O'Brien, Stockbridge; Joseph A. Picard, Ypsilanti; Claude F. Purchase, Jr.; Bruce D. Roth, both of Ann Arbor; Drago R. Slitkovic, Ypsilanti, and Andrew D. White, Lakeland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 19,411, Feb. 18, 1993, Pat. No. 5,366,987, which is a continuation-in-part of Ser. No. 913,643, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,568, Aug. 22, 1991, abandoned. This application Jul. 12, 1994, Ser. No. 274,088
Int. Cl.[6] A61K *31/415*; C07D *231/12*
U.S. Cl. 514—406 13 Claims

1. A compound of formula



wherein n is 0, 1, or 2;
R_1 is selected from:
(a) phenyl which is unsubstituted or is substituted with from one to three substituents selected from:
alkyl having from one to four carbon atoms and which is straight or branched,
alkoxy having from one to three carbon atoms and which is straight or branched,
alkylthio having from one to three carbon atoms and which is straight or branched,
hydroxy,
phenyl,
fluorine,
chlorine,
bromine,
nitro,
cyano,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from one to four carbon atoms and which is straight or branched,
$-(CH_2)_mNR_5R_6$ wherein m is 0 or 1, and each of R_5 and R_6 is hydrogen or a straight or branched alkyl group having one to four carbon atoms;
(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from:
alkyl having from one to four carbon atoms and which is straight or branched,
alkoxy having from one to three carbon atoms and which is straight or branched,
hydroxy,
fluorine,
chlorine,
bromine,
nitro,
cyano,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched,
$-(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;
R_2 and R_3 are the same or different and are selected from:
(a) hydrogen;
(b) a straight or branched alkyl group having from one to 12 carbon atoms, or a cycloalkyl group having from three to eight carbon atoms;
(c) a phenyl or phenylalkyl group where alkyl is from one to four carbon atoms and which the phenyl ring is unsubstituted or substituted with from one to three substituents selected from straight or branched alkyl having from one to four carbon atoms, straight or branched alkoxy having from one to four carbon atoms, alkylthio, straight or branched having one to four carbon atoms, hydroxy, fluorine, chlorine, bromine, trifluoromethyl, cyano, nitro, phenyl, cycloalkyl, or $(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;
(d) a straight or branched alkenyl group having from two to six carbon atoms;
R_4 is a straight or branched hydrocarbon chain having from 8 to 18 carbon atoms and is saturated or is unsaturated and has one double bond or has two nonadjacent double bonds
or a pharmaceutically acceptable salt or individual enantiomeric isomer thereof.

5,441,976
PHARMACOLOGICAL USE OF CERTAIN CYSTINE DERIVATIVES
Carl-Magnus A. Andersson; Haakan S. A. Bergstrand; Anders R. Hallberg, all of Lund; Bengt O. Särnstrand, Bjärred, and Anders P. S. Tunek, Malmö, all of Sweden, assignors to Aktiebolaget Astra, Södertalje, Sweden
Filed Dec. 4, 1992, Ser. No. 949,648
Claims priority, application Sweden, Jun. 8, 1990, 9002067; Jun. 28, 1990, 9002275
Int. Cl.[6] A61K *31/195, 31/22, 31/225;* **C07C** *323/59*
U.S. Cl. 514—410 **14 Claims**

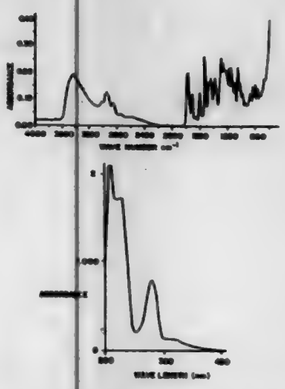
1. A pharmaceutical preparation for the treatment of diseases wherein an immunostimulating substance is effective, comprising as active ingredient a compound selected from the group consisting of racemic N,N'-dibutyrylcystine, N,N'-diisovalerylcystine, N,N'-dicaprylylcystine, N,N'-dicetylcystine dimethyl ester, N,N'-diacetylcystine diethyl ester, the D and L optical isomers thereof and physiologically acceptable salts thereof in a pharmaceutically acceptable carrier.

5,441,977
21-NORRAPAMYCIN
Ralph J. Russo, Piscataway, N.J.; Stanley R. Howell, San Diego, Calif., and Surendra N. Sehgal, Princeton, N.J., assignors to American Home Products Corporation, Madison, N.J.
Continuation-in-part of Ser. No. 949,964, Sep. 24, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 204,028
Int. Cl.[6] C07D *498/16;* **A61K** *31/40*
U.S. Cl. 514—411 **16 Claims**

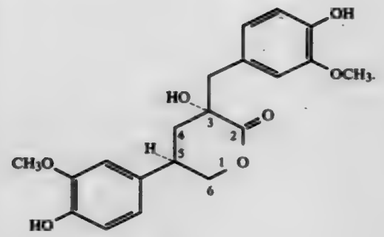
1. A compound which is 21-norrapamycin or a pharmaceutically acceptable salt thereof.

4. A method of treating transplantation rejection; graft vs. host disease; autoimmune diseases; diseases of inflammation; solid tumors; pulmonary inflammation; and disease states involving intimal smooth muscle cell proliferation in a mammal in need thereof; which comprises administering an effective amount of 21-norrapamycin.

5,441,978
COMPOUND AND NEMATICIDE AGAINST PINE WOOD NEMATODES CONTAINING THE SAME
Takayuki Suga, Hiroshima, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 12,589
Claims priority, application Japan, Feb. 7, 1992, 4-022204
Int. Cl.[6] A61K *31/365;* **C07D** *309/30*
U.S. Cl. 514—460 **6 Claims**



1. A isolated compound having the following structural formula:



5,441,979
SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING METHYLENE-BIS(THIOCYANATE) AND AN ORGANIC ACID
David Oppong, and Vanja M. King, both of Memphis, Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.
Filed Jan. 27, 1994, Ser. No. 187,075
Int. Cl.[6] A01N *37/10, 47/40, 47/46, 47/48*
U.S. Cl. 514—515 **34 Claims**

1. A composition to control the growth of at least one microorganism selected from the group consisting of bacteria, fungi, and mixtures thereof comprising a synergistic microbicidal effective amounts of (A) a methylene-bis(thiocyanate) and (B) at least one organic acid selected from the group consisting of benzoic acid, sodium enzoate, p-hydroxybenzoic acid, methyl paraben, propyl paraben their respective salts and mixtures thereof.

5,441,980
POTENTIALIZATION OF PYRETHROID BY CROTAMITON WHICH IS USEFUL IN THE TREATMENT OF PEDICULOSIS
Pierre Fabre; Gilbert Mouzin, both of Castres; Michel Jeanjean, Castanet-Tolosan; Nicole Monteny, Orsay, and Henri Cousse, Castres, all of France, assignors to Pierre Fabre Sante, Boulogne, France
Filed Apr. 16, 1993, Ser. No. 46,797
Claims priority, application France, Apr. 16, 1992, 92 04691
Int. Cl.[6] A01N *53/08*
U.S. Cl. 514—531 **3 Claims**

1. A dermatological or cosmetological composition for the treatment of pediculosis comprising: synergistically effective amounts of crotamiton and permethrin in a weight ratio of 69.5:1 to 11.6:1 and containing from 0.01 to 0.2% by weight of permethrin.

5,441,981
SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING A HALOGENATED ACETOPHENONE AND AN ORGANIC ACID
David Oppong, and Vanja M. King, both of Memphis, Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.
Filed Jan. 27, 1994, Ser. No. 186,917
Int. Cl.[6] A01N *35/00, 37/10*
U.S. Cl. 514—544 **34 Claims**

1. A composition to control the growth of at least one microorganism selected from the group consisting of bacteria, fungi, and mixtures thereof comprising a synergistic microbicidal effective amounts of (A) 2-bromo-4'hydroxyacetophenone and (B) at least one organic acid selected from the group consisting of benzoic acid, sodium benzoate, p-hydroxybenzoic acid, methyl paraben, propyl paraben their respective salts and mixtures thereof.

5,441,982
THERAPEUTICS FOR MANAGEMENT OF COCAINE INDUCED TOXICITY
Yosef Itzhak, 9407 SW. 151st Ave., Miami, Fla. 33196
Filed Sep. 24, 1993, Ser. No. 125,808
Int. Cl.[6] A61K *31/22, 31/195*
U.S. Cl. 514—55 **6 Claims**

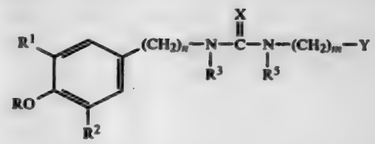
1. A method for treating the toxic effects of cocaine in a human subject comprising administering to said subject an effective cocaine induced toxicity reducing amount of a nitric oxide synthase inhibitor for a period of time effective to reduce said cocaine induced toxicity.

5,441,983
TREATMENT OF INFECTION BY ENVELOPED VIRUS WITH CALIX(N)ARENA COMPOUNDS
Kou M. Hwang, Danville; You M. Qi, Sunnyvale; Su-Ying Liu, Belmont; William Choy, and Jen Chen, both of Sunnyvale, all of Calif., assignors to Genelabs Incorporated, Redwood City, Calif.
Continuation-in-part of Ser. No. 791,920, Nov. 13, 1991, Pat. No. 5,312,837, which is a continuation-in-part of Ser. No. 647,720, Jan. 29, 1991, Pat. No. 5,196,452, which is a continuation-in-part of Ser. No. 647,469, Jan. 29, 1991, Pat. No. 5,166,173. This application Aug. 6, 1992, Ser. No. 928,108
Int. Cl.[6] A61K *31/195*
U.S. Cl. 514—562 **16 Claims**

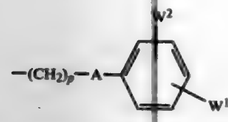
1. A method of inhibiting infection of a mammalian cell by herpes simplex virus HSV-1 or HSV-2 comprising
administering to the site of infection a therapeutically effective dose of a calix(n)arene compound which is derivatized, at its ring positions meta to the bridge attachments to the ring, with polar substituents having a terminal carboxylate, phosphonate, or sulfonate group.

5,441,984
UREA, THIOUREA AND GUANIDINE DERIVATIVES
William F. Heath, Jr., Fishers; Jill A. Panetta, Zionsville, and John K. Shadle, Fishers, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation of Ser. No. 177,896, Jan. 6, 1994, abandoned. This application Nov. 14, 1994, Ser. No. 338,994
Int. Cl.[6] A61K *31/17, 31/155, 31/38, 31/335*
U.S. Cl. 514—595 **18 Claims**

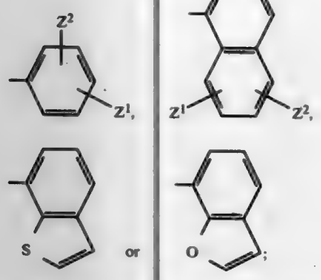
1. A method for preventing the development of diabetic complications selected from kidney failure, retinopathy, nephropathy and neuropathy in mammals comprising administering to a mammal in need of such prevention an effective amount of a compound of the formula.



wherein:
R is hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_1–C_6 alkylphenyl or a hydroxy protecting group;
R^1 and R^2 are each independently hydrogen, C_1–C_6 alkyl, C_3–C_8 cycloalkyl, C_1–C_6 alkoxy, C_2–C_6 alkenyl, C_2–C_6 alkynyl, S(O)q(C_1–C_6 alkyl) or



A is —CH_2—, —O—, —S—, —S(O)— or —$S(O_2)$—;
W^1 and W^2 are each independently hydrogen, halo, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_2–C_4 alkenyl or C_2–C_4 alkynyl;
R^3 is hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl or C_1–C_6 alkylphenyl;
X is O, S or NR^4;
R^4 is hydrogen, C_1–C_6 alkyl, C_1–C_4 alkylphenyl or C_1–C_6 alkoxy;
R^5 is hydrogen, C_3–C_8 cycloalkyl or C_1–C_8 alkyl;
Y is



Z^1 and Z^2 are each independently hydrogen, C_1–C_6 alkyl, C_3–C_8 cycloalkyl, C_1–C_6 alkoxy, hydroxy, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_4 alkylthio, halo, trifluoromethyl or —NR^6R^7;
R^6 and R^7 are each independently hydrogen, C_3–C_8 cycloalkyl, C_1–C_6 alkyl or C_1–C_4 alkylphenyl;
n is 1 to 5, both inclusive;
m and p are each independently 0 to 6, both inclusive;
q is 0, 1 or 2; and
pharmaceutically acceptable salts thereof.

5,441,985
TREATMENT OF LOWER URINARY TRACT DISORDERS WITH SELECTIVE NOREPINEPHRINE UPTAKE INHIBITORS
Mark M. Foreman, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Continuation of Ser. No. 660,767, Feb. 25, 1991, abandoned. This application May 13, 1993, Ser. No. 61,335
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—646 **13 Claims**

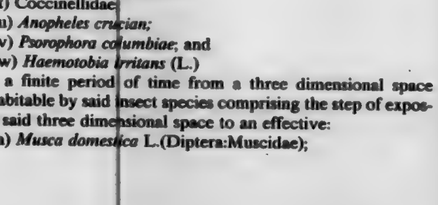
1. A method of treating urinary incontinence comprising administering to a human suffering from urinary incontinence an effective amount of tomoxetine or a pharmaceutically acceptable salt thereof.

5,441,986
ESTROGEN AGONISTS AS REMEDIES FOR PROSTATE AND CARDIOVASCULAR DISEASES
David D. Thompson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Jul. 19, 1994, Ser. No. 276,969
Int. Cl.[6] H61K *31/135*
U.S. Cl. 514—648 **2 Claims**

1. A method of treating benign prostatic hyperplasia which comprises administering to a mammal suffering from benign prostatic hyperplasia a therapeutically effective amount of droloxifene or a pharmaceutically acceptable salt thereof.

5,441,987
ANTIFUNGAL AGENT
Guy H. Harris, Cranford; James E. Curotto, Morgan; Robert A. Giacobbe, Lavallette; Suzanne M. Mandala, Scotch Plains; Richard L. Monaghan, Morristown, all of N.J.; Richard K. Jansson, Doylestown, Pa., and Joan A. Lasota, Ringoes, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Aug. 12, 1994, Ser. No. 289,863
Int. Cl.[6] A61K *31/12*
U.S. Cl. 514—691 **10 Claims**

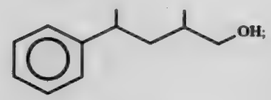
1. A compound of the formula



5,441,988
HOUSE FLY, HORN FLY, AND MOSQUITO REPELLENTS AND APPARATUS USEFUL IN TESTING EFFICACY OF SAME
Jerry F. Butler, Gainesville, Fla.; Anna B. Marin, Leonardo, N.J.; Craig B. Warren, Rumson, N.J.; Richard A. Wilson, Westfield, N.J., and Braja D. Mookherjee, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.
Division of Ser. No. 130,398, Oct. 1, 1993, which is a continuation-in-part of Ser. No. 982,374, Nov. 25, 1992, Pat. No. 5,281,621, which is a continuation-in-part of Ser. No. 789,695, Nov. 8, 1991, abandoned, which is a division of Ser. No. 643,206, Jan. 18, 1991, Pat. No. 5,126,369. This application Aug. 12, 1994, Ser. No. 289,570
Int. Cl.[6] A01N *31/00, 31/04*; C11D *9/50*
U.S. Cl. 514—715 **4 Claims**

1. A method of repelling at least one of the insect species:
(a) *Musca domestica* L.(Diptera:Muscidae);
(b) *Aedes aegypti;*
(c) *Aedes albopictus;*
(d) Anopheles spp.;
(e) *Coquillettidia perturbans;*
(f) Culiseta spp.;
(g) Culex spp.;
(h) Psorophora spp.;
(i) Culicoides spp.; and/or
(j) Lutzomyia spp.;
(k) Aedes spp.;
(l) *Culex nigripalpus;*
(m) *Aedes atlanticus;*
(n) *Culex salinarius;*
(o) *Aedes vexans;*
(p) Simuliidae spp.;
(q) *Psorophora ferox;*
(r) *Aedes infirmatus;*
(s) *Drosophila melanogaster;*
(t) Coccinellidae;
(u) *Anopheles crucian;*
(v) *Psorophora columbiae;* and
(w) *Haemotobia irritans* (L.)
for a finite period of time from a three dimensional space inhabitable by said insect species comprising the step of exposing said three dimensional space to an effective:
(a) *Musca domestica* L.(Diptera:Muscidae);

(b) *Aedes aegypti;*
(c) *Aedes albopictus;*
(d) Anopheles spp.;
(e) *Coquillettidia perturbans;*
(f) Culiseta spp.;
(g) Culex spp.;
(h) Psorophora spp.;
(i) Culicoides spp.; and/or
(j) Lutzomyia spp.;
(k) Aedes spp.;
(l) *Culex nigripalpus;*
(m) *Aedes atlanticus;*
(n) *Culex salinarius;*
(o) *Aedes vexans;*
(p) Simuliidae spp.;
(q) *Psorophora ferox;*
(r) *Aedes infirmatus;*
(s) *Drosophila melanogaster;*
(t) Coccinellidae;
(u) *Anopheles crucian;*
(v) *Psorophora columbiae;* and
(w) *Haemotobia irritans* (L.) repelling concentration and quantity of at least one composition of matter selected from the group consisting of:
(i) 2,4-dimethyl-4-phenyl-1-butanol having the structure:



and
(ii) an ether having the structure:



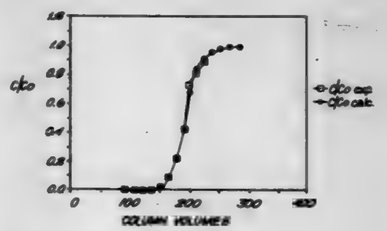
5,441,989
VITREOUS HUMOR TAMPONADE FOR THE POSTERIOR CAVITY IN AN EYE
Hasso Meinert, Neu-Ulm; Klaus Heimann, Köln; Christine F. Kreiner, München, and Bernd Kirchhof, Köln, all of Germany, assignors to adatomed Pharmazeutische und medizintechnische Gesellschaft mbh, Munich, Germany
Filed Jun. 25, 1993, Ser. No. 81,050
Claims priority, application Germany, Jun. 25, 1992, 42 20 882.3
Int. Cl.[6] A61K *31/08*
U.S. Cl. 514—772 **1 Claim**

1. A method of using a perfluorocarbon, which is liquid under normal conditions and which after injection into an eye gradually changes to vapor condition as a result of its inherent vapor pressure at body temperature, as a displacement agent for eliminating a water component from a posterior cavity in a non-vitrectomised eye, comprising:
a) injecting a liquid perfluorocarbon into a posterior cavity of a non-vitrectomised eye;
b) gradually forming a gas bubble of the injected liquid perfluorocarbon, as a result of its inherent vapor pressure at body temperature;
c) displacing and thereby eliminating a water component from the posterior cavity in the non-vitrectomised eye by replacing the water component with the gas bubble.

5,441,990
CLEANED, H_2-ENRICHED SYNGAS MADE USING WATER-GAS SHIFT REACTION
Allen M. Robin, Anaheim, Calif., and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.
Continuation of Ser. No. 814,532, Dec. 30, 1991, abandoned. This application May 13, 1994, Ser. No. 242,154
Int. Cl.[6] C01B *3/12, 3/16*; C07C *29/151*
U.S. Cl. 518—703 **16 Claims**

1. A process for making a cleaned, H_2-rich H_2/CO mixture comprising:
(1) supplying a CO-rich H_2/CO mixture having a H_2/CO molar ratio of less than about 1 and volatile metal compounds;
(2) separating part of the CO-rich H_2/CO mixture and reacting CO therein with H_2O to make CO_2 and hot H_2-enriched H_2/CO mixture cleaned of volatile metal compounds;
(3) combining the rest of the CO-rich H_2/CO mixture of step (1) with the hot, H_2-enriched H_2/CO mixture of step (2) to make hot, recombined H_2-rich H_2/CO mixture cleaned of volatile metal compounds.

5,441,991
CESIUM-SPECIFIC PHENOLIC ION EXCHANGE RESIN
Jane P. Bibler, and Richard M. Wallace, both of Aiken, S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 800,735, Dec. 3, 1991, abandoned, which is a continuation of Ser. No. 460,480, Jan. 3, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 963,965
Int. Cl.[6] A61K *33/00, 31/775*
U.S. Cl. 521—35 **18 Claims**



1. An improved resorcinol-formaldehyde ion exchange resin provided by:
neutralizing resorcinol with a base;
initiating the condensation of said neutralized resorcinol with aqueous formaldehyde under basic conditions;
continuing said condensation throughout to completion under maintained basic conditions to form a polymer made under basic conditions and having properties from being so made; and,
heat curing said polymer so made to make said improved ion exchange resin.

5,441,992

NON-CFC FOAM PRODUCED USING PERFLUOROALKANES

Ruben Santos, 1224 Arlington Ave., Sarnia, Ontario, Canada N7S 3T8 ; Paul Meunier, Box 20 Beverly Glen R.R. #2, Cambachie, Ontario, Canada N0N-1E0 ; Vyacheslav S. Grinshpun, 1277 Duley Ave., Sarnia, Ontario, Canada N7S 5X3 ; William Kipp, P.O. Box 235, Courtright, Ontario, Canada N0N 1H0 , and Jennifer Willson, M202-1520 Venetian Blvd., Pt. Edward, Ontario, Canada N7T 7Z8

Filed Jun. 9, 1994, Ser. No. 257,406
Int. Cl.[6] C08J *9/14*
U.S. Cl. 521—131 11 Claims

1. A process for producing a closed cell phenolic foam comprising the steps of:

providing a foaming composition of

(a) a phenol formaldehyde resole resin having substantially no free formaldehyde and having a water content of 4 to 8% and a viscosity ranging from 5,000 cps to 40,000 cps at 40° C.;

(b) a blowing agent consisting essentially of (i) a low boiling point hydrogenated chlorofluorocarbon (HCFC) or hydrogenated fluorocarbon (HFC) and (ii) a perfluoroalkane wherein the perfluoroalkane comprises 1 to 5 weight percent of total blowing agent weight;

(c) a surfactant; and

(d) catalyst

mixing the composition to initiate foaming and to produce a phenolic foam; and

curing the phenolic foam to a density ranging from 0.5 to 2.0 pounds per cubic foot.

5,441,993

POLYURETHANE FOAMS

Guido Maretti, Singapore, Singapore, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 16, 1992, Ser. No. 992,273
Claims priority, application United Kingdom, Dec. 17, 1991, 9126741
Int. Cl.[6] C08G *18/28*
U.S. Cl. 521—174 9 Claims

1. A method for the preparation of flexible polyurethane foams from a reaction mixture comprising a polyisocyanate component, a polyol composition and water as foaming agent wherein the polyisocyanate component comprises a diphenylmethane diisocyanate composition having an average isocyanate functionality of from 2 to 2.4 and the polyol composition comprises:

(1) a first polyol component comprising at least one polyoxyalkylene polyol containing oxyethylene residues, said component having an average nominal hydroxyl functionality of at least 3, an average hydroxyl equivalent weight of at least 1500, an average oxyethylene content of from 10 to 20% by weight and an average primary hydroxyl group content greater than 50%;

(2) a second polyol component comprising at least one polyoxyalkylene polyol containing oxyethylene residues, said component having an average nominal hydroxyl functionality of 3, an average hydroxyl equivalent weight of at least 1000 and an average oxyethylene content of from 50 to 85% by weight, and

(3) a chain extender and/or cross-linker comprising at least one compound having at least two isocyanate-reactive groups, at least one of which is a primary or secondary amino group and a molecular weight below 500, said composition containing from 4 to 20 parts by weight of (2) and (3) together per 100 parts by weight of (1), the weight ratio of (2) to (3) being in the range from 1:1 to 20:1.

5,441,994

PLASTISOL COMPOSITION

Toshinori Moriga, Tokyo; Shunji Kojima, Yokosuka, and Seishichi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed May 16, 1994, Ser. No. 242,843
Claims priority, application Japan, May 14, 1993, 5-112901; May 14, 1993, 5-112902
Int. Cl.[6] C08K *5/12, 5/11, 5/521*
U.S. Cl. 523—201 9 Claims

1. An acrylic plastisol composition having excellent anti-creep property comprising:

(A) a dispersing medium composed chiefly of a plasticizer,

(B) acrylic resin particles dispersed in said dispersing medium, and

(C) a crosslinking agent, wherein said acrylic resin particles are obtained by copolymerization of a monomer composition comprising

(i) at least 40% by weight, based on the weight of the resin, of at least one ester of an acrylic acid or methacrylic acid or a combination of said ester and a comonomer selected from the group consisting of styrene, vinyltoluene, acrylonitrile, methacrylonitrile, and vinyl acetate, and

(ii) a functional monomer having a reactive functional group selected from the group consisting of a carboxyl group, a hydroxyl group, an epoxy group, a methylol group and an etherified methylol group, said reactive functional group being present at a concentration of 7 to 330 mmoles per 100 g of the particles,

said acrylic resin particles having a number average molecular weight of at least 200,000 and said crosslinking agent is a resin which is reactive with the functional groups in the acrylic resin and is at least partly soluble in the plasticizer,

said acrylic plastisol composition having a relaxation time of stress of at least 10 minutes at a temperature of 120° C. in a gelled state.

5,441,995

ELECTRODEPOSITION PAINT COMPOSITION CONTAINING POLYSILOXANE-POLYALKYLENEOXIDE BLOCK COPOLYMERS

Atsushi Ohgaki, Neyagawa; Hiroharu Ohsugi, Hirakata; Hiroki Tanabe, Yawata; Kenshiro Tobinaga, Hiroshima, and Yoshio Kojima, Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jun. 6, 1994, Ser. No. 254,882
Claims priority, application Japan, Jun. 8, 1993, 5-164080
Int. Cl.[6] C09D *5/44, 163/00*
U.S. Cl. 523—404 5 Claims

1. An electrodeposition paint composition having an aqueous dispersing system comprising an electrodepositable resin and a block polymer represented by the formula:

$$(A\text{–}B)_n$$

wherein A is a polysiloxane unit having a number average molecular weight of from about 100–5,000 , B is a polyalkylene oxide unit having a number average molecular weight from about 100–10,000 , and n is an integer equal to or greater than 2 , and wherein A and B are directly linked by an ester linkage

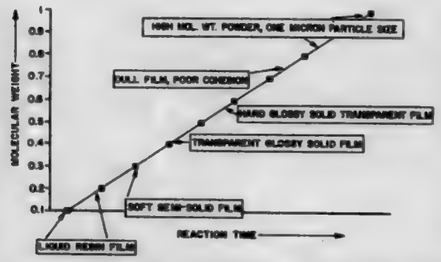
said block polymer having a number average molecular weight of from about 1,000–30,000 , and said block polymer's concentration being from about 0.01–3.00 wt. % of the solid of said aqueous dispersing system.

5,441,996

SINGLE PACKAGE IONIC EMULSION POLYMERS AND THEIR PREPARATION

Lowell O. Cummings, San Anselmo; Patrick A. Terrizzi, and Norman Gac, both of San Francisco, all of Calif., assignors to Adhesive Coatings Co., San Mateo, Calif.

Continuation of Ser. No. 967,018, Oct. 27, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 184,758
Int. Cl.[6] C08K *3/20;* C08L *63/00*
U.S. Cl. 523—416 18 Claims



1. A heat hardening or air drying single component water-based composition suitable for use as a coating, ink, adhesive, or sealant, comprising the combination of the reaction product of an enhanced molecular weight epoxy ionic emulsion and an acid inactivated amine chosen from the group consisting of primary, secondary and tertiary amines or ammonia, said enhanced molecular weight epoxy polymer being prepared by polymerizing water-borne epoxy resin particles in the presence of an alkaline substance.

5,441,997

HIGH DENSITY POLYESTER-POLYCARBONATE MOLDING COMPOSITION

Eileen B. Walsh, Evansville; Angelika H. Clark, Mt. Vernon, both of Ind.; Ronald D. Courson, Crossville, Ill., and Robert R. Gallucci, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 995,243, Dec. 22, 1992, abandoned.
This application Dec. 8, 1993, Ser. No. 164,654
Int. Cl.[6] C08K *5/524, 3/32, 3/22*
U.S. Cl. 524—147 29 Claims

1. A composition which, based on the weight of the total composition, comprises:

(a) from 0–60 weight percent of a polybutylene terephthalate resin;

(b) from 0–60 weight percent of a polyethylene terephthalate resin, with the proviso that the sum of the amounts of the polybutylene terephthalate resin and the polyethylene terephthalate resin must be at least 10 weight percent;

(c) from 10–30 weight percent of an aromatic polycarbonate resin with the proviso that the amount of (a)+(b) is greater than or equal to the amount of (c);

(d) an effective amount of a stabilizer selected from the group consisting of an acid, alkyl, aryl, or mixed phosphite having at least one hydrogen or alkyl group; acidic phosphate salts, polyacid pyrophosphates and salts thereof, phosphate salts of a Group IB or Group IIB metal and phosphorous oxo-acids;

(e) from 0–15 weight percent of a styrene-rubber impact modifier;

(f) from 29.99–79.99 weight percent of an inorganic filler selected from the group consisting of barium sulfate, strontium sulfate, zirconium oxide and zinc sulfate; and

(g) from 0–30 weight percent of a fibrous glass reinforcing filler.

5,441,998

REPULPABLE HOT MELT ADHESIVES

Susan M. Teeters, Sand Springs, Okla.; Charles H. Heroux, Scarborough, Canada; Michael D. Watson, Tulsa; William P. Cottom, Mounds, both of Okla., and Terrance D. Duryee, Charlotte, N.C., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 16, 1993, Ser. No. 18,087
The portion of the term of this patent subsequent to Feb. 21, 2012, has been disclaimed.
Int. Cl.[6] C08K *5/01*
U.S. Cl. 524—270 16 Claims

1. A composition, which when added to a tackifier renders a repulpable hot melt adhesive, comprising:

(a) an elastomeric resin; and

(b) an alkoxylated alcohol of the formula

$$A\text{-}B \qquad (I)$$

wherein A is the unit

$$CH_3(CHCH)_x\text{—} \quad \begin{matrix} R & R_1 \\ | & | \end{matrix} \qquad (IA)$$

and B is the unit

$$CH_2O(CH_2CHO)_yH \quad \begin{matrix} & R_2 \\ & | \end{matrix} \qquad (IB)$$

and further wherein R and R_1 are independently selected from the group consisting of hydrogen and a C_1–C_{10} alkyl group; R_2 is hydrogen or a C_1–C_5 alkyl group; x is between about 1 to about 142; and y is between about 2 to about 817, provided the weight ratio of B/A+B is between 51 and 90 percent.

5,441,999

HOT MELT ADHESIVE

Neil R. Jarvis, Brantford, Canada, and Anil B. Goel, Naperville, Ill., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Oct. 15, 1993, Ser. No. 137,599
Int. Cl.[6] C08L *91/00*
U.S. Cl. 524—271 10 Claims

1. A hot melt adhesive, comprising a blend of

(a) 5 to 20 weight percent low molecular weight polyolefin, olefin-carboxylic acid graft polymer or olefin-maleic anhydride graft polymer or blends thereof;

(b) 40 to 70 weight percent propylene-ethylene-butene terpolymer;

(c) 10 to 40 weight percent tackifying resin or blend of tackifying resins; and

(d) 0.1 to 2.0 percent antioxidant or blend of antioxidants.

5,442,000

CONNECTOR MOLDING COMPOSITION COMPRISING AN IMPACT MODIFIED AND STABILIZED POLYESTER

Tetsuo Kato, and Masahiro Kanda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 155,695
Claims priority, application Japan, Nov. 24, 1992, 4-313447
Int. Cl.[6] C08L *67/02, 55/00, 51/06;* C08K *5/13*
U.S. Cl. 524—291 2 Claims

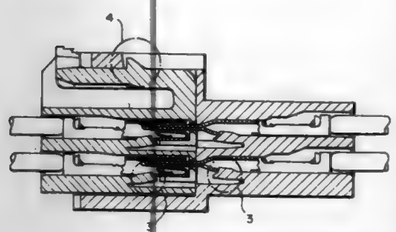
1. A connector comprising a housing comprising a polybutylene terephthalate resin composition comprising:

(A) 100 parts by weight of a polybutylene terephthalate resin having an intrinsic viscosity of from 1.10 to 1.30 dl/g as measured in o-chlorophenol at 25° C.;

(B) from 40 to 60 parts by weight of a copolymer of acrylonitrile and styrene;

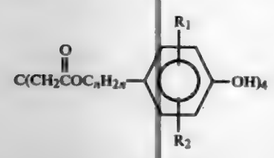
(C) from 10 to 20 parts by weight of a graft copolymer comprising:

(C1) from 65 to 75% by weight of copolymer comprising from 75 to 85% by weight of ethylene and from 25 to 15% by weight of glycidyl methacrylate, and



(C2) from 25 to 35% by weight of a copolymer of acrylonitrile and styrene;

(D) from 0.05 to 0.5 part by weight of a hindered phenol compound represented by formula (I):



(I)

wherein n represents an integer of from 0 to 6, and R_1 and R_2 each represents an alkyl group having from 1 to 6 carbon atoms, a substituted alkyl group having from 1 to 6 carbon atoms, or a cycloalkyl group having from 3 to 6 carbon atoms; and

(E) from 0.05 to 0.5 part by weight of a thioether compound represented by the following formula (II):

$$(R_3SR_4COOCH_2)_mC(CH_2OH)_{4-m} \quad \text{(II)}$$

wherein m represents an integer of from 1 to 4, R_3 represents an alkyl group, and R_4 represents an alkylene group.

5,442,001

USE OF LOW TOXICITY SOLVENTS IN WATERBORNE ADHESIVES

M. Erin Jones, Yardley, Pa., and Paul P. Puletti, Pittstown, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 121,008, Sep. 14, 1993, abandoned. This application Sep. 7, 1994, Ser. No. 301,470

Int. Cl.[6] C08K *5/06, 5/01;* **C09J** *133/10, 133/08, 133/02*

U.S. Cl. 524—292 **29 Claims**

1. A waterborne packaging and converting adhesive comprising:

A) a mixture containing:

a) a dispersion of a polymer selected from the group consisting of vinyl acetate and all-acrylic polymers, the dispersion being present in an amount effective to impart adhesive properties required for use as a packaging or converting adhesive;

b)

i) 0 to 20 parts by weight plasticizer;

ii) 0 to 10 parts by weight polyvinyl alcohol;

iii) 0 to 20 parts by weight tackifier;

iv) 0 to 20 parts by weight filler;

v) 0 to 20 parts by weight humectant; and

vi) 0 to 20 parts by weight of mixtures of i–v;

vii) 0 to 25 parts by weight of thickener; and

B) 1 to 35 parts by weight of an organic solvent selected from the group consisting of the C_1–C_5 alkyl butyrates, d-limonene, ethylene glycol monobutyl ether, and C_5–C_{20} aliphatic hydrocarbon petroleum distillates and normal paraffins.

14. An article having applied to a portion thereof a packaging or converting adhesive composition, the adhesive composition comprising:

A) a mixture containing:

a) a dispersion of a polymer selected from the group consisting of vinyl acetate and all-acrylic polymers, the dispersion being present in an amount effective to impart adhesive properties required for use as a packaging or converting adhesives;

b)

i) 0 to 20 parts by weight plasticizer;

ii) 0 to 10 parts by weight polyvinyl alcohol;

iii) 0 to 20 parts by weight tackifier;

iv) 0 to 20 parts by weight filler;

v) 0 to 20 parts by weight humectant; and

vi) 0 to 20 parts by weight of mixtures of i–v;

vii) 0 to 25 parts by weight of thickener; and

B) 1 to 35 parts by weight of an organic solvent selected from the group consisting of the C_1–C_5 alkyl butyrates, d-limonene, ethylene glycol monobutyl ether, and C_5–C_{20} aliphatic hydrocarbon petroleum distillates and normal paraffins.

29. A method for improving the adhesion of an aqueous based polyvinyl acetate or wholly polyacrylic packaging or converting adhesive to a waxy substrate, the method comprising adding to the adhesive 1 to 35 parts by weight of an organic solvent selected from the group consisting of the C_1–C_5 alkyl butyrates, d-limonene, ethylene glycol monobutyl ether, and C_5–C_{20} aliphatic hydrocarbon petroleum distillates and normal paraffins.

5,442,002

POLYMER SCALE DEPOSITION PREVENTIVE AGENT

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,224

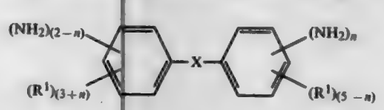
Claims priority, application Japan, Jul. 22, 1993, 5-201842

Int. Cl.[6] C08K *5/29;* **C08G** *12/00*

U.S. Cl. 524—81 **9 Claims**

1. A polymer scale deposition preventive agent for use in polymerization of a monomer having an ethylenically unsaturated double bond, comprising an alkaline solution having as a solvent thereof water or a mixed solvent of water and an organic solvent miscible with water, the amount of water contained in the mixed solvent being more than 70% by weight, and said alkaline solution having a pH of 7.5 to 13.5 which has been adjusted by the addition of an alkaline compound, and containing a condensation product of:

(A) a diphenyl compound having at least two amino groups represented by the following general formula (1):



(1)

wherein a plurality of R^1's may be the same or different, which are —H, —OH, —COOH, $-SO_3H$, $—NH_2$, —Cl, $—NO_2$, $—COCH_3$, $—OCH_3$, $—N(CH_3)_2$ or an alkyl group having 1 to 3 carbon atoms, wherein X is an alkylene group having 1 to 5 carbon atoms, $—N(CH_3)—$, $—C(CH_3)_2—$, —CONH—, —P(=O)H—, $—SO_2—$, —O—, —S—, or $—Si(R)_2—$, where R is an alkyl group having 1–10 carbon atoms, and wherein n is an integer of 1 or 2; and

(B) a quinone compound.

5,442,003

PARA-ARAMID DOPE OF LOW DEGREE OF POLYMERIZATION, PARA-ARAMID FIBER AND PARA-ARAMID PULP PRODUCED THEREFROM AND PROCESSES FOR PRODUCING THE SAME

Tsutomu Takahashi, Iharaki, and Hiroyuki Sato, Tsukuba, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan and Akzo N.V., Arnhem, Netherlands

Filed May 25, 1993, Ser. No. 67,000

Claims priority, application Japan, May 28, 1992, 4-136733

Int. Cl.[6] C08K *5/3415, 5/21, 5/20, 3/16*

U.S. Cl. 524—104 **13 Claims**

1. A para-aramid dope of low degree of polymerization exhibiting an optical anisotropy consisting essentially of 4–10% by weight of a para-aramid selected from the group consisting of poly(paraphenylene terephthalamide), poly(4,4'-benzanilide terephthalamide), poly(paraphenylene-4,4'bi-phenylenedicarboxylic acid amide) and poly(paraphenylene-2,6-naphthalene-dicarboxylic acid amide), said para-aramid having an inherent viscosity of 1.0–2.5 dl/g and 2–10% by weight of an alkali metal chloride or an alkaline earth metal chloride in a polar amide solvent selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, N-methyl-2-pyrrolidone and N,N,N',N'-tetramethylurea.

5,442,004

GELS

Alistair A. P. Sutherland, and John M. Hudson, both of Swindon, England, assignors to Raychem Limited, London, England

Continuation of Ser. No. 844,633, Mar. 30, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,669

Claims priority, application United Kingdom, Oct. 5, 1989, 8922445

Int. Cl.[6] C08K *5/52*

U.S. Cl. 524—140 **19 Claims**

1. A gel or gelloid liquid-extended polymer composition having (i) an ASTM D217 cone penetration value within the range from 50 to 400 (10^{-1} millimetres), (ii) an ASTM D412 ultimate elongation greater than 100% with substantially elastic deformation to an elongation of at least 100% (iii) and ASTM D412 ultimate tensile strength of less than 1 MegaPascal, and (iv) a dynamic storage modulus at 23° C. of less than 100000 Pascals; the composition comprising an intimate mixture of

(a) at least one block copolymer containing relatively hard blocks and relatively elastomeric blocks;

(b) at least 300 parts by weight of extender liquid per 100 parts by weight of the said copolymer(s), which liquid extends and softens the elastomeric blocks; and

(c) at least 50 parts by weight per 100 parts by weight of the copolymer(s) (a), of a plasticiser-stabilising additive comprising

(i) a stabilising material capable of either establishing substantial equilibrium with, or resisting migration into the composition of, one or more PVC plasticisers of a plasticised PVC article with which the composition in use is to be placed in surface contact;

and either the stabilising material (i) raises or does not significantly depress the softening temperature of the composition, in which case the additive (c) may optionally include

(ii) a temperature-raising material which raises the softening temperature of the composition;

or the stabilising material (i) significantly depresses the softening temperature of the composition, in which case the additive (c) includes a sufficient quantity of the temperature-raising material (ii) to compensate for at least 50% of the depression caused by the stabilising material wherein either of material (i) or optional material (ii) of the said additive is selected from the group consisting of 2,2-oxybis(ethanol)dibenzoate and organic phosphates.

5,442,005

MULTI-FUNCTION PROTECTIVE COATING FOR ZINC COATED STEEL SURFACES AND ITS ALLOYS

Juan F. Brugarolas, and Federico S. Rodellas, both of Barcelona, Spain, assignors to Procoat S.A., Rubi (Barcelona), Spain

Continuation of Ser. No. 770,159, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 492,362, Mar. 9, 1990, abandoned, which is a continuation of Ser. No. 198,511, May 25, 1988, abandoned. This application Jan. 26, 1993, Ser. No. 9,373

Claims priority, application European Pat. Off., Nov. 26, 1987, 87500083

Int. Cl.[6] C08K *3/20*

U.S. Cl. 524—276 **27 Claims**

1. A method for temporarily protecting metal members having zinc coated steel surfaces and surfaces of other metal alloys to be formed into non-planar shapes, comprising the steps of:

preparing a mixture comprising 40 to 50% of an aqueous solution consisting essentially of 50–60% by weight of a copolymer of polymerized acrylic monomers having an acidity index of 30 to 60 mg. of KOH and being soluble in water at pH 8 and above, 2 to 10% of an aqueous dispersion of solid lubricatory additives selected from the group consisting of natural waxes, synthetic waxes, and graphite, and deionized water;

moving said metal members on a high speed continuous galvanizing line;

applying said mixture as a wet film to at least one of said surfaces to be protected while moving said metal member on said continuous line by a process selected from the group consisting of roll squeezing, roll coating, electrostatic spraying and ultrasonic deposition to form a coating on said at least one of said surfaces;

drying said coating on said at least one of said surfaces so that said coating has a dry film weight of 0.5 to 5 gr./m^2 corresponding to a dry solid content of said wet film of from 8 to 18% by weight, has a lubricating effect reducing the coefficient of friction of the metal surface on which said coating is applied, prevents zinc dust loosening, improves metal forming conditions, does not chemically alter the metal surface, protects against corrosion of the metal surface, is adaptable to application of additional lubricant thereon, is soluble in alkaline solutions and is easily removable from said at least one of said surfaces, and the coated metal is weldable; and

forming said coated metal members into desired non-planar shapes.

5,442,006

AQUEOUS POLYMER DISPERSION HAVING A WIDE PARTICLE SIZE DISTRIBUTION

Oral Aydin, Mannheim; Michael Portugall, Wachenheim; Josef Neutzner, Neustadt, and Walter Maechtle, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 38,863, Mar. 29, 1993, Pat. No. 5,352,720. This application Apr. 19, 1994, Ser. No. 229,631

Claims priority, application Germany, Apr. 29, 1992, 42 13 967.8

The portion of the term of this patent subsequent to Jun. 20, 2012, has been disclaimed.

Int. Cl.[6] C08L *13/02*

U.S. Cl. 524—457 **14 Claims**

1. An aqueous polymer dispersion whose solids volume concentration is ≧50% by volume and which has all the following polymer particle size distributions:

5–30% by weight of the polymer ≦200 nm

20–55% by weight of the polymer ≦300 nm

45–70% by weight of the polymer ≦400 nm

60–85% by weight of the polymer ≦600 nm

75–95% by weight of the polymer ≦800 nm

100% by weight of the polymer ≦2000 nm,

the polymer being formed from free radically polymerizable monomers.

5,442,007

PROCESS FOR THE PREPARATION OF HYDROGENATED RUBBER

Dane K. Parker, Massillon, and David M. Ruthenburg, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 210,856, Mar. 21, 1994. This application Feb. 1, 1995, Ser. No. 382,105

Int. Cl.[6] C08L *39/00*

U.S. Cl. 524—555 **9 Claims**

1. A polymer latex which is prepared by a process comprising:

(1) combining an unsaturated polymer in latex form with
  (a) an oxidant selected from the group consisting of oxygen, air and hydroperoxide;
  (b) a reducing agent selected from hydrazine and hydrates thereof; and
  (c) a metal ion activator;
(2) heating the mixture to a temperature from 0° C. to the reflux temperature of the reaction mixture;
(3) treating the mixture with ozone in an amount and under conditions which are sufficient for the ozone to react with residual polymer unsaturation to form an ozonated latex of elastomeric polymer having at least one terminal aldehyde end group;
(4) treating the ozonated latex with hydroxylamine in an amount and under conditions which are sufficient to convert aldehyde end groups of the elastomeric polymer to oxime end groups to form a oximated polymer latex.

5,442,008

STABILIZED POLYMER FILM COATED COMPOUNDS AND STABILIZED FORMULATIONS IN COMPRESSED FORM USING SAME

Werner Fülberth; Richard Leeb; Manfred Radau, all of Kelkheim, and Willi Stammberger, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 921,757, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 274,598, Nov. 22, 1988, Pat. No. 5,151,433. This application Feb. 10, 1994, Ser. No. 194,634

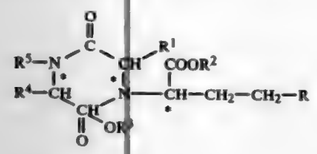
Claims priority, application Germany, Nov. 24, 1987, 37 39 690.0

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[6] A61K *31/74*; C07D *209/02*

U.S. Cl. 424—478 **16 Claims**

1. A stable pharmaceutical composition in compressed form containing a compound of the formula I:



in which

R is hydrogen, C_1–C_4-alkyl or phenyl,

R^1 represents C_1–C_4-alkyl or

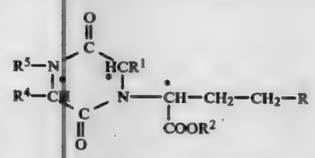


in which m is 1, 2, 3 or 4, and A and B are identical or different and denote hydrogen or C_1–C_4-alkyl,

R^2 is hydrogen, C_1–C_4-alkyl or benzyl,

R^3 is hydrogen or C_1–C_4-alkyl, and

R^4 and R^5 denote, together with the atoms carrying them, a heterocyclic, mono-, bi- or tricyclic hydrogenated or partially hydrogenated ring system which has one nitrogen atom and 4 to 15 ring carbon atoms and which is optionally mono- or disubstituted by C_1–C_4-alkoxy, or the physiologically tolerated salts thereof, which compound is coated with a polymeric protective coating before being compressed and is substantially stabilized against decomposition to a diketopiperazine compound of formula II:



in which R, R^1, R^2, R^4, and R^5 are the same as defined for formula I, wherein the proportion by weight of the polymeric protective coating is 3 to 25% relative to said compound, and wherein said polymeric protective coating comprises a polymer selected from cellulose derivatives, polyvinyl acetate phthalate, polyvinylpyrrolidone, cationic and anionic polymers, copolymers with a neutral character based on poly(-meth)acrylic esters, anionic polymers of methacrylic acid and methyl methacrylate, and gelatin.

5,442,009

PROCESS FOR THE PREPARATION OF HYDROGENATED RUBBER

Dane K. Parker, Massillon, and David M. Ruthenburg, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 210,856, Mar. 21, 1994. This application Feb. 1, 1995, Ser. No. 382,104

Int. Cl.[6] C08L *39/00*

U.S. Cl. 524—555 **7 Claims**

1. A dried hydrogenated rubber prepared by a process comprising:

(1) combining an unsaturated polymer in latex form with
  (a) an oxidant selected from the group consisting of oxygen, air and hydroperoxide;
  (b) a reducing agent selected from hydrazine and hydrates thereof; and
  (c) a metal ion activator;
(2) heating the mixture to a temperature from 0° C. to the reflux temperature of the reaction mixture;
(3) treating the mixture with ozone in an amount and under conditions which are sufficient for the ozone to react with residual polymer unsaturation to form an ozonated latex of elastomeric polymer having at least one terminal aldehyde end group;
(4) treating the ozonated latex with hydroxylamine in an amount and under conditions which are sufficient to convert aldehyde end groups of the elastomeric polymer to oxime end groups to form a oximated polymer latex;
(5) coagulating said oximated polymer latex; and
(6) drying said oximated polymer latex after coagulation.

5,442,010

EPOXY-TERMINATED POLYISOBUTYLENE-POLYDIMETHYLSILOXANE COMPOSITIONS

Dale E. Hauenstein; Thomas M. Gentle; Linda D. Kennan, all of Midland, and Paul J. Popa, Auburn, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 4, 1994, Ser. No. 317,447

Int. Cl.[6] C08K *3/36*

U.S. Cl. 524—588 **21 Claims**

1. A composition comprising:

(A) a polydimethylsiloxane having a viscosity greater than about 2 cS at 25° C.; and

(B) a polyisobutylene oligomer having a number average molecular weight of about 200 to about 3,000 and having at least one end terminated with an epoxy-containing group, the weight ratio of said polydimethylsiloxane (A) to said polyisobutylene (B) being in the range 1:99 to 99:1.

5,442,011

POLYMERIC FLUOROCARBON SILOXANES, EMULSIONS AND SURFACE COATINGS THEREOF

Robert A. Halling, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1994, Ser. No. 205,988

Int. Cl.[6] C08L *83/06*

U.S. Cl. 524—873 **19 Claims**

1. A polymeric fluorocarbon siloxane represented by the formula or corresponding branched polymeric structure:

$$R_1\{-OSi(R_a)(OR_1)_x\{-OSi(R_b)(OR_1)\}_y\{-OSi(R_c)(OR_1)\}_z-OR_1$$

where x=1 to 100, y=1 to 10 times x, z=0 to 5 times x; R_1=the same or different $\{-CH_2CH_2-O\}_mR_3$ with m=0 to 5 and $R_3=C_1$ to C_3 alkyl; $R_a=R_f-Z\{-CH_2\}_p$, where R_f=perfluoroalkyl of 3 to 18 carbons, n=1 to 3 and Z=$-CH_2-$ or $-O-$; $R_b=(R_3)_2N(CH_2CH_2NR_3)_\rho CH_2CH_2CH_2-$ and p=0 or 1, R_3=H or C_1 to C_3 alkyl; and $R_c=C_1$ to C_{12} hydrocarbyl or halogen-containing hydrocarbyl, phenyl, substituted phenyl, or cyanoalkyl.

5,442,012

PROCESS FOR MAKING ENCAPSULATED MICRO-AGGLOMERATED CORE/SHELL ADDITIVES FOR PVC BLENDS

James S. Kempner, Southhampton; Hsing-Yeh Parker, Holland; Janis C. Stevenson, Langhorn, all of Pa.; Morris C. Wills, Roebling, and Judith L. Allison, Medford, both of N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 37,052, Mar. 25, 1993, Pat. No. 5,276,092, which is a division of Ser. No. 772,406, Oct. 7, 1991, Pat. No. 5,221,713. This application Oct. 26, 1993, Ser. No. 143,202

Int. Cl.[6] C08L *51/04, 27/06*

U.S. Cl. 525—71 **13 Claims**

1. A process for preparing an agglomerated, encapsulated blend of a core/shell impact modifier and a core/shell processing aid which comprises:

a) forming by emulsion polymerization a rubbery core impact modifier polymer particle having a glass temperature below about −20° C. and a particle size below about 100 nm diameter, the rubbery core polymer particle being formed from at least 50 weight percent of units derived from butadiene, C_2 to C_8 alkyl esters of acrylic acid, or mixtures thereof, and having a weight-average molecular weight of at least about 500,000;

b) forming by sequential emulsion polymerization in the presence of the rubbery core impact modifier polymer, under conditions wherein essentially no new polymer particles are formed, an intermediate shell polymer encapsulating the rubbery core polymer, the intermediate shell polymer having a glass temperature above −20° C., the intermediate shell being formed predominantly from units derived from C_1 to C_4 esters of acrylic or methacrylic acid, and the intermediate shell being from about 5% to about 20% by weight of the core/intermediate shell polymer particles so as to prepare the core/shell impact modifier;

c) separately forming by emulsion polymerization a processing-aid core polymer particle having a particle size below about 100 nm diameter, the processing-aid core polymer particle being formed from at least 80 weight percent of units derived from C_4 to C_{12} alkyl esters of acrylic acid or methacrylic acid or mixtures thereof and from 0 to about 20 parts of units derived from at least one other vinyl or vinylidene monomer, and having a weight-average molecular weight of no more than about 100,000, the processing-aid core polymer not containing units derived from a graftlinking or crosslinking monomer, and the processing-aid core polymer not being deliberately crosslinked;

d) optionally forming by sequential emulsion polymerization in the presence of the processing-aid core polymer, under conditions wherein essentially no new polymer particles are formed, and encapsulating the core polymer, a intermediate crosslinked shell polymer containing:
  1) at least about 90 weight percent of units derived from one or more of vinyl aromatic monomers or C_1 to C_4 alkyl esters of (meth)acrylic acid,
  2) from about 0.5 to about 10 weight percent of units derived from at least one of:
    a) a multifunctional monomer containing two or more copolymerizable double bonds;
    b) a copolymerizable unsaturated acid, the copolymerizable unsaturated acid being partially to completely in the form of an alkali, alkaline earth, or transition metal salt;

e) optionally forming by sequential emulsion polymerization in the presence of the processing-aid core polymer or the processing-aid core/intermediate crosslinked shell polymer and encapsulating the processing-aid core polymer or, if present, the core/intermediate crosslinked shell polymer, under conditions wherein essentially no new polymer particles are formed, a intermediate shell stage of a polymer containing at least about 70 weight percent of units derived from one or more of vinyl aromatic monomers or C_1 to C_4 alkyl esters of methacrylic acid, wherein at least one of steps (d) or (e) must be conducted, so as to prepare the core/shell processing aid;

f) admixing the polymer particles formed in steps (a–b) and in steps (c–e) in emulsion form;

g) agglomerating the core/intermediate shell polymer particles to form a dispersion of agglomerated particles of at least 150 nm diameter;

h) forming by sequential emulsion polymerization onto the agglomerated particles, under conditions wherein essentially no new polymer particles are formed, a final external encapsulating shell of hard polymer having a glass temperature at least 60° C., the encapsulating shell being formed predominantly from units derived from a C_1 to C_4 alkyl ester of methacrylic acid, the encapsulating shell comprising from about 5 to about 20% by weight of the final core/shell polymer blend; and

i) isolating the final core/shell polymer blend.

5,442,013

GRAFT COPOLYMER FOR TREATING SURFACE STRUCTURES

Harald Bauer, Rossdorf; Juergen Christner, Seeheim-Jugenheim; Maria L. Weber, Roedermark, all of Germany, and Wolfgang Hoehne, Sao Leopoldo, Brazil, assignors to Röhm GmbH, Darmstadt, Germany

Filed Apr. 25, 1994, Ser. No. 232,836

Claims priority, application Germany, Apr. 27, 1993, 43 13 714.8

Int. Cl.[6] C08F *265/06*; C14C *11/00*

U.S. Cl. 525—309 **1 Claim**

1. An aqueous emulsion of an acrylate graft copolymer consisting of at least one graft monomer of the formula

$$CH_2{=}CH{-}COOR_1$$

wherein R_1 is an alkyl group having 2–24 carbon atoms, graft polymerized onto a backbone polymer free of any crosslinking agent and comprising 55–100 percent by weight of at least one monomer of the formula

$$CH_2{=}CH{-}COOR_2$$

wherein R_2 is alkyl having 2–24 carbon atoms, the ratio of graft monomers to monomers of the backbone polymer being from 1:9 to 1:1 in parts by weight.

5,442,014

SUPERABSORBENT ACRYLIC POWDERS HAVING LOW RESIDUAL MONOMER CONTENT

Shu R. Rebre, Vincennes; Christian Collette, and Sandrine Denie, both of Paris, all of France, assignors to Elf Atochem S.A., Puteaux, France

Division of Ser. No. 104,757, Aug. 12, 1993, Pat. No. 5,373,066. This application Sep. 13, 1994, Ser. No. 304,841

Claims priority, application France, Aug. 12, 1992, 92 09961

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—330.2 **4 Claims**

1. Particulates of a superabsorbent partially neutralized acrylic polymer, having a mean particle size ranging from 100 to 500 μm, essentially monodisperse and essentially devoid of fines having a particle size of less than 100 μm, having a nonuniformly surfaced spheroidal particle morphology, and containing a residual monomer content of at most 50 ppm.

5,442,015

ALDEHYDE-TELECHELIC POLYISOBUTYLENES, CATALYTIC METHOD FOR PREPARING THE SAME WITH HIGH CONVERSION AND SELECTIVITY, AND BLOCK COPOLYMERS MADE THEREFROM

Joseph P. Kennedy; Brian L. Goodall, and Alexander V. Lubnin, all of Akron, Ohio, assignors to The University of Akron

Division of Ser. No. 976,532, Nov. 16, 1992, Pat. No. 5,340,881. This application Apr. 13, 1994, Ser. No. 227,071

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—340 **12 Claims**

1. A process for making an aldehyde telechelic polyisobutylene, comprising the steps of:

hydroformylating a polyisobutylene containing at least one olefin end group in the presence of a rhodium-phosphorus ligand catalyst complex.

5,442,016

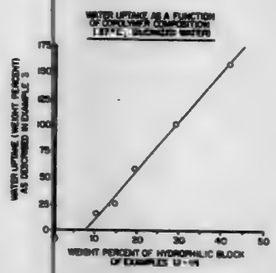
COATING FOR TISSUE DRAG REDUCTION

Peter K. Jarrett, New Haven; George Jessup, Brookfield; Louis Rosati, Norwalk, all of Conn.; Chris Martin, Guildford, Australia, and John W. Maney, Spring Valley, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 843,053, Mar. 2, 1992, Pat. No. 5,352,515. This application Apr. 20, 1994, Ser. No. 230,267

Int. Cl.[6] C08L *67/04*; C08G *63/08*; B32B *27/02*; A61L *17/00*

U.S. Cl. 525—415 **14 Claims**



1. An ABA or AB block copolymer having a (B) block comprising a poly(alkylene oxide) having a number average molecular weight of about 5,000 to 20,000 and an A block comprising a biodegradable random copolymer of (1) the cyclic ester of an alpha-hydroxy acid and (2) ε-caprolactone, wherein the ABA or AB block polymer has a glass transition temperature at or less than 16° C.

5,442,017

PROCESS FOR PRODUCING POLYMER WHEREIN POLYMER SCALE DEPOSITION IS PREVENTED

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 950,128, Sep. 24, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 220,035

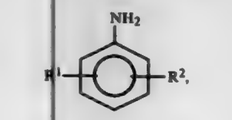
Claims priority, application Japan, Sep. 24, 1991, 3-271944; Sep. 24, 1991, 3-271945

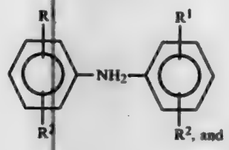
Int. Cl.[6] C08F *14/06*

U.S. Cl. 526—62 **12 Claims**

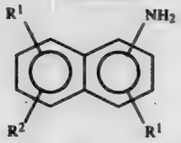
1. A process of producing a polymer of a monomer having an ethylenic double bond, which comprises polymerizing the monomer in a polymerization vessel having a coating on its inner wall surfaces, wherein said coating comprises: (A) at least one condensation product selected from the group consisting of:

condensation products of an aromatic amine compound selected from the group consisting of the compounds having the following general formulas (1) to (3):


(1)


(2)

-continued


(3)

wherein in the formulas (1) to (3) R^1 is —H, —NH_2, —Cl, —OH, —NO_2, —$COCH_3$, —OCH_3, —$N(CH_3)_2$ or an alkyl group of 1 to 3 carbon atoms, and R^2 is —H, —NH_2, —OH, —CH_3, —COOH or —SO_3H, with an aromatic hydroxyl compound-acetone condensate (I),

condensation products of an aromatic amine compound having the above general formula (3) with an aromatic hydroxyl compound-aldehyde condensate (II),

condensation products of an aromatic amine compound having the above general formula (3) with a condensate (III) of an aromatic hydroxyl compound alone,

condensation products of an aromatic amine compound having the above general formula (3) with an aromatic hydroxyl compound-aromatic amine compound condensate (IV), and

condensation products of an aromatic amine compound having the above general formula (3) with a natural aromatic hydroxyl-containing organic compound (V); (B) a water-soluble polymeric compound; and (C) a colloidal silica and/or an alkali metal silicate.

5,442,018

ETHYLENE POLYMERIZATION USING A TITANIUM AND VANADIUM CATALYST SYSTEM IN STAGED REACTORS

Kevin J. Cann, Rocky Hill; James W. Nicoletti, Piscataway; Frederick J. Karol, Belle Mead, all of N.J.; Arthur E. Marcinkowsky, Charleston, W. Va.; Thomas E. Spriggs, Cross Lanes, W. Va., and Mark C. Hwa, South Charleston, W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Apr. 1, 1994, Ser. No. 221,845

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—65 **19 Claims**

1. A process for preparing polyethylene, comprising 1) contacting in a first reactor under polymerization conditions ethylene and optionally a comonomer in the presence of:

a titanium-based catalyst containing:

a titanium complex that is the reaction product of a titanium-containing compound in which the titanium is in the +3 or +4 oxidation state, a magnesium halide and a first electron donor; and

optionally, a first modifier compound having the formula $AlX_aR_{(3-a)}$, wherein X is a halide, each R is independently an alkyl having 1 to about 14 carbon atoms, and a is 0, 1, 2, or 3; and

a first cocatalyst having the formula AlR_3, to form a mixture; 2) transferring the mixture to a second reactor connected in series to the first reactor; and 3) contacting the mixture with further ethylene and optionally further comonomer in the second reactor under polymerization conditions in the presence of:

a vanadium-based catalyst comprising:

a vanadium complex that is a vanadium-containing compound in which the vanadium is in the +2, +3, +4, or +5 oxidation state optionally reacted with a second electron donor; and

optionally, a second modifier compound having the formula $AlX_aR_{(3-a)}$; and

a second cocatalyst having the formula AlR_3; and a halohydrocarbon promoter.

5,442,019

PROCESS FOR TRANSITIONING BETWEEN INCOMPATIBLE POLYMERIZATION CATALYSTS

Agapios K. Agapiou, Humble; Michael E. Muhle, Kingwood, and Gary T. Renola, Seabrook, all of Tex., assignors to Exxon Chemical Company, Wilmington, Del.

Filed Mar. 25, 1994, Ser. No. 218,277

Int. Cl.[6] C08F *2/38*

U.S. Cl. 526—82 **15 Claims**

1. A process for transitioning from a polymerization reaction catalyzed by a first catalyst to one catalyzed by a second catalyst comprising a metallocene catalyst wherein said first and second catalysts are incompatible, said process comprising the steps of:

a) discontinuing the introduction of the first catalyst into a reactor;

b) introducing into the reactor an irreversible catalyst killer in an amount greater than about 1 molar equivalent based on the total gram atom metal of the first catalyst in the reactor; and

c) introducing the second catalyst into the reactor.

5,442,020

BIMETALLIC METALLOCENE ALUMOXANE CATALYST SYSTEM AND ITS USE IN THE PREPARATION OF ETHYLENE-ALPHA OLEFIN AND ETHYLENE-ALPHA OLEFIN-NON-CONJUGATED DIOLEFIN ELASTOMERS

Stephen C. Davis, Bright's Grove, Canada, assignor to Polysar Rubber Corporation, Sarnia, Canada

Division of Ser. No. 72,195, Jun. 3, 1993, Pat. No. 5,372,980. This application Aug. 30, 1994, Ser. No. 298,495

Int. Cl.[6] C08F *4/642*

U.S. Cl. 526—127 **7 Claims**

1. A process for producing an ethylene-alpha-olefin elastomeric copolymer comprising:

(i) adding ethylene and an alpha-olefin monomer to a reaction vessel in amounts and Under pressure sufficient to maintain the desired ethylene-alpha-olefin weight ratio in the liquid phase in the reaction vessel; and

(ii) adding to the mixture of monomers a catalyst system selected from the group consisting of 1,9-(1,9-disila-1,1,9,9-tetramethylnonylene)-$1,1^1$-di[bis(cyclopentadienyl) zirconium dichloride], 1,10-(1,10-disila-1,1,10,10-tetramethyldecylene)-$1,1^1$-di[bis(cyclopentadienyl) zirconium dichloride], 1,12-(1,12-disila-1,1,12,12-tetramethyldodecylene)-$1,1^1$-di[bis(cyclopentadienyl) zirconium dichloride], [1,7-disila-1,7-dimethyl-heptadiylidene]-$1,1^1,1^{11},1^{111}$-di[bis(cyclopentadienyl) zirconium dichloride], [1,8-disila-1,8-dimethyl-octadiylidene]-$1,1^1,1^{11},1^{111}$-di[bis(cyclopentadienyl) zirconium dichloride], [1,9-disila-1,9-dimethyl-nonadiylidene]-$1,1^1$, 1^{11}, 1^{111}di[bis(cyclopentadienyl) zirconium dichloride], [1,10-disila-1,10-dimethyl-decadiyliden]-$1,1^1$, 1^{11}, 1^{111}-di-[bis(cyclopentadienyl) zirconium dichloride] and [1,12-disila-1,12-dimethyl-dodecadiylidene]-$1,1^1$, 1^{11}, 1^{111}-di[bis(cyclopentadienyl) zirconium dichloride]; and an alumoxane;

(iii) reacting the mixture for a time sufficient to permit copolymerization of said ethylene and alpha-olefin to an elastomeric copolymer, and

(iv) recovering the elastomeric copolymer.

5,442,021

LUMINESCENT COPOLYMERS

Ludger Heiliger, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 18, 1994, Ser. No. 198,637

Claims priority, application Germany, Feb. 26, 1993, 43 05 959.7

Int. Cl.[6] C08F *230/04, 214/18, 220/58, 216/10, 220/104*

U.S. Cl. 526—241 **4 Claims**

1. Luminescent copolymers having the formula:

$[A]_a$—$[B]_b$

in which

A is a rare earth metal complex having the formula $M^{3+}(L)_n$, wherein M^{3+} is a rare earth metal cation, L is a polymerizable complex ligand containing a polymerizable double bond, and n is an integer of 1 to 4; and

B represents radical-polymerizable (co)monomers; and

a and b represent the percentages by weight of A and B in the copolymer a; a making up 0.0001 to 20% by weight and b making up 99.9999 to 80% by weight of the luminescent copolymer.

5,442,022

LOW YELLOW INDEX POLYMER COMPOSITIONS, POLYMERISABLE COMPOSITIONS AND LENSES USING SAID COMPOSITIONS

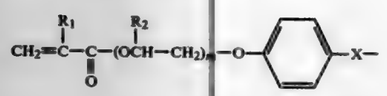
Gabriel Keita, Courbevoie, and Joël Renaudineau, Creteil, both of France, assignors to Essilor International-Compagnie General D'Optique, France

Filed Dec. 21, 1993, Ser. No. 172,137
Claims priority, application France, Dec. 22, 1992, 92 15533
Int. Cl.[6] C08F *232/04*
U.S. Cl. 526—309 **14 Claims**

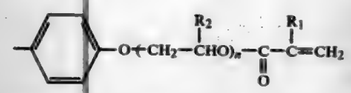
1. A polymer composition obtained by polymerisation of a composition comprising:

a component A comprising

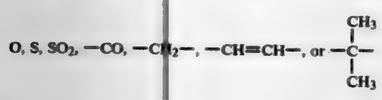
at least 50% by weight of a monomer or mixture of monomers having formula I:



(I)



wherein R_1 and R_2, which may be identical or different, represent hydrogen or C_1–C_6 alkyl, X represents:

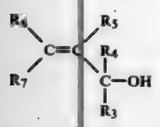


and m+n is an integer between 0 and 10, inclusive of 0 and 10;

0 to 50% by weight of one or more mono- or poly-functional vinyl, acrylic or methacrylic comonomers (II); and

a component B:

comprising in a proportion of 0.5 to 15% by weight with respect to the weight of components (I) and (II), a compound having formula (III)



(III)

wherein R_3 and R_4 represent hydrogen or one of radicals R_3 and R_4 represents hydrogen while the other forms with R_7 a ring having 5 to 10 carbon atoms which may be substituted with one or more linear or branched C_1–C_4 alkyl groups; and

R_5, R_6 and R_7 are selected independently of each other from hydrogen or C_1–C_6 alkyl groups which may be substituted by one or more OH groups, and wherein the chain may be interrupted by one or more ether, ester or ketone groups, or R_7 may form with one of radicals R_3 or R_4 a C_5–C_{10} ring which may be substituted by one or more linear or branched C_1–C_4 alkyl groups.

5,442,023

HINDERED-HYDROXYL FUNCTIONAL (METH)ACRYLATE MONOMERS CONTAINING DI(METH)ACRYLATES AND COMPOSITIONS INCLUDING SAME

John N. Argyropoulos, Scott Depot, and Molly I. Busby, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 30, 1994, Ser. No. 268,273
Int. Cl.[6] C08F *220/10*
U.S. Cl. 526—320 **6 Claims**

1. A copolymer comprising the reaction product of (a) one or more hindered-hydroxyl functional (meth)acrylate monomers containing from about 5 weight percent to about 25 weight percent of the corresponding di(meth)acrylates, and (b) at least one other monomer copolymerizable therewith, said copolymer having (i) a number average molecular weight of less than about 12,000, and (ii) a glass transition temperature of from −30° C. to about 100° C.

5,442,024

PHOTOSENSITIVE POLYIMIDE PRECURSOR COMPOSITION

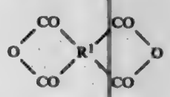
Kouichi Kunimune, Chiba; Hirotoshi Maeda, Kanagawa; Kouichi Katou, Kanagawa, and Eiji Watanabe, Kanagawa, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 26, 1994, Ser. No. 233,693
Claims priority, application Japan, Apr. 26, 1993, 5-099576
Int. Cl.[6] C08G *77/08*
U.S. Cl. 528—12 **2 Claims**

1. A photosensitive polyimide precursor composition which comprises a polyimide precursor represented by the formula (6)

$$(OR^5)_kR^4_{3-k}Si—R^3—X—Z \quad (6)$$

and having a logarithmic viscosity number of 0.1 to 5.0 dl/g measured in N-methyl-2-pyrrolidone at 30° C. and a compound capable of generating an acid by light irradiation, said polyimide precursor being obtained by reacting A mol of a tetracarboxylic dianhydride represented by the formula (1)



(1)

B mol of a diamine represented by the formula (2)

$$NH_2—R^2—NH_2 \quad (2)$$

and C mol of an aminosilane represented by the formula (3)

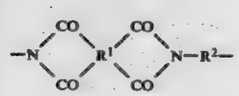
$$NH_2—R^3—SiR^4_{3-k}(OR^5)_k \quad (3)$$

so as to meet the relations of the equations (4) and (5)

$$1 \leqq \frac{C}{A-B} \leqq 2.5 \quad (4)$$

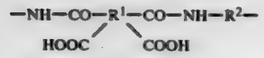
$$0.1 \leqq \frac{C}{B+C} \leqq 1 \quad (5)$$

wherein X is a polymer chain comprising m mol of a structural unit represented by the formula (6-1)



(6-1)

and n mol of a structural unit represented by the formula (6-2)

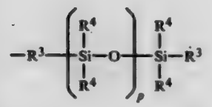


(6-2)

and meeting the relation of the equation (7)

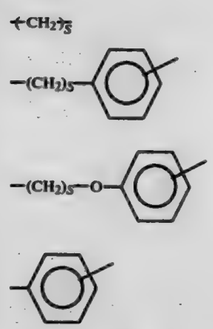
$$40 \leqq 100 \times \frac{m}{m+n} \leqq 100 \quad (7)$$

Z is a group represented by the formula (8), (9), (10), (11), (12) or (13); so as to meet the relations of the equations (4) and (5) wherein R^1 is independently a tetravalent carbon cyclic aromatic group, heterocyclic group, alicyclic group or aliphatic group having 4 to 30 carbon atoms; R^2 is independently a divalent aliphatic group, alicyclic group, aromatic aliphatic group, carbon cyclic aromatic group or heterocyclic group having 2 to 30 carbon atoms, or a polysiloxane group represented by the formula (14)



(14)

wherein p is a value of 1 to 100; R^3 is independently a group represented by the formula (15), (16), (17) or (18)



(15)

(16)

(17)

(18)

wherein s is an integer of 1 to 4; R^4 is independently an alkyl group having 1 to 6 carbon atoms, phenyl group or alkyl-substituted phenyl group having 7 to 12 carbon atoms; and R^5 is independently an alkyl group having 1 to 6 carbon atoms and k is 1 to 3.

5,442,025

ORGANOSILSESQUIOXANES HAVING AT LEAST ONE MESOGENIC SIDE GROUP

Peter Spes, Munich; Franz-Heinrich Kreuzer, Martinsried; Christian Freyer, Burghausen, and Mechthild Hessling, Kirchheim b. München, all of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Germany

Continuation of Ser. No. 3,817, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 667,131, Mar. 11, 1991, abandoned.
This application Jan. 10, 1994, Ser. No. 180,759
Claims priority, application Germany, Mar. 14, 1990, 40 08 076.5
Int. Cl.[6] C08G *77/26*
U.S. Cl. 528—15 **7 Claims**

1. A compound having the general formula

$$[R(SiR^1_2O)_sSiO_{3/2}]_x$$

in which x is 4, 6, 8, 10 or 12, a is an integer of from 1 to 10, R^1 is a monovalent organic radical and R is a radical selected from the group consisting of a chiral mesogenic radical and achiral mesogenic radical, with the proviso that up to x−1 of the radicals R are the same as R^1.

5,442,026

RHODIUM CONTAINING CATALYSTS FOR THE SYNTHESIS OF EPOXYSILOXANE/EPOXYSILICONE MONOMERS AND POLYMERS

James V. Crivello, Clifton Park, and Mingxin Fan, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 896,950, Jun. 11, 1992, Pat. No. 5,387,698.
This application Nov. 10, 1994, Ser. No. 337,593
Int. Cl.[6] C08G *77/08*
U.S. Cl. 528—15 **2 Claims**

1. A compound of rhodium containing selective hydrosilation catalyst of the general formula

$$[R_4M]^+[RhCl_3Br]^-$$

wherein M is phosphorous or nitrogen and R is an organic radical comprising C_{1-18}, substituted or unsubstituted, linear alkyl radical, or an aryl, alkaryl, or aralkyl radical.

5,442,027

MOISTURE CURABLE ORGANOSILOXANE COMPOSITIONS EXHIBITING EXTENDED WORKABILITY

Joan M. Donatelli; Daniel F. McMahon, and Kent R. Larson, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 23, 1994, Ser. No. 264,382
Int. Cl.[6] C08G *77/08*
U.S. Cl. 528—18 **9 Claims**

1. A curable organosiloxane composition comprising

A) a liquid curable polyorganosiloxane containing at least two silanol groups per molecule and exhibiting a number average molecular weight of at least 20,000;

B) as the curing agent for said composition, an organosilicon compound containing at least three siliconbonded hydrolyzable groups per molecule, wherein the concentration of said curing agent is sufficient to cure said polyorganosiloxane in the presence of moisture;

C) as the curing catalyst, a tin compound at a concentration sufficient to promote curing of said composition in the presence of moisture; and

D) as a working time extender, at least 0.6 weight percent, based on the weight of said composition, of a silanolterminated polydiorganosiloxane having a number average molecular weight less than 1000.

5,442,028

CURATIVES FOR AQUEOUS ADHESIVES

John K. Fromwiller, McHenry, Ill., and Steven J. Ney, Sharon, Wis., assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 20, 1993, Ser. No. 109,873
Int. Cl.[6] C08G *18/00, 18/30;* C08J *3/00;* C08L *3/20*
U.S. Cl. 528—44 2 Claims

1. An isocyanate curative which is the reaction product of materials comprising

A) between about 30 and about 60 wt. % of a mixture of polyethers formed from alkylene oxides, between about 66 and about 84 mole percent of the total polyether content comprising propylene oxide units and between about 16 and about 34 mole percent of the total polyether content comprising polyethylene oxide units,

said mixture of polyethers (A) comprising

at least about 35 wt % of total polyether component being a polyether (a1) having between about 35 and about 50 mole percent ethylene oxide units and between about 50 and about 65 mole percent propylene oxide units,

at least about 35 wt % of total polyether component being a polyether (a2) having between about 10 and about 20 mole percent ethylene oxide units and between about 80 and about 90 mole percent propylene oxide units, and

at least about 10 wt % of total polyether component being a polyether (a3) having at least about 95 mole percent propylene oxide units, balance other alkylene oxide units,

B) between about 1 and about 10 wt % of an aliphatic diol(s),

C) between about 1 and about 10 wt % of an aliphatic triol(s) or polyols having hydroxyl functionality greater than 3, and

D) between about 30 and about 50 wt % of an aliphatic diisocyanate,

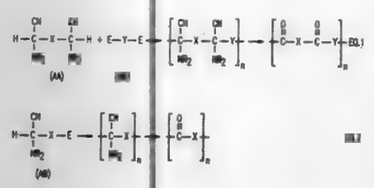
the aliphatic diisocyanate being provided in an amount to provide an NCO/OH ratio of between about 1.5 and about 2, the curative having an NCO content of between about 5 and about 10 wt. % and an NCO equivalent weight of between about 400 and about 1200.

5,442,029

METHODS OF PREPARING POLYMERIC KETONES

Harry W. Gibson, Blacksburg, Va., and Ashish Pandya, Natick, Mass., assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, both of Blacksburg, all of Va.

Division of Ser. No. 956,783, Oct. 5, 1992, Pat. No. 5,344,914.
This application Aug. 26, 1994, Ser. No. 296,135
The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.
Int. Cl.[6] C08G *69/10*
U.S. Cl. 528—328 4 Claims



1. A method of preparing polymers having ketone functionality comprising the steps of:

polymerizing a first monomer having at least one aminonitrile constituent, wherein the amino moiety of the aminonitrile constituent is a secondary amine, to produce a polyaminonitrile; and

acid catalyzing aminonitrile constituents in said polyaminonitrile to produce a polymer having ketone functionality.

5,442,030

POLYIMIDES CONTAINING FLUORINATED AROMATIC DIAMINE UNITS

Zhenyu Yang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 14, 1993, Ser. No. 136,528
Int. Cl.[6] C08G *73/10*
U.S. Cl. 528—353 9 Claims

1. A polyimide comprising the repeat unit

(IV)



wherein each nitrogen atom is part of an aromatic imide group and X is selected from the group consisting of

(I)



and

(II)



n is an integer selected from the group consisting of 2, 3, and 4; and provided that:

when X is (I) each nitrogen atom is attached to the 4 position of the respective benzene ring, or each nitrogen atom is attached to the 3 position of the respective benzene ring;

when X is (II) the nitrogen atom is attached to the 3 position of the respective benzene ring.

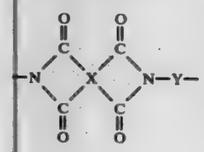
5,442,031

POLYIMIDES FROM OXYDIPHTHALIC ANHYDRIDE AND 2,4-DIAMINOTOLUENE

Beth E. Dunlap, Lyndhurst, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

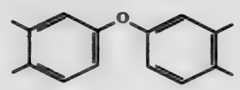
Filed Apr. 21, 1994, Ser. No. 230,951
Int. Cl.[6] C08G *69/26, 73/10*
U.S. Cl. 528—353 6 Claims

1. A polymer solution comprising polyimides consisting essentially of the following repeat units:



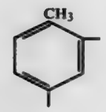
where

X is



and

Y is



in an amide solvent.

5,442,032

COPOLYMERS OF 1,4-DIOXEPAN-2-ONE AND 1,5,8,12-TETRAOXACYCLOTETRADECANE-7-14-DIONE

Steven C. Arnold, Sparta; Rao S. Bezwada, Whitehouse Station, and Alastair W. Hunter, Bridgewater, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

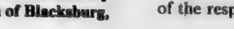
Filed Mar. 15, 1994, Ser. No. 213,787
Int. Cl.[6] C08G *63/08, 63/676;* A61L *17/00*
U.S. Cl. 528—354 26 Claims

1. A copolymer comprising a first repeating unit of the chemical formula:



and a second repeating unit having a chemical formula selected from the group consisting of:







combinations of two or more thereof wherein R is a hydrogen atom or a methyl group and the first repeating unit is less than 45 weight percent of the total weight of the copolymer wherein the copolymer is selected from the group consisting of:

a) a copolymer comprising the reaction product of a prepolymer of the first repeating unit the remainder of the copolymer being the second repeating unit;

b) a random copolymer comprising the first repeating unit and the second repeating unit;

c) a copolymer comprising the reaction product of a prepolymer containing the second repeating unit and the remainder of the copolymer being the first repeating unit;

d) a copolymer comprising the reaction product of a prepolymer containing less than 45 weight percent of the first repeating unit and greater than 55 weight percent of the second repeating unit in the prepolymer and the remainder of the copolymer being the second repeating unit.

5,442,033

LIQUID COPOLYMERS OF EPSILON-CAPROLACTONE AND LACTIDE

Rao S. Bezwada, Whitehouse Station, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 317,684, Oct. 5, 1994, abandoned, which is a continuation of Ser. No. 95,128, Jul. 20, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 339,045
Int. Cl.[6] C08G *63/08*
U.S. Cl. 528—354 5 Claims

1. A liquid copolymer comprising from in the range of 55 to 70 mole percent lactide and from in the range of 45 to 30 mole percent ϵ-caprolactone, having an intrinsic viscosity in the range of from about 0.05 to about 0.8 dl/g as determined in a 0.1 g/dl solution of hexafluoroisopropanol at 25° C.

5,442,034

SPRAY POLYUREA ELASTOMERS CONTAINING ORGANIC CARBONATES TO IMPROVE PROCESSING CHARACTERISTICS

Dudley J. Primeaux, II, Elgin, Tex., assignor to Huntsman Corporation, Salt Lake City, Utah

Filed Jun. 1, 1994, Ser. No. 252,031
Int. Cl.[6] C08G *18/10, 18/30*
U.S. Cl. 528—60 20 Claims

1. A spray polyurea elastomer made by the process comprising the steps of:

reacting together an isocyanate, and an active hydrogen-containing material to form a quasi-prepolymer;

mixing an alkylene carbonate with the quasi-prepolymer after the quasi-prepolymer is formed, to produce an (A) component; and

reacting together the (A) component and a (B) component comprising at least one amine resin by combining the components through a spray gun.

5,442,035

CALCIUM SULFONATE OR CALCIUM HYDROCARBYL SULFATE ACCELERATOR FOR AMINE CURE OF EPOXY RESINS

Larry S. Corley, and Harold E. De La Mare, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 29, 1993, Ser. No. 128,932
Int. Cl.[6] C08G *59/68, 65/10*
U.S. Cl. 528—90 10 Claims

1. A composition comprising:

(a) an epoxy resin;

(b) an effective amount of a primary C_{5-15} aliphatic polyamine curing agent for the epoxy resin; and

(c) a cure-accelerating amount of a calcium sulfonate or calcium hydrocarbyl sulfate represented by one of

$Ca(OSO_2R)_2$ or $Ca(OSO_2OR)_2$

in which each R is independently selected from C_{6-25}hydrocarbyl or hydrocarbyl-containing moieties.

5,442,036

BRANCHED COPOLYESTERS ESPECIALLY SUITABLE FOR EXTRUSION BLOW MOLDING

Randy S. Beavers, Kingsport; Karen L. Carman, Morristown; Michael L. Cassell, Kingsport; Joseph F. Knight, Kingsport, and James W. Mercer, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 6, 1994, Ser. No. 301,090
Int. Cl.[6] C08G *63/12*
U.S. Cl. 528—296 4 Claims

1. Polyester particles adapted to be extrusion blow molded into articles having improved rheological qualities, with said particles being formed from a polyester precursor in the melt phase having an I.V. of at least 0.60 dl/g and said polyester

consisting essentially of repeat units from about 40 to 100 mol % terephthalic acid, about 80–98 mol % ethylene glycol, about 0.5–10 mol % 1,4-cyclohexanedimethanol, about 3–10 mol % diethylene glycol, and about 0.05–1.0 mol % of a polyfunctional branching agent, the molecular weight gradient from core to surface of said particles satisfying the following parameters:

(A) number average less than 5500,
(B) weight average less than 35,000, and
(C) Z average less than 110,000.

5,442,037

POLYESTER PREPOLYMER SHOWING SHAPE-MEMORY EFFECT

Chang-Hwang Lee; Jae-Yeon Hwang, and Byeong-Seok Chae, all of Seoul, Rep. of Korea, assignors to Tong Yang Nylon Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 7, 1994, Ser. No. 301,766
Int. Cl.[6] C08G *63/66*
U.S. Cl. 528—301 **8 Claims**

1. A shape-memory polyester prepolymer prepared with at least one kind of dicarboxylic acid component and at least one kind of diol component to have unsaturated end group, wherein the dicarboxylic acid component comprises aromatic dicarboxylic acid in an amount of not less than 80% by mole based on the total mole of the dicarboxylic acid component; the diol component comprises a diol containing 2–10 carbon atoms in an amount of not less than 80% by mole based on the total mole of the diol component, and wherein the prepolymer has a repeating unit ranging in number from 2 to 50 and the end group of the prepolymer contains crosslinkable, ethylenically unsaturated bond.

5,442,038

POLYMERS OF MALEIC ACID WITH AMINES

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to SRCHEM, Inc., Elkridge, Md.

Filed Oct. 6, 1993, Ser. No. 132,246
The portion of the term of this patent subsequent to Apr. 18, 2012, has been disclaimed.
Int. Cl.[6] C08G *73/10, 69/00*
U.S. Cl. 528—363 **1 Claim**

1. A polymer produced by a process comprising polymerizing (1) an acid selected from the group consisting of maleic acid, malic acid, and fumaric acid and (2) less than one equivalent of ammonia, at a temperature greater than about 120° C., to produce said polymer.

5,442,039

MESOGENIC POLYCYANATES AND THERMOSETS THEREOF

Robert E. Hefner, Jr.; Jimmy D. Earls, and Paul M. Puckett, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

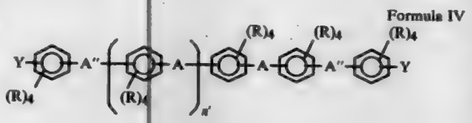
Continuation of Ser. No. 908,274, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 746,527, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 380,938, Jul. 17, 1989, abandoned. This application Jul. 13, 1993, Ser. No. 91,459
Int. Cl.[5] C08G *73/10*
U.S. Cl. 528—422 **11 Claims**

1. A polymerizable composition comprising a mixture of
(A) at least one thermosettable polycyanate or polycyanamide containing one or more rodlike mesogenic moieties; and
(B) at least one component selected from the group consisting of
(1) at least one polycyanate or polycyanamide which does not contain rodlike mesogenic structures;
(2) at least one epoxy resin;
(3) at least one polymaleimide;
(4) at least one polyamine;
(5) at least one polyphenol;
(6) at least one compound containing one or more polymerizable ethylenically unsaturated group(s);
(7) at least one compound which contains in the same molecule both a cyanate or cyanamide group and a polymerizable ethylenically unsaturated group;
(8) at least one compound which contains in the same molecule both a 1,2epoxide group and a polymerizable ethylenically unsaturated group;
(9) at least one compound which contains in the same molecule both a maleimide group and a cyanate group;
(10) at least one compound which contains one or more rodlike mesogenic moieties and only one cyanate or cyanamide group per molecule;
(11) at least one prepolymer of any of the aforesaid components (1) through (10) or any combination of any two or more of said components; and
(12) a mixture of any two or more of components (1) through (11) in any proportion and any combination;

with the proviso that:

(i) component (A) may include 4,4′-dicyanatostilbene if components (B-4) or (B-5) are not used;
(ii) component (A) may include 4,4′-dicyanamidozaobenzene, 4,4′-dicyanamidobenzanilide or 4,4′-dicyanamidophenylbenzoate if components (B-3) or (B-4)are not used;
(iii) component (A) may include the compositions of Formula IV

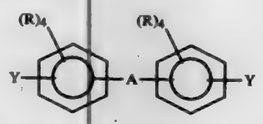
Formula IV



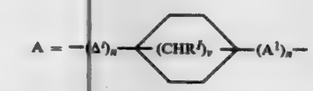
where R is —H or —CH_3, n=1, Y=—O—C≡N, each A″ is independently an alkylene group having from 1 to about 10 carbon atoms, a direct bond, —O—, —CO—, —S—, —S—S—, —SO—, —SO_2— or —O—CO—O—; each A^1 is independently a —CO—, —O—CO—, —CO—O—, —CO—NR^1—, or —NR_1—CO— group, where both A groups may simultaneously be —O—CO—;

(iv) component (A) can include the 1,4-bis(p-cyanatophenyl)bicyclo[2.2.2]-octanes represented by the following Formula I

Formula I



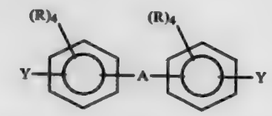
where R=—H, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms, a halogen atom, a nitro group, a nitrile group, a phenyl group or a —CO—R^1 group where R^1 is hydrogen or a hydrocarbyl group having 1 to about 3 carbon atoms; Y=—O—C≡N;



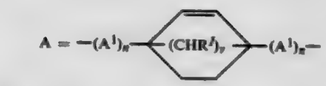
where n=0, v=2 and R^1=—H if component (B-1) is not used; and

(v) component (A) can include the 1,4-bis(p-cyanotophenyl)bicyclo[2.2.2]oct-2-enes represented by the following Formula I

Formula I



where R=—H, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms, a halogen atom, a nitro group, a nitrile group, a phenyl group or a —CO—R^1 where R^1 is hydrogen or a hydrocarbyl group having 1 to about 3 carbon atoms; Y=—O—C≡N;



where n=0, v=2 and R^1=—H if component (B-1) is not used.

5,442,040

EXTRACTION OF SELECTION HYDROCARBONS FROM A HYDROCARBON STREAM USING A CARBON ADSORBENT

John D.-Y. Ou, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 982,137, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 554,305, Jul. 17, 1990, abandoned. This application Jan. 10, 1994, Ser. No. 178,713
Int. Cl.[6] C07C *7/12*
U.S. Cl. 528—482 **28 Claims**

1. A process for treating mixed hydrocarbon streams containing polymers involving the selective separation of polymers from the stream, said process comprising:
contacting a hydrocarbon stream comprising an amount of polymers, with activated carbon under adsorption conditions and for a time effective for adsorption of said polymers from said hydrocarbon stream to produce a resultant stream having a reduced amount of said polymers, wherein said polymers are selected from the group consisting of poly-propylene, poly-iso-butylene, polymers of the isomers of iso-butylene, and co-polymers of iso-butylene and other olefins, wherein said amount of said polymers present in said stream in an amount within the range of about 50 ppm to 2%, and wherein said resultant stream contains less than 5 ppm of said polymers.

5,442,041

REMOVAL OF VOLATILE SUBSTANCES FROM THERMOPLASTIC RESINS

Ramesh Mallikarjun, Exton; Leon L. Otte, Newtown Square, and William J. Cleland, Thorndale, all of Pa., assignors to ARCO Chemical Tecanology, L.P., Greenville, Del.

Filed Jan. 19, 1995, Ser. No. 374,051
Int. Cl.[6] C08F *6/00*
U.S. Cl. 528—483 **12 Claims**

1. A method of reducing the level of volatile residues in a thermoplastic resin comprising the steps of:
(a) delivering the thermoplastic resin and a chemical blowing agent capable of generating an inert gas upon heating to an extruder equipped with at least one vent;
(b) extruding the thermoplastic resin and chemical blowing agent while applying a vacuum at said vent or vents at a temperature effective to convert the chemical blowing agent to the inert gas and remove said inert gas together with at least a portion of the volatile residues, thereby forming a purified polymeric composition; and
(c) recovering the purified polymeric composition in solid unfoamed form.

5,442,042

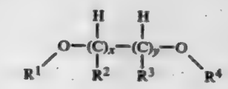
SURFACE TREATMENT OF POLYAMIDE MOLDINGS AND MOLDINGS OBTAINED THEREBY

Hartmut Zeiner; Walter Betz, both of Ludwigshafen, and Graham E. McKee, Weinheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/01312, § 371 Date Dec. 16, 1993, § 102(e) Date Dec. 16, 1993, PCT Pub. No. WO93/00392, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 11, 1992, Ser. No. 162,201
Claims priority, application Germany, Jun. 22, 1991, 41 20 723.8
Int. Cl.[6] C08J *3/00*; C08F *8/00*; B05D *3/10*
U.S. Cl. 528—502 **6 Claims**

1. A process for surface treatment of moldings based on polyamides by treatment with aqueous acids, which comprises: applying to the surface of the molding a mixture of at least 20% strength by weight aqueous hydrochloric acid and a mono- or diether of an aliphatic polyfunctional hydroxy compound of the formula I

I



where
R^1 is hydrogen or C_1- to C_{10}-alkyl,
R^2 is hydrogen, C_1- to C_{10}-alkyl or hydroxyl,
R^3 is hydrogen or C_1- to C_{10}-alkyl,
R^4 is hydrogen, C_1- to C_{10}alkyl or —$(CH_2)_n$—OR^5,
R^5 is hydrogen or C_1- to C_{10}-alkyl,
x is an integer from 1 to 10,
y is 0 or 1, and
n is an integer from 2 to 4

the mixing ratio of the two components being from 90:10 to 10:90% by volume.

5,442,043

PEPTIDE CONJUGATE

Makoto Fukuta, Nara; Satoshi Inuma, Kobe, and Hiroaki Okada, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1993, Ser. No. 158,245
Claims priority, application Japan, Nov. 27, 1992, 4-318031
Int. Cl.[6] A61K *35/14, 38/00, 38/28, 7/00*; C07K *7/00*
U.S. Cl. 530—303 **10 Claims**

1. A peptide conjugate capable of passing the blood-brain barrier, comprising a bioactive peptide or protein incapable of passing the blood-brain barrier and an insulin fragment consisting essentially of:
(a) a peptide chain having 14 to 21 amino acid residues from the N-terminus of insulin chain A and
(b) another peptide chain having 16 to 22 amino acid residues from the N-terminus of insulin chain B.

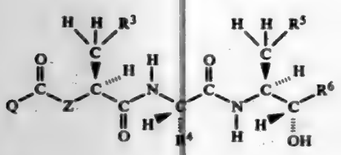
5,442,044

ORALLY ACTTIVE RENIN INHIBITORS

Dennis J. Hoover, Stonington; Bruce A. Lefker, Gales Ferry, and Robert L. Rosati, Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.

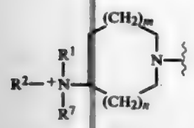
Continuation of Ser. No. 638,238, Jan. 4, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 28,038
Int. Cl.[6] C07K *5/06*; H61K *38/05*
U.S. Cl. 530—331 **7 Claims**

1. A compound of the formula



I

wherein Q is



with the proviso that R^7 may be absent and that when R^7 is absent the nitrogen does not carry a positive charge and X^- is absent; X^- represents a pharmaceutically acceptable anion or shared anion; m and n are independently 0 to 1; R^1 and R^2 are independently selected from hydrogen, C_1 to C_8 alkyl, C_1 to C_6 alkoxy-C_2 to C_8 alkyl, C_1 to C_6 alkylamino-C_2 to C_8 alkyl or di(C_1 to C_8 alkyl)amino-C_2 to C_8 alkyl, or R^1 and R^2 taken together with the nitrogen atom to which they are attached form a 4 to 8 membered ring containing 0, 1 or 2 atoms selected from the group consisting of oxygen and nitrogen, the remaining atoms in the ring being carbon, said ring optionally containing one or two substituents selected from hydroxy and C_1 to C_6 alkyl, the hydroxy substituent being attached to a carbon in the ring and the C_1 to C_6 alkyl substituents being attached to a carbon or nitrogen in the ring; R^7 is C_1 to C_8 alkyl; Z is CH_2, O or NH; R^3 is phenyl, C_5 to C_7 cycloalkyl, 1-naphthyl, 2-naphthyl, phenylmethyl, 2-thienyl, 3-thienyl, wherein said phenyl is optionally substituted with one or two groups selected from the group consisting of C_1 to C_3 alkoxy and halogen; R^4 is C_1 to C_8 alkyl, C_1 to C_8 substituted alkyl wherein the alkyl moiety is substituted with hydroxy, C_1 to C_8 alkylthio or C_1 to C_8 alkoxy; 4-imidazolylmethyl, thienylmethyl, or C_2 to C_8 alkenyl-methyl; R^5 is C_5 to C_7 cycloalkyl or phenyl; and R^6 is COO-C_1 to C_8 alkyl; $CONR^{11}R^{12}$, wherein each of R^{11} and R^{12} is hydrogen or C_1–C_8 alkyl or $CONHR^8$ wherein R^8 is C_1 to C_8 alkyl substituted with 1 to 3 halogen atoms;
and the pharmaceutically acceptable salts thereof.

5,442,045

BIOLOGICAL CONJUGATES OF FLUORESCENT RHODOL DYES

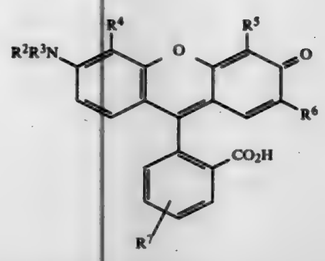
Richard P. Haugland, and James E. Whitaker, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Division of Ser. No. 509,360, Apr. 16, 1990, Pat. No. 5,227,487. This application Mar. 8, 1993, Ser. No. 28,319

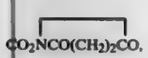
Int. Cl.[6] G01N *37/00*; C07K *1/13*; C07D *211/00*

U.S. Cl. 530—391.3 **20 Claims**

1. A compound comprising a fluorescent dye having the structure



wherein R^1 is H or CH_3, and R^2 is H, CF_3CO, CH_3, or C_2H_5; or R^1 in combination with R^2 is $(CH_2)_3$;
R^3 is H, CH_3, or C_2H_5, and R^4 is H; or R^3 in combination with R^4 is $(CH_2)_3$;
R^5 is H, CH_2NH_2, $CH_2NHCOCH_2Cl$, $CH_2NHCOCH_2I$; $CH_2NHCOCH{=}CH_2$, or $CH_2NHCOC_6H_4N_3$;
R^6 is H, Cl, Br, CH_3, or C_2H_5, or $(CH_2)_nCH_3$ where n is an integer from 0 to 15, or $(CH_2)_nCO_2H$, where n is an integer from 0 to 11;
R^7 is H, CO_2H,



NH_2, NCS, $CH_2NHCOCH_2Cl$, or $CH_2NHCOCH_2I$;
such that R^7 is not H if R^5 is H;
conjugated to a reactive site on a biomolecule via reaction of a chemically reactive functional group on the dye with a reactive site on the biomolecule.

5,442,046

ALKYL AND/OR ALKENYL OLIGOGLYCOSIDE ISETHIONATES

Manfred Weuthen, Solingen, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/02500, § 371 Date May 9, 1994, § 102(e) Date May 9, 1994, PCT Pub. No. WO93/09125, PCT Pub. Date May 13, 1993

PCT Filed Oct. 30, 1992, Ser. No. 240,713

Claims priority, application Germany, Nov. 8, 1991, 41 36 783.9

Int. Cl.[6] C08B *37/00*

U.S. Cl. 536—4.1 **19 Claims**

1. An alkyl or alkenyl oligoglycoside isethionate which is the product of the reaction of a) at least one salt of vinyl sulfonic acid and b) at least one oligoglycoside selected from the group consisting of alkyl and alkenyl oligoglycosides of the formula

$$R^1O(G)_p$$

wherein R^1 is an aliphatic, linear or branched hydrocarbon group having from about 6 to about 22 carbon atoms and 0, 1, 2 or 3 double bonds; (G) is a glycose unit having 5 or 6 carbon atoms: and p is a number from 1 to 10, in the presence of a basic catalyst.

5,442,047

PROCESS FOR PREPARING ISEPAMICIN

Chou-Hong Tann, Berkeley Heights; Tiruvettipuram K. Thiruvengadam, Edison; John S. Chiu, Parsippany; Cesar Colon, Rahway, and Michael D. Green, Paterson, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 777,385, Dec. 4, 1991, abandoned, which was the national stage of interational application number PCT/US90/03328, filed Jun. 19, 1990, which is a continuation of Ser. No. 369,578, Jun. 21, 1989, abandoned. This application Oct. 15, 1993, Ser. No. 138,558

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—13.6 **6 Claims**

1. A process for preparation of isepamicin which comprises:
(a) reacting a complex formed from zinc pivaloate and gentamicin B with 3-formylmercaptobenzothiazole under conditions which cause selective introduction of formyl protecting groups at the 3,6'-amino groups of gentamicin B to produce 3,6'-di-N-formylgentamicin B;
(b) acylating the 1-amino group of 3,6'-di-N-formylgentamicin B with an N-protected (S)-isoserine compound;
(c) removing all the protecting groups by basic hydrolysis and
(d) isolating isepamicin.

5,442,048

PROCESS FOR THE PREPARATION OF ACTIVATED CHITOSANS AND THEIR USE IN THE PREPARATION OF CHIOTSAN DERIVATIVES

Christoph Meister, Wiesbaden, and Reinhard Dönges, Bad Soden am Taunus, both of Germany, assignors to Hoechst AG, Frankfurt, Germany

Continuation of Ser. No. 476,263, Feb. 7, 1990, abandoned. This application Dec. 14, 1993, Ser. No. 166,738

Claims priority, application Germany, Feb. 9, 1989, 39 03 797.5

Int. Cl.[6] C08B *37/08*; C07H *1/00*

U.S. Cl. 536—20 **19 Claims**

1. A process for activating chitosan by adding acid for salt formation which comprises carrying out the addition of acid in a suspending agent consisting essentially of a chitosan and an aqueous solution of an inorganic salt, selected from the group consisting of chloride, nitrates, sulfate and acetates which are readily soluble in water,
wherein the aqueous solution of the inorganic salt substantially prevents the chitosan salts from dissolving.

5,442,049

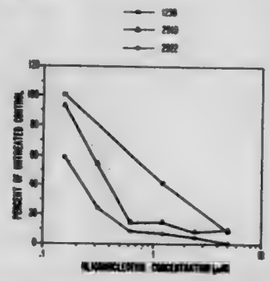
OLIGONUCLEOTIDES FOR MODULATING THE EFFECTS OF CYTOMEGALOVIRUS INFECTIONS

Kevin Anderson, Carlsbad, Calif.; Kenneth Draper, Boulder, Colo., and Brenda Baker, Encinitas, Calif., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 927,506, Nov. 19, 1992. This application Jan. 25, 1993, Ser. No. 9,263

Int. Cl.[6] C07H *21/04*; A61K *48/00*

U.S. Cl. 536—24.5 **1 Claim**



1. An oligonucleotide comprising SEQ ID NO: 22.

5,442,050

MOLECULAR CLONING OF ANTIGENS SHARED BY RAT- AND HUMAN-DERIVED *PNEUMOCYSTIS CARINII*

Jay A. Fishman, Boston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 768,166, Sep. 30, 1991, abandoned. This application Oct. 18, 1991, Ser. No. 781,034

Int. Cl.[6] C07H *21/04*; C12N *15/79*

U.S. Cl. 536—23.7 **5 Claims**

1. Isolated DNA having a nucleotide sequence selected from the group consisting of:
a) the nucleotide sequence of FIG. 5 (Sequence ID NO:1);
b) the nucleotide sequence of nucleotides 1 to 1056 of FIG. 8 (Sequence ID NO:3);
c) the nucleotide sequence of FIG. 9 (Sequence ID NO:4);
d) nucleotide sequences which, through the degeneracy of the genetic code, encode the same peptide gene product as that encoded by the nucleotide sequence of FIG. 5 (SEQ ID NO:1);
e) nucleotide sequences which, through the degeneracy of the genetic code, encode the same peptide gene product as that encoded by the nucleotide sequence of FIG. 9 (SEQ ID NO:4).

5,442,051

ANHYDROUS CRYSTAL OF 4-CARBAMOYL-1-β-D-RIBOFURANOSYL IMIDAZOLIUM-5-OLEATE

Shinji Ozeki, Ohito, and Shinichi Nakatsugawa, Shiznoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 61,764, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 600,617, Oct. 22, 1990, abandoned. This application Apr. 21, 1994, Ser. No. 231,011

Claims priority, application Japan, Nov. 10, 1989, 1-291078

Int. Cl.[6] C07H *19/052*

U.S. Cl. 536—28.9 **1 Claim**

1. Anhydrous crystals of 4-carbamoyl-1-β-D-ribofuranosyl imidazolium-5-olate possessing the following characteristics:
(1) water content determined by the Karl Fisher method: 0.5% by weight or less, and
(2) specific IR spectrum absorption peaks (measured by an interference-type IR spectrophotometer):
3580, 1852, 1630, 1575, 1554 cm^{-1} (standard deviation ±2 cm^{-1}).

5,442,052

EXPRESSION OF GENES IN TRANSGENIC PLANTS

Colin R. Bird, Bracknell; Donald Grierson, Shepshed, and Wolfgang W. Schuch, Heathlake Park, all of England, assignors to Zeneca Limited, London, England

PCT No. PCT/GB91/01956, § 371 Date Jul. 8, 1993, § 102(e) Date Jul. 8, 1993, PCT Pub. No. WO92/08798, PCT Pub. Date May 29, 1992

PCT Filed Nov. 7, 1991, Ser. No. 50,393

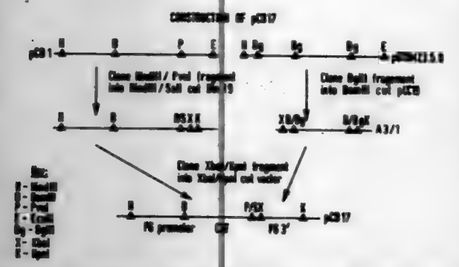
Claims priority, application United Kingdom, Nov. 8, 1990, 9024323

Int. Cl.[6] C07H *21/04*; C12N *5/14, 15/82*; A01H *5/00*

U.S. Cl. 536—24.1 **8 Claims**

1. DNA construct for use in transforming plant cells which comprises a structural gene under the control of upstream promoter and downstream terminator sequences, characterized in that the structural gene is other than tomato polygalacturonase, the upstream promoter is a 4.9 SalI/BamI kilobase fragment of the DNA control sequence found upstream of the tomato polygalacturonase structural gene, and the downstream terminator sequence is a 1.6 kilobase BglII fragment of the DNA control sequence found downstream of the tomato

polygalacturonase structural gene, said fragments being obtainable from the genomic clone gTOM23, deposited at the



National Collections of Industrial and Marine Bacteria under the accession number NCIMB 12373.

5,442,053

SALTS AND MIXTURES OF HYALURONIC ACID WITH PHARMACEUTICALLY ACTIVE SUBSTANCES, PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME AND METHODS FOR ADMINISTRATION OF SUCH COMPOSITIONS

Francesco della Valle, Padova; Aurelio Romeo, Rome, and Silvana Lorenzi, Padova, all of Italy, assignors to Fidia, S.p.A., Abano Terme, Italy

Continuation of Ser. No. 452,681, Dec. 19, 1989, Pat. No. 5,166,331, which is a continuation of Ser. No. 756,824, Jul. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 719,113, Apr. 2, 1985, abandoned, and Ser. No. 669,431, Nov. 8, 1984, abandoned, and a continuation-in-part of Ser. No. 425,462, Sep. 28, 1982, Pat. No. 4,593,091. This application Aug. 19, 1992, Ser. No. 931,949

Claims priority, application Italy, Oct. 10, 1983, 49143/83; Oct. 9, 1984, 48979/84; Apr. 2, 1985, 47924/85

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.[6] C07H *5/04*

U.S. Cl. 536—55.1 **60 Claims**

1. A partial or a stoichiometrically neutral salt of hyaluronic acid or a molecular weight fraction thereof with at least one pharmacologically active substance of a basic nature suitable for topical administration.

5,442,054

HIGHLY SUBSTITUTED SULPHOALKYCELLULOSE DERIVATIVES, ESPECIALLY SULPHOETHYCELLULOSE ETHER, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS THICKENING AGENT FOR TEXTILE PRINTING PASTES

René Kiesewetter, Soltau-Ahlften; Reinhard Kniewske, Fallingbostel; Eugen Reinhardt, and Klaus Szablikowski, both of Walsrode, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Dec. 14, 1993, Ser. No. 166,402

Claims priority, application Germany, Dec. 21, 1992, 42 43 281.2

Int. Cl.[6] C08B *11/10*; C09D *11/08*

U.S. Cl. 536—84 **7 Claims**

1. In the printing of textile wherein to the textile there is applied a printing paste, containing a thickening agent or rheology improver, the improvement which comprises including in said thickening agent or rheology improver a sulphoalkylcellulose having a degree of substitution by sulphoalkyl groups of 1.2 to 2.

5,442,055

AZETIDINONE COMPOUND AND PROCESS FOR PREPARATION THEREOF

Tameo Iwasaki, Nishinomiya, and Kazuhiko Kondo, Osaka, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

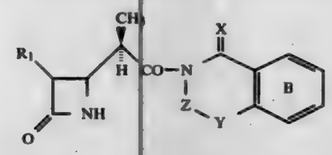
Filed Nov. 5, 1993, Ser. No. 148,917

Claims priority, application Japan, Nov. 13, 1992, 4-303662; May 13, 1993, 5-111460; Jul. 8, 1993, 5-169182; Sep. 24, 1993, 5-238155

Int. Cl.[6] C07D *227/00, 417/06, 413/06, 279/08*

U.S. Cl. 540—200 **19 Claims**

1. An azetidinone compound of the formula [I]:



[I]

wherein Ring B is a benzene ring which may be substituted by one to four group(s) selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkoxy group and an aryl group; R^1 is a hydroxy-substituted lower alkyl group which may be protected; X is oxygen atom or sulfur atom; Y is oxygen atom, sulfur atom, methylene group or an imino group which may be substituted by a lower alkyl group or an acyl group selected from the group consisting of a lower alkanoyl group, a lower alkoxycarbonyl group, a phenylcarbonyl group or a phenyl-lower alkoxycarbonyl group; and Z is a methylene group which may be substituted by one to two group(s) selected from the group consisting of a C_{3-7} alkylene group, a C_{1-20} alkyl group, a C_{4-7} cycloalkyl group (said alkylene group, alkyl group and cycloalkyl group further may have substituent(s) selected from the group consisting of a lower alkyl group, a lower alkoxy group, a halogen atom and an amino group which may be protected), an aryl group, an aralkyl group and a heterocyclic group which is a 4-to-7-membered heterocyclic group containing oxygen atom, nitrogen atom or sulfur atom as a hetero atom; or a salt thereof.

5,442,056

PREPARATION OF 2-ARYL CARBAPENEMS

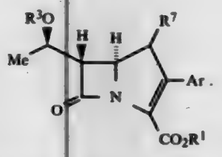
Ann E. DeCamp, Scotch Plains; Edward J. J. Grabowski, Westfield; Mark A. Huffman, Scotch Plains; Lyndon C. Xavier, Piscataway, and Nobuyoshi Yasuda, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1994, Ser. No. 245,101

Int. Cl.[6] C07D *487/00*

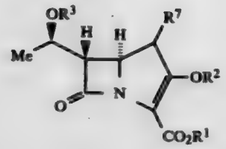
U.S. Cl. 540—302 **12 Claims**

1. A process of making a 2-aryl carbapenem of the formula 1:



1

comprising reacting a compound of formula A:



A

in which

—OR_2 is a leaving group selected from the group consisting of:

(a) triflate;

(b) fluorosulfonate;

(c) mesylate;

(d) rosylate and

(e) diaryl phosphate, wherein the aryl groups are unsubstituted or substituted phenyl and the substituents on each phenyl are independently 1–3 halo groups;

R^1 is a protecting group selected from the group consisting of:

(a) benzyl;

(b) p-methoxybenzyl,

(c) p-nitrobenzyl,

(d) o-nitrobenzyl,

(e) benzhydryl

(f) allyl,

(g) 2-trimethylsilylethyl and

(h) 2,2,2-trichloroethyl;

R^3 is selected from the group consisting of:

(a) hydrogen,

(b) a hydroxy protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl silyl and diphenyl mono C_{1-4} alkyl silyl;

(c) —C(O)OR'^3,

(d) $CH_2OR'^3$, and

(e) R'^3;

wherein R'^3 represents:

(a) benzyl,

(b) p-methoxybenzyl,

(c) p-nitrobenzyl,

(d) o-nitrobenzyl,

(e) benzhydryl

(f) allyl,

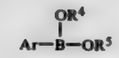
(g) 2-trimethylsilylethyl or

(h) 2,2,2-trichloroethyl;

and

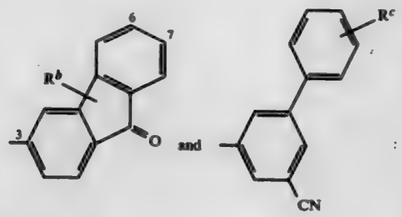
R^7 is hydrogen or methyl;

with a silylated boronic acid compound of the formula B:



B

in which Ar is selected from the group consisting of:



and

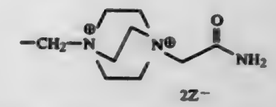
R^b is selected from the group consisting of:

(a) C_{1-3} alkyl,

(b) substituted C_{1-3} alkyl, wherein the substituent is hydroxy, chloro, bromo, iodo or methoxy;

(c) hydroxy C_{1-3} alkyl, wherein the hydroxy is protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl silyl and diphenyl mono C_{1-4} alkyl silyl; and

(d)



wherein Z^- represents a negatively charged counterion;

R^c is selected from the group consisting of:

(a) C_{1-3} alkyl,

(b) C_{1-3} alkyl substituted with 1–3 groups selected from bromo, chloro and iodo;

(c) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl silyl and diphenyl mono C_{1-4} alkyl silyl;

R^4 and R^5 are silyl protecting groups independently selected from: (a) tri-C_{1-4} alkyl silyl; (b) phenyl di C_{1-4} alkyl silyl, and (c) diphenyl mono C_{1-4} alkyl silyl, said phenyl groups being unsubstituted or independently substituted with 1–3 C_{1-4} alkyl or halo groups,

to produce a compound of formula 1.

5,442,057

PREPARATION OF 2-ARYL CARBAPENEMS VIA A BORONIC ACID COUPLING REACTION

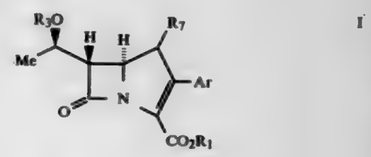
Ann Decamp, 2637 Crest La., Scotch Plains, N.J. 07076; Ulf H. Dolling, 641 Fourth Ave., Westfield, N.J. 07090; Yulan Li, 69 Dellwood Rd., Edison, N.J. 08820; Dale L. Rieger, 800 Forrest Ave. Apt. 11H, Westfield, N.J. 07090; Nobuyoshi Yasuda, 225 Oak Tree Rd., Mountainside, N.J. 07092, and Lyndon C. Xavier, 234P Greenfield Gardens, Edison, N.J. 08837

Division of Ser. No. 978,598, Nov. 19, 1992, Pat. No. 5,338,875. This application Apr. 12, 1994, Ser. No. 226,788

Int. Cl.[6] C07D *487/00*

U.S. Cl. 540—302 **12 Claims**

1. A process of making a 2-aryl carbapenem compound of Formula I,



I

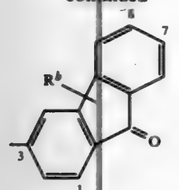
wherein

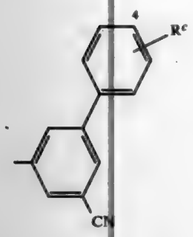
Ar is

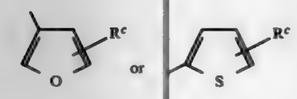


(a)

-continued







wherein:

R^a is
- (a) CN,
- (b) CF_3,
- (c) C_{1-3} alkoxy,
- (d) $—NO_2$,
- (e) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;
- (f) substituted tetrazolyl wherein the substituent is hydrogen, C_{1-3}alkyl, halo, hydroxy or C_{1-3}alkoxy;

R^b is
- (a) C_{1-3} alkyl,
- (b) C_{1-3} alkoxy,
- (c) substituted C_{1-3} alkyl, wherein the substituent is hydroxy, or
- (d) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di-C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;

R^c is
- (a) C_{1-3} alkyl,
- (b) hydroxy C_{1-3} alkyl, wherein the hydroxy is optionally protected with a silyl protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;

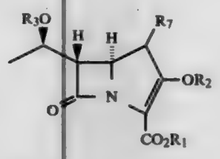
R_1 is
- (a) benzyl,
- (b) p-methoxybenzyl,
- (c) p-nitrobenzyl,
- (d) o-nitrobenzyl,
- (e) benzhydryl,
- (f) allyl,
- (g) 2-trimethylsilylethyl or
- (h) 2,2,2-trichloroethyl;

R_3 is
- (a) hydrogen,
- (b) a hydroxy protecting group selected from tri-C_{1-4} alkyl silyl, phenyl di C_{1-4} alkyl and diphenyl mono C_{1-4} alkyl silyl;
- (c) $—C(O)OR'_3$, wherein R'_3 is
  - (a) benzyl,
  - (b) p-methoxybenzyl,
  - (c) p-nitrobenzyl,
  - (d) o-nitrobenzyl,
  - (e) benzhydryl,
  - (f) allyl,
  - (g) 2-trimethylsilylethyl or
  - (h) 2,2,2-trichloroethyl;
- (d) $CH_2OR'_3$, or
- (e) R'_3;

R_7 is hydrogen or methyl including β-methyl;

comprising:

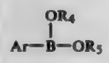
contacting a compound of formula B



B

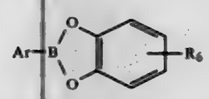
$—OR_2$ represents
- (a) triflate;
- (b) fluorosulfonate;
- (c) mesylate;
- (d) tosylate or
- (e) diarylphosphate wherein aryl is mono or disubstituted phenyl and the substituents are each independently hydrogen or halo;

and a coupling base in a coupling solvent with a compound of Formula



and a transitional metal catalyst to yield a compound of Formula 1

wherein R_4 and R_5 are each individually hydrogen or C_{1-6} alkyl or R_4 and R_5 taken together are C_{1-6} alkyl or R_4 and R_5 are joined together as to form



wherein R_6 is C_{1-3} alkyl, halo, hydroxy, C_{1-3} alkoxy or hydrogen.

5,442,058

CONVERSION OF PENICILLINS AND CEPHALOSPORINS TO 1-(S)-SULFOXIDES

Paulus G. J. Nieuwenhuis, Bathmen, Netherlands, assignor to Akzo Nobel N.V., Arnhem, Netherlands

PCT No. PCT/EP90/01643, § 371 Date Apr. 9, 1992, § 102(e) Date Apr. 9, 1992, PCT Pub. No. WO91/05788, PCT Pub. Date May 2, 1991

PCT Filed Sep. 27, 1990, Ser. No. 844,667

Claims priority, application European Pat. Off., Oct. 16, 1989, 89202606

Int. Cl.[6] C07D *501/02, 499/04*

U.S. Cl. 540—314 **8 Claims**

1. A process for the conversion of a compound selected from the group consisting of 1-(R)-sulfoxide containing penicillins, cephalosporins and mixtures thereof, to the corresponding 1-(S)-sulfoxides, said process comprising the step of treating an aqueous solution comprising 1-(R)-sulfoxide containing penicillin, cephalosporin and mixtures thereof, with an amount of acid anhydride effective to convert said 1-(R)-sulfoxide to the corresponding 1-(S)-sulfoxide, said conversion process carried out at a temperature of between −15° and 30° C. and the pH of said aqueous solution being maintained between 3.5 and 8.

5,442,059

9-[(SUBSTITUTED GLYCYL)AMIDO)]-6-DEMETHYL-6-DEOXYTETRACYCLINES

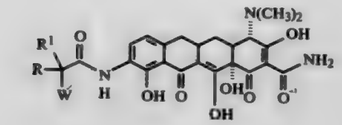
Phaik-Eng Sum, Pomona; Ving J. Lee, Monsey, both of N.Y., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Aug. 13, 1992, Ser. No. 928,590

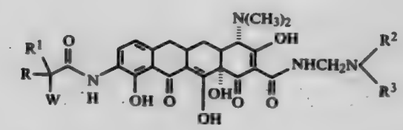
Int. Cl.[6] C07C *231/12, 233/64*

U.S. Cl. 544—63 **83 Claims**

1. A compound of the formula:



or



wherein:

R is selected from the group consisting of hydrogen; straight or branched (C_1-C_8)alkyl group selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, hexyl, beptyl and octyl; α-mercapto(C_1-C_4)alkyl group selected from the group consisting of mercaptomethyl, α-mercaptoethyl, α-mercapto-1-methylethyl, α-mercaptopropyl and α-mercaptobutyl; α-hydroxy(C_1-C_4)alkyl group selected from the group consisting of hydroxymethyl, α-hydroxyethyl, α-hydroxy-1-methylethyl, α-hydroxypropyl and α-hydroxybutyl; carboxyl (C_1-C_8) alkyl group; (C_6-C_{10}) aryl group selected from the group consisting of phenyl, α-naphthyl and β-naphthyl; substituted (C_6-C_{10}) aryl group wherein the substitution is selected from the group consisting of hydroxy, halogen, (C_1-C_4) alkoxy, trihalo(C_1-C_3) alkyl, nitro, amino, cyano, (C_1-C_4) alkoxycarbonyl, (C_1-C_3) alkylamino and carboxy; (C_7-C_9) aralkyl group selected from the group consisting of benzyl, 1-phenylethyl, 2-phenylethyl and phenylpropyl; and substituted (C_7-C_9) aralkyl group wherein the substitution is selected from the group consisting of halo, (C_1-C_4)alkyl, nitro, hydroxy, amino, mono- or di-substituted (C_1-C_4)alkylamino, (C_1-C_4)alkoxy, (C_1-C_4)alkylsulfonyl, cyano and carboxy];

R^1 is selected from the group consisting of hydrogen and (C_1-C_6)alkyl selected from the group consisting of methyl, ethyl propyl, isopropyl, butyl, isobutyl, pentyl and hexyl; when R does not equal R^1 the stereochemistry of the asymmetric carbon (i.e. the carbon bearing the W substituent) maybe be either the racemate (DL) or either of the individual enantiomers (L or D);

W is selected from amino; hydroxylamino; (C_1-C_{12}) straight or branched alkyl monosubstituted amino group wherein the substitution is selected from the group consisting of methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 1-methylpropyl, 2-methylpropyl, 1,1-dimethylethyl, n-pentyl, 2-methylbutyl, 1,1-dimethylpropyl, 2,2-dimethylpropyl, 3-methylbutyl, n-hexyl, 1-methylpentyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3-methylpentyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 1-methyl-1-ethylpropyl, heptyl, octyl, nonyl, decyl, undecyl and dodecyl; diastereomers and enantiomers of said branched alkyl monosubstituted amino group; (C_3-C_8)cycloalkyl monosubstituted amino group wherein the substitution is selected from the group consisting of cyclopropyl, trans-1,2-dimethylcyclopropyl, cis-1,2-dimethylcyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, bicyclo[2.2.1]hept-2-yl, and bicyclo[2.2.2oct-2-yl and the diastereomers and enantiomers of said (C_3-C_8)cycloalkyl monosubstituted amino group; $[(C_4-C_{10})$cycloalkyl]alkyl monosubstituted amino group wherein the substitution is selected from the group consisting of (cyclopropyl)methyl, (cyclopropyl-)ethyl, (cyclobutyl) methyl, (trans-2-methylcyclopropyl)-methyl, and (cis-2-methylcyclobutyl)methyl; (C_3-C_{10})alkenyl monosubstituted amino group wherein the substitution is selected from the group consisting of allyl, 3-butenyl, cis 2-butenyl trans 2-butenyl, 2-pentenyl, 4-octenyl, 2,3-dimethyl-2-butenyl, 3-methyl-2-butenyl 2-cyclopentenyl and 2-cyclohexenyl; (C_6-C_{10})aryl monosubstituted amino group wherein the substitution is selected from the group consisting of phenyl and naphthyl; (C_7-C_{10})aralkylamino group wherein aralkyl is selected from the group consisting of benzyl, 2-phenylethyl, 1-phenylethyl, 2-(naphthyl)methyl, 1-(naphthyl)methyl and phenylpropyl; substituted (C_6-C_{10})aryl monosubstituted amino group wherein the substitution is selected from the group consisting of (C_1-C_5)acyl, (C_1-C_5)acylamino, (C_1-C_4)alkyl, mono or disubstituted (C_1-C_8)alkylamino, (C_1-C_4)alkoxy, (C_1-C_4)alkoxycarbonyl, (C_1-C_4)alkylsulfonyl, amino, carboxy, cyano, halogen, hydroxy, nitro and trihalo (C_1-C_3)alkyl; straight or branched symmetrical disubstituted (C_2-C_{14})alkylamino group wherein the substitution is selected from the group consisting of dimethyl, diethyl, diisopropyl, di-n-propyl, di-n-butyl and diisobutyl; symmetrical disubstituted (C_3-C_{14})cycloalkylamino group wherein the substitution is selected from the group consisting of dicyclopropyl, dicyclobutyl, dicyclopentyl, dicylohexyl and dicycloheptyl; straight or branched unsymmetrical disubstituted (C_3-C_{14})alkylamino group wherein the total number of carbons in the substitution is not more than 14; unsymmetrical disubstituted (C_4-C_{14})cycloalkylamino group wherein the total number of carbons in the substitution is not more than 14; (C_2-C_8) azacycloalkyl; substituted (C_2-C_8)azacycloalkyl group wherein the substitution is selected from the group consisting aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, 4-methylpiperidinyl, 2-methylpyrrolidinyl, cis-3,4-dimethylpyrrolidinyl, trans-3,4-dimethylpyrrolidinyl, 2-azabicyclo[2.1.1]hex-2-yl, 5-azabicyclo[2.1.1]hex-5-yl, 2-azabicyclo [2.2.1]hept-2-yl, 7-azabicyclo-[2.2.1]hept-7-yl, and 2-azabicyclo[2.2.2oct-2-yl; diastereomers and enantiomers of said (C_2-C_8)azacycloalkyl and substituted (C_2-C_8)azacycloalkyl group 1-azaoxacycloalkyl group selected from the group consisting of morpholinyl and 1-aza-5-oxocycloheptane; substituted 1-azaoxacycloalkyl group wherein the substitution is selected from the group consisting of 2-(C_1-C_4)alkylmorpholinyl, 3-(C_1-C_3)alkylisoxazolidinyl, tetrahydrooxazinyl and 3,4-dihydrooxazinyl; [1,n]-diazacycloalkyl or substituted [1,n]-diazacycloalkyl group selected from the group consisting of piperazinyl, 2-(C_1-C_3)alkylpiperazinyl, 4-(C_1-C_3)alkylpiperazinyl, 2,4-dimethylpiperazinyl, 4-(C_1-C_4)alkoxypiperazinyl, 4-(C_6-C_{10})aryloxypiperazinyl, 4-hydroxypiperazinyl, 2,5-diazabicyclo[2.2.1]hept-2-yl, 2,5-di-aza-5-methylbicyclo[2.2.1]hept-2-yl, 2,3-diaza-3-methylbicyclo[2.2.2oct-2-yl, and 2,5-diaza-5,7-dimethylbicyclo[2.2-.2oct-2-yl, and the diastereomers and enantiomers of said [1,n]-diazacycloalkyl and substituted [1,n]-diazacycloalkyl groups; 1-azathiacycloalkyl or substituted 1-azathiacycloalkyl group selected from the group consisting of thiomorpholinyl, 2-(C_1-C_3)alkylthiomorpholinyl and 3-(C_3-C_6)cycloalkylthiomorpholinyl; N-azolyl or substituted N-azolyl group selected from the group consisting of 1-imidazolyl, 2-(C_1-C_3)alkyl-1-imidazolyl, 3-(C_1-C_3) alkyl-1-imidazolyl, 1-pyrrolyl, 2-(C_1-C_3)alkyl-1-pyrrolyl, 3-(C_1-C_3)alkyl-1-pyrrolyl, 1-pyrazolyl, 3-(C_1-C_3)alkyl-1-pyrazo-

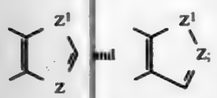
lyl, indolyl, 1-(1,2,3-triazolyl), 4-(C_1-C_3)alkyl-1-(1,2,3-triazolyl), 5-(C_1-C_3)-alkyl-1-(1,2,3-triazolyl), 4-(1,2,4-triazolyl, 1-tetrazolyl, 2-tetrazolyl and benzimidazolyl; (heterocycle)amino group selected from the group consisting of 2- or 3-furanylamino, 2- or 3-thienylamino, 2-, 3- or 4-pyridylamino, 2- or 5-pyridazinylamino, 2-pyrazinylamino, 2-(imidazolyl)amido, (benzimidazolyl-)amino, and (benzothiazolyl)amino; substituted (heterocycle)-amino group wherein (heterocycle) amino is as defined above with substitution selected from straight or branched (C_1-C_6)alkyl; (heterocycle)methylamino group selected from the group consisting of 2- or 3-furylmethylamino, 2- or 3-thienylmethyl- amino, 2-, 3- or 4-pyridylmethylamino, 2- or 5-pyridazinylmethylamino, 2-pyrazinylmethylamino, 2-(imidazolyl)methylamino, (benzimidazolyl)methylamino, and (benzothiazolyl) methylamino; substituted (heterocycle)methylamino group as defined above with substitution selected from straight or branched (C_1-C_6)alkyl; carboxy (C_2-C_4) alkylamino group selected from the group consisting of aminoacetic acid, α-aminopropionic acid, β-aminopropionic acid, α-butyric acid, and β-aminobutyric acid; enantiomers of said carboxy (C_2-C_4)alkylamino group; (C_1-C_4)alkoxycarbonylamino group wherein alkoxycarbonyl is selected from methoxycarbonyl, ethoxycarbonyl, allyloxycarbonyl, propoxycarbonyl, isoproproxycarbonyl, 1,1-dimethylethoxycarbonyl, n-butoxycarbonyl, and 2-methylpropoxycarbonyl; (C_1-C_4)alkoxyamino group wherein alkoxy is selected from the group consisting of methoxy, ethoxy, n-propoxy, 1-methylethoxy, n-butoxy, 2-methylpropoxy, and 1,1-dimethyl ethoxy; (C_3-C_8)cycloalkoxyamino group wherein cycloalkoxy is selected from the group consisting of cyclopropoxy, trans-1,2-dimethylcyclopropoxy, cis-1,2-dimethylcyClopropoxy, cyclobutoxy, cyclopentoxy, cyclohexoxy, cycloheptoxy, cyclooctoxy, bicyclo[2.2.1]hept-2-yloxy, and bicyclo[2.2.2oct-2-yloxy; diastereomers and enantiomers of said (C_3-C_8)cycloalkoxyamino group; (C_6-C_{10})aryloxyamino group selected from the group consisting of phenoxyamino, 1-naphthyloxyamino and 2-naphthyloxyamino; and (C_7-C_{11})arylalkoxyamino group wherein arylalkoxy is selected from the group consisting of benzyloxy, 2-phenylethoxy, 1-phenylethoxy, 2- (naphthyl) methoxy, 1- (naphthyl) methoxy and phenylpropoxy;

R^2 is selected from the group consisting of hydrogen; straight or branched (C_1-C_3)alkyl group selected from the group consisting of methyl, ethyl, n-propyl and 1-methylethyl; (C_6-C_{10})aryl group selected from the group consisting of phenyl, α-naphthyl and β-naphthyl; (C_7-C_9)aralkyl group; a heterocycle group selected from a five membered aromatic or saturated ring with one N, O, S or Se heteroatom optionally having a benzo or pyrido ring fused thereto selected from the group consisting of



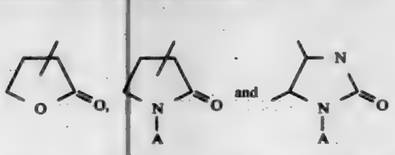
Z = N, O, S or Se

a five membered aromatic ring with two N, O, S or Se heteroatoms optionally having a benzo or pyrido ring fused thereto selected from the group consisting of



Z or Z^1 = N, O, S or Se

a five membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from the group consisting of



wherein A is selected from the group consisting of hydrogen; straight or branched (C_1-C_4)alkyl; C_6-aryl; substituted C_6-aryl wherein the substitution is selected from the group consisting of halo, (C_1-C_4)alkoxy, trihalo (C_1-C_3)alkyl, nitro, amino, cyano, (C_1-C_4)-alkoxycarbonyl, (C_1-C_3)alkylamino or carboxy; and (C_7-C_9)-aralkyl group selected from the group consisting of benzyl, 1-phenylethyl, 2-phenylethyl or phenylpropyl;

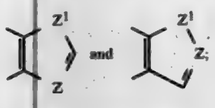
a six membered aromatic ring with one to three N heteroatoms; a six membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom; and —$(CH_2)_nCOOR^4$ where n=0–4 and R^4 is selected from the group consisting of hydrogen; straight or branched (C_1-C_3)alkyl group selected from the group consisting of methyl, ethyl, n-propyl and 1-methylethyl; and (C_6-C_{10})aryl group , selected from the group consisting of phenyl, α-naphthyl, and β-naphthyl;

R^3 is selected from the group consisting of hydrogen; straight or branched (C_1-C_3)alkyl group selected from the group consisting of methyl, ethyl, n-propyl and 1-methylethyl; (C_6-C_{10})aryl group selected from the group consisting of phenyl, α-naphthyl and β-naphthyl; (C_7-C_9)aralkyl group; a heterocycle group selected from a five membered aromatic or saturated ring with one N, O, S or Se heteroatom optionally having a benzo or pyrido ring fused thereto selected from the group consisting of



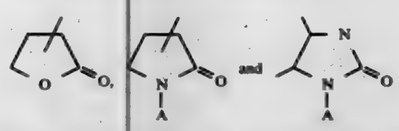
Z = N, O, S or Se

a five membered aromatic ring with two N, O, S or Se heteroatoms optionally having a benzo or pyrido ring fused thereto selected from the group consisting of



Z or Z^1 = N, O, S or Se

a five membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom selected from the group consisting of



wherein A is selected from the group consisting of hydrogen; straight or branched (C_1-C_4)alkyl; C_6-aryl; substituted C_6-aryl wherein the substitution is selected from the

group consisting of halo,(C_1-C_4)alkoxy, trihalo(C_1-C_3)alkyl, nitro, amino, cyano, (C_1-C_4)-alkoxycarbonyl, (C_1-C_3)alkylamino and carboxyl; aand (C_7-C_9)-aralkyl group selected from the group consisting of benzyl, 1-phenylethyl, 2-phenylethyl or phenylpropyl;

a six membered aromatic ring with one to three N heteroatoms; a six membered saturated ring with one or two N, O, S or Se heteroatoms and an adjacent appended O heteroatom; and —$(CH_2)_nCOOR^4$ where n=0–4 and R^4 is selected from the group consisting of hydrogen; straight or branched (C_1-C_3)alkyl selected from the group consisting of methyl, ethyl, n-propyl and 1-methylethyl; and (C_6-C_{10})aryl selected from phenyl, α-naphthyl and β-naphthyl; with the proviso that R^2 and R^3 cannot both be hydrogen;

or R^2 and R^3 taken together are —$(CH_2)_2B(CH_2)_2$—, wherein B is selected from the group consisting $(CH_2)_n$ where n=0–1, —NH, straight or branched —$N(C_1$-C_3)alkyl, —$N(C_1$-C_4)alkoxy, oxygen, sulfur and substituted congeners selected from the group consisting of (L or D)proline, ethyl(L or D)prolinate, morpholine, pyrrolidine or piperidine; and the pharmacologically acceptable organic and inorganic salts or metal complexes.

5,442,060

CARBOXAMIDE DERIVATIVES

Tetsuo Jikihara, Komae; Tadashi Shirasaka, Machida; Kazuo Suzuki; Hiroko Suzuki, both of Sagamihara; Masao Taniguchi, Machida, and Shinya Inoue, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

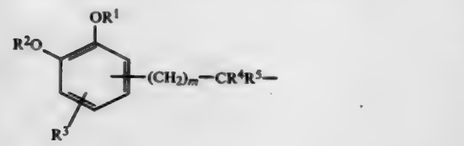
Filed Sep. 29, 1993, Ser. No. 128,250

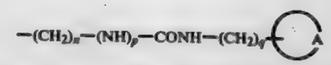
Claims priority, application Japan, Sep. 29, 1992, 4-260325; Sep. 30, 1992, 4-262476; Nov. 10, 1992, 4-299686

Int. Cl.[6] C07D *265/30, 295/50*

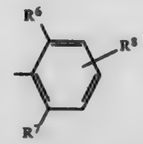
U.S. Cl. 544—106 **7 Claims**

1. A carboxamide derivative of the formula:

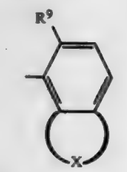




wherein, m, n and q each independently represent an integer from 0 to 3, p represents 0 or 1, R^1 and R^2 each independently represent C_1–C_3 alkyl group, or R^1 and R^2, taken together, may form C_1–C_3 alkylene group, R^3 represents hydrogen atom, amino group, C_1–C_3 alkylamino group, C_2–C_6 dialkylamino group, C_1–C_3alkyl group, C_2–C_7 acyl group, pyrrolidino group, piperidino group, morpholino group, nitro group, hydroxy group, C_2–C_7acyloxy group, C_1–C_3 alkoxy group or halogen atom, R^4 represents hydrogen atom or C_1–C_{10} alkyl group, R^5 represents C_1–C_{10} alkyl group, or R^4 and R^5, taken together, may form C_2–C_7 alkylene group, A ring represents;



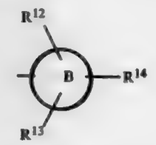
wherein R^6 and R^7 each independently represent C_1–C_5 alkyl group, C_1–C_5 alkoxy group, or halogen atom, R^8 represents hydrogen atom, amino group, C_1–C_3 alkylamino group, C_2–C_6dialkylamino group, C_1–C_5 alkyl group, C_1–C_5 alkoxy group, pyrrolidino group, piperidino group, morpholino group or halogen atom, or A ring represents;



wherein R^9 represents hydrogen atom, C_1–C_5 alkyl group or C_1–C_5alkoxy group and X represents;



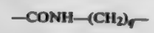
in which R^{10} and R^{11} each independently represent hydrogen atom or C_1–C_5 alkyl group, r and z each independently represent 0 or 1, and x and y each independently represent an integer from 0 to 5 under the condition that $0 \leqq x+y \leqq 5$; or A ring represents;



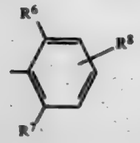
wherein B ring represents 5 or 6-membered nitrogen-containing aromatic group, R^{12} and R^{13} each independently represent C_1–C_5alkyl group, optionally substituted phenyl group or piperazino group, pyridyl group, C_1–C_5 alkoxy group, a group



(in which R^{15} and R^{16} each independently represent hydrogen atom or C_1–C_5 alkyl group, or R^{15} and R^{16}, taken together, may form C_3–C_6 alkylene group), morpholino group, carboxy group or C_2–C_4 alkoxycarbonyl group, R^{14} represents hydrogen atom or C_1–C_5 alkyl group, with the proviso that R^{12} and R^{13} are attached to the two atoms adjacent to the atom on the B ring which is bound to the moiety:



(in which q has the same significance as defined above), with the proviso that when A ring is



in which R^6, R^7 and R^8 have the same significance as defined above, then p represents 0) a pharmaceutically acceptable salt thereof.

5,442,061

RADIATION-SENSITIVE SULFONIC ACID ESTERS AND THEIR USE

Georg Pawlowski, Wiesbaden; Horst Roeschert, Ober-Hilbersheim; Walter Spiess, Dielburg, and Klaus-Juergen Przybilla, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

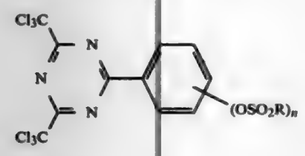
Division of Ser. No. 895,679, Jun. 9, 1992, Pat. No. 5,298,364. This application Oct. 21, 1993, Ser. No. 139,017

Claims priority, application Germany, Jun. 19, 1991, 41 20 174.4

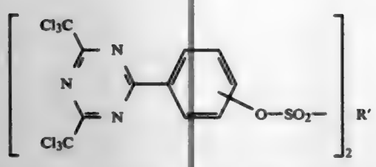
Int. Cl.[6] C07D *251/24*

U.S. Cl. 544—216 **11 Claims**

1. A radiation-sensitive ester of a sulfonic acid of the formula $R—SO_3H$ or $R^1(SO_3H)_2$ with 2,4-bis-trichloromethyl-6-(mono- or dihydroxyphenyl)-1,3,5-triazines, said ester being represented by one of formulae I and II



(I)



(II)

where R is an optionally further substituted $(C_1–C_{10})$alkyl, $(C_5–C_{10})$cycloalkyl, $(C_6–C_{10})$aryl or $(C_6–C_{10})$aryl-$(C_1–C_{10})$alkyl radical, R^1 is an optionally substituted $(C_1–C_{10})$alkylene or $(C_6–C_{10})$arylene radical, and n is 1 or 2,

wherein the optional substituents on radicals R or R′ are selected from the group consisting of $(C_1–C_8)$alkyl, $(C_1–C_8)$alkoxy, $(C_1–C_8)$alkanoyl, $(C_1–C_8)$alkanoyloxy, $(C_6–C_{10})$aryl, cyano and halogen.

5,442,062

IMIDAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Keiko Koh; Mikio Taniguchi, both of Tsukuba; Norie Itoh, Inashiki; Hiroshi Kushida, Shimodate; Osamu Morita; Hiroyoshi Yamada, both of Tsukuba; Kiyotaka Munesada, Shimotsuma; Kazuo Tsuzuki; Mineo Kunihara, both of Tsukuba, and Yoshiji Fujita, Abiko, all of Japan, assignors to The Upjohn Company, Kalamazoo, Mich.

PCT No. PCT/US92/08584, § 371 Date Apr. 22, 1994, § 102(e) Date Apr. 22, 1994, PCT Pub. No. WO93/08193, PCT Pub. Date Apr. 29, 1993

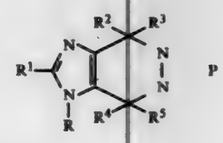
PCT Filed Oct. 14, 1992, Ser. No. 122,446

Claims priority, application Japan, Oct. 24, 1991, 3-277537; Dec. 7, 1991, 3-323474; Apr. 15, 1992, 4-095191; Aug. 14, 1992, 4-216809

Int. Cl.[6] C07D *237/26, 237/32, 257/04*

U.S. Cl. 544—234 **12 Claims**

1. An imidazole derivative represented by the general formula I:



P

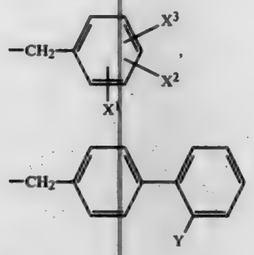
wherein

R^1 is

(a) hydrogen atom,
(b) $C_1–C_8$ alkyl group,
(c) $C_1–C_8$ alkoxy group,
(d) $C_1–C_8$ alkylthio group,
(e) $C_1–C_8$ alkylamino group,
(f) alkenyl of up to 8 C atoms,
(g) alkynyl of up to 8 C atoms,
(h) $—CF_3$ group,
(i) $C_6–C_{10}$ aryl group, or
(j) $C_6–C_{10}$ aralkyl group;

R is

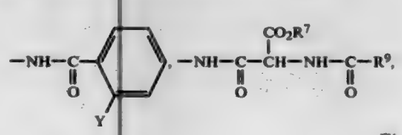
(a) hydrogen atom, or
(b) a group selected from the following groups;

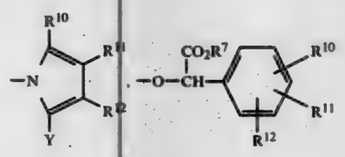


wherein

each occurrence of X^1, X^2 and X^3 is independently selected from

(a) hydrogen atom,
(b) halogen atom,
(c) $C_1–C_8$ alkyl group,
(d) $C_1–C_8$ alkoxy group,
(e) nitro group,
(f) cyano group,
(g) 1H-tetrazol-5-yl group or an alkali metal salt thereof,
(h) $—CO_2R^7$ group,
(i) $—CONR'R''$ group,
(j) $—CONHSO_2R^8$ group,
(k) an amino group,
(l) $—NHSO_2CF_3$ group
(m) $—SO_3H$ group, or
(n) a moiety selected from the following:





wherein

Y is

(a) cyano group,
(b) 1H-tetrazol-5-yl group or alkali metal salt thereof,
(c) $—CO_2R^7$ group,
(d) $—CONR'R''$ group,
(e) $—CONHSO_2R^8$ group,
(f) an amino group,
(g) $—NHSO_2CF_3$ group or,
(h) $—SO_3H$ group;

wherein

each occurrence of R^2, R^3, R^4 and R^5 is independently selected from

(a) hydrogen atom, or
(b) $C_1–C_8$ alkyl group, or
(c) R^2 and R^3, or R^4 and R^5 taken together form a $=O$ bond;

(a) hydrogen atom,
(b) alkali metal atom, or
(c) $C_1–C_8$ alkyl group;

wherein

each occurrence of R′ and R″ is independently

(a) hydrogen atom, or
(b) $C_1–C_8$ alkyl group, or
(c) R′ and R″ are taken together to form an alicyclic structure;

R^8 is

(a) $C_1–C_8$ alkyl group,
(b) $C_6–C_{10}$cycloalkyl group or
(c) $C_6–C_{10}$ aryl group;

R^9 is

(a) $C_1–C_8$ alkyl group,
(b) $C_1–C_8$ alkoxy group,
(c) $C_6–C_{10}$ cycloalkyl group,
(d) $C_6–C_{10}$ cycloalkoxy group,
(e) $C_6–C_{10}$ aryl group, or
(f) $C_6–C_{10}$ aryloxy group;

R^{10}, R^{11} and R^{12} are independently

(a) hydrogen atom,
(b) halogen atom,
(c) $C_1–C_8$ alkyl group,
(d) $C_1–C_8$ alkoxy group,
(e) nitro group,
(f) cyano group,
(g) $—CO_2R^7$ group, or
(h) $—CONR'R''$ group;

—P— is

(a) A—B—C—D—,
(b) A—B═C—D, or
(c) A═B—C═D; wherein A or D may be absent or present and

wherein

A—B—C—D, A—B═C—D or A═B—C═D represents, when A or D is not present, B—C—D, B═C—D, B—C═D, A—B—C, A—B═C or A═B—C, wherein these moieties are:

(a) $—CH(R^{13})—CH(R^{14})—CH(R^{15})—$,
(b) $—C(R^{13})═C(R^{14})—C(R^{15})—$,
(c) $—CH(R^{13})—C(R^{14})═C(R^{15})—$,
(d) $—CH(R^{13})—CH(R^{14})—C(=O)—$,
(e) $—C(=O)—CH(R^{14})—CH(R^{15})—$, or
(f) $—CH(R^{13})—C(=O)—CH(R^{15})—$, or

represents, when A and D are present, as A—B—C—D—, A—B═C—D or A═B—C═D, wherein these moieties are:

(a) $—C(R^{13})(R^{16})—CH(R^{14})—CH(R^{15})—C(R^{17})(R^{18})—$,
(b) $—C(R^{13})(R^{16})—C(R^{14})═C(R^{15})—C(R^{17})(R^{18})—$,
(c) $—C(R^{13})═C(R^{14})—CH(R^{15})═C(R^{17})—$,
(d) $—C(=O)—CH(R^{14})—CH(R^{15})—C(R^{17})(R^{18})—$,
(e) $—C(R^{13})(R^{16})—C(=O)—CH(R^{15})—C(R^{17})(R^{18})—$,
(f) $—C(R^{13})(R^{16})—CH(R^{14})—C(=O)—C(R^{17})(R^{18})—$, or
(g) $—C(R^{13})(R^{16})—CH(R^{14})—CH(R^{15})—C(=O)—$;

wherein

each occurrence of R^{13}, R^{14}, R^{15}, R^{16}, R^{17} and R^{18} is independently

(a) hydrogen atom,
(b) $C_1–C_8$ alkyl group,
(c) $C_1–C_8$ fluoroalkyl
(d) $—C(R')(R'')—OR^{19}$ group,
(e) $—(CH_2)_j—CO_2R^7$ group,
(g) $—(CH_2)_j—C(=O)R'$ group,
(h) $—(CH_2)_jCONR'R''$ group, or,
(i) $—(CH_2)_j—$Aryl group wherein j is 0, 1 or 2, or
(j) wherein R^{16} and R^{18} may be taken together to form $—(CH_2)_i—$group, wherein i is 1,2 or 3; wherein Aryl is

(a) phenyl group,
(b) pyridyl group,
(c) pyrimidinyl,
(d) pyridazinyl group,
(e) furyl group,
(f) thienyl group,
(g) pyrazolinyl group,
(h) oxazolyl group,
(i) thiazolyl group,
(j) oxadiazolyl group, or
(k) isoxazolyl group, or

(i) any of the foregoing groups substituted with

(i) halogen atom,
(ii) $C_1–C_8$ alkyl group,
(iii) hydroxy group,
(iv) $C_1–C_8$ alkoxy group,
(v) nitro group, or
(vi) cyano group;

wherein.

R^{19} is

(a) hydrogen atom, or
(b) $C_1–C_8$ alkyl group optionally substituted with hydroxy group or ether group; or a pharmacologically acceptable ester or salt thereof.

5,442,063

PROCESS FOR PRODUCING (E)-ALKOXYIMINO OR HYDROXYIMINO-ACETAMIDE COMPOUNDS AND INTERMEDIATES THEREFOR

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Moriyasu Masui, Yokkaichi, and Kuniyoshi Nishida, Koka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

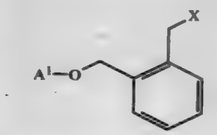
Filed Nov. 2, 1993, Ser. No. 144,425

Claims priority, application Japan, Nov. 2, 1992, 4-294225; Dec. 3, 1992, 4-324120

Int. Cl.[6] C07D *401/08; C07F 7/02*

U.S. Cl. 544—333 **6 Claims**

1. A compound of the formula



wherein X is halogen and A^1 is substituted phenyl or an optionally substituted heterocyclic group, said substituents being selected from the group consisting of

(1) lower alkyl,
(2) lower alkenyl,
(3) lower alkynyl,
(4) cycloalkyl,
(5) cycloalkenyl,
(6) lower alkanoyl,
(7) lower alkylsilyl,
(8) halogenated alkyl,
(9) di(lower)alkylamino,
(10) phenyl,
(11) phenyl(lower)alkyl,

(12) phenyl(lower)alkenyl,
(13) furyl(lower)alkyl,
(14) furyl(lower)alkenyl,
(15) halogen,
(16) nitro,
(17) cyano,
(18) —OR^4 wherein R^4 is
(a) hydrogen,
(b) lower alkyl,
(c) lower alkenyl,
(d) lower alkynyl,
(e) lower alkanoyl,
(f) phenyl,
(g) lower alkoxyphenyl,
(h) nitrophenyl,
(i) phenyl(lower)alkyl,
(j) cyanophenyl(lower)alkyl,
(k) benzoyl,
(l) tetrahydropyranyl,
(m) pyridyl,
(n) trifluoromethylpyridyl,
(o) pyrimidinyl,
(p) benzothiazolyl,
(q) quinolyl,
(r) benzoyl(lower)alkyl,
(s) benzenesulfonyl, or
(t) lower alkylbenzenesulfonyl,

and

(19) —CH_2—Z—R^5

wherein Z is —O—, —S— or —NR^3—, wherein R^3 is hydrogen or lower alkyl, R^5 is phenyl, halophenyl, lower alkoxyphenyl, pyridyl or pyrimidinyl.

5,442,064

CARBOXYLIC ACID DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

Helmut Pieper, Biberach; Günter Linz; Frank Himmelsbach, both of Mittelbiberach; Volkhard Austel, Biberach; Thomas Müller, Biberach; Johannes Weisenberger, Biberach, and Brian Guth, Warthausen, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

Filed Oct. 12, 1993, Ser. No. 135,041

Claims priority, application Germany, Oct. 12, 1992, 42 34 295.3

Int. Cl.[6] C07D *401/06, 295/00, 211/30, 211/06*

U.S. Cl. 544—360 **6 Claims**

1. Carboxylic acid derivatives of the formula

A—B—C—D—E—F—G (I)

wherein

A denotes a C_{1-2}-aminoalkyl group or an amidino group, in which at a nitrogen atom in the above-mentioned groups, a hydrogen atom may be replaced by an alkoxycarbonyl group having a total of 2 or 3 carbon atoms or by a benzyloxycarbonyl, allyloxycarbonyl or R_1—CO—O—(R_2CH)—O—CO— group, wherein
R_1 denotes a C_{1-2}-alkyl group and
R_2 denotes a hydrogen atom or a C_{1-2}-alkyl group;
B denotes a pyridinylene group optionally substituted in the carbon skeleton by a fluorine, chlorine or bromine atom or by a methyl group;
C denotes a piperazinylene group;
D denotes a carbonyl group;
E denotes an —NR_4—X— group, wherein
X represents a 1,4-cyclohexylene group, and
R_4 denotes a hydrogen atom, a C_{1-6}-alkyl group or a phenylalkyl group having 1 to 4 carbon atoms in the alkyl moiety;
F denotes a bond; and
G denotes a carbonyl group substituted by an R_5O— group, wherein
R_5 denotes a hydrogen atom, a C_{1-6}-alkyl group, a phenylmethyl group, a cycloalkyl or cycloalkylmethyl group each having 5 or 6 carbon atoms in the cycloalkyl moiety, or a menthyl or norbornyl group;
or G denotes an R_6CO—O—CHR_2—O—CO— group, wherein
R_2 is as hereinbefore defined, and
R_6 denotes a C_{1-4}-alkyl group or a methoxy or ethoxy group;
the tautomers thereof, the stereoisomers thereof including the mixtures thereof, and the addition salts thereof.

5,442,065

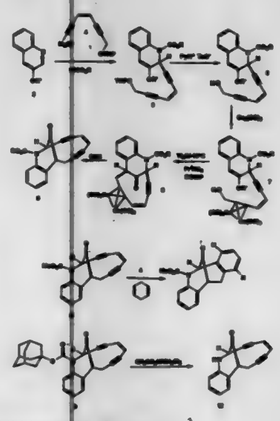
SYNTHESIS OF TETRAHYDROQUINOLINE ENEDIYNE CORE ANALOGS OF DYNEMICIN

Philip D. Magnus, Austin, Tex.; Theodore Iliadis, Athens, Greece; Shane A. Eisenbeis, and Robin A. Fairhurst, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

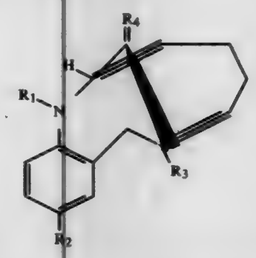
Filed Sep. 9, 1993, Ser. No. 118,862

Int. Cl.[6] C07F *7/02;* **C07D** *221/06, 221/22*

U.S. Cl. 546—14 **1 Claim**



1. A compound of the formula;



wherein R_1 is H, COOAd, $COOCH_2CH_2Cl$, $COOCH_3$, $CH(CH_3)_2$, cholesterol or menthyl; R_2 is H or OCH_3; R_3 is SePh, CH_2COCH_3, OH, OCOPh, —SPh, CH(OH) Ph, H or CH_2OMe; R_4 is CHCH, CH_2, O or $CHCO_2Me$ except that R_2 or R_3 is not H when R_1 is —$COOCH_3$ and pharmaceutically acceptable salts thereof.

5,442,066

QUATERNARY OXAZIRIDINIUM SALTS AS BLEACHING COMPOUNDS

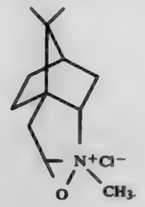
Stephen A. Madison, New City, N.Y., and Janet L. Coope, Cliffside Park, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 151,483, Nov. 12, 1993, Pat. No. 5,370,826. This application Sep. 2, 1994, Ser. No. 300,833

Int. Cl.[6] C07D *273/01, 498/04, 498/08, 498/10*

U.S. Cl. 546—16 **9 Claims**

1. An oxygen transfer agent having the structure:



5,442,067

TETRA-[N-ALKYL-2,2,6,6,-TETRAMETHYLPIPERIDIN-4-YL]-4,4'-DIPHENYLBISPHOSPHONITE

Rita Pitteloud, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

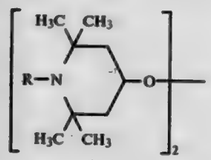
Continuation of Ser. No. 124,130, Sep. 20, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 323,478

Claims priority, application Switzerland, Sep. 25, 1992, 3008/92

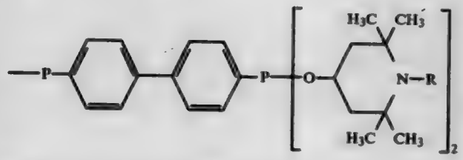
Int. Cl.[6] C07F *9/6509*

U.S. Cl. 546—25 **2 Claims**

1. A compound of formula I



(I)



wherein R is C_1–C_4 alkyl, allyl or benzyl.

5,442,068

PROCESS AND INTERMEDIATES FOR PREPARING AZABICYCLO[2.2.2]OCTAN-3-IMINES

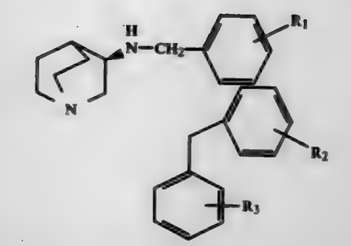
Dennis M. Godek, and Charles W. Murtiashaw, both of Glastonbury, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 861,752, Apr. 1, 1992, Pat. No. 5,216,163. This application Jan. 19, 1993, Ser. No. 3,977

Int. Cl.[6] C07D *453/02*

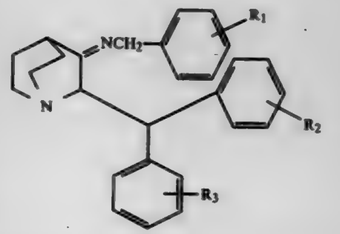
U.S. Cl. 546—133 **2 Claims**

1. A process for preparing a racemic cis-compound of the formula



VI

wherein R_1, R_2 and R_3 are independently hydrogen, or one or two substituents selected from the group consisting of fluorine, chlorine, bromine, trifluoromethyl, alkyl having from one to three carbon atoms or alkoxy having from one to three carbon atoms, which comprises reducing a compound of the formula



I

with sodium triacetoxyborohydride and acetic acid.

5,442,069

Patent Not Issued For This Number

5,442,070

DERIVATIVES OF FLUORO-QUINOLINE CARBOXYLIC-3-ACID AND PREPARATION THEREFOR

Christophe Daubie; Jean-Jacques Legrand, both of Paris, France, and Clive Pemberton, Romfold, Great Britain, assignors to Laborattoire Roger Bellon, Neuilly-Sur-Seine, France

PCT No. PCT/FR92/00936, § 371 Date Apr. 7, 1994, § 102(e) Date Apr. 7, 1994, PCT Pub. No. WO93/07127, PCT Pub. Date Apr. 15, 1993

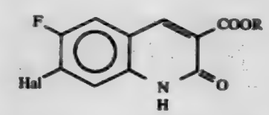
PCT Filed Oct. 8, 1992, Ser. No. 211,325

Claims priority, application France, Oct. 10, 1991, 91 12480

Int. Cl.[6] C07D *215/22, 215/18, 215/227*

U.S. Cl. 546—156 **3 Claims**

1. A fluoro-3-quinolinecarboxylic acid derivative of formula:



in which R is a hydrogen atom or an alkyl radical and Hal is a halogen atom, as well as its metal salts or its addition salts with nitrogenous bases where they exist.

5,442,071

NON-MIGRATING 1-HYDROCARBYLOXY HINDERED AMINE DERIVATIVES AS POLYMER STABILIZERS

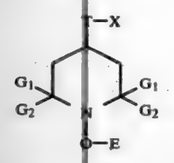
James P. Galbo, Hartsdale; Ramanathan Ravichandran, Nanuet, both of N.Y.; Peter J. Schirmann, Fairfield, and Andrew Mar, Norwalk, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 179,652, Jan. 7, 1994, Pat. No. 5,359,069, which is a division of Ser. No. 903,699, Jun. 24, 1992, Pat. No. 5,286,865, which is a division of Ser. No. 480,173, Feb. 14, 1990, Pat. No. 5,145,893, which is a continuation-in-part of Ser. No. 326,702, Mar. 21, 1989, abandoned. This application Aug. 2, 1994, Ser. No. 284,959

Int. Cl.[6] C08K *5/34*; C07D *405/12*

U.S. Cl. 546—207 5 Claims

1. A 1-hydrocarbyloxy substituted hindered amine compound having the formula I,



(I)

wherein,

G_1 and G_2 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together are pentamethylene,

T is a direct bond,

X is —O-glycidyl,

E is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 2 to 18 carbon atoms, cycloalkenyl of 5 to 12 carbon atoms, propargyl, aralkyl of 7 to 15 carbon atoms, a radical of a saturated of unsaturated bicyclic or tricyclic hydrocarbon of 7 to 12 carbon atoms.

5,442,072

PROCESS FOR PREPARING CHLOROMETHYLPYRIDINES

Helmut Kraus, Odenthal; Hans Lindel, Leverkusen, and Hans-Joachim Diehr, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

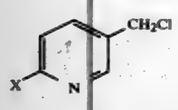
Filed Jun. 24, 1994, Ser. No. 265,526

Claims priority, application Germany, Jul. 2, 1993, 43 22 054.1

Int. Cl.[6] C07D *213/61, 213/26, 213/72*

U.S. Cl. 546—345 1 Claim

1. A process for preparing a chloromethylpyridine of the formula

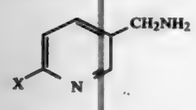


I

in which

X represents halogen,

wherein an aminomethylpyridine of the formula



II

in which

X represents NH_2 or halogen is reacted with or nitrosylchloride in the presence of a two phase and at a temperature between −20° C. to 50° C.

5,442,073

PREPARATION OF ALKYL 2-ALKYL-4-FLUOROMETHYLTHIAZOLECARBOXYLATES

Karl Eicken, Wachenheim; Klaus Ditrich, Bad Duerkheim; Thomas Mueller, Hessheim, and Oliver Wagner, Bexbach, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

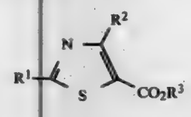
Filed Jan. 13, 1994, Ser. No. 182,701

Claims priority, application Germany, Jan. 20, 1993, 43 01 356.2

Int. Cl.[6] C07D *277/56*

U.S. Cl. 548—201 8 Claims

1. A process for preparing alkyl 2-alkyl-4-fluoromethylthiazolecarboxylates of the formula I



I

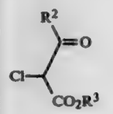
where

R^1 is C_1–C_4-alkyl,

R^2 is difluoromethyl or trifluoromethyl and

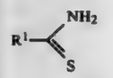
R^3 is C_1–C_6-alkyl,

which comprises reacting alkyl 2-chloroacetoacetates, substituted in the 4-position by fluorine, of the formula III



III

where R^2 and R^3 have the abovementioned meanings, with thiocarboxamides of the formula II



II

where R^1 has the abovementioned meaning, in an aprotic solvent at below 100° C. and reacting with a dehydrating agent, in the presence of a base, at below 80° C.

5,442,074

HERBICIDAL FLUOROBENZOTHIAZOLYLOXYACETAMIDES

Heinz Förster, Wuppertal; Klaus Wagner, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

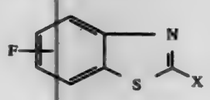
Division of Ser. No. 119,462, Sep. 9, 1993, Pat. No. 5,356,864. This application Jun. 9, 1994, Ser. No. 257,393

Claims priority, application Germany, Sep. 16, 1992, 42 30 903.4

Int. Cl.[6] C07D *277/76*

U.S. Cl. 548—166 2 Claims

1. A fluorobenzothiazole of the formula



(II)

in which

X represents C_{1-4}-alkylsulphonyl.

5,442,075

PROCESS FOR THE PRODUCTION OF 2-SUBSTITUTED 5-CHLORIMIDAZOLE-4-CARBALDEHYDES

Gareth Griffiths, Visp; René Imwinkelried, Brig-Glis, and Jacques Gosteli, Basel, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

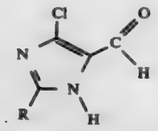
Continuation-in-part of Ser. No. 203,583, Mar. 1, 1994, abandoned. This application Mar. 11, 1994, Ser. No. 208,955

Claims priority, application Switzerland, Mar. 12, 1993, 749/93

Int. Cl.[6] C07D *233/68, 233/96*

U.S. Cl. 548—316.4 16 Claims

1. A process for the production of a 2-substituted 5-chlorimidazole-4-carbaldehyde of the general formula:



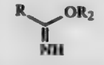
I

wherein R is hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, a benzyl group or a phenyl group, comprising, in a first stage, reacting a glycine ester hydrohalide of formula:



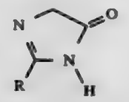
II

wherein R_1 is an alkyl group and X is a halogen atom, with an imidic acid of formula:



III

wherein R has the above-mentioned meaning and R_2 is an alkyl group, in the presence of a base and a solvent to produce a 2-substituted 3,5-dihydroimidazol-4-one of formula:



IV

wherein R has the above-mentioned meaning, and in a second stage, the 2-substituted 3,5-dihydroimidazol-4-one of formula IV is reacted with phosphoroxy chloride or phosgene and N,N-dimethylformamide to provide the end product.

5,442,076

PROCESS FOR THE PRODUCTION OF 2-SUBSTITUTED-5-CHLORIMIDAZOLE-4-CARBALDEHYDES

Jacques Gosteli, Basel; Gareth Griffiths, Visp, and René Imwinkelried, Brig-Glis, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

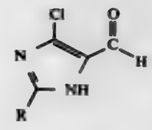
Filed Jul. 15, 1993, Ser. No. 92,052

Claims priority, application Switzerland, Jul. 16, 1992, 2239/92

Int. Cl.[6] C07D *233/68*

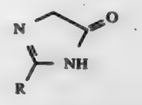
U.S. Cl. 548—333.5 8 Claims

1. Process for the production of a 2-subetituted-5-chlorimidazole-4-carbaldehyde of formula:



I

wherein R is an alkyl group, a cycloalkyl group, a benzyl group or a phenyl group, characterized in that a 2-substituted 3,5-dihydroimidazolin-4-one of formula:



II

wherein R has the above-mentioned meaning, is reacted with phosphorous oxychloride and N,N-dimethylformamide to produce the end product.

5,442,077

BENZO[B]FURANCARBOXAMIDE DERIVATIVES, PROCESS FOR THE PREPARATION OF SAME AND USE THEREOF FOR IMPROVING HYPERMOTILITY

Yutaka Baba; Toshinao Usui; Noriyuki Iwata; Takaji Kakigami; Yoshiro Ozeki; Katsura Tsukamoto, and Nobuyaki Ito, all of Aichi, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

Filed Aug. 4, 1994, Ser. No. 285,719

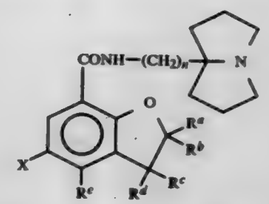
Claims priority, application Japan, Aug. 24, 1993, 5-209242; May 24, 1994, 6-109491

Int. Cl.[6] C07D *487/04*; A61K *31/40*

U.S. Cl. 548—453 6 Claims

1. A benzo[b]furancarboxamide derivative of the formula

(I)



wherein R^a, R^b, R^c and R^d are a hydrogen atom or lower alkyl group, respectively; r^e is a hydrogen atom, amino radical, lower alkylamino group or lower alkanoylamino group; X is a hydrogen atom or halogen atom; and n is an integer of 1–5

or a pharmacologically acceptable salt of the compounds.

5,442,078

INTERMEDIATES FOR SPECIFIC 5-HT3 ANTAGONISTS

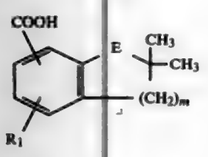
Marlene L. Cohen; William B. Lacefield, both of Indianapolis, and David W. Robertson, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 53,061, Apr. 26, 1993, Pat. No. 5,364,863, which is a division of Ser. No. 730,718, Jul. 16, 1991, abandoned, which is a division of Ser. No. 598,297, Oct. 16, 1990, abandoned, which is a division of Ser. No. 471,754, Jan. 24, 1990, Pat. No. 4,997,956, which is a division of Ser. No. 366,343, Jun. 14, 1989, Pat. No. 4,921,982, which is a continuation of Ser. No. 222,466, Jul. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 94,360, Sep. 8, 1987, abandoned. This application Jun. 22, 1994, Ser. No. 263,858

Int. Cl.[6] C07D *335/06*

U.S. Cl. 549—23 2 Claims

1. A compound of the formula



IIa

wherein

m is 2;

E is S, and R_1 is hydrogen, methyl, halo, trifluoromethyl, (C_1–C_3 alkyl)-S(O)$_t$—, or methoxy.

5,442,079

METHOD FOR PREPARING ERYTHRURONOLACTONE

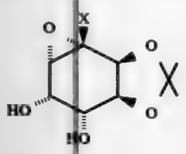
Tomas Hudlicky, and Martin Mandel, both of Blacksburg, Va., assignors to Virginia Polytechnic Institute and State University, Blacksburg, Va.

Filed May 10, 1993, Ser. No. 60,454

Int. Cl.[6] C07D *493/04*

U.S. Cl. 549—306 9 Claims

1. A process for the synthesis of a desired lactone (4), the process comprising reacting an epoxide of the formula:



wherein X is halogen;

with an effective amount of periodate in a substantially aqueous environment and recovering the desired lactone (4) or an enantiomer thereof.

5,442,080

PROCESS FOR PREPARING POLYAZIDO ALCOHOLS AND POLYAMINO ALCOHOLS AND APPLICATION TO THE PREPARATION OF POLYAZIDOTHIOLS AS DERIVATIVES THEREOF

Paul Caubere, Nancy, and Herve Forconi, Longjumeau, both of France, assignors to Etat Francais representé par le Delegue General pour l'Armement, Paris, France

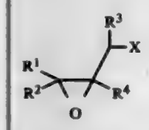
Filed Nov. 23, 1992, Ser. No. 980,217

Claims priority, application France, Nov. 21, 1991, 91 14541

Int. Cl.[6] C07F *9/28*

U.S. Cl. 552—8 18 Claims

1. A process for preparing polyazido alcohols comprising reacting, with a metal azide in an aqueous medium, a polysubstituted oxirane having a nucleofuge group in position β, wherein the oxirane is represented by the formula



in which X represents a nucleofuge substituent; R^1 represents an atom of hydrogen, a lower alkyl group optionally substituted by a halogen, or an aryl group; each of R^2 and R^3 represents an atom of hydrogen, a lower alkyl radical or an aryl radical; and R^4 represents an atom of hydrogen, a lower alkyl group, or an aryl group optionally substituted by an alkoxy group.

5,442,081

PROCESS FOR THE PRODUCTION OF OLIGOMERIC FATTY ACIDS AND LOWER ALKYL ESTER THEREOF

Arno Behr, and Hans-Peter Handwerk, both of Duesseldorf, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/00676, § 371 Date Oct. 4, 1993, § 102(e) Date Oct. 4, 1993, PCT Pub. No. WO92/17434, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 26, 1992, Ser. No. 129,048

Claims priority, application Germany, Apr. 4, 1991, 41 10 836.1

Int. Cl.[6] C09F *7/06*

U.S. Cl. 554—26 20 Claims

1. A process for the production of oligomeric fatty acids and/or lower alkyl esters thereof comprising the steps of

A) oligomerizing at least one fatty acid containing 16 to 24 carbon atoms and 2, 3, 4 or 5 double bonds and/or a lower alkyl ester thereof with a C_{1-4} alcohol at an elevated temperature in the presence of a catalyst comprising an inorganic tin halide; and

B) isolating an oligomeric fatty acid and/or lower alkyl ester thereof from the reaction mixture.

5,442,082

ALKOXYLATED COMPOUNDS PRODUCED FORM EPOXIDIZED CARBOXYLIC ACID DERIVATIVES

Guenter Uphues, Monheim; Uwe Ploog, Haan; Peter Daute, Essen; Gerhard Stoll, Korschenbroich, and Berthold Schreck, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 915,729, Jul. 27, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 357,559

Claims priority, application Germany, Jan. 26, 1990, 40 02 213.7

Int. Cl.[6] C07C *69/96*

U.S. Cl. 554—149 20 Claims

1. An alkoxylated compound prepared by reacting an epoxidized C_{10}–C_{22} carboxylic acid derivative with a C_2–C_4 alkylene oxide in the presence of an alkaline alkoxylation catalyst and a polyhydric alcohol.

5,442,083

METHOD FOR THE PREPARATION OF ORGANOSILICON POLYMER

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

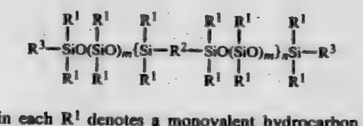
Filed Aug. 24, 1994, Ser. No. 296,060

Claims priority, application Japan, Sep. 3, 1993, 5-243843

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—434 15 Claims

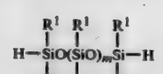
1. A method for the preparation of an organosilicon polymer having the structure



wherein each R^1 denotes a monovalent hydrocarbon group which is free of aliphatic unsaturation and contains 1 to 10 carbon atoms, R^2 denotes an alkylene group having 2 to 10 carbon atoms, R^3 is a group selected from the group consisting of hydrogen, an alkenyl group having 2 to 10 carbon atoms and a hydroxyl group, m is an integer having a value of zero or greater and n is an integer having a value of 1 or more, said method comprising:

reacting

(A) diorganosiloxane having the general formula



wherein R^1 and m have their previously defined meanings, and

(B) an unsaturated aliphatic hydrocarbon having 3 to 10 carbon atoms that contains 2 carbon-carbon double bonds, said reaction taking place in the presence of

(C) a hydrosilylation-reaction catalyst, with the proviso that said reaction takes place in the presence of an active hydrogen-containing compound when R^3 is to be said hydroxyl group.

5,442,084

METHOD OF SELECTIVE FLUORINATION

Gauri S. Lal, Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 187,422, Jan. 25, 1994, abandoned. This application Oct. 28, 1994, Ser. No. 330,635

Int. Cl.[6] C07F *9/40, 9/50, 9/53*

U.S. Cl. 558—141 20 Claims

1. A method of synthesizing a product of the formula:

$$(R^a)(R^b)(R^c)P—CH(F)—Z$$

wherein R^a is alkyl, aryl, alkyl substituted aryl, aryl substituted alkyl or hydrogen, each bonded directly or through an ether linkage to the phosphorus, or =O; R^b is alkyl, aryl, alkyl substituted aryl, aryl substituted alkyl or hydrogen, each bonded directly or through an ether linkage to the phosphorus; R^c is alkyl, aryl, alkyl substituted aryl, aryl substituted alkyl or hydrogen, each bonded directly or through an ether linkage to the phosphorus; and Z is —CN, —NO_2, —COR, —CO_2R, —PR_3, —P(O)OR_2, or an organic radical, where R is alkyl, aryl, alkyl substituted aryl, aryl substituted alkyl or hydrogen; comprising selectively fluorinating with an electrophilic fluorinating agent a compound of the formula:

$$(R^a)(R^b)(R^c)P—CH(X)—Z$$

wherein R^a, R^b, R^c and Z are as defined above and X is selected from the group consisting of I, Br and Cl, and reducing the resulting fluorinated compound to said product.

5,442,085

SYNTHESIS OF TETRAALKYL VINYLIDENE DIPHOSPHONATE MONOMER

Spiro D. Alexandratos, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation of Ser. No. 985,974, Dec. 4, 1992, Pat. No. 5,256,808. This application Oct. 5, 1993, Ser. No. 131,904

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[6] C07F *9/40*

U.S. Cl. 558—142 20 Claims

1. A method of making a tetraalkyl vinylidene-1, 1-diphosphonate, comprising the steps of:

(a) combining a secondary amine, a formaldehyde and a tetra (alkyl) methylene diphosphonate to form a reaction mixture, wherein said tetra (alkyl) methylene diphosphonate comprises tetra (methyl) methylene diphosphonate, tetra (ethyl) methylene diphosphonate, tetra (propyl) methylene diphosphonate, tetra (isopropyl) methylene diphosphonate, and mixtures thereof;

(b) adjusting the pH of said reaction mixture above about 6; and

(c) heating said reaction mixture of step (b) for a sufficient time at a temperature of 50° C. to 100° C. for components of the reaction mixture to react and provide a reaction product comprising the tetraalkyl vinylidene-1, 1-diphosphonate.

5,442,086

ULTRAVIOLET LIGHT-ABSORBING COMPOUNDS AND SUNSCREEN FORMULATIONS AND POLYMERIC MATERIALS CONTAINING SUCH COMPOUNDS OR RESIDUES THEREOF

James J. Krutak; Max A. Weaver; Clarence A. Coates, Jr., all of Kingsport; Samuel D. Hilbert, Jonesborough; Terry A. Oldfield, Kingsport; William W. Parham, Kingsport, and Wayne P. Pruett, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 994,069, Dec. 18, 1992, Pat. No. 5,374,419, which is a continuation of Ser. No. 733,769, Jul. 22, 1991, abandoned, which is a division of Ser. No. 395,386, Aug. 17, 1989, Pat. No. 5,057,594. This application Sep. 19, 1994, Ser. No. 308,863

Int. Cl.[6] C07C *255/00*

U.S. Cl. 558—401 2 Claims

1. A compound having the formula



wherein

each R^1 is independently selected from; carboxy; C_1–C_{24} alkoxycarbonyl, optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido; C_5–C_7 cycloalkoxycarbonyl or phenyloxycarbonyl or a naphthyloxycarbonyl radical; or a phenyl or naphthyl radical optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido;

each R^2 is independently selected from C_1–C_{24} alkoxycarbonyl, optionally substituted by a group selected from the group consisting of hydroxy, C_1–C_{24} alkoxy, halogen, C_1–C_{24} alkoxycarbonyl, cyano, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkoxy, succinimido, and phthalimido; C_5–C_7 cycloalkoxycarbonyl or a phenyloxycarbonyl or naphthyloxycarbonyl radical;

each A is independently selected from a 1,2-phenylene or 1,2-naphthylene radical;

each Z is independently selected from —0— or —S—; and

L is an organic linking group bonded by non-oxo carbon atoms to each Z atom, wherein said linking group is a C_1–C_{12} alkylene, 2-hydroxy-1,3-propanediyl, 2-methyl-1,3-propanediyl, oxy-bis-ethylene, oxy-bis-1,4-butanediyl, sulfonyl-bis-ethylene, thio-bis-ethylene, 1,2-, 1,3-, and 1,4-phenylene-bis-methylene, 1,2-, 1,3-, and 1,4-phenylene-bis-ethylene, 1,4-cyclohexylene-bis-methylene, 1,2-, 1,3-, and 1,4-phenylene-bis-(oxyethylene), methylsulfonylimino-bis-ethylene, phenylimino-bis-ethylene, acetylimino-bis-ethylene, and 1,2-, 1,3-, and 1,4-phenylene.

5,442,087

POLYMERS HAVING N,N-DISUBSTITUTED SULFONAMIDE PENDENT GROUPS AND USE THEREOF

Mathias Eichhorn, Niederhausen, and Gerhard Buhr, Koenigstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 10, 1993, Ser. No. 165,148

Claims priority, application Germany, Dec. 14, 1992, 42 42 050.4

Int. Cl.[6] C07C *271/12, 271/24, 271/28, 311/06*

U.S. Cl. 560—12 **4 Claims**

1. Compounds of the formuale $R^1—SO_2—N(CO—OR^2-)—R^3—O—CO—CR^4=CH_2$ or $R^1—N(CO—OR^2-)—SO_2—R^3—O—CO—CR^4=CH_2$, in which:

R^1 is a $(C_1–C_2)$alkyl, $(C_3–C_{10})$cycloalkyl, $(C_6–C_{14})$aryl or $(C_7–C_{20})$aralkyl radical, individual methylene groups in the radicals containing alkyl being optionally replaced by heteroatoms;

R^2 is a $(C_3–C_{11})$alkyl, $(C_3–C_{11})$alkenyl or $(C7–C_{11})$aralkyl radical;

R^3 is a $(C_3–C_{12})$alkylene, $(C_3–C_{12})$cycloalkylene, $(C_6–C_{15})$arylene or $(C_8–C_{20})$arylenedialkyl radical; and

R^4 is a hydrogen atom or a methyl group.

5,442,088

PROCESS FOR THE PREPARATION OF PHOSPHORUS-CONTAINING L-AMINO ACIDS, THEIR DERIVATIVES AND INTERMEDIATES FOR THIS PROCESS

Michael Hoffmann, Hofheim, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

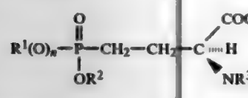
Continuation of Ser. No. 862,969, Apr. 3, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,775

Claims priority, application Japan, Apr. 6, 1991, 3-4111188

Int. Cl.[6] C07C *271/22, 311/19, 227/18;* C07F *9/40*

U.S. Cl. 560—12 **17 Claims**

1. A process for the preparation of a compound of the formula I or salt thereof,



(I)

in which

R^1 and R^2 independently of each other are hydrogen, $(C_1–C_6)$-alkyl, which is unsubstituted or is mono- of poly-substituted by halogen or aryl, or $(C_3–C_{10})$-cycloalkyl,

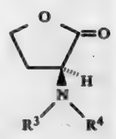
R^3 and R^4 independently of each other are hydrogen, $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, where the last three radicals mentioned can be straight-chain or branched and can have hetero atoms in the chain, $(C_1–C_6)$-alkylcarbonyl, aryl-$(C_1–C_4)$-alkylcarbonyl, $(C_1–C_6)$-alkoxycarbonyl, $(C_1–C_6)$-alkylsulfonyl, benzyl, benzyloxycarbonyl, aryloxycarbonyl or arylsulfonyl, where the last four radicals mentioned are unsubstituted or substituted in the aryl radical,

R^5 is hydrogen or $(C_1–C_4)$-alkyl, which is straight-chain or branched and is unsubstituted or substituted by halogen, aryl or a heterocycle, or $(C_3–C_7)$-cycloalkyl and

n is the number 0 or 1,

which comprises

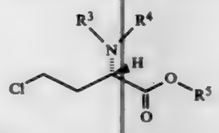
a) reacting an optically active S-homoserine lactone of the formula II,



(II)

in which

R^3 and R^4 are defined as in formula I, with hydrogen chloride in the presence of an alcohol of the formula $R^5—OH$ to give a compound of the formula III



(III)

in which

R^3, R^4 and R^5 are defined as in formula I, except that $R^5=H$, and

b) reacting the resulting compound of formula III with a compound of formula IV,

$$R^1(O)_n—P(OR^2)_2 \quad \text{(IV)}$$

in which

R^1, R^2 and n are defined as in formula I, and, if desired, hydrolyzing the product to give the compound of formula I, in which $R^5=H$.

5,442,089

PREPARATION OF MONOCARBAMATE DIOLS

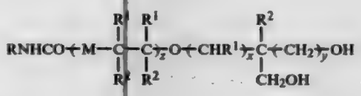
Smarajit Mitra, West St. Paul, and Cecil V. Francis, Woodbury, both of Minn., assignors to Minnesota Mining and manufacturing Company, St. Paul, Minn.

Division of Ser. No. 905,267, Jun. 26, 1992, Pat. No. 5,212,015, which is a division of Ser. No. 760,862, Sep. 16, 1991, Pat. No. 5,163,060, which is a division of Ser. No. 365,965, Jun. 14, 1989, Pat. No. 5,093,456. This application Feb. 11, 1993, Ser. No. 16,781

Int. Cl.[6] C07C *205/06*

U.S. Cl. 560—20 **14 Claims**

1. A process for the preparation of pure monocarbamate diols represented by the formula



(I)

wherein

R is an alkyl, alkenyl or aryl group having 1 to 20 carbon atoms, each of which can be substituted by a non proton-donating group;

R^1 and R^2 can be the same or different and each is selected from hydrogen and alkyl, alkenyl, alkoxyalkyl, aryl, aryloxyalkyl, alkoxyaryl, aralkyl or alkaryl groups, wherein R^1 and R^2 together total from zero to forty carbon atoms, or a pair of R^1 and R^2 together with the carbon atoms to which they are joined can form an aliphatic cyclic structure of 5 to 7 atoms;

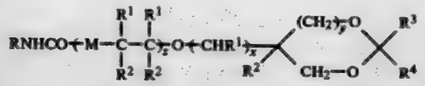
M is a unitary heteroatom selected from —O— and —S—;

x is an integer 0 to 20;

y can be zero or 1 provided that at least one of x and y is not zero;

z is an integer from zero to twenty; and comprising the steps of:

a) dissolving a carbamate functional cyclic acetal or ketal of the formula



(II)

where R, R^1, R^2, M, x, y, and z are as defined above, and R^3 and R^4 are independently H, alkyl, aryl, alkoxyaryl, aryloxyalkyl, aralkyl or alkaryl, wherein together R^3 and R^4 can total from zero to 40 carbon atoms, or R^3 and R^4 together with the carbon atom to which they are joined can form a cyclic aliphatic structure having 5 to 7 carbon atoms and up to 2 unitary ring atoms selected from nitrogen, sulfur, and oxygen atoms, in an acidic aqueous mixture of non-interfering organic solvent to provide a mixture having acidity in the range of pH 1 to 2;

b) hydrolyzing said cyclic acetal or ketal group to provide monocarbamate diols; and

c) isolating said pure monocarbamate diol by removing excess acid.

5,442,090

RADIATION-CURABLE URETHANE ACRYLATE COMPOUNDS CONTAINING AMINE AND UREA GROUPS

Erich Beck, Harthausen; Wolfram Weiss, Mutterstadt; Hans Renz, Meckenheim, and Alfred Lindner, Bobenheim-Roxheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 4, 1991, Ser. No. 663,966

Claims priority, application Germany, Mar. 7, 1990, 40 07 146.4

Int. Cl.[6] C07C *271/28, 271/16, 269/02*

U.S. Cl. 560—25 **6 Claims**

1. A radiation-curable urethane acrylate compound containing amine and urea groups and based on di- or polyisocyanates, hydroxy compounds and amines, which contains secondary or tertiary amino groups which are bonded to isocyanate via hydroxyl groups and are obtained by an addition reaction of primary or secondary amines with hydroxyacrylates.

5,442,091

ASSOCIATIVE MONOMERS

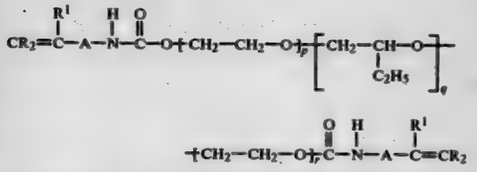
John M. Wilkerson, III, Hixson; Daniel W. Verstrat, Ooltewah, and Milagros C. Barron, Hixson, all of Tenn., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 172,626, Dec. 22, 1993, Pat. No. 5,412,142, which is a division of Ser. No. 85,851, Jun. 30, 1993, Pat. No. 5,294,692. This application Nov. 15, 1994, Ser. No. 339,612

Int. Cl.[6] C07C *271/00*

U.S. Cl. 560—33 **5 Claims**

1. A non-ionic urethane monomer comprising the structure



wherein R and $R^{1'}$ are, independently, H, —CH_3 or —CH_2CH_3; q is an integer from 1 to 50; p and r are, independently, integers from 1 to 50 the sum of p+q+r is less than or equal to 150; and A is a C_2–C_{20} alkyl, aryl, alkaryl or alkylene group.

5,442,092

PREPARATION OF ESTERS OF 3,5,6-TRICHLOROSALICYCLIC ACID

Vilas M. Chopdekar, Edison, and James R. Schleck, Somerset, both of N.J., assignors to Jami Fine Chemicals, Inc., Bound Brook, N.J.

Filed Apr. 4, 1994, Ser. No. 222,400

Int. Cl.[6] C07C *69/76*

U.S. Cl. 560—65 **18 Claims**

1. A process for preparing esters of 3,5,6-trichlorosalicylic acid which comprises:

a) preparing a reaction mixture comprising 3,5,6-trichlorosalicylic acid, a solvent and about 100–175 mol %, based on said acid, of a C_1–C_{20} straight or branched chain alcohol and a catalytic amount of a catalyst selected from the group consisting of glycol titanates and glycol stannates; and

b) heating the mixture and distilling off water from the mixture until substantially all the water has been removed.

5,442,093

PROCESS FOR PREPARING INTERMEDIATES FOR THE SYNTHESIS OF ANTIFUNGAL AGENTS

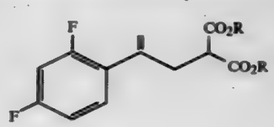
Anantha Sudhakar, East Brunswick, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed May 9, 1994, Ser. No. 239,488

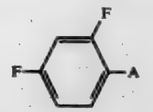
Int. Cl.[6] C07C *69/76*

U.S. Cl. 560—82 **13 Claims**

1. A process for preparing compounds of the formula



wherein R is C_1–C_6 alkyl, comprising heating a mixture of a difluorobenzene derivative of the formula



wherein A is Br, I, —$OS(O)_2R^2$, or —$OP(=O)(OR^3)_2$, and wherein R^2 is F, CF_3, C_1–C_6 alkyl, aryl or substituted aryl, and R^3 is C_1–C_6 alkyl, with allene, a dialkyl malonate of the formula $CH_2(CO_2R)_2$, wherein R is C_1–C_6 alkyl, and a base, in a polar organic solvent in the presence of a catalyst, in a sealed vessel and the pressure within the vessel is 1 to 10 psig.

5,442,094

SODIUM SALT OF 1-MENTHYLOXYCARBONYL 1-HYDROXY METHANESULPHONIC ACID, ITS PREPARATION PROCESS AND ITS USE FOR OBTAINING L(-)MENTHYL GLYOXYLATE

Alain Schouteeten, Evreux, France, assignor to Societe Francaise Hoechst, Puteaux, France

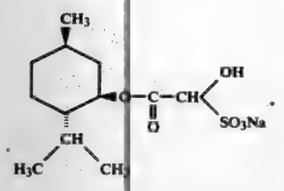
Filed Oct. 4, 1994, Ser. No. 317,381

Claims priority, application France, Oct. 5, 1993, 93 11842

Int. Cl.[6] C07C *303/00*

U.S. Cl. 560—149 **11 Claims**

1. Compound of formula (I)



(I)

5,442,095

CATALYSTS, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Patrick Auvray, L'Hay les Roses, France, assignor to Rhone-Poulenc Nutrition Animale, Commentry, France

Continuation of Ser. No. 751,814, Aug. 30, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,178
Claims priority, application France, Sep. 5, 1990, 90 11006
Int. Cl.[6] C07C *69/66*
U.S. Cl. 560—170 5 Claims

1. A method comprising catalyzing the addition reaction of compounds containing active methylene groups with dienes with a catalyst comprising a rhodium atom to which three water-soluble phosphines are bonded, and a perchlorate counter-ion.

5,442,096

POLYMERIZABLE COMPOUND AND POLYMER THEREFROM

Satoshi Urano, Kyoto; Kei Aoki; Nobuaki Tomita, both of Nara, and Hirohiko Mori, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

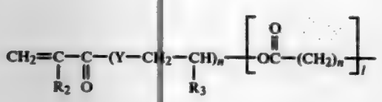
Division of Ser. No. 861,548, Apr. 1, 1992, Pat. No. 5,248,749, which is a division of Ser. No. 464,121, Jan. 12, 1990, Pat. No. 5,117,044. This application Jul. 2, 1993, Ser. No. 84,966
Claims priority, application Japan, Jan. 12, 1989, 1-7031; Dec. 7, 1989, 1-318504
Int. Cl.[6] C07C *69/34*
U.S. Cl. 560—190 5 Claims

1. A process for preparing a polymerizable compound represented by formula (I)

A—X—COCOOR$_1$ (I)

wherein:

R$_1$ represents a hydrogen atom, a C$_1$-C$_5$ alkyl group or an aryl group; X represents an oxygen atom; A represents a C$_3$-C$_{18}$ alkenyl, alkynyl, alkenylaryl or alkenylaralkyl group, or a group represented by:



wherein:

R$_2$ and R$_3$, which may be the same or different, independently represent a hydrogen atom or a C$_1$-C$_5$ alkyl group;

Y represents an oxygen atom or —NR$_4$— wherein R$_4$ represents a hydrogen atom or a C$_1$-C$_5$ alkyl group;

n is an integer of 1 to 5;

m is an integer of 1 to 10; and

l is 0 or an integer of 1 to 20,

said process comprising reacting an active hydrogen-containing compound represented by the formula:

A—XH

with an ester compound represented by the formula:

R$_1$O—COCOOR$_1$,

in an excess amount of dialkyl oxalate 2 to 20 times larger than the amount of the active hydrogen-containing compound in the presence of a catalyst and a polymerization inhibitor.

5,442,097

PROCESS FOR THE RECOVERY OF FLUORINATED CARBOXYLIC ACIDS

Reinhold Obermeier, Mühldorf, and Gunter Stefaniak, Burgkirchen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 31, 1994, Ser. No. 251,752
Claims priority, application Germany, Jun. 2, 1993, 43 18 258.5; Jan. 29, 1994, 44 02 694.3
Int. Cl.[6] C07C *69/63*
U.S. Cl. 560—227 9 Claims

1. A process for the recovery of fluorinated carboxylic acid emulsifiers in utilizable form from contaminated starting materials, which comprises:

optionally releasing the fluorinated carboxylic acid from these materials in an aqueous medium with a sufficiently strong acid,

reacting this fluorinated carboxylic acid with a suitable alcohol and

distilling off the ester thus formed.

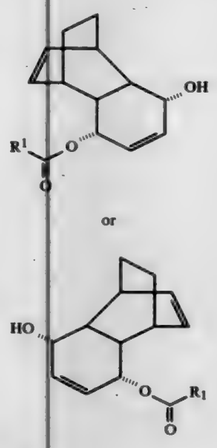
5,442,098

CYCLOHEXENE DIOL DERIVATIVES

Seiichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 31, 1994, Ser. No. 251,260
Claims priority, application Japan, May 31, 1993, 5-149822
Int. Cl.[6] C07C *69/12*
U.S. Cl. 560—256 2 Claims

1. An optically active cyclohexene diol derivative represented by the general formula:



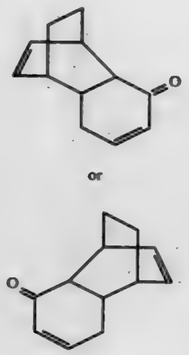
(I)

or

(I')

wherein R$_1$ is alkyl.

2. An optically active cyclohexenone derivative represented by the formula:



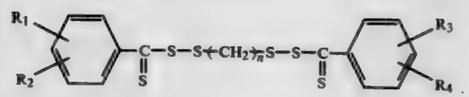
5,442,099

BIS-(THIOBENZOYLDISULFIDO)-ALKANES

Juergen Wolpers, Haltern; Karl-Heinz Nordsiek, Marl; Jaroslaw Monkiewicz, Marl, and Dieter Zerpner, Marl, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 16, 1993, Ser. No. 152,702
Claims priority, application Germany, Dec. 9, 1992, 42 41 447.4
Int. Cl.[6] C07C *327/36*
U.S. Cl. 560—302 1 Claim

1. A polysulfide compound of the formula



wherein R$_1$–R$_4$ are each hydrogen and n is 2 or 6.

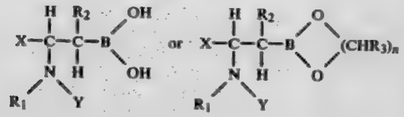
5,442,100

β-AMINOALKYL AND β-N-PEPTIDYLAMINOALKYL BORONIC ACIDS

David W. Bjorkquist, Wyoming, and Rajan K. Panandiker, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 14, 1992, Ser. No. 931,809
Int. Cl.[6] C07F *5/02*
U.S. Cl. 562—7 5 Claims

1. A compound having the formula:



where R$_1$, R$_2$, and R$_3$ are independently hydrogen or C$_1$–C$_4$ alkyl; n is 2–4; X is phenyl or C$_1$–C$_6$ alkyl; and Y is selected from the group consisting of

a) hydrogen;

b) an amine protecting group selected from the group consisting of

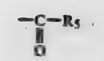
i) t-butoxycarbonyl,

ii) methoxycarbonyl,

iii) benzyloxycarbonyl, and

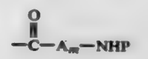
iv)

(2)



wherein R$_5$ is phenyl or C$_1$–C$_4$ alkyl; and

c)



(2')

wherein A is independently selected from naturally occurring amino acids; m is 1 to 3; and P is selected from the amine protecting groups of Component b).

5,442,101

METHYLENEBISPHOSPHONIC ACID DERIVATIVES

Hannu Hanhijärvi, Turku; Heikki Nupponen, Kangasala; Jouko Vepsäläinen, and Esko Pohjala, both of Tampere, all of Finland, assignors to Leiras Oy, Turku, Finland

PCT No. PCT/FI91/00396, § 371 Date Oct. 20, 1993, § 102(e) Date Oct. 20, 1993, PCT Pub. No. WO92/11268, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 18, 1991, Ser. No. 78,155
Claims priority, application Finland, Dec. 20, 1990, 906296
Int. Cl.[6] C07F *9/44*; A61K *31/66*
U.S. Cl. 562—10 6 Claims

1. Methylenebisphosphonic acid ester derivatives having the general formula I



1

in which formula W^1, W^2, W^3 and W^4 are independently the group OR^1 or the group NR^{2}R^3 wherein R^1, R^2 and R^3 independently are hydrogen or straight or branched C$_1$-C$_8$ alkyl, benzyl or phenyl, or the groups R^2 and R^3 form together with the adjacent nitrogen atom a piperidino or morpholino ring, provided that in the formula I at least one of the groups W^1, W^2, W^3 and W^4 is hydroxy and at least one of the groups W^1, W^2, W^3 and W^4 is the amino group NR^{2}R^3,

Q^1 is hydrogen or chlorine, and Q^2 is chlorine, including the stereoisomers, such as the geometrical isomers and the optically active isomers, of the compounds, as well as the pharmacologically acceptable salts of the compounds.

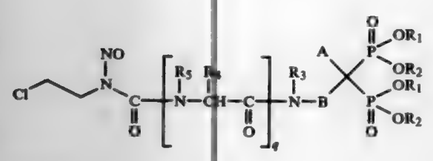
5,442,102

GEM-DIPHOSPHONIC ACID NITROSOCARBAMOYL DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Sergio Tognella; Valeria Livi; Ernesto Menta, and Silvano Spinelli, all of Milan, Italy, assignors to Boehringer Mannheim Italia S.p.A., Milan, Italy

PCT No. PCT/EP92/00745, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18511, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 3, 1992, Ser. No. 129,099
Claims priority, application Italy, Apr. 12, 1991, MI91A1017
Int. Cl.[6] C07F *9/38, 9/40*; A61K *31/66*
U.S. Cl. 562—13 8 Claims

1. Compounds of formula (I):



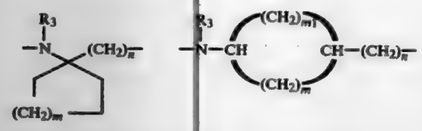
wherein:

R_1 and R_2, which are the same or different, are hydrogen or C_1–C_4 alkyl;

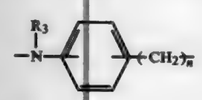
A is hydrogen, halogen (chlorine, bromine or iodine), hydroxy, straight or branched C_1–C_{12} alkyl;

B is a covalent bond, a straight or branched C_1–C_8 alkylene chain, an alkylene chain containing at least one heteroatom of formula $—[CH(CH_3)]_p—(CH_2)_{n1}—X—(CH_2)_n—$ or, B forms:

a) Cycloaliphatic rings of formulae



b) an ortho, meta or para substituted aralkyl of formula



X is O, S, N—CH_3;

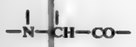
m is zero or the integer 1 or 2;

m_1 is the integer 1, 2, 3 or 4;

n and n_1 are an integer from 1 to 5; p is zero or the integer 1;

R_3 is hydrogen, straight or branched C_1–C_9 alkyl, C_3–C_6 cycloalkyl, benzyl, phenyl, or p-methoxybenzyl;

R_4 and R_5, together with the



group to which they are linked, are the residue from a D or L amino acid; q is zero or 1; and isomers, diastereoisomers and pharmaceutically acceptable salts thereof.

5,442,103

PROCESS FOR PRODUCING 2,6-NAPHTHALENEDICARBOXYLIC ACID

Hiroshi Iwase; Takahiro Sugawara; Katsufumi Kujira; Naoki Suzuki, and Tomoya Sakata, all if Inashiki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 153,424

Claims priority, application Japan, Nov. 30, 1992, 4-320588

Int. Cl.[6] C07C *51/21*

U.S. Cl. 562—416 **9 Claims**

1. A process for producing 2,6-naphthalenedicarboxylic acid by oxidizing 2,6-dimethylnaphthalene by molecular oxygen in the presence of a catalyst including cobalt, manganese and bromine; said process using a 2,6-dialkylnaphthalene mixture of 2,6-dimethynaphthalene and a small amount of 2,6-diisopropylnaphthalene as a raw material, thereby performing the oxidation reaction.

5,442,104

INHIBITORS OF KYNURENINASE

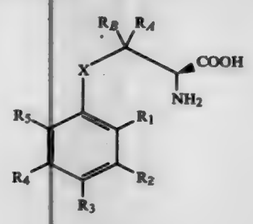
Robert S. Phillips, and Rajesh K. Dua, both of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 840,408, Feb. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,705, Apr. 18, 1991, Pat. No. 5,254,725. This application Jan. 21, 1994, Ser. No. 184,788

Int. Cl.[6] C07C *317/10, 317/14, 317/28*

U.S. Cl. 562—430 **12 Claims**

1. A kynureninase inhibitor selected from the group consisting of compounds having the formula:



wherein

X is SO_2, SO, $SONH_2$;

R_a and R_b, independently of one another are H, a halogen, CF_3 or a small alkyl group having one to three carbon atoms;

R_1 is H, NH_2, NR_6R_7, NO_2, halogen, CF_3 or a small alkyl group having from one to three carbon atoms, wherein:

R_6 and R_7, independently of one another, are H, a formyl group or a small alkyl group having from one to three carbon atoms with the exception that only one of R_6 or R_7 can be a formyl group;

R_2 is OH, H, halogen, CF_3 or a small alkyl group having from one to three carbon atoms; and

R_3, R_4 and R_5, independently of one another, are H, halogen, CF_3, NO_2, NH_2 or small alkyl group having from one to three carbon atoms.

except that where X is SO_2 and each of R_A, R_B, R_2, R_3, R_4 and R_5 is H, R_1 cannot be H or a small alkyl group having from one to three carbon atoms; where X is SO_2 and each of R_A, R_B, R_1, R_3, R_4 and R_5 is H, R2 cannot be CF_3 or a small alkyl group having from one to three carbon atoms; where X is SO_2 and each of R_A, R_B, R_1, R_2, R_4 and R_5 is H, R_3 cannot be NO_2, CF_3, a halogen, or a small alkyl group having from one to three carbon atoms; where X is SO and each of R_A, R_B, R_1, R_3, R_4 and R_5 are H, R_3 cannot be H or a small alkyl group having from one to three carbon atoms, and when X=SO, and R_2, R_4, R_5 are all H, R_3 cannot be a halogen, NO_2 or a small alkyl group having from one to three carbons.

5,442,105

PROCESS FOR PRODUCING CYCLOHEXYLBUTYRIC ACID DERIVATIVE

Noboru Sayo; Noboru Sano, and Hidenori Kumobayashi, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

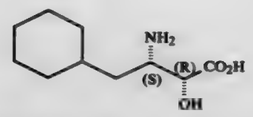
Continuation-in-part of Ser. No. 900,444, Jun. 18, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,505

Claims priority, application Japan, Jun. 21, 1991, 3-150224

Int. Cl.[6] C07C *61/08*

U.S. Cl. 562—507 **5 Claims**

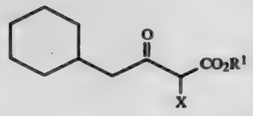
1. A process for producing a (2R,3S)-cyclohexylnorstatine represented by formula (6) or a salt thereof:



(6)

which comprises the steps of:

(a) hydrogenating a 4-cyclohexyl-2-halogeno-3-oxobutyric acid ester represented by formula (1):

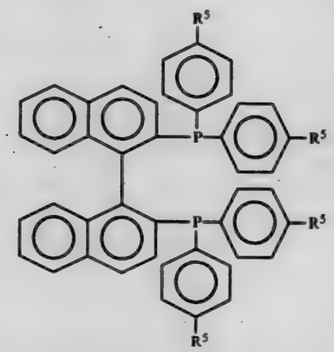


(1)

wherein X represents a halogen atom; and R^1 represents a lower alkyl group, in the presence of a ruthenium-phosphine complex selected from compounds represented by formulae (11) and (12):

$$Ru_2X_4((+)\text{-}R^5\text{-BINAP})_2(NEt_3) \quad (11)$$

wherein R^5-BINAP means a tertiary phosphine represented by formula (13):

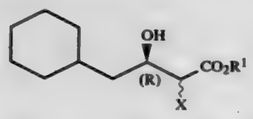


(13)

wherein R^5 represents a hydrogen atom, a methyl group, a tert-butyl group, or a methoxy group; Et is an ethyl group; and X represents a halogen atom;

$$[RuX(Y)\ ((+)\text{-}R^5\text{-BINAP})]X \quad (12)$$

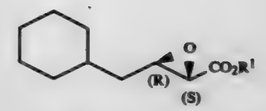
wherein Y represents a phenyl group which may have a substituent group; and R^5-BINAP and X are as defined above, to produce a 4-cyclohexyl-2-halogeno-(3R)-hydroxybutyric acid ester represented by formula (2):



(2)

wherein R^1 and X are as defined above, and the wavy line means a (2S)-configuration and/or a (2R)-configuration,

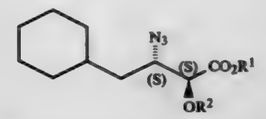
(b) reacting the compound of formula (2) in the presence of a base at a temperature of from −20° to 30° C. to produce a 4 -cyclohexyl-(2S, 3R) -epoxybutyric acid ester represented by formula (3):



(3)

wherein R^1 is as defined above,

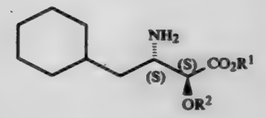
(c) reacting the compound of formula (3) with a lower trialkylsilyl azide in the presence of a Lewis acid to produce a (3S)-azido-4-cyclohexyl-(2S)-substituted butyric acid ester represented by formula (4):



(4)

wherein R^1 represents a lower alkyl group; and R^2 represents a hydrogen atom or a lower trialkylsilyl group,

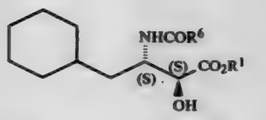
(d) reducing the compound of formula (4) by using hydrogen as a reducing agent in the presence of a palladium-on-carbon catalyst to produce a (2S,3S)-cyclohexylnorstatine derivative represented by formula (5):



(5)

wherein R^1 and R^2 are as defined above,

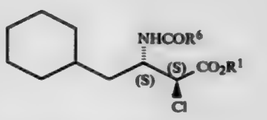
(e) reacting the compound of formula (5) with acyl chloride in the presence of a base and treating the reaction mixture with a hydrochloric acid to produce a compound represented by formula (14):



(14)

wherein R^6 represents a lower alkyl group or a phenyl group; and R^1 is as defined above,

(f) reacting the compound of formula (14) with thionyl chloride in an amount of from 1 to 3 moles per mol of the compound (14) to produce a compound represented by formula (15'):



(15')

wherein R^1 and R^6 are as defined above, and

(g) reacting the compound of formula (15') hydrochloric acid.

5,442,106

PROCESS FOR HYDROLYZING ESTERS USING 4-AMINOPYRIDYL SILOXANE CATALYSTS

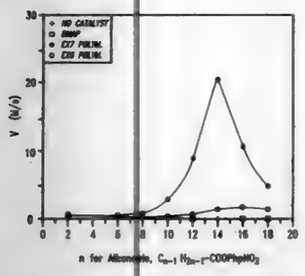
Martel Zeldin; Wilmer K. Fife, both of Indianapolis, Ind., and Slawomir Rubinsztajn, Schenectady, N.Y., assignors to Indiana University Foundation, Bloomington, Ind.

PCT No. PCT/US91/07673, § 371 Date Apr. 15, 1994, § 102(e) Date Apr. 15, 1994, PCT Pub. No. WO93/08150, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 15, 1991, Ser. No. 211,761

Int. Cl.[6] C07C *51/09, 27/02*

U.S. Cl. 562—512 **12 Claims**



1. A process for hydrolyzing an activated ester, which comprises the step of hydrolyzing the ester in an aqueous medium in the presence of a catalytic amount of a siloxane having 4-dialkylaminopyridine groups incorporated into its polymer backbone.

5,442,107

PREPARING CARBOXYLIC ACIDS

Robert G. Beevor, and David J. Gulliver, both of North Humberside, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 866,102, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 603,664, Oct. 26, 1990, abandoned. This application Sep. 28, 1993, Ser. No. 127,890

Claims priority, application United Kingdom, Apr. 6, 1989, 8907763; Aug. 15, 1989, 8918588

Int. Cl.[6] C07C *51/12*

U.S. Cl. 562—519 **8 Claims**

1. A process for preparing a carboxylic acid having (n+1) carbon atoms by reaction of carbon monoxide with an alcohol having n carbon atoms wherein n is from 1 to 8 carbon atoms in the presence of a rhodium catalyst which process comprises feeding an alcohol and/or an ester of the alcohol and the carboxylic acid, together with carbon monoxide, to a carbonylation reactor in which there is maintained during the course of the process a liquid reaction medium comprising: (a) at least a quantity of water of about 0.1 to 15% by weight; (b) a catalyst stabilizer which is a quaternary ammonium iodide of a heterocyclic nitrogen compound selected from the group consisting of 2-ethyl-4-methylimidazole, 4-methylimidazole, 4-tert.-butylpyridine, 2-hydroxypyridine, 3-hydroxypyridine and 4-hydroxypyridine; (c) the iodide derivative corresponding to the alcohol, (d) the ester of the carboxylic acid and the alcohol; (e) a rhodium catalyst, and (f) the carboxylic acid, and passing the rhodium catalyst and catalyst stabilizer to a zone which is deficient in carbon monoxide relative to the carbonylation reactor and in which zone separation of carboxylic acid from the other components takes place.

5,442,108

PROCESS FOR REMOVAL OF SOLID ORGANIC MATTERS

Tatsuya Kawajiri; Hideyuki Hironaka; Kazuyuki Uekawa; Michio Tanimoto; Hiromi Yunoki, and Tsuyoshi Kudoh, all of Himeji, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Mar. 11, 1994, Ser. No. 208,667

Claims priority, application Japan, Mar. 12, 1993, 5-051874; Mar. 12, 1993, 5-051875

Int. Cl.[6] C07C *51/16*

U.S. Cl. 562—532 **20 Claims**

1. A process for removal of solid organic materials formed and deposited in the reaction system when an unsaturated aldehyde or an unsaturated aldehyde-containing gas is subjected to catalytic gaseous oxidation in the presence of a molybdenum-vanadium oxidizing catalyst to prepare an unsaturated carboxylic acid corresponding thereto, which process comprises contacting the solid organic materials with a mixed gas containing at least 3 volume % of molecular oxygen and at least 0.1 volume % of steam at a temperature of 260° to 450° C.

5,442,109

PREPARATION OF OXADIMETHACRYLIC ACID

Siegmund Besecke, Hameln; Harald Lauke, Mannheim, and Andreas Deckers, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 996,397, Dec. 23, 1992, abandoned. This application Aug. 29, 1994, Ser. No. 297,410

Claims priority, application Germany, Dec. 24, 1991, 41 42 913.3

Int. Cl.[6] C07C *59/42*

U.S. Cl. 562—583 **6 Claims**

1. In a process for preparing 2,2'-(oxybis(methylene))1-bis-2-propenoic acid

$$CH_2{=}C(COOH)CH_2{-}O{-}CH_2C(COOH){=}CH_2$$

by hydrolysis of its esters in an aqueous medium and subsequent acidification of the resultant salt, the improvement which comprises carrying out the hydrolysis in an aqueous, basic solution in the presence of a polymerization inhibitor of up to 0.5% by weight based on the total amount of the reaction mixture whereby 2,2'(oxybis(methylene))1-bis-2-propenoic acid is obtained in a purity of at least 99%.

5,442,110

HYDROXAMIC ACID DERIVATIVE

Yasuo Isomura; Seijiro Akamatsu; Toru Yoden; Masafumi Kudou, and Akira Suga, all of Ibaraki, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01421, § 371 Date Apr. 20, 1994, § 102(e) Date Apr. 20, 1994, PCT Pub. No. WO93/09090, PCT Pub. Date May 13, 1993

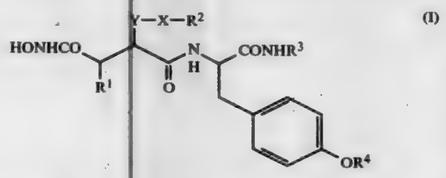
PCT Filed Nov. 2, 1994, Ser. No. 211,934

Claims priority, application Japan, Nov. 6, 1991, 3-318467

Int. Cl.[6] C07C *259/06*

U.S. Cl. 562—621 **7 Claims**

1. A compound represented by the following formula (I):



(I)

each character in this formula means as follows;

R^1: a lower alkyl group which may be substituted by a substituent group selected from the class consisting of a mercapto group, a lower alkylthio group, an arylthio group and a lower acylthio group,

R^2, R^3 and R^4: the same or different from one another and each represents a lower alkyl group,

X: an oxygen atom or a sulfur atom,

Y: a single bond or a lower alkylene group, a pharmaceutically acceptable salt thereof, a pharmaceutically acceptable hydrate thereof, a pharmaceutically acceptable solvate thereof or a stereoisomer thereof.

5,442,111

3,5-DI-TETRIARY-4-BUTYL-4-HYDROXYPHENYLOXY- OR TIOALKYLENE N-HYDROXYAMIDES, N-HYDROXYTHIOAMIDES, N-HYDROXYUREAS, AND N-HYDROXYTHIOUREAS AS 5-LIPOXYGENASE INHIBITORS

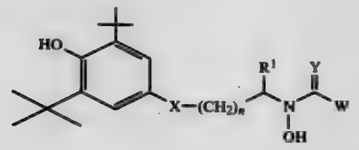
James B. Kramer, Sylvania, Ohio, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 24, 1991, Ser. No. 705,480

Int. Cl.[6] C07C *335/12*

U.S. Cl. 562—623 **2 Claims**

1. A compound of the formula



wherein

X is S;

n is an integer of 1 to 4;

Y is S;

R^1 is hydrogen or lower alkyl, and

W is NR^2R^3 in which R^2 and R^3 are each independently hydrogen or lower alkyl, or a pharmaceutically acceptable base salt thereof.

5,442,112

PREPARATION OF DIALKYL TELLURIUM AND DIALKYL SELENIUM

David J. Cole-Hamilton, Fife, United Kingdom, and Ewan McQueen, Sydney, Australia, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom

PCT No. PCT/GB92/01782, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/07117, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 29, 1992, Ser. No. 211,402

Claims priority, application United Kingdom, Oct. 3, 1991, 9121000

Int. Cl.[6] C07F *11/00*; C07C *395/00, 391/00*

U.S. Cl. 562—899 **12 Claims**

1. A method of preparing dialkyl tellurium, dialkyl selenium, dialkyl ditelluride and dialkyl diselenide, said method comprising the steps of

(a) reacting a sodium chalcogenide with an alkyl halide in a two-phase system of solvents and by the addition of a phase-transfer catalyst, said two phase system comprising water and an organic solvent immiscible with water, and thereafter

(b) separating the reaction product.

5,442,113

NITROSAMINE AND NITRITE INHIBITION

Michael Blezard; Glyn R. Jones, both of Cumbria, and Moharam Ghadimi, Keynes, all of England, assignors to Albright & Wilson Limited, Warley, England

Filed Feb. 1, 1993, Ser. No. 11,976

Claims priority, application United Kingdom, Jan. 31, 1992, 9202057

Int. Cl.[6] C07C *209/90*

U.S. Cl. 564—2 **19 Claims**

1. A method for inhibiting the formation and/or lowering the concentration of nitrosamine in a product comprising an active ingredient, said ingredient being an amine oxide, said method comprising adding to said product, before, during or after the preparation thereof, a synergistic mixture comprising:

(i) from 0.05 to 20% by weight of a material selected from the group consisting of carbonates and bicarbonates; and

(ii) from 0.005 to 5% by weight of a phosphonate; said percentages being based on the weight of said active ingredient.

5,442,114

PROCESS FOR PRODUCING AROMATIC AMIDE COMPOUNDS

Kan Takamine; Michio Yamato; Akira Murakami; Toora Tokumaru, all of Oita; Yoshinori Nakayama, Ibaraki, and Motoo Hazama, Oita, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

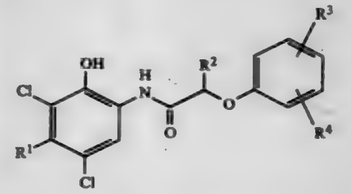
Filed Jan. 18, 1994, Ser. No. 182,460

Claims priority, application Japan, Jan. 29, 1993, 5-013646; Jan. 29, 1993, 5-013647; Oct. 6, 1993, 5-250598; Oct. 6, 1993, 5-250599

Int. Cl.[6] C07C *231/02*

U.S. Cl. 564—142 **14 Claims**

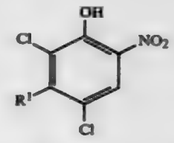
1. A process for producing an aromatic amide compound of the general formula:



(4)

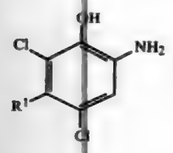
wherein R^1 is a C_1–C_4 alkyl group, and R^2, R^3 and R^4 are independently a hydrogen atom or a C_1–C_6 alkyl group, said process comprising the steps of:

(a) subjecting an o-nitrophenol compound of the general formula:



(1)

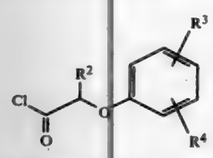
wherein R^1 is as defined above, to catalytic reduction in acetone or an aromatic hydrocarbon solvent under the presence of a nickel catalyst to give an o-aminophenol compound of the general formula:



wherein R^1 is as defined above; and

(b) subjecting the reaction mixture containing the o-aminophenol compound obtained in the step (a) to condensation with an acid chloride compound having a sulfur content of 0.5% or less, based on the weight of the acid chloride compound, of the general formula:

(3)



wherein R^2, R^3 and R^4 are each as defined above under an atmosphere of an inert gas having an oxygen concentration of 1% or less.

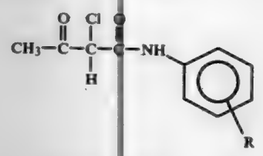
5,442,115

PREPARATION OF ALPHA-CHLOROACETOACETANILIDE COMPOUNDS

Benjamin J. Pierce, Southbury, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

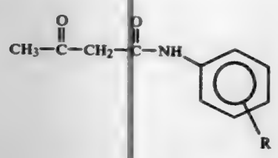
Filed Jun. 15, 1994, Ser. No. 260,147
Int. Cl.[6] C07C *225/22*
U.S. Cl. 564—200 20 Claims

1. A method for producing an α-chloro-acetoacetanilide compound (α-Cl AAA) of the formula



wherein R is hydrogen, halogen or C_1–C_4 alkyl, which comprises the steps of:

(a) reacting an acetoacetanilide compound (AAA) of the formula



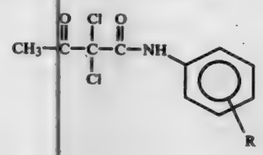
wherein R is as defined above, with chlorine in the presence of a solvent mixture consisting essentially of water and an organic solvent selected from the group consisting of toluene, xylene, dioxane, isopropyl alcohol, ethanol, 1,2-dichloroethane, chloroform, carbon tetrachloride and chlorobenzene, at a temperature of about 0° C. to about 20° C., wherein the percent of the water to the organic solvent in the solvent mixture, is between about 10% and 150% (v/v); and

(b) isolating the α-Cl AAA produced in step (a).

6. A method as recited in claim 1 further comprising the steps of:

(c) hydrogenating any α,α-dichloroacetoacetanilide compound (α,α-diCl AAA) of the formula

(2)



wherein R is as defined in claim 1, produced in step (a), with hydrogen in the presence of a catalyst selected from the group consisting of palladium, platinum, and Raney nickel, and in the presence of a solvent mixture consisting essentially of water and an organic solvent selected from the group consisting of toluene, xylene, dioxane, isopropyl alcohol, ethanol, 1,2-dichloroethane, chloroform, carbon tetrachloride and chlorobenzene, at a temperature of between 20° C. and 100° .C., wherein the percent of the water to the organic solvent in the solvent mixture is between 10% to 150% (v/v), for a period of time sufficient to produce α-Cl AAA; and

(d) isolating the α-Cl AAA produced in step (c).

5,442,116

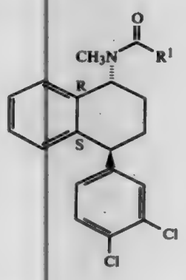
PROCESS FOR PREPARING SERTRALINE INTERMEDIATES

Willard M. Welch, New London, Conn., and Michael T. Williams, Deal, United Kingdom, assignors to Pfizer Inc., New York, N.Y.

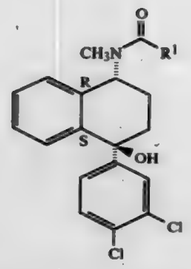
PCT No. PCT/EP92/01496, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/01161, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 3, 1992, Ser. No. 178,240
Claims priority, application United Kingdom, Jul. 11, 1991, 9114948
Int. Cl.[6] C07C *233/03, 233/04, 231/18*
U.S. Cl. 564—222 12 Claims

1. A process for the preparation of the substantially geometrically and optically pure trans-stereoisomeric form of a compound of the formula

(I)



wherein R^1 is H or C_1–C_4 alkyl, and R and S represent the absolute configurations of the asymmetric centres, which comprises ionic hydrogenation of a compound of the formula:



wherein R^1 R and S are as defined for formula (I) .

5,442,117

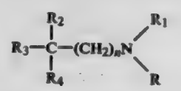
ENANTIOMERIC RESOLUTION

G. Patrick Stahly, and Thanikavelu Manimaran, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Dec. 13, 1993, Ser. No. 165,619
Int. Cl.[6] C07B *57/00*
U.S. Cl. 564—304 16 Claims

1. A process for producing a substantially pure enantiomeric salt of a hydrocarbyl amine having the formula:

I



where R_1 and R_2 are different and are hydrogen, alkyl, cycloalkyl, phenyl, substituted phenyl, naphthyl, substituted naphthyl; R_3, R_4 and R_5 are different and are hydrogen, alkyl, cycloalkyl, phenyl, naphthyl, substituted phenyl, substituted naphthyl, haloalkyl, hydroxyalkyl, alkoxyalkyl, acyloxyalkyl, carboxyalkyl, alkoxycarbonylalkyl or cyanoalkyl; and n is 0 or 1; which comprises:

i) reacting said hydrocarbyl amine enriched with one of its enantiomers with an optically inactive acid thereby forming a salt of said hydrocarbyl amine enriched with said enantiomer, said salt having: a) at least one eutectic point; b) a composition that is not at the eutectic point; and c) a eutectic composition that is closer to the racemic composition than is the eutectic composition of said hydrocarbyl amine, or be a solid where compound I is a liquid;

ii) treating said salt with an inert solvent;

iii) separating a salt of the substantially pure enantiomer of the hydrocarbyl amine.

5,442,118

ASYMMETRIC SYNTHESIS OF (R)- AND (S)-ARYLETHANOLAMINES FROM IMINOKETONES

Yun Gao, Southborough; Yaping Hong, Worcester, and Charles M. Zepp, Berlin, all of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Filed Apr. 22, 1994, Ser. No. 231,231
Int. Cl.[6] C07C *213/00*
U.S. Cl. 564—356 13 Claims

1. A process for the enantiospecific reduction of an α-iminoketone to an α-aminoalcohol comprising reacting an α-iminoketone with a borane-reducing agent in the presence of a chiral 1,3,2-oxazaborole catalyst.

5,442,119

CATALYTIC ASYMMETRIC REDUCTION OF TRISUBSTITUTED OLEFINS

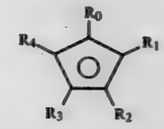
Stephen L. Buchwald, Somerville, Mass., and Richard D. Broene, Brunswick, Me., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 792,229, Nov. 14, 1991, Pat. No. 5,292,893, which is a continuation-in-part of Ser. No. 698,940, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,892, Nov. 21, 1990, Pat. No. 5,286,878. This application Jul. 12, 1993, Ser. No. 90,338
Int. Cl.[6] C07C *211/27, 43/20, 43/205, 25/02, 5/11*
U.S. Cl. 564—374 8 Claims

1. A catalytic asymmetric reduction process, comprising the steps of:

providing a catalytic amount of an active species of an enantiomerically enriched Chiral catalyst selected from the group consisting of M(L)(L')(L''), M(L)(L')(L'')(L'''), M(L)(L')(L'')(L''')(Liv), and M(L)(L')(L'')(L''')(L^{iv})(L^{v}), where M is a group 3, 4, 5 or 6 metal, a lanthanide or an actinide, and L, L', L'', L''', L^{iv}, L^{v}, independently, is some combination of H, alkyl, aryl, Si(R)(R')(R''), halogen, —OR, —SR, or —NR(R'), PR(R')(R''), or a cyclopentadienyl group having the formula

(II)



where R, R', and R'' are H, alkyl, aryl, or silyl and may be different or the same, and where R_0, R_1, R_2, R_3, and R_4 are hydrogen, alkyl, aryl, Si(R)(R')(R''), halogen, —OR, —SR, —NR(R'), PR(R')(R''), or —PR(R') groups in any combination, where R, R', and R'' are as defined above;

reacting a trisubstituted olefin substrate in the presence of hydrogen and the catalyst; and

recovering and purifying a reduced organic reaction product having a high level of enantiomeric purity.

5,442,120

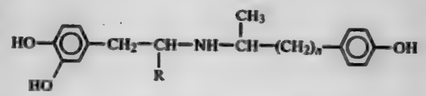
PRODUCTION OF DOBUTAMINE COMPOUNDS

Paulus F. C. van der Meij, and Paulus P. G. de Jong, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Apr. 8, 1994, Ser. No. 224,877
Claims priority, application European Pat. Off., Apr. 13, 1993, 93201071
Int. Cl.[6] C07C *213/00*
U.S. Cl. 564—375 11 Claims

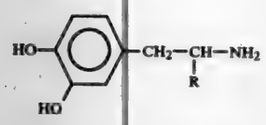
1. A process for the production of an acid addition salt of a dobutamine compound of the formula

(I)



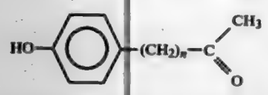
wherein R is a hydrogen atom or a methyl group, and n is 1 or 2,

characterized in that a mineral acid—addition salt of a dopamine compound of the formula



(II)

is reacted with a ketone of the formula



(III)

under the influence of a catalytic amount of a base, and in the presence of hydrogen and a hydrogenation catalyst, after which the pH of the reaction mixture is adjusted to about 6 at most and the product is isolated.

5,442,121

PROCESS FOR PRODUCING N,N-DISUBSTITUTED AMINOPHENOL

Shigeki Nagamatsu; Tomohiro Arase, and Masaaki Yasuda, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

PCT No. PCT/JP94/00424, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO94/21594, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 17, 1994, Ser. No. 335,744

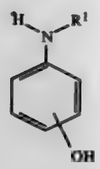
Claims priority, application Japan, Mar. 19, 1993, 5-060075

Int. Cl.[6] C07C *209/02*

U.S. Cl. 564—398 **3 Claims**

1. A process for producing N,N-disubstituted aminophenol which comprises:

(1) step I in which a reaction mixture containing an N-substituted aminophenol represented by the following formula (2)



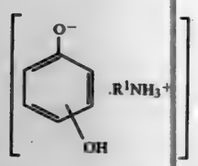
(2)

wherein R^1 is an alkyl group having 1 to 6 carbon atoms or a cycloalkyl group having 4 to 8 carbon atoms is obtained by reacting a dihydric phenol with a primary amine represented by the following formula (1)

$$R^1NH_2 \quad (1)$$

wherein R^1 is the same as defined in the formula (2);

(2) step II in which a quaternary ammonia salt represented by the following formula (3)

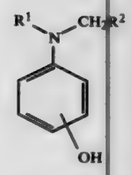


(3)

wherein R^1 is the same as defined in the formula (2) and present inevitably in said reaction mixture obtained in the previous step I is subjected to heat treatment to decompose said quaternary ammonia salt into a dihydric phenol and said primary amine of the formula (1) and at least the substantial amount of said primary amine is removed from said reaction mixture;

(3) step III in which N-substituted aminophenol represented by the formula (2) is separated from said reaction mixture obtained in the previous step II by distillation;

(4) step IV in which N,N-disubstituted aminophenol represented by the following formula (5)



(5)

wherein R^1 is the same as in the formula (1) and R^2 is an alkyl group having 1 to 5 carbon atoms or a cycloalkyl group having 4 to 8 carbon atoms, is obtained by reacting said N-substituted aminophenol obtained in the previous step III with an aldehyde compound represented by the following formula (4)

$$R^2CHO \quad (4)$$

wherein R^2 is the same as in the formula (5) in an organic solvent and in a hydrogen atmosphere in the presence of a reduction catalyst; and

(5) step V in which said N,N-disubstituted aminophenol is isolated from said reaction mixture obtained in the previous step IV.

5,442,122

DIBENZOSUBERYL AND DIBENZOSUBERENYL DERIVATIVES

Masaki Noda, Ohmihachiman, and Kiyoshi Nokihara, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

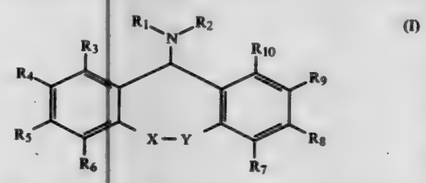
Filed Nov. 3, 1993, Ser. No. 145,101

Claims priority, application Japan, Nov. 9, 1992, 4-324759

Int. Cl.[6] C07C *211/00*

U.S. Cl. 564—426 **7 Claims**

1. A compound represented by the following formula (I):



(I)

wherein R_1 represents a hydrogen atom, an amino acid residue protected by an amino-protecting group which is removable in the presence of a base, or an α-fluorenylmethyloxycarbonyl group; R_2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; one substituent selected from the group consisting of R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} represents —O—$(CH_2)_n$—COOH, wherein n is an integer of 1 to 6, and all of the remaining substituents independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or an alkoxy group having 1 to 4 carbon atoms; and —X—Y— represents a —C—C—bond or a —C=C— bond.

5,442,123

PROCESS FOR SELECTIVELY PREPARING ORGANIC TRISULFIDES

Emmanuel F. Arretz, rue de Cagnes, France; Glenn T. Carroll, Jeffersonville, and Roger T. Clark, Pottstown, both of Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 748,377, Aug. 22, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,209

Int. Cl.[6] C07C *321/00*

U.S. Cl. 568—26 **14 Claims**

1. A process for the selective production of organic trisulfides of the formula R^1SSSR^2 where R^1 and R^2 are independently C_1-C_{24} monovalent hydrocarbon radicals optionally having hydroxy or alkoxy substituent groups, said process comprising reacting in the absence of a polar solvent a first high sulfur rank polysulfide as the major sulfur source of the reaction, said polysulfide having the formula $R^1SS_{x-1}SR^2$ where x is greater than 2 and R^1 and R^2 are as defined above, with an excess of a mercaptan of the structure R^3SH, where R^3 is of the same description as R^1 and R^2, at a reaction temperature ranging from about 30° to 120° C. and in the presence of a heterogeneous catalyst which is a) an alumina-containing material, b) silica modified with at least 0.5 weight percent of either sodium, potassium, calcium or magnesium, or c) a zinc oxide-containing material, each of the recited catalysts being different in composition than the others, and terminating the reaction in sufficient time to permit recovery of a total product containing at least 70 weight percent of organic trisulfide of the above formula, at least a portion of which is the product of the reaction of said first high sulfur rank polysulfide and said mercaptan.

5,442,124

PROCESS FOR THE PREPARATION OF NOVEL AROMATIC COMPOUNDS

Charles Fehr, Versoix, and José Galindo, Les Avanchets, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Continuation-in-part of Ser. No. 911,447, Jul. 10, 1992, Pat. No. 5,324,875, which is a division of Ser. No. 544,285, Jun. 26, 1990, Pat. No. 5,162,588. This application Feb. 14, 1994, Ser. No. 195,903

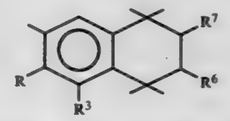
Claims priority, application Switzerland, Jun. 30, 1989, 2454/89

Int. Cl.[6] C07C *45/29*

U.S. Cl. 568—322 **10 Claims**

1. A process for the preparation of a compound of formula (Ic) or (Id) said process comprising:

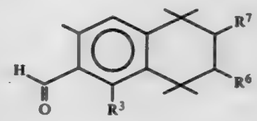
a) the reaction of a compound of formula



(IIIb)

wherein symbols R and R^3 are different and represent each a hydrogen atom or a methyl radical and symbols R^6 and R^7 stand for a hydrogen atom or a methyl radical,

with an oxidation or formylation agent to obtain an aldehyde of formula

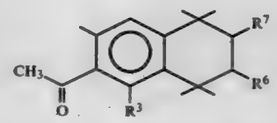


(Ic)

wherein symbols R^3, R^6 and R^7 represent a hydrogen atom or a methyl radical;

and, if necessary,

b) the treatment of aldehyde (Ic) with MeI or a Grignard reagent followed by hydrolysis and oxidation, to obtain a ketone of formula



(Id)

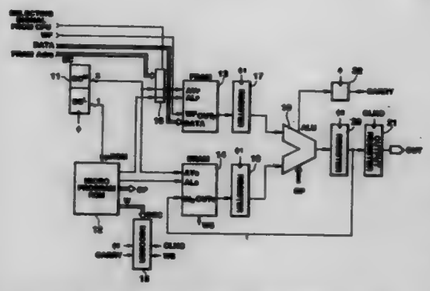
wherein symbols R^3, R^6 and R^7 are defined as in formula (Ic).

5,442,125

SIGNAL PROCESSING APPARATUS FOR REPEATEDLY PERFORMING A SAME PROCESSING ON RESPECTIVE OUTPUT CHANNELS IN TIME SHARING MANNER

Kohtaro Hanzawa, Iruma; Goro Sakata, Mitaka, and Kikuji Tanaka, Fussa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 917,904, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 775,150, Oct. 9, 1991, abandoned. This application Aug. 24, 1994, Ser. No. 295,353
Claims priority, application Japan, Nov. 20, 1990, 2-315250
Int. Cl.[6] G10H *7/00*
U.S. Cl. 84—602 5 Claims



5. A signal processing apparatus comprising:

data input means for inputting data of a plurality of channels to be processed;

program memory means having a single memory area for storing a process program prepared for a single one of said channels, said process program including a plurality of program steps used for processing of the data which is inputted by said data input means;

clock signal generating means for generating reference clock signals;

counting means coupled to said clock signal generating means for counting the reference clock signals, upper bits of the count output of said program memory means and lower bits of a count output of said counting means designating an address of said program memory means while one of said channels is designated; and

processing means, having a plurality of channels, coupled to said program memory means and to said counting means, for respectively processing the data of respective channels designated by the upper bits of the count output based on all the plurality of program steps of the process program readout from said program memory means addressed by said lower bits of said count output.

5,442,126

MUSICAL SOUND SIGNAL RECORDING/REPRODUCING APPARATUS

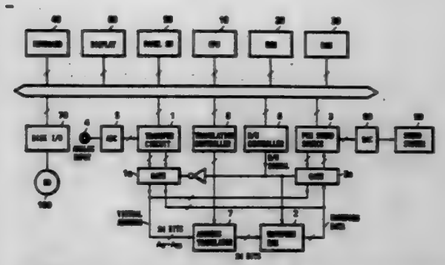
Ando Tokiharu, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jul. 13, 1993, Ser. No. 90,756
Claims priority, application Japan, Jul. 16, 1992, 4-189324
Int. Cl.[6] G10H *7/04, 7/12*
U.S. Cl. 84—603 16 Claims

1. A musical sound signal recording/reproducing apparatus for recording/reproducing musical sound signals having a plurality of waveforms, comprising:

a rewritable waveform memory for storing waveform data of musical sound signals, said rewritable waveform memory being accessed with real addresses to write and read said waveform data; and

address translating means for translating consecutive virtual addresses supplied thereto into said real addresses, such that enabling an access of a waveform data in said rewritable waveform memory with consecutive virtual addresses even if said waveform data is divided into plural parts and said plural parts are respectively stored in plural areas



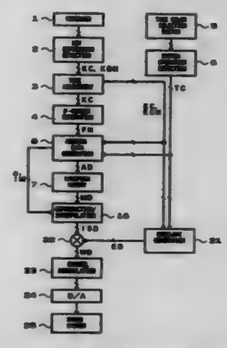
which are not consecutive to each other in said rewritable waveform memory.

5,442,127

WAVEFORM GENERATION DEVICE HAVING A MEMORY FOR STORING ADJACENT SAMPLE DATA IN DIFFERENT DATA COMPRESSION REPRESENTATIONS

Masatada Wachi, and Masahiro Shimizu, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 24, 1994, Ser. No. 217,608
Claims priority, application Japan, Mar. 26, 1993, 5-068873
Int. Cl.[6] G10H *7/02, 7/12*
U.S. Cl. 84—603 14 Claims



1. A waveform generation device comprising:

memory means for storing waveform sample data for plural sample points forming a given tone waveform, the waveform sample data for one plurality of the sample points being expressed in first data representation, the waveform sample data for another plurality of the sample points being expressed in second data representation which is more compressed data representation than said first data represeantation, said memory means including a storage area having plural addresses each of which is composed of a predetermined number of bits, the predetermined number of bits in each of said addresses being greater than the number of bits in each of said waveform sample data expressed in said first data representation, so that each of the waveform sample data expressed in the first data representation is stored at some bit positions of one of the addresses and each of the waveform sample data expressed in the second data representation is stored at remaining bit positions of one or more addresses;

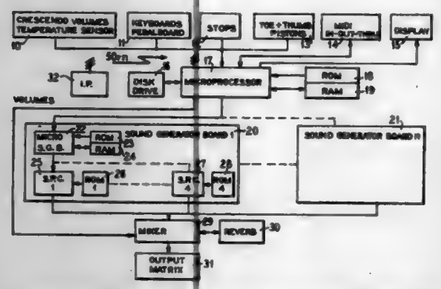
read means for reading out the stored waveform sample data from said memory means; and

data reproduction means for converting the waveform sample data expressed in said second data representation that is read out by said read means, into the first data representation, so as to reproduce all the waveform sample data read out by said read means in said first data representation.

5,442,128
DIGITAL CLASSIC ORGAN WITH REMOTE CONTROL FINISHING

Giacomo F. Bodini, Saludecio, and Primo Cimaroli, Coriano, both of Italy, assignors to Generalmusic S.P.A., Mondaino, Italy

Filed Jun. 30, 1992, Ser. No. 907,776
Claims priority, application Italy, Mar. 31, 1992, BO92A0116
Int. Cl.[6] G10H *7/00, 1/24*
U.S. Cl. 84—620 **21 Claims**



1. Apparatus for producing classic organ sounds including a first operator controlled keyboard at a first location for selecting stops each having a group of notes, and for selecting notes to be sounded in real time, a second operator controlled programming key pad at a second location for defining parameters related to individual qualities of all of the notes of said selected stops, and means for sounding said notes as they are selected at the location of said first operator controlled keyboard, characterized in that there is provided storage means for storing representations of a multiplicity of said parameters for each of said notes, said representations of parameters being individually modifiable by means of said second keyboard in order to adjust tonal qualities of said classic organ sounds, and said means for sounding is controlled by said stored representations of parameters.

5,442,129
METHOD OF AND CONTROL SYSTEM FOR AUTOMATICALLY CORRECTING A PITCH OF A MUSICAL INSTRUMENT

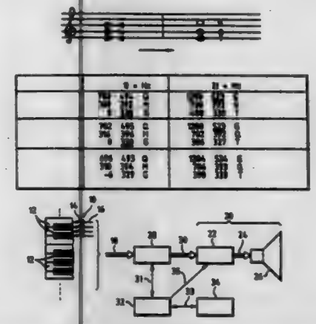
Werner Mohrlok, Hohenbergstr. 16, D-7218 Trossingen, and Herwig Mohrlok, Trossingen, both of Germany, assignors to Werner Mohrlock, Trossingen, Germany

PCT No. PCT/EP88/00702, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO89/01219, PCT Pub. Date Feb. 9, 1989
PCT Filed Aug. 3, 1988, Ser. No. 458,725
Claims priority, application Germany, Aug. 4, 1987, 37 25 820.6
The portion of the term of this patent subsequent to Oct. 15, 2009, has been disclaimed.
Int. Cl.[6] G10H *7/00, 1/38*
U.S. Cl. 84—637 **26 Claims**

1. Method of automatically correcting a pitch of a musical instrument including a note input device for inputting note input signals according to a first intonation system, and a tone generating device for receiving the note input signals and for generating corresponding tones, said method comprising the steps of:

(i) determining whether an input signal pattern comprising at least two note input signals corresponds to one of a plurality of predetermined chord patterns, comprising each a predetermined fundamental note; and

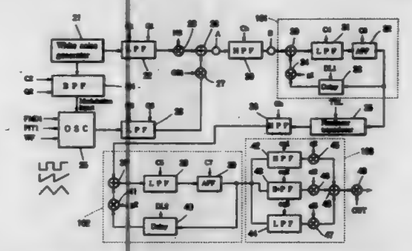
(ii) in the case of correspondence of the input signal pattern to one of a plurality of predetermined chord patterns, replacing the input signal pattern by a corrected input signal pattern, said corrected input signal pattern being determined on the basis of the input signal pattern corrected by first and second correction factors attributed to the one chord pattern, with the first correction factors being determined to correct according to a second intonation system different from the first intonation system, in particular, an intonation system with "just" intonation, all note input signals except for a note input signal corresponding to the fundamental note of the respective chord pattern, and with the second correction factors being applied to all of the note input signals of the input signal pattern with a same correction factor value for all of the note input signals, and being determined to shift all of the note input signals to one of higher and lower signal values dependent on whether the first correction factors shift the note input signals on average to the one of higher and lower signal values.



5,442,130
MUSICAL TONE SYNTHESIZING APPARATUS USING COMB FILTER

Toru Kitayama, and Yoichiro Ogai, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 2, 1993, Ser. No. 25,282
Claims priority, application Japan, Mar. 3, 1992, 4-081546
Int. Cl.[6] G10H *5/00, 1/12*
U.S. Cl. 84—661 **21 Claims**



1. A musical tone synthesizing apparatus comprising:

a plurality of loop means connected in series for circulating and delaying an input signal having a plurality of frequency components in accordance with a selected delay time to produce an output signal representative of a musical tone, each of the loop means including:

delay means for delaying the input signal in accordance with the selected delay time;

feedback means for feeding back the delayed input signal to the delay means;

designating means for designating a pitch of a musical tone to be synthesized;

control means for controlling the delay means according to the designated pitch so as to select the delay time of the loop means to thereby determine the pitch of the musical tone;

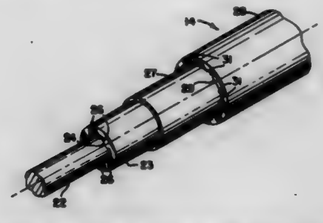
generating means for generating said input signal; and

attenuating means connected external to one of the loop means for selectively attenuating predetermined lower frequency components of the input signal having periods longer than the set selected delay time of the loop means.

5,442,131
HIGH ENERGY COAXIAL CABLE COOLING APPARATUS

Dennis Borgwarth, 3267 13th Ave., Anoka, Minn. 55303

Filed Jul. 23, 1993, Ser. No. 96,354
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—15.6 **6 Claims**



1. An electrical insulation tube for providing a plurality of longitudinally disposed channels for guiding fluid flow along the length of an enclosed electrical conductor, comprising

a plurality of elongate insulation strips each having opposing ends,

a flat side on each of said elongate insulation strips,

an opposing side on each of said elongate insulation strips having at least one open channel extending lengthwise therealong,

first and second opposing edges on each of said elongate insulation strips intersecting said flat side and said opposing side, and

mating edge means formed on said first and second opposing edges for joining adjacent ones of all of said first and second opposing edges on adjacent ones of said plurality of elongate insulation strips, for forming an insulation tube whereby said plurality of insulation strips when all joined edge to edge form an insulation tube having an inside and an outside wall with said at least one open channel in each insulation strip on said inside wall adjacent to the enclosed electrical conductor.

6. A method of manufacturing an electrical insulation tube for surrounding an electrical conductor and for providing longitudinally disposed cooling channels adjacent to the electrical conductor comprising the steps of

fabricating an elongate insulation strip,

forming one side of the elongate insulation strip in a flat configuration,

configuring an opposing side of the elongate insulation strip to have at least one open channel extending lengthwise therealong,

forming a first mating element on a first edge of the elongate insulation strip,

forming a second mating element on a second and opposing edge of the elongate insulation strip,

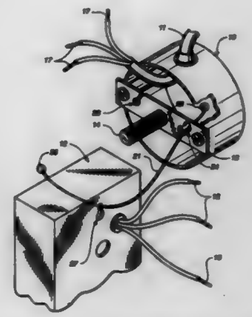
cutting at least one elongate insulation strip to predetermined length, and

joining a first mating element to a second mating element to form a tube having at least one open channel extending along the interior thereof.

5,442,132
APPARATUS FOR INSTALLING A MOTION DETECTOR, LIGHTING FIXTURE OR THE LIKE

Donald R. Sandell, San Jose, and Wade P. Lee, Lafayette, both of Calif., assignors to Intelectron Products Company, Hayward, Calif.

Filed Jun. 18, 1993, Ser. No. 80,659
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—48 **5 Claims**



1. Apparatus for temporarily supporting an electrical fixture during installation of the fixture on an electrical junction box, said fixture having a back portion for mounting directly on the junction box and covering the junction box in its mounted disposition, said apparatus comprising:

a fixture support link formed of a flexible material, said support link being formed with a first restraining means at a first end thereof for removably attaching and detaching said support link to and from the junction box;

attachment means for attaching a second end of said support link to said back portion of said fixture, said attachment means being arranged and disposed so that the support link so attached faces the junction box when the fixture is in its installed orientation; and

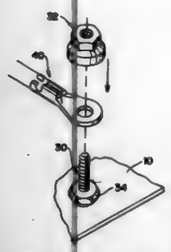
a first receiving means secured to the junction box for receiving said support link at said first end thereof,

wherein said first receiving means is formed to co-function with said first restraining means to attach and detach said support link to and from the junction box, and said first receiving means and first restraining means co-function to attach said support link to the junction box sufficiently securely to support the weight of the fixture during installation; and

a mounting bar formed to be attached across the junction box for supporting the fixture, wherein said first means at the junction box for receiving said support link is formed in said mounting bar;

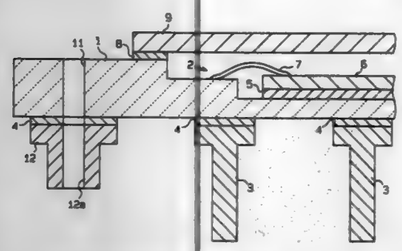
wherein said first receiving means comprises a slot formed in said mounting bar and sized to receive said support link, and said first restraining means comprises a stop on the first end of said support link for restraining movement of said support link through said slot when the fixture hangs from said support link during installation.

5,442,133
GROUNDING STUD/NUT
Delbert L. Arnold, St. Clair, and Mark H. Delcourt, Emmett, both of Mich., assignors to Emhart Inc., Newark, Del.
Filed Sep. 8, 1993, Ser. No. 118,110
Int. Cl.[6] H01R *4/38*
U.S. Cl. 174—51 6 Claims
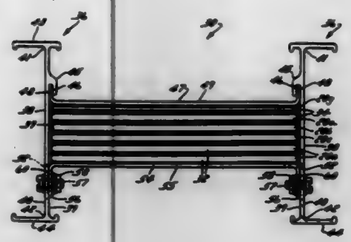


1. A grounding stud/nut sub-assembly adapted to be attached by welding to a substrate, comprising a stud and a nut, said stud comprising a head portion, a washer portion and a threaded stud portion, said nut comprising a washer portion and means to cause said nut to be of the prevailing torque type, said stud and said nut being formed of electrically conductive material, and said stud washer portion being relatively thin in relation to said nut washer portion.

5,442,134
LEAD STRUCTURE OF SEMICONDUCTOR DEVICE
Yukiyasu Miyazaki, Kariya; Nobuyoshi Sugitani, Toyota, and Yoshiaki Shimojo, Kagoshima, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya; Toyota Jidosha Kabushiki Kaisha, Aichi and Kyocera Corporation, Kyoto, all of Japan
Continuation of Ser. No. 109,321, Aug. 19, 1993, abandoned.
This application Dec. 1, 1994, Ser. No. 347,832
Claims priority, application Japan, Aug. 20, 1992, 4-221825
Int. Cl.[6] H01L *23/02*
U.S. Cl. 174—52.4 9 Claims



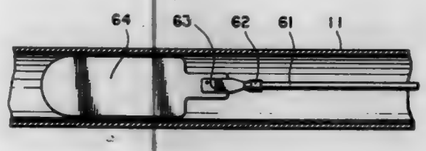
1. A semiconductor device comprising:
a flat semiconductor package having an upper and a lower surface and at least one through hole extending through said package interconnecting said upper and lower surfaces; and
at least one metallic lead connector having a bore therethrough and secured to and projecting from said lower surface of said flat semiconductor package with said bore substantially coaxially aligned with said through hole for receiving a metallic conductor through said package from said upper surface for conductive connection to said lead connector.

5,442,135
ELECTRICAL POWER DISTRIBUTION BUSWAY AND HOUSING
Nathan H. Faulkner, Pauline, and Ronald D. Nordenbrock, Moore, both of S.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Mar. 25, 1993, Ser. No. 37,206
Int. Cl.[6] H02G *5/00*
U.S. Cl. 174—68.2 8 Claims



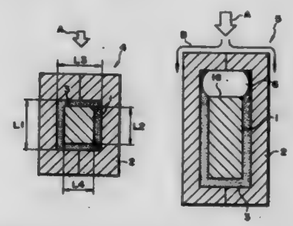
1. An electrical power distribution busway comprising:
a first conductive busbar;
a second conductive busbar;
a pair of substantially parallel side plates;
a top housing channel adjustably mounted between the side plates;
a bottom housing channel adjustably mounted between the pair of side plates, wherein the top and bottom housing channels may be adjusted towards and away from each other such that the first and second busbars are held in contact with each other between the top and bottom housing channels;
a plurality of fasteners for connecting the top and bottom housing channels to the side plates at a plurality of connection points, wherein the fasteners may be loosened for adjustment of the top and bottom housing channels and tightened to secure the top and bottom channels at a desired distance from each other; and
a plurality of gripping structures, each gripping structure being disposed at one of the connection points to prevent slippage between the channels and side plates.

5,442,136
METHOD OF INSTALLATION OF PARTITIONING DEVICE FOR A TUBULAR CONDUIT
Jerry L. Allen, 6749 Greenwich Rd., Westfield Center, Ohio 44251
Division of Ser. No. 907,594, Jul. 2, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,167
Int. Cl.[6] H02G *3/28*
U.S. Cl. 174—95 3 Claims



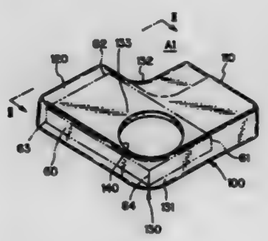
1. A method of partitioning a longitudinally extending conduit into a plurality of longitudinally extending chambers comprising the steps of attaching a paddle member to a pushing device, pushing the paddle member longitudinally through the conduit by pushing the pushing device in one direction, detaching the paddle member from the pushing device, attaching a partitioning device to the pushing device, and pulling the pushing device longitudinally through the conduit in the other direction thereby removing the pushing device from the conduit and leaving the partitioning device in the conduit to partition the same into the longitudinally extending chambers.

5,442,137
SUPERCONDUCTOR WIRE AND METHOD OF MANUFACTURING THE SAME
Satoru Murase, and Shigeo Nakayama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 22, 1991, Ser. No. 796,380
Claims priority, application Japan, Nov. 22, 1990, 2-320117; May 17, 1991, 3-113082
Int. Cl.[6] H01B *12/02*
U.S. Cl. 174—125.1 19 Claims



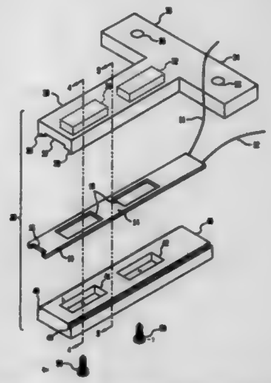
1. A superconducting wire adapted to manufacture a coiled superconducting wire such as an electromagnet device, said superconductor wire comprising:
a housing including at least one significant space;
a superconducting wire body arranged in said housing, so as to leave the significant space in the housing; and
a material filled in the significant space,
wherein a distance between said housing and a surface of said superconducting wire body, on which a load acts in a direction perpendicular to a longitudinal direction of said superconductor wire, is set to not less than 0.25 mm and not permitted to exceed 0.7 mm.

5,442,138
INSULATOR FOR TERMINAL-CONNECTING PORTION
Hiroyuki Ochi, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Oct. 22, 1993, Ser. No. 140,316
Claims priority, application Japan, Oct. 23, 1992, 4-079755 U
Int. Cl.[6] H01R *13/62*
U.S. Cl. 174—138 F 5 Claims



1. An insulator, for a terminal connecting portion which includes a first terminal having a generally rectangular shape and a second terminal, comprising an elastic insulator body in an L-shaped hollow form, said insulator body including:
a first inlet formed in a first end of said insulator body for receiving the first terminal having the generally rectangular shape;
a second inlet formed in a second end of said insulator body for receiving the second terminal;
a curved portion having an exterior wall constituted of an outer corner wall part, an inner corner wall part, and opposite side wall parts; and
a draining hole formed in one of said opposite side wall parts of said exterior wall said draining hole being large in size relative to said one of said opposite side wall parts, so that said draining hole extends over a substantial portion of said one of said opposite side wall parts;
whereby the first terminal is held in said insulator body with two out of four corners of the first terminal at its leading end being closely and elastically contacted with the interior at said second end and with one of the other two corners being closely and elastically contacted with the interior at said outer corner part of said exterior wall; and
whereby the second terminal inserted through said second inlet into said insulator body is connected to the first terminal inserted through said first inlet into said insulator body.

5,442,139
INSULATED MOUNTING SUPPORT FOR LADDER-LINE
James D. Hagerty, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 27, 1993, Ser. No. 127,184
Int. Cl.[6] H02G *15/007*
U.S. Cl. 174—138 R 12 Claims



1. An insulated mounting support assembly, comprising:
a transmission line having two spaced apart parallel conductors encased and separated by a dielectric material to a feedpoint of said transmission line where said two spaced apart parallel conductors encased and separated by said dielectric material extend from said transmission line is first and second wires, said dielectric material having a plurality of spaced apart cutouts located between said conductors;
a T-shaped first plate of electrical insulator material having a central longitudinal portion and a cross-bar portion, said central longitudinal portion having an open-ended longitudinal recess extending along the entire length thereof and being sized to receive the height and width of said transmission line, said cross-bar portion being provided with holes at opposing ends thereof;

at least two bosses extending from said longitudinal recess of said central longitudinal portion, said at least two bosses maintained in a spaced apart relationship in correspondence with at least two cutouts from said plurality of spaced apart cutouts;

a second plate of electrical insulator material having at least two recesses in a face thereof for mating engagement with said at least two bosses, wherein said central longitudinal portion of said T-shaped first plate and said second plate are sandwiched about a portion of said transmission line, said at least two bosses extending through said at least two cutouts for said mating engagement with said at least two recesses such that said portion of said transmission line residing in said longitudinal recess is engaged without pressure thereon between said T-shaped first plate and said second plate, wherein tension in said transmission line is absorbed by said at least two bosses; and

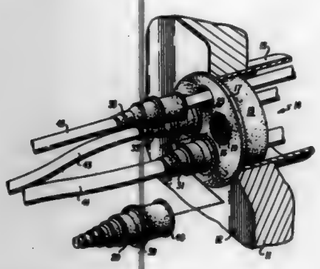
each of said holes at opposing ends of said cross-bar portion serving as a loophole for one of said first and second wires extending from said transmission line at said feedpoint, wherein tension applied to said cross-bar portion via either of said first and second wires is absorbed by said T-shaped first plate.

5,442,140

CONDUIT AND CABLE SEALER

Eugene W. Mc Grane, Ormond Beach, Fla., assignor to Homac Mfg. Company, N.J.

Filed Oct. 5, 1993, Ser. No. 131,548
Int. Cl.[6] H02G *3/22*
U.S. Cl. 174—151 **3 Claims**



1. A conduit and cable sealer comprising

a substantially cylindrical base having opposed end faces, said end faces being formed from a resilient moldable material;

a circumferential flange extending transversely outwardly of one of said faces of said cylindrical base;

the outer surface of said cylindrical base being tapered inwardly at the other of said end faces;

a plurality of boreholes extending through said base between said end faces;

resilient cable-accepting seals having stepped towers insertable in and removable from said boreholes and providing a friction fit when inserted into said boreholes;

the outside surface of said cylindrical base having a substantially constant diameter between said circumferential flange and said taper at said other end;

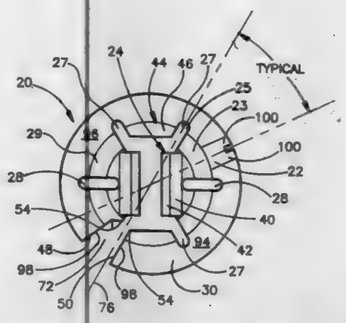
whereby said cylindrical base is adapted to frictionally fit within and be removable from an open end of a conduit so as to seal said conduit.

5,442,141

EASY-INSERTION INTEGRALLY HINGED C-SHAPED CONNECTOR

Thomas J. Gretz, Clarks Summit, Pa., assignor to Arlington Industries, Inc., Scranton, Pa.

Filed Apr. 30, 1993, Ser. No. 55,734
Int. Cl.[6] H02G *3/22*
U.S. Cl. 174—153 G **5 Claims**



1. A one-piece C-shaped connector for connecting a sheathed electric cable through an opening in a panel, comprising:

(a) a hollow one-piece C-shaped round body of resiliently flexible material having an outboard end, an inboard end, a wall and a passageway surrounded by said wall extending from said outboard end to said inboard end for enclosing a cable;

(b) a cutout in said wall extending from said outboard end to said inboard end with sufficient width to permit said wall to be circumferentially collapsed sufficiently to permit the inboard end of said connector to be inserted in said opening in said panel;

(c) at least two opposed gripper jaws at said inboard end of said body having an opening on each side thereof for gripping said cable;

(d) an angled support having an inboard end and an outboard end for each of said gripper jaws with said gripper jaw integrally attached at said inboard end of said angled support;

(e) a base flange having two arcuate parts with each arcuate part having a first facing end and a second facing end with said base flange located at said outboard end of said body and having a diameter greater than the diameter of said opening in the panel and with said cutout separating the said two arcuate parts between their first facing ends;

(f) a notch separating said second facing ends of said two arcuate parts located on the opposite side of said body from said cutout extending entirely through said base flange;

(g) a seat in said body of approximately the same diameter and an equal or greater width as the diameter and thickness, respectively, of the opening in the panel, said seat having an outward abutment edge located on the inner side of said base flange and an inboard side located across from such abutment edge;

(h) a second flange located on said inboard side with said second flange being integrally attached to said seat; and

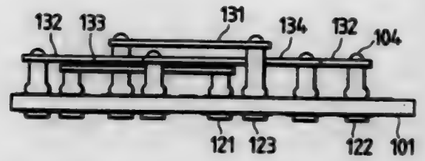
(i) an integral hinge in said wall located between said notch and the nearest of said openings on a side of said gripper jaws and opposite said cutout whereby said body can be collapsed by folding about said hinge to close said cutout and decrease the diameter sufficiently to be inserted in the opening of said panel.

5,442,142

LARGE-CURRENT CIRCUIT BOARD AND METHOD THEREFOR

Satoru Hayashi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 129,605
Claims priority, application Japan, Sep. 30, 1992, 4-261501; Mar. 19, 1993, 5-060209
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—250 **25 Claims**



1. A large-current board assembly comprising:

a circuit board defining a substantially planar surface;

a first plurality of fasteners positioned apart and secured to said circuit board, each said fastener extending an axial length from said planar surface and having at least a first supporting means disposed along said axial length;

a first plurality of busbars for electrically connecting at least a first group of said first plurality of fasteners, each busbar in said first plurality of busbars having a planar plate shape and being supported by said first supporting means;

a second plurality of fasteners positioned apart and secured to said circuit board, each said fastener extending an axial length from said planar surface and having at least a second supporting means disposed along said axial length;

a second plurality of busbars for electrically connecting at least a group of said second plurality of fasteners, each busbar in said second plurality of busbars having a planar plate shape and being supported by said second supporting means; and

wherein a first group of fasteners in said first plurality of fasteners has said first supporting means disposed along said axial length at a substantially similar first position and a first group of fasteners in said second plurality of fasteners has said second supporting means disposed along said axial length at a substantially similar second position, so that said first plurality of busbars connected to said first group of fasteners are disposed at a level with respect to said circuit board that is different from a level of said second plurality of busbars resulting in said first plurality of busbars being electrically insulated from said second plurality busbars.

5,442,143

CORE FOR ELECTRICAL CONNECTING SUBSTRATES AND ELECTRICAL CONNECTING SUBSTRATES WITH CORE, AS WELL AS PROCESS FOR THE PRODUCTION THEREOF

Walter Schmidt, Zürich, and Marco Martinelli, Neftenbach, both of Germany, assignors to Dyconex Patente AG, Zug, Switzerland

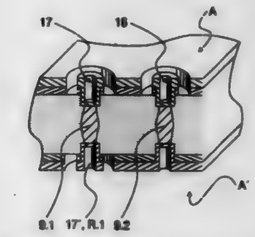
Filed Mar. 23, 1994, Ser. No. 216,717
Claims priority, application Switzerland, Apr. 16, 1993, 01163/93
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—262 **7 Claims**

1. A core for a substrate for a circuit board comprising the combination of

a substantially planar body of electrically insulating material having major surfaces on opposite sides;

first and second electrically conductive cover layers on said major surfaces; and

an array of electrically conductive elongated columns contained within said body, each column of said array having a central longitudinal axis substantially perpendicular to said major surfaces and having axially opposite ends



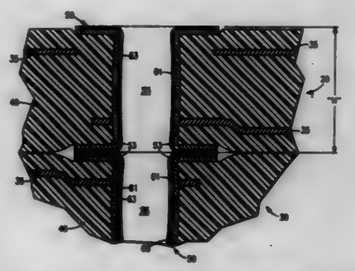
spaced inwardly from said cover layers, whereby said columns are electrically isolated from said cover layers and from each other.

5,442,144

MULTILAYERED CIRCUIT BOARD

William T. Chen, Endicott; Thomas P. Gall, Endwell; James R. Wilcox, Vestal, and Tien Y. Wu, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 112,499, Aug. 26, 1993, Pat. No. 5,359,767.
This application Aug. 31, 1994, Ser. No. 298,707
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—266 **7 Claims**



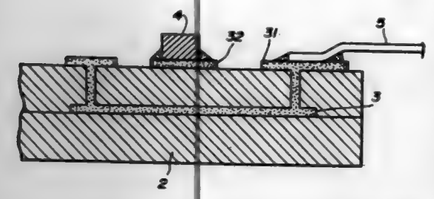
1. In a multilayered circuit board including at least two layered subassemblies each including at least one dielectric layer having opposing surfaces, electrically conductive wiring in the form of at least one conductive layer, and at least one conductive through-hole therein having a cylindrical portion and opposing land segments, the improvement wherein said layered subassemblies are aligned and engage one another, one of said land segments of said through-hole of one of said layered subassemblies engaging and being bonded to one of said land segments of said through-hole of another of said layered subassemblies, said bonded through-holes being of compressed shape such that the side walls of said cylindrical portions of said compressed through-holes are of substantially curved configuration.

5,442,145

INPUT/OUTPUT TERMINAL FOR ELECTRONIC CIRCUIT DEVICE

Ryuji Imai, and Toshikatsu Takada, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 12, 1993, Ser. No. 134,606
Claims priority, application Japan, Oct. 12, 1992, 4-298165
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—267 11 Claims



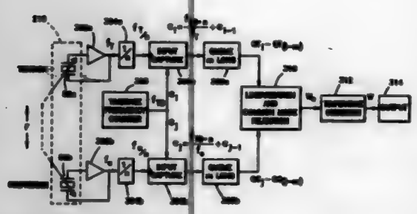
1. A terminal for an electrical circuit device, comprising:
a metal core;
a gold (Au) layer provided over said metal core; and
a nickel (Ni) layer having the thickness of 1.5 μm or less, provided under said gold (Au) layer.

5,442,146

COUNTING SCALE AND LOAD CELL ASSEMBLY THEREFOR

David Bell, Santa Rosa; Robert G. Allard, Healdsburg; Ronald A. Rodgers, Sebastopol; Victor E. Hipkiss, Sonoma, all of Calif., and Thomas H. Johnson, Winnebago, Minn., assignors to Weigh-Tronix, Inc., Fairmount, Minn.

Continuation-in-part of Ser. No. 863,162, Apr. 3, 1992, Pat. No. 5,313,023, and a continuation-in-part of Ser. No. 862,827, Apr. 3, 1992, Pat. No. 5,336,854. This application May 19, 1993, Ser. No. 64,551
Int. Cl.[6] G01G *3/14*
U.S. Cl. 177—210 FP 35 Claims



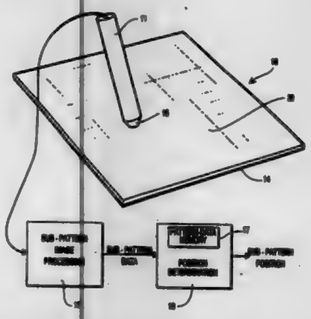
1. A load cell assembly comprising:
(a) a load cell capable of being subjected to an applied force;
(b) first and second transducers operatively mounted on the load cell, each transducer having a resonant frequency that varies with the applied force;
(c) means for driving the first and second transducers at their resonant frequencies, respectively, for providing first and second frequency signals; and
(d) means for providing a force value indicative of the applied force on the load cell comprising:
(i) converting means, operatively connected to receive the first and second frequency signals, for converting the first and second frequency signals to first and second values, respectively, wherein the converting means comprises a time base frequency counter and first and second input capture latches operatively connected to receive an output of the counter, wherein the first and second latches have gate inputs operatively connected to receive gating signals from the first and second frequency signals, respectively; whereby the first and second values provided by the converting means are representative of one or more periods of the first and second frequency signals, respectively:
(ii) means operatively connected to receive the first and second values for linearizing and rejecting common-mode effects therefrom to provide a linearized difference value; and
(iii) means operatively connected to receive the linearized difference value for rejecting temperature effects therefrom to provide the force value.

5,442,147

POSITION-SENSING APPARATUS

John Burns, and Sheelagh A. Lloyd, both of Bristol, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

PCT No. PCT/GB92/00594, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO92/17859, PCT Pub. Date Oct. 15, 1992
PCT Filed Apr. 3, 1992, Ser. No. 117,200
Claims priority, application United Kingdom, Apr. 3, 1991, 9106990; Oct. 3, 1991, 9120982
Int. Cl.[6] G08C *21/00*; G09G *1/00*
U.S. Cl. 178—18 57 Claims



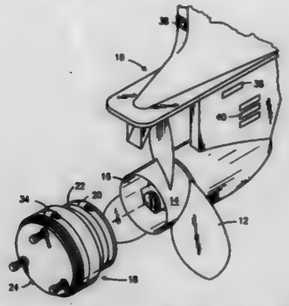
1. Position sensing apparatus comprising:
a pattern element with an arrangement of indicia that together present a two-dimensional windowing pattern, said two-dimensional windowing pattern having windowing property characteristics such any portion of said two-dimensional windowing pattern of predetermined minimum extent forms a corresponding unique sub-pattern is that is locatable within said two-dimensional windowing pattern for at least one orientation of said unique sub-pattern relative to said two-dimensional windowing pattern;
an indicator element moveable relative to said pattern element across said arrangement of indicia;
sub-pattern detector means including sensor means for sensing said indicia, such that for any one position of the indicator element the sensing means is operative to sense a portion of said two-dimensional windowing pattern which lies in the locality of said indicator element and is smaller in extent than said unique sub-pattern, the detector means being operative to process the output of the sensor means such that as the indicator element is moved over the two-dimensional windowing pattern, the sub-pattern detector means derives sub-pattern data representative of a said unique sub-pattern in proximity to said indicator element in a said at least one orientation of the unique sub-pattern relative to said two-dimensional windowing pattern; and
position-determining means including a memory for holding pattern data representative of said two-dimensional windowing pattern, the position-determining means being responsive to the sub-pattern data derived by said sub-pattern detector means to determine, by reference to said pattern data, a position of said indicator element relative to said pattern element.

5,442,148

EXHAUST MUFFLER FOR OUTBOARD MOTORS

Roy F. Hensler, Clearwater, Fla., assignor to Flush Muffler, Inc., Pinellas Park, Fla.

Filed May 31, 1994, Ser. No. 251,256
Int. Cl.[6] F01N *7/12*
U.S. Cl. 181—235 10 Claims



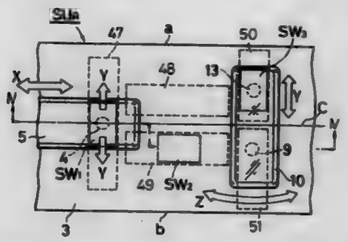
1. An exhaust muffler for an outboard motor which has its exhaust out through the hub of the propeller, comprising a propeller having a hub, an exhaust muffler connected to said propeller, said exhaust muffler including directing means for directing the engines exhaust back into said hub of said propeller and said exhaust muffler including securing means for securing said directing means to said propeller.

5,442,149

SWITCH APPARATUS FOR AUTOMOBILE

Hiroshi Sato, Tokyo, Japan, assignor to Toyo Denso Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 777,082, Oct. 16, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 144,484
Claims priority, application Japan, Oct. 17, 1990, 2-108752 U; Nov. 7, 1990, 2-116746 U
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—5 R 12 Claims



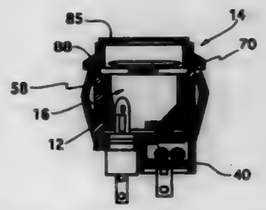
1. A combination of a casing and switch components for use as a right-hand and a left-hand switch unit arranged on opposite sides within an interior of the automobile comprising:
a casing having a width dimension and a length dimension, said length dimension having a central axis, said casing being substantially symmetrically shaped relative to said central axis for selective use as a right-hand switch and a left-hand switch;
a first aperture disposed substantially centrally along the length of said casing, said first aperture having a longitudinal length being longer relative to a width dimension with the longitudinal length extending along the length dimension of said casing and being positioned on a first side of said central axis;
a second aperture disposed substantially centrally along the length of said casing, said second aperture having a longitudinal length being longer relative to a width dimension with the longitudinal length extending along the length dimension of said casing and being positioned on a second side of said central axis, said second aperture being substantially the same shape as said first aperture, said first and second apertures being arranged substantially symmetrically relative to said central axis;
a third aperture disposed adjacent to and on a first side of said first and second apertures, said third aperture extending along the width dimension and intersecting and extending substantially symmetrically across said central axis, said third aperture having a length being longer relative to a width dimension with the length being arranged to be substantially perpendicular to said central axis;
a fourth aperture disposed adjacent to and on a second side of said first and second apertures, said fourth aperture extending along the width dimension and being disposed on said first side of said central axis, said fourth aperture having a length being longer relative to a width dimension with the length being arranged to be substantially perpendicular to said central axis;
a fifth aperture disposed adjacent to and on a second side of said first and second apertures, said fifth aperture extending along the width dimension, being aligned with said fourth aperture and being disposed on said second side of said central axis, said fifth aperture having a length being longer relative to a width dimension with the length being arranged to be substantially perpendicular to said central axis said fifth aperture being substantially the same shape as said fourth aperture, said fourth and fifth apertures being arranged substantially symmetrically relative to said central axis; and
switch component means being arranged only within said first, third and fifth apertures to function as a left-hand switch unit for the left-hand side of the interior of the automobile and only within said second, third and fourth apertures to function as a right-hand switch unit for the right-hand side of the interior of the automobile, said switch components being selectively operated in said first and second apertures to be actuated in a longitudinal direction and being selectively operated in said third, fourth and fifth apertures in a transverse direction relative to said central axis.

5,442,150

PIEZO ELECTRIC SWITCH

Ralph G. Ipcinski, 295 Silverlake Rd., Hollis, N.H. 03049

Filed Sep. 7, 1993, Ser. No. 116,495
Int. Cl.[6] H01H *57/00*
U.S. Cl. 200—181 1 Claim



1. A piezo electric switch including, a housing, a lamp mounted within the housing, a piezo element and a plunger, the housing comprising a base having a first edge, a second edge, a third edge and a fourth edge, a first side extending integrally from the first edge, a second side extending integrally from the

second edge and in spaced parallel relation to the first side, third and fourth sides, extending from the respective third and fourth edges and wherein each third and fourth side is connected to the first and second sides whereby the base and the first, second, third and fourth sides define a box like configuration of the housing, the first, second, third and fourth sides each having an inner surface and a top portion spaced from the base, an interior circumferential shoulder extending integrally from the inner surface of the first, second, third and fourth sides and positioned on a plane at a distance from the top portion within the box like configuration of the housing, a first circular opening formed through the base for receiving the lamp and a second opening of larger diameter than a diameter of the first opening is formed through the base adjacent the first opening and separated therefrom, an integral rectangular subhousing extending from the base, positioned adjacent the second opening and terminating on a plane adjacent a termination of the first opening, a first pair of slots are centrally formed through respective first and second sides adjacent an external shoulder, a second pair of slots are formed on respective opposite sides of the subhousing and adapted to receive a circuit board the plunger integrally formed of an upper part and a lower part, the lower part comprising a base portion forming a cavity generally circular in configuration and having an aperture formed therethrough for receiving the lamp, a tubular wall extending integrally from the base portion, the tubular wall has an upper end and a lower end and is open at its upper end and partly closed by the base portion at its lower end, an actuator extending integrally from an external surface of the base portion in close proximity to the aperture, the upper part comprises a rectangular second base portion, first, second, third and fourth walls extending from a periphery of the second base portion to provide a box like configuration having a circular inner surface and open at the top, a circular aperture formed through a lower end of the second base portion and opening into the cavity formed by the lower part, an inside diameter of the upper part is greater than an inside diameter of the lower part, the second base portion forms a shoulder portion with the tubular wall, tabs extending centrally from the shoulder portion of the walls, the piezo element mounted in the sub housing, a gasket circumscribes a lower part of the plunger, and the plunger mounted within the housing with the shoulder portion abutting the interior circumferential shoulder, the tabs passed through the first slots to thereby hold the housing and the plunger together and the actuator positioned above the second opening and positioned to contact the piezo element upon depression of the plunger

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5,442,151

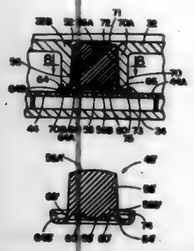
BUTTON WELL COMPRESSION SEAL ASSEMBLY

Ward E. Strang, Fairfield, and Carol Z. Howard, Oxford, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 27,888, Mar. 8, 1993, abandoned. This application Apr. 19, 1994, Ser. No. 229,855

Int. Cl.[6] H01H *13/06*

U.S. Cl. 200—302.2 **6 Claims**



1. In a device including a housing having an interior cavity, an outer cover enclosing a portion of said interior cavity, said outer cover having an exterior surface and an annular portion defining an opening through said outer cover from said exterior surface thereof into said interior cavity, and a stationary surface disposed in said interior cavity and spaced from said annular portion of said outer cover, a compression seal assembly disposed in said interior cavity of said housing between said stationary surface and said exterior surface of said outer cover, said compression seal assembly comprising:

(a) a stationary elongated annular wall disposed in said interior cavity in alignment with said opening, said annular wall having an outer end attached to said annular portion of said outer cover, said annular wall extending therefrom in said interior cavity toward said stationary surface therein, said annular wall also having an inner end spaced from said stationary surface, said annular wall further having an annular interior surface extending between said outer and inner ends thereof and defining an interior passageway extending from said opening in said outer cover toward said stationary surface, said annular wall still further having an annular exterior surface spaced outwardly from and surrounding said annular interior surface;

(b) a push button having a body portion extending through said passageway of said annular wall and disposed above said stationary surface and below said exterior surface of said outer cover, said body portion of said push button having a lower end disposed above said stationary surface and an upper end disposed below said exterior surface of said outer cover and exposed through said opening of said outer cover where said push button can be touched by a user;

(c) an annular flange flexibly attached to said lower end of said body portion of said push button and supported above and upon said stationary surface so as to mount said push button for reciprocal movement through and within said passageway relative to said stationary annular wall and toward and away from said stationary surface located below said push button, said annular flange being fabricated of flexible compressible material and being contacted and compressed by said inner end of said annular wall against said stationary surface to define a hermetic seal surrounding said lower end of said body portion of said push button;

(d) said inner end of said annular wall having an an edge surface extending between said interior and exterior surfaces of said annular wall and being spaced a predetermined distance above said stationary surface;

(e) said annular flange being disposed upon said stationary surface and extending between said edge surface of said inner end of said annular wall and said stationary surface from an inner peripheral portion of said annular flange disposed adjacent to said interior surface of said annular wall to an outer peripheral portion of said annular flange disposed slightly beyond said exterior surface of said annular wall; and

(f) an upstanding peripheral rim attached on said outer peripheral portion of said annular flange and projecting upwardly therefrom and surrounding said exterior surface of said annular wall, said peripheral rim terminating closer to said inner end than to said outer end of said annular wall so as to define a socket extending about said inner end and spaced below said outer end of said annular wall facilitating proper alignment of said body portion of said push button within said passageway defined by said annular wall.

5,442,152

COMPUTER KEY SWITCH

Chih-Lun Huang, Taipei Hsien, Taiwan, assignor to Focus Electronic Co., Ltd., Taipei, Taiwan

Filed Sep. 28, 1994, Ser. No. 313,881

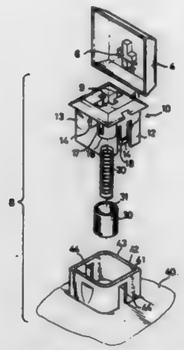
Int. Cl.[6] H01H *13/70*

U.S. Cl. 200—345 **3 Claims**

1. A key switch adapted to be mounted on a keyboard for engaging a contact of a first circuit with a contact of a second circuit through an aperture defined in a film insulator sandwiched between the first circuit and the second circuit wherein the key switch comprises:

a frame which is adapted to be mounted on the keyboard and defines two vertical slots;

a slidable member including a plate, two hooks projecting downwardly from the plate and each including a barb for engaging with one of the vertical slots and a hollow cylinder projecting downwardly from the plate and defining two vertical slots;



a cup including two barbs projecting radially inwardly therefrom wherein the barbs formed on the cup are engageable in the slots defined in the hollow cylinder when the hollow cylinder is inserted in the cup;

a spring received in the hollow cylinder and the cup for biasing the cup from the hollow cylinder;

an inverted funnel-shaped resilient member with a closed upper end for supporting the cup, open lower end adapted to be mounted on the first circuit and a boss projecting downwardly from the closed upper end for engaging the contact of the first circuit with the contact of the second circuit upon depression of said slideable member.

5,442,153

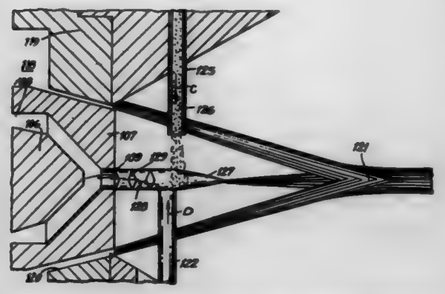
HIGH VELOCITY ELECTRIC-ARC SPRAY APPARATUS AND METHOD OF FORMING MATERIALS

Daniel R. Marantz; David R. Marantz, both of 25 Cedar La., Sands Point, N.Y. 11050, and Keith A. Kowalsky, 3012 Bond Dr., Merrick, N.Y. 11566

Division of Ser. No. 576,632, Aug. 31, 1990, Pat. No. 5,296,667. This application Mar. 10, 1994, Ser. No. 209,160

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.47 **11 Claims**



1. A method for forming matrix metal composite utilizing a transferred-arc-plasma torch assembly which forms a transferred-arc column and plasma jet comprising the steps of

feeding a metal wire into said transferred-arc column at an angle such that no portion of said metal wire is closer to said transferred-arc-plasma torch assembly than the leading edge of said metal wire during operation as said leading edge of said metal wire intersects a plasma flow:

creating an electrical potential difference between said metal wire leading edge and said transferred-arc-plasma torch assembly; and

feeding a powder downstream of said metal wire in the plasma jet path.

5,442,154

LASER BEAM MACHINE SAFETY DEVICE AND METHOD OF USE

Michel Philippe, Cestas, and Benoit Soulignac, Leognan, both of France, assignors to Lectra Systems, Cestas, France

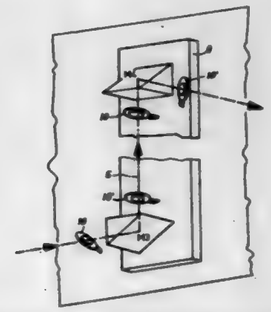
PCT No. PCT/FR93/00423, § 371 Date Dec. 10, 1993, § 102(e) Date Dec. 10, 1993, PCT Pub. No. WO93/22095, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1992, Ser. No. 162,098

Claims priority, application France, Apr. 30, 1992, 92 05414

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.62 **8 Claims**



1. A safety device for use in an operating network for a laser beam monitoring signal which network monitors whether a laser beam is following a determined optical path, said safety device including at least one removable signal interrupter element constituted at least in part by a conductor for said monitoring signal, said conductor surrounding the beam following the determined optical path when said signal interrupter element is disposed along the optical path, said conductor being formed of a material that interacts with the beam in the event of the beam deviating from the determined path and into contact with the conductor, with the interaction causing the monitoring signal to be interrupted so as to result in beam interruption, and said conductor being constituted by at least one printed circuit that is coupled to an electrical circuit of the operating network, and said conductor also being constituted by a series of concentric tracks.

5,442,155

WELDING POSITION DETECTOR WITH COOLING AND CLEANING MEANS

Ryo Nihei, Fujiyoshida; Yasuo Sasaki, and Takahiro Hase, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Sep. 8, 1994, Ser. No. 302,415

Claims priority, application Japan, Sep. 8, 1993, 5-223470

Int. Cl.[6] B23K *9/095*

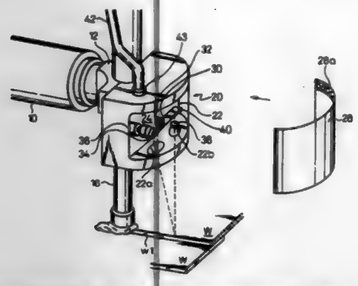
U.S. Cl. 219—130.01 **4 Claims**

1. A cooling and cleaning means adapted for being incorporated in a welding position detector having a casing means

encasing a sensor unit emitting a laser beam for detection to thereby illuminate a welded area of a welded object, via a protective window means of said casing means, and receiving the laser beam reflected by the welded area of the welded object, via said protective window means to thereby detect the welded area of the welded object, said cooling and cleaning means removing heat from said sensor unit by using a single flow of cooling gas under pressure and protecting an outer face of said protective window means of said welding position detector from contamination, said cooling and cleaning means for said welding position detector comprising:

a single gas introducing means for introducing the single flow of pressurized cooling gas into a hermetically sealed chamber defined in said casing means of said welding position detector;

a gas discharging means for permitting the cooling gas under pressure to be discharged into said hermetically sealed



chamber in the form of a convectional flow of gas circulating around said sensor unit to thereby remove heat from said sensor unit; and,

a check valve means for permitting the cooling gas under pressure to be delivered from said hermetically sealed chamber of the welding position detector toward the outside of the casing, said check valve means being arranged in said casing means and having a gas inlet opening into said hermetically sealed chamber for introducing the cooling gas under pressure and a gas outlet opening toward an outer face of said protective window of said welding position detector for spouting the cooling gas under pressure in the form of a laminar flow of pressurized cleaning gas streaming on said outer face of said protective window means to thereby form a gas curtain protecting said outer face of said window means from contamination.

5,442,156

HEATING APPARATUS FOR COMPOSITE STRUCTURE REPAIR

Everett A. Westerman, Auburn, and Phillip E. Roll, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 682,537, Apr. 9, 1991. This application Feb. 16, 1993, Ser. No. 18,466

Int. Cl.[5] H05B *3/78*

U.S. Cl. 219—243 **20 Claims**

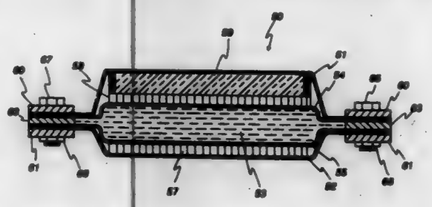
1. Apparatus for applying heat at temperatures above 300° F. to a repair site comprising:

a pliable, sealed bladder in contact with said repair site;

a thermally-conductive fluid in said bladder;

an electrical heater immersed in said thermally conductive fluid for heating said thermally-conductive fluid to temperatures above 300° F., said electrical heater being substantially uniformly disposed within said bladder to permit circulation of the thermally-conductive fluid around said electrical heater; and

said heated thermally-conductive fluid maintains said repair site at substantially even temperatures by conduction and convection within said thermally-conductive fluid[1]



wherein said thermally conductive fluid comprises beeswax.

5,442,157

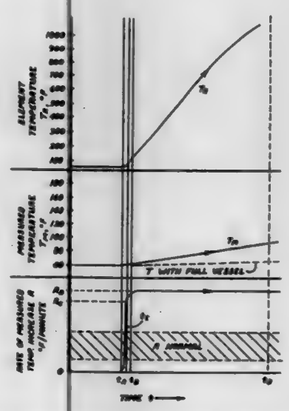
ELECTRONIC TEMPERATURE CONTROLLER FOR WATER HEATERS

Barry N. Jackson, Woodbury, Minn., assignor to Water Heater Innovations, Inc., Eagan, Minn.

Filed Nov. 6, 1992, Ser. No. 972,964

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—492 **4 Claims**



1. A monitoring apparatus for a water heater having a heating means and a closed pressure vessel for containing heated water, comprising:

temperature sensing means for sensing the temperature of the water in the vessel as a function of time;

means for calculating a rate of change in the sensed temperature;

control means for controlling said heating means based on the calculated rate of change in the sensed temperature;

means for determining a "dry-fire" condition corresponding to an abnormal time rate of sensed temperature change;

means for shutting off the water heater when a calculated time rate of change in the sensed temperature attains a preset value corresponding to a "dry-fire" condition; and

a separate heating circuit external said vessel for recirculating water from said vessel, wherein said heating means comprises a fuel fired heat exchanger means in said separate circuit, and wherein said means for determining a "dry-fire" condition comprises presettable control means for determining an abnormal time rate of change in sensed temperature of said water in said vessel lower than the normal rate of temperature change.

5,442,158

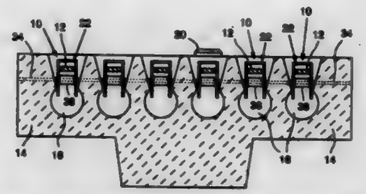
HEATING ELEMENT SUPPORT CLIP

William C. Sawyer, Salida, Calif., assignor to United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1993, Ser. No. 156,753

Int. Cl.[6] H05B *3/26, 3/66*

U.S. Cl. 219—542 **16 Claims**



1. A heating element support clip for supporting a heating element in a channel in a heater base, comprising:

a substantially U-shaped member characterized by two substantially parallel portions each having an end connected to opposite ends of a base portion, the parallel portions each having a hole therethrough and being substantially perpendicular to the base portion;

a retaining pin extending through the holes in the parallel portions for retaining the U-shaped member in a channel in a heater base; and

wherein, the holes in the parallel portions are positioned so that a heating element may be confined between the base portion, the parallel portions, and the retaining pin.

5,442,159

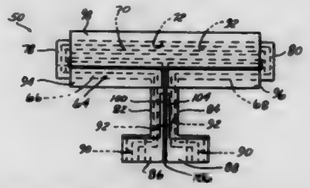
METHOD OF INDUCTION BONDING JUXTAPOSED STRUCTURAL MEMBERS

Thomas J. Shank, Warren, Mich., assignor to Robotron Corporation, Southfield, Mich.

Division of Ser. No. 053,102, Apr. 26, 1993, Pat. No. 5,365,041. This application Jun. 15, 1994, Ser. No. 260,357

Int. Cl.[6] H05B *6/40*

U.S. Cl. 219—633 **19 Claims**



1. A method of bonding a first metal sheet to a second metal sheet comprising the steps of:

disposing an uncured, heat curable bonding material on one surface of the first metal sheet in a predetermined location with respect to a perimeter edge of the first metal sheet;

disposing the second metal sheet in a juxtaposed position with respect to the first metal sheet in contact with the bonding material, with a perimeter edge of the second metal sheet juxtaposed with the perimeter edge of the first metal sheet;

disposing induction heater means adjacent one surface of one of the first and second metal sheets and adjacent the juxtaposed perimeter edges of the first and second metal sheets; and

inducing heat from the induction heater means to the bonding material from one surface of one of the first and second metal sheets and from the juxtaposed perimeter edges of the first and second metal sheets to cure the bonding material between at least the first and second metal sheets and along the juxtaposed edges of the first and second metal sheets in proximity with the induction heater means.

5,442,160

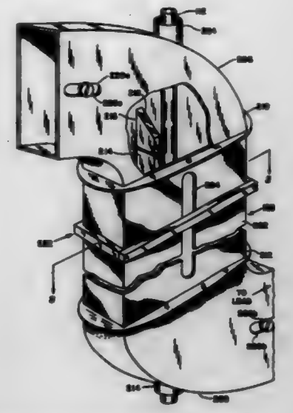
MICROWAVE FIBER COATING APPARATUS

Harold D. Kimrey, Jr.; William B. Snyder, Jr., both of Knoxville, Tenn., and Richard C. Kratenat, Belmont, Mass., assignors to Avco Corporation, Providence, R.I.

Filed Jan. 22, 1992, Ser. No. 824,254

Int. Cl.[6] H05B *6/70*

U.S. Cl. 219—690 **30 Claims**



1. Apparatus for heating a fiber comprising:

a) a source of microwave energy, said microwave energy having an electric field associated therewith; and said electric field situated perpendicular to the fiber;

b) an applicator having walls defining a cavity adapted to have the fiber pass therethrough, said applicator coupled to the source of microwave energy;

c) means for concentrating a maximum electric field on the fiber comprising an element projecting into the cavity; and

d) means for tuning the electric field in a longitudinal direction along the fiber to yield a uniform electric field along the fiber.

5,442,161

OVEN HAVING VACUUM HEAT INSULATING WALL AND METHOD FOR ASSEMBLING SAME

Haruo Matsushima, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 29, 1993, Ser. No. 128,192

Claims priority, application Japan, Sep. 30, 1992, 4-261176

Int. Cl.[6] H05B *6/76*

U.S. Cl. 219—756 **24 Claims**

1. A high-frequency wave oven comprising:

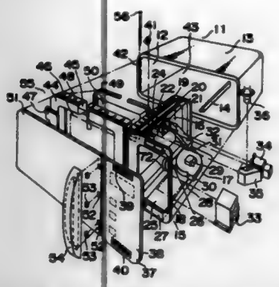
a metal container having a double wall construction comprising an inner casing and an outer casing with a vacuum space formed between said inner casing and said outer casing, said metal container having a rear side and an open front side, said metal container defining therewithin a container chamber;

a position regulating member mounted in said container chamber;

a metallic partitioning plate removably mounted in said metal container at a position determined by said position regulating member, said partitioning plate dividing said container chamber into a heating chamber and a mechanical chamber;

a door openably mounted to said open front side of said metal container;

a heater mounted in said container chamber; and



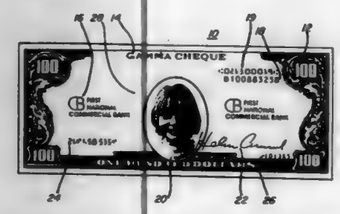
a high frequency wave heating source mounted in said mechanical chamber for supplying high frequency waves through said partitioning plate and into said heating chamber.

5,442,162

TRAVELER'S CHECK AND DISPENSING SYSTEM THEREFOR

Jack Armel, Sarasota, Fla., assignor to The Foundation For Physical Sciences, Sarasota, Fla.

Filed Apr. 5, 1994, Ser. No. 223,229
Int. Cl.[6] G06F *7/08*
U.S. Cl. 235—381 18 Claims



1. A system for dispensing traveler's checks which identify on their face the individual owner of the account number under which the checks are issued, comprising:

means for prerecording and storing under an account number a representation of the portrait and signature of an individual assigned said account number;

means for storing blank traveler's checks, each of said checks being preprinted with a serial number and issuing bank identification;

means for an individual user of the system to enter a desired monetary amount of traveler's checks and an account number;

means for comparing said entered account number with assigned account numbers to generate an accept signal when the comparison is favorable;

means for printing on said blank traveler's checks in the desired monetary amount said representation of the portrait and signature stored under said entered account number; and for dispensing the so printed traveler's checks in the desired monetary amount, said printing and dispensing means being responsive to said accept signal; and

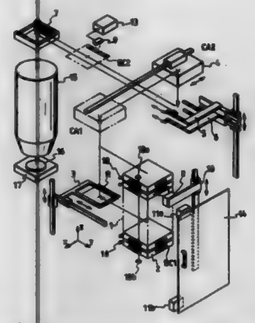
means for recording and storing the serial numbers of the checks dispensed, the entered account number and the date of issuance of said checks.

5,442,163

EXPOSURE APPARATUS

Kanefumi Nakahara; Masao Nakajima, both of Yokohama, and Toshinori Tsuruya, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 25, 1994, Ser. No. 249,268
Claims priority, application Japan, Jun. 29, 1993, 5-159687
Int. Cl.[6] G06F *15/20, 15/24*
U.S. Cl. 235—381 12 Claims



1. An apparatus for processing a plurality of masks, comprising:

case storing means for removably holding a plurality of cases for containing said respective plurality of masks to be processed;

mask processing means for drawing said mask from selected one of said cases in said case storing means and processing said selected mask;

containing means with an openable door for containing said case storing means and said mask processing means;

said cases being inserted in said case storing means or taken out therefrom by opening said door;

information reading means for reading case information patterns given to respective specific positions of said cases with said cases contained in said case storing means;

shifting means for relatively shifting said information reading means and said case storing means along the aligning direction of said plurality of cases such that said information reading means faces said respective specific positions;

detection signal outputting means for detecting whether there is hindrance for said shifting means to be driven and outputting a detection signal; and

control means for starting or stopping the operation of said shifting means based on said detection signal.

5,442,164

BAR CODE READER FOR READING TWO-DIMENSIONAL BAR CODES BY USING LENGTH INFORMATION DERIVED FROM A SENSED SIGNAL

Yutaka Adachi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,679
Claims priority, application Japan, Sep. 2, 1992, 4-234734
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—463 5 Claims

1. A bar code reader comprising:

a sensor for sensing a two-dimensional bar code, said sensor including a linear sensor arranged in a direction of an array of bars and spaces of the two-dimensional bar code and moved relative to the two-dimensional bar code in a direction perpendicular to the direction of the array of bars and spaces of the two-dimensional bar code, said linear sensor sensing each row of the two-dimensional bar code a plurality of times;

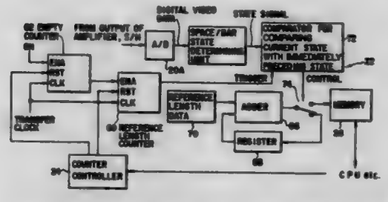
replacing means for replacing a sensed signal of the bar code

in a direction of an array of bars and spaces, which is supplied successively from said sensor, with length information of the bars and the spaces, said replacing means including row replacing means for replacing the sensed signal of the two-dimensional bar code in the direction of the array of bars and spaces, which is supplied successively from said linear sensor, with length information of the bars and the spaces once for each row of the two-dimensional bar code;

a memory for storing the length information output from said replacing means as data to be decoded; and

said row replacing means includes:

length information replacing means for replacing the sensed signal of the two-dimensional bar code in the direction of the array of bars and spaces, which is supplied successively from said linear sensor, with the length information of the bars and the spaces;



holding means for holding the length information of one row replaced by said length information replacing means until said length information replacing means finishes replacement of the next row;

comparing means for comparing the length information of one row replaced by said length information replacing means with the length information of one row held by said holding means; and

means for storing the length information of one row held by said holding means into said memory only when the comparison result of said comparing means indicates that the two compared length information do not agree with each other.

5,442,165

SECURE IC CARD SYSTEM WITH REUSABLE PROTOTYPE IC CARD

Shiro Atsumi; Toshinari Kondo, and Yoshihiro Shona, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

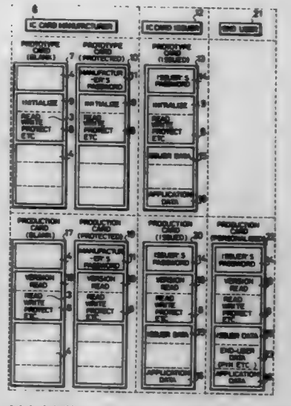
Filed Oct. 14, 1993, Ser. No. 136,038
Claims priority, application Japan, Oct. 15, 1992, 4-277256
Int. Cl.[6] G06K *19/06, 5/00*
U.S. Cl. 235—492 21 Claims

21. A set of IC cards, comprising:

a prototype IC card programmed to execute a standard set of commands for reading and writing data in said prototype IC card, and an initialize command for initializing said data; and

at least one production IC card programmed to execute said standard set of commands, which read and write data in said production IC card, and programmed to execute a version read command, which reads a version number distinguishing said production IC card from said prototype IC card, but not programmed to execute said initialize command;

wherein execution of said initialize command and at least some of said standard set of commands is initially conditional on entry of a correct password; and



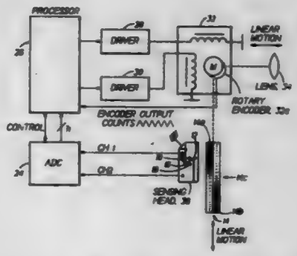
wherein said initialize command initializes said password to a preselected value.

5,442,166

LINEAR ABSOLUTE POSITION SENSOR

Joerg W. Hollman, Midland Ontario, Canada, assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 15, 1993, Ser. No. 152,153
Int. Cl.[6] G01D *5/347*; G01B *11/00*
U.S. Cl. 250—201.1 6 Claims



1. A closed loop optical component positioning system for controllably positioning at least one optical component along a translation axis of linear motion, said apparatus comprising:

drive means coupled to said at least one optical component for controllably positioning said at least one optical component along the translation axis of linear motion;

control means having a control output coupled to said drive means, said drive means operating in accordance with said control output; and

position sensor means for sensing a position of said at least one optical component along the translation axis of linear motion, said position sensor means comprising,

a linear scale that is coupled to said at least one optical component for being translated therewith along the translation axis of linear motion, the scale having an optical characteristic that spatially varies within a first region from a low value to a high value going from a first end of the scale to a second end, and that spatially varies within a second region from a high value to a low value going from the first end to the second end, said linear scale having a long axis that passes through said

first and second ends and that is generally parallel to the translation axis of linear motion;

a plurality of optical sources individual ones of which are disposed relative to a said scale for illuminating a portion of one of the regions; and

a plurality of optical detectors individual ones of which are disposed relative to said scale for detecting an amount of illumination that results from an interaction of the illumination, from an associated one of said plurality of optical sources, with the optical characteristic within the region illuminated by the associated optical source, each of said plurality of optical detector means having an output coupled to said control means for expressing thereto the detected amount of illumination; wherein

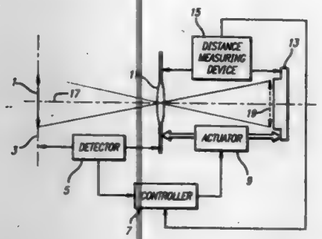
said control means is responsive to said outputs of said plurality of detector means for generating said control output in accordance therewith to controllably position said at least one optical component at a desired point along the translation axis.

5,442,167

METHOD AND APPARATUS FOR AUTOMATIC IMAGE FOCUSING

Craig J. Cornelius, Woodinville, and Kevork Arackellian, Everett, both of Wash., assignors to Intermec Corporation

Filed Apr. 16, 1993, Ser. No. 48,825
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.2 **60 Claims**



1. An apparatus for automatically focusing an image of an object onto an image plane located perpendicular to an optical axis defined by said object and said image plane which comprises:

(a) a means for focusing said image of said object onto an image plane, said focusing means fixed on the optical axis;

(b) movable means for detecting said image;

(c) a means for determining the position of said object along said optical axis and feeding this information to a controller means for determining the location of said image

(d) means connected to said movable detecting means for controlling the movement of said movable detecting means substantially along said optical axis;

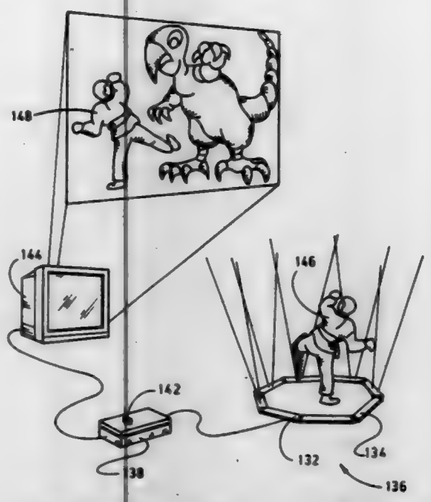
(e) said controller means for determines the amount of movement control that will be applied to said movable detecting means by said movement controlling means in an open loop fashion.

5,442,168

DYNAMICALLY-ACTIVATED OPTICAL INSTRUMENT FOR PRODUCING CONTROL SIGNALS HAVING A SELF-CALIBRATION MEANS

Asaf Gurner, Tel-Aviv, and Oded Y. Zur, Netanya, both of Israel, assignors to Interactive Light, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 776,669, Oct. 15, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,058
Claims priority, application Israel, Feb. 19, 1992, 101016
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—221 **40 Claims**



1. A self-calibratable controller for controlling a device upon detecting an object in an environment, comprising:

a) activatable radiation means for sensing radiation in the environment and generating an output indicative of the sensed radiation; and

b) control means responsive to the output of the activatable radiation means and having a regulatable sensitivity, said control means including:

i) self-calibration means for calibrating the controller to operate in the environment, including means for activating the radiation means to sense radiation in the environment in a self-calibration state in which the object is absent from the environment;

ii) means for determining a reference paramenter indicative of the radiation sensed in the self-calibration state;

iii) operating means for maintaining the radiation means activated to sense radiation in the environment in an operating state in which the object is present in the environment;

iv) said determining means being further operative for determining a sensing paramenter indicative of the radiation sensed in the operating state;

v) means for comparing the reference and sensing parameters, and for responsively generating an output control signal to control the device; and

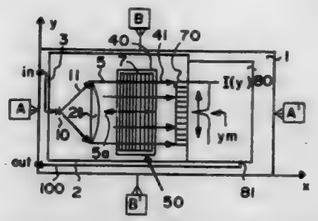
vi) means for regulating the sensitivity of the control means to the output of the radiation means during the self-calibration state.

5,442,169

METHOD AND APPARATUS FOR DETERMINING A MEASURING VARIABLE BY MEANS OF AN INTEGRATED OPTICAL SENSOR MODULE

Rino E. Kunz, Steinmaur, Switzerland, assignor to Paul Scherrer Institut, Villigen, Switzerland

PCT No. PCT/CH92/00078, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO92/19976, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 22, 1992, Ser. No. 958,121
Claims priority, application Switzerland, Apr. 26, 1991, 1254/91
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.21 **45 Claims**



1. A method for determining the value of one or more variables to be measured by means of an integrated optical sensor module, comprising the steps of:

providing at least one guided wave in at least one optical waveguide integrated in said sensor module;

interacting at least one of said guided waves with at least one measuring variable in at least one sensor field arranged integrated in said sensor module to receive said at least one of said guided waves;

defining the value of at least one module parameter by the action of the measuring variable on the guided wave;

converting the guided wave into at least one modified guided wave by the action of the measuring variable on the guided wave;

analyzing said modified guided wave in at least one analyzer integrated in the sensor module to ascertain a value at least one output variable corresponding to the measuring variable; and

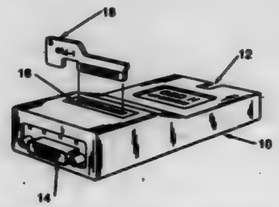
making available said value of said at least one output variable in at least one information field integrated in the sensor module.

5,442,170

PROGRAMMABLE CABLE ADAPTOR FOR CONNECTING DIFFERENT AUTOMOBILE COMPUTERS TO DIAGNOSTIC EQUIPMENT

Keith A. Kreft, Cupertino, and Karl F. Heinrich, San Jose, both of Calif., assignors to Balco, Incorporated, San Jose, Calif.

Filed Apr. 15, 1994, Ser. No. 228,445
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—229 **26 Claims**



1. A programmable cable adaptor comprising:

an input connector means having a plurality of input pins/sockets;

an output connector means having a plurality of output pins/sockets;

key receptacle means having a key-receiving aperture and a first plurality of coupling means disposed along at least one side of said aperture and electrically connected to at least some of said input pins/sockets, and a second plurality of coupling means disposed along at least one side of said aperture and connected to at least some of said output pins/sockets; and

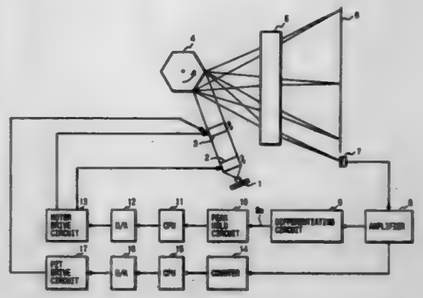
key means having a plurality of discrete communicating elements configured to link selected ones of said first coupling means to selected ones of said second coupling means such that selected output pins/sockets are communicatively connected to selected input pins/sockets when said key means is disposed within said aperture.

5,442,171

OPTICAL SYSTEM INCLUDING PROVISIONS FOR CORRECTING SCANNING BEAM SPOT DISPLACEMENTS DUE TO CHANGING AMBIENT CONDITIONS

Susumu Anzai, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 191,480
Claims priority, application Japan, Feb. 10, 1993, 5-044378
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—235 **3 Claims**



1. A scanning optical system for directing a beam of light from a light source onto a surface to be scanned by causing the beam of light to scan and converge onto the surface to be scanned by a deflector and a lens system, said scanning optical system comprising:

a beam spot detector disposed on an extension of the surface to be scanned and having a mask with a side which the scanning beam of light intersects substantially perpendicularly and a side which the scanning beam of light intersects obliquely;

means for detecting conditions of convergence of the beam of light in a main scanning direction and in an auxiliary scanning direction from peak values of a differentiated waveform of a detected output from the beam spot detector;

means for automatically adjusting a diameter of the beam of light based on focus adjusting signals outputted from said light beam convergence condition detecting means;

means for detecting a displacement in the auxiliary scanning direction of the beam of light from a width of the detected output; and

means for automatically correcting the displacement in the auxiliary scanning direction based on a correction signal outputted form said displacement detecting means,

wherein the conditions of convergence and the displacement

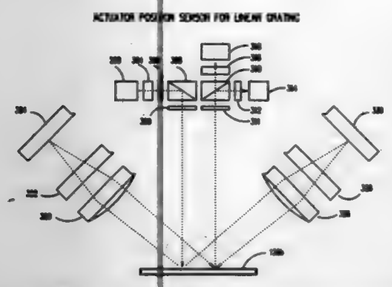
in the auxiliary scanning direction of the beam of light are detected using the same beam spot detector.

5,442,172

WAVEFRONT RECONSTRUCTION OPTICS FOR USE IN A DISK DRIVE POSITION MEASUREMENT SYSTEM

Wen-Wei Chiang, San Jose, Calif., and Chih-Kung Lee, Taipei, Taiwan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1994, Ser. No. 250,198
Int. Cl.[6] H01J 3/14
U.S. Cl. 250—237 G 17 Claims



1. A wavefront reconstruction optical system for use with a reflective diffraction grating, comprising:

a first spherical lens positioned to receive light diffracted in a first off-axis direction from said reflective diffraction grating;

a first reflector positioned to reflect light from said first spherical lens back to said first spherical lens, said first reflector located on the opposite side of said first spherical lens from said reflective diffraction grating;

a second spherical lens positioned to receive light diffracted in a second off-axis direction from said reflective diffraction grating, said second off-axis direction being on the opposite side of said reflective diffraction grating axis from said first off-axis direction; and

a second reflector positioned to reflect light from said second spherical lens back to said second spherical lens, said second reflector located on the opposite side of said second spherical lens from said reflective diffraction grating.

5,442,173

METHOD AND SYSTEM FOR REAL-TIME MONITORING OF EARTH FORMATION FRACTURE MOVEMENT

Peter D. Wraight, Missouri City, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

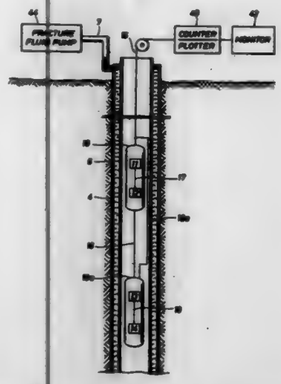
Filed Mar. 4, 1994, Ser. No. 206,983
Int. Cl.[6] G01V 5/12
U.S. Cl. 250—260 32 Claims

1. A method for real time monitoring of an earth formation fracture location during the fracturing of said formation comprising the steps of:

(a) injecting a radio-active tracer element into an earth formation during the fracturing of said formation;

(b) continually detecting and counting gamma-rays emitted by the tracer element;

(c) monitoring tracer element movement in an earth formation fracture by continually maintaining a current count of detected gamma-rays generated by said tracer element; and



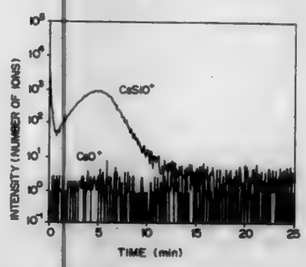
(d) simultaneously with step (c), determining formation fracture height and vertical depth from the movement of the tracer element.

5,442,174

MEASUREMENT OF TRACE ELEMENT CONCENTRATION DISTRIBUTION, AND EVALUATION OF CARRIERS, IN SEMICONDUCTORS, AND PREPARATION OF STANDARD SAMPLES

Yuji Kataoka, and Yoko Toda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 19, 1993, Ser. No. 137,766
Claims priority, application Japan, Oct. 23, 1992, 4-285783; Aug. 24, 1993, 5-209658
Int. Cl.[6] G01N 23/225
U.S. Cl. 250—282 5 Claims



1. A measurement method for concentration analysis of a trace element existing in a solid in a planar direction and/or a depth-wise direction, comprising:

irradiating an ion containing an alkali metal element to the surface of said solid as an ion beam;

detecting a three-component atom composite ion comprising said alkali metal ion irradiated, an object element and a base material element from among particles emitted from the surface of said solid due to sputtering by mass separation; and

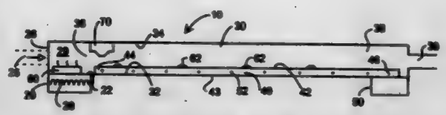
measuring a concentration distribution in the planar direction by displaying an intensity distribution of said three-atom composite ion as a two-dimensional image, or measuring the concentration distribution in the depth-wise direction by displaying the intensity of said three-atom composite ion with a sputtering time.

5,442,175

GAS EVOLUTION COMPONENT ANALYSIS

Robert Dawson, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 29, 1994, Ser. No. 315,094
Int. Cl.[6] H01J 49/04
U.S. Cl. 250—288 16 Claims



1. An apparatus for analyzing chemical compounds on a surface, comprising:

a heater component for volatilizing the chemical compounds from the surface;

condensing surface having a hot end and a cold end wherein said condensing surface is adapted for causing said volatilized chemical compounds to flow along said condensing surface so as to sequentially condense said chemical compounds thereon; and

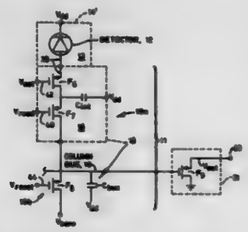
an exciter/analyzer directed toward said condensing surface for sequentially analyzing said condensed chemical compounds.

5,442,176

INFRARED DETECTOR ARRAY

Robert A. Eckel, Jr., Andover; Ronald R. Kusner, Harvard, and Daniel Y. Ang, Quincy, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 6, 1993, Ser. No. 132,516
Int. Cl.[6] H01L 27/146
U.S. Cl. 250—338.4 11 Claims



1. An infrared detector array, comprising:

a first semiconductor body;

a plurality of infrared detectors arranged in a matrix of rows and columns and formed in the first semiconductor body;

a second semiconductor body;

a plurality of integration/read circuits arranged in a matrix of rows and columns and formed in the second semiconductor body, each one of the plurality of integration/read circuits being in registration with, and electrically connected to, a corresponding one of the plurality of detectors, each one of the plurality of integration/read circuits comprising:

a first field effect transistor coupled to a corresponding one of the infrared detectors;

a capacitor connected in parallel with the first field effect transistor and the corresponding one of the infrared detectors; and

a second field effect transistor serially coupled between the first field effect transistor and a column output bus; and

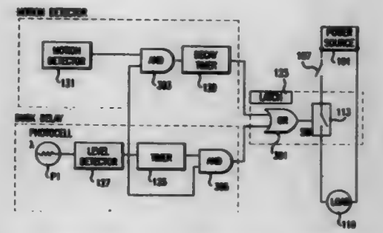
a plurality of reset circuits, each one associated with a corresponding one of the columns of integration/read circuits, such reset circuits being formed in the second semiconductor body laterally displaced from the integration/read circuits.

5,442,177

DUSK DELAY SYSTEM FOR OUTDOOR MOTION DETECTION

Charles A. Boulos, Milford, Mass.; Michael D. Sund, Walnut Creek, and Syed M. A. Hussain, Diamond Bar, both of Calif., assignors to Pace Control Technologies, Inc., Chino, Calif.

Continuation of Ser. No. 951,385, Sep. 25, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 300,936
Int. Cl.[6] G08B 13/193, 13/191; H05B 37/02; F21V 23/00
U.S. Cl. 250—342 9 Claims



1. A dusk delay system for outdoor motion detection, comprising:

switch means for controlling transmission of a source of power to a load, said switch means including input means for coupling the source of power to the load responsive to receipt of one of a plurality of control signals, said plurality of control signals being defined by a first control signal and a second control signal;

motion detector means for generating a motion signal on an output thereof responsive to detection of movement in a monitored area;

light sensor means for generating a detection signal on an output thereof responsive to an ambient light level being below a predetermined threshold value;

signal transmission means having a first input coupled to said output of said motion detector means and a second input coupled said output of said light sensor means for coupling said motion signal from said first input to an output thereof responsive to receipt of said detection signal;

first timer means having an input coupled to said output of said signal transmission means for generating said first control signal for a first predetermined duration of time; and,

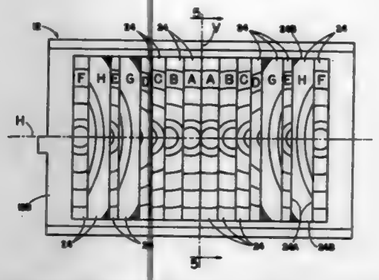
second timer means having an input coupled to said output of said light sensor means for generating said second control signal for a second predetermined duration of time, said second predetermined duration of time being greater than said first predetermined duration of time, wherein the load is coupled to the source of power for a time period defined by said second predetermined duration of time when said ambient light level is below said predetermined value, subsequent to expiration of said second predetermined duration of time the load is coupled to the source of power for a time period defined by said first predetermined duration of time when said ambient light level is below said predetermined value and said motion detector means detects movement within the monitored area.

5,442,178

CROSS-OVER FIELD-OF-VIEW COMPOSITE FRESNEL LENS FOR AN INFRARED DETECTION SYSTEM

John R. Baldwin, Newtown, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Mar. 18, 1994, Ser. No. 214,459
Int. Cl.[6] G02B 3/08; G01J 5/08
U.S. Cl. 250—353 26 Claims



1. A composite Fresnel lens for use in an infrared detection system, said composite Fresnel lens comprising:
(a) an array of Fresnel lens segments defined in first and second groups thereof;
(b) said first group of Fresnel lens segments being constructed as grooves-in lens segments and arranged in said array as grooves-in lens segments;
(c) said second group of Fresnel lens segments being constructed as grooves-out lens segments but arranged in said array as grooves-in lens segments such that said lens segments of said first group pass incident energy without refraction thereof whereas said lens segments of said second group refract the incident energy and are alternately arranged with some of said lens segments of said first group so as to cause cross-over of fields-of-view of said lens segments of said second group with fields of view of adjacent ones of said lens segments of said first group and resulting in said array of Fresnel lens segments having an expanded composite field-of-view compared to an array of Fresnel lens segments without said cross-over of fields-of-view.

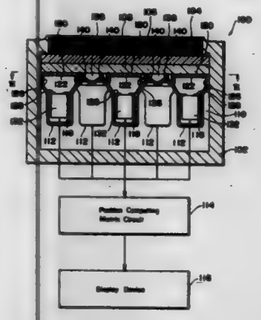
5,442,179

PHOTOMULTIPLIER ASSEMBLY AND GAMMA CAMERA HEAD

Keiichi Ohishi, Hamamatsu, Japan, assignor to Hamamatsu Photonics, K.K., Hamamatsu, Japan

Filed Sep. 20, 1993, Ser. No. 122,957
Claims priority, application Japan, Sep. 21, 1992, 4-251282
Int. Cl.[6] 250 366, 368
U.S. Cl. 250—363.02 21 Claims

1. A photomultiplier assembly comprising:
(a) a two-dimensional array of head-on type photomultipliers disposed in parallel with one another and on the same level, said array having dead spaces defined between said photomultipliers, each of said photomultipliers including:
(i) a transparent tubular closed vessel having an end plate located at one end,
(ii) a principal photocathode surface formed on an inside of said end plate of said closed vessel,
(iii) an electron multiplying unit disposed in said closed vessel for multiplying electrons emitted from said principal photocathode surface when said principal photocathode surface receives light entering said end plate,
(iv) a convergent electrode having an opening for converging electrons emitted from said principal photocathode surface and for guiding said electrons to said electron multiplying unit, said convergent electrode being disposed between said principal photocathode surface and said electron multiplying unit, and
(v) a side photocathode surface formed on a substantially entire circumferential inside surface of a side wall of said closed vessel in a predetermined region adjacent to said principal photocathode surface;



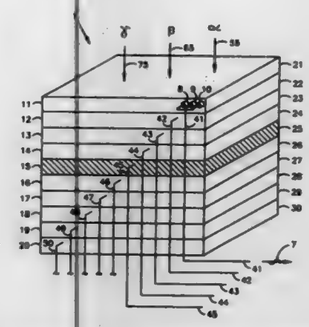
and
(b) reflectors disposed in said dead spaces respectively, each of said reflectors having reflecting surfaces for reflecting light which has entered said dead space to one of said side photocathode surfaces of one of said photomultipliers nearest to an incidence point of said entering light.

5,442,180

APPARATUS FOR THE FIELD DETERMINATION OF CONCENTRATION OF RADIOACTIVE CONSTITUENTS IN A MEDIUM

Richard W. Perkins; Alan J. Schilk, both of Richland; Ray A. Warner, Benton City, and Ned A. Wogman, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Aug. 19, 1993, Ser. No. 110,284
Int. Cl.[6] G01T 1/167
U.S. Cl. 250—367 14 Claims



1. An apparatus for the on-location determination of the concentration of radioactive constituents in a medium comprising:
(a) a probe having a plurality of detection layers for interacting with radioactive particles and producing a detection signal;
(b) means for converting the detection signal into electrical signals, said means attached to said detection layers;
(c) means for sending said electrical signal to an analyzer unit;
(d) said analyzer unit comprising;

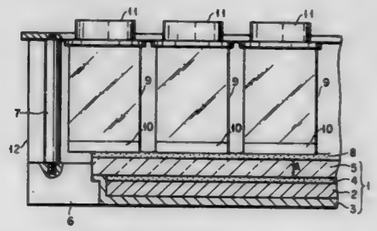
(i) means for receiving said electrical signal,
(ii) means for comparing the received electrical signal to a stored calibration signal pattern, and
(e) a readout display for displaying comparison results;
whereby said readout display indicates the concentration or type of radioactive constituents in the medium.

5,442,181

RADIATION DETECTOR AND ITS MANUFACTURING METHOD

Tsutomu Yamakawa, Tochigi; Keisei Shuto, and Takuzou Takayama, both of Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 953,824, Sep. 30, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,297
Claims priority, application Japan, Oct. 3, 1991, 3-256643; Sep. 22, 1992, 4-253187
Int. Cl.[6] G01T 1/202
U.S. Cl. 250—368 18 Claims



1. A radiation detector comprising:
a scintillator having a plate-like monocrystal converting a radiation ray radiated from an object to be examined to a visible ray, and a glass plate provided on said monocrystal, said glass plate transmitting said visible ray generated in said monocrystal, and protecting said monocrystal from deliquescence wherein said glass plate has a thickness of 9 mm or greater;
a plurality of photomultipliers, arranged on said glass plate of said scintillator, converting the visible ray to an electrical signal; and
a filling agent packed between said photomultipliers and said glass plate of said scintillator, and having substantially the same refractive index as that of an input surface of said photomultipliers and that of said glass plate.

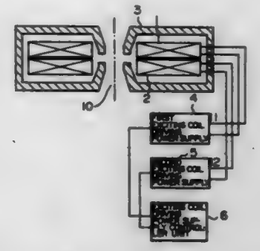
5,442,182

ELECTRON LENS

Toshiro Kubo; Toshiyuki Ohashi, both of Katsuta; Mikio Ichihashi, Kodaira, and Yuji Sato, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,161
Claims priority, application Japan, Nov. 6, 1992, 4-321483
Int. Cl.[6] H01J 37/141
U.S. Cl. 250—396 ML 29 Claims

1. An electron lens comprising:
a first exciting coil;
a second exciting coil;
a casing for encompassing said first and second exciting coils, said casing having a magnetic path with a single gap therein; and



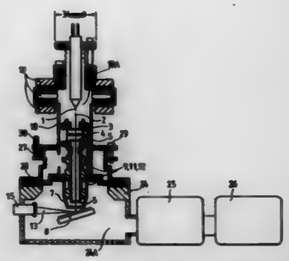
excitation control means for controlling an excitation state of at least said first exciting coil independently from said second exciting coil.

5,442,183

CHARGED PARTICLE BEAM APPARATUS INCLUDING MEANS FOR MAINTAINING A VACUUM SEAL

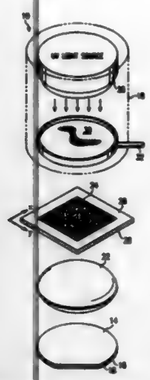
Hironobu Matsui, An Yang City, Rep. of Korea; Mikio Ichihashi, Kodaira, Japan; Shinjiroo Ueda, Abiko, Japan; Tadashi Otaka, Katsuta, Japan; Kazue Takahashi, Tsuchiura, Japan; Toshiaki Kobari, Chiyoda, Japan, and Kenji Odaka, Tomobe, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 717,018, Jun. 18, 1991, Pat. No. 5,254,856. This application Oct. 19, 1993, Ser. No. 137,965
Claims priority, application Japan, Jun. 20, 1990, 2-159663; Jun. 20, 1990, 2-159664; Jul. 4, 1990, 2-175214; Aug. 13, 1990, 2-211579
Int. Cl.[6] H01J 37/257
U.S. Cl. 250—441.11 9 Claims



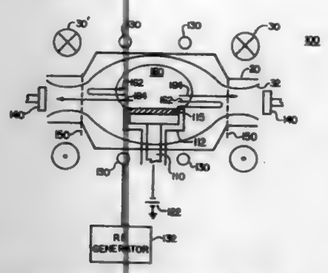
1. A charged particle beam apparatus comprising:
a sample chamber having an inner space for accommodating a sample therein;
a beam column having an inner space and containing at least a charged particle beam generating section for generating a charged particle beam for irradiation onto said sample;
a first vacuum pump system for evacuating the inner space of said sample chamber;
valve means provided between said beam column and said sample chamber for vacuum sealing the inner space of said beam column from the inner space of said sample chamber; and
means for moving said beam column relative to said sample chamber for separating said beam column from said sample chamber.

5,442,184
SYSTEM AND METHOD FOR SEMICONDUCTOR PROCESSING USING POLARIZED RADIANT ENERGY
Shane R. Palmer, Dallas, Tex., and Gong Chen, Madison, Wis., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 10, 1993, Ser. No. 165,284
Int. Cl.[6] G03B 27/72
U.S. Cl. 250—442.2 23 Claims



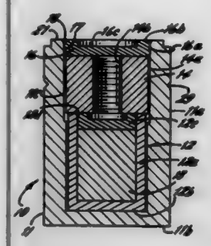
1. An optical lithography system for exposing a layer of radiation sensitive material on a semiconductor wafer, said system comprising:
a source of polarized radiant energy, said radiant energy polarized in a predetermined orientation;
a mask positionable between said source of radiant energy and the wafer, said mask including a plurality of slits, said slits having a length greater than the wavelength of said polarized radiant energy, said polarized radiant energy being positioned so that the direction of polarization of said polarized radiant energy is aligned with at least one of said slits; and
a lens for focusing the polarized radiant energy transmitted through the mask on the wafer to expose the radiation sensitive material in a predetermined pattern.

5,442,185
LARGE AREA ION IMPLANTATION PROCESS AND APPARATUS
Chung Chan, Newton, Mass., assignor to Northeastern University, Boston, Mass.
Division of Ser. No. 230,327, Apr. 20, 1994. This application Dec. 9, 1994, Ser. No. 353,098
Int. Cl.[6] H01J 37/317
U.S. Cl. 250—492.21 24 Claims



1. An ion implantation apparatus comprising:
a magnetic bottle for selectively retaining ions;
an ion cyclotron resonant frequency device for selectively heating ions retained within said magnetic bottle thereby permitting ions having predetermined characteristics to escape from said magnetic bottle; and
a wafer holder positioned to expose a wafer to ions selectively retained within said magnetic bottle.

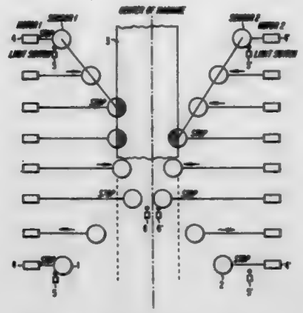
5,442,186
RADIOACTIVE SOURCE RE-ENCAPSULATION INCLUDING SCORED OUTER JACKET
William F. Walker, Raleigh, and Peter D. Muse, Durham, both of N.C., assignors to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.
Filed Dec. 7, 1993, Ser. No. 163,349
Int. Cl.[6] G21F 5/00
U.S. Cl. 250—506.1 14 Claims



1. An encapsulated radioactive isotope source which permits re-encapsulation and reuse of the radioactive isotope and which comprises:
an outer protective jacket in the form of a can having a side wall, an integrally formed bottom wall and an open upper end;
a source capsule containing a radioactive isotope, said source capsule being received within said outer protective jacket;
a jacket cap received within said outer protective jacket so as to close the open end of said jacket, with said source capsule located therewithin, said jacket cap having its outer peripheral edge positioned in close-fitting relation to the inner peripheral surface of said jacket side wall to form a narrow gap between the jacket cap and said jacket side wall;
a score line formed on the exterior of said outer protective jacket; and
a seal extending along said narrow gap to join said jacket cap to said jacket and to seal said source capsule within the protective jacket.

5,442,187
DEVICE AND METHOD FOR POSITIONING THE SENSORS OF A WEB MOVEMENT CONTROL DEVICE
Hans J. Schrauwen, Hiddenhausen; Theodor Nacke, Leopoldshöhe, and Jürgen Bettführ, Vlotho, all of Germany, assignors to BST Servo-Technik GmbH, Bielefeld, Germany
Continuation of Ser. No. 15,829, Feb. 10, 1993, abandoned. This application Apr. 25, 1994, Ser. No. 232,591
Claims priority, application Germany, Feb. 11, 1992, 42 03 952.5
Int. Cl.[6] G01N 21/86
U.S. Cl. 250—548 12 Claims

1. Device for positioning the sensors of a web movement control device having in each case one sensor on each side of the web of material and having a sensor adjustment device for each sensor, by means of which the two sensors can be adjusted independently of one another relative to the edges of the web, and having an electronic signal processing device which processes the signals emitted by the sensors and controls the sensor adjustment devices, wherein the two sensor adjustment



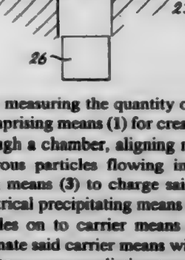
devices can be coupled to one another in such a way that the two sensors move synchronously in opposite directions.

5,442,188
STRIP CHART RECORDER PAPER ATTRIBUTE DETECTOR AND MONITOR
Michel Brimbal, Cleveland Heights, and Kenneth Frantisak, Parma, both of Ohio, assignors to Gould Instruments Systems, Inc., Valley View, Ohio
Filed Apr. 22, 1992, Ser. No. 872,627
Int. Cl.[6] G06K 7/10
U.S. Cl. 250—566 16 Claims

1. A paper attribute detector for use in combination with a strip chart recorder comprising:
a paper web having a plurality of connected paper pages, each of said paper pages having corresponding scannable indicia thereon, each paper page indicia being a coded representation of one or more attributes of said paper of said corresponding paper page;
and indicia scanning means operably associated with the strip chart recorder for detecting each page indicia as said paper web travels through the strip chart recorder with said page indicia being aligned transverse a travel axis of the paper web.

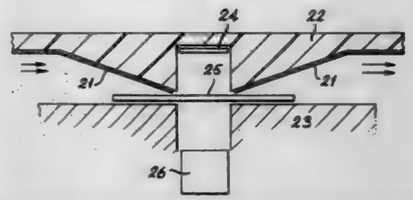
5,442,189
APPARATUS FOR INSPECTING DEFECTS AND FOREIGN SUBSTANCES HAVING A SPOT ILLUMINATED FOCUSING SYSTEM
Tsuneyuki Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Sep. 22, 1993, Ser. No. 124,461
Claims priority, application Japan, Sep. 24, 1992, 4-254590
Int. Cl.[6] G01N 21/88
U.S. Cl. 250—559.42 9 Claims

1. An apparatus for inspecting defects and foreign substance on an object to be inspected, the object having patterns, comprising:
a first lens for optically forming Fourier transform images of said patterns;
a second lens for executing inverse Fourier transform of said Fourier transform images;
a light source for emitting illumination light;
an illumination optical system for focusing said illumination light and illuminating a spot of an illuminated area or a linear illuminated area on said patterns to be inspected;



an optical filter for blocking components of the Fourier transform images corresponding to said patterns without defects from said optically formed Fourier transform images;
a photoelectric detector for photoelectrically converting images, which are projected by said second lens, of the defects and foreign substance on said object to be inspected; and
a scanning device for relatively displacing said patterns to be inspected and said illumination light.

5,442,190
METHOD AND APPARATUS FOR THE MEASUREMENT OF AIRBORNE FIBRES
Michael J. Leck, Goostrey, England, assignor to British Technology Group Ltd., London, England
PCT No. PCT/GB92/00700, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO92/18842, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 16, 1992, Ser. No. 137,044
Claims priority, application United Kingdom, Apr. 19, 1991, 9108442.6
Int. Cl.[6] G01N 15/06
U.S. Cl. 250—573 6 Claims



1. Apparatus for measuring the quantity of fibres present in a gaseous fluid comprising means (1) for creating a flow of said gaseous fluid through a chamber, aligning means to align the orientation of fibrous particles flowing into said chamber, electrical charging means (3) to charge said particles within said chamber, electrical precipitating means (24) to precipitate said fibrous particles on to carrier means (25), illuminating means (7) to illuminate said carrier means with radiation, measuring means (26) to measure radiation transmitted from said carrier means characterised in that electrical screening means (21) are provided to shield said particles from the influence of said electrical precipitating means in regions not adjacent said measuring means.

5,442,191
ISOTOPICALLY ENRICHED SEMICONDUCTOR DEVICES

Tso-Ping Ma, Branford, Conn., assignor to Yale University, New Haven, Conn.

Continuation of Ser. No. 932,763, Aug. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 615,425, Nov. 16, 1990, Pat. No. 5,144,409, which is a continuation-in-part of Ser. No. 577,526, Sep. 5, 1990, abandoned. This application Jul. 5, 1994, Ser. No. 270,394
Int. Cl.[6] H01L *27/24*
U.S. Cl. 257—1 17 Claims

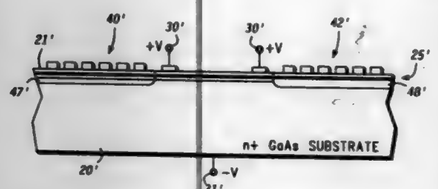


1. A semiconductor structure comprising:
a single-crystal region composed entirely of a single isotopically enriched material, wherein said isotopically enriched material is selected from a subset consisting of all semiconductor materials except elemental silicon and elemental carbon and wherein said isotopically enriched material exhibits enhanced bulk properties as compared to the bulk properties of naturally occurring forms of said material; and
a semiconductor device formed by using said isotopically enriched semiconductor region so as to take advantage of the enhanced bulk properties of said isotopically enriched material.

5,442,192
HETEROSTRUCTURE ELECTRON EMITTER UTILIZING A QUANTUM WELL

Herbert Goronkin, Tempe, and Lawrence N. Dworsky, Scottsdale, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jan. 27, 1994, Ser. No. 187,258
Int. Cl.[6] H01L *27/14, 29/161*
U.S. Cl. 257—10 9 Claims

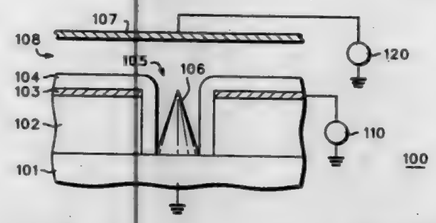


1. A heterostructure electron emitter comprising:
a substrate;
a plurality of layers of semiconductor material deposited on the substrate with a surface layer having a surface barrier potential, the plurality of layers forming a quantum well for the collection of free electrons, each collected electron having an energy level below the surface barrier potential; and
an acoustic generator positioned on the substrate to launch acoustic waves into free electrons collected in the quantum well so as to raise the energy level of collected free electrons above the surface barrier potential for the emission of the electrons into free space.

5,442,193
MICROELECTRONIC FIELD EMISSION DEVICE WITH BREAKDOWN INHIBITING INSULATED GATE ELECTRODE

James E. Jaskie, and Robert C. Kane, both of Scottsdale, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Feb. 22, 1994, Ser. No. 200,036
Int. Cl.[6] H01J *19/24, 1/46, 1/02*
U.S. Cl. 257—10 7 Claims

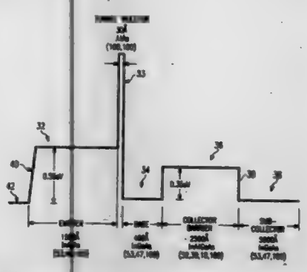


1. A field emission device comprised of an electron emitter and a peripherally disposed gate extraction electrode defining a free space region therebetween and wherein the gate extraction electrode is insulated from the free space region by an insulating layer disposed thereon, the insulating layer being disposed between the gate extraction electrode and the free space region.

5,442,194
ROOM-TEMPERATURE TUNNELING HOT-ELECTRON TRANSISTOR

Theodore S. Moise, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 7, 1994, Ser. No. 178,676
Int. Cl.[6] H01L *29/161, 29/72, 27/12*
U.S. Cl. 257—29 18 Claims

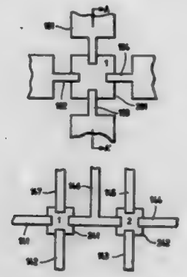


1. A hot-electron transistor formed on a substrate having an outer surface, comprising:
a collector barrier outwardly from the outer surface of the substrate and a base outwardly from said collector barrier, wherein said collector barrier has sufficient conduction band energy so that thermal electrons are confined within said base of the transistor at room temperature; and
a tunnel injector outwardly from said base and an emitter outwardly from said tunnel injector, said emitter having an unbiased conduction band energy greater than that of both said base and said collector barrier, said tunnel injector being formed of a single barrier for ballistically injecting electrons from said emitter into said base and to said collector barrier at an energy level lower than the energy at which inter-valley scattering occurs in said base but greater than the collector barrier conduction band energy.

5,442,195
SUPERCONDUCTING DEVICE INCLUDING PLURAL SUPERCONDUCTING ELECTRODES FORMED ON A NORMAL CONDUCTOR

Kazuo Saitoh, Hachiouji; Toshikazu Nishino, Kawasaki, and Mutsuko Hatano, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 817,668, Jan. 7, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 136,984
Claims priority, application Japan, Jan. 11, 1991, 3-001911
Int. Cl.[6] H01L *39/22;* B05D *5/12;* H01B *12/00;* G11C *11/44*
U.S. Cl. 257—36 6 Claims

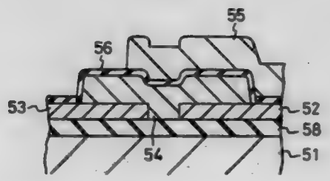


1. A superconducting device comprising:
a substrate;
an insulator film disposed on the substrate;
a normal conductor layer disposed on the insulator film; and
three superconducting electrodes formed in contact with the first normal conductor layer;
wherein said at least three superconducting electrodes are disposed on the normal conductor layer and contact layer superconducting electrode is positioned substantially in an equal distance from a central point of said normal conductor layer and have substantially same form.

5,442,196
SUPERCONDUCTING DEVICE

Toshikazu Nishino, Kawasaki; Mutsuko Miyake, Urawa; Ushio Kawabe, Nishitama; Yutaka Harada, Kodaira; Masaaki Aoki, Minato, and Mikio Hirano, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 875,431, Apr. 29, 1992, Pat. No. 5,311,036, which is a continuation of Ser. No. 412,201, Sep. 25, 1989, Pat. No. 5,126,801, which is a continuation of Ser. No. 73,408, Jul. 13, 1987, Pat. No. 4,884,111, which is a continuation of Ser. No. 795,270, Nov. 5, 1985, abandoned. This application Feb. 24, 1994, Ser. No. 201,410
Claims priority, application Japan, Nov. 5, 1984, 59-231308; Feb. 20, 1985, 60-30366; Feb. 25, 1985, 60-34355; Mar. 11, 1985, 60-46539; May 24, 1985, 60-110371
Int. Cl.[6] H01L *39/22*
U.S. Cl. 257—36 13 Claims

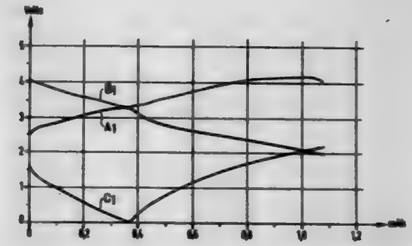


1. A superconducting device comprising:
a substrate, made of a high resistance material;
at least two superconducting electrodes formed on said substrate;
a semiconductor layer formed on said substrate and on said at least two superconducting electrodes;
an insulator layer formed on said semiconductor layer; and
a control electrode formed on said insulator layer.

5,442,197
SUPER-CAPACITOR COMPRISING POSITIVE AND NEGATIVE ELECTRODES MADE OF A P-DOPED ELECTRON CONDUCTIVE POLYMER AND AN ELECTROLYTE CONTAINING AN ORGANIC REDOX COMPOUND

Xavier Andrieu, Bretigny sur Orge, and Laurence Kerreneur, Marcoussis, both of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris Cedex, France

Filed Dec. 10, 1992, Ser. No. 990,795
Claims priority, application France, Dec. 13, 1991, 91 15521
Int. Cl.[6] H01L *29/28;* H01G *9/00;* H01M *6/00, 4/00*
U.S. Cl. 257—40 4 Claims



1. A super-capacitor comprising a positive electrode having a potential, a negative electrode having a potential, both made of a p-doped electron conductive polymer, and an electrolyte, said electrolyte comprising an organic redox compound having a redox potential soluble in said electrolyte in an amount of at least 10^{-3} mole per liter, the redox potential of said redox compound lies in a non-capacitive region of said electron conductive polymer, the redox compound is reduced in a reversible manner at the negative electrode when the potential of the negative electrode is equal to or less than the redox potential of the redox compound, and the redox compound is oxidized in a reversible manner at the positive electrode when the potential of the positive electrode is equal to or more than the redox potential of the redox compound.

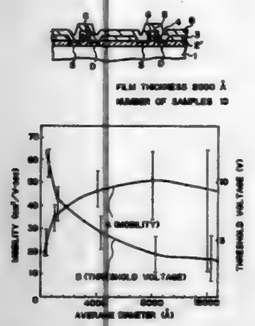
5,442,198
NON-SINGLE CRYSTAL SEMICONDUCTOR DEVICE WITH SUB-MICRON GRAIN SIZE

Michio Arai; Masaaki Ikeda; Kazushi Sugiura; Nobuo Furukawa, all of Tokyo; Mitsufumi Kodama, Kanagawa; Yukio Yamauchi, Kanagawa; Naoya Sakamoto, Kanagawa; Takeshi Fukada, Kanagawa; Masaaki Hiroki, Kanagawa, and Ichirou Takayama, Kanagawa, all of Japan, assignors to TDK Corporation, Tokyo and Semiconductor Energy Lab. Co., Ltd., Kanagawa, both of Japan

Division of Ser. No. 825,552, Jan. 27, 1992, Pat. No. 5,298,455. This application Jan. 31, 1994, Ser. No. 189,498
Claims priority, application Japan, Jan. 30, 1991, 3-29411; Jan. 30, 1991, 3-29412
Int. Cl.[6] H01L *21/00, 29/161, 29/34*
U.S. Cl. 257—64 7 Claims

1. A non single crystal semiconductor device comprising;
a substrate,
a non single crystal silicon semiconductor film placed on said substrate said film having a thickness in the range 500 Å to 2000 Å, and crystal grains in said film having an

average diameter in the range 250 Å to 8000 Å, and an oxygen density in said film of less than $2\times10^{19}/cm^3$, and



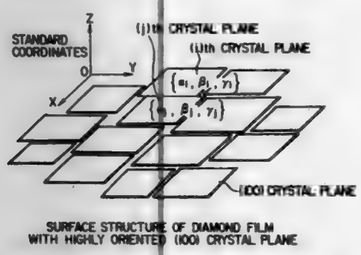
at least one MOS transistor formed on said film and including doped regions in said film.

5,442,199

DIAMOND HETERO-JUNCTION RECTIFYING ELEMENT

Kimitsugu Saito; Koichi Miyata, both of Kobe, Japan, and Kalyankumar Das, Raleigh, N.C., assignors to Kobe Steel USA, Inc., Research Triangel Park, N.C.

Filed May 14, 1993, Ser. No. 62,051
Int. Cl.[6] H01L *29/161, 29/04*
U.S. Cl. 257—77 **6 Claims**



SURFACE STRUCTURE OF DIAMOND FILM WITH HIGHLY ORIENTED (100) CRYSTAL PLANE

1. A diamond hetero-junction rectifying element comprising,

a film of either silicon carbide or silicon, and

a highly-oriented diamond film which is grown by chemical vapor deposition, and which has a surface area consisting of at least 80% a plurality of (100) crystal planes, for which the differences $\{\Delta\alpha, \Delta\beta, \Delta\gamma\}$ of Euler angles $\{\alpha, \beta, \gamma\}$, which represent the orientations of the crystal planes, satisfy $0\leqq|\Delta\alpha|\leqq5°$, $0\leqq|\Delta\beta|\leqq5°$ and $0\leqq|\Delta\gamma|\leqq5°$ simultaneously between adjacent (100) crystal planes;

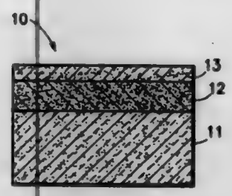
said highly oriented diamond film forming a heterojunction with said film or either silicon carbide or silicon.

5,442,200

LOW RESISTANCE, STABLE OHMIC CONTACTS TO SILCON CARBIDE, AND METHOD OF MAKING THE SAME

Michael A. Tischler, Danbury, Conn., assignor to Advanced Technology Materials, Inc., Danbury, Conn.

Filed Jan. 3, 1994, Ser. No. 253,969
Int. Cl.[6] H01L *29/48, 29/56, 29/64*
U.S. Cl. 257—77 **17 Claims**



1. An ohmic contact SiC article, comprising:

a SiC base layer; and

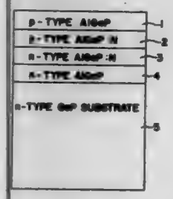
a non-carbonaceous metal silicide ohmic contact structure on the SiC layer.

5,442,201

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH NITROGEN DOPING

Keizo Adomi; Nobuhiko Noto; Akio Nakamura, and Takao Takenaka, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1994, Ser. No. 216,278
Claims priority, application Japan, Mar. 25, 1993, 5-090736
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—86 **8 Claims**



1. A semiconductor light emitting device comprising a nitrogen-doped epitaxial layer(s) of compound semiconductor alloy represented by the formula $(Al_xGa_{1-x})_yIn_{1-y}P$ $(0<x\leqq1, 0<y\leqq1)$ doped with nitrogen of 1×10^{15} to 1×10^{20} atoms/cm^3, and formed on a compound semiconductor single crystal substrate composed of an element(s) from Group III and an element(s) from Group V in the periodic table.

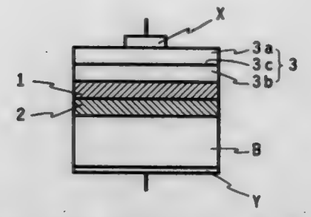
5,442,202

SEMICONDUCTOR LIGHT EMITTING ELEMENT

Hiroaki Kinoshita; Kunihiro Hattori, and Kazumasa Dobashi, all of Itami, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, Japan

Filed Oct. 27, 1994, Ser. No. 330,838
Claims priority, application Japan, Oct. 29, 1993, 5-272053; Feb. 18, 1994, 6-020880
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—94 **10 Claims**

1. A semiconductor light emitting element comprising plural semiconductor layers inclusive of a light emitting part having a pn junction, which are laminated on a crystal substrate, wherein a first semiconductor layer, having a carrier concentration of not more than 5×10^{17} cm^{-3} and a band gap of not less than the energy of the light emitted from the light emitting part, is formed in the passage of light emitted from the light emitting part toward the substrate side, and a second semiconductor layer, having a carrier concentration of not more than



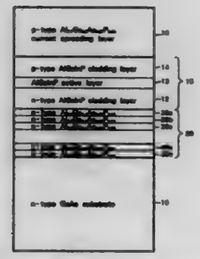
5×10^{17} cm^{-3} and a band gap of not greater than the energy of the light emitted from the light emitting part, is formed behind (when seen from the passage of the light) the first layer.

5,442,203

SEMICONDUCTOR LIGHT EMITTING DEVICE HAVING ALGAASP LIGHT REFLECTING LAYERS

Keizo Adomi; Nobuhiko Noto, and Takao Takenaka, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 299,084
Claims priority, application Japan, Aug. 24, 1993, 5-230977
Int. Cl.[6] H01S *3/19*; H01L *33/00*
U.S. Cl. 257—97 **7 Claims**



1. A semiconductor light emitting device in which a light emitting layer portion comprising AlGaInP layers is formed on a GaAs substrate and a light reflecting layer portion comprising alternately laminated layers with different refractive indices is provided between said GaAs substrate and said light emitting layer portion, wherein:

said light reflecting layer portion comprises $Al_wGa_{1-w}As_{1-v}P_v$ layers (where, $0\leqq w\leqq1$, $0<v\leqq0.05$ w).

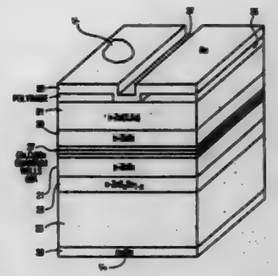
5,442,204

III-V SEMICONDUCTOR HETEROSTRUCTURE CONTACTING A P-TYPE II-VI COMPOUND

Piotr M. Mensz, Ossining, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed May 12, 1994, Ser. No. 241,840
Int. Cl.[6] H01L *29/161, 33/00*
U.S. Cl. 257—103 **16 Claims**

1. A semiconductor structure comprising a first layer of a p-type II-VI compound of the formula $Zn_xQ_{1-x}S_ySe_{1-y}$ wherein Q is an element selected from the group consisting of Mg, Cd and Mn, $0.5\leqq x\leqq1$ and $0\leqq y\leqq1$ and a substrate of p-type GaAs, said first layer and said substrate being separated by a series of thin epitaxial undoped or p-doped layers of a total thickness of up to 2 μm and each layer of a thickness of 20 Å to 2000 Å contacting opposing surfaces of said substrate and said first layer, said series of layers comprising a layer of $In_{0.5}Al_{0.5}P$ contacting the opposing surface of said first layer, a layer of a compound selected from the group consisting of $In_{0.5}Ga_{0.5}P$ and $Al_xGa_{1-x}As$ wherein $x=0.1$–0.3 contacting the opposing surface of said substrate, a layer of $In_{0.5}Ga_{0.5}P$ contacting said layer of $Al_xGa_{1-x}As$, at least one layer of



$In_{0.5}Al_zGa_{0.5-z}P$ wherein $0<z<0.5$, the value of z decreasing in the direction of said layer of $In_{0.5}Ga_{0.5}P$ provided between, and having surfaces contacting said layer of $In_{0.5}Al_{0.5}P$ and said layer of $In_{0.5}Ga_{0.5}P$.

5,442,205

SEMICONDUCTOR HETEROSTRUCTURE DEVICES WITH STRAINED SEMICONDUCTOR LAYERS

Daniel Braaen, Lake Hiawatha; Eugene A. Fitzgerald, Jr., Bridgewater; Martin L. Green, New Providence; Donald P. Monroe, Berkeley Heights; Paul J. Silverman, Millburn, and Ya-Hong Xie, Flemington, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 14,029, Feb. 5, 1993, abandoned, which is a division of Ser. No. 690,429, Apr. 24, 1991, Pat. No. 5,221,413. This application Aug. 9, 1993, Ser. No. 104,513
Int. Cl.[6] H01L *29/161, 29/205, 29/225*
U.S. Cl. 257—191 **23 Claims**



1. A heterostructure comprising

(a) a monocrystalline silicon substrate;

(b) a spatially graded epitaxial layer of germanium-silicon located on the silicon substrate and forming an interface therewith, the spatially graded epitaxial layer having spatial gradient of germanium that is less than about 25 percent per micrometer, and the spatially graded epitaxial layer having a concentration of germanium that is equal to approximately zero at the interface;

(c) a first spatially ungraded epitaxial layer of germanium-silicon located on the spatially graded epitaxial layer;

(d) an epitaxial layer of germanium or silicon located on the first spatially ungraded epitaxial layer of germanium-silicon;

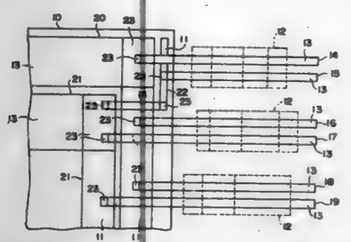
(e) a second spatially ungraded epitaxial layer of germanium-silicon located on the epitaxial layer of germanium or silicon.

5,442,206

LAY-OUT STRUCTURE OF POWER SOURCE POTENTIAL LINES AND GRAND POTENTIAL LINES FOR SEMICONDUCTOR INTEGRATED CIRCUIT

Takashi Ienaga, and Tomoko Kai, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

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Claims priority, application Japan, May 11, 1993, 5-108643
Int. Cl.[6] H01L 27/02, 27/10, 23/48
U.S. Cl. 257—207 4 Claims



1. A lay-out structure of power source potential lines and grand potential lines for a semiconductor integrated circuit wherein a macro cell and standard cells are mixed in,

inner and outer peripheral power supply lines provided for said macro cell, each peripheral power supply line having first metal layer lines extending towards one direction, second metal layer lines forming a layered line structure with said first metal layer lines including an insulating layer between the first and the second metal layer lines for electrical insulation and extending towards the direction crossing to said first metal layer line, and contacts connecting said first and said second metal layer lines,

a plurality of pairs of power supply lines provided for said standard cells, each power supply line having first metal layer line or second metal layer line extending parallel to said first metal layer line or said second metal layer line for said inner and outer peripheral power supply lines, respectively, and

an auxiliary power supply line having a first metal layer line and a second metal layer line extending parallel to said first metal layer line and said second metal layer line for said inner and outer peripheral power supply lines, respectively, said auxiliary power supply line being not electrically contacted with said outer peripheral power supply line and one end thereof being connected to said inner peripheral power supply line and another end thereof extending to the outside of the outer peripheral power supply line and being connected to one or more of said power supply lines for said standard cells.

5,442,207

CHARGE COUPLED DEVICE

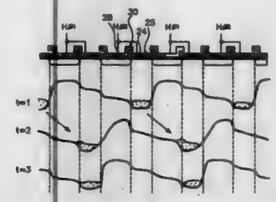
Jae H. Jeong, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed May 26, 1994, Ser. No. 250,757
Claims priority, application Rep. of Korea, Aug. 18, 1993, 16030/1993
Int. Cl.[6] H01L 29/78
U.S. Cl. 257—221 12 Claims

1. A charge coupled device, comprising:

a first electrode consisting of a first region and second region having lower resistance than the first region; and

a second electrode consisting a first region and a second region having lower resistance than this first region, the first region of the first electrode being adjacent to said first



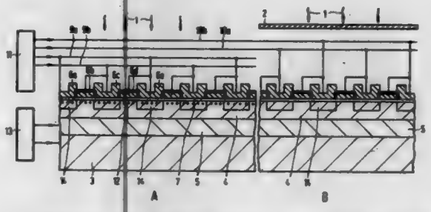
region of the second region at an interval of an insulating film.

5,442,208

CHARGE-COUPLED DEVICE HAVING CHARGE RESET

Jan T. J. Bosiers; Edwin Roks, and Agnes C. M. Kleimann, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 164,233, Dec. 8, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 359,326
Claims priority, application European Pat. Off., Dec. 9, 1992, 92203825
Int. Cl.[6] H01L 29/78, 27/14, 31/00
U.S. Cl. 257—223 5 Claims



1. A charge-coupled imaging device of the buried-channel type, comprising a substrate of a first conductivity type which is provided at a surface with a plurality of zones of the first conductivity type separated from the substrate of the first conductivity type by an interposed zone of the second conductivity type opposite to the first, said zones of the first conductivity type forming buried channels of a first number of registers of a two-dimensional imaging section situated next to one another in which a pattern of charge packets corresponding to a radiation image projected on the device can be generated during an integration period, a second number of registers situated next to one another and forming a memory section for the temporary storage of a pattern of charge packets generated in the imaging section, and a read-out register having parallel inputs connected to the registers of the memory section, the memory section being situated between the imaging section and the read-out register, the surface being provided with a system of clock electrodes for applying clock voltages and being separated from the surface by an interposed dielectric layer and being connected to a voltage source by means of which voltages are applied, an inversion layer of the second conductivity type being formed below the system of electrodes at the interface between the dielectric layer and the buried channels in at least the imaging section during the integration period, charge reset means for draining off charge from charge storage locations in the imaging section through the substrate by the application of a voltage pulse, said charge reset means comprising a pulse voltage source connected to at least one of the substrate and the interposed zone, and means for draining off charge through the substrate from only the imaging section and simultaneously preventing charge from being drained off

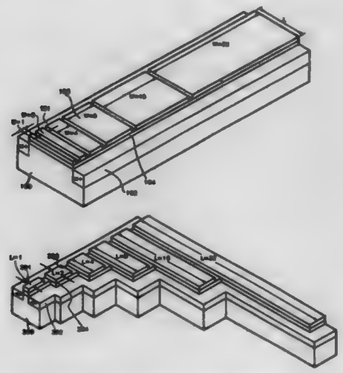
through the substrate from storage locations in the memory section.

5,442,209

SYNAPSE MOS TRANSISTOR

Ho-sun Chung, Taegu, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Cheongju-city, Rep. of Korea

Continuation of Ser. No. 68,163, May 28, 1993, abandoned. This application Jun. 2, 1994, Ser. No. 253,215
Claims priority, application Rep. of Korea, May 30, 1992, 92-9479
Int. Cl.[6] H01L 29/80, 29/78
U.S. Cl. 257—270 8 Claims



1. A synapse MOS transistor, comprising:

a substrate;

a source region extending in a first direction on said substrate;

a drain region extending in said first direction on said substrate; and

a plurality of gate electrodes each formed directly over said substrate and each extending across said substrate from said source region to said drain region in a second direction perpendicular to said first direction;

each of said plurality of gate electrodes having a width in said first direction different from the widths of the others of said plurality of gate electrodes, wherein said synapse MOS transistor conducts a different amount of current in response to an input signal being applied to a different one of said plurality of gate electrodes.

5,442,210

SEMICONDUCTOR DEVICE

Kaoru Kanehachi, Tokyo, Japan, assignor to Nippon Precision Circuits Inc., Tokyo, Japan

Filed Oct. 28, 1993, Ser. No. 144,935
Claims priority, application Japan, Nov. 12, 1992, 4-302420
Int. Cl.[6] H01L 29/78, 27/10
U.S. Cl. 257—296 7 Claims

1. A semiconductor device comprising:

a DRAM portion;

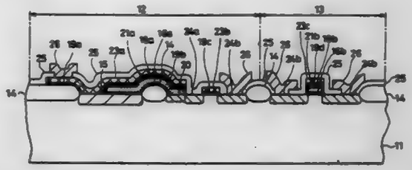
a flash memory portion;

said DRAM portion and said flash memory portion both being formed on a main surface of a common semiconductor substrate;

a first insulation layer;

said DRAM portion having a first capacitor with a first electrode separated from said main surface of said substrate by said first insulation layer;

said flash memory portion having a floating gate separated from said main surface by said first insulation layer and formed of the same material as said first electrode; and



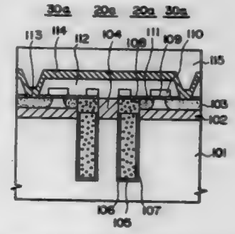
said first insulation layer in said flash memory portion forming a tunnel oxide film.

5,442,211

ONE-TRANSISTOR ONE-CAPACITOR MEMORY CELL STRUCTURE FOR DRAMS

Akio Kita, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 156,620
Claims priority, application Japan, Dec. 1, 1992, 4-321644
Int. Cl.[6] H01L 29/68
U.S. Cl. 257—301 28 Claims



1. A one-transistor one-capacitor memory cell comprising:

(a) a semiconductor substrate, a surface of which being successively covered by a buried insulating film layer and a single crystalline semiconductor film layer; (b) an insulating layer for isolation formed at a predetermined region of the single crystalline semiconductor film layer in such a manner that a depth thereof reaches to the buried insulating film layer;

(c) a trench penetrating through the buried insulating film layer along a side wall of the insulating layer for isolation from the single crystalline semiconductor film layer and reaching to a predetermined depth of the substrate;

(d) a dielectric film layer formed on an inner side wall surface of the trench except for a top portion thereof;

(e) a conductive material filled in the trench up to a top edge of the dielectric film layer;

(f) a conductor plug filled in the trench from the top edge of the dielectric film layer up to a top of the trench; and

(g) a MIS transistor having a source diffusion layer and a drain diffusion layer formed in the single crystalline semiconductor film layer;

i) the source diffusion layer and the drain diffusion layer reaching to the buried insulating film layer;

ii) either the source diffusion layer or the drain diffusion layer making contact with the conductor plug;

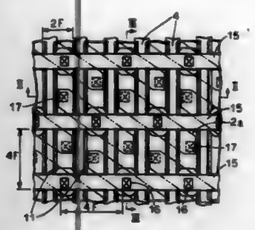
whereby is formed a capacitor, a plate electrode and a storage node electrode of which are respectively constituted by the semiconductor substrate and the conductive material, and whereby is formed a memory cell by connecting the capacitor to the MIS transistor through the conductor plug.

5,442,212

SEMICONDUCTOR MEMORY DEVICE

Takahisa Eimori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 292,303
Claims priority, application Japan, Aug. 31, 1993, 5-215869
Int. Cl.[6] H01L *29/68*
U.S. Cl. 257—303 14 Claims



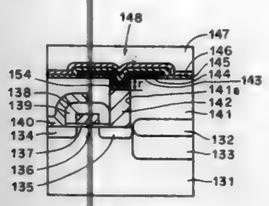
1. A semiconductor memory device, including
a plurality of word lines arranged approximately parallel to each other,
a plurality of bit lines approximately orthogonal to the word lines and approximately parallel to each other, and
a plurality of memory cells each including one transistor and one capacitor,
said capacitor of said each memory cell having a lower electrode arranged above said bit lines, wherein
pitch of said bit lines is set to be larger than pitch of said word lines and one bit line contact is arranged in each rectangular area surrounded by said word lines and said bit lines, and that
distance between centers of lower electrode contacts of said lower electrodes of adjacent said capacitors and distance between centers of said bit line contact and said lower electrode contact adjacent to said bit line contact are both made larger than the pitch of said word lines.

5,442,213

SEMICONDUCTOR DEVICE WITH HIGH DIELECTRIC CAPACITOR HAVING SIDEWALL SPACERS

Tomonori Okudaira; Takeharu Kuroiwa; Nobuo Fujiwara, and Keiichiro Kashihara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 255,854
Claims priority, application Japan, Jun. 23, 1993, 5-152364
Int. Cl.[6] G11C *11/24*
U.S. Cl. 257—310 13 Claims



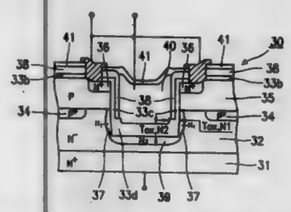
1. A semiconductor device comprising:
a semiconductor substrate having a main surface,
an impurity region formed on the main surface of said semiconductor substrate,
an interlayer insulation film formed on the main surface of said semiconductor substrate to cover said impurity region, and having a contact hole reaching said impurity region,
a buried conductive layer filled in said contact hole, in contact with said impurity region, and having a top face lower in level than a top face of said interlayer insulation film,
a sidewall spacer formed at a sidewall of said contact hole from a top face corner of said interlayer insulation film towards the top face of said buried conductive layer, in a recess portion defined by the sidewall of said contact hole and the top face of said buried conductive layer,
a lower electrode layer formed on said interlayer insulation film and said sidewall spacer to be in contact with the top face of said buried conductive layer,
a high dielectric film of a high dielectric constant material formed to cover said lower electrode layer, and
an upper electrode layer formed to cover said high dielectric film.

5,442,214

VDMOS TRANSISTOR AND MANUFACTURING METHOD THEREFOR

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsin-Chu, Taiwan

Division of Ser. No. 287,950, Aug. 9, 1994. This application Oct. 28, 1994, Ser. No. 330,567
Int. Cl.[6] H01L *29/68*
U.S. Cl. 257—328 5 Claims



1. A VDMOS transistor on a semiconductor substrate, comprising:
a drain electrode region of a first conductivity type in said substrate, said drain electrode region having a drain electrode region doping density (D+);
an epitaxial layer of said first conductivity type formed on said drain electrode region, said epitaxial layer having an epitaxial layer doping density (D−), said epitaxial layer defining a first trench and a deeper and narrower second trench within said first trench, said epitaxial layer including a first implanted region of said first conductivity type adjoining said first trench and a second implanted region of said first conductivity type adjoining said second trench, said first and said second implanted regions having a first and a second implanted region doping density (D_1), (D_2), respectively;
a first gate oxide layer formed within said first trench adjacent to said first implanted region, said first gate oxide layer having a first gate oxide layer thickness ($T_{OX,D1}$); and
a second gate oxide layer formed within said second trench adjacent to said second implanted region, said second gate oxide layer having a second gate oxide layer thickness ($T_{OX,D2}$), wherein:

$$D-<D_1<D_2<D+;$$

and

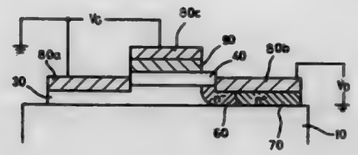
$$T_{OX,D1}<T_{OX,D2}.$$

5,442,215

THIN FILM TRANSISTOR HAVING AN ASYMMETRICAL LIGHTLY DOPED DRAIN STRUCTURE

Gee S. Chae, Seoul Incheon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 31, 1994, Ser. No. 220,665
Claims priority, application Rep. of Korea, Mar. 31, 1993, 93-5434
Int. Cl.[6] H01L *27/01, 27/13, 29/78*
U.S. Cl. 257—352 4 Claims



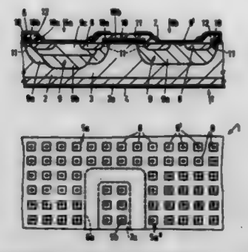
1. A thin film transistor having an asymmetrical lightly doped drain structure, comprising:
an insulating substrate;
an active layer formed on said substrate;
a source electrode formed on one side of said active layer as an integral part of said active layer;
a drain electrode formed on said substrate by doping high-density impurities;
a lightly doped drain region formed on said substrate by doping low-density impurities, said lightly doped drain region being in contact with said drain electrode;
a gate-insulating layer formed on an upper surface of said active layer between said source electrode and said lightly doped drain region; and
a gate electrode formed on said gate-insulating layer.

5,442,216

SEMICONDUCTOR DEVICE HAVING ACTIVE DEVICE CELLS AND A MONITOR CELL

Paul A. Gough, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 42,966, Apr. 5, 1993, abandoned. This application May 13, 1994, Ser. No. 242,687
Claims priority, application United Kingdom, Apr. 9, 1992, 9207849
Int. Cl.[6] H01L *29/78*
U.S. Cl. 257—355 13 Claims



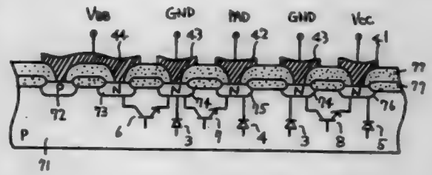
1. A semiconductor device comprising a semiconductor body having a first region providing a current path to a first main electrode and comprising a plurality of active device cells, a majority of said active device cells being connected to a second main electrode for providing a main current path through the device between the first and second main electrodes and at least one remaining active device cell forming a monitor cell and being connected to a monitor electrode for providing a monitor current path through the device between the first main electrode and the monitor electrode, characterized in that the at least one monitor cell is structurally formed differently from the majority of the active device cells so as to comprise means for being more susceptible to failure than the majority of the active device cells.

5,442,217

SEMICONDUCTOR APPARATUS INCLUDING A PROTECTION CIRCUIT AGAINST ELECTROSTATIC DISCHARGE

Toshio Mimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1993, Ser. No. 157,483
Claims priority, application Japan, Dec. 1, 1992, 4-322114
Int. Cl.[6] H01L *29/06, 29/78*
U.S. Cl. 257—361 3 Claims



2. A semiconductor apparatus including a protection circuit against electrostatic discharge, comprising:
an internal circuit;
a terminal connected to the internal circuit;
a ground wiring for applying a ground voltage to the internal circuit;
a substrate bias wiring for applying a substrate bias voltage to a substrate in which the semiconductor apparatus is provided;
at least one power supply wiring for applying a voltage having a different polarity from the polarity of the substrate bias voltage relative to the ground voltage;
a first protection device against electrostatic discharge for allowing a breakdown current to flow in response to a voltage having at least a specified level, the protection device being connected between the substrate bias wiring and the ground wiring;
a plurality of second protection devices against electrostatic discharge for allowing a breakdown current to flow in response to a voltage having at least a specified level, the protection devices being respectively provided between the terminal and one of the ground wiring and the substrate bias wiring, and between the power supply wiring and one of the terminal, the ground wiring and the substrate bias wiring; and
a plurality of diodes respectively provided between the substrate bias wiring and the power supply wiring, between the substrate bias wiring and the terminal, and between the substrate bias wiring and the ground wiring, wherein the first and the plurality of second protection devices are each formed of a MOS transistor.

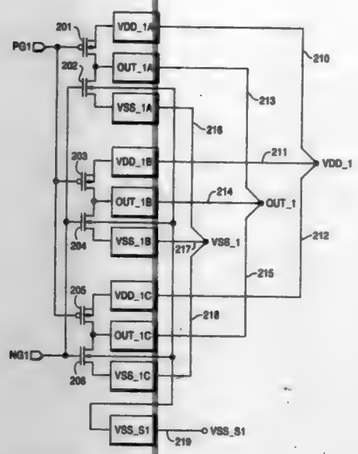
VOL 11,77 ISS 3 AG 15 1995 UMI

5,442,218

CMOS POWER FET DRIVER INCLUDING MULTIPLE POWER MOSFET TRANSISTORS CONNECTED IN PARALLEL, EACH CARRYING AN EQUIVALENT PORTION OF THE TOTAL DRIVER CURRENT

Durbin L. Seidel; Donald M. Bartlett; Ricky F. Bitting, and James F. Patella, all of Fort Collins, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio and Hyundai Electronics America, Milpitas, Calif.

Filed Sep. 30, 1993, Ser. No. 128,428
Int. Cl.[6] H01L *29/772*; H03K *17/695*
U.S. Cl. 257—369 11 Claims



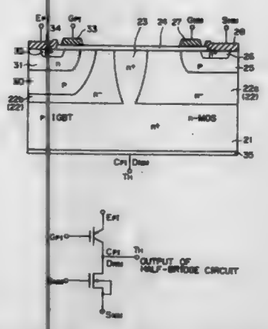
1. A semiconductor device comprising:
an integrated wafer circuit including a plurality of power switch devices and a plurality of corresponding output bonding pads; each power switch device having an output terminal connected to its corresponding output bonding pad; and
packaging for said integrated circuit wafer including an output pin for providing an electrical connection between said semiconductor device and an external device, and a plurality of bond wires corresponding to said plurality of output bonding pads, each bond wire providing an electrical connection between its corresponding bonding pad and said output pin; and wherein:
said plurality of output bonding pads are positioned adjacent to one another along the edges of said integrated circuit wafer;
said power switch devices operate in parallel, each contributing an essentially equivalent share of current to said output pin; and
each one of said plurality of power switch devices comprises:
a P-type MOSFET transistor having a source terminal, a gate terminal and a drain terminal; and
an N-type MOSFET transistor having a source terminal, a gate terminal and a drain terminal;
said drain terminals of said transistors being connected together to form the output terminal of said power switch device;
the gate terminals of each one of said P-type MOSFET transistors are electrically connected together to a first control input; and
the gate terminals of each one of said N-type MOSFET transistors are electrically connected together to a second control input.

5,442,219

SEMICONDUCTOR DEVICE FOR CONTROLLING ELECTRIC POWER

Masaaki Kato, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 14, 1993, Ser. No. 61,960
Claims priority, application Japan, May 18, 1992, 4-124686
Int. Cl.[6] H01L *27/06, 27/102, 27/105*
U.S. Cl. 257—370 4 Claims



1. A semiconductor device including a half-bridge circuit on a single semiconductor chip comprising:
a vertically-structured p-channel insulated gate bi-polar transistor forming an upper arm of the half-bridge circuit, said transistor comprising: an n-collector area, a p-base area, an n-base area and a p-emitter area; and
a vertically-structured n-channel metal-oxide-silicon transistor forming a lower arm of the half-bridge circuit, said metal-oxide-silicon transistor comprising: a p-body area, an n-type source area and an n-type drain area;
a shared n-type common area providing said n-collector area of the insulated gate bi-polar transistor and said n-type drain area of the metal-oxide-silicon transistor;
a first n-type isolation area formed on said n-type common area separating said p-base area of the insulated gate bi-polar transistor from said common area;
a second n-type isolation area formed within said first n-type isolation area, the n-type of the first and second isolation areas differing from each other, and said second n-type isolation area dividing said first n-type isolation area into two sections which separate said p-base of the insulated gate bi-polar transistor from said p-body area of the metal-oxide-silicon transistor.

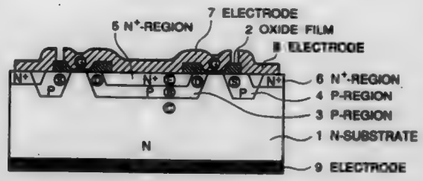
5,442,220

CONSTANT VOLTAGE DIODE HAVING A REDUCED LEAKAGE CURRENT AND A HIGH ELECTROSTATIC BREAKDOWN VOLTAGE

Takao Airi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,885
Takao Arai, Tokyo, Japan, assignor to NEC Corporation, Tokyo,
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—378 5 Claims

1. A semiconductor device functioning as a diode, including:
an insulated-gate field effect transistor for determining a breakdown voltage; and
a bipolar transistor connected to the field effect transistor for amplifying a drain current of the field effect transistor, said field effect transistor and said bipolar transistor being formed in a semiconductor substrate,
wherein said field effect transistor and said bipolar transistor are formed at a first principal surface of said semiconductor substrate, and a source, a drain and a gate of the field effect transistor are connected to a collector, a base and an emitter of the bipolar transistor, respectively, so that a collector-emitter characteristic of the bipolar transistor is utilized as a constant voltage diode.

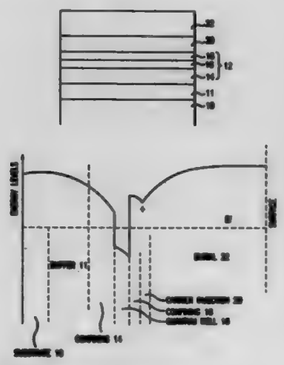


5,442,221

HALL EFFECT SENSOR

Vincent Mosser, Le Plessis Robinson, and Jean-Louis Robert, Le Cres, both of France, assignors to Schlumberger Industries, S.A., Montrouge, France

Filed May 24, 1993, Ser. No. 65,003
Claims priority, application France, May 27, 1992, 92 0617
Int. Cl.[6] H01L *27/22, 43/00*
U.S. Cl. 257—425 18 Claims



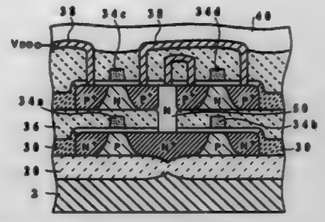
1. A Hall effect sensor comprising:
a) a quantum well structure having
i) a first layer of a III-V semiconductor material,
ii) a second layer of a III-V semiconductor material, and
iii) a third layer of III-V semiconductor material deposited on a semiconductor substrate, the III-V material of the second layer having a forbidden band gap narrower than that of the III-V materials of the first and third layers;
b) a fourth layer superimposed on the third layer and doped with donor type impurities, said fourth layer having a thickness less than 250 Å, and a carrier density per unit area integrated over the whole fourth layer less than $5\times10^{12}cm^{-2}$; and
c) a fifth layer of III-V semiconductor material superimposed on said fourth layer, said fifth layer having a thickness greater than 200 Å, which is not doped or is doped with acceptor type impurities, wherein the conduction band of said fifth layer has a higher energy than the energy of the conduction band of the second layer, and said second layer of III-V semiconductor material has a forbidden band gap of smaller width than the forbidden band gap of said first layer, and said third layer of III-V semiconductor material has a forbidden band gap of greater width than the forbidden band gap of the first layer.

5,442,222

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING GROWN LAYER ON INSULATING LAYER

Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 788,636, Nov. 6, 1991, abandoned. This application Jan. 28, 1994, Ser. No. 188,352
Claims priority, application Japan, Jul. 26, 1991, 3-187619
The portion of the term of this patent subsequent to Apr. 4, 2012, has been disclaimed.
Int. Cl.[6] H01L *27/12, 27/02*
U.S. Cl. 257—506 2 Claims



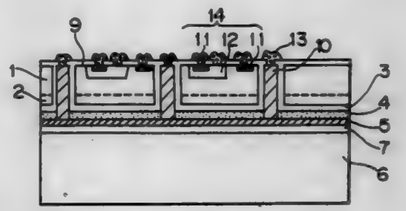
1. A semiconductor device which comprises:
a) a silicon substrate having a surface;
b) an insulating layer formed on the entire surface of said substrate, said insulating layer including at least one bird's beak structure defined by a tapered connection formed between two portions of said insulating layer which have a substantially equal thickness which is greater than a thickness of said tapered connection therebetween;
c) a plurality of first growth layers of silicon on said insulating layer which plurality of first growth layers have a same crystal plane orientation as said substrate and are isolated from one another; and
d) a semiconductor element formed in each of said plurality of first growth layers.

5,442,223

SEMICONDUCTOR DEVICE WITH STRESS RELIEF

Tetsuo Fujii, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 774,982, Oct. 15, 1991, abandoned. This application Apr. 11, 1994, Ser. No. 225,924
Claims priority, application Japan, Oct. 17, 1990, 2-280507
Int. Cl.[6] H01L *27/06, 29/06*
U.S. Cl. 257—506 12 Claims



1. A semiconductor device comprising:
a substrate;
a polycrystalline film disposed at least on said substrate;
adjacent polycrystalline layers disposed on said polycrystalline film and making contact with said polycrystalline film;
a stress relief film formed on said polycrystalline film, except

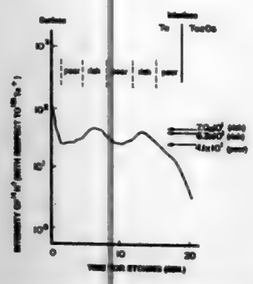
at a portion where said adjacent polycrystalline layers are formed, said stress relief film formed of a first material;
an insulating film formed of a second material and disposed adjacent a surface portion of said stress relief film and adjacent an inside surface portion of said adjacent polycrystalline layers, wherein said second material of said insulating film is different from said first material of said stress relief film so that said stress relief film relieves a thermal stress of said insulating film;
an element forming layer disposed on said insulating film and adjacent said inside surface portion of said adjacent polycrystalline layers such that said adjacent polycrystalline layers form a surrounding region which functions as an electric shielding layer when a potential is applied thereto, said element forming layer including a semiconductor element formed therein; and
an electrode coupled to at least one of said adjacent polycrystalline layers for applying a potential to said surrounding region.

5,442,224

TWO-TERMINAL MIM DEVICE HAVING STABLE NON-LINEARITY CHARACTERISTICS AND A LOWER ELECTRODE OF THIN TA FILM DOPED WITH NITROGEN

Toshiyuki Yoshimizu, Ikoma; Masahiro Kishida, Nabari; Toshiaki Fukuyama, Nara; Yoshihisa Ishimoto, Sakai; Takeshi Seike, Kitakatsuragi, and Masakazu Matobe, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1994, Ser. No. 188,818
Claims priority, application Japan, Feb. 3, 1993, 5-016569; Mar. 8, 1993, 5-046959; May 31, 1993, 5-129775; Aug. 11, 1993, 5-199790
Int. Cl.[6] G02F *1/13*
U.S. Cl. 257—536 **12 Claims**



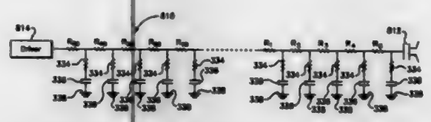
1. A two-terminal nonlinear device, comprising:
a lower electrode of a thin Ta film doped with nitrogen which is formed on a substrate,
an anodized oxide film formed by anodizing a surface of the lower electrode, and
an upper electrode of a metal thin film which is formed on the anodized oxide film,
wherein the thin Ta film includes a structure in which first portions and second portions are alternately deposited, the first portions containing a different amount of nitrogen from that contained in the second portions.

5,442,225

INTEGRATED CIRCUIT HAVING INTERCONNECTS WITH RINGING SUPPRESSING ELEMENTS

Michael D. Rostoker, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 13, 1993, Ser. No. 106,175
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—538 **6 Claims**



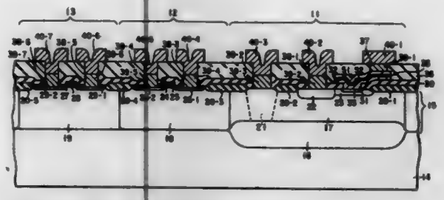
1. An integrated circuit comprising:
an interconnect: and
resistance increasing means located near a high impedance element,
and wherein:
a resistance of said resistance increasing means progressively increases toward said high impedance element,
said interconnect is formed of polysilicon, and
said resistance increasing means comprises a doped portion of said interconnect wherein the amount of dopant decreases continuously toward said high impedance element.

5,442,226

BIPOLAR TRANSISTOR HAVING AN EMITTER ELECTRODE FORMED OF POLYSILICON

Takeo Maeda, Tokyo; Hiroshi Gojohbori, Yokohama, and Takeo Nakayama, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1993, Ser. No. 51,780
Claims priority, application Japan, Apr. 27, 1992, 4-107497
Int. Cl.[6] H01L *29/735, 29/417, 29/43*
U.S. Cl. 257—557 **10 Claims**



1. A semiconductor device comprising:
a semiconductor body;
a collector region provided in a major surface portion of the semiconductor body;
a base region provided in part of a surface portion of the collector region;
an emitter region provided in part of a surface portion of the base region;
a first insulating film provided on the major surface portion of the semiconductor body;
a first contact hole formed in a part of the first insulating film, which is located on the emitter region;
an emitter electrode with a structure consisting of at least two layers, including a polysilicon layer provided in the first contact hole and on the first insulating film and put in contact with the emitter region, and a metal layer covering a full surface of the polysilicon layer;
a second insulating layer provided on the emitter electrode and the first insulating film;
a second contact hole provided, remotely from the first

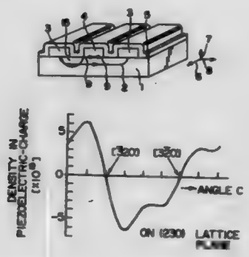
contact hole, on that part of the second insulating film which is located on a substantially flat portion of the metal layer;
a first buried metal layer provided on said metal layer in the second contact hole;
a first wiring layer provided on the first buried metal layer and on part of the second insulating layer;
a third contact hole provided in those portions of the first insulating film and the second insulating layer which are located on the base region;
a second buried metal layer formed on the base region in the third contact hole; and
a second wiring layer provided on the second buried metal layer and on part of the second insulating layer.

5,442,227

FIELD EFFECT TRANSISTOR HAVING A LOW THRESHOLD VOLTAGE SHIFT

Muneo Fukaishi, and Hikaru Hida, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 11, 1994, Ser. No. 180,058
Claims priority, application Japan, Jan. 14, 1993, 5-005212
Int. Cl.[6] H01L *29/04*
U.S. Cl. 257—628 **4 Claims**



1. A semiconductor device comprising a semiconductor substrate having a main surface having a piezoelectric property and a field effect transistor formed on the main surface of said semiconductor substrate, wherein the main surface of said semiconductor substrate is positioned on a lattice plane of said semiconductor substrate and said field effect transistor has a drain current flowing in a direction parallel to a crystal axis of said semiconductor substrate, a combination of an index of said lattice plane and an index of said crystal axis being selected from the group consisting of combinations (nm0) and [m̄n0] or [m̄n0], (nm0) and [mn0] or [mn0], (nm0) and [mn0] or [m̄n0], and (nm0) and [m̄n0] or [mn0], wherein n and m independently represent an arbitrary positive integer, respectively, and n̄ and m represent negative integers having an absolute value equal to the absolute values of n and m, respectively, and wherein the quotient n/m is not an integer.

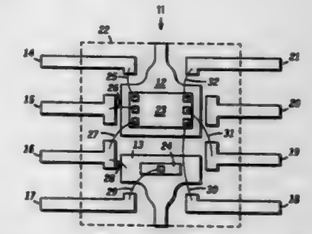
5,442,228

MONOLITHIC SHIELDED INTEGRATED CIRCUIT

Phuc C. Pham; Charles B. Siragusa, both of Chandler, and John C. Veto, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 864,458, Apr. 6, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 214,997
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—659 **15 Claims**

1. A voltage controlled oscillator comprising:
a monolithic integrated circuit voltage controlled oscillator including a metal shield integrated on said monolithic integrated circuit voltage controlled oscillator for preventing radio frequency interference;
a varactor diode for adjusting the frequency of the voltage controlled oscillator; and
a leadframe package including a leadframe having a plurality of leads, a first flag area for mounting said monolithic integrated circuit voltage controlled oscillator and a second flag area for mounting said varactor diode, said first and second flag areas being electrically isolated from each other and said plurality of leads.

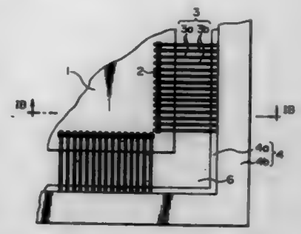


5,442,229

METAL LEAD-FILM CARRIER ASSEMBLY HAVING A PLURALITY OF FILM CARRIERS, AND FILM CARRIER-SEMICONDUCTOR CHIP ASSEMBLY AND SEMICONDUCTOR DEVICE CONTAINING SUCH METAL LEAD-FILM CARRIER ASSEMBLY

Takao Mori, Kanagawa; Satoshi Yoshida, Hachioji; Tadahiko Nishimukai, Sagamihara, and Kenji Yamaguchi, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

Filed Sep. 10, 1993, Ser. No. 118,646
Claims priority, application Japan, Sep. 10, 1992, 4-241717
Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **13 Claims**



1. A film carrier-semiconductor chip assembly comprising:
a film carrier having mounted thereon test wiring electrodes and metal leads electrically connected to said test wiring electrodes; and
a semiconductor chip electrically connected to said metal leads, wherein
said film carrier comprises a first film layer with said test wiring electrodes mounted on a surface thereof and a second film layer stacked on said first film layer and carrying said metal leads electrically connected to said semiconductor chip and said test wiring electrodes so as to electrically connect the semiconductor chip and test wiring electrodes.

5,442,230

HIGH DENSITY INTEGRATED CIRCUIT ASSEMBLY COMBINING LEADFRAME LEADS WITH CONDUCTIVE TRACES

Satya Chillara, and Shahram Mostafazadeh, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 16, 1994, Ser. No. 307,270
Int. Cl.[6] H01L 23/02
U.S. Cl. 257—666 20 Claims



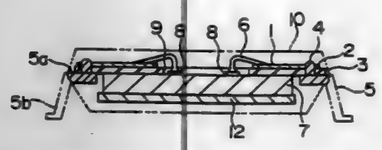
1. An integrated circuit assembly, comprising:
a) a dielectric substrate defining a predetermined array of electrically conductive traces on a first surface thereof;
b) a plurality of leadframe leads supported by said substrate and electrically isolated from said traces;
c) an IC chip supported by the substrate on the first surface, said IC chip including a series of input/output pads; and
d) a first series of bonding wires respectively electrically connecting certain ones of the input/output pads of the IC chip to respective ones of said traces and a second series of bonding wires respectively electrically connecting certain other ones of the input/output pads of the IC chip to respective ones of said leadframe leads, whereby the IC chip can be connected to external components in a predetermined way through both said electrically conductive traces and said leadframe leads.

5,442,231

SEMICONDUCTOR DEVICE

Takashi Miyamoto, and Hitoshi Fujimoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,705
Claims priority, application Japan, Oct. 1, 1991, 3-253833
Int. Cl.[6] H01L 23/48, 29/44, 29/52, 29/60
U.S. Cl. 257—668 6 Claims



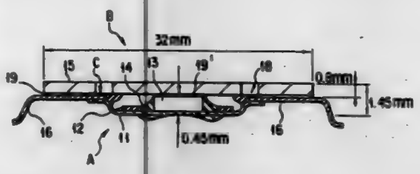
1. A packaged semiconductor device comprising:
a semiconductor chip having opposed top and bottom surfaces, at least two edges, a plurality of electrode pads disposed on the top surface inwardly spaced from each of the two edges;
an insulating tape having opposed top and bottom surfaces and a central opening, the bottom surface of the insulating tape being adhered to the top surface of the semiconductor chip between the electrode pads and the two edges with the electrode pads being disposed within the central opening and the insulating tape extending beyond the semiconductor chip at both of the two edges;
a plurality of leads, each lead having an inner lead portion and an outer lead portion, the inner lead portions extending toward but spaced from the semiconductor chip, being bonded to the bottom surface of the insulating tape, and being substantially flush with the top surface of the semiconductor chip where bonded to the insulating tape;
a plurality of electrically conducting traces disposed on the top surface of the insulating tape, each electrically conducting trace having an inner end extending toward the central opening and an outer end extending away from the central opening toward one of the inner lead portions of a lead;
inner lead connection means electrically connecting the outer end of each trace on the top surface of the insulating tape to a corresponding inner lead portion on the bottom surface of the insulating tape;
metallic wires electrically connecting respective electrode pads on the semiconductor chip to the inner ends of corresponding traces on the top surface of the insulating tape; and
a package encapsulating the chip, traces, and insulating tape with the outer lead portions of the leads extending out of the package.

5,442,232

THIN SEMICONDUCTOR PACKAGE HAVING MANY PINS AND LIKELY TO DISSIPATE HEAT

Masao Goto, Yokohama, and Morihiko Ikemizu, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1993, Ser. No. 172,186
Claims priority, application Japan, Dec. 28, 1992, 4-348663
Int. Cl.[6] H01L 23/495, 23/498, 23/34
U.S. Cl. 257—668 11 Claims



1. A semiconductor device, comprising:
a carrier tape;
a first lead wire mounted to said carrier tape;
a semiconductor chip connected to one end of said first lead wire;
a reinforcing plate to which one surface of said semiconductor chip is mounted; and
a second lead wire mounted to one surface of said reinforcing plate and having the other end of said first lead wire connected to one end thereof, said reinforcing plate having an open portion at one end portion of said second lead wire.

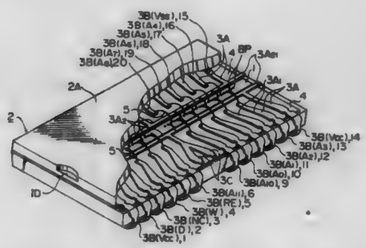
5,442,233

PACKAGED SEMICONDUCTOR DEVICE AND A LEADFRAME THEREFOR, HAVING A COMMON POTENTIAL LEAD WITH LEAD PORTIONS HAVING DUAL FUNCTIONS OF CHIP SUPPORTAND HEAT DISSIPATION

Ichiro Anjoh, Koganei; Gen Murakami, Tama, both of Japan; Michael A. Lamson, Van Alstyne, and Katherine G. Heinen, Dallas, both of Tex., assignors to Hitachi, Ltd., Tokyo, Japan and Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 620,206, Nov. 30, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,956
Claims priority, application Japan, Dec. 1, 1989, 1-312401
Int. Cl.[6] H01L 23/48, 29/44, 29/52, 29/60
U.S. Cl. 257—675 28 Claims

1. A packaged semiconductor device, comprising:
a tetragonal semiconductor chip having a main surface in which active elements and on which bonding pads are formed;
a tetragonal molding resin encapsulating said semiconductor chip;
at least one common potential lead, each including a first portion and a second portion and projections,
said first portion of said common potential lead overlying said main surface of said semiconductor chip, said first portion having integral dummy leads extending therefrom, generally transverse thereto, for enhancing dissipation of heat generated by the semiconductor device,
said second portion overlying said main surface of said semiconductor chip and extending from said first portion to a longer side of said tetragonal molding resin, and said second portion protruding from said longer side of said tetragonal molding resin, and



said projections extending from sides of said first portion toward the longer side of said tetragonal molding resin, in a direction transverse to a lengthwise direction of said first portion, said projections being distributed along a length of the first portion, said projections enhancing dissipation of heat generated by the semiconductor device;
first and second groups of signal leads arranged on opposite sides of said first portion, generally extending transverse to said first portion and protruding from said longer sides of said tetragonal molding resin;
bonding wires electrically connecting said signal leads to said bonding pads; and
an insulating film interposed between said main surface of said semiconductor chip and said first portion of said common potential lead,
wherein said first and second portions and projections are integrally formed.

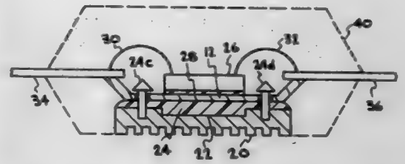
5,442,234

APPARATUS FOR THERMALLY COUPLING A HEAT SINK TO A LEADFRAME

Louis H. Liang, Los Altos, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 943,272, Sep. 10, 1992. This application Apr. 21, 1994, Ser. No. 232,573
Int. Cl.[6] H01L 23/48, 29/44, 27/52, 29/60
U.S. Cl. 257—675 10 Claims

1. A molded plastic package for an integrated-circuit die, comprising:
a lead frame having a central die-attach paddle, one side of said die-attach paddle being adapted to having an integrated-circuit die fixed thereto;
a heat sink member positioned adjacent to the other side of said die-attach paddle;
coarse positioning means for loosely positioning said heat sink with respect to said other side of said die-attach paddle, said coarse positioning means including:
one or more studs fixed to said heat sink; and
respective one or more holes which are formed in said lead frame and which are engaged by corresponding studs; and
means for resiliently fixing said heat sink member to said other side of said die-attach paddle, wherein said means for resiliently fixing said heat sink member to said other side of said die-attach paddle includes a layer of viscous thermal grease which is located between said heat sink member and said other side of said die-attach paddle; wherein said heat sink member has a recessed area centrally located in the top surface thereof for containing a supply of viscous thermal grease between said top surface of said heat sink member and said other side of said die-attach paddle.

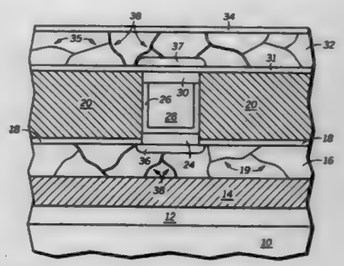


5,442,235

SEMICONDUCTOR DEVICE HAVING AN IMPROVED METAL INTERCONNECT STRUCTURE

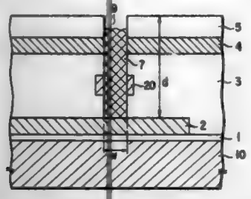
Louis C. Parrillo, and Jeffrey L. Klein, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 23, 1993, Ser. No. 172,320
Int. Cl.[6] H01L 29/460
U.S. Cl. 257—758 15 Claims



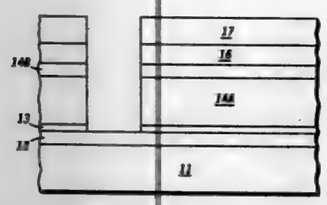
1. A semiconductor device comprising:
a metal interconnect;
an insulating layer overlying the interconnect and having an opening therein exposing a portion of the interconnect;
a second metal layer filling the opening;
a copper layer intermediate to the metal interconnect and the second metal layer; and
a copper reservoir underlying the metal interconnect and in intimate contact with the copper layer,
wherein copper from the copper reservoir continuously replenishes copper depleted by electromigration from the metal interconnect.

5,442,236
SEMICONDUCTOR DEVICE HAVING A MULTILAYERED WIRING STRUCTURE WITH DUMMY WIRING
Yuji Fukazawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 30,619, Mar. 12, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,857
Claims priority, application Japan, Mar. 14, 1992, 4-089591; Mar. 11, 1993, 5-077697
Int. Cl.[6] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—758 8 Claims



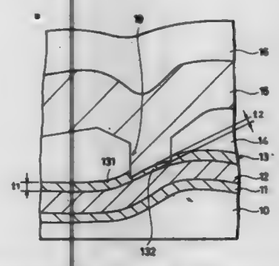
1. A semiconductor device comprising:
a semiconductor substrate on which a multi-layered wiring is formed;
a lower wiring which comprises a part of the multi-layered wiring and is formed over the semiconductor substrate;
at least one lower insulating film formed on the lower wiring;
an upper wiring, which comprises a part of the multi-layered wiring, formed on the lower insulating film;
an upper insulating film formed on the upper wiring;
a dummy wiring formed in the lower insulating film, situated between the upper wiring and the lower wiring;
a through hole penetrating through the upper insulating film, the upper wiring, the dummy wiring, and the lower insulating film, and formed such that the lower wiring is exposed, and such that the upper wiring and the dummy wiring are exposed on a side wall of the through hole; and
a connection wiring filled in the through hole, for electrically connecting the upper wiring with the lower wiring.

5,442,237
SEMICONDUCTOR DEVICE HAVING A LOW PERMITTIVITY DIELECTRIC
Henry G. Hughes; Ping-Chang Lue, and Frederick J. Robinson, all of Scottsdale, Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed Feb. 4, 1994, Ser. No. 191,736
Int. Cl.[6] H01L *23/42, 23/44*
U.S. Cl. 257—759 8 Claims



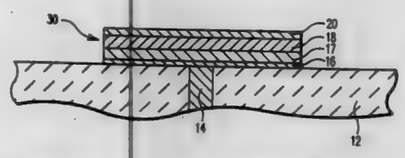
1. A semiconductor device comprising:
a semiconductor substrate having electronic devices formed therein, the substrate having a surface;
a first patterned metal layer interconnecting the electronic devices;
a first adhesion promoter overlying a portion of the substrate, wherein the first adhesion promoter comprises a material selected from the group consisting of a metal halide, a metal alkoxide, and vinyltrichlorisilane; and
a first dielectric layer on the first adhesion promoter, the dielectric layer separating portions of the first patterned metal layer from the substrate, wherein the first dielectric layer comprises a fluorinated polymer.

5,442,238
INTERCONNECTION STRUCTURE OF A SEMICONDUCTOR DEVICE
Yoshifumi Takata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 858,997, Mar. 30, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,379
Claims priority, application Japan, Apr. 5, 1991, 3-073206
Int. Cl.[6] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—774 17 Claims



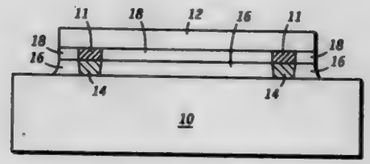
1. An interconnection structure for a semiconductor device, comprising:
a first aluminum interconnection layer including a layer containing aluminum and a layer containing refractory metal formed on the layer containing aluminum;
an insulating layer on said first aluminum interconnection layer;
a through-hole extending completely through said insulating layer and into but not through said underlying said layer containing refractory metal; and
a second aluminum interconnection layer formed on said insulating layer and extending through said through-hole so as to be in contact with said layer containing refractory metal.

5,442,239
STRUCTURE AND METHOD FOR CORROSION AND STRESS-RESISTANT INTERCONNECTING METALLURGY
Giulio DiGiacomo, Hopewell Junction; Armando S. Cummarano, Hyde Park, and Nunzio DiPaolo, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 683,169, Apr. 10, 1991, Pat. No. 5,175,609. This application Oct. 1, 1992, Ser. No. 955,091
Int. Cl.[6] H01L *23/54*
U.S. Cl. 257—781 36 Claims



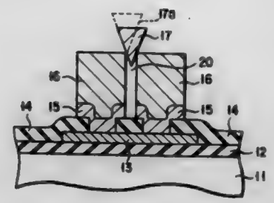
1. A multilayered interconnecting metallurgical structure for an electronic component comprising, a pad over a substrate, wherein said pad comprises sequentially formed layers of chromium, nickel and a noble or relatively noble metal, wherein said layer of chromium is on a base metallurgy and wherein said base metallurgy is selected from the group consisting of chromium, cobalt, copper, hafnium, molybdenum nickel, niobium, tantalum, titanium, zirconium, noble metals and mixtures thereof.

5,442,240
METHOD OF ADHESION TO A POLYIMIDE SURFACE BY FORMATION OF COVALENT BONDS
Prosanto K. Mukerji, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 223,184, Apr. 5, 1994, Pat. No. 5,391,397. This application Oct. 31, 1994, Ser. No. 332,155
Int. Cl.[6] H01L *23/28*
U.S. Cl. 257—783 4 Claims



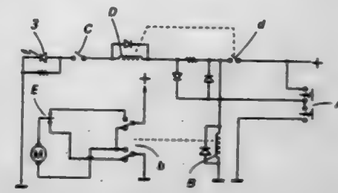
1. A semiconductor device, comprising:
a polyimide surface pretreated with a hydroxyl amine solution at an elevated temperature to form amino-ester and amide groups; and
an encapsulant material with covalent bonds to said adhesive surface.

5,442,241
BUMP ELECTRODE STRUCTURE TO BE COUPLED TO LEAD WIRE IN SEMICONDUCTOR DEVICE
Yasuo Tane, Urayasu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 22, 1994, Ser. No. 278,759
Claims priority, application Japan, Jul. 26, 1993, 5-183879
Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—784 6 Claims



1. A semiconductor device comprising:
a semiconductor substrate having a main surface with an insulating film thereon;
a pad electrode provided on the insulating film;
first and second bumps disposed on the pad electrode to provide a gap therebetween; and
a lead wire provided along the gap and parallel with the main surface of the substrate, the lead wire direction perpendicular to and upward from the main surface, at least a portion of the lead wire secured in the gap to couple the first and second bumps.

5,442,242
APPARATUS FOR DRIVING EXPANSION POLE FOR USE IN VEHICLE
Koichi Yoshida, Tomioka, Japan, assignor to Yoshiko Co., Ltd., Tomioka, Japan
Filed May 20, 1993, Ser. No. 63,975
Claims priority, application Japan, May 27, 1992, 4-160126; Nov. 19, 1992, 4-310598
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 307—10.1 9 Claims



1. An apparatus for driving an expansion pole for use in a vehicle comprising:
a light emitting element arranged within said expansion pole;
a driving means for extending and shrinking said expansion pole including a motor which is rotated in forward and reverse directions and a mechanism for coupling said motor with said expansion pole;
a main switch connected such that when said main switch is actuated, said motor is connected to a power supply source and is driven in the forward direction to extend said expansion pole or in the reverse direction to shrink said expansion pole; and
an auxiliary switch arranged within said expansion pole such that the auxiliary switch can be actuated from an outside of the vehicle and is connected such that when said auxiliary switch is actuated from the outside of the vehicle in a condition to which said expansion pole is extended, said light element is deenergized and said motor is driven in the reverse direction to shrink said expansion pole, said auxiliary, switch comprising a first contact provided on a stationary member, a second contact provided on a stationary, member, a second contact prodded on a movable member which is movable with respect to said stationary member in an axial direction of the expansion pole, and a movable means provided between said first and second contacts for converting a tilting movement of said expansion pole Into an axial movement such that said second contact is moved in the axial direction to actuate said auxiliary switch when said expansion pole is tilted.

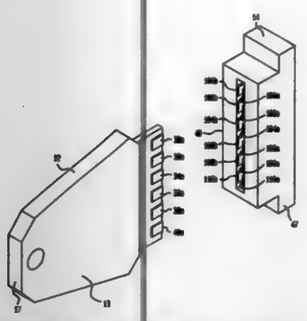
5,442,243
ELECTRICAL KEY AND LOCK SYSTEM
Henry C. Bailey, Castle Rock, Colo., assignor to Electro Lock, Inc., Denver, Colo.
Filed Feb. 16, 1993, Ser. No. 18,037
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.5 5 Claims

1. A system for enabling at least one circuit of a vehicle comprising:
a key having top and bottom surfaces;
a plurality of pairs of electrical male contacts formed on said front surface of said key, a plurality of pairs of electrical male contacts formed on said rear surface of said key, both said pluralities of pairs of male contacts extending from one end of said key, a first connecting wire connecting a first male contact of said pair of male contacts on said front surface of said key to a second male contact of said pair of contacts on said front surface of said key, a second connecting wire connecting a first male contact of said pair of male contacts on said rear surface of said key to a second male contact of said pair of male contacts on the

rear surface of said key, said first and second male contacts of said respective front and rear surfaces being aligned on said key,

a lock connected to said at least one circuit of said vehicle, said lock including a plurality of pairs of electrical female contacts for establishing contact with said electrical male contacts, said lock having a front and rear surface;

each of said plurality of pairs of said electrical female contacts including a first female contact and a second female contact, said first female contact being positioned on said front surface of said lock and said second female contact being positioned on said rear surface of said lock,



a first female contact positioned on said front surface of said lock of a first pair of said female contacts being wired to a second female contact positioned on the rear surface of said lock of a second pair of said female contacts for providing reversed wire pairs of said female contacts so that a predetermined pair of said plurality of male contacts mates with said reversed wired pairs of female contacts when either said front side or said rear side of said key is inserted adjacent said front surface of said lock,

wherein a complete circuit connection of said at least one circuit is established when either said front or said rear surface of said key is inserted adjacent said front surface of said lock.

5,442,244

STARTING CIRCUIT OF PASSENGER PROTECTING APPARATUS

Takashi Furui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,218

Claims priority, application Japan, May 28, 1992, 4-160057

Int. Cl.[6] B60R *21/32*

U.S. Cl. 307—10.1 **19 Claims**

1. A starting apparatus for starting a first and a second passenger protecting apparatus for protecting a passenger in a movable body from impact, said starting apparatus comprising:

a first auxiliary power supply connected to a power source in said movable body, including a first capacitor charged by said power source;

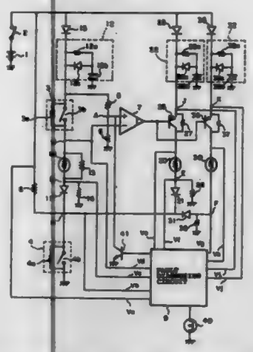
first starting means for starting said first passenger protecting apparatus by current supplied from said first auxiliary power supply;

a first acceleration sensor, including a first switch for feeding said current from said first auxiliary power supplied to said first starting means upon sensing that acceleration of said movable body is a first predetermined value or greater;

a second auxiliary power supply connected to said power source, including a second capacitor charged by said power source;

second starting means for starting said second passenger protecting apparatus by current supplied from said second auxiliary power supply;

control means for detecting potential across said first switch of said first acceleration sensor and for controlling a semiconductor switch of a switching means to be in one of an ON and OFF state based upon said detected potential; and



said switching means, upon being controlled to be in an ON state, for feeding said current from said second auxiliary power supply to said second starting means upon said acceleration of said movable body being said first predetermined value or greater.

5,442,245

Patent Not Issued For This Number

5,442,246

PROGRAMMABLE LOGIC CIRCUIT

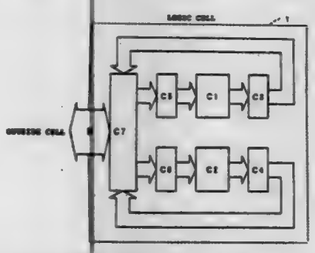
Kengo Azegami, and Koichi Yamashita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1993, Ser. No. 128,223

Claims priority, application Japan, Sep. 29, 1992, 4-260367; Aug. 30, 1993, 5-214567

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—38 **45 Claims**



1. A programmable logic circuit comprising:

a plurality of logic cells including specific logic cells;

at least two sub blocks, included in the specific logic cell, respectively having two or more inputs and one or more outputs and having only a predetermined combinational logic function by itself; and

a switching circuit, included in the specific logic cell, and capable of independently connecting a path between the input and output of each sub block,

an arbitrary combinational logic function and an arbitrary sequential logic function being realized by programming ON/OFF states of the switching circuit.

5,442,247

OUTER-ROTOR TYPE SPINDLE MOTOR WITH A REDUCED THICKNESS IN THE AXIAL DIRECTION

Yuzuru Suzuki; Sakae Fujitani; Masaaki Inagaki, all of Sizuoka, and Hitoshi Uchida, Nagano, all of Japan, assignors to Minebea Kabushiki-Kaisha, Nagano, Japan

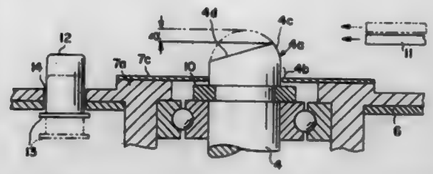
Division of Ser. No. 992,662, Dec. 18, 1992, Pat. No. 5,336,955.

This application May 19, 1994, Ser. No. 246,139

Claims priority, application Japan, Dec. 20, 1991, 111731

Int. Cl.[6] H02K *7/00*

U.S. Cl. 310—67 R **1 Claim**



1. An outer-rotor type spindle motor in which: a front-end portion of a spindle forming a stationary member passes through a central portion of a hub plate onto which a disk is loaded of a rotor yoke forming a rotating member; and, said front-end portion having been passed through said central portion of said hub plate of said rotor yoke forms a head portion which is formed into a semispherical shape having been obliquely cut.

5,442,248

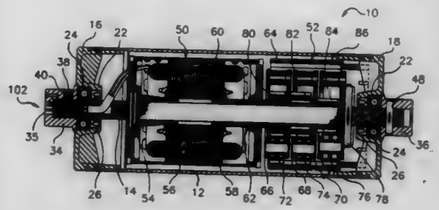
MOTORIZED PULLEY WITH INTEGRAL ELECTRICAL CONNECTOR

Charles Agnoff, Wilmington, N.C., assignor to Interroll Holding, A.G., San Antonio, Switzerland

Filed Apr. 11, 1994, Ser. No. 225,804

Int. Cl.[6] H02K *11/00, 7/10*

U.S. Cl. 310—71 **15 Claims**



1. A motorized pulley or roller comprising:

(a) a stationary roller shaft;

(b) a generally cylindrical drum mounted on the roller shaft for rotation around the axis of the roller shaft;

(c) an electric drive assembly mounted on the roller shaft and disposed inside the cylindrical drum from rotating the drum about the roller shaft;

(d) a recess formed in one end of the roller shaft;

(e) a first electrical connector disposed in the recess in the end of the roller shaft and electrically connected to the electric drive assembly; and

(f) a second electrical connector operatively connected to a power source and shaped to mate with said first connector to provide power to said electric drive assembly when the first and second connectors are mated.

5,442,249

HORIZONTAL-AXIS ELECTRICAL MACHINE

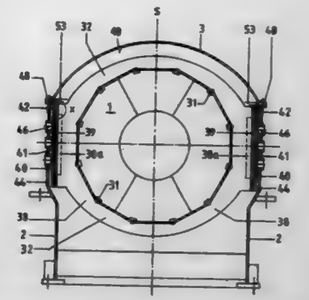
Hans Zimmermann, Mönchaltorf, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed May 5, 1994, Ser. No. 238,662

Claims priority, application Germany, Jul. 5, 1993, 43 22 268.4

Int. Cl.[6] H02K *5/00*

U.S. Cl. 310—91 **26 Claims**



1. A horizontal-axis electrical machine having a stator laminate core which is arranged in a housing which is split horizontally such that said housing includes a housing upper part and a housing lower part, wherein said housing is stiffened by housing formers, and wherein said stator laminate core is clamped by means of fastening wedges which are distributed over its circumference, in supporting rings which are arranged orthogonally to a machine longitudinal axis, said supporting rings being spaced apart from one another and each are connected on their external circumference to the housing lower part of the machine by fastening plates disposed between the external circumference of each supporting ring and said housing lower part, wherein said fastening plates extend symmetrically with respect to a vertical plane of symmetry of the machine, wherein the fastening plates are connected to the said supporting rings such that they are sprung horizontally in a radial direction, each fastening plate providing a spring coupling between the external circumference of one of said supporting rings and said housing.

5,442,250

ELECTRIC POWER TRAIN FOR VEHICLES

Leanart Stridsberg, Eskede, Sweden, assignor to Stridsberg Licencing AB, Sweden

PCT No. PCT/SE91/00683, § 371 Date Apr. 20, 1993, § 102(e) Date Apr. 20, 1993, PCT Pub. No. WO92/06530, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 9, 1991, Ser. No. 39,375

Claims priority, application Sweden, Oct. 9, 1990, 9003217; Jun. 12, 1991, 9101787

Int. Cl.[6] H02K *1/10, 3/16, 3/20, 7/14*

U.S. Cl. 310—186 **16 Claims**

1. An electric apparatus, comprising:

a field magnet having different magnetic poles included in the field magnet, the different magnetic poles formed alternately at an equal spacing;

an armature having an armature core and armature windings, the armature core including protruding first and second poles, each of the first and second poles having ends, the different magnetic poles included in the field magnet arranged to oppose the ends of the first and second poles;

electrical windings wound on each one of the first poles, the electrical windings electrically connected to one phase of a multiphase electrical power source, the field magnet and the armature being arranged to move in complete succes-

sive rotations in relation to each other such that a gap is maintained between the poles of the field magnet and the poles of the armature,

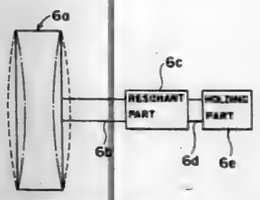
the first poles arranged in pole groups such that the windings of the poles in a pole group are connected to a same electrical phase, each pole group including at least two first poles, each pole in a pole group located immediately adjacent to another pole of the same pole group, and when more than one pole group is connected to an electrical phase, located therebetween is at least one other pole group the poles of which are connected to a different electrical phase, the pitch of the poles in a pole group



being equal to the pitch of the magnetic poles of the field magnet;

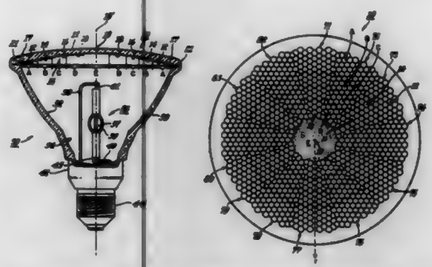
the second poles operative as flux balancing poles, the flux balancing poles not belonging to any pole group, the flux balancing poles arranged such that a flux density over the surface of the permanent magnets is relatively even, each one of the flux balancing poles being arranged adjacent to and between first poles in two adjacent pole groups, the flux balancing poles having one of no windings and windings having a lower number of turns than a number of turns of the windings belonging to first poles in pole groups.

5,442,251
VIBRATING UNIT
Hiroaki Kaida, and Jiro Inoue, both of Nagaokakyo, Japan, assignors to Murata Mfg. Co., Ltd., Japan
Continuation of Ser. No. 87,478, Jul. 2, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 387,391
Claims priority, application Japan, Jul. 3, 1992, 4-177068; Jul. 14, 1992, 4-187135; Jul. 16, 1992, 4-189726; Jul. 23, 1992, 4-196914; Jul. 27, 1992, 4-209037; Aug. 11, 1992, 4-214152
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—321 **9 Claims**



1. A vibrating unit comprising:
a vibration source that generates vibration;
a vibration transfer part having an end coupled to said vibration source, said vibration transfer part receiving and propagating said vibration from said vibration source; and
vibration cancel means coupled to said vibration transfer part for receiving the propagated vibration to vibrate in a bending mode, said vibration cancel means vibrating at a predetermined frequency such that said propagated vibration is cancelled in accordance with a dynamic vibration absorbing phenomenon,
wherein said vibration cancel means is a dynamic damper that vibrates in a bending mode at a natural frequency substantially identical to a frequency of said vibration propagated from said vibration source.

5,442,252
LENTICULATED LENS WITH IMPROVED LIGHT DISTRIBUTION
Thomas M. Golz, Willoughby Hills, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 16, 1992, Ser. No. 976,794
Int. Cl.[6] F21V *5/00*
U.S. Cl. 313—111 **18 Claims**

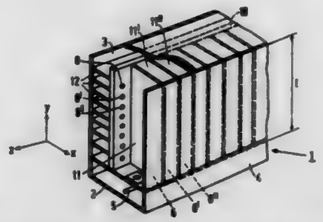


1. A lenticular lens comprising an optical center and a multiplicity of multi-sided lenticules for dispersing and spreading light arranged in a plurality of zones or bands concentric around the optical center of said lens, the light dispersing ability of each zone becoming progressively greater toward the outermost edges of said lens, and oriented to avoid parallelism when used to disperse light from a light source into a desired beam pattern.

5,442,253
THIN-TYPE PICTURE DISPLAY DEVICE
Gerardus G. P. Van Gorkom, and Petrus H. F. Tormpenaars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 830,951, Feb. 6, 1992, Pat. No. 5,313,136, which is a continuation of Ser. No. 528,677, May 24, 1990, abandoned. This application Mar. 21, 1994, Ser. No. 210,962
Claims priority, application Netherlands, Jan. 6, 1989, 8901391; Jan. 10, 1990, 9000060
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] H01J *29/70*
U.S. Cl. 313—422 **5 Claims**

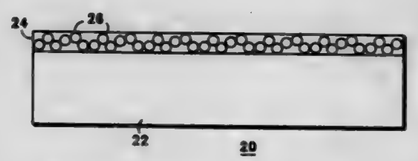
1. A display device comprising an envelope including a surface bearing a luminescent screen having a multiplicity of predefined areas and electron source means for selectively energizing respective ones of said areas to produce an image, characterized in that said display device comprises:
a. at least one electron current transport duct defined by at least one wall comprising a material having a predetermined secondary emission coefficient;
b. first electrode means arranged for producing a predetermined electric field within the at least one duct;
c. electron producing means arranged for providing electrons in the at least one duct;

said predetermined secondary emission coefficient and the arrangement of said first electrode means being chosen to effect an electron current in an operative length of the at least one duct;
d. wall means having apertures disposed in communication with said predefined screen areas and the at least one duct;



e. second electrode means for selectively effecting extraction of electron currents from the at least one duct for propagation through said apertures; and
f. means for effecting transport of the extracted electron currents toward said screen.

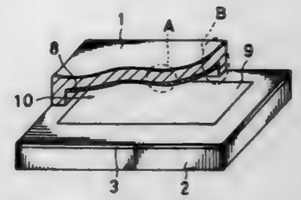
5,442,254
FLUORESCENT DEVICE WITH QUANTUM CONTAINED PARTICLE SCREEN
James E. Jaskie, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 4, 1993, Ser. No. 55,889
Int. Cl.[6] H01J *1/62, 63/04*
U.S. Cl. 313—485 **12 Claims**



1. A fluorescent device with quantum contained particle screen comprising:
a source of fluorescent stimulation; and
a fluorescent screen mounted in spaced relation to the source, the fluorescent screen including an optically transparent supporting substrate and a fluorescent layer deposited on the substrate, the fluorescent layer containing a plurality of particles each quantum confined by a diameter dictated by a specific desired color of emitted light.

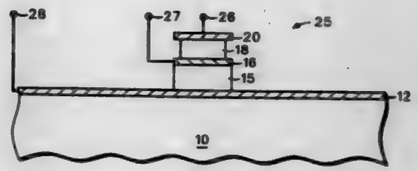
5,442,255
ELECTRON EMITTING DEVICE
Tomokazu Ise, Abiko, and Reiko Imamoto, Kashiwa, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 12, 1993, Ser. No. 104,845
Claims priority, application Japan, Aug. 25, 1992, 4-225531; Nov. 27, 1992, 4-318167; Feb. 24, 1993, 5-035227; Jun. 2, 1993, 5-131831
Int. Cl.[6] H01J *31/12*
U.S. Cl. 313—495 **20 Claims**

1. An electron emitting device comprising:
a first substrate;
a second substrate located as opposed to said first substrate;
a cold cathode array composed of a plurality of electron emitting sources for emitting electrons based on a principle of electric field emission;
an electrode electrically insulated from said cold cathode array and for picking up an electron beam; and
an electron collect electrode insulated from said cold cathode array and said electrode for picking up an electron beam,
an outer peripheral portion of at least said first substrate being jointed to an outer peripheral portion of said second substrate in a manner to keep an electron emission space,



defined by at least said cold cathode array, said electrode for picking up an electron beam and said electron collect electrode, in vacuum.
one of the portions which are jointed to each other at the jointing portion comprising a material containing an alkaline metal element and an oxygen element and the other portion comprising an oxidizable element or a material containing an oxidizable element.

5,442,256
SINGLE SUBSTRATE, VACUUM FLUORESCENT DISPLAY INCORPORATING TRIODE LIGHT EMITTING DEVICES
Curtis D. Moyer, Phoenix; James E. Jaskie, Scottsdale, and John Song, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 8, 1993, Ser. No. 133,360
Int. Cl.[6] H01J *1/62*
U.S. Cl. 313—496 **32 Claims**



18. A single substrate fluorescent display including triode light emitting devices, the display comprising:
a supporting substrate;
a first layer of electrically conductive material positioned on the substrate;
a first insulating layer positioned on the first layer of electrically conductive material;
a second layer of electrically conductive material supported on the first insulating layer and electrically insulated from the first layer of electrically conductive material, the second layer of electrically conductive material being formed into a plurality of horizontally spaced apart rows;
a second insulating layer positioned on the second layer of electrically conductive material;
an electron emitting layer of low work function material positioned on the second insulating layer and electrically insulated from the first and second electrically conductive layers, the electron emitting layer being formed into a plurality of horizontally spaced apart columns with posi-

tions at which each column overlies each row defining a pixel;

an opening extending through the layer of electron emitting material, the second insulating layer, the second layer of electrically conductive material and the first insulating layer to the first layer of electrically conductive material at each pixel; and

a layer of light emitting material positioned on the first layer of electrically conductive material in the opening at each pixel and further positioned so that emitted electrons strike the light emitting layer.

5,442,257

SYSTEM FOR AND METHOD OF LIGHTING DISCHARGE LAMP HAVING FAILURE DETECTION OF DISCHARGE LAMP, EXTERNAL WIRING AND LIGHTING CIRCUIT

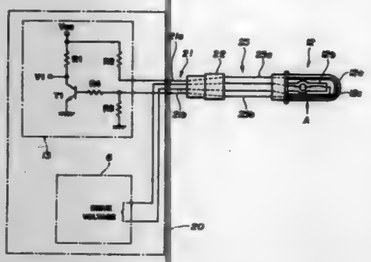
Yoshihiro Mitsumoto, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 20, 1993, Ser. No. 123,178

Claims priority, application Japan, Sep. 21, 1992, 4-250301; Mar. 4, 1993, 5-43699

Int. Cl.[6] H01J *1/60*

U.S. Cl. 315—129 **8 Claims**



1. A system for lighting a discharge lamp with a bulb and a conductive line separated from said bulb, the discharge lamp being connected to a power source, comprising:

a lighting circuit means for lighting the discharge lamp, said lighting circuit means being connected to the bulb of the discharge lamp through an external wiring with a signal line; and

a failure diagnostic circuit means, connected to the conductive line of the discharge lamp through said signal line of said external wiring and said lighting circuit means, for diagnosing failure of the discharge lamp and failure of said lighting circuit means,

said failure diagnostic circuit means diagnosing failure of the discharge lamp and failure of said external wiring,

said failure diagnostic circuit means diagnosing failure of said lighting circuit means only if both of failure of the discharge lamp and failure of said external wiring fail to be found;

said failure diagnostic circuit means diagnosing failure of the bulb only if failure of the lighting circuit means fails to be found.

5,442,258

LED LAMP DEVICE

Yoshihiko Shibata, Kiyose, Japan, assignor to Hakuyo Denkyu Kabushiki Kaisha, Kiyose, Japan

Filed May 4, 1994, Ser. No. 237,862

Int. Cl.[6] H01J *1/60*

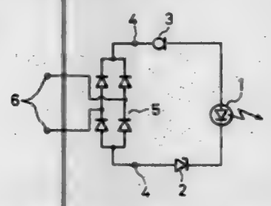
U.S. Cl. 315—129 **5 Claims**

1. An LED lamp device comprising:

an LED emitter;

a pair of DC voltage input terminals;

a circuit connecting between said LED emitter and said pair of DC voltage input terminals; and



at least one constant-voltage diode and at least one constant-current diode which are interposed in said circuit.

5,442,259

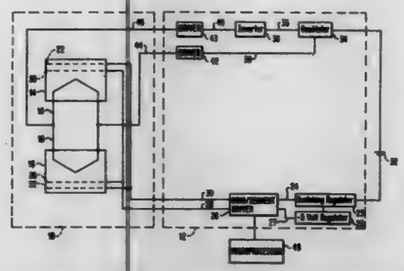
POWER SUPPLY FOR VACUUM FLUORESCENT DISPLAYS

Gary J. Lameris, Dayton, and Daniel C. Rothfuss, Vandalia, both of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed May 2, 1994, Ser. No. 236,479

Int. Cl.[6] G09G *3/10*; H05B *41/00*

U.S. Cl. 315—169.4 **16 Claims**



1. A power supply for a vacuum fluorescent display of the type having a filament, a grid, and plate electrodes and operable from a DC voltage source, said supply comprising:

means for increasing a signal from said DC voltage source, said increasing means including switching regulator means connected to said DC voltage source for generating a first boosted DC signal, and means for supplying said first boosted DC signal to grid and segment drive means for said display;

oscillator means connected to said DC voltage source for producing a first AC signal from said DC voltage source signal;

means for inverting said first AC signal from said oscillator means to produce a second AC signal of opposite polarity; and

means for amplifying said first and second AC signals and applying said amplified signals across said filament electrodes in said display to drive said filament.

5,442,260

LIGHT-EMITTING ELEMENT DRIVE CIRCUIT

Hiroyuki Saito, and Akira Ito, both of Chiba, Japan, assignors to Seikosha Co., Ltd., Japan

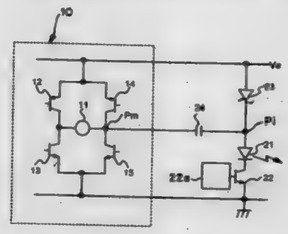
Filed Mar. 30, 1994, Ser. No. 221,057

Claims priority, application Japan, Mar. 30, 1993, 5-015400 U

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—241 P **16 Claims**

1. A light-emitting element drive circuit comprising: a diode and a light-emitting element connected in series with each other between a power source and ground; a first switching element switchable between on and off states for driving the light-emitting element; second and third switching elements connected in series with each other between the power source



and ground; and a capacitor connected between a junction point of the diode and light-emitting element and a junction point of the second and third switching elements.

5,442,261

ENERGY SAVING LAMP CONTROLLER

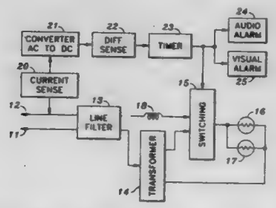
Abraham H. Bank, Long Beach, Calif., and Ralph E. Hearn, Chehalis, Wash., assignors to T.T.I. Corporation, Signal Hill, Calif.

Continuation-in-part of Ser. No. 862,455, Apr. 2, 1992, Pat. No. 5,252,894. This application Jun. 15, 1993, Ser. No. 79,124

The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.[6] H05B *41/36*

U.S. Cl. 315—307 **10 Claims**



1. An energy saving lamp controller comprising:

sensing means for sensing current applied to at least one lamp;

converting means for converting said sensed current to a control signal;

differential sensing means for producing an output signal in response to increases of said control signal, said differential sensing means comprising:

a comparator having first and second inputs and an output;

a first coupling network coupling said first input to said converting means;

a second coupling network coupling said second input to said converting means;

said first and second coupling networks having different time constants;

timing means producing a fixed duration signal in response to the occurrence of said output signal; and

power coupling means responsive to said timing means to apply an increased voltage to said lamps when said fixed duration signal is present and a reduced voltage in the absence of said fixed duration signal.

5,442,262

DISPLAY DEVICE INCLUDING A FIELD DISTORTION CORRECTION CIRCUIT, AND FIELD DISTORTION CORRECTION CIRCUIT

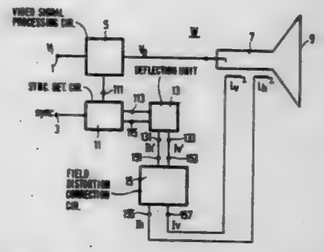
Antonius H. Van Tiel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1994, Ser. No. 203,966

Claims priority, application European Pat. Off., Mar. 4, 1993, 93200630

Int. Cl.[6] G09G *1/04*; H01J *29/70*

U.S. Cl. 315—371 **6 Claims**



1. A display device comprising:

a display tube with a display screen for displaying a video signal;

a deflection unit for deflecting at least one electron beam generated in the display tube, said deflection unit comprising at least a field deflection coil;

means for generating at least a line deflection current and a field deflection current related to said video signal; and

a field distortion correction circuit coupled to said means for generating and the deflection unit for correcting a field deflection; characterized in that the field distortion correction circuit comprises:

a resonant circuit including a series arrangement of a first inductance and a capacitor;

coupling means for coupling the resonant circuit to the field deflection coil, said coupling means applying a resonance waveform to the field deflection coil, said resonance waveform being a correction version of said field deflection current applied to said resonance circuit; and

a bidirectionally conducting line frequency-controlled switch coupled across said series arrangement, said bidirectionally conducting line frequency-controlled switch having a control input coupled to said generating means for receiving said line deflection current for selectively activating said resonance circuit at the line frequency.

5,442,263

DYNAMIC ELECTROSTATIC AND MAGNETIC FOCUSING APPARATUS FOR A CATHODE RAY TUBE

Roger C. Alig, Princeton Junction, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Aug. 23, 1994, Ser. No. 294,712

Int. Cl.[6] H01J *29/58*

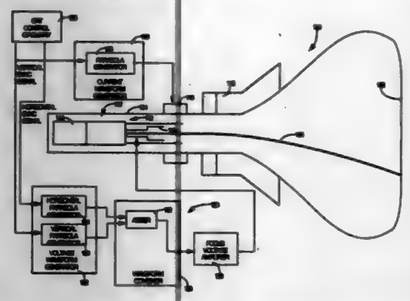
U.S. Cl. 315—382.1 **11 Claims**

1. Apparatus for focusing an electron beam in a cathode ray tube, said apparatus comprising:

an electrostatic focus lens, circumscribing the electron beam, for generating an electric field having a magnitude that is responsive to a position of said beam on a screen of said cathode ray tube;

a magnetic focus lens, circumscribing said electron beam, for generating a magnetic field having a magnitude that is

responsive to a position of said beam on a screen of said cathode ray tube; and



wherein, operating simultaneously, said magnetic and electrostatic lenses focus the electron beam at any location on the screen.

5,442,264

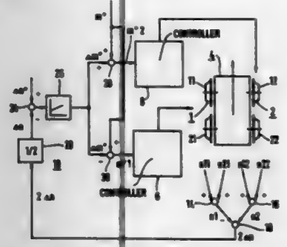
Patent Not Issued For This Number

5,442,265

METHOD AND APPARATUS FOR IMPROVING THE RUNNING CHARACTERISTICS OF A WHEEL BLOCK BOGIE

Leonhard Reng, Herzogenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 29, 1993, Ser. No. 129,220
Claims priority, application European Pat. Off., Sep. 29, 1992, 92116655
Int. Cl.[6] B61F *5/38*
U.S. Cl. 318—77 **6 Claims**



1. In a rail vehicle having a plurality of individual wheels arranged in two wheel blocks and a plurality of traction motors wherein the motors are supplied with power on each wheel block by wheel block basis, said two wheel blocks are controlled by a first and a second open loop/closed loop control device, a method comprising the steps of:

detecting the speed of the plurality of individual wheels;

for each wheel block calculating a wheel block speed based on the detected speed of the individual wheels of the associated wheel block;

detecting an actual speed difference from the calculated wheel block speeds;

comparing said actual speed difference to a predetermined set speed difference value, and producing a manipulated variable from the comparison;

providing a set torque value to the first open loop/closed loop control device, said set torque value formed by subtracting said manipulated variable from a set traction level value; and

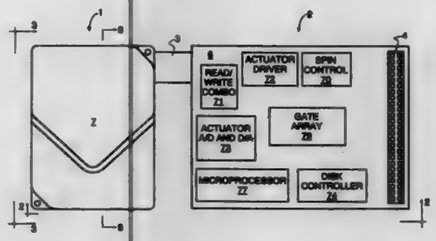
providing a set torque value to the second open loop/closed loop control device, said set torque value formed by adding said manipulated value a set traction level value.

5,442,266

MINIATURE DISK DRIVE WITH SPIN MOTOR CONTROL SYSTEM

James H. Morehouse, Jamestown; Steven B. Volk, Boulder; Michael R. Utenick, Englewood, and John H. Blagaila, Boulder, all of Colo., assignors to Intégral Peripherals, Inc., Boulder, Colo.

Division of Ser. No. 629,948, Dec. 19, 1990. This application Sep. 14, 1993, Ser. No. 121,847
Int. Cl.[6] H02P *1/00*
U.S. Cl. 318—272 **31 Claims**



1. A disk drive information storage device comprising:

disk means for recording and reproducing information;

a housing having a first external dimension of about 51 mm;

a spin motor supported by said housing for rotating said disk means, said spin motor including a rotor for receiving said disk means and rotating said disk means about an axis;

a start-up control circuit coupled to said spin motor, said start-up control circuit comprising:

a BEMF commutation pulse input line for receiving a BEMF commutation pulse from a BEMF commutation circuit;

counter circuit means having an input line, a count direction control terminal, and an output line;

wherein said counter circuit means changes a count value in response to a signal on said input line;

a start-up pulse is generated on said output line upon said count value equaling a predetermined value; and

a signal on said direction control terminal determines the direction of change of said count value; and

logic circuit means having (i) an input line coupled to said BEMF commutation pulse input line, (ii) an output line connected to said input line of said counter circuit means;

counter direction control circuit having an input line connected to said BEMF commutation pulse input line and an output line connected to said count direction control terminal of said counter circuit means wherein upon start-up of said spin motor, said counter direction control circuit generates a signal having a first level on said output line;

wherein upon start-up of said spin motor, said count value of said counter circuit means changes value in a first direction in response to each clock pulse generated on said output line by said logic circuit; and

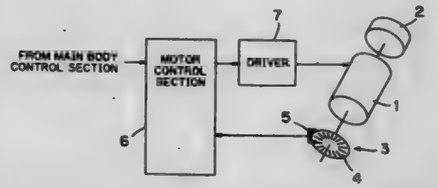
in response to said BEMF commutation pulse, said counter direction control circuit generates a signal providing a second level to said count direction control terminal of said counter circuit means so that said count value changes in a second direction different from said first direction thereby providing a smooth transition from a start-up mode to a BEMF commutation mode of said spin motor.

5,442,267

DEVICE FOR CONTROLLING THE REVERSE ROTATION OF A MOTOR AND METHOD OF JUDGING TIME POINT WHERE THE MOTOR IS ACTUALLY ROTATED IN A REVERSE DIRECTION

Hiroyuki Harada, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Jun. 14, 1993, Ser. No. 76,428
Claims priority, application Japan, Jun. 17, 1992, 4-158290; Jun. 17, 1992, 4-158291; Jun. 17, 1992, 4-158292
Int. Cl.[6] H02K *27/20*
U.S. Cl. 318—280 **12 Claims**



1. An apparatus for controlling reverse rotation of a motor said apparatus comprising:

rotation signal outputting means connected to a rotation axis of a motor for outputting a rotation signal in synchronism with rotation of the motor;

speed calculation means for calculating rotation speed of the motor based on a rotation signal outputted by the rotation signal outputting means;

means for applying a reverse rotation instruction to the motor;

judging means for judging, after a reverse rotation instruction has been applied to the motor by the applying means, whether or not the rotation speed of the motor as calculated by the speed calculating means is not more than a predetermined reference speed; and

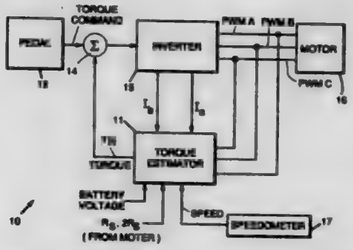
reverse rotation detecting means for detecting that the motor has begun to rotate in a reverse direction when a predetermined very small time period has elapsed after the judging means has judged that the rotation speed of the motor is not more than the reference speed.

5,442,268

TORQUE OSCILLATION COMPENSATION USING TORQUE EMULATOR/OBSERVER FEEDBACK

Gholam D. Goodarzi, Torrance, and Robert S. Wedeen, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 13, 1993, Ser. No. 61,658
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—432 **2 Claims**



1. A torque oscillation compensation system for use with an electric vehicle comprising a source of torque command signals and an electric motor that is controlled by a power switching circuit that is responsive to the torque command signals and which provides pulse width modulated signals for driving the motor, said system comprising:

a torque estimator coupled to receive pulse width modulated signals provided by the power switching circuit for providing estimated torque feedback signals derived therefrom, wherein said torque estimator comprises:

(i) processing and scaling means coupled to receive the pulse width modulated signals and a battery signal, for scaling the pulse width modulated signals in proportion to the battery signal to produce output signals that comprise a measure of the phase voltages applied to the motor,

(ii) multiplying and summing means responsive to a measured current signal from the motor and to a signal indicative of the equivalent resistance of the motor for producing an output signal corresponding to a first transfer function,

(iii) multiplying means coupled to the multiplying and summing means for multiplying the output signals therefrom to produce an output power signal indicative of the output power P(t) of the motor, and

(iv) dividing means coupled to the multiplying means for dividing the output power signal by the speed of the electric vehicle to produce an output torque signal T(t) that is coupled to the summing device as the estimated torque feedback signal from the estimator circuit; and

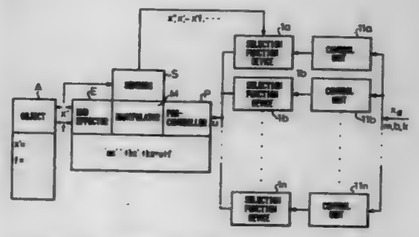
a summing device coupled to the source of torque command signals, the torque estimator, and to the power switching circuit, for combining the torque command signals with the estimated torque feedback signals to provide compensated input signals to the power switching circuit that controls the motor.

5,442,269

ROBOT CONTROL SYSTEM

Kuniharu Takayama, Kawasaki, and Hiroyuki Kano, Hiki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 10, 1993, Ser. No. 118,747
Claims priority, application Japan, Mar. 12, 1993, 5-052233
Int. Cl.[6] B25J *9/18*
U.S. Cl. 318—568.11 **4 Claims**



1. A robot control system comprising:

an end effector for acting upon an object to be worked;

a manipulator which mechanically supports the end effector and thereby is operative to move the end effector;

a plurality of sensors mounted on the end effector and operative to detect, and to produce corresponding outputs representative of, a position (x) of the end effector, a force (f) between the end effector and the object and an acceleration (x″), a speed (x′) and a work rate (−x′f) of the end effector;

a pre-controller which controls movement of the end effector by the manipulator;

a plurality of selection function means having respective outputs connected in parallel to the pre-controller and at least one of the selection function means being selected in accordance with the sensor outputs representative of the acceleration (x″), the speed (x′) and the work rate (−x′f);

a plurality of control means respectively connected to the

plurality of selection function means and individually operative, for receiving and inputting, in common, a target trajectory (x_d) of the end effector and for outputting respective control signals (u) to the pre-controller to control movement of the end effector and the manipulator; and

each said selected one of the selection function means being selected in accordance with respective values, each value being one of "0" and "other than 0", of the acceleration, the speed and the work rate sensor outputs; and the respective control signal (u), from each control means corresponding to a selected one of the selection function means, is input to the pre-controller thereby to control movement of the end effector by the manipulator.

5,442,270

ADAPTIVE SLIDING MODE CONTROL METHOD FOR OBJECT OF CONTROL INCLUDING SPRING SYSTEM

Kato Tetsuaki, Oshino, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

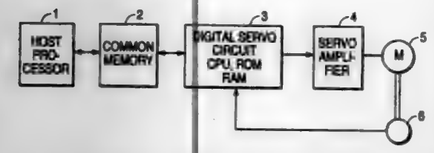
PCT No. PCT/JP93/00056, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO93/16423, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 19, 1993, Ser. No. 129,084

Claims priority, application Japan, Feb. 6, 1992, 4-056344

Int. Cl.[6] G05B *19/405*

U.S. Cl. 318—568.22 **4 Claims**



1. An adaptive sliding mode control method for controlling a control object, including a spring system, being driven by a servomotor, said method comprising the steps of:

feeding back a difference between a position of the servomotor and a position of a moving part of the control object driven by the servomotor, for determination of a phase plane used in sliding mode control, said phase plane having a value; and

controlling a torque command for the servomotor so that the value of said phase plane converges to 0.

5,442,271

INDUCTION MOTOR CONTROL APPARATUS PROVIDING HIGH EFFICIENCY WITH RAPID RESPONSE TO CHANGES IN LOAD TORQUE

Takefumi Hatanaka, and Naruto Kuwahara, both of Tokyo, Japan, assignors to Arex Electronics Corporation, Tokyo, Japan

Filed Jun. 15, 1994, Ser. No. 259,836

Claims priority, application Japan, Jun. 21, 1993, 5-187681

Int. Cl.[6] H02P *5/40*

U.S. Cl. 318—729 **7 Claims**

1. An induction motor control apparatus for controlling the value of an AC voltage which is derived from an AC power source voltage and is supplied to an induction motor as a motor supply voltage, the apparatus comprising:

conversion means for converting said AC power source voltage to said motor supply voltage;

means for deriving a voltage detection signal indicative of said value of the motor supply voltage and a current detection signal indicative of a value of supply current of said induction motor;

reference power factor designation means for producing a reference power factor designation signal indicative of a target value of operating power factor of said induction motor;

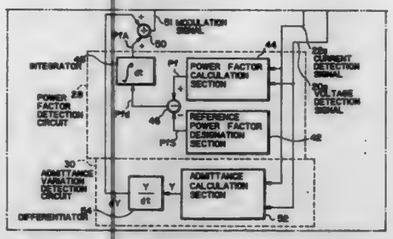
power factor calculation means responsive to said voltage detection signal and current detection signal for deriving a power factor signal indicative of an actual operating value of power factor of said induction motor;

means for operating on said power factor signal and reference power factor designation signal to obtain a deviation signal indicative of an amount of deviation of said actual operating value of power factor from said target value of power factor;

integrator means for integrating said deviation signal to obtain a power factor adjustment signal;

parameter calculation means for operating on said voltage detection signal and current detection signal to derive an operating parameter signal, said operating parameter signal varying in level in accordance with a degree of slip of said motor;

differentiator means for differentiating said operating parameter signal to obtain an operating parameter variation signal, said operating parameter variation signal increasing in level with a first polarity in response to an increase in a load torque applied to said induction motor and increasing in level with a second polarity in response to a decrease in said load torque; and



combining means for combining said operating parameter variation signal with said power factor adjustment signal to obtain a modulation signal, and for supplying said modulation signal to said conversion means;

said conversion means being controlled by said modulation signal to vary said motor supply voltage such as to reduce said amount of deviation, and said combining means being configured such as to change said modulation signal in a direction tending to increase said motor supply voltage when said operating parameter variation signal increases with said first polarity and in a direction tending to decrease said motor supply voltage when said operating parameter variation signal increases with said second polarity.

5,442,272

CURRENT LIMITING FOR DC ELECTRIC MOTOR START-UP

Jeffrey D. Schwartz, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 2, 1993, Ser. No. 146,546

Int. Cl.[6] H02P *7/06*

U.S. Cl. 318—778 **2 Claims**

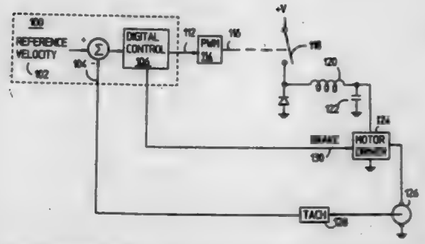
1. In a motor control circuit having a DC electric motor, a power supply for supplying current to the motor, a filter, the filter including a capacitor connected in parallel with the motor, a method for starting the motor, the method comprising the following steps:

(a) preventing current flow through the motor;

(b) applying a motor voltage to the motor, the motor voltage being equivalent to a maximum voltage, thereby charging the capacitor to the maximum voltage;

(c) reducing the motor voltage being applied to the motor to an intermediate voltage, at which if the intermediate voltage is applied directly to the motor while stationary, current through the motor does not exceed a predetermined power supply current limit;

(d) switching current flow through the motor;



(e) measuring motor angular velocity after the motor begins rotating; and

(f) increasing the motor voltage being applied to the motor in proportion to the motor angular velocity.

5,442,273

DRIVE CONTROL APPARATUS

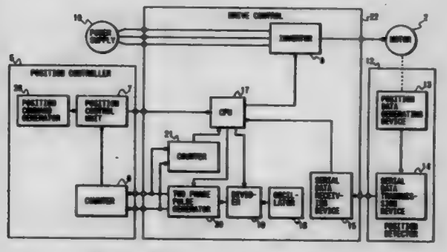
Yasushi Ikawa, and Seisuke Tsutsumi, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1994, Ser. No. 215,716

Claims priority, application Japan, Mar. 23, 1993, 5-64050

Int. Cl.[6] G05B *19/29*; **H02D** *5/40*

U.S. Cl. 318—799 **18 Claims**



1. A drive control apparatus, for use with a device for detecting at least one of the position and velocity of an apparatus being driven by a power supply and outputting condition data representative thereof, for controlling driving of the apparatus, comprising:

means for dividing a clock pulse signal in accordance with a division ratio signal and outputting a divided clock pulse signal;

means for generating two-phase pulses having a 90-degree phase shift of a given polarity with respect to one another in accordance with the divided pulse signal, and for reversing the polarity of the phase shift in accordance with a rotation judging signal; and

processing means for providing the division ratio signal and the rotation judging signal, calculating the velocity of the apparatus in accordance with the condition data, and outputting a control signal to control driving of the apparatus in accordance with the calculated velocity and the two-phase pulses.

5,442,274

RECHARGEABLE BATTERY CHARGING METHOD

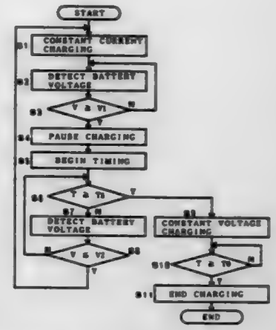
Mikitaka Tamai, Sumoto, Japan, assignor to Sanyo Electric Company, Ltd., Osaka, Japan

Filed Aug. 26, 1993, Ser. No. 111,976

Claims priority, application Japan, Aug. 27, 1992, 4-228896; Sep. 10, 1992, 4-241947; Sep. 29, 1992, 4-260115; Apr. 19, 1993, 5-91264

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—23 **15 Claims**



1. A rapid rechargeable battery charging method, which comprises the steps of:

(a) charging a rechargeable battery at one of a prescribed constant current and a prescribed quasi-constant current until a battery voltage of the rechargeable battery becomes a first voltage that is greater than a second voltage;

(b) repeating a process of constant current charging the rechargeable battery at the one of the prescribed constant current and the prescribed quasi-constant current and of then pausing the constant current charging of the rechargeable battery; and

(c) constant voltage charging the rechargeable battery at the second voltage after step (b);

further comprising detecting a time that elapses as the battery voltage drops from the first voltage toward the second voltage during the pausing of the constant current charging in step (b), and wherein the constant voltage charging in step (c) starts when the detected time becomes greater than or equal to a prescribed time.

5,442,275

BATTERY CHARGING CIRCUIT AND ELECTRONIC DEVICE INCLUDING THE SAME

Hitoshi Sahai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 8, 1993, Ser. No. 117,949

Claims priority, application Japan, Sep. 10, 1992, 4-266826

Int. Cl.[6] H02J *7/10*

U.S. Cl. 320—39 **2 Claims**

1. A battery charging circuit which converts a value of charging current flowing through a battery into a voltage value, A/D converts the converted voltage value into a digital value and detects an over current charging condition and a charging completion condition respectively based on the converted digital value comprising:

a power source circuit for charging said battery;

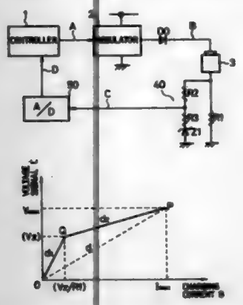
a current voltage conversion circuit inserted in series with said battery which, when assuming a voltage value to charging current ratio, shows a first current-voltage conversion characteristic having a first positive value of the ratio in a first range of charging current value representing the charging completion condition and further shows a second current-voltage conversion characteristic having

a second smaller positive ratio value than that of the first current-voltage conversion characteristic in a range of charging current value exceeding the first range;

an A/D converter circuit which A/D converts the converted voltage value by said current-voltage conversion circuit;

a controller which detects respectively the over current charging condition and the charging completion condition upon receipt of an output from said A/D converter circuit and terminates the charging operation of said power source circuit when one of these conditions is detected;

wherein the first current-voltage conversion characteristic is linear and the first ratio value thereof is set larger than a third ratio value defined by a ratio of the voltage value to the charging current between a minimum value of the charging current to a current value representing an over current charging condition, and the second ratio value of



the second current-voltage conversion characteristic is set smaller than that of the third ratio value and wherein when a voltage of said battery restores to a predetermined voltage value, the charging current gradually decreases in accordance with the advance of the charging operation; and

wherein said current-voltage conversion circuit includes a series resistor inserted in series with said battery and a diode connected in parallel with said series resistor, the first current-voltage conversion characteristic is substantially determined by the resistance value of said series resistor and the second current-voltage characteristic is substantially determined by a condition when said diode is turned "ON"; and further

wherein a series circuit of a plurality of resistors connected in series is provided between said battery and said diode and the voltage value is taken out from the junction point of the plurality of the resistors in said series circuit.

5,442,276

APPARATUS FOR PROVIDING CONTROLLED MECHANICAL BRAKING TORQUE

Rodney E. Schwartz, Tempe; Steven T. Clauter, Scottsdale, and Gary M. Orman, Paradise Valley, all of Ariz., assignors to Integrated Technology Corporation, Tempe, Ariz.

Continuation-in-part of Ser. No. 335,791, Mar. 27, 1989, Pat. No. 5,189,360. This application Feb. 22, 1993, Ser. No. 21,275

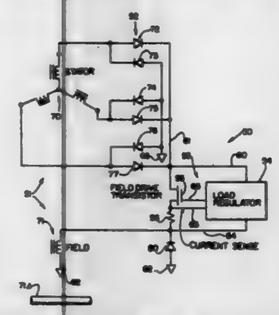
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—25 **21 Claims**

1. An electrical apparatus for generating a mechanical braking torque, comprising:

an electro-mechanical device which generates electrical energy as a function of a mechanical input using at least one winding, said at least one winding being lossy; and



means for dissipating substantially all said electrical energy in said at least one winding to generate said mechanical braking torque.

5,442,277

INTERNAL POWER SUPPLY CIRCUIT FOR GENERATING INTERNAL POWER SUPPLY POTENTIAL BY LOWERING EXTERNAL POWER SUPPLY POTENTIAL

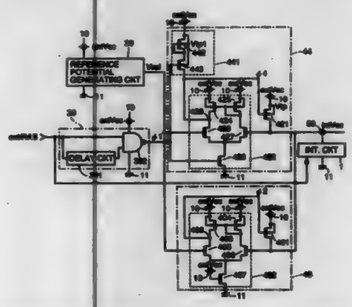
Shigeru Mori, and Takeshi Kajimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,730

Claims priority, application Japan, Feb. 15, 1993, 5-025207; Dec. 7, 1993, 5-306917

Int. Cl.[6] G05F *3/04*

U.S. Cl. 323—312 **16 Claims**



1. An internal power supply circuit for generating an internal power supply potential by lowering an external power supply potential, comprising:

(a) an output node at which said internal power supply potential is generated;

(b) main internal power supply potential generating means for constantly generating said internal power supply potential at said output node based on a constant reference potential from a constant reference potential source; and

(c) auxiliary internal power supply potential generating means including

switching means connected between an external power supply node to which said external power supply potential is applied and said output node for conducting said external power supply node and said output node when a voltage larger than a prescribed threshold voltage is applied,

comparing means activated temporarily in response to a prescribed control signal and when activated, for comparing a potential, generated at said output node and changing in response to said internal power supply potential, with said reference potential, for applying a control voltage larger than said threshold voltage to said switching means in a first case in which said potential is lower than said reference potential, and for applying a control voltage smaller than said threshold voltage to said switching means in a second case in which said potential is higher than said reference potential, and

standby means for applying a standby voltage which is smaller than said threshold voltage but larger than zero voltage to said switching means while said comparing means is not activated.

5,442,278

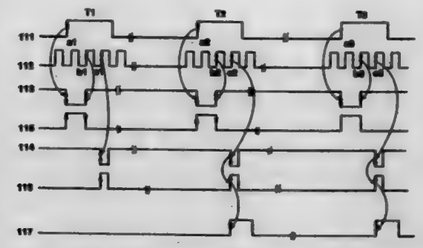
APPARATUS FOR DETECTING THE FREQUENCY OF AN INPUT SIGNAL BY COUNTING PULSES DURING AN INPUT SIGNAL CYCLE

Yung F. Fan Chiang, and Kun-M. Lee, both of Kweishan, Taiwan, assignors to Acer Peripherals, Inc., Taiwan

Filed Sep. 24, 1993, Ser. No. 126,329

Int. Cl.[6] G01R *23/02*

U.S. Cl. 324—76.41 **11 Claims**



1. An apparatus for detecting a frequency of an input signal, comprising:

a timing control circuit, in response to said input signal and a reference signal of a predetermined frequency, generating first, second, third, fourth, and fifth control signals;

a counter means having a clock input terminal for receiving said reference signal, the counter means, in response to said second control signal, resetting and beginning to count, the counter means having an output terminal for outputing a count value;

a first latch having an input terminal for receiving said count value, the first latch, in response to said first control signal, latching said count value and outputing a new count value at an output terminal;

a microprocessor means receiving said new count value and generating a value of the frequency of said input signal;

a second latch having an input terminal coupled to the output terminal of said first latch, the second latch, in response to the third control signal, latching said new count value and outputing an old count value at an output terminal;

a comparator having an output terminal and having a first and a second input terminal coupled to the output terminals of the first latch and the second latch, respectively, the comparator, in response to the fourth control signal, comparing said new count value and said old count value and outputing a trigger signal at its output terminal when the new and old count values are not equal; and

a flip-flop having an input terminal for receiving said trigger signal, the flip,flop, in response to said trigger signal and the fifth control signal, generating an interrupt signal which causes said microprocessor means to recompute an updated frequency.

5,442,279

APPARATUS AND METHOD FOR DETECTING POWER OF A THREE PHASE ALTERNATING CURRENT SYSTEM

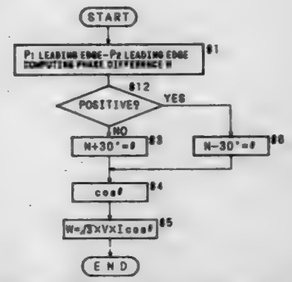
Haruyoshi Kitayoshi, Takatsuki, and Atsuhiko Tamaki, Kyoto, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Nov. 24, 1992, Ser. No. 980,917

Claims priority, application Japan, Nov. 29, 1991, 3-361209

Int. Cl.[6] G01R *21/06, 11/16*

U.S. Cl. 324—107 **9 Claims**



8. A method for computing the power (W) of a three-phase alternating current supply comprising the steps of:-

detecting the current (I) of one phase of said supply,

detecting the line to line voltage (V) between said one phase and another phase of said supply,

computing the phase difference (N) between the detected current (I) and line to line voltage (V),

comparing the magnitude of the computed phase difference (N) with a phase difference angle α ($30° \leqq \alpha \leqq 60°$), and

subtracting 30° from or adding 30° to the computed phase difference (N) depending if the comparison is larger or smaller than α to produce a resultant phase angle (θ) and

computing the power (W) of the supply using the resultant phase angle (θ).

5,442,280

DEVICE FOR MEASURING AN ELECTRICAL CURRENT IN A CONDUCTOR USING A ROGOWSKI COIL

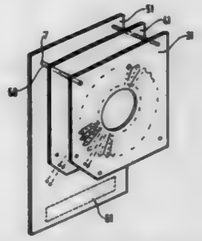
Christophe Baudart, Lyons, France, assignor to GEC Alstom T & D SA, Paris, France

Filed Sep. 1, 1993, Ser. No. 114,246

Claims priority, application France, Sep. 10, 1992, 9210801

Int. Cl.[6] G01R *33/00*; H01F *40/06*

U.S. Cl. 324—127 **4 Claims**



1. Device for measuring an electrical current in a conductor, comprising:

a Rogowski coil through which said conductor passes, said Rogowski coil being of the type comprising at least one printed circuit plate provided with a circular cutout, the coil being implemented by metal deposits on each of the two faces of the plate and extending along radii such that

geometrical projections thereof pass through the center of said cutout, electrical connections between the radii on one face and those on the opposite face being implemented by plated-through holes that pass through the thickness of the plate, wherein the radially-extending metal deposits and the plated-through holes form a coil winding which is constituted by a first clockwise winding and a second counter-clockwise winding which are connected in series and disposed around the circuit cutout, said winding having an input and an output on the same face of the plate, separated by a distance of a few tenths of a millimeter;

a resistor R connected in series with said Rogowski coil; and

said resistor R having a value equal to

$$R_0 = r_0(\alpha_r - \alpha_s - \alpha_R)/\alpha_s$$

where:

R_0 is the ohmic resistance of the resistor R at a reference temperature,

r_0 is the ohmic resistance of the Rogowski coil at said reference temperature,

α_r is the temperature coefficient of the conductive material of said Rogowski coil,

α_s is the temperature coefficient of the sensitivity of the Rogowski coil,

α_R is the temperature coefficient of the resistor R, the current I to be measured being related to the voltage U by the equation:

$$U = j\, S_0\, \omega I\, R_0/(R_0 + r_0)$$

where:

S_0 is the sensitivity of said Rogowski coil at said reference temperature,

j is the complex operator such that $j^2 = -1$, and

ω is the angular frequency of the current to be measured.

5,442,281

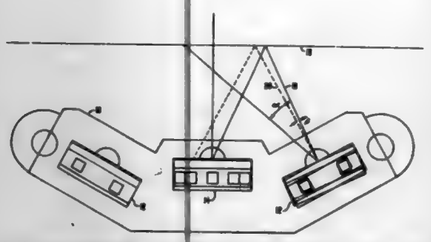
METHOD AND APPARATUS FOR DERIVING POWER CONSUMPTION INFORMATION FROM THE ANGULAR MOTION OF A ROTATING DISK IN A WATT HOUR METER

Myron I. Frisch, Minneapolis, and Ahmed Naumaan, Bloomington, both of Minn., assignors to EnScan, Inc., Spokane, Wash.

Filed Jun. 1, 1993, Ser. No. 69,704

Int. Cl.[6] G01R *11/02, 22/00;* G01D *5/34;* G01P *13/04*

U.S. Cl. 324—137 **37 Claims**



1. An apparatus for recording information about the angular motion of a rotatable disk disposed in a first structure, the disk having regions with differing properties with respect to electromagnetic energy, the apparatus comprising:

first means for emitting a first sequence of electromagnetic energy pulses in a first direction toward the disk, the first emitting means being mounted on the first structure adjacent a first side of the disk;

second means for emitting a second sequence of electromagnetic energy pulses in a second direction toward the disk, the second emitting means being mounted on the first structure adjacent the first side of the disk and separated from the first emitting means in the direction of rotation of the disk, the first and second directions being such that the first and second Sequences of electromagnetic energy pulses reflect from the first side of the disk in different areas, the areas being separated in the direction of rotation of the disk;

photosensitive means mounted on the first structure so that the photosensitive means can receive the electromagnetic energy pulses from both the first and second emitting means at a single point, the photosensitive means being for generating a signal in response to the received electromagnetic energy pulses; and

a controller coupled to the photosensitive means for processing the signal to determine the number of rotations of the disk, and the direction of rotation of the disk, the controller also being for synchronizing the first and second sequences of electromagnetic energy pulses such that each electromagnetic energy pulse from the first emitting means is followed by an electromagnetic energy pulse from the second emitting means.

5,442,282

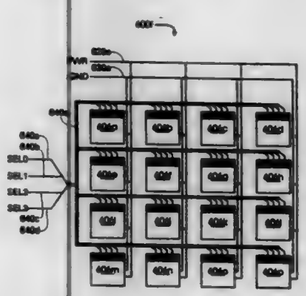
TESTING AND EXERCISING INDIVIDUAL, UNSINGULATED DIES ON A WAFER

Michael D. Rostoker; Carlos Dangelo, and James Koford, all of San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 2, 1992, Ser. No. 908,687

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—158.1 **3 Claims**



1. A method of providing signals from a common external source to individual, unsingulated dies on a semiconductor wafer, comprising:

forming a plurality of individual integrated circuit dies on a semiconductor wafer, each die occupying a distinct one of a like plurality of first areas on the wafer;

providing an electronic selection mechanism in a second area of the wafer distinct from the plurality of first areas of the wafer;

providing pads for receiving signals from a source external to the wafer;

providing on each die, within the area of the die, an address decoding circuit associated with the die, each address decoding circuit being responsive to a unique address at a multibit address input of the address decoding circuit to permit the signals to be received by the die with which the address decoding circuit is associated;

causing the electronic selection mechanism to address one or more of the plurality dies, by Outputting a multi-bit address signal associated with the one or more dies;

providing a multi-bit address bus of conductive lines between the electronic selection mechanism and the plurality of dies;

receiving the signals from the external source; and

routing the signals, over the multi-bit address bus, to the selected one of more of the plurality of dies.

5,442,283

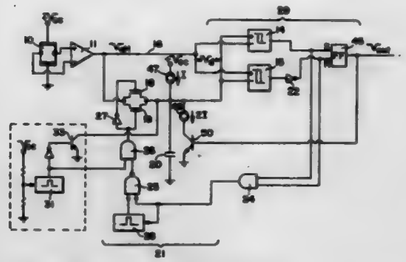
HALL-VOLTAGE SLOPE-ACTIVATED SENSOR

Ravi Vig, Concord, N.H.; Hitoshi Yabusaki, Tokyo, Japan, and Alberto Bilotti, Argentina, Fla., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Sep. 3, 1993, Ser. No. 117,516

Int. Cl.[6] G01R *33/06;* G01B *7/14;* H03K *5/22*

U.S. Cl. 324—207.2 **10 Claims**



9. A slope-activated sensor comprising:

a) a magnetic-field detector including a magnetic-field to voltage transducer;

b) a comparator means having an output and having one and another input conductors, for producing a binary output voltage that changes from one binary level to the other when the magnitude of the voltage appearing at said comparator input exceeds a predetermined magnitude;

c) a first circuit branch means, connected between the output of said detector and said one comparator input conductor, for applying the detector voltage to said one comparator input conductor; and

d) a second circuit branch means connected between said detector output and said another comparator input conductor, for tracking a slope of either polarity and holding the subsequent peak detector output voltage, and for applying the held peak voltage to said another comparator input conductor,

so that during said holding, when the increasing difference between the detector output voltage and the held peak voltage exceeds said predetermined magnitude of said comparator, the ensuing change in the comparator output voltage from one binary level to the other indicates the onset of a change in the strength of an ambient magnetic field at said magnetic-field to voltage transducer.

5,442,284

PROCESS FOR INSPECTING SPACERS OF HEAT EXCHANGER TUBES IN A HEAT EXCHANGER

Joachim Kolditz, Talheim, Germany, assignor to Gemeinschaftskernkraftwerk Neckar GmbH, Neckarwestheim, Germany

PCT No. PCT/EP92/01997, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO93/05391, PCT Pub. Date Mar. 18, 1993

PCT Filed Jun. 30, 1993, Ser. No. 56,433

Claims priority, application Germany, Sep. 2, 1991, 41 29 153.0

Int. Cl.[6] G01N *27/90;* G01B *5/20, 7/26;* G21C *17/00*

U.S. Cl. 324—220 **4 Claims**

1. A method of inspecting spacers of heat exchanger tubes of a heat exchanger, the heat exchanger tubes fixed in position by spacers and serving to transfer heat from a first medium to a second medium, the second medium being fluid-tightly separated from the first medium, said method comprising the steps of:

introducing a measuring probe into an heat exchanger tube to be inspected;

subjecting a wall section of the heat exchanger tube and the spacer located outside the heat exchanger tube to an electromagnetic alternating field generated by the measuring probe resulting in local eddy currents within the subjected wall section and the spacer;

guiding an eddy current sensor, rotatable in the circumferential direction of the heat exchanger tube, in the longitudinal direction of the subjected wall section of the heat exchanger tube;

picking up a voltage signal, induced by the eddy currents within the wall section and the spacer, with the eddy current sensor, the voltage signal varying locally as a function of the eddy currents that are affected by a condition of the material of the wall section, a thickness of the wall section,. the gap between the spacer and the heat exchanger tube, and the construction of the spacer;

recording the voltage signals induced by the spacer of the wall section in a computer;

generating a reference signal as an arithmetic mean of the sum of the voltage signals of the heat exchanger generated after manufacturing the heat exchanger; and

comparing all recorded voltage signals with the arithmetic mean and detecting those ones of the recorded voltage signals which surpass a preset limit for the standard deviation of a Gaussian curve of the recorded voltage signals and indicate wrongly positioned spacers.

5,442,285

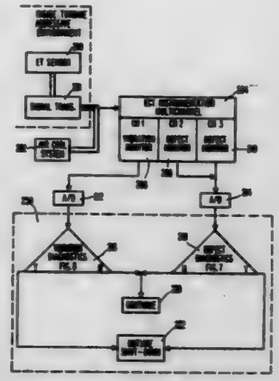
NDE EDDY CURRENT SENSOR FOR VERY HIGH SCAN RATE APPLICATIONS IN AN OPERATING COMBUSTION TURBINE

Paul J. Zombo, Cocoa, Fla.; Michael J. Metala, Murrysville, Pa.; Charles C. Moore, Hibbs, Pa.; Paul Guenther, Murrysville, Pa., and Oran L. Bertsch, Titusville, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1994, Ser. No. 203,466

Int. Cl.[6] G01N *27/90;* G01H *11/02*

U.S. Cl. 324—227 **14 Claims**



1. An eddy current sensing system comprising:

an eddy current sensor disposed in an enclosed environment of a rotating member, said eddy current sensor having at least one driver coil for inducing an eddy current in said rotating member and having at least one pickup coil for sensing said eddy current induced in said rotating member, said pickup coil providing an output indicative of said eddy current so sensed;

an eddy current testing instrument coupled to said at least one pickup coil for filtering said output from said at least one pickup coil and for providing at least one filtered

output, each filtered output being related to a condition of said rotating member to be monitored;

a threshold detector coupled to said eddy current testing instrument for receiving each said filtered output and detecting occurrences when any of said filtered outputs exceed a predetermined threshold relating to said condition, said threshold detector providing an output indicative of each occurrence so detected;

an assessment meads coupled to said threshold detector receiving said output from said threshold detector, and an input related to external factors affecting said analysis of said condition; and

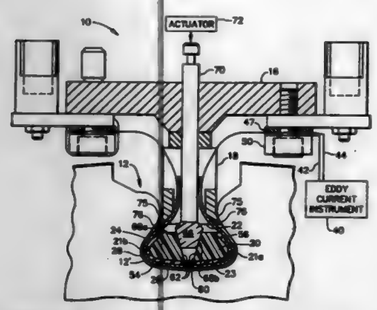
analyzing said output indicative of each said occurrence to determine a severity of said condition.

5,442,286

EDDY CURRENT ARRAY INSPECTION DEVICE

George H. Sutton, Jr.; Francis H. Little, both of Cincinnati; Carl Granger, Jr., West Chester, and Philip F. Stapf, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 22, 1993, Ser. No. 125,469
Int. Cl.[6] G01N *27/82*
U.S. Cl. 324—242 **5 Claims**



1. A device for inspecting a component, comprising:

an eddy current array circuit having respective pluralities of drive and sense elements and having an active face for positioning on a surface portion of the component during an inspection operation;

a backing disposed on a face of said eddy current array circuit opposite to said active face to apply a uniform pressure behind said array circuit to maintain the array circuit against the surface portion during the inspection operation;

an expandable bar having expandable exterior side edges and an operating face shaped to cause said eddy current array circuit to conform to the shape of the component surface under inspection, said eddy current array circuit and said backing being disposed over said operating face with said array circuit active face being closest to the component surface portion and said expandable bar having a slot formed therein, said slot having interior sides which narrow toward said operating face at a predetermined slope;

an expanding wedge with angled sides for respectively matingly engaging said interior sides of said slot to cause: said exterior side edges of said expandable bar to expand outwardly when said wedge is pushed deeper into said slot;

an actuator to push said wedge deeper into said slot; and

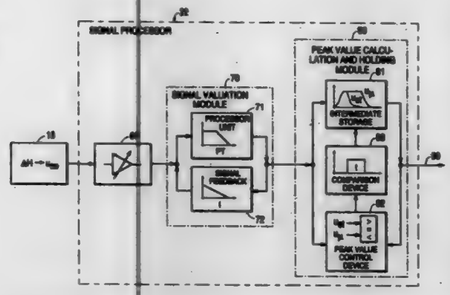
means for electrically connecting said eddy current array circuit to an eddy current instrument.

5,442,287

METHOD AND APPARATUS FOR DETECTING MAGNETIC DISCONTINUITIES BY INDUCING A MAGNETIC FIELD IN A MAGNETIZABLE SAMPLE

Reinhold Kammann, Wienhausen; Helmut Knapwost; Manfred Worms, both of Nienhagen, and Helgo Deeg, Winsen, all of Germany, assignors to Tuboscope Vetco (Deutschland) GmbH, Germany

Filed Apr. 29, 1994, Ser. No. 235,636
Claims priority, application European Pat. Off., May 3, 1993, 93107122
Int. Cl.[6] G01N *27/82, 27/83*
U.S. Cl. 324—242 **19 Claims**



5. An apparatus for detecting magnetic discontinuities in a sample of magnetizable material, comprising:

a magnetizing device for inducing a magnetic field in the sample of magnetizable material,

sensors for detecting magnetic stray flux close to the surface of the sample resulting from the induced magnetic field and detected discontinuities and outputting electrical signals in accordance with the detected magnetic stray flux;

a signal processor for processing the electrical signals to obtain test results; and

means for optically displaying and storing the test results, said signal processor comprising:

a programmable amplifying module for amplifying the electrical signals from the sensors corresponding to the magnetic stray flux from the sample with high common mode rejection ratio and automatic drift control,

a signal valuation module for filtering the amplified signals from the amplifying module using a frequency dependent evaluation and providing more weight to signals originating from low frequency stray flux in discontinuities of shallow depth than signals originating from high frequency stray flux, and

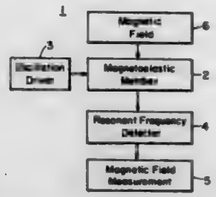
a peak value calculating and holding module for receiving the filtered signals from the signal valuation module as input signals and outputting an output signal which corresponds to a value of the input signal during a rising amplitude of the input signal and a latest measured maximum value is held in memory for a preselected period of time and thereafter deleted during a decreasing amplitude of the input signal, unless the input signal reaches a value exceeding the held maximum value during the holding and deletion phase, in which case the output signal corresponds to the input signal without loss of amplitude and the holding step is cancelled.

5,442,288

MAGNETOELASTIC MAGNETOMETER

Ralph C. Fean, Cambridge; Michael J. Gerver, Brookline; Richard L. Hockney, Lynnfield, all of Mass., and Bruce G. Johnson, Monument, Colo., assignors to SATCON Technology Corporation, Cambridge, Mass.

Filed Apr. 22, 1993, Ser. No. 52,074
Int. Cl.[6] G01R *33/02, 33/18;* G01B *7/24*
U.S. Cl. 324—244 **23 Claims**



1. A magnetoelastic magnetometer, comprising:

a magnetoelastic member for placement in a magnetic field;

electromechanical means, proximate to said member, for measuring a change in the modulus of elasticity of said magnetoelastic member caused by the magnetic field; and

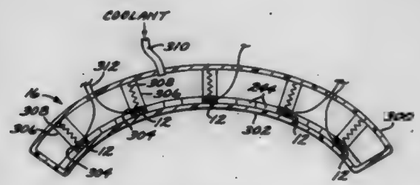
means responsive to said means for measuring for determining the magnitude of the magnetic field.

5,442,289

BIOMAGNETOMETER HAVING FLEXIBLE SENSOR

Mark S. DiIorio, Del Mar; Eugene C. Hirschkoff, Leucadia; Richard T. Johnson, San Diego; D. Scott Buchanan, Escondido; Stephen O. James, San Diego; Douglas Paulson, and William C. Black, Jr., both of Del Mar, all of Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 551,841, Jul. 17, 1990, Pat. No. 5,158,932, which is a continuation-in-part of Ser. No. 386,948, Jul. 31, 1989, Pat. No. 5,061,680, and a continuation-in-part of Ser. No. 831,905, Feb. 6, 1992. This application Oct. 27, 1992, Ser. No. 967,217
Int. Cl.[6] G01R *33/035;* A61B *5/05;* H01F *6/06*
U.S. Cl. 324—248 **20 Claims**



1. A biomagnetometer, comprising:

a magnetic field sensor unit, the sensor unit including a magnetic field pickup coil made of a material having a superconducting transition temperature;

vessel means for containing the magnetic field sensor unit, the vessel means including

a flexible contact face adapted for contacting to a subject whose biomagnetism is to be measured, with the magnetic field sensor unit mounted in the interior of the vessel means adjacent to the flexible contact face, and

rigid support structure means for defining the general configuration of the vessel means, the flexible contact face being attached to the support structure means;

insulation means at the flexible contact face of the vessel means for preventing excessive heat flow through the flexible contact face;

means for cooling the pickup coil to a temperature of less than its superconducting transition temperature; and

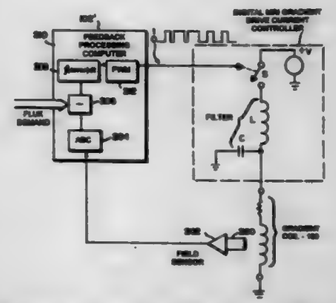
detector means for receiving an output signal of the pickup coil and for measuring the magnitude of magnetic fields sensed by the sensor unit.

5,442,290

MRI GRADIENT DRIVE CURRENT CONTROL USING ALL DIGITAL CONTROLLER

Lawrence E. Crooks, Richmond, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Aug. 4, 1992, Ser. No. 924,508
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[6] G01R *33/48*
U.S. Cl. 324—309 **19 Claims**



1. In a magnetic resonance imaging system which generates a control signal representing a desired level of electromagnet coil current to be supplied from a switchable electrical power supply via a filter, a method comprising the steps of:

digitally generating said control signal to have a ratio of first digit values to second digit values that corresponds to the desired level of electromagnet coil current; and

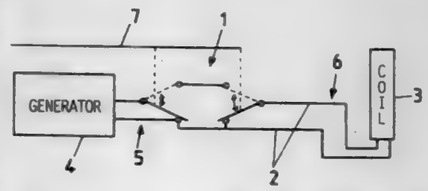
using said control signal to control the switched duty cycle of said electrical power supply.

5,442,291

COMMUTATION DEVICE AND CONTROL PROCESS USING THE SAME

Jean-Max Tyburn, Wissembourg; Alfred Niess, Hunspach, both of France, and Tonio Gianotti, Heidelberg, Germany, assignors to Sadis Bruker Spectrospin Societe Anonyme De Diffusion De L'Instrumentation Scientifique Bruker Spectrospin (Societe Anonyme a Directoire), Wissembourg, France

Filed Nov. 15, 1993, Ser. No. 152,026
Claims priority, application France, Nov. 16, 1992, 92 13880
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—322 **4 Claims**



1. Commutation device to connect and disconnect a current or voltage generator and a coil adapted to create a gradient of magnetic field in a measurement chamber of an NMR apparatus, comprising switch means (1) mounted in the supply circuit

(2) of the coil (3) and actuated by means of a control signal, said switch means (1) being configured to totally isolate the coil (3) from the generator (4) when said switch means (1) is controlled to assume an open position to thereby trigger a measurement phase of said NMR apparatus.

5,442,292

NUCLEAR MAGNETIC RESONANCE APPARATUS HAVING AT LEAST TWO TRANSMISSION FREQUENCIES

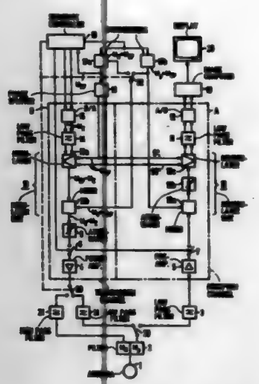
Heinrich Kolem, Effeltrich; Wilfried Schnell, Forchheim; Rolf Sauter, Fuerth; Karsten Wicklow, and Hermann Requardt, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 1, 1994, Ser. No. 282,505

Claims priority, application Germany, Aug. 3, 1993, 43 26 045.4

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—322 4 Claims



1. In a nuclear magnetic resonance apparatus for investigating atomic nuclei of a first type having a first resonant frequency, which are nuclear-magnetically coupled in the presence of a basic magnetic field to atomic nuclei of a second type, having a second resonant frequency, means for exciting said atomic nuclei of the first type with said first resonant frequency by high-frequency fields during an excitation phase and thereby generating nuclear magnetic resonance signals which are read out during a read-out phase, and means for exciting said atomic nuclei of the second type by generating high-frequency fields at said second resonant frequency during said read-out phase, the improvement of a transmission/reception unit comprising:

a reception channel containing a phase-sensitive demodulator unit;

a single transmission channel for both of said resonant frequencies containing a modulator unit used in common for modulating respective signals with each of said resonant frequencies;

a first synthesizer for generating a first signal at said first resonant frequency and a second synthesizer for generating a second signal said second resonant frequency;

said first synthesizer being connected to said demodulator unit of said reception channel at least during said read-out phase for supplying said first signal thereto as a frequency and phase reference and also being connected to said modulator unit of said transmission channel during said excitation phase for supplying said first signal thereto as a basic frequency; and

said second synthesizer being connected to said modulator unit of said transmission channel during said read-out phase for supplying said second signal thereto as a basic frequency.

5,442,293

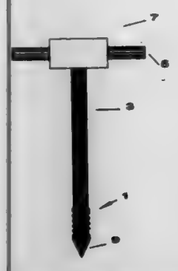
METHOD AND APPARATUS FOR DETERMINING FLUID CONTENT AND CONDUCTIVITY IN POROUS MATERIALS

James N. Lange, Rte. 3 Box 212, Stillwater, Okla. 74075

Filed Dec. 21, 1992, Ser. No. 993,633

Int. Cl.[6] G01V *3/08, 3/10, 3/12;* G01R *27/02*

U.S. Cl. 324—332 2 Claims



1. An apparatus for measuring fluid content and pore fluid conductivity in unconsolidated porous media of known composition and fluid type comprising:

a hollow cylindrical element constructed of dielectric material surrounding an axial bore,

a plurality of electrically conductive wires each wound in the approximate form of a helix on the exterior surface of said hollow cylindrical element of elliptical crossection with coincident symmetry axes of rotation and supported thereby and placed axially along said hollow cylindrical element, a sealing means on the surface of each said helix,

a plurality of coaxial conducting cables positioned within the axial bore of said cylindrical element of elliptical crossectional for connection to each said helix, whereby the center conducting wire is connected and no connection is made to the outer conductor of said coaxial cable,

a circuit means connected through a switching means to one end of said coaxial cable and said helixes connected to the other end of said coaxial cable, to establish an electric field through the materials surrounding the apparatus in order to polarize the porous media and it's contained fluids,

said coaxial cable, helixes and surrounding material form an electrical resonance composite circuit which is connected remotely by both leads of the coaxial cable to a detector circuit whereby the self resonance frequency and amplitude response of said composite circuit is determined quantitatively and each helix having a different number of revolutions whereby the self resonance frequency of each coil is different from the others, and

a detector circuit to determine each of said probes' natural frequency and amplitude response.

5,442,294

CONDUCTIVITY METHOD AND APPARATUS FOR MEASURING STRATA RESISTIVITY ADJACENT A BOREHOLE

Louis H. Rorden, Incline Village, Nev., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 899,020, Jun. 15, 1992, Pat. No. 5,260,662, which is a continuation of Ser. No. 792,040, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 581,561, Sep. 10, 1990, Pat. No. 5,089,779. This application Apr. 16, 1993, Ser. No. 49,036

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[6] G01V *3/28, 3/18*

U.S. Cl. 324—339 36 Claims



1. An apparatus for measuring the resistivity of a formation surrounding a borehole, comprising:

a support member adapted for movement through the borehole;

at least one antenna means disposed on said support member;

means for driving said antenna means to provide a changing primary magnetic field within said formation which induces a current in said support member, whereby a secondary field is provided by said current in said support member; and

at least one current detector means disposed on said support means at a location spaced axially away from a center of said antenna means, said current detector means detecting current values at said location caused by said secondary field.

5,442,295

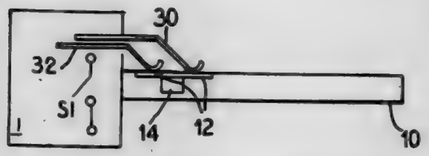
METHOD AND APPARATUS FOR INDICATING THE IMPROPER TERMINATION OF A CHIP CARD COMMUNICATION

Hans-Diedrich Kreft, Dassendorf, Germany, assignor to Angewandte Digital Electronik GmbH, Dassendorf, Germany

Filed Mar. 15, 1994, Ser. No. 213,085

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—537 14 Claims



6. An electronic circuit apparatus for detecting an interruption of an electrical communication between a chip card and a corresponding write/read device, comprising:

means for detecting a position of said card;

means for reporting said position to said write/read device;

means for transmitting a signal representing a change in said position from said write/read device to said card; and

means for storing said change signal on said card, said change signal being indicative of an interruption.

5,442,296

METHOD FOR CALIBRATING A NETWORK ANALYZER

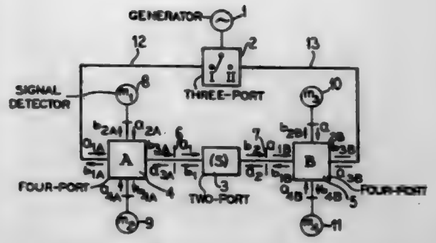
Burkhard Schiek, Bochum, and Holger Heuermann, Witten, both of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Munich, Germany

Filed Nov. 23, 1993, Ser. No. 155,826

Claims priority, application Germany, Dec. 12, 1992, 42 42 023.7; Jan. 13, 1993, 43 00 610.8

Int. Cl.[6] G01R *27/02*

U.S. Cl. 324—601 11 Claims



1. A method for calibrating a network analyzer having two test ports by successive measurements of transmission and reflection parameters on a plurality of calibration standards in any desired order, from which correction values are then calculated that are taken into account in subsequent device-under-test measurements, comprising the steps of:

performing at least five successive calibration measurements in calibration procedures with calibration standards as follows,

a first calibration procedure consisting of calibration measurement using calibration standards T, MM, SS, OO and one of SM, SO and MO,

a second calibration procedure consisting of calibration measurement using calibration standards T, MM, SS, MS and SM,

a third calibration procedure consisting of calibration measurement using calibration standards T, MM, OO, MO, OM,

a fourth calibration procedure consisting of calibration measurement using calibration standards T, MM, SS, MS, UM, MU,

a fifth calibration procedure consisting of calibration measurement using calibration standards T, MM, OO, MO, UM, MU,

a sixth calibration procedure consisting of calibration measurement using calibration standards T, MM, SS, MU, UM, SU, US, and

a seventh calibration procedure consisting of calibration measurement using calibration standards T, MM, OO, MU, UM, OU, UO,

where T is a two-port standard for which all complex scattering parameters are known,

where M is a one-port standard having a known reflection,

where S is a one-port standard that is a short circuit,

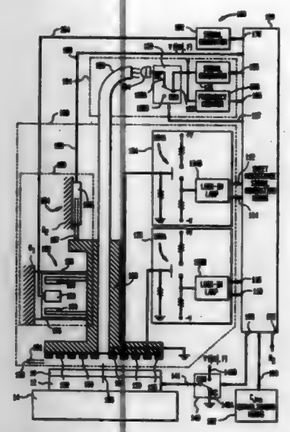
where O is a one-port standard that is an open circuit,

where U is a one-port standard having an arbitrary unknown reflection, and

where double letter designation of M, S, O and U refer to a double one-port standard with which the respective specified one-port measurements are successively performed on the two test ports thereof as one calibration measurement,

calculating a total of 15 correction values from measured values obtained with said calibration standards.

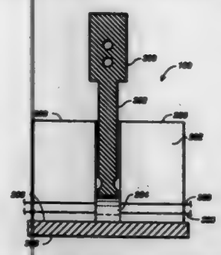
5,442,297
CONTACTLESS SHEET RESISTANCE MEASUREMENT METHOD AND APPARATUS
Roger L. Verkuil, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 30, 1994, Ser. No. 269,855
Int. Cl.[6] G01N *27/22*; G01R *27/00, 31/26, 31/308*
U.S. Cl. 324—702 36 Claims



1. A contactless sheet resistance measurement apparatus for measuring the sheet resistance of a desired layer of a first conductivity formed upon an underlying opposite conductivity substrate, said apparatus comprising:
a) means for establishing an amount of junction capacitance of the junction between the desired layer and the underlying substrate, said junction capacitance establishing means providing a signal indicative of the junction capacitance;
b) means for generating a point location alternating current (AC) photovoltage between the desired layer and the underlying substrate, the photovoltage having a sinusoidal magnitude and frequency and further being propagated radially outward from a point location along the desired layer by a resistive nature of the desired layer at an attenuation and phase shift, said point location AC photovoltage generating means further providing a signal indicative of the AC sinusoidal frequency;
c) means for monitoring the attenuation and phase shift of the propagated AC photovoltage as a function of radial distance remote from the point location, said attenuation and phase shift monitoring means providing first and second output signals indicative of a first and a second monitored magnitude and phase at first and second radial distances, respectively; and,
d) means responsive to the junction capacitance signal, the AC sinusoidal frequency signal, and the first and second attenuation and phase shift signals for generating an output signal indicative of a sheet resistance R_S of the desired layer according to a prescribed sheet resistance model.

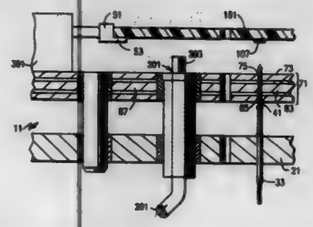
5,442,298
METHOD AND APPARATUS FOR MEASURING RESISTIVITY OF GEOMETRICALLY UNDEFINED MATERIALS
On-Kok Chang, 1031 Belvedere La., San Jose, Calif. 95129
Filed Mar. 30, 1993, Ser. No. 40,054
Int. Cl.[6] G01N *27/04*
U.S. Cl. 324—724 28 Claims

1. Apparatus for measuring electrical characteristics of a material comprising:
means for receiving said material, said material receiving means including a cylindrically-shaped receptacle and two conductive sheets integrally formed in said receiving means in contact with said receptacle for providing a first electrical measurement of said material; and



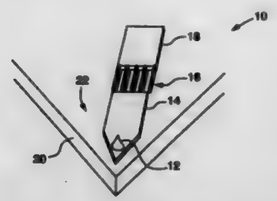
conductivity measuring means for measuring a conductivity measurement of said material placed in said receiving means, said conductivity measuring means including means for applying pressure to said material during said conductivity measurement.

5,442,299
PRINTED CIRCUIT BOARD TEST FIXTURE AND METHOD
Raymond J. Caggiano, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 6, 1994, Ser. No. 178,181
Int. Cl.[6] G01R *1/073*; G01B *11/00*
U.S. Cl. 324—758 2 Claims



1. A tester for interconnect testing of a printed circuit board, said printed circuit board having a plurality of positioning fiducials, said tester comprising:
a. a fixture;
b. a pin probe plate having a plurality of pin probes for electrical contacts on the printed circuit board under test;
c. a printed circuit board holder for rigidly holding a printed circuit board under test;
d. fiber optic machine vision means for locating fiducials of the printed circuit board under test; and
e. lateral movement means for moving said printed circuit board holder responsive to the fiber optic machine vision means for locating fiducials,
the improvement wherein said tester further comprises:
f. each of said pin probes comprising:
i. an annular, fixed body portion extending outwardly from the pin probe plate toward and facing the printed circuit board under test, and
ii. a movable upper body portion extending outwardly from the fixed body portion longitudinally to the printed circuit board under test; and
g. a multilayer pin probe guide interposed between the pin probe plate and the printed circuit board holder, each layer of said pin probe guide having a plurality of apertures therethrough corresponding to individual pin probes, said individual pin probes extending through the corresponding individual apertures.

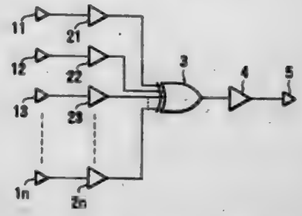
5,442,300
ULTRAFAST ELECTRICAL SCANNING FORCE MICROSCOPE PROBE
John A. Nees, Ann Arbor, Mich., and Shin-ichi Wakana, Sagamihara, Japan, assignors to Regents of the University of Michigan, Ann Arbor, Mich. and Fujitsu Limited, Kanagawa, Japan
Filed Apr. 29, 1994, Ser. No. 236,525
Int. Cl.[6] G01R *31/28, 31/02*
U.S. Cl. 324—762 17 Claims



1. A scanning probe adapted for use in a microscope to obtain both high-spatial resolution images and high-temporal resolution electronic waveforms of an electronic device, the probe comprising:
a substrate;
at least one layer including a base portion formed and supported on the substrate and a cantilever portion extending from the base portion and unsupported by the substrate;
a single electrically conductive probe tip formed on and extending downwardly from a free end of the cantilever portion in electrical communication with a semiconductor portion of the at least one layer;
an output electrode layer formed on the at least one layer and adapted to be electrically connected to a first electronic processor wherein the semiconductor portion of the at least one layer and a portion of the output electrode layer partially defining a photoresponsive switch, the cantilever portion having a bottom surface and a reflective top surface adapted to reflect a beam of coherent light wherein the reflected beam of the coherent light is processed by a second electronic processor to generate an image of the electronic device and wherein the at least one layer is adapted to receive and direct a pulsed switching beam to the photoresponsive switch to electrically communicate the probe tip with the output electrode layer to thereby sample an electronic waveform at a desired location on the electronic device when the probe tip is pressed into low force contact with the electronic device at the desired location.

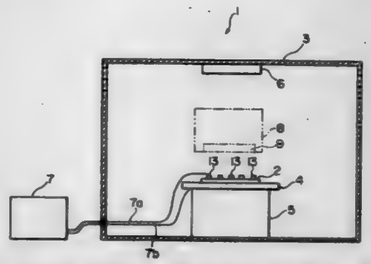
5,442,301
LSI TEST CIRCUIT
Yasuyuki Nasu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 1,401, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 841,273, Feb. 26, 1992, abandoned, which is a continuation of Ser. No. 641,699, Jan. 16, 1991, abandoned. This application Jun. 3, 1994, Ser. No. 253,328
Claims priority, application Japan, Jan. 17, 1990, 2-8805
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 1 Claim

1. A method of testing connection pins of an integrated circuit mounted on the printed circuit board, wherein a total integer number of n input pins are connection through a plurality of input buffers having a plurality of pull-up resistors to an exclusive-OR gate to provide an exclusive-OR output of the input buffers, said method comprising:
a first detecting step for detecting whether or not an output from said exclusive-OR gate is coincident with an expected value, said output being obtained by applying a binary zero input pattern to all of said input pins,
a second detecting step for detecting whether or not an output from said exclusive-OR output is coincident with an expected value, said output being obtained by applying a binary one input pattern to only a first input pin of said total input pins and a binary zero input pattern to the rest of the input pins, and
third through (n+1)-th detecting steps for sequentially detecting input pins for detecting whether or not said outputs from said exclusive-OR gate are coincident with



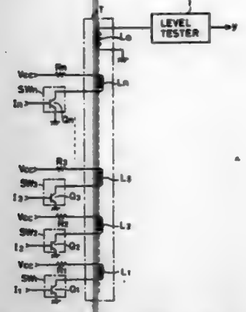
expected values, said outputs being obtained by applying a binary one input pattern to selected first through i-th input pin (i being an integer) of said total number n input pins and a binary zero input pattern to the rest of the input pins, said detection indicating defects at (j-1)-th and k-th input pins (j and k being integers) when non-coincident outputs of said exclusive-OR gate are continuously detected from said j-th to k-th step.

5,442,302
METHOD AND APPARATUS FOR MEASURING HIGH-FREQUENCY C-V CHARACTERISTICS OF MIS DEVICE
Nobuyoshi Fujimaki, Tokyo, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1993, Ser. No. 171,406
Claims priority, application Japan, Dec. 24, 1992, 4-357586
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—765 23 Claims



1. A method of measuring the high-frequency C-V characteristics of a MIS device, comprising the steps of:
illuminating the MIS device by means of an illuminant emitting a light having long wavelengths, wherein short wavelengths that generate excess minority carriers at a semiconductor surface of the MIS device are eliminated to form and maintain an equilibrium of an inversion layer of the semiconductor surface;
applying a voltage with a high-frequency signal to a gate electrode of the MIS device; and
measuring the MIS capacitance of the MIS device receiving said voltage.

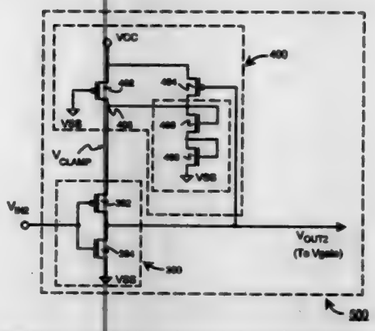
5,442,303
ELECTROMAGNETICALLY COUPLED FAIL-SAFE LOGIC CIRCUIT
Norihiro Asada; Masakazu Kato; Koichi Futsuhara, all of Urawa, and Masayoshi Enshi, Sendai, all of Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/00911, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO94/00292, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 16, 1992, Ser. No. 204,405
Int. Cl.[6] H03K *19/003*
U.S. Cl. 326—14 15 Claims



1. An electromagnetically coupled fail-safe logic circuit comprising a transformer and a level tester, the transformer including a plurality of primary coils and a secondary coil, the primary coils being electromagnetically coupled to one another to receive a plurality of AC input signals, respectively, the AC input signals being in synchronism with one another and each representing a binary logic variable, i.e., a logic value of 1 corresponding to a high energy state or a logic value of 0 corresponding to a low energy state, the secondary coil being electromagnetically coupled with all of the primary coils, to provide an output corresponding to the sum of magnetic flux produced by the primary coils, the level tester with a threshold operation function carrying out a threshold operation of the level of the output of the secondary coil, and according to the operation result, providing an output representing the logic value 1 corresponding to the high energy state or the logic value 0 corresponding to the low energy state, the level tester providing an output representing the logic value 0 if failure occurs.

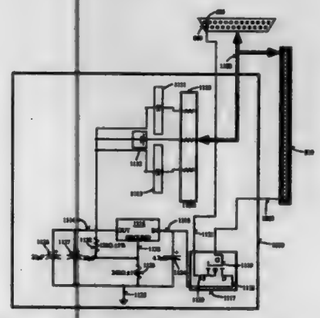
5,442,304
CMOS LOGIC GATE CLAMPING CIRCUIT
Jack T. Wong, Fremont; Fabiano Fontana, Santa Clara, and Martha Chan, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Oct. 15, 1993, Ser. No. 137,437
Int. Cl.[6] H03K *19/01, 19/0175*
U.S. Cl. 326—17 11 Claims

1. A logic gate clamping circuit comprising:
a logic gate, the logic gate including an input for receiving an input signal, an output, and a clamping node, the logic gate being coupled to a ground potential; and
bias means coupled in a feedback relationship between the output of the logic gate and the clamping node for increasing the speed of the transitions of the input signal at the output and for minimizing power consumption of the logic gate the bias means includes a first transistor coupled between a V_{CC} power supply and the clamping node; a second transistor coupled to the first transistor and to the V_{CC} power supply, the second transistor also being coupled to the output of the logic gate; and third and fourth



transistors coupled in series and also coupled between the second transistor and ground.

5,442,305
ACTIVE BUS TERMINATION DEVICE
Stephen R. Martin, San Jose, and Randall O. Mooney, Jr., Boulder Creek, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Division of Ser. No. 771,127, Oct. 3, 1991, Pat. No. 5,357,519.
This application Sep. 14, 1994, Ser. No. 306,010
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—30 5 Claims

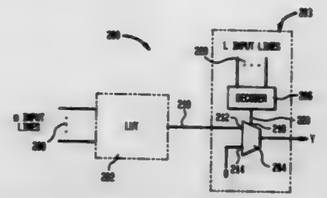


1. A device for terminating a bus comprising:
a. first means for activating termination of the bus;
b. second means coupled to the first means for supplying power, the second means supplying power upon activation of the first means;
c. third means coupled to the second means for limiting voltage received from the second means; and
d. fourth means coupled to the third means for limiting transient voltages on the bus.

5,442,306
FIELD PROGRAMMABLE GATE ARRAY USING LOOK-UP TABLES, MULTIPLEXERS AND DECODERS
Nam-Sung Woo, New Providence, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Sep. 9, 1994, Ser. No. 304,013
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—39 15 Claims

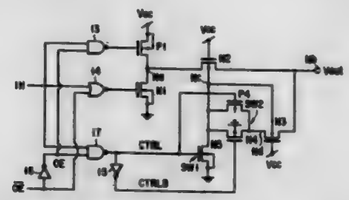
1. An integrated circuit comprising a field programmable gate array having:

(a) at least one look-up table having a plurality of input terminals and an output terminal;
(b) a decoder circuit arrangement coupled to said output terminal of said at least one look-up table, said decoder circuit arrangement including:



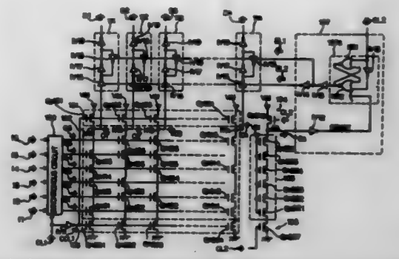
(i) a multiplexing circuit having an address selector terminal and at least one input terminal, said at least one input terminal being connected to said output terminal of said at least one look-up table; and
(ii) a decoder circuit having a plurality of inputs, said decoder circuit being coupled to said address selector of said multiplexing circuit.

5,442,307
INTERFACE CIRCUIT WITH BACKGATE BIAS CONTROL OF A TRANSISTOR
Hiroshi Shigehara, Tokyo, and Masanori Kinugasa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Apr. 12, 1994, Ser. No. 226,683
Claims priority, application Japan, Apr. 12, 1993, 5-084507
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—81 24 Claims



1. An interface circuit comprising:
a MOS circuit formed in a semiconductor substrate;
a first MOS transistor having a current path connected between an output node of said MOS circuit and an output terminal and a gate connected to a first potential supplying source;
a first switching element connected between a backgate of said first MOS transistor and a second potential supplying source;
a second MOS transistor having a current path connected at one end to said output terminal, a gate connected to said first potential supplying source and a backgate set at the same potential as that of the backgate of said first MOS transistor; and
a second switching element connected between the backgate of said first MOS transistor and the other end of the current path of said second MOS transistor, the ON/OFF state thereof being controlled in a complementary state with respect to that of said first switching element.

5,442,308
DYNAMIC DECODER CIRCUIT OPERATIVE AT LOW FREQUENCY CLOCK SIGNALS WITHOUT DATA DESTRUCTION
Hisashi Fujiwara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 2, 1994, Ser. No. 190,477
Claims priority, application Japan, Feb. 4, 1993, 5-017155
Int. Cl.[6] H03K *19/0948*
U.S. Cl. 326—108 7 Claims



1. A dynamic decoder for decoding input signals, comprising:
a) a main precharging circuit for charging a plurality of decoded signal nodes to a first level at a first timing;
b) a main discharging circuit associated with said plurality of decoded signal nodes for discharging said plurality of decoded signal nodes at a second timing after said first timing;
c) a plurality of switching transistors disposed at selected positions in a matrix, and grouped into a plurality of serial circuits coupled between said plurality of decoded signal nodes and said main discharging circuit;
d) an input circuit operative to selectively supply said input signals to control nodes of said plurality of switching transistors between said first timing and said second timing for selectively discharging said plurality of decoded signal nodes through said main discharging circuit, a plurality of decoded signals being produced at said plurality of decoded signal nodes at a third timing after said second timing;
e) a plurality of latch circuits respectively coupled with said plurality of decoded signal nodes, and enabled with an enable signal for latching said plurality of decoded signals, said enable signal being shifted to an inactive level at a fourth timing for electrically isolating said plurality of latch circuits from said plurality of decoded signal nodes;
f) a timing producing means for producing a timing control signal after a predetermined lapse of time from said second timing; and
g) a controlling circuit responsive to said timing control signal for shifting said enable signal to said inactive level at said fourth timing.

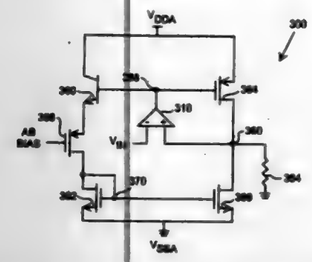
5,442,309
LOW DISTORTION OUTPUT STAGE
Carlin D. Cabler, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Dec. 14, 1993, Ser. No. 168,103
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—108 5 Claims

1. A low distortion output stage for an operational amplifier for driving a resistive load, comprising:
an amplifier having a first input for receiving an input voltage, a second input connected to one side of the load, and an output;
a current source for sourcing current to the load when the voltage on said output of said amplifier is within a first range comprising a transistor having a control terminal

connected to said amplifier output, a first terminal connected to a DC power supply, and a second terminal connected to one side of the load;

a current sink for sinking current from the load when the voltage on said output of said amplifier is within a second range, comprising a transistor having a control terminal connected to a feedback network, a first terminal connected to one side of the load, and a second terminal connected to a reference potential; and

wherein said feedback network for controlling said current source and said current sink to source or sink current, respectively, to the load comprises a first transistor having



a control terminal connected to said output of said amplifier for sensing the voltage on said output of said amplifier to control the current and said current sink, a first terminal connected to a DC power supply, and a second terminal; a second transistor having a control terminal for receiving a biasing voltage, a first terminal connected to said second terminal of said first transistor and a second terminal; and a third transistor having a control terminal connected to said control terminal of said transistor of said current sink, a first terminal connected to both said second terminal of said second transistor and said control terminal of said third transistor, and a second terminal connected to the reference potential.

5,442,310

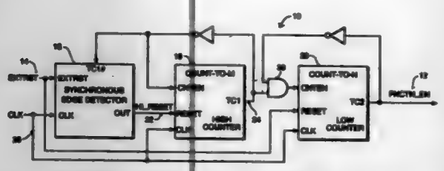
CIRCUITRY AND METHOD FOR RESET DISCRIMINATION

Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 923,076, Jul. 31, 1992, abandoned. This application Aug. 2, 1994, Ser. No. 284,930

Int. Cl.[6] H03K *17/22*

U.S. Cl. 327—143 **7 Claims**



2. A reset discrimination circuit identifying completion of power up upon a valid inactive state of an external reset signal, and signaling completion of power up via an active state of a function enable signal, comprising:

a first counter, having a clock input coupled to a clock signal including a multiplicity of clock pulses and having a reset input coupled to the external reset signal, for identifying a valid active state of the external reset signal, the first counter generating a first terminal count signal and bringing it to an active state after counting a first number of clock pulses during an active state of the external reset signal;

a first inversion device having an input coupled to the first terminal count signal and having an output coupled to a count enable input of the first counter; and,

a second counter, having a count enable input coupled to the first terminal count signal and a clock input coupled to the clock signal, for identifying the valid inactive state of the external reset signal following the valid active state of the external reset signal, the second counter being enabled to begin counting a second number of clock pulses by the active state of the first terminal count signal, the second counter generating the function enable signal, bringing it to an inactive state during power up and holding it in the inactive state until the second counter counts the second number of clock pulses during the inactive state of the external reset signal.

5,442,311

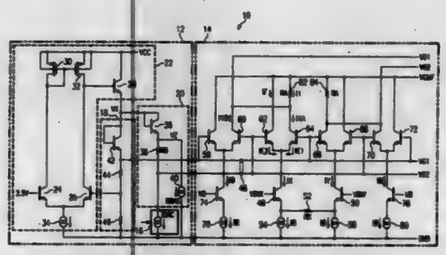
SYSTEM AND METHOD FOR CONTROLLING A GAIN CIRCUIT

Fredrick W. Trafton, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 28, 1994, Ser. No. 187,954

Int. Cl.[6] H03L *5/00*; **G06F** *7/556*

U.S. Cl. 327—306 **20 Claims**



1. A system for controlling a gain circuit, comprising:

circuitry for generating a control current;

circuitry for establishing a reference voltage;

circuitry responsive to said control current generating circuitry and said establishing circuitry for generating a first output control voltage;

circuitry responsive to said establishing circuitry for generating a second output control voltage wherein said first and second control voltages are operable to provide a differential control signal related to said control current to the gain circuit such that the gain of the gain circuit is exponentially related to said control current.

5,442,312

INTEGRATED CIRCUIT FOR GENERATING A RESET SIGNAL

Rudolph Walter, Munich, Germany, assignor to Siemens AG, Munich, Germany

Filed Sep. 30, 1993, Ser. No. 129,959

Claims priority, application European Pat. Off., Sep. 30, 1992, 92116741

Int. Cl.[6] H03K *17/22, 5/153, 17/22*

U.S. Cl. 327—198 **14 Claims**

1. An integrated circuit for generating a reset signal, comprising:

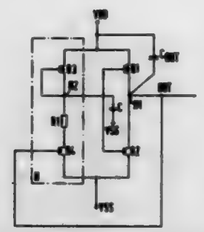
a terminal for a first supply potential and a terminal for a second supply potential;

two first transistors connected in series between said terminals for the first and the second supply potentials, said first transistors each having a source, a drain and a gate and each having a respective one of first and second mutually complementary channel types;

a serial network acting as a voltage divider circuit and being

connected between said terminals for the first and the second supply potentials, said serial network including at least two second transistors each having a source, a drain and a gate and each having a respective one of the mutually complementary channel types, and said serial network including at least one element having a voltage drop during operation;

the sources of said transistors of the first channel type being connected to said terminal for the first supply potential; the sources of said transistors of the second channel type being connected to said terminal for the second supply potential;



the drains of said two first transistors forming a first circuit node at which a reset signal is created in operation;

the gate of said second transistor of the second channel type being connected to said first circuit node;

the gates of said first and second transistors of the first channel type both being connected to the drain of said second transistor of the first channel type of said serial network, forming a second circuit node; and

the gate of said first transistor of the second channel type being connected to the second circuit node.

5,442,313

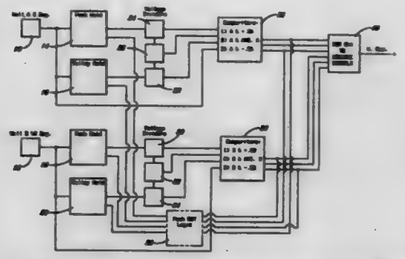
RESOLUTION MULTIPLYING CIRCUIT

A. John Santos, Farmington, and Mark E. LaCroix, New Hartford, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed May 27, 1994, Ser. No. 250,190

Int. Cl.[6] G06G *7/12*; **H03K** *12/00*; **G01R** *19/00*

U.S. Cl. 327—355 **13 Claims**



5. A resolution multiplying circuit for use with a plurality of analog sensors having a predetermined electrical degree separation, the circuit comprising:

a plurality of peak hold means, each peak hold means for holding a previous peak voltage of a signal from the respective analog sensor;

a plurality of valley hold means, each valley hold means for holding a previous valley voltage of a signal from the respective analog sensor;

threshold generating means, for independently generating a plurality of threshold voltages from the held previous peak and valley voltages of the respective analog sensors;

voltage comparing means, for independently comparing the signals from the analog sensors to the respective threshold voltages to produce sequences of output transitions; and

combining means, for combining the output transitions such that each sequence of output transitions from each analog sensor occurs between sequences of the other analog sensors.

5,442,314

CMOS CIRCUIT FOR GENERATING VOLTAGE RELATED TO TRANSISTOR GATE LENGTH

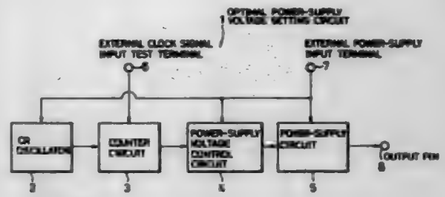
Takaaki Hara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 979,222, Nov. 20, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 149,743

Claims priority, application Japan, Nov. 22, 1991, 3-332737

Int. Cl.[6] H03K *17/04*

U.S. Cl. 327—543 **3 Claims**



1. A CMOS integrated circuit for generating voltage related to transistor gate length, comprising:

an oscillator including a capacitor having a polysilicon gate of one of several transistors as an electrode thereof, and a diffused resistor located adjacent to said polysilicon gate;

a counter circuit for calculating a frequency of said oscillator;

a power-supply voltage control circuit for selecting an optimal power-supply voltage for transistors in accordance with said frequency; and

a power-supply circuit for generating said optimal power-supply voltage.

5,442,315

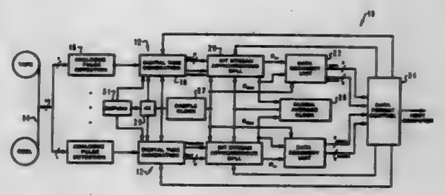
BIT STREAM RATE ASYNCHRONOUS DIGITAL PHASE-LOCKED LOOP

Robert A. Hutchins, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 97,503

Int. Cl.[6] H03K *1/00, 5/18*

U.S. Cl. 327—159 **14 Claims**



1. A phase-locked loop for operating with fixed duration sample cells on run length limited code, the phase-locked loop comprising:

a phase detector which utilizes arrival time information for a raw data pulse within a sample cell a current period output phase difference signal and an accumulated output phase signal for generating a phase error signal;

a low pass loop filter taking the phase error signal as an input and generating a phase adjustment signal;

means for adding the phase adjustment signal to a ratio of the duration of the fixed sample cell and the duration of a nominal bit cell to generate an output phase difference signal; and

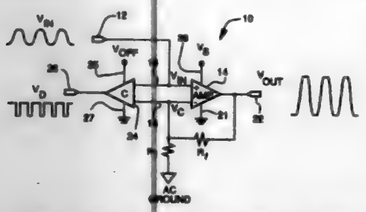
a phase integrator taking succeeding values for the output phase difference signal with successive sample cells to accumulate the accumulated output phase signal.

5,442,316

TEMPERATURE COMPENSATED AND SUPPLY INDEPENDENT CLIPPING DISTORTION INDICATOR

Paul E. Buck, Russiaville; Mark W. Gose, Kokomo, and Ian D. Jay, Logansport, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 30, 1994, Ser. No. 268,750
Int. Cl.[6] H03F *1/26, 1/30*
U.S. Cl. 330—2 **9 Claims**



1. An audio amplifier system for generating a clipping distortion detection signal which identifies the occurrence of excessive clipping distortion, said system comprising:

an audio amplifier having a voltage gain, a first input for receiving an input voltage, and an output for generating an amplified output voltage;

a supply voltage supplied to said audio amplifier, said supply voltage determining a maximum amplifier output voltage;

means for generating a comparison voltage which is indicative of the output voltage divided by the voltage gain;

a clip detector voltage comparator having a first input for receiving the input voltage, a second input for receiving the comparison voltage, a voltage offset and a comparator output for providing a clipping distortion detection signal when the input voltage deviates from the comparison voltage in excess of the offset voltage so as to indicate the detection of excessive clipping distortion; and

compensation means for adjusting the voltage offset as a function of the supply voltage so as to maintain a substantially constant maximum percent distortion.

5,442,317

SWITCHING REGULATOR AND AMPLIFIER SYSTEM

Robert E. Stengel, Ft. Lauderdale, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 269,944, Jun. 29, 1994, abandoned, which is a continuation of Ser. No. 974,017, Nov. 10, 1992, abandoned. This application Mar. 10, 1995, Ser. No. 402,759
Int. Cl.[6] H03F *3/38*
U.S. Cl. 330—10 **18 Claims**

17. A transformer-less switching audio amplifier, comprising:

a single voltage source providing a single supply signal;

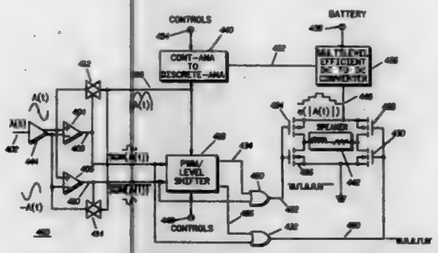
an input terminal for receiving an audio signal;

a voltage converter operating from the single supply signal, the voltage converter receiving the audio signal and providing a converted output signal which is a function of the magnitude of the audio signal;

a full-wave bridge circuit having a first supply terminal for receiving the converted output signal and a second supply terminal, the full-wave bridge circuit including first and second load terminals for providing the converted output signal to an external load;

a circuit providing control signals to the full-wave bridge circuit; and

the full-wave bridge circuit provides a current loop path



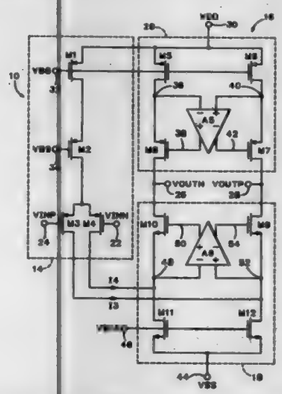
which allows energy to dissipate between the first and second load terminals but does not allow energy to flow between the first and second supply terminals in response to the conhol signals during certain periods of operation.

5,442,318

GAIN ENHANCEMENT TECHNIQUE FOR OPERATIONAL AMPLIFIERS

Rajeev Badyal, Fort Collins, Colo., and Shao F. Shu, Hillsboro, Oreg., assignors to Hewlett Packard Corporation, Palo Alto, Calif.

Filed Oct. 15, 1993, Ser. No. 138,176
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **10 Claims**



1. An operational amplifier circuit having improved common-mode rejection comprising:

a differential input section having an input pair for receiving a differential input signal and having a differential output pair including first and second differential outputs;

a cascode current source section having a differential input pair coupled to the differential output pair of the input section, a first cascode current source coupled to a first output of the operational amplifier and a second cascode current source coupled to a second output of the operational amplifier; and

a cascode current mirror section having a first mirror current source coupled to the first output of the operational amplifier circuit and a second mirror current source coupled to the second output of the operational amplifier circuit, the first mirror current source having a feedback node and a control node and the second mirror current source having a feedback node and a control node, and

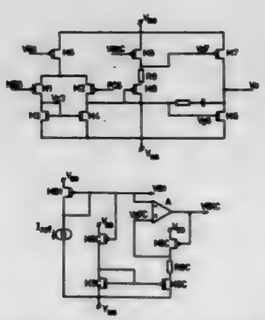
a fully-differential operational amplifier having a negative input coupled to the first mirror current source feedback node, a positive input coupled to the second mirror current source feedback node, a positive output coupled to the first mirror current source control node, and a negative output coupled to the second mirror current source control node, wherein the fully-differential amplifier is constructed and arranged to amplify a differential feedback signal appearing on the feedback nodes of the first and second mirror current sources while remaining substantially unresponsive to a common-mode feedback signal appearing thereon when said operational amplified circuit is in operative condition.

5,442,319

ACTIVE BIASING CONTROL FOR CLASS-AB CMOS OPERATIONAL AMPLIFIERS

Petrus H. Seesink, Eindhoven, and Reinder L. Post, Rosmalen, both of Netherlands, assignors to Sierra Semiconductor B.V., 'S-Hertogenbosch, Netherlands

PCT No. PCT/NL92/00151, § 371 Date Jun. 28, 1994, § 102(e) Date Jun. 28, 1994, PCT Pub. No. WO93/06655, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 3, 1992, Ser. No. 211,034
Claims priority, application Netherlands, Sep. 17, 1991, 9101567
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—261 **4 Claims**



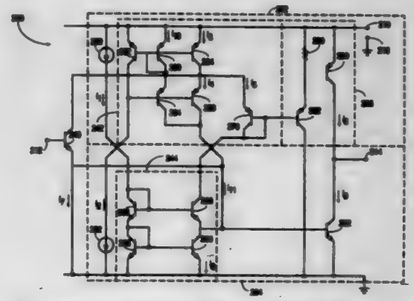
1. Biasing circuit for a CMOS operational amplifier comprising at least an input operational amplifier, a source follower stage and an end stage, which input operational amplifier comprises a common stage having a first MOS transistor (M5) receiving a first biasing voltage (VB1) from a biasing circuit, said source follower stage comprising at least a series connection of a second (M8) and a third (M9) MOS transistor, the gate electrode of the third MOS transistor (M9) receiving an output signal from the input operational amplifier and the gate electrode of the second transistor (M8) receives a second biasing voltage (VB1C) from the biasing circuit, said end stage comprising at least a series connections of a fourth (M7) and a fifth (M6) MOS transistor, the gate electrode of the fourth transistor (M7) being connected to the output of the source follower stage, said biasing circuit comprising at least a biasing operational amplifier (A) having an inverting input (−) and a non-inverting input (+), the inverting input (−) being connected to a junction point of a series connection of a diode connected MOS transistor (MB1) and a current source (Iref), the non-inverting input (+) being connected to the output voltage (Vg7C) of an inverting circuit comprising at least a series connection of a sixth MOS transistor (M8C) and a seventh MOS transistor (M9C), the gate electrode of the sixth MOS transistor (M8C) being connected to the output of the biasing operational amplifier (A), said output also supplying said second biasing voltage (VB1C), wherein the gate electrode of the first MOS transistor (M5) receiving the first biasing voltage (VB1) is directly connected to the junction point of the series connection of the diode connected MOS transistor (MB1) and the current source (Iref), and a first resistive means (R9) is connected between said second MOS transistor (MS) and said third MOS transistor (M9), and a second resistive means (R9C) is connected between said sixth MOS transistor (MSC) and said seventh MOS transistor (M9C).

5,442,320

MIRROR AND BIAS CIRCUIT FOR CLASS AB OUTPUT STAGE WITH LARGE SWING AND OUTPUT DRIVE

David J. Kunst, and Stuart B. Skacter, both of Tucson, Ariz., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 9, 1994, Ser. No. 257,587
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—267 **37 Claims**



18. A complementary transistor class AB output stage having a signal input terminal, a signal output terminal, a positive power supply terminal and a negative power supply terminal, the output stage comprising:

a Darlington output driver;

a complementary output transistor complementary to the Darlington output driver coupled in series with the Darlington output driver between the positive and negative power supply terminals;

a complementary current source coupled to drive the output of the complementary output transistor; and

a current mirror circuit coupled to the Darlington output driver including:

a current mirror transistor coupled between the positive and negative power supply terminals in series with a constant current generator,

a current source transistor forming a first current mirror with the current mirror transistor, the first current mirror forming a second current mirror with the Darlington output driver,

a bias transistor coupled to the Darlington output driver and coupled in series with the current source transistor,

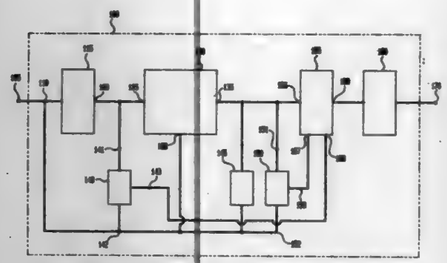
a bias voltage source coupled in parallel with the coupled current source transistor and bias transistor operated at a potential about two V_{BE} below the potential of the positive power supply terminal and coupling the bases of the current mirror circuit transistors to the base of the complementary output transistor to furnish additional current drive.

5,442,321

AUTOMATIC TRANSIMPEDANCE CONTROL AMPLIFIER

Robert J. Bayruns, Middlesex, and Timothy M. Laverick, Franklin Park, both of N.J., assignors to Analogics, Inc., Warren, N.J.

Filed Jul. 8, 1993, Ser. No. 89,201
Int. Cl.[6] H03F *1/34*; H03G *3/30*
U.S. Cl. 330—282 14 Claims



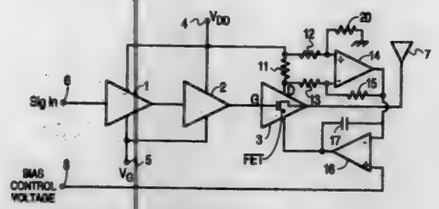
1. An automatic transimpedance amplifier comprising:
an inverting voltage amplifier,
said voltage amplifier comprising a plurality of voltage gain stages, each of said voltage gain stage having an output node and at least one input node, said gain stages being connected one after another from a first stage to a last stage as a cascade;
a feedback resistance means connecting said output node of said last stage to said input node of said first stage;
a plurality of variable resistance means,
each said means having first, second, and control terminals, the resistance between said first and second terminals being variable by applying an electronic signal to said control terminal,
each said variable resistance means being connected between said output node of one voltage gain stage and said input node of said first stage, with said first terminal of said variable resistance means being connected to said output node of said one stage, and said second terminal being connected to said input node of said first gain stage, whereby a voltage gain of said one stage being controlled by changing said resistance of said variable resistive means; and
an automatic gain control (AGC) drive circuit having an input node connected to the output node of said last stage, and a plurality of output control nodes, each control node being connected to said control terminal of one variable resistive means,
said AGC drive circuit being responsive to an output voltage at the output node of the last stage, generating at said output control terminals control signals relating to said output voltage,
said drive circuit being responsive to an increased current applied at said input node of said first stage, generating control signals that reduce the resistance of each variable resistance means, thereby reducing voltage gain of each stage as well as an effective feedback resistance.

5,442,322

POWER AMPLIFIER BIAS CONTROL CIRCUIT AND METHOD

Richard K. Kornfeld, San Diego; Ana L. Weiland, Encinitas, both of Calif., and Mitsunari Okazaki, Fukushima, Japan, assignors to Alps Electric Co. and Qualcomm Inc., Japan

Continuation of Ser. No. 37,764, Mar. 26, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 315,540
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—285 21 Claims



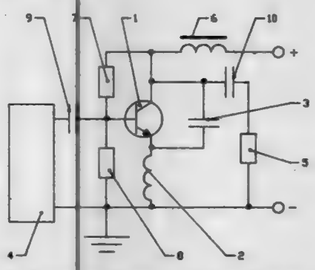
1. A power amplifier comprising:
an FET amplifier stage having a power supply terminal and having an input terminal for receiving an externally provided variable amplitude signal and receiving a control signal at a control terminal;
a current detector connected to said power supply terminal thereby detecting a power supply current provided to said power supply terminal of said FET amplifier stage, said current detector supplying a signal at an output terminal proportional to said power supply current; and
a comparator having a first input terminal connected to a source of a reference signal and a second input terminal connected to the output terminal of said current detector, and providing in response said control signal to said amplifier stage.

5,442,323

BROAD-BAND POWER AMPLIFIER

Sergey G. Tikhomirov, 1 Novosmolenskaya, St., Apt. 175, St. Petersburg, Russian Federation 199397

Filed May 6, 1994, Ser. No. 239,308
Int. Cl.[6] H03F *1/42*
U.S. Cl. 330—292 11 Claims



1. A broad-band power amplifier circuit having a current gain-bandwidth product and usable with an amplifier load having a resistance, said amplifier circuit comprising:
a transistor having a base terminal, an emitter terminal, a collector terminal and an output capacitance;
a bias circuit connected to said base terminal of said transistor;
a capacitor connected between said collector terminal and said emitter terminal of said transistor, said capacitor having a capacitance value C in accordance with the following equation:

$$C=1/(2\pi\times f_T\times R),$$

where R is said resistance of said amplifier load and where f_T is said current gain-bandwidth product; and an inductor connected to said emitter terminal of said transistor, said inductor having an inductance value L in accordance with the following equation:

$$L=R/(2\pi\times f_T)+R^2\times C_c),$$

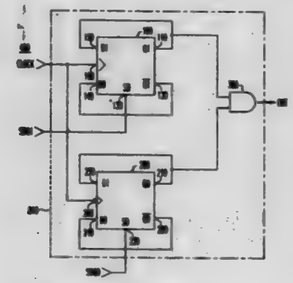
where R is said resistance of said amplifier load and where C_c is said output capacitance of said transistor.

5,442,324

DIGITAL-CONTROLLED OSCILLATOR

Gregory T. Brauns, Whitehall Township, Lehigh County, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Sep. 23, 1994, Ser. No. 311,625
Int. Cl.[6] H03B *28/00*; H03L *7/085, 7/099*
U.S. Cl. 331—34 20 Claims



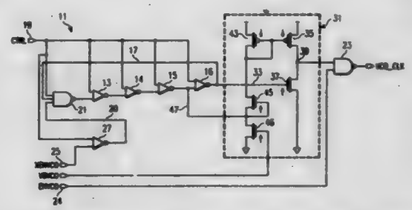
1. An integrated circuit comprising:
a digital-controlled oscillator;
said oscillator including an edge delay oscillator being adapted to produce digital oscillator pulses in response to digital clock pulses, each of said oscillator pulses having a rising edge and a falling edge;
said edge delay oscillator being further adapted to delay at least one of the oscillator pulse edges in response to a delay signal.

5,442,325

VOLTAGE-CONTROLLED OSCILLATOR AND SYSTEM WITH REDUCED SENSITIVITY TO POWER SUPPLY VARIATION

Patrick W. Bosshart, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 8, 1993, Ser. No. 133,497
Int. Cl.[6] H03B *5/04*
U.S. Cl. 331—57 12 Claims



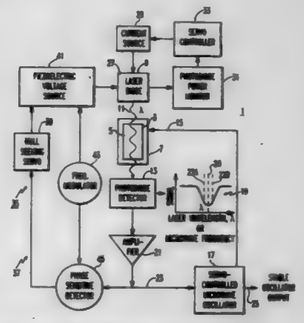
1. A voltage-controlled oscillator (VCO) with reduced sensitivity to power supply voltage variations, said VCO comprising:
at least one stage, each said stage including an inverter with a dc power supply input;
a disabling circuit for disabling frequency oscillation, said disabling circuit including
a disabling gate connecting to an input of said at least one stage; and
an enabling gate having an enable input for receiving output from said at least one stage and for enabling transmission of said output from said VCO in response to an enable signal on said enable input;
a control signal source connected to add power supply, providing a control signal at a voltage level that is substantially independent of said power supply voltage, said control signal source being connected to the dc power supply input of said at least one stage; and
a disable input element having an input for receiving a disable signal and providing an output signal representative of said disable signal to an input of said disabling gate, and being coupled to said control signal source such that the output signal of said disable input element is provided at a voltage level that is adjusted in accordance with the voltage level of said control signal.

5,442,326

ATOMIC TIME STANDARD WITH PIEZOELECTRIC STABILIZATION OF DIODE LASER LIGHT SOURCE

Irving Liberman, Squirrel Hill, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

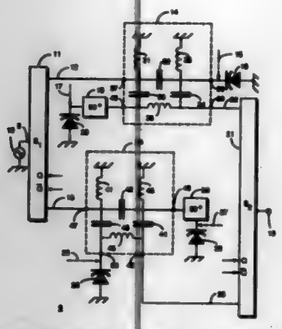
Filed Sep. 9, 1994, Ser. No. 303,802
Int. Cl.[6] H03L *7/26*
U.S. Cl. 331—94.1 5 Claims



1. An atomic time standard comprising:
a gas cell containing a vapor having specified atomic transition frequencies/wavelengths including an optical resonance wavelength and a microwave atomic transition frequency;
oscillator means generating a microwave signal in a frequency range including said microwave atomic transition frequency;
means coupling said microwave signal to said gas cell;
a piezoelectrically controllable diode laser optically pumping said vapor in said gas cell with light at a wavelength within a range including said optical resonance wavelength;
detector means generating a detector signal representing light from said diode laser which has passed through said vapor in said gas cell;
means applying said detector signal to said oscillator means for operating said oscillator means to regulate said microwave signal as a function of said microwave atomic transition frequency and to generate an output signal of a stable frequency related to said microwave atomic transition frequency; and
laser wavelength control means responsive to said detector

signal controlling said piezoelectrically controllable diode laser to stabilize the wavelength of the light generated thereby.

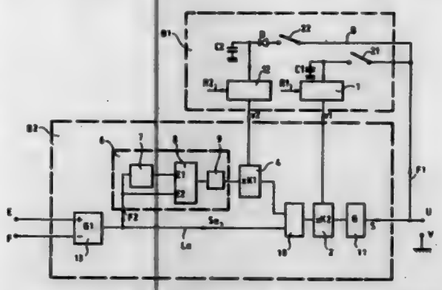
5,442,327
MMIC TUNABLE BIPHASE MODULATOR
Beth A. Longbrake, Cave Creek; Hugh R. Malone, Phoenix, and Michael Dydyk, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 21, 1994, Ser. No. 263,324
Int. Cl.[6] H04L *27/20*
U.S. Cl. 332—103 **20 Claims**



1. An apparatus for providing electronically tunable biphase modulation, said apparatus comprising:
an input;
a first switch having a first input coupled to said input, a first output and a second output, said first switch coupling said first input to either said first output or to said second output in response to a modulating signal;
a first signal path having a first phase shift, said first signal path coupled to said first output;
a second signal path having a second phase shit different than said first phase shift, said second signal path coupled to said second output; and
a second switch having a first input coupled to said first signal path, a second input coupled to said second signal path and a terminal output, said second switch coupling said first signal path to said terminal output when said first switch couples said input to said first signal path and coupling said second signal path to said terminal output when said first switch couples said input to said second signal path.

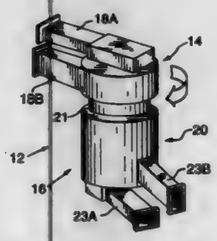
5,442,328
TRANSMISSION LINE CORRECTION SYSTEM
Pierre Halin, Montmorency, France, assignor to Thomson Broadcast, Cergy Saint Christophe, France
Filed Dec. 31, 1992, Ser. No. 999,374
Claims priority, application France, Dec. 31, 1991, 91 16375
Int. Cl.[6] H03H *11/12*
U.S. Cl. 333—18 **17 Claims**

1. A correction system for adjusting the amplitude of signals on at least one transmission line, comprising:
means for automatically correcting the attenuation of a DC component of a signal traveling on each of said at least one line; and
means for adjusting the attenuation of a plurality of frequency components of said signal, said means for adjusting the attenuation of frequency components comprising automatic correction means, wherein said automatic correction means includes a means for individually adjusting the amplitude of each of said plurality of frequency components of said signal to a desired amplitude value which



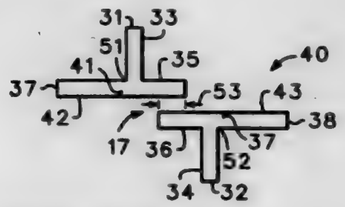
means for individually adjusting the amplitude comprises a closed feedback loop.

5,442,329
WAVEGUIDE ROTARY JOINT AND MODE TRANSDUCER STRUCTURE THEREFOR
Subir Ghosh, and Luiz C. Da Silva, both of Kitchener, Canada, assignors to SG Microwaves Inc., Kitchener, Canada
Filed Dec. 9, 1993, Ser. No. 161,258
Claims priority, application United Kingdom, Dec. 4, 1992, 9225367
Int. Cl.[6] H01P *1/06, 1/16*
U.S. Cl. 333—21 R **17 Claims**



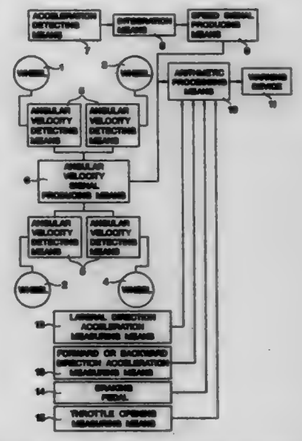
12. Combination of waveguides and transducers for the simultaneous propagation of microwave energy in TM01 and TE01 propagation modes in a circular waveguide, wherein:
the combination includes a circular waveguide and two rectangular waveguides A and B;
the circular waveguide comprises a cylinder, having an axis and having cylindrical walls defining a hollow circular-cylindrical interior, having a diameter, and an end-wall;
the combination includes a TM01-mode transducer, for transducing a microwave energy propagation mode in rectangular waveguide A into a circular-symmetrical TM01 propagation mode in the circular waveguide:
the combination includes a TE01-mode transducer, for transducing a microwave energy propagation mode in rectangular waveguide B into a circular-symmetrical TE01 propagation mode in the circular waveguide:
the TE01-mode transducer is located in the cylindrical walls of the circular waveguide, adjacent to the end wall;
the combination includes a reflector means, which is so located in relation to the end wall and to the TE01-mode transducer as to reflect energy propagating in the TE01 mode in the circular waveguide, away from the end wall;
the rectangular waveguide B has a main body, which terminates in an H-plane Tee-junction box chamber, being a chamber of hollow rectangular cross-section, having two long side-walls and two short side-walls;
the rectangular waveguide B has a longitudinal axis which intersects the axis of the circular waveguide at right angles thereto;
the cylinder and the box share a common wall, said common wall being the said end-wall of the cylinder, and being one of the long side-walls of the box;
the common wall is physically and electrically integral with the said cylindrical walls and with the said side-walls;
the TM01-mode transducer comprises slots disposed in the common wall, the slots providing energy-propagating communication between the cylinder and the box;
and the slots in the common wall are located symmetrically upon the diameter of the cylinder, and the slots extend laterally symmetrically from the said diameter, being a diameter of the cylinder which lies perpendicular to the axis of the rectangular waveguide.

5,442,330
COUPLED LINE FILTER WITH IMPROVED OUT-OF-BAND REJECTION
Ronald D. Fuller, Mesa, and Hugh R. Malone, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 27, 1993, Ser. No. 173,234
Int. Cl.[6] H01P *1/203*
U.S. Cl. 333—204 **18 Claims**



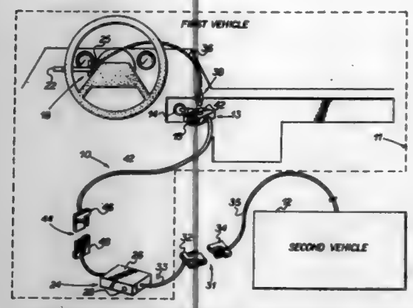
1. A microwave filter circuit comprising:
a substrate having a first and second opposing surfaces;
a ground plane conductor disposed over said second surface;
a first strip conductor of a first electrical pathlength disposed on said first surface, said first strip conductor having first and second ends;
a second strip conductor of said first electrical pathlength disposed on said first surface in parallel to said first strip conductor, said second strip conductor having third and forth ends, said first and second strip conductors having a coupling region being less than half said first electrical pathlength; and
a third strip conductor positioned approximately ninety degrees to said first strip conductor and coupled to said first strip conductor at a first distance from said first end, said first distance being greater than one half of said first electrical pathlength, said third strip conductor causing a first transmission zero at a first zero frequency, said first zero frequency being below a pass-band of said filter circuit.

5,442,331
METHOD AND DEVICE FOR DETECTING A DEFLATED TIRE BY COMPARING ANGULAR VELOCITY AND FORWARD/BACKWARD SPEED DATA WITH A DATA TABLE
Yoshikazu Kishimoto, Kakogawa, and Minso Yanase, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Dec. 20, 1993, Ser. No. 169,397
Claims priority, application Japan, Dec. 21, 1992, 4-340000; Dec. 24, 1992, 4-344104
Int. Cl.[6] B60C *23/00*
U.S. Cl. 340—444 **8 Claims**



1. A method for detecting a deflation condition of a tire mounted on a wheel of a vehicle, comprising the steps of:
(a) detecting angular velocity of each wheel,
(b) producing signals proportional to the detected angular velocities,
(c) detecting accelerations of the vehicle in a forward or backward direction,
(d) obtaining a speed in the forward or backward direction by integrating the detected accelerations,
(e) producing a signal proportional to the obtained speed in the forward or backward direction,
(f) arithmetically processing the signals produced in steps (b) and (e),
(g) measuring throttle opening, as a proportion of maximum opening differentiating the measured values with respect to tire and monitoring the differentiated values of throttle opening; and
(h) invalidating the data of angular velocity of each wheel when the differentiated value of throttle opening exceeds 100%/sec,
wherein the step (f) comprises;
obtaining, from a previously prepared table of wheel angular velocities under normal conditions, a wheel angular velocity at the speed in the forward or backward direction which is obtained in step (d),
comparing the wheel angular velocity at the speed in the forward or backward direction with the angular velocity of each wheel obtained in the step (a), and
operating a device which warns of the deflation condition of the at least one tire when the respective differences between the wheel angular velocity at the speed in the forward or backward direction and the angular velocity of each wheel detected in the step (a) range from 0.05% to 0.60% of wheel angular velocity in the table.

5,442,332
VEHICLE INTERFACE SYSTEM AND METHOD
Michael T. Hughes, 504 Second St., Berthoud, Colo. 80513
Filed Feb. 19, 1993, Ser. No. 20,322
Int. Cl.[6] B60Q *1/50*
U.S. Cl. 340—467 14 Claims

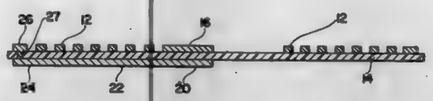


1. An interface system utilizing an inertia sensor for actuating a vehicle light said inertia sensor comprising:
at least two conductive surfaces;
a mobile conductive mass against and electrically connecting said surfaces and capable of moving along said surfaces in response to inertia;
processing means connected to said inertia sensor for monitoring resistance between said surfaces, to thereby determine or perform actuation of said light upon a predetermined change in said resistance.

5,442,333
URGENT BRAKING DEVICE
Major S. Bailey, Kokomo, Ind., assignor to Scott Allan Pitcher, Kokomo, Ind.
Continuation of Ser. No. 160,360, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 659,857, Feb. 22, 1991, abandoned. This application Jul. 15, 1994, Ser. No. 275,654
Int. Cl.[6] B60Q *1/50, 1/44*
U.S. Cl. 340—467 5 Claims

1. A flasher device for use with a brake light system of a vehicle, comprising:
a source of power;
a brake switch;
a brake light;
a resistor;
modulating means for modulating power;
a normally-closed mercury switch connected in parallel with said modulating means and said resistor, said mercury switch being fixedly oriented relative to said vehicle so that said normally-closed switch opens in direct response to a predetermined rate of deceleration of said vehicle;
a casing containing said mercury switch and said resistor, said casing having socket means for removably connecting said modulating means in parallel with said mercury switch; and
means for connecting in series said source of power, said brake switch, said brake light, and the parallel connection of said modulating means, said resistor and said mercury switch.

5,442,334
SECURITY SYSTEM HAVING DEACTIVATABLE SECURITY TAG
Frank F. Gallo, Bristol; Yan P. Bielek, Cumberland; Riccardo Tebano, Bristol, and Mark P. Sardinha, Barrington, all of R.I., assignors to Stoplift Corporation, Bristol, R.I.
Filed Jul. 20, 1992, Ser. No. 915,310
Int. Cl.[6] G08B *13/14;* B32B *31/00*
U.S. Cl. 340—572 11 Claims

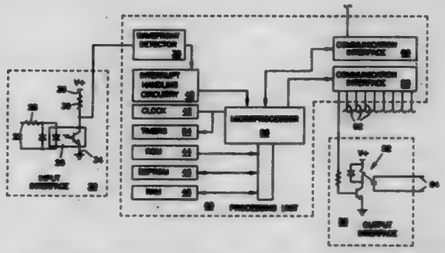


1. A security system having a security tag that is applied to an article located for sale in a retail establishment, said tag comprising a substrate that is formed of a non-conductive material and that includes opposed parallel surfaces, a coil having electrical conductive characteristics and being imprinted on one of said surfaces of said substrate, and a capacitor having portions respectively imprinted on said opposed surfaces of said substrate, said capacitor being electrically connected to said coil, wherein said coil and said capacitor define an electrical circuit having a predetermined single tuned resonant detection frequency and being responsive to a swept radio frequency signal transmitted at said predetermined tuned detection resonant frequency, wherein said circuit resonates to produce a signal that is detected by an alarm circuit, the material from which said coil and capacitor are formed including a plurality of separate particles having electrical conductive characteristics and that are disposed in electrical engaging relation, and a binder that is intermixed with the conductive particles for fixing the particles in said electrical engaging relation to provide for electrical continuity throughout said coil and capacitor, said binder comprising a resin that is selected from a group consisting of alkyd, epoxy, polyacryl, polyamid, polyurethane, polyvinyl acetate, hydrocarbon resin, nitrocellulose, polyvinyl chloride and rosin, said resin further including a copolymer comprising two or more monomers selected from a group consisting of acryl, vinyl, styrene, urethane, vinyl acetate and oil, said coil and capacitor being further responsive to application of a predetermined magnitude of induction heat thereto that results from the emission from a source of an electromagnetic field located in close proximity thereto for breaking down the electrical continuity of the conductive material in said coil and capacitor to increase the resistance thereof thereby inhibiting electrical conductivity therethrough.

5,442,335
CONTROLLER FOR CONTROLLING OPERATION OF AT LEAST ONE ELECTRICAL LOAD OPERATING ON AN AC SUPPLY, AND A METHOD THEREOF
Luc Cantin; Mario Deschênes, both of Baie Comeau, and Mario D'Amours, Sept Iles, all of Canada, assignors to I.D. Tek Inc., Baie-Comeau, Canada
Filed Nov. 13, 1992, Ser. No. 975,861
Int. Cl.[6] H02J *1/00, 3/00;* H04M *11/04*
U.S. Cl. 340—825.71 12 Claims

1. A controller for controlling operation of at least one electrical load operating on an AC supply having a typical frequency, said AC supply being provided via power transformers by an electrical power distribution grid, said controller being associated with said at least one load and comprising:

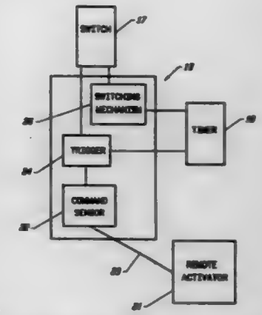
an input interface including input terminals for connection to said grid, and an output for producing a signal representative of said AC supply and having the same frequency;
frequency detecting means for detecting the frequency of said AC supply, said frequency detecting means having an input connected to said output of the interface, and an output for producing a signal indicative of said frequency;
memory means for storing preprogrammed commands;
frequency monitoring means connected to the output of said frequency detecting means, for reading the signal indicative of said frequency and producing frequency data derived thereof;
selecting means connected to said frequency monitoring means and said memory means, for selecting at least one of said preprogrammed commands with respect to said frequency data, said selecting means comprising: means for detecting a substantial drop in the frequency of said AC supply below a threshold value and, on detection of said drop, selecting a first group of said commands for achieving a disconnection of said at least one load from said grid for a first predetermined time period; means for detecting whether a variation in the frequency of said AC supply



exceeds a predetermined level and, on detection of said variation exceeding said level, selecting a second group of said commands for achieving a disconnection of said at least one load from said grid for said first predetermined time period; means for detecting an absence of said AC supply and, on detection of said absence, selecting a third group of said commands for achieving a disconnection of said at least one load from said grid for a second time period longer than the first time period; and clock and timer means for timing operations performed by said selecting means;
control means having an output for producing at least one command signal representative of the at least one of said preprogrammed commands selected by said selecting means; and
an output interface including an input connected to said output of the control means, and an output for connection to said at least one load, said output interface including means responsive to the command signal for controlling said at least one load;
whereby said at least one load can be controlled by means of said controller depending on the frequency of said AC supply.

5,442,336
SWITCH-TIMER SYSTEM AND METHOD FOR USE IN SMOKE DETECTOR ALARM UNIT
Daniel L. Murphy, and Paula N. Chavez, both of 1707 Pine Knoll Dr., Belmont, Calif. 94002
Filed Jun. 1, 1993, Ser. No. 71,282
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—628 4 Claims

3. For use in a smoke detector alarm unit having a main assembly and a power assembly, a system comprising:
a switch which is capable of having an off state and an on state and which is in communication with said main assembly and said power assembly so that when said switch is off, electric current does not pass from said power assembly to said main assembly and so that when said switch is on, electric current passes from said power assembly to said main assembly; means for commanding said switch to assume said off state;
a timer for monitoring a predetermined length of time, said timer in communication with said commanding means, wherein said timer is activated when said switch is set to said off state;



a switching mechanism in communication with said timer and said switch for causing said switch to return to said on state after said timer indicates that said predetermined length of time has passed; and
means for intermittently returning said switch to said on state during said predetermined length of time.

5,442,337
DEVICE FOR PROTECTION OF DIGITAL MULTIMETER FROM MISINSERTION OF INPUT PLUG
Dong W. Hwang, Kumi, Rep. of Korea, assignor to H.U. Kim & Associates, Seoul, Rep. of Korea
Filed Mar. 10, 1994, Ser. No. 209,776
Claims priority, application Rep. of Korea, Apr. 20, 1993, 93-6463
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—635 13 Claims



1. A device for protecting a digital multimeter from misinsertion of an input plug, said multimeter having a measuring result display on its top case, a plurality of plug inserts and a rotary type function switch for selecting a desired function, the device comprising:
plug misinsertion preventing means for preventing said input plug from being inserted into a specified one of said plug inserts when a function other than a specified function is selected, said specified function corresponding to said specified plug insert; and
alarm generating means for generating an alarm signal when said function switch is operated in order to change a function when said input plug is inserted in said specified

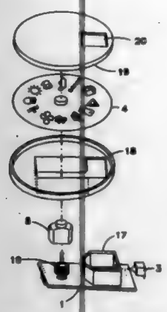
plug insert, wherein said plug misinsertion preventing means cooperates with said alarm generating means such that when said function switch selects said specified function said plug misinsertion preventing means acts to at least partially enable said alarm generating means.

5,442,338

MINIATURE TELLTALE MODULE

John A. Ayres, Lapeer, and David L. Ehle, Attica, both of Mich., assignors to Nu-Tech & Engineering, Inc., Lapeer, Mich.

Filed May 3, 1993, Ser. No. 56,087
Int. Cl.[6] G08B *5/00*
U.S. Cl. 340—815.64 **18 Claims**



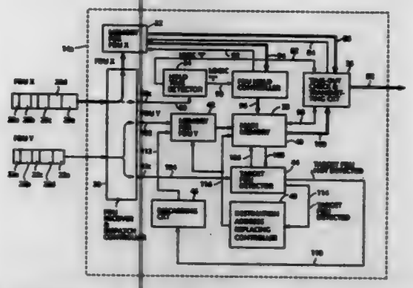
1. An image display arrangement comprising:
a substrate wherein said substrate acts as a base having an integrated circuit and electrical connections;
stator coils fixedly attached to said substrate;
an actuator fixedly attached to said substrate and having two or more inputs which act as connection points for said stator coils and said connection points having inputs of high, low, and floating, whereby six output positions for said actuator are provided and wherein a stator magnetic field is created when current flows through said stator coils;
a brake disc disposed beneath said stator coils and fixedly attached to said substrate;
a brake disc pad disposed beneath said stator coils and fixedly attached to said brake disc;
a light emitting diode (LED) electrically connected to said integrated circuit;
a magnet having a magnetic field, said magnet disposed around said stator coils wherein said magnet can freely rotate around said stator coils and wherein no current is flowing in said stator coils, said brake disc attracts said magnet and causes said magnet to move axially until contact occurs between said magnet and said brake disc pad and also wherein current is flowing in said stator coils, said brake disc is released by said magnetic field of said stator coils overcoming said magnetic field of said magnet;
an image strip carrier having a series of images and having said image strip fixedly attached to said magnet wherein said image strip can freely rotate around said stator coils;
a light box fixedly attached to said substrate;
a housing fixedly attached to said substrate wherein said housing encloses said actuator, said light emitting diode (LED), said stator coils, said magnet, and said light box;
a cover fixedly attached to said housing having a window opening to view said image strip and to emit light from said light emitting diode (LED).

5,442,339

METHOD AND SYSTEM OF CHANGING DESTINATION OF PROTOCOL DATA UNIT IN HIERARCHICAL DATA COMMUNICATION NETWORK SYSTEMS

Atsumasa Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 730,170, Jul. 16, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 97,540
Claims priority, application Japan, Jul. 16, 1990, 2-187517
Int. Cl.[6] G05B *23/02*
U.S. Cl. 340—825.16 **5 Claims**



1. A hierarchical data communications network system, including a relay station for changing a destination of a protocol data unit (PDU) and a first end system coupled to forward a first PDU to one of a plurality of destination end systems via said relay station, said first PDU including a destination address which specifies the destination end system of said first PDU and a transmission hold indicator, said first end system also being coupled to dispatch a destination change PDU to said relay station after said first PDU has been forwarded to said relay station, said destination change PDU including a destination change address and a target PDU indicator, said relay station comprising:
first means for receiving and temporarily storing said first PDU, and for continuing to retain said first PDU for a given time period if said transmission hold indicator indicates that said first PDU should be retained within said relay station; and
second means for receiving and storing said destination change PDU and for changing the destination of said first PDU in the event that said first PDU is specified by the target PDU indicator within the given time period.

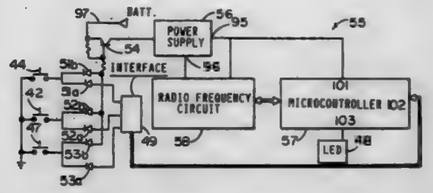
5,442,340

TRAINABLE RF TRANSMITTER INCLUDING ATTENUATION CONTROL

Kurt A. Dykema, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 874,361, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 567,390, Aug. 14, 1990, which is a continuation-in-part of Ser. No. 279,643, Dec. 5, 1988, abandoned. This application Apr. 30, 1993, Ser. No. 55,509
Int. Cl.[6] H04Q *7/02*
U.S. Cl. 340—825.22 **26 Claims**

1. A trainable transmitter for learning and transmitting an activation signal that includes an RF carrier frequency modulated with a code for remotely actuating a device, said trainable transmitter comprising:
a controller operable in a learning and an operating mode, said controller receiving the activation signal in said learning mode for storing data corresponding to the radio frequency and code of the activation signal, and in said operating mode, providing an output signal, which identifies the radio frequency and code of the received activation signal, and an attenuation control signal;
a signal generator coupled to said controller, for receiving said output signal for outputting a modulated radio frequency carrier signal corresponding to the received activation signal; and
an attenuator, coupled to said signal generator and to said controller, for receiving the attenuation control signal



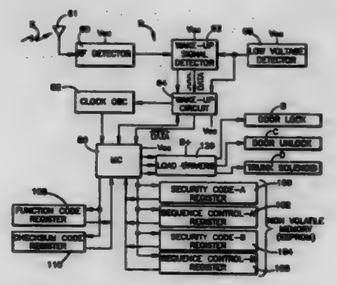
from said controller, for attenuating the modulated radio frequency carrier signal received from said signal generator at an attenuation level indicated by the attenuation control signal, and for transmitting an attenuated output signal to the device.

5,442,341

REMOTE CONTROL SECURITY SYSTEM

George P. Lambropoulos, Grosse Pointe Woods, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Apr. 10, 1992, Ser. No. 866,906
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.31 **41 Claims**



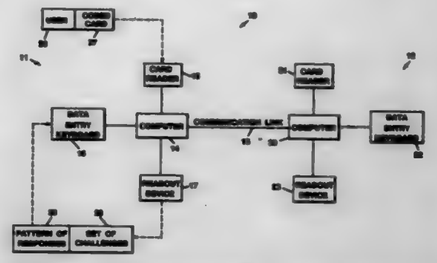
1. A transmitter for use in a remote control keyless security system for remotely controlling the locking and unlocking control functions of a locking means on a vehicle or the like having a receiver mounted on said vehicle, said transmitter being located remote from said receiver, wherein said transmitter comprises:
an actuatable switch means representative of a control function to be performed by said locking means;
signal transmission means including circuit means responsive to actuation of said switch means for transmitting a digital signal including a first portion having a multi-bit security code uniquely identifying said transmitter from a plurality of similar transmitters, and a multi-bit sequence control code adapted to be sequentially changed in response to each actuation of a said switch means and wherein said security code contains information defining one of a predetermined plurality of different sequence algorithms for use in changing the digital value of said sequence control code;
said transmitter including means responsive to each actuation of a said switch means for sequentially and selectively changing the digital value of said sequence control code with each change being dependent upon said one of said sequence algorithms selected in accordance with said information contained in said security code identifying said transmitter.

5,442,342

DISTRIBUTED USER AUTHENTICATION PROTOCOL

Kenneth C. Kung, Cerritos, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 832,643, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 574,640, Aug. 29, 1990, abandoned. This application May 27, 1993, Ser. No. 77,133
Int. Cl.[6] G06K *5/00*
U.S. Cl. 340—825.34 **9 Claims**



1. In a method for authenticating an authorized user for a computer controlled system, said method being of the type wherein a coded card containing an authentication code and a user password is inserted by the user into a reader coupled to the computer controlled system, and wherein the computer then verifies the authenticity of the card by checking the authentication code against authentication data stored on the coded card, and wherein the computer also compares a password entered into a data entry device with the user password on the coded card, the improvement comprising the following steps for authorization of access after verification of the user password:
providing a set of challenges to be answered by the user, each challenge having a right answer and at least one wrong answer;
storing a predetermined pattern of responses to said challenges, said predetermined pattern defining an authenticating response to said set of challenges, said predetermined pattern including a deliberately wrong answer to at least one of said challenges and a right answer to at least a remaining one of said challenges comprising said set;
sequentially presenting said set of challenges via a readout device to the user;
permitting the user to respond sequentially to each challenge of the set of challenges via the data entry device, wherein the sequential set of user responses to said set of challenges defines a user-entered pattern of responses;
comparing said user-entered pattern of responses to said predetermined pattern defining said authenticating response and permitting entry to said computer controlled system if and only if said user-entered pattern of responses matches said authentication pattern.

5,442,343

ULTRASONIC SHELF LABEL METHOD AND APPARATUS

Robert T. Cato, and Richard H. Harris, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1993, Ser. No. 80,340
Int. Cl.[6] G06F *7/04*
U.S. Cl. 340—825.35 **20 Claims**

1. Ultrasonic communication method between means for processing data, means for transceiving ultrasonic signals, and

means for displaying data, wherein each displaying means has a unique identifier, comprising the steps of:

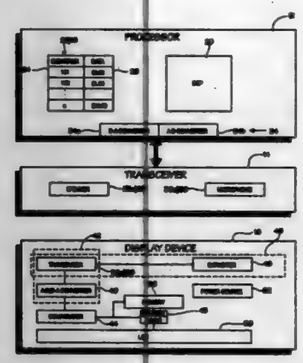
(a) associating data with an identifier at said processing means;

(b) communicating the identifier and the associated data to said transceiving means;

(c) ultrasonically broadcasting the identifier and the associated data at said transceiving means;

(d) receiving the broadcast identifier and the associated data at said displaying means;

(e) ultrasonically generating an acknowledgment signal at said displaying means if the received identifier matches the unique identifier of said displaying means;



(f) displaying the received data at said displaying means; and

(g) determining at said processing means whether the acknowledgment signal was generated, wherein step (g) includes

(i) prior to step (d), determining a first indicator of the amount of sound within an acknowledgment signal bandwidth;

(ii) for a time window after step (c), determining a second indicator of the amount of sound within the acknowledgment signal bandwidth; and

(iii) determining the acknowledgment signal to have been generated if the second indicator exceeds the first indicator by a defined amount.

5,442,344

DATA ACQUISITION SYSTEM HAVING SELECTIVE COMMUNICATION CAPABILITY

Scott A. Merkle, and Douglas A. Ochsner, both of Newton, Iowa, assignors to Maytag Company, Newton, Iowa

Division of Ser. No. 872,062, Apr. 22, 1992, Pat. No. 5,376,930. This application Sep. 23, 1994, Ser. No. 315,127

Int. Cl.[6] G06F *7/24, 15/21*; H04Q *9/00*

U.S. Cl. 340—825.35 **13 Claims**



1. A configuration setup system for use with one or more appliances of the type which provide services for money received, the configuration set-up system comprising:

a data probe for storing a set-up record defining operational parameters of an appliance in at least a first format and a second format, the first format being different from the second format, the data probe having a transceiver for transmitting a setup record in the first format or in the second format; and

individual and separate data acquisition units resident in a plurality of appliances for storing a setup record, the data acquisition unit having a transceiver for receiving the setup record wherein the data probe interrogates the data acquisition t nit and receives the identification information from the data acquisition unit in is communicating with and transmits a setup record in the first format or in the second format depending upon the identification information received from the data acquisition unit.

5,442,345

LOW VOLTAGE ALERTING DEVICE IN A PAGING RECEIVER AND METHOD THEREFOR

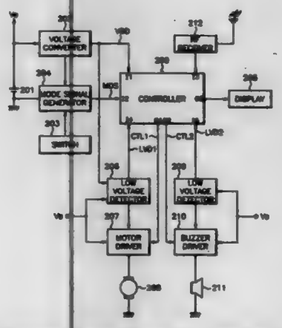
Won-Hyoun Kwon, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 892,925, Jun. 3, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 354,147

Claims priority, application Rep. of Korea, Nov. 26, 1991, 21266/1991

Int. Cl.[6] G08B *21/00*; H04Q *7/00*

U.S. Cl. 340—825.46 **21 Claims**



1. A low voltage alerting circuit in a paging receiver for driving vibrating means in response to received self data in a memory mode, said low voltage alerting circuit comprising:

power supply means for providing a power supply voltage;

low voltage detector means connected to controller means, for generating a first low voltage detection signal independently of reception of said self data by said paging receiver whenever said power supply voltage is less than a first reference voltage, and a second low voltage detection signal independently of reception of said self data by said paging receiver whenever said power supply voltage is less than a second reference voltage lower than said first reference voltage;

alerting driver means interposed between said power supply means and said low voltage detector means, for sequentially disconnecting electrical conduction between said power supply means and said vibrating means, and between said power supply means and buzzer means in dependence upon said first and second low voltage detection signals, respectively; and

said controller means for enabling a visual display of low voltage status of said power supply means in dependence upon said first and second low voltage detection signals, and said buzzer means for producing a first audible tone scheme comprised of audible tones each having a first time duration to alert a user of the low voltage status of said power supply means in response to said first low voltage detection signal and for producing a second audible tone scheme comprised of audible tones each having a second time duration to alert the user of the reception of said self

data, said first time duration being different than said second time duration.

5,442,346

REMOTE CONTROL TRANSMITTING DEVICE OF ROBOT

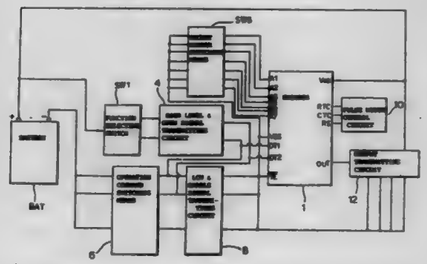
Ji-Hyun Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Mar. 25, 1993, Ser. No. 36,858

Claims priority, application Rep. of Korea, Mar. 25, 1992, 92-4719

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.57 **12 Claims**



1. A remote control transmitting device for a robot, comprising:

a power source for outputting a direct voltage;

secret number switching means for inputting secret numbers of a user;

a function selecting switch for allowing the user to select a function from among a plurality of different functions of the robot;

a high level and open signal transmitting circuit, coupled to said function selecting switch, wherein, when said function selecting switch is rendered conductive, a high level voltage outputted from the battery is received to thereby output a high level voltage indicative of a first predetermined function of the robot, and when said function selection switch is turned off, an open signal is generated indicative of a second predetermined function of the robot which is different from the first predetermined function, wherein said high level and open signal transmitting circuit comprises a plurality of resistors, and a plurality of diodes;

operation command switching means coupled to receive a plurality of different operation commands from the user;

a low and enable signal transmitting circuit for outputting a low signal and an enable signal after receiving the user's operation command signal outputted from the operation command switching means;

an encoder, coupled to said low and enable signal transmitting circuit, said secret number switching means, and said high level and open signal transmitting circuit, for outputting secret-coded signals, and function and operation command signals; and

an output transmitting circuit coupled to said encoder, for outputting signals from said encoder as infrared signals to the robot.

5,442,347

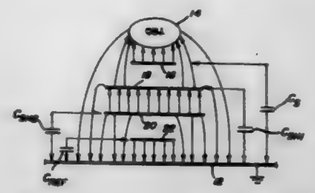
DOUBLE-DRIVEN SHIELD CAPACITIVE TYPE PROXIMITY SENSOR

John M. Vranish, Crofton, Md., assignor to The United States of America as represented by the Administrater, national Aeronautics & Space Administration, Washington, D.C.

Filed Jan. 25, 1993, Ser. No. 8,426

Int. Cl.[6] G08C *19/10*

U.S. Cl. 340—870.37 **18 Claims**



1. A double driven shield capacitive type proximity sensor located on a piece of apparatus for detecting the presence of an intruding object within a region of interest in the vicinity of the apparatus, comprising:

an outermost sensor element on said piece of apparatus and facing said object;

a first shield element for said outermost sensor element located immediately behind said outermost sensor element and between said piece of apparatus;

a reference sensor element located immediately adjacent said piece of apparatus and behind said first shield element;

a second shield element for said reference sensor element located intermediate said first shield element and said reference sensor element;

said outermost sensor element and said first shield element being coupled in parallel in a first arm of a bridge circuit also including first and second pairs of circuit nodes, said reference sensor element and said second shield element being coupled in parallel in a second arm of said bridge circuit, said first and second arms comprising a first pair of mutually adjacent arms of said bridge circuit and being connected at one end to a first node of said first pair of circuit nodes and being connected at their respective other ends to separate nodes of said second pair of circuit nodes, and additionally including first and second electrical impedance elements respectively comprising third and fourth arms of said bridge circuit, said third and fourth arms comprising a second pair of mutually adjacent arms of said bridge circuit and being connected at one end to a second node of said first pair of circuit nodes and being connected at their respective other ends to said separate nodes of said second pair of nodes thereby closing said bridge circuit;

a single frequency signal source coupled to said first pair of circuit nodes; and

second circuit means coupled to said second pair of circuit nodes for detecting the state of balance of said bridge circuit, thereby providing an indication of intrusion by said object within said region of interest as a function of said state of balance.

5,442,348

COMPUTERIZED PARKING METER

Joshua Mushell, Denver, Colo., assignor to Park-A-Tron Limited Liability Company, Greeley, Colo.

Filed Mar. 12, 1993, Ser. No. 30,650

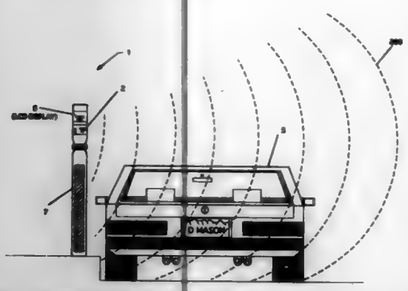
Int. Cl.[6] B60Q *1/48*

U.S. Cl. 340—932.2 **34 Claims**

1. In a computerized parking meter system, the process of providing maximum revenues comprising the steps of:

(a) partially inserting a coin in a coin collector;

(b) rejecting the coin if parking restrictions are pre-programmed in a computer attached to said coin collector;
(c) rejecting the coin as improper by means of detecting magnetic variations created by said improper coin when it is partially inserted into said coin collector;
(d) accepting a coin as good if no magnetic variations are detected when it is partially inserted into said coin collector;
(e) adding to a coin total count;
(f) checking a real time clock;
(g) adding a time purchased to a time remaining;
(h) displaying the time remaining;
(i) sending a pulse of ultrasonic waves toward a parking space;



(j) receiving the reflections of the ultrasonic waves off an object;
(k) determining the distance to the object;
(l) ignoring any distance to the object which is outside a window of distances programmed into the computer attached to said coin collector;
(m) setting any distance to the object which is within the window as a vehicle baseline distance;
(n) periodically rechecking the distance to the object for which the vehicle baseline distance was set;
(o) resetting the time remaining on the parking meter to zero when a rechecked distance exceeds the baseline distance; and
(p) setting an alarm means for indicating when the time remaining equals zero.

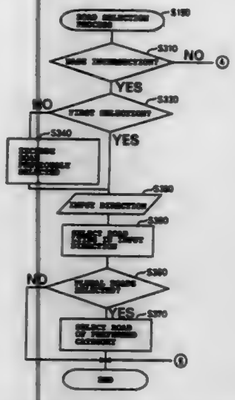
5,442,349

NAVIGATION SYSTEM WITH ROUTE DETERMINATION PROCESS CAPABLE OF DETERMINING A DESIRED ROUTE READILY AND QUICKLY

Nobutaka Inoue, Aichi; Jun Uemura, Nagoya, and Shigemitsu Toriyama, Yokkaichi, all of Japan, assignors to Masproden-koh Kabushikikaisha, Japan

Filed Sep. 16, 1993, Ser. No. 122,769
Claims priority, application Japan, Oct. 12, 1992, 4-273082
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—995 **12 Claims**

1. A navigation system comprising:
a) display means for displaying a road map thereon;
b) road map data storage means for storing road map data to be displayed on said display means, said road map data including road category data indicative of a category type of each road;
c) display control means for controlling said display means to display said road map according to said road map data stored in said road map data storage means;
d) input means for inputting a base point and a driving direction;
e) first road selection means for determining based on said base point and driving direction a road, from said base point to an intersection substantially in said driving direction, to be taken on a route;
f) second road selection means for selecting, according to said road map data and the road category type of the determined road, a next road to be taken on said route from the end of the determined road to a next intersection based on said input driving direction;
g) route indication control means for controlling said display means to indicate on said displayed road map said route determined by said first and second road selection means;
h) determination means for determining whether said next road from the end of the determined road to said next intersection was selected by said second road selection means and, if said next road from the end of the determined road to said next intersection was selected, causing



said second road selection means to operate to determine a further next road, to be taken on said route from the end of said next road to a further next intersection based on said input driving direction;
i) route cancel input means for receiving an instruction inputted by a user to stop determination of said route by said first and second road selection means; and
j) route cancel control means, responsive to said instruction inputted by the user to stop determination of said route, for canceling at least a portion of the determined route, intersection by intersection, from the end of the determined route toward said base point and for erasing the canceled portion of said route on said displayed road map.

5,442,350

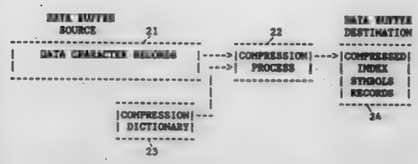
METHOD AND MEANS PROVIDING STATIC DICTIONARY STRUCTURES FOR COMPRESSING CHARACTER DATA AND EXPANDING COMPRESSED DATA

Balakrishna R. Iyer, San Jose, Calif.; Clark Kurtz, Highland; Kenneth E. Plambeck, Poughkeepsie, both of N.Y., and Bhaskar Sinha, Boxford, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,631
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **98 Claims**

1. An improved method of implementing a well-known Ziv-Lempel (ZL) compression algorithm for compressing any one or more of relatively small small uncompressed records in a relatively large data base to improve compression for the records, comprising the steps of:
pre-generating a static compression dictionary entity (dictionary) before generating compressed records by applying a computer program (utilizing the ZL compression algorithm) to the data base to generate the dictionary to contain all ZL character strings in the data base as dictionary strings;

structuring each character string in the data base as a dictionary string represented by one or more dictionary entries in which each entry is assigned one or more respective extension characters (ECs) in the dictionary string, in which the assigned EC(s) may or may not be recorded within the dictionary entry and may be called true extension characters (TECs);
chaining or indexing the dictionary entries in a dictionary string from a first entry of any string represented by two or more entries; and
generating compressed records from accessed uncompressed records without changing the dictionary whether or not any uncompressed record(s) in the data base have been changed, by the further steps of:
executing another computer program to detect record strings in an uncompressed record by matching a sequence of characters in the uncompressed record against the dictionary strings in the dictionary; and
outputting index symbols (that represented ending locations in the dictionary for record strings being matched against dictionary strings in the dictionary) to provide a compressed record corresponding to the uncompressed record.

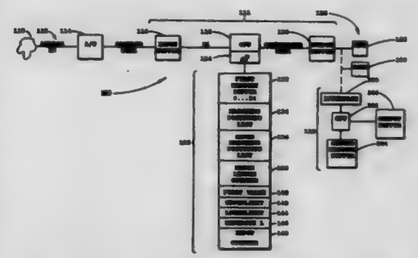


5,442,351

DATA COMPRESSION METHOD AND APPARATUS FOR WAVEFORMS HAVING RECURRING FEATURES

Robert N. S. Horspool, and Warren J. Windels, both of Victoria, Canada, assignors to Harley Street Software Ltd., Vancouver, Canada

Filed Sep. 20, 1993, Ser. No. 122,955
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **53 Claims**



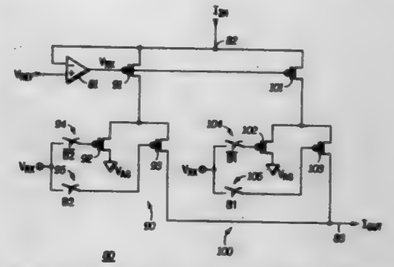
1. A method of compressing an input sequence of data items produced by sampling a periodic waveform, the method comprising the steps of:
a) searching a First History Buffer operable to store consecutive data items, to locate a stored sequence of consecutive data items matching said input sequence, said matching occurring when each data item in said input sequence is within non-equal upper and lower limits of its corresponding data item in said stored sequence; and
b) when a stored sequence matching said input sequence is located, producing compressed output data representing said stored sequence and storing said stored sequence in the First History Buffer to succeed the data items already in said First History Buffer; and
c) when a stored sequence matching said input sequence is not located, producing uncompressed output data including a representation of the first data item in said input sequence and storing said first data item in the First History Buffer to succeed the data items already stored in said First History Buffer.

5,442,352

LINEAR ATTENUATOR FOR CURRENT-MODE DIGITAL-TO-ANALOG CONVERTER (DAC) OR THE LIKE

H. Spence Jackson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 14, 1994, Ser. No. 181,506
Int. Cl.[6] H01P *1/22*
U.S. Cl. 341—136 **20 Claims**



1. A linear attenuator for a current-mode digital-to-analog converter (DAC) or the like, comprising:
a first transistor having a first current electrode for receiving an input current, a second current electrode, and a control electrode;
an amplifier having a negative input terminal coupled to said first current electrode of said first transistor, a positive input terminal for receiving a reference voltage, and an output terminal coupled to said control electrode of said first transistor; and
a plurality of current-steering cells each coupled to said second current electrode of said first transistor and receiving a corresponding one of a plurality of input signals, and steering a current thereinto selectively to first and second nodes as determined by said corresponding one of said plurality of input signals;
at least one of said first and second nodes forming an output terminal of the linear attenuator.

5,442,353

BANDPASS SIGMA-DELTA ANALOG-TO-DIGITAL CONVERTER (ADC), METHOD THEREFOR, AND RECEIVER USING SAME

H. Spence Jackson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

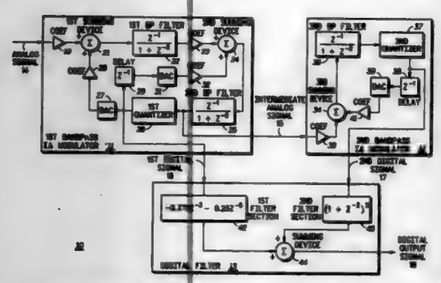
Filed Oct. 25, 1993, Ser. No. 140,948
Int. Cl.[6] H03M *3/02*
U.S. Cl. 341—143 **28 Claims**

1. A bandpass sigma-delta analog-to-digital converter (ADC) comprising:
a first bandpass sigma-delta modulator that converts a received analog signal into an intermediate analog signal and a first digital signal;
a second bandpass sigma-delta modulator operably coupled to said first bandpass sigma-delta modulator, wherein said second bandpass sigma-delta modulator converts said intermediate analog signal into a second digital signal; and
a digital filter operably coupled to said first bandpass sigma-delta modulator and said second bandpass sigma-delta

modulator, wherein said digital filter converts said first digital signal and said second digital signal into a digital output signal,

said digital filter comprising:

a first digital filter section having an input for receiving said first digital signal, and an output, said first digital filter section filtering said first digital signal according to a transfer function designated as $H_1(z)$ given substantially by $H_1(z)=-0.375z^{-3}-0.25z^{-5}$;



a second digital filter section having an input for receiving said first digital signal, and an output, said second digital filter section filtering said first digital signal according to a transfer function designated as $H_2(z)$ given substantially by $H_2(z)=(1+z^{-2})^2$; and

a summing device having first and second inputs respectively coupled to outputs of said first and second digital filter sections, and an output terminal for providing said digital output signal.

5,442,354

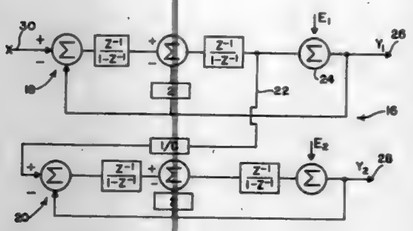
FOURTH-ORDER CASCADED SIGMA-DELTA MODULATOR

Carlin D. Cabler, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 147,062, Nov. 3, 1993, which is a continuation-in-part of Ser. No. 112,610, Aug. 26, 1993, Pat. No. 5,414,424. This application Dec. 21, 1993, Ser. No. 171,091

Int. Cl.[6] H03M *3/02*

U.S. Cl. 341—143 **2 Claims**



2. A sigma-delta modulator system comprising:

a preceding second-order sigma-delta modulator having a quantizer;

a subsequent second-order sigma-delta modulator;

means for applying an input signal to both said preceding modulator quantizer and said subsequent modulator;

means for scaling a subsequent modulator output signal by a predetermined factor;

means for delaying a preceding modulator output signal by two sample periods to produce a delayed preceding modulator output signal;

means for subtracting said delayed preceding modulator output signal from said scaled subsequent modulator output signal to produce a difference output signal;

means for differentiating said difference output signal; and

means for summing said delayed preceding modulator output signal and said differentiated difference output signal to provide a circuit output signal.

5,442,355

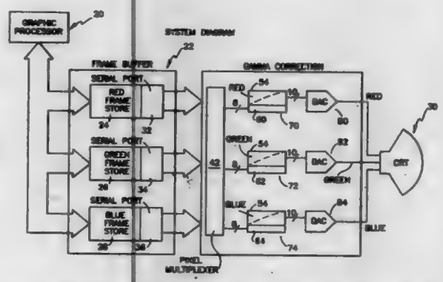
SYSTEM FOR DEVELOPING CRT COLOR-INTENSITY CONTROL SIGNALS IN HIGH RESOLUTION CRT DISPLAY EQUIPMENT

Timothy J. Cummins, Limerick, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 79,641, Jun. 18, 1993, which is a continuation of Ser. No. 649,433, Feb. 1, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 151,946

Int. Cl.[6] H03M *1/68*

U.S. Cl. 341—145 **21 Claims**



1. An integrated-circuit (IC) chip formed with three digital-to-analog converters (DACs) for developing video analog signals to be directed to respective color guns of a CRT, said DACs each comprising:

a plurality of current sources;

first, second and third switch control means for switching the currents of said current sources from one to the other of two lines;

said first switch control means receiving a set of higher-order bit signals;

said second switch control means receiving a set of middle-order bit signals;

said third switch control means receiving a set of lower-order bit signals;

circuit means for developing composite analog output signals for each of said DACs to enable said analog output signals to be directed to respective CRT color guns;

said second switch control means comprising a fan-out decoder responsive to said middle-order bit signals and having outputs for controlling said middle group of said current sources;

said middle group of current sources all having equal currents.

5,442,356

AIRBORNE SYSTEM FOR OPERATION IN CONJUNCTION WITH A MARKER BEACON

Frederick F. Hiltz, Newport, R.I., and Charles E. Wilson, Clarksville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1994, Ser. No. 216,568

Int. Cl.[6] G01S *13/80*

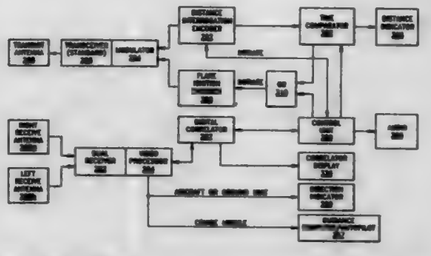
U.S. Cl. 342—46 **7 Claims**

1. An airborne system for use in conjunction with a marker beacon, said marker beacon having a flare for visual and infrared aid to terminal homing to said marker beacon, said airborne system comprising:

detection means for detecting said marker beacon upon receipt of first predetermined radio signals;

direction determination means for determining the direction of said marker beacon upon receipt of said first predetermined radio signals by said detection means;

transponder means for querying said marker beacon as to its range upon receipt of said first predetermined radio signals by said detection means;



range determination means for determining the slant range of said marker beacon upon receipt of second predetermined radio signals; and

flare activation means for transmitting a flare activation signal for activating said flare of said marker beacon upon said range determination means determining said slant range to be not more than a predetermined distance.

5,442,357

RADAR TRANSPONDER

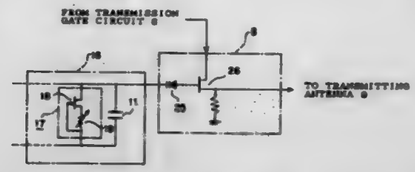
Tohru Dochi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 203,589

Claims priority, application Japan, Mar. 25, 1993, 5-089452

Int. Cl.[6] G01S *13/80*

U.S. Cl. 342—51 **9 Claims**



1. A radar transponder, comprising:

means for detecting a radio wave transmitted by a search radar;

means for producing a predetermined number of pulses when the detecting means detects the radio wave;

a sweep signal generator for generating sawtooth wave signals of rising and falling signal magnitudes responsive to said pulses, said signal generator having a capacitor and a first constant current circuit, the capacitor and the first constant current circuit being connected in parallel with each other, the sweep signal generator converting the predetermined pulses into sawtooth wave signals with the capacitor and the first constant current circuit functioning to substantially linearize the signal-time characteristic of said falling signal magnitudes of said sawtooth wave signals; and

a microwave oscillator producing a microwave which sweeps in a predetermined range of frequency based on the sawtooth wave signals.

5,442,358

IMAGING LIDAR TRANSMITTER DOWNLINK FOR COMMAND GUIDANCE OF UNDERWATER VEHICLE

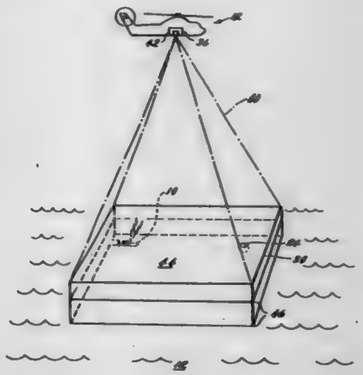
R. Norris Keeler, McLean, Va.; Robert S. Manthy, Suffield; Troy J. LaMontagne, Broad Brook, both of Conn., and Randall McGee, Tucson, Ariz., assignors to Kaman Aerospace Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 789,170, Nov. 6, 1991, Pat. No. 5,241,314, which is a continuation-in-part of Ser. No. 760,872, Sep. 16, 1991, Pat. No. 5,248,978, which is a continuation-in-part of Ser. No. 746,645, Aug. 16, 1991, abandoned. This application May 13, 1993, Ser. No. 62,467

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[6] G01S *13/86, 15/89, 13/89*

U.S. Cl. 342—54 **28 Claims**



1. Apparatus for removal of navigational hazards in the water from a platform positioned above the water, comprising:

(1) a discrete vehicle detachably attachable to said platform, said vehicle including;

(a) propulsion means for moving said vehicle in water;

(b) directional guidance means for directionally maneuvering said vehicle in water;

(c) explosive means for detonating said vehicle at a selected navigational hazard;

(d) control means for controlling said directional guidance means; and

(e) communications means for communicating navigational instructions to said control means;

(2) imaging lidar sensor means positioned on said platform, said imaging lidar sensor means providing images of both a selected navigational hazard and said vehicle; and

(3) optical lidar downlink means for optical transmission of navigational instructions to said communications means of said vehicle, said navigational instructions being responsive to said images from said imaging lidar sensor means;

wherein said imaging lidar sensor means comprises;

means for selectively generating imaging pulses of light using transmitter means;

means for projecting said short pulses of light toward water and at a navigational hazard disposed in a target volume at least partially enveloped by the water;

gated camera means for receiving said pulses of light reflected back from said target volume after a time delay corresponding to the round-trip propagation time of said light pulses to and from said target volume using receiver means;

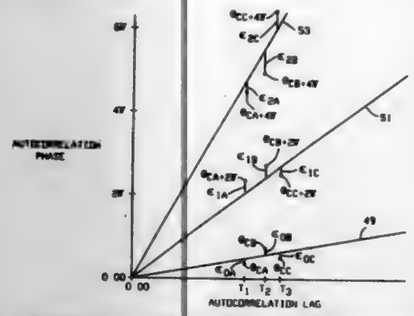
means for converting said received pulses of light to a video image of said navigational hazard in said target volume.

5,442,359

APPARATUS AND METHOD FOR MITIGATING RANGE-DOPPLER AMBIGUITIES IN PULSE-DOPPLER RADARS

William L. Rubin, Whitestone, N.Y., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 30, 1994, Ser. No. 268,698
Int. Cl.[6] G01S *13/526, 13/53, 13/538, 13/95*
U.S. Cl. 342—109 7 Claims



1. A Doppler radar of the type having a stabilized transmitter for transmitting pulse modulated signals and a receiver for receiving radar returned signals further comprising:

waveform generator means coupled to said transmitter for providing a periodic modulating waveform, each period including a plurality of pulses positioned with unequal intervals therebetween, thereby causing periodic pulse modulated radiated signals with each period having a plurality of radiated pulse modulated signals with unequal intervals therebetween;

correlation means coupled to said receiver for performing autocorrelations of returned radar signals, lags for said autocorrelations being equal to said unequal intervals between said plurality of pulses positioned in said period, and for providing signals representative of said autocorrelations, said autocorrelations having an amplitude and a phase; and

Doppler frequency shift means coupled to receive said autocorrelation representative signals for providing signals representative of Doppler frequency shifts of said returned radar signals.

5,442,360

ECHO DISTANCE-MEASURING SYSTEM WITH CALIBRATION APPARATUS

Michel Maignan, Morangis, and Gilles Vendrome, Longpont-sur-Orge, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

PCT No. PCT/FR92/00377, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19985, PCT Pub. Date Dec. 11, 1992
PCT Filed Apr. 28, 1992, Ser. No. 958,333
Claims priority, application France, Apr. 29, 1991, 91 05250
Int. Cl.[6] G01S *7/40, 13/40*
U.S. Cl. 342—120 6 Claims

2. Calibration apparatus for an echo distance-measuring system, said calibration apparatus comprising:

means for transforming an electrical signal into an optical signal to be delayed;

an optical delay line for receiving and delaying said optical signal to be delayed, said optical delay line further comprising

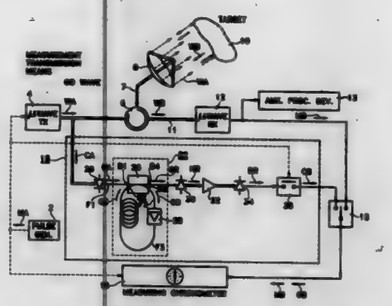
a retarding optical fiber disposed in a loop,

an optical coupler coupled to said fiber for

enabling an initial optical signal that is to be delayed to be injected into said fiber and to cause it to travel therealong,

enabling at least a fraction of an optical signal that has travelled along the fiber to be reinjected therein, and

enabling at least a fraction of an optical signal that has travelled along the optical fiber to be extracted therefrom, said extracted fraction constituting a succession of delayed optical signals supplied in response to said initial optical signal,



a loop amplifier disposed in said loop for amplifying the optical signals travelling along the retarding optical fiber;

detector means responsive to said extracted fraction for transforming said succession of delayed optical signals into a corresponding succession of detected electrical signals; and

a signal selector receiving said succession of detected electrical signals and subsequently transmitting only a selected electrical signal corresponding to a predetermined one of said delayed optical signals.

5,442,361

MICROWAVE TRANSCEIVER USING A SELF-REFLECTION PUMPED MIXER

Steven J. Peters, Renton, and Kenneth G. Voyce, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 21, 1994, Ser. No. 184,535
Int. Cl.[6] G01S *13/08*
U.S. Cl. 342—128 3 Claims



1. A radar system comprising:

a generator of electromagnetic signals for transmission to a target;

means for capturing electromagnetic signals reflected from the target;

means for detecting a frequency difference between captured electromagnetic signals reflected from the target and electromagnetic signals reflected from the means for capturing electromagnetic signals; and

means for interpreting the frequency difference to determine the range of a target from the electromagnetic signal generator;

wherein the means for capturing electromagnetic signals reflected from the target comprises:

a reflector; and

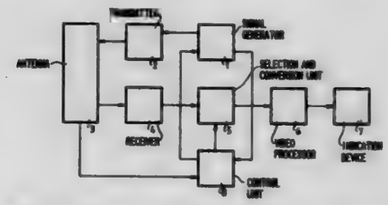
a subreflector, the reflector having the reflected electromagnetic signals focused on the subreflector and the subreflector reflecting electromagnetic signals from the generator of electromagnetic signals to the reflector and from the reflector to the means for detecting a frequency difference between captured electromagnetic signals and electromagnetic signals reflected from the subreflector.

5,442,362

RADAR APPARATUS

Johan M. C. Zwarts, Borne, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Continuation of Ser. No. 921,328, Jul. 29, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 103,312
Claims priority, application Netherlands, Aug. 29, 1991, 9101459
Int. Cl.[6] G01S *7/04, 13/66*
U.S. Cl. 342—176 20 Claims



1. Radar apparatus for detecting targets, provided with a signal generator with transmitter means coupled to it and receiver means with a video processor coupled to it, antenna means coupled to the transmitter and receiver means, and an indication device suitable for the display, in a first mode with a first range resolution, of a radar picture generated by the video processor, of targets which are in a part of the radar apparatus surroundings, characterized in that the radar apparatus is furthermore provided with means for the selection of at least one designated target within the radar picture and, in a second mode, the generation of a radar picture of surroundings of that at least one designated target with a second range resolution which exceeds the first range resolution, wherein in the first mode, the signal generator generates signals of a first bandwidth which corresponds with the first range resolution and, in the second mode, generates signals of a second bandwidth which corresponds with the second range resolution, and with a control unit coupled to the antenna for switching the signal generator from the first mode into the second mode if an azimuth direction of the antenna and an azimuth direction of the at least one designated target at least substantially coincide.

5,442,363

KINEMATIC GLOBAL POSITIONING SYSTEM OF AN ON-THE-FLY APPARATUS FOR CENTIMETER-LEVEL POSITIONING FOR STATIC OR MOVING APPLICATIONS

Benjamin W. Remondi, Dickerson, Md., assignor to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 4, 1994, Ser. No. 285,680
Int. Cl.[6] H04B *7/185;* G01S *5/02*
U.S. Cl. 342—357 30 Claims

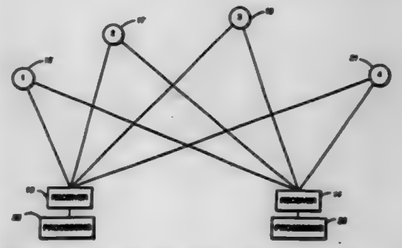
1. A method for determining a relative position of a remote receiving antenna with respect to a reference receiving antenna in a satellite-based positioning system under varying relative kinematic conditions between the remote and reference receiving antenna, the method comprising the steps of:

making carrier phase measurements based on the reception of a dual frequency carrier signals L1 and L2 over one or more epochs of an initialization time period from each of a plurality of at least four satellites used to compute the relative position of the remote receiving antenna;

deriving from the carrier phase measurements an initial set of potential solutions that are grid points for the relative position, wherein the initial set of potential solution grid points all are within a region of uncertainty defined by a search volume, and wherein multiple potential solution grid points arise because of whole cycle ambiguity of the carrier signals L1 and L2;

eliminating a first set of false solutions from the initial set of potential solutions leaving a reduced number of potential solution;

determining a final unique solution from the reduced number of potential solutions, by using a triple difference evaluation technique, the triple difference techniques is defined as:



iteratively evaluating the reduced number of potential solutions using a runout triple difference trajectory starting position of a grid point final candidate position using a least squares technique,

converting a resulting runout triple difference trajectory position to computed ranges of each final candidate position,

scoring the difference between the computed ranges of each final candidate position and carrier ranges with module one cycle,

determining the final solution by applying error statistics to each final candidate that i) reflects a degree of coincidence of that final candidate's yield ambiguities to integer values and ii) a smallness of residuals for an ionospherically-free linear combination of carrier ranges.

5,442,364

ALIGNMENT AND BEAM SPREADING FOR GROUND RADIAL AIRBORNE RADAR

Henry E. Lee, Ellicott City; Martin J. Decker, Baltimore, and Stephen Warejko, Pasadena, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1993, Ser. No. 94,957
Int. Cl.[6] H01Q *3/22;* G01S *13/00*
U.S. Cl. 342—372 30 Claims

1. A radar system comprising:

an antenna, said antenna producing a radar beam intersecting a ground plane to form an isogain line on said ground plane, said ground plane including a plurality of ground radial lines radiating from an origin point on said ground plane, said origin point being related to a navigational position of said radar system with respect to said ground plane, said isogain line having a corresponding ground radial line; and

beam steering means for controlling said antenna and for adjusting said radar beam to closely align said isogain line



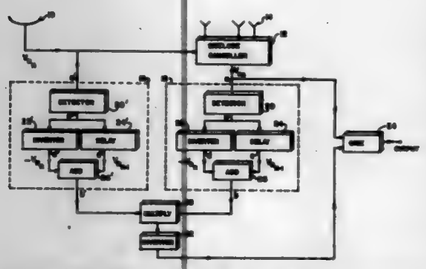
with said corresponding ground radial line to facilitate scan conversion to a television display format.

5,442,365

TECHNIQUE FOR PROCESSING INTERFERENCE-CONTAMINATED RADAR ENERGY

Bernard L. Lewis, 13318 Fort Wash. Rd., Oxon Hill, Md. 20022, and Frank F. Kretschmer, Jr., 12707 Claxton Dr., Laurel, Md. 20811

Filed Sep. 2, 1975, Ser. No. 609,752
Int. Cl.[6] G01S *3/16, 7/36*
U.S. Cl. 342—381 **2 Claims**



1. A method of preventing utilization by a radar system of a signal V_{on} from a sidelobe canceller during the period that a signal V_R at a radar antenna experiences reduced effective jamming signal interference while a jamming signal is simultaneously present at the output of an associated sidelobe canceller auxiliary antenna comprising the steps of:

sensing successive canceller output signals V_{on}, V_{on-1};

forming a first difference signal ($V_{on}-V_{on-1}$) which may be positive or negative;

sensing successive main channel radar signals V_{Rn-1}, V_{Rn};

forming a second difference signal ($V_{Rn-1}-V_{Rn}$) which may be positive or negative;

forming a product signal by multiplying said first difference signal by said second difference signal;

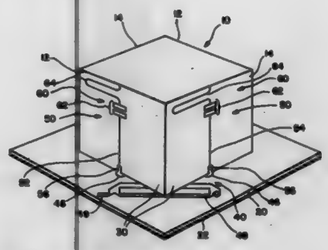
interrupting receipt by the radar system of the sidelobe canceller output signal whenever said product signal is negative.

5,442,366

RAISED PATCH ANTENNA

Gary G. Sanford, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 13, 1993, Ser. No. 91,175
Int. Cl.[6] H01Q *1/27*
U.S. Cl. 343—700 MS **19 Claims**



1. A raised antenna comprising:

a base having a ground plane;

a plurality of leg supports interconnected to and extending upwardly from said base;

a raised patch antenna element supportedly interconnected to said leg supports and positioned over said ground plane;

feed means for transmitting signals to and from said raised patch antenna element and having a feed base portion and a feed-leg portion provided on said leg supports, said feed-leg portion including a first pair of balanced feed-leg lines interconnected to first opposing sides of said raised patch antenna element and a second pair of balanced feed-leg lines interconnected to second opposing sides of said raised patch antenna element; and

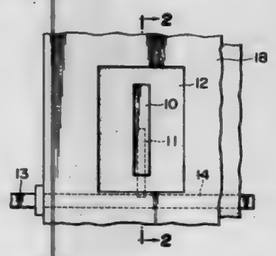
impedance matching means for matching the impedance of said feed base portion with the impedance of said raised patch antenna element and said feed-leg portion.

5,442,367

PRINTED ANTENNA WITH STRIP AND SLOT RADIATORS

Motoyuki Nsito, Ichikawa, and Koichi Ito, Chiba, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1993, Ser. No. 112,386
Claims priority, application Japan, Sep. 3, 1992, 4-260804
Int. Cl.[6] H01Q *1/38, 21/24*
U.S. Cl. 343—700 MS **6 Claims**



1. A printed antenna comprising:

an insulator substrate having opposite surfaces thereon;

a grounded conductor layer provided on one surface of said insulator substrate having a window cut out in said conductor layer, said window having a length in a lengthwise direction of the conductor layer;

a strip antenna element provided on said one surface of said insulator substrate and disposed within said window;

a transmission line provided on the opposite surface of said insulator substrate and arranged perpendicular to and spaced apart in the lengthwise direction from said strip antenna element; and

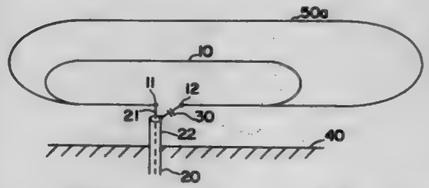
a strip conductor provided as a probe for supplying power from said transmission line to said strip antenna element, said strip conductor being arranged in the lengthwise direction and disposed on said opposite surface of said insulator substrate having a first end spaced apart by a gap in proximity to said transmission line and a second end overlapped with said strip antenna element on said one surface of said insulator substrate.

5,442,368

AUTOMOBILE LOOP ANTENNA

Takuji Harada, and Takashi Kido, both of Kanagawa, Japan, assignors to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 899,232, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 410,292, Sep. 21, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 163,122
Claims priority, application Japan, Sep. 21, 1988, 63-236795
Int. Cl.[6] H01Q *1/32, 7/00*
U.S. Cl. 343—713 **4 Claims**



1. An AM/FM broadcast band automobile loop antenna provided externally of an automobile body characterized in that one end of a loop is connected to a core conductor of a coaxial cable, the other end of said loop is connected to an outer conductor of said coaxial cable via a capacitor, said capacitor having a value of capacitance such that an impedance of said capacitor at the AM broadcast band isolates said core conductor from said outer conductor of said coaxial cable while an impedance of said capacitor at the FM broadcast band is substantially equal to a load impedance of the coaxial cable, said loop being sized to be resonant in the FM broadcast band and not resonant in the AM broadcast band, said outer conductor of said coaxial cable is connected to a metal part of an automobile at a point and a distance from said point where said outer conductor of said coaxial cable is connected to a metal part of said automobile to a point where said core conductor of said coaxial cable is connected to said end of said loop is 5 to 50 cm.

5,442,369

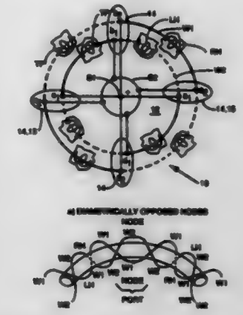
TOROIDAL ANTENNA

Kurt L. Van Voorhies, and James E. Smith, both of Morgantown, W. Va., assignors to West Virginia University, Morgantown, W. Va.

Filed Dec. 15, 1992, Ser. No. 992,970
Int. Cl.[6] H01Q *11/12*
U.S. Cl. 343—742 **38 Claims**

1. An electromagnetic antenna comprising a toroidal surface and first and second windings, characterized in that:

the first and second windings respectively comprise insulated first and second conductors each extending in a helical pattern as a single closed circuit around and over the surface of said toroid with the first and second conductors contrawound relative to each other in each of a plurality of adjacent toroid segments extending around the toroid, the segments being defined by nodes at which the first and second windings change respective winding direction; and first and second signal terminals are connected to the nodes.

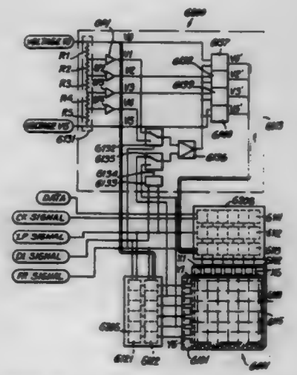


5,442,370

SYSTEM FOR DRIVING A LIQUID CRYSTAL DISPLAY DEVICE

Katsunori Yamazaki, and Satoshi Ystabe, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 918,113, Jul. 22, 1992, which is a continuation of Ser. No. 456,123, Dec. 22, 1989, which is a continuation of Ser. No. 232,750, Aug. 15, 1988, Pat. No. 5,010,326. This application May 14, 1993, Ser. No. 61,890
Claims priority, application Japan, Aug. 13, 1987, 62-202154; Feb. 9, 1988, 63-27922; Feb. 9, 1988, 63-27923; Feb. 9, 1988, 63-27924; May 14, 1992, 4-122144; May 14, 1992, 4-122145; Nov. 17, 1992, 4-307323
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—94 **31 Claims**



1. A matrix liquid crystal display device for displaying characters or a pattern comprising:

a first substrate;

a plurality of common electrodes being formed on said first substrate;

a second substrate;

a plurality of segment electrodes being formed on said second substrate;

a liquid crystal sandwiched between said first substrate and second substrate;

power circuit means for generating a plurality of voltage waveforms;

segment electrode driving means for receiving at least a portion of said plurality of voltage waveforms and producing a voltage segment waveform in response thereto, said segment electrodes receiving said segment voltage waveforms and exhibiting either a lighting or non-lighting state in response thereto;

common electrode driving means for receiving at least a portion of said plurality of waveforms and producing in response thereto a common voltage waveform, said common electrodes receiving said common voltage waveform and exhibiting one of a selected and non-selected state in response thereto, said common electrode intersecting said scanning electrodes to define a matrix having a dot at each intersection, the dots being in either an ON state or an OFF state depending on the voltage applied to the intersecting common and segment electrode; and

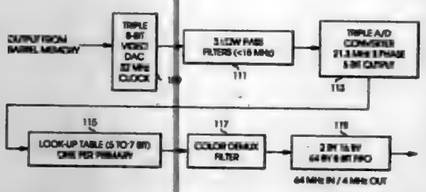
said power circuit means including voltage compensation means for compensating distortion of said voltage waveforms which occurs and varies according to the display pattern by detecting a voltage change within said matrix liquid crystal display device, determining an amount of distortion occurring as a function of said display pattern in one of said segment voltage waveforms and common voltage waveforms in response to said voltage change and generating a correction voltage based upon said voltage change, said correction voltage being added to the segment voltage waveform and common voltage waveform exhibiting said amount of distortion.

5,442,371

SIMPLIFIED IMAGE RECONSTRUCTION INTERFACE

David W. Miller, Longmont, Colo.; Larry A. Nelson, Bellevue, Wash., and Ronald C. Robinder, Albuquerque, N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 27, 1993, Ser. No. 127,565
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—98 **18 Claims**



1. A video interface apparatus for convening an incoming interlaced video signal to an outgoing non-interlaced video signal for an LCD flat panel with an arbitrary number of rows and columns, the apparatus comprising:

(a) analog to digital (A/D) means for convening the incoming analog video signal into a corresponding digital signal;

(b) memory means connected to the A/D means for storing and outputting a plurality of rows of the digital signal;

(c) read and write (R/W) address generator means connected to the memory means for generating addresses for reading and writing data from and into the memory means; and

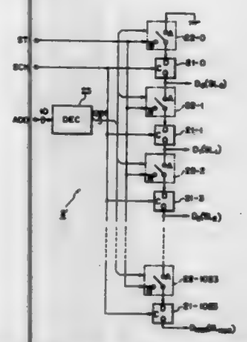
(d) image reconstruction means connected to the memory means for reconstructing the digital signal into an image for display on the LCD flat panel, having a digital to analog converter (DAC) means connected to the memory means for converting the digital signal output from the memory means to a corresponding analog signal, a line filtering means connected to the DAC means for filtering the analog signal to provide a smoothly varying analog signal, a second A/D means connected to the line filtering means for converting the smoothly varying analog signal into a corresponding LCD digital signal matching the display resolution of the LCD flat panel, a luminance correction means connected to the second A/D means for correcting the luminance of the LCD digital signal, a sequential read means connected to the luminance correction means for sequentially reading and outputting the corrected LCD digital signal, and an output memory means connected to the sequential read means for storing a row of the LCD digital signal and outputting the row to the LCD flat panel.

5,442,372

APPARATUS FOR DRIVING LIQUID CRYSTAL DISPLAY PANEL FOR SMALL SIZE IMAGE

Tatsuya Shiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 4, 1994, Ser. No. 177,322
Claims priority, application Japan, Jan. 5, 1993, 5-000162
Int. Cl.[6] G06E *1/00*
U.S. Cl. 345—98 **8 Claims**



1. An apparatus for driving a liquid crystal display panel having M signal lines, N scan lines and M×N liquid crystal cells each connected to one of said M signal lines and one of said N scan lines, said apparatus comprising:

a plurality of shift registers, each having an input terminal, a clock terminal and an output terminal connected to an associated one of said N scan lines, each of said shift registers receiving a data signal at said input terminal and outputting said data signal at said output terminal in response to a scan clock signal supplied to said clock terminal;

start pulse signal generating means for generating a start pulse signal in synchronization with a horizontal synchronization signal;

a plurality of switching circuits, each having a first terminal connected to an output terminal of one of said shift registers and a second terminal connected to an input terminal of another one of said shift registers, said switching circuits and said shift registers being connected in series such that one of said switching circuits is interposed between adjacent ones of said shift registers, each of said switching circuits further having a third terminal connected to said start pulse signal generating means to receive said start pulse signal;

selecting means, connected to said switching circuits, for selecting one of said switching circuits, said one of said switching circuits forming an electrical path between the first terminal and third terminal thereof and with each of remaining ones of said switching circuits and shift registers via an electrical path formed between said first terminal and said second terminal of each of said remaining switching circuits; and

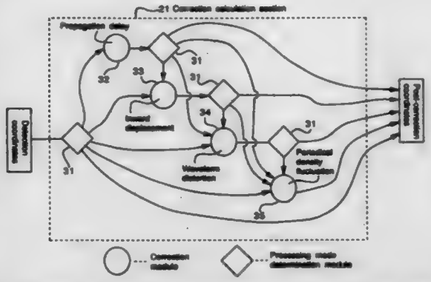
means, connected to said plurality of shift registers, for generating and supplying said scan clock signal to said clock terminal of each of said shift registers, said start pulse signal being transferred from said one of said switching circuits to one of said shift registers that has an input terminal connected to said second terminal of said one of said switching circuits and shifted through plural ones of said shift registers including said one of said shift registers.

5,442,373

DISPLAY-INTEGRATED TYPE TABLET DEVICE

Toshio Nomura, Tenri; Takao Tagawa, Kashihara, and Noritoshi Kako, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1993, Ser. No. 65,882
Claims priority, application Japan, May 22, 1992, 4-4130695
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—104 **1 Claim**



1. A display-integrated type table device including a display panel driven by first electrodes and second electrodes crossing each other at right angles, a detection pen having at a tip thereof an electrode which can be electrostatically coupled with the first electrodes and the second electrodes, a first electrode drive circuit for driving the first electrodes, a second electrode drive circuit for driving the second electrodes, a display control circuit for displaying an image on the display panel by controlling the first electrode drive circuit and the second electrode drive circuit in an image display period, a detection control circuit for sequentially scanning at least one of the first and second electrodes of the display panel by controlling at least one of the first and second drive circuits in a coordinate detection period, and a coordinate detection circuit for detecting at least one of a detection x-coordinate value and a detection y-coordinate value on the display panel designated by the tip of the detection pen based on a time of generating an output signal from the detection pen and a time of scanning at least one of the first and second electrodes,

the display-integrated type table device comprising a correction processing circuit which has an inward displacement correction module for correcting an inward displacement of at least one of the detection x-coordinate value and the detection y-coordinate value attributed to a reduction in number of at least one of the first electrodes and the second electrodes to which a scanning pulse is applied.

5,442,374

COLOR DISPLAY

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,099
Claims priority, application Japan, Feb. 26, 1992, 4-039234; Mar. 2, 1992, 4-044643; Jul. 21, 1992, 4-194047; Aug. 18, 1992, 4-219216; Feb. 2, 1993, 5-015131
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—110 **13 Claims**

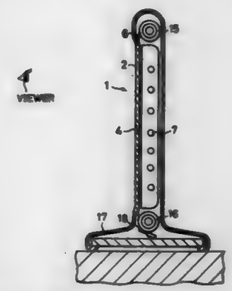
1. A color display comprising:

a transparent cover glass having a color stripe filter on at least one face thereof;

a data film in a web shape located in proximity to a face of said color stripe filter to overlap and display image information, said data film being constructed by a thermochromic film having a coloring state which is thermally changed between a light interrupting state having a black coloring and a decolored transparent state, and an initial operating state of said data film being set to the light interrupting state having a black coloring;

winding means for selectively feeding the data film in first and second directions by winding the data film, with the second direction a reverse direction relative to said first direction;

a single thermal head for writing the image information on the data film by partially setting the light interrupting state of the data film to the decolored transparent state on



winding the data film in the first direction by the winding means, and for thermally erasing the written image information from the data film by setting the decolored transparent state of the data film to the light interrupting state on winding the data film in the second direction by the winding means;

writing-erasing control means for controlling an operation of the thermal head;

means for controlling an operation of the winding means; and

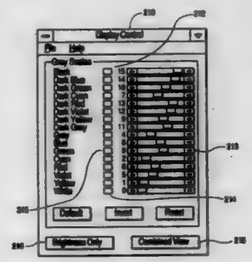
illuminating means for visualizing the image information toward a viewer.

5,442,375

METHOD AND APPARATUS FOR IDENTIFYING COLOR USAGE ON A MONOCHROME DISPLAY

David J. Wojaczynski, Mission Viejo, and Kurt M. Breuninger, Tustin, both of Calif., assignors to Toshiba America Information Systems, Inc., Irvine, Calif.

Filed Mar. 25, 1993, Ser. No. 36,699
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—147 **28 Claims**



1. In a computer system having a monochrome display, a method of identifying color usage visually on said monochrome display, said method comprising the steps of:

(a) selecting a color signal from a plurality of color signals by designating one of a plurality of color finder buttons provided on said monochrome display, each color finder

button representing a mapping between one of said color signals and a gray scale level used for displaying pixels on said monochrome display;

(b) translating said selected color signal into a gray scale signal based on the gray scale level mapped to said selected color signal;

(c) inverting said gray scale signal;

(d) cycling a predetermined number of times back and forth between said gray scale signal and said inverted gray scale signal; and

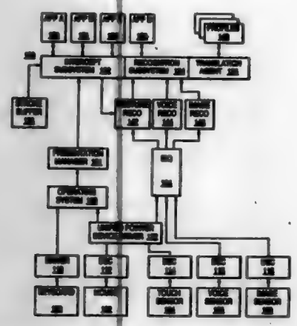
(e) displaying the results of said cycling visually on said monochrome display.

5,442,376

HANDLING MULTIPLE COMMAND RECOGNITION INPUTS IN A MULTI-TASKING GRAPHICAL ENVIRONMENT

Alan R. Tannenbaum, Lighthouse Point, Fla., and John M. Zetts, Falls Church, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,206
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—156 **33 Claims**



1. A method for registering a first input device to a system, the system having a memory, a processor and a display coupled to a system bus, the method comprising the steps of:

allocating a first or normal channel in the memory for a presentation manager and a second channel in the memory for a recognition subsystem, each channel being a separate and independent program path in the memory;

transmitting a first set of input events for the first input device to the recognition subsystem in the memory;

assigning a corresponding identifier to each of the input events with the recognition subsystem; and,

storing the first set of input events and the corresponding identifiers at the recognition subsystem and at a first recognition provider coupled to the recognition subsystem and to the first input device;

transmitting a first input signal from the first input device through the second channel including an extended information queue to the first recognition provider, bypassing the presentation manager;

recognizing the first input signal as a first input event with the first recognition provider; and,

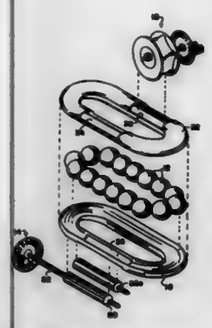
transmitting the corresponding identifier of the first input event from the first recognition provider to the recognition subsystem.

5,442,377

CONTINUOUS LOOP MOUSE

David G. Rowe, 12901 Cedar St., Leawood, Kans. 66209

Filed May 3, 1994, Ser. No. 237,439
Int. Cl.[6] G09G *3/02*
U.S. Cl. 345—165 **4 Claims**



1. A position control device comprising:

a plurality of spheres,

an annular housing for supporting said spheres and holding said spheres in adjacent annular array said housing having a window therein permitting a user to apply a generally lateral force on at least one of said spheres for communication of said force to said plurality of spheres to accomplish lateral movement of said plurality of spheres and said window permitting a user to apply a rotational force to at least one of said spheres to accomplish rotational movement of said sphere,

means for detecting lateral movement of said plurality of spheres,

means for detecting rotational movement of at least one of said plurality of spheres, and

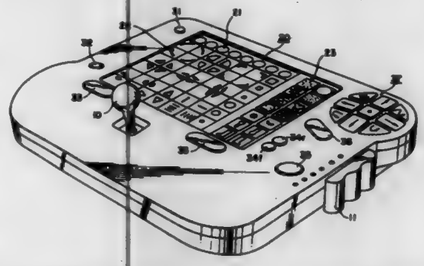
means responsive to said detected lateral and rotational sphere movement for generating a signal to effect repositioning of a computer cursor.

5,442,378

ANIMATION IMAGE CONSTRUCTING APPARATUS

Hiroshi Yasuhara, Tokyo; Hiroko Kusano, Kanagawa; Nae Yasuhara, Tokyo, and Miyuki Marusawa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 755,329, Sep. 5, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 44,553
Claims priority, application Japan, Sep. 10, 1990, 2-239280
Int. Cl.[6] B01G *3/02*
U.S. Cl. 345—168 **10 Claims**



1. An animation image constructing apparatus for constructing animated pictures on a screen of a display unit, comprising:

operating means for moving a cursor on the screen;

first memory means for storing data corresponding to character patterns and for reading out the character patterns;

character pattern selecting means, including user operated keys, for selecting a predetermined character pattern from among a plurality of character patterns stored in the first memory means for display on the screen, the plurality of patterns including geometric patterns and semirealistic patterns;

second memory means for storing display data which is displayed on the screen;

executing means for fixing the position of the predetermined character in the second memory means so as to display the predetermined character on the screen at a position of the cursor as designated by the user operating the operating means;

character designating means for selectively designating a desired character of the characters displayed on the screen;

key switch means for designating predetermined scroll direction pattern data for scrolling the designated character in a predetermined direction pattern;

execution command means, including a start key and a stop key, for generating an execution command when the start key is operated, wherein, in response to the execution command, the designated character is automatically scrolled and displayed in accordance with the scroll direction pattern data obtained from the scroll direction designating means until the stop key is operated while one or more of the remaining characters displayed on the display screen remain motionless; and

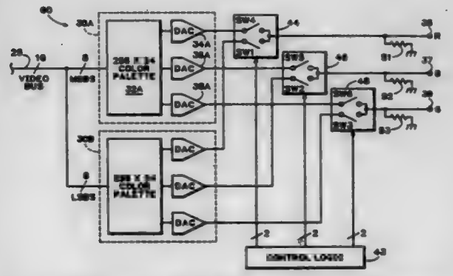
priority means for designating the priority order between a plurality of characters drawn on the screen, wherein, when the characters being displayed are scrolled to be mutually superimposed, one of such characters is displayed by priority in conformity to the priority order designated by the priority means.

5,442,379

HIGH SPEED RAMDAC WITH RECONFIGURABLE COLOR PALETTE

Robert A. Bruce, Portland; Albert Xthona, Yamhill, and Dan Moss, Aloha, all of Oreg., assignors to Methens Corporation, Beaverton, Oreg.

Continuation of Ser. No. 747,197, Aug. 15, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,033
Int. Cl.[6] G09G *1/28*
U.S. Cl. 345—199 **19 Claims**



14. A color graphics circuit for providing both a true color video mode and a fast pseudo color mode comprising:

a parallel video input bus for carrying parallel input video data having first and second data portions, the parallel input video data comprising an address for identifying the color of one or more pixels;

first, second, and third current outputs for driving a color CRT video input;

a first RAMDAC including

a first RAM having a data input coupled to the input bus for receiving the first portion of the parallel input video data and three output video data outputs, and

first, second, and third DACs each having a digital input coupled to one of the RAM data outputs and a current output;

a second RAMDAC including

a second RAM having a data input coupled to the input bus for receiving the second portion of the parallel video data and three output video data outputs, and

first, second, and third DACs each having a digital input coupled to one of the RAM data outputs and a current output;

first, second, and third analog current switching circuits, each switching circuit having a first input coupled to the current output of the respective DAC in the first RAMDAC, a second input coupled to the current output of the respective DAC in the second RAMDAC, and an output coupled to the respective current output of the color graphics circuit; and

means for controlling switching states of the first, second, and third switching circuits,

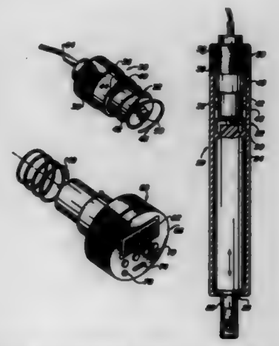
each switching circuit having at least three switching states including a first state wherein an input signal received on the first input is coupled to the switching circuit output, a second state wherein an input signal received on the second input is coupled to the switching circuit output, and a third state wherein the input signals received on the first and second inputs are summed and then coupled to the switching circuit output.

5,442,380

MARKING AND COUNTING IMPLEMENT

Erik J. McCormick, 1509 W. Temple St., Chandler, Ariz. 85224

Filed Jun. 27, 1994, Ser. No. 266,947
Int. Cl.[6] G01D *15/16, 7/00*
U.S. Cl. 346—14 MR **8 Claims**



1. A marking and counting implement comprising:

a tubular housing for holding a marking means having a marking end and an opposite end; said tubular housing having a first end with an aperture therein; said tubular housing having a second end closed by a removable end cap having a switch means therein;

a marking means for marking a surface when pressed against the surface with a first pressure; said marking means being slidably contained within said tubular housing and having a marking end extending through said aperture in said tubular housing and an opposite end in contact with said switch means;

said switch means having a spring means for preventing said switch means from being actuated by said marking means when said marking means is pressed against said surface with a pressure at or below said first pressure, for permitting actuation of said switch means by movement of said

marking means when said marking means is pressed against the surface with a pressure above said first pressure, and for returning said marking means to an extended position when said marking means is not being pressed against the surface; said spring means engaging said opposite end of said marking means; and

said switch means being part of an electrical circuit comprising a counter for registering a count when said switch means is actuated.

5,442,381

THERMAL HEAD AND METHOD FOR DRIVING THE SAME

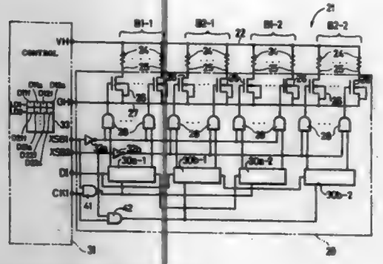
Koichi Fukubeppu; Takuji Hashiguchi; Tsuyoshi Yasutomi, all of Kokubu, and Tetsuji Hyodo, Aira, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jun. 22, 1993, Ser. No. 80,928

Claims priority, application Japan, Jun. 23, 1992, 4-164641; May 31, 1993, 5-129742

Int. Cl.[6] B41J *2/35*

U.S. Cl. 347—18 L **2 Claims**



1. A thermal head comprising:

plural heating elements, and

a driving circuit element comprising plural switching elements connected individually to the heating elements, gate elements connected individually to the switching elements, and a shift register connected to the gate elements, wherein

the plural heating elements are divided into plural blocks, and the gate elements of each block are connected to plural shift registers in the same number of bits as the number of heating elements of each block individually,

strobe signals in the same number as the number of divisions of the block are fed into gate elements corresponding to each block,

a clock gate element is provided in each block in order to obstruct clock input into the shift register corresponding to each block when printing of each block is active, and

each block is further divided into plural small blocks, and the heating elements corresponding to each small block are disposed in every different block.

5,442,382

ELECTROPHOTOGRAPHIC PRINTER WITH MEDIA SPEED CONTROL

Joseph J. Pfeuffer, Spokane, Wash., assignor to Output Technology Corporation, Spokane, Wash.

Continuation of Ser. No. 770,569, Oct. 1, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,972

Int. Cl.[6] G01D *15/24, 9/42*; G03G *21/00*

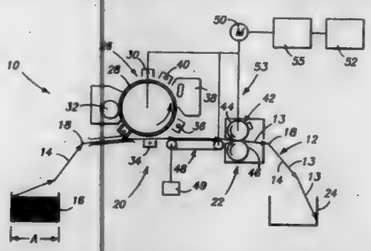
U.S. Cl. 346—136 **4 Claims**

1. A continuous-form electrophotographic printer for printing images on a continuous-form media, the media having a body and a leader section at one end of the body, the leader section being moved through the printer during an initializing load phase, the printer comprising:

a media motion assembly for moving a leader section of a continuous-form media at a selected velocity past an image transfer station, the leader section being sectioned into multiple media segments;

an image forming device at the image transfer station for placing multiple scan lines at a predetermined scan rate on a photoconductive image device; and

an initialization speed control system for determining during an initializing load phase a desired constant media velocity for the continuous-form media to obtain an optimum number of scan lines per media segment, the speed control system moving the leader section at different constant



velocities for consecutive media segments and counting an actual number of scan lines for each of the media segments, the speed control system comparing the actual number of scan lines to the optimum number of scan lines and calibrating the media motion assembly to move the media at the desired constant media velocity which causes the actual number of scan lines per media segment to equal the optimum number of scan lines per media segment;

the media motion assembly maintaining the desired constant media velocity throughout printing of a remaining body of the continuous-form media.

5,442,383

INK JET PRINTER WITH A DEVICE FOR DETERMINING A PRINTING INTERVAL

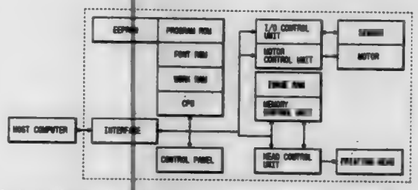
Takeshi Fuse, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,304

Claims priority, application Japan, Apr. 22, 1992, 4-102853

Int. Cl.[6] B41J *2/01, 29/26*

U.S. Cl. 347—19 **8 Claims**



6. A method for correcting an angle error of a printing head inclined and mounted on a carriage at a predetermined angle comprising the steps of:

(a) setting an initial printing interval between adjacent nozzles of said inclined printing head;

(b) successively operating said adjacent nozzles at said initial printing interval to print a first sample of an adjusting pattern of a plurality of ruled lines on a recording medium;

(c) printing first samples of said adjusting pattern predetermined times while increasing said printing interval;

(d) advancing said recording medium by a length corresponding to an arrangement of said nozzles;

(e) repeating said steps (b), (c), and (d) for second samples of said adjusting pattern to create a printing boundary between said first and second samples;

(f) detecting an arrangement of said ruled lines having no printing shift and no angular displacement at said printing boundary; and

(g) determining the printing interval between said adjacent nozzles for said detected arrangement to correct said angle error.

5,442,384

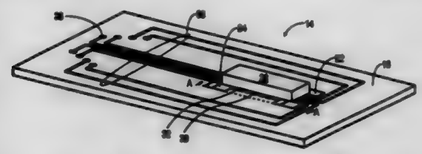
INTEGRATED NOZZLE MEMBER AND TAB CIRCUIT FOR INKJET PRINTHEAD

Christopher A. Schantz, Foster City; Eric G. Hanson, Burlingame; Si Ty, Pleasanton, all of Calif.; Paul H. McClelland, Monmouth, Oreg.; William J. Lloyd, Pigeon, Mich., and Winthrop D. Childers, San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 862,668, Apr. 2, 1992, which is a continuation-in-part of Ser. No. 849,650, Mar. 9, 1992, Pat. No. 5,305,018, which is a continuation of Ser. No. 568,000, Aug. 16, 1990, abandoned. This application Oct. 19, 1993, Ser. No. 139,630

Int. Cl.[6] B41J *2/035, 2/05*

U.S. Cl. 347—20 **6 Claims**



1. A process for forming an inkjet printhead for a printer, comprising the steps of:

forming ink orifices in a unitary strip of insulating flexible tape containing conductors for conducting electrical signals to ink ejection elements, said flexible tape having said orifices formed therein being a nozzle member for said printhead, said conductors extending from an area on said tape proximate to said orifices to a remote area on said tape for connection to power supply terminals in an ink printer; and

providing said ink injection elements proximate to each of said orifices and connected to said conductors to form said printhead.

5,442,385

BIDIRECTIONAL BLACK AND COLOR PASS PRINT METHOD FOR INK-JET PRINTERS

Eva-Maria Moon, Washougal, and Eric L. Ahlvin, Vancouver, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1992, Ser. No. 954,835

Int. Cl.[6] B41J *2/21*

U.S. Cl. 347—43 **12 Claims**

1. In an ink-jet printing method whereby color and black ink printing are performed during passage of an ink-jet printer's carriage which mounts a color and a black pen, wherein a most recent black-only swath printing is a previously printed black-only swath that was printed most recently in time and a to-be-printed black-only swath is a black-only swath that has not been printed but awaits immediate printing, the improved method performed by the printer's controller comprising the steps of:

first printing a color-only swath with the carriage moving in a first direction;

determining whether the most recent black-only swath printing and the to-be-printed black-only swath meet predefined black dot relative position criteria; and

if the most recent black-only swath printing and the to-be-printed black-only swath meet predefined black dot relative position criteria, then second printing the to-be-printed black-only swath in a second direction that is the reverse of said first direction.

5,442,386

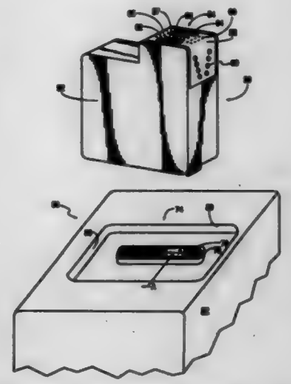
STRUCTURE AND METHOD FOR PREVENTING INK SHORTING OF CONDUCTORS CONNECTED TO PRINTHEAD

Winthrop D. Childers, San Diego; Dale D. Timm, Jr., Encinitas, both of Calif.; Charles L. Thierheimer, Jr.; Marshall Field, both of Corvallis, Oreg.; William S. Colburn, San Diego, Calif.; William R. Boucher, Corvallis; Joseph R. Elliot, Corvallis, and Peter R. Stokes, Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 960,759, Oct. 13, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,238

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—50 **10 Claims**



2. A structure for preventing ink shorting of conductors connected to a printhead, said structure comprising:

a tape of a first insulating material having conductors formed on a surface thereof;

an insulating layer of a second insulating material formed over said conductors and partially encapsulating said conductors, said conductors having ends extending from said layer, said second insulating material being different from said first insulating material;

a printhead substrate having electrodes connected to said ends of said conductors;

an ink reservoir in fluid communication with said printhead substrate, said layer for preventing ink shorting of said conductors;

a headland pattern formed on said ink reservoir proximate to an opening on said ink reservoir in fluid communication with said ink reservoir, said headland pattern having an outer wall and an inner wall, said inner wall surrounding said opening, said outer wall surrounding said inner wall;

said printhead substrate having one or more edges, and having said conductors extending from said one or more edges, said printhead substrate being positioned on said headland pattern to allow ink to be supplied to said printhead substrate; and

a third insulating material deposited on said headland pattern between said inner wall and said outer wall, said third insulating material encapsulating ends of said conductors, and thereby insulating said conductors from said ink, when said substrate and said conductors are pressed onto said headland pattern and said third insulating material.

5,442,387

APPARATUS FOR SUPPLYING PHASE CHANGE INK TO AN INK JET PRINTER

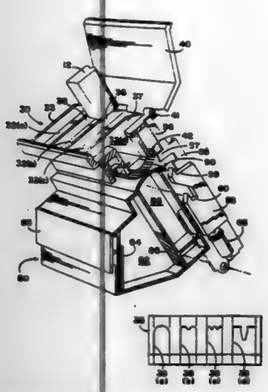
Donald I. Loofbourow, Lake Oswego, and Richard G. Chambers, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 716,567, Jun. 17, 1991, Pat. No. 5,223,860. This application Jun. 23, 1993, Ser. No. 82,209

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—88 **15 Claims**



1. An ink transfer system comprising:

a plurality of ink preload chambers, each one of the plurality of ink preload chambers being adapted to receive a solid phase ink stick and maintain the ink stick in the solid phase;

a plurality of ink reservoirs maintaining ink in a melted condition during operation of a printing apparatus, each one of the plurality of ink reservoirs corresponding to one of the plurality of ink preload chambers, and each one of the plurality of ink reservoirs furtherbeing in communication with a corresponding ink preload chamber;

means for detecting when a solid phase ink stick is positioned in an ink preload chamber;

a triggerable ink transfer means capable of maintaining solid phase ink sticks in each of the plurality of ink preload chambers in a non-transfer condition and to transfer solid phase ink sticks located in each of the plurality of ink preload chambers to a corresponding ink reservoir in a transfer condition;

a plurality of solid phase ink sticks, each of the solid phase ink sticks having a different cross-sectional polygon shape; and

a plurality of openings to the ink preload chambers shaped such that a corresponding one of the cross-sectional polygon shaped solid phase ink sticks will pass through a corresponding one of the openings to the ink preload chambers, but will not pass through any other of the plurality of openings to the ink preload chambers.

5,442,388

METHOD AND MEANS FOR CORRECTING LATERAL REGISTRATION ERRORS

Richard A. Schieck, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 16, 1992, Ser. No. 821,526

Int. Cl.[6] G01D *15/06*

U.S. Cl. 347—116 **7 Claims**

1. A printing device for providing color prints comprising:

an imageable surface;

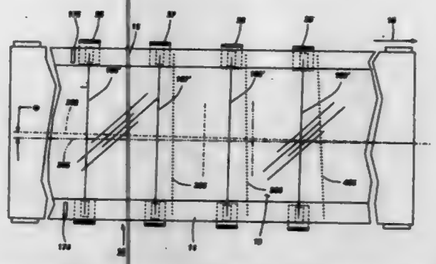
a plurality of image processing stations for forming a composite image on said imageable surface;

transport means for moving the imageable surface along a predetermined course between said processing stations;

a first indicia on said transport means;

a second indicia laterally spaced from said first indicia on said transport means;

means for sensing said first and second indicia to detect skew angle deviations of said imageable surface from the predetermined course of said imageable surface;



means for selecting a lateral registration error for said image processing stations as a function of the detected skew angle deviations; and

means, responsive to said selecting means, for linearly adjusting said image processing stations substantially laterally relative to the predetermined course of said imageable surface to compensate for lateral deviations thereby enhancing the registration of the composite image on said surface.

5,442,389

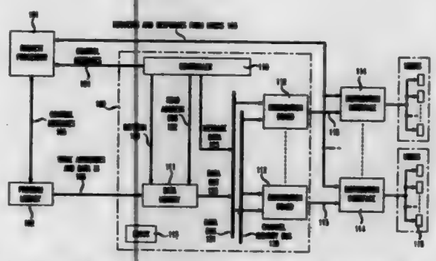
PROGRAM SERVER FOR INTERACTIVE TELEVISION SYSTEM

Donald E. Blahut, Holmdel, and Edward S. Szurkowski, Maplewood, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 28, 1992, Ser. No. 997,985

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **41 Claims**



1. A server for sending one or more data blocks from a data memory in specified channels over a distribution system at controlled time intervals, which comprises:

a command-word memory for storing a command word for each said data block to be sent, each command word including at least the identity of the channel for said data block, the address in said data memory of the next portion of said data block to be sent and a time indication;

first processing means for receiving requests to send data blocks and for storing said command words in said command memory in response to said requests;

second processing means for periodically processing each command word in said command-word memory, said second processing means comprising:

means for updating the time indication in said command word;

means operative when said time indication reaches a threshold value for retrieving the portion of said data block from the address in said data memory specified in said command word and updating said address; and

means for sending said retrieved portion in said identified channel over said distribution system.

5,442,390

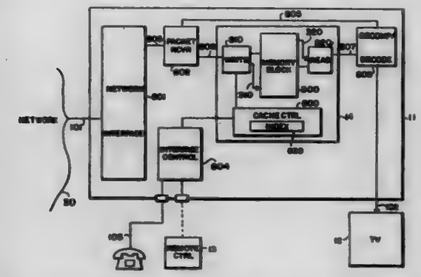
VIDEO ON DEMAND WITH MEMORY ACCESSING AND OR LIKE FUNCTIONS

Donald F. Hooper, Shrewsbury; Matthew S. Goldman, Marlborough; Peter C. Bixby, Westborough, and Suban Krishnamoorthy, Shrewsbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 7, 1993, Ser. No. 88,504

Int. Cl.[6] H04N *7/16*

U.S. Cl. 348—7 **10 Claims**



1. A system for interactively viewing a selected one of a plurality of videos, the selected video including a plurality of frames, each frame including digitally encoded video data and a time stamp, the video data representing time sequenced image signals and audio signals for play-back on a viewing device, a communications network for transmitting the video data, comprising:

means for requesting the transmission of the selected video on the communications network;

a network interface, coupled to the communications network for receiving the selected video as a first stream of video data;

a memory buffer, coupled to said network interface, for storing a segment of the selected video, said segment including video data of a forward moving time interval of the selected video;

a write pointer, coupled to said memory buffer, associated with said first stream of video data to be written to said memory buffer;

a read pointer, coupled to said memory buffer, associated with a second stream of video data to be read from said memory buffer;

means coupled to said write pointer, for writing said first stream of video data to said memory buffer while receiving the selected video;

means, coupled to said read pointer for reading said second stream of video data from said memory buffer while writing said first stream of video data, said means for reading operating independently from said means for writing, to display any video data of said segment of the selected video on the viewing device while receiving said first stream of video data: and

an index for associating the time stamps of the frames with memory addresses of said memory buffer where the frames are stored.

5,442,391

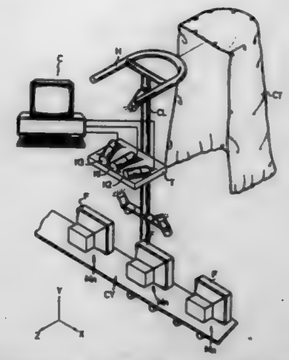
METHOD AND A SYSTEM FOR TESTING A CATHODE RAY TUBE OR LIKE PRODUCTS

Yi-ping Hung; Yau-liang Tsai, and George J. Yang, all of Taipei, Taiwan, assignors to Eerise Corporation, Taipei, Taiwan

Filed Jun. 1, 1994, Ser. No. 252,404

Int. Cl.[6] H04N *17/00, 17/04*

U.S. Cl. 348—190 **10 Claims**



1. An improvement in a method for testing a row of cathode ray tubes or cathode ray tube monitors, both hereinafter generally referred to as CRT, transported in a horizontal direction, said method comprising producing a standard test pattern on a CRT being tested, reading the screen of said CRT using at least one electronic camera, inputting the read data into a computer to obtain the actual values of the various geometrical parameters of the standard test pattern relative to said screen, the nominal values of various geometrical parameters of the standard test pattern relative to said screen being stored in said computer, and comparing said actual values of the geometrical parameters with said nominal values to obtain the deviations of said actual values from said nominal values, so as to adjust said CRT, the improvement comprising producing a locating pattern comprising at least three locating points on said tested CRT, reading the locating pattern using an electronic camera assembly which comprises at least two electronic cameras, of which the relative position between each individual camera is known, wherein at least two of the electronic cameras of said assembly respectively read the whole said locating pattern to obtain the position of said electronic camera assembly relative to said CRT, and using at least one of said electronic cameras of said assembly to read said standard test pattern.

5,442,392

NEGATIVE FILM IMAGE CONVERSION APPARATUS FOR VIDEO CAMERA

Jong B. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 992,711, Dec. 18, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 264,954

Claims priority, application Rep. of Korea, Dec. 21, 1991, 23806/1991

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—239 **4 Claims**

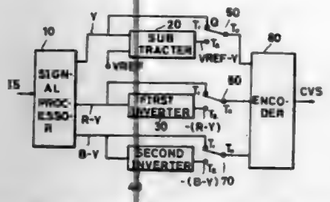
1. A negative film image conversion apparatus for a video camera, comprising:

signal processing means for generating a luminance output signal and a plurality of color difference output signals from an image signal of a negative film shot by the negative film image conversion apparatus;

subtracting means for subtracting the generated luminance output signal from said signal processing means from a predetermined reference signal which is a white peak

value that is independent of the generated luminance output signal;

inverting means for directly inverting each color difference output signal of the plurality of color difference output



signals from said signal processing means, individually; and

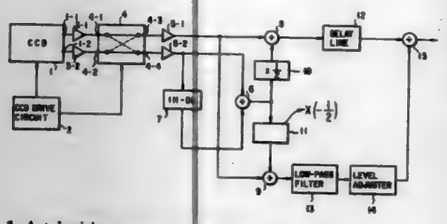
encoding means for combining output signals from said subtracting means and said inverting means and outputting the combined signal as a composite video signal.

5,442,393

TELEVISION CAMERA HAVING A NOISE REDUCTION AND VERTICAL EDGE CORRECTION APPARATUS

Junichi Yamanaka, Sagamihara, and Fumio Takahashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 10, 1993, Ser. No. 103,685
Claims priority, application Japan, Aug. 11, 1992, 4-213129
Int. Cl.[6] H04M *3/14*
U.S. Cl. 348—252 **5 Claims**



1. A television camera comprising:

a solid state imaging device for reading video signals from vertical and horizontal scanning lines;

a driving device for driving the solid state imaging device to read said video signals corresponding to a first field, defined by a vertical scanning line of pixels intersecting odd numbered horizontal lines starting with a first odd numbered horizontal line (a_1, $a_2 \ldots a_{N-1}$, a_N) and intersecting even numbered horizontal lines starting with a second even numbered horizontal line (b_2, $b_3 \ldots b_{N-1}$, b_N);

said driving device for driving the solid state imaging device to read said video signals corresponding to a second field after reading said first field, said second field defined by a vertical scanning line of pixels intersecting said odd numbered horizontal lines starting with said first odd numbered horizontal line (a_1, $a_2 \ldots a_{N-1}$, a_N) and intersecting said even numbered horizontal lines starting with a first even numbered horizontal line (b_1, $b_2 \ldots b_{N-1}$, b_N);

a switching circuit receiving said video signals from the solid state imaging device corresponding to the odd numbered horizontal lines and the even numbered horizontal lines, for outputting the video signals corresponding to the odd numbered horizontal lines and the even numbered horizontal lines from a first and second outputs of the switching circuit, respectively, when the solid state imaging device reads said video signals of the first field, and for switching the first and second outputs of the switching circuit when the solid state imaging device reads the second field;

a one horizontal line delay device for delaying an output signal of the second output of the switching circuit by one horizontal line;

a first adder for adding the output signal of the second output of the switching circuit to an output of the one horizontal line delay device;

a first multiplier for multiplying an output signal of the first adder by a first coefficient (K1) for adjusting sensitivity and resolution of the television camera;

a second multiplier for multiplying the output signal of the first adder by a second coefficient (K2) for adjusting the sensitivity and resolution of the television camera;

a second adder adding an output signal from the first output of the switching circuit with an output signal of the first multiplier, an output signal from the second adder representing a distribution of the first field and the second field;

a third adder adding an output signal from the first output of the switching circuit with an output signal from the second multiplier, an output signal of the third adder representing a vertical-edge signal including both positive and negative components; and

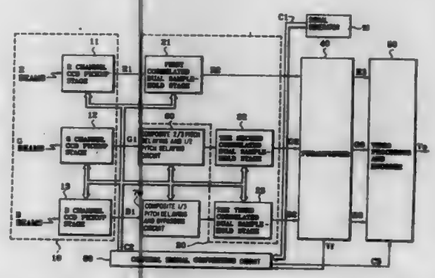
a fourth adder adding the vertical-edge signal corresponding to the first field and the second field to correct vertical-edge resolution in each field before interlacing the first and second fields.

5,442,394

METHOD FOR IMPROVING THE RESOLUTION OF THREE CCD CAMERA AND APPARATUS THEREOF

Hyo S. Lee, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 840,971, Feb. 26, 1992, abandoned.
This application Dec. 1, 1993, Ser. No. 160,328
Claims priority, application Rep. of Korea, Feb. 26, 1991, 91-3147
Int. Cl.[6] H04N *9/07*
U.S. Cl. 348—264 **4 Claims**



1. In an interlacement apparatus for interpolating pixels using correlated dual sample-hold processing, said apparatus including a CCD pickup device provided with first, second and third CCD image pickup sensors for R, G and B channels, respectively, and for converting R, G and B photo signals to respective first, second and third electrical signals, a correlated dual sample-hold circuit provided with first, second and third correlated dual sample-hold stages corresponding to said R, G and B channels, respectively, for removing dark current from output said electrical signals from said first, second and third CCD image pickup sensors, a pre-amplifier for low-pass filtering respective first, second and third output electrical signals from said correlated dual sample-hold circuit and amplifying respective gains of said output electrical signals to produce respective first, second and third amplified electrical signals, and a video processor and encoder for carrying out video processing after synthesizing said amplified electrical signals from said pre-amplifier, said apparatus further comprising:

a composite ¾-pitch delaying and ¼-pitch delaying circuit for delaying said electrical signal corresponding to said second pickup stage by a selected one of a ¾-pitch delay and a ¼-pitch delay in order to apply first delayed signals to said second correlated dual sample-hold stage;

a composite ¼-pitch delaying and bypassing circuit for delaying said electrical signals corresponding to said third pickup stage by a selected on a ¼-pitch delay and a delay corresponding to bypassing in order to apply second delayed signals to said third correlated dual sample hold stage; and

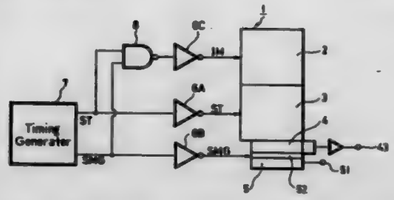
a control signal converting circuit for generating control signals based on clock signals from a pulse generator in a camera and a video signal corresponding to R, G and B synthesized signals from said pre-amplifier for selecting a desired interlacing delay value.

5,442,395

FIT CCD IMAGE SENSOR INCORPORATING GATED LINE SHIFT PULSES

Katsuo Sekiguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 94,339
Claims priority, application Japan, Jul. 21, 1992, 4-194102
Int. Cl.[6] H04N *3/14*
U.S. Cl. 348—312 **5 Claims**



1. A frame interline transfer solid state image sensor comprising:

a) an image section formed of light sensing sections disposed in a matrix fashion and a first vertical transfer section for transferring signal charges read out from said light sensing sections in the vertical direction;

b) a storage section having a second vertical transfer section for temporarily accumulating a signal charge that is transferred from said first vertical transfer section in the vertical direction during a frame shift period:

c) a horizontal transfer section for reading out a signal charge accumulated in said storage section at every horizontal line during a line shift period:

d) a smear drain having a smear gate region disposed between it and said second vertical transfer section for discharging unnecessary signal charges of said first vertical transfer section through said second vertical transfer section and for discharging unnecessary signal charge of said second vertical transfer section; and

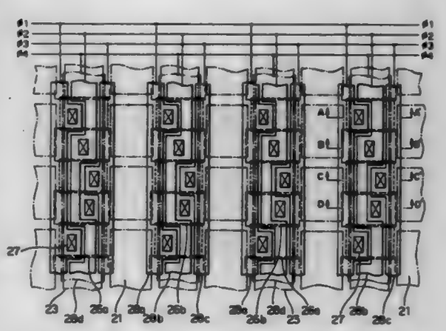
e) means for supplying a discharge pulse to said first vertical transfer section and said second vertical transfer section to discharge said unnecessary signal charges to said smear drain before a signal charge is read out from said light sensing section to said second vertical transfer section through said first vertical transfer section, wherein an amplitude of a signal supplying line shift pulses to said first vertical transfer section only during said frame shift period is fixed to a predetermined level during said line shift period and signal charges accumulated in said second vertical transfer section are sequentially transferred to said horizontal transfer section at every horizontal line by a signal supplying line shift pulse supplied to said second vertical transfer section during said line shift period.

5,442,396

SOLID-STATE IMAGE PICKUP DEVICE WHEREIN PLURAL POWER FEEDING WIRES SERVE AS A LIGHT-SHIELD FILM

Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,539
Claims priority, application Japan, Aug. 26, 1993, 5-234014
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—322 **11 Claims**



1. A solid-state image pickup device comprising:

a plurality of photoelectric converting sections, arranged in the configuration of a matrix with m rows and n columns, for accumulating, in response to incident light, electric charges as signal charges where m and n represent first and second positive integers each of which is not less than two;

n vertical charge transfer sections each adjacent to a respective one of the n columns of said photoelectric converting sections at a same directional side thereof, each of said n vertical charge transfer sections extending along a vertical direction, said n vertical charge transfer sections being for reading the signal charges out of said photoelectric converting sections as read charges to transfer the read charges along the vertical direction as transferred charges, each of said n vertical charge transfer sections comprising a plurality of vertical charge transfer electrodes and a vertical charge transfer region formed beneath the vertical charge transfer electrodes;

n transferring wires, which are disposed on said n vertical charge transfer sections, respectively, and which serve as light-shield films for shielding said n vertical charge transfer sections from the incident light, for supplying vertical transferring clocks to said vertical charge transfer electrodes to make said n vertical charge transfer sections transfer to read charges along the vertical direction as the transferred charges, said n transferring wires light-shielding areas between said photoelectric converting sections and said vertical charge transfer regions, each of said n transferring wires comprising two metal wires; and

n reading/transferring wires, which are disposed on said n vertical charge transfer sections, respectively, and which serve as light-shield films for shielding said n vertical charge transfer sections from the incident light, for supplying readout pulses and vertical transferring clocks to said vertical charge transfer electrodes to make said n vertical charge transfer sections read the signal charges from said photoelectric converting sections to the vertical charge transfer regions as the read charges and to make said n vertical charge transfer sections transfer the read charges along the vertical direction as the transferred charges, each of said n reading/transferring wires comprising two metal wires.

5,442,397

IMAGE SENSING APPARATUS

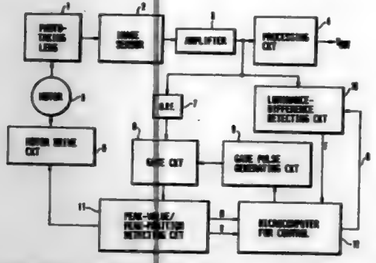
Katsuji Yoshimura; Masamichi Toyama; Akihiro Fujiwara; Hirofumi Sada, all of Kanagawa; Kunihiko Yamada, Tokyo; Kitahiro Kaneda, Kanagawa, and Hideo Homma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 99,807, Jul. 29, 1993, abandoned, which is a continuation of Ser. No. 808,045, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 319,546, Mar. 6, 1989, abandoned. This application May 18, 1994, Ser. No. 245,813

Claims priority, application Japan, Mar. 11, 1988, 63-57760; May 2, 1988, 63-109642

Int. Cl.[6] H04N 5/232

U.S. Cl. 348—363 50 Claims



1. An object tracing device for tracing an object image on an image sensing plane, comprising:

(A) setting means for movably setting a detecting area on said image sensing plane;

(B) first object tracing means, having means for respectively detecting luminance level between the inside and outside of said detecting area, for controlling said setting means to vary a set position of said detecting area on said image sensing plane so that the difference in luminance level between the inside and the outside of said detecting area becomes greater;

(C) second object tracing means for controlling said setting means to vary the set position of said detecting area on said image sensing plane so that a position at which a contrast on said image sensing plane becomes maximum coincides with a central portion of said detecting area; and

(D) control means for selectively operating one of said first object tracing means and said second object tracing means.

5,442,398

METHOD AND APPARATUS FOR TRANSMITTING A VIDEO SIGNAL, AND APPARATUS FOR RECEIVING A VIDEO SIGNAL

Natsuki Koshiro, and Tatsuya Ishikawa, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 88,031

Claims priority, application Japan, Jul. 6, 1992, 4-177266

Int. Cl.[6] H04N 7/12

U.S. Cl. 348—385 1 Claim

1. A video signal receiving apparatus comprising:

an input terminal for receiving one of a first coded signal and a second coded signal, said first coded signal being produced by coding a multichannel resolution TV signal in which a plurality of low-resolution TV signals have been synthesized, said second coded signal being produced by coding a high-resolution TV signal;

decoding means for decoding said received one of said first and second coded signals into said multichannel resolution TV signal and said high-resolution TV signal, respectively;

a first switch having a first, a second and a third output terminal, and an input terminal for receiving one of said multichannel resolution TV signal and said high-resolution TV signal from said decoding means;

a second switch having a first and a second input terminal, said first input terminal of said second switch being connected to said first output terminal of said first switch;

a first memory connected to said second output terminal of said first switch;

a second memory connected to said third output terminal of said first switch;

an interpolation circuit connected to said first memory;

a reduction/expansion circuit connected to said second memory;

a third switch having a first input terminal, which is connected to said interpolation circuit, a second input terminal, which is connected to said reduction/expansion circuit, and an output terminal, which is connected to said second input terminal of said second switch;

displaying means for displaying a signal output from said second switch; and

control means for controlling said first, second and third switches, wherein:

in a first display mode, said control means controls said second switch so as to connect said first input terminal of said second switch to said output terminal of said second switch, thereby allowing a signal input to said input terminal of said first switch to be supplied to said display means;



in a second display mode, said control means controls: (1) said second switch so as to connect said second input terminal of said second switch to said output terminal of said second switch; (2) said third switch so as to connect said first input terminal of said third switch to said output terminal of said third switch; and (3) said first switch so as to connect said input terminal of said first switch to said second output terminal of said first switch, thereby selecting one of said plurality of low-resolution TV signals of said multichannel resolution TV signal to be supplied to said display means;

in a third display mode, said control means controls: (1) said second switch so as to connect said second input terminal of said second switch to said output terminal of said second switch; (2) said first switch so as to connect said input terminal of said first switch to said second and third output terminals of said first switch, thereby selecting two of said plurality of low-resolution TV signals of said multichannel resolution TV signal; and (3) said third switch so as to selectively connect one of said first and second input terminals of said third switch to said output terminal of said third switch, thereby supplying said selected two of said plurality of low-resolution TV signals of said multichannel resolution TV signal to said display means.

5,442,399

METHOD AND APPARATUS FOR CODING A DIGITAL VIDEO SIGNAL BY FORMATTING THE SIGNAL INTO BLOCKS

Yoshinori Asamura; Yoshiko Hatano, and Ken Onishi, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

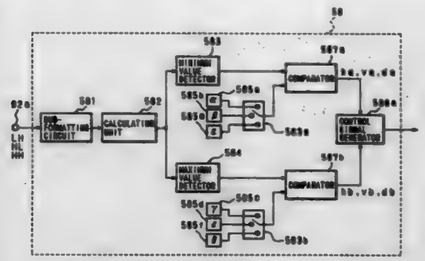
Continuation of Ser. No. 718,288, Jun. 20, 1991, abandoned.

This application Aug. 8, 1994, Ser. No. 287,587

Claims priority, application Japan, Jun. 25, 1990, 2-170816; Jul. 5, 1990, 2-180124; Jul. 16, 1990, 2-189928; Jul. 16, 1990, 2-189929; Jul. 17, 1990, 2-191662; Sep. 12, 1990, 2-243555; Apr. 11, 1991, 3-079210

Int. Cl.[6] H04N 7/13

U.S. Cl. 348—394 62 Claims



1. A coding apparatus for coding a digital video signal, comprising:

sub-band dividing means for dividing the digital video signal into a plurality of digital video signals of distinct sub-bands;

formatting means for formatting video signals of each sub-band into blocks corresponding to a plurality of picture elements;

orthogonal transforming means for performing an orthogonal transform upon each formatted block to thereby obtain coefficients; and

coding means for coding the obtained coefficients including,

quantizing means, having a plurality of quantization tables of different quantizing step widths, for quantizing the coefficients obtained by said orthogonal transforming means, and

determining means for determining a quantization table of said plurality of quantization tables to be selected by said quantizing means based on a signal level of picture elements of the block of a high frequency band.

5,442,400

ERROR CONCEALMENT APPARATUS FOR MPEG-LIKE VIDEO DATA

Huifang Sun, Princeton; Joel W. Zdepski, Belle Mead, and Kamil M. Uz, Plainsboro, all of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Apr. 29, 1993, Ser. No. 53,760

Int. Cl.[6] H04N 7/64, 7/66

U.S. Cl. 348—402 6 Claims

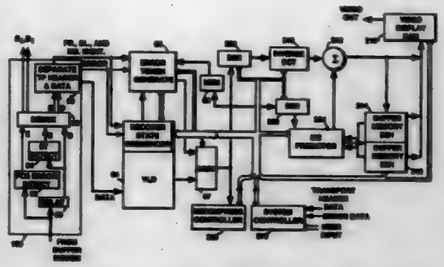
4. Apparatus for processing motion compensated compressed video data wherein ones of frames of video signal are compressed according to intraframe processing and other frames of said video signal are compressed according to interframe processing, and wherein said intraframe and interframe processing generates compressed data on a block by block basis, and wherein motion vectors are generated for respective blocks of intraframe processed data, and respective motion vectors of intraframe processed blocks are attached to blocks of data other than blocks to which they respectively correspond, said apparatus comprising:

a source of said motion compensated compressed video data;

means for detecting errors in said motion compensated compressed video data and for discarding blocks of data including errors;

means for separating said motion vectors from respective blocks of intraframe compressed data, and for storing said motion vectors in memory, and for applying blocks of intraframe compressed data without corresponding intraframe motion vectors to decompression means for decompression;

means, responsive to said motion compensated compressed



video data and said means for detecting errors, for providing blocks of synthesized data for said blocks of intraframe compressed data discarded by said means for detecting errors, said synthesized data formed using intraframe motion vectors corresponding to said discarded blocks, which said motion vectors are accessed from said memory; and

means for substituting said blocks of synthesized data for corresponding said discarded blocks of intraframe compressed data.

5,442,401

METHOD AND APPARATUS FOR ENCODING AN IMAGE TO PRODUCE A TARGET INFORMATION AMOUNT

Tokumichi Murakami, and Toshiaki Shimada, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

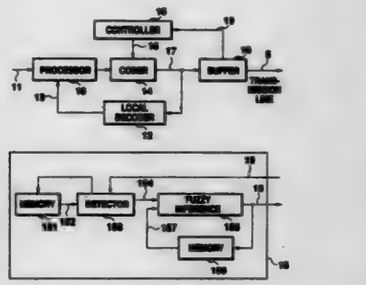
Continuation of Ser. No. 844,635, May 15, 1992, abandoned.

This application Feb. 16, 1994, Ser. No. 197,226

Claims priority, application Japan, May 24, 1991, 3-120162; May 24, 1991, 3-120163; Aug. 20, 1991, 3-208025

Int. Cl.[6] H04N 7/50

U.S. Cl. 348—405 33 Claims



1. In an image coding system having a coder for coding a sequence of image signals, as dictated by a control signal that sets coding parameters for the coder, a controller for controlling the coder, comprising:

a) a motion detector for detecting an extent of motion between a current image signal and at least one previously encoded image signal based on an information amount of

said current image signal and an average information amount of said at least one previously encoded image signal; and

b) a coding update means for generating the control signal based on current coding parameters and the extent of motion detected by the motion detector.

5,442,402

MODULAR MEMORY FOR AN IMAGE DECODING SYSTEM

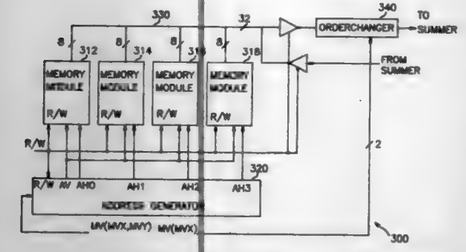
Chang Sohn, and Oh-Sang Kwon, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 23, 1993, Ser. No. 127,256

Claims priority, application Rep. of Korea, Sep. 23, 1992, 1992-17346

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—416 **4 Claims**



1. A modular memory for use in a decoding system of motion compensated prediction coded image data, comprising:

2^N memory modules each comprising a two dimensional memory array for storing different pixels of a frame of the image data in accordance with horizontal locations of the different pixels within the frame, wherein N is a positive integer;

means for generating a read/write signal in response to a frame synchronization signal from the image data;

an address generator for simultaneously generating a read/-write horizontal and a read/write vertical addresses for each of the 2^N memory modules in response to a motion vector from the image data and the read/write signal;

a parallel data bus for simultaneously outputting/inputting 2^N pixels of the image data from/into the 2^N memory modules in response to the read/write signal; and

means for, before outputting the 2^N pixels, changing relative positions of the 2^N pixels with each other in the parallel data bus in response to a horizontal component of the motion vector so that the 2^N pixels are arranged in the parallel data bus in ascending order of horizontal locations of the 2^N pixels within the frame.

5,442,403

WIDE-SCREEN TV SIGNAL TRANSMISSION APPARATUS

Yoshio Yasumoto, Nara; Sadashi Kageyama, Hirakata; Shuji Inoue, Moriguchi, and Hideyo Uwabata, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 626,291, Dec. 12, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 946,008

Claims priority, application Japan, Dec. 18, 1989, 1-327896

Int. Cl.[6] H04N *7/12, 7/01*

U.S. Cl. 348—432 **4 Claims**

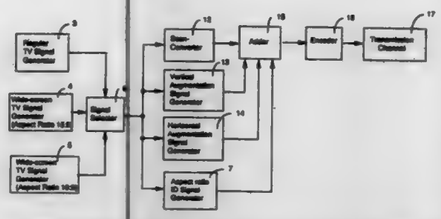
1. A wide-screen television signal transmitting apparatus comprising:

a wide-screen television signal generating means for generating at least two wide-screen television signals which have different aspect ratios and a different number of horizontal scanning lines from each other;

a selecting means for selecting one of said at least two wide-screen television signals;

a scan converting means for down-converting the number of effective horizontal scanning lines of a selected wide-screen television signal at a conversion ratio of 2 to 1 to obtain a conventional television-compatible signal with upper and lower black bars which include some lines dependent on said selected wide-screen television signal;

a vertical augmentation signal generating means for generating a vertical augmentation signal having information for enhancing vertical resolution at a receiver;



a multiplexing means for multiplexing an identification signal indicative of an aspect ratio of said selected wide-screen television signal with said convention television-compatible signal;

an adding means for adding said conventional television-compatible signal and said vertical augmentation signal to obtain a conventional television-compatible composite signal; and

a transmitting means for transmitting said conventional television-compatible composite signal.

5,442,404

SCANNING LINE CONVERTING METHOD FOR A TELEVISION RECEIVER AND DEVICE THEREOF

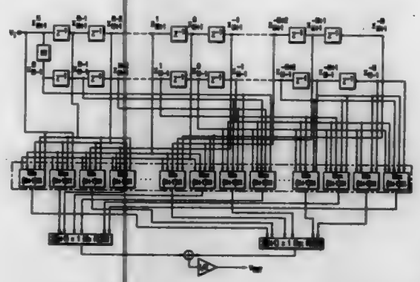
Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 21, 1993, Ser. No. 48,731

Claims priority, application Rep. of Korea, Apr. 21, 1992, 1992-6685

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—448 **21 Claims**



1. A scanning line converting method for a video signal having vertical, horizontal and diagonal components and an edge pattern used in a television receiver of an interlaced scanning system, said scanning line converting method comprising the steps of:

determining a sample value of a pixel having a peripheral pixel component and positioned between upper and lower scanning lines responsive to the horizontal, vertical and diagonal components and the edge pattern of the video signal;

determining a center value of the sample value performed by a two dimensional linear pseudomedian filtering operation responsive to said peripheral pixel component and the upper and lower scanning lines, and outputting a computed signal;

2/1 time compressing respectively said computed signal and said video signal into respective computed and video time compressed signals; and

selectively switching said computed and video time compressed signals thereby interpolating the scanning line.

5,442,405

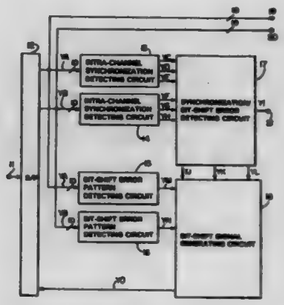
FRAME SYNCHRONIZING CIRCUIT FOR FRAME SYNCHRONIZATION OF DIGITAL SIGNALS

Kenshi Taniguchi, Moriguchi; Masatoshi Tanaka, Kashihara; Noboru Mizuguchi, Osaka, and Kiyoshi Uchimura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 22, 1993, Ser. No. 172,025

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—525 **18 Claims**



1. A frame synchronizing apparatus comprising:

a serial-parallel converter for converting input serial data into parallel data having a plurality of channels, and for outputting said parallel data separately for each of said plurality of channels;

a plurality of intra-channel synchronization detecting circuits each for receiving said parallel data in a corresponding one of said plurality of channels output from said serial-parallel converter, for detecting a synchronization pattern and a pseudo-synchronization pattern for the corresponding channel, and for generating a channel synchronization detect signal and a pseudo-synchronization detect signal for the corresponding channel;

a plurality of bit-shift error pattern detecting circuits each for receiving said parallel data in a corresponding one of said plurality of channels output from said serial-parallel converter, for detecting a bit-shift error pattern for the corresponding channel, and for generating a bit-shift error pattern signal for the corresponding channel;

a synchronization/bit-shift error detecting circuit for receiving the channel synchronization detect signals and the pseudo-synchronization detect signals, for detecting a synchronization between channels and specifying the amount of erroneously shifted bits, and for generating a frame synchronization detect signal and bit-shift error detect signals; and

a bit-shift signal generating circuit for receiving said bit-shift error detect signals and the bit-shift error pattern signals, for calculating the number of erroneously shifted bits in said serial-parallel converter, and for generating a bit-shift shift signal, said bit-shift signal being supplied to said serial-parallel converter by which the calculated number of bits are shifted.

5,442,406

WIDE SCREEN TELEVISION

Robert D. Altmansbofer, Carmel; Enrique Rodriguez-Cavazos; Donald H. Willis, both of Indianapolis; Nathaniel H. Ersoz, Brownsburg, and Barth A. Canfield, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

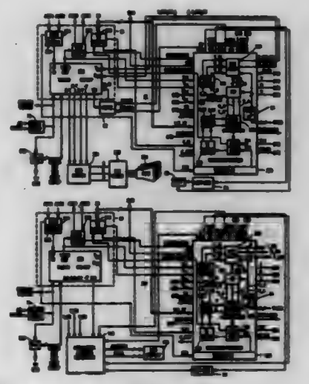
PCT No. PCT/US91/03740, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992

PCT Filed May 29, 1991, Ser. No. 941,435

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—588 **21 Claims**



1. A display system, comprising:

display means having a first format display ratio;

means for mapping an output video signal onto said display means, said output video signal representing a picture which is dimensionally adjustable on said display means by operation of said mapping means;

a plurality of video signals, each of said video signals having one of different format display ratios;

means for processing at least two of said plurality of video signals, as necessary, to be compatible with one another and with said display means;

switching means for coupling first and second ones of said video signals as inputs to said processing means;

means for selecting, as said output video signal, between: one of said first and second ones of said video signals as processed, such that said picture represented by said output video signal is a single picture display; and, a combination of said first and second ones of said video signals as processed, such that said picture represented by said output video signal is a multiple picture display; and,

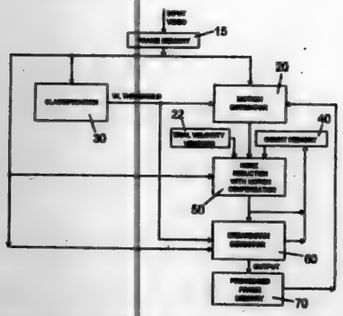
means for controlling said mapping means, said processing means and said selecting means, to adjust each picture represented in said output video signal in format display ratio and image aspect ratio, during both said single and multiple picture displays.

5,442,407

VIDEO SIGNAL NOISE REDUCTION SYSTEM USING TIME-VARYING FILTER COEFFICIENTS

Siu-Leong Iu, Bensalem, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 22, 1994, Ser. No. 215,683
Int. Cl.[6] H04N *5/213*
U.S. Cl. 348—620 **13 Claims**



2. Apparatus for reducing noise in an input video signal which includes a plurality of video frames, the apparatus comprising:

processed frame memory means for storing a noise reduced image;

motion estimator means for identifying a target block of image components in said frame memory to be used in calculating a noise reduced video signal;

motion compensated noise reduction means for calculating said noise reduced video signal by calculating a set of time-varying weighted filtering coefficients for the target block and for generating a motion block of noise reduced image components by averaging a plurality of image components in a current block selected from the video signal with respective image components of the target block as weighted by the coefficients; and

breakdown detection means for replacing each one image component of the current block with a corresponding noise-reduced image component of the motion block if a measure of noise reduction achieved for the one image component divided by a reference measure of noise is less than a threshold value.

4. Apparatus according to claim 2, further comprising:

count memory means such that a 1:1 correspondence exists between counts and image components in one frame of the plurality of frames, where each count indicates a number of image components corresponding to the count in the plurality of frames which were used to develop the noise reduced image component;

wherein the motion compensated noise reduction means is responsive to the counts held in the count memory means and corresponding to the respective image components of the target block for calculating the set of time-varying weighted filtering coefficients for the target block.

5. Apparatus for reducing noise in an input video signal which includes a plurality of video frames, the apparatus comprising:

processed frame memory means for storing a noise reduced image;

motion estimator means for identifying a target block of image components in said frame memory to be used in calculating a noise reduced video signal;

motion compensated noise reduction means for calculating said noise reduced video signal by calculating a set of time-varying weighted filtering coefficients for the target block and for generating a motion block of noise reduced image components by averaging a plurality of image components in a current block selected from the video signal with respective image components of the target block as weighted by the coefficients; and

classification means for determining a measure of variation which occurs in the current block and for calculating a weighting value and a threshold value to be used by the motion estimator means.

7. Apparatus for reducing noise in an input video signal which includes a plurality of video frames, the apparatus comprising:

processed frame memory means for storing a noise reduced image;

motion estimator means for identifying a target block of image components in said frame memory to be used in calculating a noise reduced video signal;

motion compensated noise reduction means for calculating said noise reduced video signal by calculating a set of time-varying weighted filtering coefficients for the target block and for generating a motion block of noise reduced image components by averaging a plurality of image components in a current block selected from the video signal with respective image components of the target block as weighted by the coefficients; and

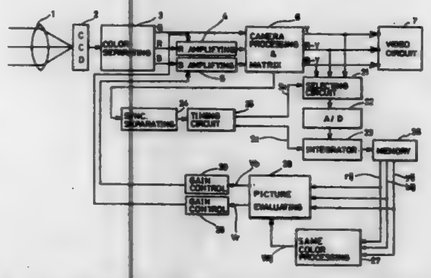
future frame memory means for holding image components representing an image which is to be displayed following the current image, wherein the motion estimator means includes means for identifying a further block of image components in said future frame memory means and the motion compensated noise reduction means includes means for generating said motion block of image components by combining the current block of image components with at least one of the target block of image components and the further target block of image components.

5,442,408

WHITE BALANCE ADJUSTING APPARATUS FOR AUTOMATICALLY ADJUSTING WHITE BALANCE IN RESPONSE TO LUMINANCE INFORMATION SIGNAL AND COLOR INFORMATION SIGNAL OBTAINED FROM IMAGE SENSING DEVICE

Toshinobu Haruki, Shijonawate, and Kenichi Kikuchi, Daito, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 13, 1990, Ser. No. 612,831
Claims priority, application Japan, Nov. 17, 1989, 1-300239; Dec. 26, 1989, 1-337352; Feb. 28, 1990, 2-47915; Mar. 9, 1990, 2-58652; Mar. 28, 1990, 2-80102; Apr. 5, 1990, 2-90902
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—655 **15 Claims**



1. A white balance adjusting apparatus for automatically adjusting white balance in response to a plurality of color information signals obtained from imaging sensing means having a lens and an image sensing device, comprising:

means for amplifying red and blue signals, contained within the color information signals, each with a corresponding variable gain so as to yield a plurality of amplified color information signals,

means for dividing an amplified picture produced by said image sensing means into a plurality of regions,

means, coupled to said dividing means, for integrating respective values of said plurality of amplified color information signals so as to convert said respective values of said plurality of amplified color information signals into a plurality of color evaluating values for each of said plurality of regions,

means for controlling the variable gain of said amplifying means according to each of said color evaluating values of each of said plurality of regions, and

means for adjusting each of said color evaluating values to control said variable gain.

5,442,409

MOTION VECTOR GENERATION USING INTERLEAVED SUBSETS OF CORRELATION SURFACE VALUES

W. A. David Morgan, Farnham, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 24, 1994, Ser. No. 201,359
Claims priority, application United Kingdom, Jun. 9, 1993, 9311852
Int. Cl.[6] H04N *7/28, 7/01*
U.S. Cl. 348—699 **9 Claims**

7. A method of generating motion vectors from image data comprising the steps of:

(i) calculating correlation surface values representing image correlation between temporally adjacent images, each correlation surface relating to one of a plurality of portions of said temporally adjacent images;

(ii) providing a stream of correlation surface values comprising interleaved subsets of correlation surface values from differing correlation surfaces, each subset being a portion of a given correlation surface;

(iii) receiving said stream of correlation surface values at a correlation surface value analyzer and determining partial result values for motion vectors dependent upon that part of a given correlation surface for which correlation surface values have been received;

(iv) storing said partial result values from said correlation surface value analyzer between times at which correlation surface values for said given correlation surface are received and supplying said partial result values to said correlation surface value analyzer each time correlation surface values for said given correlation surface are received; and

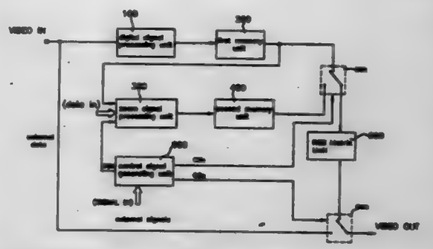
(v) responsive to completion of receipt of correlation surface values for said given correlation surface, reading final result values for motion vectors for said given correlation surface from said correlation surface value analyzer.

5,442,410

VIDEO CASSETTE RECORDER HAVING VARIABLE, HIGH-RESOLUTION VIDEO SCREEN ZOOMING

Yong J. Jun, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 29, 1993, Ser. No. 12,138
Claims priority, application Rep. of Korea, Jan. 31, 1992, 1551/1992
Int. Cl.[6] H04N *5/262*
U.S. Cl. 348—704 **4 Claims**



1. A video cassette recorder comprising:

digital signal processing means for receiving composite video signals and converting them into digital video signals;

first memory means for receiving the digital video signals from the digital signal processing means and storing them by frames therein;

zoom signal processing means for receiving digital video signals corresponding to one frame from the first memory means and zooming only digital video signals corresponding to a predetermined zoom region from the received digital video signals, so as to reconfigure them as digital video signals corresponding to one new frame;

second memory means for receiving the zoomed digital video signals from the zoom signal processing means and storing them by frames therein;

first switching means for selecting the digital video signals corresponding to one frame from the first memory means and digital video signals corresponding to one frame from the second memory means;

second switching means for selecting and outputting original composite video signals and output signals via said first switching means; and

control signal generating means for receiving signals for operation modes of the video cassette recorder and generating the first control signal for controlling said first switching means, the second control signal for controlling said second switching means and the third control signal for controlling said zoom signal processing means.

5,442,411

DISPLAYING VIDEO DATA ON A SPATIAL LIGHT MODULATOR WITH LINE DOUBLING

Paul M. Urbanus; Vishal Markandey, both of Dallas, and Robert J. Gove, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1994, Ser. No. 176,618
Int. Cl.[6] H04N *5/74*
U.S. Cl. 348—771 **20 Claims**

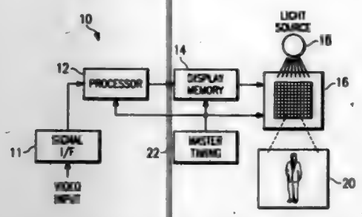
1. A spatial light modulator for generating display frames from fields of an incoming video signal, comprising:

column lines for delivering pixel data to an array of pixel elements;

a column selector coupled to said column lines for selecting subsets of each row of pixel data in response to a control signal that designates which subsets of data will be selected, wherein said subsets of each row of pixel data comprise pixel data for said column lines;

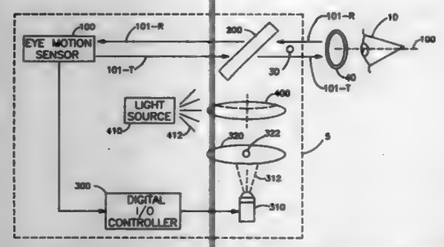
said array of pixel elements arranged in display rows, said

display rows coupled to said column lines such that said pixel elements may be loaded with a selected subset of pixel data; and



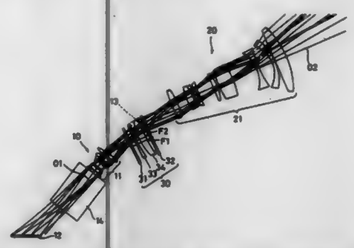
a row selector connected to said display rows by enable lines for enabling at least two adjacent display rows to be loaded with said selected subset of pixel data.

5,442,412
PATIENT RESPONSIVE EYE FIXATION TARGET METHOD AND SYSTEM
Rudolph W. Frey, and George R. Downes, Jr., both of Orlando, Fla., assignors to Autonomous Technologies Corp., Orlando, Fla.
Filed Apr. 25, 1994, Ser. No. 232,959
Int. Cl.[6] A61B *3/02*
U.S. Cl. 351—223 **23 Claims**



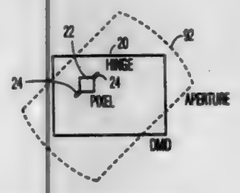
1. A biofeedback mechanism for providing eye position feedback to a patient, comprising:
a first light source for producing a ring of visible light centered about an optical axis and perceivable by an eye of said patient at a first position, said eye having a visual axis;
a second light source for producing a dot of visible light centered on said optical axis and perceivable by said eye of said patient at a second position, wherein said first position is perceived by said eye as being closer to said eye than said second position, and wherein said eye perceives said dot as being centered in said ring when said eye moves said visual axis into spatial and angular alignment with said optical axis; and
an eye movement sensor operatively connected to said second light source for detecting a quantifiable amount of movement of said eye and for generating an eye movement error signal based on said quantifiable amount, said eye movement error signal being supplied to said second light source, wherein said second light source adjusts said dot's appearance based on said eye movement error signal to indicate to said patient to realign said visual axis with said optical axis of said dot and said ring.

5,442,413
PUPIL CONJUGATE-COUPLING DEVICE IN PROJECTING OPTICAL SYSTEM
Yasuyuki Tejima; Yasunori Izawa; Nobutaka Minefuji, and Ryota Ogawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1993, Ser. No. 153,876
Claims priority, application Japan, Nov. 26, 1992, 4-316977; Dec. 4, 1992, 4-325209; Jan. 14, 1993, 5-004450; Jan. 14, 1993, 5-004451; Oct. 27, 1993, 5-268871
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—69 **39 Claims**



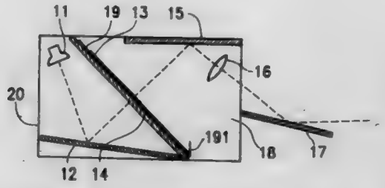
1. A pupil conjugate-coupling device in a projecting optical system comprising:
a first projection lens system which forms an intermediate image of an image indicating element,
a second projection lens system which projects said intermediate image onto a screen,
said first and second projection lens systems having optical axes intersecting at a predetermined angle, and,
an optical element having structural periodicity positioned between said first and second projection lens systems, said optical element having a positive power and a prism function for deflecting a bundle of rays transmitted through said first projection lens system towards an optical axis of said second projection lens system to thereby couple pupils of said first and second projection lens systems,
wherein said optical element is deviated from an intermediate image forming position by a predetermined offset in an optical axis direction.

5,442,414
HIGH CONTRAST ILLUMINATION SYSTEM FOR VIDEO PROJECTOR
Peter J. Janssen, Scarborough, and Jeffrey A. Shimizu, Peekskill, both of N.Y., assignors to U. S. Philips Corporation, New York, N.Y.
Filed May 10, 1994, Ser. No. 241,093
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—98 **16 Claims**



1. A video projection system comprising:
a light source;
a lens for projecting an image onto a viewing surface;
a light path extending between said light source and said lens;
a light valve disposed in said light path between said light source and said lens, said light valve having an array of pivotable reflective pixels, said pixels being pivoted about a pivot axis, said pixels reflecting light impinging thereon either into said lens or away from said lens to modulate light in accordance with video information input thereto; and
aperture means disposed in said light path, said aperture means having a long dimension and a short dimension, said aperture means being oriented in the light path with said long dimension being disposed parallel to the pivot axis of the pixels of said light valve.

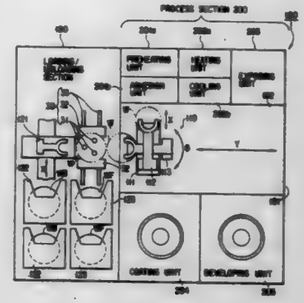
5,442,415
ARMLESS TRANSPARENCY PROJECTOR
Zu W. Chao, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan, Taiwan
Filed Aug. 15, 1994, Ser. No. 288,697
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—119 **8 Claims**



5. An armless transparency projector comprising:
a projector main body having an opening;
a light source lamp installed inside said projector main body for emitting light needed to project an image on a distant screen;
a light source reflection mirror for reflecting the light from said light source lamp;
a Fresnel lens being passed by the light reflected by said light source reflection mirror for converging the light to be a converging light, and installed inside said projector main body for holding a transparency;
an image reflecting mirror installed inside said projector main body for reflecting the converging light from said Fresnel lens;
a projector lens installed inside said projector main body for projecting an image converged through the aperture of said projector lens along the light axis, to the distant screen; and
a guiding board installed between said Fresnel lens and the transparency, with a stopping strip to prevent the transparency from falling off.

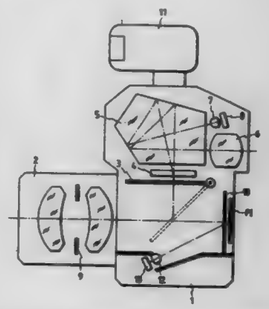
5,442,416
RESIST PROCESSING METHOD
Kiyohisa Tateyama; Masami Akimoto, both of Kumamoto, and Mitsuru Ushijima, Tama, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan
Continuation of Ser. No. 31,464, Mar. 15, 1993, Pat. No. 5,339,128, which is a continuation-in-part of Ser. No. 904,505, Jun. 25, 1992, Pat. No. 5,202,716, which is a continuation-in-part of Ser. No. 627,357, Dec. 14, 1990, Pat. No. 5,177,514, which is a continuation of Ser. No. 308,470, Feb. 10, 1989, Pat. No. 4,985,722. This application Jul. 7, 1994, Ser. No. 271,675
Claims priority, application Japan, Feb. 12, 1988, 63-30219; Nov. 5, 1991, 3-318441
Int. Cl.[6] G03D *5/00*
U.S. Cl. 354—319 **66 Claims**

1. A process apparatus for applying two or more treatments to a substrate, comprising:
a linear passage;
a process portion comprising at least one process section, said process section including a plurality of substrate-processing units arranged along both sides of the passage;
carrier means for carrying substrates on the passage; and
positioner means arranged in or adjacent to one end of the process portion to position the substrate on the passage;



wherein one of said carrier means receives the substrate from the positioner means and carries it to one of the substrate processing units.

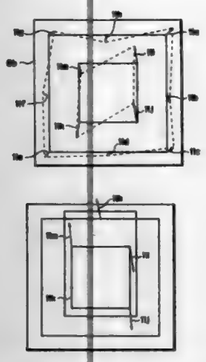
5,442,417
AUTOMATIC FLASH AMOUNT CONTROL APPARATUS OF CAMERA
Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jun. 25, 1993, Ser. No. 81,221
Claims priority, application Japan, Jul. 22, 1992, 4-195496; Jul. 22, 1992, 4-195498
Int. Cl.[6] G03B *13/36, 15/05*
U.S. Cl. 354—402 **13 Claims**



1. An automatic flash amount control apparatus of camera, comprising:
flashing means capable of performing preliminary flash carried out before an exposure operation of camera and main flash carried out during the exposure operation;
metering means for metering in a plurality of divided metering regions beams emitted from said flashing means and reflected by a photographic field;
photographic distance value output means for outputting a value concerning a photographic distance;
control means for specifying and excluding a region a metering value of which is not used among said plurality of metering regions, based on a metering result upon said preliminary flash and said photographic distance value and for adjusting a flash amount of said flashing means upon main flash, based only on metering values of regions except for the excluded region; and
inhibiting means for comparing said photographic distance

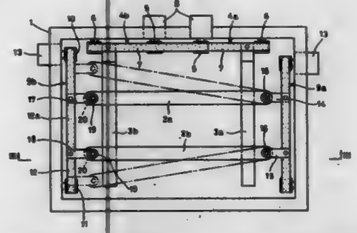
value with a predetermined value and for inhibiting an region exclusion operation of said control means if said photographic distance value is judged as greater than said predetermined value.

5,442,418
EXPOSURE METHOD
Masaichi Murakami; Muneyasu Yokota; Toshio Matsuura, all of Tokyo, and Atsuyuki Aoki, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 70,178, Jun. 2, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,521
Claims priority, application Japan, Jun. 9, 1992, 4-149278
Int. Cl.[6] G03B *27/42*
U.S. Cl. 355—53 13 Claims



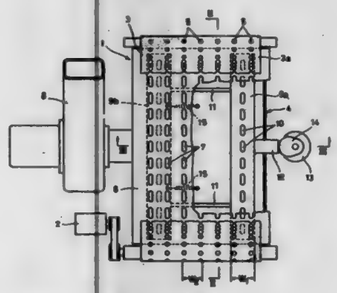
1. An exposure method for exposing a photosensitive substrate to first and second extended patterns of at least one original with mutual jointing of end portions thereof by means of a projection optical system, comprising:
- determining distortion characteristics of said projection optical system, representing the positions of projected images within a projection area of said projection optical system;
- determining, within said distortion characteristics, first distortion characteristics corresponding to an image at an end portion of said first pattern at the projection thereof, and second distortion characteristics corresponding to an image at an end portion of said second pattern at the projection thereof;
- determining the difference between said first and second distortion characteristics;
- projection the image of said first pattern onto said photosensitive substrate by said projection optical system;
- projecting the image of said second pattern onto said photosensitive substrate by said projection optical system in jointed relationship to the image of said first pattern; and
- adjusting said jointing by at least one of a relative movement between said at least one original and said photosensitive substrate and a change in the projection magnification of said projection optical system, according to said difference of the distortion characteristics, prior to the projection of the images of said first and second patterns, in such a manner as to minimize the aberration of the images of said first and second patterns in a direction substantially perpendicular to an extending direction of the first and second patterns at said end portions thereof.

5,442,419
PAPER MASK DEVICE
Hironori Masutani, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan
Filed Jun. 2, 1994, Ser. No. 252,783
Claims priority, application Japan, Jun. 3, 1993, 5-133256
Int. Cl.[6] G03B *27/58*
U.S. Cl. 355—74 1 Claim



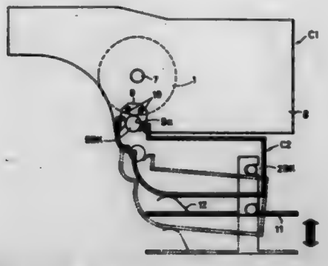
1. A paper mask device comprising a pair of longitudinal masks provided in a longitudinal direction of a web of printing paper, and a pair of transverse masks provided in a transverse direction, said pair of longitudinal masks and said pair of transverse masks being moved relative to each other to change the print size, characterized in that a first transfer unit for moving one end of said pair of longitudinal masks relative to each other and a second transfer unit for moving the other ends of said pair of longitudinal masks relative to each other are provided, said pair of longitudinal masks being coupled to said first and second transfer units so that they can take oblique positions.

5,442,420
EXPOSURE DEVICE
Masuaki Tsuji, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan
Filed Jun. 7, 1994, Ser. No. 255,916
Claims priority, application Japan, Jun. 8, 1993, 5-137155
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—74 7 Claims



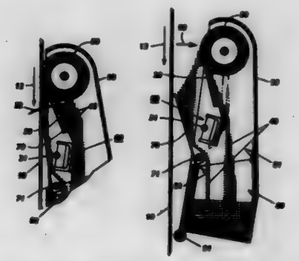
1. An exposure device, comprising:
- a suction belt having a plurality of suction holes therein arranged in a plurality of rows that extend in a longitudinal direction of said suction belt;
- a suction box;
- an exposure table comprising a belt support plate connected with said suction box, said belt support plate having a front side for supporting said suction belt, a plurality of suction holes formed therein in a plurality of rows that extend in the longitudinal direction of said suction belt for communication with said suction holes of said suction belt, and a back side; and
- an adjusting plate movably mounted on said back side of said belt support plate so as to be movable between a closed position in which some of said suction holes of said belt support plate are closed and an open position in which said suction holes of said belt support plate that are closed in said closed position are open.

5,442,421
PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS USING THE SAME
Hisayoshi Kojima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Japan
Continuation of Ser. No. 765,010, Sep. 24, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 38,058
Claims priority, application Japan, Oct. 1, 1990, 2-260564
Int. Cl.[6] G03G *5/00, 15/048, 15/056*
U.S. Cl. 355—211 45 Claims



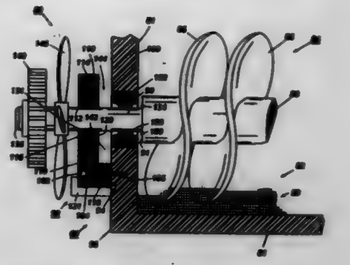
45. A detachably mountable process cartridge for use with a sub-cartridge that includes a developing unit support member and a developing unit having a developing agent bearing member, said process cartridge comprising:
- an image carrier; and
- an image carrier support member supporting said image carrier, said image carrier support member comprising a positioning member, the positioning member being configured and arranged to directly contact and position the developing agent bearing member of the sub-cartridge when the sub-cartridge is positioned adjacent to said process cartridge.

5,442,422
TONER CONTAMINATION SEAL DEVICE FOR CLEANER
Alvin J. Owens, Jr., Fairport, and Douglas J. Buxendell, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 8, 1994, Ser. No. 257,588
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—215 19 Claims



1. An apparatus for cleaning particles from a surface, comprising:
- means for removing particles from the surface, said removing means moving between an operative position contacting the surface to remove particles therefrom and an inoperative position spaced from the surface; and
- means, moving from a position spaced from the surface to a position in contact therewith in response to said removing means moving from the operative position to the inoperative position, for capturing particles released from said removing means as said removing means moves from the operative position to the inoperative position, said capturing means being in contact with the surface collecting particles escaping past said removing means when said removing means is in the operative position.

5,442,423
EXTERNAL DEVELOPMENT HOUSING BEARINGS
Cyril G. Edmunds; Steven C. Hart, both of Webster, and Michael J. DeLuzio, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 23, 1994, Ser. No. 264,397
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—215 23 Claims



1. A developer unit, comprising:
- a housing defining a chamber for storing a supply of toner therein;
- a member for moving the toner in the chamber of said housing;
- a support structure, projecting from said housing, for supporting said member, said support structure mounted on an external surface of said housing, said support structure including a thermally conductive material; and
- a bearing located in said support structure, said bearing being spaced from said housing and rotatably supporting said member.

5,442,424
IMAGE RECORDING DEVICE FOR FORMING AN ELECTROSTATIC LATENT IMAGE ON AN IMAGE HOLDING MEMBER
Isao Ito, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1994, Ser. No. 222,699
Claims priority, application Japan, Apr. 6, 1993, 5-079468
Int. Cl.[6] G03G *15/04*
U.S. Cl. 355—244 10 Claims

1. An image recording device forming an electrostatic latent image on a surface of an image holding member in accordance with image information and transferring by pressure an image made by developing the electrostatic latent image to a transfer medium which passes through a contact portion between said image holding member and a pressure roller bearing against said image holding member, said image holding member rotating in a developing direction, said image recording device comprising:
- a plurality of electrostatic latent image forming means disposed adjacent to and around the circumference of said image holding member at predetermined spacings and forming an electrostatic latent image on said image holding member, at least one of said plurality of electrostatic

latent image forming means being located upstream in said developing direction of a remainder of said plurality of electrostatic latent image forming means; and

controlling means for starting electrostatic latent image formation by said at least one upstream electrostatic latent image forming means, stopping electrostatic latent image formation by said at least one upstream electrostatic latent

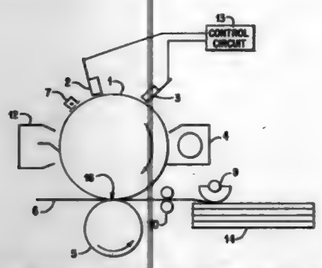


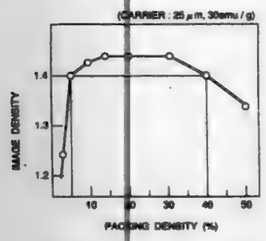
image forming means immediately before the transfer medium enters said contact portion between said image holding member and said pressure roller, and continuing electrostatic latent image formation by said remainder of said electrostatic latent image forming means, after the transfer medium enters said contact portion between said image holding member and said pressure roller.

5,442,425

DEVELOPING APPARATUS

Tomoaki Yokoyama, Aichi, and Makoto Takase, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 25, 1994, Ser. No. 186,025
Claims priority, application Japan, Jan. 28, 1993, 5-012420
Int. Cl.[6] G03G *15/09*
U.S. Cl. 355—251 **2 Claims**



1. A developing apparatus for developing an electrostaic latent image formed on an image bearing member into a powder image comprising;

a two-component type developer material consisting of toner particles and carrier particles;

a rotatable sleeve facing the image bearing member;

a stationary magnetic member having a plurality of magnetic poles extending in an axial direction thereof and disposed inside the sleeve; and

a regulating member facing the sleeve with a small gap defined between it and the sleeve; and

wherein the developer material is retained by an effect of the magnetic member so as to be transported by the rotation of the sleeve and regulated by the regulating member prior to being brought into contact with the image bearing member in a developing region where the sleeve confronts the image bearing member,

characterized in that two of said magnetic poles which are of the same polarity are positioned so as to confront the developing region in a neighboring relation with each other;

said carrier particles have an average particle size of not smaller than 25 μm and are capable of being magnetized to an intensity of magnetization of not lower than 30 emu/g; and

a packing density P.D (%) as defined below in the developing region ranges from 5% to 40%:

$$P.D = 100 \cdot M/(Ds \cdot \rho)$$

wherein:

M is the amount of the developer material transported on the sleeve per unit area (g/cm^2);

Ds is the distance of the gap between the sleeve and the photoreceptor; and

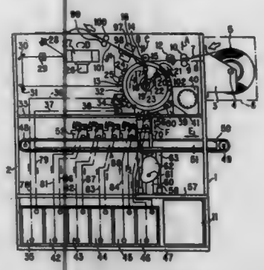
ρ is the weight of the developer material (g/cm^3).

5,442,426

WET TYPE ELECTRO-PHOTOGRAPHIC RECORDING APPARATUS

Takashi Yamamura; Kazunori Namiki, both of Kanagawa; Toshiya Kobashi, Yokohama, and Ryuji Horiuchi, Kanagawa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 24, 1993, Ser. No. 82,884
Claims priority, application Japan, Jun. 25, 1992, 4-191461; Jul. 27, 1992, 4-219707; Jul. 28, 1992, 4-219551
Int. Cl.[6] G03G *15/10*
U.S. Cl. 355—256 **20 Claims**



1. An image recording apparatus for recording an image on an electro-photographic recording sheet by forming an electric charge image corresponding to an image to be recorded on said electro-photographic recording sheet and developing said electric charge image by a wet type developer containing developer particles dispersed in an electrically insulating liquid, said image recording apparatus comprising:

a rotary drum for carrying said electro-photographic recording sheet wound thereon;

means for leading a leading edge of said electro-photographic recording sheet supplied from a supply portion having a roll of said electro-photographic recording sheet and intimately holding said electro-photographic recording sheet cut to a predetermined size on said rotary drum;

an electric charger for uniformly charging said electro-photographic recording sheet wound on said rotary drum;

exposing means having an exposing portion for exposing, through an optical system, said uniformly charged electro-photographic recording sheet to a predetermined spot light obtained by intensity-modulating a laser light with predetermined exposing data containing a spot matrix image digital data, said exposing portion disposed in an upstream region in a rotating direction of said rotary drum with respect to a lower extreme portion thereof and generally opposing an upper portion of said rotary drum;

a pre-bath treatment portion provided in a position between said upper portion where said exposing means is disposed and the lower extreme portion of the rotary drum, said pre-bath treatment portion comprising at least a supply section provided at a high level position for dropping pre-bath liquid and a pre-bath coating section provided in a vicinity of said rotary drum for coating the pre-bath liquid on the electro-photographic recording sheet by receiving the pre-bath liquid dropped from said supply section, whereby the electro-photographic recording sheet is pre-bathed by using high insulating liquid having phase solubility with electrically insulating liquid used as a wet type developer;

a developing portion having developing electrode means disposed substantially close to said rotary drum and being upstream of said lower extreme portion of said rotary drum;

an excess developer removing portion disposed on a downstream side with respect to said lower extreme portion of said rotary drum for removing an excess amount of said developer in the vicinity of said developing electrode provided in said exposing portion by air pressure;

a fixing portion;

a residual charge removing portion;

means for separating said recorded electro-photographic recording sheet from said rotary drum; and

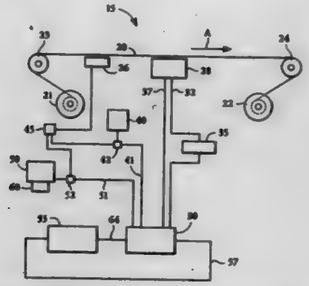
a controller for controlling operations of said rotary drum, said loading means, said electric charger, said exposing means, said pre-bath treatment portion, said developing portion, said excess developer removing portion, said fixing portion, said residual charge removing portion and said separating means.

5,442,427

CONCENTRATE STIRRING FOR CONTINUOUS PRINTING

Gene F. Day, Hillsborough, Calif., assignor to Phoenix Precision Graphics, Inc., Sunnyvale, Calif.

Filed Oct. 4, 1993, Ser. No. 131,468
Int. Cl.[6] G03G *15/10*
U.S. Cl. 355—256 **20 Claims**



1. A continuously operable developing system for electrostatic printing comprising:

a liquid concentrate including toner particles and charge agent disposed within a concentrate tank,

a stirring means disposed within said concentrate tank for homogenizing said concentrate,

a means for supplying a liquid carrier to a location proximate to said concentrate,

a means for combining said carrier and said concentrate to form a developer,

a means for forming an electrostatic latent image on a medium proximate to said developer,

a means for supplying said developer to said medium, such that said toner particles are attracted to said electrostatic image on said medium in order to form a visible image on said medium, and

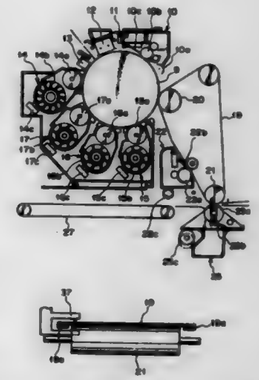
a means for discharging said developer from said surface to a developer tank.

5,442,428

IMAGE RECORDING APPARATUS

Mitsuru Takahashi, Tokyo; Yasunori Kawaishi, Narashino; Hideo Yu; Toshiaki Motohashi, both of Tokyo; Katsuya Kawagoe, Kamakura, and Hideki Kamiyama, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,499
Claims priority, application Japan, May 20, 1993, 5-116754
Int. Cl.[6] G03G *13/16*
U.S. Cl. 355—271 **10 Claims**



1. An image recording apparatus comprising:

an image carrier for sequentially forming toner images of respective colors on a surface thereof;

an intermediate transfer belt passed over a plurality of rollers and rotatable in a reciprocating motion, said intermediate transfer belt having guides at opposite edges thereof for being prevented from deviating;

the toner images being transferred from said image carrier to said intermediate transfer belt, which is in a reciprocation motion, one above the other, and then a resulting composite toner image being transferred to a recording medium;

said intermediate transfer belt being rotated, before sequential transfer of the toner images to said intermediate transfer belt, in a reverse direction opposite to a direction for image formation.

5,442,429

PRECURING APPARATUS AND METHOD FOR REDUCING VOLTAGE REQUIRED TO ELECTROSTATICALLY MATERIAL TO AN ARCUATE SURFACE

Jack N. Bartholmae, 3538 Parsons Ridge La., Duluth, Ga. 30136, and E. Neal Tompkins, 7755 Janan Way, Atlanta, Ga. 30360

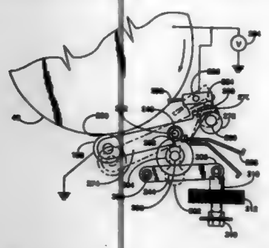
Continuation of Ser. No. 141,273, Dec. 6, 1993, which is a continuation-in-part of Ser. No. 954,786, Sep. 30, 1992, Pat. No. 5,276,490. This application Dec. 6, 1993, Ser. No. 147,056
Int. Cl.[6] G03G *15/14, 15/16*
U.S. Cl. 355—273 **13 Claims**

1. A print engine paper feed device for feeding paper onto a rotating arcuate surface, comprising:

a directing device for directing a sheet of paper along a defined path;

a precurl device for deforming said sheet of paper to have an arcuate deformation that allows said sheet of paper to

follow an arcuate path in the direction of curvature of the rotating arcuate surface defined as a predetermined number of degrees of path curvature per path millimeter of travel that is greater than a predetermined minimum and a combined curl-droop angle greater than a predetermined minimum, said curl-droop angle defined as the sum of the angle of repose of said sheet of paper prior to deformation thereof over an unsupported fixed length and the angle of



curl of said sheet of paper over a fixed length after deformation thereof;

a precurl control for controlling the amount of arcuate deformation imparted to said sheet of paper by said precurl device; and

an attachment device for attaching said sheet of paper to the rotating arcuate surface after arcuate deformation thereof by said precurl device.

5,442,430

COLOR IMAGE FORMING APPARATUS AND CLEANING DEVICE THEREFOR

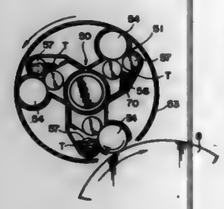
Yoshiko Ishii, Tokyo; Shigeru Yoshiki, Kawasaki, and Tsukuru Kai, Fujisawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 261,327

Claims priority, application Japan, Jun. 16, 1993, 5-145026; Jul. 3, 1993, 5-190919; Dec. 28, 1993, 5-337405

Int. Cl.[6] G03G *21/10*

U.S. Cl. 355—298 **19 Claims**





1. A cleaning device for a color image forming apparatus having image forming means of the type forming a toner image on an image carrier by using toners of at least two colors, said device comprising:

a plurality of cleaning units each being assigned to the respective toner to be deposited on the image carrier; and

recycling means for recycling the toners removed from the image carrier by the respective cleaning units.

5,442,431

AUTOMATIC ORIGINAL FEEDING APPARATUS OF ORIGINAL SIDE-BY-SIDE MOUNT TYPE

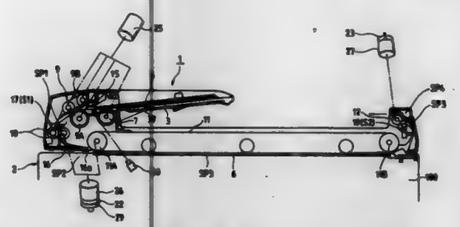
Hitoshi Fujimoto, Kawasaki; Akimaro Yoshida, Yokohama; Norifumi Miyake, Kawasaki, and Satoshi Choho, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,302, Feb. 4, 1994, abandoned, which is a continuation of Ser. No. 50,566, Apr. 21, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 336,755

Claims priority, application Japan, Apr. 22, 1992, 4-130225; Jun. 15, 1992, 4-181853

Int. Cl.[6] G03G *21/00, 15/00*

U.S. Cl. 355—311 **13 Claims**



1. An automatic original feeding apparatus, comprising:

first rotary supply means for supplying a sheet original;

second rotary supply means disposed at a downstream side of said first supply means to further supply the sheet original;

control means for rotating said second rotary supply means reversely to return the sheet original toward an upstream side by a small amount;

retract means for directing a trailing end of the returned sheet original out of a sheet path connecting between said first rotary supply means and said second rotary supply means;

controlling means for controlling said first rotary supply means to cause said first rotary supply means to feed a next sheet original until a leading end of the next sheet original is overlapped with the trailing end of the first sheet original;

information means for the kind of sheet originals; and

means for changing a return amount of the sheet original effected by said control means, in accordance with the kind of the sheet original from said information means;

wherein when the first and second sheet originals are supplied simultaneously, the first sheet original is supplied faster than the second sheet original so that the overlap between the sheet originals is cancelled.

5,442,432

RECORDING APPARATUS WITH A FINISHER HAVING MULTIPLE BIND MODES

Tatsuo Tani, Urayasu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 84,146, Jul. 1, 1993. This application Aug. 11, 1994, Ser. No. 289,270

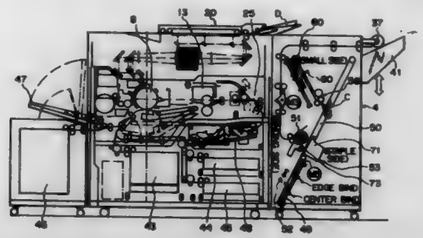
Claims priority, application Japan, Jul. 1, 1992, 4-174406

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—324 **2 Claims**

1. In a recording apparatus, a first record mode for recording an image on one or both sides of a sheet, a second record mode for recording two pages of images on one side of a sheet and other two pages of images on the other side of said sheet, a first bind mode for stacking the sheets undergone said first record mode on a staple tray and then binding said sheets by a stapler of a type driving a staple into an edge of a stack of said sheets from above said stack, and a second bind mode for stacking the sheets undergone said second record mode and then binding said sheets at a center of said sheets are provided; in said first record mode, recording beginning with, among

all pages, the last page or the second page from the last, the papers carrying said all pages being sequentially stacked on said staple tray such that the last page is lowest; in said second record mode and if a blank page exists, assuming that N papers are required to record the total number



of pages including said blank page, recording beginning with a "2N" page and a "2N+1" page or with a "2N−1" page and a "2N+2" page, the sheets being sequentially stacked on said staple tray such that the "2N" page and the "2N+1" page are lowest and then bound in either of said first bind mode and said second bind mode.

5,442,433

IDENTIFICATION SYSTEM FOR AN ARTICLE HAVING INDIVIDUALLY ATTACHED PATCHES

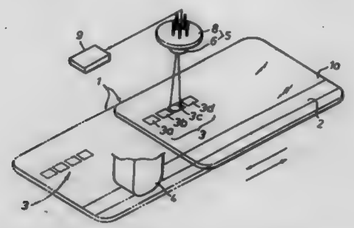
Hidekazu Hoshino; Hidemi Haga, and Tsugutaka Sugahara, all of Kanagawa, Japan, assignors to NHK Spring Co., Ltd., Japan

Continuation-in-part of Ser. No. 782,976, Oct. 24, 1991, Pat. No. 5,200,794, and a continuation-in-part of Ser. No. 788,569, Nov. 6, 1991, Pat. No. 5,291,006. This application Mar. 23, 1993, Ser. No. 36,016

Claims priority, application Japan, Apr. 28, 1992, 4-137787

Int. Cl.[6] G06K *7/10, 19/00*

U.S. Cl. 356—71 **7 Claims**



1. An article identification system comprising:

identification means provided on said article including a plurality of patches, each patch having a specific reflective directivity, each patch being formed individually;

light emitting means for impinging light emitted therefrom onto said identification means;

light detecting means for detecting light reflected by said identification means; and

control means for evaluating light detected by said light detecting means and determining the authenticity of said article associated with said identification means;

wherein each patch is individually affixed to said article.

5,442,434

METHOD FOR FINDING AND MEASURING OPTICAL FEATURES USING AN OPTICAL TIME DOMAIN REFLECTOMETER

David D. Liao, Scarborough, and Andrew E. Forber, Mississauga, both of Canada, assignors to Antel Optronics Inc., Burlington, Canada

Filed Oct. 29, 1993, Ser. No. 143,037

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—73.1 **10 Claims**



1. A method for identifying optical features along the length of a fiber optic cable in response to injecting a pulse of light into the fiber optic cable and collecting data corresponding to signals which are reflected, the method comprising the steps of:

(a) identifying potential optical features in the data according to a first set of parameters;

(b) constructing a pattern for selecting optical features from said potential optical features;

(c) fitting said pattern to said optical features and selecting optical features which meet a second set of parameters;

(d) determining a position along the cable for each of said selected optical features; and

(e) computing a reflectance/loss level for each of said selected optical features.

5,442,435

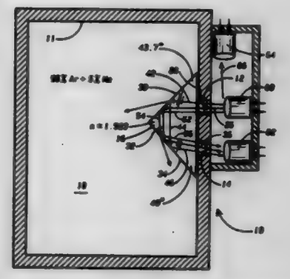
FLUID COMPOSITION SENSOR USING REFLECTED OR REFRACTED LIGHT MONITORING

Stephen R. W. Cooper, Tustin, and Guangyu Zhang, Grand Rapids, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Mar. 24, 1994, Ser. No. 217,611

Int. Cl.[6] G01N *21/41*

U.S. Cl. 356—133 **16 Claims**



1. Sensor apparatus for monitoring the composition of a fluid comprising:

a) a vessel for holding a fluid and including one or more openings for allowing radiation to enter and to exit the vessel;

b) a radiation source for directing a beam of radiation along a path that causes the radiation to enter the vessel;

c) a prism having a radiation transmitting surface that covers said one or more openings in the vessel and further having first and second reflecting surfaces having a specified orientation with respect to each other wherein a first reflecting surface is oriented with respect to an angle of incidence of radiation passing through the prism from the radiation source so that a significant portion of light contacting the first reflecting surface is reflected off the first reflecting surface along a path completely within the prism to the second reflecting surface where a significant portion of the radiation reaching the second reflecting surface is reflected off the second reflecting surface and exits the prism and the vessel;

d) a first radiation detector for monitoring intensity of radiation leaving the vessel that has been reflected off the second reflecting surface of the prism;

e) a second radiation detector for monitoring intensity of radiation from the radiation source that does not enter the vessel; and

f) means for determining fluid composition based on the intensity sensed by the first and the second radiation detectors.

5,442,436

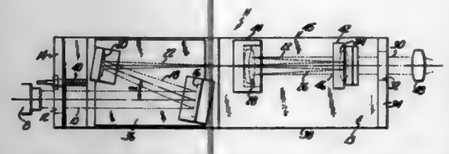
REFLECTIVE COLLIMATOR

William E. Lawson, Somerset, Wis., assignor to Laser Machining, Inc., Somerset, Wis.

Continuation of Ser. No. 831,428, Feb. 5, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 188,102

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—153 **18 Claims**



1. A reflective collimator for adjusting an input light beam comprising:

first reflective means for adjusting the path of the input light beam, for focusing the input light beam, and for reflecting the input light beam to second reflective means;

second reflective means for reflecting the light beam from the first reflective means to third reflective means;

third reflective means for reflecting the light beam from the second reflective means to fourth reflective means; and

fourth reflective means for adjusting the path and focus of the light beam and for reflecting the input light beam from the third reflective means to produce a substantially parallel output light beam parallel to the direction of the input light beam.

5,442,437

SAMPLE CELL AND PROBE FOR SPECTROPHOTOMETER

Timothy M. Davidson, Alta Loma, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 13, 1993, Ser. No. 120,263

Int. Cl.[6] G01N *21/05*

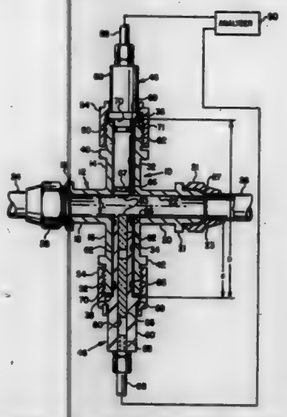
U.S. Cl. 356—246 **1 Claim**

1. Apparatus for determining certain properties of a flowable material, said apparatus comprising:

a flow cell body including first and second perpendicular intersecting bores having support surfaces,

means for introducing said flowable material into one end of said first bore for flowing therethrough; and

two probe means extending on opposite sides, respectively, of said first bore which respectively engage corresponding surfaces of said second bore for precisely locating each probe means with respect to said second bore and said oppositely disposed probe, said probe means being supported in said second bore in a predetermined position relative to said first bore for transmitting a signal through said flowable material in a predetermined portion of the spectrum of electromagnetic radiation,



a portion of at least one of said probe means having a window extending into said first bore for allowing said flowable material to continuously scour said window to minimize contamination and clouding of said window.

5,442,438

SPECTROSCOPIC APPARATUS AND METHODS

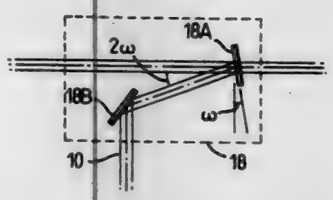
David N. Batchelder, London, and Chunwei Cheng, Yorkshire, both of United Kingdom, assignors to Renishaw PLC, Gloucestershire, United Kingdom

Continuation-in-part of Ser. No. 543,729, Aug. 6, 1990, Pat. No. 5,194,913. This application Nov. 13, 1992, Ser. No. 976,513

Claims priority, application United Kingdom, Dec. 22, 1988, 8830039; Nov. 16, 1991, 9124408; Nov. 16, 1991, 9124409; Feb. 7, 1992, 9202588; Jun. 20, 1992, 9213120; Jun. 20, 1992, 9213121

Int. Cl.[6] G01J *3/44*

U.S. Cl. 356—301 **4 Claims**



1. A spectroscopic apparatus, comprising:

means for illuminating a sample so as to produce therefrom a spectrum of scattered light;

a detector for detecting the scattered light;

an optical path between the sample and the detector;

means in the optical path for selecting a desired frequency of said spectrum received from the sample and passing it to the detector; and

a filter in the optical path for rejecting Rayleigh scattered light received from the sample, said filter being oriented at a low angle of incidence to said optical path, said low angle of incidence greater than 0° and substantially less than 45°, wherein illuminating light from the illuminating means is directed to the filter at an angle relative to the optical path which is twice said low angle of incidence, such that the filter directs said illuminating light along said optical path towards the sample.

5,442,439

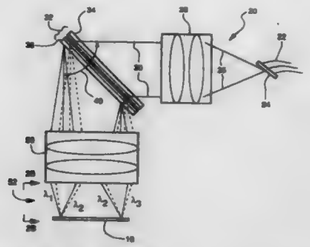
SPECTROGRAPH WITH MULTIPLEXING OF DIFFERENT WAVELENGTH REGIONS ONTO A SINGLE OPTO-ELECTRIC DETECTOR ARRAY

David E. Battey; Harry Owen, both of Ann Arbor, and James M. Tedesco, Livonia, all of Mich., assignors to Kaiser Optical Systems, Inc., Ann Arbor, Mich.

Filed Apr. 21, 1993, Ser. No. 50,862

Int. Cl.[6] G01J *3/28*

U.S. Cl. 356—328 **17 Claims**



1. An optical spectrograph for use in analyzing an incoming light beam, comprising:

a two-dimensional opto-electric array containing rows and columns of detector elements;

a plurality of holographic transmission optical gratings, each recorded to diffract a predetermined range of wavelengths, said gratings being supported so that a light beam to be analyzed passes through each, with each grating diffracting wavelengths in its range onto said two-dimensional array of opto-electric detectors in such a way that the light diffracted by each grating falls onto a different set of detector elements comprising said array.

5,442,440

SPECTROSCOPE

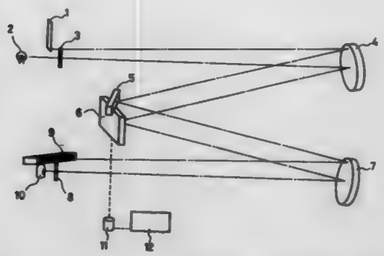
Yoichi Harada, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Feb. 7, 1994, Ser. No. 193,507

Claims priority, application Japan, Feb. 8, 1993, 5-020408

Int. Cl.[6] G01J *3/28;* **G01O** *3/32*

U.S. Cl. 356—328 **6 Claims**



1. In a spectrum analysis apparatus comprising an incident slit, a main wavelength dispersive device, an outgoing slit, a main detector for detecting spectrum-analyzed light, a driving unit for driving the main wave length dispersive device, a control unit for controlling the driving unit, a light source for emitting light having a narrow wavelength bandwidth, a sub-wavelength dispersive device fixed to the main wavelength dispersive device to be driven with the main wavelength dispersive device, and a sub-detector having a plurality of detecting elements aligned in a row and detecting diffraction lines from the sub-wavelength dispersive device, the improvement wherein said sub-wavelength dispersive device is constituted by a plane diffraction grating, and said main wavelength dispersive device and said sub-wavelength dispersive device are fixed on a driving axis of said driving unit with an angular offset therebetween about the driving axis.

5,442,441

RADIO FREQUENCY EXCITED RING LASER GYRO

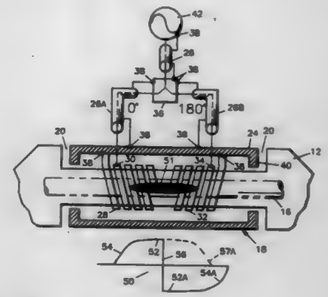
Bruce C. Grover, Newbury Park, and Tae W. Hahn, Chatsworth, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 253,094, Sep. 22, 1988, Pat. No. 5,305,085, Ser. No. 115,018, Oct. 28, 1987, Pat. No. 5,386,288, and Ser. No. 517,644, Apr. 6, 1990, Pat. No. 5,196,905, which is a continuation of Ser. No. 218,405, Jun. 22, 1988, abandoned.

This application Oct. 15, 1991, Ser. No. 776,929

Int. Cl.[6] H01S *3/05;* **G01B** *9/02;* **G01C** *19/64*

U.S. Cl. 356—350 **20 Claims**



1. A ring laser gyro comprising:

a ring laser housing;

at least three mirrors defining a closed ring laser path;

a bore for said path in said housing, having branches between adjacent mirrors, at least one of said branches having a gaseous gain region;

a source of radio frequency energy;

two adjacent coils surrounding said bore in said gain region, each said coil having a length substantially a quarter wavelength at the frequency of said source of radio freuency energy, with at least one of said coils being connected to receive radio frequency energy from said source of radio frequency energy for energizing said laser,

the adjacent ends of said two coils being predeterminedly closely spaced and in a predetermined position along said gain region to produce an electric field gradient in said gaseous gain region to stabilize the position of the radio frequency electro-magnetic excitation of gas plasma in said region between the adjacent ends of said coils.

5,442,442

RING LASER GYROSCOPE SCALE FACTOR ERROR CONTROL APPARATUS AND METHOD CONTROL APPARATUS AND METHOD

Edward Kanegsberg, Pacific Palisades; Steven C. Gillespie, and John P. Rahn, both of Canoga Park, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 28, 1987, Ser. No. 114,481

Int. Cl.[6] G01B *8/02;* **H01S** *3/083*

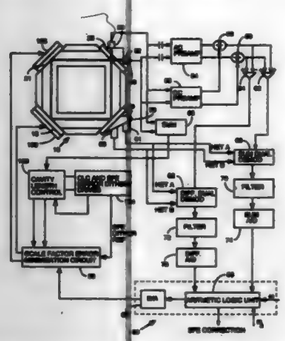
U.S. Cl. 356—350 **29 Claims**

1. A scale factor error control system for a ring laser gyroscope that includes a frame having a cavity therein for guiding a pair of counterpropagating light beams and a plurality of

cavity length control mirrors mounted to the frame comprising:

means for extracting a portion of each of the two counterpropagating light beams from the cavity;

means for forming a first beam intensity signal indicative of the intensity of the portion of a first one of the two counterpropagating beams extracted from the cavity and a second beam intensity signal indicative of the intensity of the portion of the other one of the two counterpropagating beams extracted from the cavity, each beam intensity signal having an AC component and a DC component;



means for forming intensity modulation indices representative of the sum and difference of the first and second beam intensity signals, including;

means for forming a first ratio by dividing a first signal indicative of the AC component of the first beam intensity signal by a second signal indicative of the DC component of the first beam intensity signal; and

means for forming a second ratio by dividing a second signal indicative of the AC component of the second beam intensity signal by a second signal indicative of the DC component of the second beam intensity signal; and

means for minimizing the difference and sum of the first and second beam intensity signals.

5,442,443

STEREOSCOPIC PHOTON TUNNELING MICROSCOPE

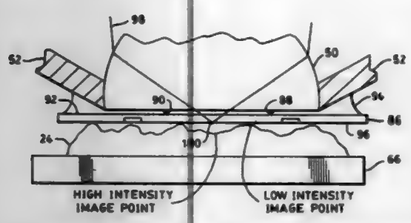
John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 8, 1993, Ser. No. 44,396

The portion of the term of this patent subsequent to Sep. 20, 2011, has been disclaimed.

Int. Cl.[6] G01N *21/17*

U.S. Cl. 356—376 5 Claims



1. A flexible plate for use with a photon-tunneling microscope operative with an evanescent mode of radiation propagation, the microscope having a piano-convex objective lens, the flexible plate being configured for mounting between a planar surface of said lens and a subject to be viewed by the microscope, the plate comprising a layer of an optically transmissive medium, a flexibility of said plate allowing said plate to conform to contours in a surface of the subject, a surface of said plate facing the subject having a hardness which resists intrusions of typographic features of the subject into the plate surface.

5,442,444

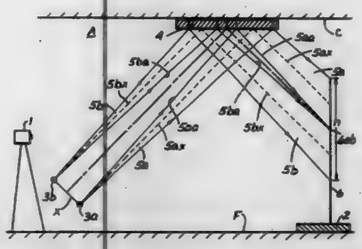
APPARATUS FOR HUMAN TOPOGRAPHY

Ulrich M. Landwehr, Vahrenwalder Str 7, 30165 Hannover, Germany

Filed Mar. 7, 1994, Ser. No. 207,276

Int. Cl.[6] G01B *11/24*; G03B *15/00, 29/00*

U.S. Cl. 356—376 8 Claims



1. Apparatus for acquiring dimensions of an object by means of imaging, and including projection means for projecting a horizontal raster line pattern at a 45° angle onto that object, so that lines of the projected line pattern are imaged in superimposed relation to that object, the improvement comprising;

said projection means including two projectors, each for projecting a raster into a common plane for both of the projectors;

a horizontal overhead mirror, said projection means being oriented so that the raster line pattern is projected upwardly by means of a projection beam being directed towards the mirror at a 45° angle from below toward that mirror, so that the projection beam is reflected at a 45° angle and downwardly accordingly.

5,442,445

REGISTRATION METHOD AND APPARATUS THEREFOR

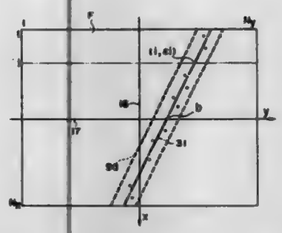
Kyoichi Tatsuno, Yamato; Toshiya Umeda, Yokohama, and Ryoichi Hirano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 640,999, Jan. 14, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 173,879

Claims priority, application Japan, Feb. 8, 1990, 2-270087

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—401 3 Claims



1. A registration method for registering a target registration object within reference orthogonal coordinates by using a single band-shaped registration mark formed on the target registration object, comprising:

an intensity measurement step of receiving a mark image for a predetermined period of time by a two-dimensional

storage type sensor while an area of the target registration object which includes the registration mark is illuminated, said two-dimensional storage type sensor having a plurality of elements which are two-dimensionally arranged within the reference orthogonal coordinates whose positional relationship within the reference orthogonal coordinates is known, of cumulatively storing electric charge stimulated by light of the mark image, and of measuring a light intensity of the mark image;

a center position measurement process of measuring coordinates of a center position of the mark image associated with an arbitrary horizontal scanning line of the two dimensional storage type sensor on the basis of the light intensity obtained in said intensity measurement step;

a mark center line calculation step of least square approximation of coordinates of said center position obtained in said center position measurement process and of obtaining a line passing through the center position drawn within the reference orthogonal coordinates; and

a distance calculation step of calculating an intersection between a first baseline of the coordinates and the line obtained in said line calculation step, and a distance between an origin of coordinates and the line;

wherein the line calculation step comprises:

obtaining a line equation of a line passing through center positions of a mark image in accordance with least square approximation;

calculating a displacement of said intersection from a second baseline, said second baseline being perpendicular to the axis of the scanning line;

obtaining a slope and a displacement of the line with respect to the second baseline;

obtaining positional data of the target registration object by utilizing the intensity measurement step, the center position measurement process, the mark center line calculation step and the distance calculation step; and

moving the target registration object by an amount corresponding to the positional data.

5,442,446

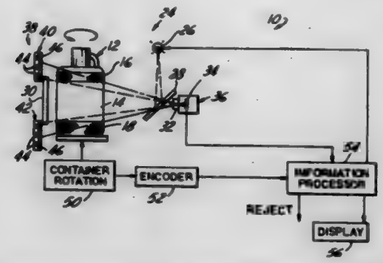
INSPECTION OF TRANSPARENT CONTAINERS

Stephen M. Gerber, Petersburg, Mich., and James A. Ringlien, Maumee, Ohio, assignors to Owens-Brockaway Glass Container Inc., Toledo, Ohio

Filed Aug. 19, 1994, Ser. No. 292,704

Int. Cl.[6] G01N *21/90*

U.S. Cl. 356—428 10 Claims



1. Apparatus for inspecting transparent containers comprising:

means for rotating a container about its axis,

a pair of discrete light sources for directing light energy through adjacent essentially discrete portions of the container in said rotating means,

means for receiving light energy directed through the container in said rotating means from both of said sources as a single image of the entire portion of the container illuminated by both of said sources, and

means for detecting commercial variations in the container as a function of variations in light intensity at said sensing means.

5,442,447

DETECTOR FOR THE CONTACTLESS MEASUREMENT OF CHARACTERISTICS OF A LINEAR PRODUCT OF VERY GREAT LENGTH RELATIVE TO ITS OTHER DIMENSIONS, ON A PRODUCTION MACHINE OR THE LIKE

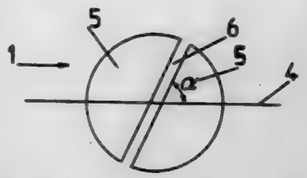
Bernard Durand, Pfastatt; Robert Enderlin, Moerschwiller le Bas, and Pierre Henry, Illzach, all of France, assignors to Superba, S.A., Mulhouse, France

Filed Feb. 3, 1994, Ser. No. 191,290

Claims priority, application France, Feb. 3, 1993, 93 01330

Int. Cl.[6] G01N *21/89*

U.S. Cl. 356—429 24 Claims



1. Detector for the measurement of the characteristics of a linear product of very great length relative to its other dimensions, on a production machine, wherein said detector operates without contact with said linear product and is provided with at least one means (1) having zones (2 and 3) for a measurement relative to a mean position of said linear product and measuring one of the variation of the complex morpho-dimensional and positional characteristics of said linear product, this latter varying, either by vibratory movement, or by induced displacement of the mean position of the axis of movement, the measuring zones (2 and 3) each having a different and variable sensitivity relative to the medial plane of the axis of said linear product to be measured.

5,442,448

DEVICE FOR THE LATERALLY RESOLVED INVESTIGATION OF A LATERALLY HETEROGENEOUS ULTRATHIN OBJECT LAYER

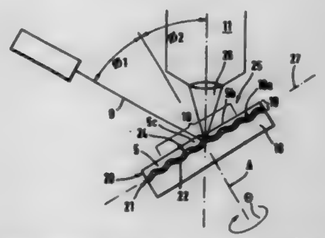
Wolfgang Knoll, Mainz, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Mar. 21, 1994, Ser. No. 215,022

Claims priority, application Germany, Mar. 27, 1993, 43 10 025.2

Int. Cl.[6] G01B *11/06*; G01N *21/84*

U.S. Cl. 356—445 10 Claims



1. A device for the laterally resolved investigation of a laterally heterogeneous ultrathin object layer, especially for the laterally resolved detection of a change in the layer thickness of the object layer which results from a specific binding reaction of a first binding partner bound to the object layer with a free second binding partner, having

a multilayer structure which extends in an investigation region on a plane surface of a substrate parallel to the plane surface and which comprises the object layer as first layer and a second layer adjacent to the object layer,

light coupler means for coupling in excitation light, incident in a plane of incidence, into the second layer, in which the excitation light generates at at least one defined angle of incidence a bound non-radiating electromagnetic wave in the second layer, from which an evanescent wave extends into the object layer and

an optical imaging system for the imaging of the investigation region of the object layer in an image plane said optical imaging system being arranged at a defined angle of emergence, at which detection light is coupled out from the second layer,

wherein

the coupler arrangement comprises an optical grating structure which extends in the investigation region parallel to the object layer and

the optical grating structure is rotatable about an axis extending perpendicular to the grating plane, to vary the orientation of the grating lines relative to the plane of incidence by changing the azimuth angle between the plane of incidence and the grating lines to thereby adjust the image contrast.

5,442,449

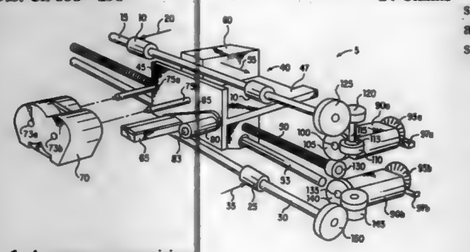
PORTABLE COPIER AND METHOD OF USING A PORTABLE COPIER

Denis J. Stemmle, Webster, N.Y., and Egon Babler, Northbrook, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1993, Ser. No. 139,776

Int. Cl.[6] H04N *1/032, 1/04;* **G01D** *15/10*

U.S. Cl. 358—296 **24 Claims**



1. A scanner comprising;

a scan carriage;

a document transport path;

a copy sheet transport path;

an image sensor supported on the scan carriage for sensing an image on a document on said document transport path; and

a printhead and ink supply cartridge supported by the scan carriage for printing on a copy sheet transported along said copy sheet transport path;

wherein a portion of the document transport path defines a document transport plane within the scanner on a document transport side of said ink supply cartridge; a portion of the copy sheet transport path defines a copy sheet transport plane within the scanner on a copy sheet transport side of said ink supply cartridge opposite from the document transport side of the ink supply cartridge; and the ink supply cartridge is disposed between the document transport plane and the copy sheet transport plane so the ink supply cartridge can be removed and replaced without crossing the document transport plane and the copy sheet transport plane and without disturbing the copy sheet and the document.

5,442,450

Patent Not Issued For This Number

5,442,451

HELICAL SCAN RECORDING/REPRODUCING DEVICE FOR SIMULTANEOUSLY HELICALLY RECORDING/REPRODUCING BOTH VIDEO AND AUDIO SIGNALS

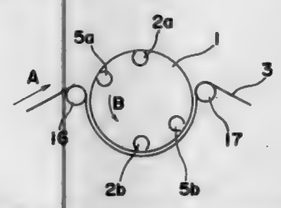
Shuzo Hitotsumachi, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka and Hitachi, Ltd., Tokyo, both of Japan

Continuation of Ser. No. 807,111, Dec. 10, 1985, abandoned, which is a continuation of Ser. No. 467,226, Feb. 17, 1983, abandoned. This application Apr. 2, 1987, Ser. No. 32,973

Claims priority, application Japan, Feb. 22, 1982, 57-27212; May 13, 1982, 57-80986; May 14, 1982, 57-81938; May 14, 1982, 57-81939; Aug. 20, 1982, 57-145040; Aug. 27, 1982, 57-149681

Int. Cl.[6] H04N *9/80*

U.S. Cl. 358—330 **20 Claims**



1. A magnetic recording and reproduction system in which a frequency-modulated luminance signal, a chrominance signal placed in a frequency band below a frequency band of said luminance signal, and a frequency-modulated audio signal placed in the frequency band of said luminance signal are recorded on a video track of a magnetic tape with a low speed such that adjacent video tracks contact each other and, thereafter, the recorded signals are reproduced from said tape, said system comprising:

first and second video heads for recording and reproducing said luminaries signal and laid chrominance signal, said heads having gaps with azimuth angles in opposite inclination directions;

first and second audio heads for recording and reproducing said audio signal, said heads having gaps with azimuth angles in opposite inclination directions, and in different values of azimuth angle from those of said video heads;

a rotary member which mounts said video heads and said audio heads, and causes said video and audio heads to trace said video track of said magnetic tape;

means for operating on said first audio head and said first video head to trace a first video track;

means for operating on said second audio head and said second video head to trace a second video track.

5,442,452

SOUND MODE SWITCHING METHOD FOR MULTICHANNEL SELECTION AND DEVICE THEREOF

Jae-chun Ryu, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Continuation of Ser. No. 398,904, Aug. 28, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 931,425

Claims priority, application Rep. of Korea, Dec. 8, 1988, 88-20496

Int. Cl.[6] H04N *5/76, 7/04, 5/262, 5/272*

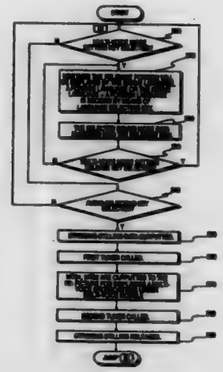
U.S. Cl. 358—335 **19 Claims**

1. A sound mode switching method for multichannel selection in a picture-in-picture video device displaying a main picture and sub-pictures overlapping portions of said main picture, said method comprising:

detecting selection of a multi-voice mode setting key for enabling entrance into a multi-voice setting mode;

in response to said multi-voice mode setting key being selected, enabling user input of sound mode data indicative of multi-voice modes for at least one of said sub-pictures and said main picture by means of a language selecting key until a multi-voice mode setting release key is selected;

storing said sound mode data into memory locations corresponding to said at least one of said sub-pictures and said main picture; and



enabling user selection of channels currently displayed as said sub-pictures to be thereafter displayed as said main picture in response to user selection of an audio selecting key, displaying the user selected channels as said main picture, and outputting audio signals corresponding to said user selected channels and said sound mode data.

5,442,453

VIDEO TAPE RECORDER WITH A MONITOR-EQUIPPED BUILT-IN CAMERA

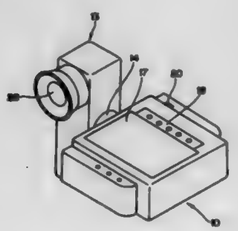
Minori Takagi, Tochigi; Kouji Aramaki, and Takeshi Ikeda, both of Yaita, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1993, Ser. No. 95,415

Claims priority, application Japan, Jul. 30, 1992, 4-203638; Jul. 30, 1992, 4-203713

Int. Cl.[6] H04N *5/225*

U.S. Cl. 358—335 **12 Claims**



1. A VTR with a monitor-equipped built-in camera comprising:

a monitor/VTR portion integrally formed of a VTR portion holding a removable tape cassette and a monitor portion including a liquid crystal display device;

a camera portion;

a rotary mechanism attaching said camera portion to said monitor/VTR portion in a relatively rotatable manner;

inverting means for inverting a displayed image on said monitor;

detection means disposed in said rotary mechanism for detecting a rotational state of said camera portion relative to said monitor/VTR portion; and wherein

said inverting means is driven based on the output from said detection means.

5,442,454

RECORDING DEVICE FOR ELECTRONIC STILL CAMERA

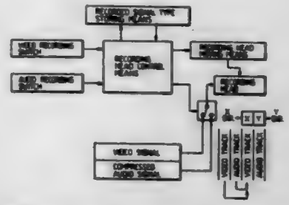
Harumi Aoki, and Nobuya Sakai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 3,219, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 738,644, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 268,303, Nov. 7, 1988, Pat. No. 5,047,869. This application Aug. 1, 1994, Ser. No. 283,146

Claims priority, application Japan, Nov. 6, 1987, 62-280720

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—341 **10 Claims**



1. A recording device for recording video and audio signals on a recording medium, said recording device comprising a recording head for recording said video and audio signals on respective video and audio tracks on said recording medium and a position controller which positions said head over a desired track for recording one of said video and audio signals on said desired track, said position controller positioning said head over a first of said video tracks when recording a first of said video signals and over a first of said audio tracks when recording a first of said audio signals related to said first video signal, said first audio track always being adjacent said first video track when said recording device is operating in a particular recording mode, said recording device including a memory for storing a signal type indicating whether the most recent signal recorded was a video signal or a compressed audio signal, and said position controller includes means for comparing a type of signal next to be recorded with the signal type stored in said memory, wherein said position controller always moves said head radially by a distance of one track position when said type of signal next to be recorded and said type of signal most recently recorded are different from one another in said particular recording mode and always moves said head radially by a distance of two track positions when said type of signal next to be recorded and said type of signal most recently recorded are both video signals in said particular recording mode.

5,442,455

TWO-SIDED VIDEO DISC HAVING HIGH DEFINITION TELEVISION VIDEO SIGNALS RECORDED THEREON AND A METHOD OF MANUFACTURING THE SAME

Toshiaki Hioki, Ogaki; Yoshihiko Morita, Takayataishi; Shigekazu Minechika, Kishiwada, and Hiroshi Watanabe, Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 691,922, Apr. 26, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,055

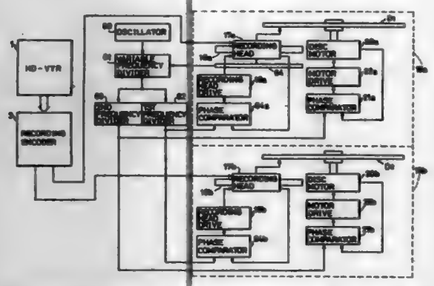
Claims priority, application Japan, Apr. 28, 1990, 2-114077; Apr. 28, 1990, 2-114078

Int. Cl.[6] H04N *5/781, 9/797*

U.S. Cl. 358—342 **11 Claims**

1. A method of manufacturing a two-sided video disc having HDTV signals recorded thereon comprising the steps of:

supplying a line sequential color HDTV video signal,
distributing said line sequential color HDTV video signal alternately by a horizontal line period to form a first video signal including a first color signal component,
distributing said line sequential color HDTV video signal alternately by a horizontal line period to form a second video signal including a second color signal component,



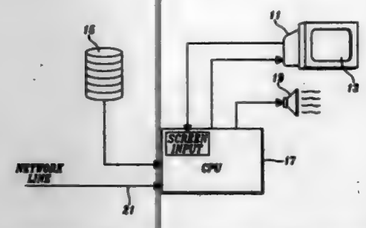
recording said first video signal on a single side face of a first disc rotating in a first direction,
recording said second video signal on a single side face of a second disc rotating in a second direction opposite to said first direction, and
bonding and securing the signal recorded faces of said first and second discs; thereby forming the two-sided video disc.

5,442,456

METHOD AND APPARATUS FOR MULTI-LEVEL NAVIGABLE VIDEO ENVIRONMENT

Benjamin E. Hansen, Westminster, Colo., assignor to U S WEST Advanced Technologies, Inc., Boulder, Colo.

Continuation of Ser. No. 40,302, Mar. 31, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 272,909
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—342 **8 Claims**



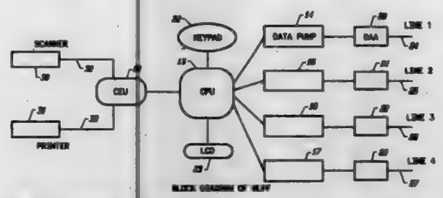
1. An apparatus for providing a multi-level navigable video environment to a user, said apparatus including:
(a) a video monitor for displaying video images;
(b) user input means;
(c) data storage means containing pre-generated data in a data structure, said data structure including a plurality of tracks, said plurality of tracks including a parent movie track for generation of a parent video environment, said parent movie track containing an ordered sequence of video images stored as a sequence of parent movie frames on said parent movie track, certain of said parent movie frames including at least one child movie region disposed in said parent movie track, whereby said parent video environment includes at least one child movie region, said plurality of tracks further including a child movie track for generation of a child movie video environment, said child movie track containing an ordered sequence of video images stored as a sequence of child movie frames on a child movie track, said child movie track associated with and for display within said at least one child movie region of said certain of said parent movie frames of said parent movie track, the child movie video environment being navigable by the user independently from the parent video environment; and
(d) a CPU coupled to said video monitor, said user input means, and said data storage means, said CPU programmed to:
(i) monitor said user input means for parent movie input from said user indicative of a desire to navigate through said parent video environment and, if said parent movie input is received, displaying another parent movie frame from said parent movie track on said monitor in accordance with the specific parent movie input so as to simulate physical movement around said video image; and
(ii) monitor said user input means for input from said user indicative of a desire to navigate through said child movie video environment disposed in said parent video environment and, if said child movie input is received, displaying a child movie frame from said child movie track on said monitor in accordance with the specific child movie input so as to simulate physical movement around said video image.

5,442,457

MULTI-LINE POOLING FACSIMILE APPARATUS

Hamid Najafi, 1256 Russell Ave., Los Altos, Calif. 94024

Filed Jan. 11, 1993, Ser. No. 2,607
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—400 **1 Claim**



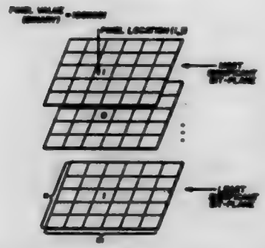
1. In a facsimile machine for sending data to a similar facsimile machine, an improvement comprising:
first means for interfacing said facsimile machine with a first telephone line;
second means for interfacing said facsimile machine with a second telephone line;
means for splitting data to be sent from said facsimile machine to said similar facsimile machine into a first data portion and a second data portion;
means routing said first data portion to said first interface means so that said first data portion can be sent along said first telephone line and means routing said second data portion to said second interface means so that said second data portion can be sent along said second telephone line;
wherein said first and second interface means further comprises;
first means for transmitting data from said first mentioned facsimile machine to said similar facsimile machine within a first fixed subbandwidth of said first telephone line with a given bandwidth defining a transmission channel which occupies a first fixed percentage of said given bandwidth; and
second means for simultaneously receiving data by said first mentioned facsimile machine from said similar facsimile machine and within a second fixed subbandwidth of said first telephone line defining a receiving channel which occupies a second fixed percentage of said given bandwidth.

5,442,458

METHOD AND ASSOCIATED APPARATUS FOR ENCODING BITPLANES FOR IMPROVED CODING EFFICIENCY

Majid Rabbani, Pittsford, and Paul W. Melnychuck, W. Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,364
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—426 **13 Claims**



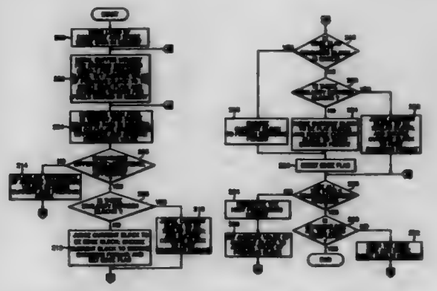
1. A method for decomposing a digital image formed as a matrix of pixel values with each pixel value being represented as a k bit binary number, each of said k bits having a bit significance level, said method comprising the steps of:
forming a first bitplane of bits having the same bit significance level;
forming a k−1 or less bitplanes of bits each having a particular bit significance level, but different than the bit significance level of said first bitplane; and
encoding, by an arithmetic coder, each of the bits of the k−1 or less formed bit planes by a context formed with bit values from at least two of said bitplanes with said context including bit values from a plurality of neighboring pixels.

5,442,459

PROCESS FOR ENCODING A HALF TONE IMAGE CONSIDERING SIMILARITY BETWEEN BLOCKS

Goo-Soo Gahang, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 9, 1993, Ser. No. 163,875
Claims priority, application Rep. of Korea, Dec. 9, 1992, 23720/1992
Int. Cl.[6] H04N *1/415*
U.S. Cl. 358—433 **14 Claims**



1. A process for encoding a half tone image of an image transmission system, comprising the steps of:
storing image data obtained by scanning a plurality of lines of a document pixel by pixel in a memory area corresponding to the scanned plurality of lines, initializing a first buffer memory for storing a binarized result for a block of pixels of a predetermined block size, setting an average brightness value of a previous block to a predetermined average brightness value and storing said average brightness value of a previous block in a previous block average value buffer, and placing an edge flag in a reset state;
designating a window having said predetermined block size in order to process the image data stored in said memory area, binarizing said image data in the designated window, and storing the binarized data in said first buffer memory as said binarized result for a block of pixels;
detecting, from said binarized result, binarized data having a maximum brightness value and binarized data having a minimum brightness value;
calculating a brightness difference value indicating a difference between said maximum brightness value and said minimum brightness value in said first buffer memory and calculating an average brightness value indicating an average brightness of said block of pixels;
comparing said brightness difference value with a predetermined reference brightness difference value;
calculating a difference between said average brightness value calculated in said calculating step and the average brightness value of said previous block stored in said average value buffer when said brightness difference value is less than said predetermined reference brightness difference value, and then determining whether said edge flag is in said reset state or a set state;
determining whether there is similarity between a current block stored in said first buffer memory and a previous block stored in said second buffer memory when said brightness difference value is less than said predetermined reference brightness difference value and said edge flag is in said reset state, or when said brightness difference value is greater than said predetermined reference brightness difference value; and
encoding said current block, said encoding step comprising one of the steps of:
encoding said current block to a first encoding format in order to raise data compression when said brightness difference value is greater than said predetermined reference brightness difference value and there is similarity between said blocks;
placing said edge flag in said set state and encoding said current block to a second encoding format in order to preserving an edge part when said brightness difference value is greater than said predetermined reference brightness difference value and there is no similarity between said blocks;
encoding said current block to a third encoding format when said brightness difference value is less than said predetermined reference brightness difference value, said edge flag is in said reset state and there is no similarity between said blocks;
encoding said current block to a fourth encoding format when said brightness difference value is less than said predetermined reference brightness difference value, said edge flag is in said set state; and
encoding said current block to said first encoding format when said brightness difference value is less than said predetermined reference brightness difference value, said edge flag is in said reset state and there is similarity between said blocks.

5,442,460

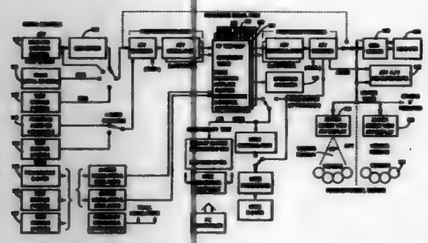
UNIDIRECTIONAL FORMAT SIGNAL CONVERTER

Charles W. Rhodes, Edgewater, Md., assignor to Advanced Television Test Center, Inc., Alexandria, Va.

Division of Ser. No. 404,190, Sep. 7, 1989, Pat. No. 5,280,397. This application Nov. 24, 1993, Ser. No. 156,833

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—441 **21 Claims**



1. A high definition television signal format converter comprising:

an interface for adapting a high definition television signal format for digital storage;

a plurality of pairs of memories for storing adapted data input via said interface;

a write circuit for addressing said pairs of memories according to control signals, said write circuit alternately enabling members of said pairs of memories;

a read circuit for addressing said pairs of memories according to said control signals, said read circuit alternately enabling members of said pairs of memories; and

a control circuit for providing said control signals in accordance with a predetermined format conversion, said control circuit configurable to convert a first high definition television signal format to a second high definition television signal format compatible with a digital video recording apparatus.

5,442,461

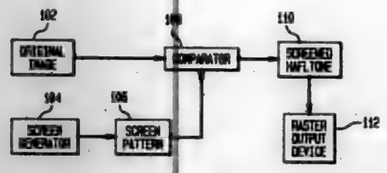
SCREEN GENERATION FOR HALFTONE SCREENING OF IMAGES WITH REDUCTION OF IRRATIONAL CORRECTION ARTIFACTS

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Continuation-in-part of Ser. No. 814,880, Dec. 24, 1991, Pat. No. 5,276,535, and a continuation-in-part of Ser. No. 768,135, Sep. 27, 1991, Pat. No. 5,307,101, which is a continuation-in-part of Ser. No. 753,893, Sep. 3, 1991, Pat. No. 5,291,310. This application Jul. 13, 1992, Ser. No. 912,943

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—456 **26 Claims**



1. A method for generating a halftone screened image from an original image, said method comprising:

generating a plurality of strips, each of said plurality of strips representing a portion of a rational angled screen pattern;

concatenating ones of said plurality of strips in a sequence forming a generated screen pattern to approximate an irrational angled generated screen pattern;

wherein the length of each of said plurality of strips is selected so that vertically adjacent strips have substantially equal lengths, whereby the vertical boundaries of said vertically adjacent strips are aligned; and

screening said original image with said generated screen pattern to form said halftone screened image.

5,442,462

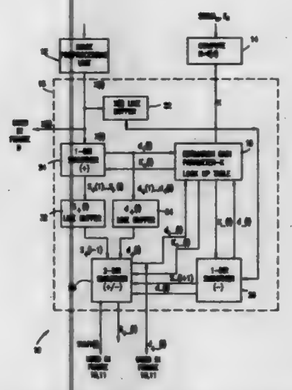
APPARATUS AND METHOD FOR SMOOTHING IMAGES

Rami Guissin, Mobile Post Kfar Vitkin, Israel, assignor to D.V.P. Technologies Ltd., Kfar Vitkin, Israel

Filed Jan. 10, 1992, Ser. No. 896,632

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—463 **32 Claims**



1. Apparatus for one-directional time domain smoothing of a current image which was preceded by a sequence of images, the apparatus comprising:

apparatus for computing a difference function between the raw value of an individual pixel of the current image and a smoothed preceding image value corresponding to at least one pixels of at least one preceding image; and

apparatus for generating a smoothed pixel value for the individual pixel of the current image by computing a weighted sum of the smoothed preceding image value and of the raw value of the individual pixel of the current image wherein the weights are a function of said difference function and of at least one characteristic of at least a portion of the current image other than the difference between the individual pixel value and at least one pixels of at least one preceding image.

5,442,463

FACSIMILE MACHINE HAVING TELEPHONE ANSWERING FUNCTION

Toru Ohnishi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 30, 1993, Ser. No. 114,802

Claims priority, application Japan, Sep. 2, 1992, 4-234935; Feb. 5, 1993, 5-019052

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—468 **2 Claims**

1. A fax machine having a telephone answering function, comprising:

recording means for recording audio information from a caller,

receiving means for receiving image data from a caller,

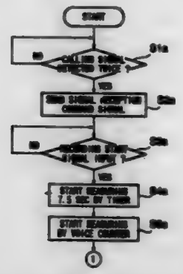
means for measuring a first time period after initiation of recording audio information from a caller,

voice measuring means for measuring the duration of voice input during recording of audio information from a caller, the voice measuring means comprising a voice counter,

erasure means for erasing recorded audio information from a caller when the measured duration of voice input during recording of audio information from a caller is not greater than a first time period,

means for stopping recording and preserving recorded information when a substantially continuous absence of voice information from a caller is detected for a fifth predetermined time period within the second predetermined time period and the voice counter provides a count value greater than a predetermined value, and

means for stopping recording and erasing recorded information when a substantially continuous absence of voice information from a caller is detected for a fifth predetermined time period within the second predetermined time period and the voice counter provides a count value not greater than the predetermined value.



5,442,464

IMAGE READING APPARATUS AND METHOD WITH IMPROVED METHOD FOR CORRECTING OUTPUT LEVEL OF PHOTOELECTRIC CONVERSION MEANS

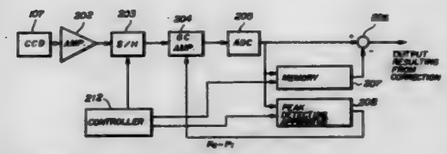
Masaaki Ito, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 898,198

Claims priority, application Japan, Jun. 12, 1991, 3-166117

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—482 **11 Claims**



1. An image reading apparatus comprising:

a light source for applying light onto either a reference white board or an original image, said reference white board or said original image thus reflecting the applied light;

reading means including a photoelectric converting means for receiving and storing therein any one of the light reflected by said reference white board, the light reflected by said original image, and light obtained in a condition where said light source emits no light, said photoelectric converting means converting the thus stored light into corresponding image signals;

said reading means further comprising processing means for processing said image signals using control values to obtain processed image data;

said reading means reading light data of any of the light reflected by said reference white board and the light reflected by said original image in a light-source switched-on condition, and the light obtained in a light-source switched-off condition;

said reading means reading the light data of the light reflected by said reference white board in the light-source switched-on condition before reading the light data of the light reflected by an original image in the light-source switched-on condition;

setting means for setting values as the control values to be used for current reading operations of said reading means;

said setting means setting the control value used in a preceding operation of said reading means as the control value to be used for a current reading operation of said reading means if said current reading operation of said reading means is carried out in the light-source switched-off condition, said preceding operation of said reading means being an operation reading light data of light reflected from an original image in the light-source switched-on condition;

said setting means setting a predetermined reference value as the control value to be used for a current reading operation of said reading means if said current reading operation of said reading means reads light data of light reflected by said reference white board in the light-source switched-on condition;

said setting means setting the control value to be used for a current reading operation of said reading means if said current reading operation of said reading means reads light data of light reflected by an original image in the light-source switched-on condition, said control value dependent on the processed image data obtained through said reading means reading said reference white board before said current reading operation of said reading means;

storing means for storing the processed image data obtained through said reading means reading light obtained in the light-source switched-off condition; and

correcting means for correcting the processed image data obtained through said reading means reading light data of light reflected by an original image in the light-source switched-on condition, the correcting operation using the processed image data obtained through said reading means reading light data of light obtained in the light-source switched-off condition, the used processed image data being the processed image data having been stored by means of said storing means.

5,442,465

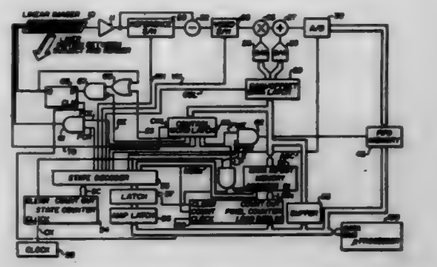
APPARATUS AND METHOD FOR CONTROLLING A LINEAR IMAGING DEVICE

John T. Compton, LeRoy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,725

Int. Cl.[6] H04N *1/03, 1/191*

U.S. Cl. 358—482 **6 Claims**



1. Apparatus for controlling operation of a linear imaging

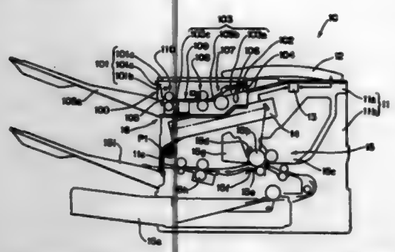
device having a line of light-responsive imaging pixels, the apparatus comprising:
- pixel counter means for supplying pixel counts corresponding to individual pixels in the imaging device;
- means for supplying a map of operating control words, the control words each comprising programmably variable bit content defining pixel-by-pixel operating characteristics of said line of imaging pixels;
- memory means for storing said map of control words at memory addresses corresponding to said pixel counts; and
- means for outputting said control words from said memory to said imaging device in synchronism with said pixel counts to control the operation of the imaging device on a pixel-by-pixel basis in accordance with the bit content of each control word.

5,442,466

PLATE SHEET CONVEYING MECHANISM HAVING INTEGRALLY FORMED SHEET GUIDE

Shinji Kaneyama; Takeo Yoshihiro; Yoshiki Aoyama; Kazuo Nakamura; Shuichi Akedo, and Masayuki Mizuno, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 9, 1993, Ser. No. 88,387
Claims priority, application Japan, Jul. 13, 1992, 4-185547; Jul. 13, 1992, 4-209715
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—498 **22 Claims**



1. An automatic sheet conveying mechanism comprising:
upper and lower casings defining a sheet conveying path therebetween, said upper and lower casings being connectable in a pivotably releasable state;
said lower casing having a sheet guide plate for providing a portion of said sheet conveying path together with said lower casing;
said sheet guide plate defining an extent to which functional parts supported by said lower casing project into said sheet conveying path to guide a lower surface of a sheet conveyed in said path;
said sheet guide plate being integrally formed with said lower casing;
said sheet conveying path including
- a sheet insertion port formed at an upstream end of said sheet conveying path,
- a lead-in portion for accepting a sheet inserted from said sheet insertion port,
- a bent portion attached and bending downward from said lead-in portion, and
- a sheet processing portion extending integrally from said bent portion toward a discharge port;

said automatic sheet conveying mechanism further including
- a sheet forward feeding means disposed at said lead-in portion for feeding a sheet inserted at said sheet insertion port downstream,
- a separating conveying means disposed at said bent portion for separating sheets conveyed by said sheet forward feeding means and conveying individual sheets drawn from a plurality of sheets downstream, and

processing means disposed at said processing portion for processing and treatment of individual sheets;
said sheet forward feeding means further including
- a forward feed roller having a non-circular cross section mounted in said lower casing and being positioned to partially intervene in said sheet conveying path through an opening formed in said sheet guide plate,
- a pressing member retractably mounted in said upper casing opposite said feed roller in said sheet conveying path so as to obliquely contact the sheets, and

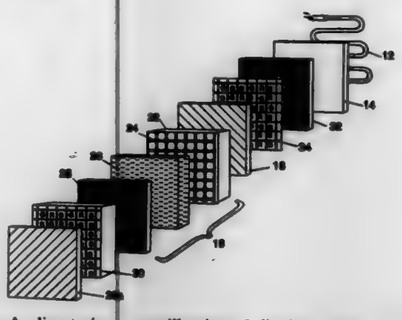
spring means for biasing said pressing member toward said forward feed roller.

5,442,467

ENHANCED OFF-AXIS VIEWING PERFORMANCE AND LUMINOUS EFFICIENCY OF A LIQUID CRYSTAL DISPLAY EMPLOYING FIBEROPTIC FACEPLATE ELEMENTS

Louis D. Silverstein, Scottsdale, Ariz.; Thomas G. Fiske, Campbell, Calif.; Richard Bruce, Los Altos, Calif., and Robert A. Sprague, Saratoga, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1994, Ser. No. 215,454
Int. Cl.[6] G02F *1/1335*; G02B *6/00*
U.S. Cl. 359—42 **21 Claims**



1. A direct-view, rear-illuminated liquid crystal display device, comprising in sequential order:
- a backlight source;
- a rear diffuser layer;
- a rear linear polarizer; and
- a liquid crystal cell including a rear glass layer with addressing elements and pixel ITO electrodes, a liquid crystal layer and a front fiber-optic faceplate as a front containing element substantially adjacent to said liquid crystal layer, said front fiber-optic faceplate having a small light input acceptance cone at a rear face adjacent to said liquid crystal layer and a large light output exit cone at a front face opposite said rear face to improve a viewing angle through the liquid crystal display device.

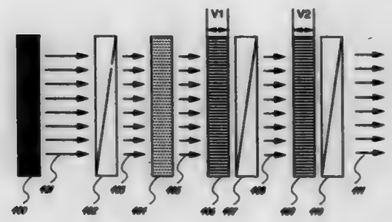
5,442,468

APPARATUS FOR PRODUCING COLOR EFFECTS

Lev Reznik, Carmiel; Lev Diamant, Korazim, and Mordechai Teicher, Kfar Saba, all of Israel, assignors to Arshach-Applied Science Cars Ltd., Korazin, Israel

Continuation of Ser. No. 79,424, Jun. 21, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 378,886
Int. Cl.[6] G02F *1/1335, 1/1347*
U.S. Cl. 359—53 **8 Claims**

1. Apparatus for producing color effects, comprising:
- a source of polychromatic light;
- a transparent linear-polarizer medium located to receive said polychromatic light and to output linearly polarized light;
- a transparent phase-rotating dispersive medium located to receive the linearly polarized light and to rotate the angle of polarization thereof around the axis of propagation of the light as a function of wavelength to produce color-angle separation and thereby a predefined color-angle spectrum of the polarized light;
- a first liquid crystal cell including electrodes for applying a voltage to the cell, said liquid crystal cell being located to receive said polarized light from the dispersive medium and to rotate said color-angle spectrum thereof around the light propagation axis a desired angle according to said applied voltage;
- a transparent linear-analyzer medium located to receive the light from said first liquid crystal cell at a selected angle to output a selected color thereof;



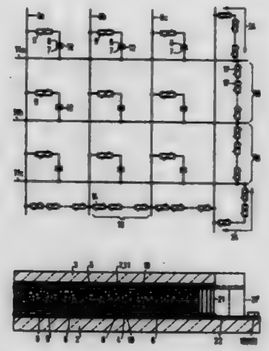
- a second liquid crystal cell aligned with said first liquid crystal cell and said first linear-analyzer medium, and independently controllable by a voltage applied to said second cell;
- and a second transparent linear-analyzer medium located to receive the light from said second liquid crystal cell and to output a selected brightness according to the voltage applied to said second liquid crystal cell of the selected color according to the voltage applied to said first liquid crystal cell.

5,442,469

ELECTRO-OPTICAL DISPLAY DEVICE WITH ELECTROSTATIC BREAKDOWN CONTROL MEANS

Michael G. Pitt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 11, 1993, Ser. No. 29,812
Claims priority, application European Pat. Off., Apr. 3, 1992, 92200951
Int. Cl.[6] G02F *1/136*
U.S. Cl. 359—58 **15 Claims**



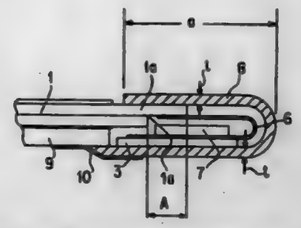
1. A display device comprising an electro-optical display medium between two supporting plates, a system of pixels arranged in rows and columns, with each pixel being formed by picture electrodes arranged on the facing surfaces of the supporting plates, and a system of row and column electrodes for presenting selection and data signals, a picture electrode on of a first one of the supporting plates being connected in an electrically conducting manner to a first non-linear symmetric two-pole switching unit between a column electrode for data signals and the picture electrode, the display device also comprising at least a first type of substantially symmetrical extra two-pole switching unit on said first one of the supporting plates and coupled between points which are connected in an electrically conducting manner to parts of the row electrodes; the display device also comprising at least a second type of substantially symmetrical extra two-pole switching unit on said first one of the supporting plates and coupled to between a column electrode and a point which is connected in an electrically conducting manner to a row electrode.

5,442,470

LIQUID CRYSTAL DEVICE HAVING FRAME MEMBER AND ELECTRONIC APPARATUS USING THE SAME

Hiroyuki Hashimoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 31,853, Mar. 16, 1993, abandoned. This application Oct. 18, 1993, Ser. No. 136,986
Claims priority, application Japan, Mar. 26, 1992, 4-068336; Dec. 8, 1992, 4-328162
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 359—83 **69 Claims**



1. A liquid crystal display device, comprising:
- a liquid crystal panel;
- a circuit board carrying electric circuits for driving said liquid crystal panel;
- a flexible printed circuit electrically connecting said liquid crystal panel and said circuit board; and
- a frame member having a substantially U-shaped cross-section and contacting said liquid crystal panel and said circuit board, said flexible printed circuit being disposed within an area enclosed by said frame member so that said flexible printed circuit is protected from direct contact by material located outside of said frame member.

5,442,471

OPTICAL DIGITAL APPARATUS

Tamiki Takemori, and Makoto Hosoda, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Sep. 16, 1993, Ser. No. 121,901
Claims priority, application Japan, Sep. 18, 1992, 4-249423; Nov. 2, 1992, 4-294472
Int. Cl.[6] G02F *1/015, 3/00, 3/02*
U.S. Cl. 359—107 **42 Claims**

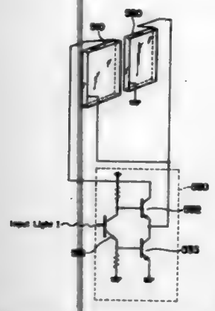
1. An optical digital apparatus comprising:
light emission means for outputting an aggregation of spatially distributed optical digital information signals propagating in a predetermined direction and bearing binary digital information; and
- a selector for receiving an optical control signal bearing binary digital information and selecting one of i) a portion of the aggregation of digital information signals received in a first area, and ii) a portion of the aggregation of digital information signals received in a second area in accor-

dance with a value of the digital information borne by the optical control signal,

said selector being one of i) a unit selector for outputting a selector optical information signal bearing the binary digital information borne by one of a first optical information signal received in said first area and a second optical information signal received in said second area in accordance with the value of the binary digital information borne by the optical control signal, and ii) a selector set comprising a combination of such unit selectors, each said unit selector including:

a first variable transmission device and a second variable transmission device driven independently for controlling the transmission of an input light;

first electric charge injecting means for injecting electric charge into said first variable transmission device;



first electric charge discharging means for discharging electric charge from said first variable transmission device;

second electric charge injecting means for injecting electric charge into said second variable transmission device;

second electric charge discharging means for discharging electric charge from said second variable transmission device; and

an optical detection circuit for issuing an activation direction to one of the pairs comprising i) said first electric charge injecting means and said second electric charge discharging means, and ii) said second electric charge injecting means and said first electric charge discharging means, and issuing a deactivation direction to the other of said pairs in accordance with the value the binary digital information borne by the input optical control signal.

5,442,472

FIBER OPTIC STATUS MONITORING SYSTEM

John Skrobko, Berkeley Lake, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 753,581, Sep. 3, 1991, abandoned. This application Sep. 19, 1994, Ser. No. 306,448

Int. Cl.[6] H04B *10/08*

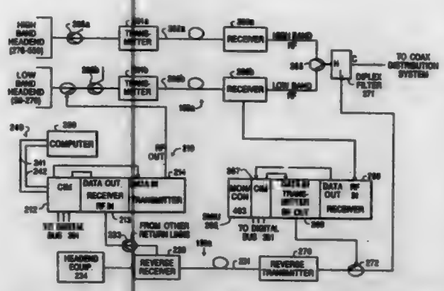
U.S. Cl. 359—110 **51 Claims**

1. A status monitoring system for a cable television system including a master hub having a plurality of transmitters for transmitting cable television signals, and at least one remote hub having a plurality of receivers for receiving said cable television signals, said status monitoring system comprising:

transmitter monitoring/control units for respectively monitoring and controlling the plurality of transmitters, each said transmitter monitoring/control unit having first and second ports that are coupled together;

receiver monitoring/control units for respectively monitoring and controlling the plurality of receivers, each said receiver monitoring/control unit having first and second ports that are coupled together;

a status monitoring interface unit, located at the remote hub, for receiving status information from said receiver monitoring/control units and for transmitting the status information over a communication link between the remote hub and the master hub, wherein the first port of a first receiver monitoring/control unit of said receiver monitoring/control units is coupled to said status monitoring interface unit and the first port of the remaining receiver monitoring/control units are each coupled to the second port of another of said receiver monitoring/control units thereby forming a receiver monitoring/control common bus for coupling status information from said receiver monitoring/control units to said status monitoring interface unit;



an interface located at said master hub for receiving the status information transmitted from said status monitoring interface unit over the communication link and for receiving status information from said transmitter monitoring/control units wherein the first port of a first transmit or monitoring/control unit of said transmitter monitoring/control units is coupled to said interface and the first port of the remaining transmitter monitoring/control units are each coupled to the second port of another of said transmitter monitoring/control units thereby forming a transmitter monitoring/control common bus for coupling status information from said transmitter monitoring/control units to said interface; and

a computer, located at said master hub and operatively connected to said interface, for receiving the status information from said transmitter monitoring/control units and said receiver monitoring/control units via said interface.

5,442,473

OPTICAL TELECOMMUNICATIONS METHOD

Bernard Biotteau, Arpajon, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 18, 1993, Ser. No. 34,396

Claims priority, application France, Mar. 18, 1992, 92 03244

Int. Cl.[6] H04J *14/02;* **H04B** *10/00*

U.S. Cl. 359—124 **7 Claims**

1. In a data transmission method comprising the steps of:

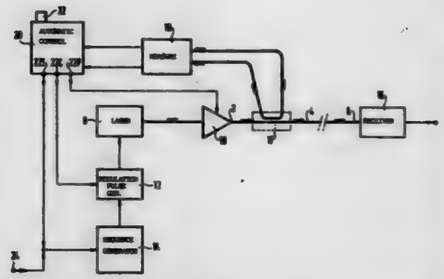
modulating an optical carrier wave with the data to be transmitted, said modulated carrier wave having a first parameter to be adjusted, and

injecting said modulated carrier wave into a near portion of a line fiber, said fiber extending between said near portion and a distant portion and being operative to guide said modulated carrier wave to said distant portion thereby transmitting said data,

the improvement according to which said method further comprises the steps of:

injecting an optical adjustment wave into said near portion of said line fiber for making a Brillouin backscattering of said adjustment wave to generate a return wave in said line fiber, said adjustment wave being free of said data and having at least one second parameter,

varying a said at least one second parameter of said adjustment wave for making said return wave to have power variations,



monitoring said power variations of said return wave from said near portion of said line fiber, and

adjusting said first parameter to be adjusted of said carrier wave according to said monitored power variations of said return wave.

5,442,474

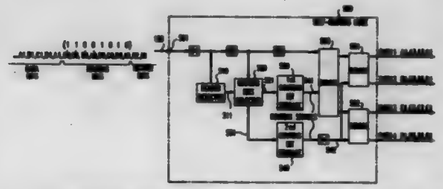
SELF-ROUTING OPTICAL COMMUNICATION NODE USING SAGNAC GATES

Alan Huang, Middletown, and Norman A. Whitaker, Jr., Atlantic Highlands, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 107,472, Jul. 30, 1993, abandoned. This application Aug. 29, 1994, Ser. No. 297,435

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—139 **14 Claims**



1. An all-optical self-routing optical signal switching node apparatus comprising

means for receiving an N channel multiplexed optical data signal including frame header bits, N channel multiplexed routing bits, each channel having at least one routing bit R assigned thereto, and N channel multiplexed data bits, where N and R are integers, $N \geq 2$ and $R \geq 1$,

frame header detector means, including Sagnac switch means, for detecting said frame header bits and for generating a routing bit select signal,

routing bit circular storage circuit, including Sagnac switch means and an optical memory loop connected thereto, for detecting and storing said routing bits in response to said routing bit select signal and for cyclically generating a recurring channel data routing signal once every N data bits and

optical demultiplexer circuit, including Sagnac switch means, responsive to said channel data routing signal, for demultiplexing each channel of said received N channel multiplexed data bits onto one of 2^R optical data output terminals selected using said channel routing signal.

5,442,475

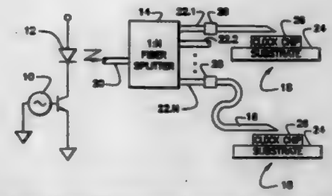
OPTICAL CLOCK DISTRIBUTION METHOD AND APPARATUS

Marvin D. Bausman; Steven S. Chen, both of Chippewa Falls; Edward C. Priest, Eau Claire, and Douglas C. Paffel, Stanley, all of Wis., assignors to Cray Research, Inc., Fagan, Minn.

Continuation of Ser. No. 807,100, Jul. 15, 1991, abandoned. This application Apr. 21, 1994, Ser. No. 231,996

Int. Cl.[6] H04J *14/08;* **H04B** *10/00*

U.S. Cl. 359—140 **9 Claims**



1. An optical clock distribution system for controlling skew between clocks distributed to a plurality of logic assemblies in a data processing system, comprising:

laser generating means for generating coherent light modulated at a system clock frequency;

first distribution means, connected to said laser generating means, for dividing said modulated light into a plurality of optical clock signals of approximately the same optical power;

second distribution means, connected to said first distribution means and including a plurality of second equalized distribution paths, each connected for receiving and transmitting one of said plurality of optical clock signals; and

third distribution means, connected to said second distribution means and including a plurality of third equalized distribution paths, each connected for receiving one of the optical clock signals from said second distribution means and each for generating a plurality of electrical clock signals representative of the received optical clock signal;

wherein any one of said second equalized distribution paths may be connected to any one of said third equalized distribution paths resulting in the same clock path delay between said laser generating means and said third distribution means.

5,442,476

OPTICAL COMMUNICATION METHOD

Shunturo Yamazaki, and Takaaki Ogata, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 977,071, Nov. 16, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,401

Claims priority, application Japan, Nov. 11, 1991, 3-298636

Int. Cl.[6] H04B *10/12, 10/04*

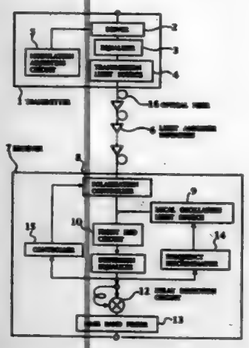
U.S. Cl. 359—173 **2 Claims**

1. An optical communication method for a frequency-shift-keying coherent optical communication system having a transmitter station and a receiver connected by an optical fiber and which employs optical frequency-shift-keying, the optical fiber having a fixed dispersion value, the method comprising the steps of:

setting a modulation index at a transmitting station, when the dispersion value of said optical fiber is positive, to a smaller value than a value at which the best receiver sensitivity is realized in a condition in which said optical fiber is not in a transmitting condition; and

setting the modulation index at the transmitting station, when the dispersion value of said optical fiber is negative, to a greater value than a value at which the best receiver

sensitivity is realized in a condition in which said optical fiber is not in a transmitting condition;



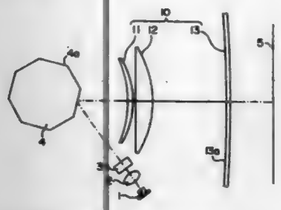
thereby to suppress receiver sensitivity degradation caused by non-linear distortion which is produced in said optical fiber.

5,442,477

OPTICAL SCANNING SYSTEM

Mitsunori Iima, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 191,640
Claims priority, application Japan, Feb. 4, 1993, 5-017662
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—205 **9 Claims**



1. An optical scanning system comprising:
a light source;
a scanning deflector which deflects a bundle of rays emitted from said light source; and
a scanning lens group which converges said deflected bundle of rays onto an image surface to form an image,
wherein said scanning lens group comprises at least one glass lens and at least two plastic lenses,
wherein said at least one glass lens provides substantially all the power of said scanning lens group, and
wherein the following relationship is satisfied:

$$0.8 < \sum_{n}^{n} (f/f_{nG}) < 1.3$$

wherein "f_{nG}" designates a focal length in a main scanning direction of an n-th glass lens from the deflector side in said scanning lens group, wherein "f" designates a focal length in the main scanning direction of said scanning lens group as a whole, and wherein

"$\sum_{n}^{n} (1/f_{nG})$"

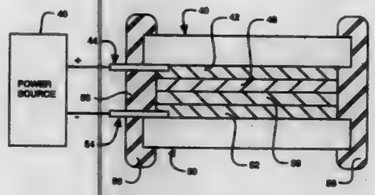
designates the resultant power in the main scanning direction of n glass lenses in said scanning lens group, respectively.

5,442,478

ELECTROCHROMIC DEVICE USING MERCAPTANS AND ORGANOTHIOLATE COMPOUNDS

Carl M. Lampert, El Sobrante; Yan-ping Ma, Berkeley; Marca M. Doeff, Hayward, and Steven Visco, Berkeley, all of Calif., assignors to The Regents, University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 606,063, Oct. 30, 1990, Pat. No. 5,142,406. This application Apr. 23, 1992, Ser. No. 872,830
Int. Cl.[6] G02F *1/153*
U.S. Cl. 359—273 **43 Claims**



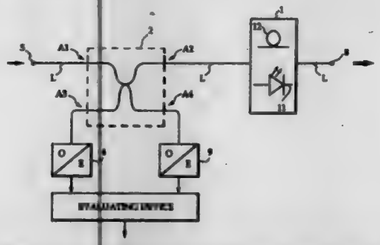
1. An electrochromatic cell comprising:
a) a layer, having first and second surfaces, of solid redox ion storage medium having a solid electrochromatic material dispersed therein and being transparent to electromagnetic radiation of a narrow bandwidth,
b) a first layer of transparent electrical conductor in electrical contact with the first surface of the solid redox ion storage medium, and
c) a second layer of transparent electrical conductor in electrical contact with the second surface of the solid redox ion storage medium.

5,442,479

FIBER-OPTIC AMPLIFIER WITH A FACILITY FOR MONITORING THE PUMP POWER AND INPUT POWER

Henning Bülow, Ludwigsburg, and Jürgen Otterbach, Leonberg, both of Germany, assignors to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Filed Jun. 24, 1994, Ser. No. 264,961
Claims priority, application Germany, Jul. 1, 1993, 43 21 856.3
Int. Cl.[6] H04B *10/02*
U.S. Cl. 359—341 **9 Claims**



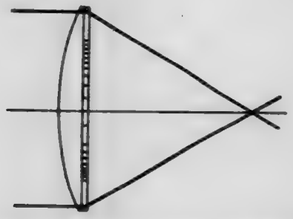
1. A fiber-optic amplifier for amplifying an optical signal and monitoring faults in a fiber-optic transmission system, comprising:
a four-port coupler (2) having a port (A1) for receiving the optical signal;
an amplifying portion (1) connected to a port (A2) of the coupler (2) from which a portion of the optical signal emerges; and
an optical-to-electrical transducer (4) for the reception of light in a wavelength region of the optical signal, said optical-to-electrical transducer being connected to a port (A3) of the coupler (2) from which emerges a portion of light which propagates in the fiber-optic amplifier in a direction opposite to that of the optical signal.

5,442,480

LENS/ZONE PLATE COMBINATION FOR CHROMATIC DISPERSION CORRECTION

Gary J. Swanson, Lexington, Mass., and Miles Scott, Palm Bay, Fla., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 985,466, Dec. 3, 1992, abandoned, and a continuation of Ser. No. 823,594, Jan. 17, 1992, abandoned, and a continuation of Ser. No. 479,955, Feb. 14, 1990, abandoned. This application Aug. 31, 1993, Ser. No. 115,393
Int. Cl.[6] G02B *13/14, 27/44, 5/18*
U.S. Cl. 359—355 **19 Claims**



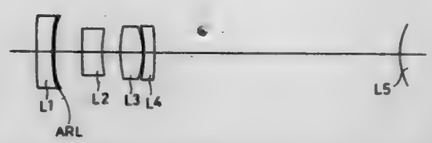
1. An optical apparatus for correcting chromatic dispersion between an infrared light source and a visible light source of substantially differing wavelengths, comprising a lens/zone plate combination, the zone plate having a phase depth on the order of the wavelength of the visible light to transmit substantially all of the infrared light into its zeroth order and to diffract most of the visible light into its first order, thus changing the focal length of the visible light to coincide with the focal length of the infrared light.

5,442,481

FINDER OPTICAL SYSTEM IN CAMERA

Sachio Hasushita, Tokyo, Japan, assignor to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 105,865
Claims priority, application Japan, Aug. 18, 1992, 4-219185
Int. Cl.[6] G02B *27/00*; G03B *13/10*
U.S. Cl. 359—614 **5 Claims**



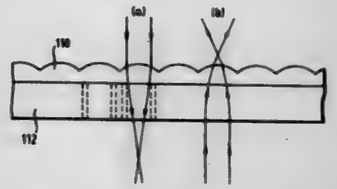
1. A real image type of finder optical system, provided separately from a photographing optical system, in which a real image is formed by an objective optical system, wherein said objective optical system includes lenses having different refractive indexes, including one lens having a highest refractive index and further includes an anti-reflection coating material on a surface of the lens that has the highest refractive index and no anti-reflection coating on at least one surface of a lens other than the lens having the highest refractive index.

5,442,482

MICROLENS SCREENS, PHOTOPOLYMERISABLE MATERIALS AND ARTIFACTS UTILISING THE SAME

William N. H. Johnson, 41 Courtenay Place, Lymington, Hants SO4 9NQ, and Nicholas J. Phillips, 85 Byron Street, Loughborough, Leicestershire, LE11 0JN, both of England

PCT No. PCT/GB91/00795, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO91/18304, PCT Pub. Date Nov. 28, 1991
PCT Filed May 21, 1991, Ser. No. 958,329
Claims priority, application United Kingdom, May 21, 1990, 9011294; May 21, 1990, 9011295; May 21, 1990, 9011296; May 21, 1990, 9011297; May 21, 1990, 9011298; May 21, 1990, 9011299; May 21, 1990, 9011300; May 21, 1990, 9011302; May 21, 1991, 9011293
Int. Cl.[6] G02B *1/12, 5/13, 27/12*
U.S. Cl. 359—619 **4 Claims**



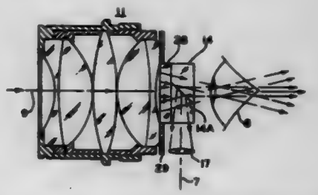
1. A sheet of transparent material comprising a layer of a photopolymer which has been formed with an array of integral graded refractive index microlenses by selective exposure of a photopolymerisable monomer to polymerising radiation wherein each microlens terminates, on at least one of the surfaces of the sheet, in a surface relief formation which adds to the power of the respective microlens.

5,442,483

OPTICAL VIEWING INSTRUMENT FOR ATTACHMENT TO A GUNSIGHT EYEPIECE

Lawrence M. Mosari, Palm Bay, Fla., assignor to DBA Systems, Inc., Melbourne, Fla.

Filed Sep. 17, 1993, Ser. No. 123,076
Int. Cl.[6] G02B *6/00, 27/14*
U.S. Cl. 359—638 **7 Claims**



1. An optical device for providing a first and second viewing optical ports for an optical gunsight comprising:
a housing having one end adapted for clamping to said gunsight, supporting an optical assembly in line with a viewing axis of said optical gunsight comprising:
an optical plate facing said gunsight;
a beamsplitter comprising:
first and second prisms which are joined along complementary diagonal surfaces, said prisms having first and second opposite pairs of adjacent continuous surfaces subtended by said diagonal surface, said opposite pairs of surfaces forming an entrance and exit pupil, respectively, said entrance pupil abutting said optical plate so that a portion of an optical aperture of said optical plate is opposite said diagonal surfaces and remaining portions of said optical aperture are above and below said diagonal surfaces;

an optical coating on said diagonal surfaces and on a portion of surfaces above and below said diagonal surfaces so that the same amount of light is transmitted through said above and below surfaces and said diagonal surfaces providing a full view of said gunsight device image;

an eyepiece located opposite said beamsplitter diagonal surfaces in line with said axis for viewing an image produced by said gunsight device; and,

a camera coupling device lying along an axis perpendicular to said gunsight axis for viewing an image reflected by said prisms diagonal surfaces.

5,442,484

RETRO-FOCUS TYPE LENS AND PROJECTION-TYPE DISPLAY APPARATUS

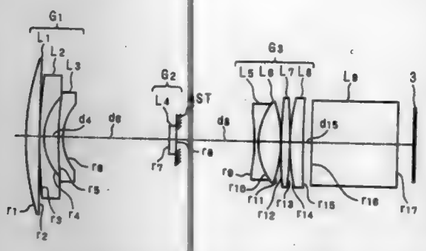
Shinsuke Shikawa, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 30, 1992, Ser. No. 998,948

Claims priority, application Japan, Jan. 6, 1992, 4-000235; Mar. 25, 1992, 4-067105; Sep. 9, 1992, 4-240793

Int. Cl.[6] G02B *9/12, 13/04*

U.S. Cl. 359—651 **13 Claims**



1. A retro-focus type lens comprising from a large conjugate side:

a first lens group having a negative refracting power;

a second lens group having a positive refracting power which is spaced away from the first lens group at an air interval D1; and

a third lens group having a positive refracting power;

wherein the following conditions are satisfied when focal lengths of the first lens group, the second lens group, the third lens group, and a total lens system are assumed respectively as f1, f2, f3, and f:

$1.8<D1/f<3.0$

$1.1<f2/f3<1.6$

$1.5<|f1|/f<2.3$.

5,442,485

ZOOM LENS SYSTEM

Takanori Yamanashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,099

Claims priority, application Japan, Oct. 15, 1992, 4-301630

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **3 Claims**

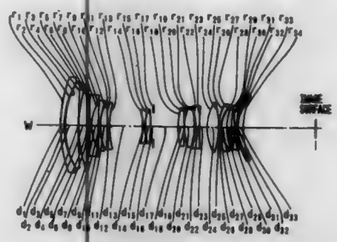
1. A zoom lens system comprising at least five lens units, in order from the object side, of: a first lens unit having a positive refractive power, a second lens unit having a negative refractive power, a third lens unit having a negative refractive power, a fourth lens unit having a positive refractive power and a fifth lens unit having a positive refractive power; wherein a magnification of said zoom lens system is changed from a wide position to a tele position thereof by moving the first lens unit rough the fifth lens unit along an optical axis and wherein said zoom lens system satisfies the following conditions (1), (2) and (3):

(1) $0.5<-f_{123W}/fw<2.0$

(2) $0.3<f_{45W}/fw<2.5$

(3) $1.5<(\beta_{2T}\cdot\beta_{3T})/(\beta_{2W}\cdot\beta_{3W})<7.0$

wherein the reference symbol fW represents a focal length of said zoom lens system as a whole at the wide position thereof, the reference symbol f_{123W} designates a total focal



length of the first lens unit, the second lens unit and the third lens unit at the wide position, the reference symbol f_{45W} denotes a total focal length of the fourth lens unit and the fifth lens unit at the wide position, the reference symbols β_{2W} and β_{3W} represent lateral magnifications of the second lens unit and the third lens unit respectively at the wide position, and the reference symbols β_{2T} and β_{3T} designate lateral magnifications of the second lens unit and the third lens unit respectively at the tele position.

5,442,486

SUPER-TELEPHOTO ZOOM LENS

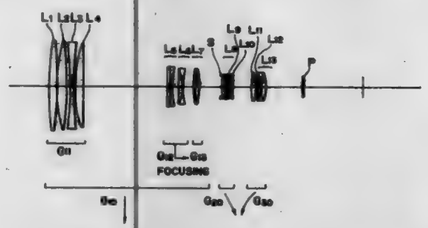
Susumu Sato, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 40,620, Mar. 31, 1993, abandoned. This application Aug. 17, 1994, Ser. No. 291,985

Claims priority, application Japan, Apr. 27, 1992, 4-107522

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—690 **10 Claims**



1. A super-telephoto zoom lens including, in succession from the object side, a first lens unit G10 having positive refractive power, a second lens unit G20 having negative refractive power, and a third lens unit G30 having positive refractive power,

said first lens unit G10 being fixed relative to the image plane and said second lens unit G20 and said third lens unit G30 being moved so as to narrow the air space therebetween during changing the focal length from the wide angle end to the telephoto end,

said first lens unit G10 including, in succession from the object side, a lens group G11 having positive refraetive power, a lens group G12 having negative refractive power, and a lens group G13 having positive refractive power, said lens group G12 being moved in the direction of the optical axis thereof to thereby effect focusing,

said zoom lens being designed to satisfy the following conditions:

$0.15\leqq f_{11}/f_w\leqq 0.40$,

$0.5\leqq f_{10}/f_w\leqq 1.1$,

where

f_{11}: the focal length of said lens group G11 in said first lens unit G10;

f_{10}: the focal length of said first lens unit G10;

f_w: the focal length of the whole system of said super-telephoto zoom lens at the wide angle end.

5,442,487

OPHTHALMIC PHOTOCOAGULATING APPARATUS USING A LASER DIODE AND A LENS SYSTEM FOR THE APPARATUS

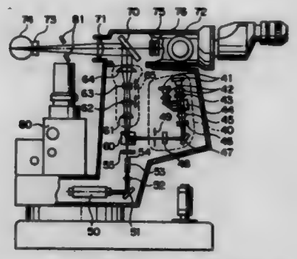
Katsuyasu Mizuno, Gamagori, Japan, assignor to Nidek Co., Ltd., Aichi, Japan

Continuation of Ser. No. 683,154, Apr. 10, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 7,828

Claims priority, application Japan, Apr. 12, 1990, 2-96949

Int. Cl.[6] G02B *9/12*; G03B *13/06*; A61N *5/06*

U.S. Cl. 359—784 **5 Claims**



4. An ophthalmic photocoagulation apparatus comprising:

a laser diode for emitting a laser diode beam, said laser diode has an emitting area which is a rectangle;

a lens system disposed between said emitting area of said laser diode and a laser beam collecting surface, said lens system having a cylindrical lens for maintaining said emitting area and said laser beam collecting surface in a conjugative relationship, and said lens system is a telescopic optical system having infinite focal length in a direction of a longer side of said emitting area of said laser diode; and

a delivery optical system for delivering said laser diode beam from said laser beam collecting surface to a patient's eye, said lens system comprising:

a first lens having converging action on said laser beam;

a second lens having a converging action on said laser beam; and

a third lens having a converging action on said laser beam only on a part of said laser beam which is in a direction of a longer side of the emitting area of the laser diode,

the first, second and third lenses being disposed in order in a direction from the laser diode toward the laser beam collecting surface, wherein on said part of said laser beam which is in the direction of the longer side of the emitting area, the emitting area and the laser beam collecting surface direction of said laser beam are made conjugate by the first, second and third lenses, and a focus of the first lens on said laser beam collecting surface and a focus of the third lens on a laser diode side are made conjugate by the second lens, and

a fourth lens which is disposed between the second lens and the third lens and has a diverging action only in a direction of a shorter side of the emitting area of the laser diode, so as to make the emitting area and the laser beam collecting surface conjugate in the direction of the shorter side.

5,442,488

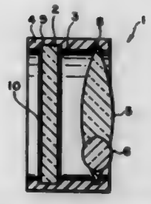
MAGNIFIED MIRROR

Anthony T. Pastorino, 147 35 W. River Rd., Inglis, Fla. 32649

Filed Dec. 13, 1991, Ser. No. 806,674

Int. Cl.[6] G02B *27/02, 7/182*

U.S. Cl. 359—802 **63 Claims**



1. A magnified mirror assembly comprising:

a frame, a first image reflecting surface mounted on said frame and a magnifying lens disposed within said frame and fixedly located adjacent to said image reflecting surface to produce a magnified reflected image, wherein the first image reflecting surface is a magnifying mirror which provides a magnified image reflection, the frame having a pair of groove means, the first image reflecting surface disposed in one groove means and the magnifying lens disposed in another groove means.

5,442,489

MAGNIFYING OBSERVATION APPARATUS

Kiyokazu Yamamoto, and Mamo Yamamoto, both of Tokyo, Japan, assignors to Scalar Corporation and Mitsubishi Chemical Corporation, both of Japan

PCT No. PCT/JP92/00836, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO93/01686, PCT Pub. Date Jan. 21, 1993

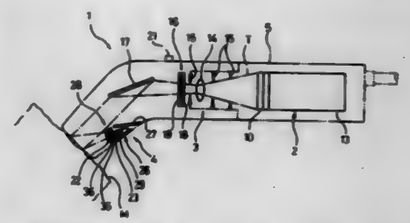
Continuation of Ser. No. 983,848, Apr. 29, 1993, abandoned.

This PCT application Jul. 2, 1992, Ser. No. 311,724

Claims priority, application Japan, Jul. 4, 1991, 3-059676; Jul. 4, 1991, 3-059677; Jul. 4, 1991, 3-189569

Int. Cl.[6] G02B *27/00*

U.S. Cl. 359—810 **32 Claims**



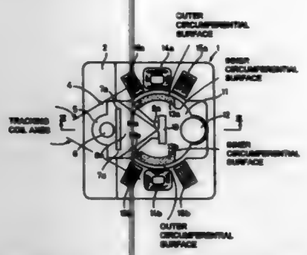
1. A magnifying observation apparatus for reproducing an image of an object to be observed which has been picked up by an image pick-up apparatus onto a monitor display and observing it, said image pick-up apparatus having a structure with a case of an essentially one-handed grapsable size, said case having a viewing hole formed therein and encasing therein at least an imaging device, a control circuit unit for the imaging device, an optical system for focusing the image of the object to be observed on the imaging device, and a light-source lamp encases by the casing for lighting the object to be observed through the viewing hole.

5,442,490

OBJECTIVE LENS DRIVING APPARATUS

Hiroyuki Suzuki, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1993, Ser. No. 3,495
Claims priority, application Japan, Jan. 27, 1992, 4-011587
Int. Cl.[6] G02B 7/02; G11B 7/09
U.S. Cl. 359—824 15 Claims



1. An objective lens driving apparatus for moving an objective lens along an optical axis of the objective lens and along a plane perpendicular to the optical axis, comprising:

a generally disk-shaped, movable member for holding the objective lens;

a base member for supporting said movable member such that said movable member is movable along an axial line that is parallel to said optical axis and that intersects a center portion of the movable member, said movable member being rotatable about said axial line;

first and second permanent magnet members oppositely fixed on said movable member with each magnet member having curved inner and outer surfaces concentric with respect to said axial line;

first and second focus adjusting coils provided on said base member opposite and separated by a gap from the outer surfaces of said first and second permanent magnet members, respectively, with coil axes of the focusing coils being approximately parallel to said axial line; and

first and second tracking adjusting coils provided on said base member opposite and separated by a gap from the outer surfaces of said first and second permanent magnet members, respectively, with coil axes of the tracking adjusting coils being approximately perpendicular to said axial line.

5,442,491

SYNCHRONIZING DATA TRACKS USING GLOBAL FORCE WINDOWS AND TRACK SYNC COUNTERS IN A MULTITRACK TAPE DEVICE

Charles E. Bailey; Steven R. Bentley; Sushama M. Paranjape; Fernando Quintana, and Stephen C. West, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 77,477, Jun. 14, 1993, Pat. No. 5,357,380.
This application Jul. 13, 1994, Ser. No. 274,515
Int. Cl.[6] G11B 20/20, 5/00
U.S. Cl. 360—26 15 Claims

1. A method for synchronizing a plurality of data tracks located on a tape medium in a multitrack tape system comprising the steps of:

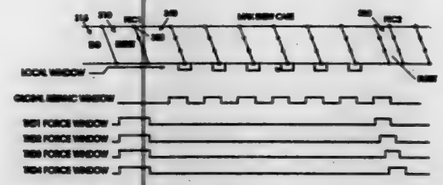
calculating track to track skew;

storing an offset value for each of said data tracks indicating its skew relative to a first data track;

initiating a counter and incrementing said counter as said tape medium passes over a read head of said tape system;

opening a first global force window for said first track at the time of detection of a first sync mark located on said first track;

opening global force windows for each of the other of said data tracks at the time that said counter exceeds the stored offset value for each of the other of said data tracks;



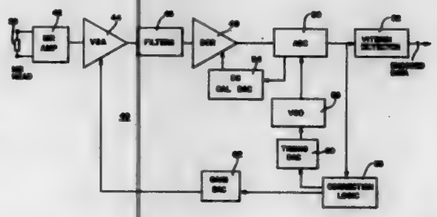
attempting to detect a sync mark located on each of the other of said data tracks within said global force window opened for each of the other of said data tracks.

5,442,492

DATA RECOVERY PROCEDURE USING DC OFFSET AND GAIN CONTROL FOR TIMING LOOP COMPENSATION FOR PARTIAL-RESPONSE DATA DETECTION

Earl A. Cunningham, and Joe M. Poss, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1993, Ser. No. 85,069
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—46 15 Claims



1. Apparatus for data recovery for data detection in a partial-response (PR) data channel including an analog-to-digital converter (ADC) for providing digital samples of a readback data signal and a voltage controlled oscillator (VCO) timing control coupled to the ADC, said apparatus comprising:

means for detecting a readback error and establishing a data recovery procedure (DRP) responsive to said detected readback error;

amplitude offset means for adjusting amplitude of the readback data signal by a selected DC offset responsive to said detected readback error; said amplitude offset means being operative to offset said readback data signal during the DRP independently of a normal ADC calibration function; and

gain control means for increasing a correction current applied to the VCO timing control responsive to said detected readback error; said gain control means being operative during the DRP for providing increased correction current.

5,442,493

DATA RECORDING SYSTEM HAVING IMPROVED BOOKKEEPING CAPABILITY

Lionel C. Shih, San Jose, and John R. Haglund, Redwood City, both of Calif., assignors to Ampex Corporation, Del.

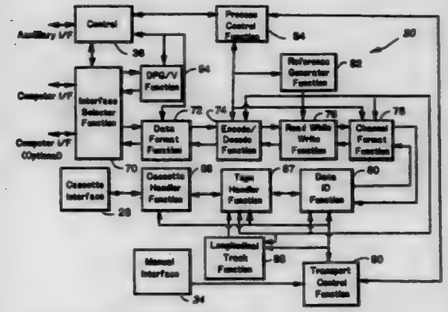
Filed Feb. 28, 1992, Ser. No. 843,461
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—48 8 Claims

1. A system adapted to selectively record and reproduce digital information data on a magnetic tape, each magnetic tape having a recordable volume, said volume being divided into a plurality of partitions in which said information data are recorded, said system comprising:

helical means adapted to selectively record and reproduce said information data including user data and system format data in physical blocks of predetermined size on a helical recording area of said tape, said user data being contained in data blocks that are identified by files, said system records each of said files of user data in at least one associated file section, each physical block being recorded on a set of helical tracks, said helical means recording data in a first direction along said tape;

servo means for controlling the movement of said tape in first and second directions, said servo means moving said tape in said first direction during recording and reproducing, said servo means including means adapted to selectively record and reproduce servo information on a servo control track that extends in the longitudinal direction of said tape;

processing means for generating said system format data and for providing said user data and said system format data to said helical means for recording thereby on said tape, said processing means generating a subarea matrix of said



system format data for recording on at least one predetermined helical track of each set of tracks;

said processing means being adapted to provide at least one of said recorded physical blocks within a partition with system format data that includes data designating said physical block as being defective;

said processing means being adapted to provide system format data that indicates at least one data block in one of said physical blocks has an identification that is the same as a data block that was recorded in a previous physical block within said partition;

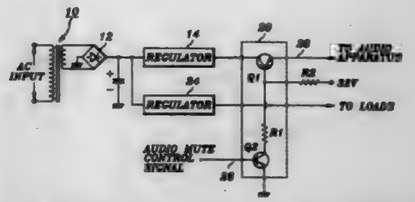
said processing means providing system format data for each physical block recorded within said partition with a sequence number, said sequence number selectively increasing from a predetermined minimum number to a predetermined maximum number with each successive recorded physical block, said sequence number being set to said predetermined minimum number for the successive physical block following the physical block with said predetermined maximum number, said sequence number having the same sequence number for those physical blocks that have been designated as being defective and for those physical blocks that have data blocks with the same identification as a previously recorded data block.

5,442,494

VIDEO CASSETTE RECORDER POWER SUPPLY CAPABLE OF BREAKING SUPPLY VOLTAGE TO AUDIO APPARATUS

Jae-Gyoo Hong, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 17, 1993, Ser. No. 123,645
Claims priority, application Rep. of Korea, Sep. 18, 1992, 92-17737
Int. Cl.[6] G11B 15/12
U.S. Cl. 360—61 1 Claim



1. An improved video cassette recorder incorporating therein, an audio apparatus, a transformer and a regulator for supplying an operating voltage to the audio apparatus wherein the audio apparatus is capable of muting audio signal in an audio mute state in response to an audio mute control signal from a control unit, wherein the improvement comprises:

first switching means coupled between the regulator and the audio apparatus for selective breaking the operating voltage the audio apparatus, wherein the first switching means includes a first transistor having a collector connected to the regulator, an emitter connected to the audio apparatus and a base connected to a second switching means, and

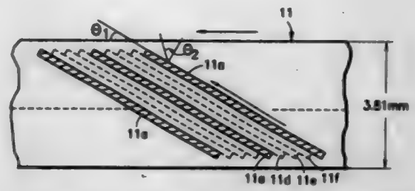
second switching means for controlling, in response to the audio mute control signal, the selective breaking operation of the first switching means, wherein the second switching means includes a second transistor having a collector connected to the base of the first transistor, an emitter connected to ground and a base connected to the control unit.

5,442,495

ALIGNMENT TAPE FOR MAGNETIC RECORDING AND PLAYBACK DEVICES AND DEVICE FOR PRODUCING THE SAME

Kenji Saito, and Masahiko Sumigama, both of Kanagawa, Japan, assignors to Mitsumi Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1993, Ser. No. 171,120
Claims priority, application Japan, Dec. 21, 1992, 4-340352
Int. Cl.[6] G11B 15/14, 5/027
U.S. Cl. 360—64 2 Claims



1. A device for producing alignment tapes for magnetic recording and playback devices, comprising:

said magnetic recording and playback device being of a type effective for playing back a plurality of adjacent recorded tracks on a magnetic tape;

a rotating drum having at least one magnetic head disposed therein;

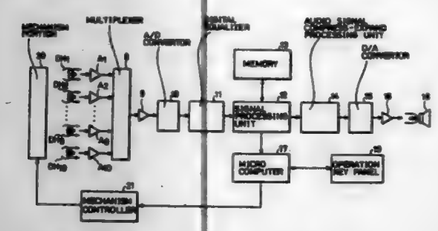
means for outputting a predetermined oscillation signal; and
means for sending said predetermined output signal to said magnetic head at a rate of less than once per tracks, whereby at least one blank track is disposed between each of said plurality of adjacent recorded tracks;
wherein said means for sending further comprises:
first means for outputting a servo signal responsive to a rotation of rotating drum;
second means for outputting a first signal responsive to said servo signal and said a rotation of said rotating drum; and
third means for outputting a second signal responsive to said first signal and at least 2 rotations of said rotary drum.

5,442,496

MAGNETIC TAPE APPARATUS INCLUDING A READING HEAD FOR READING MAIN INFORMATION AND AUXILIARY INFORMATION OF A REPRODUCING REGION TOGETHER WITH AUXILIARY INFORMATION OF ANOTHER REGION

Yutaka Ishimaru, and Hideo Yoshida, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1993, Ser. No. 82,722
Claims priority, application Japan, Jun. 30, 1992, 4-173311
Int. Cl.[6] G11B *15/087*
U.S. Cl. 360—72.2 **10 Claims**



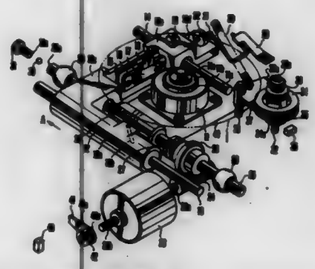
1. A magnetic tape apparatus, comprising:
a magnetic tape including a forward direction recording region and a reverse direction recording region, each region having plural main information tracks and one auxiliary information track;
a tape drive for reciprocally driving the magnetic tape;
an information reader for reading main information including a plurality of selections recorded on one of the main information tracks in one of the forward and reverse direction recording regions and auxiliary information recorded on the auxiliary information track on the other of the forward and reverse direction recording regions; and
a search reproduction controller for controlling the tape drive to search for a main information selection specified for reproduction recorded in the one of the forward and return direction recording regions based on the auxiliary information read from the auxiliary information track in the other of the forward and return direction recording regions, wherein the search reproduction controller determines a search direction of the selected main information by extracting current recording position information from the auxiliary information substantially simultaneously read out from both forward and reverse recording regions by the information reader and comparing the extracted recording position information and the recording position information of the selected main information.

5,442,497

HEAD SHIFTING DEVICE IN A RECORDING AND/OR REPRODUCING APPARATUS

Masaya Maeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 758,450, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 431,708, Nov. 2, 1989, abandoned, which is a continuation of Ser. No. 183,419, Apr. 18, 1988, abandoned, which is a continuation of Ser. No. 805,958, Dec. 5, 1985, abandoned. This application May 12, 1993, Ser. No. 60,682
Claims priority, application Japan, Dec. 6, 1984, 59-257906
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **29 Claims**



21. A head position adjusting device, comprising:
(A) head shift control means including a stepping motor for driving a head for shifting said head stepwise with predetermined steps when the head is moved toward a first reference position located outside of a recording area on a recording medium and for shifting said head stepwise with smaller steps than said predetermined steps when the head is moved from said first reference position to a second reference position located inside of said recording area;
(B) first detecting means for detecting that said head has reached the first reference position; and
(C) second detecting means for detecting that the head has reached the second reference position of said recording area by detecting a rotating phase of said stepping motor, head shift control means including a stepping motor for driving said second detecting means being arranged to detect an angle of a rotating shaft of said stepping motor.

5,442,498

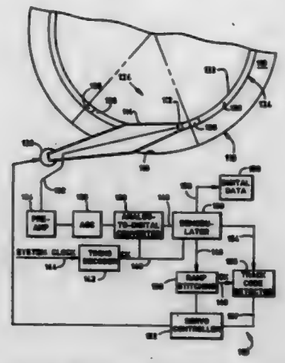
ASYNCHRONOUS TRACK CODE ENCODEMENT AND DETECTION FOR DISK DRIVE SERVO CONTROL SYSTEM

Wayne L. Cheung; Chenhuei J. Chaing, both of San Jose, and Thinh H. Nguyen, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,791
Int. Cl.[6] G11B *5/596, 5/09*
U.S. Cl. 360—77.08 **22 Claims**

1. A disk drive having:
a magnetic storage media disk with a magnetic recording material deposited with respect to a surface of the disk, on which is recorded a plurality of data tracks encoded with asynchronous track identification information burst patterns, PES information, and digital data;
a magnetic head for transducing the asynchronous track identification information burst patterns and producing a track identification information signal; and
a disk head controller that moves the magnetic head relative to the surface of the magnetic storage media disk in response to the asynchronous track identification information burst patterns, PES information, and digital data; wherein:
the asynchronous track identification information burst patterns comprise an asynchronous, multi-frequency bi-

nary track address code having burst pattern transitions oriented across the data tracks in a disk radial direction such that a binary zero code is comprised of a burst pattern having a first frequency and a binary one code is



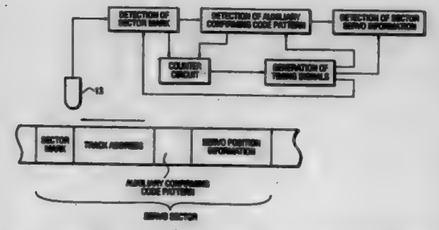
comprised of a burst pattern having a second frequency different from the first and such that no transitions between adjacent tracks of the disk are aligned in the disk radial direction.

5,442,499

METHOD OF DETECTING SECTOR SERVO INFORMATION IN A DISK SYSTEM

Teruaki Emori, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 885,080, May 18, 1992, abandoned, which is a continuation of Ser. No. 390,223, Aug. 7, 1989, abandoned. This application Jan. 25, 1994, Ser. No. 186,246
Claims priority, application Japan, Aug. 5, 1988, 63-195725
Int. Cl.[6] G11B *5/596, 5/09*
U.S. Cl. 360—77.08 **16 Claims**



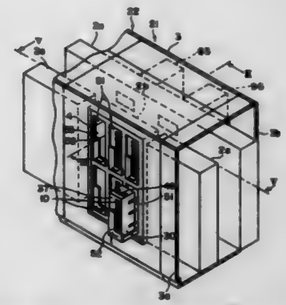
14. A method of detecting sector servo information from a reproduced signal generated by a magnetic head moving relative to a disk surface in a disk system, the sector servo information being recorded in servo sectors interspersed alternately with data sectors on the same track on the disk surface, the sector servo information for a servo sector including a sector mark, a track address, and servo position information, said method comprising the steps of:
interspersing at least two auxiliary confirming code patterns in a first servo sector including a first auxiliary confirming code pattern including a plurality of track address codes, a plurality of supplementary codes interspersed among the track address codes, and check bits, and a second auxiliary confirming code pattern including a plurality of AGC codes and timing bits;
detecting the sector mark of the first servo sector;
generating a plurality of timing signals, at least one of the timing signals being synchronized with a detection of a sector mark of a second servo sector which moved under the magnetic head at an earlier time than the first servo sector;
detecting said first and second auxiliary confirming code patterns from the reproduced signal;
adjusting activation timing of the timing signals based on the detection of the first and second auxiliary confirming code patterns; and
detecting the sector servo information utilizing said timing signals.

5,442,500

CARTRIDGE LIBRARY APPARATUS FOR HANDLING A NUMBER OF CARTRIDGES IN ONE OPERATION

Takao Hidano, and Masatoshi Ishikawa, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 998,472, Dec. 30, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,832
Claims priority, application Japan, Jan. 9, 1992, 4-2040; Jan. 22, 1993, 5-009208
Int. Cl.[6] G11B *15/68*
U.S. Cl. 360—22 **8 Claims**



1. A cartridge library apparatus having racks each of which accommodates a plurality of cartridges therein, each of the cartridges being so constructed that a magnetic tape is encased in a container and that a tape drawing-out slot is formed in a face of the container opposing one face thereof; a magnetic tape drive unit which, at least, reads contents of the magnetic tape; and a transport mechanism which transports the cartridge between the magnetic tape drive unit and the rack; comprising:
magazines each of which can be loaded with the plurality of cartridges;
each of said magazines being formed with a cartridge accommodation space in which said plurality of cartridges are accommodated, and a cartridge insertion/ejection opening through which said cartridges are put into and out of said cartridge accommodation space from outside the magazine, and being provided with erroneous insertion restraint portions each of which allows the corresponding cartridge to be completely accommodated in said cartridge accommodation space when said cartridge is intended to be inserted from said one face of said container in case of inserting said cartridge into said cartridge accommodation space through said cartridge insertion/ejection opening, whereas it prevents said cartridge from being completely inserted into said cartridge accommodation space when said cartridge is intended to be inserted from any position thereof other than said one face of said container;
at least one of said racks constructing a magazine rack which accommodates said magazines therein, and which is formed with cartridge insertion/ejection ports for putting said cartridges into and out of said magazine rack, on its

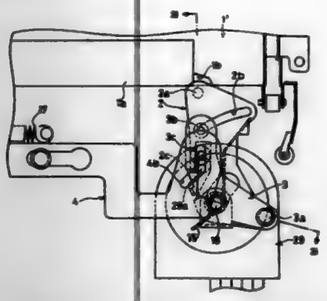
side near said transport mechanism, and magazine holes for, at least, inserting said magazines into said magazine rack from outside, on its side opposite said cartridge insertion/ejection ports, wherein said magazine rack comprises covers, each of which covers is switchable between a closed state shutting up the corresponding magazine hole and an open state allowing said magazine to be inserted through said magazine hole and latch mechanisms each of which latch mechanisms holds the corresponding cover in said closed state and releases the holding of said closed state of said cover when said magazine is intended to be inserted through said magazine hole in the state where said cartridge is completely accommodated in said cartridge accommodation space of said magazine, whereas it does not release said holding of said closed state of said cover even when said magazine is intended to be inserted through said magazine hole in the state where said cartridge is not completely accommodated in said accommodation space of said magazine.

5,442,501

DEVICE FOR HOLDING A CASSETTE HAVING A SLIDER AND A CASSETTE HAVING NO SLIDER

Koji Kaneko, Higashihiroshima; Takeshi Kubota, Hiroshima, and Tatsunori Yamamoto, Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 985,517, Dec. 7, 1992, abandoned. This application Oct. 12, 1994, Ser. No. 321,595
Claims priority, application Japan, Dec. 13, 1991, 3-330531
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—94 **17 Claims**



1. A recording and reproducing device for recording and reproducing information on/from a recording medium like a magnetic tape held in an elongate cassette having an opening in a longitudinal side surface of the cassette at which said recording medium is exposed, comprising:

storing means for storing and moving between a discharge position and a record-reproduction position either a first cassette or a second cassette of a size which is substantially equal to a size of said first cassette, said first cassette having a slider for reciprocal sliding engagement along the longitudinal side surface for covering and uncovering said opening and a first pushing means for pushing said slider in a closing direction; and

slider moving means for opening and closing said slider, said slider moving means including:

a first rotating body for moving said slider moving means in contact with said slider to uncover said opening when said first cassette is stored in said storing means;

second pushing means for pushing said first rotating body in a direction in which said cassette stored in said storing means is discharged;

a second rotating body including a first free end and a second free end, said first free end including a first rotating shaft about which the first rotating body rotates; and

restricting means for restricting a rotation of said first rotating body when said first rotating body is rotated at a predetermined angle about said first rotating shaft so as to cause said first rotating body to be rotated around a second rotating shaft of said second rotating body,

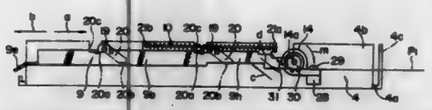
wherein, when said cassette is stored and moved toward the record-reproduction position, said first rotating body is rotated so that a radius of rotation about said first rotating shaft is greater than a radius of rotation about said second rotating shaft.

5,442,502

DISK DRIVE APPARATUS THAT POSITIONS A DISC CASSETTE WITHOUT A SLIDE PLATE

Hirohiko Shimizu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,410
Claims priority, application Japan, Feb. 14, 1991, 3-040789
Int. Cl.[6] G11B *17/04*
U.S. Cl. 360—99.02 **2 Claims**



1. In a disk device having a cassette holder into which a disk cassette is inserted, said cassette holder being reciprocated between a cassette insert position and a cassette load position, the improvement comprising:

a plurality of guided portions provided on a pair of side plates of said cassette holder;

a plurality of inclined guides provided in a pair of side plates of a chassis, the plurality of inclined guides obliquely guiding said guided portions between said cassette insert position and said cassette load position and wherein each of said inclined guides comprises an inclined surface sloped downwardly from one end thereof on the side of a cassette insert opening of said cassette holder in an insert direction of said disk cassette;

biasing means for biasing said cassette holder to move from said cassette insert position to said cassette load position;

an eject lever connected to said cassette holder for directly moving said cassette holder obliquely from said cassette load position to said cassette insert position against said biasing means;

means for locking said cassette holder in said cassette insert position against said biasing means, wherein when said disk cassette is inserted into said cassette holder by a predetermined amount, a locked condition of said cassette holder by said locking means is released, and said guided portions are lowered along said inclined guides by a biasing force of said biasing means, so that said cassette holder is moved to said cassette load position;

an inclined rack formed on said cassette holder so as to be inclined in parallel to said inclined guides; and

a damper mounted on said chassis and rotationally driven by said inclined rack, the damper damping a moving speed of said cassette holder moving from said cassette insert position to said cassette load position.

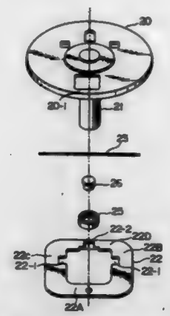
5,442,503

DISK DRIVER HAVING A DISK HOLDER TABLE WITH A HOLDER RING

Hisateru Komatsu, and Takashi Watanabe, all of Yamagata, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,152
Claims priority, application Japan, Sep. 29, 1993, 5-052650 U
Int. Cl.[6] G11B *5/016*
U.S. Cl. 360—99.05 **4 Claims**

1. A disk driver comprising a disk holder table for holding a disk having a disk hub made of metal and provided with a driving hole formed at a position eccentric with the center of the disk to receive a drive roller therein, wherein said disk holder table comprises a plastic magnet provided with an aperture formed at a position eccentric with the center thereof, said disk holder table having a bottom surface to which a holder ring made of metal and having a generally rectangular shape is assembled to hold said drive roller so that said drive roller is upwardly projected through said aperture, said holder



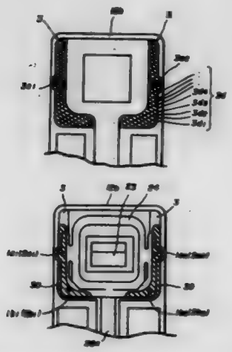
ring being engaged by a pair of hooks formed on the bottom surface of said disk holder table with a space left between said holder ring and the bottom surface of said disk holder table, said holder ring being rotatable in parallel to the bottom surface of said disk holder table within a range restricted by restricting protrusions formed on the bottom surface of said disk holder table, said holder ring being urged in a predetermined direction by a spring member placed on the bottom surface of said disk holder table.

5,442,504

HEAD SUPPORTING DEVICE OF MAGNETIC DISK SYSTEM

Fumio Nagase, Tama, and Jiro Ueki, Fuchu, both of Japan, assignors to Teac Corporation, Japan

Continuation of Ser. No. 889,492, May 27, 1992, abandoned. This application May 20, 1994, Ser. No. 246,576
Claims priority, application Japan, May 30, 1991, 3-040020 U
Int. Cl.[6] G11B *5/105, 5/49*
U.S. Cl. 360—104 **8 Claims**



1. A device for supporting an upper magnetic head of a magnetic disk system and for supporting a lower magnetic head of the magnetic disk system, the upper magnetic head having a surface positionable on a top of a magnetic disk inserted in the magnetic disk system, the lower magnetic head having a surface positionable on a bottom of the magnetic disk, said device comprising:

an arm on which said upper magnetic head is mounted, said arm having a longitudinal axis and an adhesion surface to which a first adhesive agent and a second adhesive agent are applied;

a carriage on which said lower magnetic head is mounted, said carriage having a longitudinal axis and an adhesion surface to which said first and second adhesive agents are applied;

a first gimbal for connecting said upper magnetic head to an internal circuit of said magnetic disk system, said upper magnetic head being attached to said first gimbal, and said first gimbal having an adhesion surface to which the adhesion surface of the arm is attached, so that the first gimbal is temporarily fixed to the arm by the first adhesive agent applied to the adhesion surface of the arm and finally fixed to the arm by a second adhesive agent applied to the adhesion surface of the arm; and

a second gimbal for connecting said lower magnetic head to said internal circuit of said magnetic disk system, said lower magnetic head being attached to said second gimbal, and said second gimbal having an adhesion surface to which the adhesion surface of the carriage is attached, so that the second gimbal is temporarily fixed to the carriage by the first adhesive agent applied to the adhesion surface of the carriage and finally fixed to the carriage by the second adhesive agent applied to the adhesion surface of the carriage,

wherein at least one of the adhesion surfaces of the arm and the first gimbal included a plurality of diagonally cut first grooves extending in a slanting direction relative to the longitudinal axis of the arm so that a portion of the first adhesive agent enters said first grooves so as to evenly spread over the adhesion surfaces of the arm and the first gimbal,

wherein at least one of the adhesion surfaces of the carriage and the second gimbal includes a plurality of diagonally cut second grooves extending in a slanting direction relative to the longitudinal axis of the carriage so that a portion of the first adhesive agent enters said second grooves so as to evenly spread over the adhesion surfaces of the carriage and the second gimbal; and

wherein said first and second gimbals are temporarily fixed to the arm and the carriage by applying the first adhesive agent to the adhesion surfaces of the arm and the first gimbal and to the adhesion surfaces of the carriage and the second gimbal, and said first and second gimbals are finally fixed to the arm and the carriage by applying the second adhesive agent to the adhesion surfaces of the arm and the first gimbal and to the adhesion surfaces of the carriage and the second gimbal so as to cover the first adhesive agent applied thereto, and whereby an applied second adhesive agent projects from a boundary area between the periphery of the gimbals and an exposed surface of an end portion of the arm and carriage.

5,442,505

BLOCK ASSEMBLY FOR A DISK DRIVE WITH AUGMENTING MAGNETS

Kent J. Forbord, St. Louis Park, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 24,611, Mar. 1, 1993, abandoned. This application Aug. 9, 1994, Ser. No. 288,156
Int. Cl.[6] G11B *5/55, 21/08*
U.S. Cl. 360—106 **14 Claims**

1. A disk drive system for writing data to and retrieving data from tracks of a magnetic media disk, the disk drive system comprising:

a transducer for recording and retrieving the data;

an actuator coil;

an E-block assembly coupled generally between the trans-

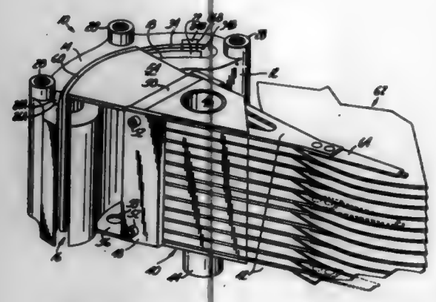
ducer and the actuator coil, the E-block assembly comprising:

a plurality of track accessing arms each with a first end and a second end, the second end being coupled to the transducer;

an elongated central portion disposed generally between the actuator coil and the plurality of track accessing arms, which defines an axis of rotation between the actuator coil and the track accessing arms wherein the first ends of the track accessing arms extend from a side of the central portion distal from the actuator coil; and

a magnetic pole piece comprising:

a front leg having a first gap surface;



a back leg having a second gap surface wherein a gap space separates the first gap surface from the second gap surface, and wherein the gap space defines an actuator path having a first end and a second end for movement of the actuator coil;

permanent magnet means positioned on one of the first and second gap surfaces of the magnetic pole piece; and

a plurality of additional augmenting magnets positioned on one of the first and second gap surfaces, the additional magnets being located on an opposite gap surface from the permanent magnet means, and positioned proximate to the first and second ends of the actuator path to increase flux density across the gap space at the first and second ends of the actuator path.

5,442,506

HEAD DRUM GROUND SYSTEM HAVING A RESILIENTLY MOUNTED CONDUCTIVE BRUSH

Dong-Ho Kang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 22, 1994, Ser. No. 231,605

Claims priority, application Rep. of Korea, May 31, 1993, 1993-9701

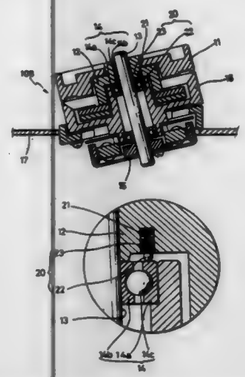
Int. Cl.[6] G11B *5/52, 5/40, 33/14;* **H05S** *1/00*

U.S. Cl. 360—107 **3 Claims**

1. In a video cassette recorder provided with a ground system for discharging static electricity generated from a head drum assembly therein which includes a rotary drum having a rotating shaft rotatably supported by at least one bearing, and a stationary drum mounted on a deck within the video cassette recorder, said ground system comprising:

a boss member, having a blind hole, closely fitted into the rotary drum and rotating together with the rotating shaft; and

an electrical coupler consisting of a conductive brush and biasing means, said biasing means being retained in the



blind hole of the boss member while resiliently depressing the conductive brush against an outer ring of the bearing.

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MAGNETORESISTIVE MAGNETIC HEAD

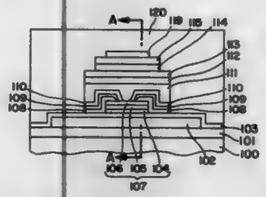
Naoki Koga, Tamana, and Akira Gyotoku, Kumamoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 13, 1993, Ser. No. 166,090

Claims priority, application Japan, Sep. 24, 1993, 5-237838; Sep. 27, 1993, 5-239685

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **14 Claims**



1. A magnetoresistive magnetic head comprising

a magnetoresistive film,

a pair of spaced apart hard magnetic material films disposed on the magnetoresistive film, and

a pair of spaced apart leads for feeding a sense current to the magnetoresistive film, wherein at least a part of each lead of said pair of leads is disposed on the magnetoresistive film and is formed between the pair of spaced apart hard magnetic material films, whereby, the distance between said spaced apart leads is narrower than the distance between said spaced apart hard magnetic material films.

5,442,508

GIANT MAGNETORESISTIVE REPRODUCE HEAD HAVING DUAL MAGNETORESISTIVE SENSOR

Neil Smith, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1994, Ser. No. 248,772

Int. Cl.[6] G11B *5/127*

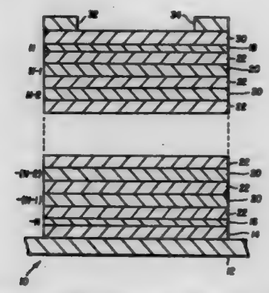
U.S. Cl. 360—113 **17 Claims**

1. A magnetoresistive sensor or reproduce head comprising:

a substrate;

a thin film, multilayered structure formed on said substrate,

said structure further comprising alternating electrically conducting, magnetic film layers and non-magnetic film layers formed such that the magnetic film layers are substantially antiferromagnetically coupled across the sandwiched nonmagnetic film layers, said antiferromagnetic coupling aligning the magnetization vectors of adjacent consecutive magnetic film layers to be substantially antiparallel to one another when not subjected to any external magnetic field, or the internal magnetic field induce by current flow therein, said multilayer structure exhibiting a change in resistivity when subjected to an external magnetic field causing the magnetization vectors of said adjacent magnetic film layers to rotate into a substantially more parallel orientation thereby exhibiting a giant magnetoresistive effect;



means for producing a current flow through said thin film, multilayer structure, wherein the magnetic fields generated by said current flow maintain a magnetization state of said structure in which the net component of magnetization along the axis transverse to that of said current flow of a first set of sandwiched magnetic film layers that are formed on one side of approximately the center-most nonmagnetic film layer is substantially equal in magnitude and opposite in direction by comparison to that of the net component of magnetization along the axis transverse to that of said current flow of the second set of sandwiched magnetic film layers that are formed on the other side of the center-most film layer, whereby the multilayered structure operates in the fashion of a dual magnetoresistive sensor or reproduce head;

means for sensing the variations of resistivity of said magnetoresistive head in response to an applied magnetic field.

5,442,509

PROTECTION STRUCTURE FOR SURGE ABSORBING ELEMENT

Takaaki Ito, Yokoze; Hiroyuki Ikeda, Tokyo; Naoyuki Tomita, Chichibu; Takashi Shibayama, Yokoze; Tomio Iwata, Yokoze, and Takashi Kurihara, Yokoze, all of Japan, assignors to Mitsubishi Materials Corp., Tokyo, Japan

Continuation of Ser. No. 982,412, Nov. 27, 1992, abandoned, which is a continuation of Ser. No. 650,613, Feb. 4, 1991, abandoned. This application May 16, 1994, Ser. No. 243,083

Claims priority, application Japan, Feb. 5, 1990, 2-24489; Feb. 5, 1990, 2-24490

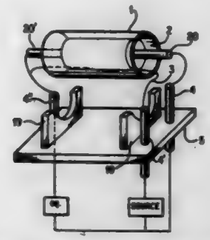
Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—104 **12 Claims**

1. A protection structure for protecting a surge absorbing element, comprising:

a gap discharging surge absorbing element, arranged in parallel with equipment to be connected, for absorbing a surge from one of an outside overvoltage or outside overcurrent;

a low melting point metal wire connected in series with said surge absorbing element, wherein said wire is mounted in



direct contact with the surface of said surge absorbing element.

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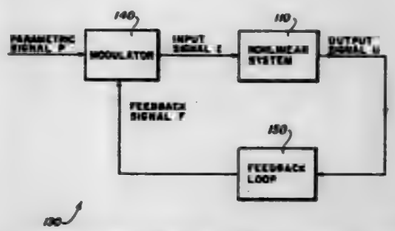
CONTROL SYSTEM FOR TRACKING NONLINEAR SYSTEMS

Ira B. Schwartz, Bethesda, Md.; Ioana Triandaf, Alexandria, Va.; Thomas L. Carroll, Alexandria, Va., and Louis M. Pecora, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1993, Ser. No. 80,155

Int. Cl.[6] G05B *13/02*

U.S. Cl. 364—152 **44 Claims**



1. A system for controlling the operation of a nonlinear system, said system comprising:

(a) means for generating a parametric signal; and

(b) means responsive to the parametric signal for controlling the nonlinear system, said controlling means comprising:

(i) a modulator responsive to the parametric signal and to a feedback signal for producing and applying an input signal to the nonlinear system to cause the nonlinear system to produce an output signal;

(ii) means responsive to the output signal for producing the feedback signal;

(iii) correcting means, operable when the time average of the feedback signal over a selected period of time is substantially nonzero, for bringing the time average of the feedback signal over the selected period of time from a substantially nonzero value to a substantially zero value; and

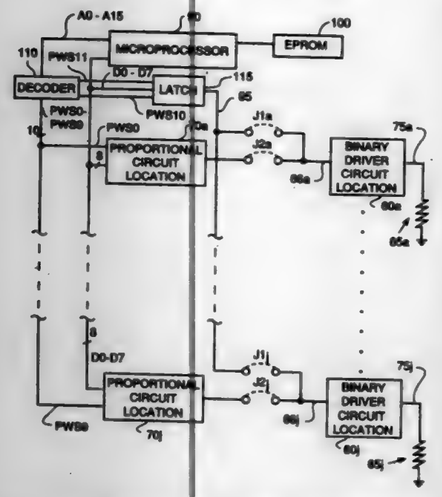
(iv) maintaining means, operable when the time average of the feedback signal over the selected period of time is substantially zero, for maintaining the time average of the feedback signal over the selected period of time at a substantially zero value.

5,442,511

GENERIC SOLENOID DRIVER CIRCUIT BOARD, CIRCUIT AND METHOD OF MAKING SAME

Stephen J. Morey, and Joseph G. Kozlevcar, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 30, 1993, Ser. No. 40,221
Int. Cl.[6] H01H 47/02, 47/04
U.S. Cl. 361—154 3 Claims



1. A generic solenoid driver circuit board for use with a plurality of solenoid driver circuits, comprising:

a plurality of binary driver circuit locations, including electrical runs connecting binary driver component sites in a manner that permits selected binary driver electrical components to function as a binary driver circuit when appropriately installed in the binary driver component sites;

a plurality of proportional driver circuit locations, including electrical runs connecting proportional driver component sites in a manner that permits selected proportional driver electrical components to function as a proportional driver circuit when appropriately installed in the proportional driver component sites;

a memory device;

a decoder device, electrically connected to said plurality of proportional driver circuit locations;

a latch device;

a plurality of first jumper locations, each of said first jumper locations being electrically connected to one of said plurality of binary driver circuit locations and to one of said plurality of proportional driver circuit locations;

a plurality of second jumper locations, each of said second jumper locations being electrically connected to said latch and to one of said plurality of binary driver circuit locations;

a microprocessor electrically connected to said memory device, said decoder, said latch and said plurality of proportional driver circuit locations;

a jumper, wherein said jumper is installed in at least one of said plurality of first or second jumper locations;

wherein at least one of said plurality of binary driver circuit locations is electrically connected to a solenoid; and

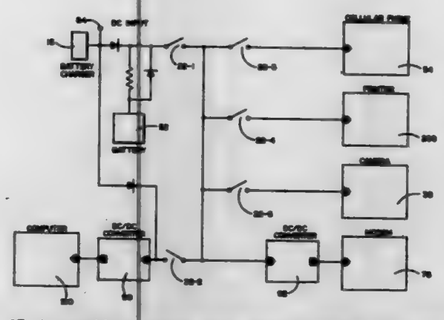
wherein electrical components are inserted in at least one of said plurality of binary driver circuity locations.

5,442,512

MODULAR PORTABLE COMPUTER WORK STATION SELECTIVELY POWERED BY EITHER AN INTERNAL BATTERY, AN INTERNAL BATTERY CHARGER, OR AN EXTERNAL DC INPUT

George M. Bradbury, Bonsall, Calif., assignor to The I.D.E.A. Corporation, Las Cruces, N. Mex.

Continuation of Ser. No. 36,451, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 822,065, Jan. 17, 1992, Pat. No. 5,212,628. This application Aug. 18, 1994, Ser. No. 292,933
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[6] G06F 1/16; H05K 5/02; H02J 7/00
U.S. Cl. 361—683 20 Claims



17. A portable computer work station including a carrying case, a computer and a computer peripheral transported within said carrying case, said carrying case having a body in which said computer and said computer peripheral are located and a cover movable to opened and closed positions relative to said body, said work station comprising:

a battery located within the body of said carrying case and adapted to supply DC power to said computer and to said computer peripheral;

a battery charger located within said carrying case to be connected to an external AC voltage source located outside said carrying case, said battery charger adapted to charge said battery and supply DC power to said computer and to said computer peripheral;

a DC input terminal located on said carrying case to be connected to an external DC voltage source located outside said carrying case, said DC input terminal also adapted to supply DC power to said computer and to said computer peripheral;

at least a first switch connected between said computer and each of said battery, said battery charger and said DC input terminal, said at least first switch being closed to connect said battery and said battery charger and said DC input terminal to said computer to supply power to said computer; and

a second switch connected between said first switch and said computer peripheral, said second switch being closed at the same time that said first switch is closed to connect said battery and said battery charger and said DC input terminal to said computer peripheral to supply power to said peripheral,

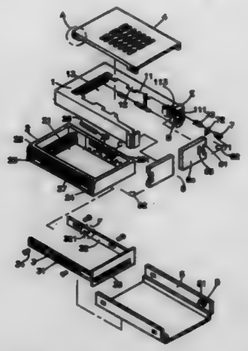
said battery charger and said DC input terminal connected to said computer to supply Dower to said computer when neither said first nor said second switch is closed and said cover is moved to the closed position relative to the body of said carrying case.

5,442,513

HARD DISK DRIVE AND CASING SLIDABLY RECEIVED WITHIN FRAME HAVING DOUBLE-SWINGING DOOR AND LOCK

Hsin Y. Lo, No. 33-5, Hsin Chuang Txu, Kuan Yin Hsiang, Taoyuan Hsien, Taiwan

Filed Feb. 18, 1994, Ser. No. 198,304
Int. Cl.[6] G06F 1/16; H05K 7/10
U.S. Cl. 361—685 1 Claim



1. A hard disk drive comprising:

a base frame fastenable in a hard disk drive slot of a mainframe of a computer, said base frame comprising a longitudinal opening, a double-swinging door to close the hard disk drive slot, two sets of vertically spaced horizontal blocks disposed at two opposite sides and respectively projecting into said longitudinal opening and defining two opposite sliding ways, a lock hole disposed at one side of said double-swinging door;

a casing received inside said base frame within said longitudinal opening, said casing comprising a holding chamber for loading the electric circuit assembly of the hard disk drive from the top, two horizontal guide grooves longitudinally disposed on two opposite long sides thereof, a plurality of first retaining holes respectively disposed on the two opposite long sides at the top, a plurality of through holes respectively made through each sliding groove, a plurality of second retaining holes disposed on the two opposite long sides at the bottom, a track longitudinally disposed at one side, and a tension spring received in said track and having one end fastened to a hook in said track;

a sliding frame connected to said casing and adapted to slide in said sliding ways of said base frame, said sliding frame comprising a front panel, a first slide bar and a second slide bar perpendicularly extending from two opposite ends of said front panel in the same direction, said first and second side bars being respectively inserted into the guide grooves on said casing and movably connected to the trough holes in the guide grooves on said casing by pins, said second side bar having a hook on the side connected to the opposite end of the tension spring being received in said track of said casing, and a guide groove on the outside;

a top cover covered over said casing at the top, having a plurality of raised portions spaced at two opposite sides and respectively engaged into the first retaining holes on said casing;

a bottom cover covered over said casing at the bottom, having a plurality of raised portions spaced at two opposite sides and respectively engaged into the second retaining holes on said casing;

a lock device supported on a spring and retained in the lock hole on said base frame by a spring plate, having a side lock bolt for locking said sliding frame inside said base frame; and

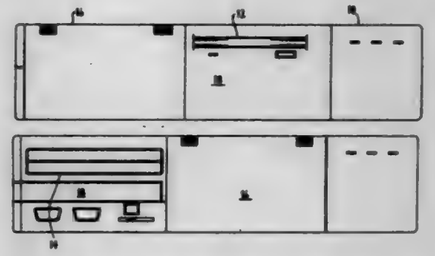
wherein when said sliding frame is inserted into the sliding ways of said base frame and supported between said horizontal blocks of said base frame, said double-swinging door is opened and received in the sliding ways of said base frame, and the lock bolt of said lock device is guided into the guide groove on said second side bar of said sliding frame to lock said sliding frame inside said base frame; when said lock device is turned by a key to release said lock bolt from the guide groove on said second side bar of said sliding frame, the spring in said track of said casing gives an outward pressure to said sliding frame causing said sliding frame to be ejected out of said base frame.

5,442,514

COMPUTER HAVING MOVABLE SHUTTER SELECTIVELY PROVIDING ACCESS TO STORAGE MEDIA RECEIVERS AND CORRESPONDING OPERATING SYSTEMS

Robert A. Hopkins, Basildon, United Kingdom, assignor to Amstrad Public Limited Company, Essex, United Kingdom

PCT No. PCT/GB93/00998, § 371 Date Jan. 7, 1994, § 102(e) Date Jan. 7, 1994, PCT Pub. No. WO93/23852, PCT Pub. Date Nov. 25, 1993
PCT Filed May 14, 1993, Ser. No. 178,299
Claims priority, application United Kingdom, May 14, 1992, 9210370
Int. Cl.[6] G06F 1/16; H05K 5/02; B65D 43/20
U.S. Cl. 361—686 6 Claims



1. A computing apparatus configured to operate in a manner compatible with two or more operating systems, comprising first means for receiving media on which are stored programs for the first operating system, second means for receiving media on which are stored programs for the second operating system, and further comprising a shutter movable between a first position in which the first receiving means is accessible for insertion of program bearing media and in which the second receiving means is inaccessible, and a second position in which the second receiving means is accessible and the first receiving means is inaccessible.

5,442,515

METHOD AND APPARATUS FOR CONTROLLING THE CURRENT THROUGH A MAGNETIC COIL

Johan Wallaert, Assebroek, Belgium, assignor to Clark Equipment Company, Statesville, N.C.

Continuation of Ser. No. 987,761, Dec. 8, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 344,526
Claims priority, application Germany, Dec. 10, 1991, 41 40 586.2
Int. Cl.[6] H02H 3/093; H01H 47/32
U.S. Cl. 361—187 15 Claims

1. A method for maintaining a non-zero current flow through a coil near a desired value, the coil connected in series with a resistor and with a switch and coupled to an external

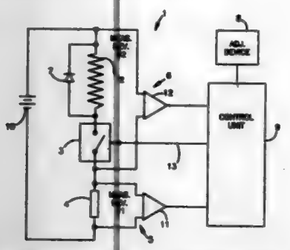
source of substantially d.c. electrical potential difference to energize the coil, the switch controlling energization of the coil by the external source and being switchable between a closed position permitting energization of the coil and an open position preventing energization of the coil, said method comprising the steps of:

a) measuring a value of a voltage drop across the resistor;

b) measuring a value of a voltage drop across the coil;

c) determining a value of current flow through the coil based on the measured value of resistor voltage drop and a resistance of the resistor;

d) determining a value of resistance of the coil based on the measured value of coil voltage drop and the determined value of current flow through the coil;



e) determining a portion of a predetermined cycle time period during which the switch should closed thereby supplying a pulsed signal to the coil so as to maintain the current flow through the coil near the desired current flow based on the determined values of the current flow through the coil and the coil resistance;

f) alternately opening and closing the switch such that it is closed for the determined portion of each cycle time period to energize the coil; and

g) repeating steps a) through f) at predetermined, regular intervals of time so as to determine a revised value for a portion of the predetermined cycle time period during which the switch should be closed and, based on the revised portion of cycle time value, adjusting the opening and closing of the switch such that it is closed for the revised portion of the cycle time to energize the coil.

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METHOD FOR CONTROLLING ELECTRIC CHARGE MOVEMENT BY SEGEMENTING CONDUCTIVE SURFACE

J. Peter Moncrieff, 408 Mason Rd., Vista, Calif. 92084

Continuation-in-part of Ser. No. 6,370, Jan. 19, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 176,333

Int. Cl.[6] H01G *4/005*

U.S. Cl. 361—303 **13 Claims**



1. A wound capacitor comprising,

a first electrode comprising a first plurality of discrete segments joined by a first electrical conductor along one edge of said first electrode,

a dielectric layer,

a second electrode comprising a second plurality of discrete segments joined by a second electrical conductor along one edge of said second electrode,

said first electrode, said dielectric layer, and said second electrode being wound into a spiral of N turns, said first and second electrodes being spaced apart by a distance H, wherein each of said segments is approximately of a length L, where $L=4\pi H N$.

5,442,517

CELLULOSE TRIACETATE, THIN FILM DIELECTRIC CAPACITOR

Shiao-Ping S. Yen, Altadena, Calif., and T. Richard Jow, Chatham Township, N.J., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 28, 1993, Ser. No. 71,416

Int. Cl.[6] H01G *4/18*

U.S. Cl. 361—305 **9 Claims**



8. A capacitor comprising in combination:

a film of dielectric; and

an electrode disposed on each side of said film comprising a film of cellulose triacetate having a thickness below 2 μm and having an upper and lower surface, each of said surfaces being metallized.

5,442,518

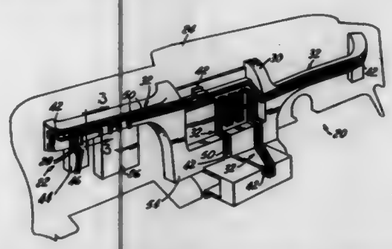
WIRING SYSTEM FOR VEHICLE INSTRUMENT PANEL WIRE ENCAPSULATED IN RECONFIGURED VENTILATION SYSTEM

William M. Beam, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 989,867, Dec. 14, 1992, abandoned. This application Jul. 6, 1994, Ser. No. 271,225

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—690 **18 Claims**



14. A wiring system for use on a vehicle, the vehicle of the type having an instrument panel, the wiring system comprising:

at least one wire;

a plurality of electronic subassembly components adapted to be mounted in proximity to the instrument panel, each said subassembly component being electrically connected to at least one wire;

a ductwork housing structure extending at least between said subassembly components, said ductwork housing structure including a wall defining an air chamber for circulation of air within the vehicle, said wall of said ductwork housing structure having an external surface opposing said air chamber;

at least one trough formed on said external surface of said wall of said ductwork housing structure, said at least one trough being defined by a pair of spaced trough side walls, said at least one trough having a finite length in at least one axial direction and having an opening extending substantially along said length for receiving said at least one wire connected to at least one of said subassembly components;

restraining means for restraining said at least one wire within said at least one trough said restraining means attached to said trough; and

a wire connector integrally disposed in said wall of said ventilation duct structure, said wire connector receiving said at least one wire, said wire connector having electrical contact with one of said plurality of electronic subassembly components.

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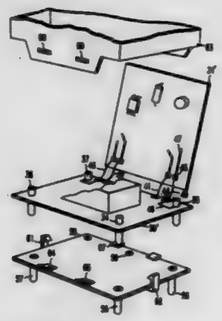
DEVICE INCLUDING A MAINTENANCE TERMINATION UNIT AND PROTECTOR

George A. DeBalko, Township of Washington, Morris County, and Rajendra S. Rana, Township of Franklin, Somerset County, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,017

Int. Cl.[6] H05K *1/11*

U.S. Cl. 361—784 **6 Claims**



1. A device comprising:

a base member with a plurality of conductive pins extending therefrom;

a first printed circuit board including a protector unit mounted thereon, said first board being mounted to a major surface of the base member and electrically connected to the pins; and

a second printed circuit board including a maintenance termination unit mounted thereon, said second board being mounted to the base member in a position essentially orthogonal to the first board and electrically connected thereto by means of a plurality of wires.

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APPARATUS FOR PRINTED CIRCUIT BOARD CONNECTION

James J. Kemp, Pleasant Plain; John L. DeJager, Milford; Thomas L. Allgeyer, Cincinnati, and Jack E. Schenkel, Mason, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jul. 1, 1994, Ser. No. 269,728

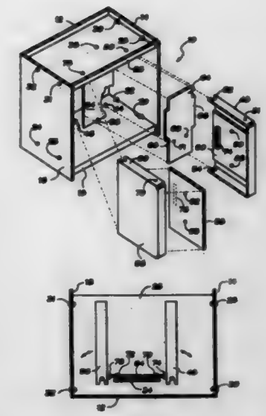
Int. Cl.[6] H01R *23/68*; H05K *7/14*

U.S. Cl. 361—785 **6 Claims**

1. An apparatus for providing interconnections of two personal computer style printed circuit mother boards, the interconnection to each mother board being made through a connecting socket thereon, the apparatus comprising:

a. a bridge printed circuit board having two edge connectors for mating engagement with the sockets of the mother boards, the edge connectors being disposed on opposing edges of the bridge printed circuit board;

b. support means for supporting the mother boards parallel to each other and substantially perpendicular to the bridge printed circuit board so that an edge connector of the bridge printed circuit board is inserted into the mating



socket of each mother board, the support means including a pivotable support for at least one mother board, the mother board and its pivotable support being arranged so that an edge connector of the bridge printed circuit board is inserted into and removed from the mating socket of one of the mother boards by pivoting of the pivotably supported mother board.

5,442,521

CIRCUIT BOARD ASSEMBLY

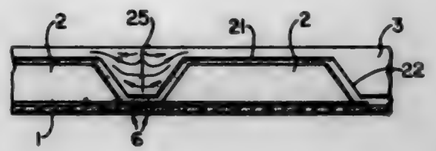
Timo Hirvonen, Salo; Ari Leman, Pertteli; Veli-Matti Vilkman, Salo; Petri Hosal, Salo; Jari Olkkola, Salo, and Lasse Uronen, Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Division of Ser. No. 183,577, Jan. 18, 1994, Pat. No. 5,400,949, which is a continuation of Ser. No. 945,607, Sep. 16, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,640

Claims priority, application Finland, Sep. 19, 1991, 914436

Int. Cl.[6] H05K *9/00*; H01L *23/28*

U.S. Cl. 361—800 **1 Claim**



1. A combined casing and circuit board assembly comprising:

a circuit board having a substrate and an electronic component mounted to a first side of the substrate;

a housing for interference shielding attached to the first side of the substrate, the housing having a top surface and a wall inclined relative to the top surface and a plane orthogonal to the plane of the substrate, the housing enclosing the electronic component; and

a casing having the housing embedded therein, the first side

of the substrate being located substantially adjacent the casing, but a second opposite side of the substrate being substantially open, the casing being relatively thin at the top surface and progressively increasing in thickness along the wall such that the casing adds structural strength to the wall and eddying of material of the casing is limited around the housing to form a strong combined casing and circuit board assembly.

5,442,522

WIDE DIMMING RANGE BACKLIGHT FOR LIQUID CRYSTAL DEVICES

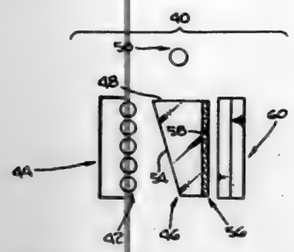
Michael H. Kalmanash, Los Altos, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

Filed May 18, 1994, Ser. No. 246,175

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[6] F21V *9/04, 7/22*

U.S. Cl. 362—26 **22 Claims**



1. An LCD lighting system comprising:
a wedge-shaped block of light transmitting material, having a substantially planar display surface and a substantially planar under surface, said surfaces converging at an acute optimum angle, and an end surface opposite the converging end;
a first light source, capable of emitting full spectrum visible light, said first light source being adjacent to one of said surfaces surface such that light from said first light source enters said block through said one of said surfaces;
a second light source positioned to be adjacent to said end surface such that light from said second light source enters said block through said end surface; and
means for disabling said first light source during night viewing, whereby light from said first and second sources is emitted from said planar surface display surface.

5,442,523

BACKLIGHTING DEVICE

Keiji Kashima; Naoki Yoshida, both of Kanagawa; Osamu Shoji, Tokyo; Eiichi Yanagi, and Takumi Fukunishi, both of Kanagawa, all of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Aug. 21, 1992, Ser. No. 933,208

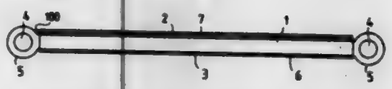
Claims priority, application Japan, Aug. 22, 1991, 3-233799; Sep. 4, 1991, 3-250327; Sep. 27, 1991, 3-275022; Oct. 29, 1991, 3-308196

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[6] F21V *5/02, 8/00*

U.S. Cl. 362—31 **6 Claims**

1. A backlighting device for use with display panels comprising:
a light conducting plate made of a light-transmissive material, one of the major faces of said light conducting plate being provided with a light diffusing capability and covered with one of a specular and light diffusing/reflecting plate;
a linear light source provided in proximity to at least one end portion of said light conducting plate; and
directivity enhancing means provided on an exit face of the light conducting plate for enhancing a directivity of light emitted from said light conducting plate in directions close to a line dropped perpendicular to said exit face, said directivity enhancing means being entirely transparent



and comprising at least one sheet that has a plurality of raised structures having straight ridgelines formed at minute intervals on a same side of said at least one sheet in such a manner that the straight ridgelines are substantially parallel to one another and said raised structures extend outward in a direction of light transmission, a distance between vertices of adjacent ones of said ridgelines being in a range of 10–1000 μm.

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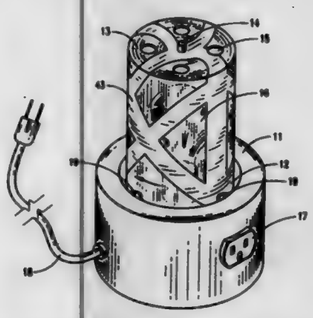
SECURITY ENHANCEMENT APPARATUS

Larry Q. Farmer, 9037 E. 29th Pl., Tulsa, Okla. 74129-6819

Filed Jul. 16, 1993, Ser. No. 92,066

Int. Cl.[6] F21V *21/30*

U.S. Cl. 362—35 **20 Claims**



1. A method of reducing the incidence of unauthorized entry into residential and commercial structures by providing the impression of occupancy by a human presence within such structures during the hours of darkness comprising the steps of:
a) providing a primary light source adapted for casting differing moving patterns of light and shadow upon and across the interior surfaces of translucent window coverings at a randomly variable frequency and speed of passage;
b) periodically causing the illumination and extinguishment of a secondary light source in a different room of such structures; and
c) causing these events to occur on an apparently random basis.

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VEHICLE LAMP

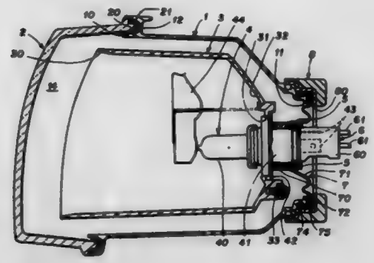
Hiroyuki Tsukada, Isehara, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,296

Claims priority, application Japan, Dec. 28, 1992, 4-089165 U

Int. Cl.[6] F21M *3/00*; F21V *31/02*

U.S. Cl. 362—61 **11 Claims**



1. A vehicle lamp, comprising:
a housing having a front and rear openings;
a front lens fixed over the front opening of the housing and defining a lamp bulb enclosure together with the housing;
a reflector tiltably disposed inside the lamp bulb enclosure and having a rear opening opposite to the rear opening of the housing;
a lamp bulb assembly including a lamp bulb, a base formed integrally with the lamp bulb, and a plurality of terminals projected from the base, the lamp bulb assembly being inserted through the rear opening of the housing and fixed to an circumferential edge of the rear opening of the reflector;
a waterproof cover fitted in a watertight manner on the base of the lamp bulb assembly and to the circumferential edge of the rear opening of the housing;
a connector rigidly fittable onto the plurality of terminals projected out of the lamp bulb enclosure from the waterproof cover and extending from an end of the base of the lamp bulb assembly, for an electrical connection between the lamp bulb assembly and a car battery; and
a sealing member for resiliently sealing a clearance between the base of the lamp bulb assembly and the connector opposite to the base, the sealing member being resiliently deformed to seal the clearance when the connector is pressed against the sealing member and rigidly fitted onto the plurality of terminals.

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VEHICLE REFLECTOR ILLUMINATING SYSTEM

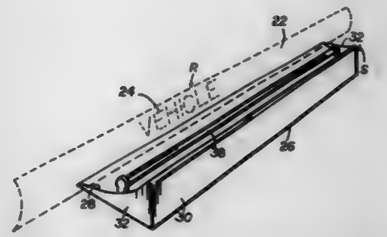
George Stowe, Jr., 4488 W. 61st St., Los Angeles, Calif. 90043

Filed Mar. 25, 1994, Ser. No. 217,554

Int. Cl.[6] G09F *13/00*

U.S. Cl. 362—61 **21 Claims**

19. A reflector illuminating lighting system for reflecting light incident on a reflector on a body of a vehicle and which reflector has a light reflective surface with a high degree of reflectivity to provide a unique lighting effect, said reflector also having indicia on said reflective surface thereof and which indicia is readily visually apparent in normal daylight but which becomes obscured in darkness or poor light conditions so that the reflective surface appears as a dark surface, said lighting system comprising:
a) an upwardly opening elongate frame;
b) light generating means on said elongate frame located in spaced relation to said reflector for generating light which is incident on said reflector;
c) mounting means associated with said frame for mounting said frame on said vehicle in a position in close proximity to and adjacent to an edge of the reflector so that light from the light generating means is incident on said reflector at a substantial angle to a plane extending in perpendicular relationship to a surface of the reflector, the light reflecting from the surface of the reflector causing illumination of the reflector so that the indicia on the reflector may become readily visually apparent even in darkness or poor light conditions; and
d) means for connecting said light generating means to a source of electrical power.



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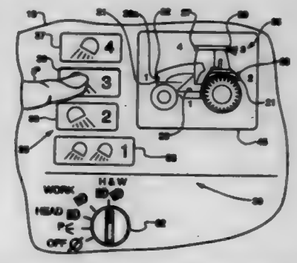
LIGHTING CONTROL SYSTEM FOR TRACTORS

Kent M. Wichelt, Blue Grass, Iowa, assignor to New Holland North America, Inc., New Holland, Pa.

Filed Oct. 5, 1994, Ser. No. 318,411

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 362—61 **22 Claims**



1. In a tractor having a wheeled chassis adapted for movement over the ground; an engine supported on said chassis for providing operative power for said tractor; lights supported from said chassis at selected locations, said lights being grouped into a parking light group, a headlight group and a working light group; and an operator's station supported on said chassis for supporting controls for controlling the operation of said tractor, said controls including steering means for controlling the direction of movement of said tractor, engine control means for controlling the operation of said engine, lighting control means for controlling the illumination of said lights, and an instrument cluster containing displays reflecting the operation of said engine and said tractor, an improved lighting control means comprising:
a first lighting switch means for controlling the illumination of groups of lights, said first lighting switch means being operable to select between an off position and a plurality of on positions, each of said on positions selecting the illumination of respective said groups of lights, at least one of said groups of lights including individual sub-groups of lights; and
a second lighting switch means for selectively controlling the illumination of each respective said individual sub-group of lights within said at least one of said groups of

lights, such that the movement of said first lighting switch means to select the illumination of said at least one group of lights will enable said second lighting switch means to select the illumination of each individual sub-group of lights within said at least one group of lights between corresponding on and off positions.

5,442,528

LIGHTING DEVICE WITH NOVEL NECK MECHANISM

Rudy A. Vandenbelt, 1705 Abbey Rd., Ottawa, Ontario, Canada K1G 0H2

Filed Dec. 30, 1993, Ser. No. 176,580
Int. Cl.[6] A47B *19/00*
U.S. Cl. 362—98 **13 Claims**



1. A lighting device comprising:
(a) a base member;
(b) a neck member connected to said base member and comprising individual vertebrae segments strung together on longitudinal electrically conductive members, said neck member being capable of slideably moving from a first position in which said neck member is fully extended out of said base member to a second position wherein said neck member is positioned over said base member;
(c) light means located at top end of said neck member; and
(d) said conductive neck members possessing a memory effect which returns said neck member substantially to a curved state in said first position when extended from said second position to said first position and forming at least part of an electrical path to said light means.

5,442,529

COMBINATION KNIFE, LIGHT AND KEY CHAIN DEVICE

Richard P. Hoover, 17849 149th Ave. NE., Woodinville, Wash. 98072

Filed Apr. 4, 1994, Ser. No. 225,839
Int. Cl.[6] B26B *1/00*
U.S. Cl. 362—119 **4 Claims**



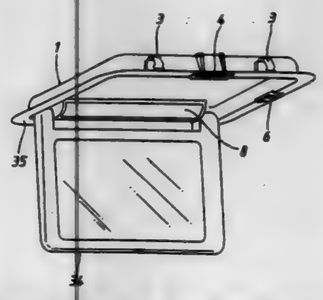
1. A combination pocket device comprising:
an upper body portion, a lower body portion, and a divider for dividing and connecting said upper and lower body portions;
a cavity formed by said upper body portion, lower body portion, and divider;
a knife blade having a cutting edge, said blade having means to move said blade at least partially into said cavity to a closed position and means to move said blade out of said cavity to an extended position where said cutting edge is exposed;
a light device housed and enclosed entirely within said upper body portion and comprising a bulb, a battery, a pair of electrical contacts engageable with said battery, and a manually operable switch for moving one of said electrical contacts into and out of engagement with said battery to provide power to said bulb;
said upper body portion having a longitudinal opening disposed at a first end of said upper body portion to allow said bulb to shine light therethrough when said bulb is illuminated;
an aperture extending through said upper and lower body portions, said aperture positioned adjacent said first end of said upper body portion; said aperture having a split ring disposed therethrough for attachment of a plurality of keys.

5,442,530

MIRROR WITH ILLUMINATING DEVICE, IN PARTICULAR FOR MOTOR VEHICLES

Lothar Viertel, Altforweiler, Germany, and Patrick Welter, La Chambre, France, assignors to Gebr. Happich GmbH, Germany

Filed Jul. 26, 1994, Ser. No. 280,492
Claims priority, application Germany, Aug. 4, 1993, 43 26 102.7
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—137 **20 Claims**



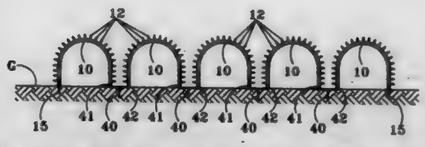
1. Illuminated mirror apparatus adapted particularly for motor vehicles, said apparatus including:
a generally rectangular shallow trough-like housing (1) having a main rear wall;
a cover (34) including a mirror (14), said cover being pivotally mounted to said housing (1) along an edge thereof for movement between a closed and an open position, in said closed position said cover (14) being forward of said rear wall and generally parallel thereto with said mirror (14) concealed, and in said open position said mirror (14) being outside of said housing (1) and being accessible for use;
an illuminating device mounted to said housing (1) and including a source of electric light (11) and a dispersion screen (8);
said cover (34) having a recess that provides clearance for said dispersion screen (8) when said cover (34) is in said closed position;
said housing (1) being equipped with an electric circuit (7, 16, 20,) and a switch (6) connected in said circuit, said switch (6) being operable to first, second and third positions;
said switch (6) when operated to said first position turning said light (11) off, said switch when in said second position enabling said light (11) to be turned on and off responsive to closing and opening of a vehicle door, and said switch (6) when in said third position enabling said light to be turned on and off by pivoting said cover (34) to said open and closed positions.

5,442,531

MODULAR LIGHT DISPLAY APPARATUS

Kuo-Hsing Lee, 10139 Duchamp, Houston, Tex. 77036

Filed May 23, 1994, Ser. No. 247,683
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—249 **10 Claims**



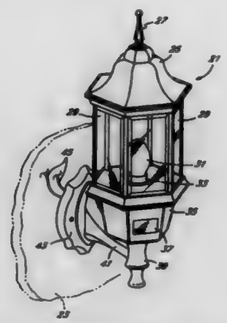
1. Modular light display apparatus for mounting a string of electric lights which has a plurality of light sockets and corresponding light bulbs connected at spaced intervals to electrically conducting wire, said light display apparatus comprising two or more pre-shaped modular light holders having adjacent ends which are provided with sockets which are removably engageable with corresponding upwardly directed prongs provided by a forked upper end of a stake which is insertable into the ground to provide for independent mounting of said string of electric lights in a display of predetermined configuration, each of said modular light holders comprising an elongated member of generally U-shaped cross-section to provide a channel in which said string of electric lights may be disposed, said elongated member being provided within said channel with a plurality of uniformly spaced holders each one of which is engageable with one of the light sockets of said string of electric lights so that when viewed from at least one side of said modular light holder said light socket is hidden within said channel and said light bulb projects upwardly from said channel to provide said display of predetermined configuration.

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DECORATIVE LIGHTING FIXTURE FOR MOTION DETECTION

Charles A. Boulos, and Syed M. A. Hussain, both of Chino, Calif., assignors to Pace Control Technologies, Inc., Chino, Calif.

Filed Jul. 30, 1993, Ser. No. 99,732
Int. Cl.[6] F21V *25/00*
U.S. Cl. 362—276 **13 Claims**



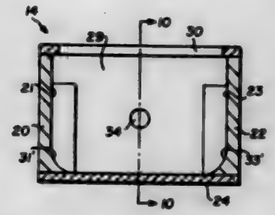
1. A light fixture employing motion detection circuitry comprising:
base housing means for housing motion detection circuitry including a motion detection sensor, said base housing means including a hollow support having a surrounding wall and a base plate portion having an aperture;
support means for supporting said base housing means, said base housing means being selectively and rotatably displaceable about a vertical axis to control the azimuthal orientation of said motion detection sensor, said support means including (1) a support having a wall base portion for mounting on a generally vertical wall, (2) a support arm portion extending from said base portion, and (3) a vertical bearing portion having an internally threaded generally vertical bore supported by said support arm portion;
encasement means for encasing a light emitting appliance, said encasement means being secured to said base housing means; and,
means for removing said encasement means from said base housing means, said means for removing said encasement means including a threaded member threadedly engaging said base plate portion and said encasement means and said vertical bore of said vertical bearing portion.

5,442,533

HIGH EFFICIENCY LINEAR LIGHT SOURCE

Martin C. Kaplan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1994, Ser. No. 263,638
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—303 **18 Claims**



1. A linear light source comprising:
a source for producing a beam of radiation; and
an elongated light integrator forming a light integrating cavity defined by cavity end walls and a side wall extending therebetween and having diffusely-reflecting interior surfaces, said cavity walls having an input port through which said beam is introduced into said cavity and a light output slit in said side wall extending generally parallel to a longitudinal axis of said cavity, a portion of interior surfaces of said side wall and end walls defining a source region for light reflected through said light output slit, wherein the junctions of said side wall and said end walls are formed in arcuate sections for reducing drop out in brightness of light reflected from said source region at the junctions.

5,442,534

ISOLATED MULTIPLE OUTPUT CUK CONVERTER WITH PRIMARY INPUT VOLTAGE REGULATION FEEDBACK LOOP DECOUPLED FROM SECONDARY LOAD REGULATION LOOPS

Slobodan Cuk, Laguna Hills, and Ljubisa Stevanovic, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 23, 1993, Ser. No. 21,841
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—16 **10 Claims**

1. In a dc-to-dc switching-mode converter having a power transformer for isolation between a primary side power stage connected to a dc voltage source and a secondary side power conversion stage connected to a load, said dc-to-dc switching mode converter having two nonisolated feedback circuits, one on the primary side and the other on the secondary side of said power transformer, which decouple output voltage regulation due to any change in said input voltage from regulation of

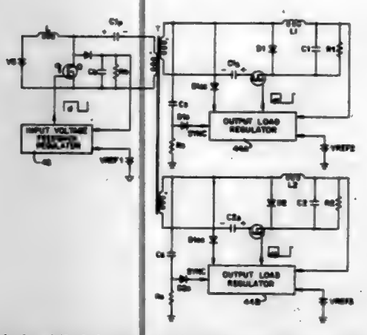
output voltage to said load due to load current changes, thereby obviating entirely the need for any isolation in said two nonisolated feedback circuits,

said primary side feedback circuit regulating against changes in input voltage from said dc voltage source by controlling pulse width modulation of a duty ratio, d, of a controllable switch in said primary side power stage,

said secondary side feedback circuit regulating against load current changes by controlling pulse width modulation of a duty ratio, d_1, of a current bidirectional controllable switch in said secondary side power conversion stage,

said primary side feedback circuit being decoupled from said secondary side feedback circuit, whereby any change to said input voltage will not affect said duty ratio, d_1 of said current bidirectional controllable switch of said secondary side power conversion stage,

sensing means on said primary side power stage for sensing the switch-off voltage of the primary side controllable



switch while it is turned off and feedback means for regulation of said switch-off voltage sensed through said primary side feedback circuit without a need for isolation in a circuit from said sensing means to said feedback means,

said primary side and secondary side controllable switches being turned on simultaneously and at a constant switching frequency, and turned off under control of their respective nonisolated feedback circuits, and

means for synchronously turning on said secondary side controllable switch with said primary side controllable switch without need for isolation in said synchronization means,

whereby overall conversion gain A of said dc-to-dc converter is the product of two gains A_1 and A_2, where A_1 is dependent only on said duty ratio, d, of said primary side controllable switch, while A_2 is dependent only on said duty ratio, d_1, of said secondary side current bidirectional controllable switch.

5,442,535

METHOD AND APPARATUS FOR CONTROLLING AN ELECTROMECHANICAL LOAD BY LEAST ONE PULSE SWITCH

John M. Bourgeios, Roquefford la Bedoule, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Mar. 9, 1993, Ser. No. 28,405

Claims priority, application France, Mar. 10, 1992, 92 02859

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—16 **14 Claims**

1. A method for controlling an electromechanical load driven by at least one electronic pulse switch converter, comprising the steps of:

receiving, by said converter, at least one binary switching signal defined by a cyclic ratio and a switching period,

controlling at least one of a current intensity and a voltage intensity to a level desired for the load,

varying the switching period to submerge a ripple induced, by the at least one switching signal, on at least one of the current intensity and the voltage intensity in natural noise frequencies of the load,

varying the cyclic ratio to submerge a ripple induced, by the at least one switching signal, on at least one of the current intensity and the voltage intensity in natural noise frequencies of the load,

wherein a mean of the switching period corresponds to a period of a frequency of a natural noise of the load,

wherein each switching period comprises a conduction time and a blocking time and wherein a random value is introduced into at least one of the switching period and the blocking time and the conduction time,

further comprising the step of, for a given natural noise level of the load and for a given load control intensity of voltage level, assigning at least one of the blocking time and the conduction time of each switching pulse a constant value according to

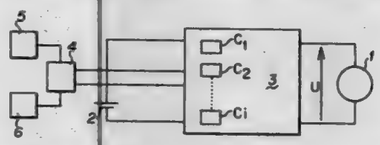
at least one of the intensity and the voltage level, and the mean switching period,

further comprising the step of assigning a randomly chosen value to at least one of a supplementary blocking time and a conduction time for the switching pulse,

further comprising the steps of determining a mean cyclic ratio desired for the switch, determining whether the mean cyclic ratio is greater or less than 50%, and

if the mean cyclic ratio value is greater than 50%, assigning the conduction time of a switching pulse a random value and the blocking time a predetermined constant value chosen so that the cyclic ratio assumes the mean value,

if the mean cyclic ratio value is less than 50%, assigning the blocking time of a switching pulse a random value and the



conduction time a predetermined constant value chosen so that the cyclic ratio assumes the mean value,

the conducting time and blocking time in both cases being brought to a temporal value such that the mean switching period assumes a value corresponding to the natural noise of the load.

11. An apparatus for controlling an electromechanical load, comprising:

means for supplying a voltage or current to the load;

means, coupled to the means for supplying, for generating a switching signal to control the means for supplying, the switching signal having a cyclic ratio and a switching period wherein the cyclic ratio is maintained at a level so that the means for supplying supplies a desired voltage or current to the load;

means, coupled to the means for generating, for controlling the cyclic ratio and the switching period of the switching signal so that a frequency of a ripple induced on the desired voltage or current by the switching signal is submerged in at least one noise frequency of the load;

wherein the at least one noise frequency includes the natural noise frequencies of the load;

further comprising means, coupled to the means for generating, for providing random numbers used to determine the switching period of the switching signal;

wherein the switching period includes a conduction time and a blocking time, and wherein the means for controlling assigns at least one of the blocking time and the conduction time a constant value according to

at least one of the voltage and the current; and

a mean switching period; and

assigns a random value to at least one of a supplementary blocking time and a conduction time;

wherein the means for controlling determines the mean cyclic ratio and whether the mean cyclic ratio is greater than or less than 50% and, if the mean cyclic ratio value is greater than 50%, assigns the conduction time a random value and the blocking time a predetermined constant value so that the cyclic ratio is substantially equal to the mean value.

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LOW-LOSS POWER SUPPLY DEVICE COMPRISING A DC/DC CONVERTER

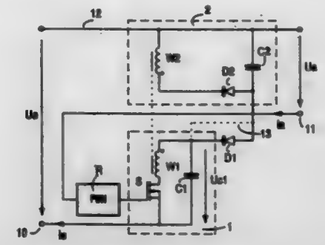
Andreas Zimmermann, Nürnberg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,710

Claims priority, application Germany, Apr. 2, 1992, 42 10 980.9

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—20 **19 Claims**



1. A power supply device for generating at least one output voltage (Ua) from an input voltage (Ue) having an absolute value higher than that of the output voltage comprising: a DC/DC converter which comprises a primary circuit and a secondary circuit and with the primary circuit connected in series with the secondary circuit, wherein the primary circuit of the DC/DC converter is adapted to apply a difference voltage (U_{c1}) formed from the output voltage and the input voltage and the secondary circuit is arranged to generate the output voltage, and the primary circuit comprises at least one input capacitor and the secondary circuit comprises at least one output capacitor which is connected in series with the input capacitor, the input voltage being applied to the series connection of the input capacitor and the output capacitor and the output capacitor being arranged to derive the output voltage.

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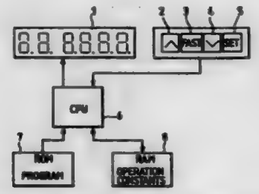
METHOD FOR SETTING OPERATION CONSTANTS IN AN INVERTER DEVICE

Masataka Ooji, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 41,234, Apr. 1, 1993, abandoned. This application Mar. 29, 1994, Ser. No. 219,835

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—43 **8 Claims**



1. A control system for setting operation constants in an inverter device, the inverter device variably controlling the speed of an induction motor, said control system comprising:

a display for displaying the current value of the operation constants;

an up key for increasing an increment constant corresponding to a motor operation constant increase made after a time interval;

a down key for decreasing an increment constant corresponding to a motor operation constant decrease made after a time interval;

a fast feed key for increasing the speed at which possible increment constants are displayed; and

a set key for setting the displayed increment constant for the motor operation constant.

5,442,538

APPARATUS FOR CONTROLLING POWER CONVERTER BASED ON OUTPUT CURRENT

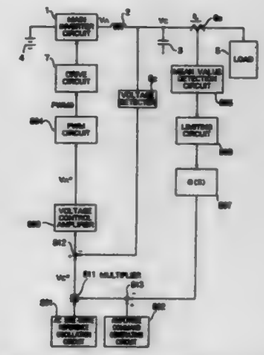
Katsumi Ikeda, and Yushin Yamamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 178,204

Claims priority, application Japan, Jan. 7, 1993, 5-001387; Jul. 8, 1993, 5-168778

Int. Cl.[6] H02M *3/24*

U.S. Cl. 363—95 **25 Claims**



1. A control apparatus for controlling a power converter having a plurality of switching devices and enabling AC-converted output to be obtained to supply arbitrary AC outputs to a load, said apparatus for controlling a power converter comprising:

voltage command value generating means for generating a voltage command voltage to be transmitted from said power converter including:

a reference sine-wave oscillation circuit for generating reference sine-waves,

a command amplitude value generating means for generating a command amplitude value for commanding the amplitude of the voltage to be transmitted from said power converter, and

a multiplier for multiplying the referenced sine-wave and the command amplitude value;

voltage control means for controlling a plurality of switching devices of said power converter in accordance with command voltage level;

electric current detection means for detecting an output electric current to be supplied from said power converter to said load; and

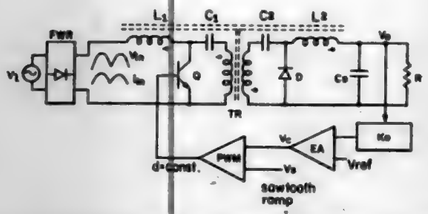
electric current limiting means for restricting said command voltage level to be supplied to said voltage control means in accordance with a value detected by said electric current detection means.

5,442,539

CUK DC-TO-DC SWITCHING CONVERTER WITH INPUT CURRENT SHAPING FOR UNITY POWER FACTOR OPERATION

Slobodan Cuk, Laguna Hills, and Milivoje Brkovic, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 2, 1992, Ser. No. 956,669
Int. Cl.[6] H02M *7/217*
U.S. Cl. 363—89 **6 Claims**



1. A process for ideally providing a DC voltage to a load from a rectified AC power line source with unity power factor using a Ćuk dc-to-dc converter which comprises

an input inductance, an energy transfer capacitance, an output inductance, and an energy storage capacitance in parallel with a load,

means for connecting said input inductance, said energy transfer capacitance, said output inductance and said load in series to form a series circuit,

said series circuit having a junction between said input inductance and said energy transfer capacitance, and a junction between said energy transfer capacitance and said output inductance,

and switching means for alternately connecting said junction between said input inductance and said energy transfer capacitance, and said junction between said energy transfer capacitance and said output inductance, to return current paths for said rectified AC power line source and load,

said process comprising operation of said switching means in a discontinuous inductor current mode at a constant switching frequency with a controlled duty ratio which remains constant for a given condition of AC power line voltage and load current, thereby providing ac-to-dc conversion with unity power factor, and making the average input current to the Cuk converter directly proportional to rectified AC power line voltage without any need for input current feedback control,

said Ćuk converter having nonpulsating input current even in discontinuous inductor current mode unlike all other switching converters having pulsating input current in discontinuous inductor current mode, thereby minimizing high frequency harmonic currents fed back to the AC line.

5,442,540

SOFT-SWITCHING PWM CONVERTERS

Guichao C. Hua, and Fred C. Lee, both of Blacksburg, Va., assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Continuation-in-part of Ser. No. 897,674, Jun. 12, 1992, Pat. No. 5,262,930. This application Jun. 25, 1992, Ser. No. 903,859
Int. Cl.[5] H02M *7/5387*
U.S. Cl. 363—98 **4 Claims**

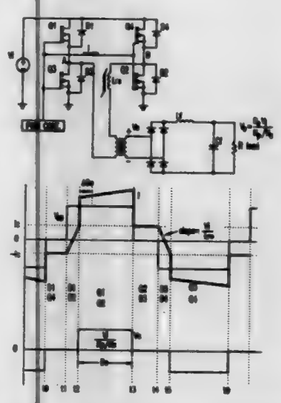
1. A full-bridge, phase shifted, pulse-width-modulated, zero-voltage-switching, d.c.-to-d.c. converter, comprising in combination:

a d.c. voltage input;

a transformer having a primary winding and a secondary winding;

switching means including four transistor switches configured in a full-bridge network for coupling said d.c. voltage input to said transformer primary winding, said full bridge network being comprised of a first half-bridge network and a second half-bridge network connected in parallel;

a phase shifted, pulse-width-modulating controller for opening and closing said semiconductor switches in a phase-



shifted sequence between switches in said first half-bridge network and a second half-bridge network for pulse-width modulating said d.c. voltage input; and

resonant circuit means, including a saturable reactor that stores energy and discharges parasitic capacitance of said transistor switches to establish a resonating voltage drop across each of said four transistor switches, which resonating voltage drop is substantially zero across said each of said four semiconductor switches at a time it switches from an off to an on state.

5,442,541

ENABLING FEATURES OVER COMMON COMMUNICATION CHANNEL

Randall R. Hube, Rochester; Louis J. Cardinale, Webster; Christopher J. Auclair, Fairport, all of N.Y., and Theodore W. Thomas, Olympia, Wash., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1993, Ser. No. 94,949
Int. Cl.[6] G05B *15/02*
U.S. Cl. 364—138 **15 Claims**

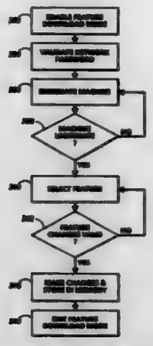
1. In an imaging system having a control for producing images of documents provided with editing indicia on image supporting substrates, the system including a machine having a plurality of operating components and a central station remote from the machine, the machine and the central station being interconnected by a communication channel, the machine having a plurality of predetermined activated editing features available to a machine operator, a method for activating an editing feature different from said activated features, the editing feature being previously inactive and unavailable to a machine operator, the editing feature providing changes of original images to the images on the supporting substrates in response to the editing indicia, including the steps of

identifying the machine at the central station for having said additional editing feature enabled,

communicating with the machine over the communication channel interconnecting the machine and the central station,

responding at the machine that said additional editing feature is a valid feature for said machine,

enabling from the central station said additional editing feature for the machine, said additional editing feature becoming an activated feature available to a machine operator, and



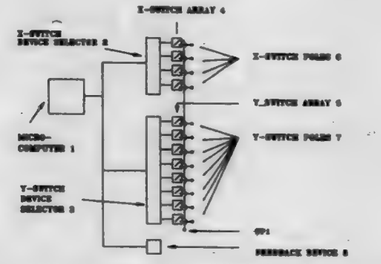
recording in memory the activation of said additional feature.

5,442,542

MACHINE STATE VIRTUALIZER

Steven R. Cook, 2575 S. Bayshore Dr., Suite 8A, Coconut Grove, Fla. 33133

Filed May 16, 1991, Ser. No. 700,705
Int. Cl.[6] G05B *19/02*
U.S. Cl. 364—140 **3 Claims**



1. A universal controller for controlling an external electronic device having a switch matrix of X-lines and Y-lines, comprising:

(A) switch means adapted to be connected to the X-lines and the Y-lines and comprising a plurality of switches for selectively interconnecting X-lines and Y-lines of the external electronic device;

(B) control means for controlling said switch means so as to virtualize a desired machine state of the external electronic device,

(1) wherein said control means comprises a data selector which controls said plurality of switches and storage means for storing a machine state virtualization map,

(2) wherein said machine state virtualization map correlates X-line and Y-line intersections of said electronic device to data values corresponding to a machine state,

(3) wherein said control means further comprises processing means for processing a control routine instruction by referencing said machine state virtualization map and outputting data values corresponding to a sequence of desired machine states to said data selector; and

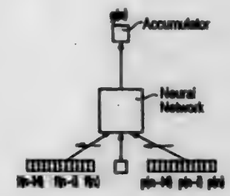
(C) feedback means for obtaining feedback from the electronic device, wherein said processing means is responsive to said feedback means, and wherein a sequence of events is altered based on preestablished rules when a predetermined signal is received from the feedback means.

5,442,543

NEURAL FILTER ARCHITECTURE FOR OVERCOMING NOISE INTERFERENCE IN A NON-LINEAR, ADAPTIVE MANNER

Volker Tresp, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00697, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO94/05080, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 6, 1993, Ser. No. 211,656
Claims priority, application Germany, Aug. 11, 1992, 42 26 598.3
Int. Cl.[6] G05B *13/04*; G06F *15/18*
U.S. Cl. 364—149 **6 Claims**



1. A non-linear filter architecture, comprising:

a) a memory means for storing values for input to a neural network;

b) supply means connected to said memory means for successively supplying said values from said memory means to said neural network;

c) a neural network having inputs connected said supply means to receive an input signal f(n−i) associated with time n−i, a time signal for time i and a parameter vector p(n−i) associated with time n−i are linked, at time i;

d) an accumulator means connected to said neural network for summing signals from said neural network;

e) the neural network being constructed such that an output signal g(n) from said accumulator means at time n results from summation of M+1 output signals, which are associated with times n, . . . , n−M, in accordance with a formula

$$g(n) = \sum_{i=0}^{M} N[f(n-i),i,p(n-i)]$$

where N[f(n−i),i,p(n−i)] designates an output function of the neural network.

5,442,544

SINGLE INPUT SINGLE OUTPUT RATE OPTIMAL CONTROLLER

Jan Jelinek, Plymouth, assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 814,307, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 471,189, Jan. 26, 1990, abandoned. This application Nov. 4, 1994, Ser. No. 334,895
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—149 **18 Claims**

1. A controller unit for controlling a plant comprising,

a reference processor having a reference input means for receiving a reference signal and being operable to generate a baseline control signal which can bring said plant into a desired state along a definite user defined path,

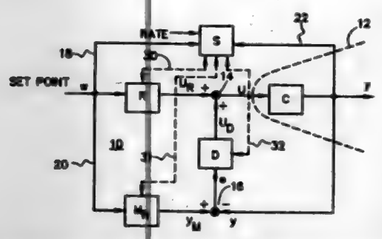
a reference model having a reference model identifying the system through the use of a transfer function for generat-

ing and outputting a signal representing the expected output of said plant at any instant along said user defined path,

a disturbance processor having an input for receiving error signals and being operable to generate and send corrective control signals,

each of said processors having an operating mode which is pursuant to either a fixed duration control law or a fixed rate control law, and

supervisor means for controlling maximum acceptable rate limits, connected to receive signals from and send signals to each of said reference processor, reference model, and



disturbance processor so that said limits are not exceeded; and wherein said reference model further comprises:

a feedforward path model of the plant under control, receiving as input a user defined set point, and generating and outputting a signal representing the expected output of said plant at that particular time instant, and

a feedback loop model, receiving an input from a disturbance model and generating and outputting a signal representing the expected effect U_D will have on the plant, and

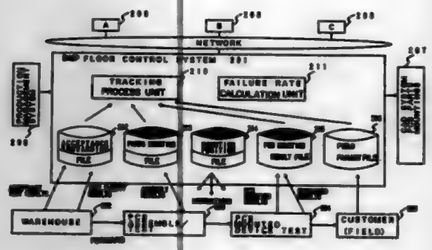
a means for outputting the result of the combination of the output of the feedforward model and the feedback loop model to the disturbance processor.

5,442,545

SYSTEM FOR AUTOMATICALLY MANAGING INFORMATION ABOUT ELECTRONIC EQUIPMENT HAVING PRINTED-CIRCUIT BOARDS

Toshinari Matsui; Shigeru Kubo; Kenzo Shimizu; Kunifumi Iwasaki; Koji Kobayashi, and Eiko Maruyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 17, 1992, Ser. No. 852,627
Claims priority, application Japan, Mar. 18, 1991, 3-051948; Mar. 18, 1991, 3-051949
Int. Cl.[6] G06F *15/00, 15/22, 15/46*
U.S. Cl. 364—403 **11 Claims**



1. A system for automatically managing information about printed-circuit boards, comprising:

first data file means for storing stock information about the printed-circuit boards stocked in a warehouse, mounting information about mounting positions of the printed-circuit boards on shelves of equipments, and mounting history information about results of mounting of the printed-circuit boards;

delivery processing means, coupled to said data file means, for detecting, by referring to said stock information stored in said data file means, that all printed-circuit boards necessary to assembly an ordered equipment are available and for generating a delivery instruction for instructing that all the printed-circuit boards are to be delivered from the warehouse to a mounting section;

mounting processing means, coupled to said data file means and said delivery processing means, for outputting to said mounting section a mounting instruction for instructing that the printed-circuit boards delivered from the warehouse are to be placed in predetermined positions in said ordered equipment by referring to said mounting information stored in said data file means;

mounting history information gathering means, coupled to said mounting processing means, for gathering the mounting history information about the printed-circuit boards placed in the predetermined positions;

output means, coupled to said data file means for outputting at least said mounting history information to an output equipment;

tracking process means for managing quality information; and

second data file means, coupled to said tracking process means for managing quality information, for storing, under control of said tracking process means for managing quality information, information about names, lot codes and numbers of accepted parts to be mounted on the printed-circuit boards, delivery information about parts delivered from a parts warehouse, assembling information about parts mounted on the printed-circuit boards obtained from a warehouse for assembled printed-circuit boards, information about results of an assembling process to determine whether or not an assembled printed-circuit board is defective and is to be replaced, and information about manufacturers of parts and destinations of delivery of the printed-circuit boards;

said tracking process means for managing quality information searching data files from said second data file means to determine, for each defective printed-circuit board, information about manufacturers of the printed-circuit board and parts mounted thereon and information about destinations of delivery to which the printed-circuit boards have been shipped.

5,442,546

SYSTEM AND METHOD FOR AUTOMATICALLY GENERATING TRANSLATION TEMPLATES FROM A PAIR OF BILINGUAL SENTENCES

Hiroyuki Kaji, Tama; Yuko Kida, and Yasutsugu Morimoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,147
Claims priority, application Japan, Nov. 29, 1991, 3-315981
Int. Cl.[6] G06F *17/20, 17/28*
U.S. Cl. 364—419.08 **19 Claims**

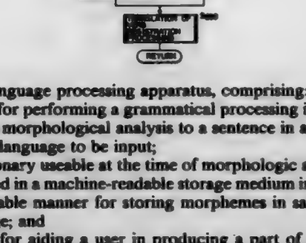
1. A method of automatically generating a translation template in a system for automatically processing sentences in at least a first language and a second language, said method comprising the steps of:

reading a sentence in said first language and in said second language;

identifying correspondence between words of said first language sentence and said second language sentence which are read in said sentence reading step by referring to a bilingual dictionary between said first and second languages; and

generating a pair of a first language template and a second language template by selecting an optional subset from the set of word correspondences identified in said word correspondence identification step and replacing a corresponding word in both said first language sentence and said second language sentence with an identical variable for each correspondence belonging to the above subset,

said translation templates include a pair of templates of a



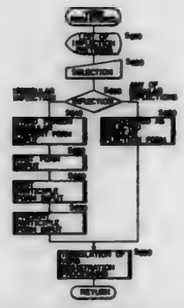
sentence in said first language and a sentence in said second language which are respective translations of a same sentence, both of said pair of templates include a sentence including at least one variable which can be replaced with at least one of phrases or words.

5,442,547

APPARATUS FOR AIDING A USER IN PRODUCING A DICTIONARY STORING MORPHEMES WITH INPUT CURSOR PREPOSITIONED AT CHARACTER LOCATION WITH THE HIGHEST PROBABILITY OF CHANGE

Takeshi Kutsumi, Yamatokouriyama, and Tokuyuki Hirai, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 6,759
Claims priority, application Japan, Jan. 22, 1992, 4-009521
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—419.08 **18 Claims**



1. A language processing apparatus, comprising:

means for performing a grammatical processing including at least morphological analysis to a sentence in a prescribed first language to be input;

a dictionary useable at the time of morphologic analysis and stored in a machine-readable storage medium in a machine readable manner for storing morphemes in said first language; and

means for aiding a user in producing a part of said dictionary, said dictionary producing aiding means including:

means for obtaining a first form of a target morpheme which the user desires to have said dictionary store;

means for receiving a second form of said target morpheme input by the user from a prescribed input region;

manually operable input means for editing, at an input position which can be moved, a character string displayed on said prescribed input region;

means for displaying said first form on said prescribed input region and positioning a cursor indicating the input position at a character location with the highest estimated possibility that said first form and said second form are different, prior to receiving said second form; and

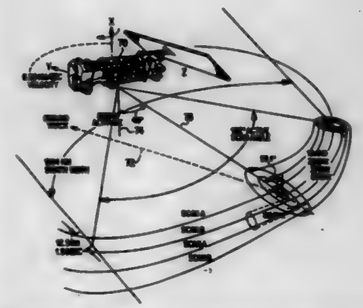
means for storing said first form and said second form in association with each other into said use dictionary.

5,442,548

MODULAR DISTORTION CORRECTING REAL TIME SSM/I IMAGERY DECOMMUTATOR AND PROCESS FOR PRODUCING SPECIAL SENSOR APPLIED METEOROLOGICAL IMAGES

Bruce Brooks, Omaha, Nebr.; Jimmy A. Jensen, Shenandoah, Iowa; Edwin A. Krzycki, Omaha, Nebr.; Ross Mapson, Omaha, Nebr.; Dale L. Nye, Omaha, Nebr.; David L. Stone, Omaha, Nebr., and Troy R. Laster, Bellevue, Nebr., assignors to Harris Corporation, Melbourne, Fla.

Filed Jan. 14, 1992, Ser. No. 820,501
Int. Cl.[6] G01V *1/00;* **H04N** *7/18*
U.S. Cl. 364—420 **28 Claims**



1. A method for applying earth curvature corrections to operational line scan image (OLS) data and special sensor meteorological image (SSM/I) data in a data decommutator, generated by OLS and SSM/I sensors scanning the earth's surface, the method comprising the steps of:

resampling the OLS image data to remove a plurality of image pixels near a center of a scan line and to interpolate an additional plurality of pixels toward an edge of the scan line;

resampling the SSM/I data to remove long track and cross track distortions caused by the SSM/I sensor scan angle; and

adjusting the resampled SSM/I data to compensate for a scan position of the SSM/I sensor.

5,442,549

DIAGNOSTIC VEHICLE ALIGNMENT SYSTEM

Timothy A. Larson, Ferguson, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Jun. 8, 1993, Ser. No. 73,185
Int. Cl.[6] G01B *5/20;* **G01F** *15/00*
U.S. Cl. 364—424.01 **57 Claims**

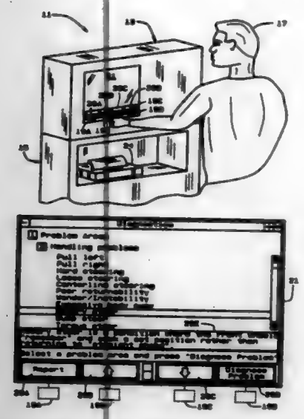
1. A vehicle wheel alignment diagnostic system comprising:

an electronic controller for guiding a user through a series of diagnostic steps to determine likely causes for at least one predetermined vehicle symptom;

vehicle wheel alignment measuring instruments for determining wheel alignment data for at least one wheel of said vehicle;

an input device manually operable by a user for providing input from the user to the electronic controller, said input ,device being operable by the user to identify at least one particular symptom which the user desires to diagnose;

a digital memory for storing a a plurality of likely causes for each of a predetermined number of selectable symptoms;
a display operatively connected to the electronic controller for displaying diagnostic questions to the user, said electronic controller being responsive to the selection of a particular symptom to cause the display to display at least one diagnostic question associated with that symptom to the user, said input device being operable by the user to



supply an answer to the diagnostic question to the electronic controller, said electronic controller being responsive to user provided input in response to at least one diagnostic question, to the likely causes stored in the digital memory, and to data from the vehicle wheel alignment measuring instruments to eliminate at least one likely cause of a symptom from consideration and identify any remaining likely causes of the symptom.

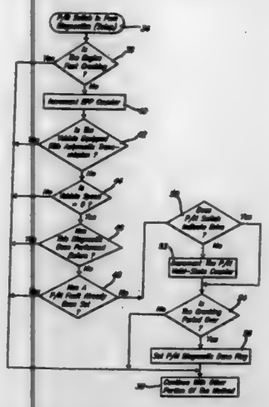
5,442,550

METHOD OF DIAGNOSING A PARK/NEUTRAL SWITCH FOR VEHICULAR AUTOMATIC TRANSMISSION

Thomas R. Tasky, Auburn Hills; Samuel Campbell, III, Southfield; James L. Vincent, Troy, and Mark A. Simonich, Highland, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 4, 1994, Ser. No. 238,099
Int. Cl.[6] B60K *28/10, 41/04*
U.S. Cl. 364—424.1 **18 Claims**

1. A method of diagnosing a Park/Neutral (P/N) switch for sensing a P/N state and a Drive state of an automatic transmission in an automotive vehicle powered by an engine having a defined cranking period, said method comprising the steps of:
determining whether the engine of the automotive vehicle is cranking;
diagnosing the P/N switch for the P/N state of the automatic transmission when the engine is cranking; and



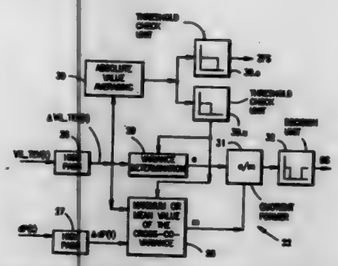
diagnosing the P/N switch for the Drive state of the automatic transmission when the engine is not cranking.

5,442,551

TANK-VENTING SYSTEM FOR A MOTOR VEHICLE AS WELL AS A METHOD AND AN ARRANGEMENT FOR CHECKING THE OPERABILITY THEREOF

Helmut Denz, Stuttgart; Ernst Wild, Oberriexingen, and Andreas Blumenstock, Ludwigsburg, all of Germany, assignors to Robert Dosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00504, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO93/01405, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 19, 1992, Ser. No. 989,026
Claims priority, application Germany, Jul. 11, 1991, 41 22 975.4
Int. Cl.[6] F02M *33/02;* **G01M** *15/00*
U.S. Cl. 364—424.03 **12 Claims**



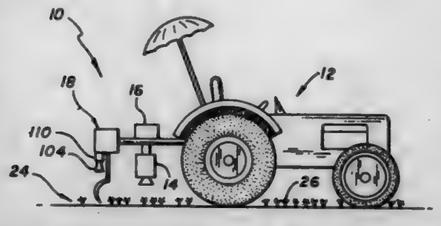
1. A method for determining operability of a tank-venting system on a motor vehicle having an internal combustion engine, the tank-venting system having an adsorption filter which is connected via a tank-connecting line to a tank and via a valve line to an intake pipe of the engine with a tank-venting valve connected therebetween through which a volume flow passes, the method comprising the steps of:
providing a cross-covariance unit defining a cross-covariance function for carrying out a cross-covariance analysis therein;
measuring the volume flow through said tank-venting valve and providing a signal indicative of said volume flow;
forming a first input variable for said cross-covariance analysis by high-pass processing said signal for the volume flow through the tank-venting valve;
measuring the difference pressure between the pressure in the tank and the ambient pressure and providing a signal indicative of said difference pressure;
forming a second input variable for the cross-covariance analysis by high-pass processing said signal for said difference pressure between the pressure in the tank and the ambient pressure;
determining one of the maximum value and the mean value of the cross-covariance function with respect to the product of the two input variables;
providing a variance-determination unit;
applying said first input variable to said variance-determination unit to obtain a measure of the variance of the first input variable;
computing a transfer factor by dividing said one of the maximum value and said mean value of the cross-covariance function by said measure for the variance of the first input variable; and,
checking whether the transfer factor lies in a pregiven value range and if this is the case, determining the tank-venting system as being operational, otherwise, as being non-operational.

5,442,552

ROBOTIC CULTIVATOR

David C. Slaughter; Robert G. Curley, both of Davis; Pictiaw Chen, El Macero, and Durham K. Giles, Davis, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 16, 1993, Ser. No. 32,075
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—424.07 **16 Claims**



1. A robotic cultivator for automatically positioning cultivation tools relative to a centerline of a plant row, said cultivator comprising:
visual input means for gathering visual information about plants and weeds in said plant row;
digitizing means for generating a digitized image of said visual information;
distinguishing means for distinguishing between said plants and said weeds in said digitized image;
means for determining a centerline of only said plants based upon said digitized image of said visual information; and
means responsive to said means for determining a centerline for locating said tools relative to said centerline.

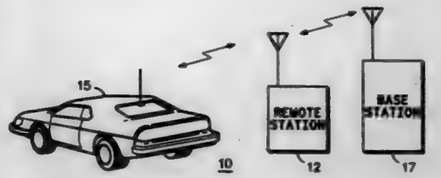
5,442,553

WIRELESS MOTOR VEHICLE DIAGNOSTIC AND SOFTWARE UPGRADE SYSTEM

Louis C. Parrillo, Austin, Tex., assignor to Motorola, Schaumburg, Ill.

Filed Nov. 16, 1992, Ser. No. 976,750
Int. Cl.[6] H04B *1/38*
U.S. Cl. 364—424.04 **15 Claims**

1. A wireless diagnostic and software upgrade motor vehicle system, which system includes a vehicle with an engine and manual controls, the system comprising:
a plurality of sensors positioned to sense a variety of dynamic data in the vehicle;
a plurality of mechanical controls coupled to the vehicle and the engine for mechanically controlling the operation of various components thereof;
a memory;
a microprocessor coupled to the plurality of sensors and to the memory to receive the dynamic data and store the dynamic data in the memory, the microprocessor further



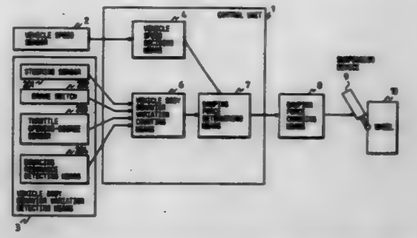
being coupled to the plurality of mechanical controls and including programs to cause functioning of the mechanical controls in accordance with signals from the manual controls; and
a transceiver coupled to the microprocessor to receive the dynamic data from the memory and transmit the dynamic data to a remote diagnostic station and to provide program upgrades to the microprocessor in response to signals received from the remote diagnostic station.

5,442,554

SUSPENSION CONTROL SYSTEM

Shigeki Ohtagaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,353
Claims priority, application Japan, Sep. 11, 1991, 3-231287
Int. Cl.[6] B60G *17/015*
U.S. Cl. 364—424.05 **15 Claims**



1. A suspension control system for use in a vehicle, comprising:
a vehicle speed sensor for sensing a vehicle speed to provide a signal representing said vehicle speed;
vehicle body behavior variation detecting means for detecting variations in a steering angular speed which indicates whether said vehicle is abruptly turned;
vehicle speed determining means for calculating a vehicle speed from said signals provided by said vehicle speed sensor and comparing said calculated vehicle speed with a value representing a predetermined vehicle speed;
vehicle body behavior variation counting means for counting said variations in the steering angular speed for a predetermined period of time according to an output of said vehicle body behavior variation detecting means;
damping force changing means for changing a vehicle body suspension damping force; and
damping force determining means for determining a damping force according to said vehicle speed determined by said vehicle speed determining means and the number of

variations in the steering angular speed counted by said vehicle body behavior variation counting means, to apply an instruction signal to said damping force changing means, so that, when said vehicle speed determined by said vehicle speed determining means is equal to or higher than a first predetermined vehicle speed, and when the number of said variations in the steering angular speed counted by said vehicle body behavior variation counting means is equal to or higher than a first predetermined value, said damping force changing means operates to increase said damping force to an increased value and to maintain said damping force at said increased value.

5,442,555

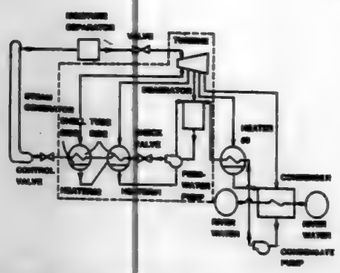
COMBINED EXPERT SYSTEM/NEURAL NETWORKS METHOD FOR PROCESS FAULT DIAGNOSIS

Jaques Reifman, Westchester, and Thomas Y. C. Wei, Downers Grove, both of Ill., assignors to Argonne National Laboratory, Argonne, Ill.

Continuation-in-part of Ser. No. 885,132, May 18, 1992, Pat. No. 5,265,035. This application Oct. 7, 1993, Ser. No. 132,888

Int. Cl.[6] G06F *15/48, 15/50, 15/46*

U.S. Cl. 364—431.01 **14 Claims**



1. A method for diagnosing failures in the operation of a thermal-hydraulic system including detection of a malfunctioning component in said thermal-hydraulic system, said method comprising the steps of:

classifying a malfunction of the component by a function performed by the component as a mass source/sink, or a momentum source/sink, or an energy source/sink imbalance including the steps of:

assigning to one or more of the components of the thermal-hydraulic system a thermal-hydraulic control volume which characterizes the total mass, momentum, and energy inventories of said one or more components during normal and off-normal operations;

assigning to each thermal-hydraulic control volume its associated mass, momentum, and energy conservation equations;

assigning to one or more components a functional classification as a source or sink of mass, momentum, or energy;

assigning components to generic component classes by said functional classification;

monitoring operation of the thermal-hydraulic control volumes for detecting an imbalance in the total mass, momentum, or energy inventories in any of the thermal-hydraulic control volumes; and

comparing a detected imbalance in mass, momentum, or energy inventories of the thermal-hydraulic control volumes with the conservation equations and the functional classification for each of the components and identifying a given component as faulty when a detected imbalance in mass, momentum, or energy of the thermal-hydraulic control volume matches the classification of the component as a source or sink of mass, momentum, or energy;

classifying the function as one of a plurality of generic component classes for each of said mass, momentum and energy source/sink imbalances; and

classifying a specific component within one of said generic component classes as said malfunctioning component.

5,442,556

AIRCRAFT TERRAIN AND OBSTACLE AVOIDANCE SYSTEMS

Jonathan D. Boyes, Westgate-on-Sea, and Charles Hewitt, Sittingbourne, both of United Kingdom, assignors to GEC-Marconi Limited, United Kingdom

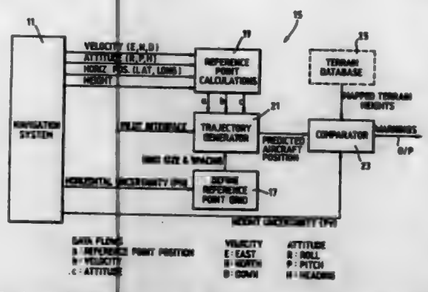
PCT No. PCT/GB92/00771, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/21077, PCT Pub. Date Nov. 26, 1992

PCT Filed Apr. 27, 1992, Ser. No. 969,809

Claims priority, application United Kingdom, May 22, 1991, 9111086

Int. Cl.[6] G05D *1/04*

U.S. Cl. 364—433 **4 Claims**



1. A method of generating in an aircraft a warning signal output whenever the aircraft is on a potentially hazardous course with respect to the terrain and obstacles thereon imminently to be overflown, comprises the steps of: using a navigation system for obtaining values of aircraft current position, attitude, velocity and acceleration, and uncertainties assigned to the current values of at least aircraft position; storing co-ordinate values of map terrain and obstacle height data in a map data storage means; using a computer system for determining, repetitively, a multiplicity of hypothetical pull-up trajectory sets, each said set including a hypothetical wings-level pull-up trajectory the length and rate of change of gradient whereof are determined by the aircraft current velocity and acceleration, an aerodynamically safe hypothetical acceleration value, aircraft pitch attitude, and a zero bank angle attitude of the aircraft; determining where the aircraft has a non-zero bank angle attitude in excess of a predetermined value, at least one additional hypothetical pull-up trajectory notionally extending along the present aircraft flight path, the number of said additional trajectories being determined by the magnitude of the bank angle, and the length and rate of change of gradient of each said additional trajectory being determined by the aircraft current velocity and acceleration, the aerodynamically safe hypothetical acceleration value, the aircraft pitch attitude, and the value of the non-zero bank angle; notionally collectively determining from said multiplicity of hypothetical pull-up trajectory sets a region of uncertainty of the terrain and obstacles to be imminently overflown determined by said uncertainties, said region moving notionally with the aircraft forwardly thereof with a spacing between the aircraft and a predesignated point within said uncertainty region which is a function involving at least said aircraft present velocity and acceleration, and values for pilot reaction time and aircraft aerodynamic response time to pilot demands; determining, taking into account uncertainty in aircraft height, whether any of the pull-up trajectories have any point with co-ordinate values having a predetermined relationship with the co-ordinate values stored in the map data storage means in

said region; and developing a warning signal output in the event that such predetermined relationship is determined.

5,442,557

NAVIGATION DEVICE

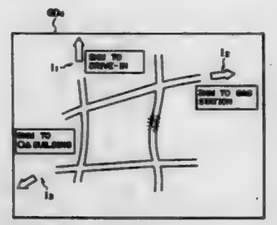
Michihiro Kaneko, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 917,165

Claims priority, application Japan, Jul. 26, 1991, 3-187453; Jul. 26, 1991, 3-187454

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449 **7 Claims**



1. A navigation device comprising:

position measurement means for measuring a current position of a movable body and generating current position information indicating the current position of the movable body;

map information storing means for storing map information;

additional information storing means for storing additional information which can be indicated together with the map information, said additional information comprising conspicuous object information;

control means, coupled to said map information storing means and said additional information storing means, for selecting a current map area to be displayed, which includes the current position, and any neighboring conspicuous object, which is located in an area neighboring the selected current map area, and generating indication information including the current position of the movable body, the map information of the selected current map area, and the conspicuous object information of the selected neighboring conspicuous object, which is superimposed on the map information at its peripheral portion on the side of said neighboring area, wherein said control means comprises means for generating information concerning azimuths of the conspicuous objects and at least one of the names of the conspicuous objects and distances between the current position and the conspicuous objects; and

indicating means, coupled to said control means, for externally indicating said indication information.

5,442,558

METHOD AND SYSTEM FOR DETERMINING VEHICLE POSITION BASED ON A PROJECTED POSITION OF A SATELLITE

Christos T. Kyrtsos, Peoria, and Adam J. Gudat, Edelstein, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 6, 1992, Ser. No. 925,150

Int. Cl.[6] G01S *5/02*

U.S. Cl. 364—449 **28 Claims**

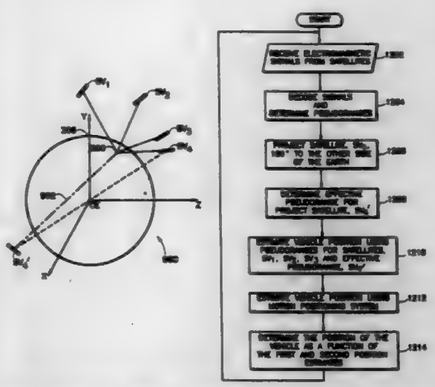
16. A system for estimating the terrestrial position of a vehicle, comprising:

means for receiving electromagnetic signals from a plurality of sources and responsively producing respective ranges from each of said sources to said vehicle and respective positions of each of said sources;

means for projecting the position of one of said sources to the opposite side of the Earth with respect to the center of the Earth and responsively determining a projected position;

means for receiving said projected position and responsively producing a projected range;

means for receiving said projected range and the ranges from the other sources and responsively producing a first position estimate of said vehicle;



means for producing a second position estimate, said second position estimate producing means including an odometer and an inertial reference unit; and,

means for receiving said first and second position estimates and responsively producing a third position estimate.

5,442,559

NAVIGATION APPARATUS

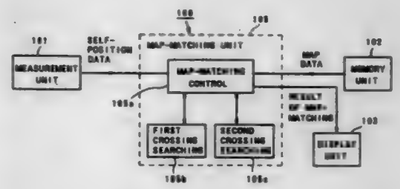
Shingo Kuwahara, and Satoshi Odagawa, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 7, 1993, Ser. No. 132,826

Claims priority, application Japan, Oct. 14, 1992, 4-275853

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449 **6 Claims**



1. A navigation apparatus comprising:

a measurement means for measuring a self-position and outputting self-position data;

a memory means for storing map data which includes crossing data indicating crossings and road data indicating roads each connecting two crossings;

a map-matching means, coupled to said measurement means and said memory means, for map-matching the self-position data with respect to the road data; and

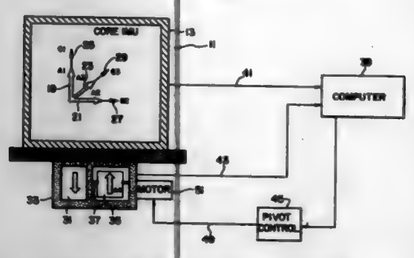
a displaying means for displaying the map-matched self-position data and the road data on the map data,

said map-matching means comprising:

a first crossing searching means for searching crossing data corresponding to a first crossing connected to a road, to which the self-position data is presently map-matched, and located within a first predetermined distance from the self-position, and for outputting first candidacy crossing

data indicating the searched first crossing and the associated immediate adjacent crossings;
a second crossing searching means for searching crossing data corresponding to a second crossing located within a second predetermined distance from the first crossing indicated by said first candidacy crossing data, and for outputting second candidacy crossing data indicating the searched second crossing and the associated immediate adjacent crossings; and
a map-matching control means for map-matching the self-position data only with respect to the road data corresponding to roads connected to the first and second crossings and their corresponding associated adjacent crossings indicated by the first and second candidacy crossing data.

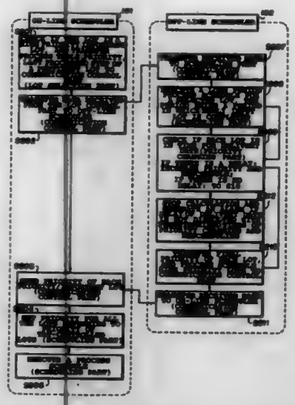
5,442,560
INTEGRATED GUIDANCE SYSTEM AND METHOD FOR PROVIDING GUIDANCE TO A PROJECTILE ON A TRAJECTORY
Shing P. Kau, Seminole, Fla., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Jul. 29, 1993, Ser. No. 99,076
Int. Cl.[6] G06F *165/00*; F41G *7/00*
U.S. Cl. 364—453 **14 Claims**



1. An inertial measurement apparatus comprising:
an inertial measurement unit strapped down within a flight vehicle, said inertial measurement unit comprised of at least three gyroscope means for measuring rotational movement of said flight vehicle along x (roll), y (pitch) and z (yaw) axes thereof and at least three accelerometer means for measuring translational motion of said flight vehicle along each of said axes; and
separate, pivotally mounted accelerometer means for preflight measurement of the gravitational field acting on said flight vehicle along predetermined directions of a sensitive axis of said separate accelerometer means for calibration of bias and scale factor errors, said separate accelerometer means being locked in position for use of said preflight measurement as a matching reference for inflight data being generated by said inertial measurement unit when said flight vehicle is in flight to enhance targeting accuracy of said inertial measurement unit.

5,442,561
PRODUCTION MANAGEMENT SYSTEM AND ITS APPLICATION METHOD
Masahiro Yoshizawa, Ichaya, and Tetsuma Sakurai, Tokyo, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed May 10, 1993, Ser. No. 58,175
Claims priority, application Japan, May 12, 1992, 4-119151; Dec. 3, 1992, 4-324123; Mar. 12, 1993, 5-051715
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—468 **10 Claims**

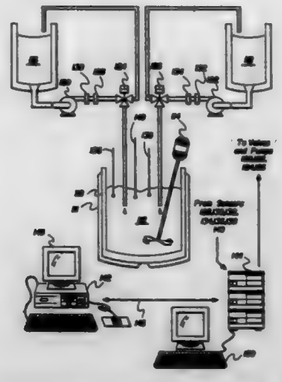
1. A production management system comprising:
a host computing machine serving as a scheduler which executes production schedules for a plurality of production machines, forming a production line, and/or articles to be processed which are objects of production processes by the production machines based on first information on production abilities of the machines and second information on state quantity of the articles to be processed by the machines;
a computer associated with each production machine for distributing said schedules to each production machine and reporting to said scheduler on progress of said production process for each production machine;
an input means for inputting to said scheduler third information on degrees of production progress on said production machines and/or said articles to be processed;
a judgment means for comparing said input third information with said production schedules and for judging if said degrees of production progress are within predetermined allowances on said production machines and/or said articles to be processed;



an adjustment means for adjusting said production schedule so as to match predetermined production target if negative judgment is given by said judgment means;
a designating means for designating at least one article to be processed having high priority or importance, forming a first article group, from said articles to be processed which are objects of said production processes, the rest forming a second article group, said designated at least one article to be processed which is an object of said execution of said production schedules to execute a first production schedule, and of said adjustment; and
an extraction means for extracting marker articles to be processed at a predetermined interval from said second article group, said extracted marker articles to be processed which are treated as said articles to be processed in said first article group.

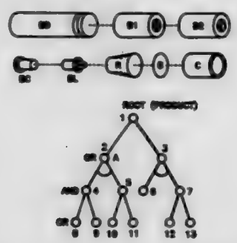
5,442,562
METHOD OF CONTROLLING A MANUFACTURING PROCESS USING MULTIVARIATE ANALYSIS
Robert W. Hopkins; Paige Miller; Ronald E. Swanson, all of Rochester, and John J. Scheible, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 10, 1993, Ser. No. 165,155
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—468 **18 Claims**

1. A computer implemented method of controlling a manufacturing process, comprising the steps of:
a.) during operation of the process, measuring the process with sensors of data representative of a plurality of process/product variables;
b.) in a computer, connected to receive data from the sensors using multivariate analysis, said computer generating a surrogate variable having a value representative of whether or not the process is in control, said surrogate variable being a function of a plurality of intermediate variables, each of said intermediate variables being a weighted function of the process/product variables;
c.) when the value of the surrogate variable is outside a predetermined limit, said computer determining which of the intermediate variables primarily contributed to the value of the surrogate variable;



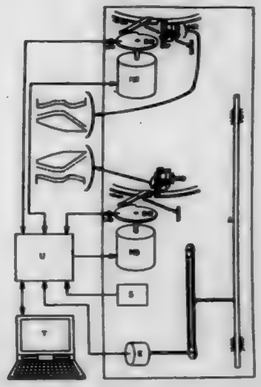
d.) for the intermediate variable determined in the previous step, identifying which of the process variables primarily contributed to the value of the determined intermediate variable; and
e.) said computer modifying the process to change the process variable identified in the previous step to bring the value of the surrogate variable within the predetermined limit.

5,442,563
BACKWARD ASSEMBLY PLANNING WITH DFA ANALYSIS
Sukhan Lee, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 942,499, Aug. 28, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 258,908
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—468 **13 Claims**



1. A method of selecting and performing a sequence of sub-assembly operations to construct an assembly said assembly containing a plurality of assembly parts, said method comprising:
identifying all direct subassemblies of said assembly, said identifying comprising:
(a) identifying potential subassemblies of said assembly,
(b) for each potential subassembly, determining whether said potential subassembly is a direct subassembly of said assembly by:
(1) determining whether there is a common axis of separation between said potential subassembly and the remainder of said assembly,
(2) determining whether said potential subassembly is stable, and
(3) determining whether there is a direct unobstructed path between said potential subassembly and the remainder of said assembly;
representing said assembly as a tree of AND and OR nodes beginning with all direct subassemblies as bottom nodes of said tree and concluding with said assembly as the top node of said tree, said AND nodes corresponding to required decompositions of said assembly, said OR nodes corresponding to alternative decompositions of said assembly;
computing a local cost of each OR node of said tree, said computing comprising at least one of the following steps:
(a) determining the number of reorientations of said assembly parts required to construct said direct subassembly given initial orientations of said assembly parts, and
(b) determining the number of mating operations required to construct said direct subassembly;
computing a heuristic cost of each OR node corresponding to said local cost comprising computing a cost of holding said direct subassembly multiplied by a cost of internal stability of said direct subassembly;
combining said local cost and heuristic cost of each OR node of said tree to form a combined cost;
eliminating OR nodes of higher combined costs; and
performing an assembly operation of subassemblies corresponding to said tree after the elimination of OR nodes of higher combined costs.

5,442,564
METHOD FOR DETERMINING THE SIZE OF THE STITCH LOOPS IN SOCK-PRODUCTION MACHINES
Marco Merlini, and Daniele Vivoli, both of Florence, Italy, assignors to Savio S.p.A., Pordenone, Italy
Filed Nov. 1, 1991, Ser. No. 786,565
Claims priority, application Italy, Nov. 7, 1990, 21992A/90
Int. Cl.[6] D04B *9/46*
U.S. Cl. 364—470 **5 Claims**



1. In an automatic knitting machine having a plurality of zones, a needle cylinder, and a stitch forming cam, a method of adjusting the relative height between the cylinder and the cam in a corresponding zone for varying the stitch loop size, wherein the machine has a control unit and a motor opera-

tively connected therewith for adjusting the relative height, and wherein the method comprises the steps of:

a) storing three sets of values in the control unit for each of a plurality of different types of yarns with which each zone is to be produced, wherein the three sets of values include two pairs of values for the relative height and a corresponding width of a knitted product, two pairs of values for a specific length and corresponding width of the knitted product, and two pairs of values for a height of stitch-formation triangles and corresponding specific length of the knitted product;

b) selecting a width and a type of yarn for each zone to be produced;

c) determining a relative height, h, corresponding to said selected width and said selected type of yarn for each zone by means of the control unit using the following equation:

$$\frac{h - h_1}{h_2 - h_1} = \frac{l - l_1}{l_2 - l_1}$$

wherein $(h_1, 1_1)$ and $(h_2, 1_2)$ are pairs of values associated with said selected type of yarn, l is said selected width, and h is the relative height;

d) measuring a rotational speed and angular position of the cylinder and feeding said speed and position to the control unit;

e) activating the motor by means of the control unit and adjusting the relative height between the cylinder and the cam to correspond to the relative height (h) calculated in said determining step (c); and

f) deriving the value for the width of said knitted product stored in the control unit by an autocalibration procedure comprising:

selecting two triangle height values;

determining the specific lengths for these height values by measuring the drawing positions; and

calculating each of the two values of the corresponding knitted product widths using the following equation:

$$K \cdot \frac{t - t_1}{t_2 - t_1} = \frac{l - l_1}{l_2 - l_1}$$

wherein t is the specific length determined by the control unit, $(t_1, 1_1)$ and $(t_2, 1_2)$ are the values of the two pairs formed by the specific length and corresponding width of the knitted product, and K is a conversion factor.

5,442,565

AUTONOMOUS SELECTIVE CUTTING METHOD AND APPARATUS

Zev Galel, Palo Alto, Calif., assignor to SeamX, Mountain View, Calif.

Continuation-in-part of Ser. No. 43,138, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 874,968, May 1, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 55,626

Int. Cl.[6] G05B *19/401*; G06F *19/00*

U.S. Cl. 364—474.02 **18 Claims**

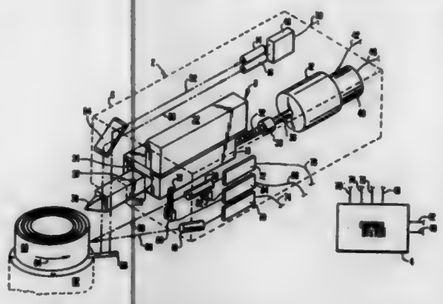
1. A method for separating dissimilar layers of material comprising:

providing a cutter and a structure having first and second dissimilar layers of material;

scanning the structure and detecting points representing the surface of the first layer adjacent the second layer;

rotating the structure and reflecting a beam off an element which is associated with the structure and rotates therewith to detect each revolution of the structure; and

controlling the position of the cutter based upon the points detected in the scanning step such that the cutter follows



a path along the first layer and removes the second layer from the first layer.

5,442,566

PARTS SUPPLYING METHOD IN WHICH MOVEMENTS OF PARALLEL SUPPLY TABLES ARE CONTROLLED

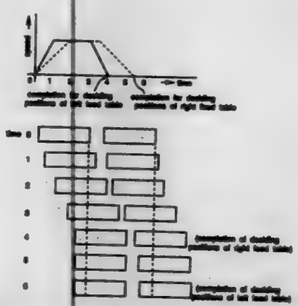
Shigeki Imafuku, Kadoma; Noriaki Yoshida, Ikeda; Takeshi Takeda, Toyono, and Takashi Shimizu, Kishiwada, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 856,650, Mar. 24, 1992, Pat. No. 5,365,452. This application Aug. 19, 1994, Ser. No. 293,037

Claims priority, application Japan, Mar. 28, 1991, 3-64591

Int. Cl.[6] H05K *3/30*

U.S. Cl. 364—478 **1 Claim**



1. A part supply method for controlling a parts supply apparatus having at least adjacent first and second parts supply tables which are spaced apart from each other along a moving direction and which are capable of being moved independently of one another in the moving direction, each of said first and second parts supply tables for setting therein a plurality of adjacent parts supply units, the parts supply apparatus further having a drive device for selectively moving each first and second parts supply table in the moving direction so as to position a desired parts supply unit at a parts take-out position to permit parts contained in the desired supply unit to be extracted using an extracting mechanism, wherein, during each of plural successive parts supply operations of said parts supply apparatus, parts are extracted by the extracting mechanism from a parts supply unit position at the parts take-out position by movement of one of said first and second parts supply tables, in the case where the last parts supply and the next parts supply are both effected from the parts supply unit mounted on the first table, said method comprising:

a step of establishing the maximum speed, acceleration and deceleration of the first table so that the movement of the first table is completed before the next parts supply operation is started;

a step of establishing the maximum speed of the second table to be equal to that of the first table and establishing the acceleration and deceleration of the second table to be smaller than those of the first table within the range that the movement of the second table is completed at the latest before completion of the next parts supply operation; and

a step of commencing the movement of the first and second table at the same time after completion of the last parts supply operation.

5,442,567

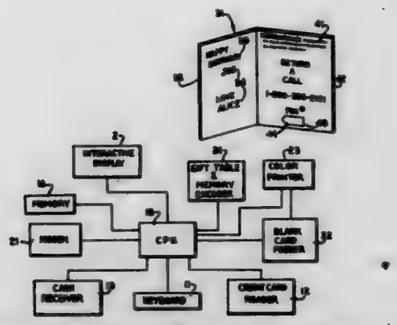
APPARATUS AND METHOD FOR ELECTRONICALLY DISPENSING PERSONALIZED GREETING CARDS AND GIFTS

Maynard E. Small, 105 Ward Pkwy., Apt. 507, Kansas City, Mo. 64112

Filed Apr. 30, 1993, Ser. No. 56,706

Int. Cl.[6] G05B *19/18*

U.S. Cl. 364—479 **3 Claims**



1. A method of vending a combination personalized greeting card and electronically generated gift and of redeeming said gift comprising the steps of:

(a) presenting a menu of alphanumeric and/or graphic information from which a customer can select data to be printed on said card;

(b) prompting the customer to select said card data and/or add personal information via a data input means;

(c) presenting a menu of prepaid long distance telephone access accounts and account values from which a customer can select a particular prepaid telephone access account at a selected value via said input means;

(d) prompting the customer to select said telephone access accounts and values via said data input means;

(e) printing both said selected card data and personal information and information concerning said selected telephone access account including a predetermined telephone number for accessing said prepaid long distance account and account authorizing data;

(f) forwarding the printed card to a gift recipient;

(g) redeeming said gift by dialling said predetermined telephone number to access said prepaid telephone account; and

(h) entering said authorizing data to validate said recipient as entitled to use said prepaid telephone account.

5,442,568

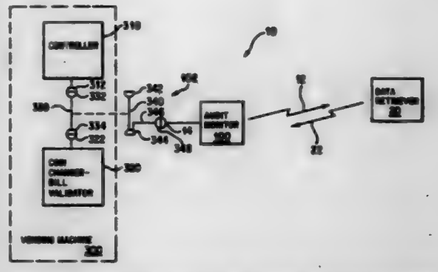
VENDING MACHINE AUDIT MONITORING SYSTEM

Eugene G. Ostendorf, Baltimore, Md.; John C. Cowles, Downingtown, Pa.; Irwin D. Morris, Bel Air, Md., and Gerald W. Smith, Clayton, N.J., assignors to Audit Systems Company, Timonium, Md.

Filed Nov. 15, 1994, Ser. No. 341,875

Int. Cl.[6] G07F *11/00*

U.S. Cl. 364—479 **19 Claims**



1. An audit monitor for retrofit into a coin operated vending system, the vending system having means for receiving and dispensing funds coupled to a controller by a data link, said audit system comprising:

interface means coupled to the data link for monitoring communication between the funds receiving and dispensing means and the controller;

microprocessor means coupled to an output of said interface means for (1) interpreting said monitored communications responsive to parameters selected from a plurality of predetermined parameters, said selected parameters including at least a protocol of said monitored communications and (2) discriminating and accumulating transaction data for the coin operated vending system;

memory means coupled to said microprocessor means for storing said plurality of predetermined parameters and said transaction data, said memory means including a circuit for (1) reading a predetermined number of said stored predetermined parameters defining said selected parameters, and (2) providing an output thereof to said microprocessor means responsive to an identification code input to said memory means therefrom;

power supply means coupled to said interface means, said microprocessor means, and said memory means for supplying an operating voltage thereto; and

input/output means removably coupled to said microprocessor means for input of said identification code to said microprocessor and output of said transaction data therefrom.

5,442,569

METHOD AND APPARATUS FOR SYSTEM CHARACTERIZATION AND ANALYSIS USING FINITE ELEMENT METHODS

Minetada Osano, Tokyo, Japan, assignor to Ocesaautes Inc., Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 82,409

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—578 **20 Claims**

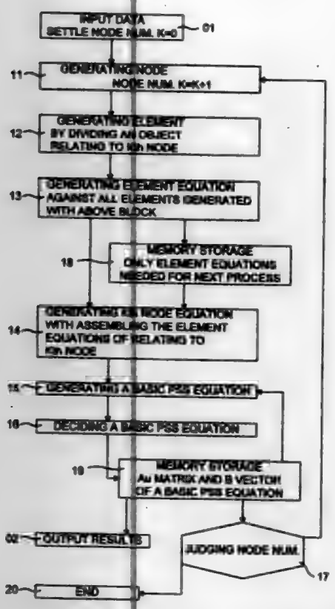
5. A method for analyzing a physical system using linear equations with finite element modeling or partial differential modeling, comprising the steps of:

(a) inputting information data as to the number and the shape for decomposing a system model to parts;

(b) generating parts decomposed from a system model in accordance with the information data;

(c) arranging nodes of the object to be analyzed in accordance with information of input data;

(d) numbering the arranged nodes;
(e) selecting one node as a kth node to be determined where k is 1 for the first node selected and subsequent nodes are incremented;
(f) constructing only elements connected to the selected kth node within the modeling system data;
(g) numbering the elements constructed;
(h) generating element equations for all elements generated based on a partial differential equation;
(i) storing the element equations in memory;
(j) generating nodal equations for the selected kth node by selecting the equations in respect of kth node from the element equations stored in memory;
(k) assembling the nodal equations and boundary conditions of the kth node into a basic PSS equation;
(l) finding a solution to the basic PSS equation;
(m) storing the solution to the basic PSS equation in memory;



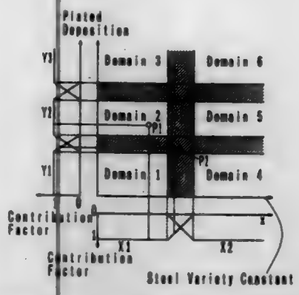
(n) judging the state in reference with the condition that, if the kth node is not last node, returning to step (d) and repeating steps (b) to (m) until the kth node is the last node or if kth node is the last node, then ending the simulation process and outputting the analyzed results.
(o) producing a terminal pan by decomposing the object to be analyzed to produce an interface terminal pan.
(p) producing with a solver(b) device the interface terminal part from the terminal part;
(q) producing the package by gathering similar parts;
(r) producing the interface terminal pans from the package;
(s) assembling the interface terminal pans with solver(c) device to recover an original system;
(t) determining the state of the interface terminal nodes and all nodes by backsolving for each said processing parts;
(u) storing a basic PSS equation of each processing part; and
(v) outputting an indication of the physical characteristics of the physical system.

5,442,570

METHOD OF CONTROLLING HEAT INPUT TO AN ALLOYING FURNACE FOR MANUFACTURING HOT GALVANIZED AND ALLOYED BAND STEEL

Yoichi Seshihara; Masahiro Masuda; Isao Nakamura; Kunitoshi Watanabe; Tetsuya Miyazaki, and Kazuhiro Sekimoto, all of Otemachi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 942,569, Sep. 9, 1992. This application Dec. 15, 1993, Ser. No. 167,607
Claims priority, application Japan, Sep. 10, 1991, 3-230218; Sep. 10, 1991, 3-230219; Sep. 10, 1991, 3-230220; Oct. 8, 1991, 3-260874; Oct. 8, 1991, 3-260875
Int. Cl.[6] G06F *15/46*; C21B *5/00*
U.S. Cl. 364—500 **5 Claims**



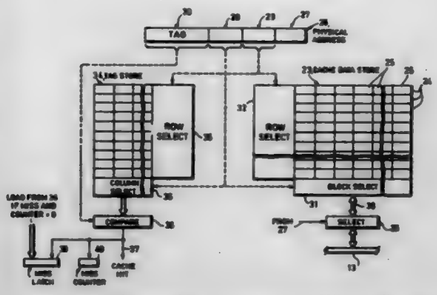
1. A method of calculating a heat input to an alloying furnace through which a hot galvanized band steel is passed to form an alloyed layer of iron and zinc on the band steel by a heating action therein, comprising the steps of:
conveying a band steel through an alloying furnace which includes heat input means, and forming a plated deposition on said band steel in said alloying furnace comprising an alloyed layer of iron and zinc, wherein said steel band has a steel variety constant and an amount of the plated deposition;
choosing a space in which a formula for calculating the heat input is defined as a two dimensional or higher dimensional space containing at least a first axis corresponding to said steel variety constant and a second axis corresponding to said amount of the plated deposition;
dividing the space into two or more independent domains and boundary regions located between the plurality of independent domains;
providing an independent calculation formula for each of the plurality of independent domains, wherein said independent calculation formula defines a relationship between heat input and a condition including at least said steel variety constant and said amount of the plated deposition;
providing two or more membership functions for each axis which determine a contribution factor of a boundary region to each independent domain;
calculating a contribution factor of the steel variety constant to each independent domain on the basis of the steel variety constant which is inputted and its associated membership function;
calculating a contribution factor of the plated deposition to each independent domain on the basis of the plated deposition which is inputted and its associated membership function;
obtaining a heat input by performing a calculation which utilizes the calculation formulae allocated to respective independent domains and the respective calculated contribution factors;
and using said obtained heat input to control said heat input means of said alloying furnace thereby controlling said forming of said iron and zinc alloyed layer plated deposition on said band steel.

5,442,571

METHOD AND APPARATUS FOR CACHE MISS REDUCTION BY SIMULATING CACHE ASSOCIATIVITY

Richard L. Sites, Boylston, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 716,397, Jun. 17, 1991, abandoned. This application May 27, 1994, Ser. No. 250,315
Int. Cl.[6] G06F *12/08*
U.S. Cl. 364—403 **25 Claims**



1. A method of operating a computer system having a processor, a main memory for storing data, and a cache for storing data corresponding to said data stored at selected main memory addresses, said method comprising the steps of:
A) accessing said cache to obtain a plurality of pages of data using said main memory addresses to identify a plurality of cache locations at which said pages may be stored;
B) detecting each of a plurality of cache misses comprising cache accesses resulting in said pages not being found at said identified locations;
C) storing a preselected subset of said main memory addresses used in said cache misses, said subset comprising more than one and less than the total number of said cache misses;
D) sampling said stored main memory addresses at selected times; and
E) moving said data at each said sampled main memory address to a different one of said main memory addresses.

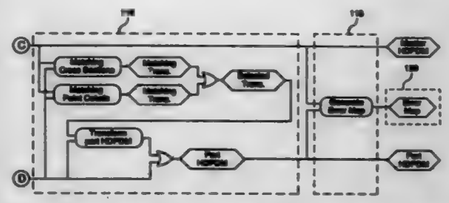
5,442,572

METHOD AND SYSTEM FOR COMPARING FREE-FORM GEOMETRIES USING HIGH DENSITY POINT DATA MODELS

Vijitha Kiridena, Inkster; Samuel E. Ebenstein, Southfield, and Gregory H. Smith, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 161,025, Dec. 3, 1993, Pat. No. 5,319,567, and Ser. No. 980,419, Nov. 23, 1992, Pat. No. 5,384,717. This application Jun. 2, 1994, Ser. No. 252,813
Int. Cl.[6] G06K *9/32*
U.S. Cl. 364—560 **18 Claims**

1. A method for verifying the accuracy of a geometry of a part with respect to the geometry of a master, the method comprising:
providing a computer workstation including a computer and an output device attached to the computer;
generating a master HDPDM having a plurality of points, the master HDPDM describing the geometry of the master;
scanning a surface of a part to generate scanned part
converting the scanned part signals to corresponding electrical part signals;
generating a part HDPDM based on the electrical part signals, the part HDPDM having a plurality of points describing the geometry of the part;
aligning the master HDPDM and part HDPDM within a coordinate frame;
computing the distance from each point of the master HDPDM to the surface described by the part HDPDM to obtain signed distance data; and



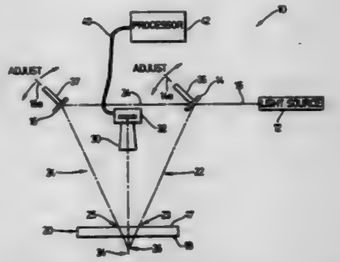
outputting an image on the output device based on the signed distance data, the image including a plurality of pixels representing the geometry of the master, each pixel being coded to indicate non-conformance between the master and the part based on the step computing to verify the accuracy of the geometry of the part with respect to the geometry of the master.

5,442,573

LASER THICKNESS GAUGE

Robert E. Bredberg, Markham, and Cristian Torres, Downsview, both of Canada, assignors to Taymer Industries Inc., Markham, Canada

Filed Apr. 28, 1993, Ser. No. 53,512
Claims priority, application Canada, Apr. 28, 1992, 2067400
Int. Cl.[6] G01B *11/06*
U.S. Cl. 364—563 **17 Claims**



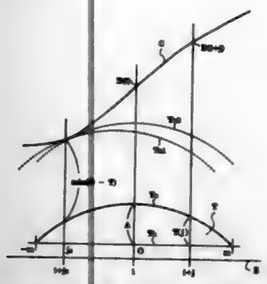
1. An apparatus for determining the position of a specimen relative to a reference point comprising;
(a) source means for producing a beam of electromagnetic radiation;
(b) splitting means for splitting said beam into a primary beam and a secondary beam;
(c) reflecting means for directing said primary and secondary beams onto a surface of said specimen when in a measuring position between the source means and the reference point such that each of said primary and said secondary beams impinge said surface at an angle and converge at said reference point;
(d) means for sensing the points at which said primary and said secondary beams impinge said surface of said specimen and for producing a signal related thereto; and
(e) means for processing said signal to determine the position of said surface of said specimen relative to said reference point.

5,442,574

METHOD AND APPARATUS FOR DETERMINING A BASE LINE OF A MEASUREMENT

Kazunari Shinya, Takatsuki, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 3, 1993, Ser. No. 28,930
Claims priority, application Japan, Mar. 24, 1992, 4-97191
Int. Cl.[6] G01C *3/00*; G01F *23/00*
U.S. Cl. 364—571.01 10 Claims



1. A method for determining a base line of a measurement curve using a data analyzer having a CPU, a ROM, a RAM and a plurality of interface circuits, the method comprising the steps of:

preparing, with said CPU, a template having an arc upward convex so that a radius of curvature of the arc is smaller than an ostensibly smallest radius of curvature of the base line;

moving, without rotating, with said CPU, the template along the measurement curve between a plurality of sampling points with a point on the arc of the template always contacting the measurement curve, said point being determined in accordance with distances between said arc and said base line at each of said sampling points;

initializing data of the base line by designating a smallest value of the base line as a starting sampling point;

judging whether points of the arc of the template after being moved to a next sampling point are superior to points of the arc at a previous sampling point at every point of the arc; and

updating data of the base line from said previous sampling point at the points where the arc after being moved to said next sampling point is superior to the points of the arc at said previous sampling point by the data of the arc after being moved to said next sampling point.

5,442,575

SCANNING ANALOG-TO-DIGITAL CONVERTER OPERATING UNDER THE SUBRANGING PRINCIPLE

Werner Gast, Köln; Andrey Georgiev, Niederzier, and Rainer M. Lieder, Jülich, all of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

Filed May 11, 1994, Ser. No. 240,985
Claims priority, application Germany, May 19, 1993, 43 16 910.4
Int. Cl.[6] G06J *1/00*
U.S. Cl. 364—602 19 Claims

1. A circuit for sampling of statistically appearing signals, especially such signals as result from semiconductor detection in nuclear spectroscopy and having a fast leading edge and slowly decaying trailing edge, said circuit operating with analog-to-digital conversion in accordance with the subranging principle and interpolating residue coding, said circuit comprising:

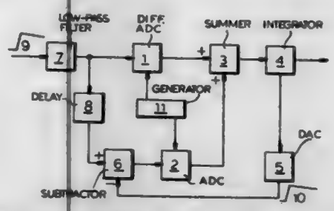
an internal differentiating analog-to-digital converter receiving the input signals and producing a sampled sequence of the differentiated input signals at a sampling frequency;

a summer having one input connected to an output of said differentiating analog-to-digital converter;

an integrator connected to an output of said summer for digitally integrating a signal outputted from said summer and producing at an output of said integrator a digital reconstruction of sampled input signals;

a digital-to-analog converter connected to said integrator and receiving a signal representing said digital reconstruction of sampled input signals and transforming the received signals into an analog signals corresponding to said digital reconstruction of sampled input signals;

an analog subtractor connected to said digital-to-analog



converter and receiving said input signals for subtracting said analog signals from said input signals to form analog residue signals; and

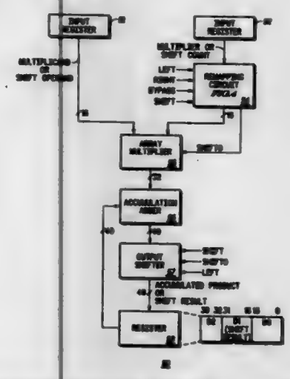
an internal analog-to-digital converter for said analog residues connected to said analog subtractor and operating at said sampling frequency for digitalizing said analog residue and producing a digital residue signal, said digital residue signal being supplied to another input of said summer for addition to the digital signal produced by said differentiating analog-to-digital converter in said summer, thereby providing higher resolution and enhanced dynamic range by comparison with those of said internal analog-to-digital converters.

5,442,576

MULTIBIT SHIFTING APPARATUS, DATA PROCESSOR USING SAME, AND METHOD THEREFOR

Joseph P. Gergen, and Kin K. Chau-Lee, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1994, Ser. No. 249,505
Int. Cl.[6] G06F *7/00*, *7/52*
U.S. Cl. 364—715.08 20 Claims



1. An apparatus for performing shift and multiply operations, comprising:

a first register for receiving a first operand;

a second register for receiving a second operand;

a remapping circuit having an input coupled to said second register, a first control input for receiving a shift direction

signal, a second control input for receiving a mode signal, and an output, said remapping circuit selectively providing either said second operand or a remapped signal to said output thereof in response to said mode signal indicating a multiply operation or a shift operation, respectively; said remapped signal being decoded from said second operand as determined by said shift direction signal; and

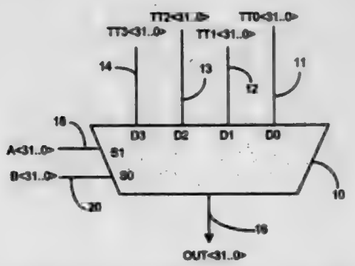
a multiplier having a first input coupled to said first register, a second input coupled to said output of said remapping circuit, and an output for providing a product of said first and second inputs thereof, said product being either a product of said first and second operands during said multiply operation, or a first shift result equal to a product of said first operand and said remapped signal during said shift operation.

5,442,577

SIGN-EXTENSION OF IMMEDIATE CONSTANTS IN AN ALU

Earl T. Cohen, Fremont, Calif., assignor to Exponential Technology, Inc., San Jose, Calif.

Filed Mar. 8, 1994, Ser. No. 207,751
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—716 13 Claims



1. A composite logic unit for performing a plurality of Boolean logic operations on a first operand, the composite logic unit allowing for implicit sign-extension of the first operand while simultaneously performing a predetermined Boolean logic operation of the plurality of Boolean logic operations, the predetermined Boolean logic operation indicated by an instruction opcode, the composite logic unit comprising:

a plurality of multiplexer cells, each of the plurality of multiplexer cells having an output, a plurality of data inputs, and a first select input, the first select input selecting one of the plurality of data inputs for coupling to the output;

a first input bus having a plurality of binary signals representing the first operand, the first input bus coupled to each of the first select inputs in the plurality of multiplexer cells;

a sign bit for the first operand, the ..sign bit indicating if the first operand is a positive binary number or a negative binary number; and

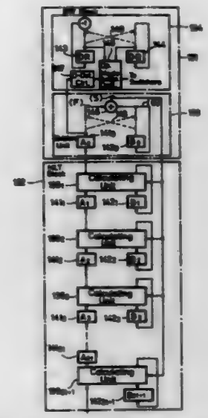
truth-table means, coupled to the plurality of data inputs, the truth-table means representing the outputs of a composite operation, the composite operation comprising the predetermined Boolean logic operation operating on the first operand after a sign-extension operation, whereby the composite logic unit simultaneously performs the implicit sign-extension of the first operand and the predetermined Boolean logic operation.

5,442,578

CALCULATING CIRCUIT FOR ERROR CORRECTION

Masayuki Hattori, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 989,035
Claims priority, application Japan, Dec. 12, 1991, 3-350753; Dec. 12, 1991, 3-350759
Int. Cl.[6] G06F *7/00*, *15/00*
U.S. Cl. 364—746.1 6 Claims



2. A Euclidean mutual division circuit comprising:

a control unit for generating a switching command indicative of one of a normal connection, a cross connection, and a shift connection based on a comparison of a predetermined value and a value stored in a first register in a division unit, and supplying the generated switching command to an MLT block and a division unit;

said MLT block having a group of A-side registers divided depending on a degree of multiplexing for storing coefficients of polynomials $R_i(X)$ and $Q_i(X)$, a group of B-side registers divided depending on said degree of multiplexing for storing coefficients of polynomials $\lambda_i(X)$, $\mu_i(X)$, and a number of calculation units depending on said degree of multiplexing, said MLT block being capable of receiving a result of division and values output from A-side and B-side registers, and responsive to the switching command for effecting one of a normal-connection calculation, a cross-connection calculation, and a shift-connection calculation during a clock cycle in each step of a Euclidean mutual division; and

said division unit having a second register for storing $R_i(X)$, $Q_i(X)$, a third register for storing $\lambda_i(X)$, $\mu_i(X)$ and a divider for dividing coefficients stored in the second and third registers, for receiving a value output from a final stage of said MLT block, effecting one of a normal-connection division and a cross-connection division in response to the switching command, and supplying the result of division to each of said calculation units when a step of said Euclidean mutual division is finished.

5,442,579

COMBINED MULTIPLIER AND ACCUMULATOR

Thomas W. S. Thomson, Santa Cruz, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 980,490, Jan. 25, 1993, abandoned, which is a division of Ser. No. 712,208, Jun. 7, 1991, Pat. No. 5,218,562. This application Nov. 28, 1994, Ser. No. 345,533
Int. Cl.[6] G06F *7/52*
U.S. Cl. 364—760 5 Claims

1. A method of summing a sequence of product terms utiliz-

ing a modified Booth's algorithm, each product term consisting of a multiplier and a multiplicand, the method comprising the sequential steps of:

(a) initializing an adder register;

(b) retrieving a product term of the sequence and storing the multiplier of the product term in a multiplier register and the multiplicand of the product term in a multiplicand register;

(c) performing a modified Booth's algorithm operation on the multiplicand register based on the least significant bits



of the multiplier register and an adjacent pad bit and adding the result of the operation to the adder register;

(d) shifting the multiplier right 2 places, through the pad bit, and shifting the multiplicand left 2 places;

(e) performing a modified Booth's algorithm operation on the shifted multiplicand based on the least significant bits of the shifted multiplier and the shifted pad bit and adding the result of the operation to the adder register; and

(f) performing steps (b)–(e) for each product term in the sequence.

5,442,580

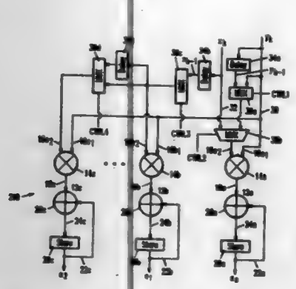
PARALLEL PROCESSING CIRCUIT AND A DIGITAL SIGNAL PROCESSER INCLUDING SAME

Gerhard P. Fettweis, Berkeley, Calif., assignor to TCSI Corporation, Berkeley, Calif.

Filed May 25, 1994, Ser. No. 248,765

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—736 **16 Claims**



1. A parallel processing circuit for receiving a first digital signal and a second digital signal and for generating a plurality of processed signals, said circuit comprising:

a plurality of substantially identical processing means each having two inputs for receiving two input digital signals and for generating a processed signal, wherein said processed signal is an arithmetic operation of said two input digital signals;

means for supplying said first digital signal simultaneously to a first input of all of said plurality of processing means;

means for supplying said first digital signal to a first delay means and for generating a first delayed digital signal therefrom;

first multiplexer means for receiving said first delayed digital signal and said first digital signal and a first control signal for generating a first multiplexed signal in response thereto, wherein said first multiplexed signal being either said first delayed digital signal or said first digital signal in response to said first control signal;

second multiplexer means for receiving said first multiplexed signal and said second digital signal and a second control signal for generating a second multiplexed signal in response thereto, wherein said second multiplexed signal being either said first multiplexed signal or said second digital signal in response to said second control signal;

means for supplying said second multiplexed signal to a second input of one of said plurality of processing means;

second delay means for receiving said second digital signal and for generating a second delayed digital signal in response thereto;

third multiplexer means for receiving said second delayed digital signal and said second digital signal and a third control signal for generating a third multiplexed signal in response thereto, wherein said third multiplexed signal being either said second delayed digital signal or said second digital signal in response to said third control signal; and

means for supplying said third multiplexed signal to a second input of another of said plurality of processing means.

5,442,581

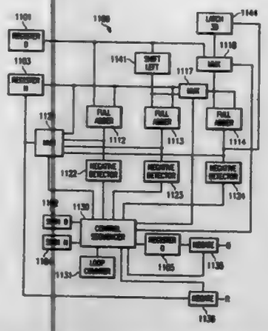
ITERATIVE DIVISION APPARATUS, SYSTEM AND METHOD FORMING PLURAL QUOTIENT BITS PER ITERATION

Sydney W. Poland, Katy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 160,115, Nov. 30, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,323

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—764 **49 Claims**



1. A data processing apparatus for forming the quotient of a numerator divided by a divisor, the divisor having N bits and the numerator having more than N bits, said data processing apparatus comprising:

a first register storing the divisor;

a second register initially storing the numerator, said second register capable of left shifting data stored therein;

first, second and third full adders, each having first and second inputs and an output;

a latch conditionally storing the output of said third adder circuit;

first, second and third negative detectors connected to respective ones of said first, second and third full adders, each generating a negative signal when said corresponding full adder output is negative;

a loop counter storing a loop count; and

a control sequencer connected to said second register, said first, second and third full adders, said latch, said first, second and third negative detectors, said loop counter and said third register, said control sequencer controlling an initial sequence wherein

said third full adder adds the divisor stored in said first register to the divisor stored in said first register as left shifted one place, and

said latch stores said output of said third full adder, and

said control sequencer controlling an iteration sequence wherein for each iteration

said first full adder subtracts the divisor stored in said first register from N most significant bits of said data stored in said second register equal to the number of bits of the divisor,

said second full adder subtracts the divisor stored in said first register as left shifted one place from N most significant bits of said data stored in said second register equal to the number of bits of the divisor,

said third full adder subtracts the data stored in said latch from N most significant bits of said data stored in said second register equal to the number of bits of the divisor,

setting a pair of quotients bits 1) equal to "00" if said first negative detector indicates said output of said first adder is less than zero, 2) equal to "01" if said first negative detector indicates said output of said first full adder is not less than zero and said second negative detector indicates said output of said second full adder is less than zero, 3) equal to "10" if said second negative detector indicates said output of said second full adder is not less than zero and said third negative detector indicates said output of said third full adder is less than zero, 4) equal to "11" if said third negative detector indicates said output of said third full adder is not less than zero,

replacing said N most significant bits of said second register with 1) said output of said first full adder if said first negative detector indicates said output of said first full adder is not less than zero and said second negative detector indicates said output of said second full adder is less than zero, 2) said output of said second full adder if said second negative detector indicates said output of said second full adder is not less than zero and said third negative detector indicates said output of said third full adder is less than zero, 3) said output of said third full adder if said third negative detector indicates said output of said third full adder is not less than zero,

left shifting said data stored in said second register two places,

updating said loop count stored in said loop counter, until said loop count stored in said loop counter reaches a predetermined end criteria.

5,442,582

TRANSVERSAL FILTER ALLRATE EQUALIZER FOR USE AT INTERMEDIATE FREQUENCY

Julius Lange, Sunnyvale, and Elbert L. Turner, San Jose, both of Calif., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Mar. 4, 1994, Ser. No. 206,065

Int. Cl.[6] G06G *7/02*; G06F *15/31*

U.S. Cl. 364—825 **5 Claims**

1. A transversal filter allrate equalizer for equalizing an intermediate frequency input signal, said equalizer comprising:

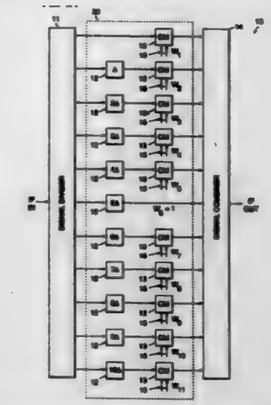
a signal divider coupled to receive the intermediate frequency input signal;

a transversal filter comprising:

a plurality of delay lines coupled to signal divider for producing time-shifted replicas of the intermediate frequency input signal; and

a plurality of multiplying circuits respectively coupled to the delay lines for weighting the time-shifted replicas of the input signal by complex numbers; and

a signal combiner coupled to the plurality of multiplying circuits for recombining the time-shifted and weighted



replicas of the input signal to produce an equalized output signal.

5,442,583

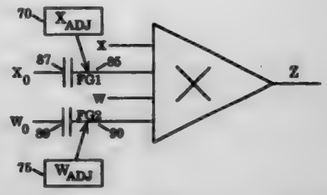
COMPENSATED ANALOG MULTIPLIERS

David B. Kirk, South Pasadena, and Alan H. Barr, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 14, 1993, Ser. No. 61,849

Int. Cl.[6] G06G *7/16*

U.S. Cl. 364—841 **21 Claims**



1. An analog multiplier which compensates for input offsets, said multiplier having a plurality of input nodes which are coupled to receive input signals and an output node which generates an output signal indicative of a product of the input nodes, said multiplier comprising:

at least one capacitor, each capacitor coupled between an input signal and a coupled input node;

at least one floating gate, each floating gate coupled between an input node and the coupled capacitor;

at least one floating gate control means, each means adjustable and coupled to the floating gate to control the amount of voltage at a floating node and therefore the amount of voltage at the coupled input node;

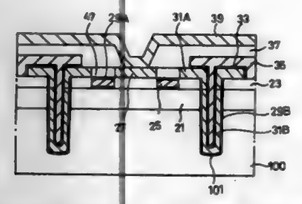
wherein the amount of voltage at each node having a capacitor, floating gate and floating gate control means is controlled to eliminate input offsets at the node.

5,442,584

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR FABRICATING THE SAME DYNAMIC RANDOM ACCESS MEMORY DEVICE CONSTRUCTION

Jae S. Jeong, Seoul, and Min H. Park, cheongju-si, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Sep. 14, 1993, Ser. No. 121,759
Int. Cl.[6] H01L *21/76*
U.S. Cl. 365—149 19 Claims



15. A dynamic random access memory (dRAM) device, comprising:
a high concentration substrate region of a first conductivity type;
an epitaxial layer of the first conductivity type formed over said substrate region;
an insulating layer formed over said epitaxial layer;
a transistor gate electrode form in a buried manner in a portion of said insulating layer;
a trench formed in said epitaxial layer and said substrate region through a portion of said insulating layer;
a source region formed over one side portion of said gate electrode and said trench;
a drain region formed over the other side portion of said gate electrode;
a transistor channel region of a second conductivity type formed over said gate electrode with a gate insulating film interposed therebetween;
a capacitor storage node formed on said trench with a first dielectric film interposed therebetween, said capacitor storage node having one portion disposed in said trench below said source region and the other portion extending from said one portion to a region over said insulating layer; and
a capacitor plate electrode formed over said capacitor storage node via a second dielectric film;
wherein said source region, said drain region, said channel region and said storage node are formed in a single layer.

5,442,585

DEVICE HAVING DIELECTRIC THIN FILM

Kazuhiro Eguchi, and Katsuaki Natori, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 7, 1993, Ser. No. 86,879
Claims priority, application Japan, Sep. 11, 1992, 4-243792
Int. Cl.[6] G11C *11/24*
U.S. Cl. 365—149 20 Claims



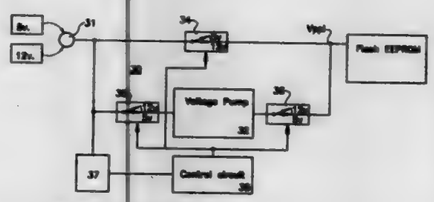
1. A semiconductor device, comprising:
a first electrode made of a first dielectric material containing an impurity;
a dielectric thin film made of a second dielectric material provided on a surface of the first electrode;
a second electrode provided on a surface of the dielectric thin film; and
wherein, the first electrode is formed on a semiconductor substrate.

5,442,586

METHOD AND APPARATUS FOR CONTROLLING THE OUTPUT CURRENT PROVIDED BY A CHARGE PUMP CIRCUIT

Jahanshir J. Javanifard, Sacramento; Albert Fazio, Los Gatos; Robert E. Larsen, Shingle Springs; James Brennan, Jr., Saratoga, and Kerry D. Tedrow, Orangevale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 10, 1993, Ser. No. 119,425
Int. Cl.[6] G11C *16/06*
U.S. Cl. 365—185 16 Claims



1. A circuit comprising:
a memory array comprising a plurality of floating gate field effect transistor devices including a gate terminal, a drain terminal and a source terminal;
a charge pump circuit for generating a positive voltage for source terminals of said floating gate field effect transistor devices during an erase operation;
a first terminal for receiving power from an external source;
a switch circuit coupled to said charge pump circuit and to said first terminal for selectively supplying power for an erase operation from either said terminal or said charge pump circuit to a second terminal; and
a control circuit coupled to said second terminal to receive said power for regulating current to a first constant current when said power is supplied from said charge pump circuit, and for not regulating current when said power is supplied from said external source, said first constant current being insufficient to bias a floating gate field effect transistor devices in a soft breakdown region during an erase operation.

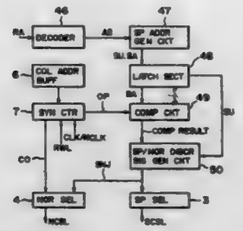
5,442,587

SEMICONDUCTOR MEMORY DEVICE

Masaaki Kuwagata, Kawaguchi, and Yuji Watanabe, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1993, Ser. No. 68,669
Claims priority, application Japan, May 29, 1992, 4-138814
Int. Cl.[6] G11C *29/00, 7/00*
U.S. Cl. 365—200 24 Claims

1. A semiconductor memory device having a normal column address portion and a spare column address portion, a column being selected on the basis of a column select signal obtained from a column address signal, wherein:
there is provided comparison discriminating means for comparing the column address signal with a spare column address signal corresponding to the spare column address portion to obtain a comparison result and further discriminating whether the column address signal is a normal column address signal or the spare column address signal, on the basis of the comparison result,
there is provided a synchronizing counter having signal transferring means for receiving an input signal and transmitting an output signal in response to a transfer signal, for outputting the column address signal; and



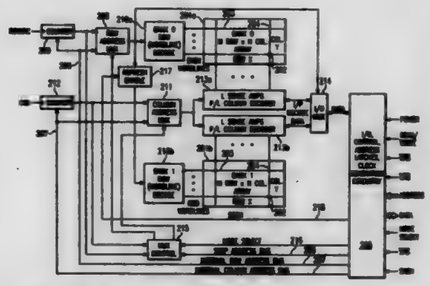
said comparison discriminating means includes a comparing circuit for comparing the column address signal prepared at an input node of said signal transferring means as a counter output preparation node of said synchronizing counter, with the spare column address signal.

5,442,588

CIRCUITS AND METHODS FOR REFRESHING A DUAL BANK MEMORY

Michael E. Runas, McKinney, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Aug. 16, 1994, Ser. No. 291,155
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—222 20 Claims



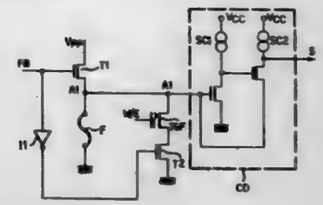
1. Memory circuitry compriaing:
first and second banks of memory cells arranged in rows and columns;
a first row decoder for selecting a said row in said first bank in response to a row address of a first group of row addresses;
a second row decoder for selecting a said row in said second bank in response to a row address of a second group of row addresses;
row address circuitry for presenting a sequence of said row addresses to said row decoders in response to a single row address received at an address port to said memory circuitry, said row address circuitry presenting only row addresses of said first group in a refresh mode; and
refresh circuitry coupling said row address circuitry with said second row decoder, said refresh circuitry in said refresh mode converting a said row address presented by said row address circuitry in said first group into a said address in said second group for use by said second row decoder.

5,442,589

FUSE CIRCUITRY HAVING PHYSICAL FUSE AND NON-VOLATILE MEMORY CELL COUPLED TO A DETECTOR

Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

Filed Oct. 26, 1993, Ser. No. 143,185
Claims priority, application France, Oct. 29, 1992, 92 12969
Int. Cl.[6] G11C *17/16*
U.S. Cl. 365—225.7 20 Claims



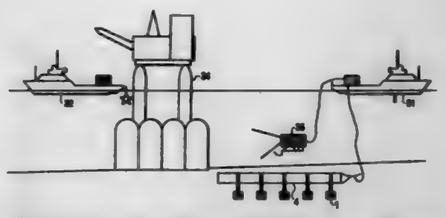
1. A fuse circuit comprising:
a physical fuse;
a detection circuit for the detection of the state of the physical fuse; and
an electrically programmable non-volatile memory cell associated with the physical fuse, programmed when the physical fuse is blown and connected to the detection circuit so that, when the electrically programmable non-volatile memory cell is programmed, the electrically programmable non-volatile memory cell confirms the blown state of the physical fuse even if the characteristics of the blown state of the physical fuse change with time.

5,442,590

SEISMIC CABLE DEVICE

Bjornar Sveaning, Trondheim, and Elvind Berg, Ranheim, both of Norway, assignors to Den norske stats oljeselskap a.s, Stavanger, Norway

PCT No. PCT/NO90/00159, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/06879, PCT Pub. Date May 16, 1991
PCT Filed Oct. 22, 1990, Ser. No. 848,009
Claims priority, application Norway, Oct. 26, 1989, 894263
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—15 5 Claims



1. Device comprising instruments for collection and recording of signals in seismic exploration off-shore, in that the device is designed as a pole which is arranged so that it can be forced down into a sea bed and comprises a pointed lower end (7), an intermediate approximately cylindrically shaped main portion (6), in that the intermediate main portion's (6) upper end is connected to a top part (8) arranged for mounting and handling the device, in that the instruments measure both shear waves and pressure waves, and in that the device is connected to a main cable (4) which extends to a seismic ship (29, 31) characterised in that
the pointed lower end comprises three geophones (15–17) arranged in mutually perpendicular directions,

a hydrophone (23) is placed near the upper end of the device,
it comprises an electronic angle gauge (19) which indicates the angle of the device with the vertical axis,
it comprises a compass (18) which indicates the pole's rotation in the plane,
the intermediate portion (6) comprises a processor (21) which at least processes signals from the geophones (15–17), the angle gauge (19), the compass (18) and the hydrophone (23).

5,442,591

METHOD FOR ADAPTIVELY SUPPRESSING NOISE TRANSIENTS IN SUMMED CO-SENSOR SEISMIC RECORDINGS

William H. Dragoset, Jr., and Ronald E. Chambers, both of Houston, Tex., assignors to Western Atlas International, Houston, Tex.

Filed Jun. 21, 1994, Ser. No. 263,056
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—21 **6 Claims**



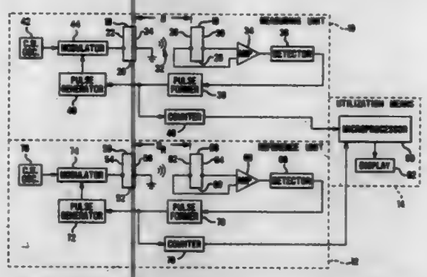
1. A method for adaptively suppressing undesired singular transients from time-scale recordings of seismic signals detected concurrently by a plurality of co-located velocity-responsive and pressure-responsive co-sensors, comprising:
a) generating a reflected seismic wavefield in a moisture-laden environment for detection by said pressure-responsive and velocity-responsive co-sensors to provide hydrophone and geophone time-scale signatures;
b) defining a scale factor, k, for scaling the geophone signatures to conform to the hydrophone signatures in amplitude;
c) grouping the detected signatures from said pressure-responsive sensors to form a common hydrophone gather, grouping the detected signatures from said velocity-responsive sensors to form a common geophone gather;
d) defining a fixed analysis window common to both gathers;
e) defining a ratio R_1 between the common geophone gathers and the common hydrophone gathers within said fixed analysis window;
f) partitioning the common hydrophone and the common geophone gathers into a plurality of common weighting zones;
g) within a first weighting zone, defining a ratio $R_{2,1}$ between the hydrophone signatures and the geophone signatures;
h) forming an equalization operator, m_1, from a combination of R_1 and $R_{2,1}$;
i) combining the hydrophone signatures in the common hydrophone weighting zone with the scaled geophone signatures in the common geophone weighting zone in the presence of said equalization operator to define a transient-free time-scale datum f(τ).

5,442,592

ULTRASONIC DISTANCE METER

Minoru Toda, Lawrenceville, N.J., and Kyung T. Park, Berwyn, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 8, 1994, Ser. No. 193,345
Int. Cl.[6] G01S *11/14*; G01N *29/00*
U.S. Cl. 367—124 **8 Claims**



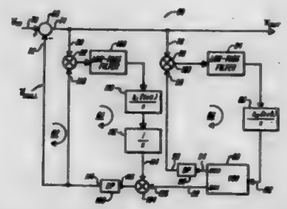
1. Ultrasonic distance measuring apparatus comprising:
a reference unit including:
a reference electroacoustic transmitter responsive to an electrical pulse applied thereto for generating an acoustic wave having the resonant frequency of an apparatus transducer;
a reference electroacoustic receiver spaced a fixed reference distance from said reference transmitter, said reference receiver being responsive to said acoustic wave impinging thereon for generating an electrical signal;
reference feedback means coupled between said reference receiver and said reference transmitter and adapted to respond to an electrical signal from said reference receiver for applying a shaped electrical pulse to said reference transmitter; and
reference pulse counting means coupled to said reference feedback means for providing a count of the number of pulses applied to said reference transmitter;
a measuring unit including:
a measuring electroacoustic transmitter responsive to an electrical pulse applied thereto for generating said acoustic wave;
a measuring electroacoustic receiver spaced from said measuring transmitter by a distance to be measured, said measuring receiver being responsive to said acoustic wave impinging thereon for generating an electrical signal;
measuring feedback means coupled between said measuring receiver and said measuring transmitter and adapted to respond to an electrical signal from said measuring receiver for applying a shaped electrical pulse to said measuring transmitter; and
measuring pulse counting means coupled to said measuring feedback means for providing a count of the number of pulses applied to said measuring transmitter; and
utilization means coupled to said reference and measuring pulse counting means for utilizing the ratio of the pulse counts of said reference and measuring pulse counting means to determine the distance between said measuring transmitter and receiver;
whereby said apparatus is insensitive to temperature and humidity variations.

5,442,593

APPARATUS AND METHOD OF NULLING DISCRETE FREQUENCY NOISE SIGNALS

Dale T. Woodbury, Belmont; Christopher R. Doerr, Cambridge, and Tze T. Chien, Wayland, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 16, 1993, Ser. No. 48,759
Int. Cl.[6] H04B *1/06*
U.S. Cl. 367—135 **26 Claims**



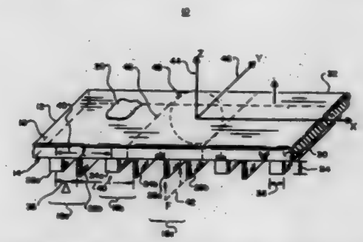
1. A signal processing system responsive to an input signal including an information portion and a periodic noise component, for generating a nulling signal for attenuating the periodic noise component, wherein said noise component has an associated phase angle, frequency and amplitude, said system comprising:
A. a combining network including means for generating an output signal representative of a combination of said input signal and said nulling signal, and
B. a phase and frequency nulling network responsive to said output signal including means for detecting said frequency and said phase angle associated with said periodic noise component, and means for generating said nulling signal whereby said nulling signal has a frequency and a phase angle substantially equal to said frequency and said phase angle associated with said noise component.

5,442,594

RIB STIFFENED SOUND WAVE PROJECTOR PLATE

Benjamin A. Cray, Richmond, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1994, Ser. No. 306,555
Int. Cl.[6] H04R *1/00*
U.S. Cl. 367—162 **11 Claims**



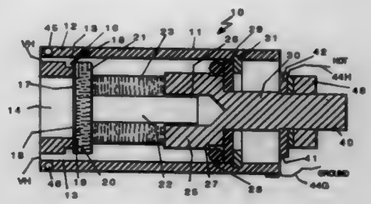
1. An acoustic, rib stiffener sound wave projector plate, for generating low frequency sound waves in a fluid medium when the plate is energized and flexed, comprising:
a flexible sound projector plate having at least first and second parallel, major planar surfaces;
said first major planar surface of said flexible sound wave projector plate including at least a first set of sound wave projector plate ribs disposed perpendicular to said first major planar surface, each set of sound projector plate ribs including at least first and second rib set members;
said first sound wave projector plate rib member including first predetermined width and height wherein at least one of said first predetermined width and height is not equal to at least one of a corresponding width and height of said second sound wave projector plate rib set member; and
said second major planar surface of said rib stiffened, sound wave projector plate coupled proximate said fluid medium, for generating low frequency sound waves in said fluid medium when said sound projector plate is energized and caused to flex.

5,442,595

CAPACITANCE-TYPE ULTRASONIC TRANSDUCER

John A. Dorr, Crofton, Md., assignor to Xecutek Corporation, Annapolis, Md.

Filed Apr. 22, 1994, Ser. No. 231,550
Int. Cl.[6] H04R *19/00*
U.S. Cl. 367—181 **8 Claims**



1. An ultrasonic transducer comprising
a hollow cylindrical housing having an open end, an interior and means forming an annular conductive contact surface in said interior,
a high temperature plastic insulating film having first and second sides, a conductive metal film on said first side and engaged with said annular conductive contact surface,
a gas permeable sintered metal conductive disk member having third and fourth sides a peripheral shoulder on said third side, a non-conductive member seated in said peripheral shoulder sandwiching said insulating film between said conductive contact surface and said peripheral shoulder, with said third side bounded by said peripheral shoulder contacting said second side of said insulating film,
spring means for applying pressure on said fourth side of said gas permeable sintered metal conductive disk member,
means forming a seal in said hollow cylindrical housing and retaining spring pressure on said film and said gas permeable sintered metal conductive disk member, and
signalling conductor means connected to said conductive contact surface and said conductive disk.

5,442,596

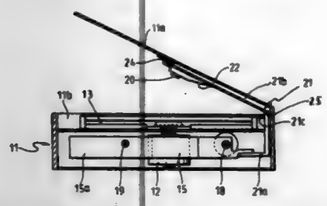
RECORDING/REPRODUCING APPARATUS HAVING A MAGNETIC HEAD WHICH IS OPENED AND CLOSED TOGETHER WITH A DOOR

Jae-yong Eom, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 15, 1993, Ser. No. 120,767
Claims priority, application Rep. of Korea, Sep. 15, 1992, 92-16726
Int. Cl.[6] G11B *11/00, 33/02*
U.S. Cl. 369—13 **2 Claims**

1. A recording/reproducing apparatus for a magneto-optical disk and having a disk driver for rotating a magneto-optical disk medium, an optical pickup for irradiating a light beam on one side of the rotating disk medium and detecting a signal from a reflected light, and a magnetization device for applying a magnetic field to an other side of the disk medium, said recording/reproducing apparatus comprising:
a housing for accommodating said disk driver and said optical pickup and having an opening for enabling the disk medium to be loaded on and unloaded from said disk driver;

a door which is rotatably hinged with one side of said housing so as to open and close the opening of said housing;
pickup driving means having a carriage on which said optical pickup is loaded to drive said carriage so that said optical pickup is moved in a radius boundary of the disk medium; and
means for supporting the magnetization device on the door so that said magnetization device is moved together with said optical pickup, and at the same time is positioned farther from or closer to the disk medium according to the opening and closing, respectively, of said door,
wherein said support means comprises:



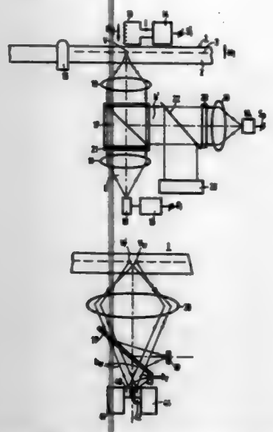
a connection member having a support portion for supporting said magnetization device and a movable portion which is fixed to said carriage, one end of said support portion being hinged to said movable portion; and
a guide member which is installed on said door, the other end of said support portion being slidably contacted with said guide member, and
further wherein a supporting plate for supporting said support portion is formed on said connection member, so that said support portion is parallel to said disk medium when said door is closed.

5,442,597

APPARATUS FOR WRITING AND READING A MAGNETO-OPTICAL RECORD CARRIER

Johannes H. M. Spruit; Bernardus A. J. Jacobs, and Cornelis M. J. Van Uijen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 790,109, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 347,610, May 2, 1989, abandoned. This application Dec. 14, 1993, Ser. No. 166,804
Claims priority, application Netherlands, Feb. 15, 1989, 8900362
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **22 Claims**



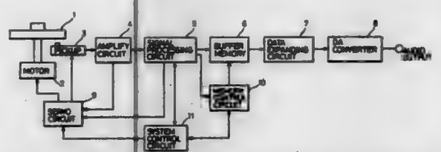
1. Apparatus for writing and subsequent reading of information in a magneto-optical information layer of a record carrier by means of diode laser radiation, which radiation is focused to a diffraction-limited radiation spot on an information layer, and by means of a movement of said radiation spot and the record carrier relative to each other, information being written by locally changing, at a location of the radiation spot formed by the write beam, a direction of magnetization of areas in the information layer by means of a diode laser write beam and a magnetic field, the information areas thus formed being read by detection of a variation, caused by the information areas, of a state of polarization of a diode laser read beam, wherein the improvement comprises the following combination of elements:
information areas are written by modulating the magnetic field with a high frequency in accordance with the information signal to be written so that magnetic domains are formed which are smaller than the write radiation spot, and
reading is effected by means of a diode laser read beam whose wavelength is shorter than that of the diode laser beam with which writing is effected so that the diode laser read beam forms a read spot which is smaller than the write radiation spot, the difference between the wavelengths of the diode laser read beam and the diode laser write beam being adapted to the difference between the dimensions in the direction of movement of the information areas and the write radiation spot.

5,442,598

INFORMATION REPRODUCTION APPARATUS WITH CONTROL MEANS FOR PLURAL TRACK KICKBACK OPERATION

Yukihiko Haikawa, and Shigeki Tsuji, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1993, Ser. No. 114,349
Claims priority, application Japan, Oct. 14, 1992, 4-275858
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **14 Claims**



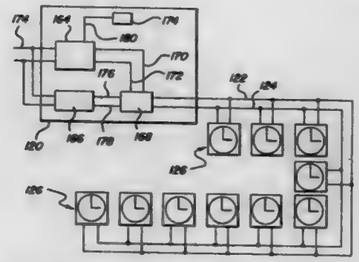
1. An information reproduction apparatus for reproducing information recorded on a recording track of a recording medium, comprising:
reproduction means for reproducing at a first transfer rate information recorded on said recording medium by tracing said recording medium,
memory means for storing information reproduced by said reproduction means,
readout means for reading out stored information from said memory means at a second transfer rate lower than said first transfer rate, and
control means for controlling said reproduction means and said memory means such that
when the amount of information stored in said memory means exceeds a predetermined value, storage of information from said reproduction means into said memory means is suspended and the reproduction position of said reproduction means is moved back by a plurality of tracks at once with the number of tracks corresponding to an information amount to trace said recording track, and
when said reproduction means arrives at a position where information subsequent to the last information stored in said memory means is recorded, storage of information from said reproduction means to said storage means is reinitiated.

5,442,599

IMPULSE CLOCK SYSTEM

Michael P. Burke, Dearborn; Stephen A. Bogdan, Huntington Woods, and Bruce D. Emaus, Dearborn Heights, all of Mich., assignors to National Time & Signal Corporation, Oak Park, Mich.

Continuation-in-part of Ser. No. 186,654, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 589,174, Sep. 27, 1990, Pat. No. 5,282,180. This application Jul. 13, 1994, Ser. No. 274,485
Int. Cl.[6] G04C *11/00, 13/04*
U.S. Cl. 368—46 **15 Claims**



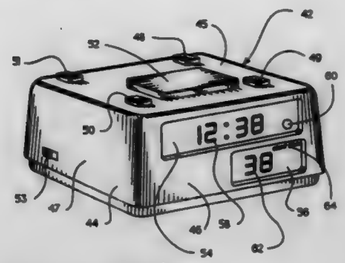
1. A clock system including:
a plurality of analog secondary clocks each including motor means to advance the respective clock; and
control means operative to
maintain real time,
generate real time pulses for transmittal to the motor means of the secondary clocks to advance the secondary clocks, and
move the secondary clocks at any time, and irrespective of the instantaneous time differential between the secondary clocks, to the real time as determined by the control means.

5,442,600

SNOOZE-TIMER DEVICE

Thomas H. Kutosky, Ten Barrington Dr., Pittsburgh, Pa. 15209

Filed Jul. 8, 1993, Ser. No. 88,840
Int. Cl.[6] G04F *8/00*; B04B *23/00*
U.S. Cl. 368—109 **20 Claims**



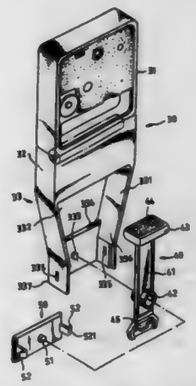
1. A timer device comprising:
a) a housing;
b) only one button-type switch attached to the housing;
c) a time display unit attached to the housing;
d) an alarm being positioned within the housing;
e) a clock positioned within the housing;
f) a central processing unit positioned within the housing and electrically connected to the time display unit, the button-type switch, the alarm and the clock; and
g) memory means positioned within the housing and electrically connected to the central processing unit, the memory means containing a program which enables a user to set the alarm to sound at the end of a time period selected by the user which selection is made by depressing the button-type switch a number of times which corresponds to the time period selected by the user the time period being the number of times multiplied by a selected time interval and which program causes the selected time period to be displayed on the display unit where each depression of the switch is for a first length of time, the memory means program further providing that depression of the button-type switch once for a second length of time will reset the timer device.

5,442,601

STRUCTURE OF A ULTRATHIN CLOCK

Ching-Ti Chen, Changhua Hsien, Taiwan

Filed Oct. 11, 1994, Ser. No. 320,266
Int. Cl.[6] G04B *17/02, 15/00*
U.S. Cl. 368—134 **3 Claims**



1. A structure of an ultrathin clock comprising generally a roughly rectangular housing, a pendulum and a flat rectangular cover therefor, wherein:
said housing comprising a first chamber on an upper portion for disposing a clockwork mechanism and dial therein, a second chamber on the median portion for disposing a set of an electric circuit and batteries and a third chamber on the lower portion for pivoting said pendulum therein;
said third chamber comprising a roughly inverted trapezoid body having an opening on the back side, a window on the front side, a knife-edge pivot axis projected at a center on the inward surface of a front wall thereof and a pair of retaining slots respectively formed on the lateral sides thereof;
said pendulum comprising a flat rectangular body having a tubular suspender perpendicularly extended across the flat body and in the proximity of the lower end of said body, a rectangular cup formed perpendicular to the upper end thereof for retaining a magnet therein and a hook means extended downward from the lower end thereof for attaching a bob thereon;
said cover comprising a corresponding knife-edge pivot axis projected from a center of the inward surface thereof and a pair of the spring tabs having reverse hooks projected inwardly from the lateral sides thereof;
whereby, said pendulum is attached on said tubular suspender to said pivot axis inside said third chamber and supported by said correspponding pivot axis of said cover

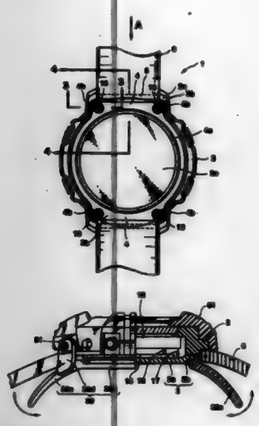
which is snapped on said pair of spring tabs thereof into said pair of retaining slots of said third chamber.

5,442,602

WRISTWATCH CASE WITH SHOCK ABSORBING MEMBERS ON THE REAR SIDE THEREOF

Masaaki Hirai; Mitsuo Matsunaga, and Yoshiya Kato, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,098
Claims priority, application Japan, Aug. 25, 1993, 5-232321; Jan. 31, 1994, 6-025860
Int. Cl.[6] G04B *37/00*
U.S. Cl. 368—286 **27 Claims**



1. A wristwatch case comprising:
a wristwatch case body having wrist band attaching portions;
a back cover attached to a back surface of the wristwatch case body, the back cover having a back surface and an outer rim;
flange portions formed at 6- and 12-o'clock positions on the outer rim of the back cover; and
a shock absorbing member attached to a back surface portion of the back cover, the shock absorbing member being attached to the flange portions of the cover.

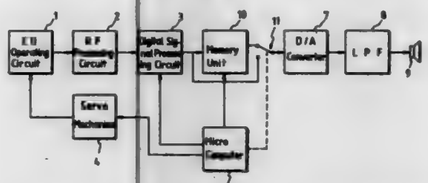
5,442,603

DIGITAL AUDIO REPETITIVE REPRODUCTION SYSTEM

Dong G. Kim, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries, Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 9, 1993, Ser. No. 163,535
Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26393
Int. Cl.[6] G11B *17/22, 7/00*
U.S. Cl. 369—32 **6 Claims**

1. A digital audio repetitive reproduction system comprising:
compact disc operating means for operating a compact disc to read an audio signal from the compact disc;
radio frequency processing means for processing the read audio signal from said compact disc operating means in a radio frequency form and outputting a resultant radio frequency signal;
digital signal processing means for processing the radio frequency signal from said radio frequency processing means in a digital form and outputting resultant digital audio data;
digital/analog conversion means for converting the digital audio data from said digital signal processing means into an analog audio signal;
system control means for outputting a plurality of control signals to control operation of the system;
servo means for controlling said compact disc operating means in response to a corresponding control signal from said system control means;
memory means connected to said digital signal processing



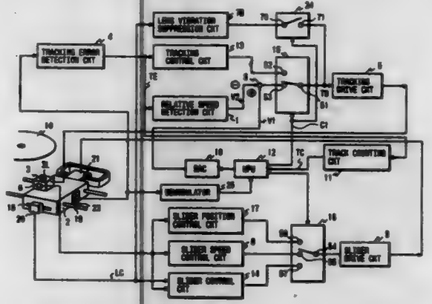
means for storing the digital audio data from said digital signal processing means; and
switching means connected between said memory means, said digital signal processing means and said digital-/analog conversion means to select digital audio data from one of said memory means and said digital signal processing means in response to control signals from said system control means and outputting the selected digital audio data to said digital/analog conversion means.

5,442,604

ACCESS CONTROL DEVICE

Yutaka Osada, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 30, 1992, Ser. No. 983,028
Claims priority, application Japan, Nov. 29, 1991, 3-340017; May 29, 1992, 4-163780
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.11 **6 Claims**



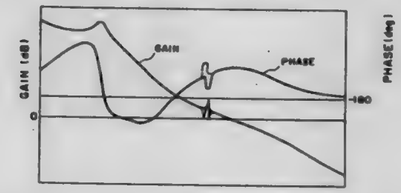
1. An access control device for use in an optical disk system including an optical pickup device for recording information on and reproducing information from an optical disk having a concentric or spiral track for recording information thereon, a tracking actuator for controlling a laser beam spot on the optical disk in such a manner to follow a center of a track, a tracking error detection circuit for detecting a difference between the position of the laser beam spot and the center of the track and a tracking drive circuit for driving the tracking actuator according to an output of the tracking error detection circuit, said access control device for moving the laser beam spot to a target track, comprising:
a lens position sensor for detecting the position of an objective lens of the optical pickup device; and
a lens vibration suppression circuit controlled according to an output of the lens position sensor for outputting a signal to suppress the vibration of the objective lens, wherein outputs of the lens vibration suppression circuit are supplied to the tracking drive circuit to suppress the vibration of the objective lens for a predetermined period of time immediately before and after a state of the optical disk system is changed from a state, in which the tracking actuator does not perform a control operation on the laser beam spot with respect to the track, to a state in which a tracking control operation is performed, wherein the lens vibration suppression circuit includes a non-linear amplifier and means for increasing an amplification factor thereof when the output of the lens position sensor becomes large.

5,442,605

HEAD DRIVING DEVICE WITH CARRIAGE ASSEMBLY CENTROID POSITION SET WHERE SERVO FREQUENCY IS NOT DELAYED

Manabu Ogura, and Hidemitsu Fujisawa, both of Hyogo, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 73,490, Jun. 9, 1993, abandoned. This application Oct. 4, 1994, Ser. No. 322,723
Claims priority, application Japan, Jun. 30, 1992, 4-172341
Int. Cl.[6] G11B *21/02*
U.S. Cl. 369—44.14 **4 Claims**



1. In a head driving device having an optical head for erasing, recording and reproducing information optically, a carriage adapted to move in a radial direction of a disk as an information recording carrier together with said optical head, and voice coils attached to said carriage and imparting a thrust to the carriage in cooperation with a magnetic circuit, wherein tracking is performed by the combination of a coarse movement made by a linear actuator including a magnetic circuit and voice coil and a fine movement made by a lens actuator or a galvanomirror, the improvement in which a centroid position of the whole of a carriage assembly including said optical head, said carriage and said voice coils is located between a drive force working line of said linear actuator and said disk, wherein in a pitch resonance portion which appears on an open loop frequency characteristic of a tracking servo system of the head driving device, said drive force working line of the linear actuator and said centroid position of said carriage assembly are deviated from each other within a range in which a phase of said open loop frequency characteristic of the tracking servo system is not delayed.

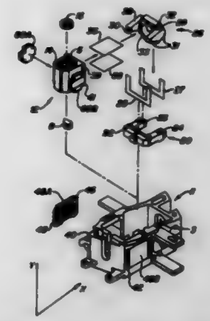
5,442,606

ELECTROMAGNETIC LENS ACTUATOR FOR OPTICAL DISK DRIVE

Martin McCaslin, Pleasanton, and Brad Johnson, Santa Clara, both of Calif., assignors to Hyundai Electronics America, Inc., Milpitas, Calif.

Continuation of Ser. No. 42,332, Apr. 2, 1993, abandoned. This application Jun. 13, 1994, Ser. No. 259,275
Int. Cl.[6] G11B *7/12*
U.S. Cl. 369—44.15 **20 Claims**

1. An apparatus for positioning an objective lens in an optical disk drive comprising:
a housing;
a lens unit disposed within the housing;
means for flexibly supporting the lens unit in the housing such that the lens unit is movable in at least a first direction relative to the housing;
at least a first magnetic circuit mounted to the lens unit for creating a first magnetic field, each of the first magnetic circuits comprising a plurality of magnets; and
at least a first current conducting coil mounted on a magnetically conductive surface coupled to the housing, the first current conducting coil being coupled to an electricity source and having a first active region orthogonal to the first magnetic field and interactive therewith to apply a force to the lens unit in the first direction, wherein the first active region comprises at least half of the coil, and wherein the magnetically conductive surface increases the efficiency with which the first active region interacts with the first magnetic field.

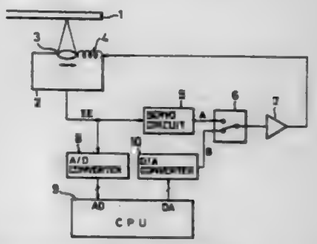


5,442,607

JUMP PULSE CORRECTOR AND OPTICAL DISK UNIT

Haruyuki Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 55,839
Claims priority, application Japan, May 1, 1992, 4-139749
Int. Cl.[6] G11B *7/09*
U.S. Cl. 369—44.25 **7 Claims**



1. A jump pulse corrector comprising:
light spot moving device for displacing a light spot in a direction perpendicular to a track of a disk;
tracking error signal detecting circuit for outputting a tracking error signal obtained in accordance with the relation in relative position between said light spot and the track;
a track jumping circuit for generating and transmitting a pulse signal for moving said light spot in the direction perpendicular to the track to said light spot moving device;
a level holding device for holding a voltage level of said tracking error signal after a constant time since said pulse signal was transmitted to the light spot moving device;

a level comparing circuit for comparing the voltage level of said tracking error signal with a predetermined level; and

a pulse height correcting device for correcting a wave height value of said pulse signal by accumulating comparing results of said level comparing circuit to the wave height value of said pulse signal at a predetermined ratio.

5,442,608

DISK APPARATUS HAVING A POWER CONSUMPTION REDUCING MECHANISM

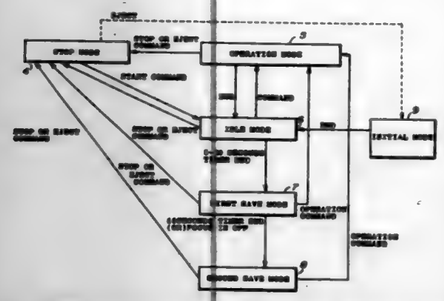
Yoshiaki Umeda; Teruo Furukawa; Masaharu Ogawa; Kazuhiko Nakase, all of Amagasaki; Akira Mashimo, Musashino; Tetsuro Araki, Musashino; Hiroyuki Onda, Musashino; Yoshiaki Sakai, Musashino; Hiroshi Tsuyuguchi, Musashino, and Katsuya Enami, Musashino, all of Japan, assignors to Mitsubishi Electric Corp and TEAC Corporation, both of Japan

Continuation of Ser. No. 731,500, Jul. 17, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 206,900

Claims priority, application Japan, Jul. 19, 1990, 2-191292

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.27 **16 Claims**



1. A disk apparatus having a first motor for rotating a data storage disk, a pickup, and a second motor for moving the pickup in radial directions with respect to said disk, and a command input device for inputting commands by a user, said disk apparatus having an operation mode for executing a command received from said command input device and an idle mode in which there is no signal processing for recording data on said disk, no recording, no signal processing of signals detected from said disk, and no reproduction of data but in said idle mode disk rotation and a focusing/tracking function to control focusing/tracking by a focusing/tracking control signal generated from a detected signal from said disk are performed, said disk apparatus further comprising:

a controller for receiving commands from said command input device and controlling operation of said disk apparatus including placing the apparatus in the operation and idle modes;

rotation control means, coupled to said controller, for controlling the first motor;

pickup motor control means, coupled to said controller, for controlling the second motor;

pickup control means, coupled to said controller, for controlling a focusing operation and a tracking operation of said pickup; and

signal processing means, coupled to said controller, for processing a recording signal to be recorded on said disk and a reproduced signal read out therefrom;

said controller comprising command judging means for judging that there is no input of a command from said command input device within a predetermined period of time when said apparatus is in said idle mode, mode displace means which executes inputted commands and changes the operative modes of the apparatus in accordance with said commands, and function stop means for stopping at least one of signal processing means, said rotation control means, said pickup motor control means, and said pickup control means when said command judging means judges that there is no input of a command, thereby to terminate a selected one of a disk rotation, focusing, and predetermined tracking functions of said idle mode.

5,442,609

TRACKING ERROR SIGNAL CORRECTING SYSTEM WHICH ADJUSTS GAIN SUCH THAT RENDING TRACKING ERROR SIGNALS AND RECORDING TRUCKING ERROR SIGNALS AND RECORDING TRACKING ERROR SIGNALS ARE EQUAL

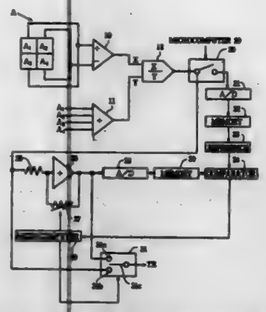
Naoharu Yanagawa, Saitama, Japan, assignor to Pioneer Electronics Corporation, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 88,120

Claims priority, application Japan, Jul. 28, 1992, 4-220724

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—44.280 **3 Claims**



1. A tracking error signal correcting system for a tracking error generating system for generating a tracking error signal based on a laser beam irradiated on a writable optical disc, by a pickup, the optical disc having a predetermined recording area, the correcting system comprising:

recording means for recording data on the predetermined recording area;

means for obtaining a recording tracking error signal from the recorded predetermined recording area through the tracking error generating system;

a first memory storing the recording tracking error signal;

a second memory storing a reading tracking error signal obtained through the tracking error generating system at reproduction of the optical disc;

adjusting means for adjusting gain of the tracking error generating system so that the level of the reading tracking error signal stored in the second memory becomes equal to the level of the recording tracking error signal stored in the first memory.

5,442,610

METHOD FOR PROCESSING AN ANOMALOUS WRITING IN AN OPTICAL DISK APPARATUS

Ichiro Moritomo, Sagamihara, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Continuation of Ser. No. 947,135, Sep. 18, 1992, abandoned. This application Dec. 29, 1994, Ser. No. 366,013

Claims priority, application Japan, Sep. 24, 1991, 3-272123

Int. Cl.[6] G11B *7/00*

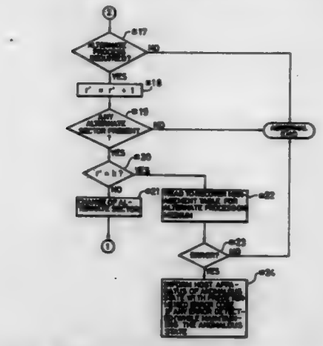
U.S. Cl. 369—47 **5 Claims**

1. A method for controlling an optical disk apparatus which executes an alternate process of a defective sector, stores control table storing the data for controlling the alternate process,

and writes the control table into a storage medium, the method comprising the steps of:

attempting to perform a writing operation for writing information into a sector;

executing an alternate process for a defective sector by alternating the defective sector with one of a plurality of sectors for alternate process and by writing said information into said one of a plurality of sectors for alternate process when said writing operation into said sector cannot be finished due to the occurrence of an anomalous state;



counting the number of times the alternate process has been executed for the defective sector;

comparing said number of times with a preset number of times; and

suspending the writing operation when the executing step is repeated for the defective sector by the preset number of times on the basis of the comparison result.

5,442,611

METHOD OF RECORDING INFORMATION ON RECORD MEDIUM HAVING DATA RECORD REGION AND FILE MANAGEMENT INFORMATION RECORD REGION
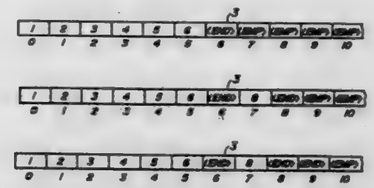
Naoki Hosaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 3, 1993, Ser. No. 55,309

Claims priority, application Japan, May 7, 1992, 4-114850

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—48 **11 Claims**



1. A method of recording information on a record medium including a data record region for recording actual data of files in a plurality of clusters and a file management information record region for recording file management information including a file name for each of said files, a file length of each of said files and a head cluster address indicating one of said plurality of clusters from which the actual data of each of said files are recorded, said method comprising the steps of:

(a) reading said file management information out of said file management information record region of the record medium;

(b) forming cluster chain management information on the basis of said file name, file length and head cluster address of each of said files;

(c) storing said cluster chain management information on a record area which is provided separately from said record medium;

(d) recording actual data of a new file in successive ones of said plurality of clusters in said data record region of said record medium; and

(e) recording, in said file management information record region of said record medium, a file name of said new file, a file length of said new file and a head cluster address indicating one of said plurality of clusters from which the actual data of said new file are recorded.

5,442,612

DIGITAL SIGNAL REPRODUCTION DEVICES, INTEGRATED CIRCUITS FOR USE THEREWITH, AND DIGITAL SIGNAL REPRODUCTION METHODS

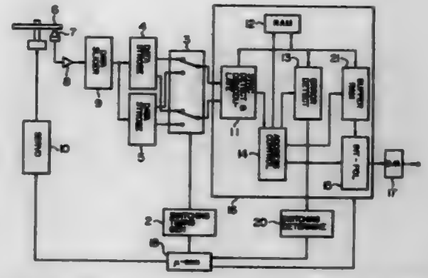
Toshifumi Takeuchi, Yokohama; Shinichi Obata, Fujisawa; Izumi Kimura, Yokohama; Osamu Kawamae, Kawasaki; Hiroshi Tadokoro, and Yutaka Nagai, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1993, Ser. No. 144,527

Claims priority, application Japan, Nov. 11, 1992, 4-301270; Aug. 30, 1993, 5-214200

Int. Cl.[6] G11B *5/09, 7/00*

U.S. Cl. 369—49 **15 Claims**



1. A digital signal reproduction apparatus which includes reproduction signal reading means for reading from a recording medium to reproduce a serial signal composed of blocks of data in a predetermined format and recorded on the recording medium and processing means for digitally processing the reproduced serial signal in accordance with the format, said reproduction apparatus comprising:

a first data strobe circuit for generating a first reproduction clock synchronous with the reproduced serial signal, intercepting the reproduced serial signal with the first reproduction clock and outputting first data;

a second data strobe circuit for generating a second reproduction clock synchronous with the reproduced serial signal, intercepting the reproduced serial signal with the second reproduction clock and outputting second data;

switching means for selecting one of a pair of the first data and the first reproduction clock output from said first data strobe circuit and a pair of the second data and the second reproduction clock output from said second data strobe circuit; and

signal processing means for digitally processing the data selected by said switching means in accordance with the format;

said switching means being switched in accordance with a signal indicative of the reproduction state of said reproduction signal reading means,

said first data strobe circuit including an analog data strobe circuit which comprises a voltage controlled oscillator and a phase comparator for comparing the first reproduc-

tion clock generated by said voltage controlled oscillator and the reproduced serial signal with respect to phase to form an analog PLL controlling the oscillating frequency of said voltage controlled oscillator in accordance with the output of said phase comparator; and

said second data strobe circuit including a digital data strobe circuit synchronizing the second production clock with an edge of the reproduced serial signal.

5,442,613

OPTICAL INFORMATION RECORDING/REPRODUCTION APPARATUS TO STOP RECORDING OPERATION UPON DETECTING ERROR IN ACCESS OPERATION TO TARGET TRACK

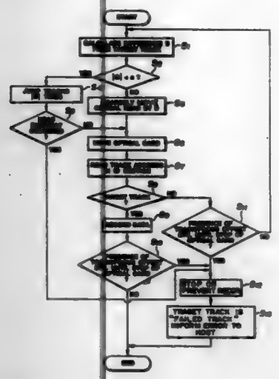
Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 827,390, Jan. 29, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,465

Claims priority, application Japan, Jan. 30, 1991, 3-009804

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—54 **21 Claims**



1. A method for controlling an optical information recording/reproducing apparatus, comprising:

performing an access operation to a target track prior to reaching said target track by moving relatively a recording medium and an optical head for irradiating a light spot onto said recording medium, and controlling said light spot to be focused on said recording medium; and

stopping the access operation to said target track if an abnormality due to at least one of a defect in a track of said recording medium and an impurity on a track of said recording medium is detected in the access operation to said target track during a period of time prior to reaching said target track, and wherein when said abnormality is detected, said target track is labelled as a failed track and no further accessing to said target track occurs.

5,442,614

METHOD OF RECORDING DATA AND INFORMATION REGARDING DEFECTS

Masahiro Tamegai, Koga, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 982,403, Sep. 9, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 351,066

Claims priority, application Japan, Sep. 13, 1991, 3-261425; Oct. 21, 1991, 3-299606; Mar. 6, 1992, 4-083055

Int. Cl.[6] G11B *7/00*

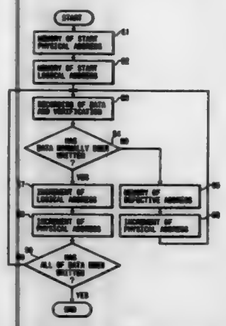
U.S. Cl. 369—58 **7 Claims**

1. A method of recording information onto an information recording medium comprising a data area having a plurality of sectors to record data and a directory area having a plurality of blocks to record directories, which are used to manage the data, said method comprising the steps of:

recording the data into a first sector group comprising at least one sector in the data area of the medium;

when there is a defect in at least a portion of the first sector group, recording the data to be recorded to the portion having the defect into a second sector group comprising at least one sector in the data area;

recording the directory corresponding to the data into the first block in the directory area of the medium;



when there is a defect in the first sector group, recording information regarding such a defect into the first block in the directory area; and

when only a portion of the information regarding the defect can be recorded into the first block, recording the remaining information regarding the defect into the second block in the directory area,

wherein an address of the head defective sector and the number of sectors indicating that defects continuously exist in those sectors when counted from the head defective sector are recorded as the information regarding the defects.

5,442,615

OPTICAL PLATE FOR CORRECTING COMATIC ABERRATION

Kiyoshi Ohsato, Chiba; Naoya Eguchi, and Kamon Uemura, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

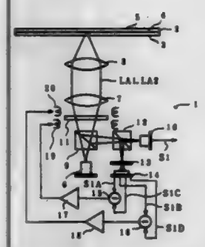
PCT No. PCT/JP92/01516, § 371 Date Aug. 26, 1993, § 102(e) Date Aug. 26, 1993, PCT Pub. No. WO93/10528, PCT Pub. Date May 27, 1993

PCT Filed Nov. 20, 1992, Ser. No. 90,115

Claims priority, application Japan, Nov. 20, 1991, 3-332449; Oct. 16, 1992, 4-278931

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—100 **5 Claims**



1. An optical disc apparatus comprising:

an optical disc for using a light beam incident through a transparent surface of the optical disc and focussed on an information recording surface of the optical disc to record desired information on the information recording surface and to reproduce information recorded on said information recording surface;

a light source for irradiating said light beam;

an object lens for focussing the light beam irradiated from said light source to the information recording surface; and

a light beam spot correction means having a plate-like transparent member for being interposed in a bundle of said light beam between said light source and said object lens, or between the object lens and said optical disc, said light beam spot correcting means also having a photo reflector for detecting an inclination angle of the plate-like transparent member: wherein

the transparent member inclination angle is changed according to a skew of the optical disc so as to correct the spot shape of the light beam focussed on the, information recording face for comatic aberration.

5,442,616

LIGHT SOURCE UNIT AND METHOD OF ADJUSTING FOR MAXIMIZING FOCUS AND TRACKING ERRORS THEREBY

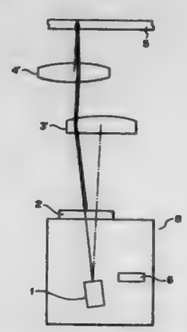
Nobuo Ogata, Tenri, and Hideaki Sato, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 16,456

Claims priority, application Japan, Feb. 13, 1992, 4-026589

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **5 Claims**



1. A light source unit which is utilized together with;

a collimator lens and an objective lens;

means for producing a signal for focusing and tracking which is calculated by adding up all amounts of light received by respective light receiving areas of a light receiving element;

means for adjusting a position of the objective lens, so as to maximize the signal;

where said light source unit which is integrally constructed of a package comprising;

a light source of an optical head and the light receiving element housed therein with a diffraction element which is adhesively secured on said package wherein predetermined focusing error signal and tracking error signal are obtained.

5,442,617

DIGITAL NOISE BLANKING CIRCUIT OF CD-ROM SYSTEM

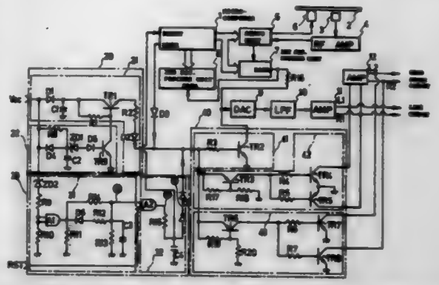
Gee-Bong Kim, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 16, 1993, Ser. No. 121,485

Claims priority, application Rep. of Korea, Sep. 16, 1992, 92-16820

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **20 Claims**



1. A digital noise blanking circuit for a CD-ROM system, the circuit comprising:

a first mute controller for providing a first mute signal for eliminating digital noise generated during a power on/off state change;

a second mute controller for providing a second mute signal for eliminating said digital noise generated during a reset operation of a computer; and

a muting circuit for cutting off said digital noise generated from an audio output terminal of the CD-ROM system in response to a selected one of said first and second mute signals output from the first and second mute controllers and a third mute signal output from a microcomputer of the CD-ROM system.

5,442,618

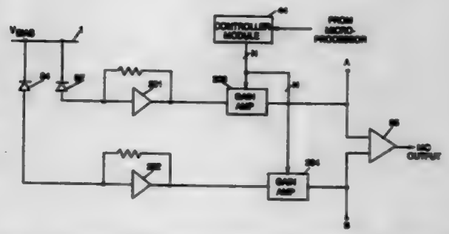
COMMON MODE REJECTION CONTROL IN AN OPTICAL DISK DRIVE

Anthony G. Dewey, San Jose, Calif.; Paul H. Francois; Timothy S. Gardner, both of Tucson, Ariz.; Hideaki Iwasaki, Fujisawa, Japan, and Morovat Tayefeh, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,896

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **20 Claims**



10. An optical disk drive apparatus capable of common mode rejection ratio (CMRR) optimization including an optical system for focussing light onto an optical disk, a data detecting portion for reading the light reflected from the optical disk, wherein the data detecting portion includes calibration setting inputs for modifying at least one operating parameter of

the data detecting portion, and a microprocessor for controlling the optical system and the data detecting portion, the optical disk drive comprising:

a controller module coupled to the microprocessor for receiving optimization setting commands from the microprocessor;

a first gain amplifier, included in the data detecting portion for amplifying a first polarized light signal, the first gain amplifier coupled to the controller module for receiving calibration settings from the controller module;

a second gain amplifier for amplifying a second polarized light signal, included in the data detecting portion, the second gain amplifier coupled to the controller module for receiving calibration settings from the controller module;

a first memory coupled to the microprocessor for storing an optimization procedure such that the microprocessor instructs the controller module to apply differing calibration settings to the first and second gain amplifiers while the microprocessor causes corresponding CMRR measurements to be made until an optimum CMRR measurement is found.

5,442,619

ERASABLE OPTICAL RECORDING MEDIUM WITH A REVERSIBLE LIGHT ABSORPTION LAYER

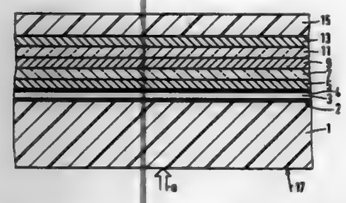
Cornelis M. J. Van Uijen, and Adrianus P. J. M. Jongenelis, both of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1994, Ser. No. 197,046

Claims priority, application European Pat. Off., Feb. 18, 1993, 93200466

Int. Cl.[6] G11B *7/26*

U.S. Cl. 369—275.2 **12 Claims**



1. An optical information carrier for recording, reading and erasing information by means of a laser-light beam, said optical information carrier comprising a transparent substrate having a servo track and a stack of layers, wherein the stack comprises at least one recording layer of a phase-change material and at least one reflection layer of metal,

characterized in that the stack also comprises at least one auxiliary layer having the property that the light absorption has a reversible, temperature-dependent character, such that at temperatures of the auxiliary layer below 70° C. the light absorption of the auxiliary layer is zero or substantially zero and at temperatures of the auxiliary layer above 70° C. the light absorption of the stack increases to more than 35%.

5,442,620

APPARATUS AND METHOD FOR PREVENTING COMMUNICATIONS CIRCUIT MISCONNECTIONS IN A BIDIRECTIONAL LINE-SWITCHED RING TRANSMISSION SYSTEM

Wilhelm Kremer, Dracut, Mass., assignor to AT&T Corp., Murray Hill, N.J.

Filed Mar. 26, 1992, Ser. No. 855,782

Int. Cl.[6] H04J *1/06*

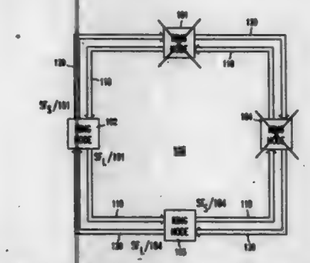
U.S. Cl. 370—16.1 **21 Claims**

1. A first ring node for use in a ring transmission system, comprising:

a means for monitoring signals into the first ring node to determine whether a second ring node in the ring transmission system has failed;

a means responsive to a determination that the second ring node has failed for detecting an active communications circuit passing through the first ring node which is terminated in the second ring node; and

a means for responsive to the detecting means for blocking the active communications circuit which is terminated in the second ring node,



wherein the means for monitoring includes a means for detecting a signal failure condition incoming to the first ring node on either a first or a second transmission path in the ring transmission, the first and second transmission paths connecting a plurality of ring nodes including the first and second ring nodes, and a means for detecting line-switch request messages in digital signals incoming to the first ring node on either of the first and second transmission paths.

5,442,621

ISDN SWITCHING SYSTEM HAVING TESTING FACILITIES

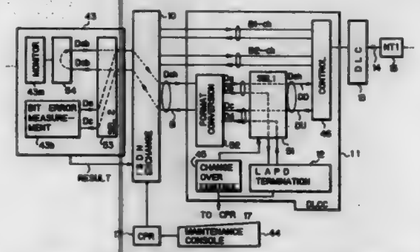
Noboru Ise; Kenji Tsutsumi; Ryoji Shimozono; Aya Takagi, all of Kawasaki; Hiroyuki Kudoh, Fukuoka; Hiroshi Adachi, Fukuoka; Yoshihiro Shimizu, Fukuoka, and Kunio Yamamoto, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 25, 1992, Ser. No. 981,557

Claims priority, application Japan, Nov. 27, 1991, 3-312309; Jan. 20, 1992, 4-007032

Int. Cl.[6] H04L *1/14*

U.S. Cl. 370—15 **20 Claims**



1. An ISDN switching system having testing facilities comprising:

an ISDN exchange accommodating a plurality of lines on which ISDN signals each composed of B-channels and D-channels at least are transferred, and having connection paths formed therein between the incoming line and the outgoing line;

testing means connected through said ISDN exchange for carrying out a test with respect to an object to be tested, which object exists along said line;

converting means for directly connecting to said ISDN exchange through one of said lines by performing a signal format conversion from a D-signal format that does not match said ISDN signal to a B-signal format that matches said ISDN signal;

change-over means, located between said object to be tested and said converting means, which is operative to apply a received D-channel signal selectively to said converting means or to a Link Access Procedure on a D-channel (LAPD) termination unit; and

connecting means for forming said connection path in said ISDN exchange between the line connected to said converting means and the line connected to said object to be tested.

5,442,622

COMMUNICATION SYSTEM WITH ISDN AS A BACKUP OF INTER-PBX TIE TRUNK

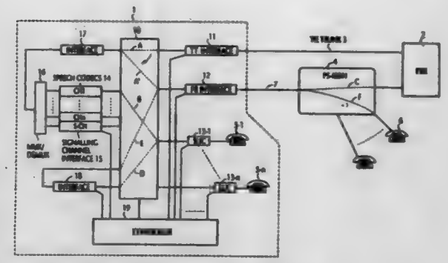
Makoto Hokari, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,936

Claims priority, application Japan, Jun. 21, 1993, 5-172126; Jun. 21, 1993, 5-172127

Int. Cl.[6] H04L *1/22*

U.S. Cl. 370—16 **14 Claims**



1. A private branch exchange comprising:

a switch;

a plurality of line interfaces connected to the switch for accommodating private branch exchange (PBX) user telephones;

a tie trunk interface connected to the switch for accommodating a tie trunk connected to a distant PBX;

an ISDN (integrated services digital network) interface connected to the switch for accommodating a public switched ISDN network;

a plurality of bit-rate compression/expansion means connected to the switch, each of the bit-rate compression/expansion means for converting a 64-kbps digital input signal to a lower bit rate digital output signal and converting a lower bit rate digital input signal to a 64-kbps digital output signal;

mux/demux means connected between said plurality of bit-rate compression/expansion means and the switch for multiplexing the lower bit rate digital output signals from the bit-rate compression/expansion means to produce an output multiplex signal and demultiplexing an input multiplex signal into a plurality of lower bit rate digital signals and applying the demultiplexed lower bit rate digital signals to said bit-rate compression/expansion means, respectively; and

control means associated with said line interfaces, said tie trunk interface and said ISDN interface for controlling said switch in response to a call from a said PBX user telephone to establish a connection between the line interface of the said PBX user telephone and any of the bit-rate compression/expansion means and a connection between the mux/demux means and the tie trunk interface when said call is destined to the distant PBX, or a connection between the line interface of the said PBX user telephone and the ISDN interface when said call is destined to a user telephone of the ISDN network, the control means monitoring the tie trunk interface for detecting a failure in the tie trunk and, in response, establishing a backup connection between the mux/demux means and the ISDN interface, instead of the connection between the mux/demux means and the tie trunk interface, and causing the ISDN network to establish a connection between the ISDN interface and the distant PBX.

5,442,623

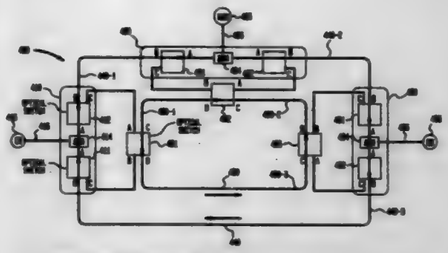
PASSIVE PROTECTED SELF HEALING RING NETWORK

Tsong-Ho Wu, Howell, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Aug. 17, 1992, Ser. No. 931,082

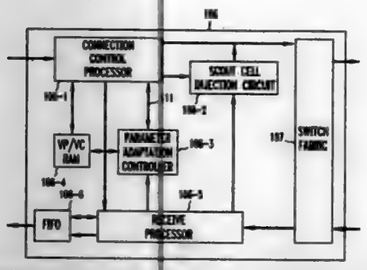
Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—16.1 **10 Claims**



identifier and transmitting said scout message over said connection,

at each of said intervening ports, responding to receipt of said scout message containing said first identifier either by transmitting said scout message via said connection to a next, succeeding port or discarding said scout message if traffic congestion is respectively not present or is present thereat, and



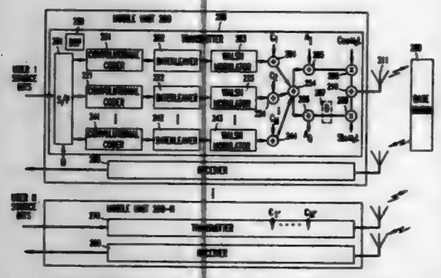
at said second port, responding to receipt of said scout message either by changing said first identifier in said scout message to a second identifier and returning said scout message containing said second identifier to said first port via a return path of said connection if traffic congestion is not present at said second port, otherwise, discarding said scout message if traffic congestion is present at said second port.

5,442,625

CODE DIVISION MULTIPLE ACCESS SYSTEM PROVIDING VARIABLE DATA RATE ACCESS TO A USER

Richard D. Gitlin, Little Silver, and Chih-Lin I, Manalapan, both of N.J., assignors to AT&T Ipm Corp, Coral Gables, Fla.

Filed May 13, 1994, Ser. No. 242,471
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—18 **14 Claims**



1. A code division multiple access radio transmitter unit comprising

means for receiving a digital bitstream from a user at one of a plurality of source bit rates, wherein said plurality of source bit rates includes a basic bit rate R and at least one other bit rate which is a multiple M of the basic bit rate R, where R and M are positive integers of at least 1, a user input selecting a particular user source bit rate by identifying a basic bit rate multiple M,

adjustable coding means, responsive to said user input, for spreading and transmitting the user digital bit stream received at the selected bit rate to a channel bit rate which at least equals the highest bit rate of said plurality of source bit rates,

wherein said adjustable coding means includes

a serial-to-parallel means, responsive to a user's input identifying a basic bit rate multiple M, for converting a received user bit stream, which is M times a basic bit rate R, into M basic bit rate streams,

M encoder means for spreading each of the M basic bit rate streams, using a different spread code C, into M channel bit rate signals, and

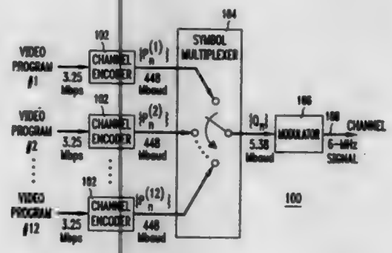
means for combining the M channel bit rate signals into one channel bit rate signal and modulating the channel signal onto a carrier signal for transmission from said transmitter unit.

5,442,626

DIGITAL COMMUNICATIONS SYSTEM WITH SYMBOL MULTIPLEXERS

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 24, 1993, Ser. No. 110,906
Int. Cl.[6] H04J *11/00*
U.S. Cl. 370—20 **11 Claims**



1. A transmitter comprising:

means for generating a sequence of bit groups for each of a plurality of sources, each bit group representing to a symbol of a predetermined constellation;

means for multiplexing the plurality of sequences of bit groups output by the plurality of sources into a single sequence of bit groups, where the multiplexing is performed on a bit group-by-bit group basis; and

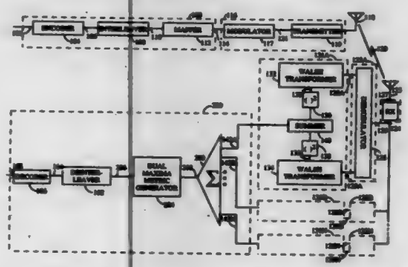
means for generating a transmitted signal that represents said single sequence of bit groups.

5,442,627

NONCOHERENT RECEIVER EMPLOYING A DUAL-MAXIMA METRIC GENERATION PROCESS

Audrey Viterbi, and Andrew J. Viterbi, both of La Jolla, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jun. 24, 1993, Ser. No. 83,110
Int. Cl.[6] H04K *1/00*
U.S. Cl. 370—22 **29 Claims**



1. A method of decoding an orthogonally encoded data signal corresponding to an original data signal, said orthogonally encoded data signal having a fixed number of possible code values each having an index number wherein a binary equivalent of said index number corresponds to said original data signal, comprising the steps of:

receiving a set of energy values, each energy value corresponding to a respective one of said fixed number of code values and corresponding index number;

searching a first subset of said set of energy values for a maximum energy value wherein said first subset contains each of said energy values corresponding to an index number having a binary equivalent with a "0" as a preselected digit;

searching a second subset of said set of energy values for a maximum energy value wherein said second subset contains each of said energy values corresponding to an index number having a binary equivalent with a "1" as said preselected digit; and

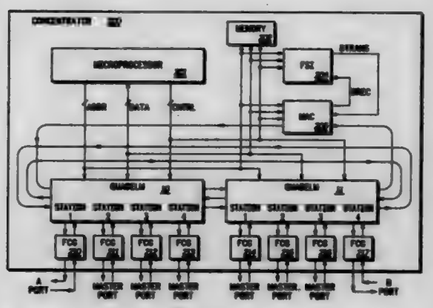
forming a difference between said maximum energy value of said first subset and said maximum energy of said second subset wherein said difference is a measure of confidence of the value of a particular digit of said original data signal.

5,442,628

LOCAL AREA NETWORK DATA PROCESSING SYSTEM CONTAINING A QUAD ELASTIC BUFFER AND LAYER MANAGEMENT (ELM) INTEGRATED CIRCUIT AND METHOD OF SWITCHING

Paul M. Anderson, Dripping Springs, and Lloyd A. Hasley, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 15, 1993, Ser. No. 151,676
Int. Cl.[6] H04L *12/417*
U.S. Cl. 370—56 **34 Claims**



25. A local area network comprising:

a token-passing ring;

N concentrators connected in series via the token-passing ring, N being a finite positive integer greater than zero, one concentrator in the N concentrators having an integrated circuit comprising:

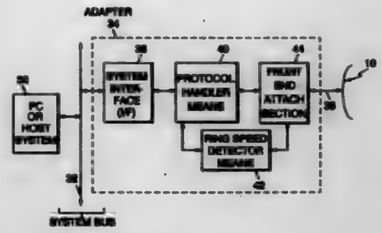
M circuits within the integrated circuit, wherein M is a positive finite integer greater than one, each of the M circuits receiving a plurality of data bits and grouping the plurality of data bits into data frames, the M circuits being selectively interconnected to transfer the data flames within the local area network.

5,442,629

TOKEN RING SPEED DETECTOR

Joel E. Geyer, Cary; Joseph K. Lee, Raleigh; John M. Mullen, Wake Forest; Vernon R. Norman; Kathleen M. Wilhelm, both of Cary, and Kenneth T. Wilcox, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1994, Ser. No. 200,989
Int. Cl.[6] H04J *3/22;* **H04L** *12/433*
U.S. Cl. 370—84 **20 Claims**



8. An adapter for coupling a device to a multi-rate communications network comprising:

a front end means for connecting to the network; said front end means including at least two parallel receive data paths, each data path having therein a first means for recovering from a data stream received from the network a clock signal at a first predetermined frequency; a second means for regenerating data signals at said first predetermined frequency from the data received from said network; and

a protocol handler means for executing functions required for sending and receiving messages to and from the network; said protocol handler means including a first data pattern recognition means responsive to the clock signal and the data signals to detect a first data pattern therefrom, a second data pattern recognition means responsive to the clock signal and the data signals to detect a second data pattern; and

a controller means responsive to the first data pattern and the second data pattern to cause the adapter to operate at a speed associated with the path which detects the data pattern.

5,442,630

ISDN INTERFACING OF LOCAL AREA NETWORKS

Ugo O. Gagliardi; Meichun Hsu, both of 5 Manor Pkwy., Salem, N.H. 03079; Paul Cummings, 53 Lawndale St., Belmont, Mass. 02178, and Stephen A. Mattin, 5 Manor Pkwy., Salem, N.H. 03079

PCT No. PCT/US91/03614, § 371 Date Dec. 14, 1993, § 102(e) Date Dec. 14, 1993, PCT Pub. No. WO92/21189, PCT Pub. Date Nov. 26, 1992
PCT Filed May 25, 1991, Ser. No. 94,143
Int. Cl.[6] H04J *3/26;* **H04L** *12/66*
U.S. Cl. 370—85.13 **14 Claims**

1. An ISDN gateway at a customer premises for interfacing a local area network having at least one host to an ISDN line, comprising:

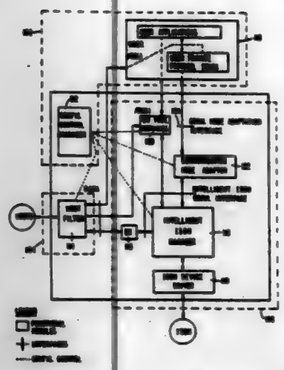
at least one circuit module resident with said host for interfacing said local area network to said ISDN line, said at least one circuit module including

(a) means for performing protocol conversion of data flowing between said local area network and said ISDN line through said gateway;

(b) means for establishing input and output destination queues for said gateway;

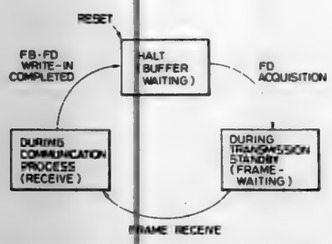
(c) means for measuring traffic flow at each of said input and output destination queues during a particular time interval;

(d) means responsive to said traffic flow measuring means for dynamically allocating channel bandwidth on said ISDN line;



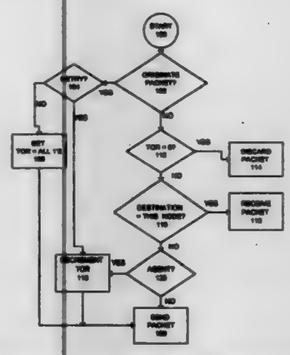
wherein said at least one circuit module includes a communication mode adaptor (CMA) providing modem-like dial up protocols.

5,442,631
COMMUNICATION CONTROL DEVICE
Koichi Tanaka, and Toshitaka Saito, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 4, 1994, Ser. No. 218,899
Claims priority, application Japan, Mar. 5, 1993, 5-045234
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—85.13 **15 Claims**



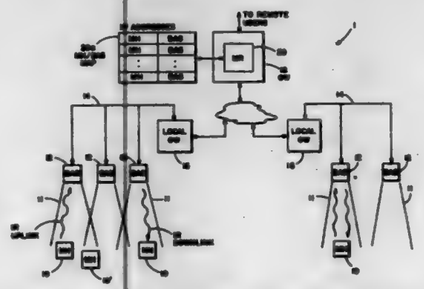
1. A communication control device comprising:
physical interface means for physical interfacing with a network;
a processor for processing high rank communication protocol of a frame transferred between said communication control device and the network through said physical interface means;
a plurality of receiving control means for processing low rank communication protocol of the frame transferred through said physical interface means; and
communication buffer means containing a data structure list for storing the frame with control data in a sequence order received by said physical interface means,
wherein at least one of said plurality of receiving control means includes control means which sets each of said plurality of receiving control means into one of a communication processing state, a communication standby state, and a halt state, sets one of said plurality of receiving control means under the halt state into the communication standby state, and selects a data structure in said data structure list and gives the selected data structure to said one of said plurality of receiving control means under the communication standby state in order to process a following frame transferred from the network through said physical interface means.

5,442,632
STALE PACKET REMOVAL METHOD AND APPARATUS
Robert W. B. Burton; William A. Hammond, Jr., and John C. Willis, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 22, 1994, Ser. No. 215,917
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—85.14 **13 Claims**



1. A method for removal of stale data packets communicated between devices via a plurality of unidirectional rings, said method comprising the steps of:
setting a traversal count value in a packet and sending said packet at a requesting device;
receiving said packet at an agent on one of said unidirectional rings, said agent changing said traversal count value and sending said packet onto another of said unidirectional rings; and
receiving said packet at a device, said device identifying said traversal count value and discarding said packet responsive to a predefined traversal count value.

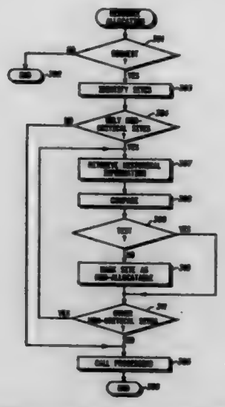
5,442,633
SHORTCUT NETWORK LAYER ROUTING FOR MOBILE HOSTS
Charles E. Perkins, Ossining, and Jacob Y. Rekhter, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 8, 1992, Ser. No. 910,701
Int. Cl.[6] H04B *7/26*; H04J *3/26*
U.S. Cl. 370—94.1 **20 Claims**



1. A method for routing a packet of information between a first host and a second host that are coupled to a network, each

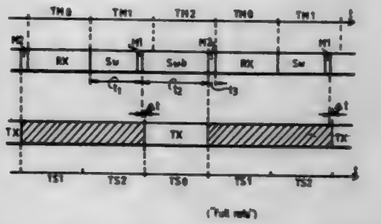
of the hosts having a unique network address, wherein at least one of the hosts is a mobile host that does not have a fixed network coupling location, comprising the steps of:
transmitting a packet from the mobile host to the second host on the network through a wireless link that is established between the mobile host and a first base access station that serves a current physical location of the mobile host, the first base access station being coupled to the network via a subnetwork, the packet including a first Loose Source Routing LSR option that includes a network address of the first base access station and possibly at least one further network address;
receiving with the second host the packet that includes the first LSR option; and
transmitting a further packet from the second host to the mobile host, via the first base access station and the wireless link, in accordance with a path reversal technique such that the further packet includes a second LSR option that includes the network address of the first base access station that was included within the first LSR option, whereby the further packet is directed through the network to the first base access station that serves the current physical location of the mobile host.

5,442,634
RESOURCE ALLOCATION TO NON-CRITICAL USERS
Paul J. Cizek, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 26, 1992, Ser. No. 858,270
Int. Cl.[6] H04Q *7/02*
U.S. Cl. 370—95.1 **15 Claims**



1. A method of allocating communication resources amongst a plurality of users belonging to one or more of a plurality of user groups in a communication system having a plurality of sites, wherein each site includes at least one communication resource that is allocatable to support a communication within an associated coverage area, the method comprising the steps of:
A) monitoring resource allocations in at least some of the plurality of sites to identify communication resources that are supporting communications for critical members of at least one of the plurality of user groups;
B) developing historical information regarding communication resources that are used to support critical members of the plurality of user groups;
C) receiving a communication request from a member of a first user group of the plurality of user groups;
D) determining whether at least one site includes only non-critical members of the first user group;
E) when the at least one site includes only non-critical members, deciding to allocate a communication resource in the at least one site in support of the communication request as a function, at least in part, of the historical information.

5,442,635
METHOD FOR DIVIDING A FRAME STRUCTURE IN A MOBILE STATION
Bengt Y. Persson, Djursholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Continuation of Ser. No. 993,810, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 496,040, Mar. 20, 1990, abandoned. This application Sep. 15, 1993, Ser. No. 186,095
Claims priority, application Sweden, Nov. 3, 1989, 8903680
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—95.1 **4 Claims**



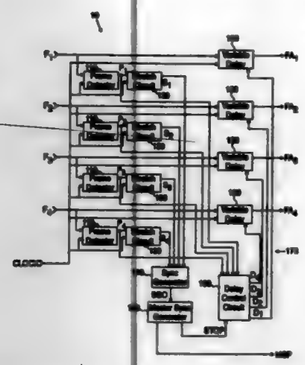
(Full rate)

1. A method of organizing a reception frame structure, said method comprising the steps of:
providing, in a mobile station of a mobile telephone system, a reception frame structure including a number of reception time slots in relation to a given transmission frame structure including the same number of transmission time slots as said number of reception time slots;
operating mode telephone system in a half-duplex mode; and
displacing the reception time slots of said reception frame structure a determined time offset interval less than half a time slot relative to the transmission time slots in said transmission frame structure, wherein a given transmission from said mobile station in a given transmission time slot of the transmission frame structure is followed by reception in a reception time slot of the reception frame structure, and, thereafter, a given idle time of substantially the same time duration as the difference between a time slot and said determined time offset interval follows said reception frame structure until transmission is recommenced in a transmission time slot of the next following transmission frame structure.

5,442,636
CIRCUIT AND METHOD FOR ALIGNMENT OF DIGITAL INFORMATION PACKETS
Hendricus M. H. Bontekoe, Huizen, Netherlands, assignor to AT&T Corp., Murray Hill, N.J.
Filed Dec. 14, 1993, Ser. No. 166,473
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—108 **17 Claims**

12. A method of aligning information packets received in a plurality of information packet signals comprising the steps of:
detecting a start of each one of the information packets;
generating a synchronization signal starting at a time of a first detected received information packet and ending at a predetermined interval after a start of a last detected received information packet;
generating a plurality of delay signals corresponding to each one of the received information packets, each delay signal being based on a time interval between the detected start of the corresponding information packet and the end of the generated synchronization signal; and

delaying each information packet signal for a particular time interval based on the corresponding delay signal of the



plurality of delay signals to align the received information packets.

5,442,637

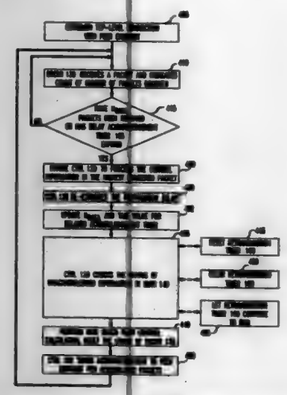
REDUCING THE COMPLEXITIES OF THE TRANSMISSION CONTROL PROTOCOL FOR A HIGH-SPEED NETWORKING ENVIRONMENT

Mai-Huong Nguyen, Eatontown, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 15, 1992, Ser. No. 961,561

Int. Cl.[6] H04J *15/00*

U.S. Cl. 371—5.5 **6 Claims**



1. A method for processing a Transmission Control Protocol in a first endpoint of a network, the method comprising the steps of:

receiving a number of packets from a second endpoint, each one of the packets having a transmission control protocol format and including control information;

processing the control information of one of the number of packets to provide an acknowledgment, which represents that a plurality of the number of received packets have been successfully received by the first endpoint, where the plurality is less than or equal to the number of received packets; and

sending the acknowledgment to the second endpoint;

where the processing step is performed when the number of packets received in the receiving step is equal to a predetermined number N, where N>1.

5,442,638

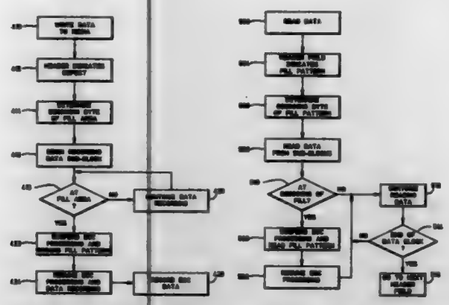
APPARATUS AND METHOD FOR RECORDING OVER DEFECTS IN STORAGE MEDIA

Joseph C. Awad; James W. Eldridge; David G. Foote, and Norman K. Ouchi, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1994, Ser. No. 179,405

Int. Cl.[6] G06F *11/00, 11/10;* **G11B** *7/00, 27/36*

U.S. Cl. 395—182.04 **18 Claims**



1. A storage device for reading and recording data onto data fields of tracks in a storage medium susceptible to a defect and adapted for movement relative to a read/write head, the tracks having at least one data field and one error correction code field for correction of read errors, the read/write head recording onto the storage medium blocks of the data and of error correction code data determined in accordance with the data blocks, the read/write head recording in accordance with a clock synchronization signal, the device comprising:

defect location means for generating a defect signal indicating the location and extent of a defect area in a track of the storage medium; and

a storage device controller that responds to the defect signal by determining if the defect area is of a size that is sufficiently small to maintain clock synchronization over the defect area but is sufficiently large to prevent correction of read errors using error correction code processing and controls the read/write head during recording of a data block in a data field that contains the defect to halt the recording of data and determining of error correction code data over the defect area, record a fill pattern over the defect area, and resume recording of data and determining of error correction code data thereafter.

5,442,639

METHOD AND APPARATUS FOR MONITORING A COMMUNICATIONS NETWORK

Robert S. Crowder, Newark, Del., and George E. Binder, Elkton, Md., assignors to Ship Star Associates, Inc., Newark, Del.

Filed Oct. 12, 1993, Ser. No. 135,330

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—20.1 **20 Claims**

MICROFICHE APPENDIX INCLUDED

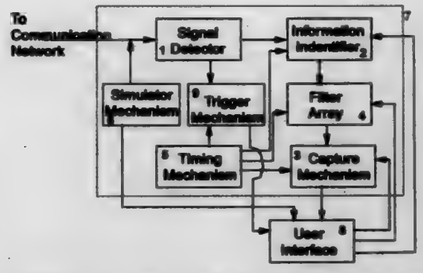
(7 Microfiche, 381 Pages)

1. A method for monitoring, detecting and analyzing signals and errors on a fieldbus communication network, utilizing a communication signal on a fieldbus within said fieldbus communication network, comprising the steps of:

receiving said communication signal from said fieldbus communication network;

identifying characteristic fieldbus protocol information on one or more signal frames from said received communication signal being used on said fieldbus communication network;

actively filtering said received communication signal in real time based on said identified characteristic fieldbus protocol information to separate frames indicative of errors in said fieldbus communication network or of operation or



function of one or more fieldbus devices on said fieldbus communication network from among said signal frames.

5,442,640

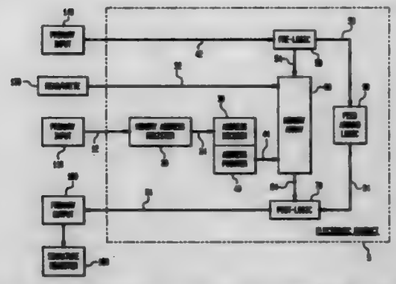
TEST AND DIAGNOSIS OF ASSOCIATED OUTPUT LOGIC FOR PRODUCTS HAVING EMBEDDED ARRAYS

Paul H. Bardell, Jr., Carmel, and Jacob Savir, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 5,724, Jan. 19, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 350,753

Int. Cl.[6] G01R *31/28, 15/12*

U.S. Cl. 371—21.1 **3 Claims**



1. A method of testing a post-logic of an electronic product, the electronic product including (i) a plurality of first input signal lines connected to an address decoder via a memory address register, the address decoder including an address pointer, (ii).at least one pre-logic circuit, the at least one pre-logic circuit having an input and further having a first output and a second output, (iii) a plurality of second input signal lines connected to the input of the at least one pre-logic circuit, (iv) at least one embedded memory array, the at least one embedded memory array having one or more storage locations, the at least one embedded memory array having a read/write input for selectively placing the at least one embedded memory array in either a read mode, or a write mode in response to a read/write signal on the read/write input, the at least one embedded memory array further having an address input connected to the address pointer of the address decoder for selecting a storage location of the at least one embedded memory array in response to an address signal on the plurality of first input signal lines, the at least one embedded memory array further having a data input connected to the first output of the at least one pre-logic for inputting information into a storage location of the at least one embedded memory array selected by the address pointer during a write mode, the at least one embedded memory array further having a data output for outputting information contained in a storage location of the at least one embedded memory array selected by the address pointer during a read mode, (v) at least one post-logic circuit, the at least one post-logic circuit having a first input and a second input and further having an output, the first input of the at least one post-logic circuit connected to the data output of the at least one embedded memory array, (vi) a plurality of output signal lines connected to the output of the at least one post-logic circuit, and (vii) at least one feed around logic circuit, the at least one feed around logic circuit connected between the second output of the at least one pre-logic circuit and the second input of the at least one post-logic circuit to thereby at least partially embed the at least one embedded memory array, said method of testing comprising the steps of:

(a) initializing the at least one embedded memory array with random bit patterns, said initializing step comprising (i) operating the at least one embedded memory array in a write mode, (ii) applying an address signal to the plurality of first input signal lines to select a storage location of the at least one embedded memory array, (iii) applying a random bit pattern to the plurality of second input signal lines, wherein the random bit pattern is input into the pre-logic circuit, acted upon by the pre-logic circuit, output from the pre-logic circuit on the first output of the pre-logic circuit, and thereby written into the selected storage location, and (iv) repeating sub-steps (ii) and (iii) for one or more storage locations of the at least one embedded memory array;

(b) applying a random address signal to the plurality of first input signal lines to select a storage location of the at least one embedded memory array that has been initialized with random bit patterns in step (a) and holding the applied random address signal for a fixed number of test periods, wherein the selected storage location which has been addressed is held selected for the fixed number of test periods;

(c) for each test period, reading the random bit pattern from the selected storage location of step (b) into the at least one post-logic circuit, said reading step comprising placing the at least one embedded memory array in the read mode for reading data stored at the selected storage location and outputting the read data onto the data output of the at least one embedded memory array to produce a first set of signals;

(d) for each test period, applying a new random bit pattern to the plurality of second input signal lines, wherein the new random bit pattern is input into the pre-logic circuit, acted upon by the pre-logic circuit, .output from the pre-logic circuit on the second output of the pre-logic circuit, input into the feed around logic circuit, acted upon by the feed around logic circuit, and thereafter output from the feed around logic circuit to produce a second set of signals;

(e) for each test period, producing an output pattern, the output pattern being generated through a combination of the first set of signals of step (c) and the second set of signals of step (d) input into the first input and second input of the at least one post-logic circuit, respectively, the at least one post-logic circuit acting upon the first set of signals and the second set of signals, and thereafter outputting the output pattern on the plurality of output signal lines of the electronic product; and

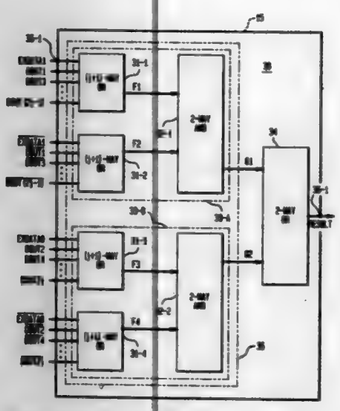
(f) for each test period, (i) collecting the output pattern of step (e) from the plurality of output signal lines into a signature register and (ii) performing a signature analysis upon the collected output pattern for a determination of any deviation from an expected output pattern, wherein any such deviation from an expected output pattern constitutes a fault and further wherein the signature analysis corresponds to a fault diagnosis, thereby testing the post-logic of the electronic product.

5,442,641

FAST DATA COMPRESSION CIRCUIT FOR SEMICONDUCTOR MEMORY CHIPS INCLUDING AN ARRAY BUILT-IN SELF-TEST STRUCTURE

Herve Beranger, Fontainebleau; Frederic Joly, Paris, both of France, and Stuart Rapoport, Washington, D.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 4, 1994, Ser. No. 223,072
Claims priority, application European Pat. Off., Jun. 30, 1993, 93480084
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.2 9 Claims



1. An SRAM macro comprising:

ABIST means for generating self-test data, address signals, a read/write control signal, and expected data signals;

memory means responsive to said self-test data, to said address signals, and to said read/write control signal, for generating data-out signals DOUT1, . . . , DOUT2j, wherein j is a positive integer equal to one half the bit width of data inputted into said memory means;

data compression means for comparing said data-out signals with said expected data signals and for generating a primary output signal RESULT that is indicative of a fail/no-fail condition of said memory means on a cycle by cycle basis;

means for generating clock signals to properly sequence said SRAM macro and said generated ABIST signals to select an ABIST mode;

characterized in that said data compression means include a data compression circuit comprising:

first means for compressing a first true expected data signal EXDATA1 with odd true data-out signals DOUT1, . . . , DOUT(2j-1) and a complement of said first expected data signal $\overline{\text{EXDATA1}}$ with complements of odd data-out signals $\overline{\text{DOUT}}$, . . . , DOUT(2j-1) to generate a first compressed output signal G1, wherein G1=(EXDATA1+DOUT1+. . . +DOUT(2j-1)). ($\overline{\text{EXDATA1}}$+$\overline{\text{DOUT1}}$+. . . +DOUT(2j-1));

second means for compressing a second true expected data signal EXDATA0 with even true data-out signals DOUT2, . . . , DOUT2j and a complement of said second true expected data signal $\overline{\text{EXDATA0}}$ with complements of even data-out signals $\overline{\text{DOUT2}}$, . . . , $\overline{\text{DOUT2j}}$ to generate a second compressed output signal G2, wherein G2=(EXDATA0+DOUT2+. . . +DOUT2j). ($\overline{\text{EXDATA0}}$+$\overline{\text{DOUT2}}$+. . . +DOUT(2j-1)); and

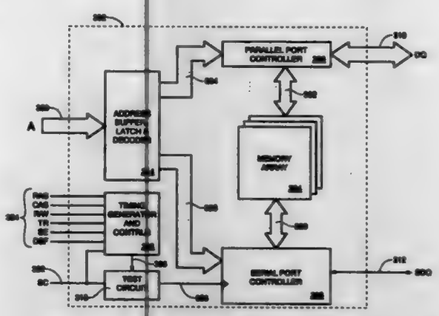
ORing means for performing a Boolean addition of said first and second compressed output signals and for generating a primary output signal, wherein RESULT=G1+G2.

5,442,642

TEST SIGNAL GENERATOR ON SUBSTRATE TO TEST

Charles L. Ingalls, and Mark R. Thomann, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 11, 1992, Ser. No. 989,403
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—22.5 19 Claims



1. A system formed on a substrate, the system for cooperating with a functional tester, the system comprising:

a. a first subsystem and a second subsystem, the first subsystem comprising an interface for functional testing; and

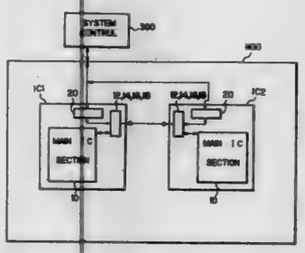
b. test means for generating a second signal asynchronous to operation of the first subsystem and for coupling.

5,442,643

INTEGRATED CIRCUIT CHIP WITH TESTING CIRCUITS AND METHOD OF TESTING THE SAME

Kaoru Adachi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,595
Claims priority, application Japan, Apr. 7, 1992, 4-085649
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.5 13 Claims



1. An integrated circuit (IC) chip capable of being independently tested comprising:

a main IC section having a predetermined function; a plurality of testing circuits connected to said main IC section for freely extracting data inputted to and outputted from said main IC section; and

an interface for selectively inputting test data from the outside of the IC chip to said plurality of testing circuits and outputting test data from said plurality of testing circuits to the outside;

said plurality of testing circuits each comprising:

test data holding means for selectively holding output data of said main IC section and test data from the outside; and

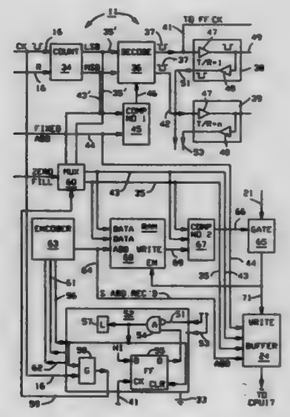
inputting/outputting means for selectively inputting and outputting data fed from said test data holding means or data sent from the outside, whereby the IC chip can be tested after being mounted on a circuit board.

5,442,644

SYSTEM FOR SENSING THE STATE OF INTERCONNECTION POINTS

Daniel L. Heflin, Front Royal, and Gary V. Layton, Sterling, both of Va., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 1, 1993, Ser. No. 84,108
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—184.01 14 Claims



1. A system for sensing a state of interconnection points, comprising:

a simulator or device having a plurality of interconnection points to be sensed in electrical context with other points in the system,

multiple interconnection sensing module means having a plurality of interconnection points for coupling to said simulator or device,

a transmitter/receiver in said module means for each interconnection point to be sensed,

means for generating a unique address at each transmitter/receiver during a unique time period,

logic control means having input means coupled to each receiver of each transmitter/receiver for sensing said state of each receiver at said unique time periods,

encoder means having input means coupled to said logic control means for generating interconnection information at its output indicative of connection between pairs of said interconnection points,

buffer means coupled to said output of said encoder means for receiving said interconnection information comprising receiver/transmitter address information,

gating means having an input coupled to said output of said encoder means and an output coupled to said buffer means, and

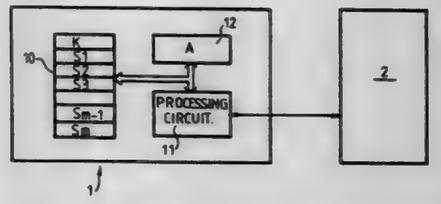
computing means coupled to said buffer means for receiving said unique addresses of said receivers and said transmitter thereby determining said status of a connection between any interconnection point and any other interconnection point in real time.

5,442,645

METHOD FOR CHECKING THE INTEGRITY OF A PROGRAM OR DATA, AND APPARATUS FOR IMPLEMENTING THIS METHOD

Michel Ugon, Maurepas, and André Oisel, Elancourt, both of France, assignors to Bull CP8, Trappes, France

Continuation of Ser. No. 646,638, Feb. 26, 1991, abandoned.
This application Oct. 24, 1994, Ser. No. 328,963
Claims priority, application France, Jun. 6, 1989, 89 07429
Int. Cl.[6] G01R *31/28*; G06F *11/00*; H04L *9/00*
U.S. Cl. 371—25.1 22 Claims



1. A method for verifying integrity, against an original message (M), of a subsequent message containing information, the method including the steps of:

storing the original message in an electronic portable object (1) having a processing circuit (11) and at least one non-volatile memory area (10) accessible only by said processing circuit (11);

storing a secret key (K) in the at least one non-volatile memory area (10) of the electronic portable object;

using the processing circuit (11) and the secret key (K) to apply an algorithm (A) to at least a part of the original message to calculate at least one original signature (S1, S2, . . . Sm) of the original message within the electronic portable object;

storing each original signature (S, S1, S2, . . . Sm) of the original message in said at least one non-volatile memory area (10) of the electronic portable object under control of the processing circuit (11);

verifying the integrity of the subsequent message against the original message by executing the algorithm (A) within the processing circuit (11) of the electronic portable object, the processing circuits (11) having inputs of the subsequent message and the secret key (K), to calculate at least one subsequent signature of at least one part of the subsequent message to be verified;

using the processing circuit (11) of the portable object to compare, within the electronic portable object, each subsequent signature calculated from the subsequent message with each original signature from the memory area (10) of the portable object; and

displaying to a user using a computer system external to the portable object, whether or not each subsequent signature calculated from the subsequent message is in matching relationship with a respective original signature calculated from a respective original message,

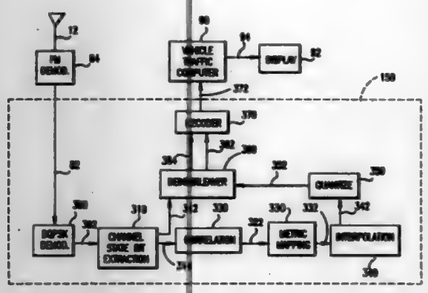
wherein algorithm (A) is a calculation algorithm which takes into account, for calculation of each original and subsequent signature, at least one secret key (K) stored in the memory area (10) of the portable object, accessible only within the electronic portable object and under control of said processing circuits (11).

5,442,646

SUBCARRIER COMMUNICATION SYSTEM

David J. Chadwick, Great Falls, Va.; Howard H. Ma, Lexington, Mass.; Frank J. Massmano, Forestville, Md.; James W. Marshall, Sterling, Va.; Vijaykumar M. Patel, Fairfax, Va., and Lyle G. Saxton, Broad Run, Va., assignors to The Mitre Corporation, Bedford, Mass.

Filed Feb. 1, 1994, Ser. No. 189,715
Int. Cl.[6] H04B *1/10, 15/00;* H04L *1/20, 1/00*
U.S. Cl. 371—43 34 Claims



1. A communication system using a subcarrier within a commercial FM channel bandwidth for transmitting data to mobile receivers, comprising:

means four generating a signal having a predetermined frequency defining a subcarrier signal of an FM broadcast channel for a commercial FM broadcast station;

coding means for encoding digital data received at an input thereof with an error correcting code, said digital data being defined by a plurality of consecutive bits;

means coupled to an output of said coding means for adding a plurality of bits in a predetermined first sequence to said encoded digital data to form a digital message;

subcarrier modulation means having (1) a first input coupled to an output of said means for adding said plurality of bits for receiving said digital message therefrom, and (2) a second input coupled to said generating means for modulating said digital message on said subcarrier signal;

means for coupling said modulated subcarrier signal to an FM transmitter of said commercial FM broadcast station for frequency modulation of said modulated subcarrier signal on a carrier signal of said FM broadcast channel;

means for receiving said FM broadcast channel transmitted by said commercial FM broadcast station, said receiving means including FM demodulation means for recovering said modulated subcarrier signal from said modulated carrier signal;

subcarrier demodulation means coupled to said carrier demodulation means for recovering said digital message from said modulated subcarrier signal;

extraction means coupled to said subcarrier demodulation means for extracting said encoded digital data from said digital message and forming a second sequence of bits therefrom;

decoding means coupled to said extraction means for (1) comparing said second sequence of bits with said predetermined first sequence of bits for establishing a data reliability factor, and (2) decoding said encoded digital data in correspondence with said data reliability factor for providing said digital data to an output thereof; and,

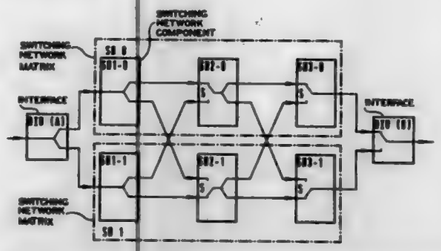
utilization means coupled to said output of said decoding means for receiving said digital data therefrom and operating thereon.

5,442,647

METHOD FOR ON-LINE MONITORING AND BIT ERROR REDUCTION FOR THROUGH-CONNECTED CALLS IN DIGITAL COMMUNICATION SYSTEMS

Norbert Loebig, Darmstadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 24, 1993, Ser. No. 64,897
Claims priority, application Germany, Jun. 1, 1992, 42 18 054.6
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—53 20 Claims



11. A method for on-line monitoring and bit error reduction for connections in communication systems having a switching network composed of at least two switching network levels, the switching network having an input side and an output side that is coupled to a destination subscriber, the method comprising the steps of:

providing interface elements of the input aide composed of a plurality of inputs and providing interface elements of the output side composed of a plurality of outputs;

providing at least one stream of information words, incoming to the switching network, with auxiliary information composed of first and second sub-information, whereby auxiliary information is provided for each information word at the interface elements of the input side composed of a plurality of inputs, the first sub-information indicative of a source number that is characteristic of a respective input of the interface elements of the input side;

forming the second sub-information from the information words and the first sub-information, whereby the information words together with the auxiliary information are duplicated and forwarded via a respective switching network level to selected interface elements of the output side;

again forming, in a first evaluation of the information words and the first sub-information received at the selected interface elements of the output side, a second sub-information in the selected interface elements of the output side, whereby newly formed second sub-information is compared to the second sub-information received at the selected interface elements of the output side, and implementing in a second evaluation a bit-by-bit comparison of the information words and the first sub-information received at the selected interface elements of the output side;

forwarding, by means of the interface elements of the output side in cooperation with a central control platform and dependent on a result of the first and second evaluations, one of the information words transmitted in parallel to the destination subscriber; and

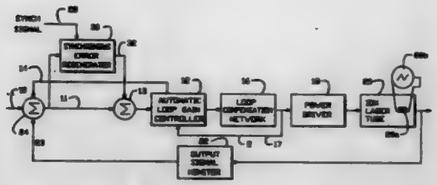
storing a source number per call setup in the interface elements of the output side by the central control platform via a communication channel, wherein given a non-coincidence of source numbers transmitted via each switching network level in the second evaluation, the interface elements of the output side, using the stored source numbers, forward the stream of information words in a direction of the destination subscriber whose transmitted source number is identical to that stored in the interface elements of the output side.

5,442,648

NOISE REJECTION CIRCUITRY AND LASER SYSTEM USING THE SAME

Harold D. DuBose, Mountain View, and Kevin K. Holsinger, Menlo Park, both of Calif., assignors to Spectra Physics Lasers, Inc., Mountain View, Calif.

Filed Jul. 19, 1994, Ser. No. 277,343
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—38 28 Claims



1. A controller for a laser system generating an output beam subject to predictable noise, comprising:

a power driver coupled to the laser system which supplies power to the laser system;

an output signal monitor, coupled with the laser system which generates a feedback signal indicating an output power for the laser system;

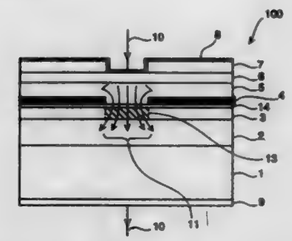
a servo circuit, coupled to the output signal monitor and the power driver, which controls the power driver to compensate for noise reflected in the feedback signal, the servo circuit including resources which develop a stored version of the predictable noise reflected in the feedback signal, and which use the stored version of the predictable noise to compensate for the predictable noise.

5,442,649

SEMICONDUCTOR LASER DEVICE

Yoshihiro Kokubo; Seiji Minamihara; Kouji Yamashita, and Katsuhiko Goto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1994, Ser. No. 248,727
Claims priority, application Japan, May 31, 1993, 5-128621; Sep. 16, 1993, 5-230393
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 8 Claims



1. A semiconductor laser comprising:

a semiconductor substrate of a first conductivity type;

a double heterojunction structure comprising a first conductivity type lower cladding layer disposed on the semiconductor substrate, an active layer disposed on the lower cladding layer, and an upper cladding layer of a second conductivity type, opposite the first conductivity type, disposed on the active layer, the double heterojunction structure having a ridge shape;

a current blocking structure disposed on opposite sides of the ridge-shaped double heterojunction structure;

a multiquantum barrier layer interposed between the opposite sides of the ridge-shaped double heterojunction structure and the current blocking structure; and

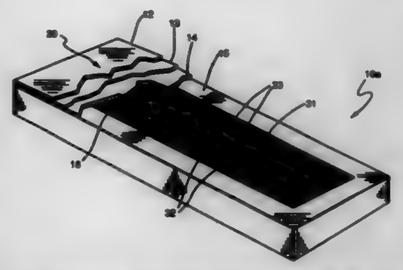
first and second electrodes electrically contacting the semiconductor substrate and the upper cladding layer, respectively.

5,442,650

DISTRIBUTED TALBOT FILTER SURFACE-EMITTING DISTRIBUTED FEEDBACK LASER

Steven H. Macomber, Bethel, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 26, 1993, Ser. No. 112,825
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—96 9 Claims



1. An improved laser apparatus of the type having an array of surface emitting distributed feedback semiconductor lasers including a semiconductor substrate, a plurality of semiconductor layers disposed on the substrate, a grating etched onto a selected semiconductor material layer, and an output window for allowing output laser radiation produced by the array to exit the laser apparatus, wherein the improvement comprises:

a Talbot spatial filter array disposed adjacent to the grating comprising a plurality of sets of parallel stripe contacts, wherein adjacent parallel sets of parallel stripe contacts are offset from each other by a spacing D, and where each stripe has a length $\bar{n}D^2/\lambda$, wherein $\bar{n}$ is the effective index of refraction and λ is the wavelength of the laser radiation in a vacuum.

5,442,651

EXTERNAL CAVITY CONTROL SEMICONDUCTOR LASER

Minoru Maeda, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,161
Claims priority, application Japan, Sep. 25, 1992, 4-280624
Int. Cl.[6] H01S *3/082*
U.S. Cl. 372—97 2 Claims

1. An external cavity controlled semiconductor laser comprising:

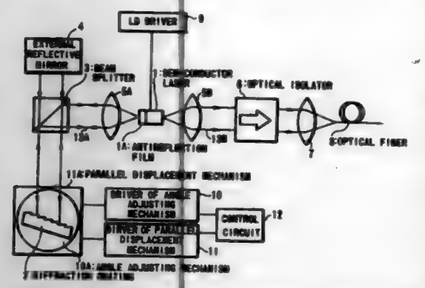
a Fabry-Perot-type semiconductor laser for outputting oscillated laser light, one end face of the semiconductor laser being coated with an antireflection film;

an external resonator comprising an external mirror, a diffraction grating, and a beam splitter inserted between the external mirror and the diffraction grating, for controlling the wavelength of the laser light and the phase of laser oscillation;

a parallel displacement mechanism for sliding the diffraction grating in parallel with a light axis of resonated light in the external resonator, the phase condition of the external resonator being altered by the sliding of the diffraction grating; and

an angle adjusting mechanism for rotating the diffraction grating, the wavelength of the laser light being altered by the rotating of the diffraction grating.

wherein the beam splitter, having low reflectance, reflects light outputted from the one end face of the semiconductor laser so as to input the reflected light into the diffraction grating and to transmit the light reflected from the diffraction grating, and the external mirror reflects the



light transmitted from the beam splitter, and through the beam splitter with low reflectance the external resonator transforms a resonance characteristic to a reflective characteristic, the external resonator acting as an qxternal reflector on the side of the antireflection film of the semiconductor laser.

5,442,652

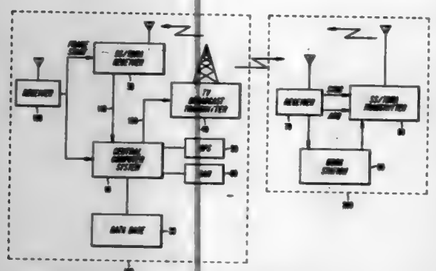
BROADCAST SYNCHRONIZED COMMUNICATION SYSTEM

Allen G. Jacobson, Ramsey, N.J., assignor to InterDigital Technology Corp., Wilmington, Del.

Division of Ser. No. 704,440, May 23, 1991, Pat. No. 5,289,497. This application Jan. 25, 1994, Ser. No. 188,324

Int. Cl.[6] H04L *27/30, 9/12*

U.S. Cl. 375—200 **6 Claims**



1. A communication system comprising:

a central processing station including an information source and a base spread-spectrum time-division-multiple-access (SS/TDMA) receiver, with adjustable gain and propagation delay for synchronizing with the communication system, operative to receive user data;

a television broadcast transmitter operatively connected to receive information from the central processing station and operative to transmit the information and horizontal and vertical timing pulses in a vertical blanking interval of a television broadcast;

one or more user stations with each user station including a television broadcast receiver operative to receive the television broadcast, a user transmitter operative to transmit user data, with the user transmitter having a Forward Error Correction (FEC) encoder for encoding the user data prior to transmission, and a single user antenna;

the user station being operative in response to the horizontal and vertical timing pulses to establish synchronization of the user transmitter with the communication system.

5,442,653

SIGNAL TRANSMITTING AND RECEIVING APPARATUS

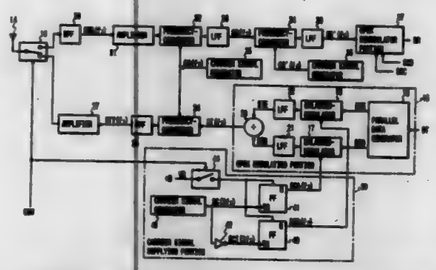
Shin Saito, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Nov. 6, 1992, Ser. No. 973,098

Claims priority, application Japan, Nov. 8, 1991, 3-292596

Int. Cl.[6] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—219 **6 Claims**



1. A signal transmitting and receiving apparatus comprising:

transmitting circuit means which has a carrier signal supplying portion for supplying first and second carrier signals having the same frequency and a phase angle difference of approximately ninety degrees, and in which the first and second carrier signals are amplitude-modulated with first and second digital data, respectively, to produce first and second amplitude-modulated signals, then the first and second amplitude-modulated signals, are combined as a quadrature-modulated signal, and the quadrature-modulated signal is frequency-converted with a third carrier signal supplied by a third carrier signal generating means into a transmissible digital phase-modulated signal allocated in a higher frequency band to be transmitted, and

receiving circuit means in which a received digital phase-modulated signal is frequency-converted with said third carrier signal supplied by said third carrier signal generating means to be allocated in a lower frequency band and the received digital phase-modulated signal having been frequency-converted is phase-demodulated to produce received digital data,

wherein a signal transmitting operation and a signal receiving operation are alternately performed in said transmitting circuit means and said receiving circuit means, respectively, and said carrier signal supplying portion comprises carrier signal generating means for generating a fourth carrier signal having a frequency twice as high as the frequency of each of the first and second carrier signals, a first flip-flop circuit supplied with the fourth carrier signal to produce the first carrier signal based on the fourth carrier signal, a second flip-flop circuit supplied with the fourth carrier signal having been phase-inverted to produce the second carrier signal based on the phase-inverted fourth carrier signal, and control means for causing the first and second flip-flop circuits to be operative when the signal transmitting operation is performed in the transmitting circuit means and to be inoperative when the signal receiving operation is performed in the receiving circuit means.

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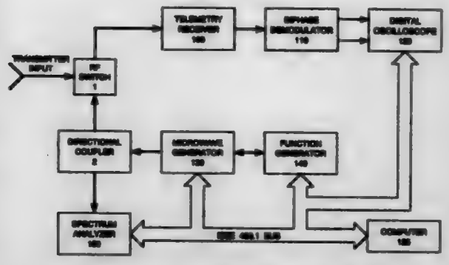
PHASE MODULATION MEASUREMENT SYSTEM

Stephen T. Cross, Morrison, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 6, 1993, Ser. No. 103,010

Int. Cl.[6] H04B *3/46*

U.S. Cl. 375—224 **1 Claim**



1. A phase modulation measurement system which measures amounts of steady state phase deviation in a phase modulated telemetry signal produced by a telemetry transmitter, said phase modulation measurement system comprising:

an input which is electrically coupled to said telemetry transmitter to receive and conduct said phase modulated telemetry signal therefrom;

a telemetry receiver which receives and demodulates the phase modulated telemetry signal from the input to produce thereby inphase signal and quadrature signal;

an RF switch which is electrically connected between said input and said telemetry receiver to conduct said phase modulated telemetry signal therebetween;

a means for digitizing the inphase and quadrature signals from the telemetry receiver to produce a digital series of I samples and Q samples; and

a computer which receives the I samples and Q samples from the digitizinq means to compute the steady state phase deviation, using a formula given by:

$$\phi_{ss}=[i=i,n \arctan (I_i/Q_i)]/n$$

where

ϕ_{ss} one sided steady state phase deviation;

I_i=each successive I sample across a third bit time;

and

Q_i=each successive Q sample across a third bit time.

n=number of samples, and

wherein said digitizing means comprises a digital oscilloscope which is electrically connected to said computer to digitize the inphase and quadrature signals into the digitized series of I samples and Q samples.

5,442,655

DC CANCELLATION AND RESTORATION IN RECEIVING APPARATUS

Ian J. Dedic, Northolt, and Dominic C. Royce, Swindon, both of United Kingdom, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 27, 1993, Ser. No. 67,959

Claims priority, application United Kingdom, Jun. 3, 1992, 9211712

Int. Cl.[6] H03D *1/00;* **H04L** *27/06*

U.S. Cl. 375—340 **13 Claims**

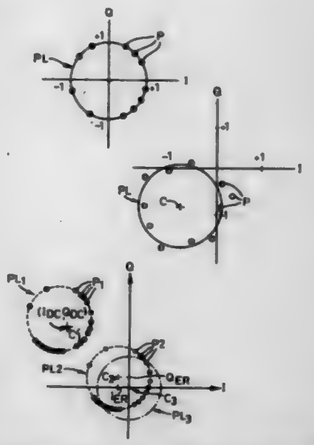
1. A method of procesing a received signal comprising a carrier wave modulated with digital data signals, said method comprising the steps of:

(a) demodulating the received signal to produce a set of digital baseband signal-value pairs, each pair being comprised of an inphase signal value and a corresponding quadrature signal value such that, when plotted on an I-Q diagram with the inphase signal value of each pair denoting distance of a plotted point from a Q-axis, and the corresponding quadrature signal value of that pair denoting distance of said plotted point from an I-axis that is orthogonal to said Q-axis, said plotted points would lie substantially on a first circle whose centre is offset from the origin of the diagram, said origin being at the intersection of said I- and Q-axes;

(b) averaging said inphase signal values of said pairs to produce an I-direction mean value, and averaging said quadrature signal values of said pairs to produce a Q-direction mean value;

(c) subtracting said I-direction mean value and said Q-direction mean value respectively from the inphase signal value and the quadrature signal value of each of said signal-value pairs so as to produce a set of adjusted signal-value pairs which, when plotted on said I-Q diagram, would produce a new set of plotted points lying substantially on a second circle such that said origin lies within the second circle;

(d) defining first, second, third and fourth regions of the I-Q diagram, the first and third regions being symmetrical to one another with respect to said Q-axis, and the second and fourth regions being symmetrical to one another with respect to said I-axis;



(e) determining for each of the said first and third regions, an average distance between said Q-axis and the plotted points of the new set that are located within the region concerned, and using a difference between the average distances of the first and third regions to produce an I-direction shift which, when subtracted from the inphase signal values of the points of the new set, causes the centre of the second circle to move closer to said Q-axis;

(f) determinings for each of the said second and fourth regions, the average distance between said I-axis and the plotted points of the new set that are located within the region concerned, and using a difference between the average distances of the second and fourth regions, to produce a Q-direction shift value which, when subtracted from the quadrature signal values of the plotted points of the new set, would cause the centre of the second circle to move closer to said I-axis; and

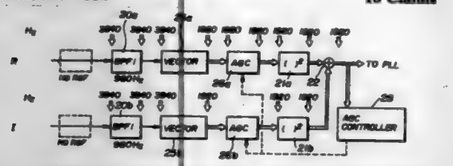
(g) subtracting said I-direction shift value from each of said inphase signal values of the plotted points of said new set, and subtracting said quadrature signal values of said plotted points, and delivering the resulting inphase and quadrature values as output signals.

5,442,656

TIMING EXTRACTION DEVICE AND DATA TRANSMISSION DEVICE USING THE TIMING EXTRACTION DEVICE

Takashi Kaku, and Noboru Kawada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 26, 1993, Ser. No. 9,108
Claims priority, application Japan, Jan. 27, 1992, 4-012009
Int. Cl.[5] H04L 27/06
U.S. Cl. 375—354 **16 Claims**



1. A timing extraction device coupled to a demodulator which derives a real signal component and an imaginary signal component from a signal received from a transmission line via an A/D converter, said timing extraction device comprising:

first means for extracting a ¼-Nyquist frequency from at least one of the real signal component and the imaginary signal component, said ¼-Nyquist frequency including two symmetrical frequency components;

second means, coupled to said first means, for processing the ¼-Nyquist frequency extracted by said first means so that a vector signal corresponding to one of the two symmetrical frequency components of the ¼-Nyquist frequency is output from said second means;

third means, coupled to said second means, for squaring the vector signal output from said second means and thereby generating a phase error signal indicating timing information concerning the signal received via the transmission line, the phase error signal having an angle equal to an angle obtained by squaring the vector signal; and

means for receiving said phase error signal and being coupled to said A/D converter for adjusting a sampling frequency of said A/D converter.

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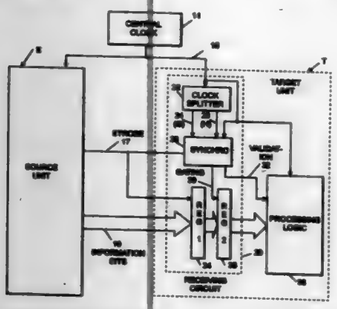
Patent Not Issued For This Number

5,442,658

SYNCHRONIZATION APPARATUS FOR A SYNCHRONOUS DATA PROCESSING SYSTEM

Philippe Cuny, La Gaude; Oliver Maurel, Le Cannet, and Philippe Klein, Cagnes-Sur-Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1993, Ser. No. 117,267
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—356 **7 Claims**



1. In a data communication system wherein bits are transferred between a source and a target unit through a bus (10) with associated synchronization pulses (strobe) transmitted by the source unit on synchronization line (17), the synchronization pulses received by the target unit being used for sampling the received bits and wherein the bits are processed under control of an internal clock signal of period T distributed to each unit of the system, an apparatus for resynchronizing the sampled received bits with the internal clock signal of the target unit, characterized in that it comprises in each unit:

first storing means (34) wherein the bits received from the bus are inputted under control of the associated synchronization pulses,

non-overlapped clock generating means (22) which is responsive to the internal clock signal for generating therefrom a first phase clock signal (PH1) which is at a first level (UP) during a first half of the internal clock period and a second phase clock signal (PH2) which is at the first level during a second half of the internal clock period.

at least one synchronization means (28) responsive to the first and second phase clock signals and synchronization pulses for generating therefrom a gating pulse on a gating line (30) during the second half of an internal clock period and setting a validation signal on a validation line (32) at an active state for the duration of the next internal clock period,

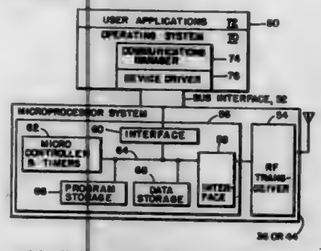
second storing means (36) for storing the bits received from the first storing means under control of the gating pulse, said bits stored in second storing means being processed by unit data processing means (38) under control of the internal clock signal when the validation signal is at the active level.

5,442,659

RADIO COMMUNICATIONS SYSTEM WITH FAULT TOLERANT FREQUENCY HOPPING SYNCHRONIZATION

Frederick J. Bauchot, Saint-Jeannet, France; Chia-Chi Huang, Hsinchu, Taiwan; Ilan Kessler, Bronx, and Kadathur S. Natarajan, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1993, Ser. No. 142,555
Int. Cl.[6] H04B 1/713
U.S. Cl. 375—202 **6 Claims**



1. In a multicellular communications network system comprising base stations having different addresses and a plurality of remote stations incorporating a technique for frequency hopping wherein said base stations transmit information to remote stations using a sequence of frequency hops of different carrier frequencies,

a method for generating and transmitting consecutive frames of data for synchronization during said transmission comprising the steps of:

Step 1 generating frames of data to be transmitted from each of said base station to said remote stations, said frames including a header portion and a data transfer portion,

Step 2 incorporating frequency hopping control information into said frame header portion by incorporating the address of said base station within the network, incorporating the time remaining in said frequency hop being used, incorporating the frame length of said frame and incorporating a list of the next hopping frequencies to be used in said sequence of changing frequency hopping sequence tracking technique, wherein said remote station switches to a given frequency for a given period of time equal to or greater than the length of a frame, and wherein said remote station monitors the header information of frames transmitted from a series of other bases of said network and selects another base as a new home base when paid SYNC state of operation is not achieved with a selected number of attempts,

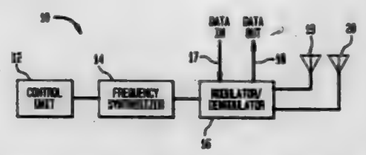
Step 3 transmitting a plurality of said frames from said base stations to said remote stations using a sequence of frequency hops having different carrier frequencies.

5,442,660

FREQUENCY HOPPING SEQUENCE USING GALOIS FIELD

Fan-Ming Kuo, Hsin-Chu, and Kwang-Cheng Chen, Ping-Tong, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, China

Filed Jan. 10, 1994, Ser. No. 179,735
Int. Cl.[6] H01K 1/10
U.S. Cl. 375—202 **4 Claims**



1. A frequency-hopping communication method for enabling up to p−1 channels of a plurality of channels, channel (1), channel (2), . . . , channel (p−1), where p is a prime number, to share a same frequency band, comprising the step of:

for each channel, changing carrier frequency on which data is one of modulated and demodulated every m^{th} fixed length time interval, to an mth frequency of a unique predetermined sequence of carrier frequencies assigned to said channel (n), where n=1 . . . (p−1), formed from p frequencies f(0), f(1), f(2), . . . , f(p−1) selected from said frequency band but the order of the frequencies for each channel being different, and wherein said m^{th} frequency in the sequence for channel (n) is given by f(m*n) where m*n indicates multiplication in a Galois field GF(p) and 0≦m≦p−1.

5,442,661

PATH GAIN ESTIMATION IN A RECEIVER

David D. Falconer, Nepean, Canada, assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 13, 1993, Ser. No. 106,250
Int. Cl.[6] H04B 1/69
U.S. Cl. 375—205 **10 Claims**

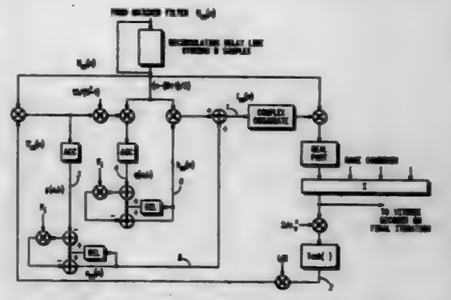
1. A method of complex-valued path gain estimation in a receiver, the method comprising the steps of:

approximating the path gain as a function of average path gain and rate of change of path gain over a block of B samples;

generating the path gain estimation over the block of B samples utilizing the matched filter outputs and soft decisions made on data symbols related to the block of B samples;

modifying the generated path gain estimation by first and second factors to produce first and second adjustment factors; and

modifying the average path gain utilizing the first adjustment factor and modifying the rate of change of path gain



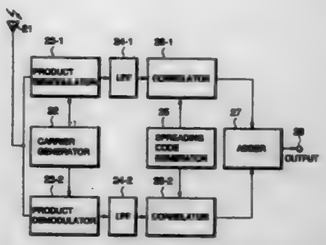
utilizing the second adjustment factor to produce an updated path gain approximation.

5,442,662

CODE-DIVISION MULTIPLE-ACCESS COMMUNICATION SYSTEM PROVIDING ENHANCED CAPACITY WITHIN LIMITED BANDWIDTH

Atsushi Fukasawa; Masabu Kawabe; Akiyoshi Kawabashi, and Takuro Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 261,915
Claims priority, application Japan, Jul. 5, 1993, 5-165632
Int. Cl.[6] H04J 13/02, 13/04; H04B 1/707
U.S. Cl. 375—205 **25 Claims**



17. A receiver for a code-division multiple-access spread-spectrum communication system, comprising:

a receiving antenna for receiving a radio-frequency signal;

a carrier generator for generating two mutually orthogonal carrier signals;

a product demodulator, coupled to said carrier generator, to demodulate said radio-frequency signal by multiplication with one of said two mutually orthogonal carrier signals, thereby generating a baseband receive signal;

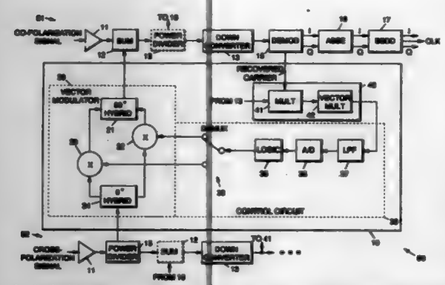
another product demodulator, coupled to said carrier generator, to demodulate said radio-frequency signal by multiplication with the other of said two mutually orthogonal carrier signals, thereby generating another baseband receive signal;

a first correlator, coupled to one of said product demodulators, to correlate one of said baseband receive signals with a first spreading code, thereby producing a first correlated signal;

a second correlator, coupled to the other of said product demodulators, to correlate the other of said baseband receive signals with a second spreading code, thereby producing a second correlated signal; and

an adder, coupled to said first and second correlators, to add said first and second correlated signals, thereby generating an output data signal.

5,442,663
RESIDUAL CARRIER ADAPTIVE CROSS-POLARIZATION EQUALIZER
Steven Andersen, San Jose; James Berman, Los Altos; Chris Hinkle, Menlo Park; Michael Jacobson, San Jose; Richard Koralek, Palo Alto; James F. Lebar, San Jose, and Francis J. Smith, Livermore, all of Calif., assignors to Loral Aerospace Corp., New York, N.Y.
Filed Apr. 22, 1994, Ser. No. 231,135
Int. Cl.[6] H03H *7/30, 7/40*
U.S. Cl. 375—229 8 Claims



1. A residual carder adaptive cross-polarization equalizer for use with a receiver that provides for cancellation of an interfering signal due to low cross-polarization isolation, wherein the receiver comprises co-polarization and cross-polarization receiver channels for respectively processing co-polarized and cross-polarized input signals, and wherein each channel comprises a low noise amplifier for amplifying the input signals, first and second summing devices a downconverter, a demodulator, an adaptive baseband equalizer, and a bit sync data detection circuit for providing baseband output signals, and wherein said residual carrier adaptive cross-polarization equalizer comprises:

a residual carrier detector for processing recovered carder signals generated by the demodulator in the co-polarized channel and an output of the downconverter of the cross-polarization channel to generate an error signal;

a control circuit coupled to the residual carrier detector that comprises a low pass filter for filtering the error signal, an analog to digital converter for processing the filtered error signal to produce a digitized signal for processing, a logic circuit coupled to the analog to digital converter for generating control signals, and a demultiplexer coupled to the logic circuit; and

a vector modulator comprising a zero-degree hybrid, first and second mixers coupled to the zero-degree hybrid and to the demultiplexer that combine control signals derived from the demultiplexer with output signals generated by the zero-degree hybrid, and a ninety-degree hybrid coupled to outputs of the respective mixers for combining the output signals from the mixers and applying it to the first summing device.

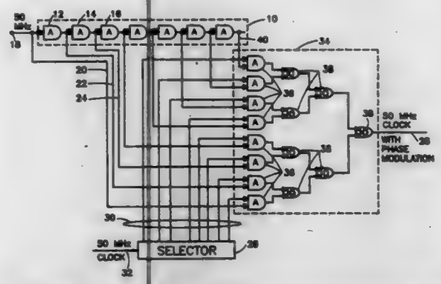
5,442,664
DIGITALLY PHASE MODULATED CLOCK INHIBITING REDUCED RF EMISSIONS
Robert Rust; Phillip R. Luque, both of Boise, Id., and Derek L. Knee, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 20, 1993, Ser. No. 171,314
Int. Cl.[6] H03K *7/06, 9/06*
U.S. Cl. 375—371 8 Claims

1. A clock pulse generator for producing phase displaced clock pulses, said clock pulse generator comprising:

a clock pulse source for producing clock pulses exhibiting a reference phase;

delay means connected to said clock pulse source and including n connections, each connection providing a clock pulse that is delayed by a different phase delay from said reference phase;

multiplexer means connected to each of said n connections and providing an output manifesting a series of clock pulses, each clock pulse of said series having a different



phase displacement from said reference phase than other clock pulses of said series; and

selector means for controlling said multiplexer means to sequentially connect a sequence of different ones of said n connections to said output, whereby said output enabled to manifest said series of clock pulses, each of which has a different phase displacement from said reference phase.

5,442,665
STRAIN GAUGE INSTRUMENTATION DEVICE FOR IN-CORE MONITOR HOUSINGS
Charles A. Dalke, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 13, 1994, Ser. No. 227,747
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 22 Claims



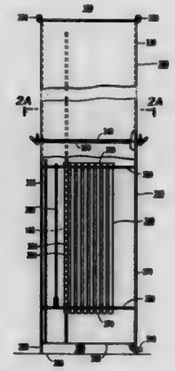
1. A method for monitoring flow-induced vibration in a cylindrical housing which extends upwardly through a bottom head of and into an interior of a reactor pressure vessel of a nuclear reactor, comprising the steps of:

connecting a vibration sensor to one end of a signal cable; and

attaching said vibration sensor to an inside surface of said cylindrical housing,

whereby said one end of said signal cable lies inside said reactor pressure vessel, another end of said signal cable lies outside said reactor pressure vessel and an intermediate portion of said signal cable penetrates said reactor pressure vessel.

5,442,666
APPARATUS FOR STORING CONTROL DRIVE ROD SHAFTS DURING CHEMICAL DECONTAMINATION OF A REACTOR
Robert E. Meuschke, Monroeville; Thomas G. Beagel, Plum Borough; Frank I. Bauer, Perry Township, and Phillip E. Miller, Greensburg, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 4, 1994, Ser. No. 206,306
Int. Cl.[6] G21C *19/06*
U.S. Cl. 376—272 7 Claims



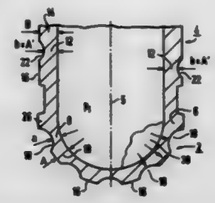
1. A tank containing a liquid for forming a storage medium in which shafts of a nuclear power plant are stored, the tank comprising:

(a) a lower tank portion having a bottom and a tank wall extending outwardly from the bottom for defining a lower storage cavity of the tank;

(b) an upper tank portion having a wall removably attached to said lower tank portion for defining an upper storage cavity of the tank; and

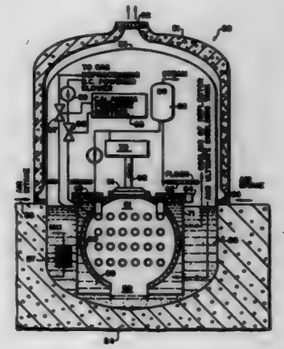
(c) a plurality of tubes operatively arranged in a predetermined structural arrangement in said lower tank portion for adaptably receiving the shafts for storage and spacing the shafts from the upper tank wall.

5,442,667
REACTOR PRESSURE VESSEL WITH LIMITED FAILURE ZONES
Gregor Senski, Nürnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 15, 1994, Ser. No. 212,979
Claims priority, application Germany, Mar. 15, 1993, 43 08 207.6
Int. Cl.[6] G21C *13/08*
U.S. Cl. 376—294 12 Claims



1. A reactor pressure vessel for a nuclear reactor, comprising an upper part and a lower part, said upper and lower parts having an outer surface, at least said lower part having first subregions with a lesser wall thickness and second subregions with a greater wall thickness, said first subregions having said lesser wall thickness being formed by recesses in said outer surface, and said lesser wall thickness being selected for a rated operation.

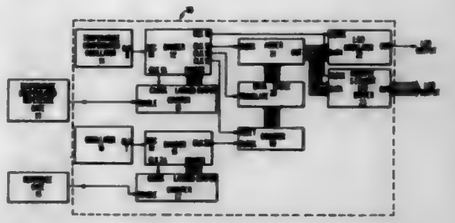
5,442,668
PASSIVE PRESSURE TUBE LIGHT WATER COOLED AND MODERATED REACTOR
Neil E. Todreas, Wabas; Michael J. Driscoll, Cambridge; Pavel Hejzlar, Arlington, all of Mass., and Jan R. Tang, Taipei, Taiwan, assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 3, 1993, Ser. No. 71,738
Int. Cl.[6] G21C *15/00*
U.S. Cl. 376—367 17 Claims



1. A fuel channel for a nuclear reactor comprising:

a solid fuel matrix having a plurality of coolant holes extending longitudinally therethrough and receptive of light water coolant, a pressure tube surrounding the fuel matrix and a calandria tube surrounding the pressure tube and forming a gap therebetween.

5,442,669
PERISHABLE GOOD INTEGRITY INDICATOR
David L. Medin, 940 Saint Joseph Ave., Los Altos, Calif. 94024
Filed Dec. 27, 1993, Ser. No. 175,209
Int. Cl.[6] H03K *4/00*
U.S. Cl. 377—20 23 Claims



1. A perishable good integrity indicator comprising:

clock means for outputting a first clock signal which does not substantially vary as a function of temperature;

second clock means for outputting a second clock signal which varies as a function of temperature;

counter means for producing a count value as a function of said second clock signal during a determinable time period;

data means for receiving said count value, translating said count value into a time temperature value representing the relationship of time and temperature during said time period; and

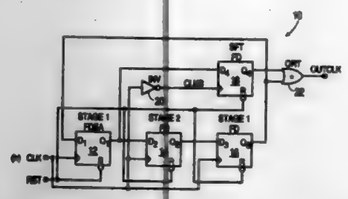
summing means for summing said time temperature values output by said data means over time and outputting a cumulative time temperature signal.

5,442,670

CIRCUIT FOR DIVIDING CLOCK FREQUENCY BY N.5 WHERE N IS AN INTEGER

Wen Shu, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 16, 1994, Ser. No. 198,191
Int. Cl.[6] H03K *21/00, 19/094*
U.S. Cl. 377—48 33 Claims



1. A method of providing a signal of a chosen frequency comprising: providing a first signal of a frequency n/N_1, wherein N_1 is an integer, and wherein n is the frequency of a given signal; providing a second signal of a frequency n/N_2, wherein N_2 is an integer, wherein n is the frequency of the given signal, and wherein the phase of the second signal is different from the phase of the first signal;

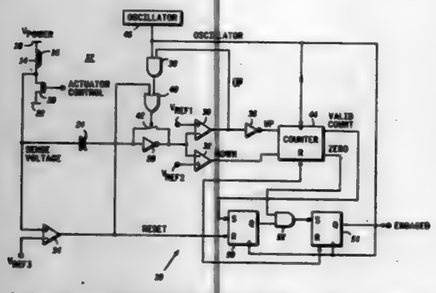
shifting the phase of the second signal; providing the first and second signals as input signals to a function gate; and providing an output signal from the function gate.

5,442,671

CIRCUIT AND METHOD OF DETECTING ACTUATOR MOVEMENT

Randall T. Wollschlager, Chandler, and John M. Hargedon, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 6, 1994, Ser. No. 300,544
Int. Cl.[6] H01H *47/00*
U.S. Cl. 377—55 20 Claims



1. An actuator movement detector circuit, comprising:

a capacitor having a first terminal coupled for receiving a sense voltage;

circuit means having an input coupled to a second terminal of said capacitor for detecting AC variation of said sense voltage and providing a first counter control signal having a first logic state when said sense voltage increases in magnitude and a second logic state when said sense voltage decreases in magnitude; and

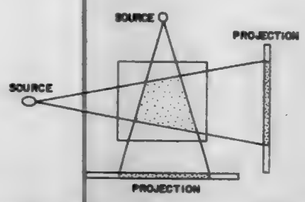
a counter having a first control input receiving said first counter control signal and having a clock input coupled for receiving an oscillator signal for providing a valid count signal indicating actuator movement.

5,442,672

THREE-DIMENSIONAL RECONSTRUCTION BASED ON A LIMITED NUMBER OF X-RAY PROJECTIONS

Paul J. Bjorkholm, 1801 Port Barmouth, Newport Beach, Calif. 92649; Khai M. Le, 5071 Audrey Dr., Huntington Beach, Calif. 92649, and Keith E. Moler, 2512 E. Willow St., No. 104, Long Beach, Calif. 90806

Filed Mar. 31, 1993, Ser. No. 40,174
Int. Cl.[6] G01N *23/04, 23/087*
U.S. Cl. 378—4 16 Claims



1. A method for generating a tomographically reconstructed image of an object comprising the steps of:

creating a first projected image of the object by exposing the object to electromagnetic radiation and measuring, at a first plurality of locations spaced from said object, the intensity of said electromagnetic radiation transmitted through said object;

creating a second projected image of the object by exposing the object to the electromagnetic radiation and measuring, at a second plurality of locations spaced from said object, the intensity of said electromagnetic radiation transmitted through said object;

creating a reconstructed image of the object having a plurality of pixels including the steps of:

setting each of said pixels to an initialized value in accordance with a corresponding momentum factor; and

adjusting the initialized value of each of said pixels based on said first and second projected images;

performing a terracing function on said reconstructed image;

performing a smoothing function on said reconstructed image; and

displaying said tomographically reconstructed image on the basis of said reconstructed image.

15. A method for generating a tomographically reconstructed image of an object comprising the steps of:

creating a first projected image of the object by exposing the object to electromagnetic radiation and measuring, at a first plurality of locations spaced from said object, the intensity of said electromagnetic radiation transmitted through said object;

creating a second projected image of the object by exposing the object to the electromagnetic radiation and measuring, at a second plurality of locations spaced from said object, the intensity of said electromagnetic radiation transmitted through said object;

creating a reconstructed image of the object from said first and second projected images;

separating the projected images into object portions and background portions;

generating a first reconstructed image on the basis of said object portions;

generating a second reconstructed image on the basis of said background portions; and

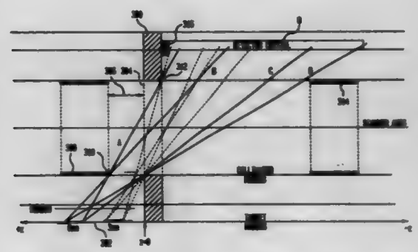
displaying said tomographically reconstructed image on the basis of either said first or second reconstructed images or both.

5,442,673

FIXED SEPTUM COLLIMATOR FOR ELECTRON BEAM TOMOGRAPHY

Roy E. Rand, Palo Alto, and Patrick B. Halahan, San Mateo, both of Calif., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 30, 1994, Ser. No. 220,076
Int. Cl.[6] A61B *6/02*
U.S. Cl. 378—10 18 Claims



3. An electron beam computed tomography scanner, comprising:

a source for generating an electron beam;

a ring-shaped target positioned a given distance from said source;

deflection means for causing said electron beam to scan along said target as a spot, thereby creating in response thereto a moving source of x-rays, which movement describes a plane;

a ring-shaped x-ray detector array positioned in a plane substantially parallel with the plane of said moving source of x-rays and spaced therefrom in an overlapping and opposing manner; and

a collimator arrangement positioned in the space between said target and said detector array for collimating the moving source of x-rays as received at said detector array, said collimator arrangement comprising:

a fixed position septum formed of an x-ray blocking material and having an aperture therein, said septum oriented substantially parallel to the planes of said moving source of x-rays and detector array, so as to define a target side and a detector side for said septum, which septum blocks the passage of x-rays from said target to said detector array except for those x-rays passing through said aperture; and

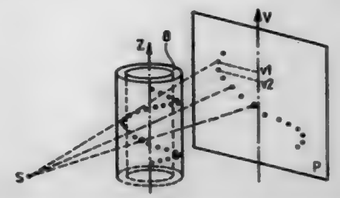
an adjustable-position collimator ring having a longitudinal axis located co-axially with the aperture in the septum and adjustable towards/away from the target side of said septum so as to controllably define a slot for said x-rays as viewed from said moving source of x-rays on said target, said slot being defined by the space between an end of said adjustable-position collimator ring which faces said septum, and the aperture of said septum.

5,442,674

DEVICE AND AUTOMATIC METHOD FOR THE GEOMETRICAL CALIBRATION OF AN X-RAY IMAGING SYSTEM

Catherine Picard, Boulogne; Anne Rougee, and Yves Trousset, both of Palaiseau, all of France, assignors to GE Medical Systems, Buc, France

Filed Jan. 21, 1994, Ser. No. 186,385
Claims priority, application France, Jan. 27, 1993, 93 00804
Int. Cl.[6] A61B *6/00*
U.S. Cl. 378—20 23 Claims



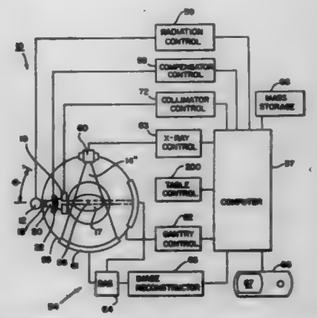
1. A rotating system for 3D X-ray imaging, comprising: a 2D detector positioned so as to be facing an X-ray tube, the 2D detector and X-ray tube being rotatable about a common axis; and a geometrical calibration device provided with (1) a 3D phantom having known dimensions and with (2) measuring means for deducing, from images of the phantom projected on the 2D detector, the calibration coefficients of this X-ray imaging system, wherein the phantom has an axis and comprises a step-by-step succession of cellular structure with radiological absorption that is contrasted with respect to their environment, each cellular structure being automatically identifiable by an ordered characteristic for the identification of this cellular structure, this being the case for all the positions, in rotation, of the system, the axis of the phantom being designed to be oriented in the X-ray imaging system, in a calibration phase, substantially in parallel to a plane of the 2D detector.

5,442,675

DYNAMIC COLLIMATOR FOR RADIATION THERAPY

Stuart Swerdloff; Thomas R. Mackie; Timothy Holmes, and Paul J. Reckwerdt, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 854,521, Mar. 19, 1992, Pat. No. 5,317,616. This application Jun. 9, 1993, Ser. No. 71,741
Int. Cl.[6] A61N *5/10*
U.S. Cl. 378—65 4 Claims



1. A radiation therapy machine having a radiation source for directing a beam of radiation along a beam plane toward a patient with a treatment volume, the therapy machine including a collimator disposed between the radiation source and the patient, to control the beam width normal to the beam plane,

the machine including a means for supporting and moving the patient with respect to the beam plane along a translation axis wherein the treatment volume includes a plurality of adjacent slices, each slice associated with a sinogram, indicating desired fluence profiles to be directed toward one associated slice, the machine comprising:

a comparison means for comparing sinograms of adjacent slices to generate a difference value;

a control signal means receiving the difference value from the comparison means for indicating whether the difference value is within a predetermined limit by means of a correlation signal;

a collimator control means receiving the correlation signal from the control signal means for controlling the collimator to adjust the beam width to simultaneously irradiate adjacent slices of the treatment volume when the correlation signal indicates that the difference value is within the predetermined limit.

5,442,676

METHOD OF DETERMINING A GIVEN CHARACTERISTIC OF A MATERIAL SAMPLE

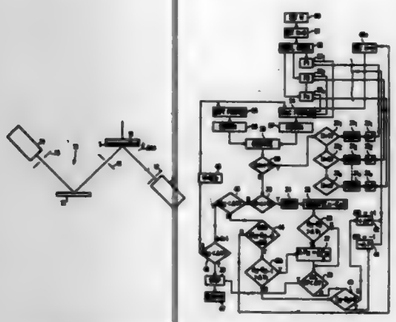
Paul F. Fewster, Brighton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1993, Ser. No. 168,732

Claims priority, application United Kingdom, Dec. 21, 1992, 9226552

Int. Cl.[6] G01N *23/20*

U.S. Cl. 378—72 **12 Claims**



1. A method of determining a given characteristic of a material sample, which method comprises

a) making measurements on the sample to obtain an experimental profile having structural features determined at least in part by the given characteristic,

b) calculating an expected profile for the sample using selected parameters,

c) applying a degree of smoothing to the experimental profile to reduce the structural features thereby producing a smoothed experimental profile,

d) applying the same degree of smoothing to the calculated profile to produce a smoothed calculated profile,

e) comparing the smoothed calculated profile with the smoothed experimental profile to determine the difference between the smoothed calculated profile and the smoothed experimental profile,

f) modifying the calculated profile by varying at least one of the parameters until the smoothed modified calculated profile fits the smoothed experimental profile,

g) repeating steps c) to f) using each time a degree of smoothing less than the previous time so that the structural features return and the final modified calculated profile provides a desired fit to the experimental profile thereby enabling the given characteristic to be determined from the parameters used for the final modified profile.

5,442,677

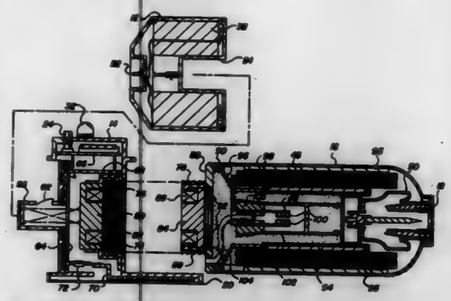
COLD-CATHODE X-RAY EMITTER AND TUBE THEREFOR

John Golden, 2859 Sowers Rd., Greensfork, Ind. 47345, and Phillip Golden, 196 S. Centerville Rd., Centerville, Ind. 47330

Filed Oct. 26, 1993, Ser. No. 142,816

Int. Cl.[6] H05G *1/06*

U.S. Cl. 378—102 **16 Claims**



1. A lightweight, battery-powered X-ray source of the type which comprises a DC power pack, an inverter powered by the DC power pack to produce an AC quantity, a step-up transformer having a low voltage coil connected to receive the AC quantity and a high voltage coil for producing a high voltage AC quantity when electromagnetically coupled to the low voltage coil, an X-ray tube, a charge generator connected to receive the high voltage quantity after rectification and a trigger connecting the charge generator to the tube for excitation thereof wherein the source further comprises:

(a) a first structure containing said power pack, said inverter and said low voltage transformer coil and electrically connected as a functional unit; and

(b) a second structure containing said X-ray tube, said charge generator, said trigger and said high voltage coil electrically connected as a functional unit;

said first and second structures including complemental mechanical coupling means operative to releasably mechanically couple the two structures together and simultaneously to electromagnetically couple the high and low voltage transformer coils.

5,442,678

X-RAY SOURCE WITH IMPROVED BEAM STEERING

Mark T. Dinsmore, Sudbury, and Donald O. Smith, Lexington, both of Mass., assignors to Photoelectron Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 955,494, Oct. 2, 1992, Pat. No. 5,369,679, which is a continuation-in-part of Ser. No. 577,883, Sep. 5, 1990, Pat. No. 5,153,900. This application Jan. 21, 1994, Ser. No. 184,021

Int. Cl.[6] A61N *5/10*

U.S. Cl. 378—137 **18 Claims**

1. An x-ray source comprising,

A. a housing enclosing a beam generation means for generating an electron beam along a beam path, said beam generation means including an electron source;

B. an elongated tubular probe extending along a central axis from said housing and about said beam path;

C. a target assembly including a target element, wherein said target element being responsive to electrons incident thereon to emit x-rays, said target assembly including means for coupling said assembly to the end of said probe distal from said housing whereby said target assembly is positioned along said beam path; and

D. a beam steering assembly, wherein said beam steering assembly includes:

i. deflection means for deflecting said beam from a nominally straight axis to an axis intersecting a selected surface region on said target element in response to a deflection control signal,

ii. a feedback network including deflection sensing means



for sensing said deflection of said beam and means for generating a feedback signal representative thereof, and

iii. a deflection controller coupled to said deflection means and to said feedback network, and including means for generating said deflection control signal in response to said feedback signal.

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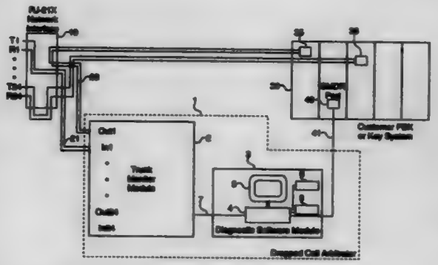
APPARATUS FOR USE IN ISOLATING THE CAUSE OF A DROPPED TELECOMMUNICATION CALL

Harry J. Regis, Jamaica, N.Y.; Avram R. Vener, Red Bank, and Charles A. White, Whitehouse Station, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 6, 1994, Ser. No. 239,077

Int. Cl.[6] H04M *1/24, 3/22, 15/00*

U.S. Cl. 379—34 **18 Claims**



1. A diagnostic device comprising:

a detector circuit having:

(a) a pair of leads; and

(b) a plurality of outputs which, when said pair of leads is connected electrically with a telecommunication trunk, provide a first set of output signals which correspond to current levels on said telecommunication trunk and a second set of output signals which correspond to voltage levels on said telecommunication trunk;

a comparator circuit connected to said detector circuit so as to receive said first set of output signals and said second set of output signals, where said comparator circuit is capable of comparing said first set of output signals to pre-selected bands of current and comparing said second set of output signals to pre-selected bands of voltage; and

a processing unit electrically connected to said comparator circuit and programmed to perform the following functions:

(a) determine within which of said pre-selected bands each of said output signals falls;

(b) determine the occurrence of a change in the preselected band within which an output signal on a particular one of said plurality of outputs falls, where said change occurs relative to an immediately previous scan of the particular one of said plurality of outputs;

(c) record the time at which said change occurred;

(d) provide at least one message indicating that said change occurred and indicating the present pre-selected band within which the particular output signal falls;

(e) record the time at which a telecommunication call on said telecommunication trunk is terminated; and

(f) provide at least one message including electrical data indicative of which equipment terminated said telecommunication call.

5,442,680

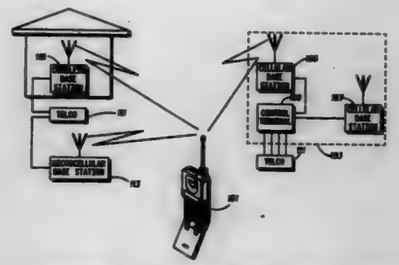
DUAL SYSTEM CELLULAR CORDLESS RADIOTELEPHONE APPARATUS WITH SUB-DATA CHANNEL TIMING MONITOR

Michael J. Schellinger, Vernon Hills, and Stefan G. Littig, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 903,251, Jun. 23, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 296,263

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 379—58 **14 Claims**



1. A radiotelephone apparatus which receives messages preferably on a first radiotelephone system having a limited radio coverage area and which alternatively receives messages on a second radiotelephone system having a wide radio coverage area, the radiotelephone apparatus interrupting its monitoring of messages from the second radiotelephone system in order to monitor the first radiotelephone system for messages the radiotelephone apparatus comprising:

means for establishing a monitoring time value;

means for monitoring for a period of time a radio channel associated with the first radiotelephone system;

means for generating a timing signal whereby the period of time spent monitoring said radio channel is measured;

means for receiving during said monitoring a predetermined number of data words transmitted on said radio channel associated with said first radiotelephone system;

means for detecting a first received data word;

means for readjusting said monitoring time value to be the sum of the value of said generated timing signal and the product of a determined number of received words to be detected and a predetermined value of time for each word;

means for incrementing said timing signal by a predetermined value;

means for comparing the value of said readjusted monitoring time value to the value of said incremented generated timing signal; and

means for ceasing monitoring of said radio channel when said readjusted monitoring time value equals or exceeds said incremented generated timing signal value, and returning to the second radiotelephone system.

5,442,681

METHOD OF EXCHANGING COMMUNICATED SIGNALS BETWEEN A REMOTE BASE SITE AND A CENTRAL SITE IN A COMMUNICATION SYSTEM

Michael D. Kotzin; Valy Lev, both of Buffalo Grove, and Stephen L. Spear, Skokie, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 764,873, Sep. 24, 1991, abandoned. This application May 3, 1993, Ser. No. 55,342
Int. Cl.[6] H04Q 7/20
U.S. Cl. 379—59 7 Claims



1. A method of exchanging communicated signals within a communication system between a remote base site and a central site on a communication resource of a plurality of communication resources assigned to the remote base site for exchanging signals with communication units in a coverage area of the remote base site, such method including the steps of:

A) determining that a signal must be exchanged between the remote base site and the central site; and

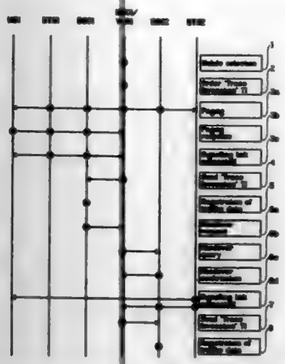
B) allocating the communication resource by the remote base site for exchanging communicated signals between the remote base site and the central site.

5,442,682

METHOD FOR REGISTERING TRAFFIC DATA IN A TELECOMMUNICATION SYSTEM

Lars-Erik Svedin, Ekerö ; Lars K. Lindén, Hästveda; Lars M. Andersson, Linköping; Cecilia S. M. Hedin, Stockholm; Ingrid V. Nordstrand, Sundbyberg, and Stig R. Bodin, Spanga, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 84,487, Jul. 1, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 360,124
Claims priority, application Sweden, Jul. 3, 1992, 92020874
Int. Cl.[6] H04Q 7/22, 7/34
U.S. Cl. 379—59 10 Claims



1. A method for registering traffic data from mobile stations in a mobile telecommunication system which includes at least one mobile switching center, a visitor location register connected to the switching center, at least two base station controllers connected to the switching center, each of said base station controllers being connected to at least one base station, wherein the radio covering area of respective base stations is called a cell and a group of cells belonging to a switching center is called a service area, and wherein, subsequent to a mobile station entering said service area, the mobile station is registered in the visitor location register, said method comprising the steps of:

selecting at least one of the mobile stations from said visitor location register;

determining, by specifying a trace invocation message, the type of traffic data to be registered, which data arises during the registration;

ordering the switching center to send the trace invocation message to the base station controller which handles the cell group in which the selected mobile station is located;

fulfilling a start condition, wherein a call is connected to the selected mobile station;

sending the trace invocation message from the switching center to a primary base station controller which handles the cell in which the selected mobile station is located;

storing in a database in the primary base station controller traffic data incoming from the selected mobile station;

sending the earlier specified trace invocation message, when the selected mobile station crosses a boundary between two cells handled by different base stations controllers, from the switching center to a secondary base station controller which handles the cell in which the selected mobile station is now located so as to continue registering the traffic data as originally specified by the trace invocation message; and

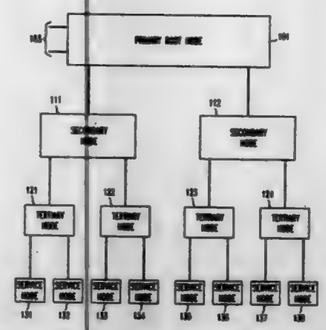
storing the a database in the secondary case station controller traffic data incoming from the selected mobile station.

5,442,683

DIRECTORY STRUCTURE FOR LARGE SCALE TELECOMMUNICATIONS NETWORK ALLOWING LOCATION OF ROAMING MOBILE SUBSCRIBERS

Jacobus Hoogeveen, Baarn, Netherlands, assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 7,751, Jan. 21, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,415
Int. Cl.[6] H04Q 7/36
U.S. Cl. 379—60 9 Claims



1. A directory/network structure for call routing and storing data pertaining to mobile radiotelephone subscribers; comprising;

a plurality of data handling nodes connected in a bifurcating tree type geometric configuration, including a root node, a plurality of service nodes including a home node and a plurality of visited service nodes and a plurality of levels of intermediary nodes between the root node and the service nodes,

each of the root, service and intermediary nodes including data storage and processing circuitry for handling subscriber information and routing calls, including routines for subscriber information inquiries and subscriber inquiry call routing, including;

said subscriber information being only stored at nodes in a shortest path between a visited node and the home node;

means for addressing subscriber information requests to a node in the tree common to a subscriber's home node and a visited node location if the subscriber is roaming;

each node including processing means for directing information requests in a search pattern allowing a node at a minimum level of the tree height above a level of the service nodes with subscriber information to process the subscriber information request; and

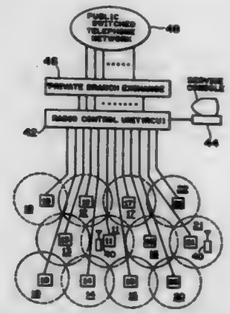
each node further including switching routing means for routing call requests through a node at a minimum level of the tree above a level of the service nodes at which the call request is entered.

5,442,684

METHOD AND ARRANGEMENT OF LOCATING CORDLESS UNITS IN WIDE AREA CORDLESS TELEPHONE SYSTEM

Tadao Hashimoto, Tokyo; Ryoji Hara, Hiroshima, and Yasuhiro Fujimura, Osaka, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 712,763, Jun. 10, 1991, abandoned. This application Jan. 13, 1994, Ser. No. 181,878
Claims priority, application Japan, Jun. 8, 1990, 2-151088
Int. Cl.[6] H04M 11/00
U.S. Cl. 379—61 9 Claims



1. A method of locating cordless units in a telephone system wherein a service area is previously divided into a plurality of small service zones and wherein a plurality of cordless units are provided for establishing communications with a system controller via a plurality of access stations, the system controller locating the cordless units and storing therein location data thereof, each of the cordless units also storing the location data thereof applied from the system controller, said method comprising the steps of:

(a) issuing from a cordless unit a request signal which includes cordless unit location data, said location data indicating a zone corresponding to an access station with which said cordless unit last communicated,

(b) receiving said request signal at an access station, said access station checking to determine if the request signal applied thereto is issued from a cordless unit whose location data indicates a service zone belonging to a predetermined service zone group which is composed of the service zone corresponding to the access station with which the location data indicates the cordless unit last communicated and one or more service zones directly adjacent thereto; and

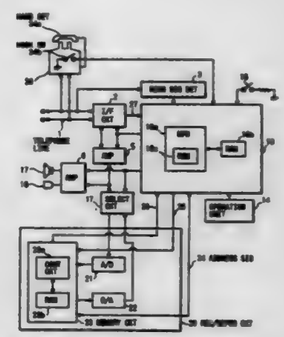
(c) in the event that the cordless unit location data applied to the access station is found to fall within said predetermined service zone group, the access station relays the request signal applied thereto, together with a signal level of the request signal, to the system controller, otherwise the receiving access station does not relay the request signal to the system controller.

5,442,685

AUTOMATIC TELEPHONE ANSWERING APPARATUS INCLUDING CONVERSION RECORDING MODE

Toshihiko Sakata, Fukuoka, and Yoshihiro Shirakawa, Kasuga, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 888,441, May 28, 1992, Pat. No. 5,278,896, Continuation of Ser. No. 714,425, Jun. 12, 1991, abandoned. This application Nov. 4, 1993, Ser. No. 145,649
Claims priority, application Japan, Jun. 13, 1990, 2-154777
The portion of the term of this patent subsequent to Jun. 11, 2011, has been disclaimed.
Int. Cl.[6] H04M 1/64
U.S. Cl. 379—88 54 Claims



1. An automatic telephone answering apparatus for sending an outgoing message recorded in first storing means through a telephone line and recording incoming messages in second storing means, said automatic telephone answering apparatus further having a further mode for recording a conversation between an operator and a conversation partner, comprising:

reproducing means response to a reproducing command signal for reproducing one of incoming messages from said second storing means;

line status detection means for detecting a line status of said telephone line;

first control means responsive to said second storing means for detecting an area of said second storing means where said incoming messages is stored and for storing data indicative of said area;

second control means for detecting an empty area of said second storing means in accordance with said storing data;

third control means responsive to said line status detection means for effecting a predetermined preparation operation when said line status detection means detects a start of use of said telephone line in order to make it possible to record said conversation between said operator and said conversation partner on said second storing means by causing said second control means to detect said empty area; and

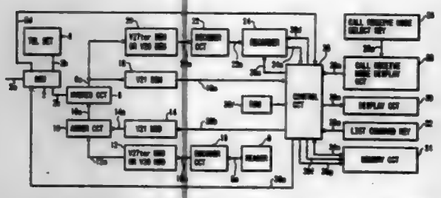
fourth control means responsive to said third control means and a recording command signal for effecting said further mode.

5,442,686

IMAGE COMMUNICATION APPARATUS

Satoshi Wada, Kawasaki, and Takehiro Yoshida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 887,599, May 21, 1992, abandoned, which is a continuation of Ser. No. 516,302, Apr. 30, 1990, abandoned. This application Aug. 29, 1994, Ser. No. 297,414
Claims priority, application Japan, May 2, 1989, 1-112914; May 8, 1989, 1-113662; May 11, 1989, 1-116071
Int. Cl.[6] H04M *1/57, 1/64, 11/00*
U.S. Cl. 379—88 32 Claims



17. An image communication method comprising the steps of:

performing a protocol communication for image communication over a line responsive to a calling signal received from the line;

communicating image data over the line in accordance with the protocol communication;

discriminating, after receiving the calling signal, whether or not it is possible to communicate image data and, when it is impossible to communicate image data, performing a protocol communication of said protocol communicating step that includes receiving a protocol signal from a calling station including data for identifying the calling station without communication of image data of said image communicating step; and

outputting data indicating which calling station issued the calling signal when communication of image data is impossible, on the basis of the data for identifying the calling station included in the protocol signal from the calling station and received in said protocol communicating step.

29. An image communication method which performs a communication protocol by sending and receiving protocol signals of various types and communicates image data on the basis of the communication protocol, said method comprising the steps of:

communicating image data over a line;

extracting identification data for identifying a calling station from a predetermined protocol signal received from the calling station over the line by performing the communication protocol;

converting the identification data into a voice signal;

registering a predetermined telephone number;

outputting as an audible signal the voice signal produced in said converting step; and

changing a destination of an output from said outputting step in accordance with whether or not the telephone number is registered in said registering step.

5,442,687

FACSIMILE HAVING A USER INTERFACE WITH AUTOMATIC OFFER OF HELP MESSAGE

William S. Miller, Oceanside, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

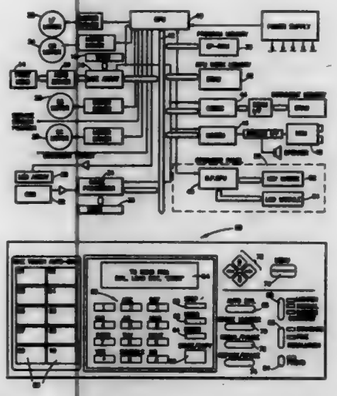
Filed Oct. 13, 1993, Ser. No. 135,834
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—100 12 Claims

1. A facsimile unit including an operator panel with a keyboard and a display panel, a subset of keys in said keyboard having plural, assigned alphabetic characters in addition to numeric character assignments and a key designated UNDO, said facsimile unit comprising:

means for initiating a data entry mode in said facsimile unit;

timer means responsive to actuation of a key in said keyboard during said data entry mode to commence a timing action; and

processor means responsive to an output from said timer means indicating that at least a predetermined timed interval has elapsed since actuation of said key, without a subsequent actuation of a key, to display a help message on said display panel, said processor means recognizing key actuations of at least first and second keys of said keyboard that have no alphabetic assignments, as yes and no responses, respectively, said processor means further responsive to actuation of said second key or an actuation of said UNDO key as a refusal of said help message.

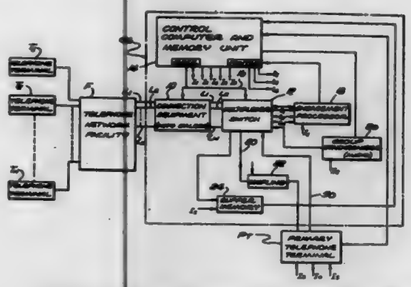


5,442,688

MULTIPLE PARTY TELEPHONE CONTROL SYSTEM

Ronald A. Katz, 570 S. Mapleton Dr., Los Angeles, Calif. 90024

Continuation of Ser. No. 895,077, Jun. 8, 1992, Pat. No. 5,297,197, which is a continuation of Ser. No. 832,720, Feb. 7, 1992, Pat. No. 5,185,787, which is a continuation of Ser. No. 642,602, Jan. 17, 1991, Pat. No. 5,091,933, which is a continuation of Ser. No. 470,468, Jan. 26, 1990, Pat. No. 4,987,590, which is a continuation of Ser. No. 371,188, Jun. 26, 1989, Pat. No. 4,939,773. This application Mar. 21, 1994, Ser. No. 216,166
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[6] H04M *1/00, 3/42*
U.S. Cl. 379—156 38 Claims



1. A multiple-party control system for use with a telephone

facility to interface a primary terminal coupled with a multitude of remote terminals through said telephone facility, said system comprising:

an audio generator structure for providing audio signals to said remote terminals to cue callers at said remote terminals;

switching apparatus for bridging a multitude of said remote terminals under control of signals from said remote terminals;

coupling apparatus connected to said switching apparatus for connecting said multitude of said remote terminals to said primary terminal for receiving audio communication; and

control structure coupled to said audio generator and said switching apparatus and further including:

a memory for storing qualification reference data relating to said callers at said remote terminals for interfacing said callers to said multiple-party control system:

means for receiving signals from said callers at said remote terminals; and

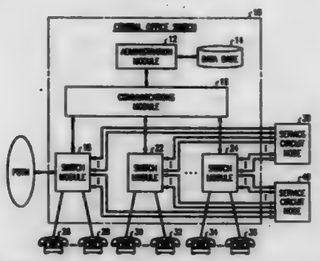
means for testing said qualification reference data against said signals received from said remote terminals for authorized participation.

5,442,689

APPARATUS AND METHOD FOR PROVIDING SERVICES PRIOR TO CALL COMPLETION IN A TELECOMMUNCATION SYSTEM

Anthony Buttitta, Chicago; Eric A. Duesing, Downers Grove; Wayne R. Kalbow, Glen Ellyn, all of Ill.; Mark O. Rossteadt, Toms River, N.J., and Liane T. Tsai, Glen Ellyn, Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 29, 1993, Ser. No. 10,950
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 18 Claims



1. A method for providing preconnection services in a telecommunication system prior to a call from a calling (CG) party being offered to a called (CD) party, the system including a central office switch to which the CD party is connected and at least one service node coupled to the switch, the method implemented by the switch comprising the steps of:

receiving a call request for a CD party having a predetermined directory number;

determining if said preconnection services are to be provided for said call request;

if said preconnection services are to be provided, identifying one service node to provide said preconnection services;

determining if said call request is from said one service node, said step of determining if said call request is from said one service node comprising the steps of locating a record in a services database associated with said switch connected to the CD party, comparing a predetermined call attribute provided as part of said call request with a corresponding call attribute stored as part of said record, and determining if said call request is not from said one service node based on said comparison;

if said call request is not from said one service node, routing the call request to said one service node where said preconnection services are performed;

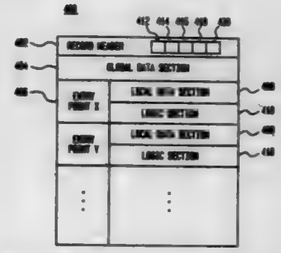
if said call request is from said one service node, routing the call request to said CD party having said predetermined directory number, thereby facilitating preconnection services prior to completion of said call request to the CD party.

5,442,690

TELECOMMUNICATION SERVICE RECORD STRUCTURE AND METHOD OF EXECUTION

Zaher A. Nazif, High Bridge; Kathleen D. Cebulka, Piscataway; Francis Y. Chu, Highland Park; Gregory M. Fisher, North Brunswick; Jill E. Lancaster, East Windsor; Susan K. Man, Holmdel; Subramanya K. Shastry, Middletown; Lori J. Vinciguerra, Newtown, and Lei-Lei C. Wang, Princeton Junction, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 934,240, Aug. 25, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,503
Int. Cl.[6] H04M *3/42, 11/00, 15/00, 7/00*
U.S. Cl. 379—207 12 Claims



1. A call processing record for execution in a telephone service execution environment, comprising:

one or more call processing logic sections each including a call processing procedure executable by a processor in said telephone service execution environment;

one or more first data sections, each of said one or more first data sections being associated with one of said one or more call processing logic sections and storing data executable only by said call processing procedure included in the associated one of said one or more call processing logic sections; and

one or more entry points, each of said one or more entry points being associated with one of said one or more call processing logic sections and an associated one of said one or more first data sections, said one or more entry points identifying the associated one of said one or more call processing logic sections.

5,442,691

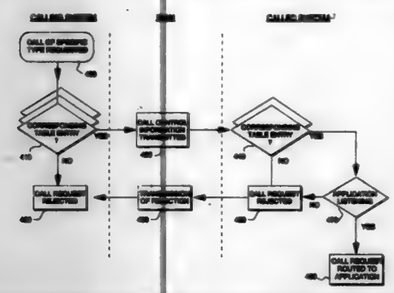
METHOD AND APPARATUS FOR CALL ROUTING IN SWITCHED DIGITAL NETWORKS USING CALL CONTROL TABLES

Steven Price, Overton, and Barry J. Worley, Bannister Park, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1993, Ser. No. 156,860
Claims priority, application United Kingdom, Dec. 22, 1992, 9226711
Int. Cl.[6] H04M *7/00*
U.S. Cl. 379—220 9 Claims

1. A method of routing calls between or within nodes (10, 20) in a switched digital network, comprising the steps of: establishing a call control table (300) for storing call control information for specific call types, said call control information for a specific call type being separated into different categories

of information, the information of the different categories being stored as separate table entries (340, 360,380) in separate parts of said call control table; in response to a request from one of said nodes (10, 20) for a call of a specific type to be made, examining said call control table (300) for call control information for said call type; and using the call control information stored for said call type to route the call, wherein the



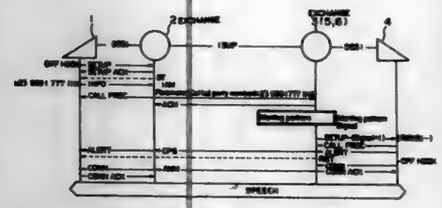
call control table is adapted for associating an element of a first category of call control information, which is stored as a single table entry in a first part of the call control table, with multiple table entries for one of the other call control information categories stored in a different part of the call control table, such that said single table entry simultaneously forms part of the stored call control information for a plurality of different call types.

5,442,692

TELECOMMUNICATION SYSTEM HAVING A CAPABILITY OF CHANGING THE ALERTING TONE

Yuki Yamazaki, and Koji Tasaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 21, 1992, Ser. No. 949,097
Claims priority, application Japan, Sep. 20, 1991, 3-268904
Int. Cl.[6] H04M *3/02, 13/00, 3/42*
U.S. Cl. 379—253 **16 Claims**



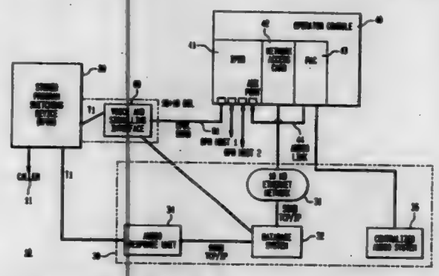
1. A telecommunication system comprising:
a network for transmitting calls,
a plurality of terminals connected to said network for communicating to each other via said network and including terminals at a calling side and terminals at a reception side, and
a reception side switching station, connected to said network and to a terminal of said plurality of terminals, located at the reception side for receiving a call from a terminal at the calling side, transmitted via said network, and directing said call to said terminal at the reception side;
said reception side switching station including:
data base means including a plurality of storage areas corresponding to said terminals at the reception side, wherein each of said plurality of storage areas stores a plurality of alerting tone patterns,
alerting tone selection means supplied with information, received from the terminal at the calling side, for identifying said terminal at the reception side, said information including alerting tone pattern data indicative of an alert tone pattern to be transmitted to and activated at said terminal at the reception side, and
alerting tone control means for controlling said terminal at the reception side on the basis of said alert tone pattern and generating a corresponding alerting tone at the terminal at the reception side.

5,442,693

INTEGRATED OPERATOR CONSOLE

J. David Hays, Lenexa, Kans., and G. Douglas Morlok, Belton, Mo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 22, 1993, Ser. No. 171,809
Int. Cl.[6] H04M *9/06*
U.S. Cl. 379—308 **16 Claims**



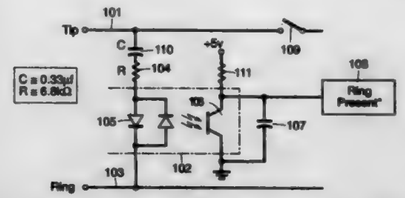
1. A console for facilitating the providing of directory assistance by a human operator to a caller of a telephone system, the console being of the type which interfaces with a stored program switching device (SPSD) for facilitating communication between the caller via the stored program switching device and the human operator, the console comprising:
personal computer means having:
a central processing unit,
a first random access memory location having a database application installed therein,
a second random access memory location having a directory assistance database application installed therein,
a third random access memory location wherein directory assistance data is shared between said database application and said directory assistance database application,
a communications bus for communicating with the central processing unit,
a display for displaying information to the human operator, and
a data input system for providing a communications interface between the human operator and said personal computer means;
interface means having a first port for communicating with said communications bus and a second port for communicating with the stored program switching device;
network communication means having a first port for communicating with said communications bus and a second port for communicating with a remote directory assistance data system; and
audio communications means having a first port via which it is accessed by said directory assistance database application in said third random access memory location, and a second port via which audio messages are conducted to said interface means.

5,442,694

RING TONE DETECTION FOR A TELEPHONE SYSTEM

Prabhakar Chitrapu, Princeton; Zhibing Pan, Randolph; Chet Juall, Warren, and Andrew Dumont, Lk. Hopatcong, all of N.J., assignors to Dialogic Corporation, Parsippany, N.J.

Filed Apr. 12, 1994, Ser. No. 226,678
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—373 **20 Claims**



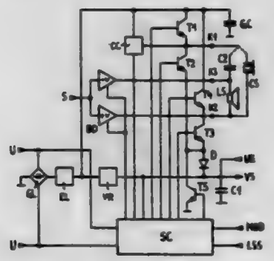
1. A method of detecting a ring tone signal in a telephone apparatus receiving an input signal from a remote caller, said telephone apparatus comprising a transformer having a first side for interfacing with a telephone network and a second side for interfacing with a voice processing apparatus the method comprising the steps of:
attenuating the input signal being received at the first side of the transformer from a telephone network while said voice processing apparatus is on-hook;
digitizing said attenuated signal;
processing said digitized signal in a processor having an input to determine whether said ring tone is present or not; and
switching the input of the processor to receive a signal from the second side of said transformer after said voice processing apparatus goes off-hook.

5,442,695

RINGER CIRCUIT

Artur Bardl, and Emil Navratil, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 49,671, Apr. 16, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,415
Claims priority, application Germany, Apr. 16, 1992, 42 12 858.7
Int. Cl.[6] H04M *1/26*
U.S. Cl. 379—375 **12 Claims**



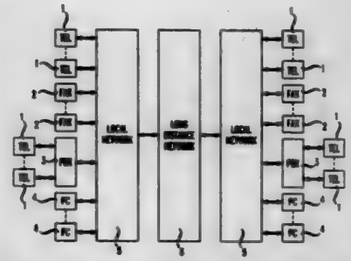
1. A ringer circuit, comprising:
a rectifier unit having a rectifier and a first capacitor; said rectifier receiving a calling alternating voltage and having first and second output terminals;
said first capacitor being connected between the first and second output terminals of said rectifier;
an acoustic transducer having first and second terminals;
a controllable first switch connected between the first output terminal of said rectifier and the first terminal of said acoustic transducer;
a controllable second switch connected between the first and second terminals of said acoustic transducer;
a second capacitor connected between the second terminal of said acoustic transducer and the second terminal of said rectifier unit; and
a switch control being supplied from said second capacitor for opening and closing said first and second switches in alternation and in phase opposition to one another as a function of the calling alternating voltage.

5,442,696

METHOD AND APPARATUS FOR DETECTING CONTROL SIGNALS

Craig R. Lindberg, and David J. Thomson, both of Murray Hill, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 31, 1991, Ser. No. 816,332
Int. Cl.[6] H04M *3/00*
U.S. Cl. 379—386 **60 Claims**



1. A method of discriminating control signal information from non-control signal information, the control signal information for use by a communication system element, the control signal information and the non-control signal information included in one or more segments of a signal communicated over a communication system channel, the control signal information comprising signal components at one or more predetermined control signal frequencies, the non-control signal information comprising signal components at one or more information signal frequencies, the method comprising the steps of:
applying a plurality of tapers to a segment of a communicated signal;
performing a transform of a tapered segment;
determining a similarity score based on a transform of a tapered segment and a model of a control signal, the similarity score reflecting a comparison of signal components of the communicated signal at the predetermined control signal frequencies with signal components of the communicated signal at other information signal frequencies;
classifying one or more segments of the communicated signal as representing either control signal information or non-control signal information based on a similarity score; and
providing an indicator signal representative of control signal information to the communication system element when the communicated signal has been classified as representing control signal information.

5,442,697

DIGITAL DATA LOOPBACK DEVICE

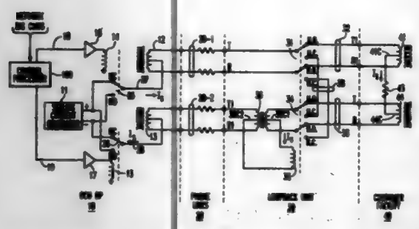
John S. McGary, Huntsville, and Norman R. Harris, Madison, both of Ala., assignors to Adtran Corporation, Huntsville, Ala.

Filed Nov. 29, 1993, Ser. No. 159,788
Int. Cl.[6] H04B *3/46*
U.S. Cl. 379—399 **39 Claims**

1. For use with a telephone network having a first communication path for conveying digital communication signals from a network office site to a customer site, and a second communi-

cation path for conveying digital communication signals from said customer site to said network office site, an arrangement for providing a loopback path between said first and second communication paths, comprising:

a sealing current flow-dependent controllable switching circuit coupled with said first and second communication paths, and being operative, in accordance with flow of sealing current, to controllably provide either throughput connectivity for said first and second communication paths between said network office and customer sites, or to interrupt throughput connectivity of said first and second communication paths between said network office and customer sites and to couple said first communication path to said second communication path and thereby provide said loopback path from said first communication path to said second communication path; and



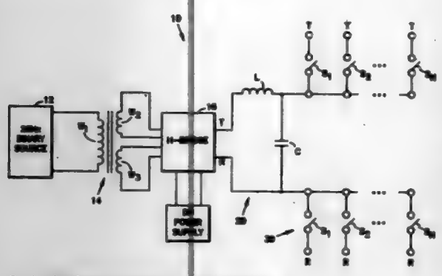
a digital command decoding unit provided at said network office site and being operative to interpret digital loopback commands supplied from a test facility and, in response thereto, to controllably generate a first sealing current flow state control signal which causes said controlled switching circuit to interrupt said throughput connectivity of said first and second communication paths and to provide a loopback path therethrough, and a sealing current flow state second control signal, different from said first sealing current flow state control signal, which causes said controlled switching circuit to establish throughput connectivity of said first and second communication paths, and causes equipment at said customer site to provide a loopback path between said first and second communication paths at said customer site.

5,442,698

RINGING GENERATOR FOR TELEPHONES

William Kingborn, Minneapolis, Minn., assignor to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Jun. 21, 1991, Ser. No. 719,161
Int. Cl.[6] H04M *3/02*
U.S. Cl. 379—418 **23 Claims**



1. A ringing generator, comprising:

means for generating a first binary signal which repeats at a desired ringing frequency, one period of said first binary signal comprising:

a first and second sequence in first and second halves of said period, respectively;

said first sequence comprising a plurality of first transitions from a first level of said first binary signal to a second level, each of said plurality of first transitions having a certain timing relative to a start of said first half period, and

said second sequence comprising a plurality of second transitions from said second level of said first binary signal to said first level, each of said plurality of second transitions having a certain timing relative to a start of said second half period, wherein

said timings of said first transitions and said timings of said second transitions are chosen to substantially cancel selected low-frequency harmonics so that said signal is substantially free of all low frequencies with the exception of the ringing frequency;

means for sourcing a second binary signal in response to said first binary signal so that said second binary signal has frequency components substantially the same as said first binary signal; and

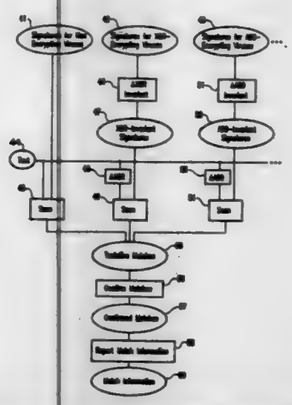
filtering means for filtering high-frequency components from said second binary signal to produce a ringing signal for application to a telephone line.

5,442,699

SEARCHING FOR PATTERNS IN ENCRYPTED DATA

William C. Arnold, Mahopac; David M. Chess, Mohegan Lake; Jeffrey O. Kephart, Yorktown Heights; Gregory B. Sorkin, and Steve R. White, both of New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,519
Int. Cl.[6] G11B *23/28*
U.S. Cl. 380—4 **24 Claims**



1. A method for determining whether a given text contains a given pattern, or any member of a class of possible encryptions of that pattern, or any member of a class of possible encryptions of patterns similar to the given pattern, the method comprising the steps of:

(a) for each possible encryption of the given pattern,

i. reducing the given pattern to a transformed pattern, the transformation having a property that it is invariant with respect to encryption of the given pattern with any allowable key,

ii. reducing the given text to a transformed text, the transformation being the same as was applied to the given pattern,

iii. searching for the presence of the transformed pattern, or a pattern similar to the transformed pattern, in the transformed text, and

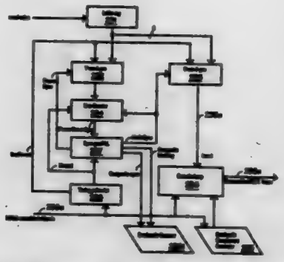
iv. identifying a match if the searching step detects the presence of the transformed pattern, or a pattern similar to the transformed pattern, in the transformed text.

5,442,700

SCRAMBLING METHOD

Stephen C. Snell, Aptos, Calif.; Delmer D. Fisher, Milpitas, both of Calif., assignors to ICTV, Inc., Los Gatos, Calif.

Division of Ser. No. 56,958, May 3, 1993, which is a continuation-in-part of Ser. No. 877,325, May 1, 1992, which is a continuation-in-part of Ser. No. 754,932, Sep. 10, 1991, Pat. No. 5,220,420, which is a continuation-in-part of Ser. No. 589,205, Sep. 27, 1990, Pat. No. 5,093,718. This application Sep. 22, 1994, Ser. No. 310,719
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—15 **4 Claims**



1. A system for scrambling a television signal, the signals having vertical and horizontal sync components, a color burst reference, a video luminance component, comprising:

(a) means for designating a horizontal line number on pseudorandom basis;

(b) means for stripping the vertical and horizontal sync components from the signal at each-location of a frame except at the line corresponding to the horizontal line number.

5,442,701

PROCESS FOR THE BROADCASTING OF CONDITIONAL ACCESS PROGRAMS PERMITTING A PROGRESSIVE ACCESS TO SUCH PROGRAMS

Louis Guillou, Bourgbarre; Jean-Lac Ginchetti, Rennes, and Alain Gelly, Paris, all of France, assignors to France Telecom Establissement Autonome de Droit Public and Telediffusion de France S.A., both of Paris, France

Filed Dec. 27, 1993, Ser. No. 172,817
Claims priority, application France, Dec. 29, 1992, 92 15841
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—20 **9 Claims**

1. A method of broadcasting conditional access programs, comprising the steps of:

(a) scrambling data representing a content of at least conditional access program; and

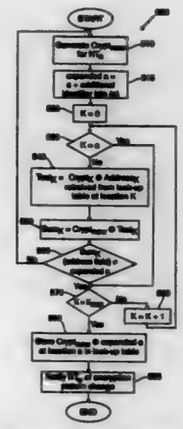
(b) transmitting such scrambled data along with partial access checking messages and complete access checking messages to subscribers, said partial access checking messages permitting said subscribers to descramble portions of said scrambled data corresponding to information regarding only the identity of said at least one conditional access program, and said complete access checking messages permitting authorized subscribers to descramble a remainder of said scrambled data and view said at least one conditional access program.

5,442,702

METHOD AND APPARATUS FOR PRIVACY OF TRAFFIC BEHAVIOR ON A SHARED MEDIUM NETWORK

Gijsbertus G. van Ooijen, Eemnes, and Robert J. M. Verbeek, Hoevelaken, both of Netherlands, assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 30, 1993, Ser. No. 159,348
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—23 **39 Claims**



1. A circuit for the generation and validation of new encryption patterns for the transmission of data cells and commands on a shared medium network having a line termination transmitting the data cells and commands, and a plurality of network terminations, each transmitted data cell or command containing encrypted address information of its destination network termination, the address information being the destination network termination address plus additional identifier bits, and a different encryption pattern being used for each destination network termination, the circuit comprising;

a microprocessing unit for performing the generating and verifying of the new encryption patterns; and

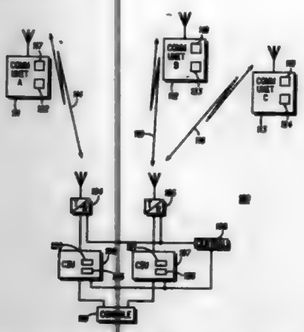
a memory device for storing and retrieval of active encryption pattern information, the memory device being connected to the processing unit, wherein the processing unit generates a new encryption pattern for a particular network termination which is verified by sequentially processing it with each of the active encryption patterns to detect for potential misdeliveries, and storing it in a respective location of the memory device if a potential misdelivery condition is not detected in each of the processing results, and generating a new encryption pattern to be verified if any of the processing results indicate potential misdeliveries.

5,442,703

METHOD FOR IDENTIFYING CORRUPT ENCRYPTION KEYS WITHIN A SECURE COMMUNICATION SYSTEM

Charles C. Kim, Mount Prospect, and Robert D. Woodhouse, Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 129,508, May 30, 1993, abandoned. This application May 27, 1994, Ser. No. 250,318
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—21 8 Claims



6. In a secure communication system that includes a plurality of communication units individually associated with a plurality of console interface units, and a resource allocator for allocating a limited number of communication resources among the plurality of communication units, wherein the secure communication system uses encryption keys to provide secure communication among the plurality of communication units, a method for reassociating a communication unit with a console interface unit when an encryption key is corrupt, the method comprising the steps of:

at the resource allocator:

a) receiving, from a first communication unit, a request to establish a communication with at least a second communication unit, wherein the second communication unit is associated with a first of the plurality of console interface units;

b) retrieving, from a database, a key identifier responsive to the request; and

c) transmitting, to at least the second communication unit, the key identifier; at the second communication unit;

d) receiving the key identifier to produce a received key identifier;

e) retrieving, based at least in part on the received key identifier, an identified encryption key; and

f) when the identified encryption key is corrupt, transmitting a corrupt key indication to the resource allocator; at the resource allocator;

g) receiving the corrupt key indication to produce a received corrupt key indication; and

h) selecting, responsive to at least the received corrupt key indication, a second of the plurality of console interface units for association with the second communication unit.

5,442,704

SECURE MEMORY CARD WITH PROGRAMMED CONTROLLED SECURITY ACCESS CONTROL

Thomas O. Holtey, Newton, Mass., assignor to Bull NH Information Systems Inc., Billerica, Mass.

Filed Jan. 14, 1994, Ser. No. 181,691
Int. Cl.[6] H04L 9/32; G07F 7/08
U.S. Cl. 380—23 20 Claims

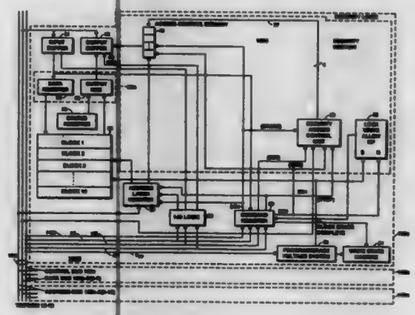
1. A secure memory card for use with a host portable computer, said memory card comprising:

a microprocessor connected for transmitting and receiving address, data and control information to and from said host computer and said microprocessor including:

an addressable non-volatile memory for storing information including a number of preestablished key values, each key value having a length no greater than a predetermined number of bits;

an internal bus connected to said microprocessor for transmitting address, data and control information defining memory operations to be performed by said card; and,

at least one non-volatile addressable memory being connected to said internal bus in common with said microprocessor for receiving said address, data and control information, said memory including a memory section and a security section, said memory section containing a non-volatile memory array organized into a number of blocks, each block having a plurality of addressable multibit locations, at least a predetermined bit location of each one of a predetermined number of said plurality of said locations being designated as a lock bit location for storing a different bit of a key value which collectively provide a serially



addressable group of lock bit locations available for storing said predetermined number of bits and control logic means for performing said memory operations and said security section being connected to said control logic means and to said memory section, said security section including:

an access control memory having a plurality of addressable storage elements, a different one being assigned to each of said number of blocks of said non-volatile array; and,

a security access control unit coupled to said access control memory, to said internal bus and to said control logic means, said security access control unit in response to signals received from said control logic means performing a key verification operation by serially comparing each key bit of one of said key values with each of the corresponding bits stored in said group of lock bit locations of a designated block and generating an output signal for switching one of said plurality of addressable storage elements to enable reading of information from a corresponding one of said blocks only when said key verification operation is successfully performed.

5,442,705

HARDWARE ARRANGEMENT FOR ENCIPHERING BIT BLOCKS WHILE RENEWING A KEY AT EACH ITERATION

Hiroshi Miyano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

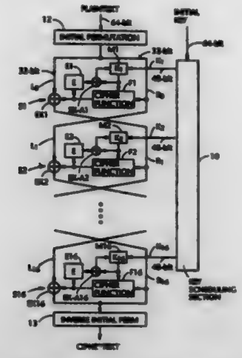
Filed Mar. 11, 1994, Ser. No. 208,589
Int. Cl.[6] H04L 9/06
U.S. Cl. 380—29 6 Claims

1. A hardware arrangement for transforming plaintext into corresponding ciphertext using a first to n-th stages provided in tandem (where n is an integer more than three), each of said

first to n-th stages performing a complex key-dependent computation and comprising;

a memory for storing a key;

first means for transposing, using said key, a first bit block applied thereto from a preceding stage;



second means for implementing an exclusive-or operation of output of said first means and a second bit block applied thereto from said preceding stage; and

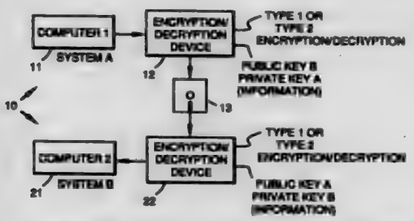
third means for transposing output of said first means using said key, said third means applying output thereof to said memory whereby said key is replaced with said output of said third means.

5,442,706

SECURE MOBILE STORAGE

Kenneth C. Kung, Cerritos, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 27, 1992, Ser. No. 842,833
Int. Cl.[6] H04L 9/30
U.S. Cl. 380—30 4 Claims



1. A method of ensuring the security of data transferred from a sender to a receiver when said data is to be transported in a transportable electronic storage medium by the physical transport of said electronic storage medium, said sender having a first public key/first private key cryptosystem key pair and said receiver having a second public key/second private key cryptosystem key pair, comprising the steps of:

(a) said sender sequentially encrypting said data with said second public key of the receiver and thereafter with the first private key of the sender and storing said encrypted data on said transportable electronic storage medium, said sender using a type 1 encryption/decryption algorithm for said encryption;

(b) transporting said transportable electronic storage medium from said sender to said receiver;

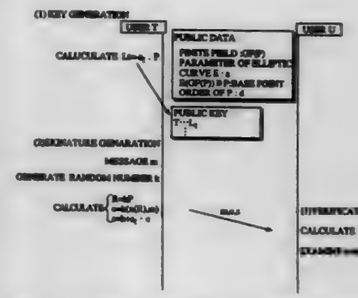
(c) said receiver sequentially decrypting data stored on the transportable electronic storage medium with the first public key of said sender and thereafter with the second private key of the receiver to provide data in its state prior to encryption in step (a), said receiver using said type 1 encryption/decryption algorithm for said decryption.

5,442,707

METHOD FOR GENERATING AND VERIFYING ELECTRONIC SIGNATURES AND PRIVACY COMMUNICATION USING ELLIPTIC CURVES

Atsuko Miyaji, Kawachinagano, and Makoto Tatebayashi, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 27, 1993, Ser. No. 127,253
Claims priority, application Japan, Sep. 28, 1992, 4-257800; Apr. 9, 1993, 5-082978
Int. Cl.[6] H04L 9/30, 9/00
U.S. Cl. 380—30 70 Claims



43. A method of generating and verifying electronic signatures via a public digital network system by using an elliptic curve, comprising the steps of:

supplying on the network system public data to each of the users from the system provider;

selecting a first secret key at a site of a first user, selecting a second secret key at a site of a second user, and selecting a third secret key at a site of a third user wherein the first, second and third secret keys are different;

notifying the third user of a number that was calculated at the site of the first user with the public data and the first secret key as a first public key, and notifying the first user of a number that was calculated at the site of the third user with the public data and the second secret key as a third public key;

calculating a common key by using the first secret key and the third public key from the third user at the site of the first user, and calculating the first common key by using the third secret key and the first public key from the first user at the site of the third user;

notifying the third user of a second public key that was calculated at the site of second user with the public data and the second secret key, and notifying the second user of the third public key that was calculated at the site of the third user with the public data and the third secret key;

calculating a second common key by using the second secret key and the third public key from the third user at the site of the second user, and calculating the second common key by using the third secret key and the second public key from the second user at the site of the third user;

generating a first electronic signature to be transmitted with data by using the first common key at the site of the first user;

verifying the first electronic signature by using the first common key at the site of the third user;

generating a second electronic signature to be transmitted with the data to the second user using the second common key at the site of the third user; and

verifying the second electronic signature by using the second common key at the site of the second user,

wherein the step of supplying and the public data includes the steps of:

choosing an elliptic curve E having GF(q) as a field of definition where q is a power of a prime number, and where the order of a group consisting of the elements of GF(q) denoted as E((GF(q)) is divisible by a prime number of 30 or more digits; and

determining an element called a base point P that gives a small absolute number less than 32 bits to at least one of its x-coordinate denoted as x(P) and y-coordinate denoted as y(P), so that fewer parameters represent E, GF(q), P, the order of P to facilitate recovering the base point P.

5,442,708

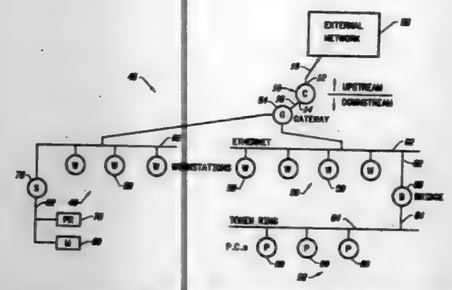
COMPUTER NETWORK ENCRYPTION/DECRYPTION DEVICE

Richard L. Adams, Jr., Fairfax, Va., and Peter D. Hallenbeck, Elfland, N.C., assignors to UUNET Technologies, Inc., Falls Church, Va.

Continuation of Ser. No. 28,437, Mar. 9, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 305,509

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—49 **18 Claims**



1. An apparatus for selectively encrypting and decrypting data transmitted between a first computer network and a second computer network, wherein said data is included in multiple data fields contained in multiple packets, each of said packets includes a header field containing source and destination information, said apparatus comprising:

memory means for storing key list information;

means, coupled to said memory means, for determining selected ones of said data fields for encryption and for determining said selected ones of said data fields for decryption;

data encryption means for selectively encrypting said selected ones of said data fields, and

data decryption means for selectively decrypting said selected ones of said data fields.

5,442,709

CIRCUIT FOR DECODING A MULTIPLEX SIGNAL IN A STEREO RECEIVER

Lothar Vogt, Hohenhameln; Jürgen Kösser, Diekholzen, and Djahanvar Chahabadi, Hildesheim, all of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Feb. 3, 1994, Ser. No. 192,505

Claims priority, application Germany, Feb. 5, 1993, 43 03 387.3

Int. Cl.[6] H04H *5/00*

U.S. Cl. 381—4 **12 Claims**

1. A digital stereo decoding circuit for processing a received multiplex stereo signal having a sum or composite signal (L+R) in a base band thereof, a subcarrier modulated with a difference signal (L−R), and a pilot signal whose frequency is half of the frequency of said sub-carrier, comprising

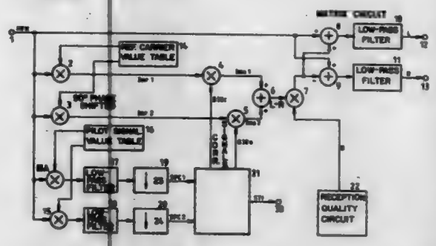
means (14) for generating, using a local sampling clock signal, first and second reference carrier signals which are phase-shifted 90° with respect to each other,

respective means (2,3) for digitally multiplying said multiplex signal by each of said first and second reference signals, thereby producing first and second uncorrected mix or product signals (Imr1, Imr2);

means (17–21) for generating first and second correction signals (G38c, G38s);

respective means (4,5) for digitally multiplying said first correction signal by said first uncorrected mix signal (Imr1) to produce a first corrected mix signal (Ims1) and said second correction signal by said second uncorrected mix signal (Imr2) to produce a second corrected mix signal (Ims2);

an adder (6) adding together said first and second corrected mix signals (Ims1, Ims2) to produce an adder output signal, and



a matrix circuit (8, 9, 10, 11) which receives said adder output signal and said sum or composite signal (MPX) and generates, at respective audio outputs (12, 13), a stereo left-channel signal and a stereo right-channel signal.

5,442,710

BODY-FELT SOUND UNIT AND VIBRATION TRANSMITTING METHOD THEREFOR

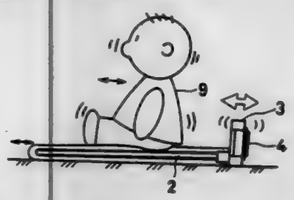
Akira Komatsu, Tokyo, Japan, assignor to Bodysonic Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,983, Nov. 26, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 193,779

Claims priority, application Japan, Nov. 30, 1990, 2-340766

Int. Cl.[6] H04R *5/02*

U.S. Cl. 381—24 **5 Claims**



1. A body-felt vibration unit having a vibration transmitting member imbedded in a human body support member, and an electro-mechanical vibration transducer attached to a vibration receiving plate fixed to said vibration transmitting member, said transducer generating constantly varying arbitrary mechanical vibration on receipt of a constantly varying arbitrary low-frequency current, thereby transmitting varying vibration to a human body on the body support member, said electro-mechanical vibration transducer and said vibration receiving plate being disposed substantially perpendicular to said vibration transmitting member, wherein vibration generated from said transducer is transmitted along an extending direction of said vibration receiving plate, thereby transmitting transverse vibration to said vibration transmitting member.

5,442,711

ACOUSTIC SIGNAL PROCESSING UNIT

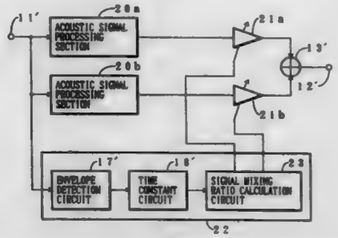
Soichi Toyama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 64,804, May 21, 1993. This application Jul. 15, 1994, Ser. No. 275,243

Claims priority, application Japan, May 26, 1992, 4-133501; Aug. 4, 1992, 4-207975

Int. Cl.[6] H03G *3/00*; H04B *1/00*

U.S. Cl. 381—63 **2 Claims**



1. An acoustic signal processing unit including a sound effecter, said sound effecter comprising:

a plurality of acoustic signal processing sections, each being connected in parallel with respect to an input acoustic signal for conducting a predetermined signal processing to an acoustic signal input through an input terminal,

a plurality of attenuators respectively connected to each of said plurality of acoustic signal processing sections, and

an adder for summing up all the signals fed from said plurality of attenuators, wherein said sound effecter further comprises:

a signal mixing ratio control section for monitoring the level of the input acoustic signal, determining a signal mixing ratio among the respective signals fed from said plurality of acoustic signal processing sections in accordance with the thus monitored level of the input acoustic signal, and for variably controlling the attenuation level of said plurality of signal processing sections on the basis of the thus determined signal mixing ratio.

5,442,712

SOUND AMPLIFYING APPARATUS WITH AUTOMATIC HOWL-SUPPRESSING FUNCTION

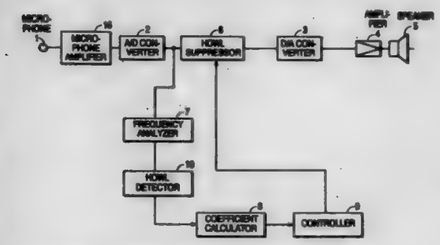
Akihisa Kawamura, Hirakata; Masaharu Matsumoto, Katano; Mitsuhiko Serikawa, Nishinomiya, and Hiroko Numazu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 31, 1993, Ser. No. 113,658

Claims priority, application Japan, Nov. 25, 1992, 4-314819; Mar. 9, 1993, 5-047700

Int. Cl.[6] H04R *27/00*; H04B *15/00*

U.S. Cl. 381—83 **19 Claims**



1. A sound amplifying apparatus comprising:

a microphone for picking up a sound to obtain a sound signal;

an analog-to-digital converter for converting the sound signal from the microphone to a digital sound signal;

a howl suppressor including a digital filter, said howl suppressor processing the digital sound signal;

a digital-to-analog converter for converting a processed digital sound signal from the howl suppressor into a processed analog signal;

an amplifier, said amplifier amplifying the processed analog sound signal to obtain an amplified sound signal;

a speaker responsive to the amplified sound signal for generating an amplified sound;

a frequency analyzer, said frequency analyzer frequency analyzing the digital sound signal from the analog-to-digital converter in real time;

a howl detector, said howl detector detecting a howl contained in the sound signal from a result of frequency analysis by the frequency analyzer, wherein the howl detector means detects a maximum peak power level among power levels of the sound signal in a frequency region analyzed by the frequency analyzer, calculates an adjusted mean power level of the sound signal by omitting first to m-th largest peak power levels from all power levels in the frequency region, where m is a predetermined integer larger than 0, and calculates a mean value of the remaining power levels, calculates a ratio of the maximum peak power level to the adjusted mean power level, and judges that the maximum power level is a howl component when the ratio is larger than a predetermined threshold level;

a coefficient calculator, said coefficient calculator calculating coefficients to be input to the digital filter to suppress the howl according to a detection result by the howl detector; and

a controller, said controller inputting the calculated coefficients to the digital filter.

5,442,713

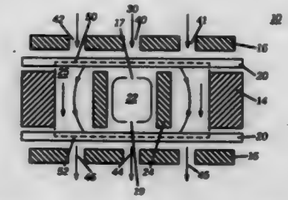
MICROPHONE PACKAGING SCHEME

Bakulesh B. Patel, Coral Springs, Fla., and Rebecca C. McNally, Stone Mountain, Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 941,601, Sep. 8, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 202,855

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—168 **18 Claims**



1. A microphone packaging scheme, comprising:

a housing having first and second opposing sides;

a first aperture in the first side and a second aperture in the second opposing side;

a microphone having a top port, a bottom portion, and sidewalls;

the microphone disposed within the housing with the top port exposed to the first aperture and the bottom portion exposed to the second aperture;

the first aperture connected to the second aperture via an empty chamber in the housing, providing wind passage around the microphone and through the housing from the first side to the second opposing side; and

a porous membrane between the top port and the first aper-

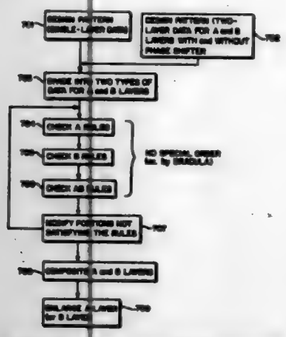
ture in the housing, said porous membrane comprising steel mesh.

5,442,714

DESIGN RULE CHECKING METHOD AND A METHOD OF FABRICATING A PHASE SHIFT MASK

Katsuji Iguchi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1992, Ser. No. 989,799
Claims priority, application Japan, Dec. 11, 1991, 3-327822
Int. Cl.[6] G06K 9/00; G01B 11/00
U.S. Cl. 382—144 20 Claims



1. A design rule checking method by which it is checked to see whether pattern data for forming a layer of a phase shift mask satisfies design rules, the method comprising the steps of:
generating the pattern data for forming the layer;
dividing the pattern data into two types of pattern data for an A layer and a B layer, respectively;
establishing A rules to be satisfied by the pattern data for the A layer, B rules to be satisfied by the pattern data for the B layer, and AB rules to be satisfied by a combination of the two types of pattern data for the A and B layers;
automatically checking whether the pattern data for the A layer satisfies the A rules, whether the pattern data for the B layer satisfies the B rules and whether the combination of the two types of pattern data for the A and B layers satisfies the AB rules; and
modifying the pattern data based on the checking step, wherein a phase of light transmitted through a light transmitting portion defined by the pattern data for the A layer is shifted relatively to a phase of light transmitted through a light transmitting portion defined by the pattern data for the B layer by a prescribed angle.

5,442,715

METHOD AND APPARATUS FOR CURSIVE SCRIPT RECOGNITION

Roger S. Gaborski, and Lori L. Barski, both of Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,911
Int. Cl.[6] G06K 9/34, 9/00, 9/72, 9/62
U.S. Cl. 382—187 2 Claims



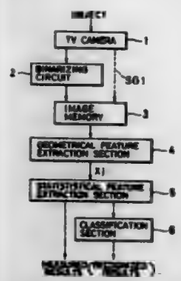
1. An apparatus for performing cursive script recognition comprising:
center determining means including a first neural network for determining the spatial location of the centers of individual cursive characters contained within digitized cursive word data;
normalization means for defining a left and right edge of a fixed size window based on the spatial location of the centers of the individual cursive characters determined by the center determining means; and
recognition means including a second neural network for locating the fixed size window on a segment of the cursive word data, wherein the left side of the window is centered on a first character contained within the segment such that a righthand portion of the first character is located within the window, the right side of the window is centered on a third character contained within the segment such that a lefthand portion of the third character is located within the window, and the center of the window is approximately centered on a second character contained within the segment such that the entire second character is located within the window, and for identifying a class grouping for the first character and a class grouping for the third character based upon similarities in the ligature structures of the righthand portion of the first character, that connect the first character to the second character, and the ligature structures of the lefthand portion of the third character, that connect the third character to the second character, to the ligature structures of characters within the class groupings, and identifying the second character based on a relationship of its ligature structure with respect to the ligature structures of the class groupings identified for the first and third characters.

5,442,716

METHOD AND APPARATUS FOR ADAPTIVE LEARNING TYPE GENERAL PURPOSE IMAGE MEASUREMENT AND RECOGNITION

Nobuyuki Otsu; Takio Kurita, both of Tsukuba, and Shigeomi Kuwashima, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology and Kabushiki Kaisha Ouyo Keisoku Kenkyusho, both of Tokyo, Japan

Continuation of Ser. No. 778,741, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 414,530, Sep. 29, 1989, abandoned. This application Jun. 24, 1993, Ser. No. 80,976
Claims priority, application Japan, Oct. 11, 1988, 63-255678; Oct. 11, 1938, 63-255679
Int. Cl.[6] G06K 9/62, 9/46
U.S. Cl. 382—181 4 Claims



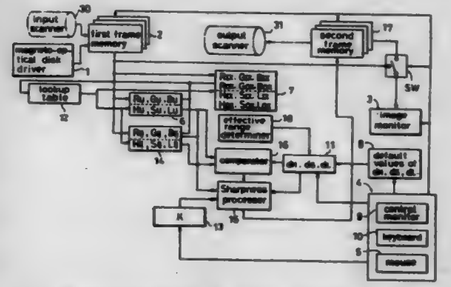
1. An adaptive learning type general purpose image measurement and recognition apparatus, said apparatus operative in a learning mode and a recognition mode, and comprising:
an image pick-up device which operates in the learning mode to view teaching objects to generate corresponding first image signals of the teaching objects located within a two-dimensional image frame, and which operates in the recognition mode to view unknown objects to generate second image signals of the unknown objects located within the two-dimensional image frame;
a window signal generating means for generating a window signal for designating a measurement scope for a pick-up image;
an image cutting-out means for partially cutting out a sub-image by using a local window for said measurement scope;
an extracting means for operating in said learning mode to extract and store in a memory basic initial features of said first image signals of said teaching objects, and for extracting and storing in said memory basic initial features of said second image signals of said unknown objects;
a matching means for matching said sub-image and autocorrelation computing mask within the measurement scope;
a counting means for counting data outputted from said matching means;
input means for inputting as teaching information a data pair denoting a number of the teaching objects and a type of the teaching objects;
a means for storing in said memory plural pairs of said basic initial features of said first image signals of said teaching objects and a corresponding teaching information;
a processing means for processing the plural pairs of basic initial features and the corresponding teaching information stored in said memory so as to extract statistical features of said basic initial features by combining the basic initial features to obtain coefficients which are optimally determined based on a multivariate analysis;
a means for storing said coefficients in said memory;
a means for applying said coefficients stored in said memory to said basic initial features of said second image signals of said unknown objects so as to generate as a recognition result at least one data pair denoting a number and a type of the unknown objects.

5,442,717

SHARPNESS PROCESSING APPARATUS

Shigeo Murakami, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 30, 1993, Ser. No. 39,659
Claims priority, application Japan, Apr. 21, 1992, 4-129541
Int. Cl.[6] H04N 1/46; G03F 3/08
U.S. Cl. 382—162 17 Claims



1. A sharpness processing apparatus including a processor for obtaining input image signals of an original image from an input device, effecting sharpness processing and outputting the image signals of the original image after the sharpness processing to an output device, said apparatus comprising:
a first frame memory for receiving and storing digitized RGB signals representing R (red), G (green) and B (blue) components of pixels of said original image;
an image monitor for receiving the RGB signals of said original image stored in said first frame memory to display said original image;
a pointing device connected to said processor for moving a point designating marker displayed on said image monitor along with said original image, and applying coordinates of a point designated by said marker on a screen of said image monitor to said first frame memory as an address of a pixel corresponding to said point from which to read the RGB signals, said pointing device being used at least to designate a reference color acting as a central object for sharpness processing and to designate an effective range of the sharpness processing based on said reference color when identifying, by means of a color, a region to be subjected to the sharpness processing in said original image displayed on said image monitor;
a parameter designating device for designating a parameter to indicate a degree of the sharpness processing;
a parameter memory for storing said parameter designated;
an image data conversion memory for storing combinations of three HSL values comprising hue (H), saturation (S) and lightness (L), representing perceived colors corresponding to said RGB signals, in storage regions at addresses representing various combinations of said RGB signals;
a first pixel value memory for storing HSL values of a designated pixel relating to said reference color read from said image data conversion memory by applying thereto, as reading addresses, the RGB signals of the designated pixel relating to said reference color read from said first frame memory;
an effective range pixel value memory for storing HSL values of a designated pixel relating to an effective range of the sharpness processing read from said image data conversion memory by applying thereto, as reading addresses, the RGB signals of the designated pixel relating to said effective range of the sharpness processing read from said first frame memory;
effective range determining means for determining an effective range, expressed as HSL values dH, dS and dL, of the sharpness processing based on said reference color, from the HSL values of the designated pixel relating to said reference color and stored in said first pixel value memory and the HSL values of the designated pixel relating to said effective range of the sharpness processing and stored in said effective range pixel value memory;
an effective range memory for storing said effective range (dH, dS and dL) of the sharpness processing determined by said effective range determining means;
a second pixel value memory for successively reading from said first frame memory and storing the RGB signals of the pixels in said original image, and for storing the HSL values read from said image data conversion memory by applying the RGB signals thereto as reading addresses;
comparator means for deriving absolute differences between the HSL values of said reference color stored in said first pixel value memory and the HSL values of the pixels in said original image stored in said second pixel value memory, to determine whether the absolute differences therebetween are smaller than said effective range (dH, dS and dL) of the sharpness processing stored in said effective range memory, and outputting an instruction to execute the sharpness processing when said absolute differences are smaller than said effective range, and an instruction to withhold the sharpness processing when said absolute differences are larger than said effective range;
sharpness processing means for effecting the sharpness processing, only when said comparator means outputs the instruction to execute the sharpness processing, by applying the parameter stored in said parameter memory to the RGB signals of said original image stored in said second pixel value memory; and
a second frame memory for storing, in positions corresponding to the pixels in said original image, the RGB signals of the pixels in said original image stored in said second pixel value memory in response to the instruction of said comparator means to withhold the sharpness processing, and for storing, in the positions corresponding to the pixels in said original image, RGB signals of the pixels in said original image resulting from the sharpness processing by said sharpness processing means in response to the instruction of said comparator means outputs to execute the

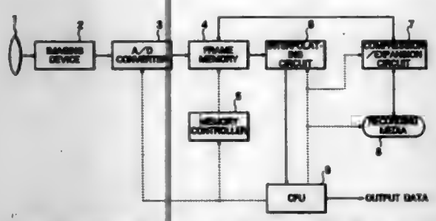
sharpness processing, said second frame memory being operable to output the RGB signals resulting from the sharpness processing to said image monitor.

5,442,718

APPARATUS AND METHOD FOR STORING AND REPRODUCING DIGITAL IMAGE DATA YIELDING HIGH RESOLUTION AND HIGH QUALITY VIDEO IMAGE DATA

Hideki Kobayashi, and Yasuo Ido, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,168
Claims priority, application Japan, Sep. 7, 1992, 4-264231
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—166 53 Claims



1. An apparatus for processing an image data signal formed of at least three color components, each having an analog intensity, produced by an imaging means having first image generation elements and second image generation elements arranged at the same registration positions on a two dimensional plane, said first image generation elements and said second image generation elements being spaced at a predetermined pitch in two orthogonal directions, and third image generation elements arranged at positions shifted by a half pitch from the registration position of said first and second image generation elements in said two orthogonal directions, comprising:

conversion means for converting the analog intensities of said color components of said image data signal to digital color component data;

compression means for compressing said digital color component data at a predetermined rate greater than 1/1, whereby when said predetermined rate is 1/1 said image data signal is not compressed;

storage means for storing said compressed digital color component data on a digital recording medium;

data reading means for reading said digital color component data from said digital recording medium;

expansion means for expanding said digital color component data read from said digital recording medium at a predetermined expansion rate, to produce expanded data substantially the same as the digital color component data before compression; and

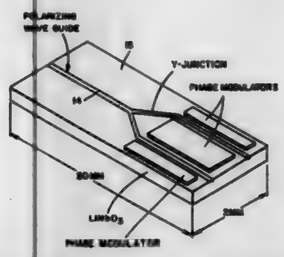
interpolation means for interpolating at least one image data representing an intensity of an image generation element arranged between two adjacent image generation elements in a first direction and between two adjacent image generation elements in a second direction, said second direction being orthogonal to said first direction, by using said expanded digital color component data representing the intensities of said adjacent image generation elements to thereby provide reproduced image picture data having a predetermined resolution.

5,442,719

ELECTRO-OPTIC WAVEGUIDES AND PHASE MODULATORS AND METHODS FOR MAKING THEM

Chin L. Chang, West Covina; Albert Choi, Agoura Hills, and Sheri L. Douglas, Newbury Park, all of Calif., assignors to Litton Systems, Inc., a Delaware corporation, Woodland Hills, Calif.

Filed Jul. 21, 1993, Ser. No. 95,278
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—3 14 Claims



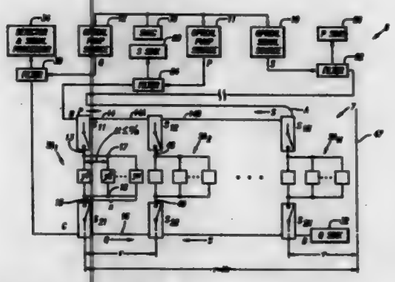
13. A lithium niobate channel waveguide electro-optic phase modulator having an electrode positioned alongside said modulator to apply an electrical signal to said modulator, said modulator including a sufficient quantity of lithium ions in said modulator to cause the phase of a light signal passing through said modulator to change substantially instantaneously to a desired steady state value in less than about 1 microsecond when an electrical signal is applied to said modulator.

5,442,720

SWITCHED ARRAY

H. John Shaw, Stanford, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 930,581, Aug. 14, 1992, Pat. No. 5,297,224. This application Mar. 21, 1994, Ser. No. 215,837
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—16 20 Claims



1. The combination comprising:

a first signal generator for generating first and second EM signals;

a utilization apparatus; and

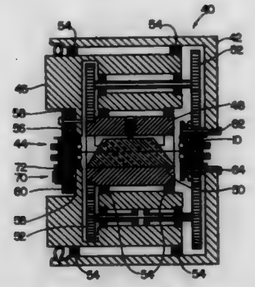
a plurality of first switchs each being successively responsive to a first EM signal for selectively connecting a second EM signal that is simultaneously present at one of said first switchs to said utilization apparatus.

5,442,721

FIBER-OPTIC ROTARY JOINT WITH BUNDLE COLLIMATOR ASSEMBLIES

Gregory H. Ames, Gales Ferry, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1994, Ser. No. 287,027
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—26 4 Claims



1. A fiber-optic rotary joint with first and second bundle collimator assemblies, said joint comprising:

generally cup-shaped main rotor;

a first of said bundle collimator assemblies fixed in a central opening in an end wall of said main rotor;

a generally cup-shaped stator disposed within said main rotor, said stator having an end wall opposed to said main rotor end wall;

a second of said bundle collimator assemblies disposed in a central opening in said end wall of said stator;

a prism mounted in a prism rotor in said joint, said prism being disposed between said first and second bundle collimator assemblies;

gear means for causing rotation of said main rotor at twice the speed of rotation of said prism rotor;

each of said bundle collimator assemblies including a tilt assembly by which its associated bundle collimator assembly may be tilted; and

azimuthal adjustment structure disposed on one of said first and second bundle collimator assemblies for azimuthal alignment of said one bundle collimator assembly with the other of said bundle collimator assemblies by rotation of said one bundle collimator assembly relative to said other bundle collimator assembly.

5,442,722

OPTICAL FIBER RIBBON WITH ZIP CORD

Michael G. DeCarlo, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Jul. 25, 1994, Ser. No. 279,612
Int. Cl.[6] G02B 6/44
U.S. Cl. 385—114 6 Claims



1. A fiber optic cable subunit comprising:

(a) an optical ribbon comprising a plurality of optical fibers aligned one to another in a planar relationship bound together in said relationship by a circumscribing plastic matrix in which the optical fibers are embedded; and,

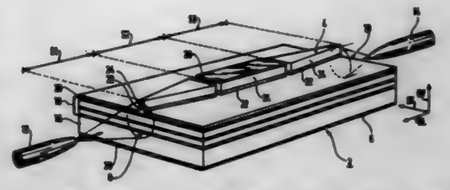
(b) one or more zip cords disposed in said plastic matrix aligned with said plurality of optical fibers having sufficient tensile strength to cut said plastic matrix when said zip cord is pulled against said plastic matrix resulting in the separation of one group of optical fibers from another group of optical fibers, said zip cord positioned in said plastic matrix and aligned with and spaced apart from the outer surfaces of laterally disposed optical fibers to the extent the outer surfaces of said laterally disposed optical fibers are not exposed by the zip cord cutting said plastic matrix.

5,442,723

SEMICONDUCTOR STRIP ACTIVE OPTICAL DEVICE

Jean-Francois Vinchant, Bruyeres le Chatel; Monique Renaud, Saint Cheron, and Marko Erman, Paris, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 29, 1994, Ser. No. 297,057
Claims priority, application France, Sep. 2, 1993, 93 10468
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—129 8 Claims



1. An electrically controllable strip-semiconductor active optical device comprising:

a vertical succession of semiconductive layers forming a longitudinal guide structure for guiding a light undergoing a controlled processing in said device,

said guide structure comprising a strip-shaped core structure, disposed between a bottom and a top confinement layer of said device, thereby imposing a single propagation mode defining a spatial distribution of power fractions of said light as guided by said guide structure,

said core structure comprising a succession of high index layers, having a higher refractive index than said bottom and top confinement layers, and being mutually separated by a dilutant material having a lower refractive index than said high index layers, said high index layers having compositions enabling them to perform said controlled processing in response to a controlled density of charge carriers therein,

said bottom and top confinement layers having thicknesses and dopant concentrations of respectively a first and a second mutually opposite types of conductivity for exchanging said charge carriers with said high index layers so as to control said charge carrier density in response to an electrical control signal applied to said core structure between said bottom and top confinement layers,

said vertical succession of semiconductive layers further including a control layer, located on said top confinement layer, and having a dopant concentration of said second type of conductivity higher than said confinement layers, so that said control layer has an increased electrical conductivity and subjects a power fraction of said light therein to a parasitic absorption; and

means for applying said control signal to said core structure from said control layer, whereby the greater said thickness of said top confinement layer the lower an efficiency of said control signal,

wherein said succession of high index layers includes at least three said high index layers having thicknesses greater

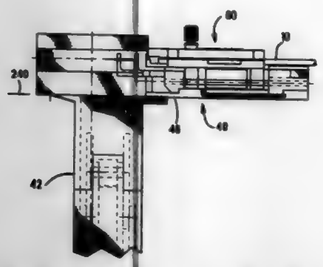
than that of quantum wells so that said efficiency of said control signal is kept high, while said power fraction of said light subjected to said parasitic absorption in said control layer is kept low.

5,442,724

TOOL FOR TERMINATING A FIBER OPTIC CABLE TO A CONNECTOR

Gregory F. Deuel, Lancaster, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 30, 1994, Ser. No. 315,733
Int. Cl.[6] G02B 6/25
U.S. Cl. 385—134 **11 Claims**



1. In a tool for attaching an end of an optical fiber of a fiber optic cable to a connector, said tool having a frame, a nest within said frame for receiving said connector, and crimping apparatus coupled to said frame for terminating said cable to said connector,

a carriage assembly coupled to said frame and arranged for holding said cable and for moving said end of said optical fiber along a first axis in a first direction toward and into abutting engagement with said connector and in a second direction, opposite said first direction, away from said connector, and during said termination arranged to maintain said end of said optical fiber in said abutting engagement with said connector at a predetermined level of force that is substantially unaffected by the force of gravity, comprising:

a base, a carriage for holding said cable slidably coupled to said base, and a counterweight coupled to said carriage and said based said counterweight having a mass proportional to the combined masses of said cable and said carriage and movable only along a second axis that is parallel to said first axis, so that when said carriage moves in said first or second directions, said counterweight moves in an opposite direction.

5,442,725

PIVOTALLY MOUNTED TRAY FOR ORGANIZING OPTICAL FIBERS

Peter Peng, Howell, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 30, 1993, Ser. No. 114,128
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—135 **14 Claims**

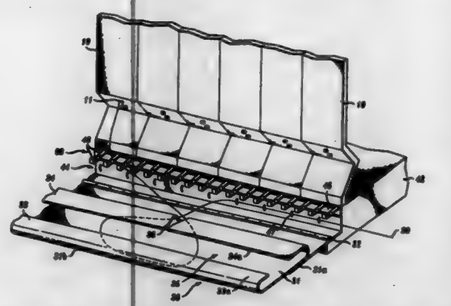
1. A tray for organizing signal conduits comprising:

a base plate having a first edge and a second edge;

a lower flange having a tip mounted on the base plate near the first edge;

an upper flange having a tip disposed near the second edge;

a hinge mounted at the first edge of the base plate;



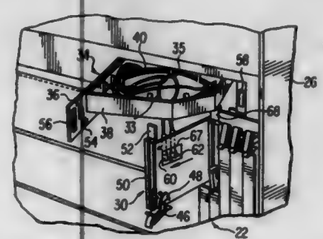
wherein the tips of the upper flange and the lower flange extend toward each other to create a buffer zone, signal conduits are retained in said buffer zone.

5,442,726

OPTICAL FIBER STORAGE SYSTEM

Paul A. Howard, Midland, and Cort Lansenderfer, Vienna, both of Va., assignors to Hubbell Incorporated, Orange, Conn.

Filed Feb. 22, 1994, Ser. No. 199,607
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—135 **20 Claims**



1. An optical fiber storage system for use in an equipment rack containing at least one removable optical interface card, comprising:

a holder for holding a length of optical fiber for connection to an optical interface card, said holder being mounted for movement between a closed position in which access to said optical fiber is prevented and an open position allowing access to said optical fiber; and

an actuating device for causing said holder to move from said closed position to said open position automatically in response to withdrawal of said optical interface card.

5,442,727

SEMICONDUCTOR PROCESSING TECHNIQUE, INCLUDING PYROMETRIC MEASUREMENT OF RADIANTLY HEATED BODIES

Anthony T. Flory, Summit, N.J., assignor to AT&T Corp., Murray Hill, N.J.

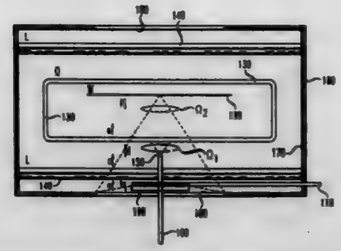
Continuation-in-part of Ser. No. 42,028, Apr. 2, 1993, Pat. No. 5,305,416. This application Apr. 14, 1994, Ser. No. 227,844
Int. Cl.[6] C01J 5/10
U.S. Cl. 392—416 **11 Claims**

1. A process for heating a body, comprising the steps of exposing the body to a controllable flux of electromagnetic radiation from at least one lamp energized by time-varying electric current, measuring the surface temperature of the body, and in response to the temperature measurement, controlling the flux of radiation, wherein the measuring step comprises:

a) collecting radiation emitted and reflected by the body in a first light-pipe probe and detecting said radiation, leading to a first probe signal denoted S_1;

b) collecting a portion of radiation propagating toward the body in a second light-pipe probe, said portion comprising radiation reflected from a diffusively reflective surface, and detecting said radiation, leading to a second probe signal denoted S_2;

c) determining magnitudes of time-varying components of S_1 and S_2, said magnitudes respectively denoted ΔS_1 and ΔS_2; and



d) mathematically combining S_1, S_2, ΔS_1 and ΔS_2 and determining an effective emittance $\epsilon(R)$ of the body wherein the ratio R is determined by a fitted time-dependent slope of S_1 vs. S_2 such that a surface temperature of the body is calculated,

CHARACTERIZED IN THAT:

e) in step (a), the first probe effectively samples radiation from an area of the body that subtends a solid angle Ω_1 at the first probe;

f) in step (b), the second probe effectively samples radiation from an area of the diffusively reflective surface that subtends a solid angle Ω_2 at the nearest surface of the body; and

g) Ω_2 is greater than or approximately equal to Ω_1.

5,442,728

INTERACTIVE PATIENT ASSISTANCE DEVICE FOR STORING AND DISPENSING A TESTING DEVICE

Stephen B. Kaufman, Highland Park; Shelly Hyland, Crystal Lake; Michael A. Leeczynski, Gurnee, and Calvin L. Bryant, Bartlett, all of Ill., assignors to HealthTech Services Corp., Northbrook, Ill.

Continuation of Ser. No. 984,282, Dec. 1, 1992, which is a continuation of Ser. No. 739,892, Aug. 2, 1991, which is a division of Ser. No. 452,788, Dec. 19, 1989, Pat. No. 5,142,484, which is a continuation of Ser. No. 201,779, Jun. 19, 1988, Pat. No. 4,933,873, which is a continuation-in-part of Ser. No. 194,018, May 12, 1988, abandoned. This application Sep. 22, 1993, Ser. No. 124,997
The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.
Int. Cl.[6] G10L 5/00
U.S. Cl. 395—2.79 **5 Claims**

1. An interactive patient assistance device comprising:

a housing,

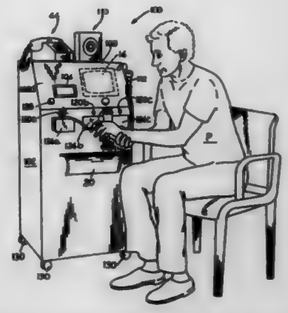
a diagnostic testing device for measuring a health parameter of a patient and for providing an output indicative of said parameter, including means within the housing and attached to the testing device for reading the output of the testing device,

storage means within the housing for physically storing the diagnostic testing device within the housing away from access by the patient,

delivery means associated with the storage means for selectively making the testing device accessible for use by the patient to perform a diagnostic test on the patient's body in response to a command signal,

patient command means for receiving and interpreting a prescribed command made by the patient,

memory means for storing a prescribed schedule for delivering the prescribed testing device, and



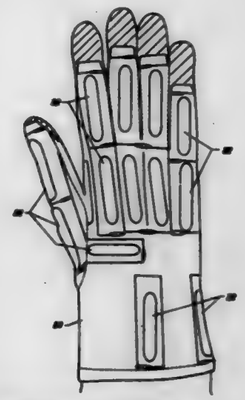
first control means for issuing the command signal to actuate the delivery means for making the testing device available to the patient in response to either the prescribed schedule stored in the memory means or the receipt of a prescribed command by the patient command means.

5,442,729

STRAIN-SENSING GONIOMETERS, SYSTEMS AND RECOGNITION ALGORITHMS

James F. Kramer, Stanford; William R. George, San Francisco, and Peter Lindener, Los Altos, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 625,305, Dec. 10, 1990, Pat. No. 5,280,265, which is a continuation of Ser. No. 238,204, Oct. 14, 1988, Pat. No. 4,047,952. This application Nov. 8, 1993, Ser. No. 148,991
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[6] G10L 9/00
U.S. Cl. 395—2.8 **15 Claims**



1. A communication system comprising:

means for deriving electrical signals indicative of a configuration of a hand fitted with an instrumented glove having a cover material configured to fit on the hand of a wearer,

a plurality of angle-sensing means supported by said cover material and positioned to respond to movement of fingers and/or hand and means for electrically connecting said plurality of angle-sensing means to circuitry of the communication system;

a computer for receiving said electrical signals representing hand-state vectors and determining symbols corresponding to hand-poses, by adaptively signal processing said hand-state vectors to recognize patterns representing said hand-poses; and

first output means responsive to said computer for providing an output of said symbols.

5,442,730

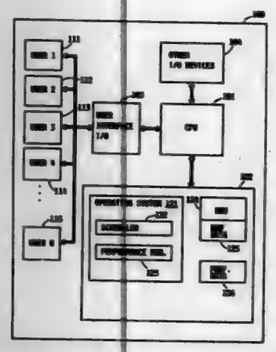
ADAPTIVE JOB SCHEDULING USING NEURAL NETWORK PRIORITY FUNCTIONS

Joseph P. Bigus, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1993, Ser. No. 134,764

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **14 Claims**



1. A method for scheduling jobs from among a plurality of job classes for service by a resource of a work-producing system, comprising the steps of:

defining a set of performance goals for said job classes;

training a neural network for producing a delay cost value function, said delay cost value function implementing said set of performance goals as output from at least one input, wherein at least one input to said neural network represents a delay time with respect to a job waiting for service by said resource;

assigning a respective job delay cost to each of a plurality of jobs waiting for service by said resource using said delay cost value function produced by said neural network: and

selecting a next job for service by said resource based on said job delay cost.

5,442,731

INFERENCE PLANNING SYSTEM

Masayuki Tanaka, Takatsuki, and Hirokazu Kominami, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

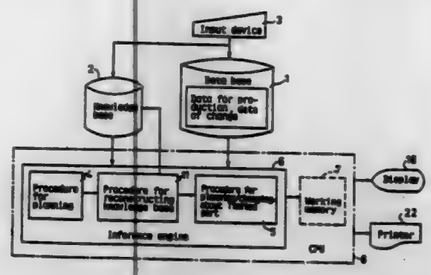
Division of Ser. No. 116,730, Sep. 7, 1993, Pat. No. 5,321,620, which is a continuation of Ser. No. 356,302, May 24, 1989, abandoned. This application Feb. 8, 1994, Ser. No. 194,339

Claims priority, application Japan, May 25, 1988, 63-127721; Dec. 1, 1988, 63-304897

The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—54 **7 Claims**



1. A method of performing inference planning comprising the steps of:

storing, in a data base storing means, production planning data of a production plan and data for changing said production planning data;

storing, in a knowledge base storing means, data of procedures which are necessary to make said production plan and to change said production plan and are expressed by a rule type format;

inputting said production planning data and said data for changing said production planning data into said data base storing means;

inputting said data of procedures into said knowledge base storing means;

producing said production plan in accordance with said production planning data and said data of procedures, by following the steps of:

developing a plan of a manufacturing process,

calculating a reference value,

allocating an operation period to a facility in which the manufacturing process will be carried out, and

calculating an estimation value,

wherein a limited part of said plan may be planned and changed by the steps of:

searching a part of said plan which is influenced by the data of change,

deleting said part for changing, and

returning a new plan to first processing means for planning,

temporarily storing said production plan produced by a central processing unit, and

outputting said production plan.

5,442,732

PRINT FOLDER APPLICATION FOR ELECTRONIC REPROGRAPHIC SYSTEMS

James F. Matysek, and Michael E. Farrell, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 10, 1992, Ser. No. 988,535

Int. Cl.[6] H04N *1/23*

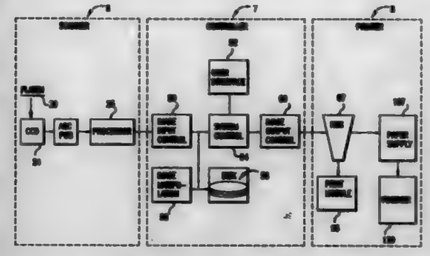
U.S. Cl. 395—116 **22 Claims**

1. A process for linking existing jobs in existing job files together for printing, where said existing jobs are comprised of

a plurality of electronic image pages and are being processed by an electronic reprographic system, said electronic reprographic system including a printer for producing prints from said electronic image pages in response to job program instructions, and a user interface with display screen for inputting said job program instructions for each print job, comprising the steps of:

creating a print folder as a new job file using the display screen;

assigning existing job files to the print folder;



selecting print folder properties to include reprographic functions using the display screen; and

printing the print folder by selecting the print folder using the display screen and assigning the print folder to a print queue by designating the print folder for printing with the selected reprographic functions, with the printing of the print folder containing contents of the assigned existing job files not affecting separate printing of the assigned existing job files.

5,442,733

METHOD AND APPARATUS FOR GENERATING REALISTIC IMAGES USING A DISCRETE REPRESENTATION

Arie E. Kaufman, Plainview, N.Y.; Daniel Cohen, Tel Avi, Israel, and Roni Yagel, Baxley, Ohio, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Mar. 20, 1992, Ser. No. 855,223

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—124 **14 Claims**



1. A method for generating a 2-D realistic image having a plurality of pixels, the method using discrete 3-D voxel representations of 3-D continuous objects that make up a scene, the method comprising:

a) forming a discrete 3-D voxel representation of each 3-D continuous object, each discrete 3-D voxel representation utilizing a plurality of voxels, each voxel representing a particular unit volume of the 3-D continuous object, each voxel having a plurality of attributes corresponding to characteristics of a corresponding unit volume of the 3-D continuous object;

b) storing each discrete 3-D voxel representation in a 3-D cubic frame buffer of voxels;

c) selecting a voxel connectivity for a plurality of families of 3-D discrete rays, each 3-D discrete ray of each family of 3-D discrete rays being formed according to the selected voxel connectivity, each family of 3-D discrete rays including at least one ray;

d) traversing the at least one ray of each family of 3-D discrete rays from a corresponding pixel through the 3-D cubic frame buffer of voxels, the traversal of the at least one ray of each family of 3-D discrete rays being performed for each of the plurality of pixels of the 2-D realistic image;

e) detecting encounters for each of the plurality of families of 3-D discrete rays with the discrete 3-D voxel representations, each encounter providing illumination values for each family of 3-D discrete rays; and

f) combining the illumination values to provide a composite illumination value for each of the plurality of families of 3-D discrete rays, each composite illumination value corresponding to a pixel value for generating the 2-D realistic image.

5,442,734

IMAGE PROCESSING UNIT AND METHOD FOR EXECUTING IMAGE PROCESSING OF A VIRTUAL ENVIRONMENT

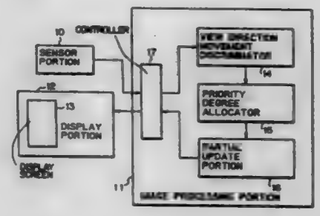
Koichi Murakami; Katsuhiko Hirota, and Soichi Nishiyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 845,422

Claims priority, application Japan, Mar. 6, 1991, 3-039732

Int. Cl.[6] G06T *7/20*

U.S. Cl. 395—127 **10 Claims**



1. An image processing unit comprising:

sensor means for detecting a view direction of a person and for generating a view vector indicative of the view direction;

display means having a display screen for displaying an image on the display screen, said display screen having a center; and

image processing means for generating an image defined by the view vector in accordance with given image data, said image processing means comprising:

view direction movement discrimination means for fetching the view vector at a certain time interval, and for calculating a view direction movement vector designating a moving speed of the view direction based on the difference between the latest two fetched view vectors;

priority degree allocation means for receiving the view direction movement vector and for generating a projection vector by projecting the view direction movement vector on the display screen, setting the center of the display screen as an origin, dividing the display screen into a selected number of sections, each divided section having a priority degree and for determining the priority degree for each divided section of the display screen

such that the priority degree is higher when the projection vector approaches the divided section and lower as the projection vector is more distant from the center of the display screen to a periphery of the display screen along the projection vector; and

partial update means for updating the display of the display screen in each divided section by the image defined by the latest view vector, sequentially from the section having a higher priority degree.

5,442,735

METHOD AND APPARATUS FOR INTERACTIVELY MANIPULATING MODELS

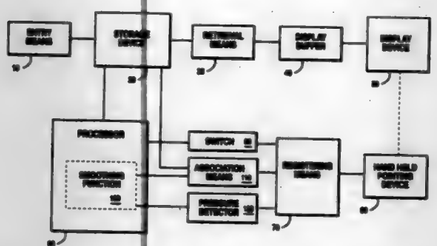
Christopher Paradine, Southampton, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1994, Ser. No. 177,886

Claims priority, application United Kingdom, Jan. 9, 1993, 9300337

Int. Cl.[6] G06T *5/00*

U.S. Cl. 395—133 **8 Claims**



5. An apparatus for smoothing an image constructed from a set of graphical object location data, comprising:

a display for displaying said set of graphical object location data as said image on display;

entry means for obtaining from said user a location on said display;

a processor for smoothing said displayed image by modifying set of modeled objects based on said obtained location so long as a location on said display is obtained from said user.

5,442,736

CORRELATION OF CURSOR POSITION TO SHAPES DISPLAYED ON A VIDEO DISPLAY SCREEN

Brian Cummiss, Houghton-le-Spring, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1993, Ser. No. 50,940

Claims priority, application United Kingdom, Apr. 21, 1992, 9215896

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—134 **3 Claims**

1. A method of correlating a cursor position with displayed shapes in a computer system including storage means, means for displaying the shapes and a cursor, and user input means for moving the cursor and selecting a cursor position, said method comprising the steps of:

displaying one or more shapes on the display means;

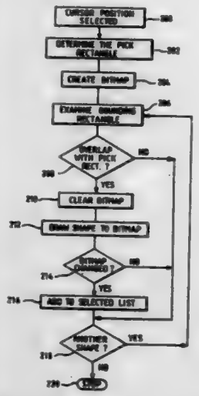
determining a bounding rectangle of each displayed shape, and storing information representative of the shape and bounding rectangle;

responsive to a user selecting a cursor position, determining a select region for said cursor position, said select region comprising a rectangle of picture elements surrounding said cursor position;

examining the bounding rectangle of each displayed shape to determine whether it overlaps the select region;

creating a bit map in the storage means corresponding to the select region;

drawing each shape whose bounding rectangle overlaps the select region into the bit map; and



examining the bit map to determine whether any shape has been written into the select region of the bit map, and if so correlating that shape with the cursor position selected by the user, wherein said steps of examining the bounding rectangle, drawing each shape, and examining the bit map are performed in succession for each shape.

5,442,737

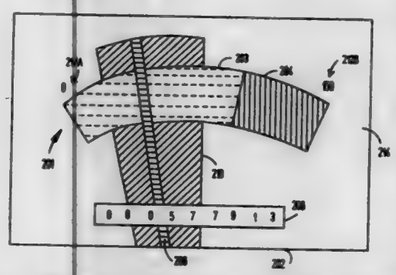
SYSTEM AND METHOD FOR RENDERING A DISPLAY ON A COMPUTER SCREEN

Jeffrey H. Smith, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1991, Ser. No. 791,810

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—135 **14 Claims**



1. A method for rendering a display of an image on a computer screen, the displayed image comprising a plurality of elements, the method comprising the steps of:

(a) creating a plurality of forms;

(b) writing each of the plurality of elements in a respective one of said plurality of forms such that the displayed image is maintained in said plurality of forms, including the steps of,

(1) writing, in a first form, a background color and a scale having an acceptable zone and an unacceptable zone,

(2) writing, in a second form, a needle shadow, and

(3) writing, in a third form, a meter having an accumulated value;

(c) modifying only those elements that need to be changed and writing said modified elements to said respective forms such that only those forms comprising said modified elements are updated;

(d) combining the contents of said plurality of forms to result in a final combined form, including the steps of

(1) logically AND'ing said first and second form to produce an intermediate form,

(2) writing a needle in said intermediate form, and

(3) writing, into said intermediate form, pixels of said third form over corresponding pixels of said intermediate form; and

(e) displaying said final combined form on the computer screen to display the displayed image, wherein the displayed image appears as an overlayed display of each of the plurality of elements contained in said final combined form.

5,442,738

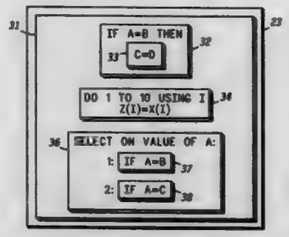
COMPUTER DISPLAY REPRESENTING STRUCTURE

William Chapman, Scottsdale, and Jeffrey A. Robinson, Glendale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1993, Ser. No. 160,765

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—135 **18 Claims**



1. A computer implemented method of presenting logical structures on a computer display screen, comprising the steps of:

providing a logical description of a plurality of objects that defines relationships between the plurality of objects;

parsing the logical description to identify the relationships between the plurality of objects;

extracting a plurality of delimiters which define the relationships between the plurality of objects; and

displaying the relationships with nested windows on the computer display as defined by the delimiters where the relationships having a higher order of precedence are arranged in windows on top of other windows that represent lower order of precedence.

5,442,739

IMAGE PROCESSING INCLUDING CUT AND PASTE EDITING

Akira Saito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1993, Ser. No. 125,655

Claims priority, application Japan, Oct. 2, 1992, 4-264730; Sep. 17, 1993, 5-231457

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—138 **5 Claims**

1. An image processing apparatus comprising:

display means having first and second display areas for displaying an image corresponding to image data, wherein the image displayed on said first display area may be displayed on said second display area;

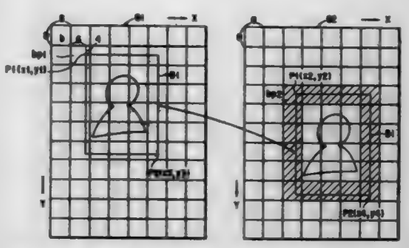
encoding and decoding means for encoding image data to be displayed on said display means in units of blocks each having m×n pixels and for decoding image data of the image displayed on said display means in units of blocks each having m×n pixels;

means for calculating values of coordinates (x, y) of a second point so as to satisfy relationships:

$$X \bmod m = x \bmod n$$

$$Y \bmod n = y \bmod n$$

where, (X, Y) represent values of coordinates of a first point



of the image displayed on said first display area and (x, y) represent coordinates of the second point corresponding to the first point of the image displayed on said second display area when the image displayed on said first display area is displayed on said second display area; and

control means for displaying the image displayed on said first display means on said second display means in accordance with the values of the second coordinates (x, y) calculated by said calculating means that the same image data in units of blocks of m×n pixels is encoded and decoded by said encoding and decoding means.

5,442,740

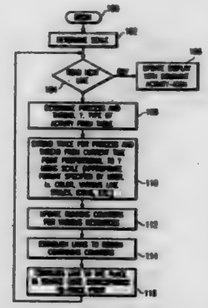
METHOD AND APPARATUS FOR VISUAL DISPLAY OF PROGRAM PERFORMANCE TRACE DATA

Shrikant N. Parikh, Mesquite, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1993, Ser. No. 91,788

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—140 **8 Claims**



1. A method of displaying on a computer monitor of a computer system performance trace data for a computer program in order to allow analysis of the computer program, comprising the steps of:

associating a plurality of trace points with predefined computer activities which result from execution of the computer program;

displaying on a time line a graphical representation of each said computer activities in accordance with execution of the computer program;

automatically linking said graphical representation to source code of the computer program; and

upon selection of any point on said graphical representation automatically presenting for analysis source code which was executed by the computer system at a time corresponding to said any point.

5,442,741

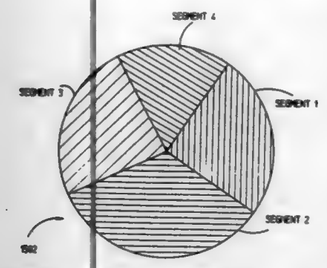
METHOD FOR DISPLAYING PIE CHART INFORMATION ON A COMPUTER SCREEN

Jeffrey A. Hughes; William R. Marbaker, and Jeffrey H. Smith, all of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 790,921, Nov. 13, 1991, abandoned. This application Apr. 12, 1994, Ser. No. 226,424

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—142 **21 Claims**



19. A method for displaying information on a computer screen, comprising the steps of:

(1) receiving first data points, second data pints, and third data points;

(2) displaying said first data points in a line graph on the computer screen;

(3) displaying said second data points in a gauge display on the computer screen; and

(4) displaying said third data points in a pie chart on the computer screen, said step (4) comprising steps of

(a) storing a pixel pattern of a circle in a first form wherein said circle pixel pattern represents an outline of the pie chart, wherein step (a) comprising the steps of:

(i) creating said first and second forms,

(ii) computing pixel positions of a circumference of said circle, and

(iii) drawing lines between said pixel positions in said first form.

(b) copying said circle pixel pattern to a second form, and

(c) drawing one or more segment boundaries in said second form within said circle pixel pattern to form segments in said circle pixel pattern according to said third data points, wherein said (c) comprises the steps of:

(i) scaling said third data points;

(ii) initializing a pointer to a first said pixel positions;

(iii) drawing a line in said second form from a center pixel position of said circle to said pixel position identified by said pointer;

(iv) selecting one of said third data points;

(v) incrementing said pointer said selected third data point;

(vi) drawing a line in said second form from said center pixel position to said pixel position identified by said pointer; and

(vii) repeating steps (iv)-(vi) for each said third data points.

5,442,742

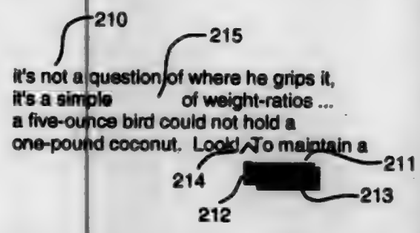
METHOD AND APPARATUS FOR THE MANIPULATION OF TEXT ON A COMPUTER DISPLAY SCREEN

Ann M. Greyson, Sunnyvale; Jeffrey D. Hokit, Mountain View; Marjory Kaptanoglu, San Carlos; Annette M. Wagner, La Honda, and Stephen P. Capps, Redwood City, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 632,318, Dec. 21, 1990, abandoned. This application Oct. 14, 1993, Ser. No. 137,375

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—146 **14 Claims**



1. In an interactive computer-controlled display system having a processor, a memory means, a display device coupled to said processor a cursor control device coupled to said processor for interactively positioning a cursor on said display device, and a signal generation device for signaling an active and an inactive control state, a process for directly manipulating a portion of text displayed on said display device, said process comprising the steps of:

selecting a block of text from a set of available text, at least a portion of said available text displayed on said display device;

dragging said selected block of text from a previous position to a new position relative to said available text, at least a portion of said selected block of text being visible as said selected block of text is dragged, said movement of said selected block of text being responsive to movement of said cursor control device, said dragging step comprising:

displaying a text manipulation handle on said display device, said text manipulation handle comprising a graphic element visually associated with said selected block of text,

determining whether said cursor is visually positioned within said text manipulation handle displayed on the display device,

receiving a signal from said signal generation device indicating that said signal generation device is in an active control state, and

upon determining that said cursor is positioned within the text manipulation handle and while the signal generation device is in an active state, dragging said selected block of text and said text manipulation handle from a previous position to a new position relative to said available text while said signal generation device is in an active control state, at least a portion of said selected block of text being visible as said selected block of text is dragged;

displaying an insertion marker on said display device, said insertion marker comprising a graphic element visually associated with said selected block of text, said insertion marker moving with said selected block of text and is indicative of a position in the available text; and

inserting said selected block of text into said available text, said selected block of text being inserted at said new position, corresponding to the position of the insertion marker, at least a portion of said available text being reformatted to provide continuity between said available text and said inserted block of text.

5,442,743

ELECTRONIC DEVICE FOR CALCULATING AND DISPLAYING A MATRIX

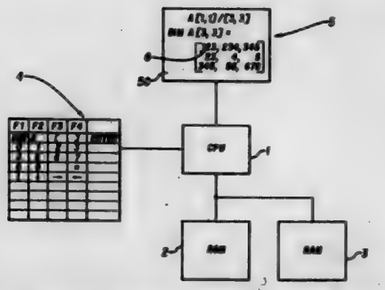
Michiaki Kuno, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 908,257

Claims priority, application Japan, Jul. 8, 1991, 3-167198

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—148 **14 Claims**



1. An electronic device for calculating and displaying a matrix, comprising:

display means including a screen portion for displaying a matrix; and

inputting means for inputting commands into a control means;

wherein said control means, after receiving a matrix generating command through said inputting means, controls the display of said matrix in a two-dimensional row-column format in which each element of said matrix has an initial value, said control means further receiving values of elements of said matrix through said inputting means, and wherein one of said elements is designated by a cursor on said screen portion.

5,442,744

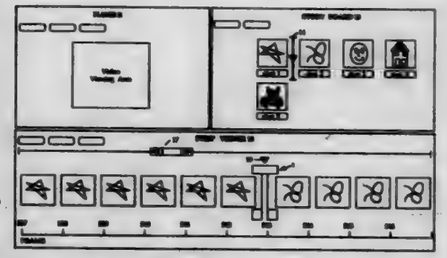
METHODS AND APPARATUS FOR DISPLAYING AND EDITING MULTIMEDIA INFORMATION

Michael Plech, Palo Alto, and Trevor Morris, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 3, 1992, Ser. No. 865,043

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—154 **19 Claims**



7. An apparatus for displaying and editing multimedia information, said apparatus comprising:

a digital computer;

a display device coupled to said digital computer, said display device having a cursor;

a cursor control device coupled to said digital computer, said cursor control device controlling the location of said cursor on said display device;

a first unit of multimedia information displayed on said display device, said first unit of multimedia information having a first start time and a first end time;

a second unit of multimedia information displayed on said display device near to said first unit of multimedia information, said second unit of multimedia information having a second start time and a second end time; and

a splinder displayed on said display device between said first unit of multimedia information and said second unit of multimedia information, said splinder comprising a first portion, a second portion movably coupled to said first portion, and a third portion movably coupled to said first portion, said first portion, said second portion and said third portion of the splinder movable by the cursor displayed on said display screen and the cursor control device coupled to said display screen; and

editing means for editing said first end time of said first unit of multimedia information and said second start time of said second unit of multimedia information, said editing means responsive to movements of said splinder by said cursor control device across the first unit of multimedia information and second unit of multimedia information displayed on said display device.

5,442,745

METAPHOR SELECTING/SWITCHING SYSTEM IN INFORMATION PROCESSORS

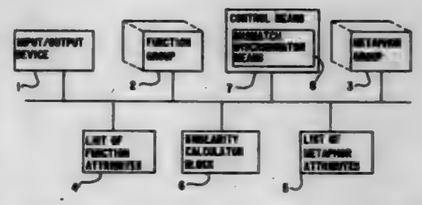
Makoto Hirose, Tokyo, Japan, assignor to Institute for Personalized Information Environment, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,986

Claims priority, application Japan, Jun. 18, 1991, 3-146071

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—155 **5 Claims**



1. A metaphor selecting/switching system in an information processor which incorporates metaphor and function groups independently, selects a matched metaphor/function combination based on similarities between metaphors and functions and lets input and output of information be performed via an input-/output means, said system comprising:

attribute lists having information on attributes and similarities regarding each metaphor and each function;

a similarity calculator means for calculating similarities from the information on the similarities regarding each metaphor and each function; and

a control means for controlling switching of one metaphor to another and matching of a particular metaphor with a particular function,

said switching of one metaphor to another being performed by calculating said similarities whenever operation is performed via said input/output means.

5,442,746

PROCEDURAL USER INTERFACE

Willard H. Barrett, Garden Grove, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 28, 1992, Ser. No. 937,801

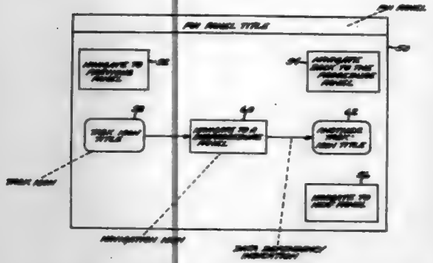
Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—161 **11 Claims**

1. A method for controlling the operation of a digital computer system comprising a memory, a visual display and a

means for accepting user data input, said method for causing to be performed by said computer system a job which is structured as a series of repeatable tasks, comprising a sequence of the following steps:

displaying the tasks comprising said job as a series of linked icons on a plurality of hierarchical display panels which provide a graphical representation of the tasks comprising the job and a sequence in which said tasks are to be performed to accomplish the job, said graphical representation including a representation indicating data dependence between linked ones of said icons, said linked icons comprising navigation icons and task icons, wherein said navigation icons provide the capability to navigate from panel



to panel, and said task icons provide the capability of operating the computer to automatically execute the required computer functions necessary for performing particular task operations represented by said task icon;

causing the computer operations to navigate to a particular display panel in response to activation of a particular linked navigation icon and to display said particular display panel; and

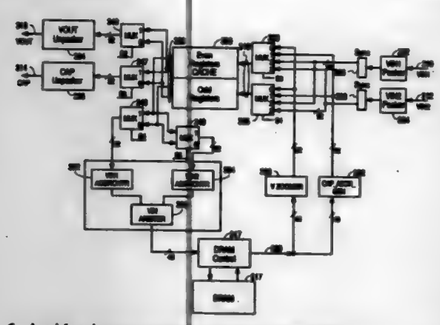
causing predetermined computer operations to be initiated in response to activation of a particular linked task icon, and automatically managing a flow of data in accordance with said data dependence between operations represented by sequentially activated linked task icons.

5,442,747

FLEXIBLE MULTIPORT MULTIFORMAT BURST BUFFER

Steven S. Chan, Fremont; Miles S. Simpson, San Jose, and Scott A. Kimura, Saratoga, all of Calif., assignors to AuraVision Corporation, Fremont, Calif.

Filed Sep. 27, 1993, Ser. No. 127,219
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—164 **8 Claims**



1. A video image memory system comprising:

a buffer memory having at least one input data port for accepting incoming data to be stored in said buffer memory, at least one write address port for receiving addresses designating locations where said incoming data is to be stored in said buffer memory, at least one output data port for outputting data retrieved from said buffer memory, and at least one read address port for receiving addresses designating locations of stored data in said buffer memory to be outputted,

each of said locations corresponding to one of a plurality of storage registers in said buffer memory;

a plurality of data sources connected to said at least one input data port for generating data to be buffered by said buffer memory;

a read addressing means for each of said data sources, each of said read addressing means being connected to said at least one read address port for generating an address for retrieving data associated with each of said data sources from said buffer memory;

a write addressing means for each of said data sources, each of said write addressing means being connected to said at least one write address port for generating an address for storing data associated with each of said data sources into said buffer memory; and

a boundary control circuit connected to said buffer memory for allocating a different group of said registers in said buffer memory to buffer data from different ones of said data sources such that each group of registers only contains data from a single one of said data sources, said boundary control circuit selecting a size of each group of registers depending upon a particular mode of operation selected for said video image memory system, said mode being selected based on requirements of said buffer memory to buffer said data from said data sources,

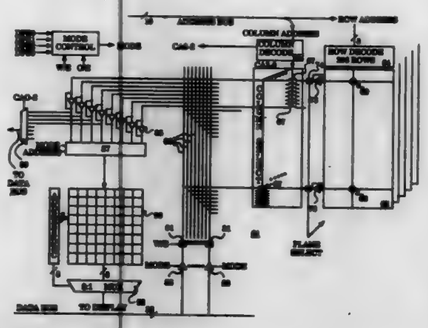
said boundary control circuit being connected to control each of said read addressing means and each of said write addressing means to selectively address only those registers in a designated group of registers, each group of registers being designated to store data from only a single data source.

5,442,748

ARCHITECTURE OF OUTPUT SWITCHING CIRCUITRY FOR FRAME BUFFER

Shuen C. Chang, San Jose; Hai D. Ho, Milpitas; Szu C. Sun, Mountain View, and Jawii Chen, Cupertino, all of Calif., assignors to Sun Microsystems, Inc., Mountain View and Samsung Semiconductor Inc., San Jose, both of Calif.

Filed Oct. 29, 1993, Ser. No. 145,754
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—164 **20 Claims**



1. A frame buffer comprising

an array plane of memory cells, each cell representing a bit position and holding a bit of data,

row decoding circuitry coupled to the array plane of memory cells for selecting rows of memory cells in the array plane,

column decoding circuitry coupled to the array plane of memory cells for selecting columns of memory cells in the array plane,

a plurality of bitlines associated with the columns of memory cells of the array plane,

each of the bitlines connecting to a column of memory cells and including a bitline sensing amplifier and a column select switch for providing access to the memory cells of that column of the array plane,

a plurality of output sense amplifiers adapted to be connected to a selected number of bitlines in an array plane by closing of particular ones of the column select switches in the bitlines,

a first switching circuit coupled to the output sense amplifiers for providing output signals from the plurality of output sense amplifiers associated with an array plane to a data bus, and a second switching circuit coupled to the output sense amplifiers for providing output signals from the plurality of output sense amplifiers associated with an array plane to a shift register.

5,442,749

NETWORK VIDEO SERVER SYSTEM RECEIVING REQUESTS FROM CLIENTS FOR SPECIFIC FORMATTED DATA THROUGH A DEFAULT CHANNEL AND ESTABLISHING COMMUNICATION THROUGH SEPARATE CONTROL AND DATA CHANNELS

J. Duane Northcutt, and David T. Berry, both of Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 748,792, Aug. 22, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,420
Int. Cl.[6] G06F *13/42, 15/62, 13/14*
U.S. Cl. 395—200.09 **10 Claims**



8. A network video server system comprising:

a plurality of computer systems comprising a server and at least two client computers;

a computer network coupling the plurality of computer systems, said network comprising a default communication channel and at least two control and data channels, said clients used for sending a connection request through said default channel to said server, said server used for responding to said connection request by establishing a control channel and a data channel for said client issuing said connection request, said clients used for sending a data request to said server through said control channels and receiving data through said data channels such that said server can transfer a plurality of said digital video data to said clients concurrently;

video acquisition unit coupled to said server, said video acquisition unit for converting real time video image data from a video source into real time digital video data, said digital video data comprising at least one frame;

said server comprising;

control channel and data channel control units for establishing said control channel and a corresponding said data channel between said server and each of said clients, said control channel unit utilized for communications, said data channel unit utilized for transferring formatted frames of said digital video data, said server used for continuously checking said control channels for requests from any of said clients;

data format converting unit for converting said digital video data frame into a plurality of formats in response to requests from said clients, said data format converting unit only converting said digital data frame into said formats requested;

formatted data storage unit coupled to said data format converting unit for storing one copy per said requested format of said data frame converted into said requested format;

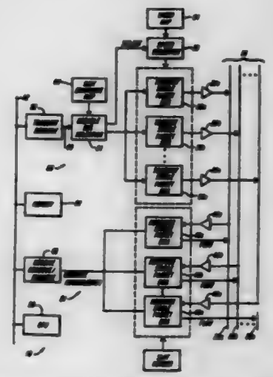
client connection unit coupled to said formatted data storage unit for transferring from said formatted data storage unit said data converted into said requested formats to said clients such that each said client which requested said data in a given format has said data transferred to it formatted into said given format.

5,442,750

SYSTEM FOR TRANSMITTING DATA BETWEEN SYSTEMS USING SELECTED SUBSETS OF PLURAL INTERCONNECTING BUS LINES AND INCLUDING SELECTION OF A COMPATIBLE TRANSMISSION SPEED

Edward S. Harriman, Jr., Billerica, Mass., and Heather D. MacDonald Achilles, Hudson, N.H., assignors to Wellfleet Communications, Bedford, Mass.

Continuation of Ser. No. 771,743, Oct. 4, 1991, abandoned. This application Dec. 2, 1993, Ser. No. 161,208
Int. Cl.[6] G06F *13/40, 13/42*
U.S. Cl. 395—200 B **23 Claims**



1. A method for transmitting data between a plurality of nodes of a communications network, each node having a maximum speed for receiving data words, said plurality of nodes connected on a communication bus having a bus width at least equal to a data word within a data packet and comprising a plurality of bus subsets of bus lines connecting the plurality of nodes, each bus subset comprising at least two bus lines, each node being directly connected to every bus line of every bus subset, the plurality of bus subsets in aggregate comprising the communication bus, the method comprising the steps of

determining, at a transmitting node, at least one of said plurality of bus subsets over which the transmitting node can communicate with an intended destination node receiving said data,

selecting, at the transmitting node, a speed at which to send said data words, within a range of the maximum speeds which said nodes can receive data words, based on a highest maximum speed at which only nodes acceptably determined to communicate with said transmitting node can receive said data words,

sending each data word within said data packet as a sequence of multibit subwords over said at least one of said plurality of bus subsets selected from said plurality of bus subsets acceptably determined to communicate with said transmitting node, and

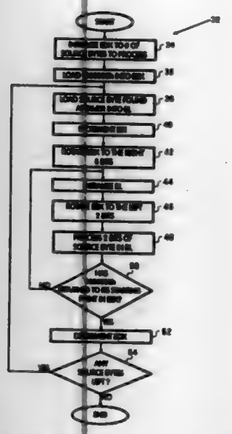
said destination node, sending over a bus subset control line, during a data transmission of said data packet, a warning signal for informing the transmitting node of an overflow condition at the destination node.

5,442,751

METHOD AND APPARATUS FOR PROCESSING DATA THROUGH A REGISTER PORTION BY PORTION

Stuart R. Patrick, Issaquah, and Amit Chatterjee, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 9, 1993, Ser. No. 150,411
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—250 **21 Claims**



1. A method for fetching a group of source bits from memory and providing portions of the group to a process, comprising:

providing a register having first and second register locations and adjacent register locations;

loading the fetched group of source bits as contents of the first register location;

providing an indicator as contents of the second register location;

shifting the contents of the register to move the indicator from the second register location into an adjacent register location and the source bit group from the first register location into an adjacent register location; and

performing the following steps:

shifting the contents of the register to cause the indicator to move from its adjacent register location toward the second register location and to cause a portion of the source bit group to move from its adjacent register location into the first register location;

providing the portion of the source bit group in the first register location to a process;

checking to determine if the indicator has returned to the second register location; and

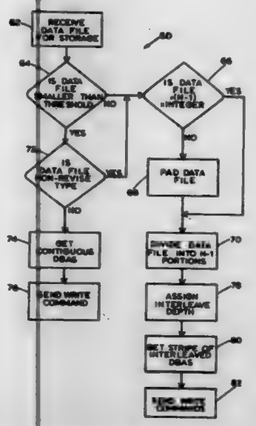
if not, repeating the shifting, providing and checking steps until the indicator has returned to the second register location, thereby indicating that all portions of the source bit group have been moved into the first register location and provided to the process.

5,442,752

DATA STORAGE METHOD FOR DASD ARRAYS USING STRIPING BASED ON FILE LENGTH

David A. Styczinski, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1992, Ser. No. 824,962
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—404 **13 Claims**



1. A method for storing data files in a data processing system having a storage array including a number of data DASD's each having locations designated by physical addresses where data is written and read, said method comprising the steps of:

(a) separating data files to be stored into two different classes depending upon at least the criterion of file length;

(b) writing data files from the class of relatively shorter files at addresses upon one of the number of DASD's; and

(c) storing data files from the class of relatively longer data files by:

(1) subdividing each and every data file from the class of relatively longer files into a number of portions equal to the entire number of data DASD's;

(2) defining for each data file from the class of relatively longer files a file specific interleave depth uniform across all the data DASDs by assigning a stripe of locations having matching physical addresses on each data DASD, the location designated by the physical address of each data DASD being sufficient to receive one of the subdivided portions; and

(3) writing the subdivided portions to the stripe of locations having matching physical addresses.

5,442,753

CIRCUITRY FOR PROVIDING REPLICA DATA TRANSFER SIGNAL DURING DMA VERIFY OPERATIONS

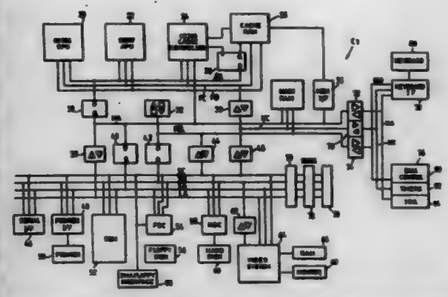
Timothy K. Waldron, Houston, and Paul R. Culley, Cypress, both of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Continuation of Ser. No. 999,470, Dec. 29, 1992, Pat. No. 5,307,476, which is a continuation of Ser. No. 431,667, Nov. 3, 1989, abandoned. This application Dec. 7, 1993, Ser. No. 163,165
The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
Int. Cl.[6] G06F *9/455, 13/28*
U.S. Cl. 395—842 **4 Claims**

1. A system for transferring data, comprising:

a direct memory access controller which produces a control signal relating to data transfer during operations of a first type and does not produce said control signal during operations of a second type;

a data transfer device which transfers data responsive to a received data transfer signal; and



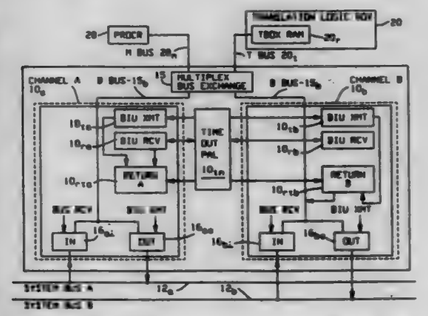
means for producing a replica signal of said control signal when said direct memory access controller is performing operations of the second type and for combining said replica signal with said control signal to produce a combined signal, said combined signal being provided to said data transfer device as said received data transfer signal.

5,442,754

RECEIVING CONTROL LOGIC SYSTEM FOR DUAL BUS NETWORK

Wayne C. Datwyler, and Paul B. Ricci, both of Laguna Niguel, Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 4, 1992, Ser. No. 985,662
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—325 **16 Claims**



1. A receive control apparatus in a bus interface unit for control of receiving data from a first and second system bus means and wherein said data is destined for a processor means and/or a translation logic means which receive multiple word message data communication protocol from multiple external modular resource units including a main memory means using a single word message data protocol connected to said system bus means, and wherein said translation logic means converts said multiple word message data communication protocol from said system bus means to a single word protocol compatible with said processor means, said receive control apparatus comprising:

(a) said bus interface unit connecting said processor means and said translation logic means to said first and second system bus means, said bus interface unit including:

(a1) input register means for receiving and holding consecutive single words of said multiple word message data communication protocol from said system bus means, said data being destined for said translation logic means and/or said processor means;

(a2) programmable receive logic means to release each one of said consecutive words of said multiple word message data communication protocol in said input register means for transmittal to said translation logic means, and to release single word message data protocol from said main memory means to said processor means via multiple bus exchange means, said programmable receive logic means including:

(i) decoder means to sense when said system bus means has data destined for said processor means;

(ii) means to sense when said translation logic means is busy;

(iii) means to initiate transmission retries, from a said external modular resource unit which had not completed a data transmission that had been initiated, to seek a period when said processor means or said translation logic means is available to receive said message word data from said input register means;

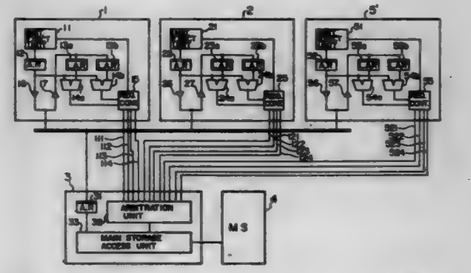
(a3) multiple bus exchange means connecting said input register means to said translation logic means or said processor means.

5,442,755

MULTI-PROCESSOR SYSTEM WITH LOCK ADDRESS REGISTER IN EACH PROCESSOR FOR STORING LOCK ADDRESS SENT TO BUS BY ANOTHER PROCESSOR

Masabumi Shibata, Kawasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 630,860, Dec. 20, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 144,486
Claims priority, application Japan, Dec. 25, 1989, 1-335941
Int. Cl.[6] G06F *13/16*
U.S. Cl. 395—325 **8 Claims**



1. A processor connected to a common bus and sharing, under control of a central storage controller connected to the common bus, a main storage connected to the central storage controller with at least one other processor connected to the common bus, the central storage controller being common to all of the processors, each of the processors comprising:

an instruction execution unit for executing an instruction involving use of the main storage and issuing a request for use of the main storage and a request address associated with the request in response to the instruction executed by the instruction execution unit, wherein the request is one of a plurality of types of requests including a locking request for locking the main storage and a lock releasing request for releasing a lock of the main storage;

an address register for storing the request address issued by the instruction execution unit;

means for sending the request address stored in the address register to the common bus;

means for reading a request address from the common bus when the request address being read from the common bus was sent to the common bus by another one of the processors, the request address being associated with a

locking request issued by the instruction execution unit of the other processor;

at least one lock address register, wherein each lock address register of the at least one lock address register is for storing as a lock address a request address read from the common bus by the reading means;

at least one comparator, wherein each comparator of the at least one comparator is for comparing the request address stored in the address register with the lock address stored in a respective lock address register of the at least one lock address register and outputting a comparison result indicating whether or not the request address is the same as the lock address; and

a request control unit for receiving the request from the instruction execution unit and the comparison result from each comparator of the at least one comparator and sending a request signal indicative of the request to the central storage controller in response to the request;

wherein the request control unit sends the request signal to the central storage controller without delay if the comparison result indicates that the request address is not the same as the lock address;

wherein the request control unit suspends sending the request signal to the central storage controller if the comparison result indicates that the request address is the same as the lock address until after the instruction execution unit of the other processor issues a lock releasing request; and

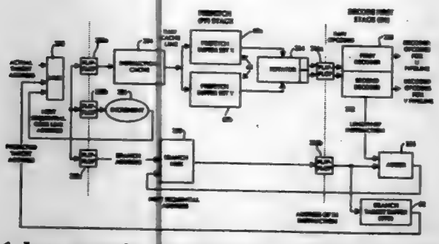
wherein the at least one lock address register is an arbitrary number of lock address registers, and wherein the instruction execution unit does not issue a locking request if all of the lock registers are storing a lock address.

5,442,756

BRANCH PREDICTION AND RESOLUTION APPARATUS FOR A SUPERSCALAR COMPUTER PROCESSOR

Edward T. Grochowski, San Jose; Donald B. Alpert, Santa Clara; Jack D. Mills, Mountain View, all of Calif., and Uri C. Weiser, Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 31, 1992, Ser. No. 922,855
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—375 **15 Claims**



1. In a superscalar microprocessor, a computer circuit for predicting the target location of a branch instruction supplied in a sequence of instructions, said computer circuit comprising:

a first and a second pipeline for receiving and processing said sequence of instructions, each pipeline including a decoder including logic to associate said instructions with one of said pipelines, including associating a branch instruction with a non-branch instruction, each of said pipelines also including an execution unit for executing a branch instruction;

a branch target buffer, responsive to instructions in the pipeline for supplying a predicted target address to the pipeline, said branch target buffer including a plurality of entries having

a tag field for storing a tag indicative of the address of a first instruction pair immediately preceding a second instruction pair that includes a branch instruction.

an address field for storing a target address predicted for the branch instruction, and

a history field for storing a history of the takenness of the branch;

a circuit for supplying a current address of an instruction pair in a preselected stage of the pipeline to the branch target buffer; and

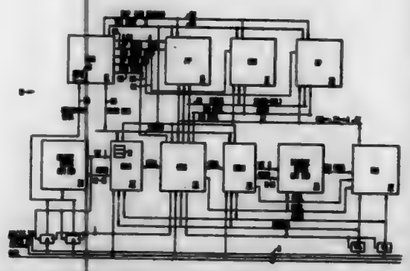
a circuit for comparing said current address with the address in the tag field.

5,442,757

COMPUTER PROCESSOR WITH DISTRIBUTED PIPELINE CONTROL THAT ALLOWS FUNCTIONAL UNITS TO COMPLETE OPERATIONS OUT OF ORDER WHILE MAINTAINING PRECISE INTERRUPTS

Harold L. McFarland, San Jose; David R. Stiles, Sunnyvale; Korbin S. Van Dyke, Fremont; Shrenik Mehta, San Jose; John G. Favor, San Jose; Dale R. Greenley, San Jose, and Robert A. Cargnoni, Sunnyvale, all of Calif., assignors to NexGen, Inc., Milpitas, Calif.

Continuation of Ser. No. 483,223, Feb. 21, 1990, Pat. No. 5,226,126, which is a continuation-in-part of Ser. No. 315,358, Feb. 24, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,439
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—375 **56 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 97 Pages)



1. A computer processor comprising:

means for issuing a series of operations, each operation upon being issued being designated an outstanding operation;

a plurality of functional units, each capable of executing at least some of said outstanding operations;

means, coupled to said plurality of functional units, for communicating each said outstanding operation to at least one of said functional units for execution, with at least some of said outstanding operations being communicated to more than one of said functional units for execution by more than one of said functional units;

wherein (a) at least some of said outstanding operations are subject to normal termination by at least some of said functional units, (b) at least some of said outstanding operations are subject to abnormal termination by at least some of said functional units, and (c) a given functional unit receiving an operation to execute is, at least under some conditions, free to execute the operation to termination whether or not a previously issued operation to another functional unit has been executed to termination;

means for maintaining, for each outstanding operation, information regarding which functional units have terminated that operation and whether the termination was normal;

means, associated with at least one of said functional units, for determining with respect to each operation communicated to it for execution when that functional unit has terminated each operation and whether the termination was normal, and for communicating such termination information to said maintaining means;

means, responsive to said termination information from said functional units, for determining when any given outstanding operation has been terminated by all functional units that were to execute said given outstanding operation and whether the termination by all functional units that were to execute said given outstanding operation was normal or abnormal;

an outstanding operation that has been terminated normally by all functional units that were to execute that outstanding operation being referred to as having completed; and

means for retiring completed operations, said means for retiring allowing a particular completed operation to cease being an outstanding operation and become a retired operation only if all outstanding operations that were issued before said particular completed operation have completed and are retired no later than said particular completed operation; and

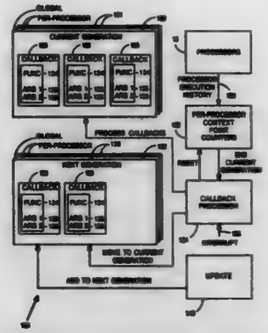
means for preventing any particular operation from irreversibly changing the programmer-visible state of the computer processor prior to the retirement of said particular operation.

5,442,758

APPARATUS AND METHOD FOR ACHIEVING REDUCED OVERHEAD MUTUAL EXCLUSION AND MAINTAINING COHERENCY IN A MULTIPROCESSOR SYSTEM UTILIZING EXECUTION HISTORY AND THREAD MONITORING

John D. Slingwine, and Paul E. McKenney, both of Beaverton, Oreg., assignors to Sequent Computer Systems, Inc., Beaverton, Oreg.

Filed Jul. 19, 1993, Ser. No. 94,629
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—375 **24 Claims**



1. A mutual-exclusion apparatus for maintaining data coherency while concurrently reading and updating a current generation data element stored in first sites of a memory of a computer, the mutual-exclusion apparatus comprising:

a first thread controlling the reading of the current generation data element;

a second thread controlling the updating of the current generation data element and storing the updated data element in second sites as a next generation data element;

a thread activity monitor producing and storing in the memory, execution history data indicative of states of the first and second threads; and

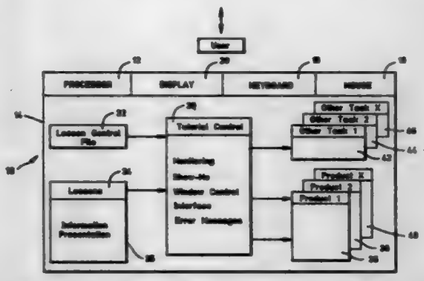
an element processor processing the current and next generation data elements in response to the execution history data that indicate the first and second threads have one of entered a predetermined state and passed through the predetermined state.

5,442,759

INTERACTIVE ONLINE TUTORIAL SYSTEM WITH USER ASSISTANCE FUNCTION FOR SOFTWARE PRODUCTS

Alice Chiang, Portola Valley; Kevin M. McBride, Menlo Park, and Calvin C. Yee, Fremont, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 858,378, Mar. 26, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,485
Int. Cl.[6] G09B *19/00*
U.S. Cl. 395—375 **21 Claims**



1. An interactive online tutorial system for providing information in the use of a non-simulation software product operating [separately but]concurrently on a digital processing apparatus with said tutorial system, said software product and said tutorial system operating running as separate executable application file processes, said software product generating a product display window with user interface controls therein, the digital processing apparatus including an instruction processing unit, a data storage resource, an input system for receiving data input from a user, and an output system including a video display for providing data output to a user, said tutorial system comprising:

display control means for generating a tutorial display window in a first portion of said video display for displaying tutorial lesson information generated by said tutorial system;

software product control means for controlling said product display window to appear in a second portion of said video display for displaying said user interface controls generated by said software product;

information presentation means for presenting tutorial lesson information in said tutorial display window, said tutorial lesson information including descriptions of user input lesson actions required for operation of said software product displayed in said product window, said tutorial lesson information being arranged in a hierarchy of lesson, step and action levels;

tutorial assistance means for sending messages to said software product to manipulate said user interface controls and drive said software product to respond as if a user had performed said user input lesson actions specified in said tutorial lesson information, said tutorial assistance means including a lesson control table containing action command statements corresponding to said messages;

first assistance request means for activating said user assistance means in response to a user request for assistance, said assistance request means including selection means for requesting assistance for a selected one of said lesson, step and action levels of said tutorial lesson information;

second assistance request means including a graphical display button for activating said user assistance means in response to said user request for assistance, said second assistance request means including means for displaying

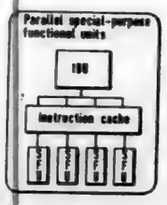
said graphical display button upon an erroneous input action being taken by a user.

5,442,760

DECODED INSTRUCTION CACHE ARCHITECTURE WITH EACH INSTRUCTION FIELD IN MULTIPLE-INSTRUCTION CACHE LINE DIRECTLY CONNECTED TO SPECIFIC FUNCTIONAL UNIT

Einar Rustad; Bjorn O. Bakka; Inge Birkeli, all of Oslo, and Nils A. Orthe, Fjestadfordet, all of Norway, assignors to Dolphin Interconnect Solutions AS, Oslo, Norway

Continuation of Ser. No. 409,674, Sep. 20, 1989, abandoned. This application Dec. 22, 1993, Ser. No. 173,136
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—375 **8 Claims**



1. In a general purpose computer having specialized functional units for parallel execution of instructions utilizing an instruction cache with one or more directories for parallel access to instructions issued to the functional units simultaneously, the instruction cache comprising:

instruction cache lines each having a plurality of instruction cache fields coupled to respective functional units for controlling the functional unit to perform a specialized function;

instruction dispatch means for loading the fields with instructions fetched from a main memory of the computer, said dispatch means decoding a portion of the instruction to determine the field into which the instruction is loaded, the dispatch means loading a first instruction on the line into a respective field according to the functional unit the instruction requires, the dispatch means loading additional instructions into respective fields on the line according to predetermined criteria; each line being addressable by the address of the first instruction only and having an address field pointing to an instruction to be executed after completion of the instruction sequence in the current line.

5,442,761

METHOD BY WHICH PACKET HANDLER INSERTS DATA LOAD INSTRUCTIONS IN INSTRUCTION SEQUENCE FETCHED BY INSTRUCTION FETCH UNIT

Kenji Toda; Yoshinobu Uchibori, and Toshio Shimada, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Continuation of Ser. No. 498,276, Mar. 23, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 173,478
Claims priority, application Japan, Apr. 20, 1989, 1-101425
Int. Cl.[6] G06F *9/312*
U.S. Cl. 395—375 **4 Claims**

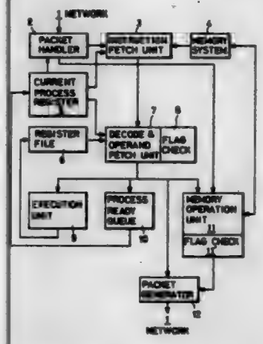
1. A method for inserting a data load instruction into an instruction sequence of a computer system, comprising the steps of:

detecting, by a packet handling means which is connected to an external source through a network, a packet having operand data, said packet being sent from the external source;

generating, by said packet handling means, in response to a detection of said packet by said detecting step, a data load instruction for loading said operand data of said packet;

fetching, by an instruction fetching unit for normally fetching instructions from a memory system of said computer system, said data load instruction, thereby inserting said data load instruction into said instruction sequence of said instructions from said memory system; and

loading, by an instruction execution unit, said operand data



from said packet into a register assigned to a current process of the computer system, in response to said data load instruction inserted into said instruction sequence;

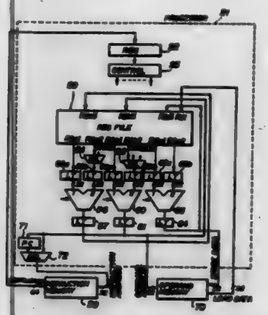
wherein said external source is external to a computer containing said packet handling means, said instruction fetching unit, and said instruction execution unit.

5,442,762

INSTRUCTING METHOD AND EXECUTION SYSTEM FOR INSTRUCTIONS INCLUDING PLURAL INSTRUCTION CODES

Takao Kato, Yokohama, and Hideo Tamura, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 606,957, Oct. 31, 1990, abandoned. This application Feb. 25, 1994, Ser. No. 202,668
Claims priority, application Japan, Nov. 1, 1989, 1-285471
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—375 **8 Claims**



1. An execution system for executing instructions in an information processing apparatus, comprising:

a plurality of operand registers;

input means for inputting a long instruction word which has a fixed length and includes a type code including a field designation and at least one instruction word of variable length the position of which is indicated by the field designation, each variable length instruction word including at least an instruction code and an operand specifying part for specifying a single instruction, the type code specifying a structure of the at least one instruction word, said variable length instruction word having a format selected from one of a first format in which the instruction code instructs an operation between contents of first and second registers and a storage of an operation result of the operation in a third register, a second format in which the instruction code instructs an operation between the content of the first register and an immediate data and a storage of an operation result of the operation in the third register, and a third format in which the instruction code instructs a storage of an immediate data in to the third register;

judging means coupled to said operand registers for judging from the type code a combination and a number of instruction words and for providing a judgement result, said judging means having means for specifying one of said operand registers depending on the operand specifying part of each variable length instruction word;

a plurality of operation means each for independently executing operations specified by different ones of the instruction words within the long instruction word; and

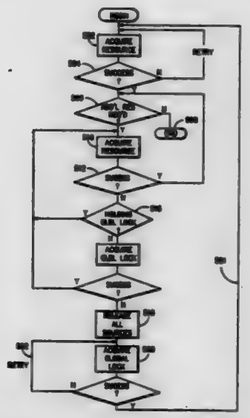
assigning means for assigning one of the operations to one of said operation means depending on the judgement result.

5,442,763

SYSTEM AND METHOD FOR PREVENTING DEADLOCK IN MULTIPROCESSOR MULTIPLE RESOURCE INSTRUCTIONS

Robert F. Bartfai, West Shokan; Barry P. Lubart, Hurley, and Julian Thomas, Lagrange, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 757,746, Sep. 11, 1991, abandoned. This application Dec. 6, 1994, Ser. No. 350,242
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—375 **24 Claims**



1. A method for preventing resource acquisition deadlock in a computer system having a plurality of disjoint resources, a plurality of processors, each processor executing instructions including instructions requiring exclusive control of a subset of said plurality of resources, said system having respective individual locks for acquiring exclusive control of said resources on an individual basis and a global lock for acquiring exclusive control of said plurality of resources on a global basis, with said global lock being controlled by at most one of said processors at a time, the method comprising the steps of:

(a) acquiring the individual lock for a first of said subset of said plurality of resources;

(b) for each remaining resource of said subset of said plurality of resources;

(1) attempting to acquire the individual lock for said resource;

(2) testing to determine if the individual lock for said resource is granted;

(3) if the individual lock for said resource is denied:

(A) attempting the acquire said global lock;

(B) if said global lock is denied, releasing all individual locks and waiting until said global lock is available; and

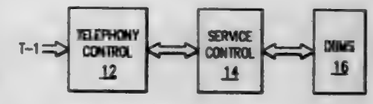
(c) once said global lock is controlled, repeating attempts to acquire the individual lock for each of said subset of said plurality of resources until successful.

5,442,764

DIGITAL SIGNAL PROCESSING HAVING IMPROVED EXECUTION EFFICIENCY

Kenneth H. J. Einhorn, Austin, and Jay D. Stewart, Cedar Park, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 20, 1990, Ser. No. 570,171
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—700 **21 Claims**



1. A digital signal processing system comprising:

a digital signal processor;

a first memory for storing a plurality of program routines;

a second memory for storing program code to be executed by the digital signal processor;

interface circuitry connected to the first memory and the second memory operable to allow transfer of the plurality of program routines from the first memory to the second memory; and

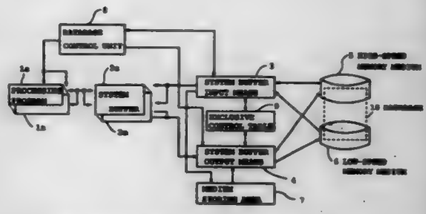
a processing unit for controlling transfer of program routines from the first memory to the second memory, such that the transfer can be accomplished without placing the digital signal processor in an idle state.

5,442,765

DATABASE SYSTEM WHICH ADJUSTS THE DATA STORAGE ORDER BASED ON THE PROCESSING SPEED OF THE STORAGE MEDIA

Shoji Shiga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,157
Claims priority, application Japan, Dec. 20, 1990, 2-412281
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—600 **7 Claims**



1. A method of retrieving storage units from and storing storage units to a database in a database system, the database containing a plurality of media, each of the media having a processing speed, the database system including a plurality of

numerically designated system buffers, an input/output section, a control table, a medium storing area and a database control unit, the database system being accessed by a plurality of processing programs, the method comprising the steps of:

retrieving, via the input/output section, storage units from the database in response to requests from the processing programs;

storing each of the retrieved storage units in a separately numbered one of the system buffers;

storing, in the medium storing area, for each retrieved storage unit, an indication of the processing speed of the medium from which the storage unit was retrieved;

controlling, by updating the control table, the storage units to prevent access of the retrieved storage units by other processing programs;

updating the storage units upon completion of a processing program;

referring to the medium storing area to determine the processing speeds of the media from which the storage units were retrieved;

storing the updated storage units in the database in an order corresponding to the processing speeds of the media from which the storage units were retrieved, such that the storage units retrieved from media having higher processing speeds are stored before storage units retrieved from media having lower processing speeds; and

releasing each of the storage units from control when the storage unit is written to the database.

5,442,766

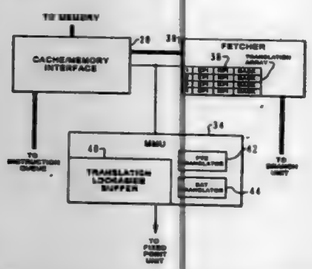
METHOD AND SYSTEM FOR DISTRIBUTED INSTRUCTION ADDRESS TRANSLATION IN A MULTISCALAR DATA PROCESSING SYSTEM

Tan V. Chu; Charles R. Moore; John S. Muhich, and Terence M. Potter, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1992, Ser. No. 959,194

Int. Cl.[6] G06F *12/10, 9/38, 12/12, 12/08*

U.S. Cl. 395—414 **10 Claims**



6. A multiscalar data processing system having a plurality of processor units for executing multiple tasks, memory for storing a plurality of instructions and data at multiple real addresses therein and a fetcher unit for fetching and dispatching instructions to said plurality of processor units, for efficiently translating a plurality of effective instruction addresses utilized within said multiple tasks into real addresses within said memory, said multiscalar data processing system comprising;

a memory management unit within said data processing system, said memory management unit including a translation buffer and translation algorithm for translating every effective address within said data processing system into a real address within said memory;

a translation array within said fetcher unit;

a small number of translation objects stored within said translation array for translating selected effective addresses among said plurality of effective addresses into real addresses; and

means for periodically varying said small number of translation objects stored within said translation array utilizing said memory management unit wherein effective addresses may be efficiently translated utilizing said translations array into real addresses without continual access to said memory management unit.

5,442,767

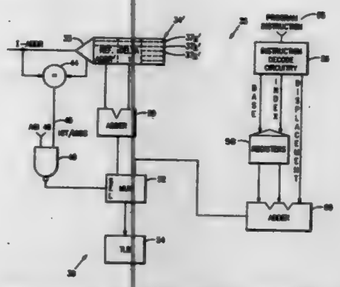
ADDRESS PREDICTION TO AVOID ADDRESS GENERATION INTERLOCKS IN COMPUTER SYSTEMS

Richard J. Eickemeyer, Rochester, Minn., and Stamatis Vassiliadis, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,466

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—401 **8 Claims**



1. A system for predicting an address required to execute a current iteration of a program instruction, said system comprising:

means for storing an address required to execute a preceding iteration of said program instruction;

means for determining differences between addresses required to execute successive iterations of said program instruction prior to said current iteration;

means for predicting the address required to execute the current iteration of said program instruction based on the address required to execute the preceding iteration of said program instruction plus a current value of an increment; and

means for setting said increment before said current iteration equal to a difference between two addresses required to execute two successive iterations of said program instruction and updating said increment when two actual differences between three addresses required to execute three successive iterations of said program instruction are equal to each other and different than the set increment, said update being said actual difference.

5,442,768

RECORDING AND REPRODUCING DATA USING BATCH ERASABLE NONVOLATILE SEMICONDUCTOR MEMORIES CAPABLE OF SELECTIVELY ERASING ONE OF A PLURALITY OF DATA GROUPS STORED IN ONE OF THE MEMORIES

Kengo Sudoh, Higashihiroshima, and Yuji Sumitomo, Yamatokouriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 5, 1992, Ser. No. 971,583

Claims priority, application Japan, Dec. 20, 1991, 3-338746

Int. Cl.[6] G06F *13/00*

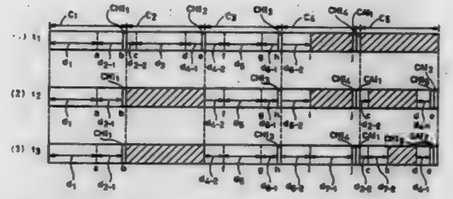
U.S. Cl. 395—430 **15 Claims**

14. A method of comprising the steps of:

recording data groups in and reproducing data groups from a plurality of batch erasable semiconductor memories, wherein plural data groups are recorded in at least one memory,

recording individual index data in each of the semiconductor memories;

recording total index data including a reproduction order from said semiconductor memories and rewrite number



data indicating a number of times said reproduction order data has been rewritten; and

selectively erasing one of said plural data groups from one of said semiconductor memories without erasing a remaining one of said plural data groups.

5,442,769

PROCESSOR HAVING GENERAL REGISTERS WITH SUBDIVISIONS ADDRESSABLE IN INSTRUCTIONS BY REGISTER NUMBER AND SUBDIVISION TYPE

Gary T. Corcoran, Fanwood, and Robert C. Fairfield, Randolph, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 493,021, Mar. 13, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 44,556

Int. Cl.[6] G06F *12/04, 9/34*

U.S. Cl. 395—310 **1 Claim**

1. Apparatus in a digital data processing unit for processing data having different sizes comprising:

a plurality of general registers, each one of the general registers being subdivided into a plurality of portions and the general registers being addressable separately from any memory accessible to the digital data processing unit;

internal data bus means;

means for receiving first instruction words executable by the digital data processing unit,

the first instruction words including source instruction words, each one of which directly specifies one general register and one portion thereof as the source of data and

destination instruction words, each one of which directly specifies one general register and one portion thereof as the destination of data; and

portion selection means coupled between the internal data bus means and the general registers and responsive to any one of the first instruction words received in the means for receiving the first instruction words, the portion selection means including

source portion selection means responsive to any one of the source instruction words for placing source data contained in the one general register and the one portion specified by the source instruction word on the internal data bus such that the least significant bit of the source data is on the least significant bit of the internal data bus and filling any most significant bits not required for the source data with predetermined bit values and

destination portion selection means responsive to any one of the destination instruction words for receiving destination data from the internal data bus in the one general register and the one portion specified by the one destination instruction word such that the least significant bit of the internal bus is the least significant bit of the destination data.

5,442,770

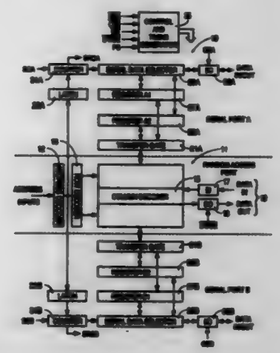
TRIPLE PORT CACHE MEMORY

Peter G. Barratt, Wellesley, Mass., assignor to NEC Electronics, Inc., Mountain View, Calif.

Continuation of Ser. No. 301,404, Jan. 24, 1989, abandoned. This application Jun. 11, 1993, Ser. No. 76,286

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—403 **10 Claims**



1. A triple-port cache memory, comprising:

an array of memory cells arranged in rows and columns;

a random access port for accessing a selected memory cell;

first and second serial ports for accessing in a bit-serial fashion a specified block of memory cells within a selected row of memory cells;

means for specifying which one of said random access port and said first and second serial ports is accessed;

an address decoding circuit, coupled to said array of memory cells, receiving a row address and a column address, said address decoding circuit decoding (i) said row address to select said selected row of memory cells, and (ii) said column address to select (a) selected memory cell from said selected row of memory cells, when said random access port is specified, and (b) said specified block of memory cells within said selected row of memory cells, when one of said first and second serial ports is specified, said column address including two fields specifying the size of said specified block, and the beginning position of said specified block within said row of memory cells, said address decoding circuit including, for each of said first and second serial ports, a counter for monitoring the size of data transferred between said selected row of memory cells and said specified one of said first and second serial ports.

5,442,771

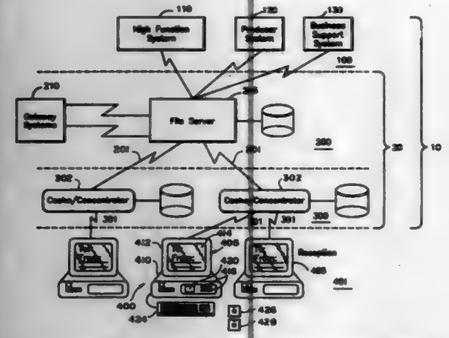
METHOD FOR STORING DATA IN AN INTERACTIVE COMPUTER NETWORK

Robert Filepp, Springfield, N.J.; Michael L. Gordon, Dobbs Ferry, N.J.; Alexander W. Bidwell, New York, both of N.Y.; Allan M. Wolf, Ridgefield, Conn.; Francis C. Young, Pearl River, N.Y.; Duane Tiemann, Dasining, N.Y.; Kenneth H. Appleman, White Plains, N.Y., and Sam Meo, New York, N.Y., assignors to Prodigy Services Company, White Plains, N.Y.

Division of Ser. No. 388,156, Jul. 28, 1989, Pat. No. 5,347,632, which is a continuation-in-part of Ser. No. 328,790, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 219,931, Jul. 15, 1988, abandoned. This application Nov. 26, 1993, Ser. No. 158,033

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—650 **20 Claims**



1. Method for storing data in a computer network, the network including a multiplicity of user reception systems at which respective users can request applications during user sessions, the application being generated from the data, the method comprising the steps of:

a. establishing data stores within the network from which data may be obtained for generating the applications during data usage sessions;

b. associating storage control parameters with the data to be stored, the control parameters dictating predetermined eligibility of the data for storage at the data stores;

c. supplying data to the respective stores for use in generating applications; and

d. retaining data at the stores based on at least the eligibility for storage dictated by the respective storage control parameters.

5,442,772

COMMON BREAKPOINT IN VIRTUAL TIME LOGIC SIMULATION FOR PARALLEL PROCESSORS

Philip L. Childs, Raleigh, N.C.; Nimish S. Radia, Cortland, and Joseph F. Skovira, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 748,295, Aug. 21, 1991, Pat. No. 5,250,943, which is a continuation-in-part of Ser. No. 677,543, Mar. 29, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,142

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—500 **20 Claims**

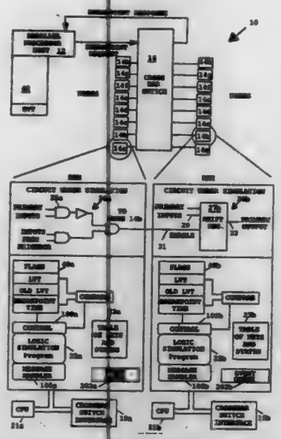
1. A distributed logic simulator for simulating a circuit, said simulator comprising:

a plurality of processors or computing nodes;

a plurality of logic simulation program means, executing on respective ones of said processors or computing nodes, for simulating respective parts of the circuit, each of said logic simulation program means executing at its own pace, including means for receiving an input from or supplying an output to another of said processors or computing nodes, and including means for predicting an input when unavailable from another of said processors or computing nodes;

host means for broadcasting a breakpoint time to said processors or computing nodes; and

a plurality of logic simulation control means, executing on respective ones of said processors or computing nodes, for



directing storage of nets and/or states of the simulated logic, receiving the breakpoint time and reporting to said host means when the respective logic simulation program means has advanced to or past said breakpoint time; and wherein

said host means determines when all of said processors or computing nodes have reported that the respective logic simulation program means has advanced to or past said breakpoint time.

5,442,773

INSTRUCTION CONTROL METHOD AND INSTRUCTION CONTROL APPARATUS

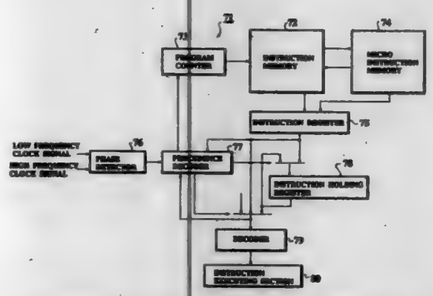
Takeshi Oto, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 846,937

Claims priority, application Japan, Mar. 14, 1991, 3-049813

Int. Cl.[6] G06F *9/28, 13/00*

U.S. Cl. 395—550 **16 Claims**



1. An instruction control method for controlling execution of an instruction in synchronization with a first clock signal which is in synchronism with timing of an internal circuit, said first clock signal having a frequency greater than that of a second clock signal which is in synchronism with timing of an external circuit, where said first clock signal is synchronous with said second clock signal and a specific phase occurs between the first clock and second clock signal once in n times, where n is an integer greater than two the method comprising the steps of:

storing phase information which designates said specific phase of the second clock signal, said specific phase being either a rising edge or a falling edge of said second clock signal;

deferring the execution of a specific instruction which is synchronized with the first clock signal until the phase of the first clock signal agrees with said specific phase of the second clock signal designated by the phase information stored in said storing step; and

executing the specific instruction when the phase of the second clock signal agrees with the specific phase designated by the stored phase information.

5,442,774

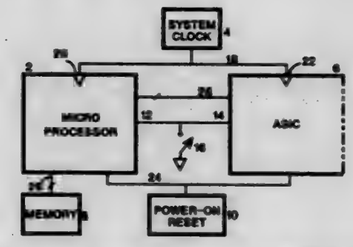
MICROPROCESSOR CONTROLLER WITH AUTOMATIC CLOCK-RATE SWITCHING

Ray L. Pickup, Brush Prairie, and Mark R. Thackray, Vancouver, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 16, 1993, Ser. No. 122,790

Int. Cl.[6] G01D *15/16*; H03K *21/02, 5/19*; G06F *11/00*

U.S. Cl. 395—550 **7 Claims**



1. A microprocessor-based control system comprising:

a microprocessor having a fast operating mode, a slow operating mode a first clock input, and a WAIT control input;

a system clock coupled to the first clock input, and capable of fast and slow operation according to the operating mode of the microprocessor;

a control circuit, requiring a slow clock comprising:

a clock-divider, having a second clock input coupled to the system clock, an output, and a data selector input;

WAIT logic having a pulled-HIGH WAIT output coupled to the WAIT control input and to the data selector input, the WAIT output being grounded when the microprocessor is in its fast operating mode;

whereby the clock-divider is configured, by its data selector input, to supply a divided or non-divided clock signal at the clock-divider output according to the state of the WAIT output.

5,442,775

TWO CLOCK MICROPROCESSOR DESIGN WITH STALL

Graham B. Whitted, III, Irvine; Hsiao-Shih Chang, Orange, and James A. Kane, Newport Beach, all of Calif., assignors to Meridian Semiconductor, Inc., Irvine, Calif.

Filed Feb. 8, 1994, Ser. No. 193,235

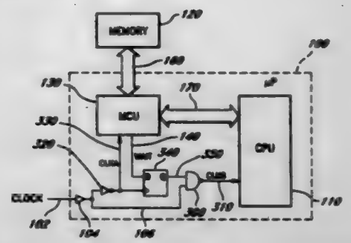
Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—550 **2 Claims**

1. A circuit for suspending the operation of a central processing unit (CPU) of a microprocessor while a memory control unit (MCU) of said microprocessor performs an operation for said CPU, said circuit being internal to said microprocessor, said circuit comprising:

a first input connected to a clock signal line, said clock signal line connected to an external clock source that provides an external clock signal;

a second input connected to a WAIT signal line, said WAIT signal line connected to said MCU, said WAIT signal line providing a WAIT signal generated by said MCU for indicating that said MCU is performing an operation for said CPU that requires said CPU to temporarily suspend processing;



a clock generation circuit that generates a first internal clock signal that controls said MCU and that generates a second internal clock signal that controls said CPU, said first internal clock signal and said second internal clock signal being generated from said external clock signal on said first input; and

a clock stall circuit that inhibits transitions of said second internal clock signal when said WAIT signal is asserted while said first clock signal continues to operate, to thereby suspend the operation of said CPU while said MCU is performing an operation for said CPU.

5,442,776

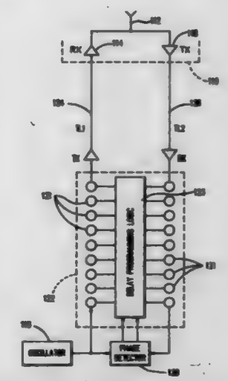
ELECTRONICALLY TUNEABLE COMPUTER CLOCKING SYSTEM AND METHOD OF ELECTRONICALLY TUNING DISTRIBUTION LINES OF A COMPUTER CLOCKING SYSTEM

Robert P. Masleid, and Nandor G. Thoma, both of Austin, Tex., assignors to International Business Machines, Corp., Armonk, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,226

Int. Cl.[6] G06F *15/20*; H03J *1/00*

U.S. Cl. 395—550 **1 Claim**



1. A method of synchronizing a clocking pulse edge from a clock oscillator with a clock pulse edge at a node of a clocked chip comprising the steps of:

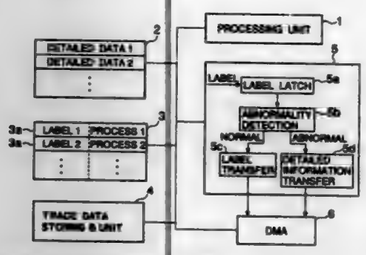
a) transmitting a clock pulse train having a first frequency from a clocking source to said node;
b) transmitting said clock pulse train from said clocking source to a phase detector;
c) transmitting said clock pulse train from said node to said phase detector;
d) detecting relative phase relation of said clock pulse train transmitted to said phase detector from said clocking source and said clock pulse train as received by said phase detector from said node;
e) delaying said clock pulse train during transmission to said node for a first controlled period of time;
f) delaying said clock pulse train during transmission from said node for a second controlled period of time equal to said first controlled period of time;
g) responsive to said detecting step, adjusting said first and second controlled periods of time, by an equal amount of time to bring said pulse trains received by said phase detector into phase;
h) increasing said first frequency to a frequency twice said first frequency,
thereby synchronizing said pulse train received by said phase detector from said clocking source with said pulse train at said node.

5,442,777

FIRMWARE TRACE DATA ACQUISITION METHOD

Ryoetsu Nakajima; Naomi Yamazaki; Takumi Maruyama, and Kiyoshi Segita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 25, 1994, Ser. No. 201,808
Claims priority, application Japan, Sep. 20, 1993, 5-233566
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.18 **5 Claims**



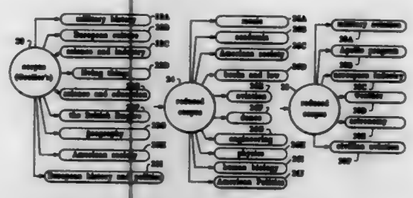
1. A firmware trace data acquisition method in a communication control processor for carrying out communication control by using firmware composed of a plurality of process modules,
said firmware trace data acquisition method comprising the steps of:
providing said plurality of process modules with module identifier labels;
monitoring the execution of firmware processes by acquiring said module identifier labels attached to said plurality of process modules and detecting whether or not there is any abnormality during said execution of firmware processes;
providing a Direct Memory Access (DMA) part, a detailed data storing part, and a trace data storing part; and
controlling said DMA part to transfer data to said trace data storing part in accordance with a result of said detecting from said monitoring step, wherein when an abnormality is detected during the execution of any of the process modules, detailed data derived from the process module which is then active and whose module identifier label is latched are transferred from said detailed data storing part to said trace data storing part and wherein when there is no abnormality detected, said latched module identifier label corresponding to the active process module is transferred to said trace data storing part.

5,442,778

SCATTER-GATHER: A CLUSTER-BASED METHOD AND APPARATUS FOR BROWSING LARGE DOCUMENT COLLECTIONS

Jan. O. Pedersen, Palo Alto; David Karger, Stanford; Douglass R. Cutting, Menlo Park, all of Calif., and John W. Tukey, Princeton, N.J., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1991, Ser. No. 790,316
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **21 Claims**



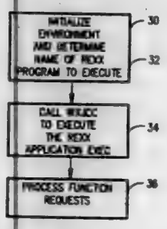
1. A document browsing method in a digital computer for a corpus of documents, comprising the steps of:
preparing an initial ordering of the corpus into a first plurality of clusters by using a first method that automatically performs the initial ordering without external inputs based on contents of the documents using the digital computer;
determining a summary for each cluster of the first plurality of clusters prepared by said initial ordering of the corpus;
selecting by a user at least one cluster of the first plurality of clusters based on the summary of each cluster; and
automatically providing a further ordering of the user selected at least one cluster into a second plurality of clusters by automatically analyzing contents of documents of the selected at least one cluster using a second method comprising the steps of:
grouping together all of the documents from the selected at least one cluster based on the content of each document, and then
assigning each of the documents to one cluster of the second plurality of clusters.

5,442,779

SYSTEM AND METHOD FOR ENABLING AN INTERPRETED PROGRAMMING LANGUAGE TO BE EXECUTED IN A DATABASE MANAGEMENT SYSTEM ENVIRONMENT

Ronald J. Barber, Morgan Hill, and Attila J. Fogarasi, Orinda, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,416
Int. Cl.[6] G06F *9/00, 17/30*
U.S. Cl. 395—600 **9 Claims**



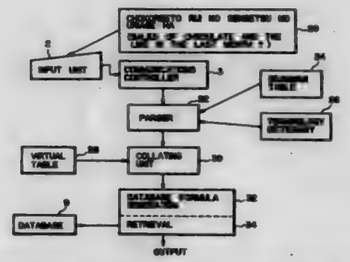
1. A computerized method for retrieving data from a database stored in a data storage device of a data processing system having a central processing unit (CPU), memory, an operating system and a database management system (DBMS), using an application program written in an interpretive programming language, comprising the steps . of:
(a) initializing by means of the CPU implementing a set of commands, a data processing environment for processing the application program;
(b) executing the application program using a Rexx program interpreter stored in the data processing system memory; and
(c) processing mapping call instructions for mapping constructs of the DBMS to constructs of the programming language, operating system call instructions, and DBMS call instructions for extracting data from the database, contained in the application program.

5,442,780

NATURAL LANGUAGE DATABASE RETRIEVAL SYSTEM USING VIRTUAL TABLES TO CONVERT PARSED INPUT PHRASES INTO RETRIEVAL KEYS

Ikuko Takanashi; Shozo Kondo; Katsushi Suzuki; Kazutomo Naganuma; Yoshiko Itabashi; Chikako Kimura, and Naohito Inaba, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,764
Claims priority, application Japan, Jul. 11, 1991, 3-171217
Int. Cl.[6] G06F *15/403*
U.S. Cl. 395—600 **11 Claims**



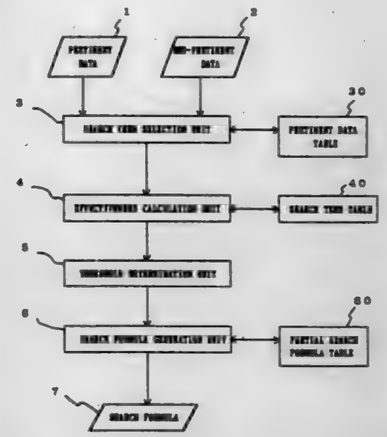
1. A computer implemented information retrieval system for retrieving information from a database, comprising:
a parser for parsing a natural language query into its constituent phrases to produce a syntax analysis result;
a plurality of virtual tables for converting phrases of the natural language query to retrieval keys possessed by the database, said virtual tables accounting for particles that modify the phrases;
a collating unit for preparing a database retrieval formula from the syntax analysis result by selecting at least one virtual table that is used to convert the phrases of the natural language query to keys possessed by the database; and
a retrieval execution unit for retrieving data from the database based on said database retrieval formula.

5,442,781

SYSTEM FOR GENERATING A SEARCH FORMULA BY ACCESSING SEARCH TERMS ON THE BASIS OF A TRAINING SET OF PERTINENT AND NON-PERTINENT OBJECTS

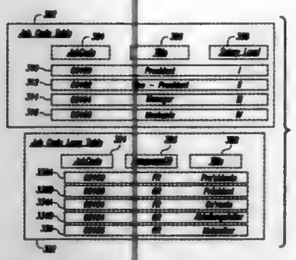
Kanako Yamagata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,702
Claims priority, application Japan, Nov. 29, 1991, 3-340360
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **20 Claims**



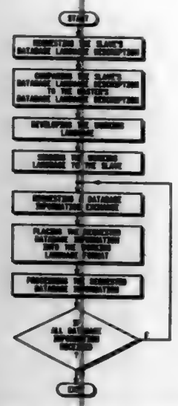
1. Apparatus for generating a search formula in an information retrieval system comprising:
input means for inputting given data consisting of pertinent data and non-pertinent data, said pertinent data and said non-pertinent data being designated by a user, said pertinent data and said non-pertinent data comprising pieces of data, each piece of said pertinent data satisfying a need of said user, each piece of said non-pertinent data not satisfying the need of said user;
search term selection means for selecting search terms among the terms included in the pertinent data on the basis of first and second term appearance ratios, said first term appearance ratio being a ratio of a number of pieces of said given data containing said particular term to a total number of pieces of said given data, said second term appearance ratio being a ratio of a number of pieces of pertinent data containing said particular term to a total number of pieces of said pertinent data;
effectiveness calculation means for calculating respective effectiveness values of the search terms selected by the search term selection means, said effectiveness calculation means calculating said effectiveness of each selected search term based on a number of pieces of said pertinent data containing the search term and the total number of pieces of said given data;
threshold determination means for determining a threshold of effectiveness by using the effectiveness values of the search terms included in respective pieces of pertinent data; and
search formula generation means for generating a search formula on the basis of the respective effectiveness values of the search terms and the threshold determined by the threshold determination means, said search formula comprising the selected search terms combined by boolean operators.

5,442,782
PROVIDING INFORMATION FROM A MULTILINGUAL DATABASE OF LANGUAGE-INDEPENDENT AND LANGUAGE-DEPENDENT ITEMS
John A. Malatesta, Alamo, and Richard A. Bergquist, Danville, both of Calif., assignors to Peoplesoft, Inc., Walnut Creek, Calif.
Filed Aug. 13, 1993, Ser. No. 106,500
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 13 Claims



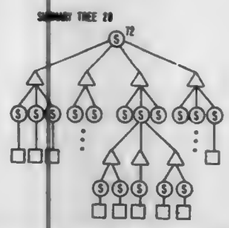
6. A method of linking multilingual versions of data in a computerized database comprising the steps of:
defining a first table to contain base language records, said base language records storing base language versions of language-independent data items and language-dependent data items;
defining a second table to contain multilingual records, said multilingual records storing multilingual versions of language-dependent data items;
defining a linkage between said second table and said first table, said linkage identifies said second table to contain multilingual versions of said base language records.

5,442,783
METHOD AND APPARATUS FOR TRANSFERRING DATA BASE INFORMATION
Gary J. Oswald, Elk Grove Village; Mark Banghart, Carpentersville, and Michael E. Burke, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 468,400, Jan. 22, 1990, abandoned. This application Sep. 24, 1993, Ser. No. 126,003
Int. Cl.[6] G06F *17/00, 17/30*
U.S. Cl. 395—600 8 Claims



1. A data base transfer controller for use with a digital computer having a first processor for performing database information transfers between the computer and at least a second processor device coupled to the computer via a communications network, each processor having a data base that may be different in structure and number of data base elements, the controller comprising:
means for identifying the first processor's data base elements;
means for identifying the at least second processor's data base elements, the at least second processor's data base elements being different in structure or number of data base elements than the first processor's data base elements;
means, coupled to the first and the at least second processor, for comparing the identified data base elements to determine those elements common to the first and the at least second processor data bases;
means, coupled to the first and the at least second processor, for developing a working language from the data base elements common to the first and the at least second data base elements;
means, coupled to the first and the at least second processor, for communicating the working language to the first and the at least second processor; and
means, coupled to the first and the at least second processor, for commencing transfers of data base information between the first and the at least second processor as a function of the working language.

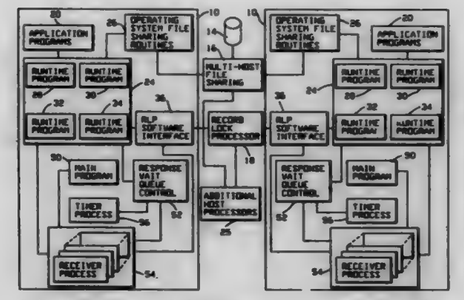
5,442,784
DATA MANAGEMENT SYSTEM FOR BUILDING A DATABASE WITH MULTI-DIMENSIONAL SEARCH TREE NODES
Frederick A. Powers, Sudbury, and Stanley R. Zanarotti, Cambridge, both of Mass., assignors to Dimensional Insight, Inc., Burlington, Mass.
Division of Ser. No. 495,360, Mar. 16, 1990, Pat. No. 5,257,365.
This application Jun. 17, 1993, Ser. No. 78,396
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 7 Claims



1. A data management system for building a database, comprising:
an input record memory for storing a plurality of input records, each input record including a plurality of data fields containing field values;
a database structure memory for storing database structures, the database structures including
a detail table,
a summary tree,
a detail index, and
a summary table;
a record input controller for entering the plurality of input records into the input record memory;
a processor connected from the record input controller and to the input record memory and to the database structure memory for performing operations on the input records and on the database structures; and
a builder control connected to the processor for controlling operations of the processor for building the database structures, including

an input record analyzer control connected from the input record memory for directing the processor for reading and analyzing the data fields of the input records;
a detail table control for directing the processor for constructing the detail table, including
generating a database record corresponding to each input record, assigning a record pointer for each of the database records, each database record being addressable by the assigned record pointer and including dimension fields containing dimension values and summary fields containing numeric information, and
writing the database records into the detail table,
a summary tree control for directing the processor for constructing the summary table, including
reading the database records and selecting summary sets of the plurality of database records wherein each summary set includes a plurality of database records having a common combination of dimension values for the associated dimension fields,
generating summary nodes of the summary table, the summary nodes for storing summary information of the summary fields of the database records of the summary sets of the database records, and
generating summary information from the numeric information contained in the summary fields of the database records and writing the summary information into the summary nodes,
constructing the detail index, including
reading the database records and selecting index sets of the plurality of database records wherein each index set includes a plurality of database records having a common combination of dimension values for the associated dimension fields, and
storing the record pointers assigned to the database records of the index sets in detail index nodes of the detail index; and,
constructing the summary tree, including
generating a summary tree, and
writing the plurality of summary nodes and the plurality of detail index nodes based on combinations of dimension values into the summary tree and arranged in a hierarchical fashion.

5,442,785
METHOD AND APPARATUS FOR PASSING MESSAGES BETWEEN APPLICATION PROGRAMS ON HOST PROCESSORS COUPLED TO A RECORD LOCK PROCESSOR
James Roffe, Blaine, and Donald N. Hester, Jr., Oakdale, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.
Continuation of Ser. No. 773,174, Oct. 8, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 221,281
Int. Cl.[6] G06F *12/14, 15/40*
U.S. Cl. 395—658 7 Claims

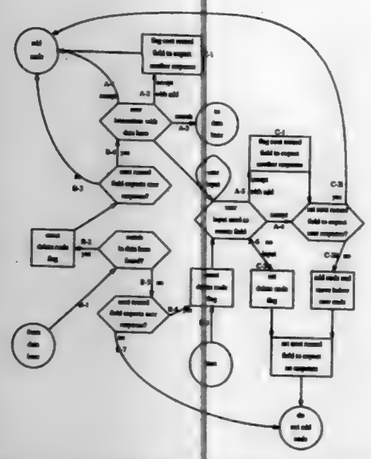


1. In a closely coupled data processing system including a plurality of host processors for executing a plurality of application programs, an apparatus for passing messages between the plurality of application programs on the plurality of host processors, comprising:
a record lock processor directly coupled to each of the plurality of host processors for coordinating locks on data objects shared between the plurality of application programs and for transferring messages in an essentially point-to-point fashion between the plurality of host processors;
a plurality of interface managers, wherein each of the plurality of host processors includes a selected one of said plurality of interface managers, and each of said plurality of interface managers is interfaced with said record lock processor and is responsive to messages received from and messages to send to application programs executing on others of the host processors;
a plurality of receiver means wherein each of the plurality of host processors includes selected ones of said plurality of receiver means and each of said plurality of receiver means is responsively coupled to a selected one of said plurality of interface managers, whereby each of said plurality of receiver means is responsive to a message received by said selected one of said plurality of interface managers, wherein each of said plurality of receiver processes is interfaced with selected ones of the plurality of application programs, wherein a selectable function of an application program is directly activated by one of said plurality of receiver means when a message is received;
wherein each of said plurality of interface managers include
registration means responsive to selected ones of said plurality of receiver means for registering said selected ones of said plurality of receiver means with said each of said plurality of interface managers and suspending processing by said selected ones of said plurality of receiver means, whereby one of said plurality of receiver means is activated by an interface manager after said interface manager has received a message;
wherein each of the plurality of host processors includes
control means responsive to selected ones of the plurality of application programs and responsive to selected ones of said plurality of receiver means for suspending execution of said selected ones of the plurality of application programs when a response-message is required, and for activating a suspended application program when a response-message is received by a receiver means;
a message response wait queue interfaced with said control means, wherein each entry in said message response wait queue identifies an application program which has been suspended by said control means;
a message response table corresponding to each application program suspended by said control means, wherein said message response table is interfaced with said control means, is referenced by an entry in said message response wait queue, and each entry in said message response table contains a response-message from one of the plurality of host processors.

5,442,786
METHOD FOR RECORDING USER INTERACTION WITH A COMPUTER DATABASE TO GENERATE REPORTS
Robert E. Bowen, 1515 S. 152nd Ave. Cir., Omaha, Nebr. 68144
Filed Apr. 28, 1994, Ser. No. 234,223
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 6 Claims

1. A method for recording user interaction with a computer data base to generate reports, comprising the steps of:
providing a computer information processing system, including a data base which interacts with user data input to build a hierarchical data tree based upon system responses;
a user initially designating a source and a "next record" field in said system; each said "next record" field comprising

instructions to direct a response by the system upon identification of a record with the designated source field;
said system searching a plurality of records forming said data base for records which have a target field matching the inputted source field, and displaying an initial record found for viewing by the user;
the system reading the instructions of the initially designated "next record" field of the initial record and interacting with records matching the initial record's source field according to those instructions;
said system responding to a "response expected" instruction in a "next record" field by prompting the user for one of two responses; wherein the two responses consist of:
(1) requesting the user to select a record with a target field matching the displayed source field; and
(2) requesting the user to provide a separate response as a selection;
said system responding to a "no response expected" instruction in a "next record" field by finding all records with target fields matching the source field of the displayed record, and automatically selecting the first record found;
said system recording a selection from the user or system as a first node, utilizing a block of computer memory;



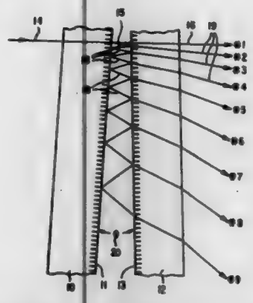
said computer system designating nodes in a predetermined hierarchical sequence, designating nodes with identical target fields as being on the same horizontal level, and designating a node with a source field matching a designated record's target field as being on a higher level than the designated record, each said node containing references to a previously selected node on the same level, the next node to be selected on the same level, the next higher level node and the next lower level node;
said system searching said data base for records which have a target field matching the source field of a second selected source field inputted by the user or system, and displaying a first matching record found for viewing by the user or system;
said system recording a selection of a displayed record by the user or the system, as a second node, on a lower vertical level than the first node;
continuing the steps of searching records, displaying a record, and recording selections, until no matching target fields are found for a selected record source field, at which time a first vertical leg of a hierarchical data tree is terminated; and
said system generating a report of all recorded nodes.

5,442,787

BEAM MULTIPLYING COMPONENT

Ivan B. Steiner, Ridgewood, N.J., assignor to AlliedSignal Inc., Morristownship, N.J.

Filed Dec. 3, 1992, Ser. No. 984,826
Int. Cl.[6] G02B *27/10*
U.S. Cl. 359—629 **6 Claims**



1. A beam multiplying component comprising:
a plurality of plane-parallel windows cooperatively arranged, each comprising an exterior surface and an interior adjacent surface, said interior adjacent surface having a partially reflective surface, wherein when an original beam is projected into said beam multiplying component each partially reflective surface splits off part of said original beam to produce a redirected beam;
said redirected beam undergoing further redirection and attenuation through multiple reflections by each partially reflective surface therefore producing a series of beams each of which is a straight line and wherein successive beams are separated by equal angles while the spacing of the beams varies and increases with each successive reflection;
angular separation between each of said plurality of plane-parallel windows being θ and angular spacing between adjacent beams of said series of beams being a constant equal to 2θ.
said series of beams including a plurality of even-numbered beams and a plurality of odd-numbered beams, each of said series of beams becoming successively dimmer with each of said multiple reflections.
each of said plurality of even-numbered beams being in a plane and deviating from the direction of said original beam by an even multiple of the angular separation between each of said plurality of plane-parallel windows;
said original beam passing through said plurality of plane-parallel windows attenuated but undeviated from the direction of said original beam; and
said plurality of plane-parallel windows cooperatively arranged so that multiple reflections from said exterior surface will produce ghost images along lines normal to a test image line.

5,442,788

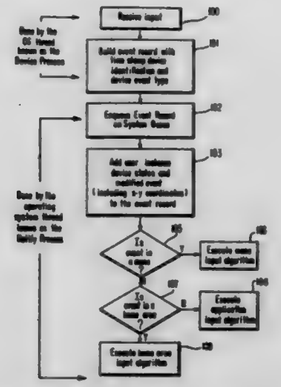
METHOD AND APPARATUS FOR INTERFACING A PLURALITY OF USERS TO A PLURALITY OF APPLICATIONS ON A COMMON DISPLAY DEVICE

Eric A. Bier, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 10, 1992, Ser. No. 974,036
Int. Cl.[6] G06F *9/22, 3/14*
U.S. Cl. 395—650 **9 Claims**

1. A method for operating a multi-user collaborative computer system, said computer system comprising:
(a) a work station including a computer and having a single display, storage means for storing multiple applications

including parent and child applications and data, each parent application being capable of having one or more child applications, each application having an application input queue for input events waiting to be processed by said application, each application being capable of spawning a process, means for executing one or more of the applications, means for presenting on the single display objects created by the applications, and a common system queue, each parent application when executing being capable of occupying a region of the display, a child application when executing occupying a sub-region of the region of the display occupied by its parent application,
(b) a plurality of user-controlled input devices each connected to the workstation, each input device being under control of a user, each input device in cooperation with the computer being capable of generating input events that are targeted by the user at selected ones of said applications, said selected ones of said applications when targeted being the focus application of the input device, said input events when executed by the focus application being capable of generating new objects for presenting on the display or of modifying objects so as to change their size, orientation, or appearance on the display, said plurality of input devices being capable of generating simultaneous or sequential input events;



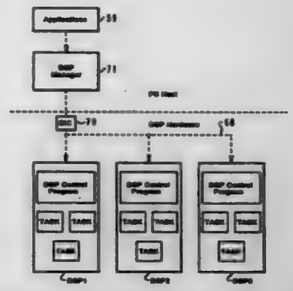
(c) means connected to the workstation for detecting when input events are generated and for passing the generated input events to the common system queue;
said method being implemented by the computer and comprising the steps:
(i) each user, operating an input device, operating the input device to establish the user's ownership of that particular input device,
(ii) said users operating their input devices to generate targeting input events targeted at certain of said applications, and detecting and passing said targeting input events to said system queue,
(iii) when a targeting input event in the system queue is targeted at a first child application, waiting for the parent application of the targeted first child application to complete any current action and then halting all processing of events by the parent application before passing the targeting event to the input queue of the targeted first child application,
(iv) thereafter placing the received targeting input event in the input queue of the first child application,
(v) restarting the parent application of the targeted first child application after said targeting input event has been placed in the input queue of the targeted first child application,
(vi) continuing to pass targeting input events to the targeted applications while the system queue contains any such events.

5,442,789

SYSTEM AND METHOD FOR EFFICIENTLY LOADING AND REMOVING SELECTED FUNCTIONS ON DIGITAL SIGNAL PROCESSORS WITHOUT INTERRUPTING EXECUTION OF OTHER FUNCTIONS ON THE DIGITAL SIGNAL PROCESSORS

Robert G. Baker, Delray Beach; Jose A. Eduartez, Miami Beach; Duy Q. Huynh, Boca Raton; Paul R. Swingle, Delray Beach, and Suksoon Yong, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1994, Ser. No. 220,959
Int. Cl.[6] G06F *9/28, 9/312*
U.S. Cl. 395—650 **8 Claims**



3. A data processing system for managing execution of tasks by digital signal processors within said data processing system comprising:
a central processing unit for data processing operations;
the plurality of digital signal processors connected to said central processing unit, wherein the digital signal processors are connected to each other by a communications channel;
a digital signal processor manager including:
first identification means, responsive to an identification of a function to be executed by the digital signal processors, for identifying a task
for loading, wherein the task constitutes part of the function;
means for loading the task identified by the first identification means;
second identification means for identifying whether a data communication module connected to the loaded task constituting part of the function is present;
first determination means, responsive to identifying the presence of the connected data communication module is a real-time data communication module;
second determination means, responsive to the presence of the real-time data communication module, for determining whether sufficient processor resources are present for the digital signal processor containing the real-time data communication module to support the identified task;
addition means, responsive to the presence of sufficient processors resources for said digital signal processor containing the real-time data communication module, for adding the identified task to the digital signal processor;
third determination means, responsive to either an absence of sufficient processors resources for said digital signal processor containing the real-time data communications module or an absence of the real-time data communication module, for determining whether the communica-

tions channel has sufficient communications resources to support an additional data communication module;

selection means, responsive to either the presence of sufficient communications resources to support the additional data communication module or the absence of any data communication modules, for selecting the digital signal processor having the greatest amount of processor resources capable of supporting the identified task; and

means, responsive to the selection means, for loading the identified task on the selected digital signal processor,

wherein tasks constituting the function may be loaded on digital signal processors without interrupting execution of tasks comprising another function executing on the digital signal processors.

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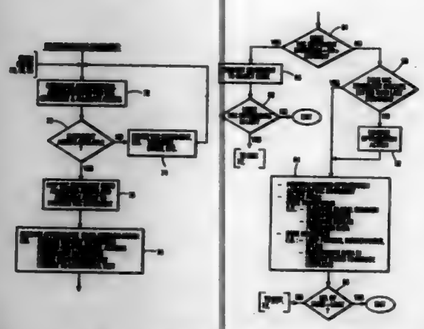
OPTIMIZING COMPILER FOR COMPUTERS

Daniel M. Nosenchuck, Mercerville, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Continuation of Ser. No. 705,331, May 24, 1991, abandoned. This application Mar. 9, 1994, Ser. No. 208,488

Int. Cl.[6] G06F 9/45

U.S. Cl. 395—700 **11 Claims**



1. A method for compiling a source code listing into an object code listing, said method performed by a computer with compiler software that controls the operation of said computer, said method comprising the steps of:

a. extracting a block of source code statements from said source code listing;

b. mapping each source code statement in said block into a common intermediate code format which defines a dependent series of machine actions to perform function(s) called for by mapped source code statements;

c. using a subset of an input data array required to enable full operation of said source code listing, executing an approximate simulation of said intermediate code format into which said block of source code statements were mapped in step a, and deriving performance results from said approximate simulation, an approximate simulation generally only executing statements which lead to a subsequent memory reference and any statement which is subjected to a following conditional test;

d. dependent upon a measure of said performance results, revising said intermediate code format approximately simulated in step c in an attempt to improve said performance results;

e. repeating steps c and d until a decision point is reached, said decision point occurring upon achievement of a determined condition.

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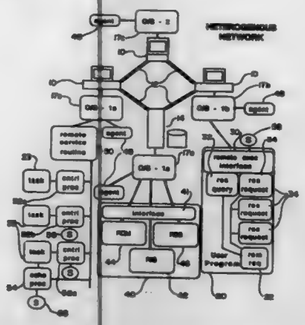
INTEGRATED REMOTE EXECUTION SYSTEM FOR A HETEROGENOUS COMPUTER NETWORK ENVIRONMENT

Joan M. Wrabetz, New Hope; D. Dean Mason, Jr., Minnetonka, and Mark P. Gooderum, Bloomington, all of Minn., assignors to Aggregate Computing, Inc., Minneapolis, Minn.

Continuation of Ser. No. 861,271, Mar. 31, 1992, abandoned. This application May 12, 1994, Ser. No. 242,141

Int. Cl.[6] G06F 9/44, 13/14, 15/16

U.S. Cl. 395—650 **38 Claims**



1. An integrated system for providing resource management and distributed remote execution services in a heterogenous computer network environment having a plurality of resources loosely coupled to each other in the network environment, the resources including at least two or more computer processors executing different operating system programs, each different operating system program having a set of kernel programs unique to that operating system program and a unique file space, and any memory devices and subordinate programs operating together with the computer processors, at least some of the resources being available to perform remote execution services, the integrated system comprising:

a plurality of interface means, each of the plurality of interface means operably integrated with a unique one of a plurality of requestors in the network environment without requiring the set of kernel programs of the operating system program associated with that requester to be modified and recompiled, each of the plurality of interface means for issuing both a resource query and a resource request for a remote execution service, the resource query including one or more query parameters specifying a set of resources that can satisfy the resource request, the resource request including information necessary to perform the remote execution service;

database means operably connected to the network environment for storing one or more items of information about the resources in the network environment, the items of information stored in the database means being available to the plurality of requestors in the network environment and including one or more items of dynamic information;

agent means operating on at least one of the computer processors for periodically collecting across more than one file space the one or more items of dynamic information about one or more computer processor and any other resources operating together with the computer processors that are available to perform remote execution services and providing the items of information to the database means;

resource query means operably associated with the database means for receiving a resource query for a remote execution service from any one of the plurality of interface means, analyzing the database means to determine which of the resources in the network environment match the query parameters and are available to satisfy the resource request, and returning to the interface means a list of resources which can be used to satisfy the resource request; and

a remote execution service means operating on each of the computer processors that is available to perform remote execution services without requiring the set of kernel programs of the operating system program associated with that requester to be modified and recompiled, each remote execution service means for receiving the resource request for the remote execution service from the interface means, performing the remote execution service and returning any results from the remote execution service to the interface means,

such that one or more computer processors are chosen by the requestor as the resources to which to send the resource request in order to perform the remote execution services based upon the list of resources provided by the resource query means.

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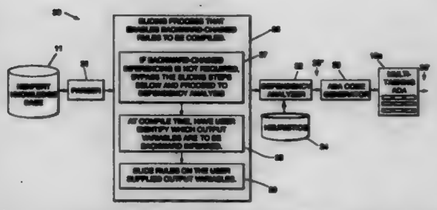
EXPERT SYSTEM COMPILATION METHOD

Robert K. Chun, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 926,467, Aug. 7, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 258,359

Int. Cl.[6] G06F 9/00, 9/45

U.S. Cl. 395—700 **3 Claims**



1. A computer implemented method for generating compiled multi-tasking procedural expert system object code from a pre-existing rule based expert system that includes a knowledge base having rules and a comprehensive inference engine, the method comprising the steps of:

parsing the knowledge base into intermediate forms including test, read, and write matrices which represent the rules of the knowledge base;

analyzing the intermediate forms as to data and control dependencies to pre-order the rules and to identify rules that are data independent and to extract parallelism among the rules, and on the basis of such analysis:

(a) merging sequentially ordered single rules into merged rules when possible thereby collapsing two or more single rules into a single merged rule and increasing efficiency by eliminating intermediate variables from computation;

(b) ordering and clustering into respective data independent clusters single rules and merged rules that must be fired sequentially such that single rules and merged rules that must be fired sequentially are ordered and clustered in the same cluster; and

(c) grouping data independent clusters into a predetermined number of data independent groups of clusters, wherein the predetermined number depends on the hardware on which the procedural expert system object code is to be executed;

synthesizing in procedural code the functional behavior of only the portion of the comprehensive inference engine that is used by the knowledge base;

generating multi-tasking procedural source code implementing said data independent groups of clusters of rules and merged rules and said portion of said comprehensive inference engine synthesized in procedural code such that said data independent groups of clusters will be executed in parallel; and

generating compiled multi-tasking procedural expert system object code from said source code.

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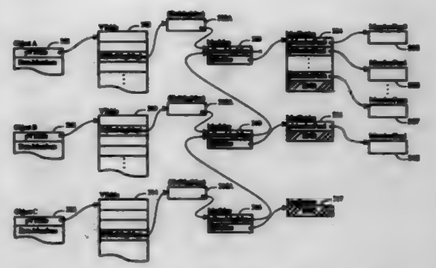
METHOD AND SYSTEM FOR LOCATING AN INHERITED VIRTUAL FUNCTION MEMBER OF A DERIVED CLASS

Bradford A. Christian, Kirkland; Scott A. Randell, Redmond, and Steven J. Sinofsky, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 25,375, Feb. 26, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 352,424

Int. Cl.[6] G06F 9/42

U.S. Cl. 395—700 **12 Claims**



1. A method in a computer system for generating a data structure for accessing virtual function members of a derived class, the derived class having a base class, the base class having a plurality of virtual function members, the derived class having a virtual function member, the method comprising the computer-implemented steps of:

creating a message entry table of message entries for the base class, each message entry identifying a virtual function member of the base class;

creating a message map for the base class and storing in the message map for the base class a reference to the message entry table for the base class;

creating a virtual function table for the base class and storing in the virtual function table for the base class a reference to a get message map function, the get message map function, when invoked, returns a reference to the message map for the base class;

creating a message entry table of a message entries for the derived class, the message entry table for the derived class having a message entry identifying the overriding virtual function member of the derived class;

creating a message map for the derived class and storing in the message map for the derived class a reference to the message entry table for the derived class and a reference to the message map for the base class; and

creating a virtual function table for the derived class and storing in the virtual function table for the derived class a reference to a get message map function, the get message map function, when invoked, returns a reference to the message map for the derived class; and

wherein when a visual function member of the derived class is invoked,

the reference to the message entry table of the derived class is retrieved using the get message map function for the derived class and the message map for derived class,

the message entry table for the derived class is searched to determine whether it contains a message entry that identifies the virtual function member to be invoked, and

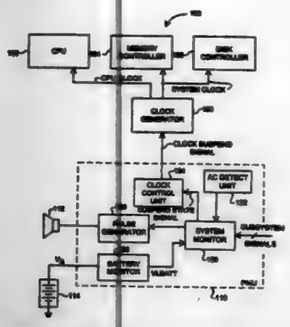
the message entry table for the base class is searched to determine whether it contains a message entry that identifies the virtual function member to be invoked.

5,442,794

DISABLE TECHNIQUE EMPLOYED DURING LOW BATTERY CONDITIONS WITHIN A PORTABLE COMPUTER SYSTEM

Michael T. Wisor, and Rita M. O'Brien, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1993, Ser. No. 160,930
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—750 12 Claims



1. A portable computer system comprising:
a primary computer subsystem;
a battery pack;
a power switch coupled between said battery pack and said primary computer subsystem for providing power from said battery pack to said primary computer subsystem;
a battery monitor unit for monitoring the capacity of said battery pack and capable of generating a control signal indicative of a low battery condition; and
a control unit coupled to said battery monitor unit, wherein said control unit is capable of preventing power from being provided to said primary computer subsystem through said power switch when said control signal is asserted, and wherein said control unit is capable of generating an indicator signal for activating a user indicator when said control signal is asserted and said power switch is closed.

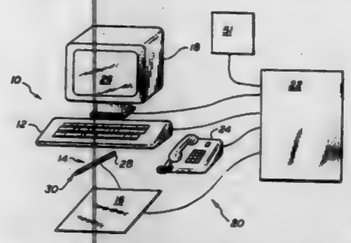
5,442,795

SYSTEM AND METHOD FOR VIEWING ICON CONTENTS ON A VIDEO DISPLAY

Stephen R. Levine, North Andover; Stephen P. Boylan, Somerville; Michael W. Schirpke, Bedford; Karen Donoghue, Melrose, all of Mass., and Alex J. Harui, Derry, N.H., assignors to Wang Laboratories, Inc., Billerica, Mass.

Continuation of Ser. No. 307,699, Feb. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 245,419, Sep. 16, 1988, abandoned, and a continuation-in-part of Ser. No. 200,091, May 27, 1988, abandoned. This application Nov. 19, 1990, Ser. No. 616,812
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—800 30 Claims

1. In a data processing system having a video display for displaying a screen view with images of sheets of information and icons of desk accessories, a graphical icon in the screen view comprising:
a tab area;
a first main body portion generally rectangular in shape with the tab area positioned adjacent one side of the rectangular shape so as to form a representation of a folder for holding images of desired sheets of information in a user established order, the representation being changeable between a graphical representation of a closed folder in which only said first main body portion and said tab area are displayed and a graphical representation of an open folder in which a second main body portion generally rectangular in shape disposed adjacent said first main body portion is also displayed upon user activation of one of the main body and the tab area,
each of the first and second body portions of an open folder capable of holding a stack of representations of user selected sheets of information one on top of the other in user



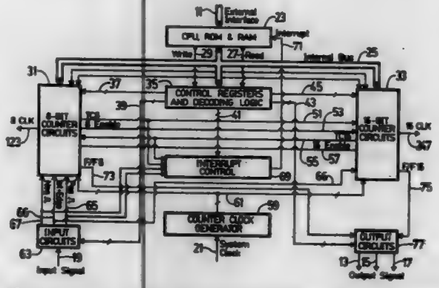
established order, the representation of a sheet on top of the stack held on either body portion being moveable to a top of the stack held on the other body portion such that the ordering of the sheets is maintained and the sheets in one stack are viewable one at a time, the representation of a sheet being visually identifiable on the top of at least one of the stacks
said tab area connected to one body portion for changing, upon user request, the screen view from displaying the graphical representation of the open folder to displaying the graphical representation of the closed folder.

5,442,796

PULSE GENERATOR AND DEMODULATOR WITH CONTROLLING PROCESSOR AND DECREMENTING COUNTERS

Lyn R. Zastrow, Coppell, Tex., and James L. Goodhart, Cupertino, Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Mar. 23, 1992, Ser. No. 855,246
Int. Cl.[6] G06F *3/023, 7/62, 15/20*
U.S. Cl. 395—800 26 Claims



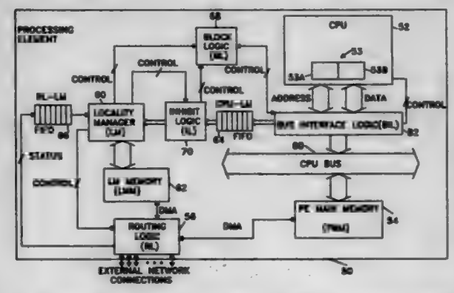
10. A system having pulse generating and demodulating modes, comprising:
first and second digital counters,
first, second and third storage registers,
means including a central processing unit for reading values from and writing values to the first, second and third registers;
means, operably connected to said first digital counter and operably connected to said first and second storage register, and operable when the system is in a pulse generating mode for loading contents of at least one of the first and second registers into the first counter to provide a starting count,
means, operably connected to said second digital counter and operably connected to said third storage register, and operable when the system is in a pulse generating mode for loading contents of the third register into the second counter to provide a starting count,
means, operably connected to said first and second counter, and operable when the system is in a pulse demodulating mode for loading first and second preset values respectively into the first and second counters to provide starting counts therein,
means, operably connected to said first counter and operably connected to said first and second storage register, and operable when the system is in a pulse demodulating mode for storing resulting counts of said first counter in at least one of said first and second registers, and
means, operably connected to said second digital counter and operably connected to said third storage register, and operable when the system is in a pulse demodulating mode for storing resulting counts of said second counter in said third register.

5,442,797

LATENCY TOLERANT RISC-BASED MULTIPLE PROCESSOR WITH EVENT DRIVEN LOCALITY MANAGERS RESULTING FROM VARIABLE TAGGING

Thomas L. Casavant, 423 Grand St., and Samuel A. Fineberg, 2804 Lakeside Manor, both of Iowa City, Iowa 52240

Filed Dec. 4, 1991, Ser. No. 800,530
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 21 Claims



1. A parallel multiprocessor for executing code resulting from a program which has been compiled, said code including locality manager code and cpu code, comprising:
a plurality of processing elements connected to each other and arranged in an interconnection structure, each processing element having a unique address within said interconnection structure, each processing element comprising:
central processing means for processing data by executing local cpu code which is a part of said cpu code that is local to said central processing means; and
locality manager processor for controlling data movement between processing elements which are cooperating on a single task by executing, upon the occurrence of specified events resulting from execution of said local cpu code, local locality manager code which is a part of said locality manager code that is local to said locality manager processor, said local locality manager code indicating when data shared among two or more of said processing elements can be released for movement between processing elements and when non-local data from another processing element is requested, wherein said central processing means and said locality manager processor are separately programmable and operate independently of each other as specified in said local locality manager code and said local cpu code.

5,442,798

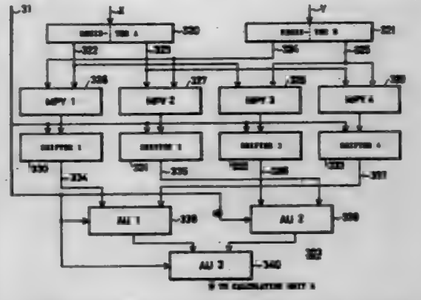
Patent Not Issued For This Number

5,442,799

DIGITAL SIGNAL PROCESSOR WITH HIGH SPEED MULTIPLIER MEANS FOR DOUBLE DATA INPUT

Tokumichi Murakami, and Naoto Kinjo, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 379,274, Jul. 13, 1989, Pat. No. 5,161,247. This application Jul. 1, 1992, Ser. No. 907,233
Claims priority, application Japan, Dec. 16, 1988, 63-318941; Dec. 16, 1988, 63-318942; Jan. 9, 1989, 1-1258; Jan. 13, 1989, 1-6805; Jan. 13, 1989, 1-6806; Jan. 18, 1989, 1-9003
Int. Cl.[6] G06F *7/44*
U.S. Cl. 395—800 13 Claims



1. A digital signal processor including a program memory for storing a microprogram; a control circuit for performing a fetch of said microprogram in said memory, and for decoding, data reading, calculating and writing a calculation result in a parallel pipeline process; a data memory capable of storing 2n-bit data-sized data, and simultaneously reading out two pieces of data; an address generating unit for generating addresses for said data memory; a multiplier circuit for performing multiplication, addition or subtraction between the two pieces of data read simultaneously from said data memory; a calculation unit for performing an arithmetic calculation or accumulation with respect to said two pieces of data or resultant data of said multiplier circuit; and, a data bus for transferring said two pieces of data and the resultant data from said calculation unit, wherein said multiplier circuit comprises:
a first register and a second register for holding one and the other of said two pieces of data respectively;
a first multiplier to a fourth multiplier provided in accordance with four combinations respectively among the two upper-side bits and two lower-side bits of the two pieces of data held in said first and second registers, for performing four multiplications respectively in parallel;
a first shifter to a fourth shifter provided in accordance with said first to fourth multipliers respectively, for performing four shift or zero-set processes respectively in parallel in response to said microprogram as to the respective resultant data from said first to fourth multipliers;
a first arithmetic calculator for receiving both outputs from said first and fourth shifters to perform an addition or subtraction process in response to said microprogram;
a second arithmetic calculator for receiving both outputs from said second and third shifters to perform addition or subtraction in response to said microprogram; and
a third arithmetic calculator for receiving both outputs from said first and second arithmetic calculators to perform addition or subtraction in response to said microprogram,

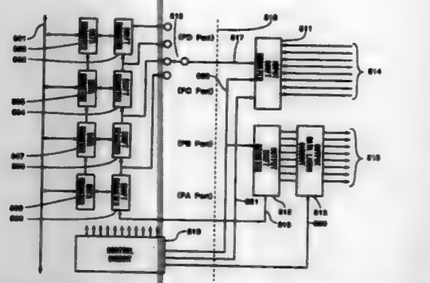
so as to supply 4n-bit output data to said calculation circuit.

5,442,800

PARALLEL INPUT-OUTPUT CIRCUIT PERMITTING REDUCE NUMBER OF PINS IN A SINGLE CHIP MICROCOMPUTER

Atsushi Okamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,842
Claims priority, application Japan, May 27, 1992, 4-135105
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 2 Claims



1. A parallel input-output circuit for a single chip microcomputer, said circuit comprising:
- a parallel input shift register disposed externally of a single chip microcomputer,
- a parallel output shift register disposed externally of said single chip microcomputer,
- a plurality of port units disposed internally of said single chip microcomputer and connected in series to each other, each said internal port unit comprising a data register and a shift register,
- an internal bus to which each of said internal port units is connected, and an internal processing unit connected to said internal bus, and
- a single internal switching device for selectively connecting an output of any selected one of said plurality of internal port units to said external parallel input shift register,
- wherein one of said plurality of internal port units is connected to said external parallel output shift register,
- whereby control signals transmitted through said internal bus from said internal processing unit are individually received and shifted in signal phases by said plurality of internal port units, whereafter said switching device transmits said shifted control signals from a selected one of said internal port units to said external parallel input shift register.

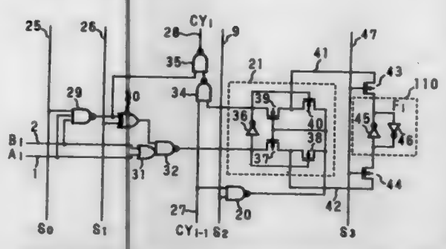
5,442,801

ARITHMETIC AND LOGIC UNIT

Fumiki Sato, and Kouichi Fujita, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1993, Ser. No. 147,269
Claims priority, application Japan, Nov. 5, 1992, 4-295547
Int. Cl.[6] G06F *7/38*
U.S. Cl. 395—800 16 Claims

1. An arithmetic and logic unit executing arithmetic operation and logic operation between a first operand and a second operand which are both one bit, according to a carry input of a carry signal, and first, second and third externally applied control signals which designate a type of arithmetic and logic operation, comprising:
- first NAND logic operating means for operating a NAND logic operation between the first operand, the second operand and the first externally applied control signal, and for outputting a result of the NAND logic operation;
- first EXOR logic operating means for operating an exclusive OR logic operation between the result of said first NAND logic operating means and the second externally applied control signal, and for outputting a result of the exclusive OR logic operation;
- OR logic operating means for operating an OR logic operation between the first operand and the second operand, and for outputting a result of the OR logic operation;
- second NAND logic operating means for operating a NAND logic operation between the result of said first EXOR logic operating means and the result of said OR logic operating means, and for outputting a result of the NAND logic operation;
- third NAND logic operating means for operating a NAND logic operation between the third externally applied control signal and the carry input of the carry signal, and for outputting a result of the NAND logic operation; and
- second EXOR logic operating means for operating an exclusive OR logic operation between the result of said second NAND logic operating means and the result of said third NAND logic operating means, and for outputting a result of the exclusive OR logic operation.

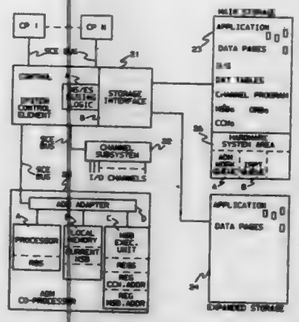


5,442,802

ASYNCHRONOUS CO-PROCESSOR DATA MOVER METHOD AND MEANS

Glen A. Brent, Red Hook; Thomas J. Dewkett, Staatsburg, both of N.Y.; David B. Lindquist, Raleigh, N.C., and Casper A. Scalzi, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 816,917, Jan. 3, 1992, abandoned. This application May 9, 1994, Ser. No. 240,301
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—200.08 13 Claims



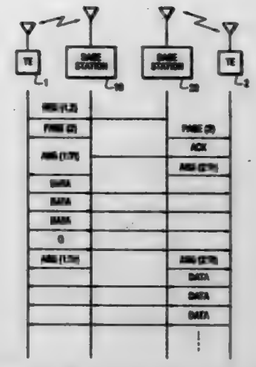
1. A method of asynchronous data transfer performed in a data processing system, said data processing system including at least one central processor (CP), input/output (I/O) channels, a co-processor to asynchronously control movement of a set of pages concurrently with continuation of execution by the CP, and two or more random-access electronic (RAM) memories having data bussing connected through a memory controller to control movement of data between and within the random access electric (RAM) memories, said method comprising first the step of:
- executing by the CP a start data move instruction having an operand for requesting movement of data page(s) between and within the random-access electronic (RAM) memories without moving any data page through any of the I/O channels, said step of executing by the CP including:
- specifying the requested movement of data page(s) in a move specification block (MSB) program indirectly addressed through the operand, the MSB program containing at least one MSB for defining movement of page(s) between and in the RAM memories,
- storing an address to the MSB in a communication location in one of the random access electronic (RAM) memories, and
- signalling the co-processor of the CP storing of the address to the MSB to complete CP execution of the start data move instruction for enabling the CP to execute other instructions,
- and thereafter and concurrently with continued processing by the CP the steps of:
- accessing by the co-process an address to the MSB in the communication location and then accessing the MSB, the MSB containing a logical source address in one of the random access electronic (RAM) memories from which the data page(s) are to be copied and containing a logical sink address in one of the random access electronic (RAM) memories into which the data page(s) are to be stored and containing a page count indicating a number of pages to be copied,
- reading by the co-processor the MSB to obtain the logical source address in one of the random access (RAM) memories and the logical sink address in one of the random access electronic (RAM) memories,
- address-translating by the co-processor the logical source and sink addresses into corresponding source and sink real addresses when the logical addresses are indicated to be virtual addresses for locating the data page(s) in at least one of the random access electronic (RAM) memories,
- generating by the co-processor a real-address page-move command containing the corresponding source and sink real address,
- issuing the co-processor the real-address page-move command to the memory controller,
- executing by the memory controller the real address page-move command by reading the data page from the source real address in one of the random access electronic (RAM) memories and storing the data page at the sink real address in the same or another of the random access electronic (RAM) memories, the step of executing by the memory controller including the steps of:
- incrementing to a next page in the MSB after reading each page until all pages of the MSB are read, and
- signalling to the co-processor when storing of the pages is completed, and
- then signalling by the co-processor to the CP a completion status when all pages have been moved for the MSB program as determined from received memory controller signalling.

5,442,803

HALF DUPLEX COMMUNICATION SYSTEM HAVING QUICK CHANNEL ASSIGNMENTS

Yukitsuna Furuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,900
Claims priority, application Japan, Oct. 8, 1991, 3-260623
Int. Cl.[6] H04B *7/14*
U.S. Cl. 455—15 3 Claims



1. A half duplex radio communication system including:
- a plurality of terminals, each of said plurality of terminals being equipped to communicate with each other; and
- a plurality of base stations, each of said plurality of terminals belonging to one of said base stations;
- wherein, each of said plurality of terminals includes means for sending a connection demand signal, upon initiation of a communication, to one of said of base stations to which said each terminal belongs and for sending a transmission end signal upon termination of a transmission; and
- each of said plurality of base stations includes:
- first channel assignment means responsive to said connection demand signal or said transmission end signal for automatically assigning a transmission channel to one of said plurality of terminals which sends said connection demand signal or is to receive said transmission end signal; and
- second channel assignment means responsive to said connection demand signal or said transmission end signal for automatically assigning a reception channel to one of said plurality of terminals which is to receive said connection demand signal or sends said transmission end signal.

5,442,804

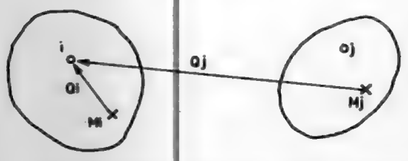
METHOD FOR RESOURCE ALLOCATION IN A RADIO SYSTEM

Krister Gunnar, and Ulf Tegth, both of Haninge, Sweden, assignors to Televerket, Farsta, Sweden

PCT No. PCT/SE90/00119, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO90/10341, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 22, 1990, Ser. No. 752,511
Claims priority, application Sweden, Mar. 3, 1989, 8900742
Int. Cl.[6] H04B *15/00*
U.S. Cl. 455—33.1 7 Claims

1. A method for allocating resources in a radio system comprising the steps of:
- providing a plurality of base stations;
- associating a coverage area for each of said base stations;
- providing a plurality of mobile stations that can move between or within the coverage areas;

determining the area of interaction between base stations and their coverage areas by measurements;
calculating a merit figure for each of said base stations and placing the merit figures in rows of a matrix;
randomly selecting a row of said matrix as a starting row;
determining, from the remaining rows, which rows are compatible with the starting row in order to determine the



best rows, randomly selecting a row from the subset of the best rows to be added to the starting row, and;
repeating said calculating, selecting and determining steps until there are no longer any compatible rows;
choosing a row from the remaining rows; and
assigning transmitting and receiving frequencies for each base station based upon the choosing step.

5,442,805

LOCATION-BASED ADAPTIVE RADIO CONTROL

Richard C. Sagers, Fort Worth, Tex.; William D. Werner, Coral Springs, Fla.; Scott M. Hall, Fort Worth, and David W. Heinzelmann, Bedford, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 667,236, Mar. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 253,529, Oct. 5, 1988, abandoned. This application Jun. 2, 1992, Ser. No. 892,303

Int. Cl.[6] H04B *1/40, 7/26;* H04Q *7/32*

U.S. Cl. 455—33.1 5 Claims



1. A mobile radio comprising:
programming means for storing at least one predetermined hazardous area location;
locating means for determining the location of the mobile radio; and
transmit inhibit means for inhibiting all transmissions by the mobile radio when the mobile radio is within the at least one predetermined hazardous area location.

5,442,806

PREFERRED CARRIER SELECTION METHOD FOR SELECTING ANY AVAILABLE CELLULAR CARRIER FREQUENCY WHEN NEITHER HOME NOR PREFERRED CELLULAR CARRIER FREQUENCIES ARE AVAILABLE

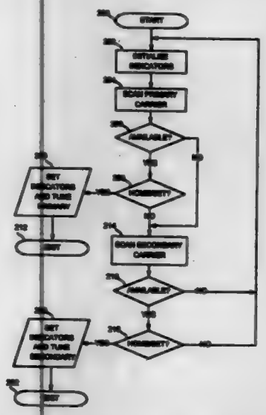
Clifton J. Barber, Forest Park, and Stephen T. Hardin, Snellville, both of Ga., assignors to Oki Telecom, Suwanee, Ga.

Filed Jun. 8, 1993, Ser. No. 73,947

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 455—33.1 38 Claims

1. A method for selecting a cellular carrier frequency for accessing cellular airtime services, said method comprising the steps of:
defining at least one predefined home system identification code (SID) and at least one predefined preferred SID;
monitoring a plurality of frequencies to detect any SID corresponding to any frequency of the plurality of frequencies, including steps of
monitoring a plurality of primary carrier frequencies to detect any SID corresponding to any frequency of the plurality of primary carrier frequencies, and
monitoring a plurality of secondary carrier frequencies to detect any SID corresponding to any frequency of the plurality of secondary carrier frequencies;
selecting a frequency, for calls to ordinary telephone numbers, corresponding to a SID matching said predefined home SID if the SID matching said predefined home SID is detected, including steps of
selecting a primary carrier frequency corresponding to the SID matching said predefined home SID if the SID matching said predefined home SID is detected upon the primary carrier frequency, and



selecting a secondary carrier frequency corresponding to the SID matching said predefined home SID if the SID matching said predefined home SID is detected upon the secondary carrier frequency and the SID matching said predefined home SID is not detected upon any primary carrier frequency;
selecting a frequency, for calls to ordinary telephone numbers, corresponding to a SID matching said predefined preferred SID if
the SID matching said predefined preferred SID is detected and
no SID matching said predefined home SID is detected; and
selecting a frequency, for calls to ordinary telephone numbers, corresponding to a SID not matching either said predefined home SID or said predefined preferred SID if the SID not matching either said predefined home SID or said predefined preferred SID is detected and
no SID matching either said predefined home SID or said predefined preferred SID is detected.

5,442,807

MOBILE COMMUNICATION SYSTEM WITH CELL SITE SELECTION FOR DISPERSION OF TRAFFIC

Yoshikazu Takayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

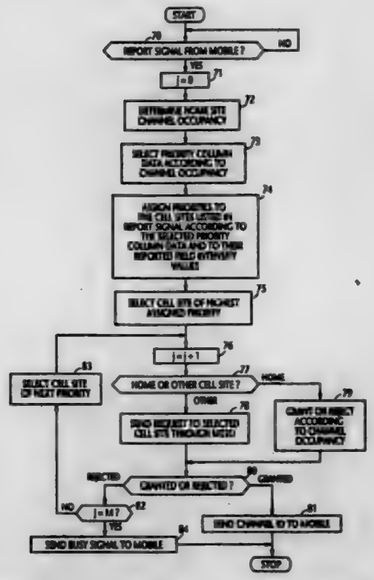
Filed Apr. 26, 1994, Ser. No. 233,621

Claims priority, application Japan, Apr. 26, 1993, 5-120417

Int. Cl.[6] H04B *7/26;* H04Q *7/38*

U.S. Cl. 455—33.1 11 Claims

9. In a cellular mobile communication system for covering a plurality of cells, comprising a mobile station for detecting field intensities of surrounding cell site stations and transmitting a report signal to one of the surrounding cell site stations whose field intensity is highest and a plurality of cell site stations located respectively in said cells, each of said cell site stations having a plurality of speech channels and including means for detecting channel occupancy of the speech channels of the cell site station in response to a connection request from a home cell site station and returning thereto a response indicating whether the connection request is to be granted or not depending on the channel occupancy, one of said cell site stations becoming said home cell site station whenever said report signal is received, said report signal reporting identities of said surrounding cell site stations, a method of operating said home cell site station comprising the steps of:
a) assigning priorities to the surrounding cell site stations identified by the report signal according to the channel occupancy of the speech channels of the home cell site station;



b) selecting one of said surrounding cell site stations having the highest of the priorities assigned by the step (a);
c) if the home cell site station is not selected, transmitting said connection request to said selected cell site station and receiving said response therefrom;
d) if the home cell site station is selected, determining whether a speech channel is available or not depending on the channel occupancy of the home cell site station;
e) if said response indicates that the connection request is granted or if the speech channel is determined to be available by the step (d), transmitting a channel identifier to said mobile station; and
f) if said response indicates that the connection request is not granted or if the speech channel is determined to be not available by the step (d), selecting one of said surrounding cell site stations having lower priority of the assigned priorities and repeating the steps (c) to (f) until said channel identifier is transmitted to said mobile station, or transmitting a busy signal to said mobile station if the steps (c) to (f) are repeated a predetermined number of times.

5,442,808

SYSTEM AND DEVICE TRANSMITTING INFORMATION BY CHANGING A SUBSTRATE TEMPERATURE

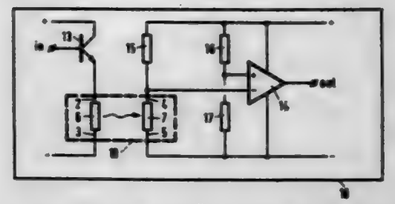
Jacob Kerkhof, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,303

Claims priority, application European Pat. Off., Sep. 4, 1991, 91202249

Int. Cl.[6] H04B *5/02*

U.S. Cl. 455—41 18 Claims



1. A telecommunication system comprising a transceiving device for transmitting information in a DC isolated manner, characterized in that said transceiving device comprises:
a thermally conducting, electrically insulating substrate,
thermal transmitter means disposed on said substrate for changing the temperature of said substrate in response to receipt of an information signal, and
thermal receiver means disposed on said substrate near said thermal transmitting means, for sensing the changing temperature of said substrate and producing an electrical output condition corresponding to said information signal.

5,442,809

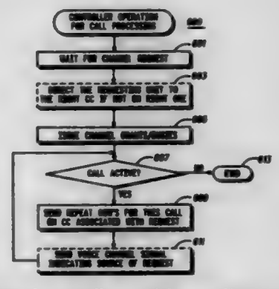
METHOD OF ASSIGNING A VOICE/DATA CHANNEL AS A TEMPORARY CONTROL CHANNEL IN A RADIO COMMUNICATIONS SYSTEM

Rafael J. Diaz, Hoffman Estates; Marc Naddell, Chicago; Gary W. Grube, Palatine; Robin Roberts, Oak Park; Michael D. Sasuta, Mundelein, and Robert Adamczyk, Hawthorn Woods, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 796,118, Nov. 21, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,797

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 455—54.1 20 Claims



1. In a central controller used in a radio communications system including a plurality of voice channels, the central controller allocating the voice channels to a plurality of subscribers using a first operational control channel, at least one of the voice channels being control-capable, an improved method of sustaining a predetermined level of communications service to the plurality of subscribers in the system, the improved method comprising the steps of:

evaluating a current loading condition for the first operational control channel;
comparing said current loading condition with an upper loading threshold;
enabling, responsive to said step of comparing, at least one of said control-capable voice channels as a temporary control channel to produce a second operational control channel for concurrent operation with the first operational control channel;
for talk group subscribers belonging to a common talk group, detecting when at least one of said talk group subscribers is presently using the first operational channel; and
re-directing, responsive to the step of detecting, said at least one of said talk group subscribers to the second operational control channel.

5,442,810

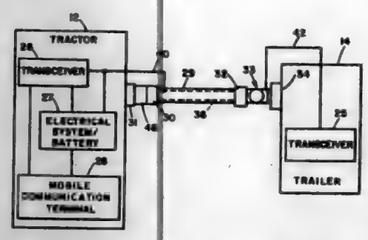
TRACTOR-TRAILER ELECTRONIC TRANSMISSION PATH

Philip C. Jenquin, San Diego, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 981,041, Nov. 24, 1992, abandoned. This application Apr. 12, 1994, Ser. No. 226,391

Int. Cl.[6] H04B 7/00

U.S. Cl. 455—66 **11 Claims**



1. A releasable tractor-trailer electrical signal transmission linkage, comprising:
at least one flexible air brake hose having a tubular wall, tractor coupling means at one end of the hose for coupling the hose to a tractor air brake outlet, releasable trailer coupling means at the opposite end of the hose for releasably coupling the hose to a trailer air brake inlet;
a continuous conductive line embedded in the tubular wall of the hose and extending along the entire length of the hose, the line having a first end at the tractor coupling means and a second end at the trailer coupling means;
a connecting line connected to the first end of the conductive line and extending into the tractor for connecting an electronic communications unit in the tractor to the conductive line;
the releasable trailer coupling means comprising a first part secured to the trailer end of the air brake hose and a second part secured to the trailer;
electrical connecting means extending through the second part of said coupling means to connect the second end of the conductive line to an electronic signal transmitting unit on the trailer when the first and second parts of the coupling means are secured together; and
the first and second parts of the releasable trailer coupling means comprising releasable mechanical connecting means for releasably securing the trailer end of the hose to the trailer air brake inlet, and having through bores for air passage through the releasable connecting means, the first part comprising an electrically conductive member connected to the second end of said conductive line, the second part comprising an electrically conductive member which is in contact with said first part when said first part is secured to said second part, the electrical connecting means comprising a conductive member secured to the second part and extending to the trailer transmitting unit, whereby the entire first and second parts of said coupling means comprise part of an electrical path from the second end of said conductive line to the trailer transmitting unit; and
insulating means at the trailer end of the hose comprising an insulating pad between the second part of the coupling means and the trailer air brake inlet.

5,442,811

LOOP TESTABLE RADIO TRANSMITTERS/RECEIVERS

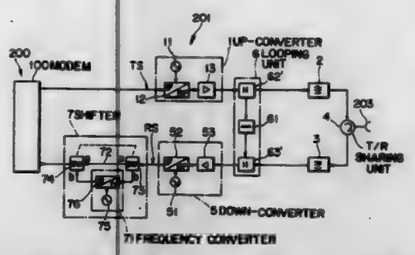
Fumihiko Kobayashi, and Eiji Itaya, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 30, 1993, Ser. No. 100,553

Claims priority, application Japan, Dec. 14, 1992, 4-333168; Jul. 21, 1993, 5-179719

Int. Cl.[6] H04B 17/00

U.S. Cl. 455—67.3 **21 Claims**



1. A loop testable radio transmitter/receiver, comprising:
a transmission system including transmission frequency converting means for converting an intermediate frequency signal from a modulator/demodulator into a transmission frequency signal, and a transmission signal filter means for suppressing an undesired wave contained in the transmission frequency signal from said transmission frequency converting means;
a receiving system including receiving signal filter means for suppressing an undesired wave contained in a receiving frequency signal, and receiving frequency converting means for converting a signal from said receiving signal filter means into an intermediate frequency signal for said modulator/demodulator;
transmit/receive sharing means, coupled between said transmission signal filter means and said receiving signal filter means, for outputting a transmission signal from said transmission system to an antenna and for outputting a receiving signal from said antenna to said receiving system;
transmission signal looping means, coupled between said transmission system and said receiving system, for attenuating the transmission signal of said transmission system and for looping back the transmission signal to the receiving system; and
shifter means arranged to an output side of said receiving frequency converting means in said receiving system for converting an intermediate frequency of a signal converted by said receiving frequency converting means into a receiving input frequency of said modulator/demodulator.

5,442,812

ANTENNA SWITCHING APPARATUS FOR SELECTIVELY CONNECTING ANTENNA TO TRANSMITTER OR RECEIVER

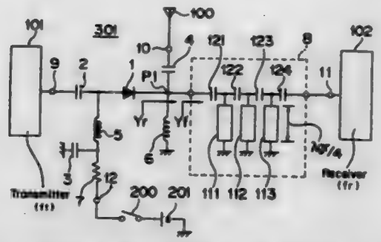
Toshio Ishizaki, Kobe; Hideaki Nakakubo, Souraku; Hiroaki Kosugi, Hirakata; Kimio Aizawa, Ikoma, and Shogo Iizuka, Yokohama , all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 85,114, Jul. 2, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,490

Claims priority, application Japan, Jul. 8, 1992, 4-180849

Int. Cl.[6] H04B 1/46

U.S. Cl. 455—82 **25 Claims**



25. An antenna switching apparatus for selectively connecting an antenna to either a transmitter for transmitting a transmitting signal having a transmitting frequency, or to a receiver for receiving a receiving signal having a receiving frequency which is higher than said transmitting frequency, the antenna switching apparatus comprising:
an antenna terminal electrically connected to said antenna;
a transmitting terminal electrically connected to said transmitter;
a receiving terminal electrically connected to said receiver;
a receiving band-pass filter, electrically connected between said antenna terminal and said receiving terminal, for passing only said receiving signal therethrough and for preventing said transmitting signal from passing therethrough;
a bi-directional impedance adjusting element electrically connected to an input end of said receiving band-pass filter, said impedance adjusting element having an element value such that an impedance when seen from said antenna terminal looking toward said receiving band-pass filter becomes substantially infinity at said transmitting frequency; and
a switching device electrically connected between said antenna terminal and said transmitting terminal, said switching device being turned on or off in response to a control signal.

5,442,813

RADIOTELEPHONE

Eckhard Walters, Rötheubach, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1994, Ser. No. 179,407

Claims priority, application Germany, Jan. 9, 1993, 43 00 433.4

Int. Cl.[6] H04B 1/38

U.S. Cl. 455—89 **4 Claims**



1. A radiotelephone comprising a loudspeaker and at least one microphone, and which is integrated with a vehicular sun visor assembly; the sun visor assembly including a sun visor in the form a substantially rectangular panel having two opposite major sides and two opposite minor sides, and which when mounted in a vehicle is positioned so that a first of said major sides thereof is more remote from an occupant of the vehicle than the second major side thereof, the major and minor sides being narrow in relation to the lengths thereof; the sun visor assembly further including a support member adjoining said first major side of the sun visor and coupled thereto by a coupling which, when the sun visor is pivoted, causes axial rotation of said support member; characterized in that:
the loudspeaker is included in the sun visor, the face of the loudspeaker being in said second major side of the sun visor;
the microphones are supported on said support member so that upon axial rotation of said support member the microphones are rotated therewith, causing tilting of a main reception path between the microphones and an occupant of said vehicle; and
said coupling causes said support member to axially rotate in a direction opposed to a pivoting direction of said sun visor, so that a downward pivoting of said sun visor causes an upward tilt of said main reception path and an upward pivoting of said sun visor causes a downward tilt of said main reception path;
whereby regardless of how the sun visor is pivoted it does not acoustically screen the main reception path of the microphones from an occupant of said vehicle.

5,442,814

CELLULAR TELEPHONE FACILITATING A RESPONSE HOLDING STATE

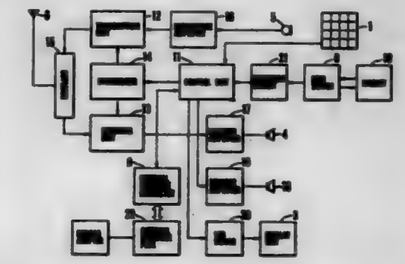
Mitsuyo Seo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 184,036

Claims priority, application Japan, Jan. 25, 1993, 5-010258

Int. Cl.[6] H04B 1/38

U.S. Cl. 455—89 **1 Claim**



1. A foldable cellular telephone having a microphone, a speaker, a foldable telephone main body, a control unit for transmitting/receiving a connection control signal, and an external interface connector connected to an external interface plug, including:
means for detecting an open/closed state of said foldable telephone main body and means for notifying said control unit of said state;
means for detecting that said external interface connector is connected to said external interface plug and means notifying said control unit whether said external interface connector is connected; and
means, arranged in said control unit, for setting a response holding state when an incoming call is received in a state wherein said external interface plug is connected to said external interface connector and said foldable telephone main body is opened.

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DESIGN PATENTS

GRANTED AUG. 15, 1995

ERRATA

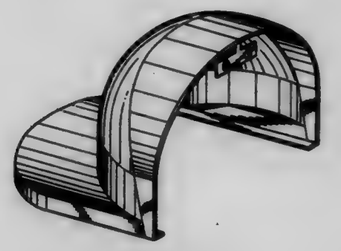
For CLASS	See PATENT NO.
D007–698	D 361,272
D013–103	D 361,309
D013–110	D 361,310
D012–171	D 361,316
D012–203	D 361,319
D012–209	D 361,320
D099–028	D 361,384

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1995
UMI

361,196
SHIRT
Masahiro Yoshida, 1-63, 4-Chome, Nagayoshi-Kawanabe, Hiranoku, Osaka, Japan
Filed Jun. 6, 1994, Ser. No. 23,975
Term of patent 14 years
U.S. Cl. D2—844



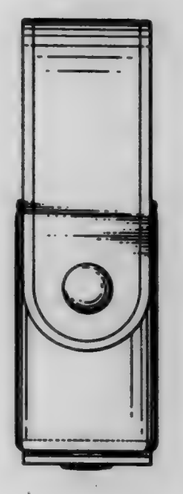
361,197
CAP PROTECTOR
Darwin Wilson, 2902 Highway 1765, Texas City, Tex. 77590
Filed Nov. 30, 1993, Ser. No. 15,821
Term of patent 14 years
U.S. Cl. D2—892



361,198
UMBRELLA
Zen Vang, 972 E. Sunnyview Rd., Lot 16, Oshkosh, Wis. 54901
Filed Jan. 7, 1994, Ser. No. 17,236
Term of patent 14 years
U.S. Cl. D3—5



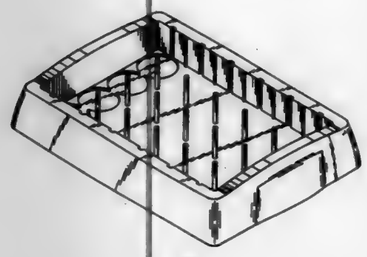
361,199
POLICE-EQUIPMENT HOLDER WITH BOTTOM-FASTENING BELT LOOP
Anthony E. Taylor, LaVerne, Calif., assignor to Aetco, Inc., Pomona, Calif.
Filed Apr. 26, 1994, Ser. No. 21,916
Term of patent 14 years
U.S. Cl. D3—226



361,200
RECEPTACLE FOR A ROLL OF PAPER
Theodore W. Wahl, Bloomfield Hills, Mich., assignor to International Products Company, Inc., Utica, Mich.
Filed May 23, 1994, Ser. No. 23,302
Term of patent 14 years
U.S. Cl. D3—229



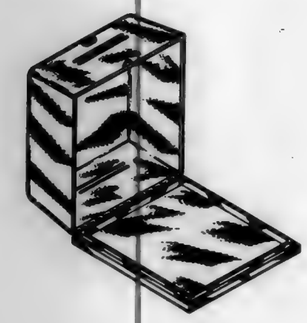
361,201
CONTAINER FOR HOLDING FISHING TACKLE ACCESSORIES
David B. Chaney, Powell, and Sean D. Montag, Westerville, all of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Jan. 27, 1994, Ser. No. 17,957
Term of patent 14 years
U.S. Cl. D3—260



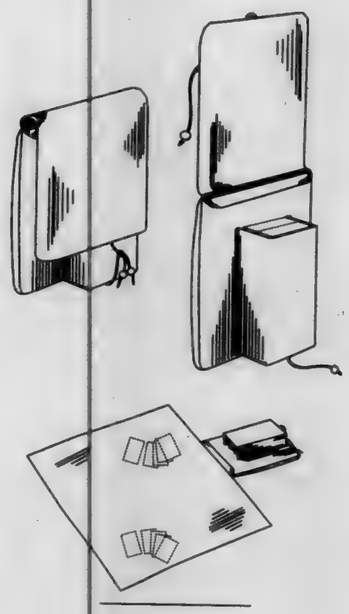
361,202
EYEGLASS HOLDER
Eugene Seach, 2379 Henn-Hyde Rd., NE., Warren, Ohio 44484
Filed Jul. 21, 1994, Ser. No. 25,202
Term of patent 14 years
U.S. Cl. D3—266



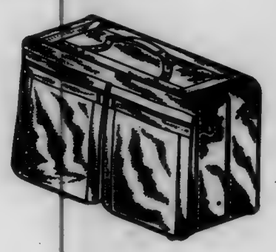
361,203
STORAGE CONTAINER FOR A LAWN MOWER OR THE LIKE
Gary L. Regnier, 3068 Lowe Rd., Kankakee, Ill. 60901
Filed Feb. 4, 1994, Ser. No. 18,353
Term of patent 14 years
U.S. Cl. D3—273



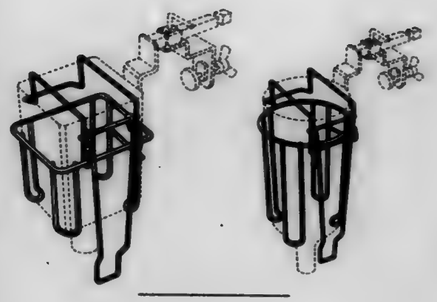
361,204
COMBINED PLAYING CARD CLOTH AND CARRIER
Dorita A. Weaver, and Bradley A. Weaver, both of 205 White Church Rd., Brooktondale, N.Y. 14817
Filed Jan. 11, 1994, Ser. No. 17,340
Term of patent 14 years
U.S. Cl. D3—274



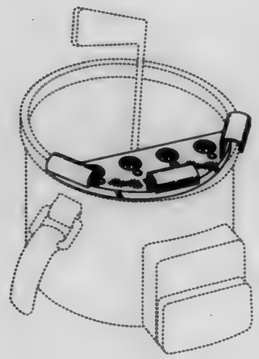
361,205
WHEELED LUGGAGE CASE
Cheryl A. Hughes, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 25, 1994, Ser. No. 20,443
Term of patent 14 years
U.S. Cl. D3—279



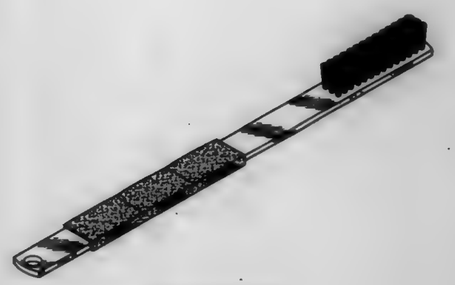
361,206
BASKET FOR HOLDING CONTAINER
Steve Stanley, Houston, Tex., assignor to Remy Amerique, Inc., New York, N.Y.
Filed Feb. 23, 1994, Ser. No. 19,113
Term of patent 14 years
U.S. Cl. D3—306



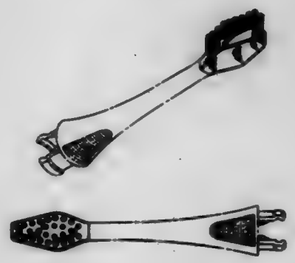
361,207
GOLF CLUB HOLDER
Jerry L. Meyer, 505 Commercial Ave., Clifton Forge, Va. 24422
Filed Dec. 20, 1993, Ser. No. 16,551
Term of patent 14 years
U.S. Cl. D3—320



361,208
DISPOSABLE TOOTHBRUSH
Sylvia S. Woods, 2300 Victoria Ave., and Michael W. Woods, 2300 Victoria Ave., Apt. 203, both of Los Angeles, Calif. 90016
Filed Dec. 20, 1993, Ser. No. 16,555
Term of patent 14 years
U.S. Cl. D4—104



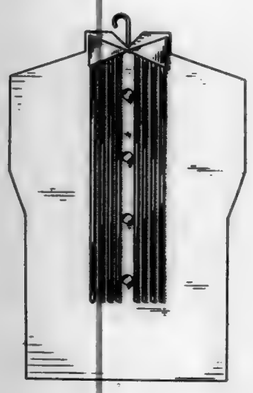
361,209
TOOTHBRUSH HEAD
John Curtis, Bloomsbury; Kenneth Wagnespack, Highland Park, both of N.J., and Pierre J. Jousson, Geneva, Switzerland, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jul. 22, 1993, Ser. No. 10,992
Term of patent 14 years
U.S. Cl. D4—104



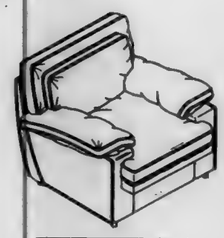
361,210
FABRIC
Mike Eakimo, Haiku Maui, Hi., assignor to WSC Windsurfing Chiemsee Produktions und Vertriebs GmbH, Grabenstatt, Germany
Filed Apr. 25, 1994, Ser. No. 21,847
Claims priority, application Germany, Nov. 30, 1993, M 93 09 461.2
Term of patent 14 years
U.S. Cl. D5—64



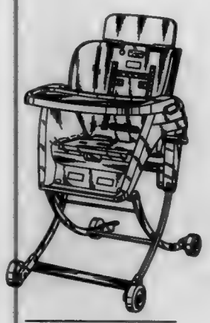
361,211
DISPLAY HANGER
Raymond F. Kurtzuba, 520 N. 73rd St., Omaha, Nebr. 68114
Filed Dec. 13, 1993, Ser. No. 16,315
Term of patent 14 years
U.S. Cl. D6—316



361,212
SEAT
Andrew C. Gibson, Greensboro, N.C., assignor to Leather Center, Inc., Carrollton, Tex.
Filed Feb. 22, 1994, Ser. No. 19,070
Term of patent 14 years
U.S. Cl. D6—334



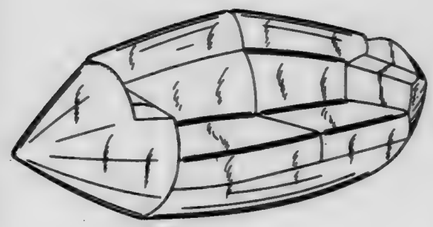
361,213
CHAIR FOR BABY
Katsuhiro Tokutake, and Susumu Matsumoto, both of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan
Filed Jan. 31, 1994, Ser. No. 18,170
Claims priority, application Japan, Jul. 30, 1993, 5-23237
The portion of the term of this patent subsequent to Sep. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—339



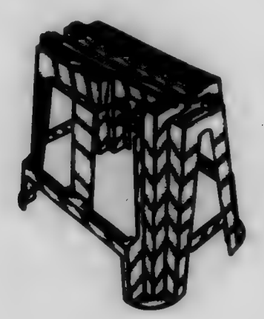
361,214
CHAIR
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Sep. 7, 1993, Ser. No. 12,641
Term of patent 14 years
U.S. Cl. D6—366



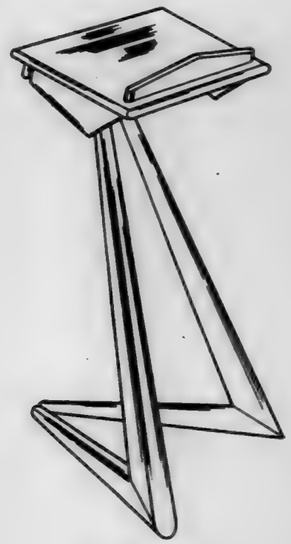
361,215
SEAT
Bennie D. Honeycutt, Sr., Aberdeen, Miss.
Filed Aug. 12, 1994, Ser. No. 27,118
Term of patent 14 years
U.S. Cl. D6—381



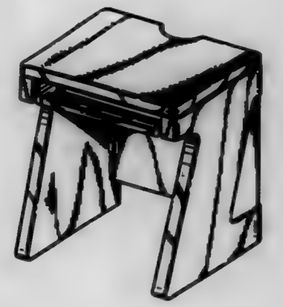
361,216
PORTABLE WORKBENCH
Richard R. Lewellen; John A. Vura, both of Wooster, and Stacy L. Wolff, Akron, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 23, 1993, Ser. No. 10,941
Term of patent 14 years
U.S. Cl. D6—400



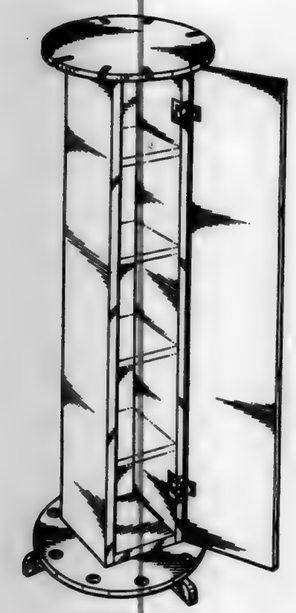
361,217
FOLDABLE LECTERN
Gregory N. Glebe, 1315 E. Gibson La., Phoenix, Ariz. 85034
Filed Nov. 8, 1993, Ser. No. 15,104
Term of patent 14 years
U.S. Cl. D6—419



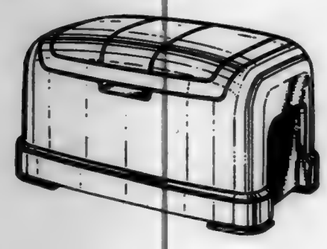
361,218
COMPUTER DESK
H. Charles Hassel, Hollywood, and Hector R. Santos, Los Angeles, both of Calif., assignors to MicroComputer Accessories, Inc., Los Angeles, Calif.
Filed Jul. 15, 1993, Ser. No. 10,675
Term of patent 14 years
U.S. Cl. D6—425



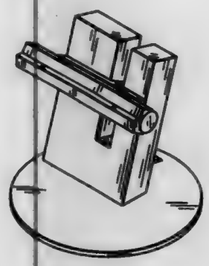
361,219
FISHING ROD CAROUSEL
Kirk M. Laymes, P.O. Box 10, Wessington Springs, S. Dak. 57382-2042
Filed Jul. 2, 1993, Ser. No. 9,018
Term of patent 14 years
U.S. Cl. D6—432



361,220
TOY BOX
Joseph C. Cacciola, Hudson, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Sep. 1, 1993, Ser. No. 12,435
Term of patent 14 years
U.S. Cl. D6—440



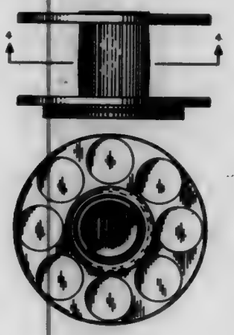
361,221
DISPLAY STAND
Toshitaka Imai, Sagamihara, Japan, and Karen M. MacMurtrie, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 6, 1994, Ser. No. 24,020
Term of patent 14 years
U.S. Cl. D6—449



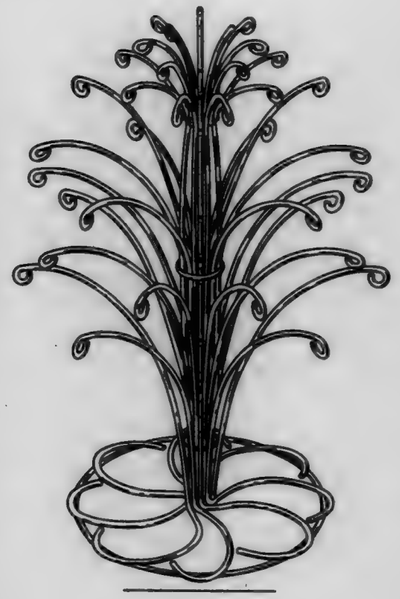
361,222
GUM POST
Leroy I. Teichmann, 2047 E. 1400 Rd., Lawrence, Kans. 66044-9304
Continuation of Ser. No. 8,925, Jun. 1, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 25,045
Term of patent 14 years
U.S. Cl. D6—455



361,223
HOBBY PAINT CADDY
Michael J. Sanson, 629 Hartwell Ave., E. Syracuse, N.Y. 13057
Filed Jan. 28, 1994, Ser. No. 18,078
Term of patent 14 years
U.S. Cl. D6—457



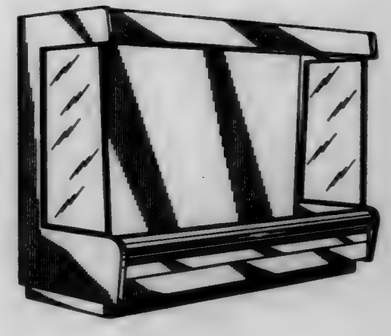
361,224
DISPLAY RACK
Patricia A. Stanley, Mooresboro, N.C., assignor to Classical Heirlooms, Inc., Forest City, N.C.
Filed Jan. 12, 1993, Ser. No. 3,551
Term of patent 14 years
U.S. Cl. D6—458



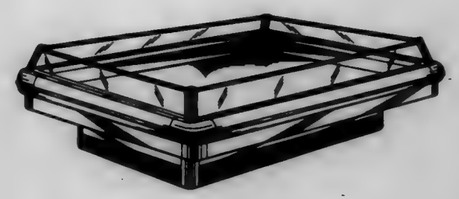
361,225
FREE-STANDING GIFT WRAP ORGANIZER
Gerald D. Wilkins, Duncanville, and Donald H. Seiler, Plano, both of Tex., assignors to Jokari/US, Inc., Carrollton, Tex.
Continuation-in-part of Ser. No. 930,213, Aug. 14, 1992. This application Feb. 22, 1993, Ser. No. 5,226
Term of patent 14 years
U.S. Cl. D6—467



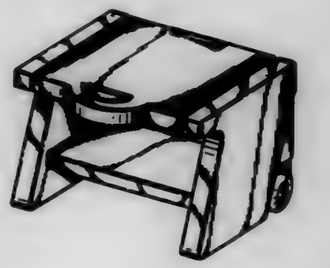
361,226
REFRIGERATED DISPLAY CASE
Donald H. Jones, Roebling, N.J., and William J. Kies, Bensalem, Pa., assignors to Falcon Manufacturing, Inc., Trenton, N.J.
Filed Jan. 13, 1993, Ser. No. 3,681
Term of patent 14 years
U.S. Cl. D6—475



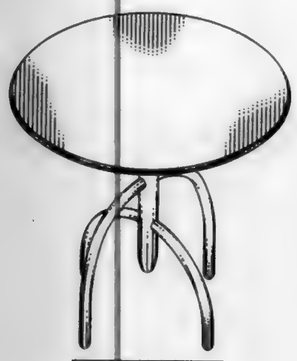
361,227
CENTER ISLAND REFRIGERATED DISPLAY CASE
Donald H. Jones, Roebling, N.J., and William J. Kies, Third Lake, Ill., assignors to Falcon Manufacturing, Inc., Trenton, N.J.
Filed Jan. 13, 1993, Ser. No. 3,680
Term of patent 14 years
U.S. Cl. D6—475



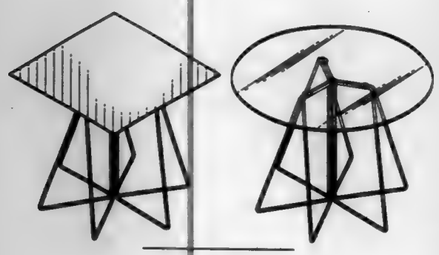
361,228
PRINTER STAND
H. Charles Hassel, Knoxville, Tenn., and Hector R. Santos, Los Angeles, Calif., assignors to MicroComputer Accessories, Inc., Los Angeles, Calif.
Filed Jul. 15, 1993, Ser. No. 10,676
Term of patent 14 years
U.S. Cl. D6—479



361,229
TABLE
Lawrence Lanke, Chicago, Ill., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 31, 1994, Ser. No. 23,683
Term of patent 14 years
U.S. Cl. D6—486



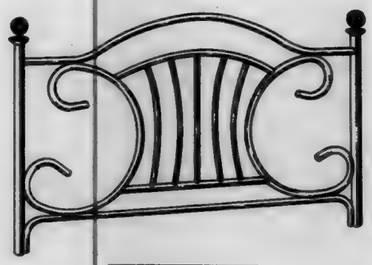
361,230
TABLE
Massimo Vignelli; Lella Vignelli, both of New York, and David B. Law, Brooklyn, all of N.Y., assignors to Westinghouse Elec. Corp., Pittsburgh, Pa.
Filed Mar. 22, 1994, Ser. No. 20,312
Term of patent 14 years
U.S. Cl. D6—487



361,231
HEADBOARD FOR BEDS
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Aug. 1, 1994, Ser. No. 26,560
Term of patent 14 years
U.S. Cl. D6—508



361,232
HEADBOARD FOR BEDS
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Aug. 1, 1994, Ser. No. 26,559
Term of patent 14 years
U.S. Cl. D6—508



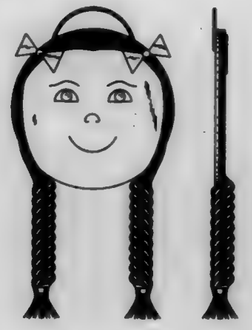
361,233
HEADBOARD FOR BEDS
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Aug. 1, 1994, Ser. No. 26,558
Term of patent 14 years
U.S. Cl. D6—508



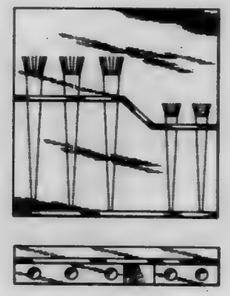
361,234
TOILET PAPER ROLL HOLDER
Yvonne Ball, 28 First Ave., Westbury, N.Y. 11590
Filed Jan. 10, 1994, Ser. No. 17,299
Term of patent 14 years
U.S. Cl. D6—520



361,235
RIBBON KEEPER
Goldie L. Decker, P.O. Box 19893, 5345 W. Monte Vista, Colorado City, Colo. 81019
Filed Apr. 8, 1994, Ser. No. 21,090
Term of patent 14 years
U.S. Cl. D6—553



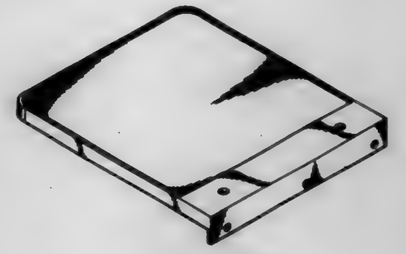
361,236
WALL MOUNTED MAKE-UP BRUSH HOLDER
Athena Murgalo, 100-21 Hope St., Stamford, Conn. 06906
Filed Apr. 25, 1994, Ser. No. 21,900
Term of patent 14 years
U.S. Cl. D6—567



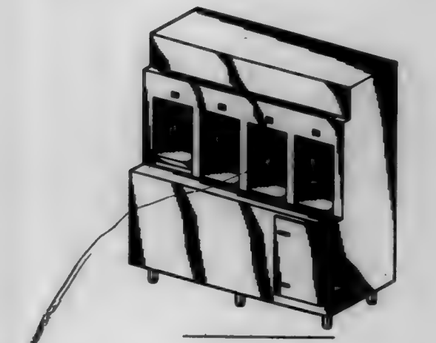
361,237
SHELF
Erhard Schroer, Karlsruhe, Germany, assignor to American Standard Inc., Piscataway, N.J.
Filed Sep. 20, 1993, Ser. No. 13,179
Claims priority, application Hague Agreement, Mar. 19, 1993, DM/025,570
Term of patent 14 years
U.S. Cl. D6—574



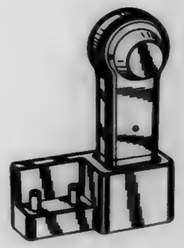
361,238
WINDOW SILL EXTENSION
Thomas F. Richards, 15 Amherst St., Milford, N.H. 03055, and Brian W. Buzzell, P.O. Box 651, Milford, N.H. 03055-0651
Filed Mar. 29, 1994, Ser. No. 20,564
Term of patent 14 years
U.S. Cl. D6—574



361,239
WATER DISPENSER CENTER
Dennis E. DiSanto, 1344 Magnolia Ave., Modesto, Calif. 95350
Continuation of Ser. No. 30,323, Apr. 26, 1993. This application Dec. 29, 1993, Ser. No. 16,880
Term of patent 14 years
U.S. Cl. D7—308



361,240
MIXER WITH BASE STAND
James L. Hanig, Highland Park, Ill., assignor to Hanig & Company, Lincolnwood, Ill.
Filed Apr. 4, 1994, Ser. No. 20,856
Term of patent 14 years
U.S. Cl. D7—376



361,241
HAND HELD ELECTRIC MIXER
Ludwig Littmann, Schwalbach, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Feb. 14, 1994, Ser. No. 18,713
Claims priority, application WIPO, Aug. 18, 1993, DMA/002267
Term of patent 14 years
U.S. Cl. D7—376



361,242
FLUID DISPENSER FOR CARBONATED LIQUIDS
Frank M. Barondi, 7486 La Jolla Blvd. #555, La Jolla, Calif. 92037
Filed Jan. 14, 1994, Ser. No. 17,531
Term of patent 14 years
U.S. Cl. D7—398



361,243
CRUSHED CUP WITH POMPON
Alexander H. Ward, Jr., 5604 Winner Ave., Baltimore, Md. 21215
Filed Nov. 24, 1993, Ser. No. 15,670
Term of patent 14 years
U.S. Cl. D7—507



361,244
CONTAINER
Derek K. Thompson, Pleasanthill, Mo., assignor to Container Supply Co., Kansas City, Kans.
Filed May 12, 1994, Ser. No. 22,793
Term of patent 14 years
U.S. Cl. D7—515



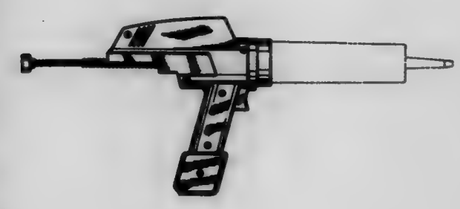
361,245
RAKE
Henry Altergott, 4853 Montrose Ave., Chicago, Ill. 60641
Filed Jul. 11, 1994, Ser. No. 25,763
Term of patent 14 years
U.S. Cl. D8—13



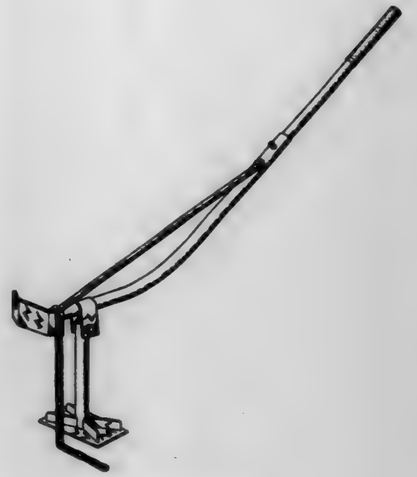
361,246
EXTENSION HANDLE FOR TURNING A SHUTOFF VALVE
Joseph F. Peacock, 2582 W. Fairway Loop, Citrus Springs, Fla. 34434
Filed Dec. 30, 1993, Ser. No. 16,949
Term of patent 14 years
U.S. Cl. D8—14



361,247
POWERED CAULKER
Mark E. Snetting; Steven A. Anderson, both of Eden Prairie, and Paul A. Pilosi, Minneapolis, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Jul. 18, 1994, Ser. No. 25,858
Term of patent 14 years
U.S. Cl. D8—14.1



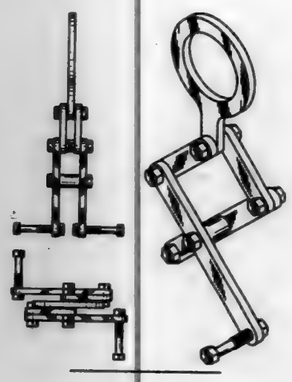
361,248
POST PULLER
Randall L. Harper, 421 N. 20th St., and Miechel C. Geddes, 4309 Vandaveer Rd., both of Billings, Mont. 59101
Filed May 2, 1994, Ser. No. 22,703
Term of patent 14 years
U.S. Cl. D8—51



361,249
STUD LOCATION MARKER
Robert W. Bonte, 6223 Shawnee Cir., Scotts, Mich. 49088
Filed Jun. 2, 1994, Ser. No. 23,885
Term of patent 14 years
U.S. Cl. D8—51



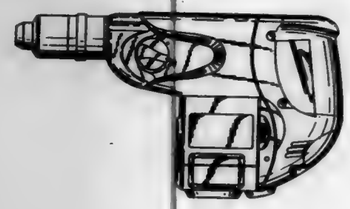
361,250
STEERING CLUTCH LIFTING BRACKET
Dan A. Heinrich, 2931 Shelley Dr., Grand Junction, Colo. 81503
Filed Dec. 21, 1993, Ser. No. 16,644
Term of patent 14 years
U.S. Cl. D8—54



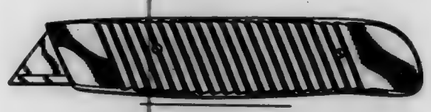
361,251
CHAIN SAW
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Apr. 19, 1994, Ser. No. 21,494
Term of patent 14 years
U.S. Cl. D8—65



361,252
ELECTRIC HAMMER
André De Neergaard, and Claude Roujon, both of Valence, France, assignors to Societe De Prospection et D'Inventions Techniques SPIT, Bourg-Les-Valence, France
Filed Mar. 29, 1994, Ser. No. 20,574
Claims priority, application France, Sep. 29, 1993, 93 4969
Term of patent 14 years
U.S. Cl. D8—69



361,253
UTILITY KNIFE
Charles D. McCoy, 1015 40th St., Sarasota, Fla. 34234
Filed Oct. 12, 1994, Ser. No. 30,164
Term of patent 14 years
U.S. Cl. D8—98



361,254
POCKET KNIFE
Alain Silberstein, 13 quai de Strasbourg, 25000 Besancon, France
Filed Jul. 5, 1994, Ser. No. 26,002
Term of patent 14 years
U.S. Cl. D8—99

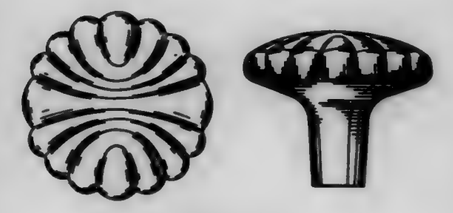
361,255
HANDLE
Jonathan Crinion, Toronto, Canada, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 24, 1994, Ser. No. 17,872
Term of patent 14 years
U.S. Cl. D8—301



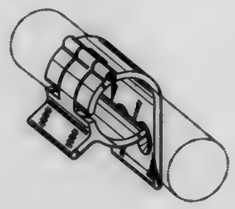
361,256
DOOR HANDLE
Jorma Vennola, Turku, Finland, assignor to Oskar Suomi Oy, Turku, Finland
Filed May 9, 1994, Ser. No. 22,630
Claims priority, application Finland, Nov. 9, 1993, 739/93
Term of patent 14 years
U.S. Cl. D8—307



361,257
KNOB
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Aug. 3, 1993, Ser. No. 11,364
The portion of the term of this patent subsequent to Feb. 28, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—312



361,258
WHEELCHAIR BACK PANEL SUPPORT BRACKET
Donald L. Helman, Fresno, Calif., assignor to Cozy Craft, Inc., Clovis, Calif.
Filed Jun. 28, 1993, Ser. No. 9,975
Term of patent 14 years
U.S. Cl. D8—354



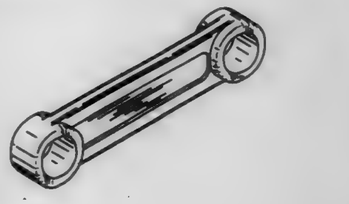
361,259
SUPPORT STRAP FOR WATER DRIP LINES
Francis X. LoJacono, Jr., Rte. 2, Box 172B, Templeton, Calif. 93465
Filed Feb. 10, 1994, Ser. No. 18,851
Term of patent 14 years
U.S. Cl. D8—356



361,260
PICTURE HANGER UNIT
Robert L. Trentham, HC 77 Box 133, Licking, Mo. 65542
Filed Mar. 28, 1994, Ser. No. 20,526
Term of patent 14 years
U.S. Cl. D8—373



361,261
SUSPENSION BAND
James D. Amburgey, Richardson, and Peter C. Hill, Dallas, both of Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,458
Term of patent 14 years
U.S. Cl. D8—499



361,262
FLUID CONTAINER
Ronald Lasker, 85 Mercer St., New York, N.Y. 10012
Filed Dec. 2, 1992, Ser. No. 2,162
Term of patent 14 years
U.S. Cl. D9—430



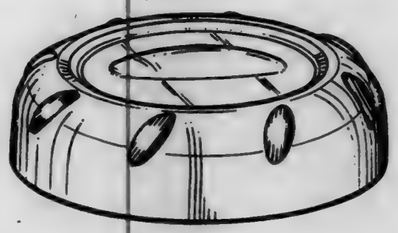
361,263
HAND GRIP FOR CARRYING ARTICLES
Robert A. Carmo, 407 Michel Pl., Placentia, Calif. 92670, and Edward A. Contreras, 14110 Las Puertas, La Mirada, Calif. 90638
Filed Mar. 18, 1994, Ser. No. 20,045
Term of patent 14 years
U.S. Cl. D9—434



361,264
INTEGRAL PLASTIC CARRYING HANDLE
Darrell E. West, Box 1, Borger, Tex. 79008-0001
Filed Jul. 25, 1994, Ser. No. 26,280
Term of patent 14 years
U.S. Cl. D9—434



361,265
LID FOR JAR
Andre Doxey, Cleveland Heights, Ohio, assignor to Rubbermaid Corporation, Wooster, Ohio
Filed Oct. 18, 1993, Ser. No. 14,235
Term of patent 14 years
U.S. Cl. D9—435



361,266
INK JET REFILL DISPENSING TIP WITH CAPTIVE ENCLOSURE
Harold Zuber, Union, N.J., assignor to Beres Industries, Inc., Lakewood, N.J.
Filed Sep. 3, 1993, Ser. No. 13,171
Term of patent 14 years
U.S. Cl. D9—440



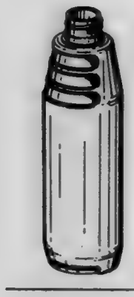
361,267
DISPENSING CONTAINER
Paul A. Harley, Poole, Christopher Harris, Oakham, and Brian R. Law, Leicester, all of United Kingdom, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Nov. 24, 1993, Ser. No. 15,712
Claims priority, application United Kingdom, May 28, 1993, 2031367
Term of patent 14 years
U.S. Cl. D9—515



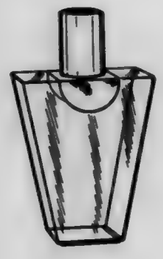
361,268
COMBINED BOTTLE AND CLOSURE
John W. Kingsbury, Cold Springs, N.Y., assignor to Coty, Inc., New York, N.Y.
Filed Sep. 30, 1994, Ser. No. 29,206
Term of patent 14 years
U.S. Cl. D9—523



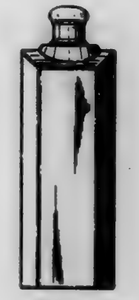
361,269
BOTTLE
Russell R. Fenton, and Elmer H. Goss, both of East Amherst, N.Y., assignors to FWJ Plastics, Inc., Tonawanda, N.Y.
Filed Aug. 8, 1994, Ser. No. 27,126
Term of patent 14 years
U.S. Cl. D9—540



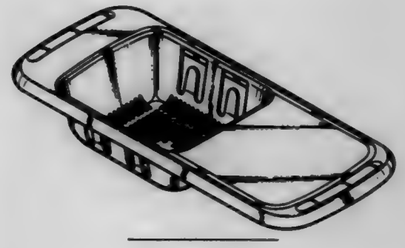
361,270
PERFUME BOTTLE
Peter Schneider, Königstein, and Jürgen Greubel, Heidenroth, both of Germany, assignors to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1994, Ser. No. 19,957
Claims priority, application Hague Agreement, Sep. 24, 1993, DMA/00293
Term of patent 14 years
U.S. Cl. D9—571



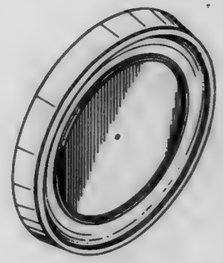
361,271
BOTTLE
Steven Goldstein, Geneva, and Christian Belce, Veyrier, both of Switzerland, assignors to Axions S.A., Geneva, Switzerland
Filed Aug. 25, 1994, Ser. No. 27,560
Term of patent 14 years
U.S. Cl. D9—572



361,272
CUTTING BOARD AND STRAINER
Charles W. Craft, Apple Creek, and Mitchell L. Wilgus, Akron, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 22, 1993, Ser. No. 13,248
Term of patent 14 years
U.S. Cl. D7—698



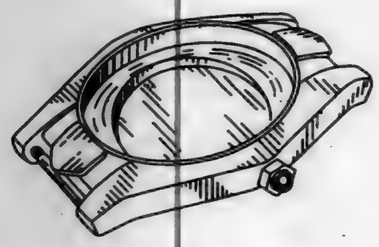
361,273
OUTDOOR INSTRUMENT HOUSING
Wade A. F. Maple, Sherrills Ford, N.C., assignor to The Little Tikes Company, Hudson, Ohio
Filed May 27, 1993, Ser. No. 8,821
Term of patent 14 years
U.S. Cl. D10—1



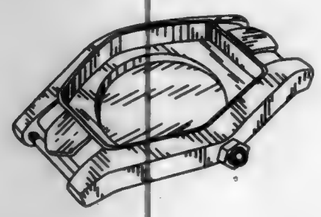
361,274
CASE FOR DIGITAL WRISTWATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Oct. 7, 1993, Ser. No. 14,649
Term of patent 14 years
U.S. Cl. D10—30



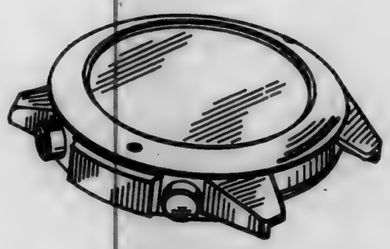
361,275
WRIST WATCH CASE
Urs Wyss, La Chaux-de-Fonds, Switzerland, assignor to Revillon Luxe S.A., Paris, France
Filed Jan. 13, 1994, Ser. No. 17,446
Claims priority, application Hague Agreement, Jul. 13, 1993, DM/026.682
Term of patent 14 years
U.S. Cl. D10—30



361,276
WRIST WATCH CASE
Urs Wyss, La Chaux-de-Fonds, Switzerland, assignor to Revillon Luxe S.A., Paris, France
Filed Jan. 13, 1994, Ser. No. 17,449
Claims priority, application Hague Agreement, Jul. 13, 1993, DM/026.682
Term of patent 14 years
U.S. Cl. D10—30



361,277
ANALOG WATCH CASE
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Nov. 7, 1994, Ser. No. 30,713
Term of patent 14 years
U.S. Cl. D10—30

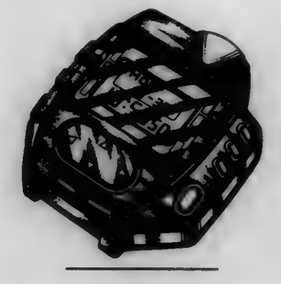


361,278
WRISTWATCH CASE
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Dec. 19, 1994, Ser. No. 32,472
Term of patent 14 years
U.S. Cl. D10—30

361,279
COMBINED WRISTWATCH AND COMPASS
Eddy Burgener, Moutier, Switzerland, assignor to Vuarnet Watches SA, Collonge-Bellerive, Switzerland
Filed Jun. 22, 1992, Ser. No. 903,539
Claims priority, application Hague Agreement, Dec. 24, 1991, DM/021538
Term of patent 14 years
U.S. Cl. D10—31



361,280
WRIST WATCH WITH GAME AND WIRELESS REMOTE CONTROLLER FOR ELECTRONIC INSTRUMENTS
Shigeru Hanagata, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1994, Ser. No. 25,067
Term of patent 14 years
U.S. Cl. D10—31



361,281
WRISTWATCH
Daniel Roth, Le Sentier, Switzerland, assignor to Daniel Roth SA, Le Sentier, Switzerland
Filed Jan. 14, 1994, Ser. No. 17,494
Claims priority, application Hague Agreement, Sep. 14, 1993, DMA/002287
Term of patent 14 years
U.S. Cl. D10—32



361,282
WATCH
Marina Bulgari, Montecarlo, Italy, assignor to Marina B Creation S.A., Vaduz, Liechtenstein
Filed Jan. 24, 1994, Ser. No. 17,838
Claims priority, application WIPO, Jul. 30, 1993, DMA/002240
Term of patent 14 years
U.S. Cl. D10—32



361,283
WRISTWATCH
Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari SpA, Rome, Italy
Filed Jul. 29, 1994, Ser. No. 26,485
Claims priority, application WIPO, Jan. 31, 1994, DMA002411
Term of patent 14 years
U.S. Cl. D10—32



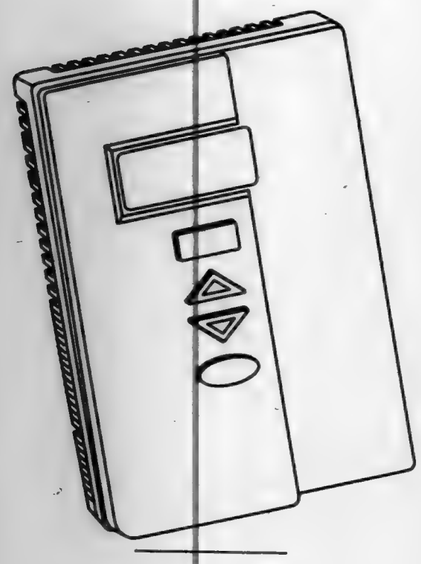
361,284
WRIST WATCH
Toshio Nakai, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 6, 1994, Ser. No. 20,988
Term of patent 14 years
U.S. Cl. D10—38



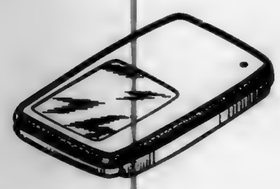
361,285
UNDERWATER WATCH
Paolo Bulgari, Rome, Italy, assignor to Bulgari Time (Switzerland) S.A., Neuchatel, Switzerland
Filed Jan. 26, 1994, Ser. No. 17,943
Claims priority, application WIPO, Jul. 27, 1993, DM/026.813
Term of patent 14 years
U.S. Cl. D10—39



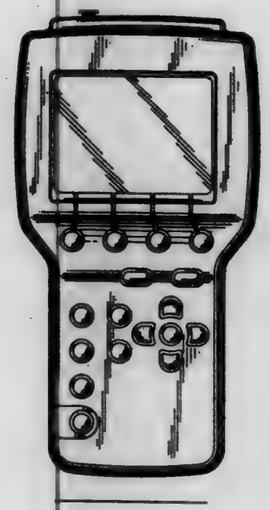
361,286
HOUSING OF A THERMOSTAT
John L. Smith, 216 Rose Lawn Avenue, Toronto, Ontario, Canada M4R 1E9 , and Kenneth H. Hollebone, 17 Symons Street, Etobicoke, Ontario, Canada M8V 1T5
Filed Apr. 26, 1993, Ser. No. 7,533
Term of patent 14 years
U.S. Cl. D10—50



361,287
TEMPERATURE MEASURING HOUSING
Stephen E. Guy, Longview, Tex.; Louis E. Sulfstede, Ft. Wayne, Ind.; Eric Hillmer, Toronto, Canada, and Stephen Bartlett, London, United Kingdom, assignors to American Standard Inc., Piscataway, N.J.
Filed Jan. 10, 1994, Ser. No. 24,210
Term of patent 14 years
U.S. Cl. D10—80



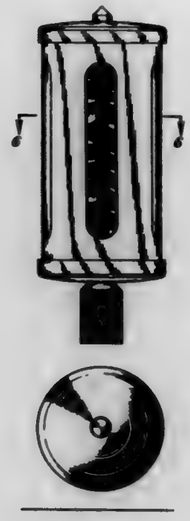
361,288
HANDHELD TELEVISION MONITORING INSTRUMENT
Paul H. Chandwick, Beaverton; Scott R. Ketterer, Hillsboro, both of Oreg.; Thor R. Calverhouse, Kirkland, Wash., and Robert C. Prochetal, Aloha, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Mar. 18, 1994, Ser. No. 20,097
Term of patent 14 years
U.S. Cl. D10—78



361,289
LIGHTNING DETERRENT
W. Gregg Fawthrop, 204B Cross Keys Rd., Berlin, N.J. 08009
Filed Dec. 2, 1994, Ser. No. 31,669
Term of patent 14 years
U.S. Cl. D10—105



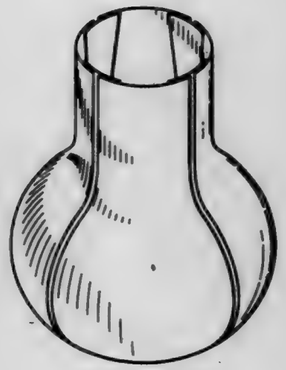
361,290
LIGHTNING DETERRENT
W. Gregg Fawthrop, 204B Cross Keys Rd., Berlin, N.J. 08009
Filed Dec. 2, 1994, Ser. No. 31,670
Term of patent 14 years
U.S. Cl. D10—105



361,291
FLORAL/ORNAMENT HOLDER FOR WINE BOTTLE
Angela Chavalas, 481 Constitution Dr., Danville, Calif. 94526, assignor to Angela Chavalas, Danville, Calif.
Filed May 2, 1994, Ser. No. 22,154
Term of patent 14 years
U.S. Cl. D11—143



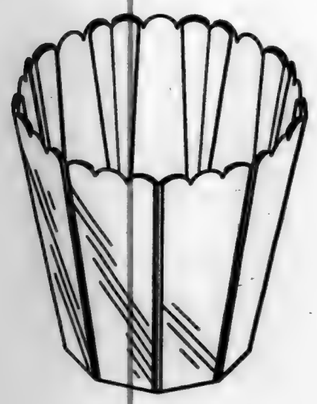
361,292
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 614,454, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, which is a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,682
Term of patent 14 years
U.S. Cl. D11—164



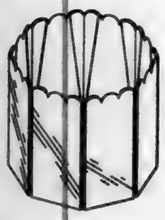
361,293
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,902
Term of patent 14 years
U.S. Cl. D11—164



361,294
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,906
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



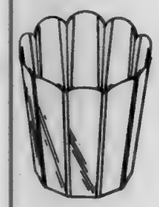
361,295
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,356
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



361,296
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,550
The portion of the term of this patent subsequent to Nov. 17, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



361,297
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,562
Term of patent 14 years
U.S. Cl. D11—164



361,298
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,563
Term of patent 14 years
U.S. Cl. D11—164



361,299
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,565
The portion of the term of this patent subsequent to Feb. 11, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



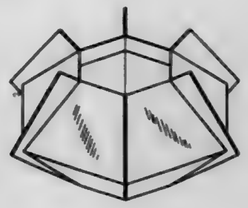
361,300
FLOWER POT COVER
Donald E. Weder, Joseph G. Straeter, both of Highland, Ill., and Paul A. Fantz, Imperial, Mo., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 22, 1992, Ser. No. 794
Term of patent 14 years
U.S. Cl. D11—164



361,301
FLOWER POT COVER WITH FINS
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed May 14, 1993, Ser. No. 8,416
Term of patent 14 years
U.S. Cl. D11—164



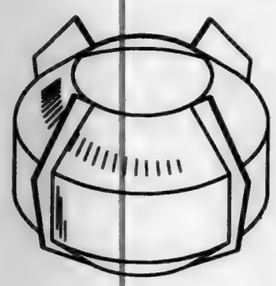
361,302
FLOWER POT COVER WITH FINS
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed May 17, 1993, Ser. No. 8,437
Term of patent 14 years
U.S. Cl. D11—164



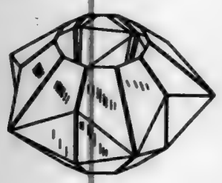
361,303
FLOWER POT COVER WITH FINS
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed May 24, 1993, Ser. No. 8,736
Term of patent 14 years
U.S. Cl. D11—164



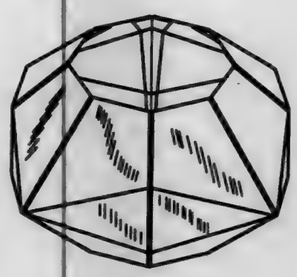
361,304
FLOWER POT COVER WITH FINS
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed May 24, 1993, Ser. No. 8,737
Term of patent 14 years
U.S. Cl. D11—164



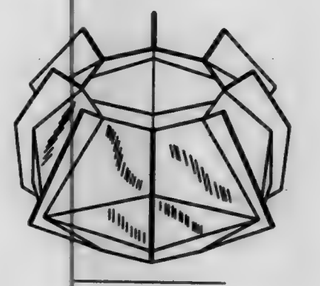
361,305
FLOWER POT COVER
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed Jun. 10, 1993, Ser. No. 9,390
Term of patent 14 years
U.S. Cl. D11—164



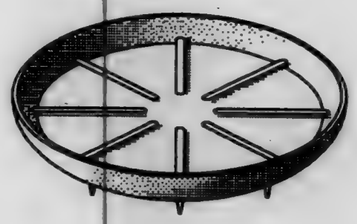
361,306
FLOWER POT COVER
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed Jun. 9, 1993, Ser. No. 9,389
Term of patent 14 years
U.S. Cl. D11—164



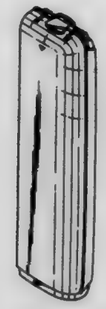
361,307
FLOWER POT COVER WITH FINS
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed Jun. 16, 1993, Ser. No. 9,609
Term of patent 14 years
U.S. Cl. D11—164



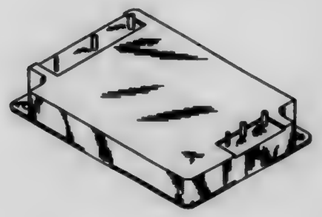
361,308
PLANT AND TREE CONTAINER PEDESTAL SUPPORT SAUCER
Carol J. Loran, 38478 Boulder Canyon Dr., Boulder, Colo. 80302
Filed Apr. 8, 1994, Ser. No. 21,047
Term of patent 14 years
U.S. Cl. D11—164



361,309
BATTERY HOUSING FOR A RADIO TELEPHONE
Adam White, London, United Kingdom, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Dec. 7, 1993, Ser. No. 16,083
Claims priority, application United Kingdom, Jun. 10, 1993, 2031661
Term of patent 14 years
U.S. Cl. D13—103



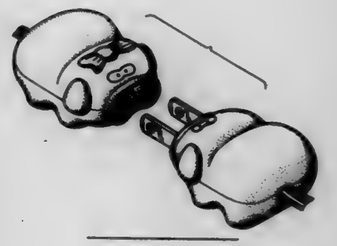
361,310
NOISE FILTER
Tamaki Kawamura, Nagaoka, Japan, assignor to Nemic-Lambda K.K., Japan
Filed Apr. 7, 1993, Ser. No. 6,804
Claims priority, application Japan, Oct. 12, 1992, 4-30012
Term of patent 14 years
U.S. Cl. D13—110



361,311
COMBINED MOTORCYCLE ENGINE GUARD AND HIGHWAY FOOTREST
Per Lindby, 23412 Pacific Park Dr., Apt. 29-H, Aliso Viejo, Calif. 92656
Filed Apr. 15, 1994, Ser. No. 21,409
Term of patent 14 years
U.S. Cl. D12—126

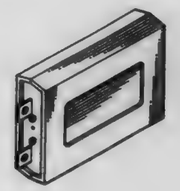


361,312
ELECTRICAL CONNECTOR FOR AN EXTENSION LINE
Wen J. Chen, No. 16, Dong Hwa St., Shih Hyy Jeen, Taipei, Taiwan
Filed Aug. 11, 1994, Ser. No. 27,031
Term of patent 14 years
U.S. Cl. D13—139



361,313
ELECTRICAL CONNECTOR
Noriaki Sai, Yokohama; Shigeru Isohata, Machida; Yasuyoshi Fukao, and Toshiyuki Sekimori, both of Toyota, all of Japan, assignors to The Whitaker Corporation, Wilmington, Del. and Toyota Motor Corporation, Aichi, Japan
Filed Mar. 18, 1994, Ser. No. 20,087
Claims priority, application Japan, Sep. 20, 1993, 5-28083
Term of patent 14 years
U.S. Cl. D13—146

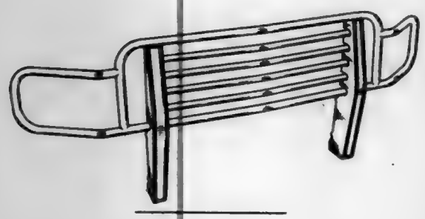
361,314
POWER SURGE PROTECTOR
Barry D. Ryan, Coeur D'Alene, Id., assignor to A.C. Data Systems of Idaho, Inc., Hayden Lake, Id.
Filed Dec. 2, 1994, Ser. No. 31,688
Term of patent 14 years
U.S. Cl. D13—160



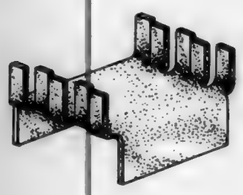
361,315
ELECTRICAL SURGE SUPPRESSOR
Mark T. Wedell, Germantown, Tenn.; Kevin W. Ponds, Olive Branch, Miss., and Debbie M. Booth, Memphis, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.
Filed Oct. 14, 1993, Ser. No. 14,160
Term of patent 14 years
U.S. Cl. D13—160



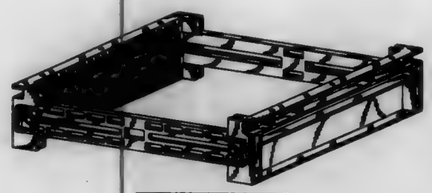
361,316
VEHICULAR GRILL GUARD
Robert J. Orth, Sr., Richardson; Jerry R. Miller, Clifton, and Thomas G. Cleveland, Morgan, all of Tex., assignors to Go Industries, Inc., Richardson, Tex.
Filed May 19, 1994, Ser. No. 23,142
Term of patent 14 years
U.S. Cl. D12—171



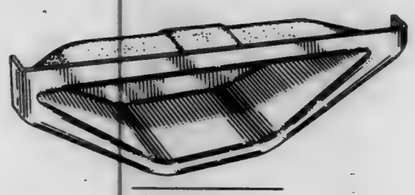
361,317
HEAT SINK DEVICE
Ronald A. Harmon, Hudson, Mass., and Jimmie D. Felps, Colorado Springs, Colo., assignors to Wakefield Engineering, Inc., Wakefield, Mass.
Filed May 26, 1994, Ser. No. 23,518
Term of patent 14 years
U.S. Cl. D13—179



361,318
CARRIER FOR PRINTED CIRCUITS
Mazal Alkelai, Tel-Aviv, Israel, assignor to Lasroc Ltd., Rishon Lezion, Israel
Filed Mar. 29, 1994, Ser. No. 20,604
Claims priority, application Israel, Sep. 29, 1993, 21433
Term of patent 14 years
U.S. Cl. D13—182



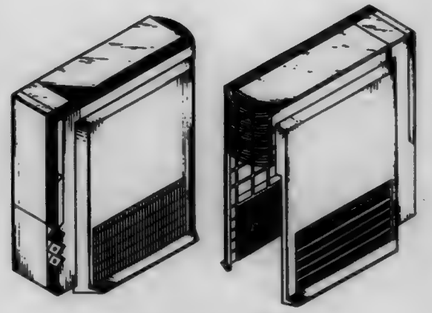
361,319
VEHICULAR STEP
Robert J. Orth, Sr., Richardson, and Kevin W. Wallace, Wylie, both of Tex., assignors to Go Industries, Inc., Richardson, Tex.
Filed Mar. 21, 1994, Ser. No. 20,136
Term of patent 14 years
U.S. Cl. D12—203



361,320
WHEEL COVER FRONT FACE
Robert D. Wise, Akron, Ohio, assignor to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 13,761
Term of patent 14 years
U.S. Cl. D12—209



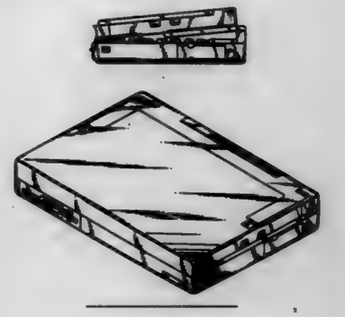
361,321
WORKSTATION HOUSING
Frod J. Berkowitz, Los Gatos; Thomas D. Carroll; Eric M. Monsef, both of San Jose, and Robert A. Musetti, Cupertino, all of Calif., assignors to HaL Computer Systems, Inc., Campbell, Calif.
Filed Nov. 29, 1993, Ser. No. 15,786
Term of patent 14 years
U.S. Cl. D14—102



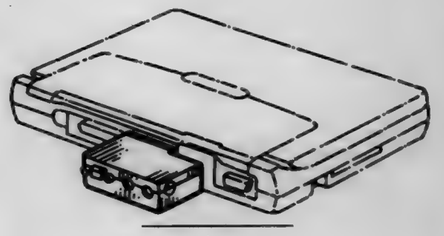
361,322
PORTABLE PERSONAL COMPUTER
Kazuhiko Yamazaki, Hiratuka, and Hisashi Shima, Fujisawa, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 11, 1994, Ser. No. 17,358
Claims priority, application Japan, Jul. 23, 1993, 5-22748
Term of patent 14 years
U.S. Cl. D14—106



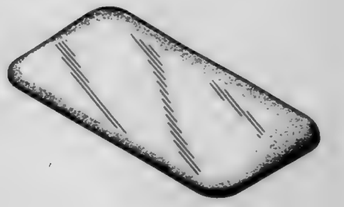
361,323
PERSONAL COMPUTER HOUSING
Kazuhiko Yamazaki, Hiratuka, and Hisashi Shima, Fujisawa, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 7, 1994, Ser. No. 17,292
Claims priority, application Japan, Jul. 23, 1993, 5-22749
Term of patent 14 years
U.S. Cl. D14—106



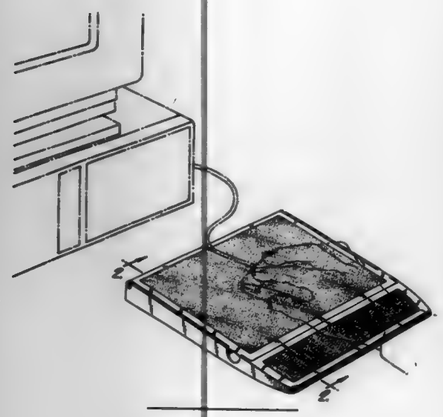
361,324
EXPANSION UNIT FOR INCREASING THE FUNCTIONS OF A NOTEBOOK COMPUTER
Rickey N. Rogers, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Jan. 27, 1994, Ser. No. 18,029
Term of patent 14 years
U.S. Cl. D14—107



361,325
WRIST SUPPORT FOR A CALCULATOR
Margaret R. Massey, 11721 Shroyer Dr., Oklahoma City, Okla. 73170
Filed Jul. 7, 1992, Ser. No. 909,808
Term of patent 14 years
U.S. Cl. D14—114



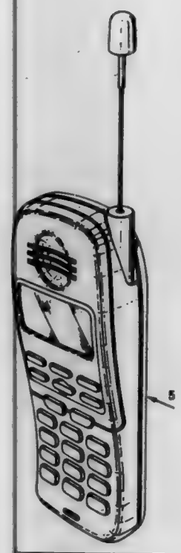
361,326
COMBINED MOUSE PAD AND STORAGE CONTAINER COMBINED
Michael J. Schriner, Santa Fe, Calif., assignor to Hunt Holdings, Inc., Wilmington, Del.
Filed Mar. 30, 1994, Ser. No. 20,659
Term of patent 14 years
U.S. Cl. D14—114



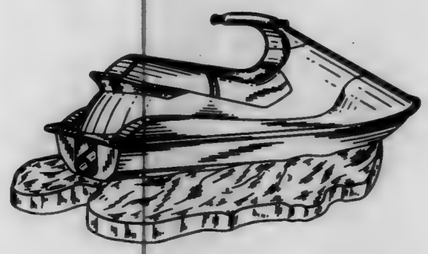
361,327
COMPUTER MAINFRAME FRONT PANEL
Jason Yang, No. 30, Jen Hsieh Lane, Ma Hsing Village, Hsiu Shui Hsiang, Changhwa Hsien,
Filed May 6, 1994, Ser. No. 22,507
Term of patent 14 years
U.S. Cl. D14—115



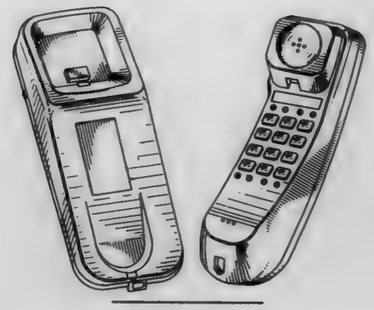
361,328
PORTABLE TELEPHONE
Adam White, London, England, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jul. 25, 1994, Ser. No. 26,295
Claims priority, application United Kingdom, Mar. 1, 1994, 2037444
Term of patent 14 years
U.S. Cl. D14—138



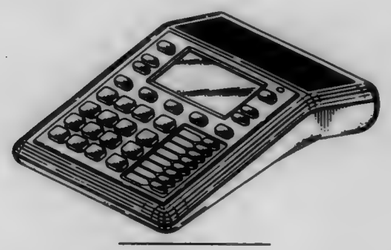
361,329
JET SKI TELEPHONE SET
Kash Gobindram, Ronkonkoma, N.Y., assignor to Kash N Gold, Ltd., Ronkonkoma, N.Y.
Filed Dec. 13, 1993, Ser. No. 16,272
Term of patent 14 years
U.S. Cl. D14—143



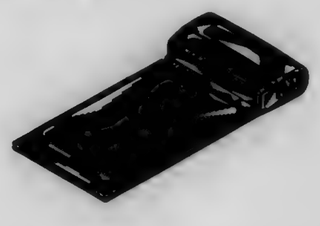
361,330
TELEPHONE
Anthony Solomita, Norwalk; Barry M. Haber, Westport, both of Conn., and Robert Taylor, Clarksburg, N.J., assignors to Conair Corporation, Stamford, Conn.
Filed Feb. 14, 1994, Ser. No. 18,648
Term of patent 14 years
U.S. Cl. D14—149



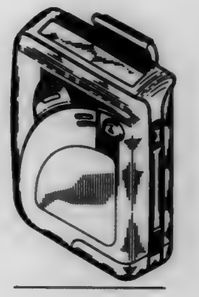
361,331
TELEPHONE APPARATUS
Keith R. Bryant, Stevenage, England, assignor to SDX Business Systems Limited, Hertfordshire, United Kingdom
Filed Jun. 28, 1994, Ser. No. 25,160
Claims priority, application United Kingdom, Apr. 7, 1994, 2038262
Term of patent 14 years
U.S. Cl. D14—149



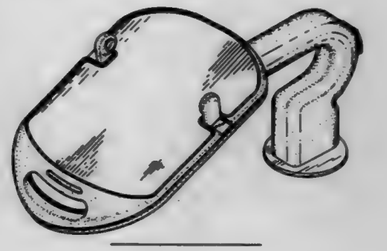
361,332
SELECTIVE CALL MESSAGE CARD
William J. Scheid, Coral Springs, and David M. Dickirson, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 31, 1994, Ser. No. 18,213
Term of patent 14 years
U.S. Cl. D14—191



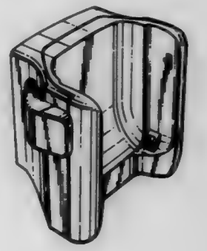
361,333
PAGER
William J. Scheid, Coral Springs, and Charles A. Acter, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 2, 1994, Ser. No. 22,221
Term of patent 14 years
U.S. Cl. D121—191



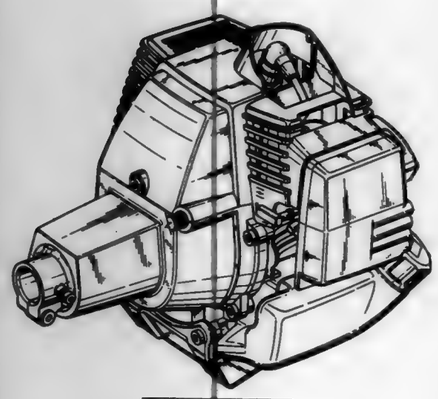
361,334
TELEPHONE RACK
Thomas Chan, 8F-6, No. 100, Sec.2, Hoping E Rd., Taipei, Taiwan
Filed Dec. 29, 1993, Ser. No. 16,921
Term of patent 14 years
U.S. Cl. D14—251



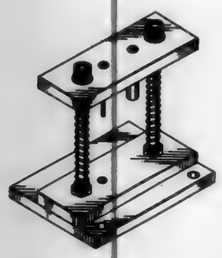
361,335
HOLDER FOR A PORTABLE TELEPHONE
Tomek Rudkiewicz, and Robert Hellier, both of Turku, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jan. 21, 1994, Ser. No. 24,822
Claims priority, application United Kingdom, Dec. 22, 1993, 2035993
Term of patent 14 years
U.S. Cl. D14—253



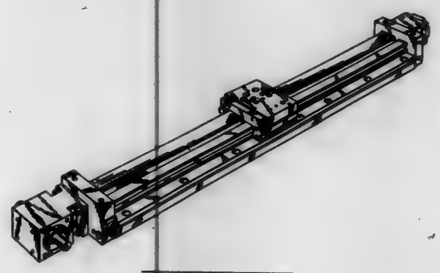
361,336
ENGINE FOR A TRIMMER
Michael Tinius, Elchingen, Germany, assignor to Andreas Stihl, Waiblingen, Germany
Filed May 5, 1994, Ser. No. 22,533
Claims priority, application Germany, Nov. 5, 1993, M 93 08 652.0
Term of patent 14 years
U.S. Cl. D15—1



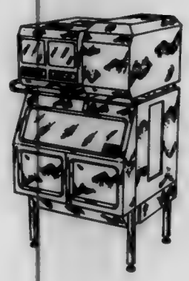
361,337
PRESS JIG FOR DENTAL HANDPIECE BEARINGS
Henry R. Hardy, 215 Rabbit Run Rd., Osteen, Fla. 32746
Filed Oct. 11, 1994, Ser. No. 29,568
Term of patent 14 years
U.S. Cl. D15—123



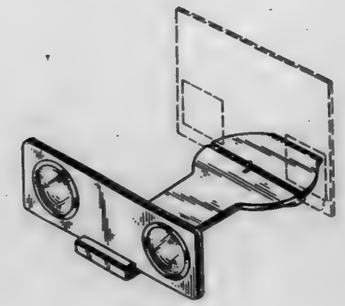
361,338
LINEAR SLIDES WITH TOOTHED BELT DRIVERS
Siegfried Bauer, Maisbach-Volkershausen, Germany, assignor to Deutsche Star GmbH, Schweinfurt, Germany
Division of Ser. No. 16,498, Dec. 16, 1993, which is a division of Ser. No. 795,640, Nov. 21, 1991, Pat. No. Des. 345,041. This application Sep. 1, 1994, Ser. No. 27,932
Claims priority, application Germany, May 22, 1991, M 91 03 755.7
Term of patent 14 years
U.S. Cl. D15—199



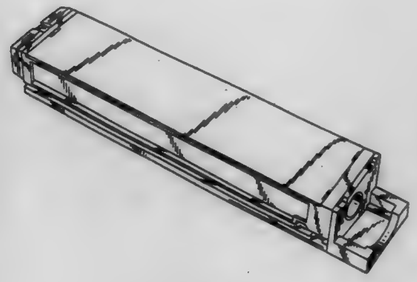
361,339
CONTAINER INSPECTION MACHINE
Monti D. Emery, Elmira, N.Y., assignor to Embart Glass Machinery Investments Inc., Wilmington, Del.
Filed Sep. 9, 1994, Ser. No. 28,207
Term of patent 14 years
U.S. Cl. D15—199



361,340
STEREOSCOPIC VIEWER
Timothy H. Bush, 19 Mohawk Dr., Clarendon Hills, Ill. 60514
Filed Nov. 5, 1993, Ser. No. 14,941
Term of patent 14 years
U.S. Cl. D16—222

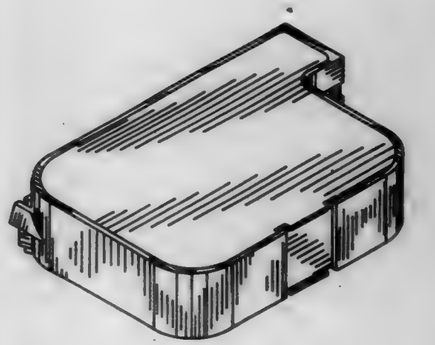


361,341
DEVELOPER-SUPPLYING UNIT FOR AN IMAGE FORMING APPARATUS
Susumu Komaki, Kobe; Masami Taniguchi, Osaka, and Syuji Fujisawa, Kadoma, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 6,297, Mar. 25, 1993, abandoned. This application Oct. 28, 1993, Ser. No. 14,610
Claims priority, application Japan, Jan. 8, 1993, 5-293; Jun. 30, 1993, 5-20428
Term of patent 14 years
U.S. Cl. D18—43



361,342
TAPE CARTRIDGE FOR TAPE PRINTER
Mitsuharu Hattori, Nagoya, and Koshiro Yamaguchi, Kasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Feb. 18, 1994, Ser. No. 18,952
Claims priority, application Japan, Aug. 19, 1993, 5-25210; Aug. 19, 1993, 5-25211
Term of patent 14 years
U.S. Cl. D18—56

361,343
COMPACT INK-JET PRINT CARTRIDGE
George Kaplinsky; Timothy J. Carlin, both of San Diego; David W. Swanson, Escondido, and Mindy A. Hamlin, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 7,763, Apr. 30, 1993, Pat. No. Des. 353,156. This application Aug. 19, 1994, Ser. No. 27,339
Term of patent 14 years
U.S. Cl. D18—56



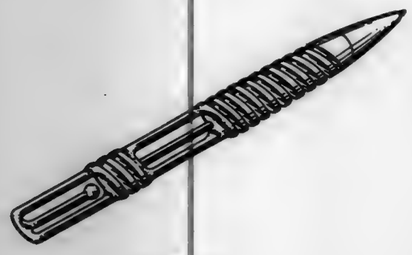
361,344
OAR-SHAPED PEN
John H. Cugley, "Woodlands", Chilling Street, Tyes Cross Sharpthorne, Nr. East Grinstead, West Sussex RH19 4JE, United Kingdom
Filed Jun. 28, 1994, Ser. No. 25,166
Term of patent 14 years
U.S. Cl. D19—42



361,345
WRITING INSTRUMENT
Barnabas C. Chen, 1856 Via Entrada, Roland Heights, Calif. 91768
Filed Mar. 11, 1994, Ser. No. 19,833
Term of patent 14 years
U.S. Cl. D19—49



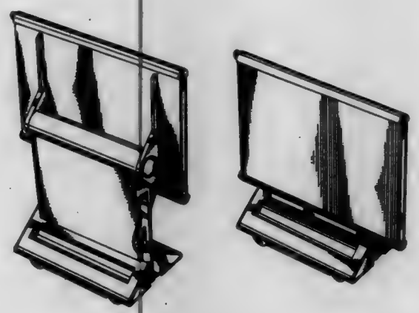
361,346
WRITING INSTRUMENT
Gary D. Johnson, 151 Hudson St., New York, N.Y. 10013
Filed Jun. 16, 1994, Ser. No. 24,591
Term of patent 14 years
U.S. Cl. D19—50



361,347
WRITING BOARD
Philip S. Adler, 1034 Selby Ave., Los Angeles, Calif. 90024
Filed Jan. 11, 1994, Ser. No. 17,325
Term of patent 14 years
U.S. Cl. D19—52



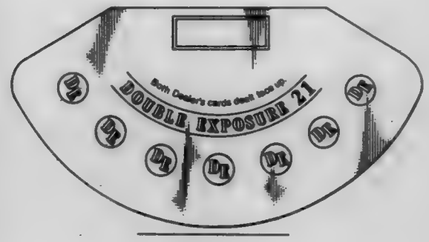
361,348
MODULARIZED VISUAL TRAINING AID FOR CLASSROOM INSTRUCTION
Eric J. Mueller; Phillip C. Dretzka, both of Minneapolis, and Nancy A. Clark, Waseca, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.
Filed Aug. 12, 1994, Ser. No. 27,096
Term of patent 14 years
U.S. Cl. D19—62



361,349
DESK-MOUNT FILING POCKETS
Bernd Brüsing, Ulm/Donau, Germany, assignor to Helit Innovative Buroprodukte GmbH, Kierspe, Germany
Filed Apr. 8, 1994, Ser. No. 21,053
Claims priority, application Germany, Oct. 13, 1993, M9308102.2
Term of patent 14 years
U.S. Cl. D19—90

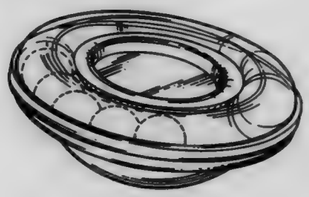


361,350
GAME BOARD
Kyle Nelson, Las Vegas, Nev., assignor to Bob Stupak, Las Vegas, Nev.
Filed Jun. 14, 1994, Ser. No. 24,466
Term of patent 14 years
U.S. Cl. D21—37

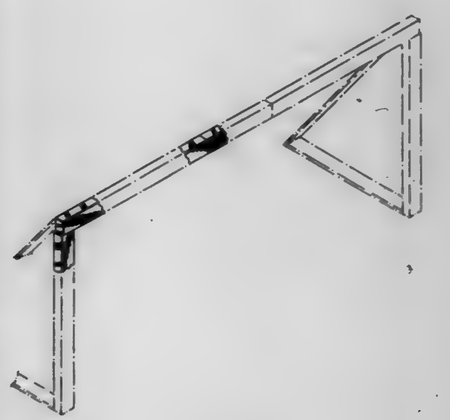


361,351
KANGAROO ROCKER
Stephen T. Smith, Richmond, and Richard J. Mueck, Kew, both of Australia, assignors to Hartman Leisure Australia Pty Ltd., Cheltenham, Australia
Filed Feb. 28, 1994, Ser. No. 19,333
Claims priority, application Australia, Sep. 1, 1993, 2676/93
Term of patent 14 years
U.S. Cl. D21—69

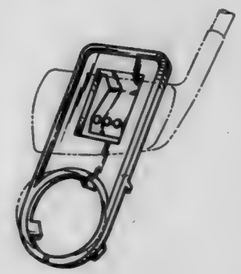
361,352
SPINNING TOY
Lois E Veraguth, Cleveland Heights, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed May 16, 1994, Ser. No. 22,983
Term of patent 14 years
U.S. Cl. D21—92



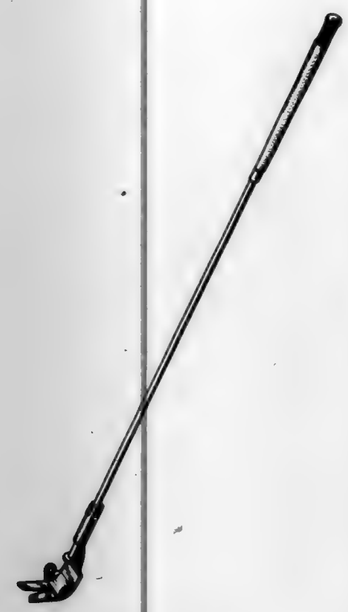
361,353
COMBINED CORNER AND SPLICE JOINT AND FASTENER FOR A SOCCER GOAL
Daniel R. Smith, 2918 Ferguson Rd., Cincinnati, Ohio 45238
Filed Aug. 9, 1993, Ser. No. 11,566
Term of patent 14 years
U.S. Cl. D21—200



361,354
GOLF BALL RETRIEVER
Bret R. Bailey, 47988 N. Jefferson, New Baltimore, Mich. 48047, and Lawrence E. Combs, 2700 N. Hayden, Ste. 3088, Scottsdale, Ariz. 85257
Filed Jun. 7, 1994, Ser. No. 24,058
Term of patent 14 years
U.S. Cl. D21—206



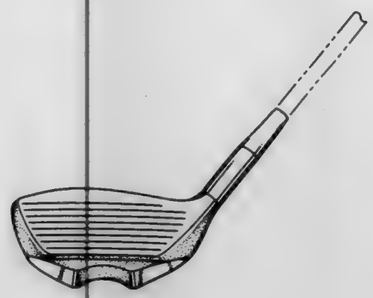
361,355
GOLF BALL AND TEE SETTER
David K. Hummer, 6101 N. 17th Ave., Phoenix, Ariz. 85015
Filed Jul. 11, 1994, Ser. No. 25,767
Term of patent 14 years
U.S. Cl. D21—208



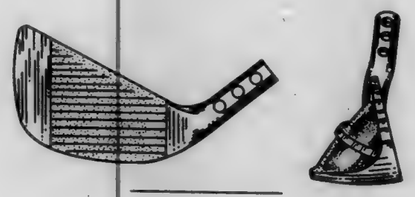
361,356
GOLF CLUB HEAD
Pierre Feche, Cran Gevrier; Jean-Francois Bernault, Annecy, both of France, and Pascal Stolz, Del Mar, Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Apr. 29, 1993, Ser. No. 7,658
The portion of the term of this patent subsequent to Jan. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—214



361,357
GOLF CLUB HEAD
Randy D. Henry, and Ross D. Henry, both of Hayden, Id., assignors to Henry-Griffitts, Inc., Hayden Lake, Id.
Filed Mar. 30, 1994, Ser. No. 20,644
Term of patent 14 years
U.S. Cl. D21—214



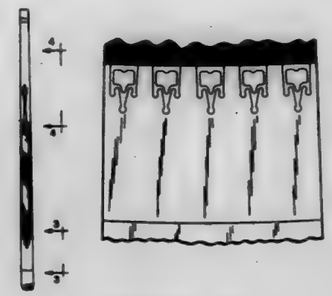
361,358
GOLF CLUB HEAD
Samuel P. Simmons, Grass Valley, Calif., assignor to Alien Sport, Inc., Mountain View, Calif.
Filed Apr. 11, 1994, Ser. No. 21,216
Term of patent 14 years
U.S. Cl. D21—220



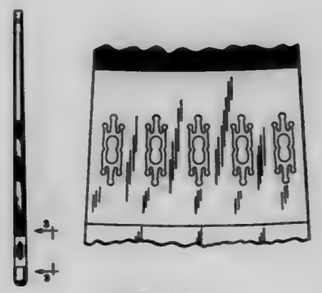
361,359
CUE STICK
Daniel Janes, Towson, Md., assignor to Brunswick Bowling & Billiards, Muskegon, Mich.
Filed Jul. 20, 1993, Ser. No. 10,897
Term of patent 14 years
U.S. Cl. D21—232



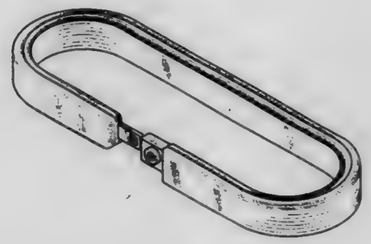
361,360
CUE STICK
Daniel Janes, Towson, Md., assignor to Brunswick Bowling & Billiards, Muskegon, Mich.
Filed Jul. 20, 1993, Ser. No. 10,901
Term of patent 14 years
U.S. Cl. D21—232



361,361
CUE STICK
Daniel Janes, Towson, Md., assignor to Brunswick Bowling & Billiards, Muskegon, Mich.
Filed Jul. 20, 1993, Ser. No. 10,902
Term of patent 14 years
U.S. Cl. D21—232



361,362
LIFE BELT
Walter L. Hoard, Rte. 3 Box 412, Everett, Pa. 15537
Filed Apr. 25, 1994, Ser. No. 21,779
Term of patent 14 years
U.S. Cl. D21—238



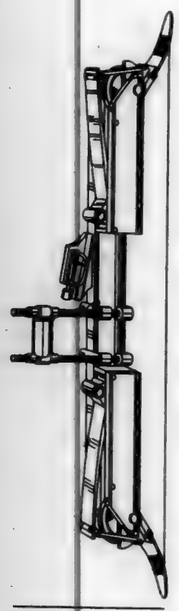
361,363
CABANA
Blake R. Sandberg, 2033 Commodore, Newport Beach, Calif. 92660, and Brian W. Sandberg, 444 Cabrillo Ter., Corona del Mar, Calif. 92662
Filed Jan. 31, 1994, Ser. No. 18,134
Term of patent 14 years
U.S. Cl. D21—253



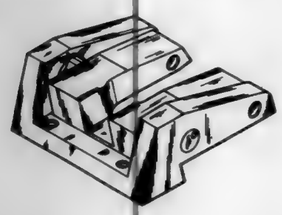
361,364
INFLATABLE TENT
Loren Winters, 150 Valley View Dr., Sequim, Wash. 98382
Filed May 3, 1994, Ser. No. 22,336
Term of patent 14 years
U.S. Cl. D21—253



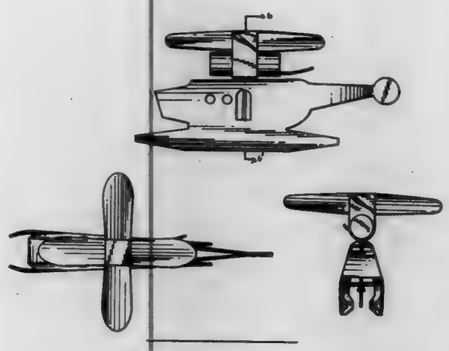
361,365
TWIN LIMB COMPOUND BOW
Gerard A. LaHaise, Sr., R.D. 1 Box 112, Bechtelsville, Pa. 19505
Filed Aug. 2, 1993, Ser. No. 11,328
Term of patent 14 years
U.S. Cl. D22—107



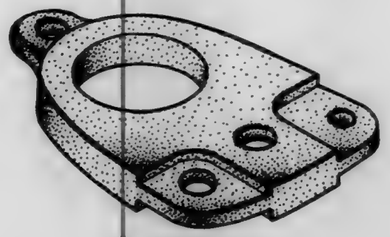
361,366
ADJUSTABLE REAR SIGHT FOR A FIREARM
Ashley C. Emerson, Fort Worth, Tex., assignor to Miniature Machine Corp., Ft. Worth, Tex.
Filed Jan. 12, 1994, Ser. No. 17,375
Term of patent 14 years
U.S. Cl. D22—109



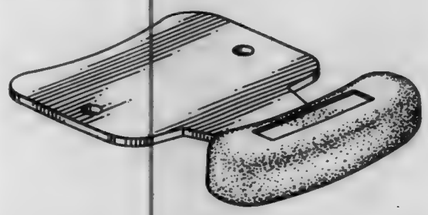
361,367
TOY HELICOPTER PYROTECHNIC DEVICE
Sai Fan Shair, Hong Kong, Hong Kong, assignor to Shiu Fung Fireworks Company Limited, Kowloon, Hong Kong
Filed Jan. 12, 1994, Ser. No. 17,413
Term of patent 14 years
U.S. Cl. D22—112



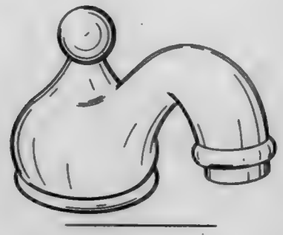
361,368
KNOT TIGHTENER FOR FISH HOOK LINE
Gerald Y. Sugai, 4304 Springfield St., Simi Valley, Calif. 93063
Filed Mar. 24, 1994, Ser. No. 20,343
Term of patent 14 years
U.S. Cl. D22—149



361,369
TOILET SEAT HANDLE
Mike Garner, Stockton, Calif., assignor to Auberge Products, Stockton, Calif.
Filed Feb. 22, 1994, Ser. No. 19,059
Term of patent 14 years
U.S. Cl. D23—252



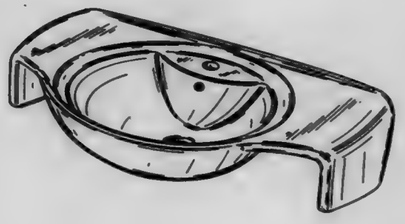
361,370
FAUCET
Wolfgang Fabian, Mannheim, Germany, assignor to American Standard Companies Inc., Piscataway, N.J.
Filed Apr. 6, 1994, Ser. No. 19,763
Term of patent 14 years
U.S. Cl. D23—257



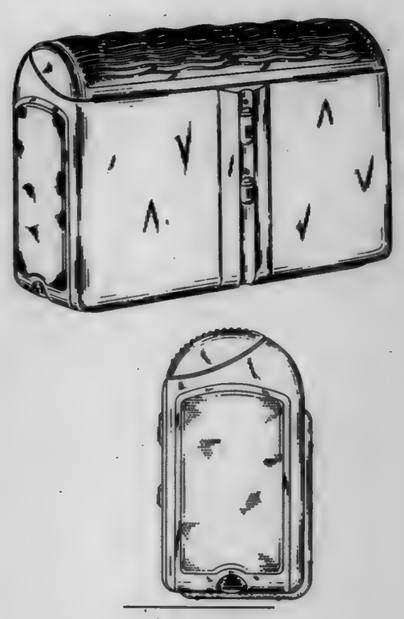
361,371
PRESSURE CLEARING DEVICE FOR CLEANING CONDUITS
Raymond McQuillan, 140 Cedar Ave., Rockville Centre, N.Y. 11570
Filed Jun. 19, 1992, Ser. No. 902,294
Term of patent 14 years
U.S. Cl. D23—259



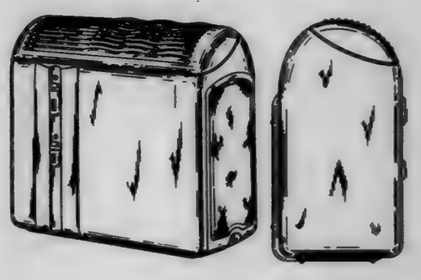
361,372
DESIGN FOR A LAVATORY
Axel Enthoven, Wijnegen, Belgium, assignor to American Standard Inc., Piscataway, N.J.
Filed Sep. 20, 1993, Ser. No. 13,209
Term of patent 14 years
U.S. Cl. D23—293.1



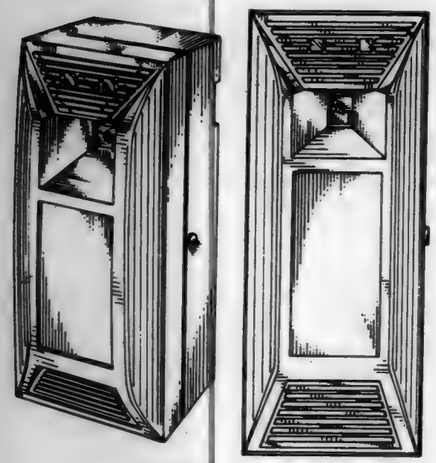
361,373
AIR CLEANER
Ronald L. Muller, Old Saybrook, Conn., assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 24, 1994, Ser. No. 23,387
Term of patent 14 years
U.S. Cl. D23—364



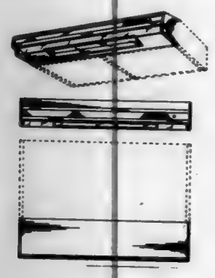
361,374
AIR CLEANER
Ronald L. Muller, Old Saybrook, Conn., assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 24, 1994, Ser. No. 23,411
Term of patent 14 years
U.S. Cl. D23—364



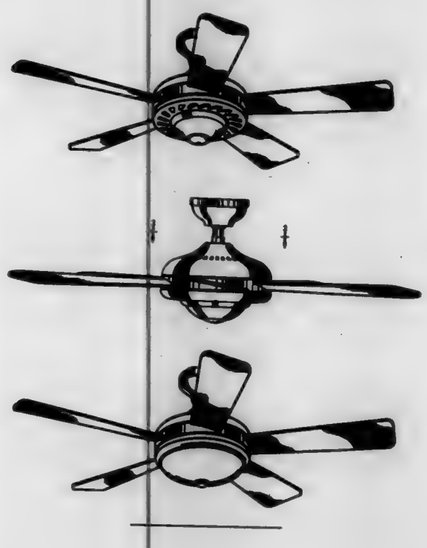
361,375
AEROSOL DISPENSING CABINET
Kevin J. Gallagher, and Jeffrey J. Miller, both of Atlanta, Ga., assignors to AMREP, Inc., Marietta, Ga.
Filed Aug. 17, 1994, Ser. No. 27,284
Term of patent 14 years
U.S. Cl. D23—366



361,376
FRONT PORTION OF A KITCHEN HOOD
Paul Isabelle; Aldo Balatti, both of St-Augustin de Desmaures, and Claude Labrecque, Mont St-Hilaire, all of Canada, assignors to Venmar Ventilation Inc., Drummondville, Canada
Filed Aug. 27, 1993, Ser. No. 12,261
Claims priority, application Canada, Aug. 26, 1993, 26-08-93-1
Term of patent 14 years
U.S. Cl. D23—372



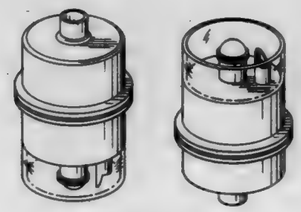
361,377
COMBINED CEILING FAN AND LIGHT KIT
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Dec. 20, 1993, Ser. No. 16,599
Term of patent 14 years
U.S. Cl. D23—377



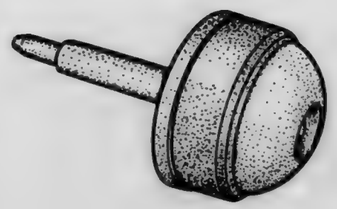
361,378
DECORATIVE GRILLE FOR A VENT
Micheal Mitchell, Cary, Ill., assignor to Woodwinds Metal & Hardware Inc., Crystal Lake, Ill.
Filed Apr. 11, 1994, Ser. No. 21,146
Term of patent 14 years
U.S. Cl. D23—393



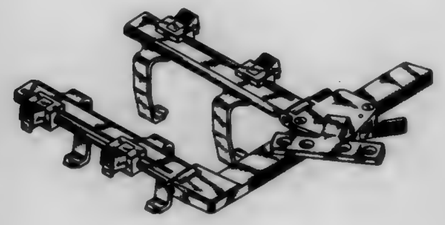
361,379
INFUSION PUMP
Gregory E. Sancoff, Rancho Sante Fe; Mark C. Doyle, San Diego, and Frederic P. Field, Solana Beach, all of Calif., assignors to River Medical, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 105,327, Aug. 6, 1993, Pat. No. 5,398,851, and a continuation-in-part of Ser. No. 105,284, Aug. 6, 1993, Pat. No. 5,397,303. This application Nov. 23, 1993, Ser. No. 15,663
Term of patent 14 years
U.S. Cl. D24—111



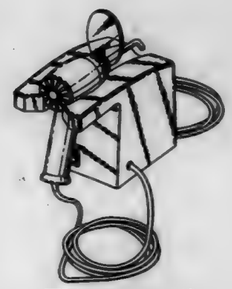
361,380
SINGLE-DOSE CONTAINER
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Jan. 24, 1994, Ser. No. 17,843
Claims priority, application Sweden, Jul. 26, 1993, 93-1659
Term of patent 14 years
U.S. Cl. D24—115



361,381
COMBINED SPINE AND STERNUM RETRACTOR FRAME
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Mar. 17, 1994, Ser. No. 20,172
Term of patent 14 years
U.S. Cl. D24—135



361,382
DENTAL MATERIAL CURING APPARATUS
Robert E. Brunsell, Woodbury, Minn.; John P. Keanedy, Guelph, and David T. Dobson, Kitchener, both of Canada, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 14, 1993, Ser. No. 14,158
Term of patent 14 years
U.S. Cl. 24—177



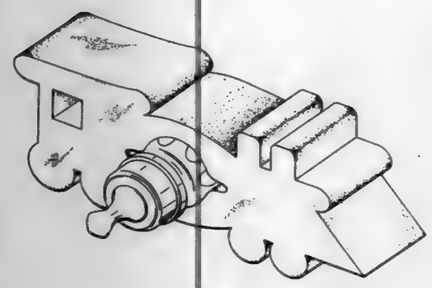
361,383
PORTABLE LIMB SUPPORT
Walda B. Lipson, White Plains, and Carl Yurdin, Port Washington, both of N.Y., assignors to Equip For Independence, Inc., White Plains, N.N.Y.
Filed Jun. 23, 1992, Ser. No. 903,548
Term of patent 14 years
U.S. Cl. D24—183



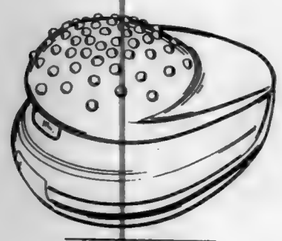
361,384
LOCK BOX
Phillip D. Facer, 825 N. Main, Mantua, Utah 84324, and Richie Aoki, 7395 N. 2800 West, Honeyville, Utah 83414
Filed Jul. 25, 1994, Ser. No. 26,388
Term of patent 14 years
U.S. Cl. D99—28



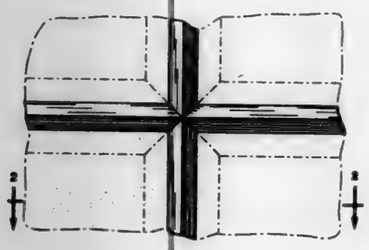
361,385
FEEDER FOR A BABY
Debbie K. Harper, Melbourne, Fla., assignor to Bailey Ann Industries, Melbourne, Fla.
Filed Feb. 17, 1994, Ser. No. 18,936
Term of patent 14 years
U.S. Cl. D24—199



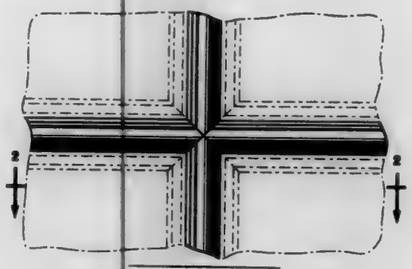
361,386
HEAT MASSAGER
Rudy Vandenbelt, Ottawa, Canada, assignor to Headwaters Research & Development Inc., Ontario, Canada
Filed Oct. 4, 1994, Ser. No. 29,392
Term of patent 14 years
U.S. Cl. D24—211



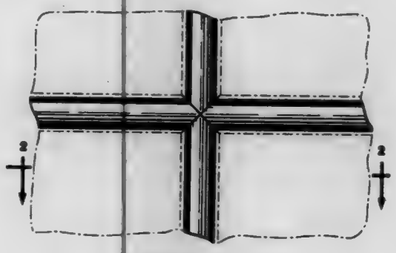
361,387
COVER UNIT FOR CEILING RAILS
Wesley T. K. Bischel, Elizabethtown, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 22, 1993, Ser. No. 6,147
Term of patent 14 years
U.S. Cl. D25—55



361,388
COVER UNIT FOR CEILING RAILS
Wesley T. K. Bischel, Elizabethtown, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 22, 1993, Ser. No. 6,148
Term of patent 14 years
U.S. Cl. D25—55



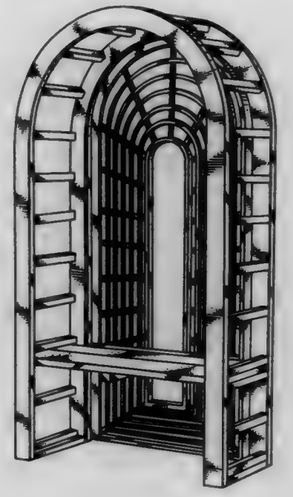
361,389
COVER UNIT FOR CEILING RAILS
Wesley T. K. Bischel, Elizabethtown, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 22, 1993, Ser. No. 6,151
Term of patent 14 years
U.S. Cl. D25—55



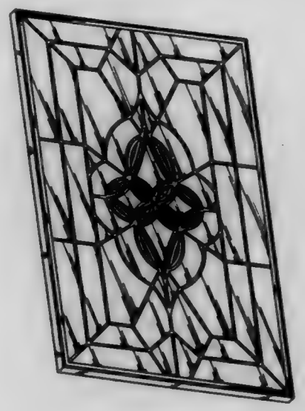
361,390
COLLAPSIBLE ADJUSTABLE WORK MOVER
Steven J. Sheftel, Marstons Mills, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Feb. 3, 1994, Ser. No. 18,364
Term of patent 14 years
U.S. Cl. D25—67



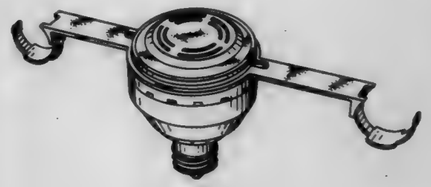
361,391
GARDEN ARBOR
Lynda A. Goldman, 612 Epping Rd., Palos Verdes Estates, Calif. 90274
Filed Jul. 11, 1994, Ser. No. 25,782
Term of patent 14 years
U.S. Cl. D25—100



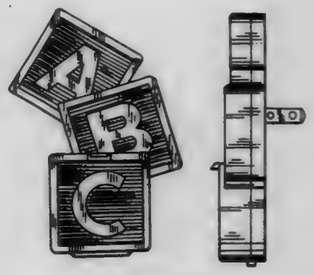
361,392
LEADED GLASS
Steven R. Wilkening, Grandville, Mich., assignor to ODL, Incorporated, Zeeland, Mich.
Filed Mar. 10, 1994, Ser. No. 19,702
Term of patent 14 years
U.S. Cl. D25—104



361,393
COMBINED FLUORESCENT LIGHT ADAPTOR AND RING TUBE HOLDER
Usman Vakil, Walnut, Calif., assignor to Lights of America, Inc., Walnut, Calif.
Filed Aug. 31, 1994, Ser. No. 27,862
Term of patent 14 years
U.S. Cl. D26—3



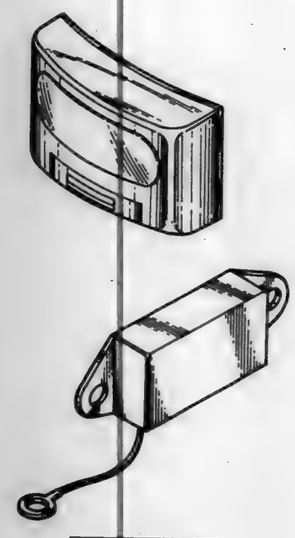
361,394
NIGHT LIGHT
Sean Simmons, Sea Cliff, N.Y., assignor to American Tack and Hardware Co., Inc., Monsey, N.Y.
Filed Aug. 30, 1994, Ser. No. 27,881
Term of patent 14 years
U.S. Cl. D26—26



361,395
VEHICLE BRAKE LIGHT
Robert R. Mendel, 54 ½ N. Summer St., Adams, Mass. 01220-1563
Filed Aug. 31, 1994, Ser. No. 27,774
Term of patent 14 years
U.S. Cl. D26—28



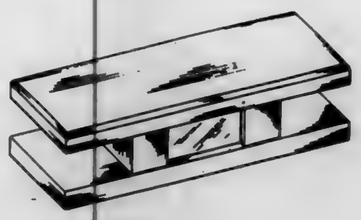
361,396
COMBINED LIGHT FOR A MOTORCYCLE HELMET AND CONTROLLING SIGNAL TRANSMITTER THEREFOR
Paul L. Bruckler, 7099 Perris Hill Rd., San Bernardino, Calif. 92404
Filed Aug. 30, 1993, Ser. No. 12,290
Term of patent 14 years
U.S. Cl. D26—39



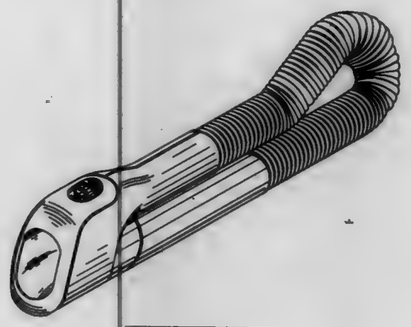
361,397
SEARCHLIGHT FOR DIVING USE
Ming-Chou Huang, No. 16, Lane 43, Hua Cheng Road, Hsin Chuang, Taipei Hsien, Taiwan
Filed Mar. 18, 1994, Ser. No. 20,123
Term of patent 14 years
U.S. Cl. D26—45



361,398
LIGHT HOUSING FOR PATIO DECKS AND THE LIKE
E. Percival Neali, III, 2604 Westfield Ct., Newtown Square, Pa. 19073
Filed Jan. 27, 1994, Ser. No. 18,019
Term of patent 14 years
U.S. Cl. D26—67



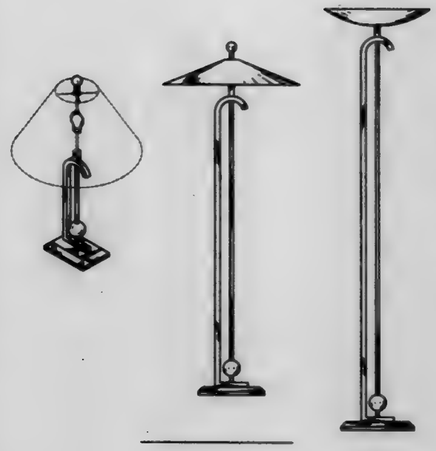
361,399
FLASHLIGHT
Richard Carbone, Southbury, and Bryan deBlois, West Haven, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 5, 1994, Ser. No. 26,809
Term of patent 14 years
U.S. Cl. D26—43



361,400
PARKING GARAGE LUMINAIRE
Wayne W. Compton, Chino Hills, Calif., assignor to Lighting, Inc., City of Industry, Calif.
Filed Nov. 12, 1993, Ser. No. 15,365
Term of patent 14 years
U.S. Cl. D26—85



361,401
LAMP
Kevin Von Kluck, Hudson, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Apr. 4, 1994, Ser. No. 20,571
Term of patent 14 years
U.S. Cl. D26—106



361,402
ACCENT STRIP FOR AN INDIRECT LIGHTING FIXTURE
Donald J. Herst, 11 Upper Ames, Ross, Calif. 94957, and Utkas Salmaa, 4053 Harlan St., #112, Emeryville, Calif. 94608
Filed Aug. 2, 1993, Ser. No. 11,320
Term of patent 14 years
U.S. Cl. D26—152



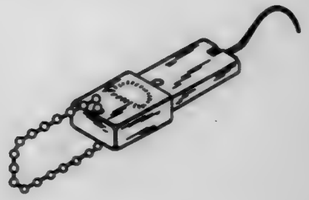
361,403
SCOOP FOR SMOKELESS TOBACCO
Jason W. Yarbrough, 28807 S. Diamondhead, Montgomery, Tex. 77356, and Brian W. Nutter, 2201 Montgomery Park Blvd., #104, Conroe, Tex. 77304
Filed Jul. 6, 1994, Ser. No. 25,597
Term of patent 14 years
U.S. Cl. D27—194



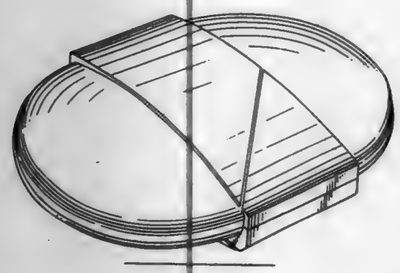
361,404
THERMAL APPLICATOR FOR COSMETIC TREATMENT
Franz Haas, Vienna, Austria, assignor to Sedes Cosmetic Vertriebsgesellschaft m.b.H., Vienna, Austria
Filed Sep. 8, 1992, Ser. No. 940,937
Claims priority, application Austria, Mar. 6, 1992, 825/92
Term of patent 14 years
U.S. Cl. D28—7



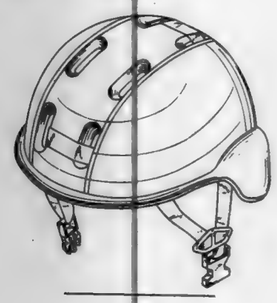
361,405
COMBINED DENTAL PICK AND SHEATH
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Filed May 23, 1994, Ser. No. 23,343
Term of patent 14 years
U.S. Cl. D28—64



361,406
COMPACT
Joël Desgrippes, Paris, France, assignor to Cosmétique Sans Soucis GmbH, Baden-Baden, Germany
Filed Jun. 1, 1994, Ser. No. 23,755
Claims priority, application Germany, Dec. 2, 1993, 93 09 470.1
Term of patent 14 years
U.S. Cl. D28—78



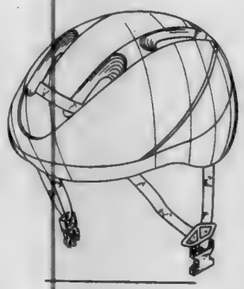
361,407
SAFETY HELMET
Chang-Hsien Ho, 12F., No.16, Sec.1, Ho-Ping E.Road, Taipei, Taiwan
Filed Sep. 24, 1993, Ser. No. 13,418
Term of patent 14 years
U.S. Cl. D29—102



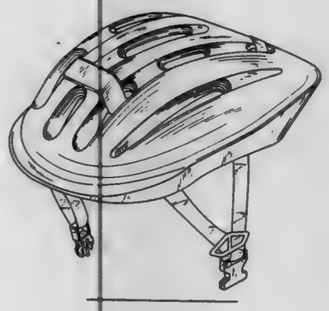
361,408
SAFETY HELMET
Chang-Hsien Ho, 12F., No.16, Sec.1, Ho-Ping E. Road, Taipei, Taiwan
Filed Sep. 24, 1993, Ser. No. 13,422
Term of patent 14 years
U.S. Cl. D29—102



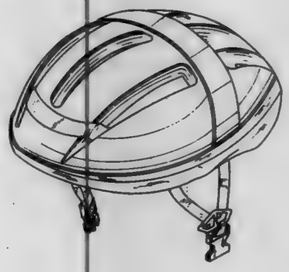
361,409
SAFETY HELMET
Chang-Hsien Ho, 12F., No. 16, Sec. 1, Ho-Ping E. Road, Taipei, Taiwan
Filed Sep. 24, 1993, Ser. No. 13,423
Term of patent 14 years
U.S. Cl. D29—102



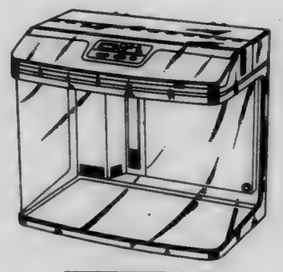
361,410
SAFETY HELMET
Chang-Hsien Ho, 12F., No. 16, Sec. 1, Ho-Ping E. Road, Taipei, Taiwan
Filed Sep. 24, 1993, Ser. No. 13,424
Term of patent 14 years
U.S. Cl. D29—102



361,411
SAFETY HELMET
Chang-Hsien Ho, 12F., No. 16, Sec. 1, Ho-Ping E. Road, Taipei, Taiwan
Filed Sep. 24, 1993, Ser. No. 13,425
Term of patent 14 years
U.S. Cl. D29—102



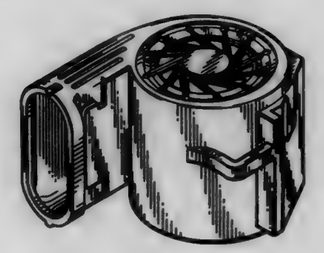
361,412
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Filed Sep. 16, 1993, Ser. No. 13,016
Claims priority, application Japan, Mar. 19, 1993, 5-7653
The portion of the term of this patent subsequent to Aug. 8, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—101



361,413
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,204
Term of patent 14 years
U.S. Cl. D30—101



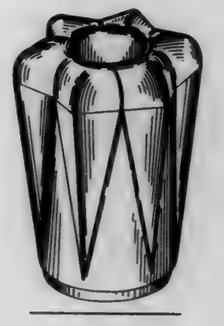
361,414
AIR MOVER
Gary L. Trautloff, 1632 Sunset La., Fullerton, Calif. 29633, and Montgomery A. Bisson, 19822 Maritime, Huntington Beach, Calif. 92648
Filed Feb. 9, 1993, Ser. No. 4,626
Term of patent 14 years
U.S. Cl. D32—15



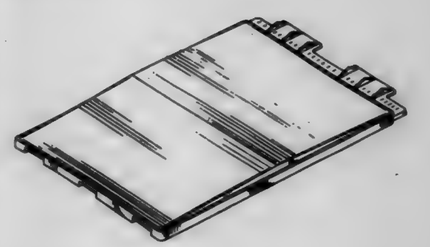
361,415
RIGID ATTACHMENT FOR A WET DRY VACUUM
Lane W. Knight, Box 16, HCR 1, Onchiota, N.Y. 12989
Filed Nov. 22, 1993, Ser. No. 15,559
Term of patent 14 years
U.S. Cl. D32—31



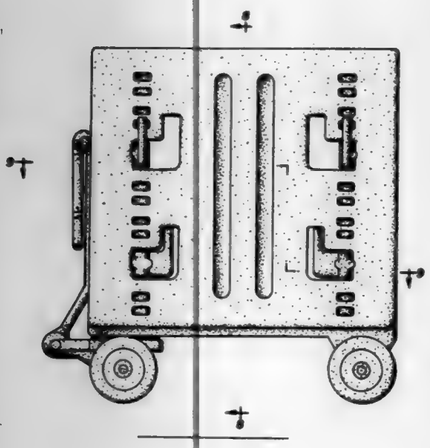
361,416
TRASH RECEPTACLE
Martin Szekely, Paris, France, assignor to J.C. Decaux, France
Continuation of Ser. No. 16,494, Dec. 17, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 31,009
Term of patent 14 years
U.S. Cl. D34—1



361,417
DUMPSTER LID
Michael P. Douglas, South Bend, Ind., assignor to Environmental Steel Products, Inc., Elkhart, Ind.
Filed May 20, 1993, Ser. No. 8,606
Term of patent 14 years
U.S. Cl. D34—11



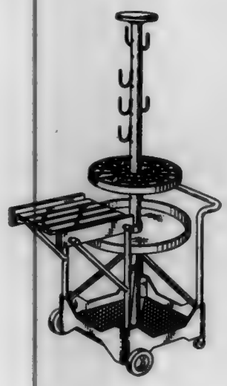
361,418
BEACH WAGON
Scott R. H. Smith, 330 M N. Stonestreet Ave., Rockville, Md. 20850
Filed May 16, 1994, Ser. No. 22,909
Term of patent 14 years
U.S. Cl. D34—19



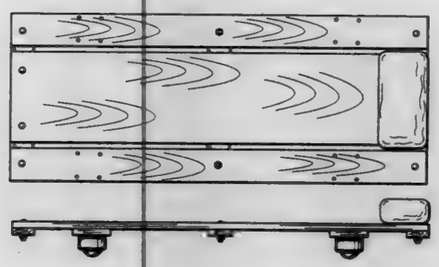
361,419
VIDEO CART
Rusty B. Snell, Maryville, Tenn., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Jul. 7, 1994, Ser. No. 25,611
Term of patent 14 years
U.S. Cl. D34—21



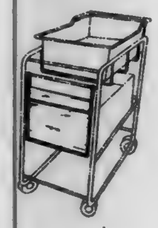
361,420
CRAFTSMAN'S UTILITY CART
Bob H. Riek, Edmond, Okla., assignor to Living Trust of Bob H. Riek, Edmond, Okla.
Filed Sep. 15, 1994, Ser. No. 28,472
Term of patent 14 years
U.S. Cl. D34—21



361,421
CREEPER
Alan W. Garoutte, 208 Bel Aire Pl., Muskogee, Okla. 74403
Filed Oct. 24, 1994, Ser. No. 30,209
Term of patent 14 years
U.S. Cl. D34—23



361,422
HOSPITAL CART RECEPTACLE FOR DIAPERS OR THE LIKE
Fredrica V. Coates, 960 Madison Dr., Earleysville, Va. 22936
Filed Mar. 2, 1994, Ser. No. 19,389
Term of patent 14 years
U.S. Cl. D34—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Synosky, Steven P.; Patel, Mansukh M.; Reed, Michael A.; and , 5,441,750, Cl. 426-3.000.
University of California, The Regents: *See*—
Lampert, Carl M.; Ma, Yan-ping; Doeff, Marca M.; and Visco, Steven, 5,442,478, Cl. 359-273.000.
A. Ahlstrom Corporation: *See*—
Oakes, Eric J.; Lee, Yam Y.; and Hiltunen, Matti A., 5,441,714, Cl. 423-235.000.
A.E. Bishop & Associates PTY LTD.: *See*—
Bishop, Arthur E., 5,441,438, Cl. 451-5.000.
A.O. Smith Corporation: *See*—
Kuo, Ming C., 5,441,763, Cl. 427-195.000.
AABH Patent Holdings Societe Anonyme: *See*—
Attwood, Geoffrey; and Grasse, Werner G., 5,441,829, Cl. 429-156.000.
AB Volvo Penta: *See*—
Rodskier, Christian; and Sellman, Lennart, 5,441,432, Cl. 440-89.000.
Ryberg, Bertil, 5,441,025, Cl. 123-198.0DB.
ABB Management AG: *See*—
Zimmermann, Hans, 5,442,249, Cl. 310-91.000.
Abbott Laboratories: *See*—
Coleman, Carole L.; Genger, Kevin R.; Graham, Hugh W.; Hanna, Charles F.; Khalil, Omar S.; and Wender, David C., 5,441,894, Cl. 436-518.000.
Abe, Hiroshi; and Tanaka, Yoshinobu, to Asahi Seiko Kabushiki Kaisha. Coin sorting device in which unnecessary material can be readily removed from a sorting passage. 5,441,139, Cl. 194-347.000.
Abe, Katsushi: *See*—
Yamaguro, Akira; Haramura, Shigenori; Minamoto, Naoki; Oshima, Yujiro; Muraki, Hideaki; Abe, Katsushi; Yokota, Koji; and Kawahara, Kazuo, 5,441,401, Cl. 431-4.000.
Abrams, Jack; and Giordano, William, to Nikon Inc. Multi-faceted photographer's vest. 5,440,761, Cl. 2-102.000.
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Fan Chiang, Yung F.; and Lee, Kun-M., 5,442,278, Cl. 324-76.410.
Adachi, Hiroshi: *See*—
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.
Adachi, Kaoru, to Fuji Photo Film Co., Ltd. Integrated circuit chip with testing circuits and method of testing the same. 5,442,643, Cl. 371-22.500.
Adachi, Yutaka, to Olympus Optical Co., Ltd. Bar code reader for reading two-dimensional bar codes by using length information derived from a sensed signal. 5,442,164, Cl. 235-463.000.
Adamczyk, Robert: *See*—
Diaz, Rafael J.; Naddell, Marc; Grube, Gary W.; Roberts, Robin; Sasuta, Michael D.; and Adamczyk, Robert, 5,442,809, Cl. 455-54.100.
Adams, Paul E.: *See*—
Cleveland, William K. S.; Adams, Paul E.; and De Tar, Marvin B., 5,441,653, Cl. 252-34.000.
Adams, Richard L., Jr.; and Hallenbeck, Peter D., to UUNET Technologies, Inc. Computer network encryption/decryption device. 5,442,708, Cl. 380-49.000.
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Meinert, Hasso; Heimann, Klaus; Kreiner, Christine P.; and Kirchhof, Bernd, 5,441,989, Cl. 514-772.000.
ADC Telecommunications, Inc.: *See*—
Kinghorn, William, 5,442,698, Cl. 379-418.000.
Adelman, Frank F.; Sosnowski, Joseph; and Alderfer, Rodney L., to Teleflex Incorporated. Motion transmitting remote control assembly with adjustable backlash. 5,440,946, Cl. 74-502.300.
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Cummings, Lowell O.; Terrizzi, Patrick A.; and Gac, Norman, 5,441,996, Cl. 523-416.000.
Adolf, Hermann: *See*—
Bock, Erich; Adolf, Hermann; and Pohn; Romeo, 5,441,207, Cl. 242-18.0DD.
Adomi, Keizo; Noto, Nobuhiko; Nakamura, Akio; and Takenaka, Takao, to Shin-Etsu Handotai Co., Ltd. Semiconductor light emitting device with nitrogen doping. 5,442,201, Cl. 257-86.000.
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McGary, John S.; and Harris, Norman R., 5,442,697, Cl. 379-399.000.
Advanced Cardiovascular Systems, Inc.: *See*—
Khosravi, Farhad; and Williams, Michael S., 5,441,515, Cl. 606-194.000.
Advanced Micro Devices: *See*—
Reinhardt, Karen, 5,441,599, Cl. 156-646.100.
Advanced Micro Devices, Inc.: *See*—
Cabler, Carlin D., 5,442,309, Cl. 327-108.000.
Cabler, Carlin D., 5,442,354, Cl. 341-143.000.
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Wisor, Michael T.; and O'Brien, Rita M., 5,442,794, Cl. 395-750.000.
Wong, Jack T.; Fontana, Fabiano; and Chan, Martha, 5,442,304, Cl. 326-17.000.
Advanced Technology Materials, Inc.: *See*—
Tischler, Michael A., 5,442,200, Cl. 257-77.000.
Advanced Television Test Center, Inc.: *See*—
Rhodes, Charles W., 5,442,460, Cl. 348-441.000.
Advanced Therapeutic Products: *See*—
Rose, Jed E.; Behm, Frederique; and Turner, James, 5,441,060, Cl. 131-271.000.
Aerovironment, Inc.: *See*—
Rippel, Wally E., 5,441,824, Cl. 429-53.000.
Aervoe-Pacific Company, Inc. Nevada: *See*—
O'Neill, Paul J.; and Wittig, Gary P., 5,441,088, Cl. 141-51.000.
Agapiou, Agapios K.; Muhle, Michael E.; and Renois, Gary T., to Exxon Chemical Company. Process for transitioning between incompatible polymerization catalysts. 5,442,019, Cl. 526-82.000.
Agarwal, Arun K.: *See*—
Bloomquist, Darrel R.; Howe, Stephan P.; and Agarwal, Arun K., 5,441,788, Cl. 428-65.600.
Agata, Takeshi: *See*—
Imai, Takashi; Agata, Takeshi; Mikami, Tadeshi; and Inaba, Yoshihiro, 5,441,840, Cl. 430-109.000.
Agency of Industrial Science and Technology: *See*—
Otsu, Nobuyuki; Kurita, Takio; and Kuwashima, Shigesumi, 5,442,716, Cl. 382-181.000.
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Toda, Kenji; Uchibori, Yoshinobu; and Shimada, Toshio, 5,442,761, Cl. 395-375.000.
Agfa-Gevaert AB: *See*—
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Agfa Gevaert AG: *See*—
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Weber, Beate; Helling, Gunter; and Geiger, Markus, 5,441,862, Cl. 430-551.000.
AGFA-GEVAERT, N.V.: *See*—
Verdonck, Emiel; Janssens, Wilhelmus; and Defieuw, Geert, 5,441,921, Cl. 503-227.000.
Aggregate Computing, Inc.: *See*—
Wrabetz, Joan M.; Mason, D. Dean, Jr.; and Gooderum, Mark P., 5,442,791, Cl. 395-650.000.
AGIP S.p.A.: *See*—
Albonico, Paola; and Lockhart, Thomas P., 5,441,928, Cl. 507-225.000.
Agnoff, Charles, to Interroll Holding, A.G. Motorized pulley with integral electrical connector. 5,442,248, Cl. 310-71.000.
Agrawal, Raj K.; and Crank, Doug, to Donnelly Corporation. Vehicular panel assembly and method for making same. 5,440,849, Cl. 52-391.000.
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Moon, Eva-Maria; and Ahlvin, Eric L., 5,442,385, Cl. 347-43.000.
Aida, Hiroyuki: *See*—
Tsukiji, Naoki; and Aida, Hiroyuki, 5,441,912, Cl. 437-129.000.
Air Products and Chemicals, Inc.: *See*—
Lal, Gauri S., 5,442,084, Cl. 558-141.000.
Lee, Sang K.; Wang, Andrew W.; and Paul, Robert, 5,441,558, Cl. 95-100.000.
McAndrew, Thomas P.; Gilicinski, Andrew G.; and Robeson, Lloyd M., 5,441,772, Cl. 427-388.100.
Aircast, Inc.: *See*—
Johnson, Glenn W.; McVicker, Henry J.; and Pick, E. P. Erez, 5,441,533, Cl. 607-104.000.

Airi, Takao, to NEC Corporation. Constant voltage diode having a reduced leakage current and a high electrostatic breakdown voltage. 5,442,220, Cl. 257-378.000.

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Hashiride, Tadaaki, 5,441,003, Cl. 112-259.000.
Takeuchi, Hiroeki, 5,441,136, Cl. 303-116.100.
Yamaguro, Akira; Hamamura, Shigenori; Minamoto, Naoki; Oshima, Yajiro; Muraki, Hideaki; Abe, Katsuhi; Yokota, Koji; and Kawahara, Kazuo, 5,441,401, Cl. 431-4.000.

Aixtron GmbH: *See*—
Jurgensen, Holger, 5,441,703, Cl. 422-129.000.

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Ajinomoto Co., Inc.: *See*—
Kinouchi, Naoyuki, 5,441,544, Cl. 210-651.000.

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Isomura, Yasuo; Akamatsu, Seijiro; Yodea, Toru; Kudou, Masafumi; and Suga, Akira, 5,442,110, Cl. 562-621.000.

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Aoki, Hideki; Akao, Masaru; Shin, Yoshiharurayama; Hayashi, Osamu; and Yoshizawa, Masahiko, 5,441,536, Cl. 427-2.270.

Akazawa, Shumi, to Ryobi Limited. Electrode terminal holder for battery drive tool. 5,441,828, Cl. 429-121.000.

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Akerman, Jan: *See*—
Ederyd, Stefan; Akerman, Jan; Beaufoy, Robert; Carpenter, Michael; Bonneau, Maxime; and Pillot, Jacques, 5,441,693, Cl. 419-10.000.

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Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,442,416, Cl. 354-319.000.

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Andersson, Carl-Magnus A.; Bergstrand, Haakan S. A.; Hallberg, Anders R.; Sarnstrand, Bengt O.; and Tunek, Anders P. S., 5,441,976, Cl. 514-410.000.

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Brandstrom, Arne E.; Lindberg, Per L.; and Sanden, Gunnel E., 5,441,968, Cl. 514-338.000.

Akzo Nobel N.V.: *See*—
Nieuwenhuis, Paulus G. J., 5,442,058, Cl. 540-314.000.

Akzo N.V.: *See*—
de Haan, Pieter; and van der Ven, Cornelus J. M., 5,441,747, Cl. 424-463.000.
Takahashi, Tsutomu; and Sato, Hiroyuki, 5,442,003, Cl. 524-104.000.

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Sippel, Egon; Meyer, Meinert; Albedyhl, Manfred; and Hollmann, Friedrich, 5,440,889, Cl. 62-63.000.

Albemarle Corporation: *See*—
Stahly, G. Patrick; and Manimaran, Thanikavelu, 5,442,117, Cl. 564-304.000.

Albers, Albert: *See*—
Jackel, Johann; and Albers, Albert, 5,441,452, Cl. 464-61.000.

Alberyd, Ake; and Hellstrom, Lerker, to Iro AB. Yarn storage and feed device utilizing correctional air jet nozzles. 5,441,087, Cl. 139-452.000.

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Albright & Wilson Limited: *See*—
Blezard, Michael; Jones, Glyn R.; and Ghadimi, Moharam, 5,442,113, Cl. 564-2.000.

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Andrieu, Xavier; and Kerreneur, Laurence, 5,442,197, Cl. 257-40.000.

Alcatel N.V.: *See*—
Biotteau, Bernard, 5,442,413, Cl. 359-124.000.
Maignan, Michel; and Vendrome, Gilles, 5,442,360, Cl. 342-120.000.
Vinchent, Jean-Francois; Renaud, Monique; and Erman, Marko, 5,442,723, Cl. 385-129.000.

Alcatel SEL Aktiengesellschaft: *See*—
Bulow, Henning; and Otterbach, Jurgen, 5,442,479, Cl. 359-341.000.

Alchas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., to Thomas Jefferson University; and Becton Dickinson and Company. Endothelial cell deposition device. 5,441,539, Cl. 623-66.000.

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Yanni, John M.; Robertson, Stella M.; Okumura, Shigetoshi; Tanaka, Hitoshi; and Saito, Tadayuki, 5,441,958, Cl. 514-253.000.

Alder, Ivan P. Portable golf target stand. 5,441,267, Cl. 273-177.00R.

Alderfer, Rodney L.: *See*—
Adelman, Frank F.; Sosnowski, Joseph; and Alderfer, Rodney L., 5,440,946, Cl. 74-502.300.

Ales, Francisco; Conrad, Jack C.; Duvall, David A.; and Zawoy, Karl R., to Cordis Corporation. Guidewire extension wire and connector assembly. 5,441,055, Cl. 128-772.000.

Alexander, William, to Privada Corporation. Armor penetrating bullet. 5,440,994, Cl. 102-439.000.

Alexandratos, Spiro D., to University of Tennessee Research Corporation, The. Synthesis of tetraalkyl vinylidene diphosphonate monomer. 5,442,085, Cl. 558-142.000.

Alig, Roger C., to David Sarnoff Research Center, Inc. Dynamic electrostatic and magnetic focusing apparatus for a cathode ray tube. 5,442,263, Cl. 315-382.100.

Allard, Robert G.: *See*—
Bell, David; Allard, Robert G.; Rodgers, Ronald A.; Hipkiss, Victor E.; and Johnson, Thomas H., 5,442,146, Cl. 177-210.0FP.

Allardyce, James D.; Weiland, Walter M.; and Frankhouse, Jay M., to Prince Corporation. Assist strap. 5,440,783, Cl. 16-110.00R.

Allegro Microsystems, Inc.: *See*—
Vig, Ravi; Yabusaki, Hitoshi; and Bilotti, Alberto, 5,442,283, Cl. 324-207.200.

Allen, Jerry L. Method of installation of partitioning device for a tubular conduit. 5,442,136, Cl. 174-95.000.

Allen, Ryne C.: *See*—
Chan, Chung; and Allen, Ryne C., 5,441,617, Cl. 204-192.380.
Chan, Chung; Allen, Ryne C.; and Xia, Zhong-Yi, 5,441,624, Cl. 204-298.410.

Allenza, Paul: *See*—
Goldberg, Ina; Allenza, Paul; and Lupton, Francis S., 5,441,885, Cl. 435-252.340.

Allergan, Inc.: *See*—
Hoeg, Anne L.; and Meadows, David L., 5,441,732, Cl. 424-78.040.

Allgeyer, Thomas L.: *See*—
Kemp, James J.; DeJager, John L.; Allgeyer, Thomas L.; and Schenkel, Jack E., 5,442,520, Cl. 361-785.000.

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Cordova, David S.; and Kirkland, Kevin M., 5,440,965, Cl. 89-36.020.
Dale, Adrian P.; Flaxington, David; and McCutcheon, Andrew R. S., 5,441,383, Cl. 415-158.000.
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Silgailis, John; and Rand, Mark, 5,441,783, Cl. 428-37.000.
Steiner, Ivan B., 5,442,787, Cl. 359-629.000.

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Brugnara, Carlo; and Alper, Seth L., 5,441,957, Cl. 514-252.000.

Alpert, Donald B.: *See*—
Grochowski, Edward T.; Alpert, Donald B.; Mills, Jack D.; and Weiser, Uri C., 5,442,756, Cl. 395-375.000.

Alps Electric Co.: *See*—
Kornfeld, Richard K.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,442,322, Cl. 330-285.000.

Alston, David: *See*—
Jaxa-Chamiec, Albert A.; Hickey, Deirdre M. B.; and Alston, David, 5,441,731, Cl. 424-78.100.

Altmanshofer, Robert D.; Rodriguez-Cavazos, Enrique; Willis, Donald H.; Ersoz, Nathaniel H.; and Canfield, Barth A., to Thomson Consumer Electronics, Inc. Wide screen television. 5,442,406, Cl. 348-588.000.

Alumax Inc.: *See*—
Dressler, Robert, 5,441,364, Cl. 405-119.000.

Aluminum Company of America: *See*—
Botterman, Ralph C.; Bias, Donald R.; and Russell, Vincent T., 5,441,334, Cl. 301-37.100.

Alusi Holdings, L.P.: *See*—
Miller, Lee H., 5,441,761, Cl. 427-146.000.

Alvarez, Hector A.: *See*—
Kane, John P.; and Alvarez, Hector A., 5,441,480, Cl. 602-36.000.

Alvarez, Maria D.: *See*—
Tustaniwskyj, Jerry I.; Alvarez, Maria D.; Bezuk, Steve J.; Rackerby, Robert E.; and Weber, Patrick A., 5,441,195, Cl. 228-160.220.

Alvendia, John: *See*—
Lee, John R.; and Alvendia, John, 5,441,415, Cl. 434-350.000.

AM International Inc.: *See*—
Hawkes, Richard B., 5,441,375, Cl. 412-19.000.

Amada Company, Limited: *See*—
Sadahiro, Toru, 5,440,960, Cl. 83-168.000.

Amano, Toshikazu: *See*—
Watanabe, Satomi; Miyazaki, Takeshi; Ito, Yutaka; and Amano, Toshikazu, 5,441,456, Cl. 474-94.000.

AMEI Technologies Inc.: *See*—
Erickson, John H.; Tepper, John C.; Thacker, Ike C.; Turi, Gregg; Varrichio, Anthony J.; and Pilla, Arthur A., 5,441,527, Cl. 607-51.000.

American Air Liquide: *See*—
Nagamura, Takashi; Yamamoto, Takao; and Tomita, Shinji, 5,441,719, Cl. 423-351.000.

American Cyanamid Company: *See*—
Jarrett, Peter K.; Jessup, George; Rosati, Louis; Martin, Chris; and Maney, John W., 5,442,016, Cl. 525-415.000.
Sun, Phaik-Eng; Lee, Ving J.; and Testa, Raymond T., 5,442,059, Cl. 544-63.000.
Woodruff, Keith F., 5,441,180, Cl. 222-327.000.

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Russo, Ralph J.; Howell, Stanley R.; and Sehgal, Surendra N., 5,441,977, Cl. 514-411.000.

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Ponticelli, Pasco, Jr.; Ponticelli, Robert J.; and Stevenson, William C., 5,441,421, Cl. 439-284.000.

American Orthodontics Corporation: *See*—
Tuneberg, Lee H., 5,441,409, Cl. 433-23.000.

American Sterilizer Company: *See*—
Napierkowski, Susan M.; and Nagare, Arthur T., 5,441,376, Cl. 414-401.000.

Ames, Gregory H., to United States of America, Navy. Fiber-optic rotary joint with bundle collimator assemblies. 5,442,721, Cl. 385-26.000.

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Pauls, Henry W.; Choi, Yong-Mi; and Amin, Dilip V., 5,441,946, Cl. 514-114.000.

Ampex Corporation: *See*—
Shih, Lionel C.; and Haglund, John R., 5,442,493, Cl. 360-48.000.

Amstrad Public Limited Company: *See*—
Hopkins, Robert A., 5,442,514, Cl. 361-686.000.

Anadigics, Inc.: *See*—
Bayruns, Robert J.; and Laverick, Timothy M., 5,442,321, Cl. 330-282.000.

Analog Devices, Inc.: *See*—
Cummins, Timothy J., 5,442,355, Cl. 341-145.000.

Anamizu, Takashi: *See*—
Fujiyoshi, Minoru; Hasegawa, Michio; Kanomata, Shinichi; Anamizu, Takashi; Saito, Morio; and Satoh, Fumitaka, 5,441,312, Cl. 285-23.000.

Anchor Hocking Corporation: *See*—
Welhouse, Harold L., 5,440,973, Cl. 99-425.000.

Andersen Corporation: *See*—
Deaner, Michael J.; Puppin, Giuseppe; and Heikkila, Kurt E., 5,441,801, Cl. 428-326.000.

Andersen, Steven; Berman, James; Hinkle, Chris; Jacobson, Michael; Koralek, Richard; Lebar, James F.; and Smith, Francis J., to Loral Aerospace Corp. Residual carrier adaptive cross-polarization equalizer. 5,442,663, Cl. 375-229.000.

Anderson, Elisabet A.: *See*—
Mathias, Larry E.; Hathaway, Jason M.; and Anderson, Elisabet A., 5,441,339, Cl. 362-74.000.

Anderson, Gregory J.; and Zimmel, John M., to H.B. Fuller Fuller Licensing & Financing Inc. Thermally stable hot melt moisture-cure polyurethane adhesive composition. 5,441,808, Cl. 428-349.000.

Anderson, Kevin; Draper, Kenneth; and Baker, Brenda, to Isis Pharmaceuticals, Inc. Oligonucleotides for modulating the effects of cytomegalovirus infections. 5,442,049, Cl. 536-24.500.

Anderson, Neil G., to FMC Corporation. Removable weapon stowage tray. 5,441,009, Cl. 114-316.000.

Anderson, Paul M.; and Hasley, Lloyd A., to Motorola, Inc. Local area network data processing system containing a quad elastic buffer and layer management (ELM) integrated circuit and method of switching. 5,442,628, Cl. 370-56.000.

Anderson, Scott C.: *See*—
Simpson, John B.; Anderson, Scott C.; Frantzen, John J.; Brown, Peter S.; Cannon, James M., Jr.; and Orth, Geoffrey A., 5,441,510, Cl. 606-159.000.

Andersson, Carl-Magnus A.; Bergstrand, Haakan S. A.; Hallberg, Anders R.; Sarnstrand, Bengt O.; and Tunek, Anders P. S., to Aktiebolaget Astra. Pharmacological use of certain cystine derivatives. 5,441,976, Cl. 514-410.000.

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Ando Electric Co., Ltd.: *See*—
Maeda, Minoru, 5,442,651, Cl. 372-97.000.

Andreas Stihl: *See*—
Gutjahr, Kurt; and Boesler, Hansjorg, 5,441,637, Cl. 210-232.000.

Andrieu, Xavier; and Kerreneur, Laurence, to Alcatel Alsthom Compagnie Generale D'Electricite. Super-capacitor comprising positive and negative electrodes made of a p-doped electron conductive polymer and an electrolyte containing an organic redox compound. 5,442,197, Cl. 257-40.000.

ANELVA Corporation: *See*—
Aketagawa, Ken-ichi; Sakai, Junro; and Tatsumi, Toru, 5,441,012, Cl. 117-86.000.

Ang, Daniel Y.: *See*—
Eckel, Robert A., Jr.; Kusner, Ronald R.; and Ang, Daniel Y., 5,442,176, Cl. 250-338.400.

Angeion Corporation: *See*—
Adams, Theodore P.; Supino, Charles G.; and Kroll, Mark W., 5,441,518, Cl. 607-5.000.

Angelini, Thomas: *See*—
Rakocy, William J.; and Angelini, Thomas, 5,440,780, Cl. 15-327.100.

Angewandte Digital Electronik GmbH: *See*—
Kreft, Hans-Diedrich, 5,442,295, Cl. 324-537.000.

Anjoh, Ichiro; Murakami, Gen; Lamson, Michael A.; and Heinen, Katherine G., to Hitachi, Ltd.; and Texas Instruments Incorporated. Packaged semiconductor device and a lead frame therefor, having a common potential lead with lead portions having dual functions of chip support and heat dissipation. 5,442,233, Cl. 257-675.000.

Antel Optronics Inc.: *See*—
Liao, David D.; and Forber, Andrew E., 5,442,434, Cl. 356-73.100.

Anzai, Susumu, to Fuji Xerox Co., Ltd. Optical system including provisions for correcting scanning beam spot displacements due to changing ambient conditions. 5,442,171, Cl. 250-235.000.

Aoi, Toshiki; Motai, Atsuko; and Ogawa, Akio, to TDK Corporation. Optical recording/reproducing method. 5,441,848, Cl. 430-269.000.

Aoki, Atsuyuki: *See*—
Murakami, Masaichi; Yokota, Muneyasu; Matsuura, Toshio; and Aoki, Atsuyuki, 5,442,418, Cl. 355-53.000.

Aoki, Harumi; and Sakai, Nobuya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Recording device for electronic still camera. 5,442,454, Cl. 358-341.000.

Aoki, Hideki; Akao, Masaru; Shin, Yoshiharurayama; Hayashi, Osamu; and Yoshizawa, Masahiko, to Kabushiki Kaisya Advance. Method for the production of an implant having an apatite coating layer using a hydrothermal treatment. 5,441,536, Cl. 427-2.270.

Aoki, Kei: *See*—
Urano, Satoshi; Aoki, Kei; Tomita, Nobuaki; and Mori, Hirohiko, 5,442,096, Cl. 560-190.000.

Aoki, Masaaki: *See*—
Nishino, Toshikazu; Miyake, Mutsuko; Kawabe, Ushio; Harada, Yutaka; Aoki, Masaaki; and Hirano, Mikio, 5,442,196, Cl. 257-36.000.

Aoyama, Moriyuki: *See*—
Takemoto, Takatoshi; Kawashima, Kazunari; Kadomatsu, Hideyuki; Aoyama, Moriyuki; and Nakamura, Takaharu, 5,441,253, Cl. 271-34.000.

Aoyama, Yoshiki: *See*—
Kameyama, Shinji; Yoshihiro, Takeo; Aoyama, Yoshiki; Nakamura, Kazuo; Akedo, Shuichi; and Mizuno, Masayuki, 5,442,466, Cl. 358-498.000.

APD Cryogenics, Inc.: *See*—
Boyarsky, Mikhail; Yudin, Boris; Mogorychny, Victor I.; and Klusmier, Larry, 5,441,658, Cl. 252-67.000.

Apolloni, Vittorio: *See*—
Cornia, Luciano; Manzardo, Ruggero; and Apolloni, Vittorio, 5,441,084, Cl. 139-25.000.

Apple Computer, Inc.: *See*—
Greyson, Ann M.; Hokit, Jeffrey D.; Kaptanoglu, Marjory; Wagner, Annette M.; and Cappa, Stephen P., 5,442,742, Cl. 395-144.000.
Martin, Stephen R.; and Mooney, Randall O., Jr., 5,442,305, Cl. 326-30.000.

Appleman, Kenneth H.: *See*—
Filepp, Robert; Gordon, Michael L.; Bidwell, Alexander W.; Wolf, Allan M.; Young, Francis C.; Tiemann, Duane; Appleman, Kenneth H.; and Meo, Sam, 5,442,771, Cl. 395-650.000.

Appleton, Arthur J. Release mechanism for cans. 5,441,148, Cl. 206-150.000.

Applied Materials, Inc.: *See*—
Cho, Tom; and Ngai, Christopher, 5,441,568, Cl. 118-715.000.
Law, Kam S.; Robertson, Robert; Kollrack, Michael; Lee, Angela T.; Takehara, Takako; Feng, Guofu J.; and Maydan, Dan, 5,441,768, Cl. 427-255.700.
Nishizato, Hiroshi; and Ono, Hirofumi, 5,440,887, Cl. 62-50.700.

Arackellian, Kevork: *See*—
Cornelius, Craig J.; and Arackellian, Kevork, 5,442,167, Cl. 250-201.200.

Arai, Michio; Ikeda, Masaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, to TDK Corporation; and Semiconductor Energy Lab. Co., Ltd. Non-single crystal semiconductor device with sub-micron grain size. 5,442,198, Cl. 257-64.000.

Arai, Takeshi: *See*—
Ohta, Yutaka; Hoshina, Yusho; and Arai, Takeshi, 5,441,571, Cl. 118-730.000.

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Yamaguchi, Mikimasa; Fukuzawa, Hiroshi; and Arai, Toshitaka, 5,441,651, Cl. 210-780.000.

Araki, Tetsuro: *See*—
Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masahara; Nakane, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.

Aramaki, Kouji: *See*—
Takagi, Minori; Aramaki, Kouji; and Ikeda, Takeshi, 5,442,453, Cl. 358-335.000.

Aramaki, Takashi: *See*—
Matsuno, Osamu; Aramaki, Takashi; Kawamura, Katsuhiko; and Nakanowatari, Jun, 5,440,921, Cl. 73-117.300.

Arase, Tomohiro: *See*—
Nagamatsu, Shigeki; Arase, Tomohiro; and Yasuda, Masaaki, 5,442,121, Cl. 564-398.000.

Arbitrage Imports Incorporated: *See*—
Moore, Barrett H., 5,441,355, Cl. 401-7.000.

ARCO Chemical Technology, L.P.: *See*—
Mallikarjun, Ramesh; Otte, Leon L.; and Cleland, William J., 5,442,041, Cl. 528-483.000.

Arex Electronics Corporation: *See*—
Hatanaka, Takefumi; and Kuwahara, Naruto, 5,442,271, Cl. 318-729.000.

Argonne National Laboratory: *See*—
Reifman, Jaques; and Wei, Thomas Y. C., 5,442,555, Cl. 364-43 1.010.

Argyropoulos, John N.; and Busby, Molly L, to Union Carbide Chemicals & Plastics Technology Corporation. Hindered-hydroxyl functional (meth)acrylate monomers containing di(meth)acrylates and compositions including same. 5,442,023, Cl. 526-320.000.

Arlington Industries, Inc.: *See*—
Gretz, Thomas J., 5,442,141, Cl. 174-153.00G.

Armel, Jack, to Foundation For Physical Sciences, The. Traveler's check and dispensing system therefor. 5,442,162, Cl. 235-381.000.

Armstrong, Wilford J.: *See*—
Molter, Trent M.; Faye, David L.; and Armstrong, Wilford J., 5,441,621, Cl. 204-252.000.

Armstrong World Industries, Inc.: *See*—
Brown, David S., 5,441,792, Cl. 428-170.000.
Sideman, Carl E.; Snyder, Donald M.; Wiker, Anthony L.; Herweh, John E.; and Remar, Joseph F., 5,441,563, Cl. 106-224.000.

Arnberg, Peter W.; and Ostergren, Roland, to RST Sweden AB. Drivable slope-sensitive unit for measuring curvature and crossfall of ground surfaces. 5,440,923, Cl. 73-146.000.

Arnold, Delbert L.; and Delcourt, Mark H., to Emhart Inc. Grounding stud/nut. 5,442,133, Cl. 174-51.000.

Arnold, James L. Fence panel assembly and fence. 5,441,240, Cl. 256-24.000.

Arnold, Steven C.; Bezwada, Rao S.; and Hunter, Alastair W., to Ethicon, Inc. Copolymers of 1,4-dioxepan-2-one and 1,5,8,12-tetraoxacyclotetradecane-7-14-dione. 5,442,032, Cl. 528-354.000.

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Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., to Hewlett-Packard Corporation. Fabrication of ink fill slots in thermal ink-jet printheads utilizing chemical micromachining. 5,441,593, Cl. 216-27.000.

Baum, James A., to Ecogen Inc. *Bacillus thuringiensis* transposon TN5401. 5,441,884, Cl. 435-252.310.

Baumann, Hans D. Eccentrically rotatable sleeve type 3-way valve. 5,441,080, Cl. 137-625.460.

Bauman, Marvin D.; Chen, Steven S.; Priest, Edward C.; and Paffel, Douglas C., to Cray Research, Inc. Optical clock distribution method and apparatus. 5,442,475, Cl. 359-140.000.

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Owens, Alvin J., Jr.; and Baxendell, Douglas J., 5,442,422, Cl. 355-215.000.

Baxter, Richard C. Mobile waste treatment apparatus. 5,441,640, Cl. 210-607.000.

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Findeisen, Kurt; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,441,924, Cl. 504-225.000.
Forster, Heinz; Wagner, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,442,074, Cl. 548-166.000.
Heiliger, Ludger, 5,442,021, Cl. 526-241.000.
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Bazes, Mel, to Intel Corporation. Circuitry and method for reset discrimination. 5,442,310, Cl. 327-143.000.

Beach, David H.; and Galaktionov, Konstantin, to Cold Spring Harbor Laboratory. Human cdc25 genes, encoded products and uses thereof. 5,441,880, Cl. 435-193.000.

Beam, William M., to Chrysler Corporation. Wiring system for vehicle instrument panel wire encapsulated in reconfigured ventilation system. 5,442,518, Cl. 361-690.000.

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Bean, Douglas C. Food temperature maintenance. 5,440,975, Cl. 99-483.000.

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Ederyd, Stefan; Akerman, Jan; Beaufoy, Robert; Carpenter, Michael; Bonneau, Maxime; and Pillot, Jacques, 5,441,693, Cl. 419-10.000.

Beaujean, Hans-Josef; Artiga Gonzalez, Rene-Andres; and Bode, Jens, to Henkel Kommanditgesellschaft auf Aktien. Non-aqueous liquid detergent preparations containing a hydrated zeolite a stabilized by a polar deactivating agent. 5,441,661, Cl. 252-95.000.

Beavers, Randy S.; Carman, Karen L.; Cassell, Michael L.; Knight, Joseph F.; and Mercer, James W., to Eastman Chemical Company. Branched copolyesters especially suitable for extrusion blow molding. 5,442,036, Cl. 528-196.000.

Beck, Erich; Ley, Gregor; Gulbins, Erich; Schlarb, Bernhard; Keil, Edmund; and Lokai, Matthias, to BASF Aktiengesellschaft. Radiation-curable, aqueous dispersion. 5,441,775, Cl. 427-496.000.

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Beckley, Gordon C., to GNB Battery Technologies Inc. Sealed lead-acid cell tray assembly and motive powered vehicle using such cell tray assembly. 5,441,123, Cl. 180-68.500.

Beckman Instruments, Inc.: *See*—
Norell, Joyce L., 5,441,698, Cl. 422-58.000.

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Alchas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., 5,441,539, Cl. 623-66.000.

Bedford, James P.; and Hollingshead, Wayne S., to Cleveland Range, Inc. Steam generator heat exchanger for cooking equipment. 5,441,034, Cl. 126-20.000.

Bedford, James P.; and Hollingshead, Wayne, to Cleveland Range, Inc. Power gas burner system. 5,441,405, Cl. 431-286.000.

Beevor, Robert G.; and Gulliver, David J., to BP Chemicals Limited. Preparing carboxylic acids. 5,442,107, Cl. 562-519.000.

Behm, Frederique: *See*—
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Behr, Arno; and Handwerk, Hans-Peter, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of oligomeric fatty acids and lower alkyl ester thereof. 5,442,081, Cl. 554-26.000.

Behr, John A.: *See*—
Schaeffer, Wayne G.; Wehmeier, William C.; Broccard, Terry J.; and Behr, John A., 5,440,894, Cl. 62-203.000.

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Belcor Industries Inc.: *See*—
Lam, Joe A. S., 5,440,852, Cl. 53-377.200.

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Wu, Tsong-Ho, 5,442,623, Cl. 370-16.100.

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Bell, Peter: *See*—
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Beloit Technologies, Inc.: *See*—
Sandberg, Brian G.; Brandt, David A.; Brown, Dale A.; Collins, Robert E.; Lange, David V.; Lindstrand, Bruce L.; and Raditke, Michael A., 5,441,604, Cl. 162-205.000.
Thompson, Stanley P.; and Zimmerman, Kenneth J., 5,440,825, Cl. 34-497.000.

Bender-Zanoni, Joseph F., to Martin Marietta Corporation. Ammunition magazine drive system. 5,440,964, Cl. 89-34.000.

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Meuschke, Robert E.; Bengel, Thomas G.; Bauer, Frank I.; and Miller, Phillip E., 5,442,666, Cl. 376-272.000.

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Bailey, Charles E.; Bentley, Steven R.; Paranjape, Sushama M.; Quintana, Fernando; and West, Stephen C., 5,442,491, Cl. 360-26.000.

Beranger, Herve; Joly, Frederic; and Rapoport, Stuart, to International Business Machines Corporation. Fast data compression circuit for semiconductor memory chips including an array built-in self-test structure. 5,442,641, Cl. 371-21.200.

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Svenning, Bjornar; and Berg, Eivind, 5,442,590, Cl. 367-15.000.

Berg, Lloyd, to Berg, Lloyd. Separation of xylenes by extractive distillation. 5,441,608, Cl. 203-51.000.

Bergen, Karl-Heinz: *See*—
Grimm, Hans; Lang, Walter; Bergen, Karl-Heinz; Lang, Ernst; and Klink, Ulrich, 5,441,439, Cl. 451-28.000.

Bergenwall, Henning, to Samhall Rehab AB. Device in toilet seats. 5,440,767, Cl. 4-667.000.

Berger, Gunter, to Mannesmann Aktiengesellschaft. Ship drive with two counterturning propellers. 5,441,388, Cl. 416-125.000.

Bergeson, Richard P.: *See*—
Kropf, Keith E.; Bergeson, Richard P.; and Fitzpatrick, Luann E., 5,440,903, Cl. 68-134.000.

Bergquist, Richard A.: *See*—
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Bergstrand, Haakan S. A.: *See*—
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Berks, Reginald B.: *See*—
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Bernstein, Peter R.; Edwards, Philip D.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., to Zeneca Limited. 1-pyrimidinylacetamide human leukocyte elastate inhibitors. 5,441,960, Cl. 514-269.000.

Berry, Bernie B., Jr., to Carr Metal Products, Inc. Selective holder design and positioning pattern. 5,441,709, Cl. 422-297.000.

Berry, David T.: *See*—
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Bertoldi, Massimo: *See*—
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Bertsch, Oran L.: *See*—
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Besemann, Alfred, to E.C.H. Will GmbH. Apparatus for manipulating sheets or webs of paper. 5,441,254, Cl. 271-299.000.

Beth Israel Hospital Assoc. Inc.: *See*—
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Better Baby Products, Inc.: *See*—
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Betz, Walter: *See*—
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Bezuk, Steve J.: *See*—
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BHP Minerals International Inc.: *See*—
Duyvesteyn, Willem P. C.; Bakker, Tom; and Lastra, Manuel R., 5,441,712, Cl. 423-99.000.

Bias, Donald R.: *See*—
Botterman, Ralph C.; Bias, Donald R.; and Russell, Vincent T., 5,441,334, Cl. 301-37.100.

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Bier, Eric A., to Xerox Corporation. Method and apparatus for interfacing a plurality of users to a plurality of applications on a common display device. 5,442,788, Cl. 395-650.000.

Bieringer, Hermann: *See*—
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Bierschenk, James L.; Howarth, Richard A.; and Socolowski, Norbert J. Thermoelectric cooler. 5,441,576, Cl. 136-203.000.

Big 'O' Inc.: *See*—
Kime, Geofrey G.; and Chapman, Carl D., 5,441,588, Cl. 156-499.000.

Bigolin, Riccardo, to Selle Royal S.p.A. Method for manufacturing integral elastic supports using an expandable resin. 5,441,676, Cl. 264-25.000.

Bigus, Joseph P., to International Business Machines Corporation. Adaptive job scheduling using neural network priority functions. 5,442,730, Cl. 395-22.000.

Bill Moss, Inc.: *See*—
Moss, C. William, 5,441,069, Cl. 135-124.000.

Billick, Irwin H.: *See*—
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Billingham, Paul R. Storage system. 5,441,151, Cl. 206-425.000.

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Binder, George E.: *See*—
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Bindon, John N.; and Parks, Thomas R. Collapsible bread slicing appliance with electric fan. 5,440,959, Cl. 83-100.000.

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Biotteau, Bernard, to Alcatel N.V. Optical telecommunications method. 5,442,473, Cl. 359-124.000.
Bird, Colin R.; Grierson, Donald; and Schuch, Wolfgang W., to Zeneca Limited. Expression of genes in transgenic plants. 5,442,052, Cl. 536-24.100.
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Bishop, Arthur E., to A.E. Bishop & Associates PTY LTD. Measuring and recording apparatus using fluid as the measuring media for use in the manufacture of hydraulic power steering valves. 5,441,438, Cl. 451-5.000.
Bitting, Ricky F.: *See*—
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Bjorkquist, David W.; and Panandiker, Rajan K., to Procter & Gamble Company, The. β-aminoalkyl and β-N-peptidylaminoalkyl boronic acids. 5,442,100, Cl. 562-7.000.
Black Diamond Equipment, Ltd.: *See*—
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Blagaila, John H.: *See*—
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Blahut, Donald E.; and Szurkowski, Edward S., to AT&T Corp. Program server for interactive television system. 5,442,389, Cl. 348-7.000.
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Blezard, Michael; Jones, Glyn R.; and Ghadimi, Moharam, to Albright & Wilson Limited. Nitrosamine and nitrite inhibition. 5,442,113, Cl. 564-2.000.
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Block and Company, Inc.: *See*—
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Bloomquist, Darrel R.; Howe, Stephan P.; and Agarwal, Arun K., to Hewlett-Packard Company. Method of preparing recording media for a disk drive and disk drive recording media. 5,441,788, Cl. 428-65.600.
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Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See*—
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Bock, Erich; Adolf, Hermann; and Pohn, Romeo, to Rieter Ingolstadt Spinnereimaschinenbau AG. Differential gear winding device for bobbins. 5,441,207, Cl. 242-18.0DD.
Bode, Jens: *See*—
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Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simai, Antal; and Tihanyi, Endre, to Egis Gyogyszergyar Rt. 1,3,4-benzotraizepin-5(4H)-one derivatives and process for the preparation thereof. 5,441,948, Cl. 514-183.000.
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Bodini, Giacomo F.; and Cimaroli, Primo, to Generalmusic S.p.A. Digital classic organ with remote control finishing. 5,442,128, Cl. 84-620.000.
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Boix Jaen, Jose, to Boix Maquinaria, S.A. Box stacker. 5,441,381, Cl. 414-790.300.
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Bonaquist, Dante P.; and Lockett, Michael J., to Praxair Technology, Inc. Cryogenic air separation system with liquid air stripping. 5,440,884, Cl. 62-22.000.
Bonham, Richard E.; and Sooley, Douglas C., to Z Mark International, Inc. Mail stamping apparatus and method. 5,440,979, Cl. 101-91.000.
Bonne, Ulrich; and Ohnstein, Thomas R., to Honeywell Inc. Microstructure gas valve control forming method. 5,441,597, Cl. 216-2.000.
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Bonnet, Henri, to United Parcel Service of America, Inc. Automatic rotary sorter and cylindrical storage system. 5,441,141, Cl. 198-370.030.
Bonomi, Flavio G.; and Peck, Richard J., to AT&T Corp. Dynamic access control for an ATM network. 5,442,624, Cl. 370-17.000.
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Bontems, Thomas A.: *See*—
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Bonutti, Peter M. Bone implant and method of securing. 5,441,538, Cl. 623-66.000.
Borgwarth, Dennis. High energy coaxial cable cooling apparatus. 5,442,131, Cl. 174-15.600.
Borucki, Martin T.; Kober, Kasimir; and Michals, Richard, to Chicago Dryer Company. Apparatus for feeding and spreading laundry articles. 5,440,810, Cl. 34-143.000.
Bosiers, Jan T. J.; Roks, Edwin; and Kleimann, Agnes C. M., to U.S. Philips Corporation. Charge-coupled device having charge reset. 5,442,208, Cl. 257-223.000.
Boshart, Patrick W., to Texas Instruments Incorporated. Voltage-controlled oscillator and system with reduced sensitivity to power supply variation. 5,442,325, Cl. 331-57.000.
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Hwang, Kou M.; Qi, You M.; Liu, Su-Ying; Choy, William; and Chen, Jen, 5,441,983, Cl. 514-562.000.

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Kuo, Fan-Ming; and Chen, Kwang-Cheng, 5,442,660, Cl. 375-202.000.

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Goodman, Michael G.; Chen, Robert; and Reitz, Allen, 5,441,942, Cl. 514-45.000.

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Cheney, Michael; Feliciano, Donald; and Wivell, Susan, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Skin cleansing composition. 5,441,671, Cl. 252-549.000.

Cheng, Chunwei: *See*—
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Traur, Liang S.; Aronson, Michael P.; Jones, Frank; and Lee, G. Jae, 5,441,724, Cl. 424-70.110.

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Gough, Anthony D.; de Groot, Joanne M.; and Price, Jeffrey, 5,441,730, Cl. 424-70.110.

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Chiang, Alice; McBride, Kevin M.; and Yee, Calvin C., to International Business Machines Corporation. Interactive online tutorial system with user assistance function for software products. 5,442,759, Cl. 395-375.000.

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Schantz, Christopher A.; Hanson, Eric G.; Ty, Si; McClelland, Paul H.; Lloyd, William J.; and Childers, Winthrop D., 5,442,384, Cl. 347-20.000.

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Chisso Corporation: *See*—
Kunimune, Koichi; Maeda, Hirotoshi; Katou, Kouichi; and Watanabe, Eiji, 5,442,024, Cl. 528-12.000.
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Chitwood, Ralph, to Glacier Cross, Inc. Cervical traction device. 5,441,479, Cl. 602-18.000.

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Bauer, Harald; Christner, Juergen; Weber, Maria L.; and Hoehne, Wolfgang, 5,442,013, Cl. 525-309.000.

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Ciotola, Alfredo A. Mechanical seal. 5,441,282, Cl. 277-85.000.

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Tomlinson, Charles E., 5,441,580, Cl. 148-247.000.

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Kato, Hitoshi; Horie, Toshio; and Ashizawa, Koichi, 5,441,627, Cl. 205-77.000.

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Dotolo, Vincent A., 5,441,666, Cl. 252-170.000.

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Krutak, James J.; Weaver, Max A.; Coates, Clarence A., Jr.; Hilbert, Samuel D.; Oldfield, Terry A.; Parham, William W.; and Pruett, Wayne P., 5,442,086, Cl. 558-401.000.

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Feng, Guofu J.: *See*—
Law, Kam S.; Robertson, Robert; Kollrack, Michael; Lee, Angela T.; Takehara, Takako; Feng, Guofu J.; and Maydan, Dan, 5,441,768, Cl. 427-255.700.
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Pradel, Robert; and Schiffler, Stefan, 5,441,132, Cl. 188-315.000.
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Childers, Winthrop D.; Timm, Dale D., Jr.; Thierheimer, Charles L., Jr.; Field, Marshall; Colburn, William S.; Boucher, William R.; Elliot, Joseph R.; and Stokes, Peter R., 5,442,386, Cl. 347-50.000.
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Autant, Pierre; Chalvin, Christophe; Colin, Claudine; Jorda, Rafael; and Wertz, Jean-Luc, 5,441,742, Cl. 424-405.000.
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Ely, Timothy B.; and Finck, Frederick P., 5,440,909, Cl. 70-395.000.
Findeisen, Kurt; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal substituted triazolimones. 5,441,924, Cl. 504-225.000.
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Casavant, Thomas L.; and Fineberg, Samuel A., 5,442,797, Cl. 395-800.000.
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Zenoni, Maurizio; and Fuganti, Claudio, 5,441,874, Cl. 435-47.000.
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Hoarty, W. Leo; Soske, Joshua; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,442,700, Cl. 380-15.000.
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Nazif, Zaher A.; Cebulka, Kathleen D.; Chu, Francis Y.; Fisher, Gregory M.; Lancaster, Jill E.; Man, Susan K.; Shastry, Subramanya K.; Vinciguerra, Lori J.; and Wang, Lei-Lei C., 5,442,690, Cl. 379-207.000.
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Kropf, Keith E.; Bergeson, Richard P.; and Fitzpatrick, Luann E., 5,440,903, Cl. 68-134.000.
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Fleisher, Alexander; Gorenstein, Ian; Vselyubskaya, Olga; and Nakhimovich, Ilya, to Florasynth, Inc. Radiation-enhanced recovery of maltol. 5,441,612, Cl. 204-157.150.
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Florian, David W. Key adaptor. 5,440,910, Cl. 70-456.00R.
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Hensler, Roy F., 5,442,148, Cl. 181-235.000.
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Crouther, Ron; Flynn, Daniel P.; and Lagwinska, Elizabeth, 5,441,759, Cl. 427-2.300.
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Anderson, Neil G., 5,441,009, Cl. 114-316.000.
Barrett, Stephen P.; and Crawford, Paul A., 5,441,310, Cl. 285-18.000.
Harris, Arthur; Burrows, John; and Wilson, David, 5,441,602, Cl. 162-48.000.
Hasse, Paul L., 5,441,411, Cl. 434-34.000.
Krapcho, Karen J.; Jackson, John R. H.; Johnson, Janice H.; DelMar, Eric G.; and Kral, Robert M., Jr., 5,441,934, Cl. 514-12.000.
McGinley, Emanuel J.; Krawczyk, Gregory R.; and Selinger, Edward, 5,441,753, Cl. 426-96.000.
Tellander, Robert M.; Hummel, Kenneth W.; and Kezar, Jeffrey F., 5,440,966, Cl. 89-46.000.
Theodoridis, George, 5,441,925, Cl. 504-243.000.
Focus Electronic Co., Ltd.: *See*—
Huang, Chih-Lun, 5,442,152, Cl. 200-345.000.
Fogarasi, Attila J.: *See*—
Barber, Ronald J.; and Fogarasi, Attila J., 5,442,779, Cl. 395-600.000.
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Foote, David G.: *See*—
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Caubere, Paul; and Forconi, Herve, 5,442,080, Cl. 552-8.000.
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Gajewski, Kenneth J.; and Nichols, Ralph T., 5,441,416, Cl. 439-32.000.
Kiridena, Vijitha; Ebenstein, Samuel E.; and Smith, Gregory H., 5,442,572, Cl. 364-560.000.
Ma: Thomas T., 5,441,023, Cl. 123-184.570.
Miller, John M.; Hampo, Richard J.; and Davis, Roy I., 5,441,298, Cl. 280-707.000.
Yasso, Adel K., 5,441,099, Cl. 165-41.000.
Foreman, Mark M., to Eli Lilly and Company. Treatment of lower urinary tract disorders with selective norepinephrine uptake inhibitors. 5,441,985, Cl. 514-646.000.
Forestier, Serge: *See*—
Deflandre, Andre ; Dubois, Michel; Forestier, Serge; and Herve, Richard, 5,441,724, Cl. 424-59.000.
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Formoa, John S.; and Jespersen, Paul W., to Georgia-Pacific Corporation. Method and apparatus for dispensing flexible sheet material. 5,441,189, Cl. 225-2.000.
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Gast, Werner; Georgiev, Andrey; and Lieder, Rainer M., 5,442,575, Cl. 364-602.000.
Forster, Heinz; Wagner, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal fluorobenzothiazolyloxyacetamides. 5,442,074, Cl. 548-166.000.
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Foster, Donald C.: *See*—
Sprecher, Cindy A.; Foster, Donald C.; and Norris, Kjeld E., 5,441,931, Cl. 514-2.000.
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Ehr, Timothy G. J.; Haneen, Michael E.; and Breyer, Scott T., 5,441,104, Cl. 165-104.320.
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Armel, Jack, 5,442,162, Cl. 235-381.000.
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Champion, Patrick; and Thenaisie, Jacky, 5,441,423, Cl. 439-367.000.
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Boulais, Guillaume, 5,441,426, Cl. 439-681.000.
Morlion, Danny L.; and Jonckheere, Luc O., 5,441,424, Cl. 439-581.000.
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Guillou, Louis; Giachetti, Jean-Luc; and Gelly, Alain, 5,442,701, Cl. 380-20.000.
Francis, Cecil V.: *See*—
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Dewey, Anthony G.; Francois, Paul H.; Gardner, Timothy S.; Iwasaki, Hideaki; and Tayefeh, Morovat, 5,442,618, Cl. 369-124.000.
Frank, Patrick M.: *See*—
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Frantisak, Kenneth: *See*—
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Freeland, Gregory A. Multi-purpose strap wrench. 5,440,955, Cl. 81-64.000.

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Freeman, Arvie E.; and Shindler, Franz A., 5,441,005, Cl. 114-117.000.

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Willgohs, Ralph H., 5,440,823, Cl. 34-363.000.

Frenzel, Michael J. Vehicular compartmentalizer unit. 5,441,183, Cl. 224-542.000.

Frey, Rudolph W.; and Downes, George R., Jr., to Autonomous Technologies Corp. Patient responsive eye fixation target method and system. 5,442,412, Cl. 351-223.000.

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Spea, Peter; Kreuzer, Franz-Heinrich; Freyer, Christian; and Hessling, Mechthild, 5,442,025, Cl. 528-15.000.

Freyne, Eddy J. E.: *See*—
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Fricke, Andreas: *See*—
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Friedrich Grohe Aktiengesellschaft: *See*—
Clare, Manamohan, 5,441,075, Cl. 137-454.600.

Fries, Romuald: *See*—
Brammer, Hartmut; Fries, Romuald; Dums, Karl; and Krebs, Holger, 5,440,933, Cl. 73-756.000.

Frisch, Myron L.; and Nsumoan, Ahmed, to EnScan, Inc. Method and apparatus for deriving power consumption information from the angular motion of a rotating disk in a watt hour meter. 5,442,281, Cl. 324-137.000.

Frischknecht, Rudolf: *See*—
Hunziker, Andreas; and Frischknecht, Rudolf, 5,441,085, Cl. 139-28.000.

Fritz, Lawrence C.: *See*—
Seubert, Peter A.; Schenk, Dale B.; and Fritz, Lawrence C., 5,441,870, Cl. 435-7.100.

Fritzsch, Gernod, to Dekna elektro-u. medizinische Apparatebau Gesellschaft mbH. Bipolar radio-frequency surgical instrument. 5,441,499, Cl. 606-45.000.

Fromwiller, John K.; and Ney, Steven J., to Morton International, Inc. Curatives for aqueous adhesives. 5,442,028, Cl. 528-44.000.

Frost, Gordon J.; and Strobel, Edward W., Jr., to Patton Electric Company, Inc. Air propelling apparatus with fan shaft mounted on guards. 5,441,391, Cl. 417-362.000.

Frye, Ricky J.: *See*—
Conley, Ralph F., Jr.; Frye, Ricky J.; and Gehres, Clint E., 5,441,001, Cl. 112-470.180.

FSR Patented Technologies, Ltd.: *See*—
Schlesinger, Barry; and Rapp, Harold, 5,441,606, Cl. 203-39.000.

Fu Tai Umbrella Works, Ltd.: *See*—
Lin, Chung-Kuang; and Chang, Jung-Jen, 5,441,065, Cl. 135-24.000.

Fuchs, Hugo; Ritz, Josef; Wiesinger, Hans J.; and Westherford, David, to BASF Aktiengesellschaft. Recovery of caprolactam from distillation residues obtained in the purification of caprolactam. 5,441,607, Cl. 203-49.000.

Fues, Johann F.: *See*—
Mueller, Heinz; Herold, Claus-Peter; von Tapavicza, Stephan; and Fues, Johann F., 5,441,927, Cl. 507-138.000.

Fuganti, Claudio: *See*—
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Fuji Electric Co., Ltd.: *See*—
Kimura, Hiroshi; Matsui, Toshiyuki; Suzuki, Takeshi; Mukae, Kazuo; and Ohi, Akihiko, 5,441,926, Cl. 505-193.000.
Ooji, Masataka, 5,442,531, Cl. 363-43.000.
Yamaguchi, Mikimasa; Fukuzawa, Hiroshi; and Arai, Toshitaka, 5,441,651, Cl. 210-780.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Akimoto, Akira, 5,441,026, Cl. 123-198.00D.

Fuji Photo Film Co., Ltd.: *See*—
Adachi, Kaoru, 5,442,643, Cl. 371-22.500.
Hara, Hiroshi, 5,441,843, Cl. 430-138.000.
Nagase, Hiroshi; Miyata, Kenichi; and Tsuda, Masahiko, 5,441,846, Cl. 430-259.000.
Ohta, Yasunori, 5,441,251, Cl. 271-145.000.
Yabuki, Yoshihara; and Suzuki, Keiichi, 5,441,859, Cl. 430-522.000.

Fuji Xerox Co., Ltd.: *See*—
Anzai, Susumu, 5,442,171, Cl. 250-235.000.
Chujo, Akihiko; Yui, Toshitake; Hashimoto, Ken; Yamashita, Yoshiro; Koide, Fumitori; Endo, Yasuharu; and Segara, Etsuo, 5,441,561, Cl. 106-20.00C.
Fuse, Takeshi, 5,442,383, Cl. 347-19.000.
Imai, Takashi; Agata, Takeshi; Mikami, Tadeshi; and Inaba, Yoshihiro, 5,441,840, Cl. 430-109.000.
Ito, Isao, 5,442,424, Cl. 355-244.000.

Fujioka, Yasuhiko; and Oshima, Hisaori, to Kabushiki Kaisha Kobe Seiko Sho. Upper and lower rims of post-cure tire inflator, and upper and lower rim replacing apparatus. 5,441,393, Cl. 425-58.100.

Fujii, Tetsuo, to Nippondenso Co., Ltd. Semiconductor device with stress relief. 5,442,223, Cl. 257-506.000.

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Fujikoshi Kikai Kogyo Kabushiki Kaisha: *See*—
Nakajima, Makoto, 5,441,444, Cl. 451-289.000.

Fujimaki, Nobuyoshi, to Shin-Etsu Handotai Co., Ltd. Method and apparatus for measuring high-frequency C-V characteristics of MIS device. 5,442,302, Cl. 324-765.000.

Fujimoto, Hitoshi; Yoshida, Akimaro; Miyake, Norifumi; and Chobo, Satoshi, to Canon Kabushiki Kaisha. Automatic original feeding apparatus of original side-by-side mount type. 5,442,431, Cl. 355-311.000.

Fujimoto, Hitoshi: *See*—
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Fujimura, Yasuhiro: *See*—
Hashimoto, Tadao; Hara, Ryoji; and Fujimura, Yasuhiro, 5,442,684, Cl. 379-61.000.

Fujimura, Yoshiichi; and Matsuura, Shizotaka, to Takata Corporation. Seat belt retractor. 5,441,209, Cl. 242-384.000.

Fujisawa, Hidemitsu: *See*—
Ogura, Masaru; and Fujisawa, Hidemitsu, 5,442,605, Cl. 369-44.140.

Fujita, Kenjiro: *See*—
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Fujita, Yoshiji: *See*—
Koh, Keiko; Taniguchi, Mikio; Itoh, Norie; Kushida, Hiroshi; Morita, Osamu; Yamada, Hiroyoshi; Munesada, Kiyotaka; Tsuzuki, Kazuo; Kunihara, Mineo; and Fujita, Yoshiji, 5,442,062, Cl. 544-234.000.

Fujitani, Sakae: *See*—
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Fujitani, Shin: *See*—
Watanabe, Hiroshi; Furukawa, Akio; Fujitani, Shin; Yonezu, Ikuo; and Isono, Takahiro, 5,441,826, Cl. 429-101.000.

Fujitsu Limited: *See*—
Azegami, Kenge; and Yamashita, Koichi, 5,442,246, Cl. 326-38.000.
Dedic, Ian J.; and Royce, Dominic C., 5,442,655, Cl. 375-340.000.
Emori, Teruaki, 5,442,499, Cl. 360-77.080.
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.
Kaku, Takashi; and Kawada, Noboru, 5,442,656, Cl. 375-354.000.
Katsuka, Yuji; and Toda, Yoko, 5,442,174, Cl. 250-282.000.
Kato, Takao; and Tamura, Hideo, 5,442,762, Cl. 395-375.000.
Kobayashi, Fumihiko; and Itaya, Eiji, 5,442,811, Cl. 455-67.300.
Matsui, Toshinari; Kubo, Shigeru; Shimizu, Kenzo; Iwasaki, Kunifumi; Kobayashi, Koji; and Maruyama, Eiko, 5,442,545, Cl. 364-401.000.
Murakami, Koichi; Hirota, Katsuhiko; and Nishiyama, Soichi, 5,442,734, Cl. 395-127.000.
Nakajima, Ryoetsu; Yamazaki, Naomi; Maruyama, Takumi; and Sugita, Kiyoshi, 5,442,777, Cl. 395-182.180.
Nees, John A.; and Wakana, Shin-ichi, 5,442,300, Cl. 324-762.000.
Takayama, Kuniharu; and Kano, Hiroyuki, 5,442,269, Cl. 318-568.110.
Yamazaki, Yuki; and Tasaki, Koji, 5,442,692, Cl. 379-253.000.

Fujiwara, Akihiro: *See*—
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kunihiko; Kaneda, Kitahiro; and Homma, Hideo, 5,442,397, Cl. 348-363.000.

Fujiwara, Hisashi, to NEC Corporation. Dynamic decoder circuit operative at low frequency clock signals without data destruction. 5,442,308, Cl. 326-106.000.

Fujiwara, Kiyoshi: *See*—
Kanazumi, Hisao; Yamashiro, Akiyoshi; and Fujiwara, Kiyoshi, 5,441,205, Cl. 241-41.000.

Fujiwara, Nobuo: *See*—
Okudaira, Tomomori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,442,213, Cl. 257-310.000.

Fujiyoshi, Minoru; Hasegawa, Michio; Kanomata, Shinichi; Anamizu, Takashi; Saito, Morio; and Satoh, Fumitaka, to Hitachi Metals, Ltd.; Tokyo Gas Co.; and Sasho Gas Seiki, Ltd. Pipe joint for connection of corrugated tube. 5,441,312, Cl. 285-23.000.

Fukada, Takeshi: *See*—
Arai, Michio; Ikeda, Masaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.

Fukaishi, Muneo; and Hida, Hikaru, to NEC Corporation. Field effect transistor having a low threshold voltage shift. 5,442,227, Cl. 257-628.000.

Fukasawa, Atsushi; Kawabe, Masabu; Kawahashi, Akiyoshi; and Sato, Takuro, to Oki Electric Industry Co., Ltd. Code-division multiple-access communication system providing enhanced capacity within limited bandwidth. 5,442,662, Cl. 375-205.000.

Fukawa, Junichi; Sasapei, Takeshi; and Goto, Kenji, to Konica Corporation. Method for processing a black-and-white silver halide photographic light-sensitive material. 5,441,847, Cl. 430-264.000.

Fukazawa, Yuji, to Kabushiki Kaisha Toshiba. Semiconductor device having a multilayered wiring structure with dummy wiring. 5,442,236, Cl. 257-758.000.

Fuki, Itsuo: *See*—
Ueda, Takashi; and Fuki, Itsuo, 5,441,211, Cl. 242-526.100.

Fukubeppu, Koichi; Hashiguchi, Takuji; Yasutomi, Tsuyoshi; and Hyodo, Tetsuji, to Kyocera Corporation. Thermal head and method for driving the same. 5,442,381, Cl. 347-18.00L.

Fukuhara, Noboru: *See*—
Hata, Masahiko; Fukuhara, Noboru; Takata, Hiroaki; and Inui, Katsumi, 5,441,913, Cl. 437-133.000.

Fukuhira, Masanori; Fukuoka, Hirofumi; Konya, Yoshiharu; and Watanabe, Masaki, to Shin-Etsu Chemical Co., Ltd. Preparation of high *a*-type silicon nitride powder. 5,441,694, Cl. 419-57.000.

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Sugita, Saburo; Fukui, Hiroyuki; and Komiya, Yukinori, 5,441,192, Cl. 227-130.000.

Fukunaga, Yuzo; Yasui, Tsuneo; and Okumura, Takashi, to Brother Kogyo Kabushiki Kaisha. Label adhesion device and printer for index labels. 5,441,586, Cl. 156-387.000.

Fukunishi, Takumi: *See*—
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, 5,442,523, Cl. 362-31.000.

Fukuoka, Hirofumi: *See*—
Fukuhira, Masanori; Fukuoka, Hirofumi; Konya, Yoshiharu; and Watanabe, Masaki, 5,441,694, Cl. 419-57.000.

Fukuta, Makoto; Iinuma, Satoshi; and Okada, Hiroaki, to Takeda Chemical Industries, Ltd. Peptide conjugate. 5,442,043, Cl. 530-303.000.

Fukutani, Iwao: *See*—
Takazawa, Tomoo; Hori, Toshio; and Fukutani, Iwao, 5,441,419, Cl. 439-86.000.

Fukuyama, Toshiaki: *See*—
Yoshimizu, Toshiyuki; Kishida, Masahiro; Fukuyama, Toshiaki; Ishimoto, Yoshihisa; Seike, Takeshi; and Matobe, Masakazu, 5,442,224, Cl. 257-536.000.

Fukuzawa, Hiroshi: *See*—
Yamaguchi, Mikimasa; Fukuzawa, Hiroshi; and Arai, Toshitaka, 5,441,651, Cl. 210-780.000.

Fulbert, Werner; Leeb, Richard; Radan, Manfred; and Stammberger, Willi, to Hoechst Aktiengesellschaft. Stabilized polymer film coated compounds and stabilized formulations in compressed from using same. 5,442,008, Cl. 424-478.000.

Fuller, Ronald D.; and Malone, Hugh R., to Motorola, Inc. Coupled line filter with improved out-of-band rejection. 5,442,330, Cl. 333-204.000.

Funahashi, Toshikazu: *See*—
Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; Uemura, Toshiya; and Funahashi, Toshikazu, 5,441,626, Cl. 205-50.000.

Furui, Masakatsu: *See*—
Mori, Takao; Furui, Masakatsu; Nakamichi, Katsuhiko; and Takahashi, Eiji, 5,441,888, Cl. 435-280.000.

Furui, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Starting circuit of passenger protecting apparatus. 5,442,244, Cl. 307-10.100.

Furukawa, Akio: *See*—
Watanabe, Hiroshi; Furukawa, Akio; Fujitani, Shin; Yonezu, Ikuo; and Isono, Takahiro, 5,441,826, Cl. 429-101.000.

Furukawa Denchi Kabushiki Kaisha: *See*—
Furukawa, Jun, 5,441,833, Cl. 429-223.000.

Furukawa Electric Co., Ltd., The: *See*—
Tsukiji, Naoki; and Aida, Hiroyuki, 5,441,912, Cl. 437-129.000.

Furukawa Electric Co., Ltd, The: *See*—
Kato, Hitoshi; Horie, Toshio; and Ashizawa, Koichi, 5,441,627, Cl. 205-77.000.

Furukawa, Jun, to Furukawa Denchi Kabushiki Kaisha. Paste nickel electrode plate and a storage battery including an electroconductive material. 5,441,833, Cl. 429-223.000.

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Arai, Michio; Ikeda, Masaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.

Furukawa, Teruo: *See*—
Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masaharu; Nakane, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.

Furuya, Takaaki: *See*—
Toda, Hiromichi; Ishigami, Shigeyasu; Kobayashi, Norihisa; Furuya, Takaaki; and Izumi, Jun, 5,440,873, Cl. 60-39.120.

Furuya, Yukitsuna, to NEC Corporation. Half duplex communication system having quick channel assignments. 5,442,803, Cl. 455-15.000.

Fuse, Takeshi, to Fuji Xerox Co., Ltd. Ink jet printer with a device for determining a printing interval. 5,442,383, Cl. 347-19.000.

Futsuhara, Koichi: *See*—
Asada, Norihiro; Kato, Masakazu; Futsuhara, Koichi; and Esashi, Masayoshi, 5,442,303, Cl. 326-14.000.

Fyson, John R.; and Willis, Roland G., to Eastman Kodak Company. Method of making stable color photographic prints. 5,441,853, Cl. 430-373.000.

G. D. Searle & Co.: *See*—
Bovy, Philippe R.; Rogers, Thomas E.; Miyano, Masateru; and Rico, Joseph G., 5,441,974, Cl. 514-365.000.
Collins, Joe T.; Hansen, Donald W., Jr.; Peterson, Karen B.; Pitzele, Barnett S.; and Reitz, David B., 5,441,950, Cl. 514-211.000.
Reitz, David B.; and Manning, Robert E., 5,441,970, Cl. 514-340.000.

Gabel, Jonathan B.: *See*—
Aichas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., 5,441,539, Cl. 623-66.000.

Gabion, Georges; Clevet, Aime ; and Roger, Robert, to Braun Aktiengesellschaft. Epilating appliance with gripping force adjustment means. 5,441,506, Cl. 606-133.000.

Gabor, Andrew M.: *See*—
Noufi, Rommel; Gabor, Andrew M.; Tuttle, John R.; Tennant, Andrew L.; Contreras, Miguel A.; Albin, David S.; and Carapella, Jeffrey J., 5,441,897, Cl. 437-5.000.

Gaborski, Roger S.; and Barski, Lori L., to Eastman Kodak Company. Method and apparatus for cursive script recognition. 5,442,715, Cl. 382-187.000.

Gac, Norman: *See*—
Cummings, Lowell O.; Terrizzi, Patrick A.; and Gac, Norman, 5,441,996, Cl. 523-416.000.

Gagliardi, Ugo O.; Hsu, Meichun; Cummings, Paul; and Mattin, Stephen A. ISDN interfacing of local area networks. 5,442,630, Cl. 370-85.130.

Gahang, Goo-Soo, to SamSung Electronics Co., Ltd. Process for encoding a half tone image considering similarity between blocks. 5,442,459, Cl. 358-433.000.

Gajewski, Kenneth J.; and Nichols, Ralph T., to Ford Motor Company. Telescoping electrical connector. 5,441,416, Cl. 439-32.000.

Gal, Eva: *See*—
Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simsi, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.

Gal, Melinda: *See*—
Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simsi, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.

Galaktionov, Konstantin: *See*—
Beach, David H.; and Galaktionov, Konstantin, 5,441,880, Cl. 435-193.000.

Galbo, James P.; Ravichandran, Ramanathan; Schirmann, Peter J.; and Mar, Andrew, to Ciba-Geigy Corporation. Non-migrating 1-hydrocarbyloxy hindered amine derivatives as polymer stabilizers. 5,442,071, Cl. 546-207.000.

Galei, Zev, to SeamX. Autonomous selective cutting method and apparatus. 5,442,565, Cl. 364-474.020.

Galindo, Jose : *See*—
Fehr, Charles; and Galindo, Jose , 5,442,124, Cl. 568-322.000.

Gall, Thomas P.: *See*—
Chen, William T.; Gall, Thomas P.; Wilcox, James R.; and Wu, Tien Y., 5,442,144, Cl. 174-266.000.

Gallagher, Anthony D. Device for terminating flow of a liquid after continuous flow of a predetermined duration. 5,441,078, Cl. 137-624.140.

Gallo, Frank F.; Bielek, Yan P.; Tebano, Riccardo; and Sardinha, Mark P., to Stoplift Corporation. Security system having deactivatable security tag. 5,442,334, Cl. 340-572.000.

Gallucci, Robert R.: *See*—
Walsh, Eileen B.; Clark, Angelika H.; Courson, Ronald D.; and Gallucci, Robert R., 5,441,997, Cl. 524-147.000.

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Gandek, Thomas P.: *See*—
Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, 5,441,603, Cl. 162-57.000.

Gangelhoff, Fred R.; Gangelhoff, James H.; and Gangelhoff, Joel T., to Tru Hone Corporation. Knife sharpener. 5,440,953, Cl. 76-86.000.

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Gao, Yun; Hong, Yaping; and Zepp, Charles M., to Sepracor, Inc. Asymmetric synthesis of (R)- and (S)-arylethasolamines from iminoketones. 5,442,118, Cl. 564-356.000.

Garcia, Francisco: *See*—
Campbell, Norman B.; Garcia, Francisco; and Diosan, Stefan, 5,441,399, Cl. 425-556.000.

Gardner, Timothy S.: *See*—
Dewey, Anthony G.; Francois, Paul H.; Gardner, Timothy S.; Iwasaki, Hideaki; and Tayefeh, Morovat, 5,442,618, Cl. 369-124.000.

Garibova, Taisija L.: *See*—
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozancev, Grigorij G., 5,441,973, Cl. 514-343.000.

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Smith, Rowland C.; and Garlick, Paul L., 5,441,077, Cl. 137-492.500.

Garman, Andrew J.; and Parker, John R., to Zeneca Limited. Pre-activated proteins for labelling oligonucleotide probes. 5,441,867, Cl. 435-6.000.
Garrevoet, Theo C.: *See*—
Noppe, Marcus J. M.; and Garrevoet, Theo C., 5,441,896, Cl. 436-525.000.
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Baker, Anna L.; and Garrigus, Darryl F., 5,441,682, Cl. 264-82.000.
Garvey, Joseph F.; and Larson, Curtis L., to Minnesota Mining and Manufacturing Company. Specialized pouches for containing and controllably dispensing product. 5,441,345, Cl. 383-9.000.
Gas Research Institute: *See*—
Reuther, James J.; and Billick, Irwin H., 5,441,402, Cl. 431-7.000.
Gast, Werner; Georgiev, Andrey; and Lieder, Rainer M., to Forschungszentrum Julich GmbH. Scanning analog-to-digital converter operating under the subranging principle. 5,442,575, Cl. 364-602.000.
Gattefosse SA: *See*—
Klein, Jean-Marie; and Denis, Joel, 5,441,738, Cl. 424-195.100.
Gazielly, Dominique; and Bloedel, Pierre. Reinforcement and supporting device for the rotator cuff of a shoulder joint of a person. 5,441,508, Cl. 606-151.000.
GE Medical Systems: *See*—
Picard, Catherine; Rougee, Anne; and Trousset, Yves, 5,442,674, Cl. 378-20.000.
Geborek, Thomas H. Document holding and display device. 5,441,228, Cl. 248-441.100.
Gebr. Happich GmbH: *See*—
Viertel, Lothar; and Welter, Patrick, 5,442,530, Cl. 362-137.000.
GEC Alsthom Electromecanique SA: *See*—
Cottevieille, Christian, 5,440,888, Cl. 62-50.700.
GEC Alstom T & D SA: *See*—
Baudart, Christophe, 5,442,280, Cl. 324-127.000.
GEC-Marconi Limited: *See*—
Boyes, Jonathan D.; and Hewitt, Charles, 5,442,556, Cl. 364-433.000.
Gehres, Clint E.: *See*—
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Geiger, Markus: *See*—
Weber, Beate; Hagemann, Jorg; Helling, Gunter; and Geiger, Markus, 5,441,855, Cl. 430-503.000.
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Gellert, Jobst U.; Zeust, Randy; and Guenther, Hans. Method of manufacturing injection molding manifold having a melt passage with an elbow. 5,441,197, Cl. 228-248.100.
Gelly, Alain: *See*—
Guillou, Louis; Giachetti, Jean-Luc; and Gelly, Alain, 5,442,701, Cl. 380-20.000.
Gelman, Andrew E.: *See*—
Kossovsky, Nir; Gelman, Andrew E.; and Sponsler, Edward E., 5,441,739, Cl. 424-400.000.
Gemeinschaftskernkraftwerk Neckar GmbH: *See*—
Kolditz, Joachim, 5,442,244, Cl. 324-220.000.
Gemplus Card International: *See*—
Kowalski, Jacek, 5,442,589, Cl. 365-225.700.
Genelabs Incorporated: *See*—
Hwang, Kou M.; Qi, You M.; Liu, Su-Ying; Choy, William; and Chen, Jen, 5,441,983, Cl. 514-562.000.
Genencor, Inc.: *See*—
Estell, David A.; Wells, James A.; and Bott, Richard R., 5,441,882, Cl. 435-222.000.
General Electric Company: *See*—
Crivello, James V.; and Fan, Mingxin, 5,442,026, Cl. 528-15.000.
Dalke, Charles A., 5,442,665, Cl. 376-245.000.
Golz, Thomas M., 5,442,252, Cl. 313-111.000.
Grohman, Martin, 5,441,816, Cl. 428-520.000.
Hansen, Kurt L.; Hill, Johnny F., II; and Ludwig, Arthur L., 5,441,574, Cl. 134-22.100.
Lin, Shaow B.; and Cooper, William E., 5,441,811, Cl. 428-355.000.
Sutton, George H., Jr.; Little, Francis H.; Granger, Carl, Jr.; and Stapf, Philip F., 5,442,286, Cl. 324-242.000.
Walsh, Eileen B.; Clark, Angelika H.; Courson, Ronald D.; and Gallucci, Robert R., 5,441,997, Cl. 524-147.000.
General Hospital Corporation, The: *See*—
Fishman, Jay A., 5,442,050, Cl. 536-23.700.
General Manufacturing Systems, Inc.: *See*—
Mueller, Gerald E.; and Siechta, Gene B., 5,441,284, Cl. 279-2.020.
Generalmusic S.p.A.: *See*—
Bodini, Giacomo F.; and Cimaroli, Primo, 5,442,128, Cl. 84-620.000.
Genger, Kevin R.: *See*—
Coleman, Carole L.; Genger, Kevin R.; Graham, Hugh W.; Hanna, Charles F.; Khalil, Omar S.; and Wender, David C., 5,441,894, Cl. 436-518.000.
Gentex Optics, Inc.: *See*—
Weymouth, Russell F., Jr., 5,440,798, Cl. 29-527.600.
Weymouth, Russell F., Jr., 5,441,398, Cl. 425-183.000.
Gentle, Thomas M.: *See*—
Hauenstein, Dale E.; Gentle, Thomas M.; Keenan, Linda D.; and Popa, Paul J., 5,442,010, Cl. 524-588.000.
Georgantas, Aristides, to S. Sclavos S.A. Jet dyeing apparatus and method. 5,440,771, Cl. 8-149.300.
George, William R.: *See*—
Kramer, James F.; George, William R.; and Lindener, Peter, 5,442,729, Cl. 395-2.800.
Georgia-Pacific Corporation: *See*—
Formon, John S.; and Jespersen, Paul W., 5,441,189, Cl. 225-2.000.
Georgiev, Andrey: *See*—
Gast, Werner; Georgiev, Andrey; and Lieder, Rainer M., 5,442,575, Cl. 364-602.000.
Georgopoulos, George, to E. J. Brooks Company. Seal. 5,441,316, Cl. 292-320.000.
Gerber, Stephen M.; and Ringlien, James A., to Owens-Brockaway Glass Container Inc. Inspection of transparent containers. 5,442,446, Cl. 356-428.000.
Gergen, Joseph P.; and Chau-Lee, Kin K., to Motorola, Inc. Multibit shifting apparatus, data processor using same, and method therefor. 5,442,576, Cl. 364-715.080.
Gerhardy, Reinhard, to Stihl, Andreas. Carburetor for an internal combustion engine. 5,441,673, Cl. 261-34.100.
Gerlach, Gerald F.; Willson, Philip J.; Rossi-Campos, Amalia; and Potter, Andrew A., to University of Saskatchewan. Actinobacillus pleuropneumoniae outer membrane lipoprotein A and uses thereof. 5,441,736, Cl. 424-190.100.
Germann, Rodney N.: *See*—
Yoder, Lamar D.; Young, Max E.; Marshall, Brian P.; and Germann, Rodney N., 5,441,022, Cl. 123-179.300.
Gerver, Michael J.: *See*—
Fenn, Ralph C.; Gerver, Michael J.; Hockney, Richard L.; and Johnson, Bruce G., 5,442,288, Cl. 324-244.000.
Geyer, Joel E.; Lee, Joseph K.; Mullen, John M.; Norman, Vernon R.; Wilhelm, Kathleen M.; and Wilson, Kenneth T., to International Business Machines Corporation. Token ring speed detector. 5,442,629, Cl. 370-94.000.
GFS Creations: *See*—
Figone, Frank M.; and Seubert, Eric M., 5,441,262, Cl. 273-157.00R.
Ghadimi, Moharam: *See*—
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Ghosh, Subir; and De Silva, Luiz C., to SG Microwaves Inc. Waveguide rotary joint and mode transducer structure therefor. 5,442,329, Cl. 333-21.00R.
Ghostley, Thomas J., to Emhart Inc. Lever operated door lock assembly. 5,441,318, Cl. 292-336.300.
Giachetti, Jean-Luc: *See*—
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Giacobbe, Robert A.: *See*—
Harris, Guy H.; Curotto, James E.; Giacobbe, Robert A.; Mandala, Suzanne M.; Monaghan, Richard L.; Jansson, Richard K.; and Lasota, Joan A., 5,441,987, Cl. 514-691.000.
Gianotti, Tonio: *See*—
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Giat Industries: *See*—
Chemiere, Patrice; and Dupuy, Jean-Paul, 5,440,992, Cl. 102-246.000.
Gibson, George A.: *See*—
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Gilbert, Donald C.: *See*—
Kane, Edmund J.; Herrmann, Robert S.; and Gilbert, Donald C., 5,441,338, Cl. 312-408.000.
Gilbert, J. Macklin, Jr. Hand cart for wall panel assembly. 5,441,379, Cl. 414-494.000.
Gilbreath, Jeremy C.: *See*—
Gilbreath, Mykos M.; Gilbreath, Jonathon L.; and Gilbreath, Jeremy C., 5,441,778, Cl. 428-13.000.
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Giles, Durham K.: *See*—
Slaughter, David C.; Curley, Robert G.; Chen, Pictiaw; and Giles, Durham K., 5,442,552, Cl. 364-424.070.
Gilicinski, Andrew G.: *See*—
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Giordano, William: *See*—
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Giovanni, Camozzi. Threaded fittings. 5,441,314, Cl. 285-211.000.
Girvin, Inc.: *See*—
Girvin, Robert H., III, 5,441,291, Cl. 280-276.000.
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Gitlin, Richard D.; and I, Chih-Lin, to AT&T Ipm Corp. Code division multiple access system providing variable data rate access to a user. 5,442,625, Cl. 370-18.000.

Giuliano, Fred; and Mizzi, John V., to Giuliano, Fred. Adjustable dispensing stirrer for soluble sweeteners. 5,440,976, Cl. 99-485.000.
GKN Walterscheid GmbH: *See*—
Fartmann, Norbert; Laubner, Joachim; and Muller, Norbert, 5,441,117, Cl. 172-272.000.
Glacier Cross, Inc.: *See*—
Chitwood, Ralph, 5,441,479, Cl. 602-18.000.
Gladden, Thomas, to Asulab S.A. Process for the manufacture by sintering of a titanium part and a decorative article made using a process of this type. 5,441,695, Cl. 419-37.000.
Gleasman, Keith E.: *See*—
Gleasman, Vernon E.; Gleasman, Keith E.; McElroy, Arthur H., II; and Porter, David W., 5,440,878, Cl. 60-487.000.
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Chakravarty, Prasun K.; de Laszlo, Stephen E.; Glinka, Tomasz W.; Greenlee, William J.; Mantlo, Nathan B.; and Patchett, Arthur A., 5,441,959, Cl. 514-259.000.
Glockner, Frank: *See*—
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Glozman, Oleg M.: *See*—
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GMI Holdings, Inc.: *See*—
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GNB Battery Technologies Inc.: *See*—
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Gobetz, Frank W.: *See*—
Wiegand, Walter J.; Gobetz, Frank W.; and Bullis, Robert H., 5,440,931, Cl. 73-724.000.
Goddard, Scott H. Carrier for bags having straps and method of use. 5,441,323, Cl. 294-158.000.
Godek, Dennis M.; and Murtiashaw, Charles W., to Pfizer Inc. Process and intermediates for preparing azabicyclo[2.2.2]octan-3-imines. 5,442,068, Cl. 546-133.000.
Goel, Anil B.: *See*—
Jarvis, Neil R.; and Goel, Anil B., 5,441,999, Cl. 524-271.000.
Gogarty, Brian J. 3-dimensional maze puzzle. 5,441,260, Cl. 273-153.00R.
GOJO Industries, Inc.: *See*—
Wyaocki, J. Christopher, 5,441,178, Cl. 222-182.000.
Gojohbori, Hiroshi: *See*—
Maeda, Takeo; Gojohbori, Hiroshi; and Nakayama, Takeo, 5,442,226, Cl. 257-557.000.
Gokhman, Alexander, to Hydro West Group, Inc. Hydraulic turbine and guide gate apparatus and runner apperatus therefor. 5,441,384, Cl. 415-161.000.
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Evans, John C., Sr., 5,441,754, Cl. 426-483.000.
Gold, Peter. Industrial van with increased cargo-carrying capacity. 5,441,324, Cl. 296-26.000.
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Chung, Ho-eun, 5,442,209, Cl. 257-270.000.
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Guerra, John M., to Polaroid Corporation. Stereoscopic photon tunneling microscope. 5,442,443, Cl. 356-376.000.

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H. L. Stud, Inc.: *See*—
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Ha, Jung Y. Magnetic apparatus for preventing backlash of transmission for a vehicle. 5,441,130, Cl. 188-82.840.

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Halsted, David W., to Stone Construction Equipment, Inc. Mortar mixer with plastic drum having reinforced end walls. 5,441,341, Cl. 366-47.000.

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Hamaker, Jon B.: *See*—
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Hampton, David M.: *See*—
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Hanai, Hiroomi: *See*—
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Hansen, David W.: *See*—
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Hansen, Donald W., Jr.: *See*—
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Tatsuno, Kyoichi; Umeda, Toshiya; and Hirano, Ryoichi, 5,442,445, Cl. 356-401.000.

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Yokota, Yoshihiro; Koide, Akira; Matsumoto, Masahiro; and Hayashi, Masahide, 5,441,300, Cl. 280-735.000.

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Fujiyoshi, Minoru; Hasegawa, Michio; Kanomata, Shinichi; Anamizu, Takashi; Saito, Morio; and Satoh, Fumitaka, 5,441,312, Cl. 285-23.000.

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Gunji, Hiroshi; Yamaguchi, Kenichi; and Tachibana, Daikichi, 5,441,814, Cl. 428-457.000.

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Eichhorn, Mathias; and Buhr, Gerhard, 5,442,087, Cl. 560-12.000.
Fulberth, Werner; Leeb, Richard; Radau, Manfred; and Stammberger, Willi, 5,442,008, Cl. 424-478.000.
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Obermeier, Reinhold; and Stefaniak, Gunter, 5,442,097, Cl. 560-227.000.
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DuBose, Harold D.; and Holsinger, Kevin K., 5,442,648, Cl. 372-18.000.

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Mc Grane, Eugene W., 5,442,140, Cl. 174-151.000.

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Kau, Shing P., 5,442,560, Cl. 364-453.000.
Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., 5,442,371, Cl. 345-98.000.

Hong, Jae-Gyoo, to Daewoo Electronics Co., Ltd. Video cassette recorder power supply capable of breaking supply voltage to audio apparatus. 5,442,494, Cl. 360-61.000.

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Hooper, Donald F.; Goldman, Matthew S.; Bixby, Peter C.; and Krishnamoorthy, Suban, to Digital Equipment Corporation. Video on demand with memory accessing and or like functions. 5,442,390, Cl. 348-7.000.

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Nishiki, Nobuo; and Horiuchi, Kazumi, 5,441,879, Cl. 435-188.000.

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Yamamura, Takashi; Namiki, Kazunori; Kobashi, Toshiya; and Horiuchi, Ryuji, 5,442,426, Cl. 355-256.000.

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Seidel, Hartmut R. A.; and Speitling, Andreas W., 5,441,500, Cl. 606-67.000.

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Kim, Jong C.; and Woo, Sang H., 5,441,904, Cl. 437-40.000.

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Bradbury, George M., 5,442,512, Cl. 361-683.000.

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Goto, Masao; and Ikesnizu, Morihiko, 5,442,232, Cl. 257-668.000.

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Bigus, Joseph P., 5,442,730, Cl. 395-22.000.
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Caggiano, Raymond J., 5,442,299, Cl. 324-758.000.
Cato, Robert T.; and Harris, Richard H., 5,442,343, Cl. 340-825.350.
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Cummins, Brian, 5,442,736, Cl. 395-134.000.
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Maaleid, Robert P.; and Thoma, Nandor G., 5,442,776, Cl. 395-550.000.
Paradine, Christopher, 5,442,735, Cl. 395-133.000.
Parikh, Shrikant N., 5,442,740, Cl. 395-140.000.
Perkins, Charles E.; and Rekhter, Jacob Y., 5,442,633, Cl. 370-94.100.
Price, Steven; and Worley, Barry J., 5,442,691, Cl. 379-220.000.
Styczinski, David A., 5,442,752, Cl. 395-404.000.
Tannenbaum, Alan R.; and Zetts, John M., 5,442,376, Cl. 345-156.000.
Verkuil, Roger L., 5,442,297, Cl. 324-702.000.

International Flavors & Fragrances Inc.: *See*—
Butler, Jerry F.; Marin, Anna B.; Warren, Craig B.; Wilson, Richard A.; and Mookherjee, Braja D., 5,441,988, Cl. 514-715.000.

Interroll Holding, A.G.: *See*—
Agnoff, Charles, 5,442,248, Cl. 310-71.000.

inTEST Corporation: *See*—
Holt, Alyn R.; Matthiessen, Robert E.; and West, Christopher L., 5,440,943, Cl. 74-89.150.

Inui, Katsumi: *See*—
Hata, Masahiko; Fukuhara, Noboru; Takata, Hiroaki; and Inui, Katsumi, 5,441,913, Cl. 437-133.000.
Inukai, Seiichi; Fujita, Kenjiro; Kondo, Akihiro; and Usuki, Katsutoshi, to Mitsubishi Jidosha Kogyo Kaubshiki Kaisha. Hydraulic control appartus for automatic transmission. 5,441,459, Cl. 475-127.000.
Ipcinski, Ralph G. Piezo electric switch. 5,442,150, Cl. 200-181.000.
Iro AB: *See*—
Alberyd, Ake; and Hellstrom, Jerker, 5,441,087, Cl. 139-452.000.
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, to Fujitsu Limited. ISDN switching system having testing facilities. 5,442,621, Cl. 370-15.000.
Ise, Tomokazu; and Imamoto, Reiko, to Sharp Kabushiki Kaisha. Electron emitting device. 5,442,255, Cl. 313-495.000.
Ishigami, Shigeyasu: *See*—
Toda, Hiromichi; Ishigami, Shigeyasu; Kobayashi, Norihisa; Furuya, Takaaki; and Izumi, Jun, 5,440,873, Cl. 60-39.120.
Ishihara, Toyohisa, to Nippon Thompson Co., Ltd. Ball spline. 5,441,346, Cl. 384-43.000.
Ishii, Kazunari: *See*—
Chihara, Katsuyuki; Ishii, Kazunari; and Kishi, Akira, 5,440,844, Cl. 52-280.000.
Ishii, Naoki: *See*—
Shimura, Kenichi; Ishii, Naoki; and Onishi, Makoto, 5,441,488, Cl. 604-265.000.
Ishii, Yoshiko; Yoshiki, Shigeru; and Kai, Tsukuru, to Ricoh Company, Ltd. Color image forming apparatus and cleaning device therefor. 5,442,430, Cl. 355-298.000.
Ishikawa, Masatoshi: *See*—
Hidano, Takao; and Ishikawa, Masatoshi, 5,442,500, Cl. 360-22.000.
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, to Konica Corporation. Negatively chargeable developer with carrier containing magnesium oxide. 5,441,839, Cl. 430-108.000.
Ishikawa, Tatsuya: *See*—
Koshiro, Natsuki; and Ishikawa, Tatsuya, 5,442,398, Cl. 348-385.000.
Ishimaru, Yutaka; and Yoshida, Hideo, to Sharp Kabushiki Kaisha. Magnetic tape apparatus including a reading head for reading main information and auxiliary information of a reproducing region together with auxiliary information of another region. 5,442,496, Cl. 360-72.200.
Ishimoto, Yoshihisa: *See*—
Yoshimizu, Toshiyuki; Kishida, Masahiro; Fukuyama, Toshiaki; Ishimoto, Yoshihisa; Seike, Takeshi; and Matoba, Masakazu, 5,442,224, Cl. 257-536.000.
Ishizaki, Toshio; Nakakubo, Hideaki; Kougi, Hiroaki; Aizawa, Kimio; and Iizuka, Shogo, to Matsushita Electric Industrial Co., Ltd. Antenna switching apparatus for selectively connecting antenna to transmitter or receiver. 5,442,812, Cl. 455-82.000.

Isis Pharmaceuticals, Inc.: *See*—
Anderson, Kevin; Draper, Kenneth; and Baker, Brenda, 5,442,049, Cl. 536-24.500.

Isobe, Asao: *See*—
Shiraishi, Hiroshi; Ueno, Takumi; Murai, Fumio; Hayakawa, Hajime; and Isobe, Asao, 5,441,849, Cl. 430-296.000.

Isomura, Shigenori: *See*—
Ikuta, Kenji; Suzumura, Toshihiro; Isomura, Shigenori; and Honjoh, Keigi, 5,441,032, Cl. 123-531.000.

Isomura, Yasuo; Akamatsu, Seijiro; Yoden, Toru; Kudou, Masafumi; and Suga, Akira, to Yamanouchi Pharmaceutical Co., Ltd. Hydroxamic acid derivative. 5,442,110, Cl. 562-621.000.

Isono, Takahiro: *See*—
Watanabe, Hiroshi; Furukawa, Akio; Fujitani, Shin; Yonezu, Ikuo; and Isono, Takahiro, 5,441,826, Cl. 429-101.000.

Itabashi, Yoshiko: *See*—
Takanashi, Ikuko; Kondo, Shozo; Suzuki, Katsushi; Naganuma, Kazutomo; Itabashi, Yoshiko; Kimura, Chikako; and Inabe, Naohito, 5,442,780, Cl. 395-600.000.

Itaya, Eiji: *See*—
Kobayashi, Fumihiko; and Itaya, Eiji, 5,442,811, Cl. 455-67.300.

Ito, Akira: *See*—
Saito, Hiroyuki; and Ito, Akira, 5,442,260, Cl. 315-241.00P.

Ito, Hiroyuki: *See*—
Ueno, Takashi; Ito, Hiroyuki; Kotani, Hirokazu; and Nakajima, Kazuo, 5,441,881, Cl. 435-199.000.

Ito, Isao, to Fuji Xerox Co., Ltd. Image recording device for forming an electrostatic latent image on an image holding member. 5,442,424, Cl. 355-244.000.

Ito, Kazuya: *See*—
Takekuma, Toshitsugu; Ii: Haruo; and Ito, Kazuya, 5,441,834, Cl. 430-5.000.

Ito, Koichi: *See*—
Naito, Motoyuki; and Ito, Koichi, 5,442,367, Cl. 343-700.0MS.

Ito, Masaaki, to Ricoh Company, Ltd. Image reading apparatus and method with improved method for correcting output level of photoelectric conversion means. 5,442,464, Cl. 358-482.000.

Ito, Midori: *See*—
Kawachi, Norio; Ito, Midori; Naka, Toshiharu; and Tsuji, Hidenori, 5,441,619, Cl. 204-206.000.

Ito, Mineyuki, to Sakurai Graphic Systems Corporation. Method and apparatus for loading a plate in a printing press. 5,440,988, Cl. 101-477.000.

Ito, Nobuyuki: *See*—
Baba, Yutaka; Usui, Toshinao; Iwata, Noriyuki; Kakigami, Takuji; Ozeki, Yoshiro; Tsukamoto, Katsura; and Ito, Nobuyuki, 5,442,077, Cl. 548-453.000.

Ito, Takaaki; Ikeda, Hiroyuki; Tomita, Naoyuki; Shibayama, Takashi; Iwata, Tomio; and Kurihara, Takashi, to Mitsubishi Materials Corp. Protection structure for surge absorbing element. 5,442,509, Cl. 361-104.000.

Ito, Yutaka: *See*—
Watanabe, Satomi; Miyazaki, Takeshi; Ito, Yutaka; and Amano, Toshikazu, 5,441,456, Cl. 474-94.000.

Itoh, Noriie: *See*—
Koh, Keiko; Taniguchi, Mikio; Itoh, Noriie; Kushida, Hiroaki; Morita, Osamu; Yamada, Hiroyoshi; Munesada, Kiyotaka; Tsuzuki, Kazuo; Kunihara, Mineo; and Fujita, Yoshiji, 5,442,062, Cl. 544-234.000.

Itsuji, Takayuki; Uchiyama, Kaoru; and Tsutsui, Mitsukuni, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Heating resistor type air flow meter with separate/processing unit. 5,440,924, Cl. 73-204.250.

ITT Automotive Electrical Systems Inc.: *See*—
Gruden, James M.; and Kikly, Ned L., 5,441,317, Cl. 292-336.300.

ITW Limited: *See*—
Smith, Rowland C.; and Garlick, Paul L., 5,441,077, Cl. 137-492.500.

Itzhak, Yossef. Therapeutics for management of cocaine induced toxicity. 5,441,982, Cl. 514-55.000.

Iu, Siu-Leong, to Matsushita Electric Corporation of America. Video signal noise reduction system using time-varying filter coefficients. 5,442,407, Cl. 348-620.000.

Iveco Fiat S.p.A.: *See*—
Dellora, Giancarlo, 5,440,879, Cl. 60-602.000.

Iwabuchi, Tetsuya: *See*—
Takahara, Yoshiyuki; Iwabuchi, Tetsuya; and Shiota, Masayuki, 5,441,735, Cl. 424-93.200.

Iwane, Hiroshi; Sugawara, Takahiro; Kujira, Katsufumi; Suzuki, Naoki; and Sakata, Tomoya, to Mitsubishi Petrochemical Co., Ltd. Process for producing 2,6-asphthalenedicarboxylic acid. 5,442,103, Cl. 562-416.000.

Iwasaki, Hideaki: *See*—
Dewey, Anthony G.; Francois, Paul H.; Gardner, Timothy S.; Iwasaki, Hideaki; and Tayefeh, Morovat, 5,442,618, Cl. 369-124.000.

Iwasaki, Hiroshi: *See*—
Goto, Shinichi; Komiyama, Chiaki; Iwasaki, Hiroshi; and Hayashi, Kazukiyo, 5,441,688, Cl. 264-167.000.

Iwasaki, Kunifumi: *See*—
Matsui, Toshinari; Kubo, Shigeru; Shimizu, Kenzo; Iwasaki, Kunifumi; Kobayashi, Koji; and Maruyama, Eiko, 5,442,545, Cl. 364-403.000.

Iwasaki, Tameo; and Kondo, Kazuhiko, to Tanabe Seiyaku Co., Ltd. Azetidinone compound and process for preparation thereof. 5,442,055, Cl. 540-200.000.

Iwase, Masazumi: *See*—
Kuboono, Kenji; Azamiza, Iwao; Iwase, Masazumi; and Kurita, Toshihiro, 5,441,696, Cl. 420-469.000.

Iwata, Noriyuki: *See*—
Baba, Yutaka; Usui, Toshinao; Iwata, Noriyuki; Kakigami, Takuji; Ozeki, Yoshiro; Tsukamoto, Katsura; and Ito, Nobuyuki, 5,442,077, Cl. 548-453.000.

Iwata, Sigemi: *See*—
Ikejima, Hiroyuki; Iwata, Sigemi; and Yosida, Masayuki, 5,441,127, Cl. 187-292.000.

Iwata, Tomio: *See*—
Ito, Takaaki; Ikeda, Hiroyuki; Tomita, Naoyuki; Shibayama, Takashi; Iwata, Tomio; and Kurihara, Takashi, 5,442,509, Cl. 361-104.000.

Iyer, Balakrishna R.; Kurtz, Clark; Plambeck, Kenneth E.; and Sinha, Bhaskar, to International Business Machines Corporation. Method and means providing static dictionary structures for compressing character data and expanding compressed data. 5,442,350, Cl. 341-51.000.

Izawa, Yasunori: *See*—
Tejima, Yasuyuki; Izawa, Yasunori; Misefuji, Nobutaka; and Ogawa, Ryota, 5,442,413, Cl. 353-69.000.

Izumi, Jun: *See*—
Toda, Hiromichi; Ishigami, Shigeyasu; Kobayashi, Norihisa; Furuya, Takaaki; and Izumi, Jun, 5,440,873, Cl. 60-39.120.

J. Knez AB: *See*—
Knez, Jordan, 5,441,145, Cl. 198-705.000.

Jab, Karl-Heinz: *See*—
Brandl, Adrian; Jab, Karl-Heinz; and Krousbein, Gerd, 5,441,548, Cl. 48-215.000.

Jackel, Johann; and Albers, Albert, to Luk lamellen und Kupplungsbau GmbH. Antifriction bearing for use in apparatus for damping fluctuations of torque in power trains of motor vehicles. 5,441,452, Cl. 464-61.000.

Jackl, Werner; and Ripley, Richard E., to Textron Inc. Method of forming and assembling top shells onto the links of metallic watchbands. 5,441,686, Cl. 264-152.000.

Jackson, Barry N., to Water Heater Innovations, Inc. Electronic temperature controller for water heaters. 5,442,157, Cl. 219-492.000.

Jackson, H. Spence, to Motorola, Inc. Linear attenuator for current-mode digital-to-analog converter (DAC) or the like. 5,442,352, Cl. 341-134.000.

Jackson, H. Spence, to Motorola, Inc. Bandpass sigma-delta analog-to-digital converter (ADC), method therefor, and receiver using same. 5,442,353, Cl. 341-143.000.

Jackson, John R. H.: *See*—
Krapcho, Karen J.; Jackson, John R. H.; Johnson, Janice H.; Del-Mar, Eric G.; and Kral, Robert M., Jr., 5,441,934, Cl. 514-12.000.

Jacobs, Bernardus A. J.: *See*—
Spruit, Johannes H. M.; Jacobs, Bernardus A. J.; and Van Uijen, Cornelis M. J., 5,442,597, Cl. 369-13.000.

Jacobsen, Kenneth H.; and Cole, Louis F. Universal tool for twin cartridge material systems. 5,441,175, Cl. 222-137.000.

Jacobson, Allen G., to InterDigital Technology Corp. Broadcast synchronized communication system. 5,442,652, Cl. 375-200.000.

Jacobson, Esther: *See*—
Spector, Yechiel; Jacobson, Esther; Naishtut, Vida; Vittenberg, Michael; and Beinert, Zohar, 5,441,114, Cl. 169-14.000.

Jacobson, Michael: *See*—
Andersen, Steven; Berman, James; Hinkle, Chris; Jacobson, Michael; Koralek, Richard; Lebar, James F.; and Smith, Francis J., 5,442,663, Cl. 375-229.000.

Jakubowica, Raymond F.; and Porte, Johannes J. Reagent cup shape allowing stacking without dislodging reagent. 5,441,895, Cl. 436-318.000.

Jame Fine Chemicals, Inc.: *See*—
Chopdekar, Vilas M.; and Schlock, James R., 5,442,092, Cl. 560-65.000.

James, Peter; and Boelryk, Bart, to Solar-Wise Products Inc. Sun shade for outdoor furniture. 5,441,067, Cl. 135-96.000.

James, Stephen O.: *See*—
Dilorio, Mark S.; Hirschkoff, Eugene C.; Johnson, Richard T.; Buchanan, D. Scott; James, Stephen O.; Paulson, Douglas; and Black, William C., Jr., 5,442,289, Cl. 324-248.000.

Janisch, Klaus, to Schmidt & Lenhardt GmbH & Co. oHG. Rotatable seat. 5,441,329, Cl. 297-344.210.

Jannetta, Thomas J.: *See*—
Torkelson, Delbert W.; Jannetta, Thomas J.; Nikkanen, John P.; Webb, Daniel E.; Zyzmaa, Steven H.; Colletti, William D.; Stern, Alfred M.; and Lord, Wesley K., 5,440,875, Cl. 60-226.100.

Janssen, Peter J.; and Shimizu, Jeffrey A., to U. S. Philips Corporation. High contrast illumination system for video projector. 5,442,414, Cl. 353-98.000.

Janssen Pharmaceutica N. V.: *See*—
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,441,954, Cl. 514-241.000.

Janssens, Wilhelmus: *See*—
Verdonck, Emiel; Janssens, Wilhelmus; and Defieuw, Geert, 5,441,921, Cl. 503-227.000.

Jansson, Richard K.: *See*—
Harris, Guy H.; Carotto, James E.; Giacobbe, Robert A.; Mandala, Suzanne M.; Monaghan, Richard L.; Jansson, Richard K.; and Lasota, Joan A., 5,441,987, Cl. 514-691.000.

Japan Digital Laboratory Co., Ltd.: *See*—
Terasaki, Hiroyuki; Sekine, Masahiro; Miyake, Hisasori; Sherick, Michael T.; and Doherty, Bryan M., Jr., 5,440,958, Cl. 83-83.000.

Japan Energy Corporation: *See*—
Tasaki, Hiroshi; and Nishimura, Eiji, 5,441,628, Cl. 205-101.000.

Japan Tobacco, Inc.: *See*—
Kodama, Hisashi; Hashimoto, Hironobu; and Kajihara, Yasuhiro, 5,441,932, Cl. 514-8.000.
Kushihashi, Shigenobu; and Inomata, Shigemitsu, 5,441,214, Cl. 242-552.000.

Jarrell, Bruce E.: *See*—
Aichas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., 5,441,539, Cl. 623-66.000.

Jarrett, Peter K.; Jessup, George; Rosati, Louis; Martin, Chris; and Maney, John W., to American Cyanamid Company. Coating for tissue drag reduction. 5,442,016, Cl. 525-415.000.

Jarvis, Neil R.; and Goel, Anil B., to Reichhold Chemicals, Inc. Hot melt adhesive. 5,441,999, Cl. 524-271.000.

Jaskie, James E.; and Kane, Robert C., to Motorola. Microelectronic field emission device with breakdown inhibiting insulated gate electrode. 5,442,193, Cl. 257-10.000.

Jaskie, James E., to Motorola, Inc. Fluorescent device with quantum contained particle screen. 5,442,254, Cl. 313-485.000.

Jaskie, James E.: *See*—
Moyer, Curtis D.; Jaskie, James E.; and Song, John, 5,442,256, Cl. 313-496.000.

Jass, Richard E.: *See*—
Ceynow, Kenneth P.; Jass, Richard E.; and Shi, Robert X., 5,440,880, Cl. 60-605.200.

Jaszlits, Laszlo : *See*—
Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simai, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.

Javanifard, Jahanshir J.; Fazio, Albert; Larsen, Robert E.; Brennan, James, Jr.; and Tedrow, Kerry D., to Intel Corporation. Method and apparatus for controlling the output current provided by a charge pump circuit. 5,442,586, Cl. 365-185.000.

Jaxa-Chamiec, Albert A.; Hickey, Deirdre M. B.; and Alston, David, to SmithKline & French Laboratories Ltd. Compounds. 5,441,731, Cl. 424-78.100.

Jay, Ian D.: *See*—
Buck, Paul E.; Gose, Mark W.; and Jay, Ian D., 5,442,316, Cl. 330-2.000.

Jeanjean, Michel: *See*—
Febre, Pierre; Mouzin, Gilbert; Jeanjean, Michel; Monteny, Nicole; and Cousse, Henri, 5,441,980, Cl. 514-531.000.

Jednakovits, Andrea: *See*—
Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simai, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.

Jefferson Smurfit Corporation: *See*—
Bushell, Victor; and Dineen, Robert, 5,441,780, Cl. 428-34.200.

Jegier, Patricia A.: *See*—
Weber, Robert E.; Fitting, Steven W.; and Jegier, Patricia A., 5,441,056, Cl. 128-849.000.

Jein Technics Co., Ltd.: *See*—
Hwang, Chul-Ju, 5,441,570, Cl. 118-725.000.

Jelinek, Jan, to Honeywell Inc. Single input single output rate optimal controller. 5,442,544, Cl. 364-149.000.

Jeng, Guang-kai D.; Mitchell, James W.; and Seibles, Lawrence, to AT&T Bell Laboratories. Method for growing continuous diamond films. 5,441,013, Cl. 117-109.000.

Jenkins, Michael E.; Roberts, Charles A.; and Stripling, Steven D., to R.J.S., Inc. Fluid spill catching, containing, collection and recovery system for wellheads. 5,441,108, Cl. 166-53.000.

Jennings, William C.: *See*—
Sanford, James R. M.; Frank, Patrick M.; Golias, Joseph H.; and Jennings, William C., 5,441,645, Cl. 210-656.000.

Jenquin, Philip C., to QUALCOMM Incorporated. Tractor-trailer electronic transmission path. 5,442,810, Cl. 455-66.000.

Jensen, Jimmy A.: *See*—
Brooks, Bruce; Jensen, Jimmy A.; Krzycki, Edwin A.; Mapson, Ross; Nye, Dale L.; Stone, David L.; and Luster, Troy R., 5,442,548, Cl. 364-420.000.

Jeong, Jae H., to Goldstar Electron Co., Ltd. Charge coupled device. 5,442,207, Cl. 257-221.000.

Jeong, Jae S.; and Park, Min H., to Goldstar Electron Co., Ltd. Semiconductor memory device and method for fabricating the same dynamic random access memory device construction. 5,442,584, Cl. 365-149.000.

Jespersen, Paul W.: *See*—
Formon, John S.; and Jespersen, Paul W., 5,441,189, Cl. 225-2.000.

Jessup, George: *See*—
Jarrett, Peter K.; Jessup, George; Rosati, Louis; Martin, Chris; and Maney, John W., 5,442,016, Cl. 525-415.000.

Jeung, Choon N., to Samsung Electronics Co., Ltd. Air vent control apparatus. 5,441,451, Cl. 454-313.000.

Jikihara, Tetsuo; Shirasaka, Tadashi; Suzuki, Kazuo; Suzuki, Hiroko; Taniguchi, Masao; and Inoue, Shinya, to Mitsubishi Kasei Corporation. Carboxamide derivatives. 5,442,060, Cl. 544-106.000.

Jobmann, Wolfgang; Stier, Uwe; and Naugle, Michael D., to Wolfgang Jobmann Florida, Inc. Apparatus for lifting drums. 5,441,322, Cl. 294-90.000.

John Crane Inc.: *See*—
Pecht, Glenn G.; and Hamaker, Jon B., 5,441,283, Cl. 277-96.100.

Johnson, Brad: *See*—
McCaslin, Martin; and Johnson, Brad, 5,442,606, Cl. 369-44.150.

Johnson, Bruce G.: *See*—
Fens, Ralph C.; Gerver, Michael J.; Hockney, Richard L.; and Johnson, Bruce G., 5,442,288, Cl. 324-244.000.

Johnson, Glenn W.; McVicker, Henry J.; and Pick, E. P. Erez, to Aircast, Inc. Automatic fluid circulating system and method. 5,441,533, Cl. 607-104.000.

Johnson, Janice H.: *See*—
Krapcho, Karen J.; Jackson, John R. H.; Johnson, Janice H.; DelMar, Eric G.; and Kral, Robert M., Jr., 5,441,934, Cl. 514-12.000.

Johnson & Johnson Medical, Inc.: *See*—
Cheong, Catherine L., 5,441,741, Cl. 424-402.000.

Johnson, Kelly B.; Moore, Walter A.; Kort, Leland B.; and Rink, Karl K., to Morton International, Inc. Piston-actuated air bag inflator with hermetic liner. 5,441,302, Cl. 280-736.000.

Johnson, Richard T.: *See*—
DiIorio, Mark S.; Hirschkoff, Eugene C.; Johnson, Richard T.; Buchanan, D. Scott; James, Stephen O.; Paulson, Douglas; and Black, William C., Jr., 5,442,289, Cl. 324-248.000.

Johnson, Thomas H.: *See*—
Bell, David; Allard, Robert G.; Rodgers, Ronald A.; Hipkins, Victor E.; and Johnson, Thomas H., 5,442,146, Cl. 177-210.0FP.

Johnson, William N. H.; and Phillips, Nicholas J. Microlens screens, photopolymerisable materials and artifacts utilising the same. 5,442,482, Cl. 359-619.000.

Johnson, John C. S. Recycling machine. 5,441,101, Cl. 165-95.000.

Johnston, Gary L. Pivoting thigh engaging exercise apparatus having frictional resistance. 5,441,472, Cl. 482-118.000.

Johnstun, A. James. Unidirectional gas valve shutoff tool and method. 5,440,956, Cl. 81-119.000.

Joly, Frederic: *See*—
Beranger, Herve; Joly, Frederic; and Rapoport, Stuart, 5,442,641, Cl. 371-21.200.

Jonckheere, Luc O.: *See*—
Morlion, Danny L.; and Jonckheere, Luc O., 5,441,424, Cl. 439-581.000.

Jones, David M.: *See*—
Hefner, Teresa C.; and Jones, David M., 5,441,465, Cl. 482-39.000.

Jones, Frank: *See*—
Tsaur, Liang S.; Aronson, Michael P.; Jones, Frank; and Lee, G. Jae, 5,441,728, Cl. 424-70.110.

Jones, George R.: *See*—
Krohn, Duane D.; and Jones, George R., 5,441,297, Cl. 280-655.000.

Jones, Glyn R.: *See*—
Blezard, Michael; Jones, Glyn R.; and Ghadimi, Moharam, 5,442,113, Cl. 544-2.000.

Jones, M. Erin; and Puletti, Paul P., to National Starch and Chemical Investment Holding Corporation. Use of low toxicity solvents in waterborne adhesives. 5,442,001, Cl. 524-292.000.

Jones, Martin A.: *See*—
Pattengill, Maurice G.; and Jones, Martin A., 5,441,760, Cl. 427-138.000.

Jongenelis, Adrianus P. J. M.: *See*—
Van Uijen, Cornelis M. J.; and Jongenelis, Adrianus P. J. M., 5,442,619, Cl. 369-275.200.

Jorda, Rafael: *See*—
Autant, Pierre; Chalvin, Christophe; Colin, Claudine; Jorda, Rafael; and Wertz, Jean-Luc, 5,441,742, Cl. 424-405.000.

Jordan, Gina M.; Eakin, Tracie L.; and Edmark, Tomima L., to Topsytail Company, The. Interchangeable decorative ornament and method. 5,441,061, Cl. 132-275.000.

Joullie, Madeleine M.: *See*—
Weisz, Paul B.; Ewing, William R.; and Joullie, Madeleine M., 5,441,944, Cl. 514-58.000.

Jow, T. Richard: *See*—
Yen, Shiao-Ping S.; and Jow, T. Richard, 5,442,517, Cl. 361-305.000.

Jozefiak, Thomas H.: *See*—
Tang, Ping W.; Jozefiak, Thomas H.; and Decker, David J., 5,441,863, Cl. 430-538.000.

Juall, Chet: *See*—
Chitrapu, Prabhakar; Pan, Zhibing; Juall, Chet; and Dumont, Andrew, 5,442,694, Cl. 379-373.000.

Juki Corporation: *See*—
Satoma, Shiro, 5,441,002, Cl. 112-143.000.

Jun, Yong J., to Goldstar Co., Ltd. Video cassette recorder having variable, high-resolution video screen zooming. 5,442,410, Cl. 348-704.000.

Jung, Frederic H.; and Arnould, Jean-Claude, to Zeneca Limited. Carbapenem antibiotic compounds. 5,441,949, Cl. 514-210.000.

Jung, Pan S.; and Yaniv, Daphna R., to Molecular Imaging Systems. Scanning force microscope with beam tracking lens. 5,440,920, Cl. 73-105.000.

Jungbauer, Dietmar: *See*—
Hornung, Barbara; Jungbauer, Dietmar; and Manero, Javier, 5,441,668, Cl. 252-299.010.

Jurayj, Jurjus: *See*—
Haugwitz, Rudiger D.; Narayanan, Venkatachiala L.; Cushman, Mark; and Jurayj, Jurjus, 5,441,941, Cl. 514-43.000.

Jurgensen, Holger, to Aixtron GmbH. Gas inlet for a plurality of reactant gases into reaction vessel. 5,441,703, Cl. 422-129.000.

Kabushiki Kaisha Ace Denken: *See*—
Takemoto, Takatoshi; Kawashima, Kazunari; Kadomatsu, Hideyuki; Aoyama, Moriyuki; and Nakamura, Takaharu, 5,441,253, Cl. 271-34.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujieda, Yasuhiko; and Oshiba, Hisanori, 5,441,393, Cl. 425-58.100.

Kabushiki Kaisha Ouyo Keisoku Kenkyusho: *See*—
Otsu, Nobuyuki; Kurita, Takio; and Kuwashima, Shigesumi, 5,442,716, Cl. 382-181.000.

Kabushiki Kaisha Tokyo Kikai Seisakusho: *See*—
Shimmura, Masatoshi; Shibuya, Yasuo; and Higuchi, Tooru, 5,440,985, Cl. 101-477.000.

Kabushiki Kaisha Toshiba: *See*—
Eguchi, Kazuhiro; and Natori, Katsuaki, 5,442,585, Cl. 365-149.000.
Fukazawa, Yuji, 5,442,236, Cl. 257-758.000.
Goto, Masao; and Ikemiru, Morihiko, 5,442,232, Cl. 257-668.000.
Koshiro, Natsuki; and Ishikawa, Tatsuya, 5,442,398, Cl. 348-385.000.
Kuwagata, Masaaki; and Watanabe, Yuji, 5,442,587, Cl. 365-200.000.
Maeda, Takeo; Gojohbori, Hiroshi; and Nakayama, Takeo, 5,442,226, Cl. 257-557.000.
Miyajima, Yasuo, 5,441,052, Cl. 128-661.090.
Murase, Satoru; and Nakayama, Shigeo, 5,442,137, Cl. 174-125.100.
Oto, Takeshi, 5,442,773, Cl. 395-550.000.
Saito, Akira, 5,442,739, Cl. 395-138.000.
Shigehara, Hiroshi; and Kinugasa, Masanori, 5,442,307, Cl. 326-81.000.
Tanaka, Koichi; and Saito, Toshitada, 5,442,631, Cl. 370-85.130.
Tane, Yasuo, 5,442,241, Cl. 257-784.000.
Tatsuno, Kyoichi; Umeda, Toshiya; and Hirano, Ryoichi, 5,442,445, Cl. 356-401.000.
Yamakawa, Tsutomu; Shuto, Keisei; and Takayama, Takuzou, 5,442,181, Cl. 250-368.000.
Yamanaka, Junichi; and Takahashi, Fumio, 5,442,393, Cl. 348-252.000.
Yamashita, Keijiro; and Suzuki, Nobukazu, 5,441,822, Cl. 429-34.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kato, Masaaki, 5,442,219, Cl. 257-370.000.
Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, 5,442,134, Cl. 174-52.400.

Kabushiki Kaisha Universal: *See*—
Okada, Kazuo, 5,441,447, Cl. 453-32.000.

Kabushiki Kaisya Advance: *See*—
Aoki, Hideki; Akao, Masaru; Shin, Yoshiharurayama; Hayashi, Osamu; and Yoshizawa, Masahiko, 5,441,536, Cl. 427-2.270.

Kadokura, Susumu, to Canon Kabushiki Kaisha. Electro-deposition coated member, process for producing electro-deposition coated member, and electro-deposition coating use therefor. 5,441,818, Cl. 428-551.000.

Kadomatsu, Hideyuki: *See*—
Takemoto, Takatoshi; Kawashima, Kazunari; Kadomatsu, Hideyuki; Aoyama, Moriyuki; and Nakamura, Takaharu, 5,441,253, Cl. 271-34.000.

Kaeriyama, Michio; and Taniguchi, Masaaki, to Murata Manufacturing Co., Ltd. Method of manufacturing laminated ceramic capacitors. 5,440,794, Cl. 29-25.420.

Kageyama, Sadaahi: *See*—
Yasumoto, Yoshio; Kageyama, Sadaahi; Inoue, Shuji; and Uwabata, Hideyo, 5,442,403, Cl. 348-432.000.

Kahn, Jeffrey A.: *See*—
Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., 5,441,593, Cl. 216-27.000.

Kai, Hiroyuki: *See*—
Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; and Nishide, Kuniyoshi, 5,442,063, Cl. 544-333.000.

Kai, Tomoko: *See*—
Ienaga, Takashi; and Kai, Tomoko, 5,442,206, Cl. 257-207.000.

Kai, Tsukuru: *See*—
Ishii, Yoshiko; Yoshiki, Shigeru; and Kai, Tsukuru, 5,442,430, Cl. 355-298.000.

Kaida, Hiroaki; and Inoue, Jiro, to Murata Mfg. Co., Ltd. Vibrating unit. 5,442,251, Cl. 310-321.000.

Kaide, Tamotsu: *See*—
Utsumi, Atsushi; Morita, Yukio; Kaide, Tamotsu; Onishi, Kazuo; and Hayashi, Shunichi, 5,441,489, Cl. 604-280.000.

Kaiser Aerospace and Electronics Corporation: *See*—
Kalmanash, Michael H., 5,442,522, Cl. 362-26.000.

Kaiser Optical Systems, Inc.: *See*—
Battey, David E.; Owen, Harry; and Tedesco, James M., 5,442,439, Cl. 356-328.000.

Kaji, Hiroyuki; Kida, Yuko; and Morimoto, Yasutsugu, to Hitachi, Ltd. System and method for automatically generating translation templates from a pair of bilingual sentences. 5,442,546, Cl. 364-419.080.

Kajihara, Yasuhiro: *See*—
Kodama, Hisashi; Hashimoto, Hironobu; and Kajihara, Yasuhiro, 5,441,932, Cl. 514-8.000.

Kajihara, Yasushi: *See*—
Tonomura, Manabu; and Kajihara, Yasushi, 5,441,667, Cl. 252-174.150.

Kajimoto, Takeshi: *See*—
Mori, Shigeru; and Kajimoto, Takeshi, 5,442,277, Cl. 323-312.000.

Kakigami, Takuji: *See*—
Baba, Yutaka; Usui, Toshinao; Iwata, Noriyuki; Kakigami, Takuji; Ozeki, Yoshiro; Tsukamoto, Katsura; and Ito, Nobuyuki, 5,442,077, Cl. 548-453.000.

Kako, Noritoshi: *See*—
Nomura, Toshio; Tagawa, Takao; and Kako, Noritoshi, 5,442,373, Cl. 345-104.000.

Kaku, Takashi; and Kawada, Nobuo, to Fujitsu Limited. Timing extraction device and data transmission device using the timing extraction device. 5,442,656, Cl. 375-354.000.

Kakuta, Tatsuya: *See*—
Sano, Hiroaki; Kakuta, Tatsuya; and Yamanishi, Toru, 5,441,813, Cl. 428-375.000.

Kalahasthy, Gopichand, to Bundy Corporation. Insertion indicator for quick connector. 5,441,313, Cl. 285-93.000.

Kalbow, Wayne R.: *See*—
Buttitta, Anthony; Duesing, Eric A.; Kalbow, Wayne R.; Roestedt, Mark O.; and Tsai, Lisne T., 5,442,689, Cl. 379-201.000.

Kalidindi, Sanyasi R. Multiple-sample segmented sampling device and method of use. 5,440,941, Cl. 73-864.640.

Kalili, Tom; and Caputo, Angelo A. Chewing gum composition with fluoride and citric acid. 5,441,744, Cl. 424-440.000.

Kalina, Alexander I., to Exergy, Inc. Method and apparatus for converting heat from geothermal liquid and geothermal steam to electric power. 5,440,882, Cl. 60-641.200.

Kalmanash, Michael H., to Kaiser Aerospace and Electronics Corporation. Wide dimming range backlight for liquid crystal devices. 5,442,522, Cl. 362-26.000.

Kalousdian, Sam: *See*—
Miller, James R.; Kalousdian, Sam; Willett, Brian C.; Winslow, John M.; Zhou, Pu; and Zou, Chaofeng, 5,441,866, Cl. 430-619.000.

Kalra, Varinder: *See*—
Whitney, Stephen; Spaunhorst, Vernon; Winnett, Joan; and Kalra, Varinder, 5,440,802, Cl. 29-623.000.

Kaman Aerospace Corporation: *See*—
Keeler, R. Norris; Manthy, Robert S.; LaMontagne, Troy J.; and McGee, Randall, 5,442,358, Cl. 342-54.000.

Kameyama, Shinji; Yoshihiro, Takeo; Aoyama, Yoshiki; Nakamura, Kazuo; Akedo, Shuichi; and Mizuno, Masayuki, to Mita Industrial Co., Ltd. Plate sheet conveying mechanism having integrally formed sheet guide. 5,442,466, Cl. 358-498.000.

Kameyama, Toru; and Asakawa, Toshiyuki, to Canon Kabushiki Kaisha. Sheet feeding apparatus. 5,441,250, Cl. 271-121.000.

Kamiyama, Hideki: *See*—
Takahashi, Mitsuru; Kawaishi, Yasunori; Yu, Hideo; Motobashi, Toshiaki; Kawagoe, Katsuya; and Kamiyama, Hideki, 5,442,428, Cl. 355-271.000.

Kammann, Reinhold; Knapwost, Helmut; Worms, Manfred; and Deeg, Helgo, to Tuboscope Vetco (Deutschland) GmbH. Method and apparatus for detecting magnetic discontinuities by inducing a magnetic field in a magnetizable sample. 5,442,287, Cl. 324-242.000.

Kammerer, Eric; Lietard, Christine; and Deboves, Jean-Bernard, to Le Carbone Lorraine. Simplified process for the production of carbon motor brushes. 5,441,683, Cl. 264-105.000.

Kamura, Hitoshi; Noma, Kazutoshi; and Kojima, Atsuyoshi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio controller for an internal combustion engine. 5,440,877, Cl. 60-274.000.

Kanaya, Masatoshi: *See*—
Takahashi, Jun; and Kanaya, Masatoshi, 5,441,011, Cl. 117-84.000.

Kanazumi, Hisao; Yamashiro, Akiyoshi; and Fujiwara, Kiyoshi, to Mitsubishi Materials Corporation. Apparatus for water-granulating slag. 5,441,205, Cl. 241-41.000.

Kanda, Masahiro: *See*—
Kato, Tetsuo; and Kanda, Masahiro, 5,442,000, Cl. 524-291.000.

Kanda, Tetsuo; Kawata, Eiji; Ikeda, Noboru; and Miyazaki, Manami, to Chiyoda Corporation. Heat storage tank equipped with heat storage members and fabrication process for the same. 5,441,097, Cl. 165-10.000.

Kandis, Mouhyieldin: *See*—
Dietz, David H.; and Kandis, Mouhyieldin, 5,440,871, Cl. 60-39.000.

Kane, Edmuad J.; Herrmann, Robert S.; and Gilbert, Donald C., to Donnelly Corporation. Snap-on shelf. 5,441,338, Cl. 312-408.000.

Kane, James A.: *See*—
Whitted, Graham B., III; Chang, Hsiao-Shih; and Kane, James A., 5,442,775, Cl. 395-550.000.

Kane, John P.; and Alvarez, Hector A. Surgical traction device. 5,441,480, Cl. 602-36.000.

Kane, Robert C.: *See*—
Jaskie, James E.; and Kane, Robert C., 5,442,193, Cl. 257-10.000.

Kane, William L.: *See*—
Eskew, Sam; and Kane, William L., 5,441,082, Cl. 138-112.000.

Kaneda, Kitahiro: *See*—
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akibiro; Suda, Hirofumi; Yamada, Kunihiko; Kaneda, Kitahiro; and Homma, Hideo, 5,442,397, Cl. 348-363.000.

Kanegsberg, Edward; Gillespie, Steven C.; and Rahn, John P., to Litton Systems, Inc. Ring laser gyroscope scale factor error control apparatus and method control apparatus and method. 5,442,442, Cl. 356-350.000.

Kanehachi, Kaoru, to Nippon Precision Circuits Inc. Semiconductor device. 5,442,210, Cl. 257-296.000.

Kaneko, Akinari: *See*—
Hitomi, Chiyoji; Kaneko, Akinari; and Hoshikawa, Jun, 5,441,794, Cl. 428-195.000.

Kaneko, Koji; Kubota, Takeshi; and Yamamoto, Tatsunori, to Sharp Kabushiki Kaisha. Device for holding a cassette having a slider and a cassette having no slider. 5,442,501, Cl. 360-94.000.

Kaneko, Michihiro, to Pioneer Electronic Corporation. Navigation device. 5,442,557, Cl. 364-449.000.

Kanematsu-ank Corporation: *See*—
Sugita, Seburo; Fukui, Hiroyuki; and Komiya, Yukinori, 5,441,192, Cl. 227-130.000.
Kang, Dong-Ho, to Daewoo Electronics Co., Ltd. Head drum ground system having a resiliently mounted conductive brush. 5,442,506, Cl. 360-107.000.
Kanno, Kazunobu: *See*—
Terada, Yuichi; Hamano, Satoru; and Kanno, Kazunobu, 5,440,800, Cl. 29-597.000.
Kano, Hiroyuki: *See*—
Takayama, Kuniharu; and Kano, Hiroyuki, 5,442,269, Cl. 318-568.110.
Kanomata, Shinichi: *See*—
Fujiyoshi, Minoru; Hasegawa, Michio; Kanomata, Shinichi; Anamizu, Takashi; Saito, Morio; and Satoh, Fumitaka, 5,441,312, Cl. 285-23.000.
Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Okada, Hideaki; and Shiba, Kenji, 5,440,951, Cl. 74-606.00R.
Kanzaki Seishi Co., Ltd.: *See*—
Ueda, Takeshi; and Fuki, Itsuo, 5,441,211, Cl. 242-526.100.
Kao Corporation: *See*—
Tonomura, Manabu; and Kajihara, Yasushi, 5,441,667, Cl. 252-174.150.
Kaplan, Martin C., to Eastman Kodak Company. High efficiency linear light source. 5,442,533, Cl. 362-303.000.
Kappel, Gary S.: *See*—
Tovey, H. Jonathan; and Kappel, Gary S., 5,441,044, Cl. 600-234.000.
Kaptanoglu, Marjory: *See*—
Greyson, Ann M.; Hokit, Jeffrey D.; Kaptanoglu, Marjory; Wagner, Annette M.; and Capps, Stephen P., 5,442,742, Cl. 395-146.000.
Karger, David: *See*—
Pedersen, Jan. O.; Karger, David; Cutting, Douglass R.; and Tukey, John W., 5,442,778, Cl. 395-600.000.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Wieland, Jakob; and Krasser, Herman, 5,440,902, Cl. 66-194.000.
Karnick, Drew A.: *See*—
Watson, William S.; and Karnick, Drew A., 5,440,817, Cl. 33-366.000.
Karol, Frederick J.: *See*—
Cann, Kevin J.; Nicoletti, James W.; Karol, Frederick J.; Marcinkowsky, Arthur E.; Spriggs, Thomas E.; and Hwu, Mark C., 5,442,018, Cl. 526-65.000.
Karpisek, Ladislav S. Openable container base. 5,441,321, Cl. 294-68.210.
Kartler, Michael J. Corner finishing system. 5,440,776, Cl. 15-235.700.
Karubian, Ralph K.; and Surman, Thomas G., to Kentmaster Manufacturing Company, Inc. De-hiding tool. 5,441,445, Cl. 452-133.000.
Kaseyama, Hideki: *See*—
Kiyomiya, Takashi; Suzuki, Takeshi; Watanabe, Hideo; Takahashi, Shoji; Yamazaki, Kazumi; Takezawa, Masashi; Baba, Shigeki; Sawada, Kenichi; Seikai, Shouji; Kaseyama, Hideki; and Kitagawa, Hiroshi, 5,441,031, Cl. 123-518.000.
Kashihara, Keiichiro: *See*—
Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,442,213, Cl. 257-310.000.
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, to Toyoda Corporation. Backlighting device. 5,442,523, Cl. 362-31.000.
Kasser, Jurgen: *See*—
Vogt, Lothar; Kasser, Jurgen; and Chahabadi, Djahanvar, 5,442,709, Cl. 381-4.000.
Katalin, Gergelyne P.: *See*—
Keresztes, Tamas; Kover, Andras; Kulcsar, Gabor; Erdodine, Katalin; and Katalin, Gergelyne P., 5,441,940, Cl. 514-31.000.
Kataoka, Tetsuo: *See*—
Murata, Shinichi; Nishihara, Setsuo; Kataoka, Tetsuo; Miyamoto, Hideki; Miyamura, Noriyuki; Kubo, Masahiko; and Higashi, Hirofumi, 5,441,020, Cl. 123-90.160.
Kataoka, Yuji; and Toda, Yoko, to Fujitsu Limited. Measurement of trace element concentration distribution, and evaluation of carriers, in semiconductors, and preparation of standard samples. 5,442,174, Cl. 250-282.000.
Kato, Hideki: *See*—
Obsumi, Shuichi; Sugiura, Koji; and Kato, Hideki, 5,441,717, Cl. 423-306.000.
Kato, Hideto: *See*—
Okinoshima, Hiroshige; and Kato, Hideto, 5,441,845, Cl. 430-191.000.
Kato, Hitoshi; Horie, Toshio; and Ashizawa, Koichi, to Furukawa Electric Co., Ltd, The; and Circuit Foil Japan Co., Ltd. Metal foil manufacturing method and an anodized film forming apparatus used therefor. 5,441,627, Cl. 205-77.000.
Kato, Katsuhisa: *See*—
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,441,685, Cl. 264-148.000.
Kato, Mamoru: *See*—
Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; Uemura, Toshiya; and Funahashi, Toshikazu, 5,441,626, Cl. 205-50.000.
Kato, Masaaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Semiconductor device for controlling electric power. 5,442,219, Cl. 257-370.000.
Kato, Masakazu: *See*—
Asada, Norihiro; Kato, Masakazu; Futsuhara, Koichi; and Esashi, Masayoshi, 5,442,303, Cl. 326-14.000.
Kato, Takao; and Tamura, Hideo, to Fujitsu Limited. Instructing method and execution system for instructions including plural instruction codes. 5,442,762, Cl. 395-375.000.
Kato, Tetsuo; and Kanda, Masahiro, to Yazaki Corporation. Connector molding composition comprising an impact modified and stabilized polyester. 5,442,000, Cl. 524-291.000.
Kato, Yoshiya: *See*—
Hirai, Masaaki; Matsunaga, Mitsuo; and Kato, Yoshiya, 5,442,602, Cl. 368-286.000.
Katou, Kouichi: *See*—
Kunimune, Kouichi; Maeda, Hirotoshi; Katou, Kouichi; and Watanabe, Eiji, 5,442,024, Cl. 528-12.000.
Katz, Ronald A. Multiple party telephone control system. 5,442,688, Cl. 379-156.000.
Kau, Shing P., to Honeywell, Inc. Integrated guidance system and method for providing guidance to a projectile on a trajectory. 5,442,560, Cl. 364-453.000.
Kaufman, Arie E.; Cohen, Daniel; and Yagel, Roni, to Research Foundation of State University of New York, The. Method and apparatus for generating realistic images using a discrete representation. 5,442,733, Cl. 395-124.000.
Kaufman, Stephen B.; Hyland, Shelly; Leszynski, Michael A.; and Bryant, Calvin L., to HealthTech Services Corp. Interactive patient assistance device for storing and dispensing a testing device. 5,442,728, Cl. 395-2.790.
Kaufman, Sydney M.; and LeBeau, Stephen E. Method of recycling scrap metal. 5,441,579, Cl. 148-233.000.
Kaukonen, Kyosti: *See*—
Heinakari, Matti Ilola, Ismo; Kaukonen, Kyosti; and Nieminen, Jari, 5,441,196, Cl. 228-222.000.
Kawabe, Manabu: *See*—
Fukasawa, Atsushi; Kawabe, Manabu; Kawahashi, Akiyoshi; and Sato, Takuro, 5,442,662, Cl. 375-205.000.
Kawabe, Nozomu: *See*—
Oishi, Yukihiro; Yamamoto, Susumu; Murai, Teruyuki; and Kawabe, Nozomu, 5,441,010, Cl. 117-40.000.
Kawabe, Ushio: *See*—
Nishino, Toshikazu; Miyake, Mutsuko; Kawabe, Ushio; Harada, Yutaka; Aoki, Masaaki; and Hirano, Mikio, 5,442,196, Cl. 257-36.000.
Kawachi, Norio; Ito, Midori; Naka, Toshiharu; and Tsuji, Hidenori, to Ebara-Udylite Co., Ltd. Electroplating apparatus. 5,441,619, Cl. 204-206.000.
Kawada, Noboru: *See*—
Kaku, Takashi; and Kawada, Noboru, 5,442,656, Cl. 375-354.000.
Kawagoe, Katsuya: *See*—
Takahashi, Mitsuru; Kawaishi, Yasunori; Yu, Hideo; Motohashi, Toshiaki; Kawagoe, Katsuya; and Kamiyama, Hideki, 5,442,428, Cl. 355-271.000.
Kawahara, Kazuo: *See*—
Yamaguro, Akira; Haramura, Shigenori; Minamoto, Naoki; Oshima, Yujiro; Muraki, Hideaki; Abe, Katsuaki; Yokota, Koji; and Kawahara, Kazuo, 5,441,401, Cl. 431-4.000.
Kawahashi, Akiyoshi: *See*—
Fukasawa, Atsushi; Kawabe, Manabu; Kawahashi, Akiyoshi; and Sato, Takuro, 5,442,662, Cl. 375-205.000.
Kawaishi, Yasunori: *See*—
Takahashi, Mitsuru; Kawaishi, Yasunori; Yu, Hideo; Motohashi, Toshiaki; Kawagoe, Katsuya; and Kamiyama, Hideki, 5,442,428, Cl. 355-271.000.
Kawajiri, Tatsuya; Hironaka, Hideyuki; Uekawa, Kazuyuki; Tanimoto, Michio; Yunoki, Hitoshi; and Kudoh, Tsuyoshi, to Nippon Shokubai Co., Ltd. Process for removal of solid organic matters. 5,442,108, Cl. 562-532.000.
Kawamae, Osamu: *See*—
Takeuchi, Toshifumi; Obata, Shinichi; Kimura, Izumi; Kawamae, Osamu; Tadokoro, Hiroshi; and Nagai, Yutaka, 5,442,612, Cl. 369-49.000.
Kawamura, Akihisa; Matsumoto, Masaharu; Serikawa, Mitsuhiko; and Numazu, Hiroko, to Matsushita Electric Industrial Co., Ltd. Sound amplifying apparatus with automatic howl-suppressing function. 5,442,712, Cl. 381-83.000.
Kawamura, Katsuhiko: *See*—
Matsuno, Osamu; Aramaki, Takashi; Kawamura, Katsuhiko; and Nakanowatari, Jun, 5,440,921, Cl. 73-117.300.
Kawase, Hajime: *See*—
Okumura, Hitoshi; Taniuchi, Osamu; and Kawase, Hajime, 5,441,420, Cl. 439-157.000.
Kawashima, Chikashi; Yoshida, Seiichi; Koga, Sunao; Nakahata, Satoshi; and Yoshikawa, Fumiyoshi, to Central Glass Company, Limited. Plastic laminate having polyamide resin surface layer and fluororesin surface layer. 5,441,782, Cl. 428-36.900.
Kawashima, Kazunari: *See*—
Takemoto, Takatoshi; Kawashima, Kazunari; Kadomatsu, Hideyuki; Aoyama, Moriyuki; and Nakamura, Takaharu, 5,441,253, Cl. 271-34.000.
Kawata, Eiji: *See*—
Kanda, Tetsuo; Kawata, Eiji; Ikeda, Noboru; and Miyazaki, Manami, 5,441,077, Cl. 165-10.000.
Kayaba Kogyo Kabushiki Kaisha: *See*—
Murakami, Tokoharu, 5,441,133, Cl. 188-322.150.
Keeler, R. Norris; Manthy, Robert S.; LaMontagne, Troy J.; and McGee, Randall, to Kaman Aerospace Corporation. Imaging lidar transmitter downlink for command guidance of underwater vehicle. 5,442,358, Cl. 342-54.000.

Keeler, Sheri D.: *See*—
Richards, Mark R.; Noel, John R.; Mackey, Larry N.; Lee, Yann-Per; Haney, Anna R.; Hammons, John L.; Lloyd, Susan N. W.; and Keeler, Sheri D., 5,441,492, Cl. 604-378.000.
Keil, Edmund: *See*—
Beck, Erich; Ley, Gregor; Gulbins, Erich; Schlarb, Bernhard; Keil, Edmund; and Lokai, Matthias, 5,441,775, Cl. 427-496.000.
Keilert, Jurgen; Glockner, Frank; Meidhof, Helmut; and Hohm, Laurenz, to Rieter Automatik GmbH. Device for cooling and granulating molten thermoplastic strands emerging from dies. 5,441,394, Cl. 425-71.000.
Keita, Gabriel; and Renaudineau, Joel, to Essilor International-Compagnie General D'Optique. Low yellow index polymer compositions, polymerisable compositions and lenses using said compositions. 5,442,022, Cl. 526-309.000.
Kelly, Christopher: *See*—
Lemieux, David J.; Chadwick, Paul K.; Kelly, Christopher; Petrek, James S.; Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Homberg, William D., 5,441,702, Cl. 422-100.000.
Kemp, James J.; DeJager, John L.; Allgeyer, Thomas L.; and Schenkel, Jack E., to Cincinnati Milacron Inc. Apparatus for printed circuit board connection. 5,442,520, Cl. 361-785.000.
Kemp, Vivian; Nichols, Janie; Brashwood, Martha; and Hallender, David. Autonomous controlled drug dispensing system. 5,441,165, Cl. 221-2.000.
Kemper, William S.: *See*—
Spani, Wayne M.; and Kemper, William S., 5,440,936, Cl. 73-861.280.
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Andrieu, Xavier; and Kerreneur, Laurence, 5,442,197, Cl. 257-80.000.
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Huang, Victor T.; Kerschner, Laurie E.; and Cullen, Lorri D., 5,441,757, Cl. 426-589.000.
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Kimura, Scott A.: *See*—
Chan, Steven S.; Simpson, Miles S.; and Kimura, Scott A., 5,442,747, Cl. 395-164.000.
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Kiss, Adrina: *See*—
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Kleimann, Agnes C. M.: *See*—
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Kleinert, R. Amil. Single fastener plant support ring for use with a t-shaped upright post. 5,440,834, Cl. 47-47.000.
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Klipper, Reinhold M.: *See*—
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Kobayashi, Hideki; and Ido, Yasuo, to Sony Corporation. Apparatus and method for storing and reproducing digital image data yielding high resolution and high quality video image data. 5,442,718, Cl. 382-166.000.
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Kobayashi, Seishichi: *See*—
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Koide, Akira: *See*—
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Kolditz, Joachim, to Gemeinschaftskerakraftwerk Neckar GmbH. Process for inspecting spacers of heat exchanger tubes in a heat exchanger. 5,442,284, Cl. 324-220.000.
Kolem, Heinrich; Schnell, Wilfried; Sauter, Rolf; Wicklow, Karsten; and Requardt, Hermann, to Siemens Aktiengesellschaft. Nuclear magnetic resonance apparatus having at least two transmission frequencies. 5,442,292, Cl. 324-322.000.
Kollrack, Michael: *See*—
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Konica Corporation: *See*—
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Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.

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Kuh, Bernard: *See*—
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Kujira, Katsufumi: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; Kujira, Katsufumi; Suzuki, Naoki; and Sakata, Tomoya, 5,442,103, Cl. 562-416.000.

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Kuno, Michiaki, to Sharp Kabushiki Kaisha. Electronic device for calculating and displaying a matrix. 5,442,743, Cl. 395-148.000.

Kunst, David J.; and Shacter, Stuart B., to National Semiconductor Corporation. Mirror and bias circuit for class AB output stage with large swing and output drive. 5,442,320, Cl. 330-267.000.

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Kunz, Rino E., to Paul Scherrer Institut. Method and apparatus for determining a measuring variable by means of an integrated optical sensor module. 5,442,169, Cl. 250-227.210.

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Kuo, Ming C., to A.O. Smith Corporation. Method of corrosion protecting steel structural components. 5,441,763, Cl. 427-195.000.

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Kusano, Hiroko: *See*—
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Kusner, Ronald R.: *See*—
Eckel, Robert A., Jr.; Kusner, Ronald R.; and Ang, Daniel Y., 5,442,176, Cl. 250-338.400.

Kuster, Hans-Werner: *See*—
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Kuwashima, Shigesumi: *See*—
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Kuzin, Alexandr I.: *See*—
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Kvaerner Engineering a.s.: *See*—
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Kvaerner Masa-Yards Oy: *See*—
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Kwak, Hae-Il: *See*—
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Kwok, John, to Camelot Technologies Inc. Soluble laminates. 5,441,805, Cl. 428-339.000.

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Kwon, Oh-Sang: *See*—
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Kwon, Won-Hyoun, to SamSung Electronics Co., Ltd. Low voltage alerting device in a paging receiver and method therefor. 5,442,345, Cl. 340-825.460.

Kyocera Corporation: *See*—
Fukubeppu, Koichi; Hashiguchi, Takuji; Yasutomi, Tsuyoshi; and Hyodo, Tetsuji, 5,442,381, Cl. 347-18.00L.
Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, 5,442,134, Cl. 174-52.400.

Kyosan Denki Co., Ltd.: *See*—
Tanaka, Masaharu, 5,441,232, Cl. 251-129.050.

Kyrtsos, Christos T.; and Gudat, Adam J., to Caterpillar Inc. Method and system for determining vehicle position based on a projected position of a satellite. 5,442,558, Cl. 364-449.000.

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Challis, Brian, 5,440,811, Cl. 30-169.000.

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Dicken, Dale H.; Pituch, Thomas M.; and Smutney, Francis N., 5,441,212, Cl. 242-532.000.

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Daubie, Christophe; Legrand, Jean-Jacques; and Pemberton, Clive, 5,442,070, Cl. 546-156.000.

Lacefield, William B.: *See*—
Cohen, Marlene L.; Lacefield, William B.; and Robertson, David W., 5,442,078, Cl. 549-23.000.

Lach, Greg F., to W.S. Tyler, Incorporated. Vibrating shaft assembly having magnetic compensation for reducing shaft bearing loads. 5,441,433, Cl. 464-180.000.

Lach, Linda L.: *See*—
Pohndorf, Peter J.; Greene, Corinne A.; and Lach, Linda L., 5,441,504, Cl. 606-129.000.

LaClair, Larry: *See*—
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Santos, A. John; and LaCroix, Mark E., 5,442,313, Cl. 327-355.000.

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Lafond, Luc. Insulated assembly incorporating a thermoplastic barrier member. 5,441,779, Cl. 428-34.000.

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Lahaye, Cindy L. Lipstick and container system. 5,441,153, Cl. 206-581.000.

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Marah, David W.; Lai, Jiening; and Anger, Wilfred R., 5,440,819, Cl. 33-501.600.

L'Air Liquide, Societe Anonyme Pour L'Etude: *See*—
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Lal, Gauri S., to Air Products and Chemicals, Inc. Method of selective fluorination. 5,442,084, Cl. 558-141.000.

Lam, Joe A. S., to Belcor Industries Inc. Flap folder. 5,440,852, Cl. 53-377.200.

Lambropoulos, George P., to TRW Inc. Remote control security system. 5,442,341, Cl. 340-825.310.

Lameris, Gary J.; and Rothfuss, Daniel C., to Premark FEG Corporation. Power supply for vacuum fluorescent displays. 5,442,259, Cl. 315-169.400.

LaMontagne, Troy J.: *See*—
Keeler, R. Norris; Manthy, Robert S.; LaMontagne, Troy J.; and McGee, Randall, 5,442,358, Cl. 342-54.000.

Lampert, Carl M.; Ma, Yan-ping; Doeff, Marca M.; and Visco, Steven, to University of California, The Regents. Electrochromic device using mercaptans and organothiolate compounds. 5,442,478, Cl. 359-273.000.

Lamson, Michael A.: *See*—
Anjoh, Ichiro; Murakami, Gen; Lamson, Michael A.; and Heinen, Katherine G., 5,442,233, Cl. 257-675.000.

Lancaster, Jill E.: *See*—
Nazif, Zaher A.; Cebulka, Kathleen D.; Chu, Francis Y.; Fisher, Gregory M.; Lancaster, Jill E.; Man, Susan K.; Shastry, Subramanya K.; Vinciguerra, Lori J.; and Wang, Lei-Lei C., 5,442,690, Cl. 379-207.000.

Landry, Robert J.; Matchette, Stephanie; and Merberg, Glenn N., to United States of America, Health and Human Services. Photochemotherapy dosimeter. 5,441,530, Cl. 607-88.000.

Landwehr, Ulrich M. Apparatus for human topography. 5,442,444, Cl. 356-376.000.

Lang, Ernst: *See*—
Grimm, Hans; Lang, Walter; Bergen, Karl-Heinz; Lang, Ernst; and Klink, Ulrich, 5,441,439, Cl. 451-28.000.

Lang, Susanne: *See*—
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Lang, Walter: *See*—
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Lange, David V.: *See*—
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Lange, Espen, to Kvaerner Engineering a.s. Submerged swivelling mooring line fairlead device for use on a structure at sea. 5,441,008, Cl. 114-293.000.

Lange, James N. Method and apparatus for determining fluid content and conductivity in porous materials. 5,442,293, Cl. 324-332.000.

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Langford, Terrence R., to KEW Import/Export, Inc. Sharps destruction apparatus. 5,441,622, Cl. 204-275.000.

Lankard, John R., Sr.: *See*—
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Bahel, Vijay; Millet, Hank; Hickey, Mickey; Pham, Hung; Herroon, Gregory P.; Warner, Wayne R.; and Caillat, Jean-Luc M., 5,440,895, Cl. 62-123.000.

Mills, Jack D.: *See*—
Grochowski, Edward T.; Alpert, Donald B.; Mills, Jack D.; and Weiser, Uri C., 5,442,756, Cl. 395-375.000.

Milton Merl & Associates Inc.: *See*—
Merl, Milton J., 5,441,161, Cl. 211-57.100.

MIM Industries, Inc.: *See*—
Conley, Ralph F., Jr.; Frye, Ricky J.; and Gehres, Clint E., 5,441,001, Cl. 112-470.180.

Mimoto, Toshio, to Sharp Kabushiki Kaisha. Semiconductor apparatus including a protection circuit against electrostatic discharge. 5,442,217, Cl. 257-361.000.

Minami Engineering Co., Ltd.: *See*—
Murakami, Takehiko; and Kondo, Kunio, 5,440,980, Cl. 101-123.000.

Minamihara, Seiji: *See*—
Kokubo, Yoshihiro; Minamihara, Seiji; Yamashita, Kouji; and Goto, Katsuhiko, 5,442,649, Cl. 372-46.000.

Minamoto, Naoki: *See*—
Yamaguro, Akira; Haramura, Shigenori; Minamoto, Naoki; Oshima, Yujiro; Muraki, Hideaki; Abe, Katsushi; Yokota, Koji; and Kawahara, Kazuo, 5,441,401, Cl. 431-4.000.

Minebea Kabushiki-Kaisha: *See*—
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,442,247, Cl. 310-67.00R.

Minechika, Shigekazu: *See*—
Hioki, Toshiaki; Morita, Yoshihiko; Minechika, Shigekazu; and Watanabe, Hiroshi, 5,442,455, Cl. 358-342.000.

Minefuji, Nobutaka: *See*—
Tejima, Yasuyuki; Izawa, Yasunori; Minefuji, Nobutaka; and Ogawa, Ryota, 5,442,413, Cl. 353-69.000.

Minnesota Mining and Manufacturing Company: *See*—
Delprato, Ivano; Massirio, Sergio; and Bertoldi, Massimo, 5,441,858, Cl. 430-508.000.
Fornasari, Brunella; Busi, Giuseppe; and Torterolo, Renzo, 5,441,860, Cl. 430-537.000.
Garvey, Joseph F.; and Larson, Curtis L., 5,441,345, Cl. 383-9.000.
Helmin, Harvey J., 5,441,549, Cl. 51-298.000.
Miller, James R.; Kalousdian, Sam; Willett, Brian C.; Winslow, John M.; Zhou, Pu; and Zou, Chaofeng, 5,441,866, Cl. 430-619.000.
Mitra, Smarajit; and Francis, Cecil V., 5,442,089, Cl. 560-20.000.
Vidal, Claude; Redmond, Russell J.; Barker, John M.; Collinson, Mike; Donaldson, Eric J.; Solyntjes, Alan J.; and Eyerly, Robert M., 5,441,509, Cl. 606-151.000.

Minolta Camera Kabushiki Kaisha: *See*—
Yokoyama, Tomoaki; and Takase, Makoto, 5,442,425, Cl. 355-251.000.

Minor, Barbara H., to Du Pont de Nemours, E. I., and Company. Compositions including a fluoroamine and a second component. 5,441,659, Cl. 252-67.000.

Minz, Franz-Rudolf: *See*—
Heller, Harold; Minz, Franz-Rudolf; Klipper, Reinhold M.; Mitschker, Alfred; and Hoffmann, Heiko, 5,441,646, Cl. 210-683.000.

Misawa Homes Co., Ltd.: *See*—
Chihara, Katsuyuki; Ishii, Kazunari; and Kishi, Akira, 5,440,844, Cl. 52-280.000.

Mishra, Pravin; Lehmann, John; and Nair, Somnath. Microdialysis probes and methods of use. 5,441,481, Cl. 604-29.000.

Mita Industrial Co., Ltd.: *See*—
Harada, Hiroyuki, 5,442,267, Cl. 318-280.000.
Kameyama, Shinji; Yoshihiro, Takeo; Aoyama, Yoshiki; Nakamura, Kazuo; Akedo, Shuichi; and Mizuno, Masayuki, 5,442,466, Cl. 358-498.000.

Mitaka Kohki Co., Ltd.: *See*—
Nakamura, Katsushige, 5,441,505, Cl. 606-130.000.

Mitao, Shinji: *See*—
Fujita, Takeshi; Mitao, Shinji; Hasegawa, Kohei; and Suga, Masataka, 5,441,582, Cl. 148-693.000.

Mitchell, James W.: *See*—
Jeng, Guang-kai D.; Mitchell, James W.; and Seibles, Lawrence, 5,441,013, Cl. 117-109.000.

Mitchnick, Mark; and Muhammed, Mamoun, to SunSmart, Inc. Topical ultra-violet radiation protectants. 5,441,726, Cl. 424-59.000.

Mitek Surgical Products, Inc.: *See*—
Bartlett, Edwin C., 5,441,502, Cl. 606-104.000.

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Mitre Corporation, The: *See*—
Chadwick, David J.; Ma, Howard H.; Mammano, Frank J.; Marshall, James W.; Patel, Vijaykumar M.; and Saxton, Lyle G., 5,442,646, Cl. 371-43.000.

Mitscher, Lester A.: *See*—
Baker, William R.; and Mitscher, Lester A., 5,441,955, Cl. 514-250.000.

Mitschker, Alfred: *See*—
Heller, Harold; Minz, Franz-Rudolf; Klipper, Reinhold M.; Mitschker, Alfred; and Hoffmann, Heiko, 5,441,646, Cl. 210-683.000.

Mitsuba Electric Manufacturing Co., Ltd.: *See*—
Hayashi, Akira, 5,441,227, Cl. 248-274.000.

Mitsubishi Cable Industries, Ltd.: *See*—
Kinoshita, Hiroaki; Hattori, Kunihiro; and Dobashi, Kazumasa, 5,442,202, Cl. 257-94.000.
Utsumi, Atsushi; Morita, Yukio; Kaide, Tamotsu; Onishi, Kazuo; and Hayashi, Shunichi, 5,441,489, Cl. 604-280.000.

Mitsubishi Chemical Corporation: *See*—
Yamamoto, Kiyokazu; and Yamamoto, Masao, 5,442,489, Cl. 355-810.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Asamura, Yoshinori; Hatano, Yoshiko; and Onishi, Ken, 5,442,399, Cl. 348-394.000.
Dochi, Tohru, 5,442,357, Cl. 342-51.000.
Eimori, Takahisa, 5,442,212, Cl. 257-303.000.
Furui, Takashi, 5,442,244, Cl. 307-10.100.
Hayashi, Satoru, 5,442,142, Cl. 174-250.000.
Ikawa, Yasushi; and Tsutsumi, Seisuke, 5,442,273, Cl. 318-799.000.
Ikeda, Katsumi; and Yamamoto, Yushin, 5,442,538, Cl. 363-95.000.
Ikejima, Hiroyuki; Iwata, Sigemi; and Yosida, Masayuki, 5,441,127, Cl. 187-292.000.
Kokubo, Yoshihiro; Minamihara, Seiji; Yamashita, Kouji; and Goto, Katsuhiko, 5,442,649, Cl. 372-46.000.
Kosaki, Katsuya, 5,441,629, Cl. 205-148.000.
Kubosono, Kenji; Asamiza, Iwao; Iwane, Masazumi; and Kurita, Toshihiro, 5,441,696, Cl. 420-469.000.
Miyamoto, Takashi; and Fujimoto, Hitoshi, 5,442,231, Cl. 257-668.000.
Mori, Shigeru; and Kajimoto, Takeshi, 5,442,277, Cl. 323-312.000.
Motonami, Kaoru, 5,441,916, Cl. 437-195.000.
Murakami, Tokumichi; and Shimada, Toshiaki, 5,442,401, Cl. 348-405.000.
Murakami, Tokumichi; and Kinjo, Naoto, 5,442,799, Cl. 395-800.000.
Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,441,899, Cl. 437-24.000.
Ogura, Manabu; and Fujiawa, Hidemitsu, 5,442,605, Cl. 369-44.140.
Ohtagaki, Shigeki, 5,442,554, Cl. 364-424.050.
Okadaira, Tomonori; Karoiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,442,213, Cl. 257-310.000.
Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and Deguchi, Mikio, 5,441,577, Cl. 136-244.000.
Sato, Fumiki; and Fujita, Kouichi, 5,442,801, Cl. 395-800.000.
Shikawa, Shinsuke, 5,442,484, Cl. 359-651.000.
Takasaki, Ikuko; Kondo, Shozo; Suzuki, Katsuhi; Naganuma, Kazutosuo; Itabashi, Yoshiko; Kimura, Chikako; and Inaba, Naohito, 5,442,780, Cl. 395-600.000.
Takata, Yoshifumi, 5,442,238, Cl. 257-774.000.

Mitsubishi Electric Corp: *See*—
Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masaharu; Nakase, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kamura, Hitoshi; Noma, Kazutoshi; and Kojima, Atsuyoshi, 5,440,877, Cl. 60-274.000.
Yoshida, Masato, 5,441,122, Cl. 180-65.200.

Mitsubishi Jidosha Kogyo Kaubshiki Kaisha: *See*—
Inukai, Seiichi; Fujita, Kenjiro; Kondo, Akihiro; and Usuki, Katsutoshi, 5,441,459, Cl. 475-127.000.

Mitsubishi Jidosha Kogyou Kabushiki Kaisha: *See*—
Murata, Shinichi; Nishihara, Setsuo; Katsoka, Tetsuo; Miyamoto, Hideki; Miyamura, Noriyuki; Kubo, Masahiko; and Higashi, Hirofumi, 5,441,020, Cl. 123-90.160.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Toda, Hiromichi; Ishigami, Shigeyasu; Kobayashi, Norihisa; Furuya, Takaaki; and Izumi, Jun, 5,440,873, Cl. 60-39.120.
Utsumi, Atsushi; Morita, Yukio; Kaide, Tamotsu; Onishi, Kazuo; and Hayashi, Shunichi, 5,441,489, Cl. 604-280.000.

Mitsubishi Kasei Corporation: *See*—
Jikihara, Tetsuo; Shirasaka, Tadashi; Suzuki, Kazuo; Suzuki, Hiroko; Taniguchi, Masao; and Inoue, Shinya, 5,442,060, Cl. 544-106.000.
Uchida, Masaaki; and Shimizu, Nobuyuki, 5,441,781, Cl. 428-35.700.

Mitsubishi Materials Corp.: *See*—
Ito, Takaaki; Ikeda, Hiroyuki; Tomita, Naoyuki; Shibayama, Takashi; Iwata, Tomio; and Kurihara, Takashi, 5,442,509, Cl. 361-104.000.
Kanazumi, Hisao; Yamashiro, Akiyoshi; and Fujiwara, Kiyoshi, 5,441,205, Cl. 241-41.000.
Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,441,899, Cl. 437-24.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; Kujira, Katsufumi; Suzuki, Naoki; and Sakata, Tomoya, 5,442,103, Cl. 562-416.000.
Mizuno, Hajime; and Omori, Hiroshi, 5,441,802, Cl. 428-327.000.

Mitsubishi Plastics Industries Limited: *See*—
Akitake, Toshiyuki; and Yamada, Shingetsu, 5,441,804, Cl. 428-336.000.

Mitsui Petrochemical Industries Ltd.: *See*—
Nagamatsu, Shigeki; Arase, Tomohiro; and Yasuda, Masaaki, 5,442,121, Cl. 564-398.000.

Mitsumi Electric Co., Ltd.: *See*—
Komatsu, Hisateru; and Watanabe, Takashi, 5,442,503, Cl. 360-99.050.
Saito, Kenji; and Sumigama, Masahiko, 5,442,495, Cl. 360-64.000.

Mitsumoto, Yoshihiro, to Nissan Motor Co., Ltd. System for and method of lighting discharge lamp having failure detection of discharge lamp, external wiring and lighting circuit. 5,442,257, Cl. 315-129.000.

Miura, Kazutoshi: *See*—
Moriya, Shuji; Matsuo, Takenobu; Wakabayashi, Tsuyoshi; Miura, Kazutoshi; and Mori, Takahiro, 5,441,076, Cl. 137-486.000.

Mixson Leathercraft: *See*—
Mixson, Robert, 5,441,187, Cl. 224-243.000.

Mixson, Robert, to Mixson Leathercraft. Holster safety snap assembly. 5,441,187, Cl. 224-243.000.

Miyaji, Atsuko; and Tatebayashi, Makoto, to Matsushita Electric Industrial Co., Ltd. Method for generating and verifying electronic signatures and privacy communication using elliptic curves. 5,442,707, Cl. 380-30.000.

Miyajima, Yasuo, to Kabushiki Kaisha Toshiba. Color doppler-type ultrasonic diagnostic apparatus. 5,441,052, Cl. 128-661.090.

Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, to Tokiwa Chemical Industries Co., Ltd.; Masuzawa Chemical Sales Co., Ltd.; and System Technical Co., Ltd. Method for producing a window glass edging member for a vehicle such as an automobile. 5,441,685, Cl. 264-148.000.

Miyake, Hisanori: *See*—
Terasaki, Hiroyuki; Sekine, Masahiro; Miyake, Hisanori; Sherick, Michael T.; and Doherty, Bryan M., Jr., 5,440,958, Cl. 83-83.000.

Miyake, Mutsuko: *See*—
Nishino, Toshikazu; Miyake, Mutsuko; Kawabe, Ushio; Harada, Yutaka; Aoki, Masaaki; and Hirano, Mikio, 5,442,196, Cl. 257-36.000.

Miyake, Norifumi: *See*—
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Miyamoto, Hideki: *See*—
Murata, Shinichi; Nishihara, Setsuo; Kataoka, Tetsuo; Miyamoto, Hideki; Miyamura, Noriyuki; Kubo, Masahiko; and Higashi, Hirofumi, 5,441,020, Cl. 123-90.160.

Miyamoto, Takashi; and Fujimoto, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,442,231, Cl. 257-668.000.

Miyamura, Noriyuki: *See*—
Murata, Shinichi; Nishihara, Setsuo; Kataoka, Tetsuo; Miyamoto, Hideki; Miyamura, Noriyuki; Kubo, Masahiko; and Higashi, Hirofumi, 5,441,020, Cl. 123-90.160.

Miyano, Hiroshi, to NEC Corporation. Hardware arrangement for encipbering bit blocks while renewing a key at each iteration. 5,442,705, Cl. 380-29.000.

Miyano, Masateru: *See*—
Bovy, Philippe R.; Rogers, Thomas E.; Miyano, Masateru; and Rico, Joseph G., 5,441,979, Cl. 514-365.000.

Miyata, Kenichi: *See*—
Nagate, Hiroshi; Miyata, Kenichi; and Tsuda, Masahiko, 5,441,846, Cl. 430-259.000.

Miyata, Koichi: *See*—
Saito, Kimitsugu; Miyata, Koichi; and Das, Kalyankumar, 5,442,199, Cl. 257-77.000.

Miyata, Masakazu; and Nagano, Tomoko, to Riso Kagaku Corporation. Cut sheet feeder for image forming apparatus. 5,441,246, Cl. 271-9.110.

Miyatake, Atsushi: *See*—
Fujii, Tsuyoshi; and Miyatake, Atsushi, 5,441,787, Cl. 428-57.000.

Miyazaki, Masami: *See*—
Kanda, Tetsuo; Kawata, Eiji; Ikeda, Noboru; and Miyazaki, Masami, 5,441,097, Cl. 165-10.000.

Miyazaki, Takeshi: *See*—
Watanabe, Satomi; Miyazaki, Takeshi; Ito, Yutaka; and Amano, Toshikazu, 5,441,456, Cl. 474-94.000.

Miyazaki, Tetsuya: *See*—
Sashihara, Yoichi; Masuda, Masahiro; Nakamura, Isao; Watanabe, Kunitoshi; Miyazaki, Tetsuya; and Sekimoto, Kazuhiro, 5,442,570, Cl. 364-500.000.

Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; Toyota Jidosha Kabushiki Kaisha; and Kyocera Corporation. Lead structure of semiconductor device. 5,442,134, Cl. 174-52.400.

Mizuguchi, Noboru: *See*—
Taniguchi, Kenshi; Tanaka, Masatoshi; Mizuguchi, Noboru; and Uchimura, Kiyoshi, 5,442,805, Cl. 348-525.000.

Mizuno, Hajime; and Omori, Hiroshi, to Mitsubishi Petrochemical Company Limited. Biaxially-oriented multi-layer films. 5,441,802, Cl. 428-327.000.

Mizuno, Katsuyasu, to Nidek Co., Ltd. Ophthalmic photocoagulating apparatus using a laser diode and a lens system for the apparatus. 5,442,487, Cl. 359-784.000.

Mizuno, Masayuki: *See*—
Kameyama, Shinji; Yoshihiro, Takeo; Aoyama, Yoshiki; Nakamura, Kazuo; Akedo, Shuichi; and Mizuno, Masayuki, 5,442,466, Cl. 358-498.000.

Mizzi, John V.: *See*—
Giuliano, Fred; and Mizzi, John V., 5,440,976, Cl. 99-485.000.

Mller, Stephan: *See*—
Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Mller, Stephan; Stark, Herbert; Schutze, Rainer; Bauer, Klaus; and Bieringer, Hermann, 5,441,922, Cl. 504-104.000.

Moard, David; and Greiner, Leonard. Apparatus and method for decressing nitrogen oxide emissions from internal combustion power sources. 5,441,546, Cl. 48-107.000.

Mobil Oil Corp.: *See*—
Valyocsik, Ernest W., 5,441,721, Cl. 423-706.000.

Modrak, James P., to Hercules Incorporated. Oleophilic staple fibers useful in pavement for making and repairing geoways. 5,441,812, Cl. 428-359.000.

Moffa, Anthony L.: *See*—
Leon, Robert L.; and Moffa, Anthony L., 5,440,938, Cl. 73-862.191.

Mogorychny, Victor I.: *See*—
Boyarsky, Mikhail; Yudin, Boris; Mogorychny, Victor I.; and Klusmier, Larry, 5,441,658, Cl. 252-67.000.

Mohawk Plastic Products, Inc.: *See*—
Lofland, James A., 5,440,789, Cl. 24-132.00R.

Mohrlock, Werner: *See*—
Mohrlok, Werner; and Mohrlok, Herwig, 5,442,129, Cl. 84-637.000.

Mohrlok, Herwig: *See*—
Mohrlok, Werner; and Mohrlok, Herwig, 5,442,129, Cl. 84-637.000.

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Moise, Theodore S., to Texas Instruments Incorporated. Room-temperature tunneling hot-electron transistor. 5,442,194, Cl. 257-29.000.

Mojden, Andrew E.; and Hoinacki, Richard P., to Fleetwood Systems, Inc. Infeed apparatus for article handling system. 5,441,382, Cl. 414-798.900.

Mol, Hans C.: *See*—
Bartoes, Robert J.; Mol, Hans C.; Shaw, Lyle W.; and Wright, William J., 5,441,244, Cl. 270-45.000.

Molecular BioQuest, Inc.: *See*—
Chagnon, Mark S., 5,441,746, Cl. 424-450.000.

Molecular Imaging Systems: *See*—
Jung, Pan S.; and Yaniv, Daphna R., 5,440,920, Cl. 73-105.000.

Molecular Probes, Inc.: *See*—
Haugland, Richard P.; and Whitaker, James E., 5,442,045, Cl. 530-391.300.

Moler, Keith E.: *See*—
Bjorkholm, Paul J.; Le, Khai M.; and Moler, Keith E., 5,442,672, Cl. 378-4.000.

Molex Incorporated: *See*—
Marshall, Robert C.; and Quinn, Robert L., 5,440,799, Cl. 29-566.200.

Moll, Hans-Christer: *See*—
Eriksen, Paul; Engstrand, Jan-Ake; Moll, Hans-Christer; Persson, Mikael; and Svensson, Jan-Agne, 5,441,397, Cl. 425-116.000.

Molter, Trent M.; Faye, David L.; and Armstrong, Wilford J., to United Technologies Corporation. Electrochemical cell having crossed-ridge sealing surface. 5,441,621, Cl. 204-252.000.

Monaghan, Richard L.: *See*—
Harris, Guy H.; Curotto, James E.; Giacobbe, Robert A.; Mandala, Suzanne M.; Monaghan, Richard L.; Jansson, Richard K.; and Lasota, Joan A., 5,441,987, Cl. 514-691.000.

Monari, Lawrence M., to DBA Systems, Inc. Optical viewing instrument for attachment to a gunsight eyepiece. 5,442,483, Cl. 359-638.000.

Moncrieff, J. Peter. Method for controlling electric charge movement by segementing conductive surface. 5,442,516, Cl. 361-303.000.

Monfore, Michael D.: *See*—
Morgan, Robert L., IV; and Monfore, Michael D., 5,440,998, Cl. 108-51.100.

Monget, Francois: *See*—
Mathieu, Gerard; and Monget, Francois, 5,441,584, Cl. 156-175.000.

Monkiewicz, Jaroslaw: *See*—
Wolpers, Juergen; Nordsiek, Karl-Heinz; Monkiewicz, Jaroslaw; and Zerpner, Dieter, 5,442,099, Cl. 560-302.000.

Monroe, Donald P.: *See*—
Brasen, Daniel; Fitzgerald, Eugene A., Jr.; Green, Martin L.; Monroe, Donald P.; Silverman, Paul J.; and Xie, Ya-Hong, 5,442,205, Cl. 257-191.000.

Monsees, Claude E.: *See*—
Roberts, John T.; Monsees, Claude E.; and Mattson, Larry J., 5,441,199, Cl. 229-117.250.

Monteny, Nicole: *See*—
Fabre, Pierre; Mouzin, Gilbert; Jeanjean, Michel; Monteny, Nicole; and Cousse, Henri, 5,441,980, Cl. 514-531.000.

Mookherjee, Braja D.: *See*—
Butler, Jerry F.; Marin, Anna B.; Warren, Craig B.; Wilson, Richard A.; and Mookherjee, Braja D., 5,441,988, Cl. 514-715.000.

Moon, Eva-Maria; and Ahlvin, Eric L., to Hewlett-Packard Company. Bidirectional black and color pass print method for ink-jet printers. 5,442,385, Cl. 347-43.000.

Mooney, Randall O., Jr.: *See*—
Martin, Stephen R.; and Mooney, Randall O., Jr., 5,442,305, Cl. 326-30.000.

Moore, Barrett H., to Arbitrage Imports Incorporated. Scrubber device with waterproof mitt. 5,441,355, Cl. 401-7.000.

Moore, Charles C.: *See*—
Zombo, Paul J.; Mehta, Michael J.; Moore, Charles C.; Guenther, Paul; and Bertsch, Oran L., 5,442,285, Cl. 324-227.000.

Moore, Charles R.: *See*—
Chu, Tan V.; Moore, Charles R.; Muhich, John S.; and Potter, Terence M., 5,442,766, Cl. 395-414.000.

Moore, Ralph, II, to Moore Variable Cam, Inc. Variable valve actuation camshaft. 5,441,021, Cl. 123-90.170.

Moore Variable Cam, Inc.: *See*—
Moore, Ralph, II, 5,441,021, Cl. 123-90.170.

Moore, Walter A.: *See*—
Johnson, Kelly B.; Moore, Walter A.; Kort, Leland B.; and Rink, Karl K., 5,441,302, Cl. 280-736.000.

Morehouse, James H.; Volk, Steven B.; Utenick, Michael R.; and Blagaila, John H., to Integral Peripherals, Inc. Miniature disk drive with spin motor control system. 5,442,266, Cl. 318-272.000.

Morep Food Process Systems Limited: *See*—
Kristensen, Jean J., 5,441,098, Cl. 165-17.000.

Moretz, Herbert L.; and Brier, Daniel L., to Intelpro Corporation. Moisture managing brassiere for sports and general wear. 5,441,436, Cl. 450-93.000.

Morey, Stephen J.; and Kozlevcar, Joseph G., to Caterpillar Inc. Generic solenoid driver circuit board, circuit and method of making same. 5,442,511, Cl. 361-154.000.

Morgan, Daniel M.: *See*—
Morgan, Ronald E.; and Morgan, Daniel M., 5,441,290, Cl. 280-259.000.

Morgan, Robert L., IV; and Monfore, Michael D., to Polycytek of Michigan, Inc. Plastic pallet assembly and method. 5,440,998, Cl. 108-51.100.

Morgan, Ronald E.; and Morgan, Daniel M. Pedal arm, pedal arm adjuster. 5,441,290, Cl. 280-259.000.

Morgan, Russell J.: *See*—
Seper, Karl W.; Zeller, Robert L., III; and Morgan, Russell J., 5,441,669, Cl. 252-185.000.

Morgan, W. A. David, to Sony Corporation. Motion vector generation using interleaved subsets of correlation surface values. 5,442,409, Cl. 348-699.000.

Mori, Hirohiko: *See*—
Urano, Satoshi; Aoki, Kei; Tomita, Nobuaki; and Mori, Hirohiko, 5,442,096, Cl. 560-190.000.

Mori, Hisatoshi: *See*—
Matsuda, Kunihiro; and Mori, Hisatoshi, 5,441,618, Cl. 204-203.000.

Mori, Kazuhiro: *See*—
Tatematsu, Susumu; Mori, Kazuhiro; and Ikari, Hideyuki, 5,440,892, Cl. 62-135.000.

Mori, Shigeru; and Kajimoto, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Internal power supply circuit for generating internal power supply potential by lowering external power supply potential. 5,442,277, Cl. 323-312.000.

Mori, Takahiro: *See*—
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Cooper, Stephen R. W.; and Zhang, Guangyu, 5,442,435, Cl. 358-133.000.

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Jones, M. Eric; and Puletti, Paul P., 5,442,001, Cl. 524-292.000.
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Aketagawa, Ken-ichi; Sakai, Junro; and Tatsumi, Toru, 5,441,012, Cl. 117-86.000.
Fujiwara, Hisashi, 5,442,308, Cl. 326-108.000.
Fukaishi, Muneo; and Hida, Hikaru, 5,442,227, Cl. 257-628.000.
Furuya, Yukitsuna, 5,442,803, Cl. 455-15.000.
Hara, Takaaki, 5,442,314, Cl. 327-543.000.
Hashimoto, Tadao; Hara, Ryoji; and Fujimura, Yasuhiro, 5,442,684, Cl. 379-61.000.
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Shiga, Shoji, 5,442,765, Cl. 395-600.000.
Shiki, Tatsuya, 5,442,372, Cl. 345-98.000.
Takayama, Yoshikazu, 5,442,807, Cl. 455-33.100.
Yamagata, Kanako, 5,442,781, Cl. 395-600.000.
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Yamazaki, Shuntaro; and Ogata, Takaaki, 5,442,476, Cl. 359-173.000.
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Barratt, Peter G., 5,442,770, Cl. 395-403.000.

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Roberts, Jerry W., 5,441,443, Cl. 451-91.000.

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Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., 5,442,371, Cl. 345-98.000.

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Thurston, Marlin O.; and Olson, Karl W., 5,441,050, Cl. 128-659.000.

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Wadell, Lars G. A., 5,441,756, Cl. 426-556.000.

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Wascher, Rick R.; Neuhauser, Roy L., III; and Fairbanks, Ray, Jr., 5,441,647, Cl. 210-695.000.

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Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,442,006, Cl. 524-457.000.

New Holland North America, Inc.: *See—*
Wichelt, Kent M., 5,442,521, Cl. 362-61.000.

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Ruggles, Kay L.; Ruggles, Bryan K.; Ruggles, Cary L.; Strauss, Kerry; and Buehner, Dennis, 5,441,592, Cl. 156-563.000.

Newman, Lawrence F.: *See—*
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McFarland, Harold L.; Stiles, David R.; Van Dyke, Korbin S.; Mehta, Shrenik; Favor, John G.; Greenley, Dale R.; and Cargnoni, Robert A., 5,442,757, Cl. 395-375.000.

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Fromwiller, John K.; and Ney, Steven J., 5,442,028, Cl. 528-44.000.

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Imai, Ryuji; and Takada, Toshikatsu, 5,442,145, Cl. 174-267.000.

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Nicetto, Romeo, 5,441,396, Cl. 425-73.000.

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Kemp, Vivian; Nichols, Janie; Brushwood, Martha; and Hullender, David, 5,441,165, Cl. 221-2.000.

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Gajewski, Kenneth J.; and Nichols, Ralph T., 5,441,416, Cl. 439-32.000.

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Cann, Kevin J.; Nicoletti, James W.; Karol, Frederick J.; Marcinkowsky, Arthur E.; Springs, Thomas E.; and Hwu, Mark C., 5,442,018, Cl. 526-65.000.

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Heinakari, Matti; Ilola, Ismo; Kaukonen, Kyosti; and Nieminen, Jari, 5,441,196, Cl. 228-222.000.

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Tyburn, Jean-Max; Niess, Alfred; and Gianotti, Tonio, 5,442,291, Cl. 324-322.000.

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Gamo, Takaharu; Taniguchi, Noboru; Niikura, Junji; and Hatoh, Kazuhito, 5,441,715, Cl. 423-249.000.

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Sato, Susumu, 5,442,486, Cl. 359-690.000.
Takagi, Tadao, 5,442,417, Cl. 354-402.000.

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Abrams, Jack; and Giordano, William, 5,440,761, Cl. 2-102.000.

Nilsson, Jan: *See—*
Collin, Marianne; Mattsson, Bertil; and Nilsson, Jan, 5,441,764, Cl. 427-226.000.

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Tanaka, Ryoichi; Matsuo, Mamoru; Yahara, Hitoshi; and Sudo, Jun, 5,441,403, Cl. 431-175.000.

Nippon Paint Co., Ltd.: *See—*
Ohgaki, Atsushi; Ohsugi, Hiroharu; Tanabe, Hisaki; Tobinaga, Kenshiro; and Kojima, Yoshio, 5,441,995, Cl. 523-404.000.
Urano, Satoshi; Aoki, Kei; Tomita, Nobuaki; and Mori, Hirohiko, 5,442,096, Cl. 560-190.000.

Nippon Precision Circuits Inc.: *See—*
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Nippon Shokubai Co., Ltd.: *See—*
Kawajiri, Tatsuya; Hironaka, Hideyuki; Uekawa, Kazuyuki; Tanimoto, Michio; Yunoki, Hiromi; and Kudoh, Tsuyoshi, 5,442,108, Cl. 562-532.000.

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Asada, Norihiro; Kato, Masakazu; Futsuhara, Koichi; and Esashi, Masayoshi, 5,442,303, Cl. 326-14.000.

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Sashihara, Yoichi; Masuda, Masahiro; Nakamura, Isao; Watanabe, Kunitoshi; Miyazaki, Tetsuya; and Sekimoto, Kazuhiro, 5,442,570, Cl. 364-300.000.
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Nippon Telegraph and Telephone Corporation: *See—*
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Nippon Thompson Co., Ltd.: *See—*
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Fujita, Ryuji, 5,441,350, Cl. 384-447.000.

Nippondenso Co., Ltd.: *See—*
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Ikuta, Kenji; Suzumura, Toshihiro; Isomura, Shigenori; and Honjoh, Keigi, 5,441,032, Cl. 123-531.000.
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Nishihara, Setsuo: *See—*
Murata, Shinichi; Nishihara, Setsuo; Kataoka, Tetsuo; Miyamoto, Hideki; Miyamura, Noriyuki; Kubo, Masahiko; and Higashi, Hirofumi, 5,441,020, Cl. 123-90.160.

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Mori, Takao; Yoshida, Satoshi; Nishimukai, Tadahiko; and Yamaguchi, Kenji, 5,442,229, Cl. 257-666.000.

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Nishimura, Kunio; Kumakawa, Shiro; and Nakagawa, Hideo, to Teijin Limited. Filter cloth for air bags. 5,441,798, Cl. 428-229.000.

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Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,441,899, Cl. 437-24.000.

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Nishiyama, Soichi: *See—*
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Nissan Motor Co., Ltd.: *See—*
Matsuno, Osamu; Aramaki, Takashi; Kawamura, Katsuhiko; and Nakanowatari, Jun, 5,440,921, Cl. 73-117.300.
Mitsumoto, Yoshihiro, 5,442,257, Cl. 315-129.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Hasegawa, Motoharu; Shirai, Kohji; Matsumoto, Kiyohiko; Suzuki, Yasuhiko; Takahasi, Isao; Takarada, Yuuiti; Saito, Mitsuyo; Yamamoto, Kumiko; Takayama, Yositaka; Komazawa, Tsutomu; and Sugai, Toshiji, 5,441,962, Cl. 514-309.000.

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Nishiki, Nobuo; and Horiuchi, Kazumi, 5,441,879, Cl. 435-188.000.

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Aizawa, Kaoru; Ohshima, Toshiyuki; Hanai, Hiroomi; and Okochi, Naoki, 5,441,810, Cl. 428-354.000.

NKK Corporation: *See—*
Fujita, Takeshi; Mitao, Shinji; Hasegawa, Kohei; and Suga, Masataka, 5,441,582, Cl. 148-693.000.

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Noel, John R.: *See—*
Richards, Mark R.; Noel, John R.; Mackey, Larry N.; Lee, Yann-Per; Haney, Anna R.; Hammons, John L.; Lloyd, Susan N. W.; and Keeler, Sheri D., 5,441,492, Cl. 604-378.000.

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Hirvonen, Timo; Leman, Ari; Valimaa, Veli-Matti; Hossi, Petri; Olkkola, Jari; and Uronen, Lasse, 5,442,521, Cl. 361-800.000.

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Kamura, Hitoshi; Noma, Kazutoshi; and Kojima, Atsuyoshi, 5,440,877, Cl. 60-274.000.

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Noppe, Marcus J. M.; and Garrevoet, Theo C. Solid phase assay for use with a physical developer. 5,441,896, Cl. 436-525.000.

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Torkelson, Delbert W.; Jannetta, Thomas J.; Nikkanen, John P.; Webb, Daniel E.; Zysman, Steven H.; Colletti, William D.; Stern, Alfred M.; and Lord, Wesley K., 5,440,875, Cl. 60-226.100.

Nordenbrock, Ronald D.: *See—*
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Pozzobon, Alessandro, 5,441,286, Cl. 280-1127.000.

Nordsiek, Karl-Heinz: *See—*
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Nordstrand, Ingrid V.: *See—*
Svedin, Lars-Erik; Linden, Lars K.; Andersson, Lars M.; Hedin, Cecilia S. M.; Nordstrand, Ingrid V.; and Bodin, Stig R., 5,442,682, Cl. 379-59.000.

Norell, Joyce L., to Beckman Instruments, Inc. Bevel closure and device. 5,441,698, Cl. 422-58.000.

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Masutani, Hironori, 5,442,419, Cl. 355-74.000.
Tsuji, Masaaki, 5,442,420, Cl. 355-74.000.

Norman, Vernon R.: *See—*
Geyer, Joel E.; Lee, Joseph K.; Mullen, John M.; Norman, Vernon R.; Wilhelm, Kathleen M.; and Wilson, Kenneth T., 5,442,629, Cl. 370-84.000.

Norris, Kjeld E.: *See—*
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North American Specialties Corporation: *See—*
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Seidler, Jack, 5,441,430, Cl. 439-876.000.

North, John: *See—*
Hoarty, W. Leo; Soake, Joshua; Lauder, Gary M.; Snell, Stephen C.; Fisher, Delmer D.; and North, John, 5,442,700, Cl. 380-15.000.

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Chan, Chung; and Allen, Ryne C., 5,441,617, Cl. 204-192.380.
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Eden, Richard C., 5,441,791, Cl. 428-162.000.

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Noto, Nobuhiko: *See—*
Adomi, Keizo; Noto, Nobuhiko; Nakamura, Akio; and Takenaka, Takao, 5,442,201, Cl. 257-86.000.
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Corain, Luciano; Manzardo, Ruggero; and Apolloni, Vittorio, 5,441,084, Cl. 139-25.000.

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Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,441,839, Cl. 430-108.000.

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Tejima, Yasuyuki; Izawa, Yasunori; Minefuji, Nobutaka; and Ogawa, Ryota, 5,442,413, Cl. 353-69.000.

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Ogura, Manabu; and Fujisawa, Hidemitsu, to Mitsubishi Denki Kabushiki Kaisha. Head driving device with carriage assembly centroid position set where servo frequency is not delayed. 5,442,605, Cl. 369-44.140.

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Stone, Henry W.; and Ohm, Timothy R., 5,440,916, Cl. 73-23.310.

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Bonne, Ulrich; and Ohnstein, Thomas R., 5,441,597, Cl. 216-2.000.

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Ohta, Yasunori, to Fuji Photo Film Co., Ltd. Sheet article containing cassette and system. 5,441,251, Cl. 271-145.000.

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Atsumi, Shiro; Kondo, Toshinari; and Shona, Yoshihiro, 5,442,165, Cl. 235-492.000.
Fukasawa, Atsushi; Kawabe, Manabu; Kawahashi, Akiyoshi; and Sato, Takuro, 5,442,662, Cl. 375-205.000.
Kita, Akio, 5,442,211, Cl. 257-301.000.

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Barber, Clifton J.; and Hardin, Stephen T., 5,442,806, Cl. 455-33.100.

Okinoshima, Hiroshige; and Kato, Hideto, to Shin-Etsu Chemical Co., Ltd. Photosensitive resin composition comprising a polyimide precursor and a photosensitive diazoquinone. 5,441,845, Cl. 430-191.000.

Okochi, Naoki: *See*—
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Yanni, John M.; Robertson, Stella M.; Okumura, Shigetoshi; Tanaka, Hitoshi; and Saito, Tadayuki, 5,441,958, Cl. 514-253.000.

Okumura, Takashi: *See*—
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Oldfield, Terry A.: *See*—
Krutak, James J.; Weaver, Max A.; Coates, Clarence A., Jr.; Hilbert, Samuel D.; Oldfield, Terry A.; Parham, William W.; and Pruett, Wayne P., 5,442,086, Cl. 558-401.000.

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Olivieri, Steven M. Painter's hand tool. 5,440,777, Cl. 15-236.010.

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Hirvonen, Timo; Leman, Ari; Valimaa, Veli-Matti; Hossi, Petri; Olkkola, Jari; and Uronen, Lasse, 5,442,521, Cl. 361-800.000.

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Olsen, Kurt F.; Salvatori, Phillip H.; and Powers, Daniel J., to Hewlett-Packard Corporation. Defibrillator patient connection system with automatic identification. 5,441,520, Cl. 607-6.000.

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Thurston, Marlin O.; and Olson, Karl W., 5,441,050, Cl. 128-659.000.

Olympus Optical Co., Ltd.: *See*—
Adachi, Yutaka, 5,442,164, Cl. 235-463.000.
Horiguchi, Toshio, 5,442,613, Cl. 369-54.000.
Hosaka, Naoki, 5,442,611, Cl. 369-48.000.
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Omega Casting Corp.: *See*—
White, Howard H., 5,440,900, Cl. 63-2.000.

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Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masaharu; Nakane, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.

O'Neill, Paul J.; and Wittig, Gary P., to Aervoe-Pacific Company, Inc. Nevada. LP gas can and gas recycling apparatus. 5,441,088, Cl. 141-51.000.

Ong, Beng S.; and Hsiao, Cheng-Kuo, to Xerox Corporation. Photoconductive imaging members with acetoxymetal phthalocyanines. 5,441,837, Cl. 430-58.000.

Onishi, Kazuo: *See*—
Utsumi, Atsushi; Morita, Yukio; Kaide, Tamotsu; Onishi, Kazuo; and Hayashi, Shunichi, 5,441,489, Cl. 604-280.000.

Onishi, Ken: *See*—
Asamura, Yoshinori; Hatano, Yoshiko; and Onishi, Ken, 5,442,399, Cl. 348-394.000.

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Shimura, Kenichi; Ishii, Naoki; and Onishi, Makoto, 5,441,488, Cl. 604-265.000.

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Onusseit, Hermann: *See*—
Broich, Ludwig; Herlfterkamp, Bernhard; and Onusseit, Hermann, 5,441,562, Cl. 106-144.000.

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Meissner, Helmuth E., 5,441,803, Cl. 428-220.000.

Ooji, Masataka, to Fuji Electric Co., Ltd. Method for setting operation constants in an inverter device. 5,442,537, Cl. 363-43.000.

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DeWitt, Robert R.; and Chodack, Jeffrey L., 5,441,159, Cl. 209-584.000.

Oppong, David; and King, Vanja M., to Buckman Laboratories International, Inc. Synergistic antimicrobial compositions containing methylene-bis(thiocyanate) and an organic acid. 5,441,979, Cl. 514-515.000.

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Oravecz, Michael G.: *See*—
Sauer, Jude S.; Oravecz, Michael G.; Greenwald, Roger J.; and Kobilansky, Alexander L., 5,441,041, Cl. 600-106.000.

Orbital Engine Company Pty. Limited: *See*—
Sayer, Christopher N. F.; and Gorman, Alan, 5,441,019, Cl. 123-73.00R.

Organek, Gregory J.; and Preston, David M., to Eaton Corporation. Clutch with a centrifugally applied ball ramp actuator. 5,441,137, Cl. 192-35.000.

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Schwartz, Rodney E.; Clauter, Steven T.; and Orman, Gary M., 5,442,276, Cl. 322-25.000.

Orrick, James. Ladder guard. 5,441,126, Cl. 182-106.000.

Ort, Oswald; Willms, Lothar; Zeiss, Hans-Joachim; Miller, Stephan; Stark, Herbert; Schutze, Rainer; Bauer, Klaus; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Combinations of benzoyl cyclohexanedione herbicides and crop-protecting substances. 5,441,922, Cl. 504-104.000.

Orth, Geoffrey A.: *See*—
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Orthe, Nils A.: *See*—
Rustad, Einar; Bakka, Bjorn O.; Birkeli, Inge; and Orthe, Nils A., 5,442,760, Cl. 395-375.000.

Ortiz, Mark, to Ethicon, Inc. Manipulable hand for laparoscopy. 5,441,494, Cl. 606-1.000.

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Osaki Engineering Co., Ltd: *See*—
Morofuji, Yoshihisa, 5,441,474, Cl. 483-55.000.

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Fujieda, Yasuhiko; and Oshiba, Hisanori, 5,441,393, Cl. 425-58.100.

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Yamaguro, Akira; Haramura, Shigenori; Minamoto, Naoki; Oshima, Yujiro; Muraki, Hideaki; Abe, Katsushi; Yokota, Koji; and Kawahara, Kazuo, 5,441,401, Cl. 431-4.000.

Osofsky, Irving B. High velocity impulse rocket. 5,440,993, Cl. 102-374.000.

Osram Sylvania Inc.: *See*—
Dutta, Arunava; and Dullea, Leonard V., 5,441,774, Cl. 427-476.000.

Ostendorf, Eugene G.; Cowles, John C.; Morris, Irwin D.; and Smith, Gerald W., to Audit Systems Company. Vending machine audit monitoring system. 5,442,568, Cl. 364-479.000.

Oster, Earl H. Portable piping-and-pump-system testing apparatus. 5,440,918, Cl. 73-40.50R.

Ostergren, Roland: *See*—
Arnberg, Peter W.; and Ostergren, Roland, 5,440,923, Cl. 73-146.000.

Oswald, Gary J.; Banghart, Mark; and Burke, Michael E., to Motorola, Inc. Method and apparatus for transferring data base information. 5,442,783, Cl. 395-600.000.

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Matsui, Hironobu; Ichihashi, Mikio; Ueda, Shinjiroo; Otaka, Tadashi; Takahashi, Kazue; Kobari, Toshiaki; and Odaka, Kenji, 5,442,183, Cl. 250-441.110.

Oto, Takeshi, to Kabushiki Kaisha Toshiba. Instruction control method and instruction control apparatus. 5,442,773, Cl. 395-550.000.

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Otterbach, Jurgen: *See*—
Bulow, Henning; and Otterbach, Jurgen, 5,442,479, Cl. 359-341.000.

Ou, John D.-Y., to Exxon Chemical Patents Inc. Extraction of selection hydrocarbons from a hydrocarbon stream using a carbon adsorbent. 5,442,040, Cl. 528-482.000.

Ouchi, Norman K.: *See*—
Awad, Joseph C.; Eldridge, James W.; Foote, David G.; and Ouchi, Norman K., 5,442,638, Cl. 395-182.040.

Output Technology Corporation: *See*—
Pfeuffer, Joseph J., 5,442,382, Cl. 346-136.000.

Owen, Harry: *See*—
Battey, David E.; Owen, Harry; and Tedesco, James M., 5,442,439, Cl. 356-328.000.

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Owens-Brockaway Glass Container Inc.: *See*—
Gerber, Stephen M.; and Ringlien, James A., 5,442,446, Cl. 356-428.000.

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Lewis, Paul P.; Owens, Daniel; and Sands, Daniel L., 5,441,707, Cl. 422-300.000.

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Oyama, Masaru; and Masuta, Noriaki, to Honda Giken Kogyo Kabushiki Kaisha. Automotive bumper stay structure. 5,441,319, Cl. 293-155.000.

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Ozlen, Susan N., to Longevity Network. Ltd. Cosmetic composition containing alpha hydroxyacids, salicyclic acid, and enzyme mixture of bromelain and papain. 5,441,740, Cl. 424-401.000.

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Porter, Clyde R.; and Stringer, Calvin R., 5,441,129, Cl. 188-67.000.

Pace Control Technologies, Inc.: *See*—
Boulos, Charles A.; Sund, Michael D.; and Hussain, Syed M. A., 5,442,177, Cl. 250-342.000.
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Pacesetter AB: *See*—
Hedberg, Sven-Erik, 5,441,521, Cl. 607-6.000.

Pacific Corporation: *See*—
Kim, Young D.; Kim, Chang K.; Lee, Choong N.; and Ha, Byung J., 5,441,725, Cl. 424-59.000.

Pack, Sa-Ryong: *See*—
So, Jai-Choon; Kwak, Hae-Il; Kwang, Kyu-Hae; Cho, Yong-Hwan; Eom, Ki-Jin; and Pack, Sa-Ryong, 5,441,699, Cl. 422-63.000.

Padden, Harvey F.; Rumore, Frank C.; and Calvert, Scott R., to Computer Control Corporation. Flow calibrator. 5,440,925, Cl. 73-253.000.

Padilla, Daniel G. Dust collector for hand-held power tool. 5,440,809, Cl. 30-124.000.

Paffel, Douglas C.: *See*—
Bausman, Marvin D.; Chen, Steven S.; Priest, Edward C.; and Paffel, Douglas C., 5,442,475, Cl. 359-140.000.

Pagan, Salvador E. Racket string alignment tool. 5,441,258, Cl. 273-73.00D.

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Chang, Rea-Woun; Lebet, Jean-Pierre; Barbault, Alexandre; Kuster, Niels; Kunz, Henry; and Pasche, Boris, 5,441,528, Cl. 607-69.000.

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Deckers, Stephen V.; Pasic, Russell F.; and Peterman, Stanley, Jr., 5,441,468, Cl. 482-54.000.

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Mikalauskas, George A., II; Corson, David N.; and Paul, Gregory J., 5,441,036, Cl. 126-198.000.

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Lee, Sang K.; Wang, Andrew W.; and Paul, Robert, 5,441,558, Cl. 95-100.000.

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DiIorio, Mark S.; Hirschkoff, Eugene C.; Johnson, Richard T.; Buchanan, D. Scott; James, Stephen O.; Paulson, Douglas; and Black, William C., Jr., 5,442,289, Cl. 324-248.000.

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Permelec Electrode Ltd.: *See*—
Shimamune, Takayuki; and Nakajima, Yasuo, 5,441,670, Cl. 252-520.000.

Perr, Julius P.: *See*—
Buchanon, David L.; Peters, Lester L.; Perr, Julius P.; and Tarr, Yul J., 5,441,027, Cl. 123-446.000.

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Persson, Bengt Y., to Telefonaktiebolaget LM Ericsson. Method for dividing a frame structure in a mobile station. 5,442,635, Cl. 370-95.100.

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Eriksen, Paul; Engstrand, Jan-Ake; Moll, Hans-Christer; Persson, Mikael; and Svensson, Jan-Agne, 5,441,397, Cl. 425-116.000.

Peterman, Stanley, Jr.: *See*—
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Peters, Dan: *See*—
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Peterson, Karen B.: *See*—
Collins, Joe T.; Hansen, Donald W., Jr.; Peterson, Karen B.; Pitzele, Barnett S.; and Reitz, David B., 5,441,950, Cl. 514-211.000.

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Petit, Pierre; Poteau, Michel; Scudier, Jean-Marc; and Vigor, Xavier, to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Rotatable device for the separation by adsorption of at least one constituent of a gaseous mixture. 5,441,559, Cl. 96-125.000.

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Lemieux, David J.; Chadwick, Paul K.; Kelly, Christopher; Petrek, James S.; Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Homberg, William D., 5,441,702, Cl. 422-100.000.

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de Melo Sanches, Eduardo; Awad, Samir P.; Silva Paulo, Cezar Augusto; and Soares Ribeiro, Orlando Jose , 5,441,112, Cl. 166-351.000.

Petroleum Engineering Services Limited: *See*—
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Petrolite Corporation: *See*—
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Petty, Christopher K. Saucepan. 5,441,169, Cl. 220-428.000.

Petty, Randall H.: *See*—
Dai, Eugene P.-S.; Sherwood, David E., Jr.; Martin, Bobby R.; and Petty, Randall H., 5,441,630, Cl. 208-216.0PP.

Petzold, Edgar N.: *See*—
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Hoover, Dennis J.; Lefker, Bruce A.; and Rosati, Robert L., 5,442,044, Cl. 530-331.000.
Thompson, David D., 5,441,986, Cl. 514-648.000.
Welch, Willard M.; and Williams, Michael T., 5,442,116, Cl. 564-222.000.
Yang, Bingwei V., 5,441,939, Cl. 514-29.000.

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Phelipon, Axel; and Le Masson, Jacques, to Salomon S.A. Shock absorbing device for skis. 5,441,296, Cl. 280-602.000.

Philippe, Michel; and Soulignac, Benoit, to Lectra Systems. Laser beam machine safety device and method of use. 5,442,154, Cl. 219-121.620.

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Dobrin, G. Chris; and Phillips, Donna S., 5,441,691, Cl. 264-504.000.

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Dinsmore, Mark T.; and Smith, Donald O., 5,442,678, Cl. 378-137.000.

Piaget, Gary; and Gordon, Trace O. Exercise step with adjustable leg bellows. 5,441,466, Cl. 482-52.000.

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Charier, Gilles A.; Guyonnet, Xavier, J. M. A.; and Picard, Jean-Louis, 5,440,874, Cl. 60-39.750.

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Lee, Helen T.; O'Brien, Patrick M.; Picard, Joseph A.; Purchase, Claude F., Jr.; Roth, Bruce D.; Slinkovic, Drago R.; and White, Andrew D., 5,441,975, Cl. 514-406.000.

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Johnson, Glenn W.; McVicker, Henry J.; and Pick, E. P. Erez, 5,441,533, Cl. 607-104.000.

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Pickup, Ray L.; and Thackray, Mark R., to Hewlett-Packard Company. Microprocessor controller with automatic clock-rate switching. 5,442,774, Cl. 395-550.000.

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Pierce, Lauvon. Fire extinguishing system. 5,441,113, Cl. 169-5.000.

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Fabre, Pierre; Mouzin, Gilbert; Jeanjean, Michel; Monteny, Nicole; and Cousse, Henri, 5,441,980, Cl. 514-531.000.

Pikulin, Michael A.: *See*—
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Pileski, Michael J.: *See*—
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Pille, Arthur A.: *See*—
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Pillot, Jacques: *See*—
Ederyd, Stefan; Akerman, Jan; Beaufoy, Robert; Carpenter, Michael; Bonneau, Maxime; and Pillot, Jacques, 5,441,693, Cl. 419-10.000.

Pillsbury Co., The: *See*—
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Piltingsrud, Stephen M., to Truth Hardware Corporation. Manually operable sash lift for motorized double hung window. 5,440,837, Cl. 49-139.000.

Piltingsrud, Stephen M., to Truth Hardware Corporation. Window operator. 5,440,839, Cl. 49-342.000.

Pioneer Electric Corporation: *See*—
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Kaneko, Michihiro, 5,442,557, Cl. 364-449.000.
Kuwahara, Shingo; and Odagawa, Satoshi, 5,442,559, Cl. 364-449.000.
Toyama, Soichi, 5,442,711, Cl. 381-63.000.

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Bartoes, Robert J.; Mol, Hans C.; Shaw, Lyle W.; and Wright, William J., 5,441,244, Cl. 270-45.000.

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Pituch, Thomas M.: *See*—
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Pitzele, Barnett S.: *See*—
Collins, Joe T.; Hansen, Donald W., Jr.; Peterson, Karen B.; Pitzele, Barnett S.; and Reitz, David B., 5,441,950, Cl. 514-211.000.

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Pocalyko, David J.: *See*—
Tsaur, Liang S.; Shen, Shiji; Aronson, Michael P.; and Pocalyko, David J., 5,441,660, Cl. 252-95.000.

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Pohang Iron & Steel Co., Ltd.: *See*—
So, Jai-Choon; Kwak, Hae-Il; Kwang, Kyu-Hae; Cho, Yong-Hwan; Eom, Ki-Jin; and Pack, Se-Ryong, 5,441,699, Cl. 422-61.000.

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Guerra, John M., 5,442,443, Cl. 356-376.000.
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Davis, Stephen C., 5,442,020, Cl. 526-127.000.

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Ponticello, Gerald S.: *See*—
Eng, Wai-Si; Burns, Donald H.; Ponticello, Gerald S.; and Selnick, Harold G., 5,441,722, Cl. 424-111.000.

Popa, Paul J.: *See*—
Hauenstein, Dale E.; Gentle, Thomas M.; Kennan, Linda D.; and Popa, Paul J., 5,442,010, Cl. 524-588.000.

Porte, Johannes J.: *See*—
Jakubowicz, Raymond F.; and Porte, Johannes J., 5,441,895, Cl. 436-518.000.

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Porter, David W.: *See*—
Gleasman, Vernon E.; Gleasman, Keith E.; McElroy, Arthur H., II; and Porter, David W., 5,440,878, Cl. 60-487.000.

Portugall, Michael: *See*—
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,442,006, Cl. 524-457.000.

Poss, Joe M.: *See*—
Cunningham, Earl A.; and Poss, Joe M., 5,442,492, Cl. 360-46.000.

Post, Reinder L.: *See*—
Seesink, Petrus H.; and Post, Reinder L., 5,442,319, Cl. 330-261.000.

Poste, Steven D.: *See*—
Park, Eugene S.; and Poste, Steven D., 5,441,919, Cl. 501-80.000.

Poteau, Michel: *See*—
Petit, Pierre; Poteau, Michel; Scudier, Jean-Marc; and Vigor, Xavier, 5,441,559, Cl. 96-125.000.

Potter, Andrew A.: *See*—
Gerlach, Gerald F.; Willson, Philip J.; Rossi-Campos, Amalia; and Potter, Andrew A., 5,441,734, Cl. 424-190.100.

Potter, David E.: *See*—
Wallace, Thomas L.; Potter, David E.; and Crosson, Craig E., 5,441,937, Cl. 514-21.000.

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Powell, Ken R.: *See*—
DeWoolfson, Bruce H.; and Powell, Ken R., 5,441,160, Cl. 209-702.000.

Powerflor, Inc.: *See*—
Greenfield, Sherwood S., 5,440,841, Cl. 52-126.200.

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Olsen, Kurt F.; Salvatori, Phillip H.; and Powers, Daniel J., 5,441,520, Cl. 607-6.000.

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Pozzobon, Alessandro, to Nordica S.p.A. Wheel mounting device for inline skates. 5,441,286, Cl. 280-11.27.000.

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Prasek, Bethicia B.: *See*—
Gupta, D. V. Satyanarayana; Prasek, Bethicia B.; and Horn, Richard D., 5,441,109, Cl. 166-300.000.

Praxair Technology, Inc.: *See*—
Bonaquist, Dante P.; and Lockett, Michael J., 5,440,884, Cl. 62-22.000.
Mullhaupt, Joseph T.; and Stephenson, Paula C., 5,441,557, Cl. 95-96.000.
Van den Sype, Jank S.; and Barlow, Alan R., 5,441,581, Cl. 148-634.000.

Preisser, Mark A.: *See*—
Storruste, Steinar; and Preisser, Mark A., 5,441,475, Cl. 494-48.000.

Premark FEG Corporation: *See*—
Lameris, Gary J.; and Rothfuss, Daniel C., 5,442,259, Cl. 315-169.400.

Premetalco, Inc.: *See*—
Wilkinson, John C., 5,441,372, Cl. 411-60.000.

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Prestek, Inc.: *See*—
Williams, Richard A.; and Lewis, Thomas E., 5,440,987, Cl. 101-454.000.

Preston, David M.: *See*—
Organek, Gregory J.; and Preston, David M., 5,441,137, Cl. 192-35.000.

Price, Jeffrey: *See*—
Gough, Anthony D.; de Groot, Joanne M.; and Price, Jeffrey, 5,441,730, Cl. 424-70.110.

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Chevallet, Jacques; Priest, Paul; and Manica, Keith, 5,441,636, Cl. 210-232.000.

Primeaux, Dudley J., II, to Huntsman Corporation. Spray polyurea elastomers containing organic carbonates to improve processing characteristics. 5,442,034, Cl. 528-60.000.

Prince Corporation: *See*—
Allardyce, James D.; Weiland, Walter M.; and Frankhouse, Jay M., 5,440,783, Cl. 16-110.00R.
Dykema, Kurt A., 5,442,340, Cl. 340-825.220.
Mathias, Larry E.; Hathaway, Jason M.; and Anderson, Elisabet A., 5,441,339, Cl. 362-74.000.
Toth, Eric S.; and Gregg, Michael J., 5,441,325, Cl. 296-97.200.

Princeton University, The Trustees of: *See*—
Noseenchuck, Daniel M., 5,442,790, Cl. 395-700.000.

Principal AB: *See*—
Svedman, Pal, 5,441,490, Cl. 604-289.000.

Privada Corporation: *See*—
Alexander, William, 5,440,994, Cl. 102-439.000.

Procoat S.A.: *See*—
Brugarolas, Juan F.; and Rodellas, Federico S., 5,442,005, Cl. 524-276.000.

Procter & Gamble Company, The: *See*—
Bjorkquist, David W.; and Panandiker, Rajan K., 5,442,100, Cl. 562-7.000.
Chatterjee, Ranjit; and Bush, Rodney D., 5,441,727, Cl. 424-65.000.
Dobrin, G. Chris; and Phillips, Donna S., 5,441,691, Cl. 264-504.000.

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Filepp, Robert; Gordon, Michael L.; Bidwell, Alexander W.; Wolf, Allan M.; Young, Francis C.; Tiemann, Duane; Appleman, Kenneth H.; and Mao, Sam, 5,442,771, Cl. 395-650.000.

Proffitt, Richard T.: *See*—
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Propak-California Corp.: *See*—
Strong, Bernard, 5,441,320, Cl. 294-31.200.

Prota, Giuseppe; and Wenske, Gottfried, to Clairol Incorporated. Process and kit for post-oxidative treatment of permanently dyed hair. 5,441,542, Cl. 8-406.000.

Pruett, Wayne P.: *See*—
Krutak, James J.; Weaver, Max A.; Coates, Clarence A., Jr.; Hilbert, Samuel D.; Oldfield, Terry A.; Parham, William W.; and Pruett, Wayne P., 5,442,086, Cl. 558-401.000.

Przybilla, Klaus-Juergen: *See*—
Pawlowski, Georg; Roeschert, Horst; Spiess, Walter; and Przybilla, Klaus-Juergen, 5,442,061, Cl. 544-216.000.

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Hefner, Robert E., Jr.; Earls, Jimmy D.; and Puckett, Paul M., 5,442,039, Cl. 528-422.000.

Puletti, Paul P.: *See*—
Jones, M. Erin; and Puletti, Paul P., 5,442,001, Cl. 524-292.000.

Puls, Craig. Snowmobile lift dolly. 5,441,378, Cl. 414-458.000.

Puppin, Giuseppe: *See*—
Deaner, Michael J.; Puppin, Giuseppe; and Heikkila, Kurt E., 5,441,801, Cl. 428-326.000.

Purchase, Claude F., Jr.: *See*—
Lee, Helen T.; O'Brien, Patrick M.; Picard, Joseph A.; Purchase, Claude F., Jr.; Roth, Bruce D.; Sliskovic, Drago R.; and White, Andrew D., 5,441,975, Cl. 514-406.000.

Purdue Research Foundation: *See*—
Haugwitz, Rudiger D.; Narayanan, Venkatachiala L.; Cushman, Mark; and Jurayj, Jurjus, 5,441,941, Cl. 514-43.000.

Putman, John M. Endoscope instrument holder. 5,441,042, Cl. 601-109.000.

Pylkki, Russell J.; Schuman, Marc; and West, Paul E., to Topometrix Corporation. Thermal sensing scanning probe microscope and method for measurement of thermal parameters of a specimen. 5,441,343, Cl. 374-137.000.

Pynchon, George: *See*—
Marks, John; and Pynchon, George, 5,440,801, Cl. 29-600.000.

Qi, You M.: *See*—
Hwang, Kou M.; Qi, You M.; Liu, Su-Ying; Choy, William; and Chen, Jen, 5,441,983, Cl. 514-562.000.

QUALCOMM Incorporated: *See*—
Jenquin, Philip C., 5,442,810, Cl. 455-66.000.
Kornfeld, Richard E.; Weiland, Ana L.; and Okazaki, Mitsunari, 5,442,322, Cl. 330-285.000.
Viterbi, Audrey; and Viterbi, Andrew J., 5,442,627, Cl. 370-22.000.

Quilliam, Jon, to EMF Corporation. Sheet feeding apparatus and method for the same. 5,441,247, Cl. 271-10.040.

Quinn, Robert L.: *See*—
Marshall, Robert C.; and Quinn, Robert L., 5,440,799, Cl. 29-564.200.

Quintana, Fernando: *See*—
Bailey, Charles E.; Bentley, Steven R.; Paranjape, Sushama M.; Quintana, Fernando; and West, Stephen C., 5,442,491, Cl. 360-76.000.

Quintana, Jason; McDonald, Steve C.; and Margid, Jordan, to Black Diamond Equipment, Ltd. Adjustable length ski pole/clamp. 5,441,307, Cl. 280-823.000.

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Deckers, Stephen V.; Panic, Russell F.; and Peterman, Stanley, Jr., 5,441,468, Cl. 482-54.000.

R.J.S., Inc.: *See*—
Jenkins, Michael E.; Roberts, Charles A.; and Stripling, Steven D., 5,441,108, Cl. 166-53.000.

R. R. Donnelley & Sons Company: *See*—
McQueeny, Thomas P., 5,441,198, Cl. 229-102.000.

Rabbani, Majid; and Melnychuck, Paul W., to Eastman Kodak Company. Method and associated apparatus for encoding bitplanes for improved coding efficiency. 5,442,458, Cl. 358-426.000.

Rabloczky, Gyorgy: *See*—
Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simai, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.

Race, Elizabeth C., to Race, Elizabeth C. Water totter. 5,441,454, Cl. 472-129.000.

Rachmankulova, Ilmira C.: *See*—
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozancev, Grigorij G., 5,441,973, Cl. 514-343.000.

Rackerby, Robert E.: *See*—
Tustaniwskyj, Jerry I.; Alvarez, Maria D.; Bezuk, Steve J.; Rackerby, Robert E.; and Weber, Patrick A., 5,441,195, Cl. 228-180.220.

Radau, Manfred: *See*—
Fulberth, Werner; Leeb, Richard; Radau, Manfred; and Stammberger, Willi, 5,442,008, Cl. 424-478.000.

Radia, Nimiah S.: *See*—
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Radtke, Michael A.: *See*—
Sandberg, Brian G.; Brandt, David A.; Brown, Dale A.; Collins, Robert E.; Lange, David V.; Lindstrand, Bruce L.; and Radtke, Michael A., 5,441,604, Cl. 162-205.000.

Rae, Kit: *See*—
Hall, David K.; and Rae, Kit, 5,440,814, Cl. 30-295.000.

Raeymaekers, Alfons H. M.: *See*—
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,441,954, Cl. 514-241.000.

Rahn, John P.: *See*—
Kanegsberg, Edward; Gillespie, Steven C.; and Rahn, John P., 5,442,442, Cl. 356-350.000.

Rai, Ghanshyam, to Smith International, Inc. Diamond and CBN cutting tools. 5,441,817, Cl. 428-551.000.

Rainin Instrument Co., Inc.: *See*—
Lemieux, David J.; Chadwick, Paul K.; Kelly, Christopher; Petrek, James S.; Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Homberg, William D., 5,441,702, Cl. 422-100.000.

Rainin, Kenneth: *See*—
Lemieux, David J.; Chadwick, Paul K.; Kelly, Christopher; Petrek, James S.; Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Homberg, William D., 5,441,702, Cl. 422-100.000.

Rakocy, William J.; and Angelini, Thomas, to GMI Holdings, Inc. Tip-resistant canister for upright vacuum cleaners. 5,440,780, Cl. 15-327.200.

Ralston, Joseph L.: *See*—
Lauritzen, Donald R.; Ralston, Joseph L.; and Rose, Larry D., 5,441,299, Cl. 280-728.200.

Ramachandran, Sivaramasubramanian; and Boehm, Alfred U., to MG Industries. Method of cleaning gas cylinders with supercritical fluids. 5,440,824, Cl. 34-443.000.

Rana, Rajendra S.: *See*—
DeBalko, George A.; and Rana, Rajendra S., 5,442,519, Cl. 361-784.000.

Rand, Mark: *See*—
Silgailis, John; and Rand, Mark, 5,441,783, Cl. 428-37.000.

Rand, Roy E.; and Halahan, Patrick B., to Siemens Aktiengesellschaft. Fixed septum collimator for electron beam tomography. 5,442,673, Cl. 378-10.000.

Randell, Scott A.: *See*—
Christian, Bradford A.; Randell, Scott A.; and Sinofsky, Steven J., 5,442,793, Cl. 395-700.000.

Randle, Hale. Method and apparatus for the production of heart centered, substantially square timbers. 5,441,092, Cl. 144-378.000.

Rapoport, Stuart: *See*—
Beranger, Herve; Joly, Frederic; and Rapoport, Stuart, 5,442,641, Cl. 371-21.200.

Rapp, Harold: *See*—
Schlesinger, Barry; and Rapp, Harold, 5,441,606, Cl. 203-39.000.

Rapp, Josef; and Rauch, Erich, to Ing. Rauch Fertigungstechnik Gesellschaft m.b.H. Worm pump for delivering a metal melt. 5,441,390, Cl. 417-359.000.

Rasch, Bodo; and Bradatsch, Juergen, to SL Sonderckonstruktionen und Leichtbau GmbH. Sunshade, particularly for stationary installation. 5,441,068, Cl. 135-98.000.

Raths, Hans-Christian: *See*—
Fabry, Bernd; Koester, Rita; Raths, Hans-Christian; Wangemann, Frank; and Mueller, Heinz, 5,441,156, Cl. 209-166.000.

Ratigan, Edward. Rope abrasion protection device. 5,441,790, Cl. 428-100.000.

Rauch, Erich: *See*—
Rapp, Josef; and Rauch, Erich, 5,441,390, Cl. 417-359.000.

Rauscher, Robert A., Jr., to Martin Marietta Corporation. Method for attaching metallic tubing to nonmetallic pressure vessel, and pressure vessel made by the method. 5,441,219, Cl. 244-135.00R.

Ravichandran, Ramanathan: *See*—
Galbo, James P.; Ravichandran, Ramanathan; Schirmann, Peter J.; and Mar, Andrew, 5,442,071, Cl. 546-207.000.

Raybone, David: *See*—
Bayliss, Keith H.; Hall, Stephen I.; and Raybone, David, 5,440,876, Cl. 60-274.000.

Raychem Corporation: *See*—
Chiotis, Achilles; Cornelius, Rejendra S.; and Soni, Pravin L., 5,441,560, Cl. 106-18.120.

Raychem Limited: *See*—
Sutherland, Alistair A. P.; and Hudson, John M., 5,442,004, Cl. 524-140.000.

Raytheon Company: *See*—
Eckel, Robert A., Jr.; Kusner, Ronald R.; and Ang, Daniel Y., 5,442,176, Cl. 250-338.400.

RCA Thomson Licensing Corporation: *See*—
Sun, Huifang; Zdepski, Joel W.; and Uz, Kamil M., 5,442,400, Cl. 348-402.000.

Rebre, Shu R.; Collette, Christian; and Denie, Sandrine, to Elf Atochem S.A. Superabsorbent acrylic powders having low residual monomer content. 5,442,014, Cl. 525-330.200.

Reckwerdt, Paul J.: *See*—
Swerdloff, Stuart; Mackie, Thomas R.; Holmes, Timothy; and Reckwerdt, Paul J., 5,442,675, Cl. 378-65.000.

Record, Grant C. Construction for building panels and other building components. 5,440,846, Cl. 52-309.150.

Redmond, Russell J.: *See*—
Vidal, Claude; Redmond, Russell J.; Barker, John M.; Collinson, Mike; Donaldson, Eric J.; Solyntjes, Alan J.; and Eyerly, Robert M., 5,441,509, Cl. 606-151.000.

Reed, Michael A.: *See*—
Synosky, Steven P.; Patel, Mansukh M.; Reed, Michael A.; and , 5,441,750, Cl. 426-3.000.

Regents, University Of California: *See*—
Siu, Stanley C.; Evans, James W.; and Salas-Morales, Juan, 5,441,820, Cl. 429-17.000.

Regis, Harry J.; Vener, Avram R.; and White, Charles A., to AT&T Corp. Apparatus for use in isolating the cause of a dropped telecommunication call. 5,442,679, Cl. 379-34.000.

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Reichert, Paul; McNemar, Charles; Nagabhushan, Nagamani; Nagabhushan, Tattanahalli L.; Tindall, Stephen; and Hruza, Alan, to Schering Corporation. Metal-interferon-alpha crystals. 5,441,734, Cl. 424-85.700.

Reichhold Chemicals, Inc.: *See*—
Jarvis, Neil R.; and Goel, Anil B., 5,441,999, Cl. 524-271.000.

Reid, John A., to Escalator Advertising Limited. Escalators. 5,441,140, Cl. 198-333.000.

Reifman, Jaques; and Wei, Thomas Y. C., to Argonne National Laboratory. Combined expert system/neural networks method for process fault diagnosis. 5,442,555, Cl. 364-431.010.

Reiners, Ulrich: *See*—
Brandt, Rainer; Reiners, Ulrich; Krallmann, Anton; Bohner, Jurgen; and Neelen, Neele, 5,441,806, Cl. 428-349.000.

Brandt, Rainer; Reinera, Ulrich; Krallmann, Anton; Neelen, Neele; and Bohner, Jurgen, 5,441,807, Cl. 428-349.000.

Reinhardt, Eugen: *See*—
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Reinhardt, Karen, to Advanced Micro Devices. Lightly doped drain etch method for semiconductor manufacture. 5,441,599, Cl. 156-646.100.

Reitz, Allen: *See*—
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Reitz, David B.; and Manning, Robert E., to G. D. Searle & Co. Use of N-arylheteroarylalkyl imidazol-2-one compounds for treatment of circulatory disorders. 5,441,970, Cl. 514-340.000.

Reitz, David B.: *See*—
Collins, Joe T.; Hansen, Donald W., Jr.; Peterson, Karen B.; Pitzele, Barnett S.; and Reitz, David B., 5,441,950, Cl. 514-211.000.

Rekhter, Jacob Y.: *See*—
Perkins, Charles E.; and Rekhter, Jacob Y., 5,442,633, Cl. 370-94.100.

Remar, Joseph F.: *See*—
Sideman, Carl E.; Snyder, Donald M.; Wiker, Anthony L.; Herweh, John E.; and Remar, Joseph F., 5,441,563, Cl. 106-224.000.

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Renaud, Monique: *See*—
Vinchant, Jean-Francois; Renaud, Monique; and Erman, Marko, 5,442,723, Cl. 385-129.000.

Renaudineau, Joel: *See*—
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Reng, Leonhard, to Siemens Aktiengesellschaft. Method and apparatus for improving the running characteristics of a wheel block bogie. 5,442,265, Cl. 318-77.000.

Renishaw PLC: *See*—
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Renlund, Gary M.; Syammach, Mustafa A.; and Mackerell, Richard R. Oxygen supply and removal method and apparatus. 5,441,610, Cl. 204-129.000.

Renola, Gary T.: *See*—
Agapiou, Agapios K.; Muhle, Michael E.; and Renola, Gary T., 5,442,019, Cl. 526-82.000.

Renz, Hans: *See*—
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Requardt, Hermann: *See*—
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Research Foundation of State University of New York, The: *See*—
Kaufman, Arie E.; Cohen, Daniel; and Yagel, Roni, 5,442,733, Cl. 395-124.000.

Research Institute of Industrial Science & Technology: *See*—
So, Jai-Choon; Kwak, Hae-Il; Kwang, Kyu-Hae; Cho, Yong-Hwan; Eom, Ki-Jin; and Pack, Sa-Ryong, 5,441,699, Cl. 422-63.000.

Respironics, Inc.: *See*—
Starr, John R.; Starr, Eric W.; and Walthour, Mary T., 5,441,046, Cl. 128-207.110.

Reuther, James J.; and Billick, Irwin H., to Gas Research Institute. Emission reduction. 5,441,402, Cl. 431-7.000.

Rexnord Corporation: *See*—
Grunze, Mark R., 5,441,351, Cl. 384-568.000.

Reynolds Metals Company: *See*—
Lucas, Earl S., Jr.; McLean, Jack R.; and Vaughan, Donald E., 5,440,961, Cl. 83-455.000.
Lucas, Earl S., Jr.; and Rocco, Frank J., 5,441,166, Cl. 220-306.000.

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Reznik, Lev; Diamant, Lev; and Teicher, Mordechai, to Arshach-Applied Science Cars Ltd. Apparatus for producing color effects. 5,442,468, Cl. 359-53.000.

Rheon Automatic Machinery Co., Ltd.: *See*—
Ueno, Sadao; Kuwahara, Hitoshi; and Morikawa, Michio, 5,440,974, Cl. 99-450.200.

Rhoads, W. Wistar: *See*—
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Rhodes, Charles W., to Advanced Television Test Center, Inc. Unidirectional format signal converter. 5,442,460, Cl. 348-441.000.

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Indey, Sophie; and Hagan, William, 5,441,072, Cl. 137-101.210.

Rhone-Poulenc Nutrition Animale: *See*—
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Rhone-Poulenc-Rorer Pharmaceuticals, Inc.: *See*—
Pauls, Henry W.; Choi, Yong-Mi; and Amin, Dilip V., 5,441,946, Cl. 514-114.000.

Riall, James D.: *See*—
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Ricci, Paul B.: *See*—
Datwyler, Wayne C.; and Ricci, Paul B., 5,442,754, Cl. 395-325.000.

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Richards, Mark R.; Noel, John R.; Mackey, Larry N.; Lee, Yann-Per; Haney, Anna R.; Hammons, John L.; Lloyd, Susan N. W.; and Keeler, Sheri D. Catamenial absorbent structures having thermally bonded layers for improved handling of menstrual fluids, and their use in catamenial pads having improved fit and comfort. 5,441,492, Cl. 604-378.000.

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Rickman, Steven L.: *See*—
Wade, Donald C.; De La Fuente, Horacio M.; Berka, Reginald B.; Rickman, Steven L.; Castro, Edgar O.; Nagy, ornel; Wesselaki, Clarence J.; Pelischek, Timothy E.; and Schliesing, John A., 5,441,221, Cl. 244-159.000.

Rico, Joseph G.: *See*—
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Ricoh Company, Ltd.: *See*—
Ishii, Yoshiko; Yoshiki, Shigeru; and Kai, Tsukuru, 5,442,430, Cl. 355-298.000.
Ito, Masaaki, 5,442,464, Cl. 358-482.000.
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Moritomo, Ichiro, 5,442,610, Cl. 369-47.000.
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Gerber, Stephen M.; and Ringlien, James A., 5,442,446, Cl. 356-428.000.

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Westerman, Everett A.; and Roll, Phillip E., 5,442,156, Cl. 219-241.000.

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Rorden, Louis H., to Baker Hughes Incorporated. Conductivity method and apparatus for measuring strata resistivity adjacent a borehole. 5,442,294, Cl. 324-339.000.

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Hoover, Dennis J.; Lefker, Bruce A.; and Rosati, Robert L., 5,442,044, Cl. 530-331.000.

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Aichas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., 5,441,539, Cl. 623-66.000.

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Rost, Incorporated: *See*—
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Rostock, Angelika: *See*—
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozantcev, Grigorij G., 5,441,973, Cl. 514-343.000.

Rostoker, Michael D.; and Heim, Dorothy A., to LSI Logic Corporation. Method of laying out bond pads on a semiconductor die. 5,441,917, Cl. 437-195.000.

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Chu, Ling; and Pedersen, Henrik, 5,440,927, Cl. 73-335.010.

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Shanok, William; Waldman, Harold; Cigna, Salvator; Safronchik, Valery; Shanok, Victor; and Shanok, Jesse P., 5,440,857, Cl. 52-716.800.

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Sahai, Hitoshi, to Rohm Co., Ltd. Battery charging circuit and electronic device including the same. 5,442,275, Cl. 320-39.000.

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Saito, Morio: *See*—
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Saito, Shin, to Sony Corporation. Signal transmitting and receiving apparatus. 5,442,653, Cl. 375-219.000.

Saito, Tadayuki: *See*—
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Bergenwall, Henning, 5,440,767, Cl. 4-667.000.

Sampei, Takeshi: *See*—
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Eom, Jae-yong, 5,442,596, Cl. 369-13.000.
Gahang, Goo-Soo, 5,442,459, Cl. 358-433.000.
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Kim, Gee-Bong, 5,442,617, Cl. 369-124.000.
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Kim, Wan-ha, 5,441,353, Cl. 400-636.100.
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Lee, Hyo S., 5,442,394, Cl. 348-264.000.
Lee, Tae-woo; Lee, Yang-goo; Lim, Byung-hak; and Park, Donggun, 5,441,908, Cl. 437-52.000.
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Sands, Daniel L.: *See*—
Lewis, Paul P.; Owens, Daniel; and Sands, Daniel L., 5,441,707, Cl. 423-300.000.

Sandvik AB: *See*—
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Pantzar, Goran; and Carlsson, Sven-Erik, 5,441,370, Cl. 407-113.000.

Sanford, Gary G., to Ball Corporation. Raised patch antenna. 5,442,366, Cl. 343-700.0MS.

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Sano, Noboru: *See*—
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Forster, Heinz; Wagner, Klaus; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,442,074, Cl. 548-166.000.

Santos, A. John; and LaCroix, Mark E., to Torrington Company, The. Resolution multiplying circuit. 5,442,313, Cl. 327-355.000.

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Baba, Yutaka; Usui, Toshinao; Iwata, Noriyuki; Kakigami, Takuji; Ozeki, Yoshiro; Tsukamoto, Katsura; and Ito, Nobuyuki, 5,442,077, Cl. 548-453.000.

Sanwa Laboratory Ltd.: *See*—
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Hioki, Toshiaki; Morita, Yoshihiko; Minechika, Shigekazu; and Watanabe, Hiroshi, 5,442,455, Cl. 358-342.000.
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Sasaki, Yasuo: *See*—
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Sato, Masahiko: *See*—
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Sato, Susumu, to Nikon Corporation. Super-telephoto zoom lens. 5,442,486, Cl. 359-690.000.

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Saurer, Eric: *See—*
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Sauter, Rolf: *See—*
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Sawada, Kenichi: *See—*
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Sawyer, William C., to United States of America, Energy. Heating element support clip. 5,442,158, Cl. 219-542.000.
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Schaeffer, Wayne G.; Wehmeier, William C.; Broccard, Terry J.; and Behr, John A., to Hussmann Corporation. Strategic modular commercial refrigeration. 5,440,894, Cl. 62-203.000.
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Tann, Chou-Hong; Thiruvengadam, Tiruvettipuram K.; Chiu, John S.; Colon, Cesar; and Green, Michael D., 5,442,047, Cl. 536-13.600.
Schewitz, Jonathan. Liquid filter using filtration aid. 5,441,633, Cl. 210-193.000.
Schieck, Richard A., to Xerox Corporation. Method and means for correcting lateral registration errors. 5,442,388, Cl. 347-116.000.
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Segerdal, Michael J. Disposable saliva ejector. 5,441,410, Cl. 433-93.000.
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Russo, Ralph J.; Howell, Stanley R.; and Sehgal, Surendra N., 5,441,977, Cl. 514-411.000.
Seibles, Lawrence: *See—*
Jeng, Guang-kai D.; Mitchell, James W.; and Seibles, Lawrence, 5,441,013, Cl. 117-109.000.
Seidel, Durbin L.; Bartlett, Donald M.; Bitting, Ricky F.; and Patella, James F., to AT&T Global Information Solutions Company; and Hyundai Electronics America. CMOS power fet driver including multiple power MOSFET transistors connected in parallel, each carrying an equivalent portion of the total driver current. 5,442,218, Cl. 257-369.000.
Seidel, Hartmut R. A.; and Speitling, Andreas W., to Howmedica GmbH. Bone nail. 5,441,500, Cl. 606-67.000.
Seidler, Jack, to North American Specialties Corporation. Solder-bearing land. 5,441,429, Cl. 439-876.000.
Seidler, Jack, to North American Specialties Corporation. Electrical lead for surface mounting of substrates. 5,441,430, Cl. 439-876.000.
Seike, Takeshi: *See—*
Yoshimizu, Toshiyuki; Kishida, Masahiro; Fukuyama, Toshiaki; Ishimoto, Yoshihisa; Seike, Takeshi; and Matoba, Masakazu, 5,442,224, Cl. 257-536.000.
Seiko Epson Corporation: *See—*
Hashimoto, Hiroyuki, 5,442,470, Cl. 359-83.000.
Yamazaki, Katsunori; and Yatabe, Satoshi, 5,442,370, Cl. 345-94.000.
Seiko Instruments Inc.: *See—*
Harada, Yoichi, 5,442,440, Cl. 356-328.000.
Seikosha Co., Ltd.: *See—*
Saito, Hiroyuki; and Ito, Akira, 5,442,260, Cl. 315-241.00P.
Seino, Masahiro; Oboshi, Minoru; Okoshi, Satoshi; and Tamaki, Kazuhiko, to Nagata Seiki Kabushiki Kaisha. Picker device of hosiery knitting machine. 5,440,901, Cl. 66-47.000.
Sekiai, Shouji: *See—*
Kiyomiya, Takashi; Suzuki, Takeshi; Watanabe, Hideo; Takahashi, Shoji; Yamazaki, Kazumi; Takezawa, Masashi; Baba, Shigeki; Sawada, Kenichi; Sekiai, Shouji; Kaseyama, Hideki; and Kitagawa, Hiroshi, 5,441,031, Cl. 123-518.000.
Sekiguchi, Katsuo, to Sony Corporation. Fit CCD image sensor incorporating gated line shift pulses. 5,442,395, Cl. 348-312.000.
Sekimoto, Kazuhiro: *See—*
Sashihara, Yoichi; Masuda, Masahiro; Nakamura, Isao; Watanabe, Kunitoshi; Miyazaki, Tetsuya; and Sekimoto, Kazuhiro, 5,442,570, Cl. 364-500.000.
Sekine, Akira, to SMC Kabushiki Kaisha. Variable force cylinder device. 5,440,968, Cl. 92-6.00R.
Sekine, Masahiro: *See—*
Terasaki, Hiroyuki; Sekine, Masahiro; Miyake, Hisasori; Sherick, Michael T.; and Doherty, Bryan M., Jr., 5,440,958, Cl. 83-83.000.
Selgas, Thomas D., Jr.; Crowley, Sean T.; and Pascarelli, Paul J., to Cyrix Corporation. Integrated circuit extraction tool. 5,440,803, Cl. 29-764.000.
Selinger, Edward: *See—*
McGinley, Emanuel J.; Krawczyk, Gregory R.; and Selinger, Edward, 5,441,753, Cl. 426-96.000.
Selle Royal S.p.A.: *See—*
Bigolin, Riccardo, 5,441,676, Cl. 264-25.000.
Sellman, Lennart: *See—*
Rodskier, Christian; and Sellman, Lennart, 5,441,432, Cl. 440-89.000.
Selnick, Harold G.: *See—*
Eng, Wai-Si; Burns, Donald H.; Ponticello, Gerald S.; and Selnick, Harold G., 5,441,722, Cl. 424-111.000.
Seltmann, Hans-Guenter; and Lippert, Hartmut, to Henkel Kommanditgesellschaft auf Aktien. Anti-friction paint for elastomeric parts. 5,441,771, Cl. 427-386.000.
Semiconductor Energy Lab. Co., Ltd.: *See—*
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Moyiyasu, Akihito, 5,441,748, Cl. 424-686.000.
Ogata, Kazumi; Sogo, Shunji; and Inoue, Eri, 5,441,972, Cl. 514-342.000.
Senski, Gregor, to Siemens Aktiengesellschaft. Reactor pressure vessel with limited failure zones. 5,442,667, Cl. 376-294.000.
Seo, Mitsuyo, to NEC Corporation. Cellular telephone facilitating a response holding state. 5,442,814, Cl. 455-89.000.
Seon, Ben K., to Health Research, Inc. Monoclonal antibody reactive to human leukemia and lymphoma cells and methods of using same for diagnosis and treatment. 5,441,871, Cl. 435-7.230.
Sep-Tainer Systems Corporation: *See—*
Charon, Richard J., 5,441,632, Cl. 210-170.000.
Seper, Karl W.; Zeller, Robert L., III; and Morgan, Russell J. Preventing potassium bicarbonate from caking. 5,441,669, Cl. 252-385.000.
Sepracor, Inc.: *See—*
Gao, Yun; Hong, Yaping; and Zepp, Charles M., 5,442,118, Cl. 564-356.000.
Sequent Computer Systems, Inc.: *See—*
Slingwine, John D.; and McKenney, Paul E., 5,442,758, Cl. 395-375.000.
Seredenin, Sergej B.: *See—*
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozancev, Grigorij G., 5,441,973, Cl. 514-343.000.
Serhan, Charles N., to Brigham & Women's Hospital. Lipoxin compounds. 5,441,951, Cl. 514-213.000.
Serikawa, Mitsuhiko: *See—*
Kawamura, Akihisa; Matsumoto, Masaharu; Serikawa, Mitsuhiko; and Numazu, Hiroko, 5,442,712, Cl. 381-83.000.
Seubert, Eric M.: *See—*
Figone, Frank M.; and Seubert, Eric M., 5,441,262, Cl. 273-157.00R.
Seubert, Peter A.; Schenk, Dale B.; and Fritz, Lawrence C., to Athena Neurosciences, Inc.; and Eli Lilly and Company. Methods for monitoring cellular processing of β-amyloid precursor protein. 5,441,870, Cl. 435-7.100.
Sextant Avionique: *See—*
Barny, Herve ; Fima, Henri; and Torregrosa, Michel, 5,440,939, Cl. 73-862.610.
SG Microwaves Inc.: *See—*
Ghosh, Subir; and Da Silva, Luiz C., 5,442,329, Cl. 333-21.00R.
SGS-Thomson Microelectronics S.A.: *See—*
Bourgeios, John M., 5,442,535, Cl. 363-16.000.
Shacter, Stuart B.: *See—*
Kunst, David J.; and Shacter, Stuart B., 5,442,320, Cl. 330-267.000.
Shadle, John K.: *See—*
Heath, William F., Jr.; Panetta, Jill A.; and Shadle, John K., 5,441,984, Cl. 514-595.000.
Shaffer, James E.: *See—*
Boyd, Gary L.; and Shaffer, James E., 5,441,385, Cl. 415-209.200.
Shaft, David L.: *See—*
Meli, Vincent; Matharani, Michael A.; Brzezinski, Ted A.; Shaft, David L.; and Urmanski, James L., 5,440,860, Cl. 53-451.000.
Shah, Ramesh M.; and Demeter, Robert J., to DataChem, Inc.; and Methodist Hospital of Indiana, Inc. Multi-purpose gown. 5,440,763, Cl. 2-114.000.
Shank, Thomas J., to Robotron Corporation. Method of induction bonding juxtaposed structural members. 5,442,159, Cl. 219-633.000.
Shannon, Warren K.: *See—*
Groswith, Charles T., III; Banks, William A.; Duval, Eugene F.; Gray, Roger M.; Heistand, Raymond D., II; Kockler, Barry C.; Shannon, Warren K.; Smith, Robert E.; and Usitale, William J., 5,441,589, Cl. 156-542.000.

Shanok, Jesse P.: *See*—
Shanok, William; Waldman, Harold; Cigna, Salvator; Safronchik, Valery; Shanok, Victor; and Shanok, Jesse P., 5,440,857, Cl. 52-716.800.

Shanok, Victor: *See*—
Shanok, William; Waldman, Harold; Cigna, Salvator; Safronchik, Valery; Shanok, Victor; and Shanok, Jesse P., 5,440,857, Cl. 52-716.800.

Shanok, William; Waldman, Harold; Cigna, Salvator; Safronchik, Valery; Shanok, Victor; and Shanok, Jesse P., to Silvatrim Associates. Endless edge trim fabricated from an extruded profile. 5,440,857, Cl. 52-716.800.

Sharp Kabushiki Kaisha: *See*—
Haikawa, Yukihiko; and Tsuji, Shigeki, 5,442,598, Cl. 369-32.000.
Harazaki, Katsuhiko, 5,441,835, Cl. 430-5.000.
Iguchi, Katsuji, 5,442,714, Cl. 382-144.000.
Ise, Tomokazu; and Imamoto, Reiko, 5,442,255, Cl. 313-495.000.
Ishimaru, Yutaka; and Yoshida, Hideo, 5,442,496, Cl. 360-72.200.
Kaneko, Koji; Kubota, Takeshi; and Yamamoto, Tatsunori, 5,442,501, Cl. 360-94.000.
Kuno, Michiaki, 5,442,743, Cl. 395-148.000.
Kutsumi, Takeshi; and Hira, Tokuyuki, 5,442,547, Cl. 364-419.080.
Mimoto, Toshio, 5,442,217, Cl. 257-361.000.
Nomura, Toshio; Tagawa, Takao; and Kako, Noritoshi, 5,442,373, Cl. 345-104.000.
Ogata, Nobuo; and Sato, Hideaki, 5,442,616, Cl. 369-112.000.
Sudoh, Kengo; and Sumitomo, Yuji, 5,442,768, Cl. 395-430.000.
Suzuki, Hiroyuki, 5,442,490, Cl. 359-824.000.
Takagi, Minori; Aramaki, Kouji; and Ikeda, Takeshi, 5,442,453, Cl. 358-335.000.
Yoshimizu, Toshiyuki; Kishida, Masahiro; Fukuyama, Toshiaki; Ishimoto, Yoshihisa; Seize, Takeshi; and Matoba, Masakazu, 5,442,224, Cl. 257-536.000.

Sharp, Kenneth G., to De Post de Nemours, E. I., and Company. Process for making inorganic gels. 5,441,718, Cl. 423-338.000.

Shastry, Subramanya K.: *See*—
Nazif, Zaher A.; Cebulka, Kathleen D.; Chu, Francis Y.; Fisher, Gregory M.; Lancaster, Jill E.; Man, Susan K.; Shastry, Subramanya K.; Vinciguerra, Lori J.; and Wang, Lei-Lei C., 5,442,690, Cl. 379-207.000.

Shaw, Andrew: *See*—
Bernstein, Peter R.; Edwards, Philip D.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,441,960, Cl. 514-269.000.

Shaw, H. John, to Litton Systems, Inc. Switched array. 5,442,720, Cl. 385-16.000.

Shaw, Lyle W.: *See*—
Bartoes, Robert J.; Mol, Hans C.; Shaw, Lyle W.; and Wright, William J., 5,441,244, Cl. 270-45.000.

Sheaffer, Roger M. Golf course distance marker. 5,441,257, Cl. 273-32.00R.

Shell Oil Company: *See*—
Corley, Larry S.; and De La Mare, Harold E., 5,442,035, Cl. 528-90.000.

Shelton, Michael B.; Riff, Kenneth M.; and Hess, Michael F., to Medtronic, Inc. Pacemaker with vasovagal syncope detection. 5,441,525, Cl. 607-23.000.

Shen, Chao C. Fixing arrangement for a cylinder mounting body and a fixed hook member of a vehicle steering wheel lock assembly. 5,440,906, Cl. 70-209.000.

Shen, Chao C. Steering wheel lock assembly with a removable cylinder. 5,440,907, Cl. 70-209.000.

Shen, Shiji: *See*—
Tsaur, Liang S.; Shen, Shiji; Aronson, Michael P.; and Pocalyko, David J., 5,441,660, Cl. 252-95.000.

Sherick, Michael T.: *See*—
Terasaki, Hiroyuki; Sekine, Masahiro; Miyake, Hisanori; Sherick, Michael T.; and Doherty, Bryan M., Jr., 5,440,958, Cl. 83-83.000.

Sherwood, David E., Jr.: *See*—
Dai, Eugene P.-S.; Sherwood, David E., Jr.; Martin, Bobby R.; and Petty, Randall H., 5,441,630, Cl. 208-216.0PP.

Sherwood Medical Company: *See*—
Crouther, Ron; Flynn, Daniel P.; and Lagwinska, Elizabeth, 5,441,759, Cl. 427-2.300.

Shi, Robert X.: *See*—
Ceynow, Kenneth P.; Jass, Richard E.; and Shi, Robert X., 5,440,880, Cl. 60-605.200.

Shiba, Haruo, to TDK Corporation. Tape take-up hub. 5,441,216, Cl. 242-605.000.

Shiba, Kenji: *See*—
Okada, Hideaki; and Shiba, Kenji, 5,440,951, Cl. 74-606.00R.

Shibata, Masabumi, to Hitachi, Ltd. Multi-processor system with lock address register in each processor for storing lock address sent to bus by another processor. 5,442,753, Cl. 395-325.000.

Shibata, Yoshihiko, to Hakuyo Denkyu Kabushiki Kaisha. LED lamp device. 5,442,258, Cl. 315-129.000.

Shibayama, Takashi: *See*—
Ito, Takaaki; Ikeda, Hiroyuki; Tomita, Naoyuki; Shibayama, Takashi; Iwata, Tomio; and Kurihara, Takashi, 5,442,509, Cl. 361-104.000.

Shibuya, Yasuo: *See*—
Shimmura, Masatoshi; Shibuya, Yasuo; and Higuchi, Tooru, 5,440,985, Cl. 101-477.000.

Shier, Ronald G. Golf putting accessory. 5,441,268, Cl. 273-186.200.

Shiga, Shoji, to NEC Corporation. Database system which adjusts the data storage order based on the processing speed of the storage media. 5,442,765, Cl. 395-600.000.

Shigehara, Hiroshi; and Kinugasa, Masanori, to Kabushiki Kaisha Toshiba. Interface circuit with backgate bias control of a transistor. 5,442,307, Cl. 326-81.000.

Shigeru, Yabuya, to Toyoda Gosei Co., Ltd. Storage area and hinge structure. 5,441,167, Cl. 220-334.000.

Shih, Da-Yuan: *See*—
Ayala-Esquilin, Juan; Beaman, Brian S.; Haring, Rudolf A.; Hedrick, James L.; Shih, Da-Yuan; and Walker, George F., 5,441,690, Cl. 264-277.000.

Shih, Lionel C.; and Haglund, John R., to Ampex Corporation. Data recording system having improved bookkeeping capability. 5,442,493, Cl. 360-48.000.

Shikawa, Shinsuke, to Mitsubishi Denki Kabushiki Kaisha. Retro-focus type lens and projection-type display apparatus. 5,442,484, Cl. 359-651.000.

Shiki, Tatsuya, to NEC Corporation. Apparatus for driving liquid crystal display panel for small size image. 5,442,372, Cl. 345-98.000.

Shimada, Toshiaki: *See*—
Murakami, Tokuniichi; and Shimada, Toshiaki, 5,442,401, Cl. 348-405.000.

Shimada, Toshio: *See*—
Toda, Kenji; Uchitori, Yoshinobu; and Shimada, Toshio, 5,442,761, Cl. 395-375.000.

Shimadzu Corporation: *See*—
Noda, Masaki; and Nokihara, Kiyoshi, 5,442,122, Cl. 564-426.000.
Shinya, Kazunari, 5,442,574, Cl. 364-571.010.

Shimamune, Takayuki; and Nakajima, Yasuo, to Permelec Electrode Ltd. Process for producing an electrically conductive mixed oxide of titanium and tantalum or niobium. 5,441,670, Cl. 252-520.000.

Shimauchi, Keisuke: *See*—
Asou, Yoshio; Sato, Hideharu; Shimauchi, Keisuke; and Matsumoto, Takumi, 5,441,233, Cl. 251-129.150.

Shimizu, Hirohiko, to Sony Corporation. Disk drive apparatus that positions a disc cassette without a slide plate. 5,442,502, Cl. 360-99.020.

Shimizu, Jeffrey A.: *See*—
Janssen, Peter J.; and Shimizu, Jeffrey A., 5,442,414, Cl. 353-98.000.

Shimizu, Kenzo: *See*—
Matsui, Toshinari; Kubo, Shigeru; Shimizu, Kenzo; Iwasaki, Kunifumi; Kobayashi, Koji; and Maruyama, Eiko, 5,442,545, Cl. 364-403.000.

Shimizu, Kouichi: *See*—
Wakahara, Keiji; Ichikawa, Akira; Nakano, Kazumi; Shimizu, Kouichi; and Hotta, Minoru, 5,440,922, Cl. 73-117.300.

Shimizu, Masahiro: *See*—
Wachi, Masatada; and Shimizu, Masahiro, 5,442,127, Cl. 84-603.000.

Shimizu, Nobuyuki: *See*—
Uchida, Masaaki; and Shimizu, Nobuyuki, 5,441,781, Cl. 428-35.700.

Shimizu, Rikuro. Slide bearing. 5,441,349, Cl. 384-276.000.

Shimizu, Takashi: *See*—
Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,442,566, Cl. 364-478.000.

Shimizu, Toshihide; and Watanabe, Mikio, to Shin-Etsu Chemical Co., Ltd. Polymer scale deposition preventive agent. 5,442,002, Cl. 524-81.000.

Shimizu, Toshihide; and Watanabe, Mikio, to Shin-Etsu Chemical Co., Ltd. Process for producing polymer wherein polymer scale deposition is prevented. 5,442,017, Cl. 526-62.000.

Shimizu, Yoshihiro: *See*—
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.

Shimmura, Masatoshi; Shibuya, Yasuo; and Higuchi, Tooru, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Delivery system for printing plate. 5,440,985, Cl. 101-477.000.

Shimoda, Masakatsu, to Ricoh Company, Ltd. Optical information recording medium using bisazo or trisazo compounds. 5,441,844, Cl. 430-167.000.

Shimojo, Yoshiaki: *See*—
Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, 5,442,134, Cl. 174-52.400.

Shimozono, Ryoji: *See*—
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.

Shimura, Kenichi; Ishii, Naoki; and Onishi, Makoto, to Terumo Kabushiki Kaisha. Medical tool having lubricious surface in a wetted state and method for production thereof. 5,441,488, Cl. 604-265.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Fukuhira, Masanori; Fukuoka, Hirofumi; Konya, Yoshiharu; and Watanabe, Masaki, 5,441,694, Cl. 419-57.000.
Okinoshima, Hiroshige; and Kato, Hideto, 5,441,845, Cl. 430-191.000.
Shimizu, Toshihide; and Watanabe, Mikio, 5,442,002, Cl. 524-81.000.
Shimizu, Toshihide; and Watanabe, Mikio, 5,442,017, Cl. 526-62.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Adomi, Keizo; Noto, Nobuhiko; Nakamura, Akio; and Takenaka, Takao, 5,442,201, Cl. 257-86.000.

Adomi, Keizo; Noto, Nobuhiko; and Takenaka, Takao, 5,442,203, Cl. 257-97.000.
Fujimaki, Nobuyoshi, 5,442,302, Cl. 324-765.000.
Ohta, Yutaka; Hoshina, Yusho; and Arai, Takeshi, 5,441,571, Cl. 118-730.000.

Shin, Wan-Sheng. Cylinder-operated and spring-loaded driving mechanism for a ball valve. 5,440,969, Cl. 92-68.000.

Shin, Yoshiharurayama: *See*—
Aoki, Hideki; Akao, Masaru; Shin, Yoshiharurayama; Hayashi, Osamu; and Yoshizawa, Masahiko, 5,441,536, Cl. 427-2.270.

Shindler, Franz A.: *See*—
Freeman, Arvie E.; and Shindler, Franz A., 5,441,005, Cl. 114-117.000.

Shinya, Kazunari, to Shimadzu Corporation. Method and apparatus for determining a base line of a measurement. 5,442,574, Cl. 364-571.010.

Shionogi & Co., Ltd.: *See*—
Takase, Akira; Kai, Hiroyuki; Masui, Moriyasu; and Nishida, Kuniyoshi, 5,442,063, Cl. 544-333.000.

Shiota, Junji, to Brother Kogyo Kabushiki Kaisha. Print tape forming apparatus having tape cutting mechanism. 5,441,352, Cl. 400-621.000.

Shiota, Masayuki: *See*—
Takahara, Yoshiyuki; Iwabuchi, Tetsuya; and Shiota, Masayuki, 5,441,735, Cl. 424-93.200.

Ship Star Associates, Inc.: *See*—
Crowder, Robert S.; and Binder, George E., 5,442,639, Cl. 371-20.100.

Shipley Company Inc.: *See*—
Rychwalski, James E.; Ciccolo, Paul J.; Currie, Robert B.; and Knudsen, Philip D., 5,441,770, Cl. 427-306.000.

Shirai, Kohji: *See*—
Hasegawa, Motoharu; Shirai, Kohji; Matsumoto, Kiyohiko; Suzuki, Yasuhiko; Takahasi, Isao; Takarada, Yuuiti; Saito, Mitsuyo; Yamamoto, Kumiko; Takayama, Yositaka; Komazawa, Tsutomu; and Sugai, Toshiji, 5,441,962, Cl. 514-309.000.

Shiraishi, Hiroshi; Ueno, Takumi; Murai, Fumio; Hayakawa, Hajime; and Isobe, Asao, to Hitachi, Ltd.; and Hitachi Chemical Company. Method of forming pattern and making semiconductor device using radiation-induced conductive resin bottom resist layer. 5,441,849, Cl. 430-296.000.

Shiraishi, Hisashi, to Tomy Company, Ltd. Trackway toy. 5,441,435, Cl. 446-424.000.

Shirakawa, Yoshihiro: *See*—
Sakata, Toshihiko; and Shirakawa, Yoshihiro, 5,442,685, Cl. 379-88.000.

Shirasaka, Tadashi: *See*—
Jikihara, Tetsuo; Shirasaka, Tadashi; Suzuki, Kazuo; Suzuki, Hiroko; Taniguchi, Masao; and Inoue, Shinya, 5,442,060, Cl. 544-106.000.

Shirasyouji, Hisashi; and Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. Motorcycle radial tire with folded breaker ply and spirally wound band ply. 5,441,093, Cl. 152-454.000.

Shirose, Meizo: *See*—
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,441,839, Cl. 430-108.000.

Shively, James S.: *See*—
White, George W.; Daniel, Edwin R.; Kirkland, James E.; and Shively, James S., 5,441,234, Cl. 251-144.000.

Shoji, Osamu: *See*—
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, 5,442,523, Cl. 362-31.000.

Shona, Yoshihiro: *See*—
Atsumi, Shiro; Kondo, Toshinari; and Shona, Yoshihiro, 5,442,165, Cl. 235-492.000.

Showa Aluminum Corporation: *See*—
Ueda, Shinichi; and Tokutake, Toshinori, 5,441,100, Cl. 165-67.000.

Shu, Shao F.: *See*—
Badyal, Rajeev; and Shu, Shao F., 5,442,318, Cl. 330-253.000.

Shu, Wen, to National Semiconductor Corporation. Circuit for dividing clock frequency by N.5 where N is an integer. 5,442,670, Cl. 377-48.000.

Shuto, Keisei: *See*—
Yamakawa, Tsutomu; Shuto, Keisei; and Takayama, Takuzou, 5,442,181, Cl. 250-368.000.

Sibal, Shiv: *See*—
Coffin, Richard J.; Gupta, Rakesh K.; Sibal, Shiv; and Takeuchi, Kunihiko, 5,441,674, Cl. 264-25.000.

Sideman, Carl E.; Snyder, Donald M.; Wiker, Anthony L.; Herweh, John E.; and Remar, Joseph F., to Armstrong World Industries, Inc. Highly insoluble azole embossing inhibitor and the use thereof. 5,441,563, Cl. 106-224.000.

Siecor Corporation: *See*—
DeCarlo, Michael G., 5,442,722, Cl. 385-114.000.

Siegemund, Christine: *See*—
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozancev, Grigorij G., 5,441,973, Cl. 514-343.000.

Sieger, William L.: *See*—
Wolcott, John H.; Sieger, William L.; and Watson, Alvin J., 5,441,389, Cl. 417-412.000.

Siemens AG: *See*—
Walter, Rudolph, 5,442,312, Cl. 327-198.000.

Siemens Aktiegesellschaft: *See*—
Loebig, Norbert, 5,442,647, Cl. 371-53.000.

Siemens Aktiengesellschaft: *See*—
Bardl, Artur; and Navratil, Emil, 5,442,695, Cl. 379-375.000.
Kolem, Heinrich; Schnell, Wilfried; Sauter, Rolf; Wicklow, Karsten; and Requardt, Hermann, 5,442,292, Cl. 324-322.000.
Rand, Roy E.; and Halahan, Patrick B., 5,442,673, Cl. 378-10.000.
Reng, Leonhard, 5,442,265, Cl. 318-77.000.
Senski, Gregor, 5,442,667, Cl. 376-294.000.
Steiner, Ewald, 5,441,422, Cl. 439-395.000.
Tresp, Volker, 5,442,543, Cl. 364-149.000.

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Stevanovic, Ljubisa: *See*—
Cuk, Slobodan; and Stevanovic, Ljubisa, 5,442,534, Cl. 363-16.000.
Stevens, Clive G. Two-pivotal-section handle assembly for an exerciser. 5,441,467, Cl. 482-54.000.
Stevens, Randy D. Device for unlocking vehicle doors without the use of a key. 5,440,954, Cl. 81-15.900.
Stevenson, Janis C.: *See*—
Kempner, James S.; Parker, Haing-Yeh; Stevenson, Janis C.; Wills, Morris C.; and Allison, Judith L., 5,442,012, Cl. 525-71.000.
Stevenson, Marion. Coin operated jackpot machine. 5,441,259, Cl. 273-143.00R.
Stevenson, William C.: *See*—
Ponticelli, Pasco, Jr.; Ponticelli, Robert J.; and Stevenson, William C., 5,441,421, Cl. 439-284.000.
Stewart, Jay D.: *See*—
Einhorn, Kenneth H. J.; and Stewart, Jay D., 5,442,764, Cl. 395-700.000.

Stewart & Stevenson Services, Inc.: *See*—
Cedillo, Greg; Robertson, Thomas A.; South, Frank C., Jr.; Baten, Robert A.; and Vickmark, Bruce A., 5,441,340, Cl. 366-2.000.

Stiebow GmbH & Co. KG: *See*—
Lund, Bernd, 5,440,861, Cl. 53-492.000.

Stier, Uwe: *See*—
Jobmann, Wolfgang; Stier, Uwe; and Naugle, Michael D., 5,441,322, Cl. 294-90.000.

Stihl, Andreas: *See*—
Gerhardy, Reinhard, 5,441,673, Cl. 261-34.100.

Stiles, David R.: *See*—
McFarland, Harold L.; Stiles, David R.; Van Dyke, Korbin S.; Mehta, Shrenik; Favor, John G.; Greenley, Dale R.; and Cargnoni, Robert A., 5,442,757, Cl. 395-375.000.

Stokes, Peter R.: *See*—
Childers, Winthrop D.; Timm, Dale D., Jr.; Thierheimer, Charles L., Jr.; Field, Marshall; Colburn, William S.; Boucher, William R.; Elliot, Joseph R.; and Stokes, Peter R., 5,442,386, Cl. 347-50.000.

Stoll, Gerhard: *See*—
Uphues, Guenter; Ploog, Uwe; Daute, Peter; Stoll, Gerhard; and Schreck, Berthold, 5,442,082, Cl. 554-149.000.

Stoll, Harris. Insect protection barrier combination. 5,440,833, Cl. 43-109.000.

Stoll, Thomas: *See*—
Wei, William; and Stoll, Thomas, 5,440,806, Cl. 29-889.200.

Stone Construction Equipment, Inc.: *See*—
Halsted, David W., 5,441,341, Cl. 366-47.000.

Stone, David L.: *See*—
Brooks, Bruce; Jensen, Jimmy A.; Krzycki, Edwin A.; Mapson, Ross; Nye, Dale L.; Stone, David L.; and Luster, Troy R., 5,442,548, Cl. 364-420.000.

Stone, Henry W.; and Ohm, Timothy R., to United States of America, National Aeronatics and Space Administration. Emergency response mobile robot for operations in combustible atmospheres. 5,440,916, Cl. 73-23.310.

Stoplift Corporation: *See*—
Gallo, Frank F.; Bielek, Yan P.; Tebano, Riccardo; and Sardinha, Mark P., 5,442,334, Cl. 340-572.000.

Storar, Robert C. Method and apparatus for measuring friction torque. 5,440,915, Cl. 73-9.000.

Stormon, Robert D. Golf club putter fitting tool and stroke analyzer. 5,441,273, Cl. 273-187.400.

Storruste, Steinar; and Preisser, Mark A., to Haahjem North America, Inc. Centrifugal separator with axially separable bowl elements. 5,441,475, Cl. 494-48.000.

Stowe, George, Jr. Vehicle reflector illuminating system. 5,442,526, Cl. 362-61.000.

Strang, Ward E.; and Howard, Carol Z., to Hubbell Incorporated. Button well compression seal assembly. 5,442,151, Cl. 200-302.200.

Strauss, Kerry: *See*—
Ruggles, Kay L.; Ruggles, Bryan K.; Ruggles, Cary L.; Strauss, Kerry; and Buehner, Dennis, 5,441,592, Cl. 156-563.000.

Stridsberg, Lennart, to Stridsberg Licencing AB. Electric power train for vehicles. 5,442,250, Cl. 310-186.000.

Stridsberg Licencing AB: *See*—
Stridsberg, Lennart, 5,442,250, Cl. 310-186.000.

Stringer, Calvin R.: *See*—
Porter, Clyde R.; and Stringer, Calvin R., 5,441,129, Cl. 188-67.000.

Stripling, Steven D.: *See*—
Jenkins, Michael E.; Roberts, Charles A.; and Stripling, Steven D., 5,441,108, Cl. 166-53.000.

Strong, Bernard, to Propak-California Corp. Bottle carrier. 5,441,320, Cl. 294-31.200.

Strubel, Edward W., Jr.: *See*—
Frost, Gordon J.; and Strubel, Edward W., Jr., 5,441,391, Cl. 417-362.000.

Strus, Joseph A. Fruit picking device. 5,440,867, Cl. 56-332.000.

Studor, Inc.: *See*—
Chalich, Daniel, 5,441,679, Cl. 264-39.000.

Stump, David A.: *See*—
Hileman, Ronald E.; Wall, Brian; and Stump, David A., 5,441,051, Cl. 128-661.080.

Stumpe, Werner; and Wrede, Jurgen, to Robert Bosch GmbH. Auxiliary and friction braking system which recognizes rapid braking. 5,441,335, Cl. 303-3.000.

Sturgess, Peter G., to Lucas Industries. Draw-bar couplings for vehicles. 5,441,293, Cl. 280-432.000.

Styczinski, David A., to International Business Machines Corporation. Data storage method for DASD arrays using striping based on file length. 5,442,752, Cl. 395-404.000.

Su, Shun-Chang. Cable lock assembly for bicycles. 5,440,904, Cl. 70-18.000.

Subramanyam, Ravi; Gu, Ben; and Hwang, AnBen, to Colgate-Palmolive Co. Composition. 5,441,663, Cl. 252-108.000.

Suda, Hirofumi: *See*—
Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kunihiko; Kaneda, Kitahiro; and Homma, Hideo, 5,442,397, Cl. 348-363.000.

Sudhakar, Anantha, to Schering Corporation. Process for preparing intermediates for the synthesis of antifungal agents. 5,442,093, Cl. 560-82.000.

Sudmanns, Hans; and Schier, Karl, to MTU Motor- und Turbinen-Union Friedrichshafen. Intake system for an internal-combustion engine for use in one-stage or two-stage supercharging. 5,440,881, Cl. 60-612.000.

Sudo, Jun: *See*—
Tanaka, Ryoichi; Matsuo, Mamoru; Yahara, Hitoshi; and Sudo, Jun, 5,441,403, Cl. 431-175.000.

Sudoh, Kengo; and Sumitomo, Yuji, to Sharp Kabushiki Kaisha. Recording and reproducing data using batch erasable nonvolatile semiconductor memories capable of selectively erasing one of a plurality of data groups stored in one of the memories. 5,442,768, Cl. 395-430.000.

Sudor Partners: *See*—
Schoendorfer, Donald W., 5,441,048, Cl. 128-632.000.

Suess, Philipp, to Sulzer Chemtech AG. Orderly packing for a column. 5,441,793, Cl. 428-192.000.

Suga, Akira: *See*—
Inomura, Yasuo; Akamatsu, Seijiro; Yoden, Toru; Kudou, Masafumi; and Suga, Akira, 5,442,110, Cl. 562-621.000.

Suga, Masataka: *See*—
Fujita, Takeshi; Mitao, Shinji; Hasegawa, Kohei; and Suga, Masataka, 5,441,582, Cl. 148-693.000.

Suga, Takayuki, to Kioritz Corporation. Compound and nematicide against pine wood nematodes containing the same. 5,441,978, Cl. 514-460.000.

Sugahara, Tsugutaka: *See*—
Hoshino, Hidekazu; Haga, Hidemi; and Sugahara, Tsugutaka, 5,442,433, Cl. 356-71.000.

Sugai, Toshiji: *See*—
Hasegawa, Motoharu; Shirai, Kohji; Matsumoto, Kiyohiko; Suzuki, Yasuhiko; Takahasi, Isao; Takarada, Yuuiti; Saito, Mitsuyo; Yamamoto, Kumiko; Takayama, Yositaka; Komazawa, Tsutomu; and Sugai, Toshiji, 5,441,962, Cl. 514-309.000.

Suganuma, Tetsuya: *See*—
Nukami, Tetsuya; and Suganuma, Tetsuya, 5,441,697, Cl. 420-528.000.

Sugawara, Takahiro: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; Kujira, Katsufumi; Suzuki, Naoki; and Sakata, Tomoya, 5,442,103, Cl. 562-416.000.

Suggitt, Robert M.: *See*—
Robin, Allen M.; and Suggitt, Robert M., 5,441,990, Cl. 518-703.000.

Sugita, Kiyoshi: *See*—
Nakajima, Ryoetsu; Yamazaki, Naomi; Maruyama, Takumi; and Sugita, Kiyoshi, 5,442,777, Cl. 395-182.180.

Sugita, Saburo; Fukui, Hiroyuki; and Komiya, Yukinori, to Kanematsu-nnk Corporation. Fastener driving tool. 5,441,192, Cl. 227-130.000.

Sugitani, Nobuyoshi: *See*—
Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, 5,442,134, Cl. 174-52.400.

Sugiura, Kazushi: *See*—
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.

Sugiura, Koji: *See*—
Ohsumi, Shuichi; Sugiura, Koji; and Kato, Hideki, 5,441,717, Cl. 423-306.000.

Sullivan, John L.: *See*—
Payne, Barrett M. M.; and Sullivan, John L., 5,441,231, Cl. 251-5.000.

Sullivan, Scott L., to Uniplast Industries, Inc. Garment hanger with locking information clip. 5,441,182, Cl. 223-85.000.

Sulzer Chemtech AG: *See*—
Suess, Philipp, 5,441,793, Cl. 428-192.000.

Sulzer Rueti AG: *See*—
Hunziker, Andreas; and Frischknecht, Rudolf, 5,441,085, Cl. 139-28.000.

Sulzer Ruti AG: *See*—
Nanni, Daniel, 5,441,086, Cl. 139-196.200.

Sum, Phaik-Eng; Lee, Ving J.; and Testa, Raymond T., to American Cyanamid Company. 9-[(substituted glycyl)amido)]-6-demethyl-6-deoxytetracyclines. 5,442,059, Cl. 544-63.000.

Sumigama, Masahiko: *See*—
Saito, Kenji; and Sumigama, Masahiko, 5,442,495, Cl. 360-64.000.

Sumita, Masaya: *See*—
Ichitsuka, Takeshi; Ogawa, Tetsuro; and Sumita, Masaya, 5,441,635, Cl. 210-198.200.

Sumitomo Chemical Company, Limited: *See*—
Hata, Masahiko; Fukuhara, Noboru; Takata, Hiroaki; and Inui, Katsumi, 5,441,913, Cl. 437-133.000.
Takahashi, Tsutomu; and Sato, Hiroyuki, 5,442,003, Cl. 524-104.000.
Takamine, Kan; Yamato, Michio; Murakami, Akira; Tokumaru, Tooru; Nakayama, Yoshinori; and Hazama, Motoo, 5,442,114, Cl. 564-142.000.

Sumitomo Electric Industries, Ltd.: *See*—
Nagayama, Katsuya; Hosoya, Toshifumi; Yoshimura, Ichiro; and Matsuda, Yasuo, 5,441,215, Cl. 242-580.000.
Oishi, Yukihiro; Yamamoto, Susumu; Murai, Teruyuki; and Kawabe, Nozomu, 5,441,010, Cl. 117-40.000.
Sano, Hiroaki; Kakuta, Tatsuya; and Yamanishi, Toru, 5,441,813, Cl. 428-375.000.

Sumitomo Metal Mining Co., Ltd.: *See*—
Naito, Motoyuki; and Ito, Koichi, 5,442,367, Cl. 343-700.0MS.

Sumitomo Rubber Industries, Ltd.: *See*—
Goodwin, Charles, 5,441,190, Cl. 226-18.000.
Kishimoto, Yoshikazu; and Yanase, Minao, 5,442,331, Cl. 340-444.000.
Shirasyouji, Hisashi; and Nakasaki, Eiji, 5,441,093, Cl. 152-454.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Ochi, Hiroyuki, 5,442,138, Cl. 174-138.00F.
Okumura, Hitoshi; Taniuchi, Osamu; and Kawase, Hajime, 5,441,420, Cl. 439-157.000.
Tamura, Toshikazu, 5,440,804, Cl. 29-825.000.

Sumitomo, Yuji: *See*—
Sudoh, Kengo; and Sumitomo, Yuji, 5,442,768, Cl. 395-430.000.

Sun, Huifang; Zdepski, Joel W.; and Uz, Kamil M., to RCA Thomson Licensing Corporation. Error concealment apparatus for MPEG-like video data. 5,442,400, Cl. 348-402.000.

Sun Microsystems, Inc.: *See*—
Burward-Hoy, Trevor, 5,441,102, Cl. 165-104.250.
Chang, Shuen C.; Ho, Hai D.; Sun, Szu C.; and Chen, Jawii, 5,442,748, Cl. 395-164.000.
Northcutt, J. Duane; and Berry, David T., 5,442,749, Cl. 395-200.090.
Piech, Michael; and Morris, Trevor, 5,442,744, Cl. 395-154.000.

Sun, Szu C.: *See*—
Chang, Shuen C.; Ho, Hai D.; Sun, Szu C.; and Chen, Jawii, 5,442,748, Cl. 395-164.000.

Sund, Michael D.: *See*—
Boulos, Charles A.; Sund, Michael D.; and Hussain, Syed M. A., 5,442,177, Cl. 250-342.000.

Sundahl, Mark J.: *See*—
Nanda, Arun K.; Sundahl, Mark J.; and Vajda, Edward J., 5,441,616, Cl. 204-192.230.

Sunden, Gunnel E.: *See*—
Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., 5,441,968, Cl. 514-338.000.

Sung, Eric: *See*—
Schwadtke, Karl; and Sung, Eric, 5,441,662, Cl. 252-108.000.
Schwadtke, Karl; and Sung, Eric, 5,441,672, Cl. 252-550.000.

Sung, Hung-Cheng; and Chen, Ling, to Taiwan Semiconductor Manufacturing Company. Process for manufacturing a plug-diode mask ROM. 5,441,907, Cl. 437-48.000.

SunSmart, Inc.: *See*—
Mitchnick, Mark; and Muhammed, Mamoun, 5,441,726, Cl. 424-59.000.

Superba, S.A.: *See*—
Durand, Bernard; Enderlin, Robert; and Henry, Pierre, 5,442,447, Cl. 356-429.000.

Supino, Charles G.: *See*—
Adams, Theodore P.; Supino, Charles G.; and Kroll, Mark W., 5,441,518, Cl. 607-5.000.

Surman, Thomas G.: *See*—
Karubian, Ralph K.; and Surman, Thomas G., 5,441,445, Cl. 452-133.000.

Sutherland, Alistair A. P.; and Hudson, John M., to Raychem Limited. Gels. 5,442,004, Cl. 524-140.000.

Sutton, George H., Jr.; Little, Francis H.; Granger, Carl, Jr.; and Stapf, Philip F., to General Electric Company. Eddy current array inspection device. 5,442,286, Cl. 324-242.000.

Suzuki, Haruyuki, to Ricoh Company, Ltd. Jump pulse corrector and optical disk unit. 5,442,607, Cl. 369-44.250.

Suzuki, Hiroko: *See*—
Jikihara, Tetsuo; Shirasaka, Tadashi; Suzuki, Kazuo; Suzuki, Hiroko; Taniguchi, Masao; and Inoue, Shinya, 5,442,060, Cl. 544-106.000.

Suzuki, Hiroyuki, to Sharp Kabushiki Kaisha. Objective lens driving apparatus. 5,442,490, Cl. 359-824.000.

Suzuki, Katsushi: *See*—
Takanashi, Ikuko; Kondo, Shozo; Suzuki, Katsushi; Naganuma, Kazutomo; Itabashi, Yoshiko; Kimura, Chikako; and Inaba, Naohito, 5,442,780, Cl. 395-600.000.

Suzuki, Kazuo: *See*—
Jikihara, Tetsuo; Shirasaka, Tadashi; Suzuki, Kazuo; Suzuki, Hiroko; Taniguchi, Masao; and Inoue, Shinya, 5,442,060, Cl. 544-106.000.

Suzuki, Keiichi: *See*—
Yabuki, Yoshiharu; and Suzuki, Keiichi, 5,441,859, Cl. 430-522.000.

Suzuki, Naoki: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; Kujira, Katsufumi; Suzuki, Naoki; and Sakata, Tomoya, 5,442,103, Cl. 562-416.000.

Suzuki, Nobukazu: *See*—
Yamashita, Keijiro; and Suzuki, Nobukazu, 5,441,822, Cl. 429-34.000.

Suzuki, Takeshi: *See*—
Kimura, Hiroshi; Matsui, Toshiyuki; Suzuki, Takeshi; Mukae, Kazuo; and Ohi, Akihiko, 5,441,926, Cl. 505-193.000.
Kiyomiya, Takashi; Suzuki, Takeshi; Watanabe, Hideo; Takahashi, Shoji; Yamazaki, Kazumi; Takezawa, Masashi; Babe, Shigeki; Sawada, Kenichi; Sekiai, Shouji; Kaseyama, Hideki; and Kitagawa, Hiroshi, 5,441,031, Cl. 123-518.000.

Suzuki, Yasuhiko: *See*—
Hasegawa, Motoharu; Shirai, Kohji; Matsumoto, Kiyohiko; Suzuki, Yasuhiko; Takahasi, Isao; Takarada, Yuuiti; Saito, Mitsuyo; Yamamoto, Kumiko; Takayama, Yositaka; Komazawa, Tsutomu; and Sugai, Toshiji, 5,441,962, Cl. 514-309.000.

Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, to Minebea Kabushiki-Kaisha. Outer-rotor type spindle motor with a reduced thickness in the axial direction. 5,442,247, Cl. 310-67.00R.

Suzumura, Toshihiro: *See*—
Ikuta, Kenji; Suzumura, Toshihiro; Isomura, Shigenori; and Honjoh, Keigi, 5,441,032, Cl. 123-531.000.

Svedin, Lars-Erik; Linden, Lars K.; Andersson, Lars M.; Hedin, Cecilia S. M.; Nordstrand, Ingrid V.; and Bodin, Stig R., to Telefonaktiebolaget LM Ericsson. Method for registering traffic data in a telecommunication system. 5,442,682, Cl. 379-59.000.

Svedman, Pal, to Principal AB. Transdermal perfusion of fluids. 5,441,490, Cl. 604-289.000.

Svenning, Bjornar; and Berg, Eivind, to Den norske stats oljeselskap a.s. Seismic cable device. 5,442,590, Cl. 367-15.000.

Svensson, Jan-Agne: *See*—
Eriksen, Paul; Engstrand, Jan-Ake; Moll, Hans-Christer; Persson, Mikael; and Svensson, Jan-Agne, 5,441,397, Cl. 425-116.000.

Swan, Trevor W. B.; and Castell, John A. B., to Lurmark Limited. Spray nozzle holder containing two valves for flow control. 5,441,203, Cl. 239-574.000.

Swanson, Gary J.; and Scott, Miles, to Massachusetts Institute of Technology. Lens/zone plate combination for chromatic dispersion correction. 5,442,480, Cl. 359-355.000.

Swanson, Ronald E.: *See*—
Hopkins, Robert W.; Miller, Paige; Swanson, Ronald E.; and Scheible, John J., 5,442,562, Cl. 364-468.000.

Sweeney, Charles F. Pneumatic vehicle jack. 5,441,237, Cl. 254-93.0HP.

Sweeney, Timothy W.: *See*—
Vatsky, Joel; Sweeney, Timothy W.; and Newman, Lawrence F., 5,441,000, Cl. 110-265.000.

Swei, Gwo S.: *See*—
Daigle, Robert C.; Smith, W. David; Olenick, John A.; Arthur, David J.; and Swei, Gwo S., 5,440,805, Cl. 29-830.000.

Swerdloff, Stuart; Mackie, Thomas R.; Holmes, Timothy; and Reckwerdt, Paul J., to Wisconsin Alumni Research Foundation. Dynamic collimator for radiation therapy. 5,442,675, Cl. 378-65.000.

Swessel, Michael A.: *See*—
Springer, Scott L.; Hahn, Norbert; and Swessel, Michael A., 5,440,772, Cl. 14-69.500.

Swingle, Paul R.: *See*—
Baker, Robert G.; Eduartez, Jose A.; Huynh, Duy Q.; Swingle, Paul R.; and Yong, Suksoon, 5,442,789, Cl. 395-650.000.

Syammach, Mustafa A.: *See*—
Renlund, Gary M.; Syammach, Mustafa A.; and Mackerell, Richard R., 5,441,610, Cl. 204-129.000.

Symtonic, S.A.: *See*—
Chang, Rea-Woun; Lebet, Jean-Pierre; Barbault, Alexandre; Kuster, Niels; Kunz, Henry; and Pasche, Boris, 5,441,528, Cl. 607-48.000.

Synosky, Steven P.; Patel, Mansukh M.; Reed, Michael A.; and , to Wm. Wrigley Jr. Company. Wax-free chewing gum with improved processing properties. 5,441,750, Cl. 426-3.000.

Syntex (U.S.A.) Inc.: *See*—
Sjogren, Eric B., 5,441,953, Cl. 514-233.500.

System Technical Co., Ltd.: *See*—
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,441,685, Cl. 264-148.000.

Szablikowski, Klaus: *See*—
Kiesewetter, Rene ; Kniewske, Reinhard; Reinhardt, Eugen; and Szablikowski, Klaus, 5,442,054, Cl. 536-84.000.

Szecsei, Jozsef. Double barrel bolt action repeating rifle. 5,440,963, Cl. 89-1.410.

Szurkowski, Edward S.: *See*—
Blahut, Donald E.; and Szurkowski, Edward S., 5,442,389, Cl. 348-7.000.

T.T.I. Corporation: *See*—
Bank, Abraham H.; and Hearn, Ralph E., 5,442,261, Cl. 315-307.000.

Tabar, William J. Apparatus and method for powered thermal friction adjustment. 5,441,305, Cl. 280-809.000.

Tachibana, Daikichi: *See*—
Gunji, Hiroshi; Yamaguchi, Kenichi; and Tachibana, Daikichi, 5,441,814, Cl. 428-457.000.

Tachibana, Katsuro; and Tachibana, Shunro. Method of measuring distribution and intensity of ultrasonic waves. 5,440,914, Cl. 73-1.0DV.

Tachibana, Shunro: *See*—
Tachibana, Katsuro; and Tachibana, Shunro, 5,440,914, Cl. 73-1.0DV.

Tack, Robert D.: *See*—
Lewtas, Kenneth; Tack, Robert D.; Bland, Jacqueline D.; and Rosi, Albert, 5,441,545, Cl. 44-393.000.

Tadokoro, Hiroshi: *See*—
Takeuchi, Toshifumi; Obata, Shinichi; Kimura, Izumi; Kawamae, Osamu; Tadokoro, Hiroshi; and Nagai, Yutaka, 5,442,612, Cl. 369-49.000.

Tadros, Maher K.; Salmon, David C.; Einea, Amin; and Culp, Todd D., to University of Nebraska, The Board of Regents of the. Precast concrete sandwich panels. 5,440,845, Cl. 52-309.120.

Taft, Robert C.; Gunderson, Craig D.; and Sitaram, Arkalgud R., to Motorola Inc. Method of forming conductive interconnect structure. 5,441,914, Cl. 437-189.000.

Tagawa, Takao: *See*—
Nomura, Toshio; Tagawa, Takao; and Kako, Noritoshi, 5,442,373, Cl. 345-104.000.

Taiwan Semiconductor Manufacturing Company: *See*—
Sung, Hung-Cheng; and Chen, Ling, 5,441,907, Cl. 437-48.000.

Taiwan Semiconductor Manufacturing Company Ltd.: *See*—
Lee, Tin-Yuan, 5,441,915, Cl. 437-195.000.

Takada, Toshikatsu: *See*—
Imai, Ryuji; and Takada, Toshikatsu, 5,442,145, Cl. 174-267.000.

Takagi, Aya: *See*—
Iac, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.

Takagi, Minori; Aramaki, Kouji; and Ikeda, Takeshi, to Sharp Kabushiki Kaisha. Video tape recorder with a monitor-equipped built-in camera. 5,442,433, Cl. 358-335.000.

Takagi, Tadao, to Nikon Corporation. Automatic flash amount control apparatus of camera. 5,442,417, Cl. 354-402.000.

Takagiwa, Hiroyuki: *See*—
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,441,839, Cl. 430-108.000.

Takahara, Yoshiyuki; Iwabuchi, Tetsuya; and Shiota, Masayuki, to Central Glass Co., Ltd. Method for controlling soft rot, bacterial seedling blight of rice and black rot. 5,441,735, Cl. 424-93.200.

Takahashi, Eiji: *See*—
Mori, Takao; Furui, Masakatsu; Nakamichi, Katsuhiko; and Takahashi, Eiji, 5,441,888, Cl. 435-280.000.

Takahashi, Fumio: *See*—
Yamanaka, Junichi; and Takahashi, Fumio, 5,442,393, Cl. 348-252.000.

Takahashi, Katsumi; and Sasagawa, Hiroshi, to Urawa Kohgyo Co., Ltd. Blood pump. 5,441,535, Cl. 623-3.000.

Takahashi, Kazue: *See*—
Matsui, Hironobu; Ichihashi, Mikio; Ueda, Shinjiroo; Otaka, Tadashi; Takahashi, Kazue; Kobari, Toshiaki; and Odaka, Kenji, 5,442,183, Cl. 250-441.110.

Takahashi, Masaaki: *See*—
Tsutsumi, Kazuhiko; Takahashi, Masaaki; and Miki, Sadao, 5,441,457, Cl. 474-110.000.

Takahashi, Mitsuru; Kawaishi, Yasunori; Yu, Hideo; Motohashi, Toshiaki; Kawagoe, Katsuya; and Kamiyama, Hideki, to Ricoh Company, Ltd. Image recording apparatus. 5,442,428, Cl. 355-271.000.

Takahashi, Shigeyuki: *See*—
Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; Uemura, Toshiya; and Funahashi, Toshikazu, 5,441,626, Cl. 205-50.000.

Takahashi, Shoji: *See*—
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Takarada, Yuuiti: *See*—
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Sayo, Noboru; Sano, Noboru; and Kumobayashi, Hidenori, 5,442,105, Cl. 562-507.000.

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Fujimura, Yoshiichi; and Matsuura, Shizutaka, 5,441,209, Cl. 242-384.000.

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Hata, Masahiko; Fukuhara, Noboru; Takata, Hiroaki; and Inui, Katsumi, 5,441,913, Cl. 437-133.000.

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Zygutis, James L.; and Doty, Gerald A., 5,441,304, Cl. 280-806.000.

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Yamakawa, Tsutomu; Shuto, Keisei; and Takayama, Takuzou, 5,442,181, Cl. 250-368.000.

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Goto, Giichi; Yukimasa, Hidefumi; and Imamoto, Tetsuji, 5,441,967, Cl. 514-326.000.
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Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,442,566, Cl. 364-478.000.

Takehara, Takako: *See*—
Law, Kam S.; Robertson, Robert; Kollrack, Michael; Lee, Angela T.; Takehara, Takako; Feng, Guofu J.; and Maydan, Dan, 5,441,768, Cl. 427-255.700.

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Adomi, Keizo; Noto, Nobuhiko; and Takenaka, Takao, 5,442,203, Cl. 257-97.000.

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Coffin, Richard J.; Gupta, Rakesh K.; Sibal, Shiv; and Takeuchi, Kunihiko, 5,441,674, Cl. 264-25.000.

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Kiyomiya, Takashi; Suzuki, Takeshi; Watanabe, Hideo; Takahashi, Shoji; Yamazaki, Kazumi; Takezawa, Masashi; Baba, Shigeki; Sawada, Kenichi; Sekisi, Shouji; Kaseyama, Hideki; and Kitagawa, Hiroshi, 5,441,031, Cl. 123-518.000.

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Yamada, Kenichi, 5,440,905, Cl. 70-208.000.

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Tamarack Products, Inc.: *See*—
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Tamegai, Masahiro, to Canon Kabushiki Kaisha. Method of recording data and information regarding defects. 5,442,614, Cl. 369-58.000.

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Ohgaki, Atsushi; Ohsugi, Hiroharu; Tanabe, Hisaki; Tobinaga, Kenshiro; and Kojima, Yoshio, 5,441,995, Cl. 523-404.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Iwasaki, Tameo; and Kondo, Kazuhiko, 5,442,055, Cl. 540-200.000.

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Tanaka, Ryoichi; Matsuo, Mamoru; Yahara, Hitoshi; and Sudo, Jun, to Nippon Furnace Kogyo Kaisha, Ltd. Method of low-NOx combustion and burner device for effecting same. 5,441,403, Cl. 431-175.000.

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Tang, Ping W.; Jozefiak, Thomas H.; and Decker, David J., to Eastman Kodak Company. Photographic elements with heterocyclic cyan dye-forming couplers. 5,441,863, Cl. 430-558.000.

Tani, Tatsuo, to Ricoh Company, Ltd. Recording apparatus with a finisher having multiple bind modes. 5,442,432, Cl. 355-324.000.

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Tappon, Ellen R.: *See*—
Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappon, Ellen R., 5,441,593, Cl. 216-27.000.

Taricco, Todd, to Thermal Equipment Corporation. Process and apparatus for autoclave resin transfer molding. 5,441,692, Cl. 264-571.000.

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Tarr, Yul J.: *See*—
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Tasaki, Koji: *See*—
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Tasky, Thomas R.; Campbell, Samuel, III; Vincent, James L.; and Simonich, Mark A., to Chrysler Corporation. Method of diagnosing a park/neutral switch for vehicular automatic transmission. 5,442,550, Cl. 364-424.100.

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Tatematsu, Susumu; Mori, Kazuhiro; and Ikari, Hideyuki, to Hoshizaki Denki Kabushiki Kaisha. Auger-type ice making machine. 5,440,892, Cl. 62-135.000.

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Taurus Impressions, Inc.: *See*—
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Taymer Industries Inc.: *See*—
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TDK Corporation: *See*—
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Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.
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Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masaharu; Nakane, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.

Tebano, Riccardo: *See*—
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Teeters, Susan M.; Heroux, Charles H.; Watson, Michael D.; Cottom, William P.; and Duryee, Terrance D., to Petrolite Corporation. Repulpable hot melt adhesives. 5,441,998, Cl. 524-270.000.

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Nishimura, Kunio; Kumakawa, Shiro; and Nakagawa, Hideo, 5,441,798, Cl. 428-229.000.

Tejima, Yasuyuki; Izawa, Yasunori; Minefuji, Nobutaka; and Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Pupil conjugate-coupling device in projecting optical system. 5,442,413, Cl. 353-69.000.

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Teleflex Incorporated: *See*—
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Persson, Bengt Y., 5,442,635, Cl. 370-95.100.
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Terumo Kabushiki Kaisha: *See*—
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Texas Instruments Incorporated: *See*—
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Champion, Patrick; and Thenaisie, Jacky, 5,441,423, Cl. 439-567.000.
Theodoridis, George, to FMC Corporation. 1-amino-3-(bicyclic heterocyclyl)-6-fluoroalkyluracils. 5,441,925, Cl. 504-243.000.
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Taricco, Todd, 5,441,692, Cl. 264-571.000.
Thierheimer, Charles L., Jr.: *See*—
Childers, Winthrop D.; Timm, Dale D., Jr.; Thierheimer, Charles L., Jr.; Field, Marshall; Colburn, William S.; Boucher, William R.; Elliot, Joseph R.; and Stokes, Peter R., 5,442,386, Cl. 347-50.000.
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Rozanski, James D., 5,441,303, Cl. 280-738.000.
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Tann, Chou-Hong; Thiruvengadam, Tiruvettipuram K.; Chiu, John S.; Colon, Cesar; and Green, Michael D., 5,442,047, Cl. 536-13.600.
Thoma, Nandor G.: *See*—
Masleid, Robert P.; and Thoma, Nandor G., 5,442,776, Cl. 395-550.000.
Thomann, Mark R.: *See*—
Ingalls, Charles L.; and Thomann, Mark R., 5,442,642, Cl. 371-22.500.
Thomas, James E., to CEM Corporation. Process for manufacture of containers for materials being heated. 5,441,681, Cl. 264-56.000.
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Alchas, Paul G.; Gabel, Jonathan B.; Williams, Stuart K.; Jarrell, Bruce E.; Rose, Deborah G.; Park, Pauline K.; Carter, Thomas L.; Augello, Frank A.; and DiPisa, Joseph A., Jr., 5,441,539, Cl. 623-66.000.
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Bartfai, Robert F.; Lubart, Barry P.; and Thomas, Julian, 5,442,763, Cl. 395-375.000.
Thomas, Kassandra. Specialty item for use when holding a baby. 5,440,769, Cl. 5-655.000.
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Bernstein, Peter L.; Edwards, Philip D.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,441,960, Cl. 514-269.000.
Thomas, Theodore W.: *See*—
Hube, Randall R.; Cardinale, Louis J.; Auclair, Christopher J.; and Thomas, Theodore W., 5,442,541, Cl. 364-138.000.
Thompson, David D., to Pfizer Inc. Estrogen agonists as remedies for prostate and cardiovascular diseases. 5,441,986, Cl. 514-648.000.
Thompson, Gary E. Fluid management system. 5,441,070, Cl. 137-1.000.
Thompson, Stanley P., and Zimmerman, Kenneth J., to Beloit Technologies, Inc. Method and apparatus for increasing dehydrator efficiency. 5,440,825, Cl. 34-497.000.
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Altmanshofer, Robert D.; Rodriguez-Cavazos, Enrique; Willis, Donald H.; Ersoz, Nathaniel H.; and Canfield, Barth A., 5,442,406, Cl. 348-588.000.
Thomson, David J.: *See*—
Lindberg, Craig R.; and Thomson, David J., 5,442,696, Cl. 379-386.000.
Thomson, Thomas W. S., to National Semiconductor Corporation. Combined multiplier and accumulator. 5,442,579, Cl. 364-760.000.
Thurston, Marlin O.; and Olson, Karl W., to Neoprobe Corporation. Radiation responsive surgical instrument. 5,441,050, Cl. 128-659.000.
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Filepp, Robert; Gordon, Michael L.; Bidwell, Alexander W.; Wolf, Allan M.; Young, Francis C.; Tiemann, Duane; Appleman, Kenneth H.; and Meo, Sam, 5,442,771, Cl. 395-650.000.
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Bodi, Ilona; Gal, Eva; Gal, Melinda; Jaszlits, Laszlo ; Jednakovits, Andrea; Kiss, Adrina; Miklos nee Kovacs, Aniko ; Mathe, Gyorgy; Pallagi, Istvan; Rabloczky, Gyorgy; Simai, Antal; and Tihanyi, Endre, 5,441,948, Cl. 514-183.000.
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Lynnworth, Lawrence C.; Bradshaw, James E.; Doyle, Christopher C.; Lynnworth, Steven A.; Matson, James E.; and Tilden, Jeffrey, 5,440,937, Cl. 73-861.290.
Tillich, Dirk. Apparatus for separating particles suspended in a flowing liquid. 5,441,638, Cl. 210-242.100.
Timm, Dale D., Jr.: *See*—
Childers, Winthrop D.; Timm, Dale D., Jr.; Thierheimer, Charles L., Jr.; Field, Marshall; Colburn, William S.; Boucher, William R.; Elliot, Joseph R.; and Stokes, Peter R., 5,442,386, Cl. 347-50.000.
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Presant, Cary A.; Proffitt, Richard T.; Teplitz, Raymond L.; Williams, Lawrence E.; and Tin, George W., 5,441,745, Cl. 424-450.000.
Tindall, Stephen: *See*—
Reichert, Paul; McNemar, Charles; Nagabhushan, Nagamani; Nagabhushan, Tattanahalli L.; Tindall, Stephen; and Hruza, Alan, 5,441,734, Cl. 424-85.700.
Tischler, Michael A., to Advanced Technology Materials, Inc. Low resistance, stable ohmic contacts to silcon carbide, and method of making the same. 5,442,200, Cl. 257-77.000.

Tittlebaum, Marty: *See*—
Stegall, William A., Sr.; and Tittlebaum, Marty, 5,441,631, Cl. 210-108.000.
Toagosei Chemical Industry Co., Inc., Ltd.: *See*—
Ohsumi, Shuichi; Sugiura, Koji; and Kato, Hideki, 5,441,717, Cl. 423-306.000.
Tobinaga, Kenshiro: *See*—
Ohgaki, Atsushi; Ohsugi, Hiroharu; Tanabe, Hisaki; Tobinaga, Kenshiro; and Kojima, Yoshio, 5,441,995, Cl. 523-404.000.
Tochigifujisangyo Kabushiki Kaisha: *See*—
Teraoka, Masao, 5,441,461, Cl. 475-252.000.
Tocker, Stanley, to Du Pont de Nemours, E. I., and Company. Water-soluble or water dispersible pesticide granules comprising sulfonylurea herbicides in a polyethylene or polypropylene coating. 5,441,923, Cl. 504-125.000.
Toda, Hiromichi; Ishigami, Shigeyasu; Kobayashi, Norihisa; Furuya, Takaaki; and Izumi, Jun, to Mitsubishi Jukogyo Kabushiki Kaisha. Gasification-combined power plant. 5,440,873, Cl. 60-39.120.
Toda, Kenji; Uchibori, Yoshinobu; and Shimada, Toshio, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Method by which packet handler inserts data load instructions in instruction sequence fetched by instruction fetch unit. 5,442,761, Cl. 395-375.000.
Toda, Minoru; and Park, Kyung T., to Whitaker Corporation, The. Ultrasonic distance meter. 5,442,592, Cl. 367-124.000.
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Kataoka, Yuji; and Toda, Yoko, 5,442,174, Cl. 250-282.000.
Todaro, Frank A.; Hotkowski, Peter D.; and Chadwick, Charles M., to Asterisk, Inc. Method and device for separating lifts from a stack of sheets. 5,441,249, Cl. 271-107.000.
Todress, Neil E.; Driscoll, Michael J.; Hejzlar, Pavel; and Tang, Jan R., to Massachusetts Institute of Technology. Passive pressure tube light water cooled and moderated reactor. 5,442,668, Cl. 376-367.000.
Tognella, Sergio; Livi, Valeria; Menta, Ernesto; and Spinelli, Silvano, to Boehringer Mannheim Italia S.p.A. Gem-diphosphonic acid nitrosocarbamoyl derivatives, a process for the preparation thereof and pharmaceutical compositions containing them. 5,442,102, Cl. 562-13.000.
Tokiharu, Ando, to Yamaha Corporation. Musical sound signal recording/reproducing apparatus. 5,442,126, Cl. 84-603.000.
Tokiwa Chemical Industries Co., Ltd.: *See*—
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,441,685, Cl. 264-148.000.
Tokumaru, Tooru: *See*—
Takamine, Kan; Yamato, Michio; Murakami, Akira; Tokumaru, Tooru; Nakayama, Yoshinori; and Hazama, Motoo, 5,442,114, Cl. 564-142.000.
Tokutake, Toshinori: *See*—
Ueda, Shinichi; and Tokutake, Toshinori, 5,441,100, Cl. 165-67.000.
Tokyo Electron Kyushu Limited: *See*—
Tateyama, Kiyohisa; Akimoto, Masami; and Ushijima, Mitsuru, 5,442,416, Cl. 354-319.000.
Tokyo Electron Limited: *See*—
Moriya, Shuji; Matsuo, Takenobu; Wakabayashi, Tsuyoshi; Miura, Kazutoshi; and Mori, Takahiro, 5,441,076, Cl. 137-486.000.
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Fujiyoshi, Minoru; Hasegawa, Michio; Kanomata, Shinichi; Anamizu, Takashi; Saito, Morio; and Satoh, Fumitaka, 5,441,312, Cl. 285-23.000.
Tomasicchio, George: *See*—
Bunk, Stanley A.; and Tomasicchio, George, 5,441,406, Cl. 432-15.000.
Tomioka, Junsuke; Nagai, Kazunori; and Matsuzaki, Akihiro, to Komatsu Electronic Metals Co., Ltd. Apparatus for pulling up a single crystal. 5,441,014, Cl. 117-213.000.
Tomita, Naoyuki: *See*—
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Tomita, Nobuaki: *See*—
Urano, Satoshi; Aoki, Kei; Tomita, Nobuaki; and Mori, Hirohiko, 5,442,096, Cl. 560-190.000.
Tomita, Shinji: *See*—
Nagamura, Takashi; Yamamoto, Takao; and Tomita, Shinji, 5,441,719, Cl. 423-351.000.
Tomlinson, Charles E., to Circle-Prosco, Inc. Hydrophilic coatings for aluminum. 5,441,580, Cl. 148-247.000.
Tompkins, E. Neal: *See*—
Bartholmae, Jack N.; and Tompkins, E. Neal, 5,442,429, Cl. 355-273.000.
Tomy Company, Ltd.: *See*—
Shiraishi, Hisashi, 5,441,435, Cl. 446-424.000.
Tong Yang Nylon Co., Ltd.: *See*—
Lee, Chang-Hwang; Hwang, Jae-Yeon; and Chae, Byeong-Seok, 5,442,037, Cl. 528-301.000.
Tonomura, Manabu; and Kajihara, Yasushi, to Kao Corporation. Detergent composition. 5,441,667, Cl. 252-174.150.
Tonsor, Andrew J., to Caterpillar Inc. Hydraulic rotary actuator. 5,440,970, Cl. 92-121.000.
Topometrix Corporation: *See*—
Pylkki, Russell J.; Schuman, Marc; and West, Paul E., 5,441,343, Cl. 374-137.000.
Topsytail Company, The: *See*—
Jordan, Gina M.; Eakin, Tracie L.; and Edmark, Tomima L., 5,441,061, Cl. 132-275.000.
Toriyama, Shigemitsu: *See*—
Inoue, Nobutaka; Uemura, Jun; and Toriyama, Shigemitsu, 5,442,349, Cl. 340-995.000.
Torkelson, Delbert W.; Jannetta, Thomas J.; Nikkanen, John P.; Webb, Daniel E.; Zyzman, Steven H.; Colletti, William D.; Stern, Alfred M.; and Lord, Wesley K., to United Technologies Corporation; and Nordam. Fixed geometry mixer/ejector suppression system for turbofan aircraft engines. 5,440,875, Cl. 60-226.100.
Tormpenaars, Petrus H. F.: *See*—
Van Gorkom, Gerardus G. P.; and Tormpenaars, Petrus H. F., 5,442,253, Cl. 313-422.000.
Tornatore, Paul M.: *See*—
Duffney, Eliott N.; Tornatore, Paul M.; Huber, Scott M.; and Hess, Ronald E., 5,441,365, Cl. 405-128.000.
Torregrosa, Michel: *See*—
Barny, Herve ; Fima, Henri; and Torregrosa, Michel, 5,440,939, Cl. 73-861.610.
Torres, Cristian: *See*—
Bredberg, Robert E.; and Torres, Cristian, 5,442,573, Cl. 364-563.000.
Torrington Company, The: *See*—
Santos, A. John; and LaCroix, Mark E., 5,442,313, Cl. 327-355.000.
Torterolo, Renzo: *See*—
Fornasari, Brunella; Bussi, Giuseppe; and Torterolo, Renzo, 5,441,860, Cl. 430-537.000.
Toshiba America Information Systems, Inc.: *See*—
Wojaczynski, David J.; and Breuninger, Kurt M., 5,442,375, Cl. 345-147.000.
Tosoh Corporation: *See*—
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, 5,442,523, Cl. 362-31.000.
Toth, Douglas J., to Under Sea Industries, Inc. Multiple-walled diver's buoyancy compensator. 5,441,367, Cl. 405-186.000.
Toth, Eric S.; and Gregg, Michael J., to Prince Corporation. Vanity mirror with opposed sliding covers. 5,441,325, Cl. 296-97.200.
Tovarischestvo s ogranichennoi otvetstvennostju, firma "MEGMA ARS" (MEGMA ARS Ltd): *See*—
Malakeev, Alexandr K.; Kuzin, Alexandr I.; and Malakeev, Vladimir K., 5,440,886, Cl. 62-50.200.
Tovey, H. Jonathan; and Kappel, Gary S., to United States Surgical Corporation. Surgical retractor. 5,441,044, Cl. 600-234.000.
Toya, Chiyoshi; Tanaka, Toku; and Tanaka, Yoshinori, to Hoshizaki Denki Kabushiki Kaisha. Bagger. 5,440,863, Cl. 53-571.000.
Toyama, Masamichi: *See*—
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Toyama, Soichi, to Pioneer Electronic Corporation. Acoustic signal processing unit. 5,442,711, Cl. 381-63.000.
Toyo Denso Kabushiki Kaisha: *See*—
Sato, Hiroshi, 5,442,149, Cl. 200-5.00R.
Toyo Seikan Kaisha, Ltd.: *See*—
Moriga, Toshinori; Kojima, Shunji; and Kobayashi, Seishichi, 5,441,994, Cl. 523-201.000.
Toyoda Gosei Co., Ltd.: *See*—
Goto, Shinichi; Komiyama, Chiaki; Iwasaki, Hiroshi; and Hayashi, Kazukiyo, 5,441,688, Cl. 264-167.000.
Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; Uemura, Toshiya; and Funahashi, Toshikazu, 5,441,626, Cl. 205-50.000.
Shigeru, Yabuya, 5,441,167, Cl. 220-334.000.
Watanabe, Satomi; Miyazaki, Takeshi; Ito, Yutaka; and Amano, Toshikazu, 5,441,456, Cl. 474-94.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Nakashima, Kunimichi; and Hattori, Takumi, 5,440,952, Cl. 74-813.00L.
Toyota Jidosha Kabushiki Kaisha: *See*—
Miyazaki, Yukiyasu; Sugitani, Nobuyoshi; and Shimojo, Yoshiaki, 5,442,134, Cl. 174-52.400.
Nukami, Tetsuya; and Suganuma, Tetsuya, 5,441,697, Cl. 420-528.000.
Trafton, Fredrick W., to Texas Instruments Incorporated. System and method for controlling a gain circuit. 5,442,311, Cl. 327-306.000.
Tran, Thomas T.: *See*—
Wang, Lixiao; Willard, Martin R.; Tran, Thomas T.; Hastings, Roger; Schmaltz, Dale F.; and Holman, Thomas J., 5,441,516, Cl. 606-198.000.
Transmatic, Inc.: *See*—
Mikalonis, Liudas K., 5,441,326, Cl. 296-208.000.
Transocean Petroleum Technology AS: *See*—
Head, Philip F., 5,441,119, Cl. 175-74.000.
Tranvoiz, Rene . Device for quick mounting and removal of a shaft, such as a pedal shaft. 5,440,950, Cl. 74-594.400.
Tresp, Volker, to Siemens Aktiengesellschaft. Neural filter architecture for overcoming noise interference in a non-linear, adaptive manner. 5,442,543, Cl. 364-149.000.
Trethewey, Brig E. A. Detachably mounted windshield screen. 5,441,095, Cl. 160-370.210.
Tri-Clover, Inc.: *See*—
Zimmerly, Robert D., 5,441,079, Cl. 137-637.200.

Triandaf, Ioana: *See*—
Schwartz, Ira B.; Triandaf, Ioana; Carroll, Thomas L.; and Pecora, Louis M., 5,442,510, Cl. 364-152.000.
Triton Technology, Inc.: *See*—
Spani, Wayne M.; and Kemper, William S., 5,440,936, Cl. 73-861.280.
Trousset, Yves: *See*—
Picard, Catherine; Rougee, Anne; and Trousset, Yves, 5,442,674, Cl. 378-20.000.
Troxler Electronic Laboratories, Inc.: *See*—
Walker, William F.; and Muse, Peter D., 5,442,186, Cl. 250-506.100.
Tru Hone Corporation: *See*—
Gangelhoff, Fred R.; Gangelhoff, James H.; and Gangelhoff, Joel T., 5,440,953, Cl. 76-86.000.
Trueba, Kenneth E.: *See*—
Baughman, Kit C.; Kahn, Jeffrey A.; McClelland, Paul H.; Trueba, Kenneth E.; and Tappen, Ellen R., 5,441,593, Cl. 216-27.000.
Truth Hardware Corporation: *See*—
Piltingsrud, Stephen M., 5,440,837, Cl. 49-139.000.
Piltingsrud, Stephen M., 5,440,839, Cl. 49-342.000.
Trutzschler GmbH & Co. KG: *See*—
Hosel, Fritz, 5,441,143, Cl. 198-464.300.
TRW Inc.: *See*—
Lambropoulos, George P., 5,442,341, Cl. 340-825.310.
TRW Vehicle Safety Systems Inc.: *See*—
Verellen, Lawrence J., 5,441,332, Cl. 297-483.000.
Tsai, Liane T.: *See*—
Buttitta, Anthony; Duesing, Eric A.; Kalbow, Wayne R.; Rossted, Mark O.; and Tsai, Liane T., 5,442,689, Cl. 379-201.000.
Tsai, Yau-liang: *See*—
Hung, Yi-ping; Tsai, Yau-liang; and Yang, George J., 5,442,391, Cl. 348-190.000.
Tsaur, Liang S.; Shen, Shiji; Aronson, Michael P.; and Pocalyko, David J., to Lever Brothers Company. Compositions comprising capsule comprising oil surrounding hydrophobic or hydrophilic active and polymeric shell surrounding oil. 5,441,660, Cl. 252-95.000.
Tsaur, Liang S.; Aronson, Michael P.; Jones, Frank; and Lee, G. Jae, to Chesebrough-Pond's USA Co., a division of Conopco, Inc. Hairspray compositions. 5,441,728, Cl. 424-70.110.
Tsay, Ching-Yuh: *See*—
Hsieh, Shiow-Ming; Tsay, Ching-Yuh; and McKee, William R., 5,441,902, Cl. 437-34.000.
Tsubakimoto Chain Co.: *See*—
Kitayoshi, Haruyoshi; and Tamaki, Atsuhiko, 5,442,279, Cl. 324-107.000.
Tsutsumi, Kazuhiko; Takahashi, Masaaki; and Miki, Sadao, 5,441,457, Cl. 474-110.000.
Tsuchiya, Yutaka, to Hamamatsu Photonics K.K. Apparatus for measuring absorption information in scattering medium and method therefor. 5,441,054, Cl. 128-665.000.
Tsuda, Masahiko: *See*—
Nagate, Hiroshi; Miyata, Kenichi; and Tsuda, Masahiko, 5,441,846, Cl. 430-259.000.
Tsuji, Hidenori: *See*—
Kawachi, Norio; Ito, Midori; Naka, Toshiharu; and Tsuji, Hidenori, 5,441,619, Cl. 204-206.000.
Tsuji, Masaaki, to Noritsu Koki Co., Ltd. Exposure device. 5,442,420, Cl. 355-74.000.
Tsuji, Shigeki: *See*—
Haikawa, Yukihiko; and Tsuji, Shigeki, 5,442,598, Cl. 369-32.000.
Tsukada, Hiroyuki, to Ichikoh Industries, Ltd. Vehicle lamp. 5,442,525, Cl. 362-61.000.
Tsukamoto, Katsura: *See*—
Baba, Yutaka; Usui, Toshinao; Iwata, Noriyuki; Kakigami, Takuji; Ozeki, Yoshiro; Tsukamoto, Katsura; and Ito, Nobuyuki, 5,442,077, Cl. 548-453.000.
Tsukiji, Naoki; and Aida, Hiroyuki, to Furukawa Electric Co., Ltd., The. Method of manufacturing a laser diode. 5,441,912, Cl. 437-129.000.
Tsuruya, Toshinori: *See*—
Nakahara, Kanefumi; Nakajima, Masao; and Tsuruya, Toshinori, 5,442,163, Cl. 235-381.000.
Tsutsui, Mitsukuni: *See*—
Itsuji, Takayuki; Uchiyama, Kaoru; and Tsutsui, Mitsukuni, 5,440,924, Cl. 73-204.250.
Tsutsumi, Kazuhiko; Takahashi, Masaaki; and Miki, Sadao, to Tsubakimoto Chain Co. Tensioner having reservoir cover plate. 5,441,457, Cl. 474-110.000.
Tsutsumi, Kenji: *See*—
Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.
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Ikawa, Yasushi; and Tsutsumi, Seisuke, 5,442,273, Cl. 318-799.000.
Tsuyuguchi, Hiroshi: *See*—
Umeda, Yoshiaki; Furukawa, Teruo; Ogawa, Masaharu; Nakane, Kazuhiko; Mashimo, Akira; Araki, Tetsuro; Onda, Hiroyuki; Sakai, Yoshiaki; Tsuyuguchi, Hiroshi; and Enami, Katsuya, 5,442,608, Cl. 369-44.270.
Tsuzuki, Kazuo: *See*—
Koh, Keiko; Taniguchi, Nikio; Itoh, Noriie; Kushida, Hiroshi; Morita, Oesnu; Yamada, Hiroyoahi; Munesada, Kiyotaka; Tsuzuki, Kazuo; Kunihara, Mineo; and Fujita, Yoshiji, 5,442,062, Cl. 544-234.000.
Tubergen, Karen R.: *See*—
Cosper, David R.; and Tubergen, Karen R., 5,441,601, Cl. 162-5.000.
Tuboscope Vetco (Deutschland) GmbH: *See*—
Kammann, Reinhold; Knapwost, Helmut; Worms, Manfred; and Deeg, Helgo, 5,442,287, Cl. 324-242.000.
Tukey, John W.: *See*—
Pedersen, Jan. O.; Karger, David; Cutting, Douglass R.; and Tukey, John W., 5,442,778, Cl. 395-600.000.
Tulley, Richard T., to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Method for the analysis of Vitamin C. 5,441,872, Cl. 435-25.000.
Tuneberg, Lee H., to American Orthodoatics Corporation. Orthodontic band. 5,441,409, Cl. 433-23.000.
Tunek, Anders P. S.: *See*—
Andersson, Carl-Magnus A.; Bergstrand, Haakan S. A.; Hallberg, Anders R.; Samstrand, Bengt O.; and Tunek, Anders P. S., 5,441,976, Cl. 514-410.000.
Turi, Gregg: *See*—
Erickson, John R.; Tepper, John C.; Thacker, Ike C.; Turi, Gregg; Varrichio, Anthony J.; and Pilla, Arthur A., 5,441,527, Cl. 607-51.000.
Turk, George F.: *See*—
Melby, Jeffrey A.; and Turk, George F., 5,441,362, Cl. 405-16.000.
Turner, Elbert L.: *See*—
Lange, Julius; and Turner, Elbert L., 5,442,582, Cl. 364-825.000.
Turner, James: *See*—
Rose, Jed E.; Beam, Frederique; and Turner, James, 5,441,060, Cl. 131-271.000.
Tustaniwskyj, Jerry I.; Alvarez, Maria D.; Bezuk, Steve J.; Rackerby, Robert E.; and Weber, Patrick A., to Unisys Corporation. Method of stretching solder joints. 5,441,195, Cl. 228-180.220.
Tuttle, John R.: *See*—
Noufi, Rommel; Gabor, Andrew M.; Tuttle, John R.; Tennant, Andrew L.; Contreras, Miguel A.; Albin, David S.; and Carapella, Jeffrey J., 5,441,897, Cl. 437-5.000.
Ty, Si: *See*—
Schantz, Christopher A.; Hanson, Eric G.; Ty, Si; McClelland, Paul H.; Lloyd, William J.; and Childers, Winthrop D., 5,442,384, Cl. 347-20.000.
Tyburn, Jean-Max; Niess, Alfred; and Gianotti, Tonio, to Sadis Bruker Spectrospin Societe Anonyme de Diffusion de L'Instrumentation Scientifique Bruker Spectrospin (Societe Anonyme a Directoire). Commutation device and control process using the same. 5,442,291, Cl. 324-322.000.
U S WEST Advanced Technologies, Inc.: *See*—
Hansen, Benjamin E., 5,442,456, Cl. 358-342.000.
Uchibori, Yoshinobu: *See*—
Toda, Kenji; Uchibori, Yoshinobu; and Shimada, Toshio, 5,442,761, Cl. 395-375.000.
Uchida, Hitoshi: *See*—
Suzuki, Yuzuru; Fujitani, Sakae; Inagaki, Masaaki; and Uchida, Hitoshi, 5,442,247, Cl. 310-67.00R.
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Yamada, Kenichi, to Takigen Manufacturing Co. Ltd. Door locking handle assembly of a pull-out and side-swinging lever-action type. 5,440,905, Cl. 70-208.000.

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Mori, Takao; Yoshida, Satoshi; Nishimukai, Tadahiko; and Yamaguchi, Kenji, 5,442,229, Cl. 257-666.000.

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Nakai, Tetsuya; Yamaguchi, Yasuo; and Nishimura, Tadashi, 5,441,899, Cl. 437-24.000.

Yamaguro, Akira; Haramura, Shigenori; Minamoto, Naoki; Oshima, Yujiro; Muraki, Hideaki; Abe, Katsushi; Yokota, Koji; and Kawahara, Kazuo, to Aisin Seiki Kabushiki Kaisha. Method of decreasing nitrogen oxides in combustion device which performs

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Kitayama, Toru; and Ogai, Yoichiro, 5,442,130, Cl. 84-661.000.
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Ise, Noboru; Tsutsumi, Kenji; Shimozono, Ryoji; Takagi, Aya; Kudoh, Hiroyuki; Adachi, Hiroshi; Shimizu, Yoshihiro; and Yamamoto, Kunio, 5,442,621, Cl. 370-15.000.
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Yamamoto, Takao: *See*—
Nagamura, Takashi; Yamamoto, Takao; and Tomita, Shinji, 5,441,719, Cl. 423-351.000.
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Kaneko, Koji; Kubota, Takeshi; and Yamamoto, Tatsunori, 5,442,501, Cl. 360-94.000.
Yamamoto, Yushin: *See*—
Ikeda, Katsumi; and Yamamoto, Yushin, 5,442,538, Cl. 363-95.000.
Yamamura, Takashi; Namiki, Kazunori; Kobashi, Toshiya; and Horiuchi, Ryuji, to Victor Company of Japan, Ltd. Wet type electrophotographic recording apparatus. 5,442,426, Cl. 355-256.000.
Yamanaka, Junichi; and Takahashi, Fumio, to Kabushiki Kaisha Toshiba. Television camera having a noise reduction and vertical edge correction apparatus. 5,442,399, Cl. 348-252.000.
Yamanashi, Takanori, to Olympus Optical Co., Ltd. Zoom lens system. 5,442,485, Cl. 359-683.000.
Yamanishi, Toru: *See*—
Sano, Hiroaki; Kakuta, Tatsuya; and Yamanishi, Toru, 5,441,813, Cl. 428-375.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Isonura, Yasuo; Akamatsu, Seijiro; Yoden, Toru; Kudou, Masafumi; and Suga, Akira, 5,442,110, Cl. 562-621.000.
Yamashiro, Akiyoshi: *See*—
Kanazumi, Hisao; Yamashiro, Akiyoshi; and Fujiwara, Kiyoshi, 5,441,205, Cl. 241-41.000.
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Yamashita, Koichi: *See*—
Azegami, Kengo; and Yamashita, Koichi, 5,442,246, Cl. 326-38.000.
Yamashita, Kouji: *See*—
Kokubo, Yoshihiro; Minamihara, Seiji; Yamashita, Kouji; and Goto, Katsuhiko, 5,442,649, Cl. 372-46.000.
Yamashita, Shusuke, to Azuma Industrial Co., Ltd. Suction nozzle attachment for vacuum cleaner. 5,440,782, Cl. 15-398.000.
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Chujo, Akihiko; Yui, Toshitake; Hashimoto, Ken; Yamashita, Yoshiro; Koide, Fuminori; Endo, Yasuharu; and Sagara, Etsuo, 5,441,561, Cl. 106-20.00C.
Yamato, Michio: *See*—
Takamine, Kan; Yamato, Michio; Murakami, Akira; Tokumaru, Tooru; Nakayama, Yoshinori; and Hazama, Motoo, 5,442,114, Cl. 564-142.000.
Yamauchi, Yukio: *See*—
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,442,198, Cl. 257-64.000.
Yamaya, Yorihiro, to Konica Corporation. Light-sensitive silver halide color photographic material with high sensitivity and superior stability. 5,441,864, Cl. 430-567.000.
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Yamazaki, Shuntaro; and Ogata, Takaaki, to NEC Corporation. Optical communication method. 5,442,476, Cl. 359-173.000.
Yamazaki, Yuki; and Tasaki, Koji, to Fujitsu Limited. Telecommunication system having a capability of changing the alerting tone. 5,442,692, Cl. 379-233.000.
Yanagawa, Naoharu, to Pioneer Electronics Corporation. Tracking error signal correcting system which adjusts gain such that rending tracking error signals and recording trucking error signals and recording tracking error signals are equal. 5,442,609, Cl. 369-44.280.
Yanagi, Eiichi: *See*—
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, 5,442,523, Cl. 362-31.000.
Yanagisawa, Takaaki, to Ricoh Company, Ltd. Toner container and toner replenishing device including a cap member having a shutter. 5,441,177, Cl. 222-167.000.
Yanase, Minao: *See*—
Kishimoto, Yoshikazu; and Yanase, Minao, 5,442,331, Cl. 340-444.000.
Yang, Bingwei V., to Pfizer Inc. 3"-desmethoxy derivatives of erythromycin and azithromycin. 5,441,939, Cl. 514-29.000.
Yang, George J.: *See*—
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Yang, John S., to Block and Company, Inc. Coin counting and holding device. 5,441,448, Cl. 453-60.000.
Yang, Sheng-Haing, to United Microelectronics Corp. VDMOS transistor and manufacturing method therefor. 5,442,214, Cl. 257-328.000.
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Jung, Pan S.; and Yaniv, Daphna R., 5,440,920, Cl. 73-105.000.
Yanni, John M.; Robertson, Stella M.; Okumura, Shigetoshi; Tanaka, Hitoshi; and Saito, Tadayuki, to Alcon Laboratories, Inc. Ophthalmic compositions comprising emedastine and methods for their use. 5,441,958, Cl. 514-253.000.
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Nagamatsu, Shigeki; Arase, Tomohiro; and Yasuda, Masaaki, 5,442,121, Cl. 564-398.000.
Yasuda, Nobuyoshi: *See*—
Decamp, Ann; Dolling, Ulf H.; Li, Yulan; Rieger, Dale L.; Yasuda, Nobuyoshi; and Xavier, Lyndon C., 5,442,057, Cl. 540-302.000.
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Yasuhara, Hiroshi; Kusano, Hiroko; Yasuhara, Nae; and Marusawa, Miyuki, to Sony Corporation. Animation image constructing apparatus. 5,442,378, Cl. 345-168.000.
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Yasui, Tsuneo: *See*—
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Yasumoto, Yoshio; Kageyama, Sadashi; Inoue, Shuji; and Uwabata, Hideyo, to Matsushita Electric Industrial Co., Ltd. Wide-screen TV signal transmission apparatus. 5,442,403, Cl. 348-432.000.
Yasutomi, Tsuyoshi: *See*—
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Yatabe, Satoshi: *See*—
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Yazaki Corporation: *See*—
Hamai, Tsuyoshi; and Watanabe, Tamio, 5,441,428, Cl. 439-843.000.
Kato, Tetsuo; and Kanda, Masahiro, 5,442,000, Cl. 524-291.000.
Yamada, Satoshi, 5,441,427, Cl. 439-686.000.
Yee, Calvin C.: *See*—
Chiang, Alice; McBride, Kevin M.; and Yee, Calvin C., 5,442,759, Cl. 395-375.000.
Yeh, Thomas. Teapot capable of giving off sound while it pours. 5,441,039, Cl. 126-388.000.
Yen, Cheng-Feng, to Ruey Bor Enterprise Co., Ltd. Multipurpose gas light. 5,441,037, Cl. 126-258.000.
Yen, Shiao-Ping S.; and Low, T. Richard, to United States of America, National Aeronautics and Space Administration. Cellulose triacetate, thin film dielectric capacitor. 5,442,517, Cl. 361-305.000.
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Yoder, Lamar D.; Young, Max E.; Marshall, Brian P.; and Germann, Rodney N., to Navistar International Transportation Corp. Vehicle ignition switch. 5,441,022, Cl. 123-179.300.
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Yokota, Yoshihiro; Koide, Akira; Matsumoto, Masahiro; and Hayashi, Masahide, to Hitachi, Ltd. Three-dimensional acceleration sensor and airbag using the same. 5,441,300, Cl. 280-735.000.

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Yonezu, Ikuo: *See*—
Watanabe, Hiroshi; Furukawa, Akio; Fujitani, Shin; Yonezu, Ikuo; and Isono, Takahiro, 5,441,826, Cl. 429-101.000.
Yong, Suksoos: *See*—
Baker, Robert G.; Eduartez, Jose A.; Huynh, Duy Q.; Swingle, Paul R.; and Yong, Suksoos, 5,442,789, Cl. 395-650.000.
Yoon, InBae. Endoscopic portal for use in endoscopic procedures and methods therefor. 5,441,486, Cl. 604-167.000.
Yoshida, Akimaro: *See*—
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Yoshida, Atsumasa, to NEC Corporation. Method and system of changing destination of protocol data unit in hierarchical data communication network systems. 5,442,339, Cl. 340-825.160.
Yoshida, Hideo: *See*—
Ishimaru, Yutaka; and Yoshida, Hideo, 5,442,496, Cl. 360-72.200.
Yoshida Kogyo K.K.: *See*—
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Ida, Kazuo, 5,440,792, Cl. 24-615.000.
Murasaki, Ryuichi; and Nishiyama, Hissai, 5,441,687, Cl. 264-167.000.
Yoshida, Koichi, to Yoshiko Co., Ltd. Apparatus for driving expansion pole for use in vehicle. 5,442,242, Cl. 307-10.100.
Yoshida, Koichi: *See*—
Kitado, Masako; Inbe, Hiroyuki; Yoshida, Koichi; and Mihara, Izumi, 5,441,476, Cl. 600-26.000.
Yoshida, Masato, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Hybrid car and an operating method therefor. 5,441,122, Cl. 180-65.200.
Yoshida, Naoki: *See*—
Kashima, Keiji; Yoshida, Naoki; Shoji, Osamu; Yanagi, Eiichi; and Fukunishi, Takumi, 5,442,523, Cl. 362-31.000.
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Yoshikawa, Katsuhiro, to Hoechst Japan Limited. Heterocyclic iminobismethylenebisphosphonic acid derivatives. 5,441,945, Cl. 514-80.000.
Yoshiki, Shigeru: *See*—
Ishii, Yoshiko; Yoshiki, Shigeru; and Kai, Tsukuru, 5,442,430, Cl. 353-298.000.
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Yoshimura, Ichiro: *See*—
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Yoshimura, Katsuji; Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kunihiko; Kaneda, Kitahiro; and Homma, Hideo, to Canon Kabushiki Kaisha. Image sensing apparatus. 5,442,397, Cl. 348-361.000.
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Yoshishita, Yukio. Golf swing training device. 5,441,275, Cl. 273-191.00A.
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Aoki, Hideki; Akao, Masaru; Shin, Yoshiharurayama; Hayashi, Osamu; and Yoshizawa, Masahiko, 5,441,536, Cl. 427-2.270.
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Yousll, Donald R., III. Integrated paperboard container and pallet system. 5,441,154, Cl. 206-599.000.
Young, Francis C.: *See*—
Filepp, Robert; Gordon, Michael L.; Bidwell, Alexander W.; Wolf, Allan M.; Young, Francis C.; Tiemann, Duane; Appleman, Kenneth H.; and Meo, Sam, 5,442,771, Cl. 395-650.000.
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Yu, Abraham. Apparatus for dispensing the content of a collapsible paste tube. 5,441,172, Cl. 222-52.000.
Yu, Chris C.: *See*—
Yu, Tat-Kwan; and Yu, Chris C., 5,441,598, Cl. 156-645.100.
Yu, Hideo: *See*—
Takahashi, Mitsuru; Kawaishi, Yasunori; Yu, Hideo; Motohashi, Toshiaki; Kawagoe, Katsuya; and Kamiyama, Hideki, 5,442,428, Cl. 355-271.000.
Yu, Jack. Housing combination for ceiling fan. 5,441,387, Cl. 416-5.060.
Yu, Tat-Kwan; and Yu, Chris C., to Motorola, Inc. Polishing pad for chemical-mechanical polishing of a semiconductor substrate. 5,441,598, Cl. 156-645.100.
Yuda, Lawrence F. Cylinder with moanting for guide rods. 5,440,971, Cl. 92-165.0PR.
Yudin, Boris: *See*—
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Yukimasa, Hidefumi: *See*—
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Yukitake, Taizo, to Llanelli Radiators Limited. Heat exchange tubes. 5,441,106, Cl. 165-183.000.
Yunoki, Hiromi: *See*—
Kawajiri, Tatsuya; Hironaka, Hideyuki; Uekawa, Kazuyuki; Tanimoto, Michio; Yunoki, Hiromi; and Kudoh, Tsuyoshi, 5,442,108, Cl. 562-532.000.
Z Mark International, Inc.: *See*—
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Zach, Helmut: *See*—
Ritter, Christoph; Zach, Helmut; Steinbock, Wolf-Dietrich; Lang, Susanne; and Huber, Wolfgang, 5,441,625, Cl. 204-409.000.
Zachary, Ian: *See*—
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Zanarotti, Stanley R.: *See*—
Powers, Frederick A.; and Zanarotti, Stanley R., 5,442,784, Cl. 395-600.000.
Zarate, Carlos E.; and Zarate, H.Graciela, to DUSA Pharmaceuticals Inc. Illuminator and methods for photodynamic therapy. 5,441,531, Cl. 607-90.000.
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Zarate, Carlos E.; and Zarate, H.Graciela, 5,441,531, Cl. 607-90.000.
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Ales, Francisco; Conrad, Jack C.; Duvall, David A.; and Zawoy, Karl R., 5,441,055, Cl. 128-772.000.
Zdepski, Joel W.: *See*—
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Zeiger, Donald J. Spring biased check valve for an injection molding machine. 5,441,400, Cl. 425-562.000.
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Zeller, Robert L., III: *See*—
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Bernstein, Peter R.; Edwards, Philip D.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,441,960, Cl. 514-269.000.
Bird, Colin R.; Grierson, Donald; and Schuch, Wolfgang W., 5,442,052, Cl. 536-24.100.
Garman, Andrew J.; and Parker, John R., 5,441,867, Cl. 435-6.000.
Jung, Frederic H.; and Arnould, Jean-Claude, 5,441,949, Cl. 514-210.000.
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Zepp, Charles M.: *See*—
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Tannenbaum, Alan R.; and Zetts, John M., 5,442,376, Cl. 345-156.000.
Zeust, Randy: *See*—
Gellert, Jobst U.; Zeust, Randy; and Guenther, Hans, 5,441,197, Cl. 228-248.100.
Zhang, Guangyu: *See*—
Cooper, Stephen R. W.; and Zhang, Guangyu, 5,442,435, Cl. 356-133.000.
Zhou, Pu: *See*—
Miller, James R.; Kalousdian, Sam; Willett, Brian C.; Winslow, John M.; Zhou, Pu; and Zou, Chaofeng, 5,441,866, Cl. 430-619.000.
Zhou, Qun-Yong: *See*—
Civelli, Olivier; and Zhou, Qun-Yong, 5,441,883, Cl. 435-257.130.
Ziegler, Otto, to Robert Bosch GmbH. Packaging machine. 5,441,146, Cl. 198-803.010.
Zilog, Inc.: *See*—
Zastrow, Lyn R.; and Goodhart, James L., 5,442,796, Cl. 395-800.000.
Zimmel, John M.: *See*—
Anderson, Gregory J.; and Zimmel, John M., 5,441,808, Cl. 428-349.000.
Zimmer, Inc.: *See*—
Kenyon, Roger R., 5,441,301, Cl. 606-85.000.
Zimmerly, Robert D., to Tri-Clover, Inc. Manifold valve assemblies. 5,441,079, Cl. 137-637.200.
Zimmerman, Kenneth J.: *See*—
Thompson, Stanley P.; and Zimmerman, Kenneth J., 5,440,825, Cl. 34-497.000.
Zimmermann, Andreas, to U.S. Philips Corporation. Low-loss power supply device comprising a DC/DC converter. 5,442,536, Cl. 363-20.000.
Zimmermann, Hans, to ABB Management AG. Horizontal-axis electrical machine. 5,442,249, Cl. 310-91.000.
Zmurenko, Ljudmila A.: *See*—
Zenker, Lothar; Wunderlich, Helmut; Lohmann, Dieter; Rostock, Angelika; Siegemund, Christine; Valdman, Artur V.; Voronina, Tatjana A.; Rachmankulova, Ilmira C.; Glozman, Oleg M.; Garibova, Taisija L.; Mescerjakova, Larisa M.; Zmurenko, Ljudmila A.; Seredenin, Sergej B.; and Rozancev, Grigorij G., 5,441,973, Cl. 514-343.000.
Zombo, Paul J.; Metala, Michael J.; Moore, Charles C.; Guenther, Paul; and Bertsch, Oran L., to Westinghouse Electric Corporation. NDE eddy current sensor for very high scan rate applications in an operating combustion turbine. 5,442,285, Cl. 324-227.000.
Zou, Chaofeng: *See*—
Miller, James R.; Kalousdian, Sam; Willett, Brian C.; Winslow, John M.; Zhou, Pu; and Zou, Chaofeng, 5,441,866, Cl. 430-619.000.
Zur, Oded Y.: *See*—
Gurner, Asaf; and Zur, Oded Y., 5,442,168, Cl. 250-221.000.
Zwarts, Johan M. C., to Hollandse Signaalapparaten B.V. Radar apparatus. 5,442,362, Cl. 342-176.000.
Zygutis, James L.; and Doty, Gerald A., to Takata Inc. Seat belt retractor activation mechanism responsive to anti-lock braking systems. 5,441,304, Cl. 280-806.000.
Zysman, Steven H.: *See*—
Torkelson, Delbert W.; Jannetta, Thomas J.; Nikkanen, John P.; Webb, Daniel R.; Zysman, Steven H.; Colletti, William D.; Stern, Alfred M.; and Lord, Wesley K., 5,440,875, Cl. 60-226.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cala, Francis R.: *See*—
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, Re. 35,017, Cl. 134-40.000.
Cans Urchaga, Miguel, to Hanscom-Madex, A.I.E. Wire winding and tying machine with magnetized hanking head. Re. 35,015, Cl. 53-118.000.
Church & Dwight Co., Inc.: *See*—
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, Re. 35,017, Cl. 134-40.000.
Cubic Toll Systems, Inc.: *See*—
Quinlan, Thomas J., Jr., Re. 35,020, Cl. 385-13.000.
Dunn, Steven E.: *See*—
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, Re. 35,017, Cl. 134-40.000.
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., to SRI International, Inc. Three-axis force measurement stylus. Re. 35,016, Cl. 73-862.041.
Hanscom-Madex, A.I.E.: *See*—
Cans Urchaga, Miguel, Re. 35,015, Cl. 53-118.000.
Homan, Gerald L. Bath water control system. Re. 35,018, Cl. 236-12.120.
Kornbluh, Roy: *See*—
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., Re. 35,016, Cl. 73-862.041.
Lajoie, M. Stephen: *See*—
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, Re. 35,017, Cl. 134-40.000.
Low, Thomas P.: *See*—
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., Re. 35,016, Cl. 73-862.041.
Miki, Tatsuya: *See*—
Ueki, Yasuhiro; and Miki, Tatsuya, Re. 35,019, Cl. 360-97.020.
Newgard, Peter M.: *See*—
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., Re. 35,016, Cl. 73-862.041.
Quinlan, Thomas J., Jr., to Cubic Toll Systems, Inc. Fiber optic load sensing device. Re. 35,020, Cl. 385-13.000.
Shrader, Eric J.: *See*—
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., Re. 35,016, Cl. 73-862.041.
SRI International, Inc.: *See*—
Gullman, Larry S.; Kornbluh, Roy; Low, Thomas P.; Newgard, Peter M.; and Shrader, Eric J., Re. 35,016, Cl. 73-862.041.
Ueki, Yasuhiro; and Miki, Tatsuya, to Victor Company of Japan, Limited. Small-size magnetic disk drive mechanism with hermetically sealed chamber. Re. 35,019, Cl. 360-97.020.
Victor Company of Japan, Limited: *See*—
Ueki, Yasuhiro; and Miki, Tatsuya, Re. 35,019, Cl. 360-97.020.
Vinci, Alfredo: *See*—
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, Re. 35,017, Cl. 134-40.000.
Winston, Anthony E.; Cala, Francis R.; Dunn, Steven E.; Vinci, Alfredo; and Lajoie, M. Stephen, to Church & Dwight Co., Inc. Method for removing soldering flux with alkaline salts, an alkali metal silicate and anionic polymer. Re. 35,017, Cl. 134-40.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Arco Chemical Technology, L.P.: *See*—
Chong, Victor M., B1 5,104,493, Cl. 203-91.000.
Bacigalupe, Carlos: *See*—
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, B1 4,941,819, Cl. 432-8.000.
Chong, Victor M., to Arco Chemical Technology, L.P. Tertiary butyl hydroperoxide concentration. B1 5,104,493, 8-15-95, Cl. 203-91.000.
Civin, Curt I., to Johns Hopkins University, The. Human stem cells and monoclonal antibodies. B1 5,130,144, 8-15-95, Cl. 424-577.000.
Davis, Bill E.: *See*—
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, B1 4,941,819, Cl. 432-8.000.
Dobie, Michael J.: *See*—
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, B1 4,941,819, Cl. 432-8.000.
Edens, Glenn T.: *See*—
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Gallatin, David M.: *See*—
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Grid Systems Corporation: *See*—
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Hardwick, John C.; and Lim, Jae S., to United States Surgical Corporation. Method and apparatus for phase synthesis for speech processing. B1 5,081,681, 8-15-95, Cl. 381-51.000.
Hobson, Stephen R.: *See*—
Paulsen, David C.; Edens, Glean T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Johns Hopkins University, The: *See*—
Civin, Curt I., B1 5,130,144, Cl. 424-577.000.
Langer, Robert S., Jr.: *See*—
Weaver, James C.; Powell, Kevin T.; and Langer, Robert S., Jr., B1 5,019,034, Cl. 604-20.000.
Lim, Jae S.: *See*—
Hardwick, John C.; and Lim, Jae S., B1 5,081,681, Cl. 381-51.000.
Massachusetts Institute of Technology: *See*—
Weaver, James C.; Powell, Kevin T.; and Langer, Robert S., Jr., B1 5,019,034, Cl. 604-20.000.
Moggridge, William G.: *See*—
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Nakamura, Karl S.: *See*—
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., B1 4,571,456, Cl. 379-96.000.
Paulsen, David C.; Edens, Glenn T.; Nakamura, Karl S.; Gallatin, David M.; Hobson, Stephen R.; and Moggridge, William G., to Grid Systems Corporation. Portable computer. B1 4,571,456, 8-15-95, Cl. 379/98.000.
Ponkala, Jorma, to Vaisala, Oy. Measuring circuit for measuring low capacitances. B1 4,295,091, 8-15-95, Cl. 324-611.000.
Powell, Kevin T.: *See*—
Weaver, James C.; Powell, Kevin T.; and Langer, Robert S., Jr., B1 5,019,034, Cl. 604-20.000.
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, to Stewart Systems, Inc. Air circulation and exhaust control system for commercial ovens. B1 4,941,819, 8-15-95, Cl. 432-8.000.
Stewart Systems, Inc.: *See*—
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, B1 4,941,819, Cl. 432-8.000.
Thomas, William M.: *See*—
Stewart, G. Wayne; Davis, Bill E.; Thomas, William M.; Dobie, Michael J.; and Bacigalupe, Carlos, B1 4,941,819, Cl. 432-8.000.
United States Surgical Corporation: *See*—
Hardwick, John C.; and Lim, Jae S., B1 5,081,681, Cl. 381-51.000.
Vaisala, Oy: *See*—
Ponkala, Jorma, B1 4,295,091, Cl. 324-611.000.
Weaver, James C.; Powell, Kevin T.; and Langer, Robert S., Jr., to Massachusetts Institute of Technology. Control of transport of molecules across tissue using electroporation. B1 5,019,034, 8-15-95, Cl. 604-20.000.

LIST OF DESIGN PATENTEES

A.C. Data Systems of Idaho, Inc.: *See*—
Ryan, Barry D., 361,314, Cl. D13-160.000.
Actor, Charles A.: *See*—
Scheid, William J.; and Actor, Charles A., 361,333, Cl. D121-191.000.
Adler, Philip S. Writing board. 361,347, 8-15-95, Cl. D19-52.000.
Aetco, Inc.: *See*—
Taylor, Anthony E., 361,199, Cl. D3-226.000.
Alien Sport, Inc.: *See*—
Simmons, Samuel P., 361,358, Cl. D21-220.000.
Alkelai, Mazal, to Lasroc Ltd. Carrier for printed circuits. 361,318, 8-15-95, Cl. D13-182.000.
Altergott, Henry. Rake. 361,245, 8-15-95, Cl. D8-13.000.
Amburgey, James D.; and Hill, Peter C., to Today's Kids, Inc. Suspension band. 361,261, 8-15-95, Cl. D8-499.000.
American Manufacturing Company, Inc.: *See*—
Sheftel, Steven J., 361,390, Cl. D25-67.000.
American Standard Companies Inc.: *See*—
Fabian, Wolfgang, 361,370, Cl. D23-257.000.
American Standard Inc.: *See*—
Enthoven, Axel, 361,372, Cl. D23-293.100.
Guy, Stephen E.; Sulfstede, Louis E.; Hillmer, Eric; and Bartlett, Stephen, 361,287, Cl. D10-50.000.
Schroer, Erhard, 361,277, Cl. D6-576.000.
American Tack and Hardware Co., Inc.: *See*—
Simmons, Sean, 361,394, Cl. D26-26.000.
AMREP, Inc.: *See*—
Gallagher, Kevin J.; and Miller, Jeffrey J., 361,375, Cl. D23-366.000.
Anderson, Steven A.: *See*—
Snetting, Mark E.; Anderson, Steven A.; and Pilosi, Paul A., 361,247, Cl. D8-14.100.
Aoki, Richie: *See*—
Facer, Phillip D.; and Aoki, Richie, 361,384, Cl. D99-28.000.
Armstrong World Industries, Inc.: *See*—
Bischel, Wesley T. K., 361,387, Cl. D25-55.000.
Bischel, Wesley T. K., 361,388, Cl. D25-55.000.
Bischel, Wesley T. K., 361,389, Cl. D25-55.000.
Auberge Products: *See*—
Garner, Mike, 361,369, Cl. D23-252.000.
Axions S.A.: *See*—
Goldstein, Steven; and Belce, Christian, 361,271, Cl. D9-572.000.
Bailey Ann Industries: *See*—
Harper, Debbie K., 361,385, Cl. D24-199.000.
Bailey, Bret R.; and Combs, Lawrence E. Golf ball retriever. 361,354, 8-15-95, Cl. D21-206.000.
Balatti, Aldo: *See*—
Isabelle, Paul; Balatti, Aldo; and Labrecque, Claude, 361,376, Cl. D23-372.000.
Ball, Yvonne. Toilet paper roll holder. 361,234, 8-15-95, Cl. D6-520.000.
Baroudi, Frank M. Fluid dispenser for carbonated liquids. 361,242, 8-15-95, Cl. D7-398.000.
Bartlett, Stephen: *See*—
Guy, Stephen E.; Sulfstede, Louis E.; Hillmer, Eric; and Bartlett, Stephen, 361,287, Cl. D10-50.000.
Bauer, Siegfried, to Deutsche Star GmbH. Linear slides with toothed belt drivers. 361,338, 8-15-95, Cl. D15-199.000.
Belce, Christian: *See*—
Goldstein, Steven; and Belce, Christian, 361,271, Cl. D9-572.000.
Beres Industries, Inc.: *See*—
Zuber, Harold, 361,266, Cl. D9-440.000.
Berkowitz, Fred J.; Carroll, Thomas D.; Monsef, Eric M.; and Musetti, Robert A., to HaL Computer Systems, Inc. Workstation housing. 361,321, 8-15-95, Cl. D14-102.000.
Bernault, Jean-Francois: *See*—
Feche, Pierre; Bernault, Jean-Francois; and Stolz, Pascal, 361,356, Cl. D21-214.000.
Bischel, Wesley T. K., to Armstrong World Industries, Inc. Cover unit for ceiling rails. 361,387, 8-15-95, Cl. D25-55.000.
Bischel, Wesley T. K., to Armstrong World Industries, Inc. Cover unit for ceiling rails. 361,388, 8-15-95, Cl. D25-55.000.
Bischel, Wesley T. K., to Armstrong World Industries, Inc. Cover unit for ceiling rails. 361,389, 8-15-95, Cl. D25-55.000.
Bisson, Montgomery A.: *See*—
Trautloff, Gary L.; and Bisson, Montgomery A., 361,414, Cl. D32-15.000.
Black & Decker Inc.: *See*—
Carbone, Richard; and deBlois, Bryan, 361,399, Cl. D26-43.000.
Bonte, Robert W. Stud location marker. 361,249, 8-15-95, Cl. D8-51.000.
Booth, Debbie M.: *See*—
Wedell, Mark T.; Ponds, Kevin W.; and Booth, Debbie M., 361,315, Cl. D13-160.000.
Braun Aktiengesellschaft: *See*—
Littmann, Ludwig, 361,241, Cl. D7-376.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Hattori, Mitsuharu; and Yamaguchi, Koshiro, 361,342, Cl. D18-56.000.
Bruckler, Paul L. Combined light for a motorcycle helmet and controlling signal transmitter therefor. 361,396, 8-15-95, Cl. D26-39.000.
Brunsell, Robert E.; Kennedy, John P.; and Dobson, David T., to Minnesota Mining and Manufacturing Company. Dental material curing apparatus. 361,382, 8-15-95, Cl. 24-177.000.
Brunswick Bowling & Billiards: *See*—
Janes, Daniel, 361,359, Cl. D21-232.000.
Janes, Daniel, 361,360, Cl. D21-232.000.
Janes, Daniel, 361,361, Cl. D21-232.000.
Brussing, Bernd, to Helit Innovative Buroprodukte GmbH. Deskmount filing pockets. 361,349, 8-15-95, Cl. D19-90.000.
Bryant, Keith R., to SDX Business Systems Limited. Telephone apparatus. 361,331, 8-15-95, Cl. D14-149.000.
Bulgari, Giovanni, to Gianni Bulgari SpA. Wristwatch. 361,283, 8-15-95, Cl. D10-32.000.
Bulgari, Marina, to Marina B Creation S.A. Watch. 361,282, 8-15-95, Cl. D10-32.000.
Bulgari, Paolo, to Bulgari Time (Switzerland) S.A. Underwater watch. 361,285, 8-15-95, Cl. D10-39.000.
Bulgari Time (Switzerland) S.A.: *See*—
Bulgari, Paolo, 361,285, Cl. D10-39.000.
Burgener, Eddy, to Vuarnet Watches SA. Combined wristwatch and compass. 361,279, 8-15-95, Cl. D10-31.000.
Bush, Timothy H. Stereoscopic viewer. 361,340, 8-15-95, Cl. D16-222.000.
Buzzell, Brian W.: *See*—
Richards, Thomas F.; and Buzzell, Brian W., 361,238, Cl. D6-574.000.
Cacciola, Joseph C., to Little Tikes Company, The. Toy box. 361,220, 8-15-95, Cl. D6-440.000.
Cal-Style Furniture Mfg. Co.: *See*—
Klein, Richard S., 361,214, Cl. D6-366.000.
Carbone, Richard; and deBlois, Bryan, to Black & Decker Inc. Flashlight. 361,399, 8-15-95, Cl. D26-43.000.
Carlin, Timothy J.: *See*—
Kaplinsky, George; Carlin, Timothy J.; Swanson, David W.; and Hamlin, Mindy A., 361,343, Cl. D18-56.000.
Carmo, Robert A.; and Contreras, Edward A. Hand grip for carrying articles. 361,263, 8-15-95, Cl. D9-434.000.
Carroll, Thomas D.: *See*—
Berkowitz, Fred J.; Carroll, Thomas D.; Monsef, Eric M.; and Musetti, Robert A., 361,321, Cl. D14-102.000.
Casio Computer Co., Ltd.: *See*—
Hanagata, Shigeru, 361,280, Cl. D10-31.000.
Nakai, Toshio, 361,284, Cl. D10-38.000.
Century Products Company: *See*—
Wise, Robert E., 361,320, Cl. D12-209.000.
Chan, Thomas. Telephone rack. 361,334, 8-15-95, Cl. D14-251.000.
Chandwick, Paul H.; Ketterer, Scott R.; Culverhouse, Thor R.; and Proebstel, Robert C., to Tektronix, Inc. Handheld television monitoring instrument. 361,288, 8-15-95, Cl. D10-78.000.
Chaney, David B.; and Montag, Sean D., to Rubbbermaid Specialty Products Inc. Container for holding fishing tackle accessories. 361,201, 8-15-95, Cl. D3-260.000.
Chavalas, Angela, to Chavalas, Angela. Floral/ornament holder for wine bottle. 361,291, 8-15-95, Cl. D11-143.000.
Chen, Barnabas C. Writing instrument. 361,345, 8-15-95, Cl. D19-49.000.
Chen, Wen J. Electrical connector for an extension line. 361,312, 8-15-95, Cl. D13-139.000.
Chieda, Robert, to Newell Operating Company. Knob. 361,257, 8-15-95, Cl. D8-312.000.
Clark, Nancy A.: *See*—
Mueller, Eric J.; Dretzka, Phillip C.; and Clark, Nancy A., 361,348, Cl. D19-62.000.
Cleveland, Thomas G.: *See*—
Orth, Robert J., Sr.; Miller, Jerry R.; and Cleveland, Thomas G., 361,316, Cl. D12-171.000.
Coates, Fredrica V. Hospital cart receptacle for diapers or the like. 361,422, 8-15-95, Cl. D34-27.000.
Colgate-Palmolive Company: *See*—
Curtis, John; Waguespack, Kenneth; and Jousson, Pierre J., 361,209, Cl. D4-104.000.
Combi Corporation: *See*—
Tokutake, Katsuhiro; and Matsumoto, Susumu, 361,213, Cl. D6-339.000.
Combs, Lawrence E.: *See*—
Bailey, Bret R.; and Combs, Lawrence E., 361,354, Cl. D21-206.000.
Compaq Computer Corporation: *See*—
Rogers, Rickey M., 361,324, Cl. D14-107.000.
Compton, Wayne W., to Lighting, Inc. Parking garage luminaire. 361,400, 8-15-95, Cl. D26-85.000.
Conair Corporation: *See*—
Solomita, Anthony; Haber, Barry M.; and Taylor, Robert, 361,330, Cl. D14-149.000.
Container Supply Co.: *See*—
Thompson, Derek K., 361,244, Cl. D7-515.000.
Contreras, Edward A.: *See*—
Carmo, Robert A.; and Contreras, Edward A., 361,263, Cl. D9-434.000.
Cosmetique Sans Soucis GmbH: *See*—
Desgrippes, Joel, 361,406, Cl. D28-78.000.

Coty, Inc.: *See*—
Kingsbury, John W., 361,268, Cl. D9-523.000.
Cozy Craft, Inc.: *See*—
Helman, Donald L., 361,258, Cl. D8-354.000.
Craft, Charles W.; and Wilgus, Mitchell L., to Rubbermaid Incorporated. Cutting board and strainer. 361,272, 8-15-95, Cl. D7-698.000.
Crinion, Jonathan, to Westinghouse Electric Corporation. Handle. 361,255, 8-15-95, Cl. D8-301.000.
Cugley, John H. Oar-shaped pen. 361,344, 8-15-95, Cl. D19-42.000.
Culverhouse, Thor R.: *See*—
Chandwick, Paul H.; Ketterer, Scott R.; Culverhouse, Thor R.; and Proebstel, Robert C., 361,288, Cl. D10-78.000.
Curtis, John; Waguespack, Kenneth; and Jousson, Pierre J., to Colgate-Palmolive Company. Toothbrush head. 361,209, 8-15-95, Cl. D4-104.000.
Daniel Roth SA: *See*—
Roth, Daniel, 361,281, Cl. D10-32.000.
deBlois, Bryan: *See*—
Carbone, Richard; and deBlois, Bryan, 361,399, Cl. D26-43.000.
Decker, Goldie L. Ribbon keeper. 361,235, 8-15-95, Cl. D6-553.000.
De Neergaard, Andre ; and Ronjon, Claude, to Societe De Prospection et D'Inventions Techniques SPIT. Electric hammer. 361,252, 8-15-95, Cl. D8-69.000.
Desgrippes, Joel, to Cosmetique Sans Soucis GmbH. Compact. 361,406, 8-15-95, Cl. D28-78.000.
Deutsche Star GmbH: *See*—
Bauer, Siegfried, 361,338, Cl. D15-199.000.
Dickirson, David M.: *See*—
Scheid, William J.; and Dickirson, David M., 361,332, Cl. D14-191.000.
DiSanto, Dennis E. Water dispenser center. 361,239, 8-15-95, Cl. D7-306.000.
Dobson, David T.: *See*—
Brunsell, Robert E.; Kennedy, John P.; and Dobson, David T., 361,382, Cl. 24-177.000.
Douglas, Michael P., to Environamental Steel Products, Inc. Dumpster lid. 361,417, 8-15-95, Cl. D34-11.000.
Doxey, Andre, to Rubbermaid Corporation. Lid for jar. 361,265, 8-15-95, Cl. D9-435.000.
Doyle, Mark C.: *See*—
Sancoff, Gregory E.; Doyle, Mark C.; and Field, Frederic P., 361,379, Cl. D24-111.000.
Dretzka, Phillip C.: *See*—
Mueller, Eric J.; Dretzka, Phillip C.; and Clark, Nancy A., 361,348, Cl. D19-62.000.
Emerson, Ashley C., to Miniature Machine Corp. Adjustable rear sight for a firearm. 361,366, 8-15-95, Cl. D22-109.000.
Emery, Monti D., to Emhart Glass Machinery Investments Inc. Container inspection machine. 361,339, 8-15-95, Cl. D15-199.000.
Emhart Glass Machinery Investments Inc.: *See*—
Emery, Monti D., 361,339, Cl. D15-199.000.
Enthoven, Axel, to American Standard Inc. Design for a lavatory. 361,372, 8-15-95, Cl. D23-293.100.
Environmental Steel Products, Inc.: *See*—
Douglas, Michael P., 361,417, Cl. D34-11.000.
Equip For Independence, Inc.: *See*—
Lipson, Walda B.; and Yardin, Carl, 361,383, Cl. D24-183.000.
Eskimo, Mike, to WSC Windsurfing Chiemsee Produktions und Vertriebs GmbH. Fabric. 361,210, 8-15-95, Cl. D5-64.000.
Fabian, Wolfgang, to American Standard Companies Inc. Faucet. 361,370, 8-15-95, Cl. D23-257.000.
Facer, Phillip D.; and Aoki, Richie. Lock box. 361,384, 8-15-95, Cl. D99-28.000.
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5,440,877
487 5,440,878
502 5,440,879
505.2 5,440,880
512 5,440,881
641.2 5,440,882

CLASS 62

6 5,440,883
22 5,440,884
24 5,440,885
50.2 5,440,886
80.7 5,440,887
5,440,888
63 5,440,889
81 5,440,890
117 5,440,891
135 5,440,892
155 5,440,893
203 5,440,894
223 5,440,895
269 5,440,896
468 5,440,897
474 5,440,898
480 5,440,899

CLASS 63

2 5,440,900

CLASS 65

162 5,441,551

CLASS 66

47 5,440,901
194 5,440,902

CLASS 68

134 5,440,903

CLASS 70

18 5,440,904
208 5,440,905
209 5,440,906
5,440,907
5,440,908
395 5,440,909
456 R 5,440,910

CLASS 71

9 5,441,552

CLASS 72

95 5,440,911
334 5,440,912

CLASS 73

1 D 5,440,913
1 DV 5,440,914
9 5,440,915
23.31 5,440,916
40 5,440,917
40.5 R 5,440,918
40.7 5,440,919
105 5,440,920
117.3 5,440,921
5,440,922
146 5,440,923
204.25 5,440,924
253 5,440,925
259 5,440,926
335.01 5,440,927
382 G 5,440,928
628 5,440,929
644 5,440,930
724 5,440,931
730 5,440,932
756 5,440,933
760 5,440,934
765 5,440,935
861.28 5,440,936
861.29 5,440,937
867.041 Re.35,016
862.191 5,440,938
862.61 5,440,939
864.16 5,440,940
864.64 5,440,941
864.91 5,440,942

CLASS 74

89.15 5,440,943
89.21 5,440,944
117 5,440,945
502.3 5,440,946
527 5,440,947
551.3 5,440,948
574 5,440,949
594.4 5,440,950
606 R 5,440,951
813 L 5,440,952

CLASS 75

230 5,441,553
255 5,441,554
5,441,555
414 5,441,556

CLASS 76

86 5,440,953

CLASS 81

15.9 5,440,954
64 5,440,955
119 5,440,956
124.4 5,440,957

CLASS 83

83 5,440,958
100 5,440,959
168 5,440,960
455 5,440,961

CLASS 84

383 R 5,440,962
602 5,442,125
603 5,442,126
5,442,127
620 5,442,128
637 5,442,129
661 5,442,130

CLASS 89

1.41 5,440,963
34 5,440,964
36.02 5,440,965
46 5,440,966

CLASS 91

471 5,440,967

CLASS 92

6 R 5,440,968
68 5,440,969
121 5,440,970
165 PR 5,440,971

CLASS 95

96 5,441,557
100 5,441,558

CLASS 96

125 5,441,559

CLASS 99

282 5,440,972
425 5,440,973
450.2 5,440,974
483 5,440,975
485 5,440,976

CLASS 100

39 5,440,977
99 5,440,978

CLASS 101

91 5,440,979
123 5,440,980
217 5,440,981
363 5,440,982
410 5,440,983
415.1 5,440,984
423 5,440,986
454 5,440,987
477 5,440,985
5,440,988
486 5,440,989

CLASS 102

215 5,440,990
218 5,440,991
246 5,440,992
374 5,440,993
439 5,440,994
517 5,440,995

CLASS 104

47 5,440,996
283 5,440,997

CLASS 106

18.12 5,441,560
20 C 5,441,561
144 5,441,562
224 5,441,563
417 5,441,564

CLASS 108

51.1 5,440,998

CLASS 109

24.1 5,440,999

CLASS 110

265 5,441,000

CLASS 112

143 5,441,002
259 5,441,003
470.18 5,441,001
475.06 5,441,004

CLASS 114

117 5,441,005
220 5,441,006
230 5,441,007
293 5,441,008
316 5,441,009

CLASS 117

40 5,441,010
84 5,441,011
86 5,441,012
109 5,441,013
213 5,441,014

CLASS 118

24 5,441,565
300 5,441,566
669 5,441,567
715 5,441,568
723 MP 5,441,569
725 5,441,570
730 5,441,571

CLASS 119

723 5,441,016
795 5,441,017

CLASS 123

45 A 5,441,018
73 R 5,441,019
90.16 5,441,020
90.17 5,441,021
179.3 5,441,022
184.57 5,441,023
188.3 5,441,024
198 D 5,441,026
198 DB 5,441,025
446 5,441,027
456 5,441,028
467 5,441,029
491 5,441,030
518 5,441,031
531 5,441,032

CLASS 125

15 5,441,033

CLASS 126

20 5,441,034
21 R 5,441,035
198 5,441,036
258 5,441,037
271.1 5,441,038
388 5,441,039

CLASS 128

207.11 5,441,046
632 5,441,048
635 5,441,049
659 5,441,050
661.08 5,441,051
661.09 5,441,052
664 5,441,053
665 5,441,054
670 5,441,047
772 5,441,055
849 5,441,056
898 5,441,058
5,441,059

CLASS 131

271 5,441,060

CLASS 132

375 5,441,061

CLASS 134

2 5,441,572
8 5,441,573
22.1 5,441,574
40 Re.35,017
122 R 5,441,062
142 5,441,063

CLASS 138

16 5,441,064
24 5,441,065
88.01 5,441,066
96 5,441,067
98 5,441,068
124 5,441,069

CLASS 136

201 5,441,575
203 5,441,576
244 5,441,577

CLASS 137

1 5,441,070
15 5,441,071
101.21 5,441,072
268 5,441,073
375 5,441,074
454.6 5,441,075
486 5,441,076
492.5 5,441,077
624.14 5,441,078
625.46 5,441,080
637.2 5,441,079

CLASS 138

44 5,441,081
112 5,441,082
149 5,441,083

CLASS 139

25 5,441,084
28 5,441,085
196.2 5,441,086
452 5,441,087

CLASS 141

51 5,441,088

CLASS 142

49 5,441,089

CLASS 144

3 D 5,441,090
287 5,441,091
378 5,441,092

CLASS 148

120 5,441,578
233 5,441,579
247 5,441,580
634 5,441,581
693 5,441,582

CLASS 151

454 5,441,093

CLASS 156

71 5,441,583
148 5,441,590
153 5,441,591
175 5,441,584
256 5,441,585
357 5,441,586
406.2 5,441,587
499 5,441,588
542 5,441,589
563 5,441,592
636.1 5,441,094
643.1 5,441,595
5,441,596
645.1 5,441,598
646.1 5,441,599

CLASS 188

370.21 5,441,095

CLASS 192

5 5,441,601
48 5,441,602
57 5,441,603
205 5,441,604

CLASS 164

340 5,441,096

CLASS 165
10 5,441,097
17 5,441,098
41 5,441,099
67 5,441,100
95 5,441,101
104.25 5,441,102
104.29 5,441,103
104.32 5,441,104
133 5,441,105
183 5,441,106
185 5,441,107

CLASS 166
53 5,441,108
300 5,441,109
308 5,441,110
358 5,441,112
387 5,441,111

CLASS 169
5 5,441,113
14 5,441,114

CLASS 172
15 5,441,115
101 5,441,116
272 5,441,117
378 5,441,118

CLASS 174
15.6 5,442,131
48 5,442,132
51 5,442,133
52.4 5,442,134
68.2 5,442,135
95 5,442,136
125.1 5,442,137
131 F 5,442,138
131 R 5,442,139
131 5,442,140
153 G 5,442,141
250 5,442,142
262 5,442,143
266 5,442,144
267 5,442,145

CLASS 175
74 5,441,119
228 5,441,120
417 5,441,121

CLASS 177
210 FP 5,442,146

CLASS 178
18 5,442,147

CLASS 180
63.2 5,441,122
68.5 5,441,123
257 5,441,124

CLASS 181
235 5,442,148

CLASS 182
82 5,441,125
106 5,441,126

CLASS 187
292 5,441,127

CLASS 188
1.11 5,441,128
67 5,441,129
82.84 5,441,130
180 5,441,131
315 5,441,132
322.15 5,441,133

CLASS 190
111 5,441,134

CLASS 192
3.29 5,441,135
13 R 5,441,136
35 5,441,137

CLASS 194
345 5,441,138
347 5,441,139

CLASS 198
333 5,441,140
370.03 5,441,141
464.3 5,441,143
492 5,441,142
499 5,441,144
705 5,441,145
803.01 5,441,146

CLASS 200
5 R 5,442,149
181 5,442,150
302.2 5,442,151
345 5,442,152
176 5,441,605

CLASS 203
5,441,606
49 5,441,607
51 5,441,608
B1 5,104,493

CLASS 204
5,441,609
129 5,441,610
153.13 5,441,611
157.15 5,441,612
180.1 5,441,613
192.12 5,441,614
5,441,615
192.13 5,441,616
192.18 5,441,617
203 5,441,618
206 5,441,619
231 5,441,620
252 5,441,621
275 5,441,622
298.09 5,441,623
298.41 5,441,624
409 5,441,625

50 5,441,626
77 5,441,627
101 5,441,628
148 5,441,629

CLASS 206
150 5,441,147
5,441,148
214 5,441,149
425 5,441,151
570 5,441,152
581 5,441,153
599 5,441,154
707 5,441,150

CLASS 208
216 FP 5,441,630

CLASS 209
10 5,441,155
166 5,441,156
271 5,441,157
583 5,441,158
584 5,441,159
702 5,441,160

CLASS 210
108 5,441,631
170 5,441,632
193 5,441,633
194 5,441,634
198.2 5,441,635
232 5,441,636
242.1 5,441,637
243 5,441,638
607 5,441,639
611 5,441,640
614 5,441,641
635 5,441,642
651 5,441,643
656 5,441,644
683 5,441,645
695 5,441,646
5,441,647
735 5,441,648
767 5,441,649
780 5,441,650
5,441,651

CLASS 211
57.1 5,441,161
153 5,441,162

CLASS 216
2 5,441,597
27 5,441,593
51 5,441,600

CLASS 219
121.47 5,442,153
121.62 5,442,154
130.01 5,442,155
243 5,442,156
492 5,442,157
542 5,442,158
633 5,442,159
690 5,442,160
756 5,442,161
23.86 5,441,163
306 5,441,166
334 5,441,167
378 5,441,168
428 5,441,169
462 5,441,170
575 5,441,164

CLASS 221
2 5,441,165

CLASS 222
3 5,441,171
52 5,441,172
63 5,441,173
105 5,441,174
137 5,441,175
163 5,441,176
167 5,441,177
182 5,441,178
190 5,441,179
327 5,441,180
389 5,441,181

CLASS 223
85 5,441,182

CLASS 224
151 5,441,184
5,441,185
159 5,441,186
243 5,441,187
264 5,441,188
342 5,441,183

CLASS 225
2 5,441,189

CLASS 226
18 5,441,190

CLASS 227
120 5,441,191
130 5,441,192
176 5,441,193

CLASS 228
6.2 5,441,194
180.22 5,441,195
222 5,441,196
248.1 5,441,197

CLASS 229
102 5,441,198
117.25 5,441,199

CLASS 235
381 5,442,162
5,442,163
463 5,442,164
492 5,442,165

CLASS 236
12.12 Re.35,018

CLASS 239
2.1 5,441,200
75 5,441,201
267 5,441,202
574 5,441,203
708 5,441,204

CLASS 241
41 5,441,205
81 5,441,206

CLASS 242
18 DD 5,441,207
125.1 5,441,208
384 5,441,209
421.1 5,441,210
526.1 5,441,211
532 5,441,212
534.2 5,441,213
552 5,441,214
580 5,441,215
805 5,441,216

CLASS 244
114 R 5,441,217
118.1 5,441,218
135 R 5,441,219
159 5,441,221
165 5,441,222

CLASS 246
4 5,441,223

CLASS 248
74.2 5,441,224
154 5,441,220
231.6 5,441,225
231.8 5,441,226
274 5,441,227
441.1 5,441,228
452 5,441,229

CLASS 250
201.1 5,442,166
201.2 5,442,167
221 5,442,168
227.21 5,442,169
229 5,442,170
235 5,442,171
237 G 5,442,172
260 5,442,173
282 5,442,174
288 5,442,175
338.4 5,442,176
342 5,442,177
351 5,442,178
363.02 5,442,179
367 5,442,180
368 5,442,181
396 ML 5,442,182
441.11 5,442,183
442.2 5,442,184
492.21 5,442,185
506.1 5,442,186
548 5,442,187
559.42 5,442,189
566 5,442,188
573 5,442,190

CLASS 251
5 5,441,231
129.05 5,441,232
129.15 5,441,233
144 5,441,234
368 5,441,235

CLASS 252
18 5,441,652
34 5,441,653
49.3 5,441,654
49.9 5,441,655
51.5 R 5,441,656
62 5,441,657
67 5,441,658
5,441,659
95 5,441,660
5,441,661
108 5,441,662
5,441,663
117 5,441,664
142 5,441,665
170 5,441,666
174.15 5,441,667
299.01 5,441,668
385 5,441,669
520 5,441,670
549 5,441,671
550 5,441,672

CLASS 254
26 E 5,441,236
93 HP 5,441,237
95 5,441,238

CLASS 256
1 5,441,239
24 5,441,240
65 5,441,241

CLASS 257
1 5,442,191
10 5,442,192
5,442,193
29 5,442,194
36 5,442,195
5,442,196
40 5,442,197
64 5,442,198
77 5,442,199
5,442,200
86 5,442,201
94 5,442,202
97 5,442,203
103 5,442,204
191 5,442,205
207 5,442,206
221 5,442,207
223 5,442,208
270 5,442,209
296 5,442,210
301 5,442,211
303 5,442,212
310 5,442,213
328 5,442,214
352 5,442,215
355 5,442,216
361 5,442,217
369 5,442,218
370 5,442,219
378 5,442,220
425 5,442,221
506 5,442,222
5,442,223
536 5,442,224
538 5,442,225
557 5,442,226
628 5,442,227
659 5,442,228
666 5,442,229
5,442,230
668 5,442,231
675 5,442,232
5,442,233
5,442,234
755 5,442,235
5,442,236
759 5,442,237
774 5,442,238
781 5,442,239
783 5,442,240
784 5,442,241

CLASS 261
34.1 5,441,673

CLASS 264
25 5,441,674
5,441,675
5,441,676
31 5,441,677
36 5,441,678
39 5,441,679
40.1 5,441,680
56 5,441,681
82 5,441,682
105 5,441,683
135 5,441,684
148 5,441,685
152 5,441,686
167 5,441,687
5,441,688
179 5,441,689
277 5,441,690
504 5,441,691
571 5,441,692

CLASS 266
251 5,441,242

CLASS 267
136 5,441,243

CLASS 270
45 5,441,244
57 5,441,245

CLASS 271
9.11 5,441,246
10.04 5,441,247
12 5,441,248
34 5,441,253
107 5,441,249
121 5,441,250
145 5,441,251
290 5,441,252
299 5,441,254

CLASS 273
26 R 5,441,255
32 R 5,441,257
73 D 5,441,258
77 A 5,441,256
143 R 5,441,259
153 R 5,441,260
157 R 5,441,261
5,441,262
167 A 5,441,263
167 H 5,441,264
176 H 5,441,265
5,441,266
177 R 5,441,267
186.2 5,441,268
5,441,269
187.2 5,441,270
187.4 5,441,271
5,441,272
187.5 5,441,273
191 A 5,441,274
232 5,441,275
249 5,441,276
296 5,441,277
309 5,441,278
410 5,441,279
5,441,280

CLASS 277
70 5,441,281
85 5,441,282
96.1 5,441,283

CLASS 279
2.02 5,441,284

CLASS 280
10 5,441,285
11.28 5,441,287
33.991 5,441,288
87.051 5,441,289
127 5,441,286
259 5,441,290
276 5,441,291
284 5,441,292
432 5,441,293
491.4 5,441,294
507 5,441,295
602 5,441,296
655 5,441,297
707 5,441,298
728.2 5,441,299
735 5,441,300
5,441,301
736 5,441,302
738 5,441,303
806 5,441,304
809 5,441,305
819 5,441,306
823 5,441,307

CLASS 281
21.1 5,441,308

CLASS 283
58 5,441,309

CLASS 285
18 5,441,310
5,441,311
23 5,441,312
93 5,441,313
211 5,441,314

CLASS 292
201 5,441,315
320 5,441,316
336.3 5,441,317
5,441,318

CLASS 293
155 5,441,319

CLASS 294
31.2 5,441,320
68.21 5,441,321
90 5,441,322
158 5,441,323

CLASS 296
26 5,441,324
97.2 5,441,325
208 5,441,326

CLASS 297
195.1 5,441,327
284.9 5,441,328
344.21 5,441,329
383 5,441,330
452.33 5,441,331
483 5,441,332

CLASS 298
495 5,441,230

CLASS 300
21 5,441,333

CLASS 301
37.1 5,441,334

CLASS 303
3 5,441,335
116.1 5,441,336

CLASS 307
10.1 5,442,242
5,442,244
10.5 5,442,243

CLASS 310
67 R 5,442,247
71 5,442,248
91 5,442,249
186 5,442,250
321 5,442,251

CLASS 312
265.5 5,441,337
408 5,441,338

CLASS 313
111 5,442,252
422 5,442,253
485 5,442,254
495 5,442,255
496 5,442,256

CLASS 315
129 5,442,257
5,442,258
169.4 5,442,259
241 P 5,442,260
307 5,442,261
371 5,442,262
382.1 5,442,263

CLASS 318
77 5,442,265
272 5,442,266
280 5,442,267
432 5,442,268
568.11 5,442,269
568.22 5,442,270
729 5,442,271
778 5,442,272
799 5,442,273

CLASS 320
23 5,442,274
39 5,442,275

CLASS 322
25 5,442,276

CLASS 323
312 5,442,277

CLASS 324
76.41 5,442,278
107 5,442,279
127 5,442,280
137 5,442,281
158.1 5,442,282
207.2 5,442,283
220 5,442,284
227 5,442,285
242 5,442,286
5,442,287
244 5,442,288
248 5,442,289
309 5,442,290
322 5,442,291
5,442,292
332 5,442,293
339 5,442,294
537 5,442,295
601 5,442,296
611 B1 4,295,091
702 5,442,297
724 5,442,298
758 5,442,299
762 5,442,300
763 5,442,301
765 5,442,302

CLASS 326
14 5,442,303
17 5,442,304
30 5,442,305
38 5,442,246
39 5,442,306
81 5,442,307
108 5,442,308

CLASS 327
5,442,309
143 5,442,310
159 5,442,315
198 5,442,312
306 5,442,311
355 5,442,313
543 5,442,314

CLASS 330
2 5,442,316
10 5,442,317
253 5,442,318
261 5,442,319
267 5,442,320
282 5,442,321
285 5,442,322
292 5,442,323

CLASS 331
34 5,442,324
57 5,442,325
94.1 5,442,326

CLASS 332
103 5,442,327

CLASS 333
18 5,442,328
21 R 5,442,329
204 5,442,330

CLASS 340
444 5,442,331
467 5,442,332
5,442,333
572 5,442,334
828 5,442,336
635 5,442,337
815.64 5,442,338
825.16 5,442,339
825.22 5,442,340
825.31 5,442,341
825.34 5,442,342
825.35 5,442,343
5,442,344
825.46 5,442,345
825.57 5,442,346
825.71 5,442,335
870.37 5,442,347
932.2 5,442,348
995 5,442,349

CLASS 341
51 5,442,350
5,442,351
136 5,442,352
143 5,442,353
5,442,354
145 5,442,355

CLASS 342
46 5,442,356
51 5,442,357
54 5,442,358
109 5,442,359
120 5,442,360
128 5,442,361
176 5,442,362
357 5,442,363
372 5,442,364
381 5,442,365

CLASS 343
700 MS 5,442,366
5,442,367
713 5,442,368
742 5,442,369

CLASS 348
94 5,442,370
98 5,442,371
5,442,372
104 5,442,373
110 5,442,374
147 5,442,375
156 5,442,376
165 5,442,377
168 5,442,378
199 5,442,379

CLASS 346
14 MR 5,442,380
136 5,442,382

CLASS 347
18 L 5,442,381
19 5,442,383
20 5,442,384
43 5,442,385
50 5,442,386
88 5,442,387
116 5,442,388

CLASS 348
7 5,442,389
5,442,390
190 5,442,391
239 5,442,392
252 5,442,393
264 5,442,394
312 5,442,395
322 5,442,396
363 5,442,397
385 5,442,398
394 5,442,399
402 5,442,400
405 5,442,401
416 5,442,402
432 5,442,403
441 5,442,460
448 5,442,404
525 5,442,405
588 5,442,406
620 5,442,407
655 5,442,408
699 5,442,409
704 5,442,410
771 5,442,411

CLASS 351
223 5,442,412

CLASS 353
69 5,442,413
98 5,442,414
119 5,442,415

CLASS 354
319 5,442,416
402 5,442,417

CLASS 355
53 5,442,418
74 5,442,419
5,442,420
211 5,442,421
215 5,442,422
5,442,423
244 5,442,424
251 5,442,425
256 5,442,426
5,442,427
271 5,442,428
273 5,442,429
298 5,442,430
311 5,442,431
324 5,442,432

CLASS 356
71 5,442,433
73.1 5,442,434
135 5,442,435
153 5,442,436
246 5,442,437
301 5,442,438
328 5,442,439
5,442,440
350 5,442,441
5,442,442
376 5,442,443
5,442,444
401 5,442,445
428 5,442,446
429 5,442,447
445 5,442,448
149 5,442,583
5,442,584
153 5,442,530
403 5,442,545
5,442,571
419.08 5,442,546
5,442,547
420 5,442,548
424.01 5,442,549
424.03 5,442,551
424.04 5,442,553
424.05 5,442,554
424.07 5,442,552
424.1 5,442,550
431.01 5,442,555
433 5,442,556
449 5,442,557
5,442,558
453 5,442,559
468 5,442,560
5,442,561
5,442,562
470 5,442,563
474.02 5,442,564
478 5,442,565
479 5,442,567
5,442,568
500 5,442,570
560 5,442,572
563 5,442,573
571.01 5,442,574
578 5,442,569
602 5,442,575
715.08 5,442,576
716 5,442,577
736 5,442,580
746.1 5,442,578
760 5,442,579
764 5,442,581
825 5,442,582
841 5,442,583

CLASS 365
149 5,442,584
5,442,585
185 5,442,586
200 5,442,587
222 5,442,588
225.7 5,442,589

CLASS 366
3 5,441,340
47 5,441,341
76.7 5,441,342

CLASS 367
15 5,442,590
21 5,442,591
124 5,442,592
135 5,442,593
162 5,442,594
181 5,442,595

CLASS 368
13 5,442,596
5,442,597
32 5,442,598
5,442,603
44.11 5,442,604
44.14 5,442,605
44.15 5,442,606
44.25 5,442,607
44.27 5,442,608
44.280 5,442,609
47 5,442,610
48 5,442,611
49 5,442,612
54 5,442,613
58 5,442,614
100 5,442,615
112 5,442,616
134 5,442,617
5,442,618
273.2 5,442,619

CLASS 370
15 5,442,621
16 5,442,622
16.1 5,442,620
5,442,623
17 5,442,624
18 5,442,625
20 5,442,626
22 5,442,627
56 5,442,628
84 5,442,629
85.13 5,442,630
85.14 5,442,631
94.1 5,442,632
95.1 5,442,634
5,442,635
108 5,442,636

CLASS 371
5.5 5,442,637
20.1 5,442,639
21.1 5,442,640
21.2 5,442,641
22.5 5,442,642
5,442,643
25.1 5,442,645
43 5,442,646
53 5,442,647

CLASS 372
38 5,442,648
46 5,442,649
96 5,442,650
97 5,442,651

CLASS 374
137 5,441,343
141 5,441,344

CLASS 375
200 5,442,652
202 5,442,659
5,442,660
205 5,442,661
5,442,662
119 5,442,653
224 5,442,654
229 5,442,663
340 5,442,655
354 5,442,656
356 5,442,658
371 5,442,664

CLASS 376
245 5,442,665
272 5,442,666
294 5,442,667
367 5,442,668

CLASS 377
20 5,442,669
48 5,442,670
55 5,442,671

CLASS 378
4 5,442,672
10 5,442,673
20 5,442,674
65 5,442,675
72 5,442,676
102 5,442,677
137 5,442,678

CLASS 379
34 5,442,679
58 5,442,680
59 5,442,681
5,442,682
60 5,442,683
61 5,442,684
88 5,442,685
5,442,686
96 B1 4,571,456
100 5,442,687
156 5,442,688
301 5,442,689
307 5,442,690
320 5,442,691
253 5,442,692
308 5,442,693
373 5,442,694
375 5,442,695
386 5,442,696
399 5,442,697
418 5,442,698

CLASS 380
4 5,442,699
15 5,442,700
20 5,442,701
21 5,442,703
23 5,442,702
5,442,704
29 5,442,705
30 5,442,706
5,442,707
49 5,442,708

CLASS 381
4 5,442,709
24 5,442,710
51 B1 5,081,681
63 5,442,711
83 5,442,712
168 5,442,713

CLASS 382
5,442,714
144 5,442,716
162 5,442,717
166 5,442,718
181 5,442,716
187 5,442,715

CLASS 385
9 5,441,345
127 5,441,348

CLASS 204
43 5,441,346
122 5,441,347
276 5,441,349
447 5,441,350
568 5,441,351

CLASS 205
3 5,442,719
13 Re.35,020
16 5,442,720
26 5,442,721
114 5,442,722
129 5,442,723
136 5,442,724
135 5,442,725
5,442,726

CLASS 392
416 5,442,727

CLASS 395
2.79 5,442,728
2.8 5,442,729
22 5,442,730
34 5,442,731
116 5,442,732
124 5,442,733
127 5,442,734
133 5,442,735
134 5,442,736
135 5,442,737
5,442,738
138 5,442,739
140 5,442,740
142 5,442,741
146 5,442,742
148 5,442,743
134 5,442,744
155 5,442,745
161 5,442,746
164 5,442,747
5,442,748
182.04 5,442,638
182.18 5,442,777
184.01 5,442,644
200 B 5,442,750
200.08 5,442,802
200.09 5,442,749
250 5,442,751
310 5,442,769
325 5,442,754
5,442,755
375 5,442,756
5,442,757
5,442,758
5,442,759
5,442,760
5,442,761
5,442,762
5,442,763
801 5,442,767
403 5,442,770
404 5,442,752
414 5,442,766
430 5,442,768
500 5,442,772
550 5,442,773
5,442,774
5,442,775
5,442,776
600 5,442,765
5,442,778
5,442,779
5,442,780
5,442,781
5,442,782
5,442,783
5,442,784
5,442,786
650 5,442,771
5,442,788
5,442,789
5,442,791
658 5,442,785
700 5,442,764
5,442,790
5,442,792
5,442,793
750 5,442,794
800 5,442,795
5,442,796
5,442,797
5,442,799
5,442,800
5,442,801
842 5,442,753

CLASS 400
5,442,352
621 5,441,353
636.1 5,441,353

636.3 5,441,354

CLASS 401

7 5,441,355
247 5,441,356

CLASS 402

75 5,441,357

CLASS 403

30 5,441,358

CLASS 404

6 5,441,359
77 5,441,360
90 5,441,361

CLASS 405

16 5,441,362
49 5,441,363
119 5,441,364
128 5,441,365
129 5,441,366
186 5,441,367
211 5,441,368

CLASS 407

113 5,441,370

CLASS 409

81 5,441,369

CLASS 410

100 5,441,371

CLASS 411

60 5,441,372
442 5,441,373

CLASS 412

11 5,441,374
19 5,441,375

CLASS 414

401 5,441,376
437 5,441,377
458 5,441,378
494 5,441,379
788.7 5,441,380
790.3 5,441,381
798.9 5,441,382

CLASS 415

158 5,441,383
161 5,441,384
209.2 5,441,385
230 5,441,386

CLASS 416

5 5,441,387
125 5,441,388

CLASS 417

359 5,441,390
362 5,441,391
412 5,441,389
479 5,441,392

CLASS 419

1 5,441,537
10 5,441,693
37 5,441,695
57 5,441,694

CLASS 420

469 5,441,696
528 5,441,697

CLASS 422

58 5,441,698
63 5,441,699
5,441,701
83 5,441,700
100 5,441,702
129 5,441,703
145 5,441,704
186 5,441,705
174 5,441,706
264 5,441,711
292 5,441,708
297 5,441,709
300 5,441,707
307 5,441,710

CLASS 423

99 5,441,712
235 5,441,713
5,441,714
249 5,441,715
299 5,441,716
306 5,441,717
338 5,441,718
351 5,441,719
386 5,441,720
706 5,441,721

CLASS 424

47 5,441,723
59 5,441,724
5,441,725

65 5,441,726
5,441,727
70.11 5,441,728
5,441,730
70.2 5,441,729
78.04 5,441,732
5,441,733
78.1 5,441,731
85.7 5,441,734
93.2 5,441,735
111 5,441,722
100.1 5,441,736
193.1 5,441,737
195.1 5,441,738
400 5,441,739
401 5,441,740
402 5,441,741
405 5,441,742
407 5,441,743
440 5,441,744
450 5,441,745
5,441,746
465 5,441,747
478 5,442,008
577 B1 5,130,144
686 5,441,748

CLASS 425

88.1 5,441,393
71 5,441,394
72.1 5,441,395
73 5,441,396
116 5,441,397
183 5,441,398
556 5,441,399
562 5,441,400

CLASS 426

3 5,441,749
5,441,750
27 5,441,751
82 5,441,752
96 5,441,753
483 5,441,754
502 5,441,755
556 5,441,756
589 5,441,757
637 5,441,758

CLASS 427

2.27 5,441,536
2.3 5,441,759
138 5,441,760
146 5,441,761
190 5,441,762
195 5,441,763
226 5,441,764
228 5,441,765
250 5,441,766
252 5,441,767
255.7 5,441,768
282 5,441,769
306 5,441,770
386 5,441,771
388.1 5,441,772
388.4 5,441,773
476 5,441,774
496 5,441,775

CLASS 428

1 5,441,776
11 5,441,777
13 5,441,778
34 5,441,779
34.2 5,441,780
35.7 5,441,781
36.9 5,441,782
37 5,441,783
40 5,441,784
41 5,441,785
50 5,441,786
57 5,441,787
65.6 5,441,788
78 5,441,789
100 5,441,790
162 5,441,791
170 5,441,792
192 5,441,793
195 5,441,794
5,441,795
5,441,796
209 5,441,797
220 5,441,803
229 5,441,798
312.6 5,441,799
323 5,441,800
326 5,441,801
327 5,441,802
336 5,441,804
339 5,441,805
349 5,441,806
5,441,807
354 5,441,808
5,441,809
355 5,441,810
5,441,811

359 5,441,812
375 5,441,813
457 5,441,814
473.5 5,441,815
520 5,441,816
551 5,441,817
5,441,818

CLASS 429

13 5,441,819
17 5,441,820
5,441,821
34 5,441,822
42 5,441,823
53 5,441,824
66 5,441,825
101 5,441,826
111 5,441,827
121 5,441,828
158 5,441,829
212 5,441,830
213 5,441,831
218 5,441,832
223 5,441,833

CLASS 430

5 5,441,834
5,441,835
5,441,836
58 5,441,837
97 5,441,838
108 5,441,839
109 5,441,840
115 5,441,841
138 5,441,843
167 5,441,844
191 5,441,845
259 5,441,846
264 5,441,847
269 5,441,848
296 5,441,849
336 5,441,850
372 5,441,851
5,441,852
5,441,853
376 5,441,854
503 5,441,855
504 5,441,856
506 5,441,857
508 5,441,858
522 5,441,859
537 5,441,860
551 5,441,861
5,441,862
558 5,441,863
567 5,441,864
569 5,441,865
619 5,441,866

CLASS 431

4 5,441,401
7 5,441,402
175 5,441,403
187 5,441,404
286 5,441,405

CLASS 432

8 B1 4,941,819
15 5,441,406
246 5,441,407

CLASS 433

8 5,441,408
23 5,441,409
93 5,441,410

CLASS 434

34 5,441,411
85 5,441,418
100 5,441,412
275 5,441,413
307 R 5,441,414
350 5,441,415

CLASS 435

6 5,441,867
7.1 5,441,869
5,441,870
7.23 5,441,871
25 5,441,872
34 5,441,873
47 5,441,874
69.1 5,441,875
69.4 5,441,868
131 5,441,876
176 5,441,877
178 5,441,878
188 5,441,879
193 5,441,880
199 5,441,881
222 5,441,882
252.1 5,441,886
252.31 5,441,884
252.34 5,441,885
257.13 5,441,883
262.5 5,441,887
280 5,441,888

320.1 5,441,889

CLASS 436

35 5,441,890
48 5,441,891
69 5,441,892
144 5,441,893
518 5,441,894
5,441,895
525 5,441,896

CLASS 437

5 5,441,897
15 5,441,898
24 5,441,899
5,441,900
31 5,441,901
34 5,441,902
5,441,903
40 5,441,904
41 5,441,905
5,441,906
48 5,441,907
52 5,441,908
5,441,909
53 5,441,910
100 5,441,911
129 5,441,912
133 5,441,913
189 5,441,914
195 5,441,915
5,441,916
5,441,917
109 5,441,918

CLASS 439

32 5,441,416
84 5,441,417
86 5,441,419
157 5,441,420
284 5,441,421
395 5,441,422
567 5,441,423
581 5,441,424
620 5,441,425
681 5,441,426
686 5,441,427
843 5,441,428
876 5,441,429
5,441,430

CLASS 440

88 5,441,431
89 5,441,432

CLASS 441

130 5,441,433

CLASS 446

5,441,434
424 5,441,435

CLASS 430

93 5,441,436

CLASS 451

1 5,441,437
3 5,441,438
28 5,441,439
5,441,440
36 5,441,441
63 5,441,442
72 5,441,449
91 5,441,443
289 5,441,444
357 5,441,450

CLASS 452

133 5,441,445

CLASS 453

32 5,441,447
60 5,441,448

CLASS 454

313 5,441,451

CLASS 455

15 5,442,803
33.1 5,442,804
5,442,805
5,442,806
5,442,807
41 5,442,808
54.1 5,442,809
66 5,442,810
67.3 5,442,811
82 5,442,812
89 5,442,813
5,442,814

CLASS 464

61 5,441,452
180 5,441,453

CLASS 472

129 5,441,454

CLASS 473

20 5,441,455

CLASS 474

94 5,441,456
110 5,441,457
189 5,441,458

CLASS 476

127 5,441,459
149 5,441,460
252 5,441,461

CLASS 477

74 5,441,462
79 5,441,463
109 5,441,464

CLASS 482

39 5,441,465
52 5,441,466
54 5,441,467
5,441,468
72 5,441,469
96 5,441,470
106 5,441,471
118 5,441,472
130 5,441,473

CLASS 485

55 5,441,474

CLASS 494

40 5,441,475

CLASS 501

80 5,441,919

CLASS 502

103 5,441,920

CLASS 505

227 5,441,921

CLASS 504

104 5,441,922
125 5,441,923
225 5,441,924
243 5,441,925

CLASS 505

193 5,441,926

CLASS 507

138 5,441,927
225 5,441,928
260 5,441,929

CLASS 512

13 5,441,930

CLASS 514

2 5,441,931
II 5,441,932
12 5,441,933
5,441,934
15 5,441,935
16 5,441,936
21 5,441,937
23 5,441,938
29 5,441,939
31 5,441,940
43 5,441,941
45 5,441,942
54 5,441,943
55 5,441,982
58 5,441,944
80 5,441,945
114 5,441,946
179 5,441,947
183 5,441,948
210 5,441,949
211 5,441,950
213 5,441,951
221 5,441,952
233.5 5,441,953
241 5,441,954
250 5,441,955
252 5,441,957
253 5,441,958
259 5,441,959
269 5,441,960
288 5,441,961
309 5,441,962
311 5,441,963
324 5,441,964
5,441,965
5,441,966
326 5,441,967
338 5,441,968
5,441,969
340 5,441,970
342 5,441,971
5,441,972
343 5,441,973
365 5,441,974
406 5,441,975
416 5,441,976
411 5,441,977
460 5,441,978
515 5,441,979
531 5,441,980
544 5,441,981
562 5,441,983
595 5,441,984
646 5,441,985
648 5,441,986
691 5,441,987
715 5,441,988
772 5,441,989

CLASS 518

703 5,441,990

CLASS 521

35 5,441,991
131 5,441,992
174 5,441,993

CLASS 523

281 5,441,994
404 5,441,995
416 5,441,996

CLASS 524

81 5,442,002
104 5,442,003
140 5,442,004
147 5,441,997
270 5,441,998
271 5,441,999
276 5,442,005
291 5,442,000
292 5,442,001
457 5,442,006
555 5,442,007
5,442,009
588 5,442,010
873 5,442,011

CLASS 525

71 5,442,012
309 5,442,013
330.2 5,442,014
340 5,442,015
415 5,442,016

CLASS 526

62 5,442,017
65 5,442,018
82 5,442,019
127 5,442,020
241 5,442,021
309 5,442,022
320 5,442,023

CLASS 528

12 5,442,024
15 5,442,025
5,442,026
18 5,442,027
44 5,442,028
60 5,442,034
90 5,442,035
296 5,442,036
301 5,442,037
328 5,442,029
353 5,442,030
5,442,031
354 5,442,032
5,442,033
363 5,442,038
422 5,442,039
482 5,442,040
483 5,442,041
502 5,442,042

CLASS 530

303 5,442,043
331 5,442,044
391.3 5,442,045

CLASS 536

4.1 5,442,046
13.6 5,442,047
20 5,442,048
23.7 5,442,050
24.1 5,442,052
24.5 5,442,049
28.9 5,442,051
55.1 5,442,053
84 5,442,054

CLASS 540

200 5,442,055
302 5,442,056
5,442,057
314 5,442,058

CLASS 544

63 5,442,059
106 5,442,060
216 5,442,061
234 5,442,062

333 5,442,063
360 5,442,064

CLASS 346

14 5,442,065
16 5,442,066
25 5,442,067
133 5,442,068
156 5,442,070
207 5,442,071
345 5,442,072

CLASS 348

166 5,442,074
201 5,442,073
316.4 5,442,075
333.5 5,442,076
453 5,442,077

CLASS 349

23 5,442,078
306 5,442,079

CLASS 352

8 5,442,080

CLASS 354

26 5,442,081

149 5,442,082

CLASS 336

434 5,442,083

CLASS 358

141 5,442,084
142 5,442,085
401 5,442,086

CLASS 360

12 5,442,087
5,442,088
20 5,442,089
25 5,442,090
33 5,442,091
65 5,442,092
82 5,442,093
189 5,442,094
170 5,442,095
190 5,442,096
227 5,442,097
256 5,442,098
302 5,442,099

CLASS 362

7 5,442,100
10 5,442,101

13 5,442,102
416 5,442,103
430 5,442,104
507 5,442,105
512 5,442,106
519 5,442,107
532 5,442,108
583 5,442,109
621 5,442,110
623 5,442,111
1097 5,442,112

CLASS 364

2 5,442,113
142 5,442,114
200 5,442,115
222 5,442,116
304 5,442,117
356 5,442,118
374 5,442,119
375 5,442,120
398 5,442,121
426 5,442,122

CLASS 368

26 5,442,123
322 5,442,124

CLASS 600

9 5,441,495
26 5,441,476
106 5,441,041
109 5,441,043
234 5,441,044
236 5,441,040
5,441,045

CLASS 601

16 5,441,477
109 5,441,042
137 5,441,478

CLASS 602

18 5,441,479
28 5,441,015
36 5,441,480

CLASS 604

20 B1 5,019,034
29 5,441,481
35 5,441,482
95 5,441,483
96 5,441,484
101 5,441,485
167 5,441,486
5,441,487
265 5,441,488
280 5,441,489
289 5,441,490
304 5,441,491
378 5,441,492
394 5,441,493

CLASS 606

1 5,441,494
15 5,441,496
5,441,497
5,441,498
45 5,441,499
67 5,441,500
85 5,441,501
104 5,441,502
115 5,441,503
129 5,441,504
130 5,441,505
133 5,441,506
139 5,441,507
151 5,441,508
5,441,509
159 5,441,510
166 5,441,511
169 5,441,512
185 5,441,513
188 5,441,514
194 5,441,515
198 5,441,516
213 5,441,517

CLASS 607

5 5,441,518
5,441,519
6 5,441,520
5,441,521
9 5,441,522
14 5,441,523
18 5,441,524
23 5,441,525
51 5,441,527
69 5,441,528
82 5,441,529
88 5,441,530
90 5,441,531
101 5,441,532
104 5,441,533
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01 :	Re.35,018	5,440,959	5,441,509	5,442,368	5,442,700	5,440,805
	5,441,472	5,440,993	5,441,510	5,442,282	5,442,706	5,440,808
	5,441,643	5,441,017	5,441,513	5,442,289	5,442,719	5,440,909
	5,442,697	5,441,032	5,441,515	5,442,290	5,442,720	5,440,910
02 :	5,441,021	5,441,033	5,441,544	5,442,291	5,442,729	5,440,931
04 :	5,440,776	5,441,048	5,441,546	5,442,304	5,442,742	5,441,044
	5,440,787	5,441,058	5,441,560	5,442,305	5,442,744	5,441,063
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	5,440,920	5,441,094	5,441,575	5,442,336	5,442,747	5,441,193
	5,440,947	5,441,102	5,441,589	5,442,342	5,442,748	5,441,249
	5,440,991	5,441,107	5,441,591	5,442,350	5,442,749	5,441,261
	5,441,049	5,441,118	5,441,596	5,442,375	5,442,754	5,441,606
	5,441,069	5,441,124	5,441,606	5,442,384	5,442,756	5,441,621
	5,441,095	5,441,129	5,441,613	5,442,386	5,442,757	5,441,671
	5,441,163	5,441,148	5,441,634	5,442,427	5,442,759	5,441,729
	5,441,202	5,441,150	5,441,684	5,442,437	5,442,775	5,441,761
	5,441,622	5,441,164	5,441,690	5,442,441	5,442,778	5,441,939
	5,441,901	5,441,168	5,441,698	5,442,442	5,442,779	5,441,986
	5,441,906	5,441,184	5,441,714	5,442,457	5,442,782	5,442,016
	5,442,192	5,441,195	5,441,739	5,442,478	5,442,788	5,442,044
	5,442,193	5,441,210	5,441,740	5,442,493	5,442,792	5,442,088
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	5,442,467	5,441,309	5,441,882	5,442,563		5,441,217		5,441,252
	5,442,491	5,441,318	5,441,898	5,442,565		5,441,297		5,441,919
	5,442,671	5,441,320	5,441,900	5,442,577		5,441,523		5,441,923
	5,442,738	5,441,323	5,441,917	5,442,579		5,441,639		5,442,011
05 :	5,440,833	5,441,333	5,441,936	5,442,580		5,441,760		5,442,030
06 :	Re.35,016	5,441,343	5,441,942	5,442,582		5,441,892		5,442,639
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August 22, 1995 Volume 1177 Number 4

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1175 O.G. 52, on June 20, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1174 O.G. 57, on May 9, 1995.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective June 20, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1722.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

May 30, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 18, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,138,714 through 5,140,706
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 16, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,763,362 through 4,764,984
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 14, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,464,795 through 4,466,134
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 14, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,043	06/641,188	12/03/85
(4,387,995)	(06/261,579)	(06/14/83)
Re. 32,747	06/880,946	09/13/88
(4,388,509)	(06/338,900)	(06/14/83)
4,387,484	06/240,709	06/14/83
4,387,486	06/283,828	06/14/83
4,387,489	06/346,204	06/14/83
4,387,494	06/267,167	06/14/83
4,387,502	06/251,352	06/14/83
4,387,505	06/293,612	06/14/83
4,387,506	06/271,836	06/14/83
4,387,509	06/293,561	06/14/83
4,387,520	06/222,599	06/14/83
4,387,523	06/222,003	06/14/83
4,387,535	06/328,200	06/14/83
4,387,536	06/281,686	06/14/83
4,387,556	06/241,217	06/14/83
4,387,560	06/220,541	06/14/83
4,387,561	06/220,542	06/14/83
4,387,572	06/261,585	06/14/83
4,387,578	06/255,673	06/14/83
4,387,584	06/312,947	06/14/83
4,387,595	06/250,665	06/14/83
4,387,596	06/231,217	06/14/83
4,387,614	06/265,890	06/14/83
4,387,616	06/222,595	06/14/83
4,387,630	06/386,309	06/14/83
4,387,631	06/262,301	06/14/83
4,387,646	06/287,875	06/14/83
4,387,653	06/308,868	06/14/83
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4,387,660	06/281,988	06/14/83
4,387,661	06/312,842	06/14/83
4,387,668	06/335,005	06/14/83
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5,022,203	07/559,160	06/11/91
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5,022,205	07/467,956	06/11/91
5,022,208	07/406,782	06/11/91
5,022,220	07/533,612	06/11/91
5,022,223	07/407,410	06/11/91
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5,022,228	07/581,960	06/11/91
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5,022,243	07/403,655	06/11/91
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5,022,258	07/520,031	06/11/91
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5,022,269	07/456,723	06/11/91
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5,022,276	07/054,324	06/11/91
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5,022,283	07/500,532	06/11/91
5,022,291	07/563,515	06/11/91
5,022,293	07/301,758	06/11/91
5,022,314	07/356,337	06/11/91
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5,022,386	07/571,712	06/11/91
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5,023,216	07/303,652	06/11/91
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5,023,276	07/300,197	06/11/91
5,023,280	07/335,071	06/11/91
5,023,282	07/439,126	06/11/91
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5,023,404	07/406,772	06/11/91
5,023,413	07/522,687	06/11/91
5,023,419	07/435,383	06/11/91
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5,023,562	07/541,640	06/11/91
5,023,563	07/589,702	06/11/91
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5,023,572	07/453,742	06/11/91
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5,023,596	07/469,388	06/11/91
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5,023,653	07/582,161	06/11/91
5,023,659	07/535,654	06/11/91
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5,023,747	07/508,927	06/11/91
5,023,760	07/398,635	06/11/91
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,173,814, Re. S.N. 08/360,226, Dec. 20, 1994, Cl. 360/98.70, DISK STORAGE DRIVE HAVING INTERNAL ELECTRICAL CONNECTION PASSAGE AND CONTAMINATION SEALS AT ENDS OF THE MOTOR, Dieter Elsasser, et. al., Owner of Record: *Papst Licensing GMBH, Spaichingen, Federal Republic of Germany,* Kenneth H. Samples, Ex. Gp.: 2512

Erratum

In the Reissue Applications Filed, appearing at 1175 OG 12 (June 6, 1995), patent number 5,096,207 should be 4,801,762.

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,325,984, Reexam. No. 90/003,869, June 29, 1995, Cl. 427/534, PLASMA PASSIVATION TECHNIQUE FOR THE PREVENTION OF POST-ETCH CORROSION OF PLASMA-ETCHED ALUMINUM FILMS, Christopher H. Galfo, et. al., Owner of Record: *Fairchild Camera & Inst., Mountain View, Calif.,* Attorney or Agent: Michael J. Pollock & Alan D. Minsk, Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 1112, Requester: Michael S. Marcus, Washington, D.C.

5,219,396, Reexam. No. 90/003,870, June 29, 1995, Cl. 119/174, ARTIFICIAL SPUR FOR COCK-FIGHTING, John J. Roman, et. al., Owner of Record: *Posti-Fort, Inc., Caguasi, Puerto Rico,* Attorney or Agent: Christopher J. McKee, Banner & Allegretti, Washington, D.C., Ex. Gp.: 3303, Requester: Thomas J. Burger, Wood Herron & Evans, Cincinnati, Ohio

5,256,370, Reexam. No. 90/003,868, June 9, 1995, Cl. 420/557, LEAD-FREE ALLOY CONTAINING TIN, SILVER & INDIUM, James A. Slattery, et. al., Owner of Record: *Indium Corp. of America, Utica, N.Y.,* Attorney or Agent: Fish & Neave, New York, N.Y., Ex. Gp.: 1308, Requester: Qualitek International, Inc., Addison, Ill., c/o Mark E. Fejer, Speckman, Pauley & Fejer, Hoffman Estates, Ill.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 05, 1995 DUE TO FAILURE TO RENEW

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991,736	73/001,631	08/27/1974
991,744	73/002,069	08/27/1974
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992,047	72/462,855	08/27/1974
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992,119	72/457,550	08/27/1974
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992,123	72/466,898	08/27/1974
992,129	72/465,031	08/27/1974
992,137	72/439,255	08/27/1974
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992,145	72/455,452	08/27/1974
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992,196	72/449,225	08/27/1974
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992,201	72/461,379	08/27/1974
992,202	72/463,345	08/27/1974
992,208	72/455,478	08/27/1974
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Applications Filed Under 37 CFR 1.60 on or After May 8, 1995, and Prior to June 8, 1995

The PTO has always required a proper continuation or divisional application filed under 37 CFR 1.60 to identify the application number (or serial number and filing date) of the prior application. The information is typically provided by the applicant in the application transmittal letter containing the request for processing under 37 CFR 1.60 or in a separate statement verifying the copy of the prior application supplied by the applicant as a "true copy".

As a result of the new 20-year patent term which was effective on June 8, 1995, a large number of continuation or divisional applications were received in the Patent and Trademark Office (PTO) during the weeks prior to June 8, 1995, using the procedure set forth in 37 CFR 1.60. Unfortunately, a number of these applications were incomplete under 37 CFR 1.60 because the applications failed to identify the application number (or serial number and filing date of the prior application. In some instances, the application number of the prior application could not be identified in the 37 CFR 1.60 application papers because the information concerning the application number assigned to the prior application by the PTO had not yet been supplied to the applicant by the PTO. A petition and payment of the $130.00 petition fee would normally be required to accord the application the original date of deposit as the filing date.

However, in view of the extraordinary circumstances which necessitated the filing of these continuation or divisional applications prior to June 8, 1995, the requirment that the application number of the prior application be supplied in the 37 CFR 1.60 application papers on filing is hereby waived, *sua sponte*, for all continuation or divisional applications filed under 37 CFR 1.60 which were filed in the PTO or deposited in the Express Mail service pursuant to 37 CFR 1.10 on or after May 8, 1995, and prior to June 8, 1995. No other requirement of 37 CFR 1.60 is being waived by this notice.

Where applicant receives a notice from the PTO in a continuation or divisional application under 37 CFR 1.60 filed on or after May 8, 1995, and prior to June 8, 1995, stating that the application is incomplete because the application number of the prior application was omitted, the delay in supplying the application number of the prior application will be excused without a petition or a petition fee being required, if applicant files a paper supplying the application number (or serial number and filing date) of the prior application within TWO MONTHS of the date of the notice mailed in the application or the publication date of this notice in the *Official Gazette*, whichever is later. If a petition fee has already been paid in such a case, the Office will refund the petition fee.

June 27, 1995

EDWARD R. KAZENSKE
Deputy Assistant Commisioner for Patents

Department of Commerce
Patent and Trademark Office

37 CFR Part 1
[Docket No. 95-0720187-5187-01]
RIN 0651-AA79

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Notice of Proposed Rulemaking
Summary: The Patent and Trademark Office (Office) is proposing to amend its rules of practice in patent cases to provide revised procedures for the reexamination of patents. H.R. 1732 proposes to authorize the extension of reexamination proceedings as a means for improving the quality of United States patents. The Office intends, through this proposed amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office would follow in conducting reexamination proceedings.
Dates: A public hearing will be held on Wednesday, September 20, 1995, at the Stouffer Renaissance Crystal City Hotel, 2399 Jefferson Davis Highway, Arlington, Virginia, 22202 at 9:30 a.m. Those wishing to present oral testimony must request an opportunity to do so no later than September 14, 1995. Written comments must be submitted on or before September 22, 1995.
Addresses: Written comments concerning the rule changes should be addressed to the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231, marked to the attention of Gerald A. Dost, Senior Legal Advisor, Special Program Law Office, Crystal Park 1, Suite 520. In addition, written comments may also be sent by facsimile transmission to (703) 308-6916 with a confirmation copy mailed to the above address, or by electronic mail messages over the Internet to [reexamrule@uspto.gov].

Written comments concerning reexamination rule matters will be available for public inspection on October 2, 1995, in Room 520 of Crystal Park One, 2011 Crystal Drive, Arlington, Virginia.

For Further Information Contact: Gerald A. Dost or Lawrence E. Anderson by telephone at (703) 305-9285, by electronic mail at landerso@uspto.gov, or by mail to Gerald A. Dost to his attention addressed to the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information:

Background

This proposed rulemaking sets forth distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures are proposed to provide for the expanded reexamination of patents as proposed in H.R. 1732.

Discussion of General Issues Involved

The proposals are in response to H.R. 1782 which resulted from suggestions and comments to the Administration by the public, bar groups, and the August 1992 Advisory Commission on Patent Law Reform suggesting more participation in the reexamination proceeding by third party requesters. Under the rules proposed herein, third party requesters will have greater opportunity to participate in reexamination proceedings in keeping with the spirit and intent of the proposed law. At the same time, participation will be limited to minimize the costs and other effects of reexamination requests on patentees.

If H.R. 1732 is amended during the legislative process, the final rules will comply with this legislation as enacted. If H.R. 1732 is not enacted, the proposed rules that would implement expanded reexamination of patents would be withdrawn.

Because reexaminations filed before the proposed law takes effect will continue to be governed by 37 CFR 1.501 - 1.570, to avoid confusion between the new and old rules the newly proposed reexamination rules have been numbered 37 CFR 1.901 - 1.997.

Regarding the reexamination fee, 35 U.S.C. 41(d) requires the Commissioner to set the fee for reexamination at a level which will recover the estimated average cost to the Office. The estimated average cost is $4,500 per patent owner requested reexamination and $11,000 for third party requested reexaminations. The difference in price takes into account the estimate that the examiner will spend twice the amount of time examining a case where a third party requester is present and additional costs incurred during the appellate stages incident to additional processing steps required in the third party proceedings.

Discussion of the Major Specific Issues Involved

The proposed rules relating to reexamination proceedings are directed to the procedures set forth in proposed Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301-307). This proposed Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings.

Section 1.4 is proposed to be amended so that paragraph (a)(2) includes the reexamination §§ 1.901 - 1.997.

Section 1.6 is proposed to be amended so that paragraph(d)(5) incudes § 1.913, which related to the exception of the use of facsimile transmission for filing the request for reexamination.

Section 1.11 is proposed to be amended so that paragraph (c), which relates to reexaminations at the initiative of the Commissioner, includes the reference to reexamination § 1.929.

Section 1.17 is proposed to be amended so that paragraph (l) reflects the fact that in the case of reexaminations filed after January 1, 1996, petitions for revival of a reexamination proceeding terminated for an unavoidable failure to respond require the fees of $55.00 for a small entity and $110.00 for other than small entity. Also, § 1.17 is proposed to be amended so that paragraph (m) reflects the fact that in the case of reexaminations filed after January 1, 1996, petitions for revival of a reexamination proceeding terminated for an unintentional failure to respond require the fees of $605.00 for a small entity and $1,210.00 for other than small entity. The Office has proposed an increase in the fee set by § 1.17(m). See "Revision of Patent and Trademark Fees" published in the *Federal Register* at 60 FR 27934 (May 26, 1995) and in the Patent and Trademark Office *Official Gazette* at 1174 Off. Gaz. Pat. Office 134 (May 30, 1995).

Section 1.20 is proposed to be amended so that paragraph (c) reflects the fact that in the case of reexaminations filed after January 1, 1996, there is a two tier fee scale in which patent owner requesters will be charged $4,500 and third party requesters will be charged $11,000.

Section 1.25 is proposed to be amended so that paragraph (b), which relates to requests for reexaminations, includes the reference to reexamination § 1.913.

Section 1.26 is proposed to be amended so as to reflect that in the case of reexaminations filed after January 1, 1996, a refund of seventy-five percent (75%) of the fee paid for filing the request for reexamination will be made to the requester.

Section 1.112 is proposed to be amended so that the last sentence reflects the fact that in the case of reexaminations filed after January 1, 1996, the examiner may close prosecution prior to making the action final. Section 1.113, which provides for a final rejection or action in a reexamination proceeding, is proposed to be amended so that its application is limited to applicants and patent owners in reexaminations filed before January 1, 1996. For reexaminations filed after January 1, 1996, the new reexamination rules will apply.

Section 1.115, which provides for amendments by the patent owner in a reexamination proceeding, is proposed to be amended so that its application is limited to applicants and patent owners in reexaminations filed before January 1, 1996. For reexaminations filed after January 1, 1996, the new reexamination rules will apply.

Section 1.116, which provides for amendments after final action in reexamination proceedings, is proposed to be amended so that its application is permissible after an action closing prosecution for patent owners in reexaminations filed on or after January 1, 1996. Also, for clarity, the rule is amended to provide that for reexaminations filed after January 1, 1996, no appeal is permitted until a right of appeal notice has been issued.

Section 1.136, which provides for filing of timely responses with petitions and fee for extension of time and extensions of time for cause, is amended to make it clear that for reexamination proceedings filed on or after January 1, 1996, § 1.957 is controlling for extensions of time.

Section 1.137, which provides for revival of abandoned applications or lapsed patents, is proposed to be amended to change the title and add new paragraphs (g) and (h). Paragraph (f) is proposed to be utilized for provisional applications. Paragraph (g) is proposed to be added to provide for revival of unavoidably terminated proceedings for reexamination proceedings filed before January 1, 1996. Paragraph (h) is proposed to be added to make it clear that for reexamination proceedings filed on or after January 1, 1996, § 1.958 is controlling.

Section 1.191, which provides for appeal to the Board of Patent Appeals and Interferences by the patent owner from any decision adverse to patentability, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.959 is controlling.

Section 1.192, which provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.965 is controlling.

Section 1.193, which provides for the Examiner's answer and reply brief, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamina-

tion proceedings filed on or after January 1, 1996, §§ 1.969 and 1.971 are controlling.

Section 1.194, which provides for the oral hearing, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.973 is controlling.

Section 1.195, which provides for the affidavits or declarations after appeal, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.975 is controlling.

Section 1.196, which provides for the decision of the Board of Patent Appeals and Interferences, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.977 is controlling.

Section 1.197, which provides for action following the decision, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.979 is controlling.

Section 1.198, which provides for reopening after the decision, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.981 is controlling.

Section 1.301, which provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Appeals for the Federal Circuit, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.983 is controlling.

Section 1.303, which provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings, is proposed to be amended so as to be applicable to reexaminations filed before January 1, 1996. For reexamination proceedings filed on or after January 1, 1996, § 1.983 is controlling.

Section 1.304 which provides for time for appeal or civil action, is proposed to be amended so as to refer also to § 1.957.

The title to Subpart D is proposed to be amended to provide that the reexamination rules in this part apply only to reexamination proceedings filed before January 1, 1996.

The proposed title to Subpart H provides that the reexamination rules in this part apply only to reexamination proceedings filed on or after January 1, 1996.

Proposed § 1.901 provides a system for citation of patents and printed publications to the Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. The section provides for citations limited to patents and printed publications when the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. The term "period of enforceability of a patent" includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286.

Proposed § 1.902 provides for the processing of prior art citations during a reexamination proceeding.

Proposed § 1.903 provides for the service of papers on parties.

Proposed § 1.904 provides that the notices published in the Official Gazette will be considered to be constructive notice.

Proposed § 1.905 provides for submission of papers by the public.

Proposed § 1.906 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination is only on the basis of patents or printed publications and on the basis of the requirements of 35 U.S.C. 112, except for the best mode requirement. Claims in a reexamination proceeding must not enlarge the scope of the claims of the patent and must not introduce new matter. Paragraph (c) provides that questions relating to matters other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding, but will be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved.

Proposed § 1.907 sets forth when reexamination is prohibited. Once an order to reexamine has been issued under § 1.931, neither the patent owner nor the third party requester, if any, nor privies of either, may file a subsequent request for reexamination of the patent until a reexamination certificate is issued under § 1.997, unless authorized by the Commissioner. Once a final decision has been entered against a party in a civil action arising in whole or in part under 28 U.S.C. 1338 in which the party did not sustain its burden of proving invalidity of any patent claim in suit, then neither that party nor its privies may thereafter request reexamination of any such patent claim on the basis of issues which that party or its privies raised or could have raised in such civil action, and a reexamination requested by that party or its privies on the basis of such issues may not thereafter be maintained by the Office.

Proposed § 1.909 provides for estoppel of third party requesters from previous reexamination proceedings. A third party requester, or its privy, who, during a reexamination proceeding, has filed a notice of appeal to the Court of Appeals for the Federal Circuit, or who has participated as a party to an appeal by the patent owner, under the provisions of 35 U.S.C. 141 to 144, is estopped from later asserting, in a subsequent reexamination proceeding, the invalidity of any claim determined to be patentable on appeal on any ground which the third party requester, or its privy, raised or could have raised during the prior reexamination proceeding. A third party requester, or its privy, is deemed not to have participated as a party to an appeal by the patent owner unless, within twenty days after the patent owner has filed notice of appeal, the third party (or its privy) files notice with the Commissioner electing to participate.

Proposed § 1.911 provides factors for consideration of privies and persons bound. For the purposes of § 1.907, a determination of whether a person is a privy with respect to the patent owner shall include consideration of whether there is: (1) a mutual, concurrent or successive relationship to the same property rights in the patent involved in the reexamination proceeding; or (2) representation of the interests of the patent owner concerning the patent. For the purposes of §§ 1.907 and 1.909, a determination of whether a person is a privy with respect to a third party requester shall include consideration of whether there is: (1) a mutual, concurrent or successive relationship to the same property rights which are or may be affected by and/or infringe the patent involved in the reexamination proceeding; or (2) representation of the interests of the other party which are or may be affected by and/or potentially infringe the patent. For the purposes of §§ 1.907 and 1.909, a person who is not a party to the reexamination proceeding but who controls or substantially participates in the control of the presentation of the reexamination proceeding on behalf of a party is bound by the determination of issues decided as though he or she were a named party. To have control of the presentation requires that person to have effective choice as to the legal theories and/or grounds of rejection or defenses to be advanced on behalf of the party to the reexamination proceeding. Under this section a party would be precluded from hiring another law firm and having that firm file a subsequent reexamination request in order to avoid the prohibitions of 35 U.S.C. 307(c) or 308.

Proposed § 1.913 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302 and limits the period for such request to the period of enforceability of the patent for which the request is filed.

Proposed § 1.915(a) requires payment of the fee for requesting reexamination. Paragraph (b) of new § 1.915 indicates what each request for reexamination must include. Paragraph (c) of new § 1.915 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. Paragraph (d) indicates that requests for reexamination may be filed by attorneys or agents on behalf of a requester, but it is noted that the real party in interest must be identified in accordance with § 1.915(b)(10).

Proposed § 1.917 indicates what will be done if the request is incomplete.

Proposed § 1.919 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination.

Proposed § 1.921 provides that prior art submissions by the third party requester filed after the reexamination order shall be limited solely to prior art which is used to rebut a finding of fact by the examiner or a response of the patent owner.

Proposed § 1.923 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303 and requires that the determination be made within 3 months of the filing date of the request.

Proposed § 1.925 refers to the refund provisions.

Proposed § 1.927 provides for review by petition to the Commissioner of any decision refusing reexamination.

Proposed § 1.929 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303.

Proposed § 1.931 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§ 1.923 or 1.929. Under paragraph (b), the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination.

Proposed § 1.933 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent.

Proposed § 1.935 indicates that the initial Office action normally accompanies the reexamination order.

Proposed § 1.937 provides that in accordance with 35 U.S.C. 305(c), unless otherwise provided by the Commissioner for good cause, all reexamination proceedings will be conducted with special dispatch. Paragraph (b) covers the basic items relating to the conduct of reexamination proceedings.

Proposed § 1.939 provides that no paper shall be filed before the first Office action.

Proposed § 1.941 provides for proposed amendments provided for in the second sentence of 35 U.S.C. 305. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under § 1.997 and 35 U.S.C. 307 is issued.

Proposed § 1.943 provides a page limit for responses and briefs of 50 pages. Prior art references and Appendix of claims would not be included in this total.

Proposed § 1.945 provides that a patent owner will be given at least thirty days to respond to any Office action. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch."

Proposed § 1.947 provides that in accordance with 35 U.S.C. 305 (b)(3), if a patent owner files a response to any Office action on the merits, the third party requester may once file written comments.

Proposed § 1.949 provides when prosecution may be closed.

Proposed § 1.951 provides for responses by the parties after an Office action closing prosecution. The responses and time periods provided for by paragraphs (a) and (b) may run concurrently.

Proposed § 1.953 provides that, following the responses or expiration of the time for response in § 1.951, the examiner may issue a right of appeal notice which shall include a final rejection or final decision favorable to patentability in accordance with 35 U.S.C. 134. The intent of limiting the appeal rights until after the examiner issues a "Right of Appeal Notice" is to specifically preclude the possibility of one party attempting to appeal prematurely while prosecution before the examiner is being continued by the other party.

Proposed § 1.955 relates to the conduct of interviews in reexamination proceedings. The third party requester is permitted to attend all interviews. Interviews are permitted before the first Office action only when initiated by the examiner.

Proposed § 1.957 relates to extensions of time and termination of reexamination proceedings. In circumstances where the response by the patent owner is not required by the examiner and is merely discretionary, such as when all claims are allowed or their patentability is confirmed and the patent owner is merely given the opportunity for comment, such a failure to comment is not the type of lack of response contemplated by paragraphs (b) and (c) and, therefore, not grounds for termination or limiting prosecution.

Proposed § 1.958 relates to revival of terminated proceedings.

Proposed § 1.959 relates to appeals and cross appeals to the Board of Patent Appeals and Interferences. Both patent owners and third party requesters are given appeal rights in accordance with 35 U.S.C. 306.

Proposed § 1.961 relates to time of transfer of the jurisdiction of the appeal over to the Board of Patent Appeals and Interferences.

Proposed § 1.962 relates to the definition of appellant and respondent.

Proposed § 1.963 relates to the time periods for filing briefs.

Proposed § 1.965 relates to the appellant brief.

Proposed § 1.967 relates to the respondent brief.

Proposed § 1.969 relates to the examiner's answer.

Proposed § 1.971 relates to the reply brief.

Proposed § 1.973 relates to the oral hearing.

Proposed § 1.975 relates to affidavits or declarations after appeal.

Proposed § 1.977 relates to the decision by the Board of Patent Appeals and Interferences.

Proposed § 1.979 relates to the procedure following the decision by the Board of Patent Appeals and Interferences.

Proposed § 1.981 relates to the procedure for reopening prosecution following the decision by the Board of Patent Appeals and Interferences.

Proposed § 1.983 relates to appeals to the United States Court of Appeals for the Federal Circuit. in accordance with 35 U.S.C. 306. Under H.R. 1732, civil actions under 35 U.S.C. 145 are not permitted in reexamination proceedings filed on or after January 1, 1996.

Proposed § 1.985 relates to notification of prior or concurrent proceedings.

Proposed § 1.987 relates to the stay of concurrent proceedings. Decisions as to whether to delay or combine cases will be made on a case-by-case basis to minimize delays and to protect the interests of all parties concerned.

Proposed § 1.989 relates to the merger of concurrent proceedings.

Proposed § 1.991 relates to the merger of a concurrent reissue application and a reexamination proceeding.

Proposed § 1.993 relates to the stay of a concurrent interference and reexamination proceeding.

Proposed § 1.995 relates to a third party requester's participation rights being preserved in merged proceeding.

Proposed § 1.997 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after the conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. It is intended that copies of the certificate will continue to be part of subsequently sold copies of the patent.

Other Considerations

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* It has been determined that this rulemaking is not significant for the purposes of Executive Order 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief

Counsel for Advocacy, Small Business Administration, that these proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impacts of these proposed changes are to expand the grounds for requesting a reexamination and to permit the third party to participate more extensively during the reexamination proceeding as well as having appeal rights.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain collection of information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, which is currently approved by the Office of Management and Budget under Control No. 0651-0033. The public reporting burden for the collection of information for requests for reexamination is estimated to average 2.0 hours each including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Office of System Quality and Enhancement, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Project 0651-0033).

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposed to amend Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small Businesses.

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Part I of Title 37 CFR is proposed to be amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.4(a)(2) is proposed to be revised to read as follows:

§ 1.4 Nature of correspondence and signature requirements.

(a) * * *

(2)Correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§ 1.31 to 1.378; of international applications in Subpart C, §§ 1.401 to 1.499; of reexamination of patents filed before January 1, 1996, in Subpart D, 1.501 to 1.570, and of reexaminations filed on or after January 1, 1996, in Subpart H, §§ 1.901-1.997; of interferences in Subpart E; §§ 1.601 to 1.690; of extension of patent term in Subpart F, §§ 1.710 to 1.785; and of trademark applications §§ 2.11 to 2.189.

* * * * *

3. Section 1.6(d)(5) is proposed to be revised to read as follows:

§ 1.6 Receipt of Correspondence

* * * * *

(d)(5) A request for reexamination under § 1.510 or § 1.913.

* * * * *

4. Section 1.11(c) is proposed to be revised to read as follows:

§ 1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under 1.20(c) has been paid, will be announced in the Official Gazette. Any reexaminations at the initiative of the Commissioner pursuant to 1.520 or 1.929 will also be announced in the Official Gazette. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

5. Section 1.17(l) and (m) are proposed to be revised to read as follows:

§ 1.17 Patent application processing fees.

* * * * *

(l)For filing a petition:

(1)For the revival of an unavoidably abandoned application under 35 U.S.C. 111, 133, 364, or 371,

(2) For delayed payment of the issue fee under 35 U.S.C. 151, or,

(3) For the revival of an unavoidably terminated reexamination proceeding:

By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00

(m) For filing a petition:

(1) For revival of an unintentionally abandoned application,

(2) For the unintentionally delayed payment of the fee for issuing a patent, or

(3) For reexamination proceedings filed on or after January 1, 1996, for the revival of an unintentionally terminated reexamination proceeding:

By a small entity (§ 1.9(f))	605.00
By other than a small entity	1,210.00

6. Section 1.20(c) is proposed to be revised to read as follows:

§ 1.20 Post issuance fees.

* * * * *

(c) For filing a request for reexamination (§ 1.915(a)):

by a patent owner	$4,500.00
by a third party requester	$11,000.00

* * * * *

7. Section 1.25(b) is proposed to be revised to read as follows:

§ 1.25 Deposit accounts.

* * * * *

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts if sufficient funds are on deposit to cover such fees. A general authorization to charge all fees, or only certain fees, set forth in §§ 1.16 to 1.18 to a deposit account containing sufficient funds may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to § 1.510 or § 1.915 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination. An authorization to charge a fee to a deposit account will not be considered payment of the fee on the date the authorization to charge the fee is effective as to the particular fee to be charged unless sufficient funds are present in the account to cover the fee.

8. Section 1.26(c) is proposed to be revised to read as follows:

§ 1.26 Refunds.

* * * * *

(c) If the Commissioner decides not to institute a reexamination proceeding, for reexaminations filed on or after January 1, 1996, a refund of seventy-five percent (75%) of the fee paid for filing the request for reexamination will be made to the requester. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

9. Section 1.112 is proposed to be revised to read as follows:

§ 1.112 Reconsideration.

After response by applicant or patent owner (§ 1.111), the application or patent under reexamination will be reconsidered and again examined: The applicant or patent owner will be notified if claims are rejected, or objections or requirements made, in the same manner as after the first examination. Applicant or patent owner may respond to such Office action in the same manner provided in § 1.111, with or without amendment. Any amendments after the second Office action must ordinarily be restricted to the rejection or to the objections or requirements made. The application or patent under reexamination will be again considered, and so on repeatedly, unless the examiner has indicated that the action is final or is an action closing prosecution.

10. Section 1.113(a) is proposed to be revised to read as follows:

§ 1.113 Final rejection or action.

(a) On the second or any subsequent examination or consideration the rejection or other action may be made final, whereupon applicant's or (for reexaminations filed before January 1, 1996) patent owner's response is limited to appeal in the case of rejection of any claim (§ 1.191), or to amendment as specified in § 1.116. Petition may be taken to the Commissioner in the case of objections or requirements not involved in the rejection of any claim (§ 1.181). Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the response to a final rejection or action must comply with any requirements or objection as to form.

* * * * *

11. Section 1.115 is proposed to be revised to read as follows:

§ 1.115 Amendment.

The applicant may amend before or after the first examination and action and also after the second or subsequent examination or reconsideration as specified in § 1.112 or when and as specifically required by the examiner. For reexaminations filed before January 1, 1996, the patent owner may amend in accordance with §§ 1.510(e) and 1.530(b) prior to reexamination, and during reexamination proceedings in accordance with §§ 1.112 and 1.116.For reexaminations filed on or after January 1, 1996, the patent owner may amend in accordance with § 1.915(c) prior to reexamination, and during reexamination proceedings in accordance with §§ 1.941 and 1.945.

12. Section 1.116(a) is proposed to be revised to read as follows:

§ 1.116 Amendments after final action.

(a) After final rejection or action (§ 1.113) or action closing prosecution (§ 1.949) for reexaminations filed on or after January 1, 1996, amendments may be made cancelling claims or complying with any requirement of form which has been made. Amendments presenting rejected claims in better form for consideration on appeal may be admitted. The admission of, or refusal to admit, any amendment after final rejection, and any proceedings relative thereto, shall not operate to relieve the application or patent under reexamination from its condition as subject to appeal or to save the application from abandonment under § 1.135. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, no appeal may be had until a right of appeal notice has been issued pursuant to § 1.953.

* * * * *

13. Section 1.136(a) (2) and (b) are proposed to be revised to read as follows:

§ 1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a)* * *

(2) The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See § 1.136(b) for extensions of time relating to proceedings pursuant to § 1.193(b), 1.194, 1.196 or 1.197. See § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action. See § 1.550(c) for extension of time in reexamination proceedings filed before January 1, 1996, § 1.957 for extension of time in reexamination proceedings filed on or after January 1, 1996, and § 1.645 for extension of time in interference proceedings.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action, § 1.645 for extension of time in interference proceedings, § 1.550(c) for extension of time in reexamination proceedings filed before January 1, 1996, and § 1.957 for extension of time in reexamination proceedings filed on or after January 1, 1996.

14. Section 1.137(g) and (h) are proposed to be added and the Section heading revised to read as follows:

§ 1.137 Revival of abandoned application, lapsed patent or terminated reexamination.

* * * * *

(g) A reexamination proceeding filed before January 1, 1996, which is terminated for failure to prosecute may be revived as a pending proceeding if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an unavoidably terminated reexamination proceeding must be promptly filed after the patent owner is notified of, or otherwise becomes aware of, the termination of the proceeding, and must be accompanied by:

(1) a proposed response to continue prosecution of that proceeding unless it has been previously filed;

(2) the petition fee as set forth in § 1.17(l); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(h) For reexamination proceedings filed on or after January 1, 1996, see § 1.958.

15. Section 1.191(a) is proposed to be revised to read as follows:

§ 1.191 Appeal to Board of Patent Appeals and Interferences.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination (for reexaminations filed before January 1, 1996), any of the claims of which have been twice rejected or who has been given a final rejection (§ 1.113), may, upon the payment of the fee set forth in § 1.17(e), appeal from the decision of the examiner to the Board of Patent Appeals and Interferences within the time allowed for response. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.959 *et seq.*, is controlling.

* * * * *

16. Section 1.192(a) is proposed to be revised to read as follows:

§ 1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under § 1.191 in an application, reissue application, or patent under reexamination (for reexaminations filed before January 1, 1996), or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief may be refused consideration by the Board of Patent Appeals and Interferences. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.965 is controlling.

* * * * *

17. Section 1.193 is proposed to be amended by adding a paragraph (c) to read as follows:

§ 1.193 Examiner's answer.

* * * * *

(c) Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, §§ 1.969 and 1.971 are controlling.

18. Section 1.194 is proposed to be amended by adding a paragraph (d) to read as follows:

§ 1.194 Oral hearing.

* * * * *

(d) Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.973 is controlling.

19. Section 1.195 is proposed to be revised to read as follows:

§ 1.195 Affidavits or declarations after appeal.

Affidavits, declarations, or exhibits submitted after the case has been appealed will not be admitted without a showing of good and sufficient reasons why they were not earlier presented. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.975 is controlling.

20. Section 1.196 is proposed to be amended by adding a paragraph (g) to read as follows:

§ 1.196 Decision by the Board of Patent Appeals and Interferences.

* * * * *

(g) Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.977 is controlling.

21. Section 1.197 is proposed to be amended by adding a paragraph (d) to read as follows:

§ 1.197 Action following decision.

* * * * *

(d) Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, p 1.979 is controlling

22. Section 1.198 is proposed to be revised to read as follows:

§ 1.198 Reopening after decision.

Cases which have been decided by the Board of Patent Appeals and Interferences will not be reopened or reconsidered by the primary examiner except under the provisions of § 1.196 without the written authority of the Commissioner, and then only for the consideration of matters not already adjudicated, sufficient cause being shown. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.981 is controlling.

23. Section 1.301 is proposed to be revised to read as follows:

§ 1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding (filed before January 1, 1996) dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: In the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§ 1.302 and 1.304); and in the Court, file a copy of the notice of appeal and pay the fee for appeal as provided by the rules of the Court. Notwithstanding the above, for reexamination proceedings filed on or after January 1, 1996, § 1.983 is controlling.

24. Section 1.303 is proposed to be amended by revising paragraphs (a) and (b) and adding a new paragraph (d) to read as follows:

§ 1.303 Civil action under 35 U.S.C. 145, 146, 306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding (filed before January 1, 1996) dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party dissatisfied with the decision of the Board of Patent Appeals and Interferences may, instead of appealing to the U.S. Court of Appeals for the Federal Circuit (§ 1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in § 1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding (filed before January 1, 1996) has taken an appeal to the U.S.Court of Appeals for the Federal Circuit, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

* * * * *

(d) For reexamination proceedings filed on or after January 1, 1996, no remedy by civil action under 35 U.S.C. 145 is available.

25. Section 1.304(a)(2) is proposed to be revised to read as follows:

§ 1.304 Time for appeal or civil action.

(a) * * *

(2) The time periods set forth in this section are not subject to the provisions of §§ 1.136, 1.550(c), 1.957 or 1.645 (a) or (b).

* * * * *

26. The heading for Subpart D is proposed to be revised to read as follows:

Subpart D — Reexamination of Patents for Proceedings Filed Before January 1, 1996
(For Proceedings beginning on or after January 1, 1996, see Subpart H)

27. Subpart H is proposed to be added to read as follows:

Subpart H — Reexamination of Patents for Proceedings Filed On or After January 1, 1996
(For Proceedings beginning Before January 1, 1996, see Subpart D)

§ 1.901 Citation of prior art in patent files.

§ 1.902 Processing of prior art citations in patent files during a reexamination proceeding.

§ 1.903 Service of papers on parties.

§ 1.904 Notice of reexamination in Official Gazette.

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§ 1.901 Citation of prior art in patent files.

(a) At any time during the period of enforceability of a patent, any person may cite to the Patent and Trademark Office in writing prior art consisting of patents or printed publications

which that person states to be pertinent and applicable to the patent and believes to have a bearing on the patentability of any claim of a particular patent. If the citation is made by the patent owner, the explanation of pertinency and applicability may include an explanation of how the claims differ from the prior art.

(b) If the person making the citation wishes his or her identity to be excluded from the patent file and kept confidential, the citation papers must be submitted without any identification of the person making the submission.

(c) Citations of patent or printed publications by the public in patent files should either:

(1) reflect that a copy of the same has been mailed to the patent owner at the address as provided for in § 1.33(c); or in the event service is not possible,

(2) be filed with the Office in duplicate.

(d) Except as provided in § 1.902, citations submitted in accordance with this section will be placed and made of record in the patent file.

§ 1.902 Processing of prior art citations in patent files during a reexamination proceeding.

Citations by the patent owner in accordance with § 1.933 and by a reexamination third party requester under § 1.915 will be entered in the patent file. The entry in the patent file of other citations submitted after the date of an order to reexamine pursuant to § 1.931 will be delayed until the reexamination proceeding has been terminated.

REEXAMINATION PROCEEDINGS

§ 1.903 Service of papers on parties.

The patent owner and any third party requester will be sent copies of Office actions issued during the reexamination proceeding. After filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on every other party in the reexamination proceeding in the manner provided in § 1.248. Any document must reflect service or the document may be refused consideration by the Office. The failure of the third party requester, if any, to timely file or serve documents may result in their being refused consideration.

§ 1.904 Notice of reexamination in Official Gazette.

A notice of the filing of a reexamination request or initiation of a Commissioner-ordered reexamination will be published in the Official Gazette. The notice published in the Official Gazette under § 1.11(c) will be considered to be constructive notice of the reexamination proceeding and reexamination will proceed.

§ 1.905 Submission of papers by public.

Unless specifically provided for, no submissions on behalf of any third parties other than third party requesters as defined in 35 U.S.C. 100(e) will be considered unless such submissions are (1) in accordance with § 1.915 or (2) entered in the patent file prior to the date of the order to reexamine pursuant to § 1.931. Submissions by third parties, other than third party requesters, filed after the date of the order to reexamine pursuant to § 1.931, must meet the requirements of § 1.901(a-c) and will be treated in accordance with § 1.902.

§ 1.906 Scope of reexamination in reexamination proceeding.

(a) Claims in a reexamination proceeding will be examined on the basis of patents or printed publications and on the basis of the requirements of 35 U.S.C. 112 except for the best mode requirement.

(b) Claims in a reexamination proceeding must not enlarge the scope of the claims of the patent.

(c) Questions other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding. If such questions are raised by the patent owner or third party requester during a reexamination proceeding, the existence of such questions will be noted by the examiner in the next Office action, in which case the patent owner may desire to consider the advisability of filing a reissue application to have such questions considered and resolved.

§ 1.907 Reexamination prohibited.

(a) Once an order to reexamine has been issued under § 1.931, neither the patent owner nor the third party requester, if any, nor privies of either, may file a subsequent request for reexamination of the patent until a reexamination certificate is issued under § 1.997, unless authorized by the Commissioner.

(b) Once a final decision has been entered against a party in a civil action arising in whole or in part under 28 U.S.C. 1338 that the party has not sustained its burden of proving invalidity of any patent claim in suit, then neither that party nor its privies may thereafter request reexamination of any such patent claim on the basis of issues which that party or its privies raised or could have raised in such civil action, and a reexamination requested by that party, or its privies, on the basis of such issues may not thereafter be maintained by the Office.

§ 1.909 Estoppel of third party requester from previous reexamination proceedings.

A third party requester, or its privy, who, during a reexamination proceeding, has filed a notice of appeal to the Court of Appeals for the Federal Circuit, or who has participated as a party to an appeal by the patent owner, under the provisions of 35 U.S.C. 141 to 144, is estopped from later asserting, in a subsequent reexamination proceeding, the invalidity of any claim determined to be patentable on appeal on any ground which the third party requester, or its privy, raised or could have raised during the prior reexamination proceeding. A third party requester, or its privy, is deemed not to have participated as a party to an appeal by the patent owner unless, within twenty days after the patent owner has filed notice of appeal, the third party, or its privy, files notice with the Commissioner electing to participate.

§ 1.911 Privies and persons bound.

(a) For the purposes of § 1.907, a determination of whether a person is a privy with respect to the patent owner shall include consideration of whether there is:

(1) a mutual, concurrent or successive relationship to the same property rights in the patent involved in the reexamination proceeding; or

(2) representation of the interests of the patent owner concerning the patent.

(b) For the purposes of §§ 1.907 and 1.909, a determination of whether a person is a privy with respect to a third party requester shall include consideration of whether there is:

(1) a mutual, concurrent or successive relationship to the same property rights which are or may be affected by and/or infringe the patent involved in the reexamination proceeding; or

(2) representation of the interests of the other party which are or may be affected by and/or potentially infringe the patent.

(c) For the purposes of §§ 1.907 and 1.909, a person who is not a party to the reexamination proceeding but who controls or substantially participates in the control of the presentation of the reexamination proceeding on behalf of a party is bound by the determination of issues decided as though he or she were a named party. To have control of the presentation requires that person to have effective choice as to the legal theories and/or grounds of rejection or defenses to be advanced on behalf of the party to the reexamination proceeding.

DETERMINING IF REEXAMINATION WILL BE ORDERED

§ 1.913 Persons eligible.

Except as otherwise provided, any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under § 1.901 or on the basis of the requirements of 35 U.S.C. 112 except for the best mode requirement.

§ 1.915 Content of request.

(a) The request must be accompanied by the fee for requesting reexamination set in § 1.20(c).

(b) Any request for reexamination must include the following parts:

(1) A statement pointing out each substantial new question of patentability based on prior patents and printed publications or based on the manner in which the patent specification or claims fail to comply with the requirements of 35 U.S.C. 112 except for the best mode requirement.

(2) An identification of every claim for which reexamination is requested.

(3) A detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested or a detailed explanation of the manner in which the specification or claim(s) fail to comply with 35 U.S.C. 112 except for the best mode requirement. If appropriate, the party requesting reexamination may also point out how claims distinguish over cited prior art or how 35 U.S.C. 112 requirements are complied with except for the best mode requirement.

(4) A copy of every patent or printed publication relied upon or referred to in paragraphs (b)(1) and (3) of this section accompanied by an English language translation of all the necessary and pertinent parts of any non-English language document.

(5) The entire patent for which reexamination is requested must be furnished in the form of cut-up copies of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper. A copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent must also be included.

(6) A certification that a copy of the request filed by a person other than the patent owner has been served in its entirety on the patent owner at the address as provided for in § 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy must be supplied to the Office.

(7) If the patent is currently involved in a reexamination proceeding for which a reexamination certificate has not been issued, a certification that the person making the request is not a privy of the patent owner or third party requester, unless otherwise authorized by the Commissioner.

(8) In a request filed by a third party requester, a certification that (i) no final decision has been entered against that party or its privies in a civil action arising in whole or in part under 28 U.S.C. 1338 in which that party or its privies did not sustain its burden of proving the invalidity of any patent claim in suit and (ii) neither that party nor its privies are requesting reexamination of any such patent claim on the basis of issues which that party or its privies raised or could have raised in such civil action.

(9) In a request filed by a third party requester, a certification that the request does not assert the invalidity of any claim determined to be patentable on appeal on any ground which the third party requester or its privy raised or could have raised during a prior reexamination proceeding in which that party or its privies filed a notice of appeal to the Court of Appeals for the Federal Circuit and/or participated as a party to an appeal by the patent owner, under the provisions of 35 U.S.C. 141 to 144.

(10) A statement identifying the real party in interest to the extent necessary for a subsequent person filing a reexamination request to determine whether that person is a privy.

(c) A request filed by the patent owner may include a proposed amendment in accordance with § 1.121(f).

(d) If a request is filed by an attorney or agent identifying another party on whose behalf the request is being filed, the attorney or agent must have a power of attorney from that party or be acting in a representative capacity pursuant to § 1.34(a).

§ 1.917 Omission of a requirement in the request for reexamination.

If the request is not accompanied by the fee for requesting reexamination or all of the other parts required by § 1.915, the person identified as requesting reexamination will be so notified and given an opportunity to complete the request within a specified time. If the fee for requesting reexamination has been paid but the defect in the request is not corrected within the specified time, the determination whether or not to institute reexamination will be made on the request as it then exists. If the fee for requesting reexamination has not been paid, no determination will be made and the request will be placed in the patent file as a citation if it complies with the requirements of § 1.901 and/or § 1.902.

§ 1.919 Filing date for request for reexamination.

The filing date of the request is the date on which the request including the entire fee for requesting reexamination is received; or, if the request is not initially accompanied by the entire fee, the date on which the last portion of the fee is received in the Patent and Trademark Office.

§ 1.921 Submission of prior art by third party following the order for reexamination.

Prior art submissions by the third party requester filed after the reexamination order shall be limited solely to prior art which is used to rebut a finding of fact by the examiner or a response of the patent owner.

§ 1.923 Examiner's consideration of the request for reexamination.

Within three months following the filing date of a request for reexamination, an examiner will consider the request and determine whether or not a substantial new question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein, with or without consideration of other patents or printed publications, or by the failure of the patent specification or claim(s) to comply with the requirements of 35 U.S.C. 112 except for the best mode requirement. The examiner's determination will be based on the claims in effect at the time of the determination and will become a part of the official file of the patent and will be mailed to the patent owner at the address as provided for in § 1.33(c) and to the person requesting reexamination.

§ 1.925 Partial refund if request is denied.

Where no substantial new question of patentability has been found, a refund of a portion of the fee for requesting reexamination will be made to the requester in accordance with § 1.26(c).

§ 1.927 Petition to review denial of the request for reexamination.

The requester may seek review by a petition to the Commissioner under § 1.181 within one month of the mailing date of the examiner's determination refusing reexamination. Any such petition must comply with § 1.181(b). If no petition is timely filed or if the decision on petition affirms that no substantial new question of patentability has been raised, the determination shall be final and nonappealable.

REEXAMINATION OF PATENTS

§ 1.929 Reexamination at the initiative of the Commissioner.

The Commissioner, at any time during the period of enforceability of a patent, may determine whether or not a substantial new question of patentability is raised by patents or printed publications which have been discovered by the Commissioner or which have been brought to the Commissioner's attention or by the failure of the patent specification or claim(s) to comply with the requirements of 35 U.S.C. 112 except for the best mode requirement. The Commissioner may order reexamination even though no request for reexamination has been filed in accordance with § 1.915. Normally requests from outside the Patent and Trademark Office that the Commissioner undertake reexamination on his or her own initiative will not be considered.

Any determination to initiate reexamination under this section will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in § 1.33(c).

§ 1.931 Order to reexamine.

(a) If a substantial new question of patentability is found, the determination will include an order for reexamination of the patent for resolution of the question.

(b) If the order for reexamination resulted from a petition pursuant to § 1.927, the reexamination will ordinarily be conducted by an examiner other than the examiner responsible for the initial determination under § 1.923.

INFORMATION DISCLOSURE

§ 1.933 Information material to patentability in reexamination proceedings.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective reexamination occurs when, at the time a reexamination proceeding is being conducted, the Office is aware of and evaluates the teachings of all information material to patentability in a reexamination proceeding. Each individual associated with the patent owner in a reexamination proceeding has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability in a reexamination proceeding. The individuals who have a duty to disclose to the Office all information known to them to be material to patentability in a reexamination proceeding are the patent owner, each attorney or agent who represents the patent owner, and every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. The duty to disclose the information exists with respect to each claim pending in the reexamination proceeding until the claim is cancelled. Information material to the patentability of a cancelled claim need not be submitted if the information is not material to patentability of any claim remaining under consideration in the reexamination proceeding. The duty to disclose all information known to be material to patentability in a reexamination proceeding is deemed to be satisfied if all information known to be material to patentability of any claim in the patent after issuance of the reexamination certificate was cited by the Office or submitted to the Office in an information disclosure statement. However, the duties of candor, good faith, and disclosure have not been complied with if any fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct by, or on behalf of, the patent owner in the reexamination proceeding. Any information disclosure statement must be filed with the items listed in § 1.98(a) as applied to individuals associated with the patent owner in a reexamination proceeding, and should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible.

(b) Under this section, information is material to patentability in a reexamination proceeding when it is not cumulative to information of record or being made of record in the reexamination proceeding, and

(1) It is a patent or printed publication that establishes, by itself or in combination with other patents or printed publications, a *prima facie* case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the patent owner takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability of a claim pending in a reexamination proceeding is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) The responsibility for compliance with this section rests upon the individuals designated in paragraph (a) of this section, and no evaluation will be made by the Office in the reexamination proceeding as to compliance with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with § 1.906(c).

OFFICE ACTIONS AND RESPONSES (BEFORE THE EXAMINER)

§ 1.935 Initial Office action normally accompanies order to reexamine.

The order for reexamination will normally be accompanied by the initial Office action on the merits of the reexamination.

§ 1.937 Conduct of Reexamination.

(a) All reexamination proceedings, including any appeals to the Board of Patent Appeals and Interferences, will be conducted with special dispatch within the Office, unless the Commissioner makes a determination that there is good cause for suspending the reexamination proceeding. A final determination that good cause exists shall not be made until the patent owner and third party requesters (if any) have had a reasonable opportunity to comment on or oppose any suspension.

(b) Except as otherwise provided, the reexamination proceeding will be conducted in accordance with the sections governing the application examination process; §§ 1.104 through 1.119, and will result in the issuance of a reexamination certificate under § 1.997.

§ 1.939 Unauthorized papers.

Unless authorized by the reexamination regulations (§§ 1.901-1.997), no paper shall be filed prior to the first Office action. If an unauthorized paper is filed by the patent owner or third party requester, it will not be considered in making the determination under § 1.923 and will be returned.

§ 1.941 Amendments by patent owner and their effective date.

(a) Any proposed amendment to the description and claims must be made in accordance with § 1.121(f) and be accompanied by an explanation of the support for the proposed amendment in the disclosure of the patent. No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amendment may be proposed for entry in an expired patent. Moreover, no amendment will be incorporated into the patent by certificate issued after the expiration of the patent.

(b) Amendments made to a patent during a reexamination proceeding will not be effective until a reexamination certificate is issued.

§ 1.943 Length of responses and briefs.

Responses and appellant briefs by the patent owner (including amendments) and third party requester, if any, shall not exceed 50 pages in length, excluding Appendix of claims and reference materials such as prior art references. All further briefs by any party shall not exceed 35 pages in length.

§ 1.945 Response by patent owner.

The patent owner will be given at least thirty (30) days to respond to any Office action. Such response may include arguments in response to any rejections and/or proposed amendments or new claims to place the patent in condition where all claims, if amended as proposed, would be patentable.

§ 1.947 Response by third party requester to patent owner's response.

If the patent owner files a response to an Office action, any third party requester may once file written comments within a period of one month from the date of service of the patent owner's response. These comments shall be limited to issues

covered by the action or the patent owner's response.

§ 1.949 Examiner's Office action closing prosecution.

Upon consideration of the issues and/or grounds of rejection a second or subsequent time, or upon allowance of all claims, the examiner shall issue an Office action treating all claims present in the reexamination proceeding, which may be an action closing prosecution. An action will not normally close prosecution if it includes a new ground of rejection which was not previously addressed by the patent owner, unless the new ground was necessitated by an amendment.

§ 1.951 Responses after Office action closing prosecution.

(a) After any action closing prosecution issued by the examiner, the third party requester may once file written comments limited to the issues raised in the Office action closing prosecution. Such comments must be filed within the time set for response in the action closing prosecution. When the third party requester does file such comments, the patent owner may file comments responding to the third party requester's comments within one month from the date of service of the third party requester's comments on the patent owner.

(b) After any action closing prosecution issued by the examiner, the patent owner may once file written comments limited to the issues raised in the reexamination proceeding and/or present a proposed amendment to the claims which amendment will be subject to the criteria of § 1.116 as to whether it shall be entered and/or considered. Such comments and/or proposed amendments must be filed within the time set for response in the action closing prosecution. Where the patent owner does file such comments and/or proposed amendment, the third party requester may file comments responding to such comments and/or proposed amendments by the patent owner within one month from the date of service of patent owner's comments and/or proposed amendment on the third party requester.

§ 1.953 Examiner's Right of Appeal Notice.

Upon considering the responses of the patent owner and any third party requester subsequent to the Office action closing prosecution, or upon expiration of the time for submitting such responses, the examiner shall issue a "Right of Appeal Notice," unless the examiner reopens prosecution. The "Right of Appeal Notice" shall include a final rejection and/or final decision favorable to patentability which shall identify the status of each claim and reasons for patentability or grounds of rejection for each claim. It shall set a 30-day or one month time period, whichever is longer, for either party to appeal. If no appeal follows, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under § 1.997 in accordance with the last action of the Office.

INTERVIEWS

§ 1.955 Interviews in reexamination proceedings.

(a) Interviews in reexamination proceedings pending before the Office between examiners and the owners of such patents or their attorneys or agents of record must be had in the Office at such times, within Office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews should be arranged for in advance. A third party requester may not initiate an interview. A third party requester has a right to participate in an interview initiated by the patent owner or the examiner and must be given adequate notice and opportunity to participate. A senior level Office official will be present when the interview is attended by a third party requester.

(b) Interviews for the discussion of the patentability of claims in patents involved in reexamination proceedings will not be initiated by the patent owner prior to the first office action thereon.

(c) In every instance of an interview with an examiner, each party must present a statement of the issues which were discussed. An interview does not remove the necessity for response to Office actions as specified in § 1.111.

EXTENSIONS OF TIME AND REVIVAL OF PROCEEDINGS

§ 1.957 Extensions of time and cause for termination in reexamination proceedings.

(a) The time for taking any action by a patent owner or third party requester in a reexamination proceeding will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner or third party requester is due, but in no case will the mere filing of a request effect any extension. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit.

(b) If the patent owner fails to file a timely and appropriate response to any Office action in a reexamination proceeding, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under § 1.997 in accordance with the last action of the Office, unless there is a third party requester and claims are found patentable.

(c) If there is a third party requester and claims are found patentable, and the patent owner fails to file a timely and appropriate response to any action in a reexamination proceeding, prosecution will be limited to claims found patentable at the time of the failure to respond and to claims which do not enlarge the scope of the claims found patentable at that time.

§ 1.958 Revival of terminated proceedings.

(a) A reexamination proceeding terminated for failure to prosecute may be revived as a pending proceeding if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an unavoidably terminated reexamination proceeding must be promptly filed after the patent owner is notified of, or otherwise becomes aware of, the termination of the proceeding, and must be accompanied by:

(1) a proposed response to continue prosecution of that proceeding unless it has been previously filed;

(2) the petition fee as set forth in § 1.17(l); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) A reexamination proceeding terminated for failure of the patent owner to prosecute may be revived as a pending proceeding if the delay in prosecution was unintentional. A petition to revive an unintentionally terminated reexamination proceeding must be:

(1) accompanied by a proposed response to continue prosecution of that proceeding unless it has been previously filed;

(2) accompanied by the petition fee as set forth in § 1.17(m);

(3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional; and

(4) filed either:

(i) within two months of the date of the first Office notification that the proceeding has been terminated; or

(ii) within two months of the date of the first decision on a petition to revive under paragraph (a) of this section which was timely filed within the time period set forth in paragraph (b)(4)(i) of this section.

(c) Any request for reconsideration or review of a decision refusing to revive a proceeding upon petition filed pursuant to paragraphs (a) or (b) of this section, to be considered timely, must be filed within two months of the decision refusing to revive or within such time as set in the decision.

(d) The time periods set forth in this section cannot be extended, except that the time period set forth in paragraph (c) of this section may be extended under the provisions of § 1.957(a).

APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

§ 1.959 Notice of appeal and cross appeal to Board of Patent Appeals and Interferences.

(a)(1) Once a "Right of Appeal Notice" has been issued, by filing a notice of appeal within the time provided in § 1.953 and paying the fee set forth in § 1.17(e), the patent owner may appeal to the Board of Patent Appeals and Interferences with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

(2) Once a "Right of Appeal Notice" has been issued, by filing a notice of appeal within the time provided in § 1.953 and paying the fee set forth in § 1.17(e), a third party requester involved in a reexamination proceeding may appeal to the Board of Patent Appeals and Interferences with respect to any final decision favorable to the patentability of any original or proposed amended or new claim of the patent.

(b)(1) Within fourteen days of service of a third party requester's notice of appeal, and upon payment of the fee set forth in § 1.17(e), a patent owner who has not filed a notice of appeal may file a notice of cross appeal with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

(2) Within fourteen days of service of a patent owner's notice of appeal, and upon payment of the fee set forth in § 1.17(e), a third party requester who has not filed a notice of appeal may file a notice of cross appeal with respect to any final decision favorable to the patentability of any original or proposed amended or new claim of the patent.

(c) The appeal in a reexamination proceeding must identify the claim(s) appealed, and must be signed by the patent owner or third party requester, or their duly authorized attorney or agent.

(d) An appeal when taken must be taken from the rejection of all claims under rejection in a Right of Appeal Notice which the patent owner proposes to contest, or from the determination of patentability of all claims indicated as patentable in a Right of Appeal Notice which the third party requester proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

(e) The time periods set forth in §§ 1.959 through 1.969 are subject to the provisions of § 1.957(a) for reexamination proceedings. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit.

§ 1.961 Jurisdiction over appeal.

Jurisdiction over the patent under reexamination passes to the Board of Patent Appeals and Interferences upon transmittal of the file, including all briefs and examiner's answers, to the Board. Prior to the entry of a decision on the appeal, the Commissioner may sua sponte order the patent remanded to the examiner, for action consistent with the Commissioner's order.

§ 1.962 Appellant and respondent defined.

For the purposes of reexamination, appellant is any party filing a notice of appeal. A respondent is any opposing party responding to the appeal of the appellant. If more than one party appeals, each is an appellant with respect to the claims to which his or her appeal is directed and, to the extent each responds, each is a respondent with respect to the claims to which his or her opponent's appeal is directed.

§ 1.963 Time for filing briefs.

(a) If a party files a notice of appeal or cross appeal, the party must file an appellant brief within two months of the date of filing of their notice of appeal or cross appeal. However, if another party files a notice of appeal or cross appeal subsequent to that of the party, then the party must file an appeal brief within two months of the date of filing of the subsequent notice of appeal or cross appeal, so that the appellant briefs of all parties filing a notice of appeal or cross appeal will be due no later than two months after the last-filed notice.

(b) Once an appellant brief has been properly filed, an opposing party may file a respondent brief within one month from the date of service of the appellant brief. The examiner will consider both the appellant and respondent briefs and prepare an examiner's answer.

(c) The third party requester and the patent owner may each file a reply brief within one month of the date of the examiner's answer. No further brief will be acknowledged or considered.

§ 1.965 Appellant brief.

(a) Appellant(s) shall, within time limits for filing set forth in § 1.963, file a brief in triplicate and serve the brief on all parties in accordance with § 1.903. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences, unless good cause is shown.

(b) On failure of a party to file the brief, accompanied by the requisite fee, within the time allowed, the appeal shall stand dismissed with respect to the claims appealed by that party.

(c) The brief shall contain the following items under appropriate headings and in the order indicated below unless the brief is filed by a party who is not represented by a registered practitioner:

(1) *Real Party in Interest.* A statement identifying the real party in interest, if the party named in the caption of the brief is not the real party in interest.

(2) *Related Appeals and Interferences.* A statement identifying by number and filing date all other appeals or interferences known to the appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) *Status of Claims.* A statement of the status of all the claims, pending or cancelled, and identifying the claims appealed.

(4) *Status of Amendments.* A statement of the status of any amendment filed subsequent to final rejection.

(5) *Summary of Invention.* A concise explanation of the invention or subject matter defined in the claims involved in the appeal, which shall refer to the specification by column and line number, and to the drawing(s), if any, by reference characters.

(6) *Issues.* A concise statement of the issues presented for review.

(7) *Grouping of Claims.* For each ground of rejection, or, in the case where the appeal is by a third party requester, each determination of patentability or determination of inapplicability of a proposed rejection, which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of this group are believed to be separately patentable or unpatentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

(8) *Argument.* The contentions of appellant with respect to each of the issues presented for review in paragraph (c)(6) of this section, and the basis therefor, with citations of the authorities, statutes, and parts of the record relied on. Each issue should be treated under a separate heading.

(i) For each rejection or, in the case where the appeal is by a third party requester, any other determination under 35 U.S.C. 112, first paragraph, the argument shall specify the errors in the rejection or other determination and how the first paragraph of 35 U.S.C. 112 is or is not complied with, including, as appropriate, how the specification and drawings, if any,

(A) describe or fail to describe the subject matter defined by each of the appealed claims, and

(B) enable or fail to enable any person skilled in the art to make and use the subject matter defined by each of the appealed claims, and

(ii) For each rejection, or in the case where the appeal is filed by a third party requester, any determination, under 35 U.S.C. 112, second paragraph, the argument shall specify the errors in the rejection or other determination and how the claims

do or do not particularly point out and distinctly claim the subject matter which appellant regards as the invention.

(iii) For each rejection or, in the case where the appeal is by a third party requester, each determination of patentability, under 35 U.S.C. 102, the argument shall specify the errors in the rejection or determination and why the appealed claims are or are not patentable under 35 U.S.C. 102, including any specific limitations in the appealed claims which are not described in the prior art.

(iv) For each rejection or, in the case where the appeal is by a third party requester, each determination of patentability under 35 U.S.C. 103, the argument shall specify the errors in the rejection or determination and, if appropriate, the specific limitations in the appealed claims which are or are not described in the prior art, and shall explain how such limitations render the claimed subject matter obvious or unobvious over the prior art. If the rejection or determination is based upon a combination of references, the argument shall explain why the references, taken as a whole, do or do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may or may not properly be combined with features disclosed in another reference. A general argument that all the limitations are or are not described in a single reference does not satisfy the requirements of this paragraph.

(v) For any rejection or, in the case where the appeal is by a third party requester, any determination of patentability, other than those referred to in paragraphs (c)(8)(i) to (iv) of this section, the argument shall specify the errors in the rejection or other determination and the specific limitations in the appealed claims, if appropriate, or other reasons, which cause the rejection or other determination to be in error.

(9) *Appendix.* An appendix containing a copy of the claims involved in the appeal.

(d) If a brief is filed which does not comply with all the requirements of paragraph (c) of this section, appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If the appellant does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will stand dismissed as to that party.

§ 1.967 Respondent brief.

(a) The brief(s) of the respondent(s) specified in § 1.963 must be filed in triplicate, served on all other parties in accordance with § 1.903 and be accompanied by the requisite fee set forth in § 1.17(f). Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences, unless good cause is shown. The respondent brief shall be limited to issues raised in the appellant brief to which the respondent brief is directed.

(b) The respondent brief shall contain the following items under appropriate headings and in the order here indicated, and may include an appendix containing portions of the record on which reliance is made:

(1) *Real Party in Interest.* A statement identifying the real party in interest, if the party named as the respondent in the brief is not the real party in interest.

(2) *Related Appeals and Interferences.* A statement identifying by number and filing date all other appeals or interferences known to the respondent, the respondent's legal representative, or assignee (if any) which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) *Status of claims.* A statement accepting or disputing appellant's statement of the status of claims. If appellant's statement of the status of claims is disputed, the errors in appellant's statement must be specified with particularity.

(4) *Status of amendments.* A statement accepting or disputing appellant's statement of the status of amendments. If appellant's statement of the status of amendments is disputed, the errors in appellant's statement must be specified with particularity.

(5) *Summary of invention.* A statement accepting or disputing appellant's summary of the invention or subject matter defined in the claims involved in the appeal. If appellant's summary of the invention or subject matter defined in the claims involved in the appeal is disputed, the errors in appellant's summary must be specified with particularity. A counter explanation of the invention may be made.

(6) *Issues.* A statement accepting or disputing appellant's statement of the issues presented for review and identifying any examiner's determination not to make a rejection proposed by the third party requester. If appellant's statement of the issues presented for review is disputed, the errors in appellant's statement must be specified with particularity. A counter statement of the issues for review may be made.

(7) *Grouping of claims.* A statement accepting or disputing any statement by appellant that allowed or rejected claims stand or fall together. If appellant's statement is disputed, the errors in appellant's statement must be specified with particularity. A counter statement may be made.

(8) *Argument.* A statement accepting or disputing the contentions of the appellant with respect to each of the issues. If a contention of the appellant or a determination of the examiner not to make a rejection proposed by the requester is disputed, the errors in appellant's argument or examiner's determination must be specified with particularity, stating the basis therefor, with citations of the authorities, statutes and parts of the record relied on. Each issue should be treated under a separate heading. An argument may be made with respect to each of the issues stated in the counter statement of the issues, with each counter stated issue being treated under a separate heading. The provisions of §§ 1.965(c)(8)(iii) and (iv) of these regulations shall apply to any argument raised under 35 U.S.C. 102 or 103.

(c) If a respondent brief is filed which does not comply with all the requirements of paragraph (b) of this section, respondent will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If the respondent does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the respondent brief will not be received into the record and will not be considered.

§ 1.969 Examiner's answer.

The primary examiner may, within such time as may be directed by the Commissioner, furnish a written statement in answer to the patent owner's and/or third party requester's appellant brief or respondent brief including such explanation of the invention claimed and of the references and grounds of rejection or reasons for patentability as may be necessary, supplying a copy to the patent owner and each third party requester, if any. If the primary examiner shall find that the appeal is not regular in form or does not relate to an appealable action, he or she shall so state and a petition from such decision may be taken to the Commissioner as provided in § 1.181.

§ 1.971 Reply brief.

(a) The patent owner and any third party requester may each file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within one month from the date of such answer. The new points of argument shall be specifically identified in the reply brief. If the examiner determines that the reply brief is not directed only to new points of argument raised in the examiner's answer, the examiner may refuse entry of the reply brief and will so notify the appellant.

(b) If the examiner's answer expressly states that it includes a new ground of rejection or allowance of claims not previously allowed, the party adversely affected must file a reply thereto within one month from the date of such answer to avoid dismissal of the appeal as to the claims subject to the new ground of rejection or allowance; such reply may be accompanied by any amendment (in the case of the patent owner) or material appropriate to the new ground. See § 1.957 for extensions of time for filing a reply brief.

§ 1.973 Oral hearing.

(a) An oral hearing should be requested only in those circumstances in which the appellant, or a respondent who has filed a respondent brief under § 1.967, considers such a hearing necessary or desirable for a proper presentation of the appeal. An appeal decided without an oral hearing will receive the

same consideration by the Board of Patent Appeals and Interferences as an appeal decided after oral hearing.

(b) If appellant, or a respondent who has filed a respondent brief under § 1.967, desires an oral hearing, he or she must file a written request for such hearing accompanied by the fee set forth in § 1.17(g) within one month after the date of the examiner's answer. If appellant, or a respondent who has filed a respondent brief under § 1.967, requests an oral hearing and submits therewith the fee set forth in § 1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board. See § 1.957 for extensions of time in a reexamination proceeding.

(c) If no request and fee for oral hearing have been timely filed by an appellant or a respondent who has filed a respondent brief under § 1.967, the appeal will be assigned for consideration and decision. If an appellant or respondent who has filed a respondent brief under § 1.967 has requested an oral hearing and has submitted the fee set forth in § 1.17(g), a hearing date will be set, and notice thereof given to each appellant, to the primary examiner and to each respondent who has filed a respondent brief under § 1.967. The notice shall set a period within which all requests for oral hearing shall be submitted. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for each appellant and respondent, and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

§ 1.975 Affidavits or declarations after appeal.

Affidavits, declarations, or exhibits submitted after the case has been appealed will not be admitted without a showing of good and sufficient reasons why they were not earlier presented.

§ 1.977 Decision by the Board of Patent Appeals and Interferences.

(a) The Board of Patent Appeals and Interferences, in its decision, may affirm or reverse the decision of the examiner in whole or in part on the grounds and on the claims specified by the examiner, or on the grounds presented by a third party requester, or remand the reexamination proceeding to the examiner for further consideration. The affirmance of the rejection or allowance of a claim on any of the grounds specified constitutes a general affirmance of the decision of the examiner on that claim, except as to any ground specifically reversed or otherwise stated. A rejection of claims by the examiner may also be affirmed on the basis of the arguments presented by the third party requester.

(b) Should the Board of Patent Appeals and Interferences have knowledge of any grounds for rejecting any appealed claim not raised in the appeal, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a new rejection of the claims. A new rejection shall not be considered final for purposes of judicial review. When the Board of Patent Appeals and Interferences makes a new rejection of an appealed claim, the patent owner may exercise one of the following two options with respect to the new ground:

(1) The patent owner may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the patent will be remanded to the examiner. The statement of the Board of Patent Appeals and Interferences shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. Should the examiner again reject the claims, the patent owner may again appeal to the Board of Patent Appeals and Interferences.

(2) The patent owner may have the case reconsidered under § 1.979(b) by the Board of Patent Appeals and Interferences upon the same record. The request for reconsideration shall address the new ground for rejection and state with particularity the points believed to have been misapprehended or overlooked in rendering the decision and also state all other grounds upon which reconsideration is sought. Where request for such reconsideration is made, the Board of Patent Appeals and Interferences shall reconsider the new ground for rejection and, if necessary, render a new decision which shall include all grounds upon which a patent is refused. The decision on reconsideration is deemed to incorporate the earlier decision, except for those portions specifically withdrawn on reconsideration, and is final for the purpose of judicial review.

(c) Should the decision of the Board of Patent Appeals and Interferences include an explicit statement that a claim may be allowed in amended form, patent owner shall have the right to amend in conformity with such statement which shall be binding on the examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Patent Appeals and Interferences normally will confine its decision to a review of rejections and allowances made by the examiner and/or arguments of the third party requester, should it have knowledge of any grounds for rejecting any allowed claim not advanced by the examiner or third party requester, it may recommend a rejection of the claim in its decision and remand the case to the examiner. In such event, the Board shall set a period, not less than one month, within which the patent owner may submit to the examiner an appropriate amendment, a showing of facts or reasons, or both, in order to avoid any grounds for rejection set forth in the recommendation of the Board of Patent Appeals and Interferences. The examiner shall be bound by any such recommended rejection and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the patent owner may again appeal to the Board of Patent Appeals and Interferences.

(e) Whenever a decision of the Board of Patent Appeals and Interferences includes a remand, that decision shall not be considered a final decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

(f) See § 1.957(a) for extensions of time to take action under this section.

§ 1.979 Action following decision.

(a) After decision by the Board of Patent Appeals and Interferences, the case shall be returned to the examiner, subject to a right of appeal or other review by the appellant or respondent, for such further action by the patent owner or by the examiner, as the condition of the case may require, to carry into effect the decision.

(b) Each party may file a single request for reconsideration or modification of the decision if filed within one month from the date of the original decision, unless that decision is so modified by the decision on reconsideration as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states. The request for reconsideration shall state with particularity the points believed to have been misapprehended or overlooked in rendering the decision and also state all other grounds upon which reconsideration is sought. See § 1.957(a) for extensions of time for seeking reconsideration.

(c) The appeal proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the U.S. Court of Appeals for the Federal Circuit. The date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the Federal Circuit expires. If an appeal to the Federal Circuit has been filed, proceedings are considered terminated when the appeal is terminated. An appeal to the Federal Circuit is terminated when the mandate is received by the Office. Upon termination of the reexamination proceeding, the Commissioner will issue a certificate under § 1.997.

§ 1.981 Reopening after decision.

(a) Cases which have been decided by the Board of Patent Appeals and Interferences will not be reopened or reconsidered by the primary examiner except under the provisions of § 1.979 without the written authority of the Commissioner, and then only for the consideration of matters not already adjudicated, sufficient cause being shown.

(b) In the event prosecution is reopened or the case is reconsidered by the primary examiner after decision by the Board of Patent Appeals and Interferences or by the U.S. Court of Appeals for the Federal Circuit, any third party requester who appealed or responded under § 1.967 may again present comments pursuant to § 1.947 and may appeal or participate in an appeal by the patent owner pursuant to § 1.959.

APPEAL TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

§ 1.983 Appeal to the United States Court of Appeals for the Federal Circuit.

Any third party requester or patent owner involved in a reexamination proceeding who is a party to any appeal to the Board of Patent Appeals and Interferences and who is dissatisfied with the decision of the Board of Patent Appeals and Interferences may appeal to the U.S. Court of Appeals for the Federal Circuit and may be a party to any appeal thereto taken from a reexamination decision of the Board of Patent Appeals and Interferences. The appellant must take the following steps in such an appeal:

(a) in the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§ 1.302 and 1.304); and

(b) in the Court, file a copy of the notice of appeal and pay the fee, as provided for in the rules of the Court. A third party requester is deemed not to have participated as a party to an appeal by the patent owner, and thereby not subject to § 1.909, unless, within twenty days after the patent owner has filed notice of appeal pursuant to § 1.983(a), the third party requester files notice with the Commissioner electing to participate.

PROCEEDINGS INVOLVING SAME PATENT AS IN REEXAMINATION

§ 1.985 Notification of prior or concurrent proceedings.

Any person at any time may file a paper in a reexamination proceeding notifying the Office of a prior or concurrent proceeding in which the same patent is or was involved, such as interferences, reissues, reexaminations, or litigation and the results of such proceedings. Such paper must be limited to merely providing notice of the other proceeding without discussion of issues of the current reexamination proceeding.

§ 1.987 Stay of concurrent proceeding.

If a patent in the process of reexamination is or becomes involved in litigation or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination or reissue proceeding.

§ 1.989 Merger of concurrent reexamination proceedings.

(a) If reexamination is ordered while a prior reexamination proceeding is pending for the same patent, the reexamination proceedings will be merged and result in the issuance of a single certificate under § 1.997.

(b) A reexamination proceeding filed under § 1.915 which is merged with a reexamination proceeding filed under § 1.510 will result in the merged proceeding being governed by §§ 1.901 - 1.997.

§ 1.991 Merger of concurrent reissue application and reexamination proceeding.

If a reissue application and a reexamination proceeding on which an order pursuant to § 1.931 has been mailed are pending concurrently on a patent, a decision may be made to merge the two proceedings or to stay one of the two proceedings. Where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with §§ 1.171 through 1.179 and the patent owner will be required to place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. In a merged proceeding, participation by the third party requester shall be limited to issues within the scope of reexamination. The examiner's actions and any responses by the patent owner or third party requester in a merged proceeding will apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

§ 1.993 Stay of concurrent interference and reexamination proceeding.

If a patent in the process of reexamination is or becomes involved in an interference, the Commissioner may stay reexamination or the interference. The Commissioner will not consider a request to stay an interference unless a motion (§ 1.635) to stay the interference has been presented to and denied by an administrative patent judge and the request is filed within ten (10) days of a decision by an administrative patent judge denying the motion for a stay or such other time as the administrative patent judge may set.

§ 1.995 Third party requester's participation rights preserved in merged proceeding.

When a third party requester is involved in one or more proceedings including a reexamination proceeding, the merger of such proceedings will be accomplished so as to preserve the third party requester's right to participate to the extent specifically provided for in these regulations. In merged proceedings involving different requesters, any paper filed by one party in the merged proceeding shall be served on all other parties of the merged proceeding.

CERTIFICATE

§ 1.997 Issuance of reexamination certificate after reexamination proceedings.

(a) Upon the conclusion of a reexamination proceeding, the Commissioner will issue a certificate in accordance with 35 U.S.C. 307 setting forth the results of the reexamination proceeding and the content of the patent following the reexamination proceeding.

(b) A certificate will be issued in each patent in which a reexamination proceeding has been ordered under § 1.931. Any statutory disclaimer filed by the patent owner will be made part of the certificate.

(c) The certificate will be mailed on the day of its date to the patent owner at the address as provided for in § 1.33(c). A copy of the certificate will also be mailed to the requester of the reexamination proceeding.

(d) If a certificate has been issued which cancels all of the claims of the patent, no further Office proceedings will be conducted with regard to that patent or any reissue applications or reexamination requests relating thereto.

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in § 1.965(d), the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

(f) A notice of the issuance of each certificate under this section will be published in the Official Gazette on its date of Issuance.

August 1, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this

publication, the cancellation will proceed as in the case of default.

Mark Squibb, Kingston, N.Y., Reg. No. 1,687,351, "INTELE-VAULT", Cancellation No. 23,750.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
for Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Department of Commerce
Patent and Trademark Office

[Docket No. 950706172-5172-01]

Utility Examination Guidelines

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: The Patent and Trademark Office (PTO) is publishing the final version of guidelines to be used by Office personnel in their review of patent applications for compliance with the utility requirement. Because these guidelines govern internal practices, they are exempt from notice and comment and delayed effective date rulemaking requirements under 5 U.S.C. § 553(b)(A).
Effective Date: July 14, 1995.
For Further Information Contact: Jeff Kushan by telephone at (703) 305-9300, by fax at (703) 305-8885, by electronic mail at kushan@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

Supplementary Information

I. Discussion of Public Comments

Forty-four comments were received by the Office in response to the request for public comment on the proposed version of utility guidelines published on January 3, 1995 (60 FR 97). All comments have been carefully considered. A number of changes have been made to the examining guidelines and the legal analysis supporting the guidelines in response to the comments received.

Many of the individuals responding to the request for public comments suggested that the Office address the relationship between the requirements of 35 U.S.C. § 112, first paragraph, and 35 U.S.C. § 101. The Office has amended the guidelines to provide a clarification consistent with these requests. The guidelines now specify that any rejection based on a "lack of utility" under § 101 should be accompanied by a rejection based upon § 112, first paragraph. The guidelines also specify that the procedures for imposition and review of rejections based on lack of utility under § 101 shall be followed with respect to the § 112 rejection that accompanies the § 101 rejection.

A suggestion was made that the guidelines should be modified to provide that an application shall be presumed to be compliant with § 112, first paragraph, if there is no proper basis for imposing a § 101 rejection. This suggestion has not been followed. Instead, the guidelines specify that § 112, first paragraph, deficiencies other than those that are based on a lack of utility be addressed separately from those based on lack of utility for the invention.

Several individuals suggested that the guidelines address how § 101 compliance will be reviewed for products that are either intermediates or whose ultimate function or use is unknown. The Office has amended the guidelines to clarify how it will interpret the "specific utility" requirement of § 101.

Some individuals suggested that the guidelines be amended to preclude Examiners from requiring that an applicant delete references made in the specification to the utility of an invention which are not necessary to support an asserted utility of the claimed invention. The guidelines have been amended consistent with this suggestion.

One individual suggested that the legal analysis be amended to emphasize that any combination of evidence from *in vitro* or *in vivo* testing can be sufficient to establish the credibility of an asserted utility. The legal analysis has been amended consistent with this recommendation.

A number of individuals questioned the legal status of the guidelines, particularly with respect to situations where an applicant believes that a particular Examiner has failed to follow the requirements of the guidelines in imposing a rejection under § 101. The guidelines and the legal analysis supporting the guidelines govern the internal operations of the Patent and Trademark Office. They are not intended to, nor do they have the force and effect of law. As such they are not substantive rules creating or altering the rights or obligations of any party. Rather, the guidelines define the procedures to be followed by Office personnel in their review of applications for § 101 compliance. The legal analysis supporting the guidelines articulates the basis for the procedures established in the guidelines. Thus, an applicant who believes his or her application has been rejected in a manner that is inconsistent with the guidelines should respond substantively to the grounds of the rejection. "Non-compliance" with the guidelines will not be a petitionable or appealable action.

Some individuals suggested that the guidelines and legal analysis be amended to specify that the Office will reject an application for lacking utility only in those situations where the asserted utility is "incredible." This suggestion has not been adopted. The Office has carefully reviewed the legal precedent governing application of the utility requirement. Based on that review, the Office has chosen to focus the review for compliance with § 101 and § 112, first paragraph, on the "credibility" of an asserted utility.

Some individuals suggested that the guidelines be amended to address how a generic claim that covers many discrete species will be assessed with regard to the "useful invention" requirements of §§ 101 and 112 when one or more, but not all, species within the genus do not have a credible utility. The guidelines have been amended to clarify how the Office will address applications in which genus claims are presented that encompass species for which an asserted utility is not credible. The legal analysis makes clear that any rejection of any claimed subject matter based on lack of utility must adhere to the standards imposed by these guidelines. This is true regardless of whether the claim defines only a single embodiment of the invention, multiple discrete embodiments of the invention, or a genus encompassing many embodiments of the invention. As cast in the legal analysis and the guidelines, the focus of examination is the invention as it has been defined in the claims.

Some individuals questioned whether the guidelines and the legal analysis govern actions taken by Examining Groups other than Group 1800 or the Board of Patent Appeals and Interferences. The guidelines apply to all Office personnel, and to the review of all applications, regardless of field of technology.

In addition to the changes made in response to comments from the public, the Office has amended the guidelines to clarify the procedure to be followed when an applicant has failed to identify a specific utility for an invention. The guidelines now provide that where an applicant has made no assertion as to why an invention is believed useful, and it is not immediately apparent why the invention would be considered useful, the Office will reject the application as failing to identify any specific utility for the invention. The legal analysis has also been amended to address evaluation of this question.

II. Guidelines for Examination of Applications for Compliance with the Utility Requirement

A. Introduction

The following guidelines establish the policies and procedures to be followed by Office personnel in the evaluation of any application for compliance with the utility requirements of 35 U.S.C. § 101 and § 112. The guidelines also address issues that may arise during examination of applications claiming protection for inventions in the field of biotechnology and human therapy. The guidelines are accompanied by an overview of applicable legal precedent governing the utility requirement. The guidelines have been promulgated to assist Office personnel in their review of applications for compliance with the utility requirement. The guidelines and the legal analysis do not alter the substantive requirements of 35 U.S.C. § 101 and § 112, nor are they designed to obviate review of applications for compliance with this statutory requirement.

B. Examination Guidelines for the Utility Requirement

Office personnel shall adhere to the following procedures when reviewing applications for compliance with the "useful invention" ("utility") requirement of 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph.

1. Read the specification, including the claims, to:

a) determine what the applicant has invented, noting any specific embodiments of the invention;
a) ensure that the claims define statutory subject matter (*e.g.*, a process, machine, manufacture, or composition of matter);
b) note if applicant has disclosed any specific reasons why the invention is believed to be "useful."

2. Review the specification and claims to determine if the applicant has asserted any credible utility for the claimed invention:

a) If the applicant has asserted that the claimed invention is useful for any particular purpose (*i.e.*, a "specific utility") and that assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility. Credibility is to be assessed from the perspective of one of ordinary skill in the art in view of any evidence of record (*e.g.*, data, statements, opinions, references, etc.) that is relevant to the applicant's assertions. An applicant must provide only one credible assertion of specific utility for any claimed invention to satisfy the utility requirement.
b) If the invention has a well-established utility, regardless of any assertion made by the applicant, do not impose a rejection based on lack of utility. An invention has a well-established utility if a person of ordinary skill in the art would immediately appreciate why the invention is useful based on the characteristics of the invention (*e.g.*, properties of a product or obvious application of a process).
c) If the applicant has not asserted any specific utility for the claimed invention and it does not have a well established utility, impose a rejection under § 101, emphasizing that the applicant has not *disclosed* a specific utility for the invention. Also impose a separate rejection under § 112, first paragraph, on the basis that the applicant has not shown how to use the invention due to lack of disclosure of a specific utility. The § 101 and § 112, rejections should shift the burden to the applicant to:

— explicitly identify a specific utility for the claimed invention, and

— indicate where support for the asserted utility can be found in the specification.

Review the subsequently asserted utility by the applicant using the standard outlined in paragraph (2)(a) above, and ensure that it is fully supported by the original disclosure.

3. If no assertion of specific utility for the claimed invention made by the applicant is credible, and the claimed invention does not have a well-established utility, reject the claim(s) under § 101 on the grounds that the invention as claimed lacks utility. Also reject the claims under § 112, first paragraph, on the basis that the disclosure fails to teach how to use the invention as claimed. The § 112, first paragraph, rejection imposed in conjunction with a § 101 rejection should incorporate by reference the grounds of the corresponding § 101 rejection and should be set out as a rejection distinct from any other rejection under § 112, first paragraph, not based on lack of utility for the claimed invention.

To be considered appropriate by the Office, any rejection based on lack of utility must include the following elements:

a) A prima facie showing that the claimed invention has no utility.

A *prima facie* showing of no utility must establish that it is more likely than not that a person skilled in the art would not consider credible any specific utility asserted by the applicant for the claimed invention. A *prima facie* showing must contain the following elements:

i) a well-reasoned statement that clearly sets forth the reasoning used in concluding that the asserted utility is not credible;
ii) support for factual findings relied upon in reaching this conclusion; and
iii) support for any conclusions regarding evidence provided by the applicant in support of an asserted utility.

b) Specific evidence that supports any fact-based assertions needed to establish the prima facie showing.

Whenever possible, Office personnel must provide documentary evidence (*e.g.*, scientific or technical journals, excerpts from treatises or books, or U.S. or foreign patents) as the form of support used in establishing the factual basis of a *prima facie* showing of no utility according to items (a)(ii) and (a)(iii) above. If documentary evidence is not available, Office personnel shall note this fact and specifically explain the scientific basis for the factual conclusions relied on in sections (a)(ii) and (a)(iii).

4. A rejection based on lack of utility should not be maintained if an asserted utility for the claimed invention would be considered credible by a person of ordinary skill in the art in view of all evidence of record.

Once a *prima facie* showing of no utility has been properly established, the applicant bears the burden of rebutting it. The applicant can do this by amending the claims, by providing reasoning or arguments, or by providing evidence in the form of a declaration under 37 CFR 1.132 or a printed publication, that rebuts the basis or logic of the *prima facie* showing. If the applicant responds to the *prima facie* rejection, Office personnel shall review the original disclosure, any evidence relied upon in establishing the *prima facie* showing, any claim amendments and any new reasoning or evidence provided by the applicant in support of an asserted utility. It is essential for Office personnel to recognize, fully consider and respond to each substantive element of any response to a rejection based on lack of utility. Only where the totality of the record continues to show that the asserted utility is not credible should a rejection based on lack of utility be maintained.

If the applicant satisfactorily rebuts a *prima facie* rejection based on lack of utility under § 101, withdraw the § 101 rejection and the corresponding rejection imposed under § 112, first paragraph, per paragraph (3) above.

Office personnel are reminded that they must treat as true a statement of fact made by an applicant in relation to an asserted utility, unless countervailing evidence can be provided that shows that one of ordinary skill in the art would have a legitimate basis to doubt the credibility of such a statement. Similarly, Office personnel must accept an opinion from a qualified expert that is based upon relevant facts whose accuracy is not being questioned; it is improper to disregard the opinion solely because of a disagreement over the significance or meaning of the facts offered.

III. Additional Information

The PTO has prepared an analysis of the law governing the utility requirement to support the guidelines outlined above. Copies of the legal analysis can be obtained from Jeff Kushan, who can be reached using the information indicated above.

July 3, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce
and Commissioner of Patents
and Trademarks

Removal From Register

Pursuant to 37 CFR § 10.11(b), a survey letter was directed on January 23, 1995, to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address or the forwarding address (or order) had expired.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Agents.

Floyd E. Anderson, 103 Scarbrough Ln., Boynton Beach, Fla. 33436
Hunter L. Auyang, Wilson, Sonsini, Goodrich & Rosati, Two Palo Alto Sq., Ste. 900, Palo Alto, Calif. 94306
James S. Bailey, 6007 Williamsburg Blvd., Arlington, Va. 22207
Gerald Franklin Baker, 1519 W. Dolphin Ave., Ridgecrest, Calif. 93555
Daniel R. Barnett, Freeman & Hawkins, 2 Peachtree St., N.W., Suite 2800, Atlanta, Ga. 30383
Jonathan A. Barney, 427 Village Green Blvd., Ste. 202, Ann Arbor, Mich. 48105
John G. Batchelder, 31872 Joshua Dr., Apt. 4M, Trabuco Canyon, Calif. 92679
John A. Bauer, Foley & Lardner, 1800 Diagonal Rd., Alexandria, Va. 22313
David L. Bick, Jones, Day, Reavis & Pogue, 225 W. Washington St., Chicago, Ill. 60606
Richard L. Blackmer, P.O. Box 80237, College, Ak. 99708
Neal E. Bonrud, Jr., Dan Greenberg Radder PSC, Bank of California Ctr., 900 4th Ave., Ste. 3100, Seattle, Wash. 98164
Douglas J. Bornemann, 2321 Aldrich Ave., S., Minneapolis, Minn. 55405
William B. Boykin, 11024 Montgomery N.E., Ste. 233, Albuquerque, N.M. 8711
Paul M. Brannen, 609 Lacey Dr., Endwell, N.Y. 13760
E. Lawrence Brevik, B Two M Industries, Inc., 12923 S. Spring St. Los Angeles, Calif. 90061
Gerald L. Brigance, Litman, Mc Mahon & Brown, One Kansas City Pl., Ste. 1600, 1200 Main St., Kansas City, Mo. 64152
Steven W. Brim, 431 E. Franklin St., Kenton, Ohio 43326
Karl W. Brownell, 6232 Jacques Rd., Lockport, N.Y. 14094
Carroll L. Bryan, II, Bryan Schiffrin & Hopkins 2701 First Ave., Ste. 300, Seattle, Wash. 98121
James F. Bryan, 66 West Lane, Bay Shore, N.Y. 11706
Marc R.K. Bungeroth, Battles & Bungeroth, P.A., Main St. Prof. Bldg., P.O. Box 735, North Conway, N.H. 03860
Donald W. Canady, 11300 Sorrento Valley Rd., Ste. 200, San Diego, Calif. 92121
Stephen R. Christian, RD 1 Box 90, Painted Post, N.Y. 14870
Terrence L.J. Clausen, Clausen & Associates, 1025 W. Carlson Dr., Littleton, Colo. 80120
Joseph A. Compton, 4847 Hayvenhurst Ave., Encino, Calif. 91436
Thomas Johnson Corum, 19 Peters Rd., Riverside, Conn. 06878
Edward F. Costigan, U.S. Dept of Army, ARDEC, Picatinny Arsenal, N.J. 07806
Charles A. Cutting, Upton Rd., Andover, Me. 04216
Albert B. Dallas, 2929 Briarpark, Ste. 415, Houston, Tex. 77042
Maureen E. Dey, P.O. Box 75052, Fairbanks, Ak. 99707
Terrence Enroth Dooher, 151 Buckingham Dr., #203, Santa Clara, Calif. 95051
James S. Downes, 949 West Armitage, Chicago, Ill. 60614
Charles Fredric Duffield, Suite 218, 409 Route 70 East, Cherry Hill, N.J. 08034
Robert A. Farley, 3712 S. Elm St., Tempe, Ariz. 85282
Bernice W. Freundel, 9212 Bardon Rd., Bethesda, Md. 20814
John Warren Girvin, Jr., IBM Corporation, Route 100, P.O. Box 100, Bldg., 2/4E-05, Somers, N.Y. 10589
Danny C. Halverson, P.O. Box 1046, Livermore, Calif. 94550
Roy A. Lieder, Gravely, Lieder & Woodruff, 705 Olive St., Ste. 712, St. Louis, Mo. 63101
Channing L. Pace, 2900 Hideaway Rd., Fairfax, Va. 22031
William H. Page, II, 786 Foxdale Ave., Winnetka, Ill. 60093
Julian Y. Palmor, 7554 Devista Dr., Los Angeles, Calf. 90046
Ralph R. Palo, Johnson & Johnson, One Johnson & Johnson Plaza, New Brunswick, N.J. 08933
Magdalene J. Palumbo, 1204 S. Oakcrest Rd., Arlington, Va. 22202
Ellis A. Pangborn, 1481 Santa Rosa Circle, Reedley, Calif. 93654
Brenda J. Panichi, Fish & Neave, 875 Third Ave., New York, N.Y. 10022
Nikolay Parada, 1066 E. 13th St. Brooklyn, N.Y. 11230
Robert J. Parizek, United Technologies Corp., One Riverview Sq., East Hartford, Conn. 06108
Arthur Richard Parker, 3291 El Primo Way, Orlando, Fla. 32808
John L. Parker, 1900 Douglas St., Joliet, Ill. 60435
Paul D. Parnass, 21 Chesterfield Dr., Concord, N.H., 03301
David J. Pasz, Kraig & Pasz, 623 St. Clair Ave. N.W., Cleveland, Ohio 44113
Robert John Patterson, 107 Harvard Dr., Hartsdale, N.Y. 10530
Clarence R. Patty, Jr., 104 Paula Place, Flat Rock, N.C. 28731
Alverna M. Paulan, Mobil Oil Corp., 3225 Gallows Rd., Fairfax, Va. 22037
Martin B. Pavane, Schechter, Brucker & Panvane, P.C., 350 Fifth Ave., Suite 4510, New York, N.Y. 10118
Marc C. Pawl, Ashland Chemical Co., 5200 Blazer Memorial Pkwy., Duelin, Ohio 43017
Beverly A. Pawlikowski, 2915 Connecticut Ave., N.W., #310, Washington, D.C. 20008
Leslie J. Payne, Voryt, Sater, Seymour & Pease, 1828 L St., N.W., Suite 1111, Washington, D.C. 20036
Thomas R. Payne, 3504 Sorrento, Louisville, Ky. 40241
Clement J. Paznokas, 10424 Spoonbill Rd., W., Bradenton, Fla. 34209
Daniel H. Pearlman, 5913 Jefferson Blvd., Frederick, Md. 21702
Peter M. Peer, II, Mallinckrodt & Mallinckrodt, 10 Exchange Pl., Suite 510, Salt Lake City, Utah 84111
Stephen A. Pendorf, Sughrue, Mion, Zinn, MacPeak & Seas, 2100 Pennsylvania Ave., N.W., Washington, D.C., 20037
Karen H. Pennington, 3620 Long Beach Blvd., Suite C-5, Long Beach, Calif. 90807
Sidney Persley, Eli Lilly & Co., Patent Division, D C 1119, Lilly Corporate Ctr., Indianapolis, Ind. 46285
William V. Pesce, 428 Broadway, Massapequa Park, N.Y., 11762
Arthur M. Peslak, Shea & Gould, 1251 Avenue of the Americas, New York, N.Y. 10020
Christine A. Peterson, 4275 S. Naples Way, Aurora, Colo. 80013
Stephen L. Peterson, Finnegan, Henderson, Farabow, Garrett & Dunner, 1300 I St., N.W., Washington, D.C. 20005
Stuart R. Peterson, Peterson, Wicks, Nemer & Kamrath, P.A., Suite 1407 Soo Line Bldg., Minneapolis, Minn. 55402
Eric W. Petraske, United Technologies Corp., One Riverview Square, 7th Fl., East Hartford, Conn. 06108
Kathleen M. Petrillo, Arnold, White & Durkee, 321 N. Clark St., Suite 800, Chicago, Ill. 60610
Donald W. Phillion, Sr., 203 Carlisle Way, Rainbow City, Ala., 35901
Don Houghton Phillips, Hoechst Celanese Corp., 51 John F. Kennedy Pkwy., Short Hills, N.J. 07078
Roger C. Phillips, 37 Fox Wood Dr., Springfield, Mass. 01129
Roberta A. Picard, Stoel, Rives, Boley Jones & Grey, 600 University St., Seattle, Wash. 98101
Scott Kevin Pickens, Staas & Halsey, 1825 K. St., N.W., Washington, D.C. 20006
Carmen B. Pili Curtis, Millen, White & Zelano, 2200 Clarendon Blvd., Suite 1201, Arlington, Va. 22201
Daniel C. Pinkus, 3500 N. Lake Shore Dr., Chicago, Ill. 60657
Marcia D. Pintzuk, FMC Corp., 2000 Market St., Philadelphia, Pa. 19103
Frank I. Piper, Sherritt Gordon Ltd., P.O. Box 2800, Commerce Court West, Toronto, FRCV. CNT., M5L 1B1 Canada
John S. Piscitello, Union Carbide Corp., 39 Old Ridgebury Rd., Danbury, Conn. 06817
Alexander H. Plache, Jones, Walker, Waechter, Poitevent, Carrere & Denegre, 201 St. Charles Ave., New Orleans, La. 70170

Robert C. Platt, 2311 M St., N.W., Suite 500, Washington, D.C. 20037
Howard I. Podell, 28 Beachfront Lane, New Rochelle, N.Y. 10805
Seymour Polansky, 72 Florence Rd., Riverside, Conn. 06878
Manfred Polk, Merck & Company, Inc., P.O. Box 2000, Rahway, N.Y. 07065
Steven J. Pollinger, Christensen, O'Connor, Johnson & Kindness, 1420 Fifth Ave., 2800 Pacific First Centre, Seattle, Wash. 98101
Kevin L. Pontius, 2401 South Grant St., Arlington, Va. 22202
Lupco Popovski, Wyatt, Gerber, Burke & Badie, 645 Madison Ave., New York, N.Y. 10022
Kevin Glenn Portz, 920 Serfas Club Dr., Corona, Calif. 91720
Harmon S. Potter, 15 Rogers Ave., Bellfort, N.Y. 11713
Maria M. Potter, Walden Book Company, Inc., 201 High Ridge Rd., Stamford, Conn. 06904
Jordan C. Powell, Motorola Inc., 4250 E. Camelback Rd., Suite 300k, Phoenix, Ariz.
George W. Price, 2243 Calle Cacique, Sante Fe, N.M. 87505
Ralph M. Pritchett, Hoechst Celanese Corp., P.O. Box 9077, Corpus Christi, Tex.78469
Martha Greenewald Pugh, 11 New Providence Ave., Summit, N.J. 07901
Alfons Puishes, 1095 Market St., Grant Bldg., Suite 805, San Francisco, Calif. 94103
Paul A. Pumpian, 520 N. St., S.W., Washington, D.C. 20024
Michael J. Quillinan, 990 Lester Rd., Yorktown Heights, N.Y. 10598
Leonard M. Quittner, 41 Old Friedensburg Rd., Reading, Pa. 19606
Samuel S. Rabkin, 211 East 53rd St., New York, N.Y. 10022
Stephen Raines, Genentech, Inc., 460 Point San Bruno Blvd., South San Francisco, Calif. 94080
Leslie Rajkay, 7617 L Hirondelle Club Rd., Baltimore, Md. 21204
Robert Lloyd Randall, Eastman Kodak Co., Patent Dept., 343 State St., Rochester, N.Y. 14650
Jonathan R. Rappeport, 4532 47th Ave. N.E., Seattle, Wash. 98105
Marcus S. Rasco, P.O. Box 153729, Irving, Tex. 75015
Howard G. Rath, 6 Valley View Rd., Chappaqua, N.Y. 10514
Patricia L. Ray, Weil, Gotshal & Manges, 767 5th Ave., Room 3344, New York, N.Y. 10153
Dana M. Raymond, Brumbaugh, Graves, Donohue & Raymond, 30 Rockefeller Plaza, New York, N.Y. 10112
Walter L. Rees, 366 Turner Ave., Glen Ellyn, Ill., 60137
Robert B. Reeves, 8523 Salisbury Court, Springfield, Va. 22151
John V. Regan, 1980-4 Westminster Circle, Vero Beach, Fla. 32966
Richard J. Reilly, 1556 Virginia Way, La Jolla, Calif. 92037
Paul J. Reising, Reising, Ethington, Barnard, Perry & Milton, P.O. Box 4390, Troy, Mich. 48099
Donald P. Reynolds, Center For Intellectual Property Law, The John Marshall Law School, 315 S. Plymouth Court, Chicago, Ill. 60604
Floyd K. Reynolds, 24915 Thorndyke, Southfield, Mich. 48034
Alfred E. Riccardo, 168 Pascack Rd., Woodcliff Lake, N.J. 07675
Gretchen A. Rice, Choate, Hall & Stewart, 53 State St., Exchange Place, Boston, Mass. 02109
D. Carl Richards, Richards, Medlock & Andrews, 4500 Renaissance Tower, Dallas, Tex. 75270
Baylor G. Riddell, 1032 Dartmouth Lane, Los Altos, Calif. 94024
Philippe Y. Riesen, Fish & Neave, 1251 Avenue of the Americas, New York, N.Y. 10020
Wayland H. Riggins, 8802 Louis Drive, Huntsville, Ala. 35802
Gary L. Rigney, Rigney, Garvin & Webster, P.C., 117 Jefferson St. North, Huntsville, Ala. 35801
Robert L. Risberg, Townsend & Townsend, Khourie & Crew, One Market Plaza, Steuart St. Tower, 20th Flr., San Francisco, Calif. 94105
Calvin A. Rising, Sr., 4121 Everglades, Port Arthur, Tex. 77642
Charles F. Roberts, 605 N. Avenue, La Grande, Oreg. 97850
John Summerfield Roberts, Jr., Suite 609-S, 2111 Jefferson Davis Hwy., Arlington, Va. 22202
Douglas W. Robinson, Hoffman, Wasson & Gitler, P.C., 2361 Jeff. Davis Hwy., Suite 522, Arlington, Va. 22202
John Paul Robinson, Jr., 801 W. Ellaine, Pasadena, Tex. 77506
Emmerich T. Robitschek, Mullerstrasse 43, 8004 Zurich, Switzerland
Stephen E. Rockwell, 177 White Plains Rd., Apt. 63-X, Tarrytown, N.Y. 10591
Glenn M. Roebuck, Arnold, White & Durkee, 750 Bering Dr., Suite 400, Houston, Tex. 77450
Daniel J. Roock, 216 Patricia Dr., North Syracuse, N.Y. 13212
Simone A. Rose, Foley & Lardner, 3000 K St., N.W., Suite 500, Washington, D.C. 20007
Stuart W. Rose, Crosby, Heafey, Roach & May, 700 S. Flower St., Suite 2200, Los Angeles, Calif. 90017
Donnie Rudd, Schuin, Firsel & Burney, Ltd., 222 N. La Salle, Suite 1910, Chicago, Ill. 60601
Martin C. Ruegnegger, Bellsouth Services Inc., South E9D1, 3535 Colonnade Parkway, Birlingham, Ala. 35243
Charles W. Rummler, Tilton, Fallon, Lungmus & Chestnut, 100 S. Wacker Dr., Hartford Plaza, Suite 960, Chicago, Ill. 60606
Albert Russinoff, 119 Heather Lane, Princeton, N.J. 08540
John R. Schenian, Dow Chemical Co., Patent Dept., 1776 Bldg., Midland, Mich. 48674
James S. Schlifke, 25 E. Washington St., Ste. 600, Chicago, Ill. 60602
Lyle J. Schlyer, U.S.A. Petroleum Corp., 2701 Ocean Park Blvd., Ste. 210, Santa Monica, Calif. 90405
Werner H. Schroeder, 3026 Beechwood La., Falls Church 22042
W. Joseph Shanley, Jr., Harris Corp., 1025 W. Nasa Blvd., Melbourne, Fla. 32919
William Robert Sherman, 15 Gay St., Nantucket, Mass. 02554
Joseph Shulsinger, Suite 117, Box J, Manhattan Beach, Calif. 90266
Jerome F. Siegel, 2615 Camino Del Rio South, Suite 203, San Diego, Calif. 92108
Charles D. Simmons, Schlumberger Technology Corp., P.O. Box 2175, Houston, Tex. 77252
Charles A. Smiley, Jr., 7461 Beverly Blvd., Suite 303, Los Angeles, Calif. 90036
Louis C. Smith, Jr., 1200 Warburton Ave., Apt. 22, Yonkers, N.Y. 10701
Peggy L. Smith, 4814 Tamanaco Court, Arlington, Tex. 76017
Vance A. Smith, 10507 Timberwood Circle, Suite 208C, Louisville, Ky. 40223
Arthur I. Spechler, 16 Alluvium Lakes Dr., West Berlin, N.J. 08091
John P. Spitals, Irell & Manella, 545 Middlefield Rd., Ste. 200, Menlo Park, Calif. 94026
Alan Maclean Staubly, 17081 Sunset Ave., Shakopee, Minn. 55379
Arlyce R. Stearns, 1406 Tecumseh St., Fort Wayne, Ind. 46805
William J. Stellman, P.O. Box 786 CCNC, Pinehurst, N.C. 28374
Sidney Sternick, 7567 Amador Valley Blvd., Suite 106, Dublin Calif. 94568
Robert E. Stebens, 50 West Broad St., Le Veque Tower, Suite 1930, Columbus, Ohio 43215
Henry P. Stevens, Calif. Institute of Technology, 4800 Oak Grove Dr., Pasadena, Calif. 91103
Paul M. Stull, Fulwider, Patton, Lee & Utecht, 11 Golden Shore, Long Beach, Calif. 90801
Donald A. Teare, 339 First Parish Rd., P.O. Box 599, Scituate, Mass. 02066
Alexander Tognino, IBM Corp., 2000 Purchase St., IG-13, Purchase, N.Y. 10577
J. Derek Vandenburgh, U.S. Court of Appeals for the Federal Circuit, 717 Madison Pl., N.W., Suite 816, Washington, D.C. 20439
Suzanne E. Vertin, E.I. Du Pont De Nemours & Co., 1007 Market St., Wilmington, Del. 19898
Russell D. Weaver, Hollrah, Lange & Thoma, 1331 Lamar, Ste. 1570, Houston, Tex. 77010
Lawrence D. Weber, 14416 Hamlin St., Ste. 209, Van Nuys, Calif. 91401
Paul A. Weilein, P.O. Box 3801, South Pasadena, Calif. 91030
Leslie A. Weise, 93 Warren St., Concord, N.H. 03301
Paul B. Weisz, 3 Delaware Rim Dr., Yardley, Pa. 19067
Walter T. Weller, 5406 Theall Rd., Houston, Tex. 77066

Gerald H. Werfel, Arent, Fox, Kintner, Plotkin & Kahn, 1050 Connecticut Ave., N.W., Washington, D.C. 20036
Alfred E. Wilson, P.O. Box 50853, Fort Myers, Fla. 33905
Carl V. Wisner, Jr., 2709 N.E. 26th Terrace, Ft. Lauderdale, Fl. 33306
Robert M. Wohlfarth Sr., Dept. of Navy, Stategic Sys. Prog., P.O. Box 15187, Arlington, Va. 22217
Fredrick M. Woodruff, Gravely, Lieder & Woodruff, 705 Olive St., Ste. 712, St. Louis, Mo. 63101
George N. Woodruff, 1000 6th St., S.W., Ste. 807, Washington, D.C. 20024
R. Lynette Wylie, Mc Glinchey, Stafford, Cellini & Lang, P.C., 643 Magazine St., New Orleans, La. 70130
Jay R. Yablon, New York State Legislative Commission on Science & Tech., Agency Bldg. 4, 12th Flr., Albany, N.Y. 12248
J. Herman Yount, Jr., 31408 Adrich Dr., Bay Village, Ohio 44140
Michael Zazzara, P.O. Box 8400, Chicago, Ill. 60680

June 19, 1995

KAREN L. BOVARD, *Director*
Office of Enrollment & Discipline

Certificate of Correction
For Week of August 22, 1995

B1 5,124,538	5,310,896	5,367,648	5,396,433
D. 350,809	5,312,522	5,368,798	5,396,462
D. 352,039	5,312,928	5,369,784	5,397,783
D. 356,144	5,313,329	5,369,929	5,398,123
D. 357,347	5,318,596	5,370,035	5,398,126
D. 358,540	5,318,864	5,371,199	5,399,403
D. 358,782	5,320,663	5,371,202	5,399,598
D. 359,152	5,321,087	5,372,045	5,401,374
D. 360,058	5,323,282	5,373,492	5,401,737
4,859,938	5,324,585	5,374,441	5,401,837
4,923,632	5,331,445	5,374,628	5,401,851
4,928,662	5,334,835	5,375,433	5,402,496
4,952,174	5,335,562	5,376,058	5,402,676
4,994,032	5,336,332	5,376,567	5,403,314
5,014,752	5,336,467	5,378,075	5,404,325
5,076,765	5,338,835	5,380,690	5,404,874
5,114,777	5,340,490	5,381,164	5,404,878
5,123,563	5,340,814	5,381,286	5,405,034
5,135,766	5,341,783	5,381,390	5,405,255
5,150,140	5,341,875	5,381,395	5,405,788
5,162,955	5,341,998	5,382,140	5,406,815
5,164,410	5,342,143	5,382,307	5,407,551
5,173,772	5,343,136	5,382,365	5,407,721
5,177,083	5,343,143	5,382,623	5,407,820
5,177,193	5,343,416	5,382,857	5,408,486
5,196,145	5,343,762	5,382,938	5,409,186
5,202,567	5,345,393	5,383,042	5,409,595
5,206,153	5,346,578	5,383,214	5,409,776
5,221,831	5,348,631	5,384,368	5,409,843
5,223,606	5,348,964	5,384,423	5,410,066
5,230,888	5,349,737	5,384,806	5,410,278
5,232,829	5,351,843	5,385,297	5,410,645
5,239,983	5,352,660	5,385,512	5,410,661
5,244,799	5,353,218	5,385,885	5,410,813
5,245,037	5,353,845	5,386,430	5,411,081
5,248,380	5,355,143	5,387,482	5,411,243
5,255,310	5,356,120	5,388,259	5,411,447
5,258,429	5,356,636	5,388,760	5,411,638
5,271,337	5,357,000	5,389,430	5,411,921
5,271,770	5,357,561	5,390,376	5,412,098
5,272,161	5,357,604	5,391,015	5,412,243
5,276,198	5,358,847	5,392,134	5,412,353
5,282,370	5,362,132	5,392,578	5,412,455
5,292,113	5,362,676	5,392,864	5,412,570
5,295,255	5,363,913	5,393,804	5,413,141
5,295,937	5,365,325	5,395,720	5,413,257
5,297,730	5,365,750	5,395,764	5,413,828
5,301,411	5,366,597	5,396,128	5,413,959
5,304,496	5,366,686	5,396,267	5,414,180
5,310,739	5,367,214	5,396,282	5,414,460

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
June 12-14, 1995

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-12	EX	74/359,847	Entertainment Communications, Inc.	2(d)	Refusal Reversed		"REBEL" [radio broadcasting]	"TEXAS REBEL RADIO" [radio programming]	No
6-12	OPP	80,294	Towle Mfg. Co. v. Godinger Silver Art Co., Ltd.	2(d)	Opposition Sustained	"PAUL REVERE" and "PR" [sterling silver flatware and holloware]	"PAUL REVERE SILVERSMITHS" [silverplated candlesticks]		No
6-12	OPP	84,913	Nonvilla Software Inc. v. LaCie Ltd.	2(d)	Opposition Sustained	"TSUNAMI PRESS" [prerecorded compact discs featuring digitized color photographic images and associated program codes suited for retrieving the images in connection with a disc drive]	"TSUNAMI" [disk drives for computer workstations and personal computers]		No
6-14	OPP	81,551	Continental Baking Co. v. Lennox Candies Since 1885, Inc.	2(d)	Opposition Sustained		"CHOC'ADELLOS" [candy]	"CHOCO-DILES" [cake]	No
6-14	EX	74/196,511	Little Caesar Enterprises, Inc.	2(d)	Refusal Affirmed		"LOTSA'LOTSA!" [pizza for consumption on and off the premises]	"LOTSA HOTSA" [restaurant services]	No
6-15	OPP	89,559	E. I. du Pont de Nemours & Co. v. Scalyn Int'l., Inc.	2(d)	Opposition Sustained	"LYCRA" [synthetic fibers; apparel containing synthetic fibers]	"LYRA" [children's clothing]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Issue	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-15	EX	74/294,309	Richard Saunders Int'l., Inc.	"NEW PRODUCT PHYSICS" (conducting classes, seminars and lectures in the field of developing the ability to generate breakthrough ideas and to use the mind more effectively)		Refusal Reversed	whether the term sought to be registered is being used as a service mark for the services recited in the application		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box Designations	Explanation
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Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
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Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 17I	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
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	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
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	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez: General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	03/31/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	06/16/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	06/15/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	07/14/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	01/18/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	09/13/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/25/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	04/21/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	308-0771	03/18/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	02/18/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	12/14/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	01/24/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/09/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	03/08/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	06/02/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0661	04/21/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	04/18/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Erskine, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/30/95
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/95	05/08/95
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/95	03/01/95
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	03/06/95
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/06/95	05/01/95
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/01/95
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/95	04/12/95
Law Office 10—Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/08/95	04/03/95
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/17/95	02/27/95
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	04/17/95
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/01/94	04/03/95
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/21/94	05/25/95
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/02/95	03/29/95
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	08/10/94	—0—
Renewals (All Classes)	05/03/95	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

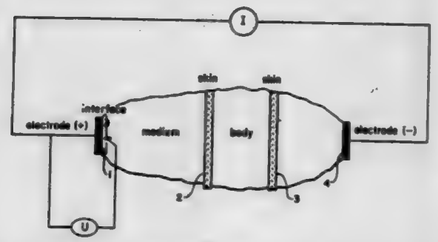
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

AUGUST 22, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,752,285 (2658th)
METHODS AND APPARATUS FOR IONTOPHORESIS APPLICATION OF MEDICAMENTS
Tomasz J. Petelenz; Robert L. Stephen, and Stephen C. Jacobsen, all of Salt Lake City, Utah, assignors to The University of Utah Research Foundation, Salt Lake City, Utah
Reexamination Request Nos. 90/001,744, Apr. 5, 1989 and 90/003,116, Jul. 6, 1993.
Reexamination Certificate for Patent No. 4,752,285, issued Jun. 21, 1988, Ser. No. 841,329, Mar. 19, 1986.
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 9, 10, 19–20 and 40 is confirmed.

Claims 1–8, 18, 21–39 are cancelled.

Claims 11–17 are determined to be patentable as amended.

New claims 41–66 are added and determined to be patentable.

40. An iontophoresis system for delivering a medicament to a patient as defined in claim 33 further comprising means for determining when the voltage at the interface of the first electrode and the medicament solution exceeds the electrolysis voltage of water so that the iontophoretic process may be terminated before injury to the patient occurs, said means comprising a sensing electrode capable of monitoring the voltage at the interface of the first electrode and the medicament solution.

B1 5,328,184 (2659th)
IRON TYPE GOLF CLUB HEAD WITH IMPROVED WEIGHT CONFIGURATION
Anthony J. Antonious, 7738 Calle Facile, Sarasota, Fla. 34238
Reexamination Request No. 90/003,646, Nov. 28, 1994
Reexamination Certificate for Patent No. 5,328,184, issued Jul. 12, 1994, Ser. No. 938,670, Sep. 1, 1992.
Continuation-in-part of Ser. No. 647,971, Jan. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 290,903, Dec. 28, 1988, Pat. No. Des. 320,056, and a continuation-in-part of Ser. No. 419,836, Oct. 11, 1989, Pat. No. Des. 327,308
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—169



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–26 is confirmed.

1. An iron type golf club head for hitting a ball along an intended line of flight, said iron type golf club head comprising:

a hosel, a heel, a toe, a ball striking face, a rear wall opposite said ball striking face, an upper surface including a top ridge, a lower surface including a sole, a center of gravity centrally located relative to said ball striking face, a peripheral mass located on said rear wall at an outer extremity of said club head, said peripheral mass and said rear wall defining a centrally located cavity formed within said peripheral mass; and

a single weight member formed on and attached solely to said rear wall within said cavity, said weight member consisting essentially of a single back bar mass extending between an edge of said peripheral mass located adjacent said lower surface and an edge of said peripheral mass located adjacent said upper surface, said back bar mass being sized to provide a significant mass at its point of location to enhance the energy transfer of a golf ball being struck during the execution of a golf stroke, and said entire back bar mass being offset and completely spaced from the club head's center of gravity.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,021

COMPOUNDING, GLAZING OR POLISHING PAD

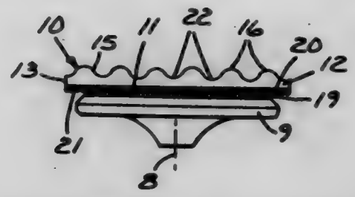
Richard L. England, Maplewood, Minn., and Thomas W. Schwartz, Troy Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,962,562, dated Oct. 16, 1990, Ser. No. 298,508, Jan. 18, 1989. Application for reissue Oct. 16, 1992, Ser. No. 962,311

Int. Cl.[6] B24B 29/00

U.S. Cl. 15—230.16

28 Claims



18. A pad for applying glaze to finish paint and adapted to be used on a drive assembly including a back up pad having a generally planar support surface and a drive motor for moving the back up pad in a plane parallel to said support surface during application of the glaze, said paint finishing pad comprising:

a layer of resiliently compressible open cell polymeric foam having a generally planar rear surface and an opposite front surface defined by a plurality of spaced projecting portions of said layer defining recess between said projecting portions, said polymeric foam from which said layer is formed having a compression deflection value generally in the range of about 0.29 to 0.49 pounds per square inch when compressed twenty five percent and generally in the range of about 0.43 to 0.77 pounds per square inch when compressed sixty five percent in accordance with the test procedure in ASTM D3574; and

means attached to said rear surface for releasably attaching said paint finishing pad to the support surface of the drive unit.

Re. 35,022

REDUCED SIZE DRIVE/FRAME ASSEMBLY FOR A RECIPROCATING FLOOR CONVEYOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Original No. 4,793,469, dated Dec. 27, 1988, Ser. No. 42,328, Apr. 24, 1987. Division of Ser. No. 477,767, Mar. 22, 1983, abandoned. Application for reissue Oct. 12, 1994, Ser. No. 321,751

Int. Cl.[6] B65G 25/04

U.S. Cl. 198—750.5

36 Claims

5. For use in a reciprocating floor conveyor of a type comprising a plurality of floor slat members mounted adjacent to each other for longitudinal reciprocation, and divided into three sets, and a hydraulic drive assembly for moving the floor slat members in one direction, for advancing a load, and for retracting them in the opposite direction, said hydraulic drive assembly being characterized by:

a pair of parallel longitudinally spaced apart mounting frame members which extend transversely of the conveyor;

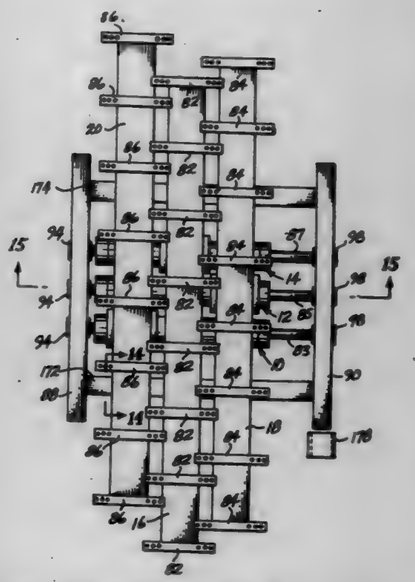
three transverse drive beams, one for each set of floor slat members, each transverse drive beam including means for connecting it to its set of floor slat members;

three reversible linear hydraulic drive units, one for each transverse drive beam, each drive unit comprising fixed opposite end portions which are secured to the mounting frame members and a movable central portion which reciprocates back and forth between the mounting frame members, said fixed and movable portions *being piston and cylinder components and including two longitudinally spaced piston head members, two longitudinally spaced cylinder head members, piston rod end portions and cylinder sidewall portions,* together defining variable volume fluid chambers;

said movable central portion being a continuous structural member including a said head member at each of its ends, each of which head members includes a fluid contacting end surface of a said variable volume fluid chamber;

said linear hydraulic drive units transmitting downward forces from the transverse drive beams to the mounting frame members;

said transverse drive beams being positioned *within a space immediately* between the mounting frame members, each



over a movable portion of a related one of the linear hydraulic drive units;

means connecting the movable *central* portion of each linear hydraulic drive unit to its related transverse drive beam;

wherein in use said transverse drive beams are moved by said linear hydraulic drive units back and forth within the space *immediately* between the mounting frame members; and

wherein one of the transverse drive beams is connected to a center section of the movable portion of its drive unit, a second of said transverse drive beams is connected to a section of the movable portion of its drive unit which is offset from center towards a first of said mounting frame members, and a third of said transverse drive beams is connected to a section of the movable portions of its drive unit which is offset from center towards the second mounting frame member.

Re. 35,023

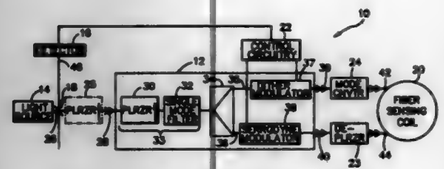
FIBER OPTIC GYRO WITH A SOURCE AT A FIRST WAVELENGTH AND A FIBER OPTIC LOOP DESIGNED FOR SINGLE MODE OPERATION AT A WAVELENGTH LONGER THAN THE FIRST WAVELENGTH

Carl M. Ferrar, East Hartford, Conn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 5,137,360, dated Aug. 11, 1992, Ser. No. 633,545, Dec. 21, 1990. Application for reissue Mar. 25, 1994, Ser. No. 218,337

Int. Cl.[6] G01C *19/72*

U.S. Cl. 356—350 12 Claims



1. An interferometric rotation sensor, comprising:

optical signal source means, for providing a source optical signal *having a primary source optical signal wavelength;*

optical fiber sensing loop means, for providing, in [the] presence of [loop] rotation *thereof,* a Sagnac phase difference between two sensing loop optical signals propagating in counter circulating paths therethrough;

[integrated optic circuit (IOC) means, having a substrate with a waveguide array formed thereon, said waveguide array including] a bi-directional common path section responsive to said source optical signal, said *bi-directional* common path *section* having a single polarization mode filter and a single spatial mode filter formed therein to pass [select] *selected* mode optical signals having a [desired] *selected* spatial mode and a [desired] *selected* polarization mode, [said waveguide means further including] *a* beam splitter/combiner means for splitting said [select] *selected* mode optical signal received from said *bi-directional* common path *section* into said two sensing loop optical signals for counter propagation through said sensing loop means, and for combining sensing loop optical signals received from said *optical fiber sensing* loop *means* into a common interference signal for return through said *bi-directional* common path *section,* said interference signal amplitude being dependent on the magnitude of said Sagnac phase difference;

detector means, for sensing the amplitude of said interference signal; and

means for coupling said source optical signal to said [IOC means] *bi-directional common path section* and for coupling said interference signal from said [IOC means] *bi-directional common path section* to said detector means;

as characterized by:

[said optical signal source means comprising a laser diode having a source optical signal wavelength;]

said [sensing loop] *optical* fiber *sensing loop means* comprising an optical fiber which is designed for single mode operation at a wavelength which is longer than said *primary optical signal* source wavelength, and wherein said [sensing loop] *optical fiber sensing loop means* embodies a signal mode conversion characteristic therein, to prevent [sensing loop] cross coupling of all optical power from [the select] *said selected* spatial mode to [undesired] *other* spatial modes *in said optical fiber sensing loop means.*

Re. 35,024

ELECTRON BEAM GUN WITH GROUNDED SHIELD TO PREVENT ARC DOWN

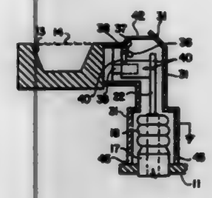
Charles W. Hanks, 3661 Willowick Dr., Ventura, Calif. 93003-1051

Original No. 5,216,690, dated Jun. 1, 1993, Ser. No. 850,686, Mar. 11, 1992. Application for reissue Mar. 24, 1994, Ser. No. 217,424

Claims priority, application WIPO, Feb. 26, 1993, PCT/US93/01830

Int. Cl.[6] H01J *37/305*

U.S. Cl. 373—10 16 Claims



13. In an electron beam gun within a high vacuum chamber subject to a preselected vacuum, a plurality of high voltage surfaces, a metallic shield surrounding all of said high voltage surfaces, means maintaining said shield at a substantially different voltage than said plurality of high voltage surfaces, said shield being spaced from said surfaces a distance less than the mean free path of electrons at said pre-selected vacuum, said high voltage surfaces comprising filament leads and an emitter structure connected through said filament leads to a high voltage source external to said chamber, said shield being formed with a small hole in the path of electrons from said emitter to a target in said vacuum chamber, a crucible, and means to focus and direct the path of electrons from said emitter structure to said crucible over an arc passing through said small hole.

Re. 35,025

BATTERY ENHANCED POWER GENERATION FOR MOBILE X-RAY MACHINE

Richard L. Anderton, West Jordan, Utah, assignor to OEC Medical Systems, Salt Lake City, Utah

Original No. 4,797,907, dated Jan. 10, 1989, Ser. No. 83,625, Aug. 7, 1987. Application for reissue Jan. 7, 1991, Ser. No. 638,176

Int. Cl.[6] H05G *1/10*

U.S. Cl. 378—101 5 Claims

5. A mobile x-ray machine for providing an image of a x-ray exposure, said X-ray machine having a X-ray tube for generating X-rays and a receptor for receiving said X-rays and providing said image, comprising:

input coupling means for coupling said machine to an external power source of approximately 110 VAC;

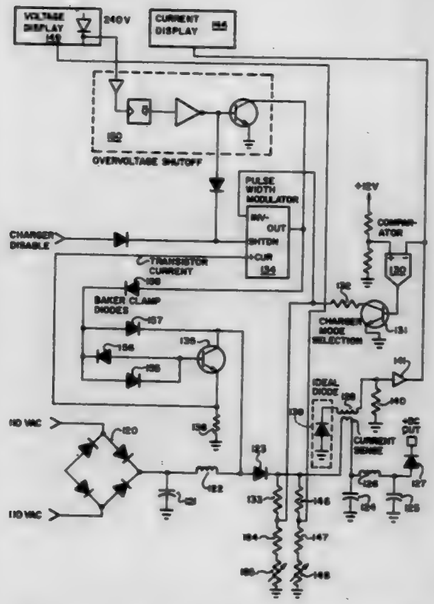
a high-voltage generation means for generating voltage and current needed to power said x-ray tube;

a plurality of batteries coupled to said high-voltage generation means for providing primary electrical power to generate said voltage and current by said high-voltage generation means during said exposure;

a charger circuit coupled to said input coupling means, high-voltage generation means and batteries for providing additional electrical power to said high-voltage generation means during periods of said exposure by converting external power from said external power source;

said charging circuit recharging said batteries during periods of no exposure, said charging circuit including a current sensor to detect current being sourced from said external power source such that when said current from said external power source exceeds a predetermined value, said charging circuit boosts voltage provided by said charging circuit; and

wherein a combination of stored power from said batteries supplemented by said external power provides for a higher-



powered exposure than alone from either one of said batteries and said external power source.

Re. 35,026

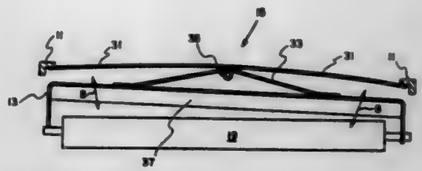
SELF-ALIGNING THERMAL PRINT HEAD AND PAPER LOADING MECHANISM

Steven A. Mahoney, McMinnville, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Original No. 5,114,251, dated May 19, 1992, Ser. No. 529,014, May 25, 1990. Application for reissue May 19, 1994, Ser. No. 245,938

Int. Cl.[6] B41J *2/32*

U.S. Cl. 400—120.17 11 Claims



4. A self-aligning thermal printer comprising:

a stationary frame;

a print head array supported by a bracket said bracket further comprising a slot at each end of said bracket;

a platen roller supported by a member slidably mounted on said stationary frame for movement between a print ready position and a paper loading position at which respective positions the platen roller is located by, and removed from, the slots in said bracket;

a leaf spring having opposite ends supported by said stationary frame so that an unsupported part of the spring can bias the bracket the print head array towards the platen roller when the platen roller is in its print ready position, and

centering means connected to said bracket and pivotally abutting the leaf spring so as to distribute the bias of the leaf spring uniformly to the bracket and the print head array when the platen roller is in its print ready position.

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PLANT PATENTS

GRANTED AUGUST 22, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,251
SHRUB ROSE PLANT NAMED 'MEIRUMOUR'
Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Sep. 28, 1994, Ser. No. 314,390
Int. Cl.[6] H01H *5/00*
U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) forms continuously throughout the season attractive simple blossoms which are Guardsman Red with a white eye on the upper surface and are white suffused and edged with Carmine Red on the under surface,
(b) exhibits a bushy growth habit, and
(c) exhibits excellent resistance to Marssonina disease;

substantially as herein shown and described.

9,252
MINIATURE ROSE PLANT NAMED 'MICPAL'
Michael C. Williams, P.O. Box 203, Cross Hill, S.C. 29332
Filed Jan. 7, 1994, Ser. No. 178,871
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—7.1 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly by blooms of blended yellow and orange coloration of which varies with light and heat intensity and borne on an upright and vigorous plant with semi-glossy greenish-purple new foliage and semi-glossy green old foliage, said plant being easy to propagate from cuttings, and said blooms being long-lasting on the plant and as cut flowers.

9,253
HYBRID TEA ROSE PLANT NAMED 'MEISOVRIS'
Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Jul. 25, 1994, Ser. No. 283,801
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance on a continuous basis large attractive fragrant blossoms that are Strawberry Red on the upper surface and Cardinal Red on the under surface,
(b) exhibits a semi-erect growth habit with bright decorative foliage,
(c) exhibits rather vigorous vegetation,
(d) is particularly suited for growing in the landscape, and
(e) exhibits good disease resistance;

substantially as herein shown and described.

9,254
INTERSPECIFIC TREE NAMED 'DAPPLE DANDY'
Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358
Filed Nov. 28, 1994, Ser. No. 345,641
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—38.1 1 Claim

1. A new and distinct variety of interspecific tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth and being a regular and productive bearer of large, firm, clingstone fruit with excellent flavor and eating quality; the fruit is further characterized by having high soluble solids, average Brix of 17.4, maturing relatively uniformly throughout the tree and having good shipping and storage quality.

9,255
APRICOT TREE 'NJA53'
Joseph C. Goffreda, Kendall Park, N.J., assignor to Rutgers University, New Brunswick, N.J.
Filed Nov. 18, 1992, Ser. No. 978,428
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—39 1 Claim

1. A new and distinct Apricot Tree cultivar, substantially as herein shown and described, characterized particularly as to novelty by the vigorous, moderately spreading growth habit of the tree, on peach rootstock, good crop production, very good dessert quality of the fruit which matures very early, and is globose, slightly compressed in shape.

9,256
TEXAS NATIVE THORNLESS MESQUITE 'BETH'
Peter Felker, 278 B, Co. Rd. 1036, Kingsville, Tex. 78160, and Andrew Korus, Rte. 1 Box 148, Stockdale, Tex. 78160
Filed Sep. 27, 1993, Ser. No. 126,875
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—51.1 1 Claim

1. A new and distinct variety of mesquite tree, *Prosopis glandulosa* var. glandulosa, substantially as illustrated and described, running true to the parent tree, which has a cold tolerance of −15 C., further characterized by being thornless, has much more of an erect habit, with smaller branch angles than the typical mesquite, does not have a typical weeping habit typical of native mesquites.

9,257
GYPSOPHILA PLANT NAMED 'MAGIC GOLAN'
Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Beit Dagan, Israel
Filed Oct. 11, 1994, Ser. No. 321,601
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct cultivar of Gypsophila plant named Magic Golan, as illustrated and described.

9,258
VARIETY OF LILIUM NAMED 'HOLECA'
Petrus M. M. Hoff, Steenbergen, Netherlands, assignor to Hoffgaarde B.V., Steenbergen, Netherlands
Filed Sep. 26, 1994, Ser. No. 312,211
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct variety of lily plant substantially as shown and described.

9,259
LILIUM 'BALLERINA'
Homme Mantel, 15361 SE. Bluff Rd., P.O. Box 1314, Sandy, Oreg. 97009
Filed Dec. 6, 1994, Ser. No. 350,139
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease, its tolerance of virus, its vigorous growth and rapid natural propagation; the excellence of its

flower form and substance; its versatility both as a garden plant and as a cut-flower produced from pre-cooled bulbs forced under glass out of season; and in particular by its unique outfacing to semi-upfacing, non-fading, deep orange to orange-red flowers, borne on an elongae racemose inflorescence with occasional secondary buds, a combination unique among hybrid lilies suited to forcing and to mass commercial cultivation.

9,260

FERN PLANT NAMED DELILA

Miriam Aharoni, Kibbutz Yifat, Israel, assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Jun. 7, 1994, Ser. No. 257,101
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.3 1 Claim

1. A new and distinct cultivar of Fern plant named Delila, as illustrated and described.

PATENTS

GRANTED AUG. 22, 1995

ERRATA

For CLASS	See PATENT NO.
128–670	5,442,940
081–439	5,442,982
600–133	5,443,057
600–188	5,443,058
137–484	5,443,083
188–003	5,443,131
188–138	5,443,132
188–250	5,443,133
188–344	5,443,134
188–250	5,443,135
188–071	5,443,141
188–374	5,443,146
192–027	5,443,147
192–048	5,443,148
206–387	5,443,159
206–561	5,443,160
206–581	5,443,161
267–283	5,443,247
073–863	5,443,271
294–087	5,443,298
425–549	5,443,381
602–026	5,443,444
428–380	5,443,455
607–098	5,443,470
604–164	5,443,484
419–002	5,443,510
241–029	5,443,567
241–189	5,443,568
014–002	5,443,584
429–134	5,443,600
216–037	5,443,686
216–027	5,443,687
216–013	5,443,688
216–063	5,443,689

ERRATA–CONTINUED

For CLASS	See PATENT NO.
430–286	5,443,690
424–078	5,443,760
424–401	5,443,855
428–001	5,443,864
424–001	5,443,953
524–507	5,444,128
526–348	5,444,145
424–001	5,444,153
435–240	5,444,156
540–133	5,444,163
548–521	5,444,165
536–007	5,444,174
218–118	5,444,201
219–506	5,444,227
219–549	5,444,228
219–630	5,444,229
365–207	5,444,305
327–565	5,444,311
327–552	5,444,312
363–087	5,444,357
360–064	5,444,575
395–182	5,444,714
395–183	5,444,722

PATENTS

GRANTED AUGUST 22, 1995

GENERAL AND MECHANICAL

5,442,815
CUT RESISTANT PROTECTIVE GLOVE

David S. Cordova, Midlothian; Gene C. Weedon, Richmond; Robert C. Wieckhofer, Richmond; Mark B. Boone, Richmond; Kevin M. Kirkland, Richmond, all of Va.; Charles P. Weber, Jr., Monroe, N.C., and Gregory J. LeCasse, Lancaster, Pa., assignors to AlliedSignal, Inc., Morristownship, Morris County, N.J.

Continuation of Ser. No. 798,983, Nov. 29, 1991, abandoned, which is a continuation of Ser. No. 462,249, Jan. 9, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 931,126
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.7
18 Claims



1. A flexible, uncoated glove made from a nonmetallic fabric wherein said nonmetallic fabrics formed yarn comprising at least one elastomeric core fiber overwrapped with at least one type of cut resistant fiber selected from the group consisting of high molecular weight polyethylene, aramid, high molecular weight polyvinyl alcohol, high molecular weight polyacrylonitrile and liquid crystal polyester, wherein the glove is compliant and ofers a high degree of tactility, weighs no more than about 30 g and is cut resistant over some portion thereof by enduring without cutting through at least 5 cycles of an impact cam cut test.

5,442,816
SURGICAL GLOVE

Nicholas F. Sekeis, 21 Beethoven St., Binghamton, N.Y. 13905

Filed Feb. 5, 1993, Ser. No. 14,252
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.7
12 Claims

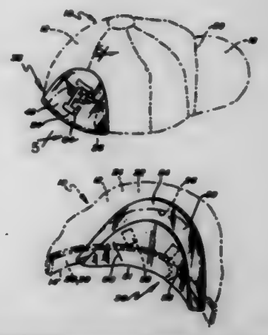


1. A surgical or examination glove comprising connected palm, fingers, thumb, wrist and forearm portions having palmar, medial, lateral and dorsal surfaces comprising a layer of film impervious to body fluids and being cut and puncture resistant, the glove having palmar distal phalangeal finger segments with a thickness less than a thickness of the rest of the palmar surface of the glove, palmar middle phalangeal finger segments of the glove having a thickness more than the thickness of the palmar distal phalangeal finger segments and equal to a thickness of a palmar distal phalangeal thumb segment, palmar proximal phalangeal finger segments of the glove having a thickness similar to a thickness of a palmar proximal phalangeal thumb segment, a thenar portion of the palm and a palmar segment of the palm having a thickness greater than a thickness of the palmar proximal phalangeal finger segments, and a forearm segment having a thickness greater than a thickness of the rest of the glove, the most distal segments of the palmar surface of the fingers being thinner than the palmar middle segments and having a thickness not greater than thicknesses of the medial, lateral and dorsal surfaces of the glove, and the palmar surface having an increasing thickness in a direction extending from the distal phalangeal segments to the forearm.

5,442,817
CARDBOARD EMBLEM BEARING CAP ATTACHMENT FOR ADJUSTABLE CAPS

Jon S. Miner, New Brighton, Minn., assignor to InterNatural Designs, Inc., Minneapolis, Minn.

Filed Jul. 23, 1993, Ser. No. 96,694
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] A42B *1/24*
U.S. Cl. 2—195.1
12 Claims



1. An emblem bearing cap attachment for mounting to a cap having a crown for fitting on a human head with a lower periphery, a rearward portion with an opening along the lower periphery, a band extending around the inside of the lower periphery of the crown and a band size adjustment strap extending from the band across the opening for sizing the cap, the emblem bearing cap attachment comprising:

(a) a substantial planar body of a relatively stiff material defining a forward surface and a rearward surface having a folding line extending centrally across the planar body defining a facing panel and a backing panel respectively above and below the folding line, the folding line facilitating a folding of the body about and capturing and enclosing the adjustment strap to position the rearward surface of the facing panel in confronting relationship with the rearward surface of the backing panel as to close the opening with the facing panel;

(b) secondary radial creases in the backing panel for facilitating an arcuate bending of the backing panel conforming with the adjustment strap and the head; and

(c) fastening means on the rearward surface substantially equally spaced from the folding line for securing the panels in confronting relationship just above the adjustment strap to secure and support the cap attachment to the cap.

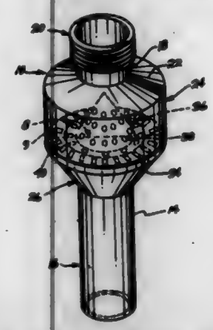
5,442,818
INNER LINING AND PROCESS FOR MAKING IT
Paul Loos, Bruckhofstrasse 5, A-4600 Thalheim b. Wels, Austria
PCT No. PCT/EP91/02443, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/17332, PCT Pub. Date Oct. 15, 1992
PCT Filed Dec. 18, 1991, Ser. No. 119,250
Claims priority, application Switzerland, Mar. 27, 1991, 928/91
Int. Cl.[6] A41D 27/02
U.S. Cl. 2—272 25 Claims



23. An item of equipment comprising:
an inner lining having cut parts that are joined together along edges to form connecting lines, each of the cut parts having at least one textile material layer and at least one semipermeable membrane layer joined together in a slip-proof and semipermeable manner over their entire common surfaces, the edges along the connecting lines between the membrane layers of adjacent cut parts being welded to each other, and the edges along the connecting lines between the textile material layers of adjacent cut parts being joined together independently of the membrane layers by sewing;
said inner lining being joined to an inside surface of said item of equipment over substantially an entire outer surface of said inner lining in a semipermeable and slip-proof manner.

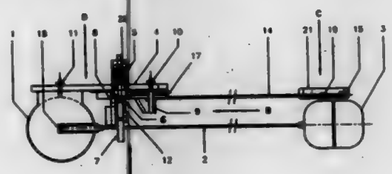
5,442,819
ARTICLE CATCHER FOR SINK DRAIN
Ernie R. Penor, and Amelita P. Penor, both of 4205 Peasley Canyon Rd., Asburn, Wash. 98001
Filed May 23, 1994, Ser. No. 247,870
Int. Cl.[6] E03C 1/26
U.S. Cl. 4—288 4 Claims

1. For use in a drainpipe system for a sink, an article catcher comprising:
an upper end tubular inlet portion connectable to a sink drain outlet member;
a lower end tubular outlet portion connectable to a drain pipe member; and
a catcher portion interconnected between said upper end tubular inlet portion and said lower end tubular outlet portion;
said catcher portion comprising a housing including an annular top wall having a small diameter inner edge defining a central opening and a large diameter outer edge;
said upper end tubular inlet portion being connected to said annular top wall generally at said small diameter inner edge, and extending upwardly from said annular top wall;
said housing also including a cylindrical upper sidewall having an upper end connected to the outer edge of the annular top wall and a lower end spaced axially below the upper end, and a converging lower sidewall having an upper end connected to the lower end of the cylindrical upper sidewall, and a lower end connected to the lower end tubular outlet portion;
said lower end tubular outlet portion extending axially downwardly from the lower end of said converging lower sidewall;
a catcher wall within said housing, said catcher wall including an annular radial wall portion having an outer edge connected to said catcher housing portion and an inner edge, and a conical wall portion having a base end connected to the inner edge of said annular radial wall portion, said conical wall portion extending upwardly from



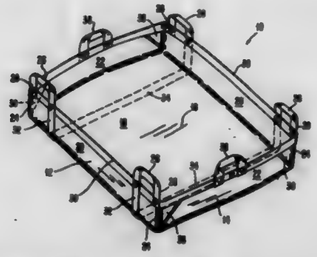
said annular radial wall portion to an upper end apex that is positioned below the central opening in the annular top wall;
said annular radial wall portion of the catcher wall including a plurality of circumferentially spaced, radially elongated openings for passing drain water;
said conical portion of the catcher wall including a plurality of additional openings for passing drain water; and
said cylindrical sidewall being made from a clear material so that a person can look into the housing and see any article that may have fallen through the sink drain outlet member onto the catcher wall.

5,442,820
TOILET TANK FLUSHING MECHANISM
Henry A. Becker, 3 Hawk Hill Way, Caledon Ontario, Canada L0N 1C0
Filed May 13, 1994, Ser. No. 242,353
Claims priority, application Canada, May 13, 1993, 2096178
Int. Cl.[6] E03D 1/00
U.S. Cl. 4—415 13 Claims



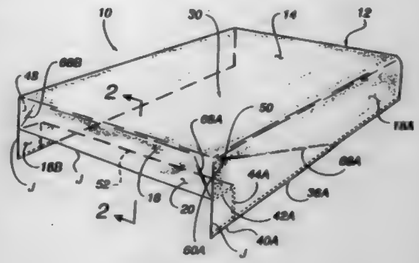
1. A toilet tank flushing mechanism comprising:
a ballcock operatively mounted within said toilet tank for receiving water from an external source, and selectively permitting water from said external source to enter into said toilet tank;
a primary float arm operatively mounted on said ballcock for movement between a raised shut-off position and a lowered refilling position whereby said ballcock is caused either to be closed or open, respectively;
a holding member operatively mounted on said ballcock for movement between a holding position whereat said primary float arm is held in its raised shut-off position and a tilted release position whereat said primary float arm is released so as to be permitted to move to its lowered refilling position;
a trigger member operatively mounted on said ballcock for movement between a set position whereat said holding member is retained in its holding position and a freeing position whereat said holding member is suddenly freed so as to permit said holding member to move to its tilted release position, said trigger member having a cam follower;
a water level tracking float arm operatively mounted on said ballcock for pivotal movement between a raised neutral position whereat said trigger member is permitted to travel to its said set position and a lowered trip position whereat said trigger member is caused to move to its releasing position; and
a cam surface mounted on said ballcock assembly and being associated with said water level tracking float arm so as to slideably engage with said cam follower upon pivotal movement of said water level tracking float arm so as to cause said trigger member to move to said freeing position when said water level tracking float arm is in its lowered trip position.

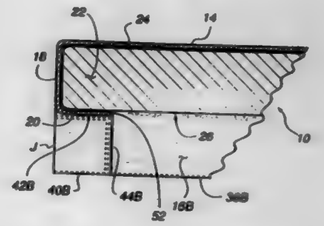
5,442,821
PATIENT TRANSFER SLING
Carole G. Weeks, 117 Boswell Dr., Holly Hill, Fla. 32117
Filed Sep. 3, 1993, Ser. No. 116,335
Int. Cl.[6] A61G 7/10
U.S. Cl. 5—81.1 16 Claims



1. A transfer sling for patients comprising:
a trough of strong flexible sheet material having a bottom, opposite side walls and opposite end walls, said side walls being connected to said end walls at four corners, said side and end walls and said corners all extending substantially the same distance upwardly from the bottom to form the trough;
a reinforced edge extending along said side walls, end walls and around said four corners, said reinforced edge being spaced upwardly from the bottom;
a pair of flexible handle straps connected to each of said side walls, each handle strap extending beyond the reinforced edge of each side wall and being adjacent one of said corners; and
a further handle strap fixed to each of said end walls, each further handle strap being intermediate the corners of each end wall respectively and extending beyond the reinforced edge of each end wall.

5,442,822
FITTED BEDDING HAVING A MATTRESS POCKET AND METHOD OF FABRICATION
Clementina R. Diaz, El Sobrante, Calif., assignor to Karen Alexander Blass, Oakland, Calif., a part interest
Continuation of Ser. No. 21,778, Feb. 24, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 272,855
Int. Cl.[6] A47C 9/02
U.S. Cl. 5—497 9 Claims





1. A fitted sheet for a mattress, comprising:
a sheet of fabric, including a generally rectangular main panel, said main panel having an upper end, a lower end, and first and second longitudinal edges or sides;
said sheet of fabric including first and second generally rectangular side-extensions extending from said lower end of said main panel, each of said side-extensions having an outer and an inner opposite longitudinal edge and a free lateral edge, each of said outer edges being aligned with a corresponding one of said first and second longitudinal side edges of said main panel;
said sheet of fabric further including a generally rectangular central-extension extending from said lower end (34) of said main panel between said side-extensions and spaced apart therefrom, said central-extension having first and second opposite longitudinal edges, each thereof having a length greater than the depth of the mattress, and a free lateral edge having a length corresponding to the width of the mattress;
said central side extension and said first and second side-extensions being spaced such that respectively first and second edge-portions of said main panel are located therebetween, each of said edge-portions having a length corresponding to the depth of the mattress; and
said first edge-portion of said main panel and said innermost edge of said first side-extension being aligned with and attached to said first longitudinal edge of said central-extension, and said second edge-portion of said main panel and said innermost edge of said second side extension being aligned with and attached to said second longitudinal edge of said central-extension, thereby forming a pocket for receiving the mattress.

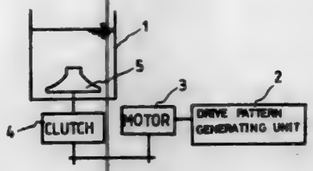
5,442,823
WHEELCHAIR CUSHION UTILIZING FOAMS OF DIFFERENT STIFFNESSES
Allen R. Siekman, Amherst, and Julius E. Nachod, III, Lakewood, both of Ohio, assignors to Invacare Corporation, Elyria, Ohio
Filed Jan. 6, 1993, Ser. No. 1,381
Int. Cl.[6] A47C 27/15, 7/02
U.S. Cl. 5—653 25 Claims



1. A wheelchair cushion comprising:
a first element, said first element having a first stiffness, said first element having top, front, rear, and side surfaces;
a second element, said second element having a second stiffness, said second element having top, front, rear, and right and left side surfaces, said front surface of said second element contiguous to said rear surface of said first element;
a third element having top, front, rear, and right and left side surfaces, said right side surface of said second element being contiguous to said left side surface of said third element, said right side surface of said second element and said left side surface of said third element making an angle between 10 degrees and 80 degrees with a vertical central plane; and,
a fourth element having top, front, rear, and right and left side surfaces, said left side surface of said second element being contiguous with said right side surface of said fourth element, said left side surface of said second element and said right side surface of said fourth element making an angle between 10 degrees and 80 degrees with said vertical central plane.

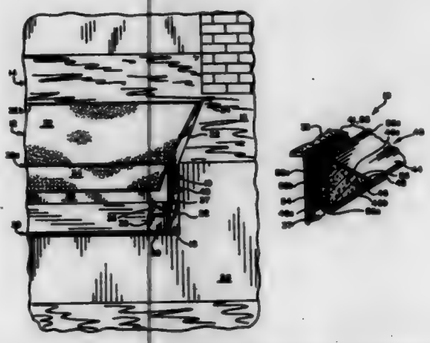
5,442,824
APPARATUS FOR AND METHOD OF CONTROLLING WATER FLOW IN WASHER
Jung H. Kim, Seoul; Hyung S. Kim, Kyungki; Byeong H. Lee, Kyungki; Young H. Roh, Kyungki, and Hae Y. Chung, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea
Filed Oct. 14, 1993, Ser. No. 136,976
Claims priority, application Rep. of Korea, Jun. 19, 1993, 11232/1993
Int. Cl.[6] D06F 33/04
U.S. Cl. 8—159 4 Claims

4. A method of controlling a water flow in a washer comprising the steps of:
(a) setting an initial value (Xo) of a solution of a function ($X=\mu Xo(1-Xo)$) and minimum and maximum values of a parameter and selecting a current parameter value as a minimum value;
(b) calculating a value of said function from the initial value and parameter value which have been set in step (a), and iteratively calculating the function value by inputting the calculated value as a solution of the function until the value of the function is obtained repeatedly at a predetermined period;
(c) calculating a value of said function as many times as a predetermined number (I) by inputting said value as a solution of said function and outputting said function value;



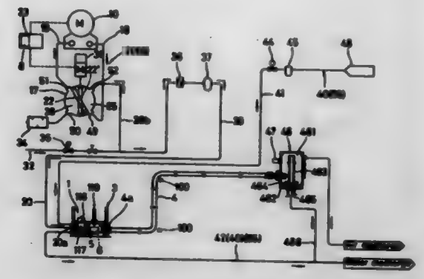
(d) repeatedly executing said steps (a), (b) and (c) until the minimum value of the parameter comes to the maximum value thereof by increasing the minimum value of the parameter as much as a predetermined level ($\Delta\mu$); and
(e) generating a drive pattern of a motor of a washer corresponding to the function values repeatedly outputted in steps (c) and (d).

5,442,825
DOCK LEVELER WEATHER SEAL
Norbert Hahn, Franklin, Wis.; William Triervieler, Dubuque, Iowa; Richard Kellermann, Franklin, and Jeff Schwager, Mequon, both of Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.
Filed Nov. 22, 1993, Ser. No. 156,231
Int. Cl.[6] E01D 1/00
U.S. Cl. 14—71.1 15 Claims



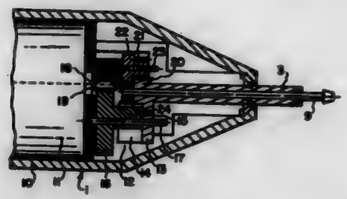
1. A seal assembly for use in a dock leveler for spanning a loading dock and a bed of a vehicle in loading or unloading position in front of the dock, the loading dock having a pit defined by opposing side walls, a rear wall and a floor, the dock leveler having a frame mounted in said pit, a deck having a front portion and a rear portion that is pivotally connected to said frame so that the deck can pivot up and down about a horizontal axis between a horizontal position wherein the deck is substantially co-planar with a loading surface of the dock, a raised, upwardly inclined position, and a lowered, downwardly inclined position, the dock leveler having opposing deck side walls which are adjacent to and move vertically relative to said pit side walls, the seal assembly comprising a seal body having a compressible core capable of resiliently and compressibly engaging the deck and pit walls to form an air-blocking seal and an attachment member for mounting the seal body to only one of the deck side wall and pit side wall so that said seal body may slidably engage the other of the deck side wall and the pit side wall and form said seal when the deck is in the horizontal or lowered position.

5,442,826
APPARATUS FOR CLEANING THE INSIDE OF A PIPE
Kazuo Murata; Hiroshi Tada; Yoshitaka Koishi, all of Hirakata; Osamu Matsui, Osaka; Kiyoshi Morimoto, Mishima; Yoshiki Sasada, Shizuoka, and Teiichi Miwa, Mishima, all of Japan, assignors to Matsui Manufacturing Co., Ltd., Osaka and Kyowa Hakko Kogyo Co., Ltd., Tokyo, both of Japan
Filed Jul. 6, 1993, Ser. No. 88,199
Claims priority, application Japan, Jul. 24, 1992, 4-239951
Int. Cl.[6] B08B 9/02
U.S. Cl. 15—3.51 32 Claims



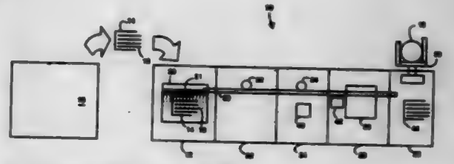
1. An apparatus for cleaning an inside of a pipe, the apparatus comprising a pig removably inserted in the pipe and a vibration generating source for moving the pig to and fro under aerial vibration whereby the inside of the pipe is cleaned.

5,442,827
ELECTRIC TOOTHBRUSH
Edgar Hommann, Grossaffoltern, Switzerland, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 19, 1993, Ser. No. 138,787
Int. Cl.[6] A61C 17/34; A46B 13/02
U.S. Cl. 15—22.1 3 Claims



1. An electric toothbrush comprising:
a) a hand-held handle component having a longitudinal axis and containing a motor having a rotating drive shaft and an inner shaft telescopingly and coaxially positioned within an outer shaft, said inner and outer shafts extending exteriorly from said handle component;
b) gear means having first and second operating portions interconnecting said motor drive shaft with said outer and inner shafts, respectively, said gear means being operable to transmit the rotational movement of said motor drive shaft to simultaneous yet discrete oscillating movements of said outer and inner shafts about their common longitudinal axis;
c) a brush head having an outer casing, a brush head shaft disposed within said casing, and at least one bristle tuft connected to and individually movable by said brush head shaft, said brush head being connected to said handle component such that said outer casing is frictionally engaged to and rotationally movable with said outer shaft, said handle inner shaft colinearly and rotationally fixed to said brush head shaft whereby said oscillating movement of said handle portion inner shaft causes a corresponding oscillating movement of said brush head shaft which ultimately moves said at least one bristle tuft;
wherein said first operating portion of said gear means which moves said outer shaft comprises:
i) a first pinion gear mounted to and rotatable with said motor drive shaft about a first axis which lies parallel to said longitudinal axis of said handle component;
ii) a first toothed gear positioned in meshing engagement with said first pinion gear, said first toothed gear being rotatable about a second axis which lies spaced and parallel to said first axis;
iii) an eccentric fixedly attached to and rotatable with said first toothed gear; and
iv) a radially extending crank guide fixedly attached to said outer shaft so as to be movable therewith, said crank guide and said eccentric being coupled such that rotation of said eccentric causes said oscillating movement of said crank guide and said outer shaft.

5,442,828
DOUBLE-SIDED WAFER SCRUBBER WITH A WET SUBMERSING SILICON WAFER INDEXER
Rick A. Lutz, San Jose, Calif., assignor to Ontrak Systems, Inc., Milpitas, Calif.
Filed Nov. 30, 1992, Ser. No. 982,830
Int. Cl.[6] A47L 25/00; B65H 3/08
U.S. Cl. 15—88.3 8 Claims



1. A wet indexer, comprising:
a tank for holding a processing solution and for accepting a cassette of wafers from a previous processing station and for pre-soaking said wafers in said processing solution while said wafers are in a queue waiting for transfer to a subsequent stage;
wafer outlet means in a side of the tank for a non-contacting passing of individual said wafers out of the tank; and
liquid jet means for motivating individual said wafers to pass from said cassette and out through the wafer outlet means.

5,442,829
PERSONAL HAND AND NAIL BRUSH
Andre D. Summers, 6 Massconomet Ave., Norfolk, Mass. 02056
Filed Sep. 29, 1994, Ser. No. 314,957
Int. Cl.[6] A46B 5/02; A45D 29/17
U.S. Cl. 15—106 12 Claims

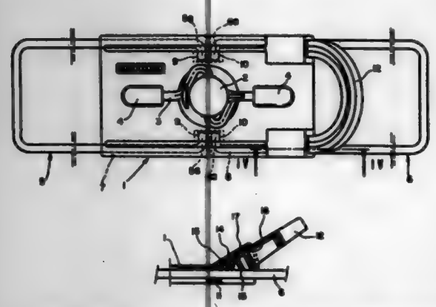
1. A brush comprising:
a body having a substantially flat, elongated portion including two ends and a recessed portion having two side edges, one of said two side edges of said recessed portion being continuous with one of said two ends of said substantially flat, elongated portion with the other of said two side edges of said recessed portion being free with a terminal surface of said other of said two side edges of said recessed portion being spaced from and in a same plane as said substantially flat, elongated portion so that said re-

cessed portion defines an elongated channel extending along said one end of said substantially flat, elongated portion,



said substantially flat, elongated portion and said recessed portion including bristles extending from one side of said body with said bristles of said substantially flat, elongated portion being a different length from a length of said bristles of said recessed portion.

5,442,830
FLOOR MOP
Heinz J. Ohm, Limburg, Germany, assignor to Leifheit AG, Lahn, Germany
Filed Feb. 9, 1994, Ser. No. 193,792
Claims priority, application Germany, Feb. 11, 1993, 43 03 993.6; Dec. 24, 1993, 43 45 138.1
Int. Cl.[6] A47L *13/253*
U.S. Cl. 15—147.2 **24 Claims**



1. A floor mop, adapted to receive a removable cover (20), comprising
a carrier plate (1);
two generally bail-like frame parts (5, 6) of essentially U shape, having legs extending along the carrier plate (1) for receiving the removable cover;
means (6a, 10) for pivotably supporting one frame part (6) on the carrier plate for pivotable movement about an axis (A) extending transversely to said carrier plate between an extended position, essentially parallel to said carrier plate, and a raised position, at an angle thereto; and
locking means (11) constraining said movable frame part (6) in an extending position on said carrier plate (1), comprising
a lever (12) pivotable mounted on the carrier plate (1) and engaging the pivotable frame part (6) for pivoting the pivotable frame part out of its extended position and overcoming the locking effect of the locking means (11) to permit release of the removable cover from said frame parts (5, 6); and
wherein the locking means for the pivotable frame part (6) is formed by protruding means (11) on the carrier plate (1), cooperating with the legs of the movable frame part, the legs of said movable frame part being spread apart upon movement of the lever (12), thereby overcoming the locking effect of said locking means (11).

5,442,831
ANGULARLY ADJUSTABLE TOOTHBRUSH
Todd H. Yamada, 13900 Tahiti Way, #127, Marina Del Rey, Calif. 90292
Filed Feb. 6, 1995, Ser. No. 383,837
Int. Cl.[6] A46B *9/04*
U.S. Cl. 15—167.1 **6 Claims**



1. An adjustable toothbrush, said toothbrush comprising:
a forward elongated section and an elongated handle section, each section having an axis adapted for coaxial alignment with the axis of the other section; each said section having a first end and a second end;
the first end of the forward section being provided with a bristle array extending normally from an upper side of the forward section; the second end of the forward section terminating in a cylindrically rounded member having an outer wall, the axis of which is transverse to the axis of the forward section, and said member being of a predetermined thickness defined by parallel spaced apart coaxial faces, and flanked by a pair of concave shoulders with their axis of concavity being parallel to the axis of the said member, said member further having an axial orifice and a series of spaced apart aligned recesses extending inwardly from the outer wall of the member, one of said recesses being disposed in the axis of the forward section;
the first end of the handle section being bifurcated to provide a pair of arms spaced from each other by a transverse wall extending a distance slightly more than the predetermined thickness of said cylindrical rounded member, thereby to enable said arms to embrace said member, and each of said arms having an orifice extending transversely of the axis of the handle member and alignable in register with the orifice in the cylindrically rounded member; and an axle inserted in the aligned orifices and extending from outer faces of the arms through the orifice in the said member;
said handle section further having an axial bore extending from the wall between the arms of the handle section for a predetermined distance toward the second end of the handle section, a portion of the first end of the handle section which defines said axial bore being slotted for a second predetermined axial distance between the bore and an outer wall of the handle section;
an elongated plunger, said plunger having a forward end and an after end and adapted to slide reciprocally in the bore between a first position in which the forward end of the plunger is extended into one of the recesses in the cylindrically rounded member, and a second position in which the forward end of the plunger is withdrawn from a recess in the cylindrically rounded member; and spring means extending between the after end of said plunger to an inner end of the bore, said spring means serving to bias said reciprocatable plunger into one of the recesses in the cylindrical rounded member of the forward section; and
a control member extending radially from and secured to a side of the plunger through the slotting and beyond the outer wall of the handle section to enable the fingers of a toothbrush user to move the control member rearward in the slotting to cause the plunger to move from its first position to its second position in which latter position the forward section of the brush may be pivoted about an axis of the axle to change the orientation of the axis of the forward section with respect to the axis of the handle section to be fixed in a preselected orientation upon the release of the control member, whereby the plunger will be forced by the spring means into a respective one of the recesses in the cylindrical rounded member of the forward section to lock the forward section at the angle with respect to the handle section determined by the recess into which the forward end of the plunger is inserted.

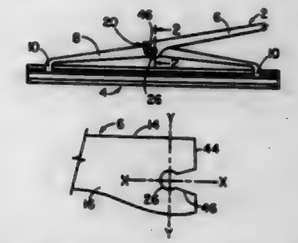
5,442,832
ADJUSTABLE TROWEL
Wayne M. Tonnager, 24311 Natchez Ave., Lakeville, Minn. 55044
Filed Apr. 19, 1994, Ser. No. 229,778
Int. Cl.[6] E01C *19/12*
U.S. Cl. 15—235.7 **7 Claims**



1. An adjustable trowel comprising:
(a) first and second generally identical planar blade members, each including a plurality of integrally formed, flat, generally L-shaped tab members projecting out of the plane of said first and second blade members along one edge thereof at a predetermined angle, the tab members being equally spaced from one another by a predetermined distance and engaged in interdigitated, interlocking relationship whereby said L-shaped tabs members of the first planar blade member are oriented in an inverted relationship relative to said L-shaped tab members of said second planar blade member, and forming a pinless hinge coupling of said first and second planar blade members, and
(b) handle means cooperating with said planar blade members for releasably locking said planar blade members together with a desired angle therebetween, the desired angle lying between first and second limiting angles.

5,442,833
SCREEN WIPER HAVING ARTICULATED ELEMENTS
Jean-Louis Teissdre, Lezoux, France, assignor to Valeo Systemes D'Essuyage, Montigny-Le-Bretonneux, France
Filed Jun. 27, 1994, Ser. No. 266,010
Claims priority, application France, Jul. 1, 1993, 93 08065
Int. Cl.[6] B60S *1/38, 1/40*
U.S. Cl. 15—250.31 **7 Claims**

1. A screen wiper, having a wiping strip and a swinging linkage carrying said wiping strip, the linkage comprising a first elongated element defining a longitudinal axis and defining a channel portion of a U-shaped transverse cross section, a second element received in said channel portion, with each of said first and second elements having a respective pair of longitudinally extending side walls, said first elongated element having an end which is defined by a terminal edge, said edge lying in a plane perpendicular to said longitudinal axis, each of said first and second elements having a pair of aligned holes formed within said side wall 5, said first element side walls further having slots joining said respective holes to said associated terminal edge, and an insert piece interposed between said first and second elements, the insert piece having side walls interposed between the side walls of the first element and those of the second element, the insert piece further having annular locating bushes protruding from its side walls, wherein said side wall holes each receive, respectively, an insert piece locating bush.



5,442,834
WINDSHIELD SCRUBBER AND BLADE WIPING ASSEMBLY
Joseph W. Perry, 1820 W. Roma Ave., Phoenix, Ariz. 85015
Filed Sep. 15, 1994, Ser. No. 306,577
Int. Cl.[6] B60S *1/28, 1/40, 1/44, 1/46*
U.S. Cl. 15—250.4 **3 Claims**



1. A vehicular windshield cleaning apparatus for cleaning a windshield, said apparatus comprising:
a wiper arm, a wiper blade assembly including an elongated wiper blade,
a deformable, elongated scrubber detachably clamped to said blade assembly by a coupling such that said blade and said scrubber extend substantially parallel to one another, said deformable scrubber adapted to flatten when placed in contact with the windshield,
a conduit coupled with said scrubber for conducting water under pressure from a source to said scrubber for dispersal along the length thereof for intensifying the cleaning effort thereof,
cam means rotatably coupling the blade assembly to said wiper arm for rotating and positioning said wiper blade and scrubber relative to said wiper arm for selectively and sequentially locking one of said wiper blade and scrubber of said window cleaning apparatus in contact with the associated windshield,
said cam means comprising a housing having first and second ends, said second end being coupled with the wiper arm and said first end being hollow and including a longi-

tudinal slot therein communicating with said hollow, said first end also rotatably supporting a cam track body thereon, said cam track body includes an elongated curved slot therethrough, said cam means further comprises a cam received in said hollow first end and extending through said longitudinal slot and said curved slot such that when said wiper blade is in contact with the windshield said cam is at one end of said curved slot and when said scrubber is in contact with the windshield, said cam is at the other end of said curved slot; and

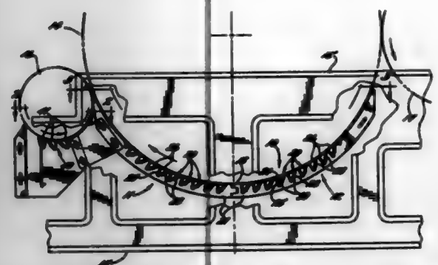
actuator means coupled with said cam for moving said cam between the ends of the longitudinal slot to thereby rotate said wiper blade assembly.

5,442,835

SCREENS FOR A CARDING MACHINE

Fletcher Walker, and Thomas A. Dixon, both of Gastonia, N.C., assignors to Jenkins Metal Corporation, Gastonia, N.C.

Filed Jun. 15, 1994, Ser. No. 267,010
Int. Cl.[6] D01G *15/34*
U.S. Cl. 19—95 7 Claims



1. A screen for use with a carding machine having a rotatable cylinder, the screen having side ribs and grid bars, each grid bar being of triangular configuration in cross-section and extending the entire distance, without interruption, between the side ribs, each grid bar being fixed to the side ribs with one side extending downwardly at about a 50° angle to a radius of a rotatable cylinder and facing air currents generated during rotation of a cylinder in use, a second side of each grid bar extending radially from a radius of a cylinder in use, the third side of each grid bar extending in substantially parallel relation to the circumference of a cylinder in use, said one side of each grid bar being of a greater width than the other two sides, and the second side of each grid bar being of a greater width than the third side of that grid bar.

5,442,836

APPARATUS FOR MAKING A NONWOVEN WEB BY SUCKING FIBERS FROM A CARDING DRUM ONTO A MOVING FIBER COLLECTING SURFACE

Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jun. 8, 1994, Ser. No. 255,645
Claims priority, application Austria, Jun. 18, 1993, 1198/93; Dec. 10, 1993, 2491/93
Int. Cl.[6] D01G *25/00*
U.S. Cl. 19—304 8 Claims

1. An apparatus for making a nonwoven web, comprising

(a) a carding drum having a peripheral surface and operable to rotate in a predetermined direction of rotation,

(b) a continuously movable, air-permeable fiber collecting member spaced from a portion of the peripheral carding drum surface, the fiber collecting member having a fiber collecting surface facing the peripheral carding drum surface portion and another surface opposite the peripheral carding drum surface portion,

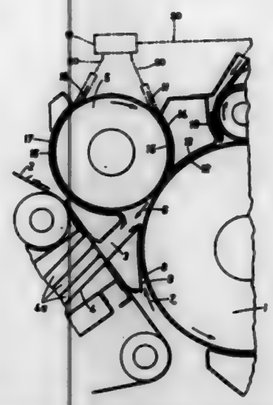
(c) a suction duct leading from the peripheral carding drum surface portion to the fiber collecting surface, the suction duct being defined between

(1) a boundary means leading with respect to the direction of rotation of the carding drum and

(2) a boundary means trailing with respect to the direction of rotation of the carding drum,

(d) a suction box adjoining the fiber collecting member at the other surface opposite the peripheral carding drum surface portion,

(e) air supply passage means disposed adjacent the leading and trailing suction duct boundary means and extending throughout a predetermined working width of the carding drum, the air supply passage means receiving fiber entraining air streams passing through the air supply passage



means into the suction duct, the air streams discharging fibers from the peripheral surface and entraining the discharged fibers into the suction duct, and

(f) a worker roller operable to rotate in a direction of rotation opposite to the direction of rotation of the carding drum,

(1) the worker roller and the carding drum defining therebetween a gap having a throat adjacent the leading suction duct boundary means, and

(2) the air supply passage means adjacent the leading suction duct boundary means is disposed at a side of the throat remote from the suction duct and communicates with the throat, the air stream passing through the latter air supply passage means moving through the throat into the suction duct.

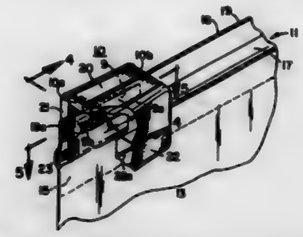
5,442,837

INTEGRATED END STOPS FOR ZIPPER SLIDER

Kevin P. Morgan, Fairport, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 20, 1994, Ser. No. 262,713
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—400 4 Claims

1. A leakproof plastic zipper with integrated end stops for a zipper slider particularly suited for thermoplastic bags and the like comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking rib and groove profile elements on the respective strips, said strips each including profiled flange structure extending along the length thereof parallel to the rib and groove elements, a straddling slider on said strips for closing or opening the reclosable rib and groove elements comprising an inverted U-shaped plastic member having a back for moving along the top edges of the flange structure with depending side walls projecting therefrom for maintaining said flange structure and said rib and groove elements therebetween, said slider including separator structure depending from said back and inserted between said flange structure to open said rib and groove elements, said sidewalls extending from an opening end of the slider to a closing end, the sidewalls being spaced wider apart at the opening end to permit separation of the rib and groove elements and being spaced sufficiently close together at the closing end to press the rib and groove elements into interlocking relationship as the slider is moved in a zipper closing direction, said flange structure and said rib and groove elements being vertically sealed together at both ends of said pair of strips to maintain the zipper closed at



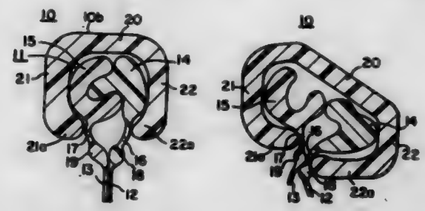
said ends and to provide integrated end stops for the zipper slider, and window structure in said flange structure beneath the top thereof and above said rib and groove elements and adjacent one of said end stops, said window structure being dimensioned to receive said separator structure at the opening end of said slider whereby when said slider is moved in the zipper closing direction, said interlocking rib and groove elements are closed throughout the length of said strips by said closing end of said slider and said separator structure at said opening end of said slider is received in said window structure and thus is ineffective on said flange structure to maintain open said interlocking rib and groove elements thereby to prevent leakage through said zipper.

5,442,838

ROLLING ACTION ZIPPER PROFILE AND SLIDER

Dale Richardson, Paoli, Pa., and Roger W. Smith, Grove City, Ohio, assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 17, 1994, Ser. No. 262,117
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—402 6 Claims



1. A plastic reclosable fastener with slider particularly suited for plastic bags and the like comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said strips including profile resilient flange structure depending from said male and female elements and having projections extending parallel to said male and female elements, said male and female elements having complementary cross sectional shapes such that they are closed by pressing the bottom of the elements together first and then rolling the elements to a closed position toward the top thereof, a straddling slider on said strips for closing or opening the reclosable fastener elements comprising an inverted U-shaped plastic member having a back for moving along the top edges of said strips with sidewalls depending therefrom for cooperating with said reclosable fastener elements and extending from an opening end of the slider to a closing end, said sidewalls having a greater spacing at the opening end than the closing end, said slider having shoulders projecting inwardly from said depending sidewalls, said shoulders have a greater spacing at the closing end of said slider than the opening end and shaped throughout the length thereof for engagement with said depending flange structure between said projections and said male and female profile elements in creating the rolling action in opening and closing said reclosable interlocking male and female profile elements.

5,442,839

CONTROL CLIP FOR USE WITH A TOOTHPASTE TUBE

George C. Miller, 824 K Ave., Cayce, S.C. 29033

Filed Mar. 7, 1994, Ser. No. 207,283
Int. Cl.[6] A44B *21/00*; B65D *37/00*
U.S. Cl. 24—563 13 Claims



1. A clip for use with a toothpaste tube, said toothpaste tube having a thinned portion and a thick portion, said thinned portion being folded in a series of flaps ending with a last flap, said clip comprising:

a flattened back member having a first end and an opposing second end; and

a flattened front member having a first end and an opposing second end, said first end of said front member being attached to said first end of said back member, said front and said back members diverging, said back member and said front member defining a space therebetween, said front member having

a lip formed on said front member along said second end and curved toward said back member to partially close said space, said lip being wide enough to substantially engage said last flap when said thinned portion of said toothpaste tube is inserted into said clip with said series of flaps toward said front member, said thick portion extending from said clip and said last flap behind said lip.

5,442,840

SEATBELT BUCKLE SAFETY SHEATH

Craig B. Ewald, R.R. 1, Box 17A, Buda, Ill. 61314

Filed Jan. 4, 1993, Ser. No. 393
Int. Cl.[6] A44B *11/26*
U.S. Cl. 24—633 4 Claims

1. A child safety seatbelt securement device for use with seatbelt locking mechanisms comprising:

a) a male seatbelt buckle;

b) a female seatbelt buckle, including means for securing said male seatbelt buckle in said female seatbelt buckle;

c) means in said female seatbelt buckle for releasing said male seatbelt buckle from said female seatbelt buckle;

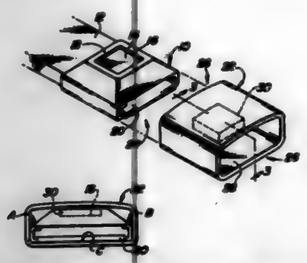
d) a deformable housing having interior and exterior surfaces for encompassing said female seatbelt buckle;

e) said female seatbelt buckle inserted into said deformable housing deforming said housing whereby said housing encompasses said female seatbelt buckle;

f) said female seatbelt buckle restrained in a fixed position in

said housing by the forces said of housing against said female seatbelt buckle; and

g) said housing deformed by said female seatbelt buckle



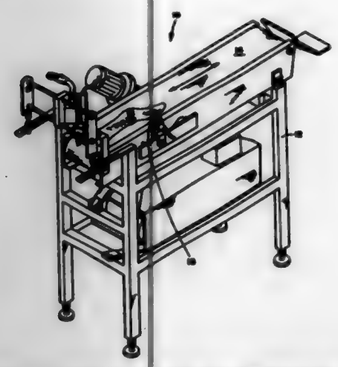
having at least one interior surface in close proximity to said release mechanism whereby pressure on the exterior surface of said housing in close proximity to said release mechanism actuates said release mechanism.

5,442,841

HOISERY TRIMMING APPARATUS

Daniel W. McLeod, Robbins, and Peter A. Mahler, High Point, both of N.C., assignors to Pam Trading Corporation, Greensboro, N.C.

Filed Oct. 6, 1994, Ser. No. 319,237
Int. Cl.[6] D06C *13/00*; B26D *5/00*; B65G *47/00*; G65H *11/00*
U.S. Cl. 26—7 14 Claims



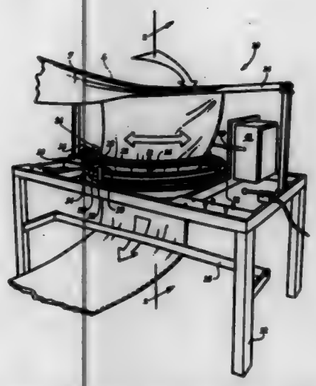
1. Hoisery trimming apparatus for trimming and removing loose yarn ends from articles of hosiery comprising: a frame; a bidirectional conveyor supported by the frame receiving one or more articles of hosiery having loose yarn ends and moving the articles of hosiery in a first preselected direction; a first sensing means carried by the frame adjacent the conveyor; reversing means operable with the conveyor and activated by the first sensing means to reverse the directional movement of the conveyor and carried hosiery; a second sensing means carried by the frame adjacent the conveyor; hosiery article clamping and conveyor pivoting means activated by the proximity of the carried hosiery articles; yarn trimming means carried by the frame and operable upon activation by the second sensing means to trim the loose yarn ends from the hosiery articles when the articles are clamped and the conveyor is pivoted; and means associated with the hosiery article clamping and pivoting means returning the conveyor to its original position after completion of the trimming operation and returning the conveyor to movement in the first preselected direction whereby the trimmed hosiery articles are moved by the conveyor to a remote location.

5,442,842

APPARATUS FOR GUIDING LONGITUDINAL TRAVEL OF TUBULAR FABRIC

Arne Nielsen; Phillip D. McCartney, both of Oak Ridge; Dennis J. Thompson, and Majid Moghaddasi, both of Greensboro, all of N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.

Filed Oct. 28, 1993, Ser. No. 142,173
Int. Cl.[6] D06C *5/00*
U.S. Cl. 26—80 6 Claims



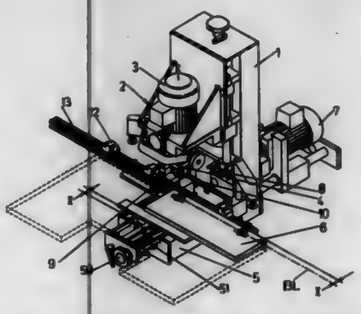
1. Apparatus for guiding longitudinal travel of tubular fabric substantially without circumferential torque of the fabric, the apparatus comprising guide means for opening the tubular fabric into circular form during traveling movement, frame means for supporting said guide means for rotational movement in the direction of the circumference of the traveling fabric, means for driving rotational movement of said guide means in the direction of the circumference of the traveling fabric, and means for detecting circumferential torque in the traveling fabric and for actuating controlled operation of said driving means opposite to the direction of the detected fabric torque to correct the detected torque.

5,442,843

DRILLING MACHINE FOR DRILLING HOLES IN FURNITURE PARTS

Bernhard Fessler, Lauterach, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 1, 1994, Ser. No. 189,643
Claims priority, application Austria, Feb. 1, 1993, A157/93
Int. Cl.[6] B23B *39/18*; B23C *3/04*
U.S. Cl. 29—26A 16 Claims



1. In a drilling machine for drilling holes in furniture parts, in particular for drilling securing holes for furniture fittings, for

example hinges, said drilling machine including a drive motor which drives drills by way of a replaceable multi-spindle drilling head with a drill gearing and a plurality of drilling spindles, a stop rule with adjustable stop blocks, a feed device for drill feed, and a table frame, the improvement wherein said drilling machine comprises:

a set of a plurality of replaceable multi-spindle drilling heads;

a quick-action clamping device operable to fix a selected one of said drilling heads on said drilling machine;

a set of a plurality of replaceable stop rules; and

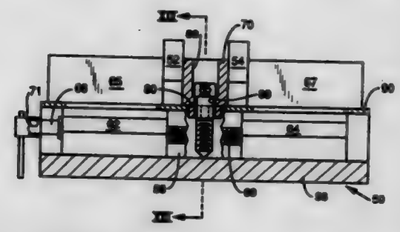
a quick-action clamping device operable to fix a selected one of said step rules on said drilling machine.

5,442,844

APPARATUS FOR PROTECTING INTERNAL ELEMENTS OF A WORKHOLDING APPARATUS

George R. Swann, Gibsonia, Pa., assignor to Chick Machine Tool, Inc., Warrendale, Pa.

Continuation of Ser. No. 998,805, Dec. 30, 1992, abandoned, which is a division of Ser. No. 955,361, Oct. 1, 1992, abandoned.
This application Feb. 4, 1994, Ser. No. 192,193
Int. Cl.[6] B25B *1/10*
U.S. Cl. 29—281.1 7 Claims



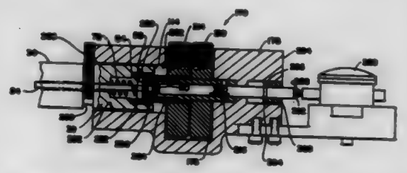
1. In a machine vise having a base member with a longitudinal axis and a slot therein that extends along said longitudinal axis, a first jaw attached to said base member and a movable member received in and extending from said slot and supported on said base member for longitudinal movement along said slot toward and away from said first jaw, and a second jaw member attached to said movable member, the improvement comprising a plate member removably received on said base member between said second jaw member and said base member and having an opening for permitting the longitudinal movement of said movable member therein, said opening being completely covered by said second jaw member such that said second jaw member cooperates with said plate member to completely cover said slot to prevent debris from entering therein.

5,442,845

INJECTION BLOW MOLD CORE ROD ASSEMBLY ADJUSTING TOOL AND METHOD

Robert B. Callender, 2228 Monaghan Ct., Spring Valley, Calif. 91977

Filed Oct. 8, 1993, Ser. No. 134,267
Int. Cl.[6] B23Q *17/22*; B29C *49/78*
U.S. Cl. 29—407 21 Claims



19. A method of adjusting and measuring the valve stroke of an injection blow mold core rod assembly, wherein a core rod contains a valve and valve stem which carries a hex nut and a locking star nut accessible from one end of said assembly, and wherein said star nut includes radially-arranged and arcuately-spaced arms with interstices therebetween; said method comprising the steps of:

a) engaging the one end of said core rod assembly with a unitary tool, said tool comprising, in combination:

a housing having a series of passageways therein arranged on a common axis;

a first portion of said passageways being sized so as to receive that end of the core rod assembly which has access to the hex nut and locking star nut therewithin;

a pair of centerless hollow wrenches arranged within another portion of said passageways internally of said housing;

one of said wrenches being configured enclasp and rotate the hex nut of a core rod assembly;

the other of said wrenches being configured engage and rotate the locking star nut of a core rod assembly;

means within said housing for selectively manipulating said wrenches; and

means operatively associated with said housing for measuring the position of said hex nut along said valve stem;

b) actuating said wrench manipulating means so as to move said locking star nut to a position where it permits movement of said hex nut;

c) thereafter actuating said wrench manipulating means so as to move said hex nut to thereby determine the stroke of the valve; said measuring means being simultaneously caused to provide continuous and current readings of the position of said hex nut relative to said tool housing;

d) repeating steps b) and c) until a desired positioning of said hex nut relative to said tool housing is obtained; and

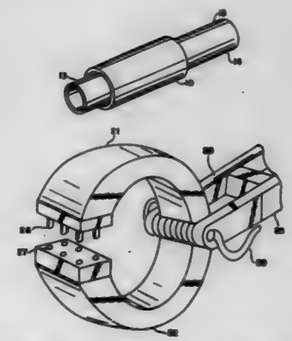
e) then actuating said wrench manipulating means so as to move said locking star nut to a position where it once again locks the hex nut against further movement along said valve stem.

5,442,846

PROCEDURE AND APPARATUS FOR COLD JOINING OF METALLIC PIPES

Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107

Filed Sep. 23, 1993, Ser. No. 126,251
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—419.2 4 Claims



1. A method for joining two large-diameter steel pipe segments together, each pipe segment having a central axis, an inner wall with an inner diameter, an outer wall with an outer diameter at least as large as 12 inches, said diameter of said two segments being equal to one another, an axial passage defined by the inner wall, a wall thickness between said walls, said wall thickness of said two segments being equal to one another and

an end face extending between said walls, said method comprising:

placing the pipe segments in axial alignment with said end faces in close proximity to one another;

placing a metal tubular joining sleeve bridging between the two pipe segments, closely fitting to their outer walls adjacent to their end faces and overlapping them for a substantial distance;

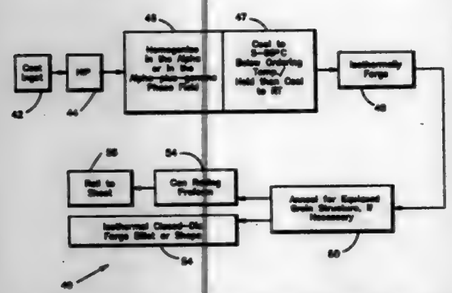
surrounding said tubular sleeve adjacent to both of said end faces with an electrically conductive coil; and applying to said coil a brief electrical pulse to produce a magnetic field to shrink the sleeve onto said pipe segments, said coil being formed in two separate coil segments which are separately joined together to surround said sleeve when said coil segments are fitted around said pipe segments where they abut, and overlapping a substantial portion of said sleeve on each side of the adjacency of said pipe segments.

5,442,847

METHOD FOR THERMOMECHANICAL PROCESSING OF INGOT METALLURGY NEAR GAMMA TITANIUM ALUMINIDES TO REFINE GRAIN SIZE AND OPTIMIZE MECHANICAL PROPERTIES

Sheldon L. Semiatin, Dayton, Ohio; Sami M. El Soudani, Cerritos, Calif.; Donald C. Vollmer, Columbus, and Clarence R. Thompson, Worthington, both of Ohio, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed May 31, 1994, Ser. No. 251,065
Int. Cl.[6] B21B *1/46*
U.S. Cl. 29—527.5 16 Claims



1. A method for thermomechanically processing near gamma titanium aluminide alloy wrought products, comprising the steps of:

(a) casting a near gamma titanium aluminide alloy ingot;

(b) hot isostatic pressing (HIP'ing) said near gamma titanium aluminide alloy ingot to seal off casting defects;

(c) preparing the HIP'ed near gamma titanium aluminide alloy ingot into suitable forging preforms;

(d) isothermally forging said forging preforms into suitable end product preforms at forging temperatures sufficiently close to a phase line between alpha+gamma and alpha-two+gamma phase fields so as to break down the ingot coarse microstructure and to yield a largely equiaxed gamma microstructure; and

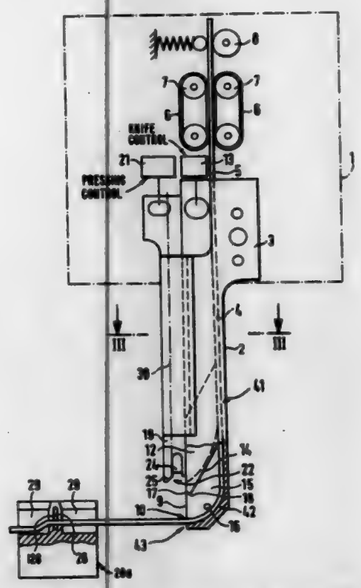
(e) processing said end product preforms into desired wrought end products.

5,442,848

WIRE POSITIONING AND CUT-OFF TOOL

Stefan Koller, Niederstotzingen, and Bernhard Albeck, Lorch-Waldhausen, both of Germany, assignors to Voest-Alpine-Schwabe GmbH, Urbach, Germany

Filed Mar. 24, 1994, Ser. No. 217,235
Int. Cl.[6] H01R *43/00*; B21F *27/00*
U.S. Cl. 29—566.1 20 Claims



1. Compact combined wire positioning and cut-off tool for, in one operation, positioning a wire (5) and cutting the wire closely adjacent said tool, comprising

a tool housing (1);

a positioning finger (2) extending from the housing;

a wire guide channel or duct (4) formed in the finger and having a wire outlet opening (10);

a pressing element (19) having a pressure surface (22) movably located adjacent the wire outlet opening (10) for movement transversely to the axial direction of the outlet opening;

pressing element position control means (21) coupled to the pressing element (19) for positioning the pressing element in a quiescent position removed from the wire outlet opening (10), and a holding position for holding the wire projecting from the wire outlet opening (10), the pressure surface (22) extending at least up to the wire outlet opening when the pressing element (19) is in the holding position;

cutting means (12) movably located on the positioning finger (2) in the vicinity of the wire outlet opening (10) and movable between a rest position clear of the wire opening and a cutting position in front of the wire outlet opening; and

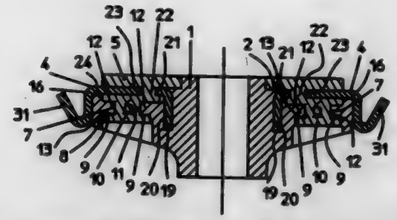
wherein said pressure surface (22) of said pressing element (19) has a rib (24) essentially aligned with the wire (5) projecting from the outlet opening (10), and having a width transverse to the direction of said wire projecting from the outlet opening which has a dimension approximately up to the diameter of a conductor (5a) within the wire (5).

5,442,849

METHOD OF MAKING A PLANAR CARBON SEGMENT COMMUTATOR

Georg Strobl, Stuttgart, Germany, assignor to Johnson Electric S.A., Hong Kong, Hong Kong

Division of Ser. No. 106,087, Aug. 13, 1993. This application Aug. 3, 1994, Ser. No. 285,178
Claims priority, application United Kingdom, Aug. 14, 1992, 9217289
Int. Cl.[6] H01R *43/08*
U.S. Cl. 29—597 4 Claims



1. A method of manufacturing a planar carbon segment commutator for an electric motor, comprising the steps of:

providing a base member of insulating material having a rotational axis, and a front surface extending, at least in part, transversely to the rotational axis and a plurality of rearwardly extending apertures, said apertures being formed with a first part and, rearwardly of the first part, with a second part having an abutment surface laterally offset from the first part;

mounting a plurality of circumferentially spaced contact members on the front surface of the base member; and

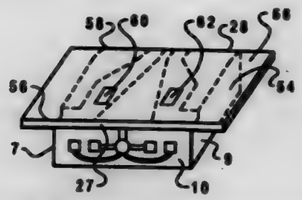
forming a plurality of circumferentially spaced carbon segments respectively on the contact member, including forming each segment with an integral anchor piece which extends into a respective one of the apertures and engages the abutment surface of the second part of said aperture to resist axial separation of the segment from the base member.

5,442,850

MAGNETIC HEAD SLIDER PROCESS

Randall T. Kerth, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1993, Ser. No. 146,552
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603 26 Claims



1. A method for fabricating a slider having a curvature and two sides, said method comprising:

selecting one side of said slider;

selecting at least one section on said selected side of said slider; and

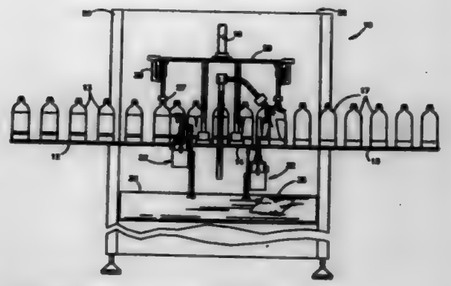
inducing a preselected amount of compressive stress within said selected at least one section to effect a change in curvature, wherein said curvature of said slider may be altered by varying said preselected amount of compressive stress and a location of said at least one section, wherein said step of inducing a preselected amount of compressive stress within said selected at least one section comprises impinging said at least one section with a plurality of particles for a preselected amount of time.

5,442,851

DELABELLING APPARATUS

Hershey Lerner, Aurora; Dana J. Liebhart, Cuyahoga Falls, and Richard W. Hess, Hudson, all of Ohio, assignors to Automated Label Systems Company, Twinsburg, Ohio

Division of Ser. No. 941,388, Sep. 8, 1992, Pat. No. 5,317,794. This application Dec. 14, 1993, Ser. No. 166,731
Int. Cl.[6] B32B *31/18*
U.S. Cl. 29—822 31 Claims



20. A delabeling mechanism comprising:

a) a bottle support platform;

b) a bottle hold down for retaining a positioned bottle on the platform; and,

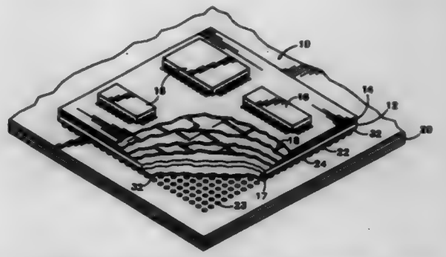
c) a fluid jet differential cutter mechanism operatively connected to the platform including motion producing means to cause relative motion between the platform and the cutter to cause the cutter to traverse an object being cut.

5,442,852

METHOD OF FABRICATING SOLDER BALL ARRAY

Paul A. Danner, Beaverton, Oreg., assignor to Pacific Microelectronics Corporation, Portland, Oreg.

Filed Oct. 26, 1993, Ser. No. 143,186
Int. Cl.[6] H01R *9/06*
U.S. Cl. 29—843 23 Claims



1. A method of fabricating a ball grid array on a substrate having a plurality of electrical terminal pads thereon, comprising:

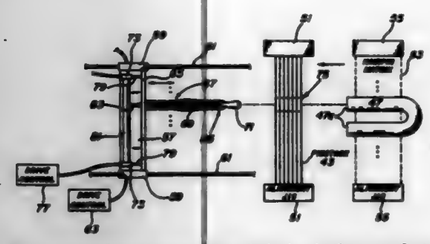
(a) perforating a sheet of dielectric material to create a plurality of holes therethrough;

(b) fastening the sheet of dielectric material to the substrate so that two or more of the holes are positioned over two or more of the pads;

(c) placing solder balls into the holes that are positioned over the pads; and

(d) heating the balls until the balls reflow and bond to the pads, each solder ball being large enough that it retains a spherical surface protruding above said sheet of dielectric material when bonded to a respective pad.

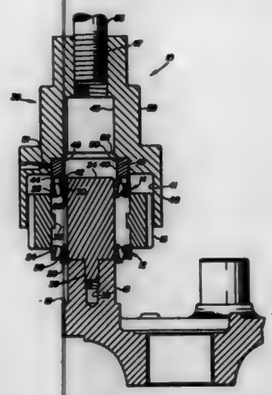
5,442,853
AUTOMATIC HAIRPINLACING PROCESS
Klaus-Dieter Vetter, 1755 Maple Ave., Croydon, Pa. 19020
Filed May 18, 1993, Ser. No. 63,535
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.047 10 Claims



3. A process for automated hairpin lacing in the manufacture of heat exchangers, said process operating upon a heat exchanger fin stack having a matrix of punched holes therethrough and a matrix of hairpin tubes to be laced through said fin stack, comprising the steps of:
establishing an axis of movement for said hairpin lacing movement;
positioning said fin stack with said holes in alignment with said established axis of movement;
positioning said matrix of hairpin tubes adjacent to said fin stack, in alignment with said established axis of movement and in alignment with said respective fin stack holes;
positioning a lacing apparatus adjacent to said fin stack on the side opposite said hairpin tube matrix, in alignment with said established axis of movement and in alignment with said respective fin stack holes;
advancing said lacing apparatus for extending through each fin stack hole thereby penetrating each hairpin tube;
engaging each hairpin tube with said lacing apparatus after said hairpin tube penetrating step;
retracting said lacing apparatus thereby drawing each said hairpin tube through a respective fin stack hole;
releasing each said hairpin tube;
withdrawing said lacing apparatus from said hairpin tubes;
wherein the step of advancing said lacing apparatus for penetrating each hairpin tube includes the step of penetrating each hairpin tube with a self aligning lacing tube; and
wherein the step of engaging each hairpin tube includes the step of expanding a portion of said self aligning lacing tube after said penetratating of said hairpin tube, for expanding against and gripping the I.D. of each said hairpin tube.

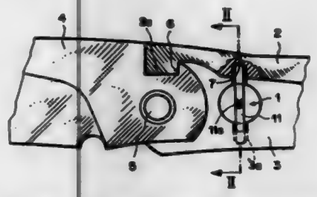
5,442,854
PROCESS AND APPARATUS FOR ASSEMBLING MULTIPLE ROLLING BEARING AND A ROTATING MEMBER ONTO A SHAFT
Sarkis A. Koltookian, Cedar Falls, and Michael E. Roby, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Dec. 2, 1994, Ser. No. 348,623
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—898.07 10 Claims

8. A process for assembling axially inner and outer rolling bearings and a rotating member onto a shaft, the rotating member adapted to receive the rolling bearings and be supported by the rolling bearings for rotation with respect to the shaft, the rotating member having a spacer adapted to maintain a desired separation between the rolling bearings, the process comprising the steps of:
aligning a pilot stud with an end of the shaft;
mounting the rolling bearings and the rotating member on the pilot stud;
aligning a ram with the shaft, the ram having an abutment member adapted to engage the outer rolling bearing; and



moving the ram toward the shaft in order to cause the abutment member to move the outer rolling bearing against the spacer and onto the shaft, and to cause the spacer to move the inner rolling bearing onto the shaft so that a single stroke of the ram mounts the rolling bearings and the rotating member onto the shaft.

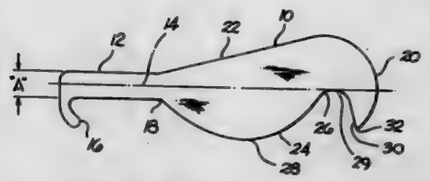
5,442,855
POCKET KNIFE WITH LOCKABLE BLADE
Jacques Jobin, Levis, Canada, assignor to Wenger SA, Switzerland
Filed Jun. 28, 1994, Ser. No. 265,066
Claims priority, application European Pat. Off., Jul. 12, 1993, 93810494
Int. Cl.[6] B26B *1/04*
U.S. Cl. 30—161 4 Claims



1. A lockable-blade pocket knife of a type having at least one pivot, a blade capable of pivoting about said pivot and including an anchoring location, a blade-locking strip having a tip adapted to fit into said anchoring location, and unlocking means including a push button disposed in one face of the knife, so that actuation of said push button moves said push button in a direction substantially perpendicular to a plane of a flat side of said blade for releasing said strip from said anchoring location, wherein the improvement comprises:
a flexible leaf being part of said unlocking means, said leaf being disposed under said push button, and co-operating with a lower face of said push button,
stop means for holding an end of said leaf remote from said strip,
a support portion being part of said strip,

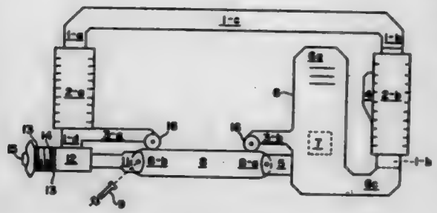
an opposite end of said leaf nearest said strip resting against said support portion of said strip, and
actuation of said push button moving said opposite end of said leaf, in a plane substantially parallel to the plane of said flat side of said blade, to move said strip so that said strip is caused to move by the actuation of said push button to release said strip from said anchoring location.

5,442,856
SURVIVAL AND CAMPING TOOL
James A. Moody, 39554 Grand River Ave., Novi, Mich. 48375
Filed May 31, 1994, Ser. No. 250,823
Int. Cl.[6] B26B *3/00*
U.S. Cl. 30—314 7 Claims



1. A survival and camping tool, comprising:
an elongated thin metal body formed of a sheet of metal of a uniform thickness and having a first side edge and a second, opposite side edge;
the first side edge having a hook-shaped section adjacent one end thereof with a sharp edge defining an opening facing away from the second side edge and terminating in a point disposed a distance from the second side edge, the first side edge having a convex belly section with an arcuate cutting edge, the belly section having an apex disposed a distance perpendicular to the second side edge generally corresponding to the distance of the point of the hook-shaped section perpendicular to the second side edge, the body having a handle tang at the end of the body opposite the hooked-shaped section;
a handle mounted on the handle tang;
the second side edge having a linear configuration; and
one end of the belly terminating at said hook-shaped section and the opposite end of the belly terminating at said handle tang, the body having its greatest width at the apex of the belly at a point generally midway between the hook-shaped section and the handle tang.

5,442,857
PORTABLE POWERED HACK-SAW
Leslie H. Gugel, 161 E. Hampton Way, Jupiter, Fla. 33458
Continuation-in-part of Ser. No. 851,576, Mar. 16, 1992, Pat. No. 5,303,478. This application Apr. 4, 1994, Ser. No. 222,196
Int. Cl.[6] B23D *49/12*
U.S. Cl. 30—392 2 Claims

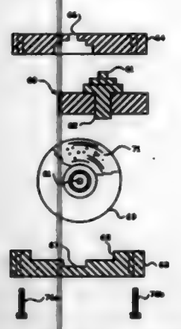


1. A portable powered hack-saw comprising:
a case,
motor means housed in and supported by said case and having a reciprocating output extending through said case,
a hack-saw blade removably mounted to said reciprocating output of said motor for reciprocal motion, said hack-saw blade including a proximal end and a distal end, said hack-saw blade including a main body incapable of supporting itself during sawing without said distal end being supported,
support frame means extending outwardly from said case,
said support frame means having a depending leg with an end portion thereon and a lateral portion extending between said depending leg and said case with said lateral portion spaced apart from and parallely disposed relative to said hack-saw blade,
spring and support assembly means attached to said end portion of said depending leg for supporting said distal end of said hack-saw blade and to axially load said hack-saw blade so as to force and resist movement of said hack-saw blade in a direction opposite to forced movement of said hack-saw blade by said motor means,
said spring and support assembly means including mount means reciprocally supported in an aperture formed in said end portion of said depending leg, said distal end of said hack-saw blade being removably connected to said mount means,
said spring and support assembly means further including spring means operably connected to said mount means to push said mount means and said hack-saw blade in a direction toward said motor means but yieldable to allow said motor means to push said mount means and said hack-saw blade away from said motor means,
said mount means includes a rod having a longitudinal axis and said output means includes a shaft having a longitudinal axis disposed in coincidence with the longitudinal axis of said rod,
and wherein the contour of said rod reciprocating in said aperture complements the shape of said aperture so that the hack-saw blade reciprocates along a constant path of travel,
and a handle extending from said case adapted to be gripped by an operator to permit said portable powered hack-saw to be held in one hand of the operator.

5,442,858
AUTOMATED ANGLE ENCODER SYSTEM FOR MRI APPARATUS
Harrie J. M. Wolters, Menlo Park; Philip M. Brooks, Foster City; David T. H. Hung, Palo Alto; Richard C. Motamedi, Sunnyvale, and Louis S. Rosinski, Jr., Simi Valley, all of Calif., assignors to Resonex Holding Company, Fremont, Calif.
Continuation of Ser. No. 979,532, Nov. 23, 1992. This application Nov. 23, 1993, Ser. No. 157,389
Int. Cl.[6] G01B *11/14*
U.S. Cl. 33—1 N 6 Claims

1. An automated angle encoding system for magnetic resonance imaging (MRI) apparatus where total noninterference with the magnetic fields generated by the MRI apparatus is necessary including the elimination of eddy currents which would be generated by metallic portions of the encoding system such currents affecting the accuracy of the MRI apparatus, and where the angle between two articulating body parts of a human body in the aperture of the MRI apparatus is being manipulated by an orthopedic positioning device in either a dynamic mode or a kinematic mode and it is necessary to measure the intermittent angles of several positions, said system comprising:
a substantially nonmetallic, nonmagnetic optical encoder disk connected to such positioning device having an angle of rotation related to said angle of such articulating body parts;
a nonmetallic, nonmagnetic casing for said disk having a

plurality of nonmagnetic, nonmetallic fiber optic channels for transmitting light and receiving reflected light pulses from said disk to indicate said angle as an absolute quantity;



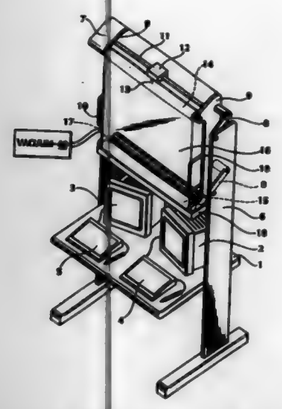
a substantially nonmetallic and nonmagnetic cable for carrying said fiber optic channels to a receiver/decoder located outside of the said magnetic fields of said MRI apparatus.

5,442,859

DEVICE FOR DISPLAYING CAD-DRAWINGS

Willi Naumann, Otto-Flake-Weg 2, D-76571 Gaggenau, Germany

Filed Feb. 25, 1994, Ser. No. 201,891
Claims priority, application Germany, Mar. 2, 1993, 93 02 966 U
Int. Cl.[6] B43L *13/00*
U.S. Cl. 33—18.1 7 Claims



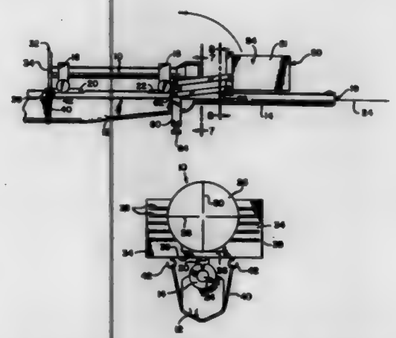
1. A device for displaying CAD drawings comprising:
a frame, two lateral end brackets arranged within said frame having an upper section and a lower section, and at least two levers pivotally connecting said two lateral end brackets to said frame;
two rollers rotatably mounted between said two lateral end brackets and an endless foil loop rotatably mounted around said two rollers defining a drawing surface;
a handle mounted on each of said lateral end brackets adapted for pivoting said drawing surface into a work area of a CAD operator;
a plotter pen for dispensing ink;
a guide rail mounted between said two lateral parts in the upper section and a head movably supported on said guide rail for holding said plotter pen, said plotter pen and said drawing surface being movable in accordance with a program in two coordinate directions relative to each other for temporarily applying ink to said drawing surface; and
an erasing device comprising a brush disposed between said two lateral brackets, in the lower region, for erasing the ink from said foil loop.

5,442,860

PORTABLE RETICLE ALINGMENT DEVICE FOR FIREARMS

Michael R. Palmer, 9 Somerset Dr., Suffern, N.Y. 10901

Filed Jul. 15, 1993, Ser. No. 92,395
Int. Cl.[6] F41G *1/54*
U.S. Cl. 33—233 10 Claims



4. A device for aiding in the cross-hair alignment of the reticle of a gun-mounted telescopic sight, said device comprising:
a gun having a barrel, said barrel including a longitudinal barrel axis and at least one mounting boss, said mounting boss being already aligned with said longitudinal barrel axis;
a telescopic sight having a rear viewing end, a front end which is closest to the muzzle of said barrel, and a reticle with at least one sighting hairline, said telescopic sight mounted to said at least one mounting boss of said gun;
a bracket assembly attachable to said at least one mounting boss so that said bracket assembly, when attached to said at least one mounting boss, aligns with said longitudinal barrel axis;
an optical assembly having a reference reticle positionable in the line of sight of said telescopic sight, said optical assembly being mechanically connected to said bracket assembly so that said optical assembly automatically aligns with said longitudinal barrel axis; and
wherein said cross hairs of said reticle may be compared with and aligned with respect to said [superimposed]reference reticle of said optical assembly to align said cross hairs of said telescopic sight with respect to said bore axis of said barrel.

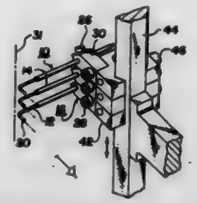
7. A device for aiding in the cross-hair alignment of the reticle of a gun having a gun barrel including a longitudinal barrel axis and a telescopic sight mounted on said gun, said telescopic sight having a viewing end and a reticle with at least one sighting hairline, said device comprising:
a card having a viewing surface and a contact edge;
at least one reference line located on said viewing surface and aligned with said contact edge, said contact edge being adapted to be positioned in abutting relationship with the mounting boss of said gun on which said telescopic sight is mounted independent of said telescopic sight so that said reference line automatically aligns with the axis of the barrel of said gun and so that said viewing surface lies adjacent to said reticle; and
the relative position of said card abutted onto said mounting boss enables the orientation of said at least one sighting hairline Of said reticle to be compared with said reference line and adjusted to align the telescopic sight with the barrel axis of the gun.

5,442,861

SIGHT PIN AND HOLDER FOR ARCHERY BOW

Paul M. Lorocco, 4110 Shady Hill Dr., Dallas, Tex. 75229

Filed Dec. 23, 1993, Ser. No. 173,503
Int. Cl.[6] F41G *1/467, 1/32*
U.S. Cl. 33—241 36 Claims



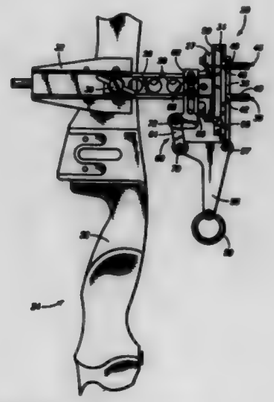
1. A sight pin unit adapted for use in an archery sight assembly to provide arrow aiming indicia at a sighting plane and comprising:
a predetermined length of a light gathering fluorescent fiber having a distal end at which gathered light is focused to comprise the arrow aiming indicia; and
a holder to secure a segment length of said fiber while exposing the remaining length of the fiber to ambient light, said holder enabling the distal end of said fiber to be supported in a sighting relation relative to an established sighting plane to be utilized.

5,442,862

VARIABLY ADJUSTABLE ARCHERY BOW SIGHT

George T. Newbold; Theodore M. Davenport, and Raymond L. Bray, all of Walla Walla, Wash., assignors to Martin Archery, Inc., Walla Walla, Wash.

Filed Aug. 30, 1993, Ser. No. 114,311
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 24 Claims



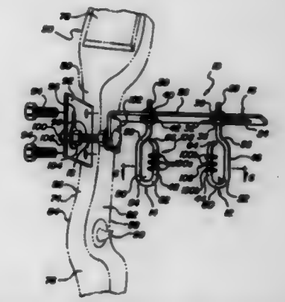
1. An archery bow sight, comprising:
a base member;
a stationary block coupled to the base member;
a ranging slide bar mounted adjacent the block, the slide bar being controllably moveable in a plane parallel to the block within a range of movement;
a range marker fixedly coupled to the ranging slide bar for movement therewith;
a sight device fixedly coupled to the ranging slide bar for movement therewith;
a lever pivotally coupled to the ranging slide bar to controllably move the slide bar through the range of movement; and
a linkage assembly pivotally interconnecting the lever and the base member, the linkage assembly including an adjustable link to adjust the range of movement through which the ranging slide bar passes.

5,442,863

STEREOSCOPIC SIGHTING DEVICE

Khosro Fazely, 1256 W. River Rd., Oscoda, Mich. 48750

Filed Dec. 16, 1993, Ser. No. 168,934
Int. Cl.[6] F41G *1/00*
U.S. Cl. 33—265 29 Claims



1. Stereoscopic sighting apparatus, comprising:
a pair of left and right longitudinally extending sighting members;
support means for supporting said sighting members in laterally spaced side-by-side relation to one another on a member to be sighted at a distance approximating the lateral spacing between a users eyes and along a users line of sight to a distance target for generating a perceived coincident central image of said sighting members aligned with the target when the target is viewed with both eyes open; and
distance compensation means movable longitudinally relative to said sighting members to at least a selected one of a plurality of longitudinal positions corresponding to associated distances to target and perceived by the user in said coincident central image for enabling the user to make appropriate elevational adjustments to the position of the member to be sighted to compensate for distance to target while maintaining the position of said sighting members relative to said support means.

5,442,864

LEVEL

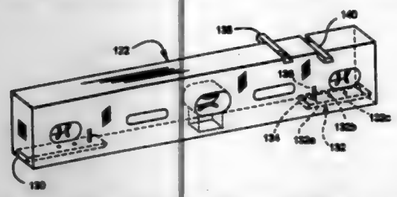
Michael A. Ermas, 276 Old Elm, Bolingbrook, Ill. 60440

Filed Mar. 29, 1993, Ser. No. 38,897
Int. Cl.[6] G01C *9/26*
U.S. Cl. 33—376 6 Claims

1. Apparatus for locating a point or a line on a second wall at the same height as a recessed point or line on a first, adjacent wall, said apparatus comprising:
an elongated body having a longitudinal axis and a flat, continuous surface;
a level indicator disposed in said body;
a first extendible member disposed on a first end of said body in said flat surface and moveable generally parallel to the

longitudinal axis of said elongated body between an extended position, wherein said first extendible member extends beyond said first end, and a retracted position within said body, wherein said first extendible member is adapted for insertion in the recessed point or line on the first wall when in said extended position;

a second extendible member disposed on a second, opposed end of said body in said flat surface and moveable generally parallel to the longitudinal axis of said elongated body between an extended position, wherein said second extendible member extends beyond said second, opposed end, and a retracted position within said body, wherein said second extendible member is adapted for engaging



the second wall at a point at the same height as the recessed point or line on the first wall when said body is positioned in a level orientation using said level indicator;

first and second retaining means for respectively maintaining said first and second extendible members either in said extended position or in said retracted position; and

wherein each of said extendible members includes a plurality of spaced recesses disposed along the length thereof, and wherein each of said retaining members includes a biasing spring and insert ball combination, wherein said insert ball is urged into one of said recesses for maintaining said extendible member either in said extended position or said retracted position.

5,442,865

PASSIVE MAGNETIC POSITION SENSOR

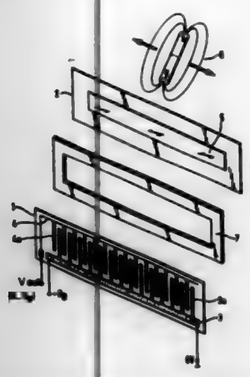
Werner Wallrafen, Sulzbach/Ts., Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Germany

Filed Jan. 4, 1994, Ser. No. 177,167

Claims priority, application Germany, Mar. 24, 1993, 43 09 442.2

Int. Cl.[6] G01B 7/00

U.S. Cl. 33—708 **11 Claims**



1. A passive contactless magnetic position sensor comprising:

an electrically non-conductive substrate having a resistance layer, and a conductor track serving as potentiometer tap disposed parallel to the resistance layer;

an electrically conductive substrate, at least one of said substrates being of resilient construction; and at least one of said substrates having a soft-magnetic layer;

a magnet device mounted for guidance in the direction of the conductor track, and being spaced apart from the conductive track, the conductive substrate and the non-conductive substrate being spaced apart at a distance allowing contact between the substrates to be produced under magnetic action; and

wherein the resistance layer and the conductor track each have structural parts, the structural parts of the conductor track being spaced apart from the structural parts of the resistance layer, the structural parts of the conductor track being interleaved with the structural parts of the resistance layer along a path of movement of the magnet device.

5,442,866

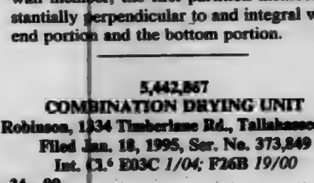
SURVEYING RULE ASSEMBLY, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

William E. Woods, 2450 Lovelace Rd., Mikado, Mich. 48745

Filed Jun. 24, 1992, Ser. No. 903,356

Int. Cl.[6] G01B 3/10

U.S. Cl. 33—760 **10 Claims**



1. A ruler-holding assembly for use in conjunction with a surveying pole, the assembly comprising:

(a) a retractable tape ruler having:

(1) a housing; and

(2) a retractable tape, the tape having measurements marked thereon, the tape being disposed within and withdrawable from the housing;

(b) an apparatus attachable to the pole capable of holding the tape ruler, the apparatus comprising:

(1) a substantially planar wall member having a front side and a back side;

(2) means for attaching the apparatus to the pole formed to the back side of the wall member, the means for attaching comprising at least one substantially U-shaped member;

(3) a cradle connected to the front side of the wall member, the cradle member comprising:

(i) a first end portion substantially perpendicular to and integral with the wall member;

(ii) a bottom portion substantially perpendicular to and integral with the wall member;

(iii) a first partition member substantially parallel to the wall member, the first partition member being substantially perpendicular to and integral with the first end portion and the bottom portion.

5,442,867

COMBINATION DRYING UNIT

Joe M. Robinson, 1334 Timberlane Rd., Tallahassee, Fla. 32312

Filed Jan. 18, 1995, Ser. No. 373,849

Int. Cl.[6] E03C 1/04; F26B 19/00

U.S. Cl. 34—90 **7 Claims**

1. A combination drying unit comprising;

a housing unit;

an first aperture is located on the front of said housing unit;

an air blower means is located within said housing unit;

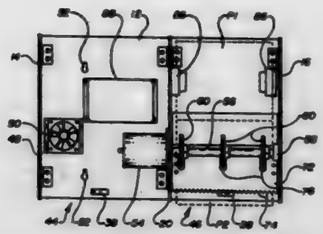
said air blower unit blows air through said first aperture;

a paper holder means is located within said housing unit;

said paper holder means holds a standard paper towel roll and permits said paper towel roll to rotate about said paper holder means;

a second aperture located on said front of said housing unit;

dispensing means for unraveling said paper towel roll wherein when said paper towel roll is unraveled, the loose paper end of said paper towel roll passes through said second aperture;



a switch located on the front of said housing unit;

control means for controlling said air blower means and said dispensing means; and

wherein the triggering of said switch causes said air blower means to activate for a preset amount of time and thereafter causes said air blower means to deactivate and immediately thereafter causes said dispensing means to activate for a preset amount of time and thereafter causes said dispensing means to deactivate.

5,442,868

METHOD FOR CONTROLLING OPERATION OF AN EXCAVATOR HAVING ELECTRONIC MICRO-MODULE

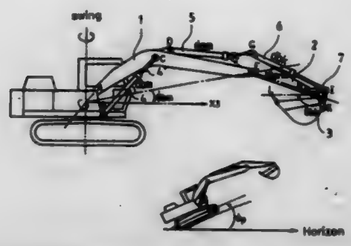
Seong-Ho Ahn, Seoul, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Rep. of Korea

Filed Dec. 22, 1993, Ser. No. 168,507

Claims priority, application Rep. of Korea, Jun. 30, 1993, 93-12198

Int. Cl.[6] E02F 9/24

U.S. Cl. 37—348 **5 Claims**



1. A method for automatically controlling a speed ratio of a swing and boom operation of an excavator comprising the steps:

calculating a required speed value at joints of a plurality of actuators of the excavator according to a manipulation amount of joy sticks controlled by an operator in which an electrical signal corresponding to an amount of operation of each joy stick is produced by each joy stick and is converted to digital data by an A/D converter coupled to the electrical signal produced by the joy stick and transferring the digital data to a processor of the excavator;

determining a speed ratio of the boom and the swing operation of the excavator such that a speed value of the joints of each actuator is set to a minimum speed when a manipulation degree of the joy sticks is at minimum rate, and otherwise the speed value is set to maximum speed;

calculating an angular velocity of the swing operation in accordance with the determined speed ratio based on a boom angular velocity which is converted from a required boom cylinder speed when a determination of a boom priority operation is made;

calculating a boom angular velocity if the determined speed ratio is set as a swing priority in accordance with the determined speed ratio based on the angular velocity of the swing operation, and converting the boom angular velocity into a required boom cylinder speed for moving the boom;

determining a bucket maintenance angle related to a horizontal level if a joy stick of a bucket of the excavator is manipulated, based on a current joint angle of the boom, a dipper, and the bucket and a bias angle read from joint sensors and a bias sensor;

calculating an object angle of the bucket for maintaining a horizontal bucket angle if the joy stick of the bucket is not manipulated based on the determined bucket maintenance angle;

transforming an object angle of the bucket into a desired object position of a bucket cylinder and calculating a required object speed of the bucket cylinder based on the desired object position and a current position of the bucket cylinder as well as a current speed of the bucket cylinder;

determining an object speed of the bucket cylinder and other cylinders of the excavator such that a compensation is made for a speed error between the object speed of the bucket cylinder and a current speed of the other cylinders calculated from a position of the other cylinders detected by the joint sensors; and

calculating a required discharge amount of pressurized fluid from pumps for making each of the cylinders move according to the calculated object speed of each cylinder, and providing control electrical signals for regulating control valves of the cylinders and for moving each actuator with a desired speed.

5,442,869

ANIMATED CRYSTAL BALL OR GLOBE DISPLAY SYSTEM

Deborah J. McDarren, Ridgefield, and James Dahl, Danbury, both of Conn., assignors to Link Group International, Ridgefield, Conn.

Filed Feb. 14, 1994, Ser. No. 195,870

Int. Cl.[6] G09F 19/08

U.S. Cl. 40—406 **20 Claims**

20. A crystal ball or globe display system comprising

A. a support base;

B. a display mounted on the support base and incorporating at least one object which is movable in response to an activation signal providing visual interest and enhancement to the visual display;

C. a globe assembly mounted to the support base and comprising

a. a first member peripherally surrounding the display,

b. a second member peripherally surrounding a substantial portion of the first member and defining a space filled with a liquid between the two members, thereby providing the visual effect of the display being contained within the fluid, and

c. first and second aperture means cooperatively associated with space defined between the two members zone for enabling the fluid retained therein to be circulated into and out of the space and

D. pump means

a. cooperatively associated with the first and second aperture means of the globe assembly, and

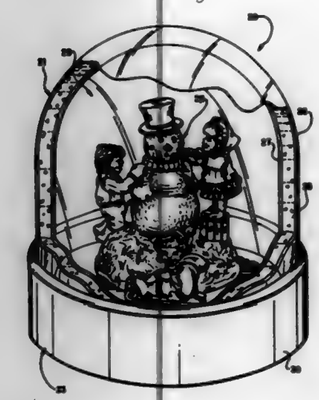
b. responsive to a first activation signal for continuously

circulating the fluid through the space when activated; and

E. drive means

a. mounted in the base,

b. connected to the movable object for controlling the movement thereof, and



c. responsive to a second activation signal for initiating the operation of the drive means;

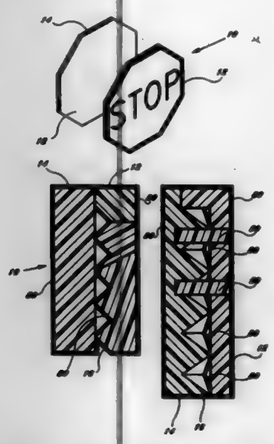
whereby a crystal ball or globe display system is attained which is capable of providing the visual impression of a display having a movable object contained in a fluid-filled housing.

5,442,870

REFLECTIVE SIGN

George E. Kochanowski, 5046 NW. 90th Ter., Coral Springs, Fla. 33067

Filed Sep. 8, 1993, Ser. No. 119,291
Int. Cl.[6] G09F *13/16*
U.S. Cl. 40—582 19 Claims



1. A retro-reflective sign providing for increased conspicuity and legibility of said sign during viewing at nighttime, comprising:

a face member constructed from polycarbonate and having an outer surface and an inner surface;

a plurality of cube corners disposed along the inner surface of said face member; and

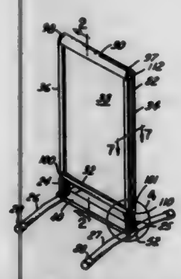
a virtually opaque back member constructed from polycarbonate and operatively associated with said face member, said back member having an inner surface and an outer surface, the inner surface of said back member having a smooth and glossy finish.

5,442,871

POSTER AND SIGN DISPLAY ASSEMBLY

Robert Sarkisian, Southfield; David J. Muir, Farmington Hills, and David U. Hillstrom, Novi, all of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Jun. 11, 1993, Ser. No. 76,004
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—606 13 Claims



1. A sign display for displaying sign indicia comprising:

a backing member for said sign indicia;

an upper frame member having a curved outer surface and a channel for insertion of an edge of said backing member;

a lower frame member having a curved outer surface and a channel for insertion of a second edge of said backing member;

a pair of side frame members each having a biased clamping member and a channel for insertion of an additional edge of said backing member;

corner members connecting together said upper frame member to said side frame members and connecting together said lower frame member to said side frame members;

clear protective member positioned adjacent said backing member and secured in said channel in said upper frame member;

said upper frame member having a projection member adjacent said channel and said protective member has a bent edge which is secured in place by said projection member; and

said channel in said lower frame member having means for limiting the extent of entry of said backing member, sign indicia and protective member into said lower frame member.

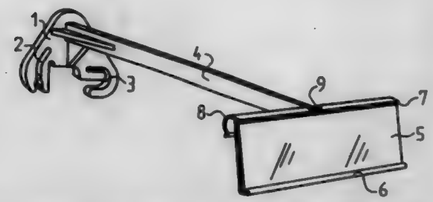
5,442,872

DEVICE FOR HOLDING STRIP-LIKE INFORMATION CARRIERS

Richard Moser, Stockholm, Sweden, assignor to HL Display AB, Tyreso, Sweden

PCT No. PCT/SE92/00776, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO/9310516, PCT Pub. Date May 27, 1993
PCT Filed Mar. 16, 1994, Ser. No. 211,012
Claims priority, application Sweden, Nov. 12, 1991, 9103326
Int. Cl.[6] G09F *3/18*
U.S. Cl. 40—642 8 Claims

1. A holder for a strip-like information carrier intended for use in shops, stores and like establishments in conjunction with goods and articles that are displayed on pronged racks, said holder comprising a mounting part (1) which is intended to be fitted to a pronged part of a stand, and a part (5) which is connected to the mounting part and which is intended to receive said information carrier, wherein the mounting part is intended to be secured to an inwardly-lying part of at least one prong and includes a substantially rigid cantilever arm (4) which extends above and essentially parallel with said prong; the information-carrier receiving part of the holder has the form of a pocket which is open along an upper edge thereof;



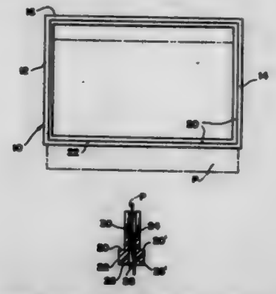
the pocket is so mounted on a forward end of the cantilever arm as to enable the pocket to repeatedly swing upwardly as each article is removed from the prong, and thereafter downwardly; and the forward end of the arm has at least one supporting part (11) which bears against a rear wall of the pocket so that when said pocket is in a downwardly swung position, the pocket can be opened by pressing against a lower part of a front wall of the pocket.

5,442,873

MOLDED PLASTIC PLACARD DISPLAY FRAME

Michael N. Vogler, 49 Miranda Ct., Thornhill, Ontario, Canada

Filed Dec. 10, 1993, Ser. No. 164,541
Int. Cl.[6] G09F *3/20*
U.S. Cl. 40—649 3 Claims



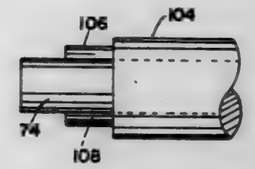
1. A unitary injection-molded plastic holder frame for displaying advertising placards which comprises four frame sides connected at their ends into a rectangle, said four frame sides having inner edges defining a rectangular opening, a contiguous trio of said sides having generally coplanar mutually directed shallow channels therein for receiving side margins of said placard along three sides of said placard with the remaining frame side being slotted along its length between two parallel frame strips in coplanar relation to said shallow channels, said slot communicating at its ends with corresponding ends of the channels in two opposite frame sides, whereby said placard can be inserted via said slot into the frame with the margins of its said three sides seated in said channels, and detent means for positively retaining said placard in its inserted position within said frame, said detent means comprising at least one nib carried on an inner face of at least one of said frame strips projecting toward the opposite strip into contact with the inner face thereof and preventing the accidental passage of said placard through said slot, each said nib having an inclined face extending from a point generally adjacent an inner edge of the frame strip to a point generally adjacent an edge of said strip opposite said inner edge, said inclined face sloping in a direction extending from said inner edge to said outer edge toward the opposite frame strip, said inclined face facilitating the intentional removal of the placard from the frame.

5,442,874

FIREARM MAGAZINE BOX ALIGNMENT

David S. Findlay, Ilion, N.Y., assignor to Remington Arms Company, Inc., Wilmington, Del.

Division of Ser. No. 868,943, Apr. 16, 1992, Pat. No. 5,373,775.
This application Sep. 19, 1994, Ser. No. 308,363
Int. Cl.[6] F41A *9/61*
U.S. Cl. 42—6 1 Claim



1. A firearm having a housing, a receiver and a barrel distinct from the receiver but connected thereto having an end with a chamber mouth attached to the receiver including:

a) a magazine box having side portions;

b) a magazine box receiving area in the housing below the attachment of the barrel to the receiver;

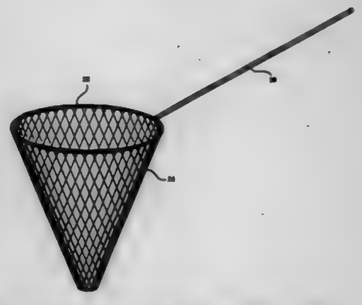
c) projections on the barrel end between which the sides of the magazine box are received to align the magazine box to die chamber mouth.

5,442,875

NET APPARATUS

David A. Brundage, 2604 Campden Dr., Austin, Tex. 78745, and Jerry E. Jones, 12502 Red Mesa Hollow, Austin, Tex. 78739

Continuation-in-part of Ser. No. 124,910, Sep. 21, 1993, Pat. No. 5,339,557. This application Apr. 13, 1994, Ser. No. 227,203
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] A01K *77/00*
U.S. Cl. 43—11 30 Claims



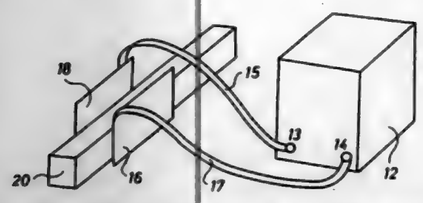
1. An apparatus for supporting a net, comprising:

a frame having a substantial portion thereof substantially non-opaque; and

an elongated handle connected to the frame;

wherein a portion of the handle is substantially non-opaque.

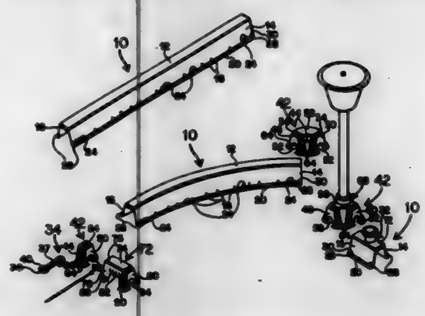
5,442,876
METHOD FOR PREVENTING AND COMBATING FUNGUS ATTACK IN EXISTING BUILDING STRUCTURES AND ELECTRODES FOR CARRYING OUT THE METHOD
Ib O. Pedersen, 4, Skolebakken, Gentofte DK-2820, Denmark
PCT No. PCT/DK92/00112, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/18716, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1992, Ser. No. 133,044
Claims priority, application Denmark, Apr. 9, 1991, 622/91
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—124 7 Claims



1. A method for preventing and combating attack by fungus and other harmful living organisms in existing building structures contained in an existing building, comprising:
arranging a high frequency (HF) generator adjacent to the attacked area of the building structure, which building structure remains in place in the existing building; connecting a number of electrodes to the HF generator through HF supply lines; adapting and activating the HF-generator to supply a sufficiently strong HF-power (kW) which is dissipated in the treated area of the building structure, thereby heating the attacked area by means of electromagnetic energy to a temperature lethal to living organisms; and maintaining the high temperature for a predetermined period of time,
characterized in that the electrodes are plate electrodes arranged on both sides of the attacked area of the building structure or part thereof in such a manner that the electrodes in combination form at least one capacitator, whereby at least part of the attacked area of the building structure constitutes the dielectric of the said at least one capacitor, using at least one frequency within a range of from 3 to 20 MHz, and thus heating the area to approximately 50° C. for at least one minute.

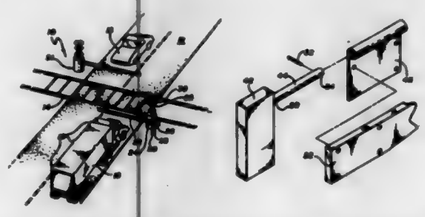
5,442,877
MODULAR LANDSCAPE BORDERS
John R. Lindhal, 5375 Circle Rd., Rathdrum, Id. 83858
Filed Apr. 6, 1994, Ser. No. 223,552
Int. Cl.[5] A01G *1/08*
U.S. Cl. 47—33 30 Claims

1. A modular landscape edging system comprising:
(a) a generally V-shaped edging module having: a top surface, a pair of vertical support walls, a pair of flanges at the base of the vertical support walls, a pair of recessed cross support members extending downward from the top planar edging surface between the vertical support walls, a means for receiving an anchoring means; and
(b) a connecting module having: a top support surface possessing a recess, a cross support receiving slot, a first and second vertical support wall, a first and second side wherein both side walls possess a pass through opening, a flange circumscribing the base of the vertical support



walls and first and second side walls, a means for receiving an anchoring means; and
(c) an anchoring means.

5,442,878
BREAK-RESISTANT RAILROAD CROSSING GATE
Robert Flores, 2940 Dorchester Cir., Corona, Calif. 91719
Filed Apr. 29, 1994, Ser. No. 235,496
Int. Cl.[6] E05D *15/56*
U.S. Cl. 49—208 10 Claims

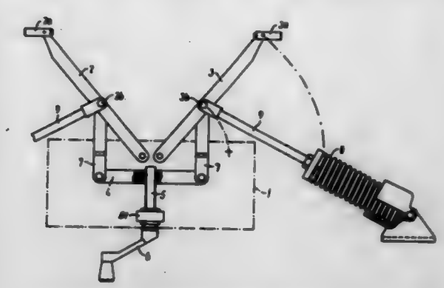


1. A railroad crossing gate to decrease gate arm breakage comprising:
a gate arm having a longitudinal axis;
a gate mechanism comprising a housing, a motor mounted to said housing and connected to a support arm for moving the gate arm between a horizontal orientation to block part or all of a vehicular roadway and a vertical orientation, and a counterweight affixed to said support arm to balance said gate arm; and
a swivel mount for rotatably attaching the gate arm to the support arm, said swivel mount allowing said gate arm to rotate about said longitudinal axis or a line parallel thereto when an external force is applied.

5,442,879
COUNTERBALANCED WINDOW OPERATOR
Per B. Christensen, Puerto del Carmen, Spain, assignor to V. Kann Rasmussen Industri A/S, SOborg, Denmark
Filed Jun. 14, 1993, Ser. No. 76,125
Int. Cl.[6] E05F *1/10*
U.S. Cl. 49—346 21 Claims

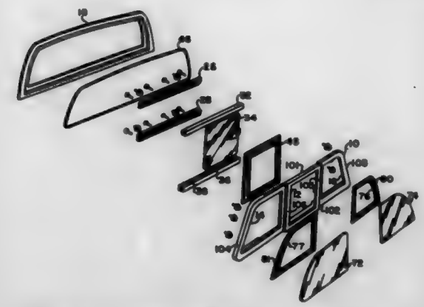
1. A window operator for opening and closing a window having a generally rectangular main frame and a generally rectangular sash mounted for pivoting movement relative to the main frame about a pivot axis generally parallel to a pair of opposed sides of said sash, comprising:
at least one unarticulated arm connected in a first end with one of said opposed sides of the sash and mounted for

pivoting about a pivot point which is stationary with respect to said main frame, wherein said first end of said at least one arm is adapted for sliding connection with the sash of the window, whereas said pivot point is located at a second end of said arm;
moving means for moving said arm about the pivot point, said moving means comprising a rotatable elongate screw member journaled for rotation and having an axis which is arrestable with respect to said main frame, means for



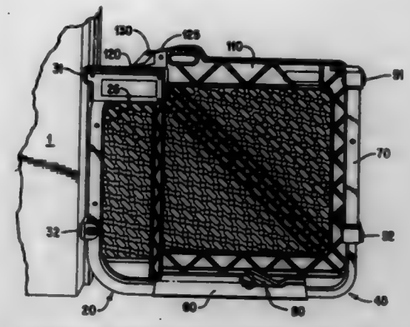
preventing axial displacement of said screw member with respect to said frame, and a non-rotatable nut member operatively connected with said arm and being engaged by said screw member to be axially displaced by said screw member upon rotation of said screw member, whereby to cause said arm to pivot about said pivot point; and
counterbalancing means operatively connected between said main frame and said arm for counteracting a weight component of the window.

5,442,880
WINDOW ASSEMBLY WITH SLIDER
Ronnie G. Gipson, Dearborn, Mich., assignor to Excel Industries, Inc., Elkhart, Ind.
Filed May 9, 1994, Ser. No. 239,707
Int. Cl.[6] E05D *15/06*
U.S. Cl. 49—413 18 Claims



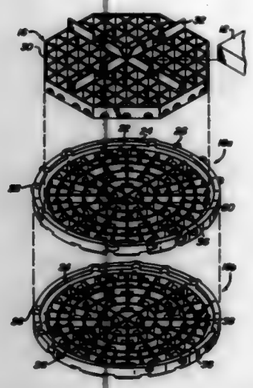
1. A window assembly comprising, in combination:
a molded plastic frame defining at least a primary aperture;
backplate means attached to an exposed surface of the frame forming, in cooperation with the frame, elongate slide channels extending substantially parallel each other on opposed sides of the primary aperture; and
a transparent slidable pane having peripheral edges in the slide channels and being slidable back and forth between a closed position in which it sealingly closes the primary aperture and an open position in which at least a portion of the primary aperture is open.

5,442,881
PRESSURE-FIT GATE ASSEMBLY
Ronald M. Asbach, Grand Island, and Robert C. Barrett, Angola, both of N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.
Filed May 16, 1994, Ser. No. 243,131
Int. Cl.[6] E05C *21/02*
U.S. Cl. 49—465 28 Claims



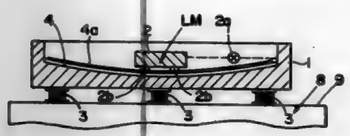
1. A gate for insertion across a lateral opening defined by two opening side surfaces, said gate comprising:
a first frame member having a first upright portion attached to a lateral first connecting portion, said first upright portion including a first side contact portion;
a second frame member having a second upright portion attached to a lateral second connecting portion, said second upright portion including a second side contact portion, and said lateral first and second connecting portions being slidably connected for displacement relative to each other along the lateral direction so that said first and second frame members together form a generally U-shaped gate frame having an adjustable width; and
a latch mounted to said first connecting portion and releasably engageable with said second connecting portion,
wherein said latch is releasable to permit free sliding displacement of said connecting portions for adjustment of the gate width to fit within the opening so that said first and second side contact members are approximately in contact with the side surfaces,
wherein said latch is operable to engage said second connecting portion and to displace said second connecting portion relative to said first connecting portion by a preselected displacement outwardly in the lateral direction, the outward displacement being imparted to flex said first and second upright portions so that said first and second side portions each apply an outward lateral force via said contact portions to the respective opening side surfaces to frictionally retain said gate in the opening, and
wherein said latch comprises:
a bracket slidable longitudinally along the second connecting portion;
a moving mechanism connected to said first connecting portion and connected to said bracket for moving said bracket away from said first connecting portion in the lateral direction; and
a frictional inter-engagement member for frictionally inter-engaging said bracket and said second connecting portion and for preventing said bracket from sliding longitudinally along said second connecting portion when said bracket is moved away from said first connecting portion by said moving mechanism, so that movement of said bracket away from said first connecting portion by said moving mechanism causes displacement of said second connecting portion.

5,442,882
UNIVERSAL SLOPE COMPENSATOR FOR USE IN CONSTRUCTING A FLAT SURFACE
John Repasky, 140 Bender Rd., Hanover, Pa. 17331
Filed Apr. 20, 1994, Ser. No. 230,497
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—105 **14 Claims**



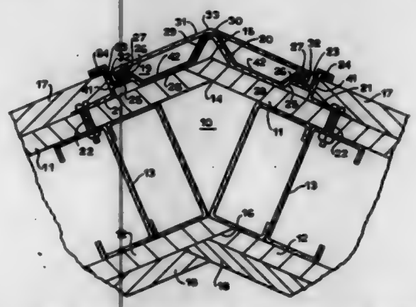
1. A slope compensator assembly for use in providing a level surface over an inclined supporting surface, comprising:
a first and second slope compensator each having a top surface and a bottom surface, said bottom surface being tapered relative to said top surface, said tapered first and second slope compensators having a point of minimum thickness and a point of maximum thickness;
interengageable means on said first and second slope compensators permitting said bottom surface of one to be stacked onto the top surface of the other in preselected positions of disposition of said minimum and maximum thicknesses; and
indicia means on at least one of said slope compensators for enabling the stacked slope compensators to be placed in a predetermined relation with respect to the inclined supporting surface.

5,442,883
VIBRATION CONTROL DEVICE FOR STRUCTURE
Isao Nishimura; Mitsuo Sakamoto, and Katsuyasu Sasaki, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan
PCT No. PCT/JP92/00704, § 371 Date Nov. 18, 1993, § 102(e) Date Nov. 18, 1993, PCT Pub. No. WO92/21840, PCT Pub. Date Dec. 10, 1992
PCT Filed May 29, 1992, Ser. No. 142,297
Claims priority, application Japan, May 29, 1991, 3-125741
Int. Cl.[6] E04H *9/02*
U.S. Cl. 52—167.2 **18 Claims**



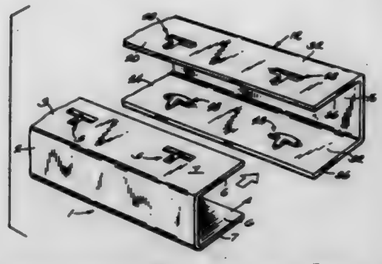
1. A device to protect a building structure having a natural period of vibration and a load-bearing horizontal surface, from structural damage due to seismic vibration or high wind, comprising: a passive first additional mass having upper, lower, and side surfaces, said upper surface being arcuately concave; passive elastoplastic supports; means to secure said passive elastoplastic supports to said building structure load-bearing horizontal surface; means to mount said passive first additional mass on said passive elastoplastic supports; an active second additional mass, smaller than said passive first additional mass, adapted to be mounted on said passive first additional mass for oscillation on said passive first additional mass arcuately concave upper surface; and actuator means to oscillate said active second additional mass in synchronization with said natural period of vibration of said building structure to attenuate destructive vibration of said building structure.

5,442,884
FIRE-RATED CORNER GUARD STRUCTURE
John D. Nicholas, Lawrenceville, Ga., assignor to Pawling Corporation, Pawling, N.Y.
Division of Ser. No. 210,725, Mar. 17, 1994, Pat. No. 5,367,850, which is a continuation of Ser. No. 905,044, Jun. 26, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,527
The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.
Int. Cl.[6] E04F *13/06*
U.S. Cl. 52—516 **4 Claims**



1. A fire and impact resistant corner and wall assembly comprising a fire and impact resistant corner structure installed in a fire resistant wall structure, the fire resistant wall structure being comprised of layers of fire resistant material and including an external corner and having a recess in said layers at said external corner where the fire resistant character of said corner structure is reduced, and having an impact resistant structure mounted in said recess, where said impact resistant structure includes a metal retainer strip mounted in said recess and a plastic cover member installed in said recess and secured by said retainer strip, characterized by,
(a) said metal retainer strip being a section of extruded aluminum having an inwardly facing surface and an outwardly facing surface,
(b) the fire resistance of said external corner being enhanced by at least one of said inwardly or outwardly facing surfaces of said extruded aluminum retainer strip being provided with a surface coating of intumescent paint capable of expanding and forming an insulating layer in said recess in response to the presence of fire, and
(c) said surface coating of intumescent paint having a thickness of at least about two mils.

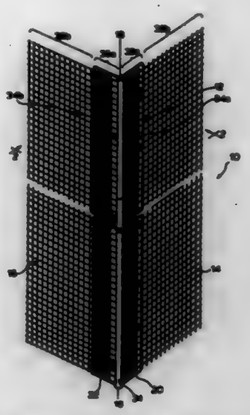
5,442,825
PRE-ASSEMBLY ATTACHMENT SYSTEM FOR A BOX-SECTION FRAME MEMBER AND METHOD OF ASSEMBLING
James R. Laven, Muskego, and Roger B. Hooper, Iron Ridge, both of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.
Filed Apr. 15, 1994, Ser. No. 228,537
Int. Cl.[6] E04C *1/00, 1/39*
U.S. Cl. 52—731.3 **11 Claims**



1. A metal box-section comprising: a pair of channel members each having a pair of longitudinally extending flanges joined by a web, a plurality of T-shaped openings disposed in the flanges of one of said channel members, with each opening being disposed between the longitudinal edge of the respective flange and the web, each opening being spaced a predetermined distance from the adjacent flange edge, and a plurality of complementary T-shaped tabs integrally lanced in the other of said channel members between the longitudinal edge of the respective flange and the web and spaced a predetermined distance from the corresponding flange edge, said tabs each being adapted to be press-fit into an associated opening, whereby said pair of channel members are locked together to define a metal box section, and said T-shaped tabs each having three ends and being integrally connected at all three ends to the associated flange, and each T-shaped tab having a first pair of parallel edges and a second pair of parallel edges which are generally perpendicular to said first pair of edges, with each of said T-shaped tab edges being closely adjacent a flange portion defining part of the associated opening, so as to prevent horizontal and vertical movement of said channel menders relative to each other.

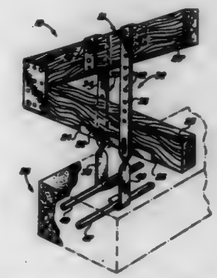
5,442,886
PREFABRICATED CORNER BEAD
Luigi Iacobelli, 61 Cromdale Ridge, Woodbridge, Ontario, Canada L4L 8C9
Filed Dec. 20, 1993, Ser. No. 169,176
Int. Cl.[6] F04B *2/00*
U.S. Cl. 52—255 **19 Claims**

1. A preformed corner bead for drywall construction comprising,
corner forming means having a central axis, said corner forming means bent along said central axis to define a pair of flanges extending laterally therefrom at an angle relative to each other, and
joining means for securing said corner bead in an operative position with the central axis of said corner forming means juxtaposed with a wall corner,
said joining means comprising a pair of flexible mesh strips, each of said mesh strips overlapping and being secured to an associated one of said flanges,
said flexible mesh strips carrying a pressure sensitive adhesive for retaining said corner bead in said operative position to permit the application of a joint compound over



the corner forming means and joining means to form a finished corner.

5,442,887
SEAT AND ANCHOR ASSEMBLY FOR A ROOF TRUSS AND WOODEN JOIST
Holden A. Welsh, 6875 N. Cartee Rd., Miami, Fla. 33158
Filed Nov. 9, 1993, Ser. No. 149,612
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—92.2 **16 Claims**



1. An improved truss seat and anchor strap assembly comprising:
a) a channel length having a first and a second end, a central web portion with longitudinally extending parallel edges having a first and a second wall portion secured thereto, each wall portion extending longitudinally along one of said edges in generally parallel relation to one another and extending upwardly from said central web portion to define a truss cradle therebetween, said truss cradle adapted to receive a truss on the central web portion and between said wall portions,
b) a first and a second elongate anchor strap of bendable metal, each anchor strap having an upper, generally flat length with spaced nail holes extending therealong and a lower length adapted to be embedded in wet concrete,
c) first connector means for adjustably connecting said first anchor strap to said channel length and extending outwardly in generally perpendicular relation to the first wall portion and extending through said first wall portion and movably engaging said first anchor strap, and second

connector means for adjustably connecting said second anchor strap to said channel length and extending outwardly in generally perpendicular relation to said second wall portion and movably engaging said second anchor strap,

d) said first and second anchor straps being attached to said first and second wall portions respectively of said channel length in spaced relation to one another along the length of said central web portion and substantially adjacent the opposite ends of said first and second wall portions, and

e) said upper length of each of said first and second anchor straps extending above said channel and said lower length of said first and second anchor straps extending below said channel, wherein said first and second anchor straps are in an operative position.

5,442,888

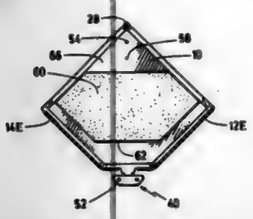
SHINGLES

Peter Ilnyckyj, 185 Rosewell Ave., Toronto, Ontario, Canada

Continuation of Ser. No. 986,936, Dec. 8, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 158,533

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—524 **29 Claims**



1. A shingle having a periphery therearound defining a central area residing generally in a plane;

said periphery comprising a first margin portion extending along approximately one half of said periphery and a second margin portion extending along the remainder thereof;

said first margin portion being downwardly turned to terminate at two opposed ends and form an edge therealong which resides generally in a plane,

a notional diagonal generally intersecting said first and second margin portions respectively at first and second zones disposed proximate the mid-point of said margin portions;

shingle support means depending from said central area for supporting said shingle when placed on a planar support surface whereby said central area adjacent said second zone and each edge adjacent said ends is proximate such planar support surface, and whereby said central area adjacent said first zone is spaced above such planar support surface by a distance approximately equal to twice the width of said margin portion adjacent said first zone, and

a connector including a hook element disposed beneath the plane of said central area adjacent said first zone;

wherein said shingle support means is continuously spaced apart from said first margin portion therearound to leave an open gap therebetween.

5,442,889

Patent Not Issued For This Number

5,442,890

INSTALLING INSULATION IN BUILDINGS

Robert E. Higg, 2080 Sylvan Rill Rd., West Des Moines, Iowa 50265

Filed Oct. 12, 1993, Ser. No. 134,597

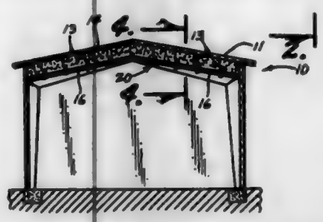
Int. Cl.[6] E04B *1/62*

U.S. Cl. 52—742.12 **9 Claims**

1. A method of insulating under a pre-existing roof of a building of a type having a pair of spaced apart structural beams extending in one direction supported in the building under the roof thereof and a plurality of spaced apart elongated purlins extending transversely to said structural beams and being supported by said structural beams and utilizing purlin clips of a type having means on the top thereof for operative connection to a purlin and means on a lower portion thereof for receiving a lower support member; said method comprising:

a) installing an upper support member across from one to the other of an adjacent pair of purlins;

b) positioning an upper strip of insulation between said adjacent pair of purlins above said upper support member, said upper strip extending substantially entirely across the



space between said adjacent pair of purlins, whereby said strip of insulation is supported by said upper support member;

c) attaching one end of a lower strip of insulation approximately as wide as the distance between purlins along one end thereof to one of said structural beams, said lower strip of insulation being under said upper layer of insulation;

d) attaching the other end of said lower strip of insulation to the other one of said structural beams; and

e) installing a lower support member between adjacent purlin clips and under said lower strip of insulation for supporting the underside of said lower strip of insulation.

5,442,891

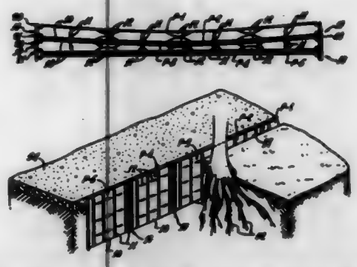
ROOT-CONTROL BARRIER COMBINATION, AND METHOD OF CONTROLLING ROOTS BY BARRIERS HAVING EITHER SINGLE-ELONGATE OR CLOSED-LOOP CONFIGURATIONS

Leonard N. Albrecht, Irvine, Calif., assignor to Deep Root Partners, L.P., Burlingame, Calif.

Filed Apr. 8, 1991, Ser. No. 682,581

Int. Cl.[6] E04B *1/344*

U.S. Cl. 52—745.14 **7 Claims**



1. A method of protecting static structures from tree roots, which comprises:

(a) providing a multiplicity of tree root control-barrier panels,

(b) providing a multiplicity of flexible synthetic resin joints for pivotally connecting said panels to each other in a manner such that tree roots may not grow therebetween,

(c) removably mounting one of said joints in connected relationship between each two adjacent panels to pivotally connect the same to each other,

(d) accordion-folding a multiplicity of said connected panels together, with each panel except the two end panels being connected to two adjacent panels by said joints,

(e) transporting said multiplicity of said accordion-folded panels to a job site, in the accordion-folded relationship resulting from said accordion-folding,

(f) removing one of said joints to thereby disconnect a predetermined desired number of connected panels, at said job site, from the remainder thereof,

(g) forming said last-mentioned connected panels into a configuration adapted to prevent tree roots from damaging a static structure, and

(h) embedding said last-mentioned connected panels in the ground between a tree and a static structure at said site, said embedded panels preventing roots from said tree from damaging said static structure.

5,442,892

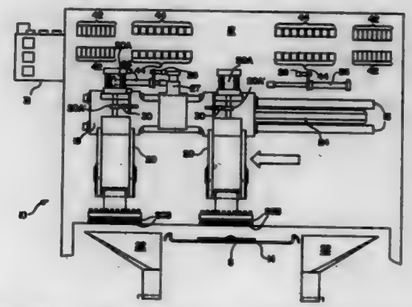
SYSTEM FOR FACILITATE RECYCLING GOODS FROM DEFECTIVE PACKAGES ON A BLISTER PACKAGING MACHINE

Henry K. Burns, III; Hubert E. Burns, both of Dothan, Ala.; Thomas P. DiNardo, Raleigh, and James E. Ingram, Angier, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Jan. 14, 1994, Ser. No. 184,431

Int. Cl.[6] B65B *57/10, 69/00, 47/02*

U.S. Cl. 53—53 **25 Claims**



18. A blister packaging process providing for the recovery and recycling of goods from defective blister packages, comprising the steps of:

(a) forming one or more blisters across the width of a progressively advancing carrier strip;

(b) filling said one or more blisters in said carrier strip with goods which are to be blister packaged;

(c) sensing the presence of empty blisters in said carrier strip;

(d) providing one or more laterally shiftable heads mounted above said carrier strip so as to move from a position in vertical registration with said carrier strip to a position laterally offset from said carrier strip, wherein said head comprises one or more engagement elements depending from the bottom thereof and adapted to engage goods on said carrier strip;

(e) providing control means for causing said head when positioned over said carrier strip to descend and engage one or more defective blister package sections of said goods with said one or more engagement elements thereof, raise upwardly and shift to said laterally offset position, and release said goods into a collection container;

(f) sealing said blisters of said carrier strip with an overlaying strip;

(g) forming blister packages by separating a plurality of blister package sections containing one or more blisters from said carrier strip; and

(h) sorting defective blister packages from which the goods have been removed from non-defective blister packages.

5,442,893

BALE, AN APPARATUS AND A METHOD FOR THE WRAPPING OF A BALE IN TWO CROSSING WRAPPING LAYERS APPLIED IN OVERLAPPING HELICAL TURNS

Staffan Söderberg, Hilleby Gard, Hörb, S-190 16, Sweden

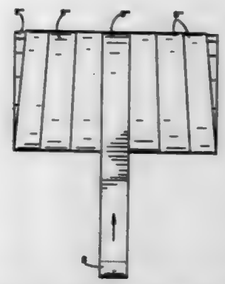
PCT No. PCT/SE92/00230, § 371 Date Oct. 25, 1993, § 102(e) Date Oct. 25, 1993, PCT Pub. No. WO92/17371, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 8, 1992, Ser. No. 129,114

Claims priority, application Sweden, Apr. 8, 1991, 9101032-2

Int. Cl.[6] B65B *11/04*

U.S. Cl. 53—211 **8 Claims**



1. An arrangement for packaging bales of organic material, such as animal-feed for ensiling, straw or hay, with strips of plastic packaging film, comprising means for rotating the bale about a generally horizontal axis, means for rotating the bale about a generally vertical axis, a film magazine including a film roll rotating about an axis from which film is taken while maintaining the film under tension, a bale supporting device (5) which is adapted to carry and support the bale for rotation about said generally vertical axis, said device (5) being operable to move in an oscillatory, alternating, limited rotational path and, means for moving said film roll between a first position wherein the roll is generally vertical and a second position wherein the roll is generally horizontal.

5,442,894

PACKAGING DEVICE

Taizo Ogata; Yuji Hanazawa, both of Chiba; Yasuo Iwata, Tokyo, and Toshio Shigeta, Chiba, all of Japan, assignors to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,918

Claims priority, application Japan, Jan. 28, 1992, 4-013331; Jan. 28, 1992, 4-013332; Jan. 28, 1992, 4-013333; Jan. 28, 1992, 4-013338

Int. Cl.[6] B65B *11/28*

U.S. Cl. 53—234 **12 Claims**

1. A packaging device for packaging continuously transferred, transported and delivered box-like items with a thermoplastic packaging sheet, where the packaging sheet is wound in a U-shape along the surface of a box-like item, said packaging sheet having two projecting free ends, with said two free ends being adapted to be folded along an outer surface of the box-like item, said two free ends thereafter being overlapped, relative to each other, prior to being adhered to each other, said packaging device comprising:

a continuously rotatable winding wheel, having an axis and an outer circumferential portion, said outer circumferen-

tial portion having a plurality of evenly spaced first pockets, each of said first pockets transporting one of said box-like items, each of said first pockets having a circumferentially-directed opening;
means for supplying said packaging sheet directly to the outer circumferential portion of said winding wheel;
means for temporarily holding said packaging sheet around the circumferentially-directed opening of each of said first pockets;
a continuously rotatable applying wheel, having an axis and an outer circumferential portion, said outer circumferential portion having a plurality of evenly-spaced second pockets, each of said second pockets transporting said box-like items, each of said second pockets having a circumferentially-directed opening;
said applying wheel being continuously and synchronously rotatable with, and in the direction opposite to, the direction of rotation of said winding wheel;
said axis of said applying wheel being disposed in parallel and on a downstream side of said axis of said winding wheel;
said first and second pockets being evenly spaced apart in a rotational direction, and means for oscillatory moving said first and second pockets;
at least one of said pluralities of first and second pockets being adapted to be linearly aligned with each other over a predetermined segment thereby defining a predetermined position where said at least one of said pluralities of first and second pockets are opposite to each other in a linear line with a predetermined space between a respective first and second pocket;



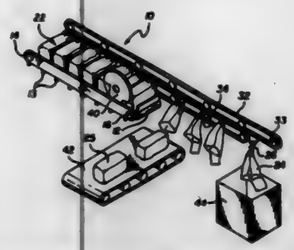
a first pusher in a first pocket in said winding wheel, for pushing and transferring the box-like items, in said at least one of said first pockets through said space and into said at least one of said second pockets in a radial direction of said winding wheel along a line between said axis of said winding wheel and said axis of said applying wheel, a second pusher in a second pocket in said applying wheel, said second pusher contacting a box-like item and retracting when the box-like item is pushed by said first pusher, said box-like item being held between said first and second pushers, said first and second pushers permitting said packaging sheet to be wound in said U-shape along the surface of said box-like item;
a continuously rotatable transferring wheel rotating synchronously with and in the direction opposite to the rotating direction of said winding wheel, said transferring wheel being disposed in parallel with and on an upstream side of said winding wheel, said transferring wheel having an outer circumferential portion, said outer circumferential portion being provided with an oscillatory mounting surface adapted for picking up said box-like items;
a transporting conveyor located at a lower portion of said transferring wheel, said transporting conveyor having a plurality of evenly-spaced pushers, said pushers being outwardly projected for pushing said box-like items onto said mounting surface of said transferring wheel;
said transporting conveyor continuously supplying said box-like items to said transferring wheel in an equally-spaced apart manner;
wherein each of said mounting surfaces of said transferring wheel oscillates as each of said mounting surfaces approaches said transporting conveyor, said transporting conveyor including transferring passages, said mounting surfaces being oscillated in an opposite direction when said mounting surfaces pass through said transferring passages of said transporting conveyor, said mounting surfaces being kept horizontal until said mounting surfaces reach a delivery position with said first pocket of said winding wheel;
a control cam for simultaneously moving said means for transferring said box-like items when each of said mounting surfaces reaches said delivery position; and
a separating and supplying mechanism for increasing the driving speed of said transporting conveyor in the downstream portion starting in a middle portion of said transporting conveyor, relative to the driving speed at an upstream portion of said transporting conveyor thereby spacing said box-like items, supplied by the upstream side of said transporting conveyor in a contacting relationship with each other, and thereafter feeding them in said downstream portion in an equally spaced apart relation.

5,442,895

METHOD AND APPARATUS FOR UNWRAPPING A WRAPPED ARTICLE

Richard L. Linson, Long Beach, Calif., assignor to Scope Industries, Santa Monica, Calif.

Filed Apr. 29, 1994, Ser. No. 224,870
Int. Cl.[6] B65B *43/26*; B02C *23/02*
U.S. Cl. 53—381.2 13 Claims



1. Apparatus for unwrapping an article wrapped in a package, said package having a first end and a second end, said apparatus comprising:
first means for holding the first end of the package;
second means for at least partially opening the second end of the package; and
third means for removing the package from the article.

5,442,896

RETAINER FOR A COMBINED SURGICAL NEEDLE-SUTURE DEVICE POSSESSING A NEEDLE SHIELD WITH NEEDLE TIP STOP FEATURE

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 98,742, Jul. 28, 1993, Pat. No. 5,353,922, which is a continuation of Ser. No. 816,101, Jan. 2, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 276,134
Int. Cl.[6] B65B *5/04, 63/04*
U.S. Cl. 53—430 4 Claims

1. A method for packaging a combined surgical needle-suture device upon a retainer base panel which comprises:
a) slidably mounting a needle shield possessing a needle tip stop and parallel flanged sides upon the obverse side of a flat retainer base panel possessing parallel lateral sides such that the flanged parallel lateral sides of the needle shield make gripping contact with the parallel sides of the base panel; and,

b) placing the needle component of the combined surgical needle-suture device in contact with the needle shield



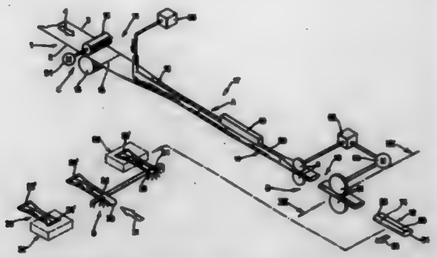
such that the point of the needle is proximate to, or abuts, the stop.

5,442,897

METHOD OF AND APPARATUS FOR MAKING TUBULAR ENVELOPES

Alfred Hinzmann, Weeze; Peter Preimer, Quinton; Timour Shu, and Wojciech Drewnowski, both of Richmond, all of Va., assignors to Hauni Richmond, Inc., Richmond, Va.

Filed Oct. 5, 1993, Ser. No. 132,506
Int. Cl.[6] B65B *5/02, 9/00, 51/26, 61/12*
U.S. Cl. 53—449 40 Claims



1. A method of transforming an elongated flexible web having two longitudinally extending marginal portions into a succession of discrete tubes each having spaced-apart first and second end portions, comprising the steps of weakening a plurality of longitudinally spaced-apart substantially transversely extending portions of the web; advancing the web lengthwise along a predetermined path in a predetermined direction; converting the advancing web into a continuous tubular body in a first portion of said path, including securing the marginal portions of the web to each other; subdividing the tubular body into a succession of discrete tubes, including exerting upon the tubular body a pull in said direction in a second portion of said path to break the advancing tubular body along the weakened portions thereof; closing one end portion of each of said succession of discrete tubes downstream of said second portion of said path; and introducing commodities into successive discrete tubes downstream of said second portion of said path upon completion of said closing step.

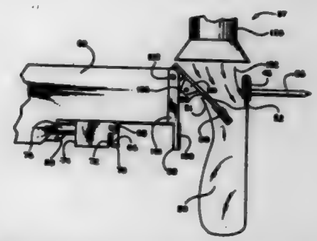
5,442,898

METHOD AND APPARATUS FOR OPENING, FILLING AND CLOSING A PREMADE WICKETED BAG

Joseph P. Gabree, Duluth; Steve W. Campbell, Tucker, and Charles Hood, Lilburn, all of Ga., assignors to A.P.M. Distributing, Inc., Norcross, Ga.

Filed Oct. 5, 1993, Ser. No. 131,715
Int. Cl.[6] B65B *1/22, 43/36*
U.S. Cl. 53—459 25 Claims

1. A method of automatically bagging a product, comprising the steps of:
providing at least one premade wicketed bag having a bag opening;
directing a flow of air toward the opening;
guiding air into the opening by positioning a horizontally pivotable plate extendible downwardly from a pivot at an angle to a first position where the far edge of the plate is adjacent to the wicketed bag to guide air from the flow of air into the opening of the wicketed bag;



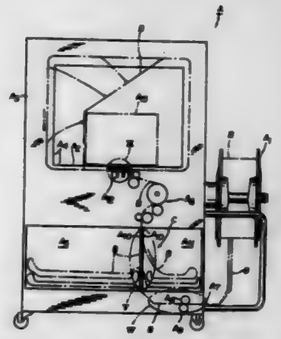
moving the plate to a second position where the plate supportively clamps the wicketed bag on a first side, the wicketed bag being opened to receive a product as the product is dispensed, and
agitating the product while dispensing the product to prevent the product from becoming jammed.

5,442,899

BAND CHARGING APPARATUS FOR PACKING MACHINE

Tokio Shibazaki, Osaka; Seiichiro Koyama, Tokyo; Kenichi Enda, Kanagawa; Yoshikatsu Aizawa, Saitama, and Hiroshi Furukawa, Tokyo, all of Japan, assignors to Strapack Corporation, Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 88,431
Claims priority, application Japan, Jul. 10, 1992, 4-183906
Int. Cl.[6] B65B *13/04*
U.S. Cl. 53—589 9 Claims



1. A band charging apparatus for a packing machine which is adapted to feed a band unwound from a reel to a pool box by means of the band charging apparatus for temporarily storing the band in the pool box, feed the stored band to a band feeding and tightening apparatus by means of the band charging apparatus for charging the band feeding and tightening apparatus with the band, feed the band to a circumference of a package by means of the band feeding and tightening apparatus, draw back the band by means of the band feeding and tightening apparatus while gripping a distal end of the band for tightly winding the band on the package, bond an overlapped portion of the band, and cut a portion of the band wound on the package from the remaining part of the band, comprising:

a pool feed roller for carrying out feeding of the band to the pool box;
a pool touch roller arranged so as to access to said pool feed roller through the band;
accessing means for accessing said pool touch roller to said pool feed roller,
guide plates having a first position in which a closed band guide path is defined in the pool box when the band is set for charging of the band in the band feeding and tightening apparatus;
a first mechanism for enabling pivotal rotation of at least one of said guide plates about an axis substantially parallel to said band guide path to a second position in which said band guide path is open;
a second mechanism coupled to said accessing means for moving said at least one guide plate from said second position to said first position to close said band guide path upon actuation of said accessing means to access said pool touch roller to said pool feed roller; and
a third mechanism for releasably maintaining said at least one guide plate in said first position closing said band guide path such that said at least one guide plate is movable to said second position when the band is excessively fed to said band guide path to thereby open said band guide path.

5,442,900
HORSE TRAINING DEVICE
Joan Ciampi, P.O. Box 11214, Greenwich, Conn. 06831-1214
Filed Dec. 28, 1993, Ser. No. 174,242
Int. Cl.[6] B68B *1/00*
U.S. Cl. 54—71 **15 Claims**



5. A horse training device positioned about a set of reins having a first side and a second side, the device comprising at least one substantially rigid tubular member having two open ends and a channel extending therebetween, at least a portion of one of the sides of the reins extending through the channel such that the at least one tubular member spans along substantially the entire neck of a horse and maintains substantially uniform pressure along substantially the entire neck of the horse adjacent to the at least one tubular member.

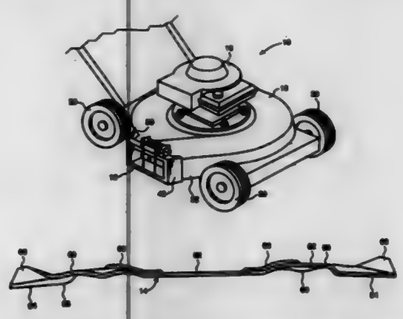
5,442,901
SELF-PROPELLED MOWER
Paul W. Niemela, Pickens; Hiroshi Morikawa, Clemson, and Stephen M. Demarco, Greenville, all of S.C., assignors to Ryobi North America, Easley, S.C.
Filed Jul. 22, 1994, Ser. No. 278,747
Int. Cl.[6] A01D *34/68*
U.S. Cl. 56—11.9 **13 Claims**

1. A lawn mower comprising:
a chassis;
at least three wheels pivotably cooperating with the chassis for positioning the chassis above a grass surface to be cut;
a grass cutting blade;
an electric blade motor mounted on the chassis having a rotary output operatively connected to the grass cutting blade to rotate the blade relative to the grass surface to be cut;
an electric drive motor cooperating with the chassis and operatively connected to at least one of said wheels to propel the chassis along the grass surface;
an electric battery mounted on the chassis for supplying electric power to the blade motor and the drive motor;
a blade motor switch electrically interposed between the battery and the blade motor for regulating the operation of the blade motor; and



a drive motor control electrically interposed between the drive motor and the battery to regulate the operation of the drive motor independently from the operation of the blade motor;
said at least three wheels comprise a pair of front wheels mounted on a forward portion of the chassis and a pair of rear wheels mounted on a rearward portion of the chassis wherein said drive motor is operatively connected to said pair of front wheels.

5,442,902
ROTARY MOWER HAVING INTEGRATED DEFLECTOR/MULCHING PLUG AND IMPROVED BLADE
Keith A. Mosley, Jackson, and Kent H. Elrod, Humbolt, both of Tenn., assignors to Murray, Inc., Brentwood, Tenn.
Filed Mar. 23, 1994, Ser. No. 217,137
Int. Cl.[6] A01D *34/73, 34/82*
U.S. Cl. 56—17.5 **19 Claims**



1. A lawn mower adapted to mulch or discharge grass clippings having an engine mounted to the top surface of a cutting deck, with a drive shaft driven by the engine extending downwardly therefrom through a suitable opening in the cutting deck into the cutting chamber defined by said cutting deck, said cutting deck having a peripheral wall with a discharge chute formed therein and a discharge opening at the distal end of said chute, said lawn mower comprising:
a plug member hingedly secured to said top surface of said cutting deck generally adjacent said discharge opening, said plug member being selectively moveable between a plurality of positions including a mulch position and a discharge position,
said plug member comprising a central body having an outer face with upper, lower, front and rear edges and a laterally offset inner wall, with a pair of angularly oriented deflector plates extending longitudinally from said front and rear edges of said body, wherein
said body of said plug member extends through said discharge opening into said chute and said face effectively blocks said discharge opening when said plug member is in said mulch position, thereby preventing the passage of grass clippings through said discharge opening, said inner wall being disposed within said chute inwardly from said discharge opening adjacent said cutting chamber and being operative to establish a temporary side portion of said cutting chamber, thereby restricting grass clippings from collecting inside said chute during normal mulching operation of said mower, and
said inner wall extends laterally outwardly from said discharge opening when said plug is in said discharge position, said inner wall and said deflector plates cooperating to form an effective extension of said chute for directing grass clippings laterally outwardly from said cutting deck during normal discharging operation of said mower.

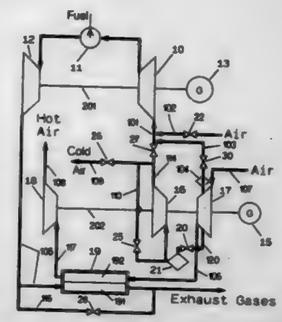
5,442,903
THERMOSET TWIST COMPOSED OF SYNTHETIC MONOFILAMENTS
Gérard Lagarrigue, Saint-Juery, France, assignor to Rhone-Poulenc Fibres, Lyons, France
Continuation of Ser. No. 68,585, May 28, 1993, abandoned, which is a continuation of Ser. No. 833,715, Feb. 11, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,351
Claims priority, application France, Feb. 21, 1991, 91 02309
Int. Cl.[6] D02G *3/48*
U.S. Cl. 57—236 **23 Claims**



1. A monofilament twist suitable for use in industrial textile applications, elastomer reinforcements, and the paper making industry, wherein the twist consists of untwisted monofilaments of synthetic material of a grist of at least 20 tex, said twisted assembly being twisted in only a single direction, and having been thermoset, and wherein the twist is virtually free of untwisting stress.

5,442,904
GAS TURBINE WITH BOTTOMING AIR TURBINE CYCLE
Isaac Shnaid, Zalman Shneur Str. 36/10, Haifa 32545, Israel
Filed Mar. 21, 1994, Ser. No. 210,570
Int. Cl.[6] F02C *6/18*
U.S. Cl. 60—39.02 **11 Claims**

1. Gas Turbine With Bottoming Air Turbine Cycle comprising:
a gas turbine comprising connected in series a compressor, at least one combustor and a turbine for producing shaft mechanical power and hot exhaust gases;
a gas-to-air main heat exchanger comprising means for transferring heat from the gas turbine hot exhaust gases to at least one flow of compressed air to produce hot compressed air;
a line connecting the gas side of the main heat exchanger with an exhaust duct of the gas turbine to supply the hot exhaust gases into the main heat exchanger;
hot air turbine comprising means for producing work by expanding the hot compressed air;
an additional air compressor comprising means for supplying at least one flow of compressed air into the main heat exchanger and for supplying at least two additional flows of compressed air;
lines connecting the additional air compressor with the hot air turbine through an air side of the main heat exchanger to supply the hot compressed air to said turbine;
an aftercooler comprising means for extracting heat from the first additional flow of compressed air;

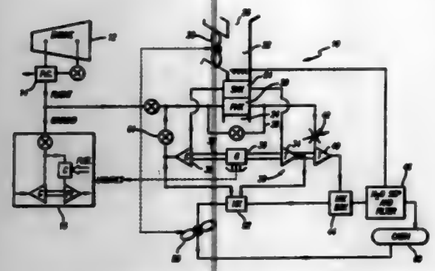


a cold air turbine comprising means for producing work and refrigerated air by expanding the first additional flow of compressed air;
lines connecting the additional air compressor with the cold air turbine through the aftercooler to supply the first additional flow of compressed air to said turbine;
lines connecting a suction duct of the compressor of the gas turbine with the atmosphere, with an exhaust duct of the cold air turbine, and with the additional air compressor to supply the gas turbine compressor with the atmospheric air, with the refrigerated air after the cold air turbine, and with the second additional flow of compressed air;
a line connecting the exhaust duct of the cold air turbine with external consumers of the cold air;
flow controlling &vices installed on the lines connected to the gas turbine compressor suction duct, to the cold air turbine inlet duct and to the external consumers of the cold air.

5,442,905
INTEGRATED POWER AND COOLING ENVIRONMENTAL CONTROL SYSTEM
Henry M. Claeys, Lomita; Katherine J. Clarke, Hermosa Beach, and Das S. Matulick, Rolling Hills Estates, all of Calif., assignors to AlliedSignal Inc., Morris Township, N.J.
Filed Apr. 8, 1994, Ser. No. 224,938
Int. Cl.[6] F02C *6/06*
U.S. Cl. 60—39.07 **3 Claims**

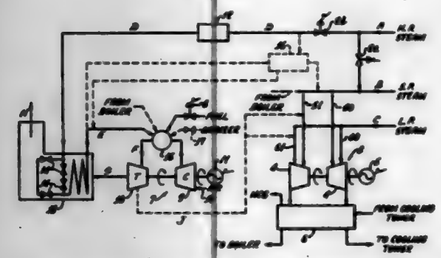
1. An environmental control system for an aircraft having a cabin and at least one engine providing fresh pressurized air, said system comprising:
a single shaft;
a power turbine mounted on said shaft and receiving said fresh, pressurized air from said engine, said power turbine having a variable geometry inlet nozzle;
a motor/generator mounted on said shaft;
a compressor mounted on said shaft and receiving recirculating air from said cabin;

a cooling turbine mounted on said shaft and receiving said recirculating air from said compressor; and



a mixing manifold receiving said recirculating air from said cooling turbine and said fresh air from said power turbine and delivering a mixture of the two to said cabin.

5,442,906
COMBINED GEOTHERMAL AND FOSSIL FUEL POWER PLANT
John G. Broadus, Los Angeles, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 30, 1992, Ser. No. 982,786
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—39.182 **11 Claims**



1. An apparatus for generating varying amounts of electric power which comprises:
- a source of geothermal steam producing a first flow of steam;
- a steam turbine which, when driven by said first flow of steam, generates a first amount of electric power;
- a source of combustible fuel;
- a combustion turbine which, when supplied by a flow of combustion products derived from said combustible fuel and an injected flow of steam, is capable of generating a second amount of electric power; and
- means for diverting a portion of said first flow from the inlet of said steam turbine to said combustion turbine to supply said injected flow.

5,442,907
BOOTSTRAP RE-IGNITION SYSTEM FOR AIRCRAFT JET ENGINE
Joseph G. Asquith, Calabasas; William P. Peschel, Venice, and Jacob L. Sperling, Carlsbad, all of Calif., assignors to Aero-Plasma, Inc., Calabasas, Calif.
Filed Apr. 4, 1994, Ser. No. 222,012
Int. Cl.[6] F02C *7/26*; F02G *3/00*
U.S. Cl. 60—39.06 **12 Claims**

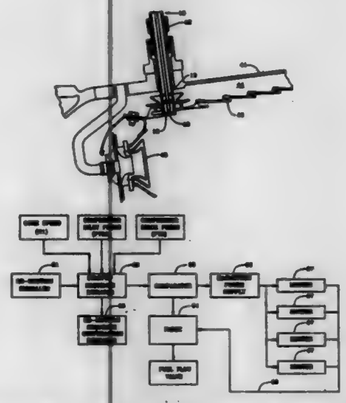
1. A method for re-igniting an aircraft gas turbine jet engine which has suffered flameout which comprises the steps of:

providing a plurality of igniters in the combustor chamber of said jet engine;

determining the maximum ratio of discharge pressure to inlet pressure for the compressor of said engine which will be permitted to exist for various core speeds of said compressor;

sensing the core speed of said compressor;

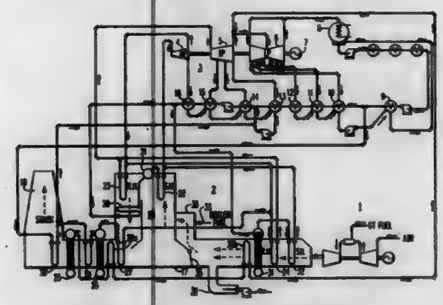
sensing the actual discharge and inlet pressures of said compressor and calculating their ratio;



comparing the actual ratio of discharge pressure to inlet pressure of said compressor to said maximum ratio for the core speed then obtaining; and

controlling the power to said igniters such that when the ratio of said actual discharge and inlet pressures of said compressor is less than said maximum value for the core speed then obtaining, said igniters will be powered, and when the ratio of said actual discharge and inlet pressures of said compressor is more than said maximum value for the core speed then obtaining, said igniters will not be powered.

5,442,908
COMBINED COMBUSTION AND STEAM TURBINE POWER PLANT
Michael S. Briesch, Orlando, Fla., and Michael A. Costanzo, Akron, Ohio, assignors to Westinghouse Elec Corp, Pittsburgh, Pa. and Babcock & Wilcox, New Orleans, La.
Continuation of Ser. No. 8,023, Jan. 25, 1993, Pat. No. 5,375,410. This application May 4, 1994, Ser. No. 237,735
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—39.182 **6 Claims**



1. A combined cycle power plant, comprising:

a steam turbine;

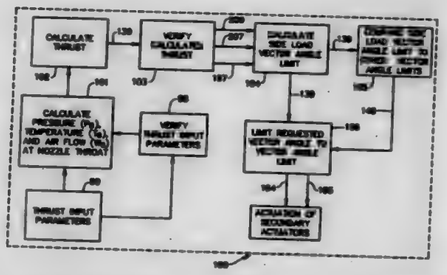
a boiler unit for generating and supplying a first source of steam to said steam turbine unit;

a combustion turbine unit with an exhaust gas duct structure for supplying the combustion turbine exhaust gases to said boiler unit and an exhaust gas stack for discharging the exhaust gases into the atmosphere, said duct structure including at least one heat recovery steam generator disposed in the flow of exhaust gas discharged through said exhaust gas stack, said heat recovery steam generator being connected to said steam turbine unit for generating and supplying a second source of steam to said steam turbine unit;

a boiler fuel supply; and

means for combusting said boiler fuel supply for incressing the boiler temperature independent of the temperature of the exhaust gases from said combustion turbine.

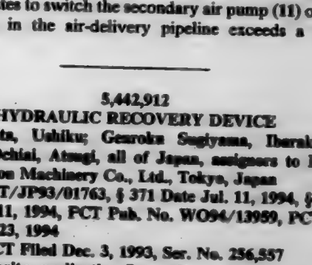
5,442,909
CONTROL SYSTEM FOR LIMITING THE VECTOR ANGLE IN AN AXISYMMETRIC VECTORING EXHAUST NOZZLE
Barton H. Snow, Wyoming; David J. Markstein, Hamilton; Thomas K. Wills, Milford, all of Ohio, and Thomas P. Schmitt, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio
Filed May 13, 1994, Ser. No. 242,473
Int. Cl.[6] F02K *1/00*
U.S. Cl. 60—204 **21 Claims**



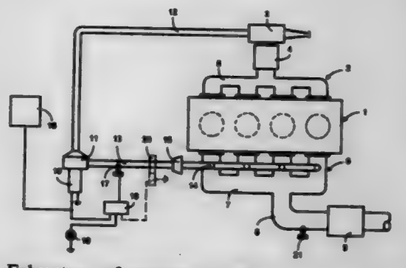
1. A method for controlling the vector angle of a thrust vectoring exhaust nozzle in a gas turbine engine, the method comprising the steps of:
- (a) calculating engine thrust produced by said gas turbine;
- (b) calculating a side load vector angle limit as a function of said calculated engine thrust and a side load limit; and
- (c) limiting any vector angle requested of said thrust vectoring exhaust nozzle to said side load vector angle limit.

5,442,910
REACTION MOTOR STRUCTURE AND METHOD OF CONSTRUCTION
William G. Anderson, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.
Filed Mar. 21, 1994, Ser. No. 215,427
U.S. Cl. 60—266 **4 Claims**

1. A reaction motor structure comprising:
- a solid body which includes a through hole with two open ends and a throat of smaller cross section area than either open end and located between the two open ends; and
- at least two elongated, non-annular heat pipes embedded within the body so that the space between heat pipes is filled with solid material and oriented so that a first evaporator end of each heat pipe is located adjacent to the throat and a condenser at the opposite end of each heat pipe is located radially more remote from the through hole than the first evaporator end.



5,442,911
EXHAUST GAS AFTERTREATMENT EQUIPMENT FOR AN INTERNAL COMBUSTION ENGINE
Klaus Hirsch, Bad Friedrichshall, Germany, assignor to Audi AG, Ingolstadt, Germany
Filed Feb. 9, 1994, Ser. No. 193,704
Claims priority, application Germany, Feb. 11, 1993, 43 04 144.2
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—277 **4 Claims**

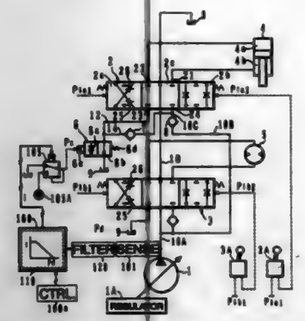


1. Exhaust-gas aftertreatment equipment for an internal combustion engine, having a secondary air pump (11), which normally is driven for only a short time and has a delivery pipeline (13) which discharges into an exhaust system (6) of the internal combustion engine and in which a check valve (15) is disposed which permits flow from the secondary air pump (11) to the exhaust system (6), a heat sensor (17) disposed in the air-delivery pipeline (13) upstream from the check valve (15) which operates to switch the secondary air pump (11) on if the temperature in the air-delivery pipeline exceeds a certain value.

5,442,912
HYDRAULIC RECOVERY DEVICE
Toichi Hirata, Ushiku; Genroku Sugiyama, Ibaraki, and Masami Ochiai, Atsugi, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
PCT No. PCT/JP93/01763, § 371 Date Jul. 11, 1994, § 102(e) Date Jul. 11, 1994, PCT Pub. No. WO94/13959, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 3, 1993, Ser. No. 256,557
Claims priority, application Japan, Dec. 4, 1992, 4-325612
Int. Cl.[6] F16D *31/02*; F15B *11/16*
U.S. Cl. 60—426 **17 Claims**

1. A hydraulic recovery device equipped in a hydraulic drive system comprising a plurality of actuators (4, 5) operated

by a hydraulic fluid supplied from a variable displacement type hydraulic pump (1), and a plurality of directional control valves (2, 3) disposed between said hydraulic pump and said plurality of actuators for controlling respective flows of the hydraulic fluid supplied to the associated actuators, said hydraulic recovery device comprising variable resistance means (6; 60) disposed in a first line (12) communicating a reservoir port (23) of at least one (2) of said plurality of directional control valves and a reservoir (9) for controlling a flow rate passing from said reservoir port to said reservoir in accordance with a control signal (Px), a third line (14) communicating a portion of said first line upstream of said variable resistance means and a second line (10C) connected to a pump port (24) of said one directional control valve, and a check valve (7)



disposed in said third line for allowing the hydraulic fluid to flow only in a direction from said first line toward said second line, wherein said hydraulic recovery device further comprises:

(a) detecting means (101; 106; 102*a*, 102*b*; 103*a*, 103*b*) for detecting a condition variable (Pd; Ph; Pia1, Pia2; Pib1, Pib2) related to an operation of said actuator (4);

(b) control means (100; 100A–100H) for receiving a signal from said detecting means and producing a drive signal (i; i*) corresponding to said condition variable based on a relationship stored therein in advance; and

(c) control signal generating means (105) for receiving said drive signal and producing said control signal (Px) corresponding to said drive signal.

5,442,913

STIRLING CYCLE SYSTEM DRIVING DEVICE

Gwan S. Cho; Seok M. Jang, both of Seoul, and Dong G. Shin, Gyeonggi, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1993, Ser. No. 172,564

Claims priority, application Rep. of Korea, Dec. 29, 1992, U92-27382; Apr. 29, 1993, P93-7306; Jun. 4, 1993, P93-10111

Int. Cl.[6] F02G *1/043*

U.S. Cl. 60—518 **12 Claims**

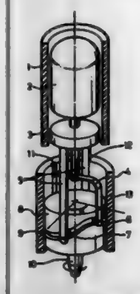
1. A stirling cycle system driving device comprising:

a circumference cam having a power shaft connected incorporate to said circumference cam for transmitting a rotating force, and at least one circumferential guiding groove formed on the outer peripheral surface of said circumference cam;

at least one piston rod and at least one displacer rod respectively having a wheel engaged in said at least one circumferential guiding groove, said wheel guided along said at least one circumferential guiding groove by the rotation of said circumference cam;

a crank case including at least one piston rod guiding groove and at least one displacer rod guiding groove which are spaced out at a predetermined circumferential interval apart, and which respectively guide said piston rod and said displacer rod so that said piston rod and said displacer rod can only reciprocate upward and downward;

a piston and a displacer which are respectively connected to said piston rod and said displacer rod, and which reciprocate upward and downward when said wheels are guided



along said at least one circumferential guiding groove by the rotation of said circumference cam; and

a cylinder case enclosing said piston and said displacer, and including an expansion space defined by said displacer and said cylinder case, and a compression space defined by said displacer and said piston.

5,442,914

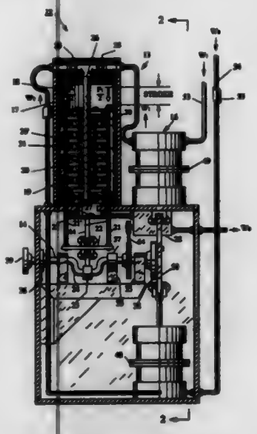
SHAPE MEMORY ALLOY HEAT ENGINE

George K. Otsuka, 13545 N. Brentwood, Channelview, Tex. 77530

Filed Dec. 7, 1993, Ser. No. 162,297

Int. Cl.[6] F03G *7/00*

U.S. Cl. 60—527 **18 Claims**



1. A SMA-CDS engine, comprising:

shape-memory-alloy (SMA) means including a first stack of primary conical-disc-springs (CDSs), each primary CDS having a zero axis, a martensite mode, and an austenite mode;

a first housing;

a first tube mounted in said housing;

first mounting means for supporting said first stack of primary CDSs on said first tube so as to allow each primary CDS to reciprocate along an outer wall of said first tube and to deflect within a first predetermined deflection range;

a first drive shaft;

first coupling means for coupling said first drive shaft to said first stack of primary CDSs;

a first heating and cooling means for cyclically heating and cooling said first stack of primary CDSs, thereby causing each primary CDS to undergo a corresponding transformation cycle during each heating and cooling cycle, so that in response to said heating each primary CDS transforms from its said martensite mode into its said austenite mode, and in response to said cooling each primary CDS returns to its said martensite mode; and

during each transformation cycle, each primary CDS deflects within said first deflection range and generates first martensite deflection forces and first austenite extension forces of different magnitudes, which result in a first resultant force causing said first drive shaft to reciprocate.

5,442,915

BRAKE FLUID PRESSURE GENERATOR

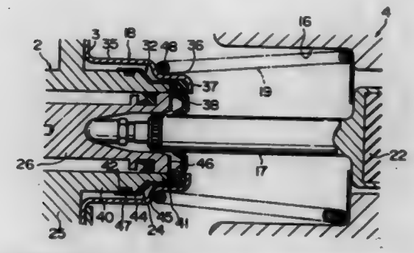
Kazunari Komatsu, Yamanashi, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Oct. 29, 1993, Ser. No. 145,798

Claims priority, application Japan, Oct. 30, 1992, 4-075714 U

Int. Cl.[6] B60T *13/00*

U.S. Cl. 60—547.1 **6 Claims**



1. A brake fluid pressure generator comprising a booster of air pressure type and a master cylinder:

said booster of air pressure type comprising:

(a) an outer shell defining an outer periphery of said booster of air pressure type;

(b) a power piston supported in said outer shell so as to be movable within said outer shell by means of a pressure difference between an actuating chamber and a negative pressure chamber provided on opposite sides of said power piston and defined by said power piston and said outer shell;

(c) a concave interlocking portion formed inside said outer shell protruding into said negative pressure chamber;

(d) a return spring provided between said power piston and said concave interlocking portion so as to urge said power piston in a direction of said actuating chamber; and

(e) an output shaft provided in mechanical contact with said power piston; and said master cylinder comprising:

(f) a convex interlocking portion fixedly received by said concave interlocking portion of said booster of air pressure type;

(g) a piston for creating brake fluid pressure, said piston being in mechanical contact with said power piston through said output shaft; and

(h) a stopper member for limiting movement of said piston;

wherein said concave interlocking portion has a stepped configuration, said return spring is brought into contact with a stepped portion of said concave interlocking portion, and said convex interlocking portion is inserted into a small diameter portion of said concave interlocking portion.

5,442,916

CONTROL VALVE ASSEMBLY FOR TOTAL PRESSURE HYDRAULIC BRAKE

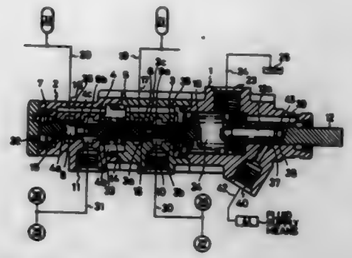
Kazuo Saito, Tokyo; Takeo Yasuda, Tochigi, and Toru Oyama, Oyama, all of Japan, assignors to Miyako Jidosha Kogyo Kabushikigaisha, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 171,605

Claims priority, application Japan, Dec. 25, 1992, 4-357703

Int. Cl.[6] B60T *13/00, 11/00*

U.S. Cl. 60—547.1 **6 Claims**



1. A control valve assembly for a total pressure hydraulic brake, comprising:

a first input port connected inputtably to hydraulic fluid supply means for said brake;

an output port connected outputtably to a brake system;

a second input port connected inputtably to hydraulic fluid supply means for remote control;

a first response member which is moved in accordance with only a depressing force exerted on a brake pedal;

a second response member which is moved together with said first response member when the depressing force is exerted on the brake pedal, and which is moved relatively to said first response member by the hydraulic fluid flowing through said second input port; and

control means which makes open/close control for the hydraulic fluid from said first input port in accordance with the movement of either said first response member or said second response member or both of them and supplies the hydraulic fluid from said first input port to said output port.

5,442,917

FORCE TRANSMISSION DEVICE WITH FLAT SUPPORT

Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Perez Revilla, Argenteuil, all of France, assignors to Bendix Europe Services Techniques, Drancy, France

PCT No. PCT/FR93/00563, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO94/01312, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 14, 1993, Ser. No. 90,063

Claims priority, application France, Jul. 8, 1992, 92 08420

Int. Cl.[6] B60T *13/20*

U.S. Cl. 60—554 **2 Claims**

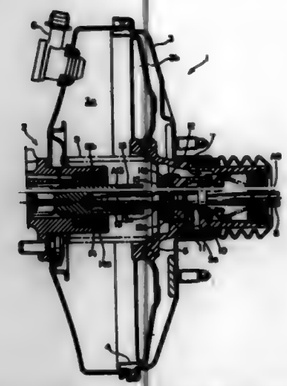
1. A force transmission device of an assembly consisting of a pneumatic brake-booster and a master cylinder, comprising:

a control rod capable, starting from a resting position, of undergoing a movement in an axial direction under the effect of an input force, the rod being terminated by a plunger probe;

a pneumatic piston movable in the axial direction, from a resting position, under the effect of a pressure differential controlled by the axial movement of the control rod, the pneumatic piston having an axial annular surface which surrounds the plunger probe;

a reaction disk housed in a cup having a flat bottom and having a free face onto which the axial annular surface of said pneumatic piston and the control rod are capable of applying output forces;

a substantially axial thrust rod a first end of which receives the output forces and another end of which retransmits the output forces to a hydraulic piston of the master cylinder; and



retaining means for ensuring that the thrust rod maintains a substantially axial direction, characterized in that the thrust rod is attached securely, at the first end, to a flat thrust washer coming to bear, with the possibility of a relative sliding, against the flat bottom of said cup, and in that said retaining means is borne by the master cylinder.

5,442,918

AUTOMATIC SUPERCHARGING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

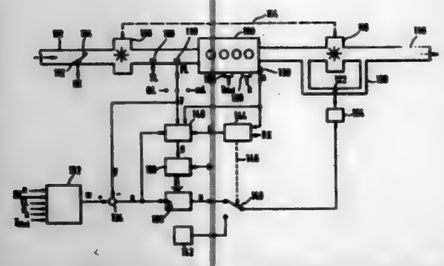
Michael Baeuerle, Besigheim-Ottmarsheim; Werner Haeming, Neudenau-Herbolzheim; Wolfgang Hilbert, Moeglingen; Ulrich Rothhaar, Stuttgart; Robert Sloboda, Markgroeningen; Oskar Torno; Stefan Unland, both of Schwieberdingen, and Iwan Surjadi, Vaihingen/Enz, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 16, 1993, Ser. No. 77,792

Claims priority, application Germany, Jun. 17, 1992, 42 19 719.0

Int. Cl.[6] F02B *37/12*

U.S. Cl. 60—602 **17 Claims**



1. A system for controlling a supercharging operation of an internal combustion engine, comprising:

a supercharger connected to the internal combustion engine;

a supercharger controller connected to the supercharger and the internal combustion engine for controlling the supercharging operation;

a system deviation signal generator for generating a system deviation signal as a function of an actual value of a first predetermined parameter representative of the supercharging operation;

a control circuit coupled to the internal combustion engine and to the system deviation signal generator, the control circuit generating a control signal as a function of a rotational frequency of the internal combustion engine and the system deviation signal; and

a performance controller connected to the system deviation signal generator for receiving the system deviation signal and to the control circuit for receiving the control signal, the performance controller generating a performance control signal, the performance control signal being transmitted to the supercharger controller for controlling the supercharger controller and, in turn, the supercharger, wherein the performance controller has a response characteristic determined as a function of the rotational frequency of the internal combustion engine and the actual value of the first predetermined parameter representative of the supercharging operation.

5,442,919

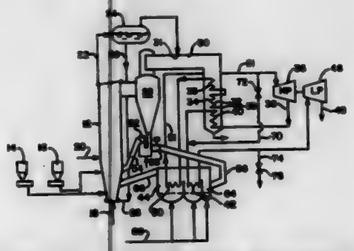
REHEATER PROTECTION IN A CIRCULATING FLUIDIZED BED STEAM GENERATOR

Bruce W. Wilhelm, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1993, Ser. No. 173,563

Int. Cl.[6] F01K *7/24*

U.S. Cl. 60—646 **4 Claims**



1. A method of operating a circulating fluidized bed combustion system wherein said system comprises a circulating fluid bed furnace, a fluid bed heat exchanger separate from said circulating fluid bed furnace and adapted to receive circulating fluidized solids from said circulating fluid bed furnace, a superheater circuit and a reheater circuit wherein said reheater circuit carries a normal reheater fluid flow and at least a portion of said reheater circuit is located in said fluid bed heat exchanger for heat exchange contact with said circulating fluidized solids comprising the steps of:

a. firing said circulating fluid bed furnace;

b. separating circulating fluidized solids from flue gases exiting said circulating fluid bed furnace;

c. feeding said seperated circulating fluidized solids to said fluid bed heat exchanger for heat exchange contact with said portion of said reheater circuit;

d. determining a condition which causes said firing to terminate and the reheater fluid flow to terminate;

e. opening a valve upon determining said condition and feeding fluid from said superheater circuit to said portion of said reheater circuit in said fluid bed heat exchanger; and

f. opening a vent downstream from said portion of said reheater circuit to permit flow of fluid from said superheater circuit through said portion of said reheater circuit thereby cooling said portion of said reheater circuit.

5,442,920

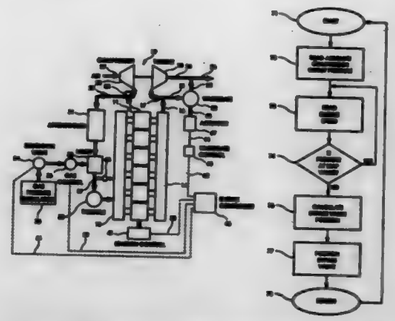
ALTITUDE COMPENSATION FOR SPARK-IGNITED TURBOCHARGED INTERNAL COMBUSTION ENGINES

Mostafa M. Kamel, and Greg A. Moore, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 28, 1994, Ser. No. 218,728

Int. Cl.[6] F02D *23/00*

U.S. Cl. 60—602 **19 Claims**



1. A method for altitude compensation for an internal combustion engine having a turbocharger and a turbocharger bypass valve, comprising the steps of:

storing the turbocharger compressor output absolute pressure value which exists when the engine produces a desired power output at a predetermined ambient pressure;

storing the engine speed at which the desired power output is produced at said predetermined ambient pressure;

sensing the compressor output pressure during operation at ambient pressure which is different from said predetermined pressure;

taking the sensed output pressure and comparing with the stored output pressure value;

responding to the result of the comparison to maintain the turbocharger bypass valve in the position necessary to maintain the output pressure at the stored absolute pressure value.

5,442,921

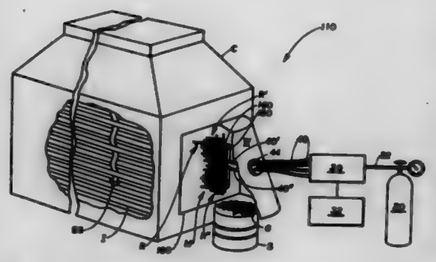
TARGETED FLUID DELIVERY SYSTEM

Winston Chow, Palo Alto, Calif.; George E. Hecker, Holden; Yusuf G. Mussalli, Boston, both of Mass., and Barry C. Syrett, Palo Alto, Calif., assignors to EPRI, Palo Alto, Calif.

Continuation of Ser. No. 20,629, Feb. 22, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 307,383

Int. Cl.[6] F01K *25/06*; F01B *31/00*

U.S. Cl. 60—657 **36 Claims**



18. A kit for modifying a heat exchanger formed from a plurality of tubes arranged in a matrix with a heat transfer fluid transported through interiors of the tubes, the kit comprising in combination:

means for adding a first fluid to the heat transfer fluid before the heat transfer fluid enters into the interior of the tubes within the matrix; and

means to attach said adding means to the tube matrix,

said adding means including a plurality of first fluid outlet ports,

said attaching means including means to secure said ports at a location adjacent the tube matrix in stationary fixed position with respect to the tube matrix.

5,442,922

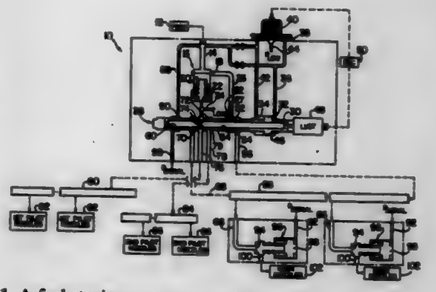
FUEL STAGING SYSTEM

Gerald P. Dyer, Enfield; Brian G. Donnelly, Suffield, and Charles E. Reuter, Granby, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1993, Ser. No. 165,097

Int. Cl.[6] F02C *7/22*

U.S. Cl. 60—739 **19 Claims**



1. A fuel staging system comprising:

a fuel inlet line;

a first fuel manifold coupled in fluid communication with the fuel inlet line to receive fuel flowing through the fuel inlet line;

a first fuel nozzle coupled in fluid communication with the first fuel manifold to receive fuel flowing through the first fuel manifold;

a first valve coupled between the first fuel manifold and the first fuel nozzle to control the flow of fuel between the first fuel manifold and the first fuel nozzle;

a second fuel nozzle coupled in fluid communication with the first fuel manifold to receive fuel flowing through the first fuel manifold; and

a second valve coupled in fluid communication between the first fuel manifold and the second fuel nozzle for controlling fuel flow between the first fuel manifold and the second fuel nozzle, the second valve also being coupled in fluid communication between the fuel inlet line and the first fuel manifold for controlling fuel flow between the fuel inlet line and the first fuel manifold.

5,442,923

ROTARY COMPRESSOR OR ROTARY DISPLACEMENT PUMP

Martin Bareiss, Leutfen am Neckar, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Nov. 4, 1993, Ser. No. 145,740

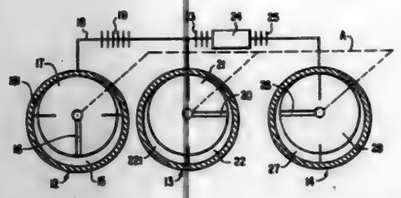
Claims priority, application Germany, Nov. 12, 1992, 42 38 166.5

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **6 Claims**

1. In a rotary fluid displacement machine including a stator having a wall provided with an inner wall face defining a work chamber; shaft bearings supported in the stator; a rotor; a rotor drive shaft secured to said rotor and supported by the shaft

bearings; and vanes secured to the rotor for revolving therewith; said vanes dividing said work chamber into at least two compartments; the improvement comprising a valve-free gas



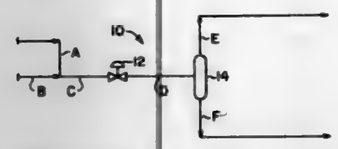
channel provided in said rotor; said gas channel having a first end opening to the exterior in a zone of one of said bearings and a second end opening to a surface of said rotor for communicating with said compartments.

5,442,924

LIQUID REMOVAL FROM NATURAL GAS

Tom C. Tsai, Houston; Fred W. Kanter, Brazoria, and George M. King, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 16, 1994, Ser. No. 197,038
Int. Cl.[6] F25J *3/08*
U.S. Cl. 62—15 **29 Claims**



1. A method for condensing hydrocarbons from a natural gas stream under pressure and removing them therefrom, the method comprising:

sampling the natural gas stream producing a sample thereof;

analyzing the sample to determine hydrocarbon content;

based on an analysis of the sample, choosing a selected microporous filter media for a filtering apparatus for removing selected hydrocarbons from the natural gas stream;

feeding an inlet natural gas stream containing condensable hydrocarbons to a throttling device;

reducing pressure of the inlet natural gas stream with the throttling device to condense condensable hydrocarbons in the inlet natural gas stream as a mist of droplets of at least 0.1 micrometer in a largest dimension;

flowing the inlet natural gas stream with the mist of droplets therein to a filtering apparatus at a temperature between −60° and +32 degrees F.;

filtering the droplets from the inlet natural gas stream with the selected microporous filter media in the filtering apparatus, the filtering producing a liquid stream with condensed hydrocarbons;

flowing the liquid stream into an exit flow line;

the filtering also producing a gas stream separate from the liquid stream; and

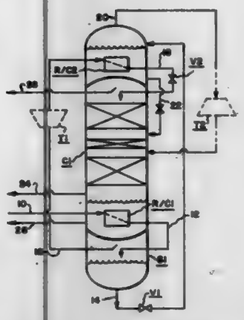
flowing the gas stream away from the filtering apparatus.

5,442,925

PROCESS FOR THE CRYOGENIC DISTILLATION OF AN AIR FEED TO PRODUCE A LOW TO MEDIUM PURITY OXYGEN PRODUCT USING A SINGLE DISTILLATION COLUMN SYSTEM

Rakesh Agrawal; Leigh A. Stapf, both of Emmaus, and Donald W. Woodward, New Tripoli, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 13, 1994, Ser. No. 259,086
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—24 **7 Claims**



1. A process for the cryogenic distillation of an air feed to produce a low to medium purity oxygen product using a single distillation column system comprising the steps of:

(a) heat exchanging at least a portion of the air feed against the liquid phase at the bottom of the distillation column in order to:

(i) partially condense the air feed into a crude liquid oxygen stream and a remaining nitrogen-enriched vapor stream; and

(ii) at least partially boil the liquid phase, thereby providing reboil to the bottom of the distillation column;

(b) reducing the pressure of the crude liquid oxygen stream and subsequently heat exchanging it against the nitrogen-enriched vapor stream in order to:

(i) completely condense the nitrogen-enriched stream; and

(ii) at least partially boil the crude liquid oxygen stream into a vapor portion and a remaining liquid portion;

(c) reducing the pressure of the condensed nitrogen-enriched stream and subsequently feeding it to the top of the distillation column, thereby providing reflux to the top of the distillation column;

(d) feeding the liquid and vapor portions from step (b)(ii) to an intermediate section of the distillation column; and

(e) withdrawing the low to medium purity oxygen product from the bottom of the distillation column.

5,442,926

CONTROL SYSTEM FOR AIR-CONDITIONER

Tsuyoshi Kawai, and Ryouichi Sekiya, both of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

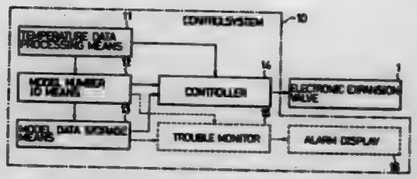
Filed Mar. 29, 1994, Ser. No. 219,478
Claims priority, application Japan, Mar. 29, 1993, 5-091929; Jul. 22, 1993, 5-181565
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—211 **7 Claims**

1. A control system for use in an air-conditioner including an outdoor unit having at least a compressor and an outdoor heat exchanger, and an indoor unit having an expansion valve and an indoor heat exchanger, said indoor and outdoor sections connected with pipes for circulating a refrigerant, said control system comprising:

temperature detection means for detecting temperatures at a multiplicity of points in the air-conditioner;

means for processing data indicative of said detected temperatures into temperature data;

model number identification means for determining the model numbers of said indoor and outdoor sections from said temperature data received from said data processing means, and a given set of status data associated with indoor and outdoor sections;



means for establishing optimum control parameters in accordance with said model numbers of said indoor and outdoor sections;

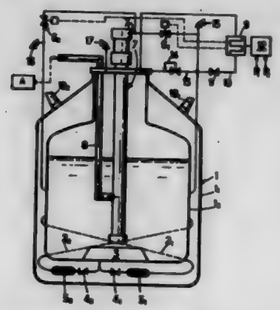
valve opening level correction means for controlling the opening of said expansion valve for an optimum flow rate of said refrigerant passing therethrough in accordance with said control parameters.

5,442,927

SELF-CONTAINED DEVICE FOR SUPPLYING WITH ENERGY AN APPARATUS ACTUATED BY A GAS UNDER PRESSURE AND ITS USE IN A FREEZING INSTALLATION

Jean-Pierre Germain, Montigny Les Bretonneux, France, assignor to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 29, 1994, Ser. No. 219,348
Claims priority, application France, Apr. 16, 1993, 93 04501
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—50.2 **7 Claims**



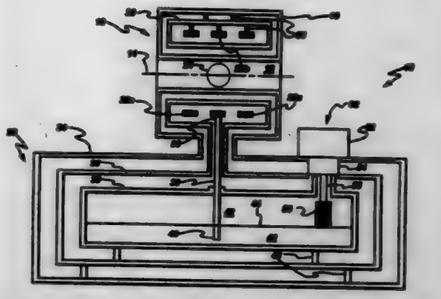
1. A self-contained apparatus for supplying a flow of gas under pressure to a utilization tool, comprising a transportable container comprising an outer vessel and an inner vessel having a bottom wall for containing a cryogenic liquid and defining within the outer vessel an inner space, at least one gas supply circuit having an upstream circuit portion in fluid communication with an outlet in the bottom wall of the inner vessel and extending within the inner space, and a downstream circuit portion connectable to the utilization tool, the upstream circuit portion including a non-return valve, the downstream circuit portion comprising a control valve, the gas supply circuit incorporating a vaporizing section intermediate the non-return valve and the control valve.

5,442,928

HYBRID COOLING SYSTEM FOR A SUPERCONDUCTING MAGNET

Evangelos T. Laskaris, Schenectady, and Bizhan Dorri, Clifton Park, both of N.Y., assignors to General Electric, Schenectady, N.Y.

Filed Aug. 5, 1994, Ser. No. 286,368
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **11 Claims**



1. A cooling system for a superconductive magnet, said magnet having a vacuum enclosure and having a superconductive coil disposed within and spaced apart from said vacuum enclosure, and said cooling system comprising:

a) a dewar disposed outside said vacuum enclosure, said dewar having a vacuum jacket generally hermetically connected to said vacuum enclosure and having liquid helium disposed within said vacuum jacket; and

b) a thermal busbar disposed within and spaced apart from said generally hermetically connected vacuum jacket and vacuum enclosure, having a first end disposed within said vacuum jacket, and having a second end disposed within said vacuum enclosure and in solid-conduction-only thermal contact with said superconductive coil.

5,442,929

CRYOGENICALLY-TREATED ELECTRICAL CONTACTS

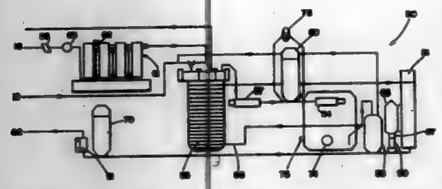
James P. Gillin, Marlton, N.J., assignor to Repco Inc., Cherry Hill, N.J.

Filed Jul. 22, 1993, Ser. No. 95,966
Int. Cl.[6] F25D *25/00*
U.S. Cl. 62—62 **40 Claims**



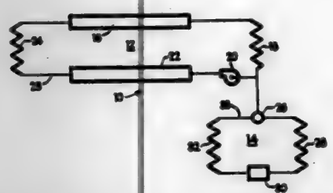
1. A method for preparing an electrical contact for use at a temperature above 172 K, said electrical contact of the type having a first contacting surface for physically engaging and disengaging a second contacting surface for making or breaking an electrical current, the method comprising the step of exposing said first contacting surface of the contact to an exposure temperature below 172 K for a predetermined time period for treatment and returning said first contacting surface to a temperature above 172K for use.

5,442,930
ONE STEP REFRIGERANT RECOVER/RECYCLE AND RECLAIM UNIT
Dale M. Stiefermann, 4720 Leandra Ln., Jefferson City, Mo. 65109
Filed Oct. 22, 1993, Ser. No. 141,279
Int. Cl.[6] F25B *47/00*
U.S. Cl. 62—85 23 Claims



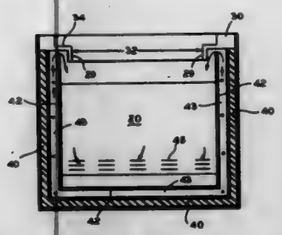
17. A method for recovering and cleaning refrigerant, comprising the following steps in the sequence set forth:
drawing liquid refrigerant into at least one evaporator;
vaporizing the liquid refrigerant by raising the temperature in said evaporator;
combining vapor refrigerant with the vaporized liquid refrigerant into a common refrigerant stream;
separating contaminants from the refrigerant with a first separator;
compressing the refrigerant;
reducing the temperature of the refrigerant such that at least some of the refrigerant is in a liquid state using a heat exchanger in heat exchange contact with said separator; and
discharging the refrigerant.

5,442,931
SIMPLIFIED ADSORPTION HEAT PUMP USING PASSIVE HEAT RECUPERATION
William Ryan, Chicago; William M. Worek, Downers Grove, and Weixiang Zheng, Darien, all of Ill., assignors to Gas Research Institute, Chicago, Ill.
Filed Aug. 2, 1994, Ser. No. 284,895
Int. Cl.[6] F25B *17/08*
U.S. Cl. 62—101 9 Claims



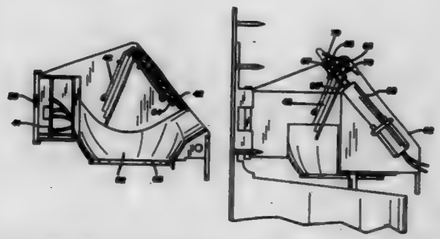
1. A heat pump system for transferring heat to and/or from a location, comprising:
a first fluid circuit including
an adsorbent reactor operably configured to permit the passage of fluid therethrough, the at least one adsorbent reactor having a first end and a second end, the adsorbent reactor further containing therewithin an adsorbent material,
a quantity of fluid which is capable of being adsorbed and desorbed by the adsorbent material in the at least one adsorbent reactor, the fluid further being capable of undergoing transition from a vapor phase, to a liquid phase, and from a liquid phase to a vapor phase, in the heat pump system,
means for receiving and storing heat from the fluid, and later releasing the stored heat back to the fluid, the means for receiving and storing heat being chemically nonreactive relative to the fluid, and operably configured to permit the passage of fluid therethrough, the means for receiving and storing heat having a first end and a second end,
means for selectively heating the fluid in the first fluid circuit, operably positioned in the first fluid circuit between the first end of the at least one adsorbent reactor, and the second end of the means for receiving and storing heat;
means for reversibly propelling the fluid through the first fluid circuit;
a second fluid circuit including
means for condensing the fluid from a vapor phase to a liquid phase,
means for receiving the condensed fluid, operably communicating with the means for condensing the fluid,
means for evaporating the condensed fluid, from a liquid phase to a vapor phase, operably communicating with the means for receiving the condensed fluid;
means for selectively enabling fluid communication between the first and second fluid circuits, such that when the first fluid circuit attains a pressure less than a predetermined amount, the means for selectively enabling fluid communication permits an amount of fluid vapor to be released from the second fluid circuit to the first fluid circuit, causing liquid fluid in the means for receiving the condensed fluid to change phase to vapor, enabling the second fluid circuit to absorb heat,
and when the first fluid circuit attains a pressure greater than a predetermined amount, the means for selectively enabling fluid communication permits an amount of fluid vapor to be released from the first fluid circuit to the second fluid circuit, causing fluid vapor in the means for condensing fluid to change phase to liquid, enabling the second fluid circuit to release heat.

5,442,932
OPEN TOPPED, AIR CURTAIN CLOSED COOLER CHEST
Robert L. O'Hearne, St. Louis, Mo., assignor to Seco Products Corporation, Washington, Mo.
Continuation of Ser. No. 80,561, Jun. 21, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 305,404
Int. Cl.[6] A47F *3/04*
U.S. Cl. 62—255 15 Claims



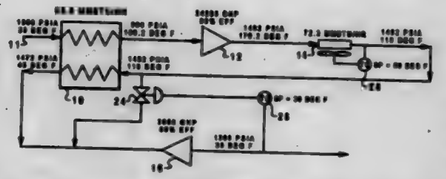
1. A cooling chest having a top area which may be open to ambient air, said chest comprising an insulated wall forming four sides and a bottom of a refrigerated compartment, means for cooling and pressurizing air within a plenum surrounding an upper periphery of said chest, a row of air ports surrounding the inside periphery of and near the top of said chest for giving exit to said pressurized air, deflector means associated with and in front of said air ports for directing said cooled pressurized air from said plenum downwardly along the side walls of said chest, said deflector comprising a vertical skirt for forcible directing air in said downwardly direction along said sidewalls of said chest, and means near the bottom of said chest for returning air from said refrigerated compartment in said chest to said means for cooling and pressurizing said air.

5,442,933
REFRIGERATOR THROUGH THE DOOR ICE DISPENSER
Larry E. Unger, Southside, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Division of Ser. No. 969,995, Nov. 2, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,707
Int. Cl.[6] F03G *7/06*; F25D *21/06*
U.S. Cl. 62—275 3 Claims



1. An ice dispenser for domestic refrigeration units comprising an insulated interior freezer compartment providing a source of ice, an exterior dispensing unit at a temperature above freezing, a passage connecting said source within said freezer compartment and said exterior dispensing unit, a closure in said passage moveable between a closed position in which said closure closes said passage and substantially eliminates flow of heat to said freezer compartment when said dispensing unit is not dispensing and an open position opening said passage allowing ice to pass therethrough into said dispensing unit during dispensing operation, and an electrical heater around said passage adjacent said closure operable to thaw said closure releasing it for movement to said open position for dispensing operation when said closure is frozen in said closed position.

5,442,934
CHILLED GAS TRANSMISSION SYSTEM AND METHOD
John R. Wolflick, McKinney, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 13, 1994, Ser. No. 226,918
Int. Cl.[6] F25D *9/00*
U.S. Cl. 62—401 5 Claims



1. A gas compression and chilling system for use in compressing and chilling gas for transmission through a pipeline disposed in frozen soil, comprising:
first gas compression means;
gas expansion means;
a first heat exchanger interposed in the flowpath of gas to be compressed by said compression means and to be expanded by said expansion means such that heat is transferred from gas which has been compressed by said compression means to gas which is approaching said compression means and prior to expansion through said expansion means;
a throttling valve interposed in the gas flowpath between said compression means and said first heat exchanger for bypassing gas around said first heat exchanger to control the outlet temperature of gas flowing through said expansion means.

5,442,935
APPARATUS FOR PRODUCING MULTI-AXIAL NON-WOVEN FABRIC
Jeffrey A. Vane, Ascot, and Colin J. Hallam, Andover, both of United Kingdom, assignors to Tech Textiles Holdings Ltd., Hampshire, United Kingdom
Filed Mar. 24, 1993, Ser. No. 35,762
Claims priority, application United Kingdom, Mar. 25, 1992, 9206512
Int. Cl.[6] D04B *23/10, 23/22*; D04H *3/04*
U.S. Cl. 66—84 A 17 Claims



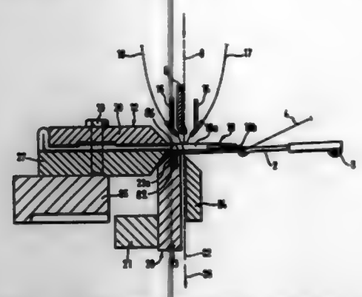
1. Apparatus for producing multi-axial non-woven fabric, the apparatus comprising a series of yarn guides having upper and lower reaches extending widthwise of the apparatus, means for driving said series of yarn guides wherein said upper and lower reaches travel in opposite directions, creel means for supplying yarns to said yarn guides, means for rotating said creel means in a substantially same direction and at a substantially same speed as said series of yearn guides to prevent tangling of the yarns supplied to the yarn guides, collecting means substantially continuously extending across the width of the apparatus for collecting the yarns issuing from said yarn guides and passing said collected yarns to a stitching means which extends across the width of the apparatus for stitching together the yarns laid by said yarn guides, and transport means for transporting the laid yarns through said stitching means.

5,442,936

DEVICE FOR CLAMPING AND GUIDING CROCHETING NEEDLES FOR A CROCHETING MACHINE

Johann Berger, Alfdorf, and Fritz Schilein, Treuchtlingen, both of Germany, assignors to Berger GmbH, Treuchtlingen, Germany

PCT No. PCT/EP92/01865, § 371 Date Mar. 23, 1994, § 102(e) Date Mar. 23, 1994, PCT Pub. No. WO93/06288, PCT Pub. Date Apr. 1, 1993
PCT Filed Aug. 14, 1992, Ser. No. 211,193
Claims priority, application Germany, Sep. 24, 1991, 41 31 809.9
Int. Cl.[6] D04B *27/06, 35/08*
U.S. Cl. 66—204 7 Claims



1. Device for clamping and guiding crocheting needles having shanks, for a crocheting machine,

a) wherein in a bottom part (27) and in a clamping cover (29) of a clamping device (12) for the shanks (10*a*) of the crocheting needles (10), opposite, straight needle beds (73, 74) which needle beds are arranged closely together,

b) and wherein the spacing of the needle beds and guide elements is at least 12 per centimeter of machine width, characterized in that

c) the two opposite needle beds (73, 74) for the crocheting needles have wall surfaces (78) that are inclined towards one another in a V-shape,

d) a knock-over comb (20, 80) fixed to the machine has upwardly projecting teeth (86) for guiding the needles,

e) the teeth (86) have wall surfaces (85) which form grooves in a V-shape,

f) a holding bar (23) fixed to the machine and the bottom part (27) of the clamping device (12) have recesses that face one another, permitting the clamping device to move in close relationship to the teeth (86).

5,442,937

APPARATUS FOR DETERMINING A TILT ANGLE OF A TUB IN A CONVERTIBLE WASHING MACHINE

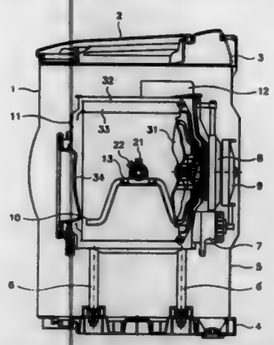
Ho C. Kwon, Kyungsangnam, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 30, 1993, Ser. No. 175,720
Claims priority, application Rep. of Korea, Jan. 20, 1993, 1993-685
Int. Cl.[6] D06F *35/00*
U.S. Cl. 68—4 25 Claims

1. An apparatus for controlling a tilt angle of a tub in a convertible washing machine which converts between drum type washing and pulsator type washing, said convertible washing machine including a tub shaft which rotates said tub and a tilt angle motor for changing a tilt angle of said tub to effect conversion of said convertible washing machine between drum type washing and pulsator type washing, said apparatus comprising:

rotating means for rotating with said tub, said rotating means including at least first and second projections; and

at least first and second reference means fixed to said convertible washing machine such that said first and second reference means are stationary when said tub rotates, said first reference means for detecting when one of said first and second projections is at a first predetermined position,



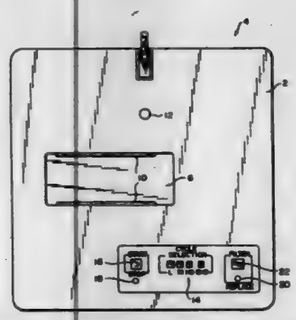
and said second reference means for detecting when one of said first and second projections is at a second predetermined position.

5,442,938

ACCESSORY KIT FOR CONVERTING A HOME DRYER TO A DRY CLEANING MACHINE

Mark N. Kislyak, 619 N. Lawn Dr., Youngstown, Ohio 44505

Filed Feb. 3, 1993, Ser. No. 12,633
Int. Cl.[6] D06F *39/04*
U.S. Cl. 68—5 C 10 Claims



1. An accessory kit for converting a home dryer into a dry cleaning machine, said home dryer having a rotatable drum enclosed in a dryer housing sealable by a door, said dryer housing having a ventilation system vented to an atmosphere and associated electro-mechanical means for actuating rotation of said drum and said ventilation system, said accessory kit comprising:

cleaning fluid dispenser means detachably engaged to said door and said electro-mechanical means for spray dispensing a predetermined amount of cleaning fluid vapor into said drum and respectively actuating both rotation of said drum and said ventilation system for predetermined periods of time, and

filter means engaged in an outlet of said ventilation system for separating soil from a mixture of air and soiled cleaning fluid vapor vented from said dryer housing and thereafter precipitating remaining cleaning fluid vapor from said air during exhaustion of said air through said filter

wherein said cleaning fluid dispenser means comprises:

a dispenser housing having access means on a front side for receiving and retaining a pressurized container of cleaning fluid within said dispenser housing,

a spray nozzle means on said dispenser housing for vaporizing said cleaning fluid and dispensing a cleaning fluid vapor on clothes in said rotatable drum,

attachment means on said dispenser housing for engaging said dispenser housing to a back side of said door,

an electronic controller means engaged in said dispenser housing for controlling operation of spray dispensing of a predetermined amount of said cleaning fluid vapor and rotation of said drum and said ventilation system for predetermined periods of time, and

a central processor unit engaged in said dispenser housing for actuating operation of said spray dispensing, said rotation and said ventilation system.

5,442,939

CARRIER FOR SUPPORTING TEXTILE MATERIAL IN A WET TREATMENT MACHINE

David R. Crawford; Matthew A. Meeker, and Thomas W. Van Scyoc, all of Stanley, N.C., assignors to Gaston County Dyeing Machine Co., Stanley, N.C.

Continuation-in-part of Ser. No. 49,835, Apr. 19, 1993. This application Oct. 12, 1993, Ser. No. 134,912
Int. Cl.[6] D06B *5/18*
U.S. Cl. 68—198 38 Claims

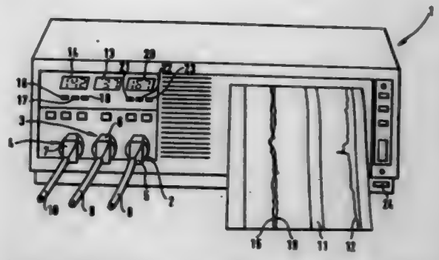
1. A carrier insertable into a vessel of a wet treatment machine for selectively supporting diverse numbers of annular textile material packages during wet treatment operations, the carrier comprising a base, at least one post extending outwardly from the base for mounting a plurality of the textile material packages in series about the post, a package supporting adapter mountable to and demountable from the post, the adapter being of predetermined lengthwise and transverse dimensions for centrally supporting a predetermined number of the annular textile material packages securely on the post during wet treatment operations, and a package retaining cap having means to attach the cap directly to the post, the cap being mountable to and demountable from the poet for selective disposition at differing package retaining positions therealong in engagement with the outermost one of the annular textile material packages supported on the post and the adapter.

5,442,940

APPARATUS AND METHOD FOR EVALUATING THE FETAL CONDITION

Herbert Socker, Stuttgart; Guenter Hornung, Sinsnoheim; Friedemann Ulmer, Gaufelden; Zoltan Takacs, Rottenburg, and Andreas Herrmann, Dielheim, all of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

PCT No. PCT/EP91/02020, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO93/08534, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 24, 1991, Ser. No. 78,327
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—670 37 Claims



1. Apparatus for evaluating a fetal condition prior to or during birth comprising

(1.1) first detection means for detecting a fetal heart rate from a first signal indicative of said fetal heart rate and generating a fetal heart rate trace,

(1.2) second detection means for detecting maternal labor from a second signal indicative of said maternal labor and generating a toco trace,

(1.3) processing means for evaluating said fetal heart rate trace and said toco trace, said processing means generating quantities representative of possible diagnostic information,

(1.4) rule based operating means for extracting, validating, classifying, and scoring at least one of: said quantities, derived parameters therefrom, said fetal heart rate trace and said toco trace,

(1.5) rule storing means operatively connected with said rule based operating means for storing rules,

(1.5.1) rule editing means

(1.6) connection means for connecting said rule storing means with said rule editing means,

(1.7) said rule editing means providing

(1.7.1) a rule edit mode for setting up new rules or changing existing rules according to a user input,

(1.7.2) a rule restore mode for restoring information on new or changed rules in said rule storing means,

(1.8) wherein said rule based operating means is set up to operate according to information restored in said rule storing means from the time of restoration.

5,442,941

PADLOCK

Hannu Kähönen, Helsinki, and Jukka Pitkänen, Joensuu, both of Finland, assignors to Abloy Security Ltd Oy, Helsinki, Finland

Filed Dec. 28, 1993, Ser. No. 175,254
Claims priority, application Finland, Feb. 5, 1993, 930504
Int. Cl.[6] E05B *67/36*
U.S. Cl. 70—34 12 Claims

1. A padlock comprising:

a substantially U-shaped lock body having first and second branches,

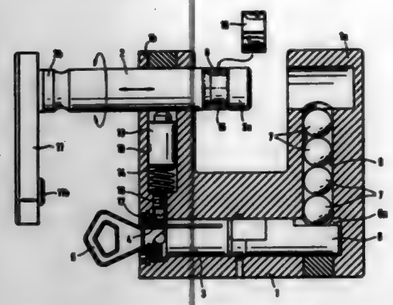
a shackle moveable back and forth relative to the lock body between a locked position, in which the shackle is connected to the first and second branches of the lock body,

and a free position, the shackle having one end that extends through the first branch of the lock body,

a key-operated lock mechanism inside the lock body,

bolt means inside the lock body, the bolt means being connected to the lock mechanism for locking the shackle to the lock body, and

a lever element supported by the shackle at said one end thereof and extending transversely relative to the shackle, the lever element being turnable relative to the lock body.

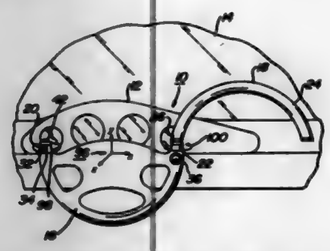


5,442,942

AUTOMOTIVE ANTI-THEFT PROTECTION APPARATUS

Bruce T. Geisler, 1330 N. 14th St., Apt. V25, Whitehall, Pa. 18052

Filed Aug. 12, 1993, Ser. No. 104,914
Int. Cl.[6] B60R 25/02
U.S. Cl. 70—209 6 Claims



1. A steering wheel providing automotive anti-theft protection comprising:

a. a lower section having a first end with releasable means housed therein and a second end with lockable means housed therein; and

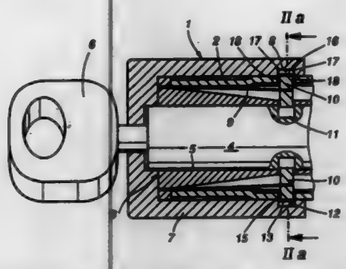
b. an upper section having a first end with means for receiving said releasable means and a second end with means for receiving said lockable means, said second end of said upper section further having means for capturing said second end of said lower section and also allowing rotation therebetween when said lockable means is not received by said second end of said upper section.

5,442,943

STEERING LOCK FOR MOTOR VEHICLES

Gottfried Schremmer, Tamm, and Karl Peitzmeier, Aldingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 1, 1993, Ser. No. 159,867
Claims priority, application Germany, Dec. 1, 1992, 42 40 283.2
Int. Cl.[6] B60R 25/02; E05B 15/02
U.S. Cl. 70—252 8 Claims



1. Steering lock for motor vehicles, in which a lock cylinder having a rotor and a stator is received in a tubular steering lock housing having a tubular end section, comprising:

a pot-shaped cap made from a high-strength material and surrounding the tubular end section of the lock housing, said cap having a central access for a vehicle key,

at least one locking element mounted in the steering lock housing, said at least one locking element being spring-biased in a radial outward direction and being radially displaceable between a locking position protruding into an inner ring groove of the cap to prevent axial displacement of the cap and an unlocking position, in a predetermined rotational setting of the rotor out of the inner groove of the cap, into a notch in the rotor, and

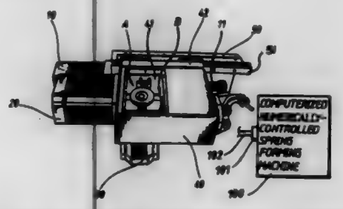
a circumferential spring wire secured along a base of the inner groove, said spring wire exhibiting for each locking element a wire section which is formed out radially up to a margin of the inner groove and by virtue of which the locking element can be displaced towards the rotor and which can be bent elastically up to the base of the inner groove.

5,442,944

AUTO-FEED CONTROL MECHANISM FOR COMPUTERIZED NUMERICALLY-CONTROLLED SPRING FORMING MACHINE

Chin-Pang Lu, Taipei Hsien, Taiwan, assignor to Hertong Machinery Ent. Co., Ltd., Taipei Hsien, Taiwan

Filed Apr. 11, 1994, Ser. No. 226,031
Int. Cl.[6] B21F 3/10, 35/02
U.S. Cl. 72—138 1 Claim



1. An auto-feed control mechanism for a computerized numerically-controlled spring forming machine arranged in front of said spring forming machine near a wire-feeding end thereof such that a tool bit connected to said auto-feed control mechanism is maneuvered in any desired direction or at any desired angle to form a spring; said auto-feed control mechanism comprising a tool holder, a tool-moving mechanism, a tool-rotating mechanism, and a tool-inclining mechanism;

said tool holder having a threaded ring and a rear handle for holding said tool bit,

said tool-moving mechanism having a first driving motor with a first central rotary shaft, said first central rotary shaft having an end with a threaded guide rod passing through said threaded ring of said tool holder, such that when said threaded guide rod is rotated by said first driving motor through said first central rotary shaft, said tool holder moves forward or backward through rotational engagement of said threaded guide rod and said threaded ring,

said tool-rotating mechanism having a second driving motor with a second central rotary shaft, a fourth rotary shaft rotated by said second central rotary shaft, a first pinion connected to an end of said fourth rotary shaft, a first bull gear meshing with said first pinion, a tool-rotating disk connected to said first bull gear by means of pins; said tool-rotating disk having a central through hole and an outward projected fixing member pivotally attached to said rear handle of said tool holder, and

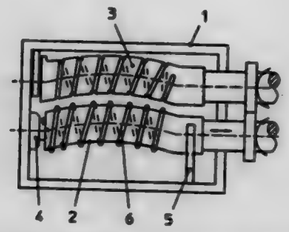
said tool-inclining mechanism having a third driving motor with a third central rotary shaft, said third central rotary shaft having an upper end with a second pinion; said second pinion meshing with a second bull gear, a positioning shaft having a lower end connected to said second bull gear; said positioning shaft having an upper end connected to a guide wheel, said guide wheel having circumferentially formed grooves, a rack arranged adjacent said guide wheel, said rack having one end with grooves engaging said circumferentially formed grooves of said guide wheel and another end rotatably connected to a tool supporting arm, said tool supporting arm extending through said through central hole of said tool-rotating disk and having an end pivotally fixed to said tool rear handle at a location such that when said rack is moved forward or backward by said third driving motor through said second pinion, said second bull gear and said guide wheel, said tool supporting arm inclines said tool rear handle downward or upward relative to said fixing member.

5,442,945

METHOD OF AND DEVICE FOR MANUFACTURING CURVED HELICAL SPRINGS

Hans Vondracek, Breckerfeld, Germany, assignor to Fried. Krupp AG Hoesch-Krupp, Dortmund, Germany

Filed Jul. 28, 1993, Ser. No. 85,816
Claims priority, application Germany, Jul. 29, 1992, 42 24 962.7
Int. Cl.[6] B21F 3/10
U.S. Cl. 72—139 7 Claims



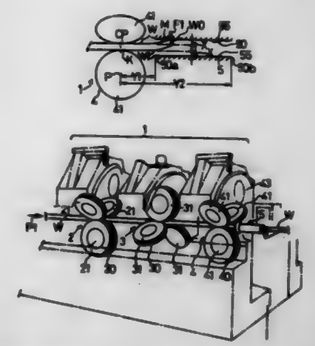
2. Apparatus for manufacturing helical springs from wire or rod and having a curved longitudinal central axis when in an unstressed state, comprising the steps of: means for heating the wire or rod to coiling temperature; a mandrel having a curved longitudinal central axis corresponding in curvature to the curved longitudinal central axis of the finished spring; and means for coiling said wire or rod on said mandrel to form the finished spring with turns of substantially equal diameters; and-feed means extending along said longitudinal axis for feeding wire or rod to said mandrel.

5,442,946

STEEL STOCK SHAPING APPARATUS PROVIDED WITH GUIDE APPARATUS AND STEEL STOCK SHAPING PROCESS

Yoshiki Yokoo, and Tadaneri Terasaka, both of Tokai, Japan, assignors to Aichi Steel Works, Ltd., Tokai, Japan

PCT No. PCT/JP91/01806, § 371 Date Jun. 29, 1993, § 102(e) Date Jun. 29, 1993, PCT Pub. No. WO93/09894, PCT Pub. Date May 27, 1993
PCT Filed Dec. 26, 1991, Ser. No. 81,381
Claims priority, application Japan, Nov. 14, 1991, 3-299105
Int. Cl.[6] B21B 39/16
U.S. Cl. 72—235 13 Claims



1. A steel stock shaping apparatus adapted for sizing a steel stock having a round shape or a hexagonal shape in a transverse cross section, said apparatus comprising:

a sizing apparatus including plural sets of 3-roll apparatuses disposed in series in a steel stock transferring direction that cause an "S" shape bending at a leading end of a steel stock during sizing, the 3-roll apparatuses including a stand and 3 sizing rolls disposed in said stand, said 3 sizing rolls having a caliber groove surface going therearound in a ring shape and disposed at predetermined intervals in a circumferential direction of the steel stock, a surface area reduction rate of said steel stock is set less than 4% in a final one of said plural sets of 3-roll apparatuses,

a guide apparatus having a sleeve-configuration, disposed adjacent to an outlet of said sizing apparatus and including a guide bore adapted for guiding a sized steel stock discharged from the outlet of said sizing apparatus, an inner diameter of the guide bore adjusted so as to be greater than an outer diameter of said steel stock in an amount of 0.1 to 8 mm, and

a distance from said leading end of said steel stock to a first bending is "L1" in said steel stock transferring direction, a bending amount of the first bending in said "S" shape bending which occurs at said leading end of said steel stock during sizing with said sizing apparatus is "A", a distance from a roll center of said final 3-roll apparatus disposed on said outlet side of said sizing apparatus to a beginning end of a parallel inner wall surface of said guide bore is "Y1" in said steel stock transferring direction, a distance from the roll center to a terminal end of the parallel inner wall surface of said guide bore is "Y2" in said steel stock transferring direction, and a difference between an outer diameter of said sized steel stock and an inner diameter of said guide bore is a product of 2 and "X"

where "X" is a clearance between said outer diameter of said sized steel stock and said inner diameter of said guide bore and "Y1" is smaller than "L1", "Y2" is larger than "L1", and "X" is "A" or less and "X" is in the range of 0.05 to 4 mm.

5,442,947

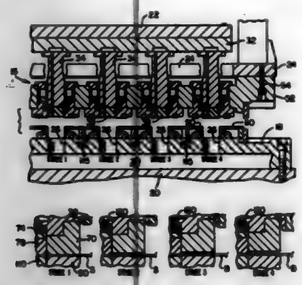
TOOLING APPARATUS AND METHOD FOR HIGH SPEED PRODUCTION OF DRAWN METAL CUP-LIKE ARTICLES

Ralph P. Stodd, 6450 Poe Ave., Suite 213, Dayton, Ohio 45414

Continuation-in-part of Ser. No. 30,777, Mar. 12, 1993, abandoned. This application Jan. 21, 1994, Ser. No. 184,969

Int. Cl.[6] B21D *28/02*

U.S. Cl. 72—336 **10 Claims**



3. A method of substantially simultaneously producing a series of cup-like articles from a strip of sheet metal with tooling mounted on a double action mechanical press including an inner ram and an outer ram each supported for reciprocating movement, the tooling comprising a series of horizontally spaced and substantially identical cup-forming stages each including an annular draw pad movable with the outer ram, an annular blank and draw die opposing the annular draw pad at each stage, an annular cut edge die surrounding the draw pad at each stage and movable with the outer ram, and a die center punch within the draw pad at each stage and movable with the inner ram, the method comprising the steps of engaging the strip between the annular cut edge dies and the corresponding annular blank and draw dies at all of the stages for forming a series of generally circular disk-like blanks, positioning the corresponding annular draw pads and opposing annular blank and draw dies with slightly different spacing at each stage for sequentially holding the metal between the annular draw pads and the corresponding annular blank and draw dies at the stages, and engaging the blanks being held between the draw pads and the blank and draw dies with the corresponding die center punches for drawing the blanks into the cup-like articles, for significantly reducing the compressive and tensile loading on the press during each stroke of the outer ram.

5,442,948

APPARATUS AND METHOD FOR DETERMINING AMOUNT OF GASES DISSOLVED IN LIQUIDS

Scott Cowing, Gaithersburg, Md., assignor to The United States of American as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1991, Ser. No. 677,941

Int. Cl.[6] G01N *7/00*

U.S. Cl. 73—19.05 **4 Claims**

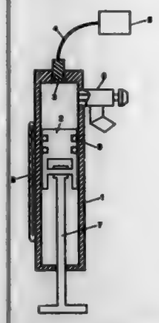
1. A method of determining the amount of gases dissolved in liquids with cylindrical apparatus comprising:

(a) introducing a predetermined first volume of liquid into a cylinder in a vertical position said cylinder having an open end, a closed end, a slidable plunger capable of moving back and forth within said cylinder and a shutoff valve, by displacing the plunger with said shutoff valve open, and expelling all nondissolved gases said cylinder being provided with a pressure transducer connected to a pressure indicator;

(b) expanding the volume in the cylinder by retracting the plunger to a first predetermined position in the cylinder creating a second volume greater than that of the liquid, with the shutoff valve closed;

(c) moving the cylinder from a vertical to a horizontal position to increase the exposed surface area of the liquid;

(d) allowing gases dissolved in the liquid to diffuse therefrom and to reach equilibrium within the expanded volume in the cylinder;



(e) compressing the gases in the cylinder by moving the plunger to a second predetermined position within the cylinder creating a third volume less than that in step (b) but greater than that of the liquid; and

(f) determining the absolute pressure in the cylinder displayed by said indicator, whereby the amount of gases dissolved in the liquid may be calculated from the absolute pressure and the predetermined first volume and third volume.

5,442,949

THERMAL ANALYSER

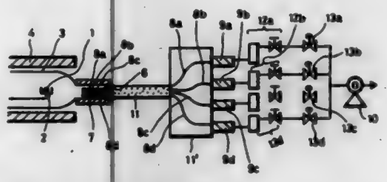
Ryoichi Kinoshita, Tokyo; Yoshiyuki Takei, Iruma; Yoshizumi Takigawa, Iruma, and Masahiro Furuno, Iruma, all of Japan, assignors to Seiko Instruments Inc., Tokyo and GL Science Inc., Saitama, both of Japan

Filed Feb. 24, 1994, Ser. No. 201,272

Claims priority, application Japan, Feb. 24, 1993, 5-035848; Mar. 3, 1993, 5-043059

Int. Cl.[6] G01N *31/22, 25/22*

U.S. Cl. 73—23.35 **7 Claims**



7. A thermal analyzer comprising:

a furnace for heating a sample to cause gas to be generated from the sample for analysis, said furnace having a sample location for holding the sample;

a furnace tube disposed in said furnace and surrounding said sample location, said furnace tube having an inlet for receiving a carrier gas which conveys the generated gas and a gas outlet for exhausting carrier gas;

means defining at least one tube-type sampling flow path having an inlet disposed between said sample location and said gas outlet for receiving at least a fractional part of the generated gas conveyed through said thermal analyzer, said flow path further having an outlet communicating with said flow path inlet inlet, where the remaining fraction of generated gas is conveyed through said thermal analyzer outside of said tube-type sampling flow path;

at least one scavenger connected to said flow path outlet for scavenging generated gas received at said flow path inlet and flowing along said flow path; and

a suction unit connected to said a scavenger for drawing generated gas into said flow path via said flow path inlet and then into said scavenger.

5,442,950

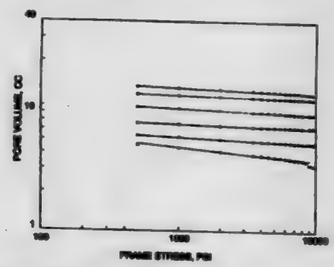
METHOD AND APPARATUS FOR DETERMINING PROPERTIES OF RESERVOIR ROCK

Servet Uzalmiser, and Terry J. Swalwell, both of Dhahran, Saudi Arabia, assignors to Saudi Arabian Oil Company, Dhahran, Saudi Arabia

Filed Oct. 18, 1993, Ser. No. 138,699

Int. Cl.[6] G01N *15/08*; E21B *49/00*

U.S. Cl. 73—38 **34 Claims**



1. A method for determining pore volume compressibility of a rock sample comprising the steps of:

(a) measuring the pore volume of the rock sample at a first pressure;

(b) varying the external pressure on said rock sample while keeping the pore pressure constant at about atmospheric pressure to attain a second pressure;

(c) measuring the pore volume of the rock sample at the second pressure;

(d) defining a log pore volume versus log pressure relation from the pore volume measurements of steps a and c, which relation is linear; and

(e) determining the pore volume compressibility of the rock sample at any pressure according to

$$C_p = \frac{-m}{P}$$

where:

C_p is the pore volume compressibility,

m is the slope of the log pore volume versus log pressure relation, and

P is the simulated overburden (external) pressure.

5,442,951

DEVICE FOR TESTING PIPES FOR INTERIOR LEAKS

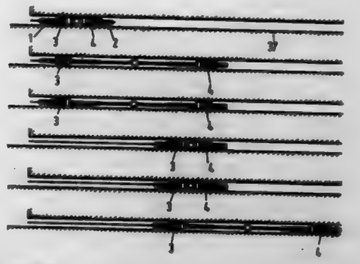
Erwin Gölner, Oberpfaffenhofen, and Horst Hütter, Tegernsee, both of Germany, assignors to Deutsche Aerospace AG, Germany

Filed May 6, 1994, Ser. No. 238,824

Claims priority, application Germany, May 6, 1993, 43 14 995.2

Int. Cl.[6] G01M *3/28*

U.S. Cl. 73—40.5 R **9 Claims**



1. A movable arrangement for examining interior of pipes, comprising:

first and second sections coupled together in mirror-inverted relationship and mutually displacesble relative to each other;

each of said first and second sections having at least one clamping element for clamping said section at a position in said pipe, and at least one actuator for causing relative movement between said first and second sections;

each of said actuators of said first and second sections comprising outer, intermediate and inner concentric telescoping cylinders and having a pneumatic pressure chamber for causing said intermediate and inner cylinders to extend longitudinally relative to said outer cylinder, causing relative movement between said first and second sections;

a pneumatic pressure source coupled to said pneumatic pressure chambers of said first and second sections;

pressure control elements for controlling application of pressure to said pneumatic pressure chambers;

a sealing arrangement for sealing off a portion of said pipe between said first and second section;

means for testing said sealed portion of said pipe;

a hydraulic unit for controlling relative movement of said intermediate and inner cylinders during extension thereof and for causing longitudinal retraction of said intermediate cylinders.

5,442,952

TESTING OF HOSES

Fredric J. Morris, and Edward F. McKiernan, both of Wooster, Ohio, assignors to Sealand Technology, Inc., Big Prairie, Ohio

Filed Aug. 11, 1994, Ser. No. 288,909

Int. Cl.[6] G01M *3/20*; C10L *5/00*

U.S. Cl. 73—40.7 **20 Claims**

1. A method of testing hose samples to determine the permeability thereof to noxious odors when used to conduct sewage, each hose sample including a tubular body with open ends, an interior volume, and an exterior surface, comprising the steps of:

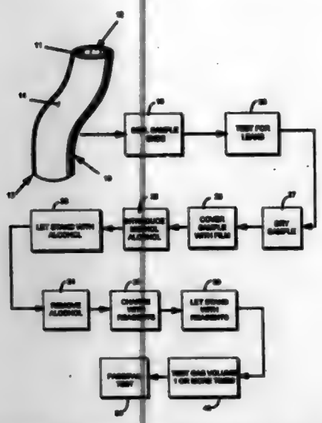
(a) sealing the open ends of the hose sample tubular body;

(b) covering the tubular body with a flexible generally sulfur-containing gas-impervious material, to define a gas volume between the exterior surface of the tubular body and the gas-impervious material;

(c) introducing fluid carbon disulfide, dimethyl sulfide, dimethyl disulfide, or combinations thereof, into the interior volume of the tubular body, and allowing the sealed tubu-

lar body to stand for at least about twenty four hours; and then

(d) after about twenty four hours or more, evaluating the content of gas in the gas volume between the exterior surface of the tubular body and the gas impervious material to see if any of the gas in the gas volume is from fluid introduced in step (c); and



comprising the further steps, prior to step (c), of (e) introducing methyl alcohol into the hose sample interior volume, (f) allowing the alcohol to stand in the hose sample for at least about twenty four hours, and then (g) emptying the alcohol from the hose sample.

5,442,953

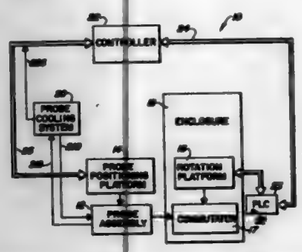
DYNAMIC COMMUTATOR PROFILE SYSTEM

William D. Fisher, and Robert H. Hartmann, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Oct. 21, 1993, Ser. No. 140,587

Int. Cl.[6] G01B 7/34

U.S. Cl. 73—105 **20 Claims**



1. A dynamic profiling system for measuring a profile of an outer surface of a moving motor component, the profiling system comprising:

a moveable probe assembly having a profile detecting probe; and

a probe cooling system for circulating a cooling liquid about the detecting probe and to maintain the cooling liquid at a fixed temperature during circulation of the cooling liquid wherein the detecting probe obtains profile measurement data from the outer surface of the moving motor component when the motor component is heated.

5,442,954

METHOD FOR DETECTING MISFIRING IN AN INTERNAL COMBUSTION ENGINE

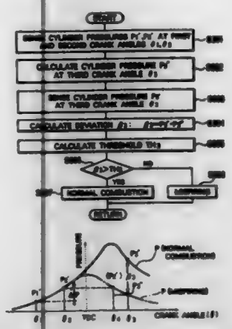
Wataru Fukui, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 49,581, Apr. 21, 1993, Pat. No. 5,351,528, which is a continuation of Ser. No. 734,712, Jul. 23, 1991, abandoned. This application May 25, 1994, Ser. No. 249,232

Claims priority, application Japan, Aug. 13, 1990, 2-211611; Aug. 23, 1990, 2-220039

Int. Cl.[6] G01M 15/00

U.S. Cl. 73—115 **2 Claims**



1. A misfiring detecting method for detecting misfiring in a cylinder of an internal combustion engine, said method comprising the steps of:

sensing the pressure in the cylinder by means of a pressure sensor at a first and a second crank angle during a compression stroke thereof;

calculating the pressure in the cylinder at a third crank angle during a power stroke thereof following the compression stroke on the basis of the pressure in the cylinder as sensed at the first and second crank angles;

sensing the pressure in the cylinder by means of the pressure sensor at the third crank angle;

calculating a deviation between the sensed cylinder pressure and the calculated cylinder pressure both at the third crank angle;

calculating a threshold suitable for comparison with the deviation;

comparing the deviation with the threshold; and

determining misfiring in the cylinder if the deviation is equal or less than the threshold.

5,442,955

MISFIRE DETECTING DEVICE OF MULTICYLINDER INTERNAL COMBUSTION ENGINE

Yasutoshi Baba, Chiryu, and Yukihide Hashiguchi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 12, 1994, Ser. No. 226,782

Claims priority, application Japan, Apr. 21, 1993, 5-094612

Int. Cl.[6] G01M 15/00

U.S. Cl. 73—117.3 **30 Claims**

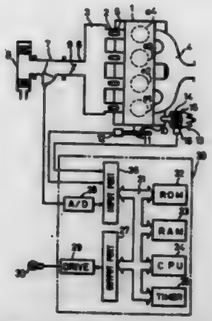
1. A misfire detecting device for a multicylinder internal combustion engine comprising:

angular velocity detecting means for detecting an angular velocity of a crankshaft at the time of combustion in each of the cylinders;

angular velocity difference calculating means for calculating a difference in an angular velocity of the crankshaft between firings of the cylinders;

provisional judging means for provisionally judging if there is a possibility that a misfire has occurred when said difference exceeds a set value;

storing means for storing a predetermined pattern of change of the angular velocity of the crankshaft representative of the occurrence of a misfire, wherein the predetermined pattern of change is a pattern of values representative of the angular velocity of the crankshaft between successive firings of the cylinders and wherein the predetermined pattern of change is distinguishable from a pattern of



change indicative an engine operating condition when the vehicle is driving on a hill; and

final judging means for finally judging that a misfire has occurred when said provisional judging means has provisionally judged that there is a possibility that a misfire has occurred and the angular velocity of the crankshaft has changed in accordance with the predetermined pattern of change stored in said storing means.

5,442,956

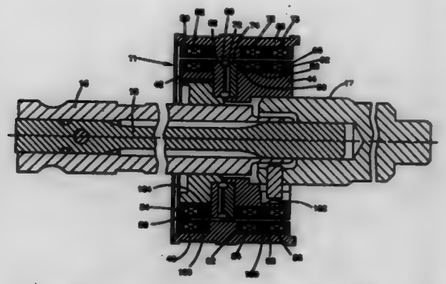
TORQUE SENSOR FOR A POWER ASSIST STEERING SYSTEM

Erland Persson, Golden Valley, Minn., assignor to TRW Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 893,090, Jun. 3, 1992, Pat. No. 5,406,155. This application Mar. 19, 1993, Ser. No. 34,746

Int. Cl.[6] G01B 7/14

U.S. Cl. 73—118.1 **9 Claims**



1. A torque sensor for use in a power assist steering system for sensing the applied torque between an input shaft and an output shaft wherein said shafts are coaxially aligned with each other and rotatable relative to each other about a common axis of rotation, said sensor including:

a rotary input transformer having a stationary primary winding and a rotary secondary winding;

a rotary transmitter adapted to be driven by the input shaft for rotation therewith about said axis, a coil set including a plurality of series connected coils arranged in an annular array about said axis on an axially directed face of said transmitter with all of said coils being wound in the same direction and electrically connected to said secondary winding for receiving an input signal therefrom;

a rotary receiver axially spaced from said transmitter and adapted to be driven by said output shaft for rotation therewith about said axis, said receiver having an axially directed face extending toward said transmitter face, first and second coil sets each including a plurality of series connected coils mounted on said receiver face, each of said coils being wound in the same direction, each of said coil sets being arranged in an annular array about said axis;

first and second rotary output transformers having first and second primary windings respectively electrically connected to said first and second receiver coil sets and adapted to be driven by said output shaft for rotation therewith about said axis, said first and second output transformers respectively including first and second stationary secondary windings;

wherein each said coil is wound so as to make an incomplete turn about itself.

5,442,957

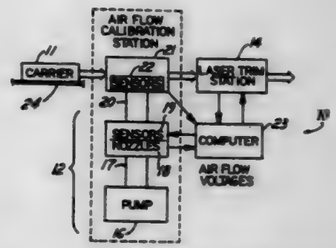
CALIBRATION TECHNIQUE FOR PRODUCTION MASS AIR FLOW SENSOR FLOW STANDS

Richard W. Caron, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1994, Ser. No. 270,551

Int. Cl.[6] G01F 25/00

U.S. Cl. 73—168 **10 Claims**



1. An apparatus for calibrating a production air flow stand of a mass air flow sensor production line, the production air flow stand generating a predetermined air flow for testing the mass air flow sensors, the apparatus comprising:

an air flow calibration test fixture for producing a calibrated mass air flow, said air flow calibration test fixture receivable on the mass air flow sensor production line upstream of the air flow stand and carried by the mass air flow sensor production line into the production air flow stand;

measuring means responsive to said air flow calibration test fixture being received in the production air flow stand for measuring an actual air flow in the air flow stand; and

comparison means for comparing said calibrated mass air flow and said actual air flow in the air flow stand to determine an error when the calibrated and actual air flows are not the same.

5,442,958

DEPLOYABLE PROBE COMBINED WITH FLUSH STATIC PORT

Floyd W. Hagen, Eden Prairie, Minn., assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Dec. 15, 1992, Ser. No. 990,733

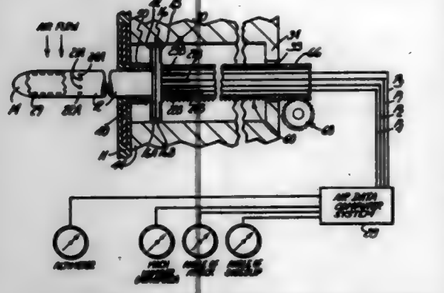
Int. Cl.[6] G01L 15/00

U.S. Cl. 73—170.02 **20 Claims**

1. A deployable probe for measuring pressures of a fluid, and relative fluid flow magnitude and direction comprising:

a wall structure forming a pressure chamber having a static port for communicating with the fluid;

an elongated probe member having a longitudinal axis, said probe member having pressure ports therein for sensing pressure in at least two radial directions from said longitudinal axis spaced inwardly from an outer end thereof; and reciprocating means for reciprocating said probe member longitudinally between a retracted position where said



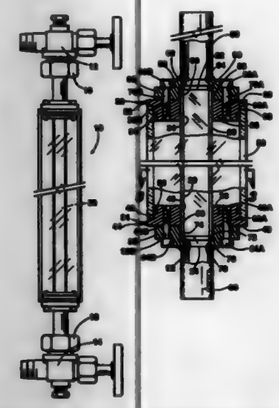
pressure ports are contained within said pressure chamber and subject to pressure, and a deployed position where at least a portion of said probe member is extended through said static port and said pressure ports are subject to a fluid stream moving relative to said probe member generally orthogonal to said longitudinal axis of said probe member.

5,442,959

SHIELDED TUBULAR SIGHT GAUGE

Stephen K. Mills, 8611 S. Louisville, Tulsa, Okla. 74137

Filed Feb. 9, 1994, Ser. No. 193,790
Int. Cl.[6] G01F *23/02*
U.S. Cl. 73—326 1 Claim



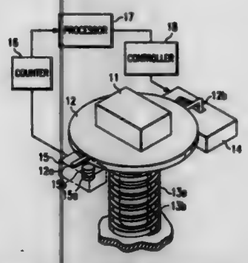
1. A shielded sight gauge assembly for placement between two spaced apart compressive type fittings connected so as to show a liquid level comprising:
an elongated tubular transparent sight tube shield having upper and lower ends;
a slightly longer elongated transparent sight tube having upper and lower ends, the sight tube being received in said sight tube shield;
an upper and a lower connection plate each having a circular peripheral surface, each circular peripheral surface having a circumferential groove therein, and each circular peripheral surface having an enlarged diameter portion providing a radially extending lip portion, each upper and lower connection plate having a central opening therein receiving said sight tube respectively adjacent said upper and lower ends thereof;
an O-ring received in said circumferential groove of each of said upper and lower connection plates, said sight tube shield being supported by said upper and lower connection plates between said radially extending lip portions, said O-rings in said circumferential grooves serving to seal the interior of said sight tube shield;
an upper and a lower nozzle member each having an opening therein to respectively capture said upper and lower ends of said sight tube;
an upper and a lower O-ring received on said sight tube adjacent respectively said upper and lower ends thereof, the upper O-ring being positioned between said upper nozzle member and said upper connection plate and said lower O-ring being positioned between said lower nozzle member and said lower connection plate;
bolt means for forcing said upper nozzle member towards said upper connection plate and said lower nozzle member towards said lower connection plate to squeeze said upper and lower O-rings into sealing and retentive engagement with said sight tube whereby said sight tube shield is held in a selected fixed position with respect to said sight tube; and
an upper and a lower nozzle connection extending from said upper and lower nozzle members respectively in coaxial alignment with said sight tube, said nozzle connections providing means to connect the shielded tubular sight gauge assembly to spaced apart compression type fittings whereby said sight tube shield is held in fixed sealed relationship with said sight tube, the assembly being positionable between and removable from said spaced apart compressive type fittings as a unit.

5,442,960

MEASUREMENT OF MASS USING ANGULAR SIMPLE HARMONIC MOTION

Ruell F. Solberg, Jr., San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Jul. 28, 1993, Ser. No. 98,789
Int. Cl.[6] G01G *3/16*
U.S. Cl. 73—580 32 Claims



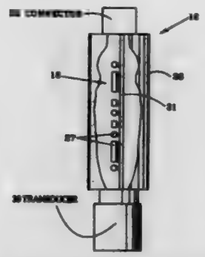
1. An apparatus for measuring periods of oscillation for determining the masses of objects, comprising:
a rotatable platform for holding the object whose mass is to be measured;
a torque restoring means attached to said platform such that when said platform is rotated about an axis of rotation of said platform from an equilibrium position, said torque restoring means provides a restoring torque to said platform;
an actuator for rotating said platform a definite angular displacement from said equilibrium position;
a position sensor for detecting at least one point on said platform and for generating electrical signals representing the detection and nondetection of said point as said platform oscillates with respect to said position sensor; and a counter for receiving said electrical signals and for measuring the time between said signals.

5,442,961

ACCELEROMETER HAVING INTEGRAL FAULT NULL

Richard J. Bozeman, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 834,451, Feb. 12, 1992, Pat. No. 5,309,149.
This application Feb. 10, 1994, Ser. No. 247,151
Int. Cl.[6] G01N *29/12*
U.S. Cl. 73—660 4 Claims



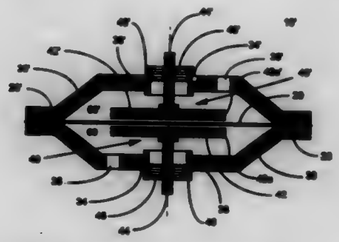
1. A machinery vibration monitoring apparatus, comprising:
a transducer responsive to vibration in machinery operative to produce an electrical transducer signal functionally related to the magnitude and frequency of said vibration;
a decoding circuit responsive to said electrical transducer signal greater than a predetermined magnitude within a selected frequency band to produce a first fault signal after a predetermined approximate number of cycles have occurred of said electrical transducer signal within said frequency band; and
isolating circuitry responsive to said first fault signal to produce a second fault signal in which ground shift effects are nullified.

5,442,962

CAPACITIVE PRESSURE SENSOR HAVING A PEDESTAL SUPPORTED ELECTRODE

Shih-Ying Lee, Lincoln, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed Aug. 20, 1993, Ser. No. 110,075
Int. Cl.[6] G01L *9/12*
U.S. Cl. 73—718 55 Claims



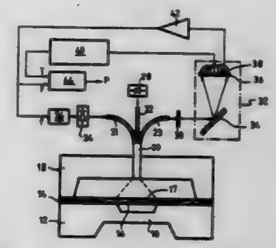
1. A capacitive pressure sensor comprising:
A) a housing disposed about a central axis, said housing including
i) a first concave base member disposed symmetrically about said central axis and having a peripheral rim disposed in a first plane, said first plane being substantially perpendicular to said central axis, said first concave base member having a first aperture extending about said central axis; and
ii) a second concave base member opposite said first concave base member disposed symmetrically about said central axis and having a peripheral rim disposed in said first plane, said peripheral rim of said second concave base member being fixedly coupled to said peripheral rim of said first concave base member;
B) a diaphragm having peripheral portion fixedly coupled to at least one of said peripheral rim of said first base member and said peripheral rim of said second base member;
C) a pre-assembled first electrode assembly including
i) a first electrode having a first electrically conductive surface;
ii) a first electrode support fixedly coupled to said first electrode and extending along a first electrode axis, said first electrode axis extending substantially transverse to said first electrically conductive surface;
iii) a first tubular collar substantially concentrically disposed about said first electrode support;
iv) a dielectric material rigidly coupling said first electrode support to said first tubular collar; and
said first electrode assembly being rigidly coupled to said first concave base member according to the following sequential steps:
1) positioning said first tubular collar in said first aperture, whereby said first electrically conductive surface is uniformly spaced apart from said first plane by a predetermined distance;
2) rigidly coupling said first tubular collar to said first concave base member maintaining said first electrically conductive surface opposite said first plane and uniformly spaced apart therefrom by said predetermined distance.

5,442,963

TEMPERATURE-COMPENSATED VIBRATING BEAM MICROSENSOR

Didier Largeau, Oslo, Norway, assignor to Solartron Group Limited, England

PCT No. PCT/FR92/00886, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/04347, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 19, 1992, Ser. No. 196,130
Claims priority, application France, Aug. 23, 1991, 91 10623
Int. Cl.[6] G01L *1/10*
U.S. Cl. 73—766 9 Claims



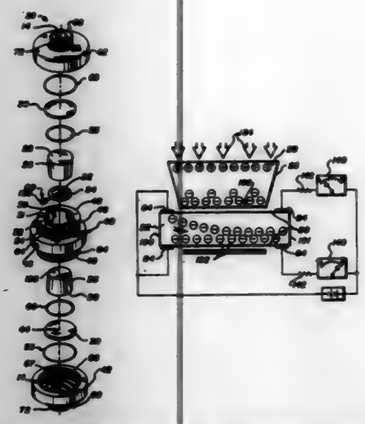
1. A temperature-compensated vibrating beam microsensor, comprising:
a vibrating beam having a resonant frequency (f) dependent upon a physical parameter to be measured,
means for exciting the vibrating beam,
means for measuring the resonant frequency (f) of the vibrating beam,
means for measuring the optical thickness of the beam,
means for deducing the temperature from the optical thickness measurement, and
means for determining the physical parameter to be measured from the resonant frequency and the temperature.

5,442,964

APPARATUS AND METHOD FOR MEASURING FORCE WITH STATIC ELECTRIC FIELD PRODUCED BY PIEZOID ELEMENTS

James A. Coates, and James M. Gernert, both of Casper, Wyo., assignors to CG&G Enterprises Limited Liability Company, Casper, Wyo.

Filed May 14, 1993, Ser. No. 62,137
Int. Cl.[6] G01L *1/00*
U.S. Cl. 73—862.68 32 Claims



11. An apparatus for measuring magnitude of a mechanical force applied to a piezoid element, wherein the piezoid element has opposing proximal force receiving and distal charge deflecting ends thereof for developing an electrical polarization in response to the applied force, the polarization having a potential whose magnitude is representative of the magnitude of the mechanical force applied, the apparatus comprising:

a charged-particle transmission medium capable of sustaining an electric field internally, the transmission medium having a plurality of surfaces and opposing longitudinal ends;

a plurality of electrical conducting means for supplying a current of charged particles to the transmission medium at one longitudinal end and for separately receiving the charged particles at an opposite longitudinal end of the transmission medium at each of the surfaces thereof;

the distal charge deflecting end of the piezoid element is disposed toward an adjacent surface of the transmission medium wherein a polarity at the distal charge deflecting end of the piezoid element will cause charged particles having a like polarity to be repelled from the adjacent surface of the transmission medium and cause charge particles having an opposite polarity to be attracted toward the adjacent surface of the transmission medium in proportion to the magnitude of the polarization at the adjacent surface of the transmission medium, whereby measuring the charged particles received toward each of the surfaces at the opposite longitudinal end of the transmission medium, the magnitude of the polarization representative of the magnitude of the mechanical forces applied, can be measured; and

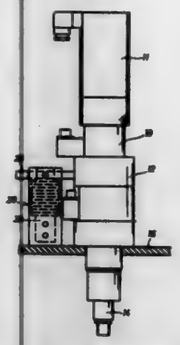
a sealed housing for housing the charged-particle transmission medium and the piezoid element therein, the sealed housing for allowing the mechanical forces to be applied to the piezoid element but not to the transmission medium whereby the transmission medium will not exhibit any intrinsic piezoelectric effects as a result of the mechanical force being applied directly to the transmission medium.

5,442,965

TORQUE DELIVERING POWER TOOL

Lars Halén, Stockholm, Sweden, assignor to Atlas Copco Controls AB, Tyresö, Sweden

Filed Dec. 3, 1993, Ser. No. 162,663
Claims priority, application Sweden, Dec. 7, 1992, 9203670
Int. Cl.[6] G01L *1/00*
U.S. Cl. 73—862.22 10 Claims



1. A torque delivering power tool for tightening threaded joints to a desired pretension level, comprising:

a housing (10);

a rotation motor (11);

an output shaft (14) connected to a threaded joint to be tightened;

power transmitting means (12, 13, 15) in said housing (10) and connecting said motor (11) to said output shaft (14);

a first torque transducer (19) in said housing (10) and coupled to said power transmitting means (12, 13, 15), said first torque transducer (19) producing a signal which is a function of torque magnitudes which in turn are a function of output torque magnitudes up to said desired pretension level;

a radially extending reaction bar (25) coupled to said power transmitting means and which is displaceable responsive to torque variations of the delivered output torque;

a second torque transducer (20, 33) mounted outside of said housing (10) and coupled to said reaction bar (25), and said second torque transducer (20, 33) producing a signal responsive to displacements of said reaction bar (25), which displacements are a function of load magnitudes which in turn are a function of output torque magnitudes up to a predetermined torque snug level which is substantially lower than said pretension level.

5,442,966

TORQUE SENSOR

Hiroyuki Hase; Rihito Shoji, both of Kyoto, and Masayuki Wakamiya, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 845,982, Mar. 4, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 231,944
Claims priority, application Japan, Mar. 4, 1991, 3-037206
Int. Cl.[6] G01L *1/00*
U.S. Cl. 73—862.335 24 Claims

1. A torque sensor comprising:

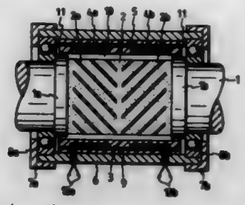
a shaft for transmitting a torque exerted thereon, at least an outer peripheral surface of said shaft being made of a magnetic alloy having a magnetostrictive property;

coil means disposed around said outer peripheral surface of said shaft for detecting a magnetic property of said magnetostrictive magnetic alloy;

a tubular magnetic yoke disposed around said coil means for forming a magnetic circuit between itself and said magnetostrictive magnetic alloy;

a hollow cylindrical container disposed around said magnetic yoke for containing the same, both end portions of said hollow cylindrical container being rotatably supported by bearings with gaps between the bearings and said tubular magnetic yoke;

stepped portions formed on said shaft for supporting the bearings;



a cushioning sleeve disposed between said tubular magnetic yoke and said hollow cylindrical container for absorption of stress created therebetween; and

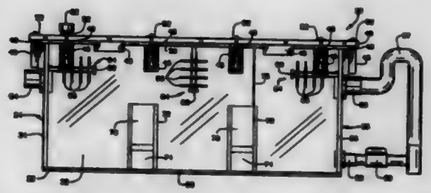
means operatively connected with said coil means for detecting a change in magnetic permeability of said magnetostrictive magnetic alloy in terms of a change in impedance of said coil means caused by the torque exerted on said shaft, thereby determining the torque.

5,442,967

SIDE-STREAM SAMPLING DEVICE

M. Brent McClane, 3504 W. Main St., Belleville, Ill. 62223

Filed Feb. 22, 1994, Ser. No. 200,194
Int. Cl.[6] G01N *1/20, 1/18*
U.S. Cl. 73—863.22 5 Claims



1. A side-stream sampling device for taking biological samples from a stream of water, the sampling device comprising:

an elongate box, having first and second ends, and an open top;

a lid that sealingly closes the open top of the box;

an inlet at the first end of the box;

an outlet at the second end of the box, the outlet extending upwardly to a point vertically above the top of the box to create a backpressure to keep the box full;

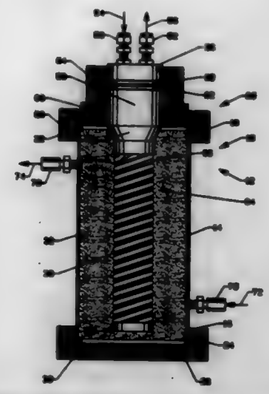
a plurality of sampling surfaces removably mounted inside the box for accumulating plant and/or animal specimens from the water flowing through the box.

5,442,968

MEMBRANE-BASED FLUID SEPARATIONS APPARATUS

Theodore N. Westlake, III; Duane K. Wolcott, both of Baton Rouge, and Gary D. DeLeo, Donaldsonville, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 8, 1992, Ser. No. 986,839
Int. Cl.[6] B01D *15/00, 19/00*; G01N *1/10, 30/96*
U.S. Cl. 73—863.23 13 Claims



1. A membrane-based fluid separations apparatus, comprising:

an outer vessel or outer vessel assembly having an opening defined therein;

a probe member inserted through and secured in the opening and having a groove defined therein; and

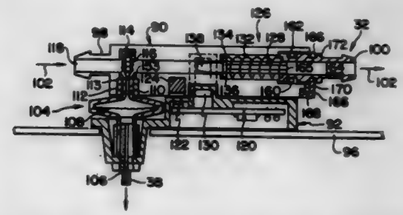
a tubular membrane supported in the groove in the probe member and defining first and second ends which can be placed in fluid communication with a source of a fluid from which a species is to be selectively removed and a desired destination for fluid from said membrane, respectively.

5,442,969

FLUID SAMPLING MODULE

Vernon H. Troutner, St. Petersburg; Andrew D. Hopping, Largo, both of Fla., and Prakash Keshaviah, Plymouth, Minn., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 960,088, Oct. 13, 1992, abandoned. This application Dec. 1, 1994, Ser. No. 349,126
Int. Cl.[6] G01N *27/30, 27/46, 3/14*
U.S. Cl. 73—863.71 48 Claims



1. A method of sampling fluid in a fluid line, comprising:

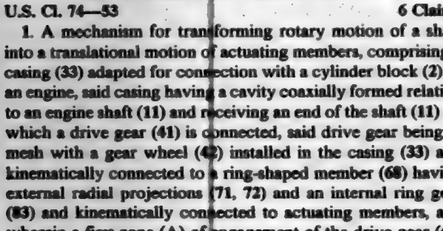
providing a sample port body including a through passageway and coupling said passageway to a fluid line;

releasably coupling said body to a separate base unit for coupling said passageway to a sampling line;

detecting the fluid flow rate through said passageway in said body; and

selectively enabling said sampling line when a predetermined flow rate is detected to obtain a volume of sample fluid from said fluid line, whereby sampling is conducted only when the fluid line flow rate is above a minimum value so that the sampling line flow rate is relatively low as compared to the fluid line flow rate.

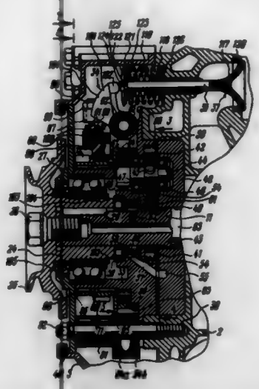
5,442,970
WATER SAMPLING DEVICE
Charles D. Hutchins, 212 Dogwood Lane, Belmont, N.C. 28012
Filed Jun. 23, 1994, Ser. No. 264,605
Int. Cl.[6] G01N *1/12*
U.S. Cl. 73—864.63 **2 Claims**



1. A manually operated sampling device for taking a sample of water from a body of water, which comprises:
an elongated telescopically extendable pole member having a large end and a small end and having a handle at said large end and a retaining member at said small end for removably attachable engagement of a sample receptacle; and
an open top sample receptacle capable of receiving a closure means having a support member integral with and extending laterally from a side thereof, said support member connected to said retaining member at said small end of said elongated pole for mounting said sample receptacle thereto so as to permit the use of said extendable pole member in obtaining samples of water at a predetermined distance from the shore of a body of water;
said support member comprises a biasing member having a pair of lugs at the end of legs extending through holes in the walls of said support member and mating with holes in said retaining member whereby said sample receptacle may be easily connected to and detached from said elongated pole.

5,442,971
MECHANISM FOR TRANSFORMING ROTARY MOTION OF A SHAFT INTO TRANSLATIONAL MOTION OF ACTUATING MEMBERS
Jury A. Romanchev; Vadim F. Kutenev; Sergei S. Istomin; Mikhail A. Zlenko, and Boris V. Kvasnikov, all of Moscow, , assignors to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut, Moscow,
Filed Oct. 13, 1993, Ser. No. 78,162
Int. Cl.[6] F02B *75/26*; F16H *21/50, 57/04*
U.S. Cl. 74—53 **6 Claims**

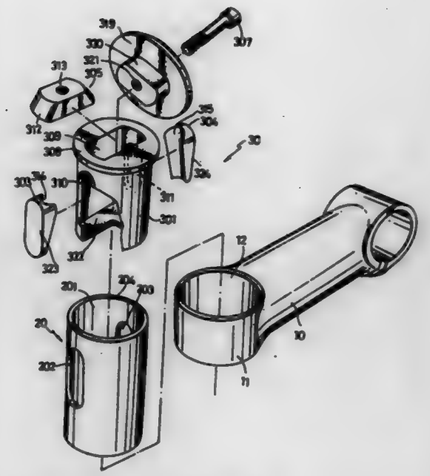
1. A mechanism for transforming rotary motion of a shaft into a translational motion of actuating members, comprising a casing (33) adapted for connection with a cylinder block (2) of an engine, said casing having a cavity coaxially formed relative to an engine shaft (11) and receiving an end of the shaft (11) on which a drive gear (41) is connected, said drive gear being in mesh with a gear wheel (42) installed in the casing (33) and kinematically connected to a ring-shaped member (68) having external radial projections (71, 72) and an internal ring gear (83) and kinematically connected to actuating members, and wherein a first zone (A) of engagement of the drive gear (41) and gear wheel (42) communicates with a header (54) of oil fed to friction surfaces, while a second zone (B) outside the engagement of the drive gear (41) with the gear wheel (42) communicates with a lubrication source.



5,442,972
VARIABLE RATIO BICYCLE DRIVE MECHANISM
Irvin Hoover, 5691-30th Aveaue N.W., Salmon Arm, British Columiba, Canada V1E 4M2
Filed Jul. 7, 1993, Ser. No. 88,138
Int. Cl.[6] B62M *3/06*
U.S. Cl. 74—65 **29 Claims**

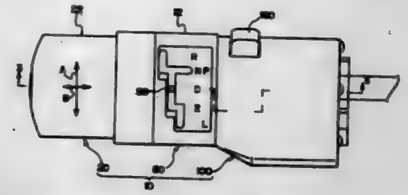
1. A drive mechanism (21R, 21L) for imparting rotational motion to a drive axle (15) rotatably coupled to a frame (2), said mechanism comprising:
(a) right and left axles (33R, 33L) rotatably coupled to said frame (2), parallel to said drive axle;
(b) right and left pedal arms (30R, 30L) connected transversely to said right and left axles respectively, said right and left pedal arms rotatable through a full circle about said right and left axles respectively;
(c) right and left intermediate arms (37R, 37L) connected transversely to said right and left axles respectively, at an angle ϕ relative to said right and left pedal arms respectively; and
(d) right and left linkage means connected between said intermediate arms and said drive axle wherein said left and right linkage means comprise right and left crank arms (41R, 41L) connected transversely to said drive axle; and, substantially rigid right and left connecting links (39R, 39L), said connecting links each having a first end pivotally connected to said respective intermediate arm and a second end pivotally connected to said respective crank arm.

5,442,973
LOCKING MECHANISM BETWEEN STEM MEMBER AND FORK TUBE OF A BICYCLE
Jim Liao, Taipei Hsien, Taiwan, assignor to Hsin Lung Accessories Co., Ltd., Taiwan
Filed Jan. 11, 1994, Ser. No. 180,038
Int. Cl.[6] B62K *19/18, 21/02*
U.S. Cl. 74—551.1 **6 Claims**



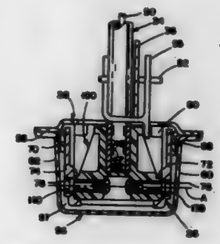
1. A locking mechanism comprising
a bicycle fork tube being rotatably received in a bicycle head tube, said bicycle fork tube being defined as having a passage in its center portion, said bicycle fork tube having a plurality of elongate slots in its tubular wall below its top end portion thereof;
a stem member having a collar which removably envelops the top end portion of said bicycle fork tube, said collar further being defined by a channel in its center; and
a locking mechanism being removably received by said passage of said bicycle fork tube, said locking mechanism including
a tubular housing defining a tubular wall having a bottom at its lower end and a flange at its top end, a chamber being enclosed between said tubular wall of said tubular housing and said bottom, said tubular housing being provided with a plurality of elongate slots with respect to said elongate slots of said bicycle fork tube;
a plurality of wedge members being slidably disposed within said elongate slots of said tubular housing,
an actuating block being disposed at the bottom of said chamber of said tubular housing and between said wedge members, said actuating block being provided with a threaded opening at its center portion; and
a lid member being removably mounted at the flange of the tubular housing, said lid member having an opening at its center thereof, said lid member being interconnected with said actuating block by means of a bolt member such that when said actuating block is moved upward by the rotation of said bolt member, said wedge members are driven outward through said elongate slots of said tubular housing and said bicycle fork tube and are pressed against the inner wall of said collar.

5,442,974
SHIFT-OPERATION APPARATUS FOR AUTOMATIC TRANSMISSION
Satoshi Sugimoto; Toshiki Akita; Yoshinori Hattori, all of Aichi, and Kazuyoshi Ishigure, Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan
Filed May 13, 1994, Ser. No. 242,666
Claims priority, application Japan, May 17, 1993, 5-025534 U; May 17, 1993, 5-025535 U; May 26, 1993, 5-027697 U
Int. Cl.[6] F16H *59/04*
U.S. Cl. 74—335 **20 Claims**



1. A shift-operation apparatus for an automatic transmission, comprising:
an operation knob capable of rotation and axial movement and having a first shift position selected by a rotating operation, a second shift position selected by the axial movement, and a third shift position selected by the rotation and the axial movement;
switch means for detecting a selected shift position of said operation knob so as to shift said automatic transmission;
a shaft disposed movably along an axis of said operation knob;
locking means disposed engageably and detachably with respect to said shaft, said locking means being adapted to prevent the axial movement of said shaft in an engaged state;
a solenoid connected to said locking means, said solenoid being actuated under a predetermined condition to cancel the engagement between said lock plate and said shaft; and
a holder fixed integrally to said operation knob and adapted to move always with said operation knob, said holder being connected to said shaft so as to permit the movement of said operation knob to one of the first shift position and the third shift position in a state in which said lock plate is engaged with said shaft and the axial movement of said shaft is prevented.

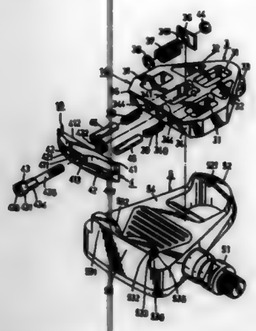
5,442,975
BEARING ARRANGEMENT FOR SHIFT LEVER
Charles Osborn, Spring Lake, Mich., assignor to Grand Haven Stamped Products Co., Div. of JSJ Corp., Grand Haven, Mich.
Filed Dec. 17, 1993, Ser. No. 169,316
Int. Cl.[6] B60K *20/04*
U.S. Cl. 74—473 R **25 Claims**



1. A shifter for an automotive transmission comprising:

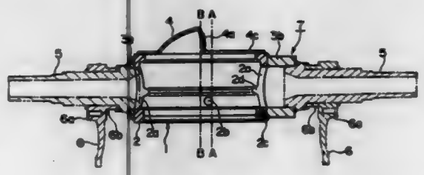
an elongated pivotable shift stick having an upper end and a lower end;
a base adapted for mounting to a vehicle;
a structure attached to said lower end of said shift stick;
a pair of bearing forming supports located on said base and spaced apart for receiving said structure therebetween; and
shaft means including at least one pivot pin having a self-locking shaft section engaging said structure, said shaft means protruding laterally from said structure for pivotally slideably engaging said pair of bearing forming supports to define an axis of rotation about which said shift stick pivots, said shaft means and said pair of bearing forming supports including bearing surfaces configured to slideably engage and form a low friction bearing arrangement.

5,442,976
PEDAL DEVICE WITH TWO-PIECE CLEAT
Wen-Heng Cheng, Taichung Hsien, Taiwan, assignor to Xerana Industrial Co., Ltd., Taichung Hsien, Taiwan
Filed Jan. 11, 1994, Ser. No. 180,021
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—594.6 **4 Claims**



1. A pedal device including a cleat to be fixed to a shoe sole and having a front portion provided with an insert piece, a rear portion opposite to said front portion, and a pedal body to be mounted rotatably on a conventional pedal shaft, said pedal body having a claw portion to receive releasably said insert piece of said cleat and an upright support spaced from said claw portion to engage said rear portion of said cleat, said pedal body being characterized by:
said cleat including a front part with said front portion and a rear part with said rear portion separated from said front part, said front part having a rearward flat abutting face spaced from said front portion, a bottom surface for abutting said pedal body, an upper surface opposite to said bottom surface and formed with a recess therein, a first blind bore with a predetermined depth extending centrally from said rearward flat abutting face toward said front portion of said front part and passing through said recess, and a pair of second blind bores extending from said rearward flat abutting face parallel to said first blind bore and being disposed on two sides of said first blind bore, each of said second blind bores having a depth that is shallower than said predetermined depth of said first blind bore, a partition wall disposed in said recess and dividing said recess into a front chamber adjacent to said front portion and a rear chamber, said partition wall having a central opening aligned with said first blind bore, said front chamber receiving a threaded nut therein and said rear chamber receiving a compression spring therein, said pair of second blind bores respectively receiving a spring-biased cylinder therein; and
said rear part having a frontward flat abutting face spaced from said rear portion and facing said rearward flat abutting face of said front part, said rear portion of said rear part being provided with a wedge-shaped protrusion and further having a central through-hole therein, passing through said frontward flat abutting face and said wedge-shaped protrusion and aligned with said first blind bore, and a pair of receiving grooves formed in said frontward flat abutting face of said rear part on both sides of said central through-hole and respectively aligned with said second blind bores so as to receive a respective one of said spring-biased cylinders, said central through-hole of said rear part being constricted in said wedge-shaped protrusion to receive an enlarged head of a locking bolt which passes therethrough and which extends through said central opening of said partition wall to engage threadedly said threaded nut, interconnecting resiliently said front and rear parts and disposing said flat abutting faces of said front and rear parts apart from each other by biasing action of said spring-biased cylinders, said locking bolt including a first section which is formed integrally with said enlarged head and which has a cross section extensible into said first blind bore so as to compress said compression spring and a second section extensible through said compression spring;
whereby, when said insert piece of said front portion is inserted into said claw portion of said pedal body and said wedge-shaped protrusion of said rear part is compressed downward against said upright support of said pedal body, said rear part moves against biasing action of said spring-biased cylinders and said compression spring so that said frontward flat abutting face of said rear part collides with said rearward flat abutting face of said front part, thereby permitting said wedge-shaped protrusion to engage said upright support of said pedal body.

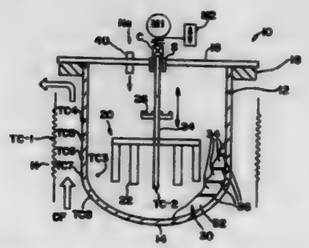
5,442,977
DIFFERENTIAL AXLE HOUSING
Seiji Daajou; Katsuya Miyata, and Shuji Ohta, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed May 28, 1993, Ser. No. 68,984
Claims priority, application Japan, Jun. 1, 1992, 4-166879
Int. Cl.[6] F16H *57/02*; B21D *11/00*
U.S. Cl. 74—607 **10 Claims**



1. A differential axle housing for a fork lift vehicle having a mast device including a pair of mast pivot brackets for connection to said differential axle housing, said differential axle housing comprising:
a generally cylindrical ring portion of roll-forged steel providing a differential housing having opposite open ends, and means providing a pair of diametrically opposite axle openings through said ring portion,
a pair of straight cylindrical flange portions each welded to, and projecting radially outward from said ring portion in surrounding relation with a respective one of said axle openings, each said cylindrical flange portion having internal diameter substantially equal to the diameter of said one axle opening with which it is in surrounding relation,
a pair of axle tubes each aligned with and welded to a respective one of said cylindrical flange portions to project outwardly therefrom, and
a pair of fitting brackets each secured to a respective one of said axle tubes and projecting radially outward therefrom, each said fitting bracket having a boss for mounting said differential axle housing on said vehicle and a fitting surface for mounting one of said pair of mast pivot brackets thereon.

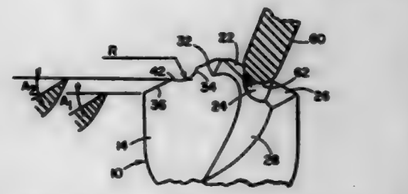
5. A method of producing a differential axle housing for a fork lift vehicle having a pivotable mast device including a pair of mast pivot brackets, said method comprising the steps of:
roll-forging a generally cylindrical steel ring portion to provide a differential housing having opposite open ends, and forming a pair of diametrically opposite axle openings through said ring portion;
forming a pair of straight cylindrical steel flange portions and welding each said flange portion to said ring portion to project outwardly therefrom in surrounding relation with a respective one of said axle openings, each said flange portion having internal diameter substantially equal to the diameter of said one of said openings with which it is in surrounding relation;
attaching a pair of axle tubes each to a respective one of said flange portions, each said axle tube being aligned with and projecting outwardly from the said flange portion to which it is attached;
providing a pair of fitting brackets each having a boss and a fitting surface thereon; and
attaching said pair of fitting brackets each to, and projecting radially outward from, a respective one of said axle tubes for mounting said differential axle housing on said vehicle using said boss and for mounting one of said mast pivot brackets on said fitting surface thereof.

5,442,978
TANTALUM PRODUCTION VIA A REDUCTION OF K2TAF7, WITH DILUENT SALT, WITH REDUCING AGENT PROVIDED IN A FAST SERIES OF SLUG ADDITIONS
Richard Hildreth, Holliston; Malcolm Shaw, Medfield; Terrance B. Tripp, Westboro, and Leo G. Gibbons, Littleton, all of Mass., assignors to H. C. Starck, Inc., Newton, Mass.
Filed May 19, 1994, Ser. No. 245,895
Int. Cl.[6] B22F *9/00*
U.S. Cl. 75—363 **6 Claims**



1. In a process for production of a tantalum powder by alkali metal reduction of a charge of complex alkali metal fluotantal diluted with alkali metal-halide salt in a reaction vessel, the improvement comprising:
(a) conducting the reduction process with series, episodic additions of discrete slug units of the alkali metal reducing agent to the charge, while the series periodicity of reducing agent slug unit additions and the size of a slug addition are controlled in relation to charge size and reduction process temperature and mobility of the reduction mass to utilize the reducing agent substantially completely in the reducing reaction so that residual contaminant traces of it in the isolated tantalum metal product are less than 10 ppm;
(b) maintaining the reduction process temperature 950°–1150° C. for tantalum (and equivalent higher than customary reduction temperature for niobium) and more precisely in a narrow band of about 10° C. or less within such larger range substantially throughout the reduction process, utilizing the thermal energy contributed by exothermic nature of the reduction reaction, as well as supplemental heating/cooling of the reaction mass as necessary for achieving the nominal narrow selected range, but primarily relying on the episodic reducing agent addition to keep the reduction temperature within such range; and
(c) establishing continuous, or regular episodes of, forced flow of the reaction mass, and consequent homogenization therein, substantially throughout the reduction process, and wherein the reaction mass mixing is aided by a rotatable stirrer in the reaction vessel that is displaced periodically along its rotation axis to regularly stir at different locations in the reaction mass.
whereby enhanced chemical, electrical and geometric properties of resultant isolated tantalum metal powders are obtained, consistent with a production process that can be carried out at a large volume scale at high rate in a single reaction vessel.

5,442,979
TWIST DRILL
George Hsu, Martinez, Ga., assignor to Greenfield Industries, Inc., Augusta, Ga.
Continuation of Ser. No. 674,906, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 168,074, Mar. 14, 1988, Pat. No. 5,011,342. This application Sep. 30, 1992, Ser. No. 954,141
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[6] B23B *51/02*
U.S. Cl. 76—108.6 **19 Claims**

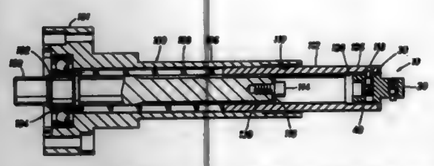


14. A method for making a drill comprising the steps of: providing a split point drill having a drill axis and an outer diameter and at least one primary clearance surface extending between said drill axis and said outer diameter; forming a groove in said at least one primary clearance surface to form an inner primary clearance surface between an inner extent of said groove and said drill axis and to form an outer primary clearance surface between an outer extent of said groove and said outer diameter; and removing material from said primary clearance surface of said drill.

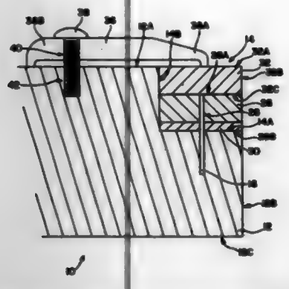
5,442,980
NUT DRIVE ADAPTER
Cecil D. Ringer, White Rock, S.C., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Sep. 24, 1993, Ser. No. 125,683
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—177.85 **2 Claims**

1. A nut drive adapter usable with a rotating power tool comprising:
a spindle housing;
a rotatable driven spindle within said spindle housing, said driven spindle having a central axis, said driven spindle further having one end connected to a rotating tool and a spline on the opposite end;

a hollow drive housing, said drive housing having a splined end constructed and arranged to interfit with said splined end of said driven spindle whereby said splined interfitment allows said drive housing to move along said central axis with respect to said driven spindle;
retainer means on said splined end of said driven spindle to prevent said drive housing from disengaging from said driven spindle;
a compression spring around said driven spindle and within said spindle housing, said compression spring having a first end in contact with said driven spindle, said compression spring having a second end in contact with said splined end of said drive housing whereby said compression spring provides a force tending to move said drive housing away from said retainer means;
a driven side male mechanical interfitment means for imparting a rotational force upon said nut drive adapter when said drive housing is rotated;
first mechanical interlock means to retain said nut driver adapter within said driven side male mechanical interfitment means, said first mechanical interlock means constructed and arranged substantially perpendicular to said driven side male mechanical interfitment means;
driver side male mechanical interfitment means to mate with a nut, said driver side male mechanical interfitment means located substantially coaxial with said driven side male mechanical interfitment means; and
second mechanical interlock means to retain said nut on said nut drive adapter, said second mechanical interlock means located on said driver side male mechanical interfitment means, said second mechanical interlock means constructed and arranged to be substantially perpendicular to said driver side male mechanical interfitment means.

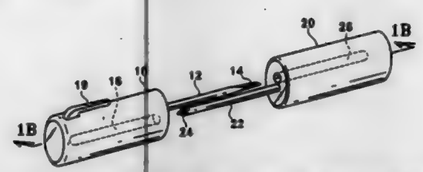


5,442,981
CUTTING TOOL
William R. Vegh, 5352 Ridgemont, Howell, Mich. 48843
Filed Feb. 14, 1994, Ser. No. 194,907
Int. Cl.[6] B23B *1/00*; B23C *9/00*
U.S. Cl. 82—1.11 28 Claims



15. A method for rotary machining without damaging a holder for a cutting insert in a cutting tool which comprises:
(a) providing the cutting tool for rotary machining of a workpiece including the cutting insert and a holder for mounting the cutting insert, wherein the cutting insert has a cutting edge which projects from the holder such that the holder is spaced from the cutting insert, and a spark generator means provided adjacent the cutting edge of the insert, wherein sparks are continuously generated by the spark generator means contacting the workpiece when the cutting insert is worn such that the holder will not be damaged by the workpiece being cut and wherein the sparks can be viewed by an operator at a safe distance from the workpiece which is being cut;
(b) cutting the workpiece with the tool until the spark generator means engages the workpiece to produce the sparks; and
(c) mounting a second cutting edge on the tool.

5,442,982
NESTING POCKET SCREWDRIVERS
Dennis J. Bell, 21825 Eaton Pl., Cupertino, Calif. 95014
Filed Nov. 26, 1993, Ser. No. 157,818
Int. Cl.[6] B25B *23/00*
U.S. Cl. 81—439 16 Claims



1. A pair of screwdrivers which can be stored together in a compact arrangement for pocket carriage, comprising:
a first screwdriver comprising (1) an elongated handle having an axis and pair of opposed ends, and (2) an elongated shaft having an axis and a pair of opposed ends with a screwdriving tip on one of said ends of said shaft, the other end of said shaft extending into one of said ends of said handle so that part of said shaft extends out from said handle, said axis of said shaft being parallel to said axis of said handle, and
a second screwdriver comprising (1) an elongated handle having an axis and pair of opposed ends, and (2) an elongated shaft having an axis and a pair of opposed ends with a screwdriving tip on one of said ends of said shaft, the other end of said shaft extending into one of said ends of said handle so that part of said shaft extends out from said handle, said axis of said shaft being parallel to said axis of said handle,
each of said handles of each of said screwdrivers having a bore extending into said handle from said one end thereof, said bore being parallel to said axis of said handle and sized to receive said part of said shaft of the other of said screwdrivers which extends out from said handle of said other of said screwdrivers,
whereby said pair of screwdrivers can be nested together by inserting said part of said shaft of each of said screwdrivers which extends out from said handle into said bore in said handle of the other of said screwdrivers, so that said screwdrivers can be nested in a compact arrangement and in a manner which covers said tips, yet so that said screwdrivers can be opened from or returned to their nested state easily.

5,442,983
ALL-ELECTRIC WEB FEEDING, CUTTING AND SHEET DISPENSING MACHINE
Joseph J. D'Angelo, 878 Annette Ct., Wycoff, N.J. 07481, and Joseph J. D'Angelo, Jr., 2 Summit Ave., Pompton Lakes, N.J. 07442
Filed Sep. 30, 1993, Ser. No. 129,669
Int. Cl.[6] B26D *5/42*, *7/02*
U.S. Cl. 83—56 22 Claims

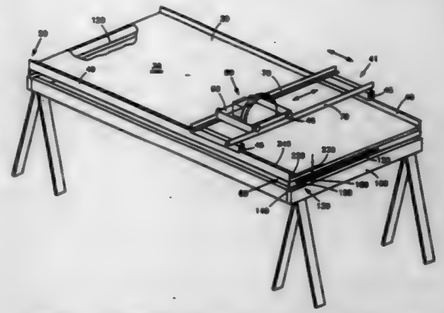
1. The method of feeding a web of packaging material and cutting the web into sheets of predetermined lengths comprising the steps of:
predetermining a desired length for cut sheets;
initiating feed of the web;
feeding a length of the web corresponding to said desired length;
stopping feed of the web upon reaching said desired length;
clamping the web along two spaced, parallel clamp regions extending across a width of the web;
providing a knife assembly having first and second cutting edges respectively facing in first and second directions opposite to each other, said knife assembly further having first and second cams facing in said first and second directions, respectively;
traversing the knife assembly in said first direction along an elongated traverse path extending between said two spaced, parallel clamp regions for providing a cutting stroke by said first edge across the width of the web for cutting off from the web a sheet having said desired length;
providing first and second cam-follower means near opposite ends of said traverse path;



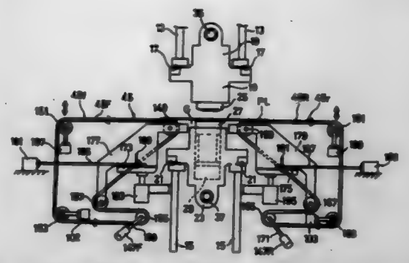
stopping traverse of the knife assembly upon completion of a traverse of the knife assembly in said first direction;
releasing said clamping of the web after completion of said cutting stroke in said first direction by said first cam engaging said first cam-follower means;
again initiating feed of the web;
again feeding a length of the web corresponding to said desired length;
again stopping feed of the web upon reaching said desired length;
again clamping the web along said two spaced, parallel clamp regions;
traversing the knife assembly in said second direction opposite to said first direction along said traverse path for providing a cutting stroke by said second edge across the width of the web for cutting off from the web another sheet having said desired length;
again stopping traverse of the knife assembly upon completion of a traverse of the knife assembly in said second direction;
again releasing said clamping of the web after completion of said cutting stroke in said second direction.

5,442,984
SHEET MATERIAL TABLE AND CUTTING GUIDE ASSEMBLY
Terrance Tate, 31158 Del Rey Rd., Temecula, Calif. 92591
Filed Dec. 9, 1993, Ser. No. 164,400
Int. Cl.[6] B26D *7/26*
U.S. Cl. 83—471.2 6 Claims

1. A saw table and guide for cutting a sheet material workpiece, comprising:
a table having a flat work surface;
a first horizontal track means comprising a first pair of tracks in spaced apart, parallel, relationship affixed to the table;
a transverse carriage assembly providing roller means at opposing ends thereof engaging the first track means for rolling thereon, the roller means and the assembly being positionable and movable on the first track means, the assembly further including a second track means comprising a second pair of tracks in spaced apart parallel relationship connected to the roller means and positioned in orthogonal relationship to the first track means;
a saw carriage assembly providing a saw support means and a further roller means at opposing ends thereof engaging, and moving over, the second track means, the saw carriage assembly being positionable at any selected position on the transverse carriage assembly for rip cutting;
a base support positioned at a convenient work height and having a pair of upwardly extending pin assemblies for pivotal and sliding attachment of the table to the base support with the flat work surface generally facing upwardly, the table including a pair of opposing slots for engaging the pair of upwardly extending pin assemblies respectively, the pin assemblies slidably engaging the slots such that the table is positionable at a desired horizontal position on the base support, the table being rotatable about the pin assemblies so that the table is positionable in an inclined orientation at a side of the base support to provide improved access to the table.



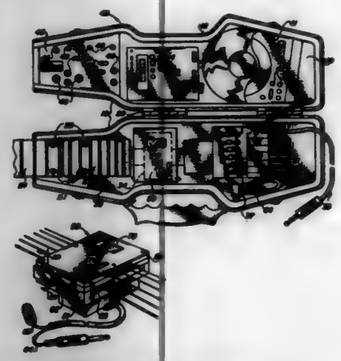
5,442,985
WORK TABLE APPARATUS FOR PLATE MATERIAL PROCESSING MACHINE
Shigeru Ito, Machida, Japan, assignor to Amada Company, Limited, Japan
Filed Jan. 14, 1993, Ser. No. 969,284
Claims priority, application Japan, Jan. 17, 1992, 4-006866; Jan. 17, 1992, 4-006892; Mar. 26, 1992, 4-067928
Int. Cl.[6] B26D *7/06*; B65G *15/12*, *15/26*
U.S. Cl. 83—155 14 Claims



1. A work table apparatus for a plate material processing machine having a plate material processing section, for movably supporting a plate material to be processed in a first direction along a work pass line, comprising:
(a) a group of work supporting belts each extending in the first direction and arranged separately in a second direction perpendicular to the first direction;
(b) belt driving means for driving said work supporting belts in the first direction of the work pass line;

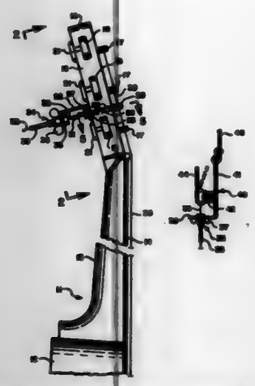
(c) downward belt moving means for selectively moving one of the work supporting belts downward away from the work pass line.

5,442,986
INTEGRATED COLLAPSIBLE GUITAR, SOUND STUDIO AND CASE
Jose G. Cota, 2928 E. La Marche, Phoenix, Ariz. 85032
Filed May 23, 1994, Ser. No. 247,639
Int. Cl.[6] G10D *1/08*
U.S. Cl. 84—267 22 Claims



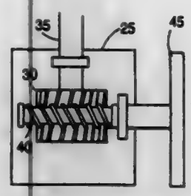
1. A guitar case assemblage comprising:
a. first and second side portions,
b. a collapsible guitar, including conventional guitar strings, formed integrally within said first side portion of said case assemblage, and
c. a sound studio formed within said second side portion of said case assemblage.

5,442,987
APPARATUS TO VARY THE PITCH OF A DESIGNATED STRING OF A MUSICAL INSTRUMENT
Bradford F. Davis, 715 Skyview Dr., Nashville, Tenn. 37206
Filed Dec. 13, 1993, Ser. No. 165,319
Int. Cl.[6] G10D *3/14*; G10G *7/02*
U.S. Cl. 84—312 R 1 Claim



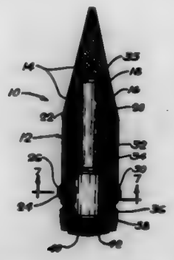
1. For use with a musical instrument which includes a body and a peghead with a plurality of strings mounted under tension between the body and a series of manually adjustable pegs in the peghead, a device for periodically varying the pitch of at least one of said strings without adjusting said pegs, said device including:
reciprocating means adapted to be mounted on the peghead in proximity to said pegs, said means including a rod adapted to extend through a hole in the peghead, a string guide secured to the distal end of the rod and adapted to overlie and bear against one of said strings, and a housing adapted to be secured to the peghead surrounding the proximal end of the rod, said housing including an end member having an internally threaded opening, an externally threaded elongated element which is provided with a longitudinal passage in which the rod is received, said elongated element being threadedly received in said opening and adapted to extend through the hole in the peghead into proximity with the string guide, and means on said elongated element for rotating it to adjust the position of the distal end thereof relative to said string guide, and manually operable means to retract the reciprocating means and increase the tension on the associated string in response to movement by a musician playing the instrument, said manually operable means including a pressure responsive actuator having a base plate with a laterally extending wall and at least one projection, a lever pivotally mounted on the projection for access by the musician, an elongated cylindrical casing with an actuator cable telescoped therein, said casing having one end secured to the housing and the opposite end secured to the wall, said cable having one end connected to the proximal end of the rod and the opposite end connected to the lever, and a supporting strap attached to said base plate and adapted to fit over a shoulder of a musician and support the lever in alignment with the musician's elbow.

5,442,988
NON-LOOSENING, KEYLESS DRUM TUNING DEVICE
Brett E. Mayo, 5424 Fox Hound La., Westerville, Ohio 43081
Filed Oct. 11, 1994, Ser. No. 320,358
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—413 3 Claims



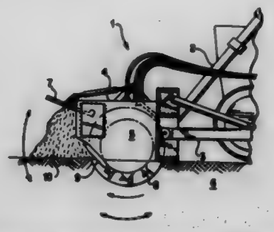
1. A tightening device for applying tension to a drumhead, comprising:
a drum having an open end over which a drumhead is to be placed;
said drum having a rim on the perimeter for receiving a drumhead;
a plurality of lug casings with threaded cylinder ends which are placed on sides of said drum;
a nonreversing gear that is attached to each said lug casing;
a plurality of T-shaped lugs with accommodating threads for the threaded cylinder ends;
said T-shaped lugs shaped to fit within the drum rim and hold said drumhead in place by providing tension;
means for turning said nonreversing gear thereby pulling the T-shaped lug into the threaded cylinder end.

5,442,989
FRANGIBLE ARMOR PIERCING INCENDIARY PROJECTILE
Richard V. Anderson, Arlington, Tex., assignor to BEI Electronics, Inc., San Francisco, Calif.
Division of Ser. No. 590,473, Sep. 28, 1990, Pat. No. 5,198,616.
This application Feb. 16, 1993, Ser. No. 18,085
Int. Cl.[6] F42B *3/00*; B22F *5/00*
U.S. Cl. 86—20.12 11 Claims



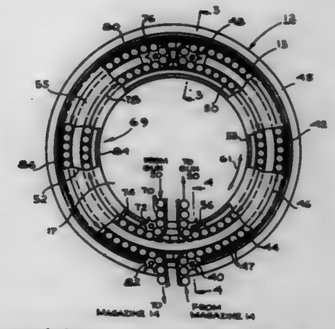
1. A method of making a brittle frangible casing for a projectile adapted to be fired from a cannon, said method comprising the steps of
preparing a powder mixture consisting predominantly of a metal powder and a minor proportion of graphite powder mixed therewith,
the proportion of said graphite powder ranging from approximately 0.2% to approximately 2% by weight,
the proportion of said metal powder ranging from approximately 99.8% to approximately 98% by weight,
said metal powder consisting predominantly of stainless steel powder, pressing said powder material into a casing mold,
said powder material thereby being compressed to a density ranging from approximately 0.21 to approximately 0.24 of a pound per cubic inch,
and sintering the molded powder in an inert atmosphere at a temperature ranging from approximately 1500° F. to approximately 1700° F. for a time sufficient to unite said molded powder into a brittle porous frangible casing,
said graphite powder vaporizing and escaping from the molded powder material during the sintering step.

5,442,990
TRACKED VEHICLE
Walter Krohn, Pflanzenhof, D-56751 Masburg, Germany
Filed Mar. 25, 1994, Ser. No. 217,592
Claims priority, application European Pat. Off., Mar. 26, 1993, 93105028
Int. Cl.[6] F41H *11/16*
U.S. Cl. 89—1.13 20 Claims



1. A mine clearing vehicle comprising a tracked vehicle, a frontal assembly operatively connected with the tracked vehicle in a liftable and lowerable manner, the frontal assembly comprising a box which is partially open on a front side and on a lower side, and a rotary scarifying drum arranged in the box essentially transversely to a forward driving direction of the mine clearing vehicle, the scarifying drum rotating on a lower side against the driving direction and reaching into soil at a cutting depth to transport the soil and a mine toward a front side of the scarifying drum and explode the mine by the application of pressure.

5,442,991
ACCUMULATING ROTARY TRANSFER UNIT
Lynn J. Swann, La Verne; Larry D. Wedertz, Mira Loma, and Michael D. Golden, Laguna, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Dec. 5, 1983, Ser. No. 558,077
Int. Cl.[6] F41A *9/02*
U.S. Cl. 89—33.1 47 Claims

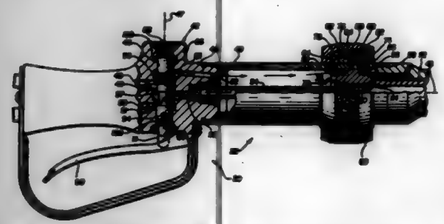


1. Accumulating rotary transfer apparatus for storing and transferring ammunition between a stationary magazine and a weapon which is rotatable in azimuth direction, the apparatus comprising:
a housing having an inner center portion which is rotatable in azimuth direction with the weapon and an outer circumferential portion which is stationary relative to the magazine;
a pair of concentric circular carriers for transporting ammunition rounds within the housing;
means for rotating the carriers about a central axis in opposite directions relative to each other;
means for transferring rounds in sequence from one carrier to the other during transfer of ammunition through the housing; and
means for feeding ammunition rounds into the housing to one of the carriers and out of the housing from the other carrier during transfer of ammunition through the housing.

5,442,992
HYDRAULIC CONTROL APPARATUS WITH SELECTIVELY OPERATED CHECK VALVE ASSEMBLY
Lanny R. Sasser, and Scott Eliasser, both of Fairmont, Minn., assignors to Greenlee Textron Inc., Rockford, Ill.
Filed Aug. 20, 1993, Ser. No. 110,085
Int. Cl.[6] F15B *11/08*, *13/04*; F01B *31/00*
U.S. Cl. 91—428 12 Claims

1. A hydraulic control apparatus for use with a hydraulic tool, said apparatus comprising: a valve body operatively coupled to said hydraulic tool and having a valve bore defining an axis, said valve body also defining a pressure port and a return port for connecting said valve bore to a source of hydraulic fluid, and a cross port communicating between said valve bore and said hydraulic tool; a tubular conduit having one end in communication with said valve bore and an opposite end in communication with said hydraulic tool; and a

selector member moveable between a first position for defining a passage communicating between said cross port and said opposite end of said tubular conduit to define a return path for hydraulic fluid between said pressure port and said return port,



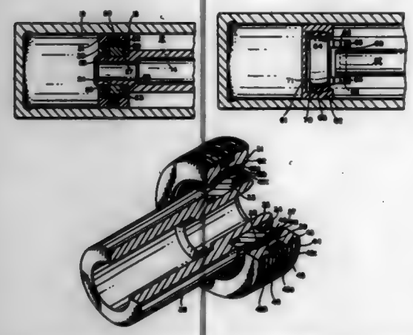
and a second position for closing off said passage, said passage defined by said selector member having a check valve for permitting fluid flow only in a direction from said cross port to said opposite end of said tubular conduit.

5,442,993

SELF-ALIGNING PISTON

John A. Baliotti, II, New Canaan, and Kenneth L. Lauck, Beacon Falls, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1994, Ser. No. 180,616
Int. Cl.[6] F16J *1/00*
U.S. Cl. 92—84 12 Claims



1. A piston assembly consisting essentially of a piston member having a side wall for slidable displacement within a bore, the piston member having a single inner chamber with a curved surface;

a single inner race member having a complimentary curved surface located within the inner chamber; and

an elastomer member located between the curved surfaces, the elastomer member substantially in the form of a sphere, the elastomer member composed of a plurality of elastomer plies.

12. A method for providing a self-aligning piston assembly comprising:

providing a piston member having a sidewall for slidable displacement within a bore, the piston member having a single inner chamber with a curved surface,

providing a single inner race member having a complimentary curved surface, to the inner chamber curved surface, and

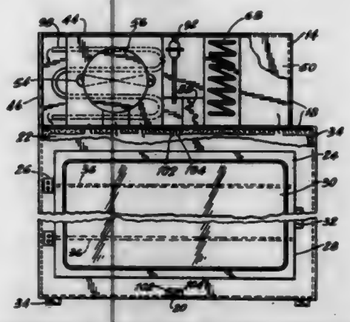
providing an elastomer member between the complimentary curved surfaces, the elastomer member substantially in the form of a sphere, the elastomer member being composed of a plurality of elastomer plies.

5,442,994

QUICK THAWING DEHUMIDIFICATION PROOF BOX

Thomas W. Parker, Staten Island, N.Y., assignor to M. Raubvogel Co., Inc., Syosset, N.Y.

Filed Mar. 1, 1993, Ser. No. 22,669
Int. Cl.[6] A21C *13/00*
U.S. Cl. 99—468 10 Claims



1. An apparatus for thawing and proofing delicate, moisture reactive frozen food products sensitive to high humidity conditions, comprising:

a cabinet defining an interior storage chamber for receiving said food products;

ducting means communicating with said cabinet for directing a volume of air therethrough, said ducting means having a first opening through which said volume of air returns from said cabinet and enters said ducting means, and a second opening through which said volume of air is introduced into said cabinet;

circulating means for moving said volume of air through said ducting means and said cabinet;

heat exchanger means for dehumidifying and cooling said volume of air, said heat exchanger including means for cooling said volume of air for retarding the cure of said food products after thawing and for dehumidifying and cooling said volume of air during proofing;

compressor means for compressing refrigerant, said compressor means fluidly communicating with said heat exchanger means;

heating means for raising the temperature of said volume of air;

humidification means for increasing the relative humidity of said volume of air, said humidification means being disposed downstream from said heat exchanger means within said ducting means so as to humidify said volume of air after said volume of air is dehumidified by passing through said heat exchanger means;

sensing means for measuring temperature and humidity within said cabinet chamber;

control means, communicating with said sensing means, circulating means, compressor means, heating means, and humidification means, for programmably regulating the temperature and humidity within said storage chamber,

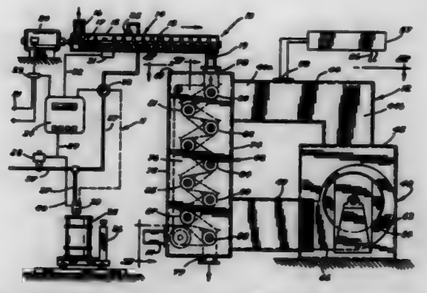
whereby, said food products may be thawed by first heating said chamber by enabling said heating means and the cure of said thawed food products retarded by enabling said heat exchanger means, and whereby said food products may then be proofed by adding heat and humidity by activating said heating means and humidification means, and controlling the humidity level and associated condensation within said chamber by passing said volume of air returning from said chamber through said heat exchanger means to dehumidify and cool said volume of air returning from said chamber into said ducting means prior to humidifying and introducing said volume of air back into said cabinet, thereby preventing excessive condensation and reducing product deterioration due to excessive moisture absorption.

5,442,995

APPARATUS FOR HEAT PROCESSING FOODSTUFF

David G. Greer, Anoka, Minn., assignor to BioChem, Inc., Anoka, Minn.

Filed Nov. 19, 1993, Ser. No. 156,031
Int. Cl.[6] A23N *17/00*
U.S. Cl. 99—487 25 Claims



1. A heat processing apparatus for foodstuffs, comprising:

an oven housing having walls defining an oven chamber;

a material inlet to the oven chamber and a material outlet from the oven chamber;

enclosed tubular means in the oven chamber connected at one end to the material inlet and at another end to the material outlet;

material conveying means associated with the tubular means to move the foodstuff from the grain inlet to the grain outlet;

a fluid inlet to the housing;

a fluid outlet from the housing;

a fluid conduit between the fluid inlet and fluid outlet exterior to the oven housing, for circulation of a heated fluid in the oven housing for heat treating the grain as it is moved through the tubular means;

a heater module connected to the fluid conduit for heating fluid contained therein;

blower means connected to the fluid conduit to move fluid through the fluid conduit and circulate the fluid through the oven housing for heat processing foodstuffs being carried in the tubular means.

5,442,996

HAMBURGER MAKER

Daniele S. Chiodini, Bologna, Italy, assignor to La Minerva Di Chiodini Mario S.r.l., Bologna, Italy

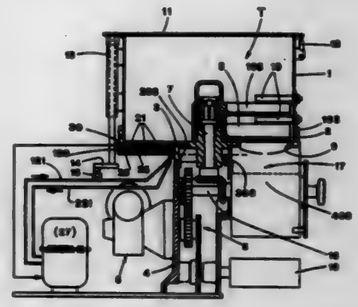
Filed Sep. 15, 1993, Ser. No. 122,023
Claims priority, application Italy, Sep. 16, 1992, GE92U0057
Int. Cl.[6] B01F *15/06;* A23B *4/06*
U.S. Cl. 99—517 10 Claims

1. A hamburger maker machine comprising:

a feed hopper for receiving minced meat, said hopper including a base plate having a raised annular rim and a tubular body fitted on said rim;

a rotating volumetric batching unit disposed below said hopper for shaping meat from said hopper into burgers; and

cooling means in direct contact with said base plate for cooling said base plate and at least limiting a downward



dripping of liquids contained in the minced meat by retaining fat particles in said hopper.

5,442,997

AUTOMATED COOKING APPARATUS

Michael A. Brasz, Spartanburg; Michael D. Black, Greenville; Harry A. Branchcomb, Inman, and James H. Jenkins, Spartanburg, all of S.C., assignors to Specialty Equipment Companies, Inc., Berkeley, Ill.

Filed May 27, 1993, Ser. No. 68,681
Int. Cl.[6] A47J *27/04;* A23L *3/10, 3/16*
U.S. Cl. 99—330 13 Claims

1. An apparatus for automatically cooking food in a food storage container in the course of a cooking process, the apparatus comprising:

a means for selectively isolating the food storage container during the cooking process, said container isolating means being configured to receive a food storage container; and

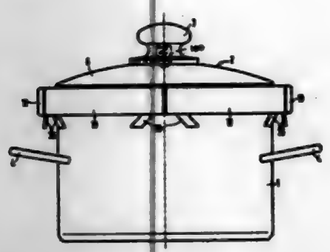
a means for introducing steam inside the food storage container received inside said container isolating means, wherein said steam introducing means includes an elongated hollow shaft disposed at least partially inside said container isolating means, wherein said steam introducing means includes a means for selectively disposing said hollow shaft in communication with the inside of the food storage container received inside said container isolating means, wherein said hollow shaft disposing means includes:

a rack gear connected to said hollow shaft;

a rotatable pinion gear disposed in engagement with said rack gear; and

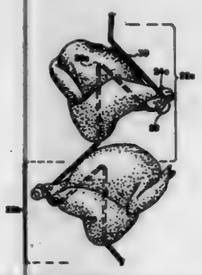
an electric drive motor having a rotatable shaft connected to rotate said pinion gear.

5,442,996
PRESSURE COOKER
Karl Nisse, Auf'm Vogelheerd 31, 67745 Grumbach, Germany
Filed Nov. 23, 1993, Ser. No. 156,421
Claims priority, application Germany, Nov. 25, 1992, 42 39 552.6
Int. Cl.[6] A47J 27/08, 27/082, 27/09; B65D 43/00
U.S. Cl. 99—337 20 Claims



1. A pressure cooker comprising:
a) a cooker bowl having a base and a cylindrical sidewall extending upwardly from said base and terminating in an outwardly extending circular pouring edge;
b) a lid removably mountable on said pouring edge of said bowl, said lid having:
i) a circular dome provided with a downwardly directed circumferential sidewall of a greater diameter than said pouring edge whereby said lid is axially movable with respect to said bowl;
(ii) a centering ring positioned within the sidewall of said dome, said centering ring having a cylindrically sidewall and a flange extending radially outwardly from the top of said cylindrical sidewall, said cylindrical sidewall of said centering ring having a smaller diameter than the sidewall of said bowl and being locatable within said bowl, said flange having an outer diameter which is smaller than the inner diameter of the sidewall of said dome and being positioned to overlay said pouring edge when said centering ring is positioned in said bowl, said centering ring being axially movable within the sidewall of said dome between an open position at which said flange is proximal to said dome and a closed position at which said flange is located distally from said dome;
(iii) an annular sealing ring fixed about the sidewall of said centering ring for movement therewith, said annular sealing ring having a first portion positioned below the radial flange of said centering ring and being adapted to seat against said pouring edge in response to pressure from within said bowl, said annular sealing ring having an upwardly extending sealing lip urgable in a sealing relation against the downwardly extending sidewall of said dome in response to internal pressure within said bowl when said lid is mounted on said bowl;
(iv) downwardly directed closure elements fixed to said sealing ring, said closure elements extending between said sidewall of said dome and said pouring edge when said lid is mounted on said bowl;
(v) a plurality of U-shaped clips mounted on said dome and being axially immobile therewith, each clip having a top leg and a bottom leg adapted to engage around said dome and said pouring edge, respectively, said clips being radially movable between a radially inward clipping position at which said lower leg engages around said pouring edge and a radially outward unclipping position at which said lower leg is free of said pouring edge,
said clips being provided with guide elements adapted to slidably engage said closure elements when said lid is positioned on said bowl, said guide elements and said closure elements being configured to bias said clips towards their radially inward clipping position in response to movement of said centering ring towards its closed position, and to bias said clips towards their radially outward unclipping position in response to movement of said centering ring towards its open position;
(vii) resilient means for normally biasing said centering ring axially away from said dome means, towards its closed position;
(viii) disengagement means for eliminating the sealing engagement between said sealing lip and the sidewall of said dome in response to movement of said centering ring towards its open position;
(ix) locking means for retaining said dome and centering ring together against the action of said resilient means, whereby the lid is released from the bowl by depressing the lid to move said centering ring towards its open position, thereby releasing the pressure within the bowl past the sealing lip as the clips are caused to move radially outwards by interaction between the closure elements and the guide elements on the clips to a position where the lower legs of the clips clear the pouring edge.

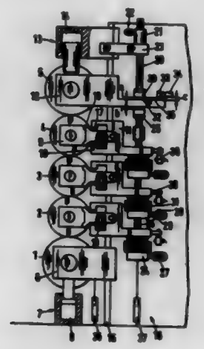
5,442,999
VERTICAL SPIT FOR A DISPLAY, ROASTING OR WARMING OVEN
James L. Meister, Rockford, Ill., assignor to The Broaster Company, Beloit, Wis.
Filed Apr. 28, 1994, Ser. No. 235,112
Int. Cl.[6] A47J 37/04, 43/18; A47F 7/00
U.S. Cl. 99—426 2 Claims



1. A vertical spit for retaining one or more fowl during display, roasting or warming comprising a unitary zig-zagging rod comprising two or more roast retaining means, each roast retaining means comprising:
(a) a downwardly projecting cradle portion for holding trussed legs of the fowl; and
(b) an upwardly projecting triangular portion for insertion into a carcass of the fowl;
wherein each roast retaining means is positioned in continuous vertical relationship along the vertical spit and wherein each roast retaining means on said spit projects from an opposite side of the vertical spit from an adjacent roast retaining means.

5,443,000
CALENDER
Reinhard Wenzel, Krefeld, Germany, assignor to Sulzer Papertec Krefeld GmbH, Krefeld, Germany
Filed Apr. 28, 1994, Ser. No. 234,984
Claims priority, application Germany, May 4, 1993, 43 14 670.8
Int. Cl.[6] B30B 3/04; D21G 1/02
U.S. Cl. 100—163 A 6 Claims

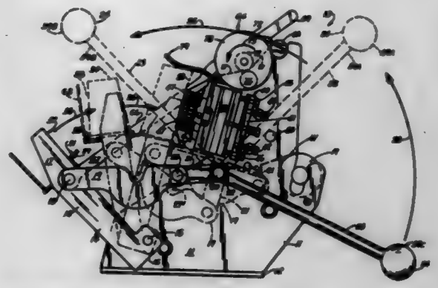
1. A calender, comprising:
a suspended spindle operatively attached at an upper end of an upright slide, wherein height-adjustable support-elements engage said suspended spindle, and a register and a primary support-element engage an upper end of said suspended spindle;
vertically-arranged rollers having an upper, lower and at least one center rollers positioned between said upper and lower rollers, wherein said upper roller is operatively attached to said upper end of said upright slide;
upper, lower and at least one center carrier-blocks operatively attached to said upper, lower and at least one center rollers, respectively, and slidably engaging said upright slide, wherein at least said lower and said at least one center carder-blocks are vertically movable along said slide, one of said carrier-blocks has a beating surface for positioning said primary support-element on said carrier-block, said height-adjustable support-elements support said upper, lower and at least one center carrier-blocks



during separation of said upper, lower and at least one center rollers;
an adjustable carrier-nut operatively attached to said upper end of said suspended spindle and supported on said register;
an elevating-device operatively attached to said lower roller for elevating said lower roller, thereby engaging said at least one center roller and said upper roller;
a motor for driving said carrier-nut, said motor operatively attached to said carrier-nut at said upper end of said suspended spindle; and
an insert positioned between said bearing-surface of said upper carrier-block and said primary support-element, wherein said insert has a thickness which allows said suspended spindle and said carrier-nut to be lifted during elevation of said upper carrier-block, wherein said carrier-nut can be easily rotated by said motor.

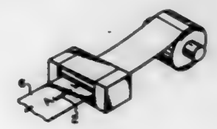
5,443,001
APPARATUS FOR IMPRINTING CONICALLY-SHAPED PLASTIC CUPS
C. Michael Keller, III; Pamela S. Keller, both of 49130 Turnpike Rd., Folsom, La. 70437; Christopher Grove, 70110 Highway 1077, Covington, La. 70433, and Ronald O'Connor, 208 Jules, Jefferson, La. 70121
Filed Oct. 2, 1992, Ser. No. 955,664
Int. Cl.[6] B31F 1/07
U.S. Cl. 101—27 12 Claims

1. A hot stamping apparatus for imprinting plastic, frustro-conically shaped articles, comprising:
a) a frame;
b) a printing arm pivotally attached to the frame, the printing arm having a first end portion adjacent the frame and a second end portion distant from the frame;
c) indexing means at the second end portion of the arm for holding a frustro-conically shaped plastic article in a desired position relative to the frame;
d) a printing head assembly supported by the frame and in a position that engages the frustro-conically shaped plastic article in a defined printing position;
e) means for supporting a wound roll of hot stamping foil material that has a free end portion defining a web;
f) roller guide means for supporting the web upon the frame;
g) take up roll means for storing the free end of the web that has been spent;



h) ratchet means for advancing the web;
i) the printing head assembly further comprising removable type means for imprinting the frustro-conically shaped article with a desired printed representation; and
j) heating means for transferring heat to the printing type, wherein the indexing means include means for deforming the plastic article so that a flat surface is presented to the printing head assembly.

5,443,002
METHOD OF PRINTING ON FIBREGLASS
Kenneth Wolf, 892 Kilburn St., Kingston, Ontario, Canada K7M 6A9
Filed Jul. 12, 1993, Ser. No. 90,619
Int. Cl.[6] B41C 1/06
U.S. Cl. 101—34 7 Claims





1. A method of applying graphic images to an existing, cured fibreglass surface comprising resin and fibreglass consisting essentially of the following steps:
(a) printing the graphic image to be applied on an absorbent, cellulose-based paper sheet;
(b) applying a coating of clear fibreglass resin to said existing surface;
(c) applying the printed paper to the resin coated surface before said coating of clear fibreglass resin is cured; and
(d) applying a further coating of the fibreglass resin on top of

the paper, thus encasing the paper in a resin envelope secured to said fibreglass surface.

5,443,003

STRETCHING FRAME FOR USE IN SILKSCREENING

James D. Larson, 6323 83rd Ave. SE., Snohomish, Wash. 98290

Continuation-in-part of Ser. No. 985,559, Dec. 3, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 146,927
Int. Cl.[6] B05C *17/06*
U.S. Cl. 101—127 5 Claims



1. A method of preparing a reusable and storable silk screen wherein the frame may be removed from the silk screen and used for another project and wherein the screen elements are quickly and easily reattached to the frame in the proper register for later use, comprising the steps of:

a) determining the amount of frame deflection caused by the proper tension being placed upon the particular fabric for the size of the frame to be used;

b) forming a flexible, resilient linking element to reflect the frame deflection;

c) cutting the silk screen fabric while in the relaxed state to have preformed curved edges which reflect the deflection of the frame; and

d) securing the edge of the fabric to the temporarily preformed linking element, wherein the linking element interacts with and is capable of being removably secured to the frame, wherein the curvature of the preformed curved edges of said silk screen is such that when said silk screen is secured to the frame and tensioned, said preformed curved edges reflect the frame deflection, whereby the warp and weft of the fabric are perpendicular when the fabric is stretched;

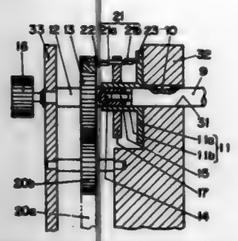
e) securing the linking element to a protective shield which is shaped to provide a securement to the frame.

5,443,004

INK FOUNTAIN APPARATUS

Yuji Kohara, Kodaira, and Tadashi Hachiya, Yokohama, both of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Filed Sep. 8, 1994, Ser. No. 301,404
Claims priority, application Japan, Nov. 13, 1993, 5-307571
Int. Cl.[6] B41F *31/04, 31/06*
U.S. Cl. 101—365 3 Claims



1. An ink fountain apparatus comprising:

a storage part for forming an ink storage space in cooperation with an external periphery of a fountain roller, said storage part including a bottom portion having a front edge which is opposed to the external periphery of said fountain roller with a gap defined by said front edge and said external periphery, said gap serving as an ink supplying port;

an ink supply adjusting member movably mounted such as to be movable toward and away from said fountain roller such as to adjust the degree of opening of an ink supplying gap, aligned with said ink supplying port, defined between the front edge of said ink supply adjusting member and said external periphery of said fountain roller;

a screw feeding mechanism having a rotational driving member for moving said ink supply adjusting member toward and away from said fountain roller; and

stopper means for restricting the range of rotation of said rotational driving member of said screw feeding mechanism;

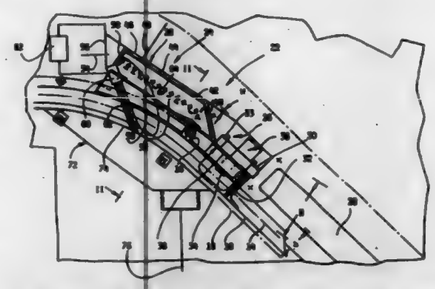
said stopper means including a rotation stopper part provided on said rotational driving member and and a fixed stopper part provided on a fixed part attached to said storage part, said rotation stopper part being rotated along with rotation of said rotational driving member in a generally fixed plane so as generally not to move in an axial direction along an axis around which said rotational driving member rotates, and said rotation stopper part overlapping with said fixed stopper part such that a side portion of said rotation stopper part is engageable with a side portion of said fixed stopper part at a certain degree of rotation of said rotation driving member.

5,443,005

DUSTING DEVICE

Hans G. Platsch, Kupferstr. 40, D-70565 Stuttgart, Germany

PCT No. PCT/EP93/00432, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO93/17866, PCT Pub. Date Sep. 16, 1993
PCT Filed Feb. 25, 1993, Ser. No. 256,550
Claims priority, application Germany, Mar. 6, 1992, 42 07 118.6
Int. Cl.[6] B41L *23/22, 23/20*
U.S. Cl. 101—424.2 11 Claims



1. A device for dusting flat products, especially printed products, with powder, comprising:

a powder box which is open towards a product transport surface along which the flat products move in a product transport direction, said powder box having a back wall and side walls;

a powder nozzle arrangement which is arranged in the powder box transversely to the product transport direction and which delivers a powder/air mixture towards the product transport surface;

a first air nozzle arrangement arranged transversely to the product transport direction at an upstream edge of the powder box, and a second air nozzle arrangement arranged transversely to the product transport direction at a downstream edge of the powder box, said first and second air nozzle arrangements cooperating to produce an air curtain directed towards the product transport surface; and

a first suction nozzle arrangement provided downstream of the first air nozzle arrangement and a second suction nozzle arrangement provided adjacent the second air nozzle arrangement, both the first and second suction nozzle arrangements being oriented transversely to the product transport surface,

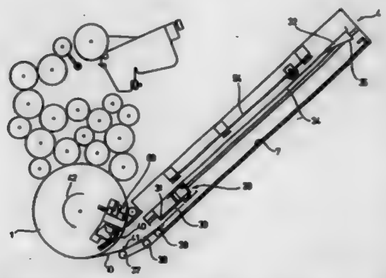
wherein a first portion of the back wall assigned to a downstream box portion is at a greater distance (H) from the product transport surface than is a second portion of the back wall assigned to an upstream box portion which is adjacent to the powder nozzle arrangement.

5,443,006

PROCESS AND DEVICE FOR CARRYING AWAY PRINTING PLATES FROM A PRINTING MACHINE

Hermann Beisel, Walldorf; Peter T. Blaser, Dielheim; Dieter Hauck, Eberbach; Rudolf Hutzenlaub, Mannheim; Helmut Jäger, Königsbach-Stein; Hans-Georg Jahn, Wiesenbach; Robert Müller, Mörlenbach; Anton Rodi, Leimen, and Nikolaus Spiegel, Walldorf, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

PCT No. PCT/EP92/02056, § 371 Date May 12, 1994, § 102(e) Date May 12, 1994, PCT Pub. No. WO93/04863, PCT Pub. Date Mar. 18, 1993
PCT Filed Sep. 7, 1992, Ser. No. 211,097
Claims priority, application Germany, Sep. 12, 1991, 41 30 359.8
Int. Cl.[6] B41F *1/28*
U.S. Cl. 101—477 16 Claims



1. Device, in the form of a magazine having a given length, for removing printing plates from a plate cylinder of a printing press, in particular for the automatic changing of printing plates, comprising a plate-removing apparatus, said apparatus comprising activatable holding means for holding the respective printing plate, said holding means being disposed on a carriage, said carriage being adapted to be moved along a guide substantially over the whole length of the device, inside the magazine.

5,443,007

PRINTING MACHINE WITH INTEGRATED TEMPERATURE CONTROL SYSTEM

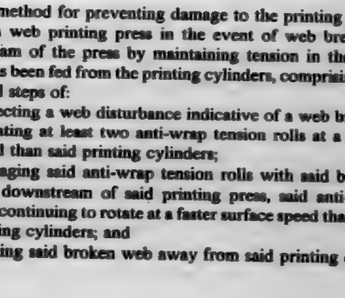
Robert J. Buesa, Winfield, Ill., assignor to Tri Service, Inc., Melrose Park, Ill.

Filed Apr. 11, 1994, Ser. No. 226,064
Int. Cl.[6] B41F *1/34*
U.S. Cl. 101—480 21 Claims

1. In a printing press such as an offset duplicating machine and similar apparatus which includes an ink system having a plurality of distribution rollers for distributing ink to at least one printing couple of the apparatus, the apparatus including a frame with a control zone for accommodating various control elements of the apparatus with an opening in the frame for access to the control elements from exteriorly of the frame, a temperature control system comprising:

a housing;

circulating water temperature control components within the housing and including at least a water pump, a water heater, valve means and conduit means for feeding controlled temperature water to said printing couple; and



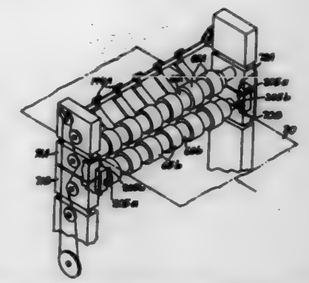
mounting means for mounting the housing on said frame for movement between a first position closing said opening and a second position exposing the opening for access to both the control elements within the frame and the control components within the housing.

5,443,008

ANTI-WRAP DEVICE FOR A WEB PRESS

Mark Pavliny, Rolling Meadows; Edward Lewandowski, Hoffman Estates; William Lawrence, Addison; Michael Gregory, Wheaton, and Guntis Ozers, Hinsdale, all of Ill., assignors to Baldwin Web Controls, Countryside, Ill.

Continuation of Ser. No. 36,928, Mar. 25, 1993, Pat. No. 5,398,610. This application Oct. 21, 1994, Ser. No. 327,095
The portion of the term of this patent subsequent to Mar. 21, 2012, has been disclaimed.
Int. Cl.[6] B41F *5/04*
U.S. Cl. 101—484 15 Claims



10. A method for preventing damage to the printing cylinders of a web printing press in the event of web breakage downstream of the press by maintaining tension in the web after it has been fed from the printing cylinders, comprising the sequential steps of:

(a) detecting a web disturbance indicative of a web break;

(b) rotating at least two anti-wrap tension rolls at a faster speed than said printing cylinders;

(c) engaging said anti-wrap tension rolls with said broken web downstream of said printing press, said anti-wrap rolls continuing to rotate at a faster surface speed than said printing cylinders; and

(d) pulling said broken web away from said printing cylin-

ders with contact exerted by said anti-wrap tension rolls; and

(e) allowing slipping to occur between said web and said anti-wrap tension rolls.

5,443,009

CHARGE ARRANGEMENT FOR CARTRIDGE AMMUNITION

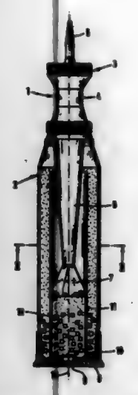
Stefan Thömen, Willich; Eckhard Rahsenführer, Dormagen, and Josef Köhler, Ampfing, all of Germany, assignors to Rheinmetall GmbH, Ratingen and WNC Nitrochemie GmbH, Aschau/Inn both of Germany

Filed Jun. 6, 1994, Ser. No. 254,105

Claims priority, application Germany, Jun. 5, 1993, 43 18 740.4

Int. Cl.[6] F42B *5/02*

U.S. Cl. 102—443 **5 Claims**



1. A charge arrangement for cartridge ammunition, comprising:

a cartridge case having an inside wall, a case bottom and a case top;

a projectile having a tail-side extending into said cartridge case through said case top;

a bottom igniter secured in the case bottom;

bulk powder propellant compound disposed in said cartridge case and surrounding the tail-side part of the projectile, said propellent compound having a predetermined axial flame propagation speed; and

a primer coaxially surrounding at least one part of the propellant compound and the tail-side of said projectile, said primer comprising a single, continuous, tubular sleeve composed of combustible material having an activity selected so that said sleeve has a burning speed greater than the axial flame propagation speed of the propellant compound, said sleeve having a longitudinal extent which is a preset distance from the inside wall of said cartridge case so that the primer can act upon the propellant compound located both inside said sleeve and between said cartridge case and said sleeve, and said sleeve extending to a position adjacent said igniter.

5,443,010

MUZZLE LOADING RIFLE PROJECTILE

Ronald R. Dahlitz, Santa Fe Springs, Calif., assignor to Buffalo Bullet Company, Santa Fe Springs, Calif.

Filed Nov. 1, 1993, Ser. No. 146,963

Int. Cl.[6] F42B *14/04*

U.S. Cl. 102—511 **3 Claims**

1. A one piece projectile of a caliber appropriate for a muzzle loading rifle of a given barrel diameter, the projectile including

a cylindrical body having a nose end and a base end, the surface of the cylindrical body between the nose end and the base end consisting of a knurled band and a smooth band, the width of the knurled band being substantially twice the width of the smooth band, knurling indentations of the knurled band being diamond shaped and continuous over the surface of the knurled band, the diameter of the knurled band determining the projectile's caliber,

a hemispherical tip extending from the nose end of the cylindrical body, the hemispherical tip being of a diameter slightly less than the diameter of the cylindrical body and being centered on the cylindrical body to provide a shoulder ring about the base of the hemispherical nose,



a coating of lubricant about the surface of the cylindrical body, the lubricant substantially filling the diamond shaped knurling indentations,

the smooth band being adjacent the base end of the cylindrical body, the band being substantially smooth and of a diameter less than the diameter of the knurled band and less than the given barrel diameter such that the smooth band is capable of being received in the muzzle of the rifle barrel, and

an empty depression in the base of the projectile, the depression being centered and of a diameter to provide a narrow skirt of material between the depression and the smooth band allowing the skirt to obturate when the projectile is fired down a rifle barrel, the depth of the depression being substantially equal to the width of the smooth band.

5,443,011

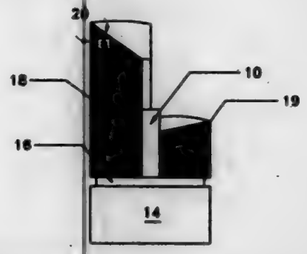
TECHNIQUE FOR INDUCING SUBCALIBER PROJECTILE YAW

Randolph S. Costes, Havre de Grace, and William R. Edmanson, Jr., North East, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 13, 1994, Ser. No. 305,234

Int. Cl.[6] F42B *14/06*

U.S. Cl. 102—522 **6 Claims**



1. A saboted projectile comprising;

a subcaliber projectile

a sabot means for achievement of axial alignment of the projectile and for providing lateral in-bore support, and

for applying an unbalance force to the projectile and for the purpose of inducing a projectile yaw,

said sabot means possessing a plurality of pedals having different length whose design, mass and lift are tailored to achieve a specific level impulse that will provide a predetermined level of subprojectile yaw,

pusher plate means for supporting the subprojectile and sabot during in-bore acceleration, and

obturator means for providing a seal to the high pressure propellant gases and for supporting the pusher plate.

5,443,012

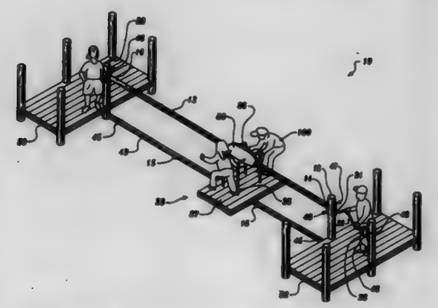
PLAYGROUND CARRIAGE

John M. Underbrink, Olympia, and Russell L. Keeler, Seattle, both of Wash., assignors to BigToys, Inc., Olympia, Wash.

Filed Mar. 11, 1994, Ser. No. 209,952

Int. Cl.[6] A63G *1/00*; B61B *9/00, 12/02*

U.S. Cl. 104—53 **31 Claims**



1. An apparatus for use in playground and recreational environments adapted to move from one area to another:

(a) a support pipe rotatable along its longitudinal axis, the pipe having a smooth cylindrical outer surface, a first end of the support pipe braced by a first vertical column, a second end of the support pipe braced by a second vertical column, wherein the support pipe extends between the first vertical column and the second vertical column;

(b) a manually-operated crank having a first end and a second end, wherein the first end of the crank is coupled to the first end of the support pipe so that manually turning the crank rotates the pipe; and

(c) a carriage mounted upon the support pipe for moving objects along the longitudinal axis of the support pipe, the carriage comprising;

(1) a carrier adapted to advance the carriage along the pipe, wherein the carrier contains a set of wheels oriented along the outer surface of the pipe so that the set of wheels follows a helical, thread-like path along the pipe and propels the carriage along the longitudinal axis of the pipe as the pipe is rotated;

(2) a handrail extending downwardly from the carrier;

(3) a platform attached to the handrail so that the platform is suspended below the carrier; and

(4) a protective housing encapsulating the carrier.

5,443,013

SELF STEERING RECREATIONAL APPARATUS FOR TROUGH-SHAPED RAILWAYS

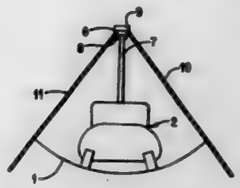
Peter Menz, Hünfeld, and Josef Wiegand, Landstrasse 12, D-6419 Rasdorf, both of Germany, assignors to Josef Wiegand, Rasdorf, Germany

Filed Nov. 23, 1992, Ser. No. 978,964

Claims priority, application Germany, Nov. 22, 1991, 41 38 442.3

Int. Cl.[6] A63G *21/02*

U.S. Cl. 104—69 **6 Claims**



1. A recreational apparatus comprising a trough-shaped runway, an electric contact wire along the runway, and at least one four-wheel car having a self-steering front axle, an electric motor as a drive, and a trolley connected to said contact wire to supply power to the electric motor wherein the front axle comprises a bolster pivotally mounted on the center line of the vehicle about an essentially vertical axis of rotation and a pair of front wheels attached to the outer ends thereof, said axis of rotation being off-set toward the front of the car relative to the front wheels.

5,443,014

FLOOR MOUNTED ON DEMAND CONVEYOR

Michael J. Belanger, Walled Lake; Robert J. Wentworth, Farmington Hills; Barry S. Turner, and Kenneth J. Dolhopf, both of Livonia, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Nov. 1, 1993, Ser. No. 146,229

Int. Cl.[6] B61B *13/00*

U.S. Cl. 104—172.3 **23 Claims**



1. A conveyor for translating a wheeled vehicle having a plurality of tires across a floor with a pair of the vehicle's tires oriented in a guided track, the conveyor comprising:

a conveyor drive sprocket and a conveyor idle sprocket each rotatably oriented relative to the floor surface in spaced apart relation;

an endless conveyor tensile member extending in a loop about the conveyor drive and idle sprockets defining a drive flight parallel to and laterally spaced from the guided track and a return flight spaced parallel to the drive flight;

a drive motor for rotating the conveyor drive sprocket causing the drive flight to advance in a forward direction;

a dolly assembly having an elongated dolly roller for engag-

ing a tire of a vehicle located within the guided track, said dolly assembly being pivotally attached to the endless conveyor tensile member and shiftable about a generally vertical dolly pivot axis between an inactive position above the floor surface in which the dolly roller is pivoted rearwardly out of the guided track sufficiently to provide clearance for the vehicle and an active position in which the elongated dolly roller extends inwardly into the guided track to engage a vehicle tire, said dolly assembly provided with a follower portion spaced from said dolly pivot axis;

an elongated dolly guide rail affixed parallel to the drive flight, said dolly guide rail having a first end located downstream of the idle sprocket and a second end located forward of the drive sprocket; said guide rail cooperating with the dolly follower to support the dolly assembly in the active position; and

an actuator for selectively shifting the dolly between the active and inactive positions on demand;

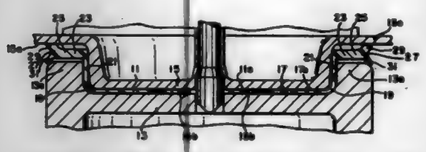
wherein said endless conveyor tensile member extends in a loop spaced above the floor a sufficient distance to enable the dolly follower to extend between the conveyor drive flight and the floor when the dolly is oriented in the inactive position.

5,443,015

CENTER BOWL WEAR LINERS FOR RAILROAD CARS WITH VARYING HARDNESS VALUES

John W. Radibaugh, West Chester, and Charles L. Van Auken, Dillsburg, both of Pa., assignors to Pennsy Corporation, West Chester, Pa.

Filed Mar. 18, 1994, Ser. No. 210,332
Int. Cl.[6] B61F *5/16*
U.S. Cl. 105—199.4 **11 Claims**



1. A wear liner (11) for use in a railroad car between a truck bowl (13) and a car body center plate (15), comprising

a wear liner bowl (11*a*) made of synthetic resin plastic material, including

a horizontal bottom floor (17) having an outer periphery (19),

an upstanding circumferential side wall (21) extending upwardly from the periphery (19) of the bottom floor (17) to a top flange (23) which forms an upper rim (25),

a sealing member (27) extending outwardly from the upper rim (25) having an upper lip (29) extending outwardly and upwardly for contacting a base shoulder (15*a*) of the center plate 15,

said sealing member (27) having a lower lip (31) extending outwardly and downwardly for contacting a top shoulder (13*a*) of the truck bowl (13),

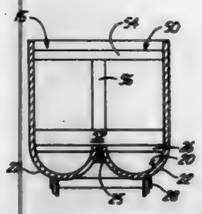
said floor (17) and circumferential side wall (21) of the wear liner (11) being made of a harder synthetic resin plastic material than the synthetic resin plastic material of which the softer sealing member (27) is made.

5,443,016

CONVERTIBLE HOPPER RAILCAR DESIGN WITH INTERNAL BRACING FOR ADAPTING CAR TO HAUL BLADDERS

Stewart Erickson, Ketchum, Id., assignor to SEEC, Inc., Menota Heights, Minn.

Continuation of Ser. No. 66,684, May 24, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 301,224
Int. Cl.[6] B61D *7/02, 17/00*
U.S. Cl. 105—411 **5 Claims**



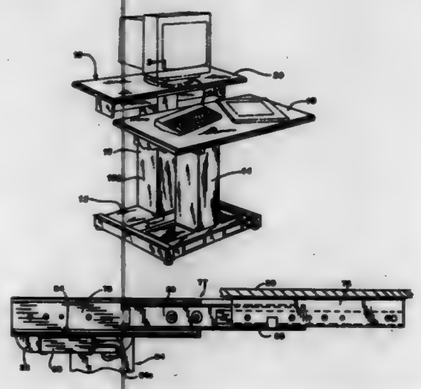
1. A railcar for use in hauling both bulk commodities and bladders, comprising a floor, a pair of opposed endwalls, a pair of opposed sidewalls, and a brace comprising a lower horizontal strut having opposed ends and being connected to a lower portion of one sidewall on one end and a lower portion of the other sidewall on the other end, an upper horizontal strut having opposed ends and being connected to an upper portion of one sidewall on one end and an upper portion of the other sidewall on the other end, and a generally vertical strut extending between and connected to the upper horizontal strut and the lower horizontal strut, wherein the brace is positioned between the endwalls at an intermediate point along the length of the railcar to define stalls for receiving the bladders, the brace being capable of restricting the movement of the bladders and permitting bulk materials to move freely from one stall to another.

5,443,017

ADJUSTABLE WORK TABLE AND MODULAR SYSTEM FOR THE ASSEMBLY THEREOF

Robert W. Wacker, Plymouth; Ronald J. Smies, Oostburg; Ronald K. LaFond, Manitowoc, and Dale M. Hemberger, Sheboygan, all of Wis., assignors to Mayline Company, Inc., Sheboygan, Wis.

Continuation-in-part of Ser. No. 858,945, Mar. 27, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 101,595
Int. Cl.[6] A47F *5/12*
U.S. Cl. 108—3 **4 Claims**



1. A work station having a pair of independently adjustable

work surfaces having parallel adjacent edges, at least one of which work surfaces is supported by a separate vertically telescoping column including a movable upper tubular column member and a fixed lower tubular column member and with both work surfaces supported on a common base, the improvement comprising:

adjustable mounting means for attaching one work surface to the upper end of the upper column member;

first actuator means secured within one lower column member, extending upwardly through the corresponding upper column member and into operative engagement with said mounting means for moving the attached work surface vertically;

second actuator means secured within said corresponding upper column member, extending upwardly into operative engagement with said mounting means for pivoting the attached work surface about a horizontal axis parallel to the surface;

said mounting means for at least one of said work surfaces including means for moving said work surface relative to its supporting column in a direction in the plane of said surface; and,

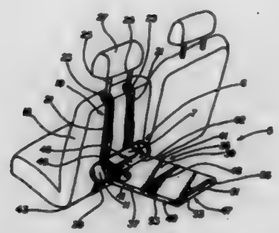
said moving means including lockout means for disenabling operation of said actuator means in response to movement of one of the adjacent edges of said work surfaces through a vertical plane containing the other of said edges.

5,443,018

FOLDING TRAY FOR ATTACHMENT TO A VEHICLE SEAT BACK

Carl E. Cromwell, 829 Shady Lake Dr., Bedford, Tex. 76021

Filed Nov. 15, 1993, Ser. No. 152,678
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—44 **1 Claim**



1. A folding tray for attachment to a vehicle seat back, comprising:

a base member;

a mounting harness for attaching the base member to the seat back, wherein the mounting harness includes a pair of straps attached between the bottom of the seat back and a headrest on the seat back and wherein a pair of projections are affixed on the base member for insertion into a pair of corresponding holes in the straps of the mounting harness;

a first box, having a bottom, a top, and a plurality of sides, wherein the first box is connected to the base member and can be pivoted between a closed position upward toward the seat back, and an open position downward away from the seat back; and

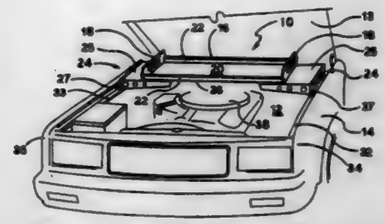
a second box, having a bottom, a top, and a plurality of sides, wherein the second box is connected to the first box and can be moved between a closed position in which the second box is near the seat back, and an open position in which the second box is away from the seat back.

5,443,019

MECHANIC'S WORK TRAY

Garry R. Sheldrick, 1035 N. Batavia, Orange, Calif. 92667

Filed Nov. 18, 1993, Ser. No. 154,139
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—44 **14 Claims**



1. A mechanic's work tray for holding and supporting a plurality of items in a convenient location comprising, in combination:

a substantially rectangular upper section forming a holding tray having a substantially flat bottom surface and a plurality of substantially flat side walls connected to said bottom surface and extending away from said flat bottom surface a predetermined distance;

said substantially flat bottom surface including an underlying lower surface, and said substantially flat bottom surface and said plurality of substantially flat side walls, constructed in one piece from a material selected from the group of metals and plastics, which material has sufficient strength to prevent said substantially flat bottom surface from being bent when a plurality of items are held and supported therein;

at least one handle fixed to said substantially flat bottom surface for transporting said mechanic's work tray;

a pair of separate L-shaped leg means slidably held by a plurality of elongated openings formed therein to said underlying lower surface of said substantially flat bottom surface; and

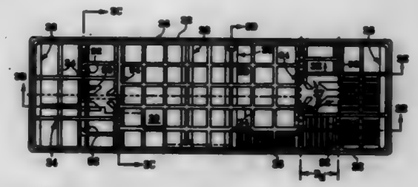
a plurality of guiding and securing means secured to said underlying lower surface of said substantially flat bottom surface and extending into said plurality of elongated openings formed in said L-shaped leg means to allow said L-shaped leg means to be adjustably guided and moved along said elongated openings, with respect to said underlying lower surface of said substantially flat bottom surface.

5,443,020

PLASTIC TABLE STRUCTURE

Mark E. Price, Fort Smith, Ark., assignor to Alltrista Corporation, Muncie, Ind.

Filed Dec. 13, 1993, Ser. No. 166,207
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—115 **4 Claims**



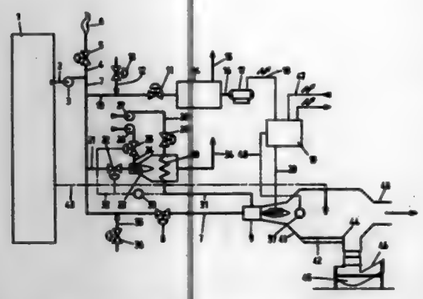
1. A table structure, comprising:

an upper portion comprising a planar upper surface;

a lower plastic portion having a generally downwardly-extending peripheral flange, the peripheral flange of said

lower portion being substantially adjacent to the edges of the planar surface of said upper portion;
a reinforcing core interposed between and enclosed by said upper and lower portions, said lower portion including a network of recesses integrally formed therein for receiving said core;
external support means for supporting the table structure above a floor surface;
means formed in the lower plastic portion for receiving and securing the external support means to said structure; and
load-transferring bracket means disposed and enclosed between said upper and lower portions at locations adjacent said means formed in the lower plastic portion for receiving and securing the external support means, said load-transferring bracket means including a plurality of hangers shaped to engage a portion of the reinforcing core and the lower plastic portion.

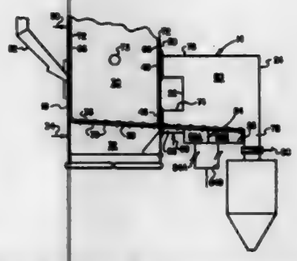
5,443,021
DUMP AND PROCESS FOR VITRIFYING WASTE
Pierre Trepaud, Paris, France, assignor to Trepaud Environnement, Paris, France
Filed Nov. 4, 1993, Ser. No. 147,791
Claims priority, application France, Nov. 12, 1992, 92 13594
Int. Cl.[6] F23G *5/02*
U.S. Cl. 110—219 **8 Claims**



1. A dump comprising a dumping area containing waste producing biogas in combination with a collector arranged to collect biogas produced by the waste, an electroburner arranged to supply heat to a waste melting furnace at the dump site, the collector communicating with the electroburner to fuel the latter with biogas produced by the waste, the waste melting furnace including a combustion chamber arranged to receive waste without prior thermal destructive processing and heat from the electroburner for melting and compacting the waste from the dumping area.

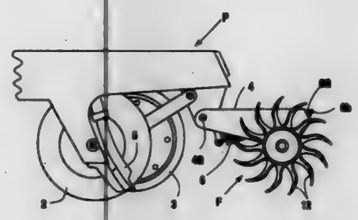
5,443,022
FLUIDIZED BED REACTOR AND METHOD UTILIZING REFUSE DERIVED FUEL.
Justin P. Winkin, Annandale; Walter R. Campbell, Jr., Union, both of N.J.; Stephen J. Goldich, Palmerton, Pa.; John Tang, Robbinsville, N.J.; Iqbal F. Abdulally, Randolph, N.J., and John W. Phalen, Somerville, N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.
Division of Ser. No. 064,776, May 11, 1993, Pat. No. 5,395,596. This application Sep. 29, 1994, Ser. No. 314,832
Int. Cl.[6] F23G *5/00, 7/00*
U.S. Cl. 110—245 **9 Claims**

1. A method of operating a fluidized bed reactor comprising:
introducing a refuse derived fuel including relatively large material and particulate material into a furnace;
passing a portion of said relatively large material and said particulate material from said furnace to a stripper and cooler;
temporarily discontinuing said step of passing after a predetermined mount of said material passes to said stripper and cooler;
stripping some of the particulate material from the relatively large material in said stripper and cooler;



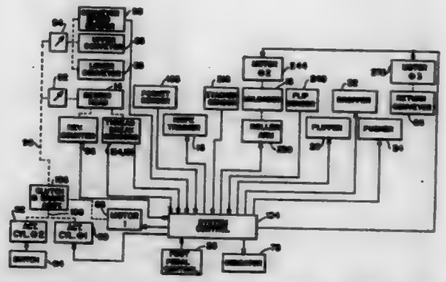
cooling said relatively large particulate material in said stripper and cooler;
then draining said cooled, relatively large material from said stripper and cooler; and
then resuming the step of passing.

5,443,023
SEED FURROW CLOSING APPARATUS FOR AGRICULTURAL PLANTERS
Walter R. Carroll, HCR Box 84A, Lytle, Tex. 78052
Filed Mar. 15, 1993, Ser. No. 33,272
Int. Cl.[6] A01C *5/06*
U.S. Cl. 111—191 **6 Claims**



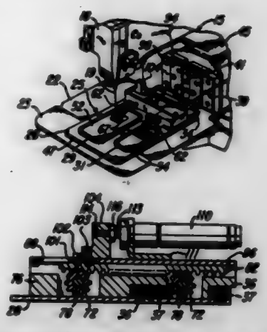
1. In a seed planter having a tractor pulled frame, a seed furrow opener depending from said frame and engagable with the soil to produce a seed furrow having laterally spaced side walls, and means for dropping seed into said open seed furrow at spaced intervals, the improvement comprising:
a subframe extending rearwardly from said frame;
a pair of laterally spaced bearing means on said subframe and spaced rearward of said seed dropping means;
said bearing means having axes oppositely angularly disposed relative to the horizontal;
a pair of rotary forks respectively rotatably mounted by said bearing means and disposed on opposite sides of said open seed furrow;
each of said rotary forks having a hub portion operatively engaged with a respective bearing means and a plurality of radially projecting, peripherally spaced, rigid tines;
said tines constructed and arranged to sequentially penetrate the soil on each side of said open seed furrow by the forward movement of the tractor pulled frame to fragmentize both side walls of the open seed furrow into particles and laterally move soil particles into the open seed furrow to cover the seeds deposited therein.

5,443,024
POCKET HEMMER
Glenn Wethington, Bowling Green; Jimmy D. Claiborne, Scottsville, and Mark R. Strain, Alvaton, all of Ky., assignors to Union Underwear Company, Inc., Bowling Green, Ky.
Filed Oct. 26, 1993, Ser. No. 141,208
Int. Cl.[6] D05B *19/00, 35/02*
U.S. Cl. 112—470.05 **41 Claims**



1. Apparatus for automatically hemming pocket pieces, comprising:
a main conveyor belt assembly located on a conveyor table and including at least two relatively narrow parallel lower conveyor belts and a pair of relatively narrow opposing intermediate conveyor belts comprising an upper and lower belt located between the two lower conveyor belts for holding pocket pieces in place when placed thereon by an operator;
means for biasing the upper intermediate conveyor belt downwardly against the opposing lower intermediate conveyor belt;
a drive motor coupled to the main conveyor belt assembly for moving all of said conveyor belts in unison at the same speed;
means on the main conveyor belt assembly located at a folder section for forming a hem fold in each of said pocket pieces after being placed on said conveyor belt assembly at a lay up section;
a sewing head located at a hemming section and being coupled to the drive motor and operated in synchronism with the main conveyor belt assembly for sewing a length of back binding tape on the hem fold of the pocket pieces;
means located at said hemming section for sensing the back binding tape or a leading and trailing edge of said pocket pieces following the length of back binding tape being sewn thereto;
cutting means located at a separation section for severing the back binding tape and any thread at the leading and trailing edge of each pocket piece;
means located on said main conveyor belt assembly for sensing the speed of said conveyor belts;
means located on said sewing head for sensing the sewing speed of the sewing head;
system control means coupled to said speed sensing means for determining the distance of said leading and trailing edges to said cutting means as a function of the sewing speed and speed of said conveyor belts and thereafter actuating said cutting means following a sensing of the binding tape or the leading and trailing edges of a pocket piece;
means located at an end section of the conveyor table for transferring hemmed pocket pieces off of said main conveyor belt assembly; and
a return conveyor belt assembly located at a return conveyor section adjacent said end section for receiving hemmed pocket pieces from said transferring means and returning the hemmed pocket pieces back to the operator for removal.

5,443,025
MULTIPLE CLAMP SYSTEM FOR A COMPUTER CONTROLLED SEWING MACHINE
Don W. Webb, 8630 Flagler St., Dayton, Ohio 45415
Filed Jan. 4, 1993, Ser. No. 229
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.13 **6 Claims**

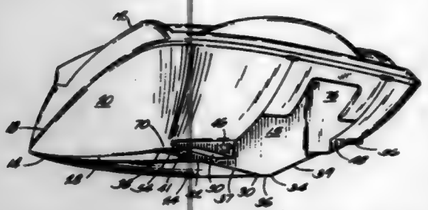


1. A clamp system for use on a computer controlled sewing machine having a surface for supporting a garment and for quickly and successively attaching a set of emblems or other patches of different sizes or shapes to the garment, said clamp system comprising a clamping plate defining a set of openings of different shapes or sizes for receiving the corresponding patches, means supporting said clamping plate for generally vertical movement between an upper position and a lower position for clamping the garment between the clamping plate and the surface, a set of corresponding clamping pads disposed within said openings and adapted to hold the patches against the garment on the surface, each of said clamping pads cooperating with the corresponding said opening to define therebetween a stitching gap extending around each said clamping pad, a corresponding set of inversion arms including U-shaped portions extending laterally across said gaps for supporting said clamping pads, means on said clamping pads for supporting said arms for corresponding rotary oscillatory movement between two positions, means supporting said arms and said clamping pads for generally vertical movement as a unit relative to said clamping plate, means connecting said arms for simultaneous rotation and including a corresponding set of gears connected to said arms, an elongated rack supported for longitudinal movement and engaging said set of gears, and power operated means connected to move said rack longitudinally for oscillating said arms to provide for successively and efficiently stitching the patches onto the garment within said gaps and completely around each of said clamp pads.

5,443,026
BOAT HULL WITH AFT PLANING MEMBERS
Thomas D. Woestadt, Cadillac, Mich.; Clarence E. Blanchard, Kenosha, Wis., and Charles L. Grasle, Columbia, S.C., assignors to Outboard Marine Corporation
Continuation-in-part of Ser. No. 824,250, Jan. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 699,806, May 7, 1991, Pat. No. D. 335,276. This application May 14, 1993, Ser. No. 62,980
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—56 **42 Claims**

1. A hull for a boat comprising a longitudinal axis, a main hull bottom having a series of generally "V" shaped transverse cross sections, a substantially vertical transom including a central portion which extends generally perpendicular to said

axis and which has port and starboard sides, a port outer portion extending forwardly and outwardly from said port side of said central portion, and a starboard outer portion extending forwardly and outwardly from said starboard side of said



central portion, and a pair of after planing members projecting rearwardly of said outer portions of said transom such that said after planing members have bottom surfaces which are in vertically upwardly stepped relation to said main hull bottom immediately in front of said bottom surfaces.

5,443,027

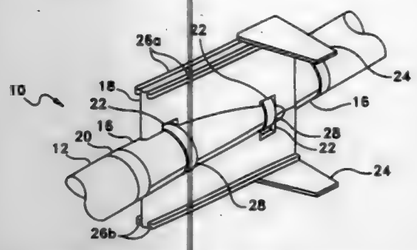
LATERAL FORCE DEVICE FOR UNDERWATER TOWED ARRAY

Norman L. Owsley, Gales Ferry; John F. Law, Oakdale; Robert D. Vanasse, Columbia, all of Conn.; Stephen P. Ebner, Wheaton; Richard K. Knutson, Germantown, both of Md., and Roger C. Norris, Mystic, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 20, 1993, Ser. No. 169,276

Int. Cl.[6] B63B *21/00*

U.S. Cl. 114—244 **20 Claims**



1. A lateral force device for controlling lateral displacement of an underwater towed cable comprising:

a hollow spool having forward and rear annular shoulders and a cylindrical body disposed along said towed cable with said towed cable extending through the hollow portion thereof;

a fuselage having a cylindrical inner surface disposed rotatably about said cylindrical body of said spool and retained horizontally on said spool by said forward and rear annular shoulders of said spool;

a wing fixed to said fuselage, said wing being oriented substantially vertically and angled with respect to the centerline of said fuselage and said spool;

a positively buoyant member disposed on the upper half of said wing/fuselage combination of said lateral force device; and

a negatively buoyant member disposed on the lower half of said wing/fuselage combination of said lateral force device for producing a righting moment in combination with said positively buoyant member when said fuselage rotates from the preselected position.

5,443,028

FISHING BOAT MOUNTABLE ON JET-SKI-TYPE WATERCRAFT AND COMBINATION THEREOF

Robert J. Keen, Rte. 3, Box 284, Decatur, Ala. 35603

Filed Dec. 2, 1994, Ser. No. 352,843

Int. Cl.[6] B63B *21/56*

U.S. Cl. 114—248 **15 Claims**



1. A watercraft comprising:

a U-shaped hull having a bow section and two arm sections, and defining a completely open and unrestricted area for snugly receiving an engine-powered watercraft therein;

said open area defined by a front wall having at least one releasable fastener releasably connectable to a bow portion of the engine-powered watercraft, and two side walls; and

a transom pivotally mounted to said two arm sections of said U-shaped hull, said transom movable between a raised position and a releasably-locking lowered position, and when in said lowered position, said transom is frictionally engageable with a stern portion of the engine-powered watercraft.

5,443,029

BOOKMARK HAVING BODY WITH LOOPED MARKING STRAPS AND SLIDABLY MOUNTED TABS

Arrow Garnet, 856 Upper James St., #20293, Hamilton, Ontario, Canada L9C 7M8

Filed Jun. 29, 1993, Ser. No. 85,398

Int. Cl.[6] B42D *9/00*

U.S. Cl. 116—235 **13 Claims**



10. A bookmark for marking pages in a book, comprising:

(a) a substantially thin flat body having a pair of first and second opposite surfaces and an elongated slot defined in said body near an edge of said body;

(b) fastening means on said first of said opposite surfaces of said body for fastening said body to the book;

(c) a plurality of marking straps connected to and extending from said body, each marking strap having an end passing through said slot in said body about said edge thereof and then secured to an adjacent part of itself so as to define said secured portion as a loop securing said marking strap to said body;

(d) a plurality of slidable tabs, each tab being slidably mounted on and along a different one of said plurality of marking straps in a sufficiently tight fitting relationship therewith such that each said tab can be set at a predetermined position along a respective marking strap for marking a location on a page within the book being marked by said respective marking strap; and

(e) label holding means disposed on said second of said opposite surfaces of said body opposite said adhesive layer and adjacent to said slot.

5,443,030

CRYSTALLIZING METHOD OF FERROELECTRIC FILM

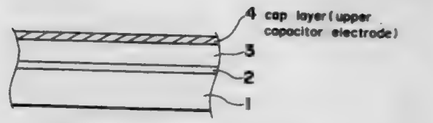
Kazuya Ishihara, Tenri; Shigeo Onishi, Nara, and Masaya Komai, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 998,844, Dec. 30, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,470

Claims priority, application Japan, Jan. 8, 1992, 4-001449; Jan. 30, 1992, 4-014472; Feb. 19, 1992, 4-031853; Feb. 19, 1992, 4-031855

Int. Cl.[6] C30B *1/06*

U.S. Cl. 117—8 **15 Claims**



1. A method of forming a ferroelectric film in a semiconductor device, the method comprising:

forming a lower electrode on a semiconductor substrate;

depositing a ferroelectric substance film on the lower electrode, the ferroelectric substance film including lead and having a crystalline construction;

forming a cap layer on an entire surface of the ferroelectric substance film, the cap layer being selected from a group consisting of platinum, a conductive oxide, and a silicon oxide film;

conducting a thermal heat treatment to convert the crystalline construction of the ferroelectric substance film to a perovskite construction; and wherein

during the thermal heat treatment the cap layer tends to prevent lead from being evaporated from the ferroelectric substance film.

5,443,031

Patent Not Issued For This Number

5,443,032

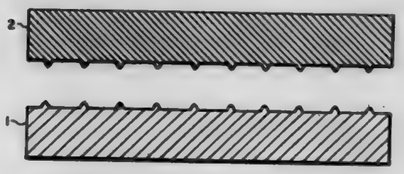
METHOD FOR THE MANUFACTURE OF LARGE SINGLE CRYSTALS

Miroslav Vichr, Emmaus, and David S. Hoover, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 8, 1992, Ser. No. 895,482

Int. Cl.[6] C30B *25/06*

U.S. Cl. 117—84 **24 Claims**



1. A chemical vapor deposition method for producing a single crystal diamond comprising:

(a) depositing a masking layer including a plurality of seed holes spaced part in said masking layer onto a seed plate comprising a plurality of oriented single crystal diamond seed wafers;

(b) placing said seed plate into a chemical vapor deposition reactor;

(c) growing epitaxial diamond through said seed holes and laterally over the masking layer to form a continuous epitaxially grown single crystal diamond layer over said masking layer;

(d) separating the resulting epitaxially grown single crystal diamond layer from said seed plate; and

(e) recovering a single crystal diamond having an area greater then the area of each of the individual seed wafers.

5,443,033

SEMICONDUCTOR CRYSTAL GROWTH METHOD

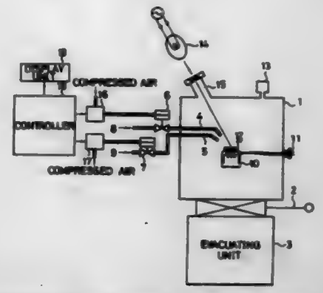
Junichi Nishizawa, 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi-ken, and Hitoshi Abe, Sendai, both of Japan, assignors to Research Development Corporation of Japan; Junichi Nishizawa and Oki Electric Industry Company Limited, all of Japan

Division of Ser. No. 22,690, Mar. 1, 1993, which is a continuation of Ser. No. 794,344, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 234,001, Aug. 12, 1988, abandoned, which is a continuation of Ser. No. 759,111, Jul. 25, 1985, abandoned. This application Mar. 11, 1994, Ser. No. 212,551

Claims priority, application Japan, Jul. 26, 1984, 59-153974; Jul. 26, 1984, 59-153975; Jul. 26, 1984, 59-153976

Int. Cl.[6] C30B *25/14*

U.S. Cl. 117—86 **7 Claims**



1. A method of growing a semiconductor crystal on a substrate through epitaxial growth of molecular layers, comprising the steps of:

heating a substrate within a crystal growth vessel enclosing said substrate;

introducing gases containing component elements of a crystal to be grown on said substrate in said vessel from outside sources via nozzles;

permitting and stopping the introducing of the gases on said substrate by operating valve means in open and closed positions, said valve means being arranged between said nozzles and said sources;

selectively cycling the opening and the closing of said valve means in accordance with a program having data indicative of a number of cycles of opening and closing of the valve means, a time period for introduction of each of the gases, and a time period for exhaustion of each of the gases between introductions of each of the gases, said data being selected based on attaining a desired thickness of the growth layer to be obtained as precise as a single molecular layer;

exhausting residuals of the gases by evacuating an interior of said vessel with an ultrahigh vacuum of 10^{-7} to 10^{-8} Pa even while said control means is selectively cycling the opening and closing of the valve means;

tracing and evaluating progress of the semiconductor crystal growth within the vessel, said step of tracing and evaluating including extending a mass analyzer into said vessel for capturing molecules liberated from said substrate;

absorbing an excess of the gas being introduced, the step of absorbing including employing a first shroud within said vessel, said first shroud having opening aligned with respective openings of said nozzles, employing a second shroud having a detection opening which is aligned with an end of said mass analyzer, arranging said first and second shrouds for absorbing the excess of the gas to allow said mass analyzer to capture only molecules liberated from said substrate, and

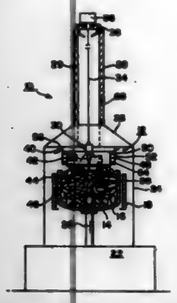
cooling both of said first and second shrouds.

5,443,034

METHOD AND APPARATUS FOR INCREASING SILICON INGOT GROWTH RATE

Scott W. Everts, Torrance, Calif., assignor to Solec International, Inc., Hawthorne, Calif.

Filed Aug. 17, 1994, Ser. No. 292,087
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—208 **6 Claims**



1. A heat shield assembly for a crystal growing furnace which has a crucible, a furnace cover and a feeder assembly located above the crucible, comprising:

an upper heat shield coupled to the furnace cover;

a lower heat shield coupled to said upper heat shield and located above the crucible; and,

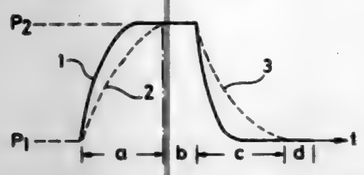
movement means for supporting and moving said lower heat shield between a first position and a second position above the crucible, such that said lower heat shield is located above the crucible in both the first and second positions.

5,443,035

METHOD OF MILKING

Ole Lind, Tumba; Benny Örnerfors, Lycksele, both of Sweden; Hartmut Grimm, Stuttgart, and Karl Rabold, Schilbisch Hall, both of Germany, assignors to Alfa Laval Agri International AB, Tumba, Sweden

PCT No. PCT/SE92/00021, § 371 Date Jul. 22, 1993, § 102(e) Date Aug. 23, 1993, PCT Pub. No. WO92/12625, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 15, 1992, Ser. No. 90,149
Claims priority, application Sweden, Jan. 25, 1991, 9100242
Int. Cl.[6] A01J *5/00*
U.S. Cl. 119—14.02 **5 Claims**



1. A method of milking an animal by using a milking machine having at least one teat cup with a teat cup liner therein for receiving a teat of the animal, a pulsation chamber being defined between the teat cup and the teat cup liner, comprising;

providing means for subjecting the pulsation chamber to a pulsating pressure varying between a first pressure and a sub-atmospheric second pressure, which is lower than said first pressure, each pulsation of said pulsating pressure including a decreasing phase (a), during which said pulsating pressure decreases from said first pressure to said second pressure, and a pressure increasing phase (c), during which said pressure increases from said second pressure to said first pressure,

providing means for subjecting the interior of the teat cup liner to said sub-atmospheric second pressure for extracting milk from the animal's teat, the milking of the animal including in sequence an initial massage period (I), during which the milk flow begins, a main flow period (II), during which the milk flow first increases to a main flow and then amounts to said main flow, a flow decreasing period (III), during which the milk flow first shortly amounts to said main flow and then decreases, and a flow terminating period (IV), during which the milk flow ceases, and

operating the milking machine to change said pulsating pressure during at least one of said pressure decreasing phase (a) and said pressure increasing phase (c) of each pulsation at a slower rate during at least one of said massage period (I), said flow decreasing period (III) and said flow terminating period (IV) than during said main flow period (II).

5,443,036

METHOD OF EXERCISING A CAT

Kevin T. Amies, 255 S. Pickett St., #301, Alexandria, Va. 22304, and Martin H. Abbott, 10549 Assembly Dr., Fairfax, Va. 22030

Filed Nov. 2, 1993, Ser. No. 144,473
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—707 **4 Claims**

1. A method of inducing aerobic exercise in an unrestrained cat comprising the steps of:

(a) directing an intense coherent beam of invisible light produced by a hand-held laser apparatus to produce a bright highly-focused pattern of light at the intersection of the beam and an opaque surface, said pattern being of visual interest to a cat; and

(b) selectively redirecting said beam out of the cat's immediate reach to induce said cat to run and chase said beam and pattern of light around an exercise area.

5,443,037

CANINE SEAT BELT AND HARNESS

M. Cecilia Saleme, 1550 N. San Marcos Rd., Santa Barbara, Calif. 93111

Filed Apr. 25, 1994, Ser. No. 231,660
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—771 **2 Claims**

1. A canine seat belt arranged for mounting to a vehicle seat, with the vehicle seat having a first cushion member obliquely mounted to a second cushion member, and wherein the seat belt comprises:

a flexible first web, only having a first web first buckle and a first web second buckle, with the first web first buckle and the first web second buckle arranged for securement relative to one another in surrounding relationship relative to the vehicle second cushion member, and

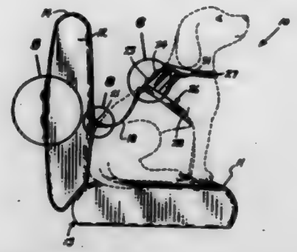
a tether strap, the tether strap having a tether strap first end and a tether strap second end, the tether strap first end including a first loop, the tether strap second end including a second loop, and

the first loop including a rigid first "D" ring slidably receiving the first tether strap first loop therethrough, and a rigid second "D" ring slidably receiving a tether strap second loop therethrough, and

the first "D" ring and slidably receiving the first web therethrough, with the second "D" ring having a hook member secured thereto, and

a harness member, the harness member including a first strap spaced from and parallel to a second strap in a coextensive relationship, with a central connecting web extending fixedly, medially, and orthogonally between the first strap and the second strap, and the central connecting web having a central web strap, with the central web strap further including a third "D" ring slidably receiving the central web strap therethrough, and the central web strap having a central web strap first end and a central web strap second end secured to the central connecting web, with the harness member arranged for securement about an animal member;

a first outer connecting web extends in a parallel, spaced relationship relative to the central connecting web, with the first outer connecting web secured to the first strap and the second strap to a first side of the central connecting web, and a second outer connecting web secured to the first strap and the second strap spaced from the central connecting web relative to a second side of the central connecting web, with the central connecting web, the first outer connecting web, and the second outer connecting web arranged in a parallel relationship relative to one another.

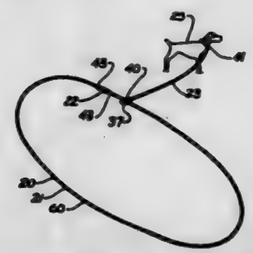


5,443,038

ADAPTABLE PET GUIDE ASSEMBLY

Frank Marino, 9 Hazeltine Rd., Upton, Mass. 01568

Filed Oct. 11, 1994, Ser. No. 321,005
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—784 **2 Claims**



1. A device for guiding a pet around a continuous-loop path, adaptable to paths of various lengths, and comprising:

a cable portion having pre-assembly and post-assembly states, and including:

a flexible linear cable having first and second ends;

first and second connectors, said first connector engaging said cable toward said first end and adapted to move freely longitudinally therealong during said pre-assembly state, and said second connector engaging said cable adjacent said second end, said connectors being adapted for connection to each other during said post-assembly state to align, abut, and secure cable ends therein and to form a connection assembly, said connectors being separated along said cable by a variable distance during said pre-assembly state,

a leash portion having a first leash end engaging said cable and adapted to move freely longitudinally therealong and freely over said connection assembly during said post-assembly state, and a second leash end removably attachable to said pet;

wherein, during said pre-assembly state said variable distance of separation along said cable may be shortened, by moving said first connector longitudinally towards said second connector, to substantially equal the length of said continuous-loop path, and truncation of extending cable between the first connector and the first cable end may provide a truncated cable length substantially equal to said continuous-loop path length, such that assembly of said connectors may align, abut and secure said second and truncated cable ends and thereby form a continuous loop along said continuous-loop path and provide a continuous-loop guide for said pet when said pet is attached to said second leash end.

5,443,039

RELEASABLE CAT COLLAR

Bernard Suchowski, Marlboro, N.J., assignor to The Hartz Mountain Corp., Harrison, N.J.

Continuation of Ser. No. 192,169, Feb. 4, 1994, abandoned. This application Dec. 14, 1994, Ser. No. 357,061
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—865 **5 Claims**



1. A collar for a cat when trying to free itself from an obstruction caught in the collar, which collar is releasable if the collar is caught on a dangerous protrusion, such as a tree branch or fence portion, thereby preventing accidental choking of the cat;

said collar comprising a receptacle buckle having a male portion insertable within a female portion, said female portion having a top cantilevered ledge portion and a lower cantilevered ledge portion bearing a covered recess therebetween, said female portion having therein an interior rounded tongue snap portion within said covered recess, said interior rounded tongue snap portion engageable between corresponding prongs of a forked element of said male portion, said forked element adapted to receive said rounded tongue snap portion within said covered recess to lock said buckle in place upon the neck of the cat;

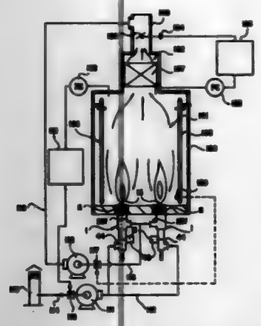
said forked element of said collar separable from said receptacle when the cat exerts above normal tensional forces upon said collar.

5,443,040

PIPESTILL HEATER AND METHOD FOR CONTROLLING COMBUSTION IN PIPESTILL HEATER

Hitoshi Kaji, and Toshiaki Yoshioka, both of Kanagawa, Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Filed Dec. 28, 1994, Ser. No. 365,409
Claims priority, application Japan, Dec. 28, 1993, 5-337861; Dec. 20, 1994, 6-316741
Int. Cl.[6] F22B 5/00
U.S. Cl. 122—13.1 20 Claims



1. A method for controlling combustion in a pipestill heater including a radiation section including a furnace wall and arranged for heating process fluid flowing through a heating tube path arranged therein mainly by radiative heat transfer, at least one combustion device arranged on the furnace wall of the radiation section, a convection section having a preheating tube path arranged therein and connected to the heating tube path for preheating the process fluid flowing through the preheating tube path by exhaust gas discharged from the combustion device, and a gas discharge path for discharging exhaust gas passing through the convection section, comprising the steps of:

using a heat recovery type combustion apparatus as said combustion device;

said heat recovery type combustion apparatus including a heat exchanger and a burner;

said heat exchanger including at least one air-pervious regenerator, an oxidizing agent passage for feeding an oxidizing agent through at least a part of said regenerator to said radiation section, and an exhaust passage for discharging a part of exhaust gas discharged from said radiation section through at least a part of said regenerator, to thereby heat said regenerator by a part of the exhaust gas, resulting in preheating the oxidizing agent by the regenerator thus heated;

flowing the exhaust gas through both said gas discharge path and exhaust passage; and

determining a ratio between the amount of exhaust gas flowing through said gas discharge path and the amount of exhaust gas flowing through said exhaust passage of said combustion device so that a maximum tube wall temperature of said heating tube path is below a heating tube design temperature.

5,443,041

HOT WATER TANK ASSEMBLY

B. Wayne Folsom, 3304 Sharer Rd., Tallahassee, Fla. 32312, and Michael Truchon, Rte. 1, Box 123, Chancellor, Ala. 36316

Filed Dec. 23, 1993, Ser. No. 172,541
Int. Cl.[6] F24H 1/18; F22K 37/36
U.S. Cl. 122—379 6 Claims

1. A hot water tank assembly comprising:

a cylindrical housing;

said cylindrical housing includes a top area, a middle area and a bottom area;

said cylindrical housing has an enclosed bottom end and an enclosed top end;

said cylindrical housing includes an inner metal layer and an outer metal layer;

an insulating layer is located between said inner metal layer and said outer metal layer;

a water inlet valve, a water outlet valve and a safety valve are located on said enclosed top end of said cylindrical housing;

an access port;

said access port is located on said bottom area of said cylindrical housing;

said access port includes a first opening, a second opening, a metal frame, a gasket, a first cover, and a second cover;

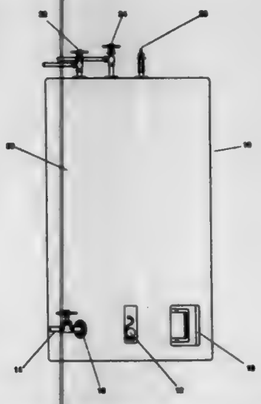
said first opening is located in said inner metal layer of said cylindrical housing;

said first opening has a perimeter;

said metal frame surrounds said perimeter of said first opening;

said gasket is located on said metal frame;

said gasket has the same shape, size, and configuration as said metal frame;



said first cover is attachable to and detachable from said inner metal wall, said metal frame, and said gasket by a first attachment means;

said second opening is located in said outer layer of said cylindrical housing and said insulating layer;

said second opening is larger than said first opening;

said second cover is attachable to and detachable from said outer metal layer by a second attachment means;

a heating element;

said heating element is provided in said bottom area of said cylindrical housing;

an insulating flange;

said insulating flange is located on said bottom area of said cylindrical housing;

said insulating flange is located on said outer metal layer of said cylindrical housing;

said insulating flange has an aperture and a plurality of alits on provided on said insulating flange and surround said aperture;

a water drain device;

said water drain device is received in said aperture of said insulating flange;

said water drain device has a first end and a second end;

said first end is received in said insulating flange;

said second end is located outside said cylindrical housing;

said first end of said water drain device is threaded and is

adapted to be removable from and attachable to said cylindrical housing for enabling a light source to be inserted into said aperture of said insulating flange for interiorly lighting said bottom area of said inner metal layer;

a valve is located between said first end and said second end; and

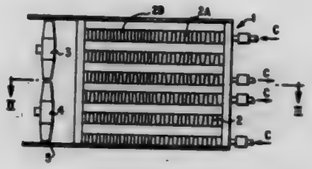
an actuation means for opening or closing said valve.

5,443,042

COOLING DEVICE FOR INTERNAL-COMBUSTION ENGINE

Guenther Kiefer, Markdorf, Germany, assignor to MTU Motoren und Turbinen Union, Friedrichshafen, Germany

Filed Jul. 11, 1994, Ser. No. 272,757
Claims priority, application Germany, Jul. 10, 1993, 43 23 176.4
Int. Cl.[6] F01P 7/10
U.S. Cl. 123—41.49 17 Claims



1. A cooling device for an internal combustion engine comprising:

a radiator through which a coolant flows,

at least one cooling air blower disposed at one lateral side of the radiator for producing airflow in a blower direction,

an air flow guide housing for guiding flow of air between the radiator and the at least one cooling air blower while deflecting the air flow direction, and

a flow grating disposed on the radiator in the cooling air flow, which flow grating exhibits a flow resistance to the cooling air which is greater in areas close to the at least one cooling air blower than in areas remote from the at least one cooling air blower.

5,443,043

INTERNAL COMBUSTION ENGINE WITH VARIABLE COMPRESSION, PROVIDED WITH REINFORCEMENTS OF THE CRANKCASE SECTION

Per-Inge Nilsson, Vagnhärad, and Lars Bergsten, Järna, both of Sweden, assignors to Saab Automobile Aktiebolag, Trollhattan, Sweden

PCT No. PCT/SE91/00818, § 371 Date Jun. 3, 1993, § 102(e) Date Jun. 3, 1993, PCT Pub. No. WO92/09799, PCT Pub. Date Jun. 11, 1992
PCT Filed Dec. 3, 1991, Ser. No. 70,354
Claims priority, application Sweden, Dec. 3, 1990, 9003835
Int. Cl.[6] F02B 75/04
U.S. Cl. 123—48 C 6 Claims

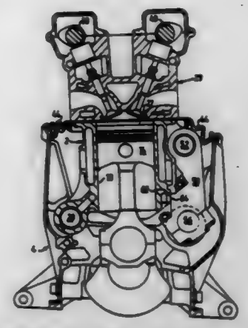
1. An internal combustion engine having a variable compression ratio, which comprises:

a crankcase section having upper and lower portions, the lower portion having opposed lateral parts having respective first and second opposed inner surfaces;

a cylinder section pivotally mounted on the crankcase section at the upper portion thereof via an inclination shaft and an eccentric shaft, the pivotal mounting of the cylinder section allowing variation of the compression ratio and subjecting the crankcase section to high compressive and bending stresses;

a crankshaft;

bearing means for mounting the crankshaft to the crankcase section at the lower portion thereof between the opposed inner surfaces of the opposed lateral parts, the bearing means including bearing cap means located beneath the crankshaft and extending transversely thereof to first and second end elements in full contact respectively with the first and second opposed inner surfaces of the opposed lateral parts of the lower portion of the crankcase section so as to provide a closed structure of the crankcase section and the bearing cap means;



vertically extending fastening means for securing the bearing cap means to the crankcase section; and

horizontally extending fastening means for reinforcing the crankcase section to compensate for the high compressive and bending stresses resulting from the pivotal mounting of the cylinder section by fastening first and second opposed inner surfaces of the lateral parts of the lower portion of the crankcase section.

5,443,044

OUTBOARD MOTOR WITH FOUR STROKE ENGINE

Russell J. VanRens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 29, 1994, Ser. No. 235,502
Int. Cl.[6] F02F 7/00; B63H 20/14
U.S. Cl. 123—195 HC 11 Claims



1. An outboard motor comprising a steerable and tiltable propulsion unit including a lower unit including a vertically extending drive shaft housing, a drive shaft extending vertically in said drive shaft housing and located in a plane extending in a fore and aft direction, and a propeller shaft driven by said drive shaft and extending in said fore and aft plane, and a powerhead comprising a four stroke engine including a vertically extending crankshaft, a cylinder extending horizontally

and radially from said crankshaft and in a vertical cylinder plane other than said fore and aft plane, a camshaft extending generally vertically in said fore and aft plane and in driving connection with said drive shaft, and means drivingly connecting said crankshaft and said camshaft for rotatably driving said camshaft at a rotational speed which is one-half of the rotational speed of said crankshaft.

5,443,045

TWO-STROKE FUEL-INJECTED INTERNAL COMBUSTION ENGINE

Pierluigi Marconi, Rimini, Italy, assignor to Bimota, S.P.A., Rimini, Italy

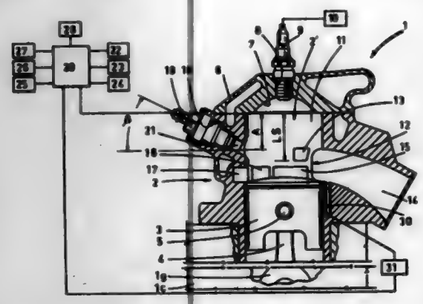
PCT No. PCT/IT93/00035, § 371 Date Dec. 23, 1993, § 102(e) Date Dec. 23, 1993, PCT Pub. No. WO93/22545, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 28, 1993, Ser. No. 167,985

Claims priority, application Italy, Apr. 24, 1992, BO92A0153

Int. Cl.[6] F02B *3/00*

U.S. Cl. 123—299 **40 Claims**



1. In a two-stroke internal combustion engine, of the type comprising a cylinder exhibiting an internal cavity of substantially cylindrical shape, a reciprocating piston accommodated slidably and coaxially within the cavity, a cylinder head connected to a first end of the cylinder, the cylinder head having an inwardly directed face defining a combustion chamber in communication with the cavity, and at least one spark plug supported by the cylinder head, the at least one spark plug having an ignition electrode exposed to the combustion chamber, a fuel injection apparatus comprising:

at least one injector passing through a wall of the cylinder;

a fuel spray nozzle disposed on said at least one injector substantially facing a first area of the cavity; and,

a first electronic control unit for cyclically activating the at least one injector; and,

a first pair of injectors having axes positioned to intersect the axis of the cylinder at an angle β of between 15° and 35° in relation to a plane normal to the axis of the cylinder and compassing an angle α of between 20° and 340° .

5,443,046

EFFICIENTLY PUMPED FUEL SUPPLY SYSTEM

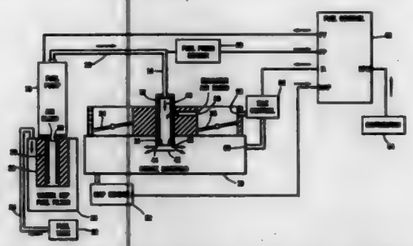
Brian R. White, Stillwater, Okla., assignor to Brunswick Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 104,380, Aug. 9, 1993, Pat. No. 5,394,846, and a continuation-in-part of Ser. No. 104,439, Aug. 9, 1993, Pat. No. 5,400,750, and a continuation-in-part of Ser. No. 104,440, Aug. 9, 1993, Pat. No. 5,408,971. This application Jan. 13, 1994, Ser. No. 180,626

Int. Cl.[6] F02D *3/02*; F02M *37/08*

U.S. Cl. 123—438 **8 Claims**

1. A method for supplying fuel to an internal combustion engine having an intake manifold, comprising providing a continuation flow fuel injector with an inlet receiving fuel, and an outlet supplying fuel to said intake manifold, said fuel injector outlet being in continuous communication with said fuel injector inlet, providing an electric fuel pump supplying fuel to said fuel injector inlet, and energizing said fuel pump with a variable duty cycle to vary the pumped volume output of said pump according to engine fuel requirements, varying said duty cycle to energize said pump to pump substantially only the amount of fuel required by said engine, such that at low engine speed, said pump is energized a lower percentage of the time



than at high engine speed, and such that fuel flow through said fuel injector is continuous, but energization of said pump is not, such that said pump is not pumping at full capacity when unneeded, supplying fuel from said fuel injector inlet to said fuel injector outlet along a longitudinal axis, and emitting fuel from said fuel injector outlet transversely of said longitudinal axis.

5,443,047

FUEL INJECTION SYSTEM

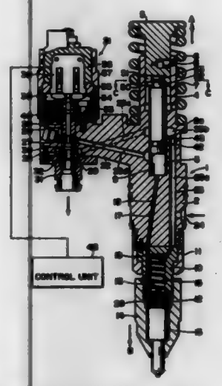
Hiroshi Ishiwata; Takashi Ohishi; Atsushi Ueda, and Naotake Ohi, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 224,782

Claims priority, application Japan, Apr. 9, 1993, 5-107705; Jul. 23, 1993, 5-202951

Int. Cl.[6] F02M *41/14*; F02D *41/40*

U.S. Cl. 123—446 **13 Claims**



1. A fuel injection system, comprising:

an injection pump unit comprising an injection pump main body having a barrel formed therein, a plunger inserted into said barrel such that said plunger slides freely therein, a compression space in a region enclosed by said barrel and said plunger, a high pressure path for conducting fuel from said compression space and a fuel supply path for supplying fuel from a fuel intake to said compression space;

a solenoid valve unit located in said fuel supply path of said fuel injection pump unit, said solenoid valve unit comprising a plug valve and a valve seat for adjusting the state of communication between a compression space side of said fuel supply path and a fuel intake side of said fuel supply path and a solenoid for operating said plug valve, the operation of said plug valve being controlled by an external control signal supplied to said solenoid;

a nozzle unit connected with said high pressure path for supplying fuel from said high pressure path to an engine; and

a leaking means for allowing communication between said compression space and said fuel supply path in correspondence with the state of said plunger, wherein said external control signal supplied to said solenoid comprises a main pulse that corresponds to a main injection and a sub pulse that corresponds to a small quantity injection that occurs prior to said main pulse, wherein the pulse width of said sub pulse is set longer than the time required for said plug valve to become seated on said valve seat and communication between said compression space and said fuel supply path is cut off after said sub pulse is generated and before said main pulse is generated.

5,443,048

FUEL PUMPING APPARATUS

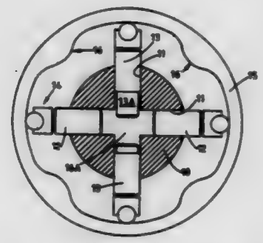
Stuart W. Nicol, London; Peter A. G. Collingborn; Christopher Stringfellow, both of Kent, and Ronald Phillips, Middlesex, all of England, assignors to Lucas Industries Public Limited Company, England

Filed Jul. 20, 1994, Ser. No. 277,877

Claims priority, application United Kingdom, Jul. 23, 1993, 9315342

Int. Cl.[6] F02M *41/00*; F04B *19/00*

U.S. Cl. 123—450 **3 Claims**



1. A rotary distributor type fuel pumping apparatus for supplying fuel to an internal combustion engine, the apparatus comprising a rotary distributor member mounted for rotation in a housing, at least three pumping plungers mounted in radial drillings respectively formed in the distributor member, the axes of said drillings lying in a common radial plane and the drillings at their inner ends intersecting to form a common pumping space, an annular cam ring surrounding the distributor member and having a plurality of cam lobes formed on its internal peripheral surface whereby during rotation of the distributor member inward movements will be imparted to the pumping plungers to displace fuel from the pumping space to an outlet, means for supplying fuel to the pumping space and one of said plungers being longer than the remaining plungers so that at its outermost position the inner end of said one plunger lies in the paths of movement of the remaining plungers.

5,443,049

FUEL PUMPING APPARATUS

Robin C. Wall, Rochester, England, assignor to Lucas Industries Public Limited Company, England

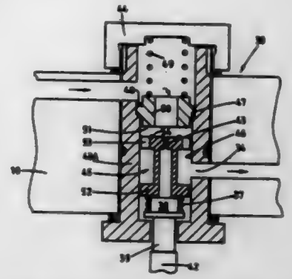
PCT No. PCT/GB93/00193, § 371 Date Aug. 2, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO93/17236, PCT Pub. Date Sep. 2, 1993

PCT Filed Jan. 29, 1993, Ser. No. 256,912

Claims priority, application United Kingdom, Feb. 19, 1992, 9203636

Int. Cl.[6] F02M *41/14*, *63/02*

U.S. Cl. 123—458 **5 Claims**



1. A fuel injection pumping apparatus for supplying fuel to a compression ignition engine comprising a bore (12), a pumping plunger (13) reciprocable within the bore, the bore and plunger defining a pumping chamber, an outlet passage (15) communicating with the pumping chamber and through which during inward movement of the pumping plunger, fuel can be displaced to an associated engine, passage means (19) through which fuel can flow from a source (20) of fuel under pressure to the pumping chamber to completely fill the pumping chamber during outward movement of the pumping plunger, an electromagnetically operable spill valve (22) including an actuating member (42), for spilling fuel from the pumping chamber during the inward movement of the plunger (13) thereby to control the quantity of fuel supplied to the associated engine, characterised by a flow inhibit valve (30) incorporated into said passage means (19), said flow inhibit valve including a valve member (36, 45) movable to a closed position to prevent flow of fuel through said passage means, and means (38) movable by said actuating member (42) for controlling the setting of said valve member whereby when the spill valve is in the closed position the valve member (36, 45) will move to the closed position.

5,443,050

ENGINE CONTROL SYSTEM

Mitsuo Hitomi; Jaseou Sasaki, and Tadayoshi Kaide, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 1, 1993, Ser. No. 12,067

Claims priority, application Japan, Jan. 31, 1992, 4-042117; Feb. 4, 1992, 4-047966

Int. Cl.[6] F02D *43/00*

U.S. Cl. 123—492 **32 Claims**

1. An engine-control system, comprising:

load detecting means for detecting a load of the engine;

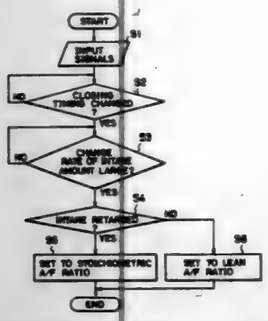
valve timing changing means for changing a timing for closing at least an intake valve;

air-fuel ratio adjusting means for adjusting an air-fuel ratio of mixed gases to be fed to the engine;

first control means for controlling said valve timing changing means in response to output from said load detecting means to thereby retard the timing for closing the intake

valve in a region where the load is lower relative to the closing timing where the load is higher; and

second control means for controlling said air-fuel ratio adjusting means in response to output from said load detecting means to thereby make the air-fuel ratio rich in the region where the load is lower relative to the fuel-air ratio where the load is higher.

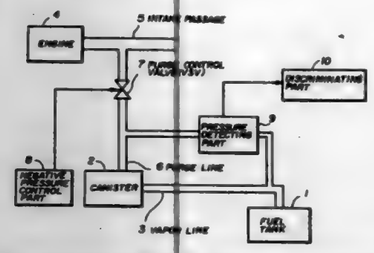


5,443,051

APPARATUS FOR DETECTING A MALFUNCTION IN AN EVAPORATED FUEL PURGE SYSTEM

Takayuki Otsuka, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 22, 1994, Ser. No. 200,095
Claims priority, application Japan, Feb. 26, 1993, 5-038654
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—520 12 Claims



1. An apparatus for detecting a malfunction in an evaporated fuel purge system of an internal combustion engine, said system including a fuel tank for containing fuel, a canister for absorbing evaporated fuel, a vapor line through which evaporated fuel from the fuel tank is supplied to the canister, a purge line through which the evaporated fuel of the canister is supplied to an intake passage of the engine, and a purge control valve arranged in the purge line for controlling a flow of the evaporated fuel supplied from the canister to the intake passage through the purge line, said apparatus comprising:

negative pressure control means for switching on the purge control valve to open the purge line between the canister and the intake passage during a malfunction detecting process time, and for switching off the purge control valve at the end of the process time, so that the purge line and the vapor line are subjected to a negative pressure of the intake passage;

pressure detecting means, arranged in a pressure line connected to the purge line and to the vapor line, for measuring a purge line pressure within the system, and for outputting the measured pressure; and

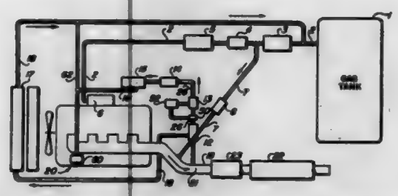
discriminating means for detecting whether or not a malfunction in the system has occurred, based on the measured purge line pressure supplied from the pressure detecting means, for calculating a continuous time during which the measured pressure is continuously lower than a reference pressure value within the process time, and for detecting whether or not the continuous time exceeds a reference time value within the process time.

5,443,052

FUEL DELIVERY SYSTEM

Steven N. Aalis, 10012 N. C475, Wildwood, Fla. 34785

Filed Dec. 22, 1994, Ser. No. 361,754
Int. Cl.[6] F02M *21/02*; F02B *43/08*
U.S. Cl. 123—525 8 Claims



1. A fuel delivery system for an internal combustion engine of an automobile of the type including a fuel tank, a main fuel line for transmitting fuel from the fuel tank to the combustion engine and an exhaust line, said apparatus comprising:

an alternate fuel line connected to the main fuel line and leading to the exhaust line,

an enlarged exhaust housing fitted in line along the exhaust line and defining a heat exchanging chamber,

an injector nozzle interconnecting to said alternate fuel line and said enlarged exhaust housing, said injector nozzle being structured to disperse, in a sprayed array, fuel flowing through said alternate fuel line,

first valve means fitted in line along said alternate fuel line between said main fuel line and said injector nozzle, said first valve means being operable between an open position and a closed position to selectively control flow of the fuel through said alternate fuel line,

a corrugated steam line extending through said heat exchanging chamber and interconnecting at one end to said injector nozzle, wherein fuel dispersed from said injector nozzle is vaporized by heat transfer from hot exhaust gas in said heat exchanging chamber,

a steam trap interconnected to an opposite end of said corrugated steam line, externally of said heat exchanging chamber, said steam trap being structured and disposed to separate the vaporized fuel from liquid fuel condensation,

a liquid petroleum gas carburetor for receiving and directing the vaporized fuel passing therethrough into the combustion engine,

a vapor line connected between said steam trap and said liquid petroleum gas carburetor for transmitting the vaporized fuel therebetween,

second valve means interconnected in line along said vapor line and being operable between an open position and a closed position to selectively control flow of the vaporized fuel through said vapor line,

pressure sensing means along said vapor line between said steam trap and said second valve means for measuring pressure of the vaporized steam therein,

a pressure reducer interconnected in line along said vapor line between said second valve means and said liquid petroleum gas carburetor for controlling and regulating pressure of the vaporized steam being delivered to said petroleum gas carburetor,

a high pressure fuel pump along said main fuel line for pumping the fuel through said alternate fuel line at a pressure in the range of 50 psi to 70 psi,

an auxiliary radiator interconnected to said steam trap for receiving and subsequently cooling the liquid fuel condensation, and

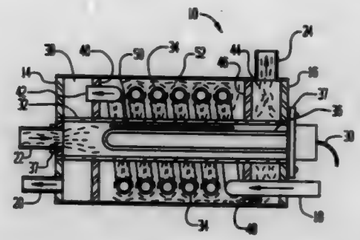
a return fuel line interconnecting between said auxiliary radiator and said main fuel line for returning cooled, unvaporized fuel to the main fuel line.

5,443,053

FUEL HEATER

Jack E. Johnson, 2808 27th St. S., Grand Forks, N. Dak. 58103

Filed Jul. 27, 1993, Ser. No. 97,702
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—557 33 Claims



1. Apparatus for heating fuel for an engine having a fluid medium circulating system and a fuel delivery system, the apparatus comprising:

chamber means for receiving fluid medium from said engine;

manifold means disposed within said chamber means for introduction of fluid medium from said engine into said chamber means;

connection means for connecting said manifold means and said chamber means to said fluid medium circulating system for said engine;

heat exchanger means disposed in said chamber means for controlling fuel flow through said chamber means; and

connection means for connecting said heat exchanger means to said fuel delivery system for said engine;

said manifold means including a plurality of openings wherein at least one opening of said plurality of openings opens in a different direction than at least one other opening of said plurality of openings and said heat exchanger means extends around said manifold means, whereby introduction of fluid medium from said engine into said chamber means by said manifold means occurs in multiple directions thereby creating a generally uniform turbulence in fluid medium contained within said chamber means thereby improving transfer of heat from said fluid medium to said fuel.

5,443,054

SUPERCHARGING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masao Tateno, and Masao Terasoka, both of Tochigi, Japan, assignors to Tochi Fuji Sangyo Kabushiki, Japan

Filed Mar. 28, 1994, Ser. No. 218,672
Claims priority, application Japan, Mar. 29, 1993, 5-069652
Int. Cl.[6] F02B *39/04*; F04D *29/04*
U.S. Cl. 123—559.1 9 Claims

1. A supercharging device for an internal combustion engine comprising:

a casing;

an air compressor with an impeller and an impeller shaft, said impeller shaft being rotatively driven by the driving force of the engine to pressurize the intake air to supply the air to the engine;

a planetary gear type of speed increasing gear device with an internal gear, a pinion gear and a sun gear, said internal gear transmitting the driving force of the engine, said pinion gear being rotatably supported on the casing, and said sun gear being formed on the impeller shaft of the air compressor;

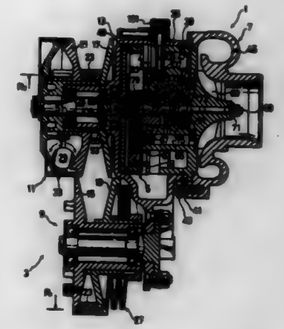
a pair of sliding bearings positioned at both sides of the sun gear in the axial direction thereof;

a bearing holder with a first portion, a second portion, and a third portion along the axial direction of the impeller shaft, pressed into the casing and supporting the impeller shaft through the sliding bearings, said second portion being located around the sun gear and the pinion gear in the radial direction thereof, said third portion extending from the second portion to one end of the impeller shaft on which the impeller is provided; said first portion extending from the second portion to the other end of the impeller shaft;

an oil channel provided in the bearing holder and guiding lubricating oil to the sliding bearings to form an oil film damper;

a thrust washer arranged between the sliding bearings to receive the thrust force of the impeller shaft; and

retaining means positioning the bearing holder and the thrust washer on the casing in the axial direction of the impeller shaft.



5,443,055

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Andreas Schneider, Sindelfingen, and Reinhard Gantenbein, Sersheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

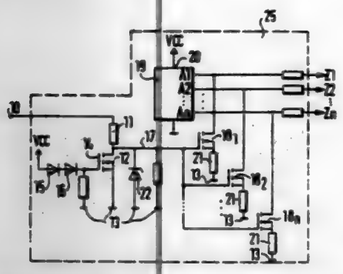
PCT No. PCT/DE92/00949, § 371 Date Jun. 7, 1994, § 102(e) Date Jun. 7, 1994, PCT Pub. No. WO/9312341, PCT Pub. Date Jun. 24, 1993
PCT Filed Nov. 13, 1992, Ser. No. 244,671
Claims priority, application Germany, Dec. 7, 1991, 41 40 416.5
Int. Cl.[6] F02P *3/06*
U.S. Cl. 123—602 8 Claims

1. An ignition system for internal combustion engines, the ignition system comprising:

an ignition control unit with at least one output for triggering at least one ignition final stage;

at least one voltage-controlled switch for selectively inhibiting the at least one output of the ignition control unit by coupling the at least one output to a ground; and

a switch control sub-circuit for controlling the at least one voltage-controlled switch to inhibit the at least one output



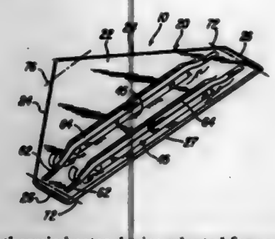
of the ignition control unit as a function of a supply voltage supplied to the control unit.

5,443,056

EXOTHERMIC HEATER DEVICE

W. Stan Smith, Florence, Ky.; Robert D. Deutsch, Wyoming, Ohio; Fred H. Hockney, Fort Thomas, Ky., and Angela Garland, Fairfield, Ohio, assignors to Zestotherm Inc., Cincinnati, Ohio

Filed May 16, 1994, Ser. No. 243,387
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263.05 21 Claims



1. An exothermic heater device adapted for accelerating the cure of epoxy adhesive around a pipe joint, said device comprising liquid impervious flexible panels having corresponding portions connected together to form an envelope defining an internal chamber, at least one heater unit disposed within said chamber and including a mixture of liquid actuated exothermic materials, said envelope having a configuration providing for wrapping said envelope around a joint within either a horizontal pipe or a vertical pipe, means for securing said envelope to either a horizontal pipe or a vertical pipe and including at least one elongated strip of pressure sensitive adhesive attached to said envelope, said strip being positioned to be wrapped around said pipe with said envelope, a removable protective strip overlying said adhesive strip, and said envelope having means for defining an opening within an upper portion of said envelope for adding liquid to said chamber when said envelope is attached to either a horizontal pipe or a vertical pipe.

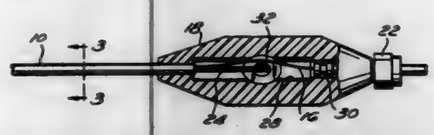
5,443,057

STERILIZABLE ENDOSCOPE AND METHOD FOR CONSTRUCTING THE SAME

J. Charles Elmore, Mission Viejo, Calif., assignor to International Bioview, Inc., Irvine, Calif.

Filed Oct. 12, 1993, Ser. No. 135,895
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—133 17 Claims

1. A gas sterilizable endoscope comprising:
a) a rigid cannula having proximal and distal ends;
b) a fiber optic imaging bundle disposed within said cannula;
c) said fiber optic imaging bundle being attached to the proximal and distal ends of said cannula; and



d) a bow formed in said fiber optic imaging bundle such that tensile stress formation in the fiber optic imaging bundle is mitigated during heat sterilization.

5,443,058

BLADE FOR TELESCOPIC LARYNGOSCOPE

Yon D. Ough, 2350 E. Ridge Rd., Beloit, Wis. 53511

Continuation-in-part of Ser. No. 156,003, Nov. 22, 1993, which is a continuation-in-part of Ser. No. 564,375, Aug. 8, 1990, Pat. No. 5,263,472, which is a continuation-in-part of Ser. No. 357,976, May 26, 1989, abandoned. This application Jan. 24, 1994, Ser. No. 186,445
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[6] A61B *1/26*
U.S. Cl. 600—188 8 Claims



1. A telescopic laryngoscope blade comprising:
a body shaped for insertion through a patient's mouth to depress the patient's tongue during endotracheal intubation;
said body having a connecting end adapted for connecting said blade to a laryngoscope handle, and a distal end extending into the hypopharynx of the patient being intubated, said body being shaped to elevate the epiglottis and to expose the glottic opening of the patient for direct visual observation alongside the blade during routine normal intubation;
an endoscope disposed along said body;
said endoscope including an eyepiece at one end of an endoscope barrel, and a front lens at an end of said barrel opposite said eyepiece and near said distal end of said blade body during use, said front lens being at least a 30 degree lens adapted to expose for indirect observation regions generally above and in front of said front lens; and
a retention device affixed to said body and being adapted for slidably receiving said endoscope therein, allowing said endoscope to be slidingly extended and withdrawn relative to said distal end; and
said body being shaped for shielding the front lens from tissues surrounding the endoscope during use.

5,443,059

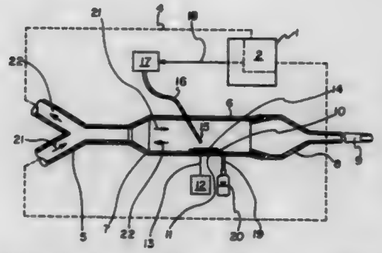
ULTRASONIC ATOMIZER WITH A METERING UNIT

Jochim Koch, Ratzeburg, Germany, and Bambang Oetomo, Groningen, Netherlands, assignors to Dragerwerk AG, Lubeck, Germany

Filed Jan. 14, 1994, Ser. No. 183,046
Claims priority, application Germany, Jan. 15, 1993, 43 00 880.1
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.16 9 Claims

1. A device for generating an aerosol, comprising:
a tube for connection to a patient;

a Y-piece;
a respiration gas line extending between said tube and said Y-piece and accommodating two way flow of respiration gas;
a respirator including respiration gas delivery means for performing inspiration and expiration strokes for artificial respiration of a patient, said respirator including a connection part including an inspiration gas line, an air expiration gas line and said Y-piece, said inspiration line being connected to one branch of said Y-piece, said expiration line being connected to another branch of said Y-piece and said respiration gas line being connected to a central part of said Y-piece;



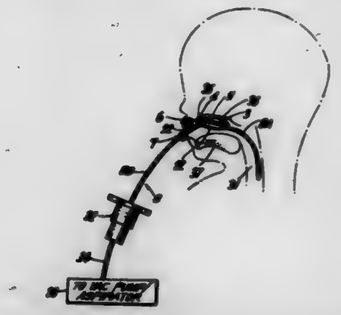
an ultrasound generator unit including a vibrating surface, said vibrating surface being provided in an interior space of said respiration gas line in an immediate vicinity of said Y-piece, said vibrating surface being induced to perform ultrasonic vibrations;
a metering line extending into said respiration gas line at an opening in said respiration gas line, said opening being at a level of and at a spaced location from said vibrating surface; and
a metering unit connected to said metering line for metering a liquid to be atomized onto said vibrating surface, said metering unit being arranged outside of said respiration gas line.

5,443,060

SYSTEM FOR SUPPORTING ENDOTRACHEAL TUBES IN PEDIATRIC PATIENTS AND METHOD OF USING SAME

Nadarasa Visveshwara, and Roy Oto, both of Fresno, Calif., assignors to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Jan. 5, 1994, Ser. No. 177,535
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—200.26 18 Claims



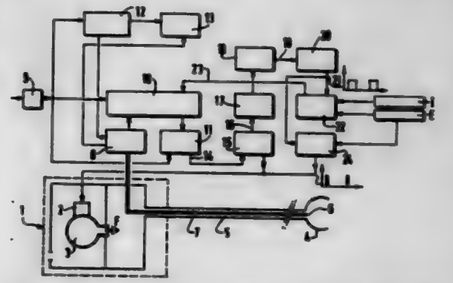
1. A system for supporting an endotracheal tube in the trachea of pediatric patient, comprising:
(a) an intraoral component of unitary construction including
a base portion having a longitudinal extent, a bore formed along said longitudinal extent for passage and support of a first selected portion of an endotracheal tube, and a facing surface made of a soft resilient material for cushioning the palate of the patient during intubation, and
a flexible alveolar ridge cushioning flap portion extending from said base portion substantially along the longitudinal extent of said base portion, and having a generally smooth upper surface, a generally smooth lower surface and a plurality of spaced apart projections extending from said generally smooth lower surface; and
(b) an extraoral component of unitary construction including
a flexible lip cushioning flap portion having a central portion, first and second end portions and a generally smooth lip contacting surface between said first and second end portions,
a centrally disposed hole for releasable receipt of a selected one of said projections,
a substantially rigid stem portion extending from said central portion,
a tube clasping portion extending from said substantially rigid stem portion, for releasably clasping a second selected portion of an endotracheal tube, and
supporting means, operably connected to said first and second end portions, for supporting said lip cushioning flap portion against the upper lip of the patient.

5,443,061

APPARATUS FOR PROVIDING A BREATHING GAS WITH AN OVERPRESSURE AND PROCESS OF CONTROLLING SUCH APPARATUS INSTALLATION

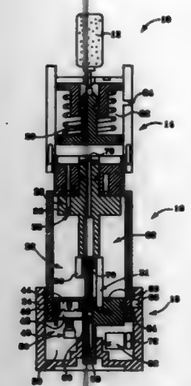
Roger Champain, Les Loges en Josas; Nourredine Kissi, Massy, and Daniel Zalkin, Rambouillet, all of France, assignors to Taema, Antony Cedex, France

Filed Mar. 20, 1992, Ser. No. 855,712
Claims priority, application France, Mar. 21, 1991, 91 03431
Int. Cl.[6] D06F *58/02*; A61M *16/00*; A62B *7/00*; F16V *31/02*
U.S. Cl. 128—204.21 9 Claims



1. A process of monitoring a respiratory apparatus including an electrically driven low inertia turbine exhibiting operating modes to supply gas to a patient's airways at a determined overpressure in response to a presettable control signal applied thereto, comprising the steps of driving the turbine with a drive current supplied thereto; detecting variations in the drive current supplied to the turbine, thereby to detect variations in the operating mode of the turbine; and correspondingly modifying the control signal in response to said detected variations to modulate the overpressure supplied by the turbine.

5,443,062
LOAD ACTIVATED OXYGEN DELIVERY SYSTEM
Jeffrey P. Hayes, 9530 W. Flynn Rd., Indianapolis, Ind. 46231
Filed Nov. 23, 1993, Ser. No. 156,368
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.26 20 Claims



1. A load activated oxygen delivery system configured to deliver oxygen from an oxygen source to a patient through a cannula in response to patient inhalation, the oxygen delivery system comprising

a regulator assembly connectable to the oxygen source,

a main body assembly configured to define a precharge chamber for holding oxygen, the precharge chamber having an inlet and an outlet, with the inlet connected to the regulator assembly,

a demand body assembly configured to define a slave chamber in fluid communication with the cannula and an actuating chamber in fluid communication with the regulator, the slave chamber being separated from an actuating chamber by a diaphragm, the diaphragm being positioned to seal the precharge chamber outlet during patient exhalation, and the diaphragm moving to an unsealed position during patient inhalation to allow oxygen in the precharge chamber to flow through the precharge chamber outlet into the slave chamber, and

a demand valve assembly positioned in fluid communication with the actuating chamber, the demand valve assembly including a solenoid assembly which opens a movable valve in response to sensor detection of pressure drop in the cannula as patient inhalation begins, the oxygen pressure in the actuating chamber dropping below oxygen pressure in the slave chamber to permit the diaphragm to move away from its sealed position over the precharge chamber outlet and provide a burst of oxygen from the precharge chamber to the patient.

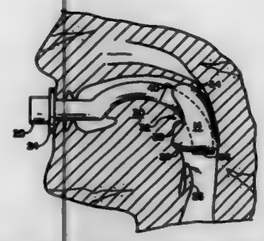
5,443,063
CUFFED ORO-PHARYNGEAL AIRWAY
Robert S. Greenberg, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed Aug. 31, 1993, Ser. No. 114,353
Int. Cl.[6] A61M *16/04*
U.S. Cl. 128—207.15 20 Claims

1. A pharyngeal tube for insertion into the pharynx, comprising:

a cannula having a first, distal end for placement within the pharynx of a patient, and a second, proximal end adapted to be disposed outside of the patient's oral cavity, said cannula having a length such that when the distal end is placed within the pharynx, it terminates distally at a point above the patient's epiglottis;

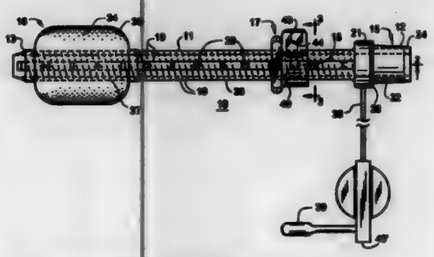
an inflatable cuff means for forming a seal between a wall of said cannula and a wall of the patient's pharynx, said cuff means comprising a membrane mounted to said cannula wall so as to be disposed adjacent said distal end; and

wherein said inflatable cuff means defines, on inflation, a ventral/anterior portion and a posterior portion, said



ventral/anterior portion comprising a protuberance having a length along the side of the cannula facing said ventral/anterior portion less than or equal to approximately one half the length of the cannula which is covered by said posterior portion of the inflatable cuff means.

5,443,064
TRACHEOSTOMY TUBE WITH ADJUSTABLE NECK PLATE
Roger W. Theis, Valparaiso, and Gerald E. Cabrera, Munster, both of Ind., assignors to Bivona, Inc., Gary, Ind.
Filed Mar. 24, 1994, Ser. No. 217,445
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.15 9 Claims



1. A tracheostomy tube comprising:

a tube having a wall, a proximal end, a distal end and a bore therethrough, said tube having a predetermined outer wall diameter between said proximal and distal ends;

neck plate means including a neck plate and a collar portion, said neck plate being adapted to be secured to the neck of a patient, said collar portion being adapted for sliding movement axially of said tube for repositioning said neck plate between said proximal and distal ends of said tube; and

said collar portion having first and second ends and including a tab portion defined at said first end and a pin defined at said second ends, said tab portion having an aperture for receiving said pin, said collar portion fitting around said tube and said pin being structurally arranged so that the inner diameter of said collar portion is engageable with the outer diameter of said tube when said tab portion is locked to said pin, with said tab portion being made of an elastic material thereby permitting said tab portion to be stretched to locate said aperture in overlying relationship with said pin, thereby securing said neck plate at a desired position axially of said tube.

5,443,065
CONNECTOR FOR MEDICAL DEVICE
Gene Berghoff, Eden Prairie; Scott Latterell, Minneapolis; both of Minn., and Paul Monroe, Janesville, Wis., assignors to Angeion Corporation, Plymouth, Minn.
Continuation of Ser. No. 836,953, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 764,626, Sep. 24, 1991, Pat. No. 5,304,209. This application Dec. 30, 1993, Ser. No. 175,498
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—639 8 Claims



1. A lead connector block for connection with a medical device having a connector cavity with a plurality of alignment tabs defined in said connector cavity, comprising:

a. means for proper orientation of an exterior perimeter of said lead connector block with said connector cavity in said medical device, said means for proper orientation including a specific geometrical shape of said exterior perimeter of said lead connector block, and including at least four adjacent sides and at least one end surface, three of said sides aligned at right angles to each other and a fourth side aligned obliquely to two adjacent of said sides for removable insertion into and alignment with said device in a first horizontal orientation in the direction of said end surface;

b. opposing alignment tabs extending horizontally from said lead connector block for alignment with said alignment slots in said device;

c. indication means on said lead connector block for indicating when said lead connector block is not fully inserted or connected with said device;

d. a female lead pin connector on said end surface; and,

e. a lead which extends from one of said sides of said lead connector block in a second orientation that is generally perpendicular to the one of said sides and is generally perpendicular to the first orientation.

5,443,066
INVASIVE SYSTEM EMPLOYING A RADIOFREQUENCY TRACKING SYSTEM
Charles L. Dumoulin, Ballston Lake, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 10,720, Jan. 29, 1993, which is a continuation-in-part of Ser. No. 793,962, Nov. 18, 1991, abandoned. This application Sep. 2, 1994, Ser. No. 299,976
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—653.1 7 Claims

1. An invasive imaging system to provide interactive images during an invasive procedure of a subject, comprising:

a) a imaging means adapted for providing an image of said subject;

b) an invasive device adapted to be inserted into said subject;

c) a radiofrequency (RF) transmitter attached to an end of the invasive device, the RF transmitter including:

i. power conversion means for converting electrical power into an RF signal at a selected frequency,

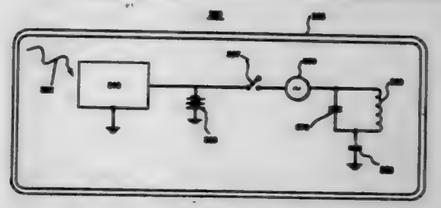
ii. power generation means for providing electrical power to the power conversion means; said power generation means comprised of:

1. a photo-voltaic device which converts light energy into an electrical power; and

2. an energy storage means coupling the photo-voltaic device to the power conversion means, for storing the converted electrical power and providing the power to the power conversion means

iii. broadcasting means for broadcasting the RF signal so as to create a dipole magnetic field, and

iv. hermetically sealed case constructed from non-bioreactive materials encasing the power conversion means, power generation means and broadcasting means having a size and shape allowing it to move freely within said patient;



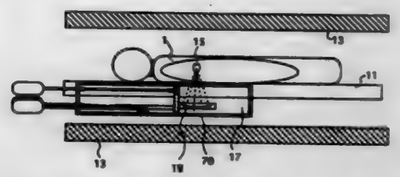
d) a plurality of receive coils placed at a plurality of known locations for receiving the broadcasted RF signal; and

e) external RF tracking/display means employing a phase-locked loop for synchronizing the external RF tracking-/display means with the RF transmitter, the external RF tracking/display means coupled to the receive coils and responsive to the RF signal for determining a location and orientation of the RF transmitter based upon strength and phase of the broadcasted RF signal received at the receive coils, and adapted for displaying the image of the subject and a symbol on the image at a position corresponding to the location of the RF transmitter in the subject.

5,443,067

Patent Not Issued For This Number

5,443,068
MECHANICAL POSITIONER FOR MAGNETIC RESONANCE GUIDED ULTRASOUND THERAPY
Harvey E. Cline, Schenectady; Kenneth W. Rohling, Burnt Hills, and Walter R. Abeling, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 26, 1994, Ser. No. 312,247
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.5 4 Claims



1. A magnetic resonance (MR) focused heat system for positioning a focal point of an energy transducer within a subject, comprising:

a) an energy transducer for concentrating energy at a focal point;

b) a subject interface located between the energy transducer and said subject, for facilitating energy to pass from the energy transducer to said subject;

c) a transducer plate constructed of an MR compatible material, for carrying the energy transducer:

d) a first slide constructed of an MR compatible material, having a first threaded shaft slideably connected to the

transducer plate such that the transducer plate slides relative to the first slide when the first threaded shaft is rotated;

e) a second slide constructed of an MR compatible material, having a second threaded shaft slideably connected to the first slide such that the first slide slides relative to the second slide when the second threaded shaft is rotated;

f) a base plate constructed of an MR compatible material, having a third threaded shaft slideably connected to the second slide such that the second slide slides relative to the base plate when the third threaded shaft is rotated;

g) a first actuating means for causing rotation of the first threaded shaft;

h) a second actuating means for causing rotation of the second threaded shaft; and

i) a third actuating means for causing rotation of the third threaded shaft thereby causing the energy transducer to be positioned in three dimensions.

5,443,069

THERAPEUTIC ULTRASOUND APPLICATOR FOR THE UROGENITAL REGION

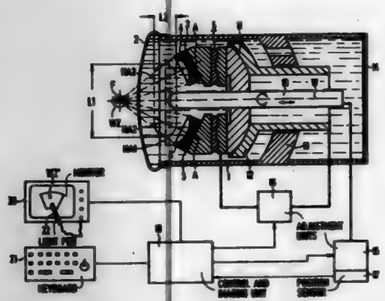
Ulrich Schnetzke, Roettenbach, Germany, assignor to Siemens Aktieng sellschaft, Munich, Germany

Filed Oct. 15, 1993, Ser. No. 136,258

Claims priority, application Germany, Nov. 16, 1992, 42 38 645.4

Int. Cl.[6] A61B *8/12*

U.S. Cl. 128—660.03 **14 Claims**



1. A therapeutic ultrasound applicator for the urogenital region comprising:

a housing containing an acoustic propagation medium and having an exit surface adapted for non-invasive placement against a patient; and

ultrasound generator means, having a working axis, for generating focused ultrasound waves converging to a working region and which always have a cross section completely occupied by said ultrasound waves in a plane proceeding at a right angle relative to said working axis circumscribed by an envelope having a first principal axis intersecting said working axis and a second principal axis intersecting said first principal axis at substantially a right angle, said first principal axis having a length exceeding a length of said second principal axis, and said ultrasound waves exiting through said exit surface.

5,443,070

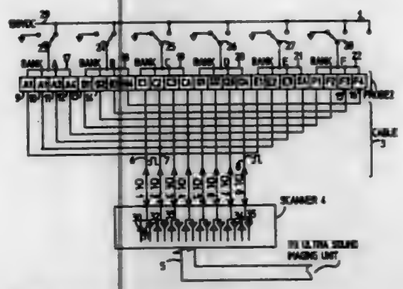
ULTRASOUND PRODE WITH BANKS OF INTERCONNECTED ELECTROSTRICTIVE TRANSDUCER ELEMENTS

James R. Mniece, Waltham, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 17, 1994, Ser. No. 291,637

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.01 **2 Claims**



1. An ultrasound probe comprising:

a first bank of n-many adjacent transducer elements of an electrostrictive material, each of the transducer elements of the first bank having first and second electrical terminals;

a first common electrical connection to which the first terminal of each of the transducer elements of the first bank is electrically connected;

a first voltage source having a voltage adequate for polarizing the electrostrictive material;

a second voltage source having a voltage adequate for depolarizing the electrostrictive material;

a first switching mechanism of single pole double throw configuration and having its pole electrically connected to the first common electrical connection, a first throw that connects the pole to the first voltage source and a second throw that connects the pole to the second voltage source;

a second bank of n-many adjacent transducer elements of electrostrictive material, each of the transducer elements of the second bank having first and second electrical terminals;

a second common electrical connection to which the first terminal of each of the transducer elements of the second bank is electrically connected;

a second switching mechanism of single pole double throw configuration and having its pole electrically connected to the second common electrical connection, a first throw that connects the pole to the first voltage source and a second throw that connects the pole to the second voltage source; and

the first electrical terminals of the transducer elements of the first bank being electrically isolated from the first electrical terminals of the transducer elements of the second bank.

5,443,071

QUANTITATIVE COLOR FLOW

Zoran B. Banjanin, Renton, and Jin Kim, Issaquah, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Oct. 11, 1994, Ser. No. 322,113

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.09 **23 Claims**

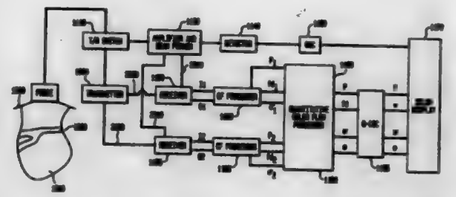
1. A method for providing a quantitative color flow display of moving matter using an ultrasound imaging system, the display being formed of pixels on a display device, which method comprises the steps of:

transmitting acoustic beams to a region of interest in the body, which region of interest includes the moving matter;

receiving echo beams from the region of interest;

obtaining, at each portion of the region of interest, which portion is referred to as a pixel, a measure of velocity of moving matter in the pixel and a measure of direction of the velocity of the moving matter in the pixel;

determining a maximum of the measure of velocity at each



pixel in the region of interest over a predetermined period of time and the measure of direction of the maximum velocity; and

displaying the measures of velocity of the pixels for the predetermined period of time wherein the measures of velocity and the measure of direction of the velocity are displayed using a color indicator which is relative to the maximum measure of velocity at each pixel and to the measure of direction of the maximum velocity.

5,443,072

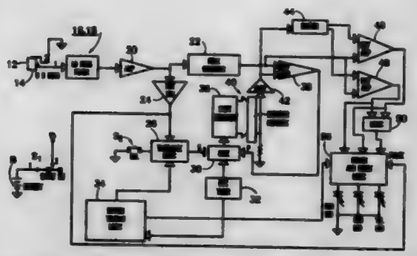
MINIATURE DISPOSABLE BLOOD FLOW MONITOR

Andrew Kagan, 101 Prospect Ave., Hackensack, N.J. 07601; Gerald P. Seldon, 36 Mt. Herman Rd., Blairstown, N.J. 07825, and James C. Wickstead, No. 5 Cold Hill Rd., Mendham, N.J. 07945

Filed Jan. 21, 1994, Ser. No. 184,690

Int. Cl.[6] A61B *5/0265*

U.S. Cl. 128—691 **23 Claims**



1. Monitor means for monitoring flow through a vessel by measuring deflection of said vessel during flow, comprising:

a substrate having one major surface adhered to a surface in close proximity to said vesel being monitored;

said substrate comprising a thin, conductive, metallic plate capable of being deflected responsive to a deflection of said vessel wall;

control circuitry including:

transducer means mounted upon said substrate for generating an electrical signal responsive to deflection of said substrate;

peak detector means responsive to energization of said monitor means for periodically and repetitively determining a peak value of each deflection responsive to an output of said transducer means;

reference generating means responsive to operation of a calibrate switch for storing a peak value of a deflection for use as a reference value;

means for comparing said stored value with each value periodically determined by said peak detector means; and

means for providing a visually readable indication of said comparison.

5,443,073

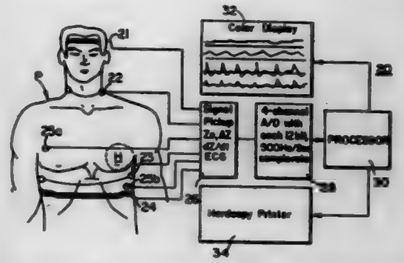
SYSTEM AND METHOD OF IMPEDANCE CARDIOGRAPHY MONITORING

Xiang Wang, Lansdale, and Hua H. Sun, Blue Bell, both of Pa., assignors to Drexel University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 834,425, Feb. 12, 1992, Pat. No. 5,309,917, which is a continuation-in-part of Ser. No. 758,034, Sep. 12, 1991, abandoned. This application May 13, 1993, Ser. No. 61,793

Int. Cl.[6] A61B *5/029*

U.S. Cl. 128—713 **26 Claims**



1. Apparatus for processing a time-derivative, thoracic impedance signal generated from a patient to identify events in the time-derivative impedance signal associated with beats of the patient's heart, the apparatus comprising:

means for generating a time-frequency distribution of data from the time-derivative impedance signal for a selected portion of the time-derivative impedance signal spanning a single heartbeat of the patient; and

means for identifying a time of occurrence of at least one cardiac event in the selected portion of said time-derivative impedance signal from the time-frequency distribution.

5,443,074

DUAL PORT THERMODILUTION CATHETER AND METHOD FOR MANUFACTURE

Robert Roelandt, Affligem, Belgium; Miriam Taimisto, Sierra Madre, and Clement E. Lieber, Yorba Linda, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

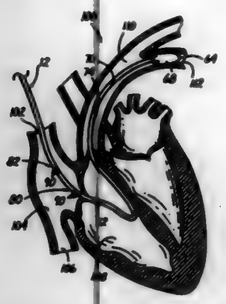
Continuation of Ser. No. 12,965, Jan. 28, 1993, abandoned, which is a division of Ser. No. 823,092, Jan. 21, 1992, Pat. No. 5,207,228. This application Nov. 16, 1994, Ser. No. 341,327

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—713 **10 Claims**

1. A bolus thermodilution catheter for use in monitoring heart function by injecting fluid into the right atrium and measuring fluid temperature downstream, said catheter comprising an inflatable balloon for positioning a distal end of said catheter in a pulmonary artery, said catheter additionally comprising plural lumens and corresponding plural injectate ports for injecting fluid proximal to the tricuspid valve of the heart, a first of said injectate ports being located closer to said balloon than a second of said injectate ports, said plural injectate ports

being spaced from each other within the range of 3–4 cm to accommodate hearts of different sizes, so that one of said



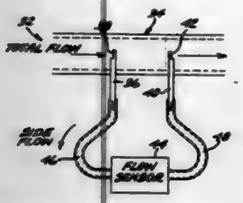
injectate ports is positioned proximal to the tricuspid valve in the right atrium when said balloon is in said pulmonary artery.

5,443,075

FLOW MEASURING APPARATUS

Russell L. Holscher, Olathe, Kans., assignor to Puritan-Bennett Corporation, Lenexa, Kans.

Filed Mar. 1, 1993, Ser. No. 25,045
Int. Cl.[6] A61B *5/087*
U.S. Cl. 128—725 **16 Claims**



1. Flow measuring apparatus, comprising:
a flow conduit;
an upstream sense tube having a notch opening disposed in the flow conduit and facing into a flow stream through said flow conduit;
a downstream sense tube having a notch opening disposed in the flow conduit and facing away from the flow stream; and
a transducer operatively connected to the upstream and downstream sense tubes for receiving a signal therefrom.

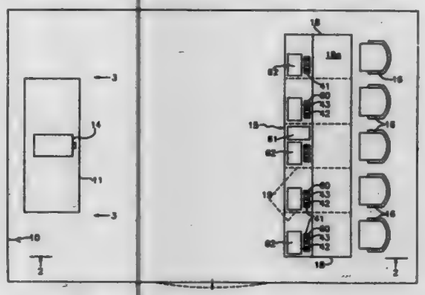
5,443,076

MEANS FOR ENHANCING THE PRODUCTIVITY OF VIDEO TELECOMMUNICATION SYSTEMS

Marcel Bau, 89 Van Ness Ct., Maplewood, N.J. 07040

Filed May 22, 1992, Ser. No. 887,044
Int. Cl.[6] A61B *5/0484*
U.S. Cl. 128—731 **12 Claims**

1. An improvement in video, telecommunication systems wherein geographically spaced conference stations are interconnected by telephone, television and computer lines enabling such systems to be more productive by functioning on an essentially real time basis, said improvement comprising the provision at each conference station of:
a. television screen means arranged at one end of the conference station,
b. at least one work area at the opposite end of the conference station, each comprising a desk housing,
c. versatile television camera means including means for quickly switching between an adjustment for panoramic viewing of a group of conferees, and separate enlarged viewing of individual conferees, said camera means including means for projecting a signal to the remote conference station,
d. means for illumination of the occupants of the work areas including a plurality of variable light source means aimed at respective ones of said work areas for illumination of the occupant thereof, with each light source containing individually variable white light and red, orange, yellow, green, blue and violet light sources,
e. electronic equipment means, said electronic equipment means including versatile EEG facility means for monitoring brain functioning of the conferees, a variable synthetic sound generator and modulator means for correlating ranges of frequencies of the output of said variable synthetic sound generator with corresponding color lights of said means for illumination,
f. a compartment at each work area housing:
(1) a head set for pre-conference use in selecting optimum light and sound adjustment for the occupant, providing left and right temporal EEG leads and an ear piece coupled with the variable sound generator, and
(2) a small ear suspended unit for in-conference use on the left ear providing a left temporal EEG lead and linkage to the variable sound generator,
g. a versatile computer interconnecting with the EEG inputs and variable light sources for each work area, and with the television screens and television camera means, and with the remote conference station, and
h. each work area having a control panel including inter alia:



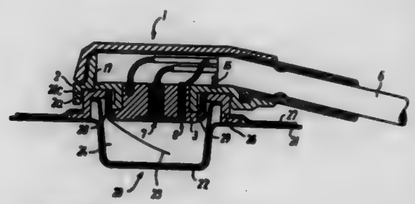
(1) a first button to be activated during pre-conference mode, and
(2) a second button to be activated during the conference mode,
respective desk housings adapted to accommodate participating conferees in each conference station prior to the beginning of a conference, a respective conferee positioning the head set for pre-conference use at his work station on his head, said EEG leads connected to said versatile computer whereby said versatile computer monitors the brain functioning of the conferee when the conferee activates said first button, said computer operably connected to said means for illumination and said variable synthetic sound generator, whereupon when the conferee activates said first button, said computer, responsive to the detected brain functioning of the conferee, adjusts said means for illumination and said variable synthetic sound generator so as to stimulate the conferee until the conferee achieves both a high level of alpha rhythm functioning, and as close as possible, a conformance between the alpha rhythm functioning in the left and right hemispheres of the conferee's brain, all as monitored by said versatile computer, said versatile computer recording for subsequent conference use the necessary data including those adjustments of said means for illumination and said variable synthetic sound generator necessary to achieve the high level of alpha rhythm functioning and the closest possible conformance between the alpha rhythm functioning in the left and right hemispheres,
said conferee during said conference mode with said small ear suspended unit positioned on the left ear and said second button activated, enabling said versatile computer through said left temporal EEG lead to monitor the brain functioning of the left hemisphere of the individual conferee, said versatile computer comparing the brain functioning EEG readings during the conference to the recorded data stored therein based upon the pre-conference readings to thereafter adjust said means for illumination and said variable synthetic sound generator as necessary to achieve as close as possible the previously determined alpha rhythm functioning level established prior to the conference,
said television screen means providing the multiple functions of:
(1) during pre-conference mode, displaying for individual conferees, graphics and data meaningful in the pre-conference adjustment of light and sound sources, and
(2) during conference mode, displaying on one screen interchangable panoramic views and enlarged individual views of conferees at the remote station, and on the other a divided projection displaying at the top the visual aids as used by both stations, and in a small lower section a running graphic comparison of the level of alpha rhythm brain functioning of conferees at both stations,
whereby the improved system, when functioning as intended, is assuring enhanced conference productivity so long as the projected alpha rhythm patterns of both stations are in substantial conformance, and indicating a breakdown in conference productivity if the projected alpha rhythm patterns assume and maintain non-conforming configurations.

5,443,077

METHOD OF MONITORING THE POSITION OF A SENSOR

Soren-Christian Krogh, Måløv, and Erik Akslbro, Rødovre, both of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

PCT No. PCT/DK92/00014, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/12670, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 21, 1992, Ser. No. 90,156
Claims priority, application Denmark, Jan. 23, 1991, 0108/91
Int. Cl.[6] A61B *5/06*
U.S. Cl. 128—737 **18 Claims**



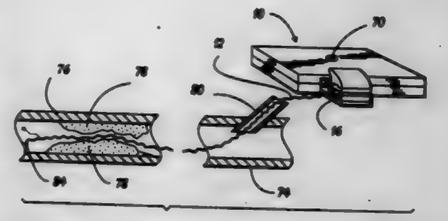
1. A method of monitoring the position of a sensor, the method comprising:
providing a sensor comprising a coil integrated in a coil circuit, the coil generating a magnetic field in close proximity to the sensor;
providing a mounting means adapted to engage with the sensor when the sensor is in a first position, the mounting means comprising a material for varying the magnetic field in the coil circuit when the sensor is in the first position;
intermittently detecting the magnetic field in the coil circuit for detecting mutual induction between the coil circuit and the surroundings of the sensor; and
determining from the magnetic field when the sensor is in the first position, or in a second position at which the sensor is not positioned adjacent to the mounting means.

5,443,078

METHOD FOR ADVANCING A GUIDE WIRE

Renan Uflacker, San Paulo, Brazil, assignor to InterVentional Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 120,473, Sep. 13, 1993, abandoned, which is a continuation of Ser. No. 944,473, Sep. 14, 1992, Pat. No. 5,243,997. This application Jun. 29, 1994, Ser. No. 268,769
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **12 Claims**



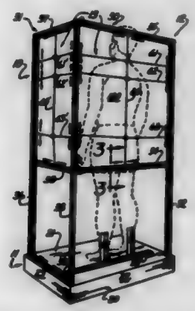
1. A method for advancing an elongated flexible element through a blood vessel, comprising the steps of:
inserting a leading end of a flexible element into the blood vessel;
advancing said flexible element along the blood vessel until frictional resistance develops from contact between a first plurality of points along said flexible element and a second plurality of corresponding points along the wall of said blood vessel; and
overcoming said resistance by introducing sinusoidal transverse vibrations into said flexible element, thereby reducing the length of contact between said flexible element and said vessel wall, and thereby reducing the time of contact between said first plurality of points and said second plurality of corresponding points.

5,443,079

ADJUSTABLE CHIROPRACTIC DIAGNOSTIC APPARATUS

Kent S. Greenawalt, 5056 Hunting Hills Sq., Roanoke, Va. 20414

Filed Oct. 21, 1993, Ser. No. 139,131
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—781 **11 Claims**



1. An adjustable chiropractic diagnostic apparatus for deter-

mining a patient's lateral and posterior postural deficiencies wherein the apparatus comprises:

a platform unit;

a three-legged framework operatively associated with the platform unit and comprising a pair of generally rectangular and perpendicularly aligned framework members, including a posterior framework member and a lateral framework member; wherein, each of said framework members comprises a pair of vertical support legs provided with an upper cross-piece element and an intermediate cross-piece element; and

a plurality of registration units, including a pair of vertical alignment cords, wherein each of the vertical alignment cords is moveably suspended between the upper and intermediate cross-piece elements of each framework member and a like plurality of horizontal alignment cords are moveably suspended between the vertical support legs of each framework member, whereby the vertical and horizontal alignment cords are moveable such that the intersection between the vertical and horizontal alignment cords may be registered with predetermined locations on a patient's anatomy to record the patient's postural deficiencies.

5,443,080

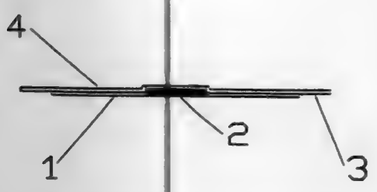
INTEGRATED SYSTEM FOR BIOLOGICAL FLUID CONSTITUENT ANALYSIS

Joseph P. D'Angelo; Henry Schur; Kedu Han, all of Miami, and Daniel J. Glenn, Hollywood, all of Fla., assignors to Ameriente Transtech, Inc., Miami, Fla.

Filed Dec. 22, 1993, Ser. No. 173,635

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—771 **12 Claims**



1. An integrated system for biological fluid constituent analysis, comprising:

collector means for non-invasively collecting a body fluid analyte from a patient and indicator means responsive to the body fluid analyte for indicating a condition of the body fluid analyte;

electronic interpretation means receiving said indicator means and electro-optically interpreting said indicator means with regard to the condition of the body fluid analyte;

wherein said collector means are in the form of a multi-layer laminate including a chemical reactant layer coated with a test reagent and color developer specifically provided for a given test, an activation gel layer disposed below said chemical reactant layer, a collection gel layer disposed below said activation gel layer, and a skin interface membrane layer disposed below said collection gel layer for placement on the patient's skin; said indicator means being in the form of a color wheel, said color wheel being divided into a plurality of color segments each communicating with said multi-layer laminate for displaying a given color in response to a given amount of body fluid analyte processed through said layers.

5,443,081

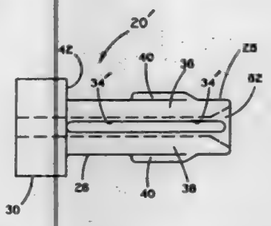
GUIDEWIRE CONTAINMENT APPARATUS AND METHOD

James J. Klosterman, Wacouta, Minn., assignor to Lake Region Manufacturing Co., Inc., Chaska, Minn.

Continuation of Ser. No. 787,068, Nov. 14, 1991, Pat. No. 5,279,573. This application Jan. 4, 1994, Ser. No. 177,265

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—772 **9 Claims**



1. A dispenser sleeve for controllably dispensing a guidewire from within a tubular container, the sleeve comprising:

a substantially cylindrical sleeve body comprising a side wall, and first and second ends, the sleeve body having a bore therethrough, the bore having a diameter which permits wire to pass restrictively therethrough, the sleeve body having in its side wall:

a plurality of slits, the slits extending through said side wall so as to divide the sleeve body into sleeve body segments which can be compressed toward each other by at least partially collapsing the slits, the slits extending from the second end and terminating short of said first end so that said first end defines a completely circular bore hole, the sleeve body segments further including:

lateral projections, the projections being located on the sleeve body segments and projecting therefrom so as to cooperate with the inside of the tubular container to compress the sleeve body segments toward each other into said tubular container thereby engaging a guidewire wire passing between said segments, the sleeve body further including:

stop means located along said second end thereof, said stop means restricting the further entry of said sleeve into said container.

5,443,082

CONTROLLING ARTICLES OF EQUIPMENT DURING SURGERY

Judith J. Mewburn, London, England, assignor to British Technology Group Ltd., London, England

PCT No. PCT/GB91/00511, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/15159, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1991, Ser. No. 927,485

Claims priority, application United Kingdom, Mar. 30, 1990, 9007197

Int. Cl.[6] A61B *19/00*

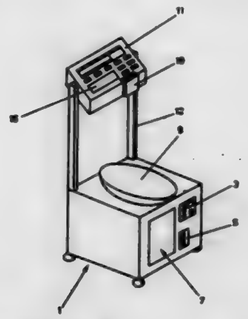
U.S. Cl. 128—897 **16 Claims**

1. A system for monitoring articles of equipment for use in surgery and recovery after such use, comprising:

(a) articles of equipment for use in surgery, which individually and directly bear a machine readable source of identifying information;

(b) reading means (19) for reading the information from the sources on each of the articles both before and after use thereof; and

(c) a computer (3) connected to the reading means for recording information obtained from the information source by the reading means and for comparing or matching



information obtained before use of an article with information obtained after such use.

5,443,083

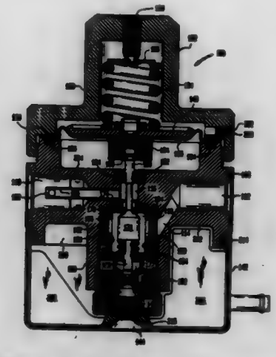
PRESSURE-REDUCING REGULATOR FOR COMPRESSED NATURAL GAS

Jeffrey B. Gotthelf, Charleston, S.C., assignor to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 143,010, Oct. 26, 1993, Pat. No. 5,381,819, which is a division of Ser. No. 16,376, Feb. 11, 1993, Pat. No. 5,285,810. This application Apr. 21, 1994, Ser. No. 230,587

Int. Cl.[6] G05D *16/02*

U.S. Cl. 137—484.8 **11 Claims**



1. A pressure-reducing regulator for compressed natural gas, comprising:

a regulator housing; wherein

said housing has a body;

said body has (a) an inner chamber for receiving high-pressure, compressed natural gas therewithin, at a given pressure, and (b) an outer chamber for receiving low-pressure, compressed, natural gas therewithin, at a given low pressure;

first porting means for admitting gas into said inner chamber;

second porting means for discharging gas, at said given low pressure, from said outer chamber;

valving means, movably disposed within said body, for controlling gas flow between said chambers;

compliant means, coupled to said valving means, for (a) sensing gas pressure in one of said chambers, and (b) effecting movement of said valving means;

means for communicating said compliant means with said second porting means, and introducing gas pressure to said compliant means at less than said given low pressure;

said compliant means comprises a diaphragm and said housing further has a bonnet;

said bonnet is coupled to said body, and said diaphragm forms a wall between said body and said bonnet;

said body has an annular groove formed therein, in an outermost surface thereof;

said diaphragm has a periphery with a rib projecting therefrom, and said rib is nested in said groove; and

a bearing ring overlies said periphery, and said bonnet clamps said ring to said periphery, and said rib into said groove.

5,443,084

PAPER MOISTENER DEVICE AND MOIST TOILET PAPER DISPENSER

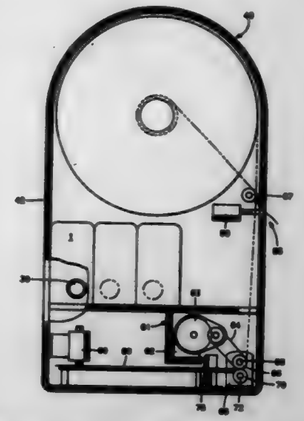
Rémy Saleur, 12, Place Vauban, 89200 Avallon, France

PCT No. PCT/FR91/00377, § 371 Date Jan. 5, 1994, § 102(e) Date Jan. 5, 1994, PCT Pub. No. WO92/19141, PCT Pub. Date Nov. 12, 1992

PCT Filed May 7, 1991, Ser. No. 146,024

Int. Cl.[6] B08N *3/2*

U.S. Cl. 134—58 R **17 Claims**



1. Paper dispenser, more particularly toilet paper or sanitary towel dispenser, delivering either a wet or dry paper of the type comprising a casing having means through which paper can pass from inside to outside thereof, a paper moistener device comprising a refill (2) comprising a reservoir (3) fitted be forehand with a spray pump (4) and pump actuator means, characterized in that the actuator means is electrical and with the refill (2) constitute an interchangeable system, the spray pump engaged with the dispenser to effect a spray outside the casing.

5,443,085

CLEANING APPARATUS AND METHOD FOR FUEL AND OTHER PASSAGES

Richard V. Huddas, Grand Haven, Mich., assignor to Fuel Systems Textron, Inc., Zeeland, Mich.

Division of Ser. No. 97,456, Jul. 26, 1993, Pat. No. 5,339,845. This application Apr. 14, 1994, Ser. No. 627,713

Int. Cl.[6] B08B *3/04*

U.S. Cl. 134—95.1 **3 Claims**

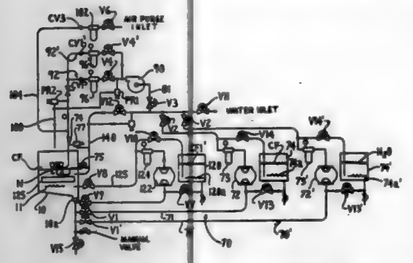
1. Apparatus for contacting external and internal surfaces of an article with first and second fluids, comprising:

a) a container for receiving the article,

b) means for supplying a first fluid to the container to

contact an external article surface, said means comprising a storage tank for said first fluid, conduit means for connecting the storage tank to the container, and a first transfer pump for transferring the first fluid between the container and the tank,

c) means for supplying a second fluid to the container after the first fluid is returned to the first storage tank for contacting an external article surface, said means comprising a storage tank for said second fluid, conduit means for



connecting the storage tank to the container, and a second transfer pump for transferring the second fluid between the container and the tank, and

d) a booster pump alternately communicable to the respective first and second transfer pumps for supplying the respective first and second fluid therefrom at a pressure to an internal surface of the article while the external surface thereof contacts the respective first and second fluid in the container.

5,443,086

UMBRELLA COVER ASSEMBLY

John J. Muller, 720 Mountain Rd., West Hartford, Conn. 06117

Filed Feb. 4, 1994, Ser. No. 191,661
Int. Cl.[6] A45B *15/00*
U.S. Cl. 135—34.2 21 Claims



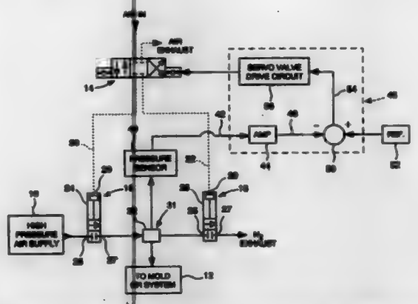
16. An umbrella cover assembly comprising a longitudinal elongate tubular cover formed from flexible water resistant sheet material and having a closed end and an open end, said cover having a slit extending in a longitudinal direction from said open end toward said closed end and terminating in spaced relation to said closed end, said slit having an open position wherein the terminal ends of said slit at said open end are spread apart and a closed position wherein said terminal ends are disposed adjacent each other, retaining means for releasably retaining said slit in said closed position, and stiffening means for imparting longitudinal rigidity to a lower portion of said cover and permitting transverse flexure of the portions of said cover defining said slit and including a pair of resilient longitudinally elongate stiffening members characterized by stiffness in a longitudinal direction and flexibility in a transverse direction, said cover and said stiffening means being foldable transversely of said slit and to a storage condition, said cover in said storage condition having a longitudinal dimension substantially smaller than the longitudinal dimension of said slit.

5,443,087

METHOD AND SYSTEM FOR CONTROLLING A PRESSURIZED FLUID AND VALVE ASSEMBLY FOR USE THEREIN

Colin K. Myles, Waterford, Mich., assignor to Melea Limited, Southfield, Mich.

Filed Dec. 13, 1993, Ser. No. 166,255
Int. Cl.[6] G05B *11/50*
U.S. Cl. 137—14 18 Claims



1. A method for controlling a pressurized fluid having a first pressure to provide the pressurized fluid at a regulated desired pressure less than the first pressure, the method comprising the steps of:

providing a pair of pneumatically-operated, fluidly-coupled valves and an electric proportioning device for opening and closing the valves;

communicating the pressurized fluid to the valves; generating a reference signal representative of the desired pressure;

generating a reference control signal based on the reference signal;

coupling the reference control signal to the proportioning device to control the pressure of the pressurized fluid regulated by the valves;

generating a feedback signal as a function of actual pressure of the regulated pressurized fluid;

generating an error signal based on the difference between the reference signal and the feedback signal, the error signal being representative of a desired amount of fluid pressure change; and

generating an error control signal as a function of the error signal to control the proportioning device, the proportioning device, in turn, communicating a pneumatic control signal to each of the valves in response to the reference and error control signals to control the opening and closing of the valves to, in turn, regulate the pressure of the pressurized fluid.

5,443,088

SQUIB VALVE

Elisha Hoch, Rehovot; Israel Schnitzer, Tel Aviv, and Victor Yusim, Rishon Lezion, all of Israel, assignors to Israel Aircraft Industries Ltd., Lod, Israel

Filed Apr. 29, 1994, Ser. No. 235,307
Claims priority, application Israel, May 5, 1993, 105616
Int. Cl.[6] F16K *17/40*
U.S. Cl. 137—68.13 5 Claims

1. A squib valve which comprises:

an inlet port associated with a pressurized fluid source;

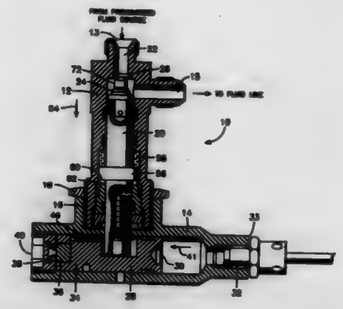
an outlet port;

a flow initiator for initiating a flow of the pressurized fluid between said inlet port and said outlet port;

an activator for activating said flow initiator and comprising a selectably actuable pressure source;

a flow controller for permitting an increase in the flow at no more than a predetermined maximum rate of increase such that a maximum volumetric flow via said outlet port is reached only after a predetermined minimum period of time has elapsed, thereby reducing the occurrence and magnitude of shock and hammering downstream of said outlet port that would be provided by an uncontrolled outflow of the pressurized fluid; and

a flow preventer arranged in a first operative orientation with respect to said inlet port and said outlet port for preventing fluid flow along said fluid path, and wherein said flow initiator is operative to permit movement of said flow preventer into a second operative orientation in



response to pressure applied by the pressurized fluid to the flow preventer, thereby to initiate a flow of the pressurized fluid along said fluid path, and wherein said flow controller comprises:

a flow retarder for retarding the movement of said flow prevention means between said first and second operative orientations so as to permit maximum volumetric outflow of the fluid only after the predetermined minimum period of time has elapsed;

a first housing portion defining a fluid flow path, and

a second housing portion arranged transversely to said first housing portion and whose interior communicates with the interior of said first housing portion,

and wherein, in said first operative orientation, said flow preventer is arranged in said first housing portion so as to prevent fluid flow along said flow path, and in said second operative orientation said flow preventer extends transversely into the interior of said second housing portion.

5,443,089

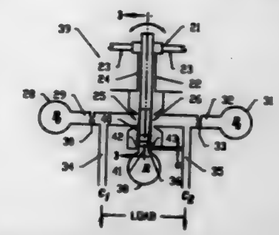
HYDRAULIC AMPLIFIERS WITH REDUCED LEAKAGE AT NULL

Anton Haumann, Ehningen, Germany, assignor to Moog Inc., East Aurora, N.Y.

Filed Mar. 23, 1994, Ser. No. 217,193
Int. Cl.[6] F15B *5/00*
U.S. Cl. 137—82 10 Claims

1. In a fluid amplifier having at least one flow path between a source of pressurized fluid and a fluid return, each flow path having at least one fluid connection to a load, at least one nozzle arranged in each flow path, a movable member operatively arranged to divert a portion of the flow through each flow path from the associated nozzle to said load so as to control the pressure at, and flow with respect to, said load, said member being mounted for controlled movement between a null position at which the flow to the load is zero and a displaced position at which the potential flow to the load is a maximum, the total flow from said source to return when said member is in said null position being greater than or equal to the maximum flow to said load when said member is in said displaced position, wherein the improvement comprises:

at least one variable-impedance orifice arranged in each flow path, the impedance of each orifice being varied as a function of the position of said member such that the leakage flow from said source to said return when said



member is in said null position will be less than the maximum flow to said load, and the leakage flow from said source to said return when said member is in said displaced position is equal to or greater than the maximum flow to said load;

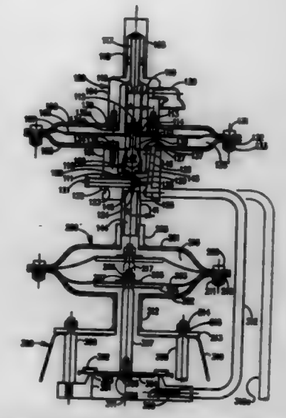
whereby the total leakage flow when said member is in said null position may be reduced.

5,443,090

MODULAR PILOT OPERATED VENT ACTUATOR

Jone Y. Ligh, P.O. Box 420509, Houston, Tex. 77242-0509

Filed Apr. 8, 1994, Ser. No. 224,797
Int. Cl.[6] F16K *17/10*
U.S. Cl. 137—489 20 Claims



1. A pilot actuated tank pressure vent valve for mounting on a tank comprising in combination:

(a) a vent valve body having a pallet which seats on a nozzle to seal the valve;

(b) a pallet actuator mounted on said vent valve body and having a pressure responsive member mechanically linked to said pallet, the upper surface of said pressure responsive member being in fluid communication with the pressure in said tank through;

(c) a pilot valve mounted on said pallet actuator and having (1) a spring loaded sensing actuator, (2) a spindle connected to and operated by said sensing actuator, (3) an inlet port in fluid communication with the pressure in said

tank, (4) a first passageway for communicating said pressure from said inlet port to said pallet actuator, (5) a second passageway for communicating said pressure from said inlet port to the under side of said sensing actuator and (6) a seating mechanism connected to said spindle for sealing an opening between said first passageway and an outlet port, said first passageway being offset from said inlet port such that any fluid flowing through said inlet port and into said second passageway must pass the opening of said first passageway.

5,443,091

NON-RETURN VALVE WITH IMPROVED LINE CONNECTING MECHANISM

Karl Rodemer, Heidelberg, and Zdravko Paluncic, Speyer, both of Germany, assignors to Lincoln GmbH, Walldorf, Germany

Filed May 17, 1994, Ser. No. 243,766

Claims priority, application Germany, May 18, 1993, 43 16 581.8

Int. Cl.[6] F16K *15/04*

U.S. Cl. 137—515.7 **52 Claims**



1. A non-return valve comprising:

a valve body having therethrough a passage for the flow therethrough of a medium, said passage having a medium inlet end and a medium outlet end, and said passage having therein a valve seat and a constricted portion, said valve body being connectable to a medium outlet for supply of medium to said medium inlet end of said passage;

a valve closing element urged toward said valve seat by a spring;

a connecting mechanism to connect a medium line to said valve body, said connecting mechanism including a gripping element having an inner end that is spreadable outwardly upon insertion of the medium line into said gripping element, said gripping element extending into said medium outlet end of said passage with said inner end of said gripping element being located at a position beyond said constricted portion of said passage; and

a holding element positioned within said passage, said spring having opposite ends braced between said holding element and said valve closing element, said holding element including a tapered projection accommodating thereabout said spring and an outwardly flared end directed away from said spring and braced against said valve body.

5,443,092

FLUID FLOW VALVE DEVICE AND ASSEMBLIES CONTAINING IT

John T. Farnsworth, and Roger D. Johnson, both of St. Joseph, Mo., assignors to Nestec S.A., Vevey, Switzerland

Filed Jan. 28, 1994, Ser. No. 188,950

Int. Cl.[6] F16K *15/02*

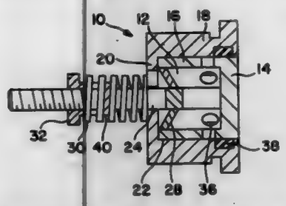
U.S. Cl. 137—542 **12 Claims**

1. A valve comprising:

a piston member having a closed end comprising a first wall, having a second wall which extends transversely from the first wall to define, together with the first wall, a piston chamber and which has at least one aperture therethrough for a fluid to flow out of the piston member from the chamber, and having a piston seat end which is displaced from the closed end by the second wall therebetween and which opens into the chamber for a fluid to flow into the chamber;

a housing member having an interior wall surface which extends from an open housing end and defines an open-ended chamber configured for slidably contacting the piston second wall and having an apertured seat member which is displaced from the open housing end and extends transversely with respect to the interior wall surface and which is configured and positioned for seating the piston seat end and for allowing fluid flow therethrough to the piston chamber;

means integrated with the piston member for reciprocatively retaining the piston member within the housing comprising a portion of the seat member which defines an aperture at a position about a substantially centrally disposed longitudinal axis of the piston second wall, a rod which extends



slidably through the substantially centrally disposed seat member aperture into the piston chamber in a direction parallel to the longitudinal axis, means for affixing the rod to the piston member and means for tensioning the rod for urging the piston member for seating the piston seat end against the seat member and so that when the piston seat end is at a position displaced away from the seat member the piston member is prevented from disengaging from the housing; and

wherein the housing interior wall surface, the seat member, the at least one piston second wall aperture and the means for reciprocatively retaining the piston member are configured and positioned so that when the piston seat end is seated against the seat member, the at least one piston second wall aperture is confined by the housing interior wall surface to close the valve to fluid flow and so that when the piston seat end is at a position displaced away from the seat member, the at least one piston second wall aperture is unconfined by the housing interior wall surface so that the valve is open to flow of fluid.

5,443,093

CONTROL DEVICE FOR A MULTIWAY VALVE

Kurt Stoll, Esslingen, and Jürgen Schnatterer, Filderstadt, both of Germany, assignors to Festo KG, Esslingen, Germany

Filed Mar. 22, 1994, Ser. No. 215,511

Claims priority, application Germany, Mar. 25, 1993, 43 09 695.6

Int. Cl.[6] F15B *13/044*; F16K *11/24*

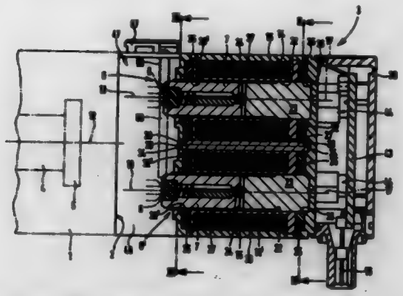
U.S. Cl. 137—596.17 **10 Claims**

1. A control device for a multiway valve, comprising:

two adjacently arranged solenoid means, to each of which a valve member to be actuated is associated;

each solenoid means having a coil, wherein said coils are arranged with parallel axes and with portions of their outer cylindrical surfaces facing each other, an intermediate area being provided between said coils;

yolk means positioned proximate said coils and arranged for conduction of magnetic fields generated by the coils, said yoke means comprising a yolk part which is positioned in said intermediate area and being associated with both coils for multiple use wherein field lines of the magnetic fields of both coils are able to extend along said yoke part;



said yoke part being the only portion of the yoke means which is positioned in the area surrounding the cylindrical surfaces of the coils.

5,443,094

CONCENTRATED PRODUCT DILUTION SYSTEM

Scott R. Olson, Eagan, and Steven E. Pasek, Shoreview, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 279,840, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 74,392, Jun. 10, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 398,048

Int. Cl.[6] B01F *5/04*

U.S. Cl. 137—892 **11 Claims**

1. A concentrated product dilution system comprising:

(a) an aspirator containing a product concentrate inlet, a diluent inlet, a venturi and an outlet orifice having an interior diameter;

(b) a product delivery means, in fluid communication with the product concentrate inlet, having an interior diameter sized in combination with the size of the interior diameter of the outlet orifice of the aspirator to achieve a predetermined dilution ratio of a product concentrate, coupled to an outlet port of a product package wherein the product delivery means does not contain a metering means;

(c) a product package comprising a flexible inner receptacle and an outlet port wherein the product package is positioned such that the product concentrate drains from the product package substantially completely by gravity flow; and

(d) a mixing container in fluid communication with the outlet orifice of the aspirator.

5,443,095

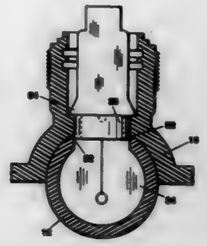
FLUID BLOCKING DEVICE

F. Raymond Gloesop, Jr., Tulsa, Okla., assignor to TDW Delaware, Inc., Wilmington, Del.

Filed Aug. 11, 1994, Ser. No. 289,185

Int. Cl.[6] F16L *55/132*

U.S. Cl. 138—94 **14 Claims**



1. A fluid blocking device for a pipeline having a saddle fitting over an opening in the wall of said pipeline, which device comprises:

an elongated resilient plug passable through said pipeline opening perpendicular to the axis of said pipeline to block passage of fluid through said pipeline; and

a resilient sealing ring mounted on said resilient plug and expandable to form a fluid tight seal with said opening in said pipeline, said resilient plug having activation ramps that mate with ramps on said resilient sealing ring.

5,443,096

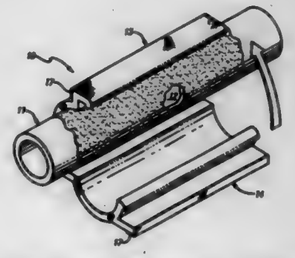
PIPE REPAIR COUPLING

Robert King, 23122 8th St., Newhall, Calif. 91321

Filed Oct. 26, 1994, Ser. No. 329,292

Int. Cl.[6] F16L *47/00, 21/06*

U.S. Cl. 138—99 **2 Claims**



1. A pipe repair coupling for repairing a cylindrical pipe comprising:

a pair of interlocking semi-circular independent segments, each of said segments being adapted to interlock together and form a cylindrical throughbore conforming to the outside surface of a cylindrical pipe with no spacing between said outer surface and said throughbore, each of said segments being identical and comprising a main semi-circular elongated body portion having an inner curved surface with said body portion terminating in spaced elongated edges, one of said elongated edges having first interlocking means adapted to interlock with second interlocking means on the other of said elongated edges in snap fitting relationship whereby the first interlocking means of one of said segments may be snap fit into the second interlocking means of the other of said segments forming a longitudinal generally cylindrical throughbore therethrough, wherein said first interlocking means includes

said main body portion terminating along one elongated edge in a single inwardly extending lip spaced from a ledge integral with both said main body portion at one end, said lip interconnected to said ledge by a sidewall portion at an opposite end of the ledge, said ledge extending outwardly from said main body portion in a direction opposite said lip forming a first elongated slot therebetween, and said second interlocking means includes said main body portion terminating along its other elongated edge in a single outwardly extending lip spaced from a flange extending from and integral with said main body portion in the same direction as said second mentioned lip, the spacing between said second mentioned lip and said flange forming a second elongated slot therebetween, whereby, when said first and second coupling segments are interlocked together, said first mentioned lip on one of said segments snap fits into said second elongated slot on the other of said segments and the first mentioned lip on the other of said segments snap fits into the second elongated slot on said one of said segments.

5,443,097

ARRANGEMENT FOR CLOSING OFF FLUID PASSAGES

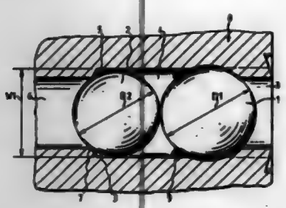
Bernd Pfeiffer, Gross-Bieberau, Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Germany

Division of Ser. No. 89,414, Jul. 9, 1993, Pat. No. 5,295,293. This application Dec. 9, 1993, Ser. No. 163,503

Claims priority, application Germany, Mar. 1, 1990, 40 06 368.2

Int. Cl.[6] F16L *55/10*

U.S. Cl. 138—89 **4 Claims**



1. An arrangement for permanently closing off a fluid passage in a housing comprising an increased diameter portion formed in said fluid passage creating a shoulder therein, a steel first closure member and a second closure member, said second closure member having a diameter smaller than said increased diameter portion of said fluid passage to be slidably fit in said enlarged portion of said fluid passage and engaged against said shoulder to seal said fluid passage, said steel first closure member having a larger diameter than said enlarged fluid passage portion and permanently press fit in said enlarged fluid passage portion and thereby immovably fixed abutting against said second closure member and holding said second member against said shoulder, said first closure member harder than the material of said housing such that particles may be abraded from said housing as said first closure element is press fit into said enlarged portion of said fluid passage, said first and second closure members configured to define a cavity space therebetween with said members abutting, whereby said second closure member creates a seal preventing entry of any abraded particles into said fluid passage.

5,443,098

THERMOPLASTIC PIPE NIPPLE

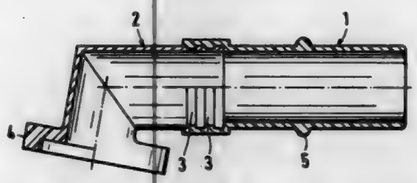
Janos Kertesz, Hofheim, Germany, assignor to Rasmussen GmbH, Maintal, Germany

Filed Nov. 15, 1993, Ser. No. 152,592

Claims priority, application Germany, Nov. 27, 1992, 42 39 909.2

Int. Cl.[6] F16L *9/12*

U.S. Cl. 138—109 **8 Claims**



1. A thermoplastic pipe nipple for connecting a flexible fluid conduit to a tank, comprising:

a first elongated tubular portion;

a second portion, said first elongated tubular portion having a first end for engaging said conduit, and a second end for engaging and surrounding said second portion, said second end of said first portion and said second portion being fused together in an area of their contact surfaces, said second portion being adapted to be attached to the tank, wherein the first portion of said nipple consists of a reinforced polyamide, and the second portion of said nipple consists of a non-reinforced plastic, and wherein said first portion has a lower tendency to deform under load than the second portion.

5,443,099

TUBE OF COMPOSITE MATERIAL FOR DRILLING AND/OR TRANSPORT OF LIQUID OR GASEOUS PRODUCTS, IN PARTICULAR FOR OFFSHORE OIL EXPLOITATION AND METHOD FOR FABRICATION OF SUCH A TUBE

Jacques E. C. Chaussepied, St Medard en Jalles; Michel Huvey, Bougival; Pierre Odru, Fontenay Sous Bois, and Charles P. Sparks, Le Vesinet, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris and Institut Francais Du Petrole, Rueil-Malmaison, both of France

Filed Nov. 4, 1992, Ser. No. 971,172

Claims priority, application France, Nov. 5, 1991, 91 13846

Int. Cl.[6] F16L *39/00, 47/06*

U.S. Cl. 138—109 **22 Claims**



1. A tube, comprising:

a tubular part of composite material with a thermosetting resin matrix, said tubular part having at least one end and an inner face;

a metallic end coupling member connected to said one end of said tubular part and at least partially engaged and in contact with said tubular part, said end coupling member having an exterior surface directly engaging a portion of said inner face of said tubular part and having an interior surface and an inner end;

a tubular covering member of impermeable material over said inner face of said tubular part and integrally attached to said tubular part, but terminating adjacent said inner end of said end coupling member so as not to cover said interior surface of said end coupling member and said portion of said tubular part inner face which engages said exterior surface of said end coupling member; end

joining means for forming an impermeable joint between said end coupling member and said covering member;

whereby said inner face of said tubular part is covered by said end coupling member and said covering member.

5,443,100

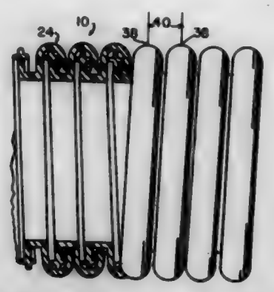
LOW PRESSURE AND VACUUM HOSE

Richard O. Finley, Upland, Calif., assignor to The United Electric Company of Ohio, Burlington, N.C.

Filed Jul. 13, 1994, Ser. No. 274,430

Int. Cl.[6] F16L *11/04*

U.S. Cl. 138—154 **19 Claims**



1. A length of flexible hose having a cylindrical configuration, said hose comprising a single helically wound convoluted strip of flexible material wound upon itself, an outwardly extending wall formed at one edge of the strip and an inwardly extending wall formed at the opposite edge of the strip, an intermediate wall connected to said outwardly extending wall by a web portion to space said outwardly extending wall and said intermediate wall from one another and forming an outwardly opening recess for receiving said inwardly extending wall, said intermediate wall being connected to said inwardly extending wall by a curved crown portion to space said inwardly extending wall and said intermediate wall from one another and forming an inwardly opening recess for receiving said outwardly extending wall, said outwardly extending wall having projection means extending laterally therefrom and engaging an adjacent inwardly extending wall, said inwardly extending wall having projection means extending laterally therefrom and engaging an adjacent outwardly extending wall, all portions of the projection means on said outwardly extending wall being spaced outwardly of the adjacent portions of the projection means on said inwardly extending wall in a direction radially of the cylindrical hose to define a space bounded by said outwardly extending wall, said inwardly extending wall, the projection means on said outwardly extending wall and the projection means on said inwardly extending wall, said space containing a bonding material which bonds the inwardly and outwardly extending walls to one another.

5,443,101

MODULAR ELECTROMECHANICAL PRESS AND METHOD THEREFOR

Richard H. J. Florissen, Kuerbock 15, 6914 AE Herwen, Netherlands

Filed Dec. 6, 1993, Ser. No. 162,717

Int. Cl.[6] B21F *1/00*

U.S. Cl. 140—105 **20 Claims**

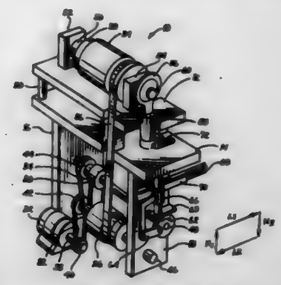
1. A modular electromechanical press apparatus for trimming excess portions from a leadframe strip package having a semiconductor chip thereon and for forming leads of said leadframe extending from said semiconductor chip comprising, in combination:

first shaft means for producing movement of said leadframe strip;

second shaft means coupled to said first shaft means for causing said trimming of said excess portions from said leadframe strip and for causing said forming of said leads of said leadframe extending from said semiconductor chip; and

rotation means coupled to both said first shaft means and said second shaft means for simultaneously rotating said first shaft means and said second shaft means.

11. A method of operating a modular electromechanical



press apparatus for trimming excess portions from a leadframe strip package having a semiconductor chip thereon and for forming leads of said leadframe extending from said semiconductor chip comprising the steps of:

providing first shaft means for producing movement of said leadframe strip;

providing second shaft means coupled to said first shaft means for causing said trimming of said excess portions from said leadframe strip and for causing said forming of said leads of said leadframe extending from said semiconductor chip; and

providing rotation means coupled to both said first shaft means and said second shaft means for simultaneously rotating said first shaft means and said second shaft means.

5,443,102

METHOD AND APPARATUS FOR FILLING PARTICULATE MATERIAL INTO A LINER OF A FIBC

Jens Svendsen, Hosle, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Jan. 27, 1994, Ser. No. 187,005

Claims priority, application United Kingdom, Jan. 27, 1993, 9301635

Int. Cl.[6] B65B *1/04, 3/04*

U.S. Cl. 141—10 **21 Claims**

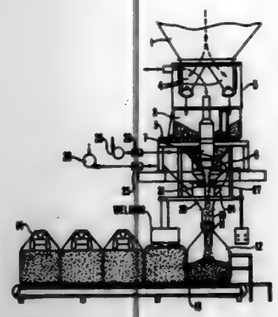
1. A method of filling particulate material from a container through a filling duct into a liner of a FIBC, said method comprising:

providing said container with inclined surfaces converging downwardly to an outlet from said container;

providing an axial valve body at a position upstream of said outlet to mask at least a part of a direct axial flow path of particulate material to said outlet and to define therewith an annular outlet orifice;

flowing said particulate material from said container along said inclined surfaces and through said annular outlet orifice, thereby creating a free fall therefrom of said particulate material through said filling duct and into said liner as a laminar flow stream spaced from and not in contact with a wall of said filling duct throughout substantially all of its passage therethrough, and thereby defining an air passage adjacent said flow stream; and

allowing air from the interior of said liner, upon being displaced therefrom by particulate material introduced



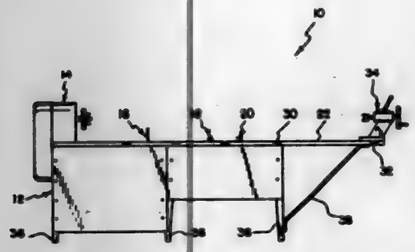
therein, to escape through said air passage without significantly disrupting said flow stream.

5,443,103

MULTIPLE TASK WOODWORKING APPARATUS

Wieslaw Kopacz, 740 Harris St., South Bend, Ind. 46629; Ewa Kopacz, and Dominika Kopacz, both of 2400 Andrew Ave., Apt. 223, La Porte, Ind. 46350

Filed Mar. 1, 1994, Ser. No. 203,296
Int. Cl.[6] B27C *9/00*; B27H *1/00*
U.S. Cl. 144—3.R 9 Claims



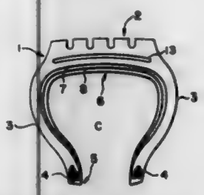
1. A new multiple task woodworking apparatus comprising:
a table having a tabletop supported upon a plurality of legs, said tabletop having at least one journal extending transversely therealong;
a table saw mounted beneath said tabletop and having a saw blade projecting through said tabletop;
a first router mounted beneath said tabletop and having a first router bit projecting through said tabletop;
a second router mounted beneath said tabletop and having a second router bit projecting through said tabletop, said second router bit being spaced from said first router bit; and
an electric motor connectable to a power source, said electric motor being mechanically coupled to said table saw and said first and second routers.

5,443,104

ELASTOMERIC BARRIER FILMS FOR TIRES

Susan E. Dollinger, Granville, Ohio, and William H. Davis, Jr., Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 35,839, Mar. 23, 1993, abandoned, which is a division of Ser. No. 705,224, May 24, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 202,324
Int. Cl.[6] B60L *5/14*
U.S. Cl. 152—510 2 Claims



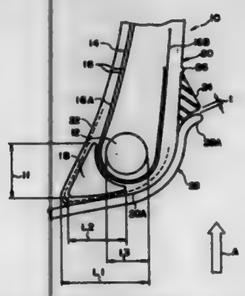
1. A pneumatic rubber tire comprising:
a chlorinated polyethylene film as an inner liner adhered to inside surface of said tire, comprising:
i) an inner layer adhered to an inside surface of the rubber tire, comprising an adhesive resin selected from a group consisting of styrenic block copolymers, ethylene-vinylacetate copolymers, and blends thereof, wherein said adhesive resin is capable of maintaining adhesion under normal operating conditions; and
ii) an outer layer consisting essentially of:
(1) 100 parts of chlorinated polyethylene containing from about 40 to about 50 percent by weight chlorine;
(2) from about 0.75 to about 5.0 parts per 100 parts of chlorinated polyethylene, of a derivative of 2,5-dimercapto-1,3,4 thiadiazole curative;
(3) from about 0.25 to about 2.0 parts butyraldehyde-aniline per 100 parts of chlorinated polyethylene; and
(4) from about 2.0 to about 10.0 parts magnesium hydroxide per 100 parts of chlorinated polyethylene;
wherein said outer layer, being cured on heating said film, is from about 5 mils to about 20 mils in thickness and having oxygen permeability from about 10 to about 50 cc-mil/100 sq.in.-atm-day.

5,443,105

PNEUMATIC RADIAL TIRE WITH BEAD TOE REINFORCING RUBBER STOCK

Hisao Ushikubo, Akron, Ohio, and Toru Ubukata, Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 7, 1994, Ser. No. 206,614
Claims priority, application Japan, Mar. 17, 1993, 5-056866
Int. Cl.[6] B60C *15/02, 15/024, 15/04, 15/06*
U.S. Cl. 152—540 4 Claims



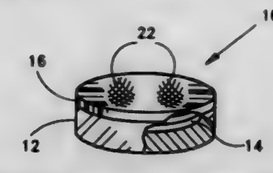
1. A pneumatic radial tire, comprising: a tread portion; a pair of bead portions each containing a bead core therein; at least one carcass ply of organic fiber cords arranged substantially at an angle of 90° with respect to a circumferential direction of the tire; and a belt layer comprising two plies of cords, the cords of one ply and the cords of the other ply crossing each other and being inclined at a relatively small angle with respect to the circumferential direction of the tire, which belt layer is arranged in a crown region of the tire and radially outward of the at least one carcass ply; wherein each bead core is substantially constructed by winding at least one metal wire; and a bead toe reinforcing rubber stock with a JIS A hardness of 85°–97° arranged inward of the outer edge of each bead core in an axial direction of the tire, in each bead portion the width of the bead toe reinforcing rubber stock being in a range of 0.5–2.0 times the width of the bead core in the axial direction, and in each bead portion the width from the outer edge of the bead core to the inner edge of the bead portion in the axial direction of the tire being in a range of 1.1–3.0 times said width of the bead core in the axial direction of the tire; and a chafer in each bead portion made of organic fiber cords reinforcing the side region in the axial direction of the tire and the inner region in the radial direction of the tire around the bead cord and the bead toe reinforcing rubber stock, said bead toe reinforcing rubber stock in each bead portion having an approximately triangular shape in cross section with faces opposite to an inner side of said bead portion in the axial direction of the tire, said at least one carcass ply, and a bead base portion of said radial tire.

5,443,106

SLAMMER FOR USE IN PLAYING MILK CAP TYPE GAMES AND METHOD OF MANUFACTURE

Bruce Browne, 373 Canyon Ridge Dr., Bonita, Calif. 91902

Filed Feb. 27, 1995, Ser. No. 394,891
Continuation-in-part of Ser. No. 305,437, Sep. 13, 1994, Pat. No. 5,421,588
Int. Cl.[6] A63F *9/02*
U.S. Cl. 156—182 7 Claims



1. A method of making a slammer suitable for use in playing the game generally called Milk Caps, which comprises the steps of:
providing at least one continuous, unapertured, metal disk;
forming a first housing portion from a first synthetic resin, said housing covering a first face and at least some of the edge of said at least one metal disk; and
forming a second housing portion from a second synthetic resin covering the second face of said at least one metal disk, said second synthetic resin being softer than said first synthetic resin.

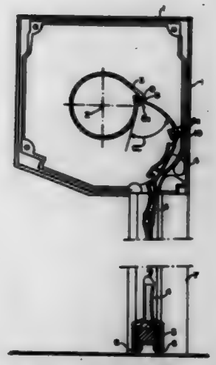
5,443,107

ROLL DOWN SHUTTER

Franz Kraler, A-9913 Abfaltersbach 125, Austria

PCT No. PCT/AT92/00134, § 371 Date Dec. 10, 1993, § 102(e) Date Dec. 10, 1993, PCT Pub. No. WO93/10325, PCT Pub. Date May 27, 1993
PCT Filed Oct. 28, 1992, Ser. No. 87,793
Claims priority, application Austria, Nov. 15, 1991, 2278/91
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 5 Claims

1. A roll down shutter comprising a rotating, self-locking winding shaft with coilable shutter armor made of linked interconnected shutter elements, the top-most shutter element being attached to the winding shaft, the top-most shutter element comprising a solid section, the remaining shutter elements being hollow-structured and having a thickness greater than the thickness of the top-most shutter element, the winding shaft having a first binding section formed by a slot having a widened region and an external opening, said slot lying in the axial direction of the shaft, and the top-most shutter element



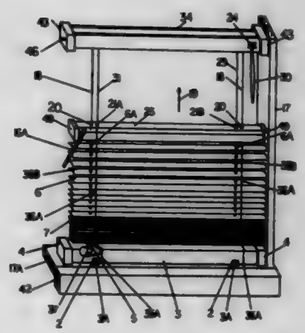
having a second binding section comprising a member sized to fit removably within the widened region of the slot, the member being encompassed by the slot and having a width greater than a width of the external opening of the slot, so that a removal of the top-most shutter element out of the winding shaft in each direction perpendicular to the axis of the winding shaft is not possible.

5,443,108

UPWARDLY DEPLOYED PRIVACY BLIND

Francis E. LeVert, 1909 Matthew La., Knoxville, Tenn. 37923; Richard J. LeVert, 7320 S. Merrill, Chicago, Ill. 60649, and Francis E. LeVert, II, 1909 Matthew La., Knoxville, Tenn. 37923

Filed Jun. 1, 1993, Ser. No. 69,769
Int. Cl.[6] E06B *9/26*
U.S. Cl. 160—167 5 Claims



1. A window blind that is deployed from the bottom of a window comprising:
an upper member mounted at the top of a window, said upper member having one aperture proximate the respective ends of the upper member and a downwardly facing cavity that extends substantially the full length of the upper member;

a drawstring holding mechanism incorporated in said cavity of the upper member;

a movable head assembly with one aperture juxtaposed near each end of said movable head assembly with the geometrical centers of said apertures of the movable head assembly collinear with the geometrical centers of said apertures of the upper member;

a plurality of slats having one oval hole proximate the respective ends of said slats with the geometrical centers of said oval holes collinear with the geometrical centers of the apertures of the movable head assembly;

two string ladders with extended top and bottom terminal ends comprising front and back ladder strings connected by cross strings at equal intervals for supporting the slats with said cross strings distant from said extended top and bottom terminal ends of said string ladders;

a slat tilt mechanism incorporated in the movable head assembly operably attached to the top terminal ends of said string ladders for tilting the slats;

a bottom unit mounted in the lower portion of a window with said bottom terminal ends of the string ladders mechanically attached thereto proximate the respective ends of said bottom unit;

alignment strings attached to the bottom unit and extended vertically through said oval holes in the slats, the apertures in the movable head assembly, and said apertures in the upper member where said alignment strings are mechanically coupled to the upper member for maintaining the horizontal axes of the slats and movable head assembly in a vertical plane; and,

drawstring means, for varying the vertical position of the movable head and concurrently the disposition of the slats within a window, rigidly attached to the movable head and extending upward into the cavity of the upper member and through said drawstring holding mechanism where said drawstring means depends in a downward direction.

5,443,109

WINDOW SHADE DRIVE

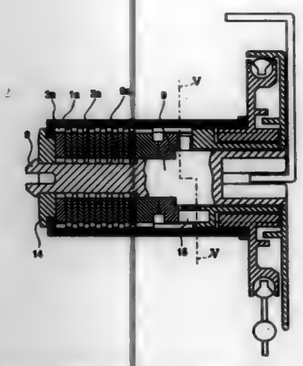
Siegfried Benthin, Bremerhaven, Germany, assignor to Benthin AG, Bremerhaven, Germany

Filed Oct. 26, 1993, Ser. No. 143,180

Claims priority, application Germany, Nov. 25, 1992, 42 39 507.0

Int. Cl.[6] E06B *9/56*

U.S. Cl. 160—298 **8 Claims**



1. A window shade drive, comprising:

a rotably mounted drive member;

a winding shaft;

a stationary pin;

a friction disk assembly including a plurality of friction disks positioned between said winding shaft and said stationary pin, an end disk of said plurality of friction disks being nonrotatably connected to said winding shaft, said friction disks being alternatingly connected nonrotatably and axially movably to said winding shaft or said stationary pin;

a first coupling element;

a second coupling element, said first coupling element and said second coupling element being positioned between said friction disk assembly and said drive member, said first coupling element being connected to said drive member and being rotatably relative to said drive member within a predetermined angle range;

a weak torque spring biasing said first coupling member in one direction of said predetermined angular range, said second coupling element being provided at said end disk of said friction disk assembly; and

camming means connected between said first coupling element and said second coupling element for generating axial forces acting on said friction disks upon rotary movement of said first coupling element and said second coupling element in relation to one another.

5,443,110

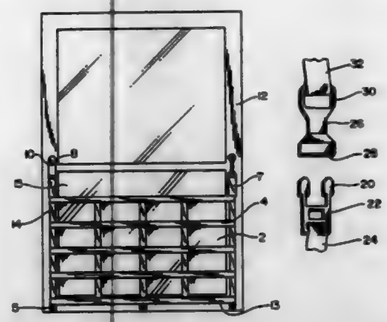
PROTECTIVE DEVICE FOR WINDOW OPENINGS

John F. Plott, Sr., 2715 Foxianna Rd., Middletown, Pa. 17057

Filed Sep. 17, 1993, Ser. No. 122,289

Int. Cl.[6] A62B *1/22*

U.S. Cl. 160—368.1 **1 Claim**



1. A safety apparatus for attachment to the outside of the wall of a building in order to cover an open window with a protective netting, said apparatus comprising: a netting portion having top, bottom and two side edges, said bottom edge in connection with a means for securing said edge to said wall, said netting portion each in connection with a pair of straps, each of said straps in connection with a two part releasing means comprising a first and second part each, said first part having a base and a pair of extended portions in connection with said base, each of said extended portions having a tongue portion in connection with said extended portion, said extended portions made of resilient material so that said extended portions may be squeezed toward one another, each said second part comprising a middle section and two conduits in connection with said middle section and at opposite sides of said middle section, said conduits having front openings and rear openings and of shape adapted to fit said tongue portions so that said tongue portions may be secured within said conduits by insertion, each said first part of said releasing means in connection with one of said straps, said second part of said releasing means in connection with a means for securing each said second part to said wall.

5,443,111

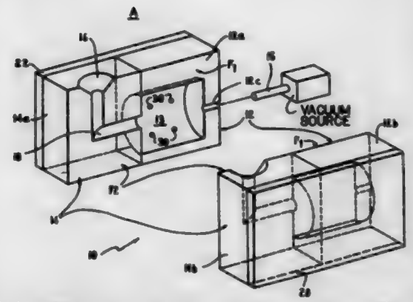
PERMANENT MOLD FOR CASTING REACTIVE MELT

Gregory N. Colvin, Muskegon; Leonard L. Ervin, Whitehall, and Robert F. Johnson, Spring Lake, all of Mich., assignors to Howmet Corporation, Greenwich, Conn.

Division of Ser. No. 943,704, Sep. 11, 1992, Pat. No. 5,287,910. This application Nov. 5, 1993, Ser. No. 147,948

Int. Cl.[6] B22C *9/06, 9/08*; B22D *18/06*

U.S. Cl. 164—254 **5 Claims**



1. A mold for use in the casting of a titanium based or nickel based melt, comprising one or more iron based mold members defining a mold cavity for receiving said melt and one or more titanium based melt inlet-forming members that cooperate with said mold members for forming a melt inlet that communicates to said mold cavity for supplying said melt thereto.

3. The mold of claim 1, including a port communicating to said mold cavity and to a source of vacuum.

5,443,112

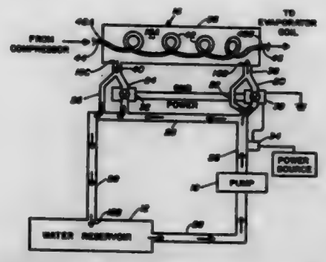
WATER FLOW AND HEAT EXCHANGE CONTROL SYSTEM AND METHOD BETWEEN HEAT SOURCE AND WATER RESERVOIR

Floyd P. Scheideman, 1024 W. 52nd St., North, Wichita, Kans. 67204

Filed Jun. 21, 1994, Ser. No. 263,049

Int. Cl.[6] F28F *27/02*

U.S. Cl. 165—1 **15 Claims**



1. A system for controlling water flow and heat exchange between a heat source and a water reservoir, said system comprising:

(a) a heat exchanger connected to the heat source;

(b) a by-pass flow line connected to exit and entry ports of the water reservoir;

(c) means connected to said by-pass flow line for recirculating water flow from the water reservoir through said by-pass flow line and back to the water reservoir;

(d) first means for communicating water flow from said by-pass flow line to said heat exchanger and back to said by-pass flow line at a first flow rate;

(e) second means for communicating water flow from said by-pass flow line to said heat exchanger and back to said by-pass flow line at a second flow rate being less than said first flow rate;

(f) means coupled to said first communicating means for controlling water flow at said first flow rate by selectively opening and closing water flow between said by-pass flow line and said heat exchanger at said first flow rate; and

(g) means for detecting the temperature of water inflowing from the water reservoir to said by-pass flow line and for actuating said controlling means to open and close water flow between said by-pass flow line and said heat exchanger at said first flow rate in response to the temperature detected so as to maintain the water reservoir at a desired temperature range;

(h) said first water flow communicating means being a pair of inflow and outflow main flow lines interconnecting respective inlet and outlet ports of said heat exchanger with said by-pass flow line, said controlling means being a pair of control valves each interposed in one of said respective inflow and outflow main flow lines.

10. A method for controlling water flow and heat exchange between a heat source and a water reservoir, said control method comprising the steps of:

(a) providing a heat exchanger connected to the heat source;

(b) providing a by-pass flow line connected to exit and entry ports of the water reservoir;

(c) recirculating water flow from the water reservoir through the by-pass flow line and back to the water reservoir;

(d) communicating water flow from the by-pass flow line to the heat exchanger and back to the by-pass flow line at a first flow rate;

(e) communicating water flow from the by-pass flow line to the heat exchanger and back to the by-pass flow line at a second flow rate being less than the first flow rate;

(f) controlling water flow at the first flow rate by selectively opening and closing water flow between the by-pass flow line and the heat exchanger at the first flow rate; and

(g) detecting the temperature of water inflowing from the water reservoir to the by-pass flow line and actuating the opening and closing of water flow between the by-pass flow line and the heat exchanger at the first flow rate in response to the temperature detected so as to maintain the water reservoir at a desired temperature range;

(h) said communicating of water flow from the by-pass flow line to the heat exchanger and back to the by-pass flow line at the first flow rate being carried out by providing a pair of inflow and outflow main flow lines interconnecting respective inlet and outlet ports of the heat exchanger with the by-pass flow line.

5,443,113

HEAT EXCHANGERS

Ronald Mulholland, Milton of Campsie, and Donald McCallum, Cumbernauld, all of Scotland, assignors to Howden Group PLC, Scotland, United Kingdom

Filed Nov. 23, 1993, Ser. No. 156,886

Claims priority, application United Kingdom, Nov. 26, 1992, 9224823

Int. Cl.[6] F23L *15/02*

U.S. Cl. 165—8 **9 Claims**

1. A heat exchanger comprising a frame, a housing carried by said frame, a rotor rotatable within said housing about an axis, said rotor having first and second axial ends, a multiplicity of heat exchange elements mounted in said rotor, first and second sector plates mounted at the first and second axial ends of said rotor, the first axial end being the hot end and the second axial end being the cold end of the rotor, said sector plates each extending along a diameter of said rotor, gas inlet and outlet ducts at said first and second axial ends respectively and arranged on the same radial side of said sector plate and air outlet and inlet ducts at said first and second axial ends respectively and arranged on the opposite radial side of said sector plates from said gas inlet and outlet ducts, said second sector

plate, being formed from a generally flat, plate material, at least two longitudinally extending sector plate ribs, welded to said plate material and extending from the sector plate in a direction

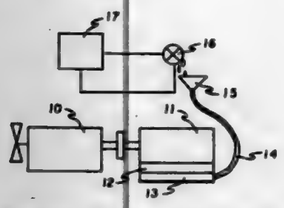


away from the rotor and support structure ribs welded directly to the frame, said support structure ribs and said sector plate ribs being welded to each other.

5,443,114
EVAPORATOR DISCHARGE COOLED TRANSMISSION OIL PAN

Reynaldo M. Deary, 1224 Turtle Creek Dr., Brownsville, Tex. 78520

Filed Nov. 9, 1994, Ser. No. 338,120
Int. Cl.[6] F25D *21/14*
U.S. Cl. 165—41 6 Claims



1. A cooling system for a transmission oil pan in a vehicle having an air conditioning unit utilizing an evaporator comprising:

a condensate collector disposed adjacent the evaporator to receive condensate issuing from the evaporator during air conditioning unit operation;

a condensate distributor juxtaposed an outer surface of the transmission oil pan; so as to allow said condensate to be evaporated into ambient air below the transmission oil pan thereby evaporatively cooling the transmission oil pan; and

a fluid conduit between said condensate collector and said condensate distributor; whereby

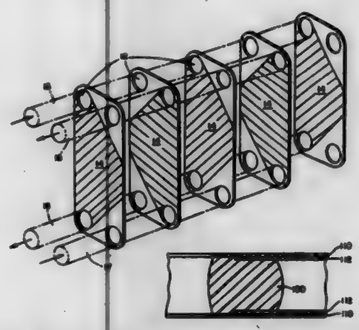
said condensate collector receives condensate issued from the evaporator and with said conduit transmits it to said condensate distributor to enhance cooling of the transmission oil pan and retained fluid.

5,443,115
PLATE HEAT EXCHANGER

Jorgen Pedersen, Kolding, and Soren E. Bogesvang, Lunderskov, both of Denmark, assignors to APV Baker A/S, Kolding, Denmark

PCT No. PCT/DK92/00219, § 371 Date Mar. 8, 1994, § 102(e) Date Mar. 8, 1994, PCT Pub. No. WO93/01463, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 7, 1992, Ser. No. 178,247
Claims priority, application European Pat. Off., Jul. 8, 1991, 91610057
Int. Cl.[6] F28F *3/08*
U.S. Cl. 165—70 5 Claims

1. A plate heat exchanger comprising a plurality of stacked plate elements, each of said stacked plate elements comprising at least two sheets of material which separate heat exchanging fluids to thus form a leakage space and prevent intermingling of said fluids in the event of a void forming in one of the sheets, each of said plate elements having a plurality of holes which, when the plate elements are stacked, are aligned to form distribution channels for cavities formed between said stacked plate elements, intermediary gaskets arranged between every two adjacent pairs of plate elements at areas which border the cavities and the aligned holes, such that in respective areas

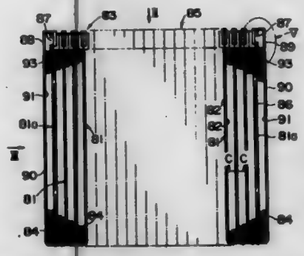


bordering the holes and which are overlayered by the gaskets, the plate elements are constructed such that the sheet layer of a plate element being the most distant layer from a gasket has a smaller hole diameter than the sheet layers nearest to the gasket and in the other areas bordering the cavities the plate elements are constructed such that the terminations of the respective sheet layers of a plate element are staggered to be overlayered by the gaskets.

5,443,116
STACKED HEAT EXCHANGER

Masateru Hayashi; Kazuo Ishii; Akihiro' Ito, all of Nishibiwajima; Hidenao Kawai, Nagoya; Yasuhiko Hirao, Nagoya, and Hiroshi Iokawa, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 113,054
Claims priority, application Japan, Aug. 31, 1992, 4-231186; Aug. 31, 1992, 4-231187; Oct. 9, 1992, 4-271567
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—149 9 Claims



1. A stacked heat exchanger formed by stacking a plurality of corrugated fins and a plurality of flat tubes for coolant flow, each of which is formed by joining a pair of formed plates which have a shallow dish-like section and an intake/outlet tank section for coolant located at one end, which tank section is deeper than said shallow dish section so that said formed plate face each other, wherein a U-shaped coolant passage comprising two straight incoming and outgoing passages and a semi-circular turn passage is formed between said two joined

formed plates so that said coolant flows from an intake coolant tank at said intake/outlet tank section to an outlet coolant tank at said intake/outlet tank section, wherein a corrugated plate is inserted into said straight passage;

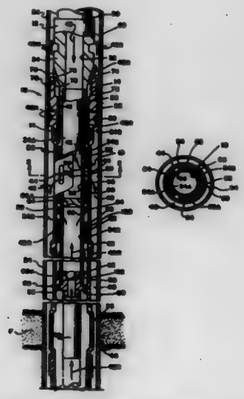
wherein a side plate is disposed on either end in the direction of stacking to form an outer wall; and

wherein each formed plate has a groove which is brazed together with a corresponding groove on another formed plate and seals outer periphery of said flat tubes when said formed plates are butted together, and each formed plate also has a groove which is brazed together with a corresponding groove on another formed plate and forms a partition between said two straight passages, and each formed plate also has at least one groove for a drain channel formed in said straight passages in parallel with any of said grooves.

5,443,117
FRAC PACK FLOW SUB

Colby M. Ross, Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Feb. 7, 1994, Ser. No. 192,876
Int. Cl.[6] E21B *43/04*
U.S. Cl. 166—51 21 Claims



1. Apparatus for treating a well, including a packer having a production mandrel and a longitudinal flow bore disposed within the well and a flow conductor coupled to the packer mandrel, the well treating apparatus comprising, in combination:

a cross-over tool coupled between the packer mandrel and the flow conductor, the cross-over tool having a longitudinal seal bore, a radial sidewall passage defining a flow port opening into the cross-over seal bore, and a longitudinal bypass flow passage coupled in flow communication with the packer mandrel flow bore; and,

a service tool having a tubular mandrel disposed within the packer mandrel bore and the seal bore of the cross-over tool, thereby defining a return flow annulus between the service tool mandrel and the packer mandrel, the service tool mandrel having a service flow bore and a return flow bore coupled in flow communication with a service flow port and a return flow port, respectively.

5,443,118
OXIDANT ENHANCED WATER INJECTION INTO A SUBTERRANEAN FORMATION TO AUGMENT HYDROCARBON RECOVERY

Demetrios V. Yannimaras, Tulsa, and Mark F. Spencer, Bixby, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

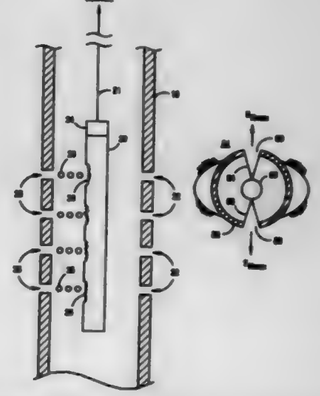
Filed Jun. 28, 1994, Ser. No. 267,415
Int. Cl.[6] E21B *43/243*
U.S. Cl. 166—251 16 Claims

1. A method for recovering crude oil from a subterranean formation, the method comprising the step of introducing water, containing ammonium nitrate, into the formation under decomposition conditions that will cause at least a portion of the ammonium nitrate to decompose to generate an oxidant which will combust with at least a portion of a crude oil contained within the formation to cause crude oil to be mobilized within the formation and to be recovered from a production well.

5,443,119
METHOD FOR CONTROLLING SAND PRODUCTION FROM A HYDROCARBON PRODUCING RESERVOIR

Michael R. Chambers, Bedford, and Eve S. Sprunt, Farmers Branch, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 29, 1994, Ser. No. 282,375
Int. Cl.[6] E21B *43/119, 49/00*
U.S. Cl. 166—254 6 Claims



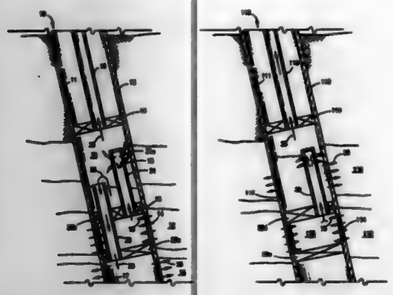
1. Method for controlling sand production in a hydrocarbon producing well, penetrating a subsurface hydrocarbon-bearing reservoir, comprising the steps of.

a) determining the azimuthal direction of the maximum in-situ horizontal compressive stress within a hydrocarbon-bearing reservoir having non-uniform horizontal tectonic stresses surrounding a well,

b) forming perforations in the reservoir surrounding said well oriented in the azimuthal direction of the determined maximum in-situ horizontal compressive stress, and

c) initiating hydrocarbon production from said well through said perforations, whereby the potential for sand production along with the production of hydrocarbons from said reservoir is minimized due to the orientation of said perforations within the reservoir in the direction of maximum in-situ horizontal compressive stress.

5,443,120
METHOD FOR IMPROVING PRODUCTIVITY OF A WELL
David A. Howell, Midland, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Aug. 25, 1994, Ser. No. 294,800
Int. Cl.[6] E21B *43/38*
U.S. Cl. 166—265 4 Claims



1. A downhole method for separating and disposing of water from fluids produced from a subterranean producing formation into a wellbore, said method comprising:
completing said wellbore wherein the portion of said wellbore which lies adjacent said production formation is inclined from the vertical;
isolating said portion of said wellbore which lies adjacent said producing formation;
producing produced fluids from said producing formation into said isolated, inclined portion of said wellbore, said produced fluids including water;
allowing at least a portion of said water from said produced fluids to separate from said produced fluids by gravity while said produced fluids are in said isolated, inclined portion of said wellbore; and
disposing of said separated water into a subterranean disposal formation without the separated volume of water ever being produced from said wellbore, said disposal formation having a pressure less than that of said producing formation.

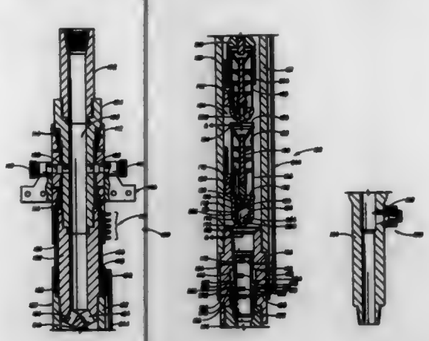
5,443,121
GRAVEL-PACKING APPARATUS & METHOD
Randolph J. Saucier, 8088 Winners Cir., Mandeville, La. 70448
Filed Jun. 23, 1994, Ser. No. 264,724
Int. Cl.[6] E21B *43/04, 43/08*
U.S. Cl. 166—278 20 Claims

12. A method of gravel-packing a perforated interval in a wellbore, comprising the steps of:
setting a screen at a desired depth;
providing a shiftable sleeve relatively movable with respect to the screen;
providing a seal mounted to said sleeve for contact with the wellbore;
positioning said sleeve with respect to said screen so that the lowermost perforations in the interval are exposed;
pumping granular material between said screen and said sleeve;
shifting said sleeve to expose additional higher perforations; and



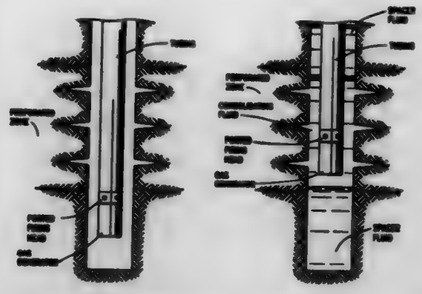
continuing deposition of granular material to cover higher perforations in the interval.

5,443,122
PLUG CONTAINER WITH FLUID PRESSURE RESPONSIVE CLEANOUT
David P. Brisco, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Aug. 5, 1994, Ser. No. 286,770
Int. Cl.[6] E21B *33/05*
U.S. Cl. 166—285 8 Claims



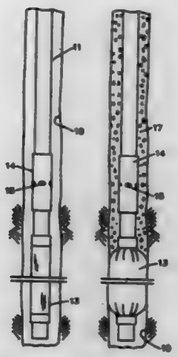
7. A method of establishing fluid flow in a plug container, comprising:
releasing a plug holder in a housing so that the plug holder moves downward in the housing into engagement adjacent a bypass sleeve disposed in the housing, wherein the plug holder has an opening defined therein and wherein the opening is blocked to fluid flow therethrough in response to the engagement adjacent the bypass sleeve when the bypass sleeve is in a lower position; and
flowing pressurized air into the housing and against the bypass sleeve to pneumatically lift the bypass sleeve and the released plug holder to a position wherein the opening defined through the plug holder is unblocked to fluid flow within the housing.

5,443,123
METHOD OF PARTICULATE CONSOLIDATION
Stanley J. Wall, Lafayette; David B. Allison, Carencro, and Michael W. Henry, Lafayette, all of La., assignors to Halliburton Company, Duncan, Okla.
Filed Mar. 14, 1994, Ser. No. 213,131
Int. Cl.[6] E21B *33/138*
U.S. Cl. 166—288 14 Claims



1. A method of consolidating incompetent particulate in a subterranean formation surrounding a perforated wellbore penetrating the subterranean formation comprising:
introducing at least a catalyst, spacer fluid and consolidating fluid including an acid curable resin into a coiled tubing string while said tubing is still outside the wellbore;
attaching a pressure actuated variable time delay firing head and a gas generating charge to an end of said coiled tubing;
introducing the end of said coiled tubing having said firing head and gas generating charge attached into said wellbore and positioning said firing head in the vicinity of the lowest perforations in the wellbore which are to be treated with a consolidating fluid;
activating said firing head by application of a predetermined pressure whereby the time delayed ignition of said gas generating charge is effected and ports in said firing head open whereby fluid in said coiled tubing string may be pumped into said wellbore;
introducing said consolidating fluid into said wellbore from said tubing and positioning said gas generator charge in said wellbore in the vicinity of said perforations to be treated;
igniting said gas generating charge whereby high pressure combustion product gases are produced and at least a portion of said consolidating fluid is caused to flow through at least one of the perforations and into the subterranean formation adjacent said perforations by said gas pressure;
coating at least a portion of said incompetent particulate in said formations with said consolidating fluid;
catalyzing at least a portion of said acid curable resin in said consolidating fluid by contact with gaseous acidic products produced during combustion of said gas generating charge whereby at least a portion of the coated particulate is consolidated;
displacing at least a portion of any consolidating fluid remaining in said wellbore through at least one of the perforations and into the formation beyond the previously consolidated particulate in said formation to coat additional incompetent particulate; and
introducing a catalyst from said tubing into said wellbore and into said formation to catalyze at least a portion of said acid curable resin in said displaced consolidating fluid whereby said resin is caused to consolidate at least a portion of said additional incompetent particulate.

5,443,124
HYDRAULIC PORT COLLAR
Edward T. Wood, Kingwood; Robert T. Brooks, Corpus Christi; Michael O. Dion, Houston; Derrel G. Gurley, Katy, and Monty E. Harris, Axle, all of Tex., assignors to CTC International, Houston, Tex.
Filed Apr. 11, 1994, Ser. No. 225,631
Int. Cl.[6] E21B *34/10*
U.S. Cl. 166—374 19 Claims

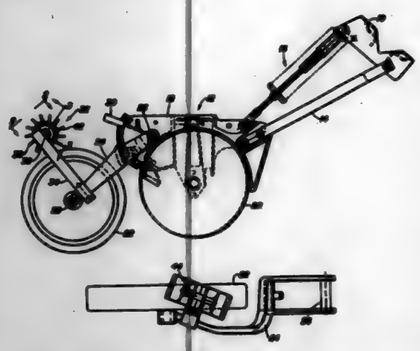


15. A method for displacing a liquid into a well bore annulus at a location along a string of pipe where a pressure operated valve is at the location and there is a liquid under pressure in the annulus comprising the steps of:
disposing a string of pipe with a pressure operated valve at a location in a well bore where it is desired to introduce a first liquid into the annulus about said location and where the annulus has a second liquid under pressure;
supplying a flow of the first liquid to the location through the string of pipe and developing a pressure in the bore of the string of pipe which is sufficient to longitudinally displace a movable sleeve member in said pressure operated valve to move the sleeve member from a closed position to an open position and to place flow ports in the valve in fluid communication with choke ports in the valve in the open position of the sleeve member and to place a differential pressure area on the sleeve member in communication with a pressure drop developed by said choke parts;
maintaining a flow of the first liquid through said choke ports and into the second liquid in the annulus sufficient to develop a differential pressure across the choke ports to act on the sleeve member and to hold the sleeve member in the open position while the flow is maintained through the choke ports.

5,443,125
SCRAPER FOR PLANTING MECHANISM GAUGE WHEEL
Richard H. Clark, Geneseo; Steven G. Gray, Lynn Center, both of Ill., and John D. Long, Ankeny, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 2, 1994, Ser. No. 236,315
Int. Cl.[6] A01B *23/00*
U.S. Cl. 172—608 6 Claims

1. In an agricultural planting machine having a plurality of row units that include a row unit frame, furrowing opening device mounted on the frame and a depth gauging wheel rotatably mounted on a transverse shaft rearwardly of the opening device, the shaft being supported on an arm connected to the frame, the combination therewith of an improved scraping device for at least one of the gauge wheels, comprising:
a support member mounted on the arm;

a scraper wheel rotatably mounted on the support member for rotation about an axis offset from the axis of the gauge wheel, the scraper wheel including a plurality of edges on its periphery that are non-parallel to the gauge wheel axis



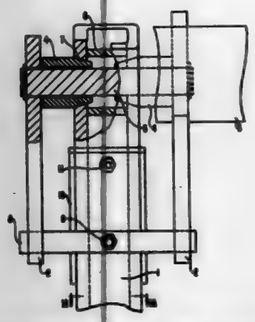
and adjacent the periphery of the gauge wheel so that the scraper wheel rotates by contact with any material on the periphery of the gauge wheel and the edges scrape said material from the gauge wheel periphery.

5,443,126

GRUBBER TINE

Magne Skjaeveland, Klepp St., Norway, assignor to Kverneland Klepp AS, Kvernaland, Norway

Filed Jul. 16, 1993, Ser. No. 92,467
Int. Cl.[6] A01B *3/00*; E02F *5/02*
U.S. Cl. 172—271 **9 Claims**



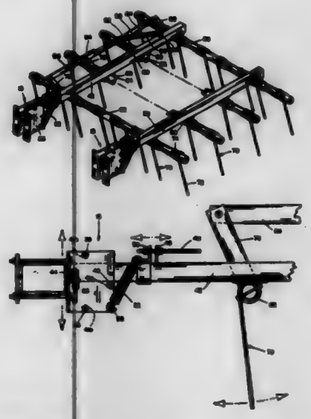
1. A resilient grubber tine for working the soil, comprising:
a grubber tine (1) having a hollow cross-section,
a shaft,
a boss (4) having a contact surface, attached to the grubber tine (1) said boss (4) suspending the grubber tine (1) rotatably on said shaft (5),
a hole defined in a wall of the grubber tine, wherein the boss (4) is pressed into the hole in the wall of the grubber tine (1), whereby elastic material deformation of the contact surface attaches the boss (4) to the grubber tine (1) through friction,
a safety bolt (9) connected to said grubber tine, and having means for maintaining the grubber tine (1) in a working position, and to be torn off through tension upon the occurrence of a predetermined load on the grubber tine, in order to protect the grubber tine (1) against overload, and
a resilient member (16) with a working area, positioned between the safety bolt and the grubber tine, through which the force between the grubber tine (1) and the safety bolt (9) passes, whereby the grubber tine (1) may be rotated around the shaft (5) within the working area of the resilient member (16) when a load on the grubber tine varies.

5,443,127

SPRING TOOTH HARROW

Michael B. Gates, R.R. 1, Box 60, Lansford, N. Dak. 58750

Continuation of Ser. No. 16,791, Feb. 11, 1993, Pat. No. 5,358,056, which is a continuation-in-part of Ser. No. 725,342, Jul. 3, 1991, abandoned. This application Aug. 26, 1994, Ser. No. 296,540
The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.
Int. Cl.[6] A01B *19/02, 73/02*
U.S. Cl. 172—634 **2 Claims**



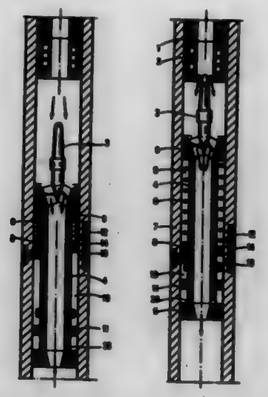
1. In combination:
a tractor having a hitch extending rearwardly therefrom;
an elongated, horizontally disposed and transversely extending draw bar operatively
secured to said hitch and having rearward and forward sides;
said draw bar being wheel supported and being pivotally movable, about a horizontal axis with respect to said hitch to enable the draw bar to be pivoted from a field position to a transport position;
means for pivoting said draw bar from said field position to said transport position;
a plurality of harrow sections secured to said draw bar and extending rearwardly therefrom;
each of said harrow sections including at least first and second horizontally spaced mounting brackets which are secured to said draw bar;
first and second arms pivotally connected at their forward ends to said first and second mounting brackets respectively, said first and second arms extending rearwardly therefrom;
a resilient means interconnecting each of said arms with its respective mounting bracket for yieldably maintaining the harrow section in ground engagement;
a plurality of horizontally spaced tooth supports selectively rotatably mounted on the underside of said arms and extending therebetween;
a plurality of spring teeth operably secured to said tooth supports and extending downwardly therefrom;
a selectively movable linkage means interconnecting said tooth supports so that said tooth supports may be rotated as a unit;
an adjustment member pivotally connected at one end to one of said arms, and selectively adjustably connected at an opposite end to said linkage means, for selectively fixing said linkage means in a pre-determined position;
said tooth supports including a forward tooth support, a rearward tooth support, and at least one intermediate tooth support;
said linkage means including means for selectively rotatably moving said forward tooth support with respect to the other tooth supports;
a stop associated with each of said mounting brackets for limiting the pivotal movement of the associated arm so that when said draw bar is moved to its said transport position, said stop limits the forward pivotal movement of said respective arm and the tooth supports secured thereto.

5,443,128

DEVICE FOR REMOTE ACTUATING EQUIPMENT COMPRISING DELAY MEANS

Benoit Amaudric du Chaffaut, Voisins le Bretonneux, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 14, 1993, Ser. No. 166,028
Claims priority, application France, Dec. 14, 1992, 92 15141
Int. Cl.[6] E21B *44/00*
U.S. Cl. 175—25 **13 Claims**



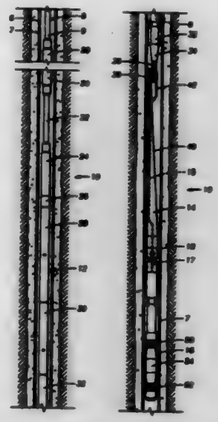
1. A device for remotely actuating equipment through a variation of flow conditions in a fluid flowing in a passageway of a pipe having a cross-sectional area, comprising:
coupling means between said device and said equipment to be actuated, adjusting means for varying the cross-sectional area of the passageway through which the fluid flows between a small and a large cross-sectional area as determined by the hydrodynamic action of the flow of said fluid in said pipe, wherein said adjusting means includes biasing means for repositioning a centralizing needle in a fixed annular flow bean and time delay means for controlling the time to go from the smaller area to the larger area;
means for preventing actuation of the equipment for a predetermined flow condition when the adjusting means are set to the smaller area; and
means for preventing actuation of the equipment when the adjusting means are set for the larger area and the flow conditions have not changed.

5,443,129

APPARATUS AND METHOD FOR ORIENTING AND SETTING A HYDRAULICALLY-ACTUATABLE TOOL IN A BOREHOLE

Thomas F. Bailey, and Barry R. Scott, both of Houston, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Jul. 22, 1994, Ser. No. 279,489
Int. Cl.[6] E21B *47/01, 7/04*
U.S. Cl. 175—45 **29 Claims**



1. An apparatus for setting a hydraulically-actuatable mechanism in a borehole and for drilling additional hole in a single trip of the drill string, said apparatus comprising:
a drill string having the hydraulically-actuatable mechanism connected thereto;
an MWD subassembly attached to said drill string and having means for detecting the orientation of said drill string in the borehole when drilling fluid is circulated in said drill string at a flow rate that is within an operational range of flow rates required for operating said MWD subassembly;
means for rotating said drill string to a desired orientation in the borehole;
a cutting assembly attached to said drill string;
means for actuating the hydraulically-actuatable mechanism after said drill string has been rotated to said desired orientation, said actuating means comprising:
a bypass valve in said drill string for controlling the hydraulic pressure exerted on the hydraulically-actuatable mechanism and for controlling the flow of drilling fluid to said cutting assembly, said bypass valve closing and actuating the hydraulically-actuatable mechanism at a drilling fluid flow rate that exceeds said operational range of flow rates for said MWD subassembly.

5,443,130

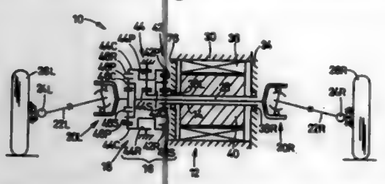
ELECTRIC MOTOR VEHICLE DRIVE SYSTEM HAVING DIFFERENTIAL GEAR DEVICE WHOSE SPLINED OUTPUT ELEMENTS ARE ABUTTABLE ON STOP MEMBER TO RECEIVE THRUST FORCES APPLIED TO VEHICLE WHEEL DRIVE MEMBERS

Koichi Tsuuka, Mishima; Kinya Yoshii, Toyota; Eiji Ichioka, Toyota; Takaharu Koide, Toyota, and Kojiro Kuramochi, Numazu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 7, 1993, Ser. No. 117,843
Claims priority, application Japan, Sep. 11, 1992, 4-269594
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—65.6 **17 Claims**

1. A drive system for an electric motor vehicle, having (a) a

housing structure mounted on a chassis of the vehicle, (b) an electric motor disposed in said housing structure and having a hollow output shaft whose axis is parallel to a transverse direction of the vehicle, (c) a first and a second drive member which are supported by said housing structure, rotatably about respective axes coaxial with said output shaft, said drive members being operatively connected to a first and a second drive wheel, respectively, (d) an intermediate shaft disposed coaxially with said output shaft so as to extend through a center bore of said output shaft, and connected at one axial end thereof to said second drive member for rotation therewith, (e) a differential gear device of planetary gear type disposed in said housing structure coaxially and in series with said output shaft, said differential gear device including a sun gear, a ring gear, a carrier and a planetary gear, one of which serves as an input element that receives power transmitted from said electric motor, and the others of which include two output elements through which the power received by said input member are distributed to said first drive member and said intermediate shaft, and (f) a plurality of thrust bearings for positioning the elements of said differential gear device so as to inhibit move-



ments of said elements in an axial direction of said output shaft, wherein the improvement comprises:

said first drive member including a first end portion having a splined outer circumferential surface remote from said first drive wheel;

said intermediate shaft including a second end portion having a splined outer circumferential surface remote from said second drive member;

said two output elements of said differential gear device having a first center bore and a second center bore, respectively, said first and second center bores being defined by respective splined inner surfaces which engage said splined outer circumferential surfaces of said first and second end portions, respectively; and

a stop member provided on one of said two output elements, so as to protrude into at least one of said first and second center bores, such that opposed end faces of said first and second end portions are abuttable on opposite ends of said stop member, whereby a transverse thrust force applied to said first and second drive members in transversely inward direction of the vehicle is received by said stop member.

5,443,131

TRAILER BRAKE SYSTEM

Ronald D. Bartlett, Rte. 3, Box 51, Spencer, W. Va. 25276

Filed Aug. 5, 1994, Ser. No. 286,419

Int. Cl.[6] B60T *7/20*

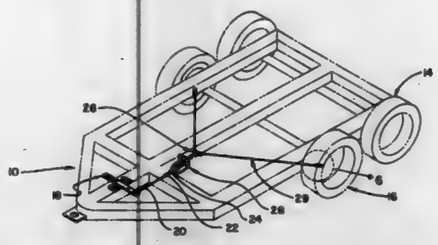
U.S. Cl. 188—3 R **1 Claim**

1. A new and improved trailer brake system for releasably applying trailer brakes by manual effort comprising:

a lever pivotally affixed to an existing trailer frame by a trunnion, the lever comprising an elongated metallic bar having a first free end portion, a central portion, and a second free end portion, the first free end portion having a polymeric layer applied thereon, the central portion having a through hole disposed therein, the second free end portion having a through hole disposed therein forming a pivotal bearing and furthermore positioned more proximate the second free end portion than the first free end portion;

a releasable position retention means comprising a pair of tab members permanently affixed to a frame portion of the trailer wherein each tab member is disposed on either side of the lever and has a through hole susceptible to loose engagement with one or more existing locks disposed therein with the lever having a similar through hole susceptible to alignment with every through hole of the tab members for maintaining a condition of locking using an existing lock in either a brake engaged or brake disengaged mode;

a force transmission means comprising a first cable member having a cable fastening means affixed to free ends thereof, the cable fastening means comprising an eye type cable fitting installed upon at least one of said cable free ends pivotally affixable to the lever and having a swivel first end member affixed to said second free end thereof, the force transmission means having a second member having a cable fastening means affixed to free ends thereof, a swivel joining the first and second cable members wherein the swivel permits multiple rotation of the first and second cable members;



a cable length compensation device comprising an L-shaped member having a first through hole and a second through hole, an end of the second cable member threadably secured to the first through hole; and

a cable splitter equalizer comprising a saddle-like member having a threaded shaft portion affixed thereto, the saddle-like member comprising a thin elongated plate having a first and second radius of curvature wherein the first radius of curvature is large and the second radius of curvature is small thereby forming a smoothly curving cable engagement channel within which a third cable member being disposed, the threaded shaft portion engaging the second through hole of the cable length compensation device, the third cable member having an eye fitting permanently fastened to both free ends thereof, the eye-fittings engage a hook-like member disposed at a free end of a brake actuation lever, force applied to the third cable member by the lever at hook-like member thereby applies a brake mechanism which moves brake shoes outward to engage a brake drum.

5,443,132

MAGNETIC LATCH MECHANISM AND METHOD PARTICULARLY FOR BRAKES

James H. Arnold, Moberly, Mo., assignor to Orscheln Co., Moberly, Mo.

Filed May 25, 1994, Ser. No. 248,258

Int. Cl.[6] B60T *7/12*

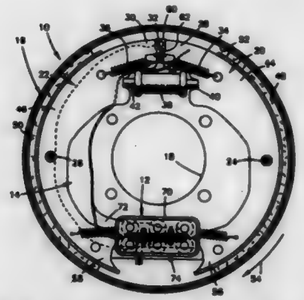
U.S. Cl. 188—138 **28 Claims**

1. A magnetic latch mechanism comprising a first member, a fixed member, a movable member movable relative to said fixed member and said first member, and a magnetic array forming a part of said first member,

said magnetic array having controllable magnetic characteristics for moving said magnetic array between said first and second member latching positions by magnetically attractive forces acting between said magnetic array and the one of said fixed and movable members toward which said magnetic array is moving,

said magnetic latching mechanism having first and second alternate stable conditions which respectively include said first and second magnetic latching positions,

said first alternate stable condition including said first magnetic latching position in which said first member is mag-



netically latched only to said fixed member by magnetic attraction between said magnetic array and said fixed member,

and said second alternate stable condition including said second magnetic latching position in which said first member is magnetically latched only to said movable member by magnetic attraction between said magnetic array and said movable member.

5,443,133

BRAKE SHOE WITH CHAMFERED LINING

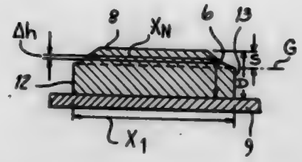
Ludwig Dreilich, Bad Soden; Hans-Joachim Schmeling, Dieburg, and Karl-Heinz Hach, Modautal, all of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt am Main, Germany

Continuation of Ser. No. 934,616, Sep. 1, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 301,048

Claims priority, application Germany, Mar. 1, 1990, 40 06 369.0

Int. Cl.[6] F16D *69/00*

U.S. Cl. 188—250 G **11 Claims**



1. A brake shoe for a disc brake, said brake shoe having a back plate and a generally planar lining having an inner face affixed against said back plate, and an outer face facing away from said backplate, said outer face defining a plane parallel to said back plate, said lining having radially lateral extending edges and circumferentially extending inner and outer edges, said lining chamfered along at least one of said radially lateral or circumferential edges of said lining;

said chamfer forming an inclined profile extending from said outer face to said at least one edge of said lining, said profile having a varying, non linear shape more steeply angled into said plane defined by said outer face of said lining adjacent said outer face than adjacent said at least one edge, whereby said chamfer shape causes the height of lining wear per braking action to rapidly decrease with successive braking actions.

5,443,134

HYDRAULIC ACTUATING DEVICE FOR BRAKES AND GEARSHIFTS OF BICYCLES OR THE LIKE

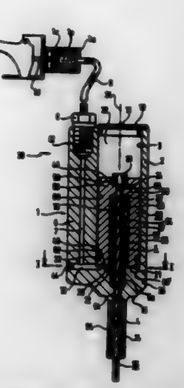
Joachim Gajek, Würzburg, and Hansjörg Stumpf, Schweinfurt, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 7, 1993, Ser. No. 163,128

Claims priority, application Germany, Dec. 10, 1992, 42 41 521.7

Int. Cl.[6] B60T *11/16*

U.S. Cl. 188—344 **21 Claims**



1. A hydraulic actuating device for brakes and gearshifts on bicycles, comprising an actuating lever, a transmitting cylinder coupled to the actuating lever, a receiving cylinder for converting the displacement of the transmitting cylinder by the actuation of the actuating lever into displacement of the receiving cylinder in accordance with the ratio of the areas of the transmitting cylinder and the receiving cylinder, and a flexible pressure line communicating the transmitting cylinder and the receiving cylinder, wherein the receiving cylinder includes a cylinder housing part and a piston; the cylinder housing part being directly connected with a first fastening section of a first component of a device to be actuated by a connecting extension and being stationary with respect to the first component upon actuation of the actuating lever, and the piston being mechanically connected by a traction element with a second fastening section of a second component of the device which is movable in relation to the first component for generating a pulling force between the first and second fastening portions in order to reduce the distance between the first and second portions upon actuation of the actuating lever.

5,443,135

BRAKE SHOE ROLLER INSERT

Christopher A. Redgrave, Portage, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 98,092, Jul. 28, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,590

Int. Cl.[6] F16D *51/00*

U.S. Cl. 188—250 F **1 Claim**

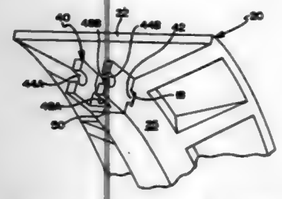
1. A brake shoe for an S cam type vehicle drum brake having a cam actuator and a cam roller follower comprising:

an arcuate brake table having a first and a second side, said first side supporting a friction brake pad for contacting a brake drum;

a brake web attached to said second side of said brake table extending inward toward the center of radius of said

arcuate brake table, said web having a first end pivotably supported and a second end having a substantially flat surface with a positioning slot formed therein, said surface being substantially perpendicular to said brake table;

a hardened steel roller insert having an insert base removeably attached to said flat surface, said roller insert having a pair of roller supports extending from said insert base for



supporting the cam roller follower, and having a positioning rib formed on said insert base facing opposite to said roller supports, said positioning rib engaging said positioning slot thereby stabilizing said roller insert on said flat surface;

attachment means for removeably securing said roller insert to said flat surface of said brake web.

5,443,136

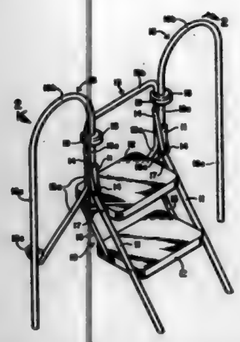
SAFETY STEPLADDER

Edward J. Ott, III, 2960 W. Carmino Carmelia, Tucson, Ariz. 85745, and Robert A. Walcott, Jr., Tucson, Ariz., assignors to Edward J. Ott, III, Tucson, Ariz.

Filed Jun. 24, 1994, Ser. No. 264,891

Int. Cl.[6] E06C *7/00*

U.S. Cl. 182—172 **12 Claims**



1. In a safety stepladder having a ladder portion providing a series of steps, each fastened at its opposite ends to a pair of stiles, respectively; a ladder-supporting back portion pivotally mounted at its upper end to the upper end of said ladder portion so as to swing toward and away from said ladder portion in the setting up and taking down of the stepladder; and outboard safety frame members pivotally mounted adjacent to their upper ends to the stiles, respectively, of said ladder portion, with lower ends thereof adapted to rest on a ladder-supporting surface spaced laterally from said ladder portion when said safety frame members are swung outwardly of said ladder portion into safety positions, the improvement wherein the pivotal mounting and the length of each of said safety frame members are such that the upper ends of said safety frame members extend above the top step of said ladder portion sufficiently, and are formed, to provide hand-holds; and wherein the outboard safety frame members are of inverted U-shape, respectively, having inside and outer leg members and an upwardly arched crossbar extending above the top step of the ladder portion as said hand-holds when said safety frame members are swung into safety positions.

5,443,137

SCAFFOLD BOARD AND METHOD FOR MAKING THE SAME

Wolfgang Welser, Ybbsitz, Austria, assignor to Josef Welser nHG Profiller- und Stanzwerk, Ybbsitz, Austria

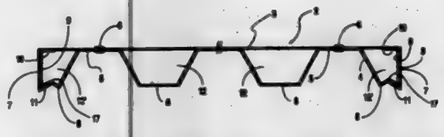
PCT No. PCT/EP91/01257, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/01131, PCT Pub. Date Jan. 23, 1992

Continuation of Ser. No. 966,146, Jan. 6, 1993, abandoned. This PCT application Jul. 4, 1991, Ser. No. 348,676

Claims priority, application Germany, Jul. 6, 1990, 9010264 U

Int. Cl.[6] E04G *1/15*

U.S. Cl. 182—222 **22 Claims**



1. A method for making a scaffold board for a building scaffold comprising connecting a substantially smooth and continuous upper sheet section, which forms the upper side of said scaffold board, to a waved lower sheet section, which comprise wave bottoms and tops of a trapezoidal cross-section and forms the bottom side of said scaffold board, the wave tops of said lower sheet section being adjacent to said upper sheet section, and filling a cavity formed between said upper and lower sheet sections with a foam which expands during curing, wherein said lower sheet section is connected to said upper sheet section at a plurality of connection points on the wave tops of said lower sheet section, said connection points defining unconnected regions between said upper sheet section and the wave tops of said lower sheet section, such that said foam squeezes said sheet sections apart during curing, penetrating between said upper sheet section and the wave tops of said lower sheet section in said unconnected regions.

5,443,138

UNIVERSAL SANDWICH ADAPTER AND THREADED NIPPLE FOR ATTACHING SAME

Ram D. Bedi, and Adrianus J. van der Griendt, both of Bloomfield Hills, Mich., assignors to K.J. Manufacturing Co., Wixom, Mich.

Filed Apr. 12, 1994, Ser. No. 226,709

Int. Cl.[6] F16C *3/14*

U.S. Cl. 184—1.5 **5 Claims**

1. An oil filter mounting adapter connectible with a boss having an opening to an internal lube oil passage system and an oil filter unit of an engine, said oil filter mounting adapter comprising:

a sandwich adapter and a nipple adapter;

said nipple adapter comprising an outer surface wherein said outer surface is divided into two portions;

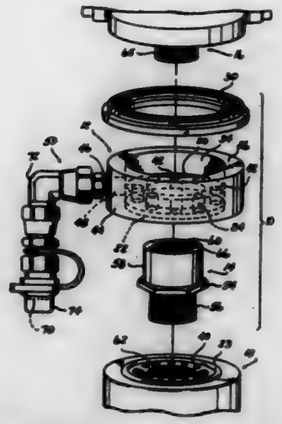
a first portion having an outer threaded surface and a second portion having an unthreaded surface, said first portion adapted to threadably attach to the oil filter unit;

a means for matingly connecting with the boss;

said nipple adapter having a central inner bore providing an oil exit opening proximate to the oil filter unit; and

said sandwich adapter comprising a first face adapted to sealingly contact the engine and to overlay the opening to the internal lube oil passage system, a second face adapted to sealingly connect to said oil filter unit;

said sandwich adapter having at least one engine oil entry opening in proximity to the opening to the internal lube oil passage system, a means for introducing and removing fluids through said sandwich adapter, a central through bore extending laterally through said sandwich adapter from said first face to said second face, said central



through bore adaptable for receiving said second portion of said nipple adapter therethrough wherein said second portion of said nipple adapter is disposed between and adjacent said boss and said sandwich adapter, and said second portion defines a hub about which said sandwich adapter is rotatably mounted.

5,443,139

BICYCLE CHAIN LUBRICATION

Fraser M. Scott, 106 Clober Rd., Milngavie, Glasgow, Scotland G62 7SS

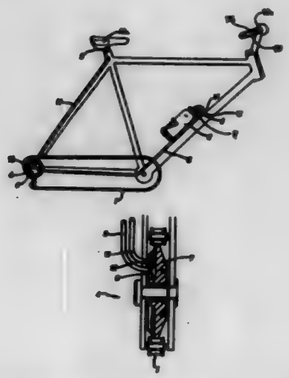
PCT No. PCT/GB91/01239, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/01597, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 966,080

Claims priority, application United Kingdom, Jul. 24, 1990, 9016198

Int. Cl.[6] F16N *7/16*

U.S. Cl. 184—15.2 **23 Claims**



1. A means for cleaning and lubricating a chain comprising a lubricant reservoir, a pump and an injecting means, characterised in that it also comprises a water reservoir and water dispensing means wherein a cleansing fluid may flow from the water dispensing means to the injecting means by a first connecting tube and lubricant may be pumped from said lubricant reservoir to said injecting means through a second connecting tube, and wherein said injecting means is adapted to inject said cleansing fluid and said lubricant onto the chain.

5,443,140

METHOD AND APPARATUS FOR REDUCING THE POWER REQUIRED BY AN HYDRAULIC ELEVATOR DRIVE

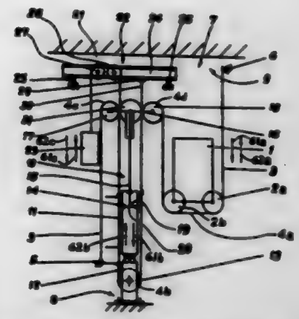
Heinz-Dieter Nagel; Jörg Christians, and Gerald Lechler, all of Berlin, Germany, assignors to Inventio AG, Hergiswil, Switzerland

Filed Feb. 10, 1993, Ser. No. 16,006

Claims priority, application Switzerland, Feb. 10, 1992, 00390/92

Int. Cl.[6] B66B *11/04*

U.S. Cl. 187—253 **10 Claims**



1. A method for reducing the power required to drive an hydraulic elevator, the elevator including a load carrying elevator car connected to an hydraulic piston-cylinder type drive by a hoist cable whereby upward and downward movements of the elevator car are controlled by fluid flow to and from a cylinder of the drive causing a piston in the cylinder to move upwardly and downwardly respectively, the elevator car moving two units of distance for each unit of distance moved by the piston in the cylinder of the drive, the method comprising the steps of:

a. connecting a counterweight to a piston in a cylinder of an hydraulic piston-cylinder type drive for movement of the counterweight in a direction opposite a direction of movement of the piston and an elevator car driven by the piston;

b. connecting a non-return valve to the cylinder between a source of pressured fluid and an upper side of the piston;

c. connecting a source of pressured fluid to the cylinder to apply pressured fluid to a lower side of the piston for movement Of the elevator car in an upward direction and to circulate fluid through the non-return valve from the upper side of the piston to the lower side of the piston during the upward movement of the elevator car;

d. connecting the source of pressured fluid to the cylinder to apply the pressured fluid to the upper side of the piston for movement of the elevator car in a downward direction and removing fluid from the cylinder at the lower side of the piston during the downward movement of the elevator car; and

e. disconnecting the source of pressured fluid from the cylinder during movement of the elevator car to stop the elevator car, the pressured fluid from the source of pressured fluid preventing fluid flow from the cylinder at the upper side of the piston through the non-return valve.

5,443,141

PRESSURE-CONTROLLED READJUSTING DEVICE FOR A VEHICLE BRAKE

Rudolf Thiel; Andreas Doell, both of Frankfurt am Main, and Georg Halasy-Wimmer, Eschborn, all of Germany, assignors to Alfred Teves GmbH, Germany

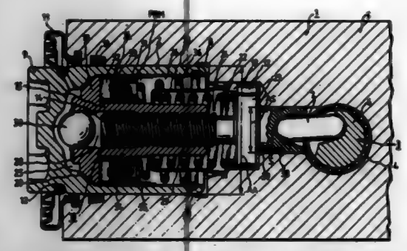
PCT No. PCT/EP92/01075, § 371 Date Aug. 4, 1993, § 102(e) Date Aug. 4, 1993, PCT Pub. No. WO93/00527, PCT Pub. Date Jan. 7, 1993

PCT Filed May 15, 1992, Ser. No. 980,802

Claims priority, application Germany, Jun. 26, 1991, 41 21 054.9

Int. Cl.[6] F16D *55/02*

U.S. Cl. 188—71.9 **27 Claims**



1. A readjusting device for a vehicle brake having a longitudinal axis and including hydraulic actuating means creating pressure upon actuation of said brake; mechanical actuating means; a cylinder; a hollow piston displaceably disposed in said cylinder and actuated by said hydraulic actuating means and by said mechanical actuating means; said readjusting device comprising:

a longitudinally displaceable, non-rotatable spindle disposed between said piston and said mechanical actuating means, activated by said mechanical actuating means, and having a thread;

a longitudinally displaceable, rotatable nut in threaded, non-self locking engagement with said spindle and positioned within said piston;

a friction cone formed upon engagement between said nut and said piston and adapted to prevent rotation of said nut;

a sealant disposed between said piston and said nut and adapted to react to application of said pressure applied upon actuation of said brake to displace said nut toward said piston; and

a first spring biasing said nut toward said mechanical actuating means and away from said piston to, upon release of said brake, cause rotation of said nut relative to said spindle, said pressure applied upon actuation of said brake overcoming said bias when said pressure exceeds a predetermined value and preventing readjustment of said brake.

5,443,142

ELEVATOR DOOR TAMPERING PROTECTION SYSTEM

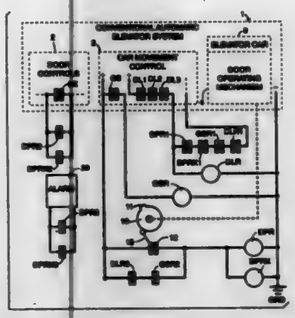
Walter Glaser, Saddle River, N.J., assignor to G.A.L. Manufacturing Corp., Bronx, N.Y.

Filed Dec. 6, 1993, Ser. No. 162,712

Int. Cl.[6] B66B *13/22*

U.S. Cl. 187—316 **14 Claims**

1. In an automatic elevator system having an elevator car with a car door, means mounting said car in a hoistway extending between a plurality of floors in a building, a floor door at each of said floors for providing access to said car, control means including hoistway apparatus for moving said car from one of said floors to another and stopping said car at a floor, door operating means for automatically opening and closing at least said car door when the car is at a floor, a first switch means including first circuit closing means and second circuit closing means normally operable in accordance with the positions of said car door for controlling said control means and permitting said control means to move said car from said floor to another floor when said car door and each said floor door is closed, and a second switch means connected in circuit with said first switch means and operable in accordance with the position of at least one of said car door and said floor door for normally preventing movement of said car when there has been tampering with said first switch means which causes abnormal operation of said first switch means and movement of said car without closing of both said car door and each said floor door, wherein the improvement comprises: a safety circuit means electrically connected to and separating said second circuit closing means and said control means, said safety circuit means being electrically responsive to said second switch means, said first circuit closing means and said second circuit closing means, for detecting failure of said first switch means, said second switch means and said safety circuit means to operate normally due to one of shorting, grounding, open circuits and failure of any component of one of said first and second switch means and said safety circuit means to operate normally and for the prevention of movement of said car when such failure is detected.



5,443,143

CLUTCH RELEASE APPARATUS

Andree Tobiasz, Sur Seine, France, assignor to Automotive Products, France, SA, Herblay-Cergy-Pontoise, France

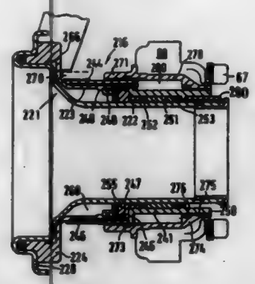
PCT No. PCT/EP93/02513, § 371 Date May 13, 1994, § 102(e) Date May 13, 1994, PCT Pub. No. WO94/07047, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 17, 1993, Ser. No. 244,237

Claims priority, application France, Sep. 17, 1992, 92 11236

Int. Cl.[6] F16D *25/08*

U.S. Cl. 192—85 CA **7 Claims**



1. A hydraulic annular slave cylinder for a motor vehicle clutch comprising an annular body having inner and outer cylindrical walls forming a hydraulic chamber therebetween, a primary piston displaceable in response to hydraulic pressure within the chamber, a secondary piston mounted on the primary piston and displaceable therewith, and a release bearing operatively connected with the secondary piston, the secondary piston forming with the primary piston a second hydraulic chamber of variable length and volume and being connected to the first hydraulic chamber through a valve means so that the length of the secondary chamber and hence the position of the secondary piston relative to the primary pistons is adjustable to compensate for clutch wear.

5,443,144

METHOD AND APPARATUS FOR IMPROVED COIN, BILL AND OTHER CURRENCY ACCEPTANCE AND SLUG OR COUNTERFEIT REJECTION

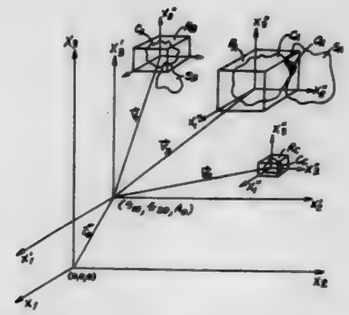
Bob M. Dobbins, Villanova, and Jeffrey E. Vaks, Chester Springs, both of Pa., assignors to Mars Incorporated, McLean, Va.

Continuation of Ser. No. 898,802, Jun. 15, 1992, Pat. No. 5,330,041, which is a continuation of Ser. No. 595,076, Oct. 10, 1990, Pat. No. 5,167,313. This application May 26, 1994, Ser. No. 249,323

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—317 **32 Claims**



18. A method for increasing the level of counterfeit rejection in a money validation system, wherein the money validation system generates at least one value corresponding to at least one characteristic of an inserted item and compares the generated value to predetermined acceptance criteria values, comprising:

inserting a plurality of known counterfeit items into the validation apparatus;

generating counterfeit values for each counterfeit item;

subtracting the counterfeit values from the acceptance criteria values to form an improved acceptance criteria; and

utilizing the improved acceptance criteria to validate subsequently inserted items.

5,443,145

SAFETY DEVICE AT THE RUN-IN POINT OF A CIRCULATING HANDRAIL

Klaus Schoeneweiss, Hattingen, Germany, assignor to O&K Orenstein & Koppel, AG, Berlin, Germany

PCT No. PCT/EP93/01456, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO94/05585, PCT Pub. Date Mar. 1, 1994

PCT Filed Jun. 9, 1993, Ser. No. 244,256

Claims priority, application Germany, Sep. 8, 1992, 42 29 936.5

Int. Cl.[6] B66B *29/04*

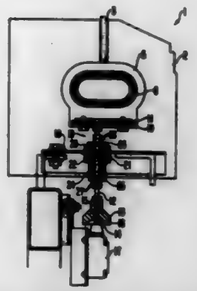
U.S. Cl. 198—323 **12 Claims**

1. A safety device disposed at a run-in region of a circulating handrail of a moving passage into a stationary wall, the safety device comprising:

a cover plate;

an elastically deformable handrail run-in part configured as a bellows and connected to the cover plate;

a rod-shaped element having a first end and a second end and being seated in a rear region of the handrail run-in part;



an angled component having a first leg connected to a rear side of the handrail run-in part and a second leg adapted to receive the first end of the rod-shaped element; and

a limit switch for stopping a movement of the moving passage upon being activated, the limit switch being disposed such that the rod-shaped element is effective for transmitting a deformation of the handrail run-in part onto the limit switch for activating the limit switch.

5,443,146

IMPACT-ABSORBING SHOCK ABSORBER WITH DEFORMATION BODY

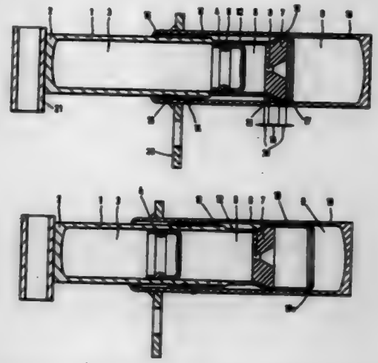
Metin Ayyildiz, Köln, and Holger Kirchner, Ruppichteroth, both of Germany, assignors to Fichtel & Sachs AG, Elterf, Germany

Filed Aug. 3, 1994, Ser. No. 285,401

Claims priority, application Germany, Aug. 4, 1993, 43 26 070.5; Feb. 2, 1994, 44 03 127.0

Int. Cl.[6] F16F *7/12*

U.S. Cl. 188—374 **20 Claims**



11. An impact damper for being connected between a frame and a bumper of a motor vehicle to dampen the impact of a collision of the motor vehicle with an obstacle, said impact damper comprising:

an outer tubular member;

means for operatively attaching said outer tubular member to one of:
the frame of a motor vehicle, and
the bumper of a motor vehicle;
said outer tubular member having a first end and a second end;
said outer tubular member comprising a first chamber disposed adjacent the second end of said outer tubular member, said first chamber comprising a hydraulic fluid therein;
an inner tubular member;
said inner tubular member comprising means for operatively attaching said inner tubular member to the other of:
the frame of a motor vehicle, and
the bumper of a motor vehicle;
said inner tubular member being at least partially disposed within said outer tubular member through the first end of said outer tubular member, said inner tubular member being axially movable within said outer tubular member;
said inner tubular member having a longitudinal axis, a first end disposed towards said second end of said outer tubular member, a second end opposite the first end, and at least a portion of said inner tubular member defining a first dimension, said first dimension being disposed substantially transverse to said longitudinal axis;
said inner tubular member comprising:
second chamber means disposed within said inner tubular member;
separating means disposed adjacent said at least a portion of said inner tubular member for separating said first chamber from said second chamber means, said separating means having a second dimension, said second dimension being disposed substantially parallel with the first dimension of said at least a portion of said inner tubular member, said second dimension being substantially greater than said first dimension;
means for retaining said separating means in an initial position between said at least a portion of said inner tubular member and said first chamber;
said separating means being configured for moving along said at least a portion of said inner tubular member under a force applied to said separating means by the fluid in said first chamber; and
said separating means comprising means for expanding said at least a portion of said inner tubular member during movement along said at least a portion of said inner tubular member, said means for expanding comprising means for increasing said at least a portion of said inner tubular member from said first dimension to substantially said second dimension.

5,443,147
ROTATIONALLY DEPENDENT FREE-WHEELING COUPLING

Franz Gratzer, Köppling, Austria, assignor to Steyr-Daimler Puch AG, Vienna, Austria

Filed Apr. 5, 1994, Ser. No. 222,802
Claims priority, application Germany, Apr. 6, 1993, 43 11 288.9
Int. Cl.[6] F16D *41/10, 41/07, 41/067*
U.S. Cl. 192—27 **10 Claims**

1. A rotationally dependent free-wheeling coupling for a motor vehicle, comprising
a first ring which constitutes a driving element in a towing mode of the motor vehicle,
a second ring which constitutes a driven element in said towing mode,
clamping elements which act between the first and second rings to transfer torque between said first ring and said second ring in both directions of torque flow,
at least a first cage in which said clamping elements are disposed,
a friction element connecting said first cage to said second ring so that said first cage is urged to follow rotation of said second ring,
a latch which acts between said first ring and said first cage, said latch being mounted for swivelling movement on an axle, said latch entering a recess of said first cage, said recess having a wall which constitutes a stop for said latch, said clamping elements being in a neutral position and not transferring torque between said first and second rings when said latch presses against said stop,

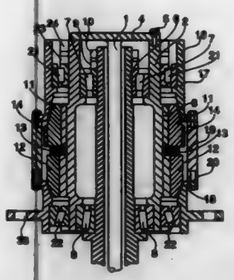


a retaining spring which presses said latch into said recess of said first cage, and
a slipping spring comprising a loop which is coiled around a fixed ring and a protruding spring arm which acts on said latch, said loop being coiled around said fixed ring in a direction of rotation such that said protruding spring arm causes said latch to disengage from said recess in opposition to said retaining spring when said vehicle is in reverse travel.

5,443,148
COASTING DEVICE FOR A VEHICLE

Qiwen Shi, No. 176, Dabeijie, Tangyin, Henan, China

Filed Sep. 2, 1993, Ser. No. 114,850
Claims priority, application China, Nov. 30, 1992, 92240879.3; Feb. 18, 1993, 93102939.7
Int. Cl.[6] F16D *27/08*
U.S. Cl. 192—48.2 **2 Claims**

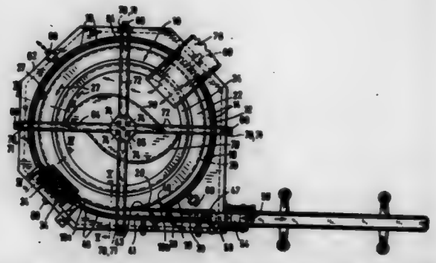


1. A coasting device for a vehicle comprising: a half shaft, a drive hub with external thread, said hub coaxially mounted to one end of said half shaft; an overrunning clutch which includes a forward running ring and a rearward running ring, both said running rings matching said external thread and being of frustum shape with truncated conical surfaces, and the conical surfaces of said running rings being oppositely disposed, and said running rings being threaded on the threaded section of said drive hub; a retainer ring provided between the two running rings; an outer casing coaxially provided outside the drive hub, with an annular chamber formed therein, said chamber being provided with conical shaped surfaces to match said conical surfaces of said running rings; and a locking device provided outside the rearward running ring; said outer casing comprising a first cylinder with an internal conical surface; a second cylinder with an internal conical surface; a middle cylinder provided between the first and second cylinders and rigidly connected with them; thus forming a chamber with internal conical surfaces at each end and a cylindrical internal surface in the middle, said locking device further comprising a pair of brake shoes provided radially inside said middle cylinder; and a spring device provided radially outside the brake shoes, urging the brake shoes against the rearward running ring to achieve a lockup state, by virtue of the pressure exerted by said spring device, said locking device further comprising a pair of brake shoes having shoe tips and a first cam mechanism having a cam, a cam shaft and an electromagnetic drive device, said cam being provided at the position of the shoe tip of one brake shoe and being rotatable to release the brake shoe under the operation of said electromagnetic device.

5,443,149
APPARATUS FOR ALIGNING DISORDEREDLY SUPPLIED BODIES

Norbert Rohwetter, and Jürgen Moska, both of Bünde, Germany, assignors to Werner Kammann Maschinenfabrik GmbH, Germany

Filed Mar. 9, 1994, Ser. No. 208,511
Claims priority, application Germany, Mar. 16, 1993, 43 08 316.1
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—392 **24 Claims**

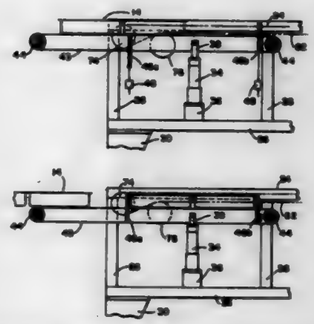


1. An apparatus for aligning disorderedly supplied bodies including: a drum which is rotatable about a substantially vertical axis and which has a bottom comprising at least first and second substantially coaxial discoid means arranged one above the other, the first discoid means at the lowermost position being of the largest outside diameter, the second discoid means being disposed above and being of smaller diameter than the first discoid means, the second discoid means having at least a part of its outer periphery forming an inner boundary of a channel for receiving the supplied bodies in alignment, the first discoid means forming a bottom boundary of said channel; a stationary wall means forming the outer boundary of said channel, wherein the radial width of the channel which is defined by the distance between said outer periphery of said second discoid means and said stationary wall means, is adapted to the configuration of the supplied bodies to be aligned in such a way that only one body can be accommodated by the channel over the width of the channel; means for rotating each discoid means independently of each other; means for adjusting the position of the second discoid means to provide for adjustment of the height of the inner boundary of said channel which is formed by the outer periphery of the second discoid means, the height adjustment being dependent on the size and configuration of the supplied bodies; a stripper means disposed above said channel and operative to urge towards the interior of the drum any body disposed in the region above a body within the channel, without however removing bodies which occupy their correct position within the channel; and second stationary wall means located downstream of said stripper means in the direction of transportation of said bodies in said channel, the second stationary wall means delimiting a portion of said channel on the inward side thereof to shield said portion of the channel relative to the interior of the drum, whereby the aligned bodies in the channel are guided out of the drum by way of at least a part of said shielded portion of the channel.

5,443,150
APPARATUS FOR ADVANCING PREFORMED CONTAINERS

Raymond G. Buchko, Appleton, Wis., assignor to Rapidpak, Inc., Appleton, Wis.

Filed Sep. 23, 1993, Ser. No. 125,572
Int. Cl.[6] B65G *47/34*
U.S. Cl. 198—463.3 **8 Claims**



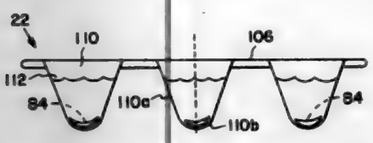
1. An indexing motion machine for processing a preformed container, said machine comprising:
preformed container supply means for supplying a preformed container along a first path to an advancement mechanism associated with the machine, and movable in a second path substantially parallel to the first path of the preformed container supply means wherein the preformed container and the advancement mechanism are temporarily maintained stationary along their respective first and second paths;
movable gate means movable into and out of engagement with the preformed container and operatively associated with and separate from the preformed container supply means for controlling the transport of the preformed containers along the first path;
clamping means located on the advancement mechanism for clamping the preformed container as it is maintained stationary along its first path on the preformed container supply means, the preformed container supply means being movable along a third path from a first position in which the preformed container is disengaged from the clamping means to a second position in which the preformed container is grippingly engaged by the clamping means;
first means for moving the preformed container supply means between the first position and the second position; and
second means for indexingly moving the advancement mechanism and the preformed container to be processed along the machine after the preformed container has been grippingly engaged by the clamping means.

5,443,151
CONVEYOR OR CRANE BEAM OF EXTRUDED ALUMINUM ALLOY
Michael K. Taylor, Farmington, N.Y., assignor to Gorbel, Inc., Fishers, N.Y.
Filed Mar. 30, 1994, Ser. No. 219,949
Int. Cl.[6] B65G *21/02*
U.S. Cl. 198—860.1 19 Claims



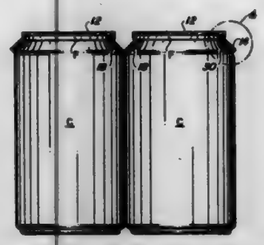
1. A conveyor or crane beam comprising:
an aluminum alloy extrusion configured to form:
a. a top flange having a plane top extending for the width of the beam;
b. opposite side edges of the top flange being thickened so that the side edges are thicker than mid-regions of the top flange;
c. a vertical web extending integrally from the top flange to a bottom flange that extends laterally to approximately the width of the top flange;
d. opposite side edges of the bottom flange turning integrally downwardly to form channel side walls and integrally inwardly to form a channel bottom having a central bottom slot arranged so that the channel bottom provides a wheel track on each side of the bottom slot for supporting wheeled elements; and
e. opposite bottom corners of the channel being thickened in a region where the channel side walls turn inwardly to the channel bottom so that the bottom corners are thicker than the channel side walls and the channel bottom.

5,443,152
APPARATUS FOR CARRYING OPHTHALMIC LENSES
Thomas G. Davis, Princeton, N.J., assignor to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.
Continuation of Ser. No. 995,622, Dec. 21, 1992, abandoned.
This application Jun. 28, 1994, Ser. No. 267,578
Int. Cl.[6] A45C *11/04*
U.S. Cl. 206—5.1 20 Claims



1. An apparatus containing an ophthalmic lens, said lens having a radius of curvature, said apparatus comprising:
a base member;
a well connected to the base member to hold the ophthalmic lens, the well being substantially transparent, and including:
i) a frusto-conical sidewall having a downward slope to a bottom portion, and
ii) said bottom portion hemi-spherically shaped and connected to and extending downward from the sidewall, and having a radius of curvature larger than said ophthalmic lens radius of curvature contained therein, said larger bottom portion radius or curvature allowing only single point contact between said bottom portion and said ophthalmic lens.

5,443,153
CLIP-TYPE ARTICLE CARRIER
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Feb. 10, 1994, Ser. No. 194,764
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—152 3 Claims

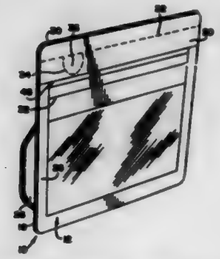


1. A carrier containing adjacent rows of articles, each article having an upper portion which includes an outwardly projecting lip, comprising:
a support panel including two spaced parallel inner fold lines extending longitudinally of the panel and two outer fold lines parallel to and outwardly spaced from the inner fold lines;
the support panel including downwardly extending outer support sections connected thereto along the outer fold lines and downwardly extending inner support sections connected thereto along the inner fold lines, the inner support sections converging toward each other and being connected to each other along a central fold line;
each inner and outer fold line being interrupted by slots through which portions of the projecting lips of the articles protrude;
the slots having lower surfaces engaging the underside of the protruding portions of the article lips to thereby support the articles;
a reinforcement flap connected to each outer support section along a fold line;
each flap being folded under the associated outer support section;
each flap having an unconnected edge, portions of which are in contact with adjacent articles;
the inner and outer support sections including score lines opposite the articles for distributing stresses to the central fold line and to the reinforcing flap fold line, respectively; and
the reinforcing flaps including score lines for distributing stresses to the reinforcing flap fold line, said score lines being aligned with the score lines in the adjacent outer support section.

3. A blank for forming a clip-type carrier adapted to support adjacent rows of articles having outwardly projecting lips on the upper portions thereof, comprising:
a generally rectangular sheet including two spaced parallel inner fold lines extending longitudinally of the sheet and two outer fold lines parallel to and outwardly spaced from the inner fold lines;
the sheet including outer support sections connected thereto along the outer fold lines and inner support sections connected thereto along the inner fold lines, the inner support sections connected to each other along a central fold line;
each inner and outer fold line being interrupted by spaced slits for forming slots in the support sections for receiving at least portions of the projecting lips of the articles to be carried;

the edges of the outer support sections formed by folding the outer support sections down about their connecting fold lines being adapted to engage the underside of the outwardly projecting lips of articles;
a reinforcement flap connected to each outer support section along a fold line, the flaps being adapted to be folded under the associated outer support section and to contact adjacent articles;
each flap having an unconnected edge, at least portions of which are in contact with adjacent articles in a carrier formed from the blank;
the inner and outer support sections including score lines opposite the spaced slits for distributing stresses to the central fold line and the reinforcement flap fold line, respectively; and
the reinforcement flaps including score lines for distributing stresses to the reinforcement flap fold line, said score lines being arranged so as to be aligned with the score lines in the adjacent outer support section of the carrier.

5,443,154
EASY SEPARATING PACKAGE AND METHOD
Gerald O. Husted, McFarland, and Jeffrey M. Lipinski, Waunakee, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.
Filed Sep. 27, 1993, Ser. No. 127,390
Int. Cl.[6] B65D *75/62*
U.S. Cl. 206—213.1 31 Claims



1. A hermetically sealed gas flushed or vacuum package comprising:
at least two opposing faces of barrier film having their faces in intimate contact about their periphery forming an outer seal;
an inner seal extending parallel with a portion of the outer seal and disposed inwardly therefrom cooperating with a second portion of the outer seal to form a product cavity;
a tear away strip defined by a, first line of weakening extending substantially parallel to said inner seal and disposed above the inner seal; and
a tab portion defined by a second line of weakening on said two opposing faces of barrier film integral with said tear away strip that separates from said package, and said second line of weakening forms a cutaway portion on one of said two opposing faces of barrier film which separates from said opposing face of barrier film when said tear away strip is severed from said package to allow easy separation of said two opposing faces of barrier film for access to said product cavity.

10. A hermetically sealed gas flushed or vacuum sealed package comprising:
at least two opposing faces of barrier film having their faces in intimate contact about their periphery forming an outer seal;
an inner hermetic seal extending parallel with a portion of the outer hermetic seal and disposed inwardly therefrom cooperating with a portion of the outer seal to form a product cavity;
a line of weakening defining a tear away strip extending substantially parallel to said inner seal and disposed above the inner seal; and
a tab portion on one of said two opposing faces of barrier film integral with said tear away strip that separates from said package and forms a cutaway portion on one of said two opposing faces of barrier film when said tear away strip is severed from said package to allow easy separation of said two opposing faces of barrier film for access to said product cavity, said cutaway portion being formed by a perforation line extending downwardly from said tear away strip and through only one of said two opposing faces of barrier films.

19. A hermetically sealed package comprising:
at least two opposing faces of barrier film having said faces in intimate contact about their periphery forming an outer seal;
an inner seal extending substantially parallel with a portion of the outer seal and disposed inwardly therefrom cooperating with a second portion of said outer seal to form a product cavity;
a line of weakening defining a tear away strip extending substantially parallel to said inner seal and disposed above the inner seal; and
one of said two opposing faces of the barrier film having a prepunched or preperforated cutaway portion extending downwardly from said tear away strip toward said inner seal adapted to expose the inner and outer surfaces of at least one of said barrier films and to allow easy separation of said two opposing faces of barrier film when said tear away strip is removed.

30. A method of making a package, said method comprising:
providing two sheets of barrier film in adjacent face to face relationship;
forming an outer seal about the periphery of said two sheets of barrier film;
forming an inner hermetic seal extending substantially parallel to a portion of said outer seal and spaced inwardly therefrom cooperating with a second portion of said outer seal to provide a product cavity;
perforating both of said two sheets of barrier film along a line spaced inwardly from the periphery of the two sheets of barrier film whereby to define a tear away strip; and
perforating one of said two sheets of barrier film along an arcuate path extending from one segment of said line spaced inwardly form the periphery to another segment of said line spaced inwardly from the periphery.

31. A method of making a package, said method comprising:
providing a first section of barrier film;
perforating, said first section of barrier film inwardly of an edge along an arcuate line for defining a cutaway area of said first section of barrier film;
providing a second section of barrier film and positioning said second section adjacent and in face-to-face contact with said first section of barrier film;
perforating both of said first section and said second section of barrier film along a line that extends through said cutaway area;
forming an outer seal about the periphery of said first and second sections of barrier film; and
forming an inner seal extending parallel to said edge and spaced inwardly therefrom and cooperating with a portion of said outer seal to form a product cavity.

5,443,155
WRIST RESTRAINING DEVICE
Edwin Robinson, 20 Crum Elbow Rd. 2-A, Hyde Park, N.Y. 12538
Filed Jun. 27, 1994, Ser. No. 266,725
Int. Cl.[6] B65D *85/00*; E05B *75/00*
U.S. Cl. 206—223 14 Claims

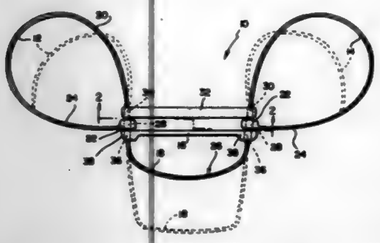
1. A device for restraining a person's wrists, said device comprising
first and second elongated flexibly structured strap parts

folded into respective first and second wrist receptive enlarged loop configurations with a first tip end of each of said strap parts passing slidably through a slotted enlargement in its associated strap part which slotted enlargement defines a second opposite strap part end location, the strap part tip ends and following strap part lengths extending a distance beyond the loop configurations with the tip ends being connected together so as to present with said following strap part lengths a stiffened U-shaped strap bight,

spacer means extending between the first and second loop configurations for holding said loop configurations spaced a distance apart,

an elongated cinch bar having opposite ends in which the following strap part lengths are received in pass through relation, the cinch bar being proximal and the spacer means remote the strap bight,

cooperating detenting means carried on said cinch bar opposite ends and on said strap parts, said detenting means being operable to allow loop configuration reduction from enlarged to reduced size wherein closely conforming loop embrace of the person's wrists exists be effected by either sliding the cinch bar on the strap part following lengths in one direction while said strap part following lengths are held or by sliding the strap part following lengths in an opposite direction while the cinch bar is held, said detenting means being operable further to prevent loop configuration enlargement by either locking the cinch bar in stopped position on the strap parts when a force tending to slide the cinch bar counter to said one direction is imposed



on the cinch bar or locking the strap part following lengths in stopped position in the cinch bar when force is imposed on said strap part following lengths tending to slide them counter to said opposite direction.

12. A kit of components for assembling a twin loop restraining device for use in restraining a person's wrists and embodying a control handle adjunct, the kit comprising the combination of

a pair of elongated, flat flexibly structured straps, one end of each of said straps having an enlarged tip end with there being a slot in such tip end, there being teeth carried at one flat side face of each strap and extending an appreciable length along such one flat side face from an opposite strap end toward the enlarged tip end,

an elongated, relatively rigid spacer piece, there being slots in each of opposite ends of the spacer piece,

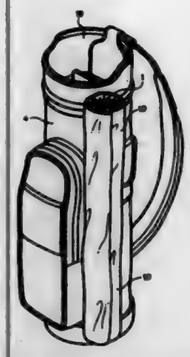
an elongated cinch bar, the cinch bar having pass through slots at opposite ends thereof, there being a stopping means embodied at each cinch bar end,

each said strap being foldable into a loop configuration with its said opposite strap end making pass through successively of one of the end slots of the spacer bar, the slot in the enlarged tip end of said strap and one of the cinch bar opposite end slots, the stopping means in each cinch bar end being operable to allow pass through of the said strap in one direction but to engage the teeth on the strap flat face if withdrawal movement force be imposed on the strap in an opposite direction, each said strap being of length sufficient to produce an enlarged loop course therewith and to provide a length run thereof located beyond the cinch bar distal the loop course,

a connector handle comprising a tubular member, the length run of each strap distal its associated loop course being insertable into an end of said tubular member so that with the length run of each strap received in the tubular member, such length runs and the tubular member constitute a U-shaped stiffened bight facing the cinch bar and constituting a device control handle, the cinch bar being slidable on each strap to reduce the size of the loops to close conforming embrace of a person's wrists which have been received therethrough and therewith correspondingly enlarging the length runs of each strap provide an enlarged bight size, the tubular member having strap teeth engaging lock means operable to engage the teeth of strap length runs inserted therein and prevent removal of said strap length runs from the tubular member, and

an envelope enclosing the components aforesaid.

5,443,156
STOWABLE GOLF BAG COVER
Yoshihiko Shioda, 4603 S. Blvd., Charlotte, N.C. 28209
Filed May 18, 1994, Ser. No. 245,593
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.3 **4 Claims**



1. In the combination of a golf bag for containing golf clubs and a protective cover for golf bag and golf clubs, said cover being made of flexible and foldable material for expanding from a collapsed stowed disposition to an expanded golf bag and club covering disposition, said cover comprising:

a cylindrical portion formed for containing and covering substantially the entire lengthwise extent of said golf bag;

an end portion integral with said cylindrical portion and having a lengthwise and crosswise extent sufficient to cover the heads of golf clubs contained in said golf bag;

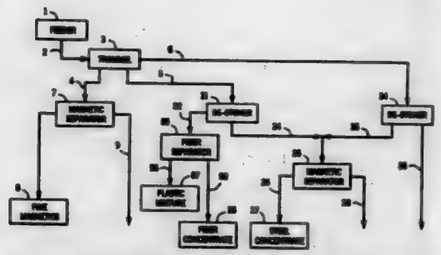
said cover having opposed edges extending substantially the full length of said cover when said cover is in its covering disposition;

means for releasably securing said edges together to close said cover in its covering disposition with the golf bag and clubs therein, and releasable to allow collapsing of said cover from its covering disposition to its stowed disposition extending lengthwise along the golf bag;

means for securing said cylindrical portion to said golf bag along a lengthwise extent of the golf bag to retain said cover on said golf bag in both the covering and stowed disposition of said cover; and

a wrap member for releasably confining said cover in said stowed disposition and secured to one of said cylindrical portion and said golf bag for releasably encircling said cover in its stowed disposition, said wrap member extending over a substantial portion of said stowed cover.

5,443,157
AUTOMOBILE SHREDDER RESIDUE (ASR) SEPARATION AND RECYCLING SYSTEM
Bennie A. Baker, Brookside, N.J.; Kenneth L. Woodruff, Morrisville, Pa., and Joseph F. Naporano, Essex Fells, N.J., assignors to Nimco Shredding Co., Newark, N.J.
Filed Mar. 31, 1994, Ser. No. 221,399
Int. Cl.[6] B03B *7/00*
U.S. Cl. 209—12.1 **15 Claims**



1. A method of sorting and separating automobile shredder residue, comprising the steps of:

separating automobile shredder residue into an undersize fraction, a middling fraction and an oversize fraction;

separating the undersize fraction into a ferrous portion and a non-ferrous portion;

separating the middling fraction into a light fraction and a heavy fraction;

separating the oversize fraction into a light stream and a heavy stream;

combining the heavy fraction from the middling fraction with the heavy stream from the oversize fraction; and

magnetically separating the heavy fraction from the middling fraction and the heavy stream from the oversize fraction to recover steel and a non-magnetic portion.

5,443,158
COAL FLOTATION PROCESS
Colin J. McKenny, and Brian W. Raymond, both of Calgary, Canada, assignors to Fording Coal Limited, Calgary, Canada
Filed Oct. 2, 1992, Ser. No. 955,471
Int. Cl.[6] B03B *1/04*; B03D *1/02*
U.S. Cl. 209—166 **48 Claims**

1. A process for selectively floating particles of lignitic coal, subbituminous coal or oxidized bituminous coal contained within a slurry of coal and gangue, comprising the following steps in the sequence set forth:

(a) dispersing a quantity of a surfactant throughout the slurry;

(b) first conditioning the slurry in the presence of said quantity of surfactant by mixing or agitating such that the surfaces of the particles of coal are selectively coated by the surfactant to produce more oleophilic activated particles of coal;

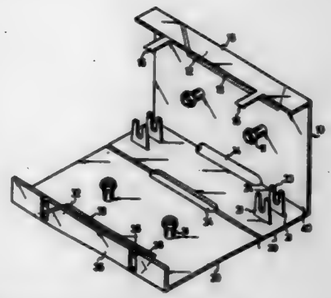
(c) dispersing a quantity of an oil selected from the group consisting of heavy oil and bunker C oil throughout the first conditioned slurry containing the surfactant coated, more oleophilic, activated particles of coal;

(d) second conditioning the first conditioned slurry in the presence of said quantity oil by mixing or agitation such that the surfaces of the surfactant coated, more oleophilic , activated particles of coal are selectively coated by the oil to produce oiled particles of coal; and

(e) subjecting the second conditioned slurry to selective flotation in the presence of gas bubbles to selectively float the oiled particles of coal on the surface of the slurry for separation from the slurry and the gangue;

where the surfactant is a substance that will selectively adhere to the coal and not the gangue, and will cause the coal to accept a coating of the oil.

5,443,159
TRI-CASSETTE CARRIER
Yu-Feng Cheng, No. 7, Fu Hsing St., Tu Cheng Ind. Dist., Taipei Hsien, Taiwan
Filed Nov. 7, 1994, Ser. No. 337,201
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.1 **3 Claims**



1. A tri-cassette carrier comprising a first panel, two protrusions projecting from the first panel and each including a head formed at a free end portion, two hooks projecting from a free edge of the first panel and each including a barb formed on a free end portion, a second panel hinged to the first panel, two clips formed on the second panel, a third panel hinged to the second panel, two protrusions projecting from the third panel and each including a head formed at a free end portion, a strip projecting from a free edge of the third panel, and two barbs formed on the strip, wherein the barbs formed on the hooks are engageable with the barbs formed on the strip for retaining the carrier in a closed position.

5,443,160
VARIABLE POSITION DIVIDER FOR STORAGE TRAY
Dennis J. Tortorella, Arlington Heights, Ill., and William R. Dorr, Houston, Tex., assignors to Fellowes Manufacturing Company, Itasca, Ill.
Filed Jan. 28, 1994, Ser. No. 189,303
Int. Cl.[6] B65D *1/34*
U.S. Cl. 206—561 **17 Claims**

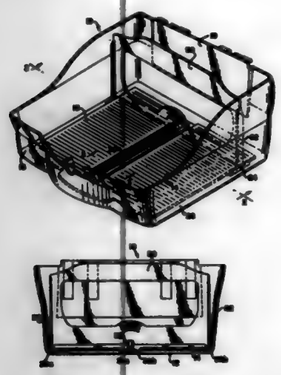
1. A storage tray comprising:

a. a bottom with a front wall opposite a rear wall and a first side wall opposite a second side wall, each wall extending upward from the bottom, the front and rear walls being substantially normal to the first and second side walls;

b. a channel formed on the bottom and extending substantially from the front wall to the rear wall, the channel defined by a pair of spaced apart upward extending fingers that are tapered from the distal end to the proximal end;

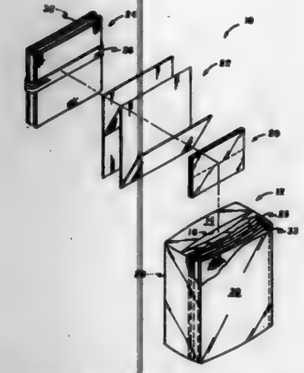
c. at least one divider having a guide that removably engages the channel, the guide being integral and tiltable with the divider, the guide further being shaped to cooperate with the channel so that when the divider is substantially vertical, the guide is substantially vertical and the divider is

slidable along the entire length of the channel and when the divider is tilted from the substantially vertical position,



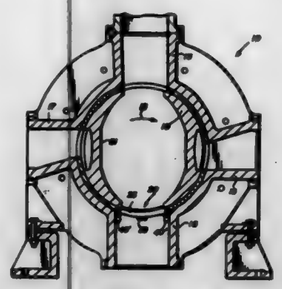
the guide is tilted from the substantially vertical position and the divider is substantially secured in position.

5,443,161
DISPOSABLE BABY CHANGE KIT
David R. Jonese, P.O. Box 5, Arbovale, W. Va. 24915
Filed Jul. 26, 1994, Ser. No. 279,880
Int. Cl.[6] B65D *30/22*
U.S. Cl. 206—581 7 Claims



1. A baby change kit comprising:
a plurality of baby care supplies including a first diaper, a second diaper, a first moisture impermeable disposal bag, a first wet wiping element having a first moisture impermeable wrapping, a second wet wiping element having a second moisture impermeable wrapping;
a moisture impermeable enclosure containing said plurality of baby care supplies, said moisture impermeable enclosure having a main body and a portion attached to said main body by a continuous seal, said moisture impermeable enclosure also having a tear line;
said first diaper includes a first main side, and said second diaper includes a second main side, both said first main side and said second main side being substantially entirely in communication with said moisture impermeable enclosure; and
said moisture impermeable enclosure includes a first pair of opposing surfaces and a second pair of opposing surfaces, said tear line and said continuous seal being integral with different surfaces of said first pair of opposing surfaces, said first main side and said second main side being substantially entirely in communication with different surfaces of said second pair of opposing surfaces.

5,443,162
HIGH CAPACITY HIGH PRESSURE FEEDING
Michael I. Sherman, Glens Falls, N.Y., assignor to Glentech Inc., Glens Falls, N.Y.
Filed Mar. 18, 1993, Ser. No. 33,547
Int. Cl.[6] B07B *1/06*; B65G *53/08*
U.S. Cl. 209—274 20 Claims

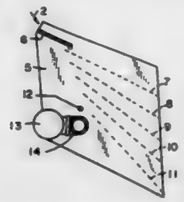


7. A slotted screen for a high pressure feeder comprising:
an integral metal body comprising a frame and a plurality of bars;
said frame having first and third opposite sides, and second and fourth opposite sides;
said plurality of bars comprising a first plurality of arcuate bars extending between said first and third sides of said frame, having concave surfaces, and midpoint areas opposite said concave surfaces; said bars generally evenly spaced from each other to define generally uniformly dimensioned slots therebetween; and
said plurality of bars further comprising a single reinforcing bar extending between said second and fourth sides of said frame, substantially transverse to said arcuate bars, and reinforcing said first plurality of bars, said reinforcing bar engaging said arcuate bars at said midpoint areas opposite said concave surfaces.

5,443,163
APPARATUS FOR SCREENING GRANULAR MATERIALS
Peder Mogensen, Hjo, Sweden, assignor to Fredrik Mogensen AB, Hjo, Sweden
PCT No. PCT/SE92/00662, § 371 Date Apr. 18, 1994, § 102(e) Date Apr. 18, 1994, PCT Pub. No. WO93/05892, PCT Pub. Date Jan. 4, 1993
PCT Filed Sep. 24, 1992, Ser. No. 211,275
Claims priority, application European Pat. Off., Sep. 27, 1991, 91850236
Int. Cl.[6] B07B *1/28*
U.S. Cl. 209—315 4 Claims

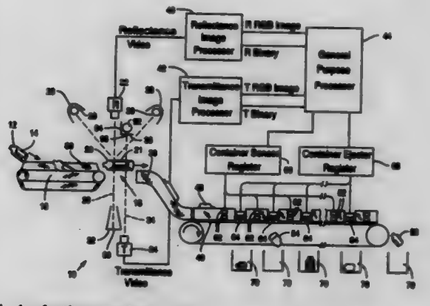
1. Apparatus for separating a collection of particles according to size, shape and/or density comprising a single vibrating means and a frame forming a vibrating space having classifying elements in the form of cloths, wires or bars, slopingly arranged in said space, one below the other, a collection of particles being fed through an inlet into said space, wherein said vibrating means is mounted on a transversal structure of said frame and is arranged below said inlet and well to the rear

of the center of gravity of the apparatus relative to the direction of particle flow, thereby moving said inlet with a stroke



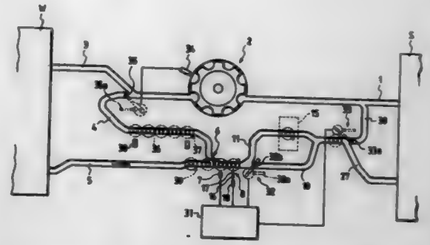
which is more than twice as large as the motion at said center of gravity.

5,443,164
PLASTIC CONTAINER SORTING SYSTEM AND METHOD
Casey P. Walsh; Philip L. Hoffman; William S. Drummond, and H. Parks Squyres, all of Medford, Oreg., assignors to Simco/-Ramic Corporation, Medford, Oreg.
Filed Aug. 10, 1993, Ser. No. 105,349
Int. Cl.[6] B07C *5/00*; G01N *21/00*
U.S. Cl. 209—580 17 Claims



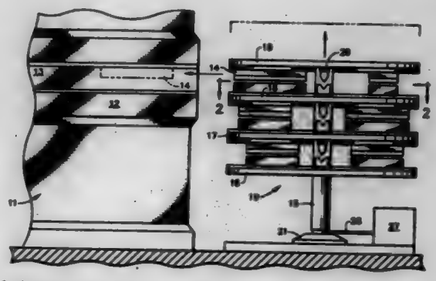
1. A plastic container sorting apparatus, comprising:
a presentation conveyor moving in a first direction and downwardly tilted in a second direction transverse to the first direction such that the plastic containers placed on the presentation conveyor tend to move in the second direction toward a stationary side barrier that stabilizes an orientation of the plastic containers as they are propelled by the presentation conveyor through an air space forming an inspection zone;
a first video camera receiving reflected light from the plastic containers in the inspection zone and generating a stream of reflectance image data;
a second video camera receiving light transmitted through the plastic containers in the inspection zone and generating a stream of transmittance image data; and
a processor classifying translucent ones of the plastic containers into translucency categories in response to the transmittance image data and opaque ones of the plastic containers into color categories in response to the reflectance image data.

5,443,165
BOBBIN FEEDING SYSTEM OF AUTOMATIC WINDER
Keini Hasui, Ohtsu, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jun. 26, 1992, Ser. No. 905,289
Claims priority, application Japan, Jun. 29, 1991, 3-182949
Int. Cl.[6] B07C *5/07*; B65H *73/00*
U.S. Cl. 209—602 3 Claims



1. A bobbin feeding system for an automatic winder, comprising:
a bobbin feedback conveyor for conveying trays carrying bobbins from the automatic winder,
a first conveyor for conveying trays carrying bobbins having a small amount of residual yarn,
a second conveyor for conveying trays carrying empty bobbins and trays carrying bobbins having a large amount of residual yarn, the first and second conveyors branching from the bobbin feedback conveyor,
an empty bobbin discharge conveyor to which at least the first conveyor is joined, and
a bobbin stripper provided adjacent the first conveyor for removing residual yarn from bobbins on trays conveyed on the first conveyor, wherein the first and second conveyors define a branching location having an upstream side, and further comprising:
a first detecting device for detecting an empty bobbin, and
a second detecting device for detecting an amount of residual yarn on a bobbin,
the first and second detecting devices being located on the upstream side of the branching location.

5,443,166
STORAGE RACK FOR USE WITH A BREAK PRESS
John H. Schutte, 5525 Sidney Rd., Cincinnati, Ohio 45238, and Walt L. Wurzelbacher, 2459 Joyce La., Okeana, Ohio 45053
Filed Nov. 9, 1993, Ser. No. 149,522
Int. Cl.[6] A47F *3/06*
U.S. Cl. 211—70.6 15 Claims



1. A storage rack for use with a break press, said storage rack capable of holding a plurality of dies in a manner whereby each

die is positioned for ready transfer to a die bolster of the break press, said storage rack comprising:

(a) a rotatable central shaft having hydraulic lift means operably associated therewith for vertical movement; and

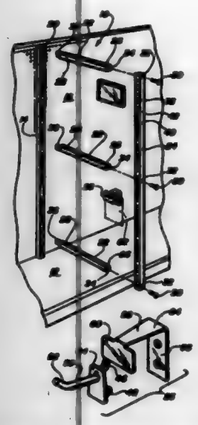
(b) a set of horizontal tiers, each said tier rigidly mounted to the central shaft for vertical movement therewith and for rotational movement therewith wherein each tier has at least two support rails mounted thereon and each support rail has two parallel longitudinally running rib members with a channel therebetween to slidably hold dies whereby a selected die on the storage rack is capable of being positioned juxtaposed the die bolster of the break press by vertical movement of the tier on which the selected die is held and rotational movement of said tier so that the die is readily slid substantially horizontally from the support rail to the die bolster.

5,443,167

MERCHANDISING DISPLAY SYSTEM

Neal M. Menaged, 1714 Fredendall Cir., South Hampton, Pa. 18966, and Lewis M. Hendler, 1420 Greenwalt Rd., Huntingdon Valley, Pa. 19006

Filed May 27, 1994, Ser. No. 250,051
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—87 **11 Claims**



1. A merchandising display system for merchandising products, the system comprising:

a gondola display unit including a base member and an upwardly extending wall portion;

an auxiliary display assembly including first and second cantilever members and a vertical member, said first and second cantilever members each including a distal end and a proximal end, said distal ends of said cantilever members being interconnected by said vertical member;

means for removably attaching said auxiliary display assembly to said gondola display unit;

a merchandise holder adapted to receive and retain a plurality of products; and

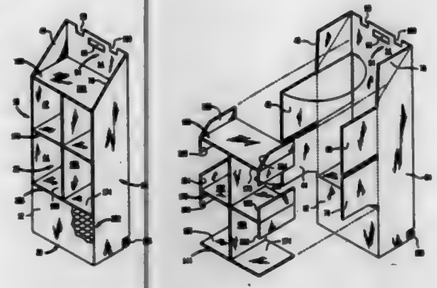
means for removably attaching said merchandise holder to said vertical member such that said merchandise holder is positioned horizontally spaced apart from said upright support member and extends substantially parallel to said upwardly extending wall portion.

5,443,168

PORTABLE DISPLAY STAND WITH SHELVES

James A. Dyment, and Michael S. Kerth, both of Cincinnati, Ohio, assignors to Dyment Limited, Toronto, Canada

Filed Jan. 5, 1994, Ser. No. 177,414
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—149 **15 Claims**



1. A portable display, comprising:

a front panel, a back panel and a pair of spaced, side panels extending between said front and back panels;

a bottom panel assembly including four bottom flaps each connected along a fold line to one of said front, back and spaced side panels, said bottom flaps being foldable to a closed position to form a seat;

at least one shelf for supporting products, said shelf including a front edge, back edge and opposed side edges;

shelf support means for supporting said at least one shelf, said shelf support means including a divider located between said side panels, and mounting means, associated with each of said side panels, for supporting said opposed side edges of said at least one shelf;

a wheel assembly including an axle having opposed ends and a pair of wheels each mounted at one end of said axle, said axle and said wheels being mounted to said seat of said bottom panel assembly in a position substantially concealed from view at least when looking toward said front panel.

5,443,169

CRANE BACKHITCH

Gene Pagel, Two Rivers; Charles Pick, Manitowoc, and Mark Roloff, Two Rivers, all of Wis., assignors to The Manitowoc Company

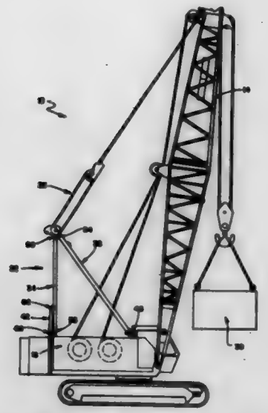
Filed Sep. 15, 1992, Ser. No. 945,140
Int. Cl.[6] B66C 23/42
U.S. Cl. 212—298 **16 Claims**

1. A gantry assembly for a crane, comprising:

a) a gantry having a first end and a second end, the first end of the gantry pivotally connected to a crane bed;

b) a backhitch having an upper end and a lower end, the upper end of the backhitch pivotally connected to the second end of the gantry, the lower end of the backhitch detachably connected to the crane bed; and

c) a control link having a top end and a bottom end, the top end of the control link pivotally connected to the backhitch, the bottom end of the control link pivotally connected to the crane bed, the control link operative to rotate while guiding the backhitch between raised and retracted positions when the lower end of the backhitch is disconnected from the crane bed, the backhitch remaining



pivotally connected to the control link in the raised and retracted positions.

5,443,170

VARIABLE ANGLE FRICTION CLUTCH MECHANISM FOR A DRAFT GEAR ASSEMBLY

Walter H. Merker, Jr., Downeragrove, and Howard R. Sommerfeld, Oak Forest, both of Ill., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Division of Ser. No. 3,109, Jan. 11, 1993, abandoned. This application Jan. 21, 1994, Ser. No. 183,838
Int. Cl.[6] B61G 7/00
U.S. Cl. 213—32 C **4 Claims**

1. A variable angle draft gear assembly to cushion buff and draft shocks encountered in railroad rolling stock during operation, said variable angle draft gear assembly comprising:

(a) a hollow housing member closed at a first end thereof and open at an opposed second end thereof, said hollow housing member having a rear portion adjacent said closed first end and a front portion adjacent said opposed second open end, said front portion being in open communication with said rear portion;

(b) at least one of a spring and a hydraulic compressible cushioning element substantially centrally disposed within said rear portion of said hollow housing member with a first end thereof disposed adjacent at least a portion of an inner surface of said closed first end of said hollow housing member, said compressible cushioning element extending longitudinally from said closed first end, said compressible cushioning element absorbing a first portion of energy generated during compression of said variable angle draft gear assembly;

(c) a seat means having at least a portion of one surface thereof disposed adjacent an opposed second end of said compressible cushioning element and mounted to move longitudinally within said hollow housing member for, respectively, compressing and releasing said compressible cushioning element during an application and a release of a force being exerted on said variable angle draft gear assembly;

(d) a friction cushioning means positioned at least partially within said front portion of said hollow housing member for absorbing a second portion of such energy generated during a compression of said variable angle draft gear assembly, said friction cushioning means including;

(i) a pair of laterally spaced outer stationary plate members having an outer surface and an opposed inner friction surface, said outer surface disposed adjacent an inner surface of said hollow housing member at said opposed second open end thereof,

(ii) a pair of laterally spaced movable plate members of substantially uniform thickness and having an outer friction surface and an inner friction surface and at least one substantially flat edge portion disposed intermediate said outer friction surface and said inner friction surface, said one flat edge portion of each of said pair of laterally spaced movable plate members engaging a portion of said seat means, at least a portion of said outer friction surface movably and frictionally engaging said inner friction surface of a respective one of said outer stationary plate members,

(iii) a pair of laterally spaced tapered plate members having an outer friction surface and an inner friction surface, said outer friction surface movably and frictionally engaging at least a portion of said inner friction surface of a respective one of said movable plate members,

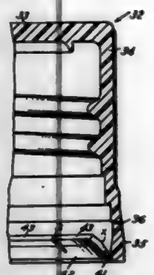
(iv) a pair of laterally spaced wedge shoe members having at least a portion of an outer friction surface movably and frictionally engaging at least a portion of an inner friction surface of a respective one of said tapered plate members and at least a portion of one edge engaging another portion of said seat means, each of said pair of wedge shoe members having a predetermined tapered portion which is tapered upwardly and outwardly from a plane intersecting a longitudinal centerline of said variable angle draft gear assembly at a predetermined angle, and

(v) a center wedge member having a pair of matching predetermined tapered portions for engaging said tapered portion of a respective one of said wedge shoe members to initiate frictional engagement of said friction cushioning means and thereby absorb said second portion of such energy generated by buff and draft loads being exerted on said variable angle draft gear assembly;

(e) a spring release means engaging a portion of longitudinally extending between said seat means and said center wedge member for continuously urging said friction cushioning means outwardly from said compressible cushioning element to release said friction cushioning means when an applied force compressing said variable angle draft gear assembly is removed; and

(f) at least one resilient member engaging said inner surface of said hollow housing member adjacent to at least one member of said laterally spaced outer stationary plate members for exerting a predetermined lateral force on said friction cushioning means which is at least sufficient to maintain all of said friction surfaces in frictional engagement even when a predetermined amount of wear has occurred to at least one of said members.

5,443,171
TAMPER INDICATING PACKAGE
Frank L. Sprowl, Sturgis, Mich., assignor to Owens-Illinois Closure Inc., Toledo, Ohio
Filed Mar. 26, 1993, Ser. No. 38,152
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—252 12 Claims



1. A tamper indicating closure adapted to be applied to a container having a neck with a threaded finish, and an annular bead on said neck, said closure comprising
a plastic closure which includes a base wall and a depending peripheral skirt having threads interengaging the threads of said container, and
a tamper indicating band attached to said skirt by at least one weakened portion defining a line of severing,
an annular flange extending axially upwardly and inwardly from said tamper indicating band toward said base wall of said closure and having a free edge,
said annular flange having a plurality of circumferentially spaced narrow slits extending from the free edge thereof and defining a plurality of adjacent segment portions, each said segment portion having a free end,
said narrow slits having a narrow width and extending entirely through said flange to define said segment portions such that when the closure is fully applied to a container, and the closure is rotated to remove the closure, the free ends of the adjacent segment portions engage a bead on the container and are moved radially inwardly and the sides of the slits adjacent the free ends of substantially all the segment portions contact one another in an interfering manner to enhance resistance to removal and inhibit tampering.

5,443,172
NON-SLIP CLOSURE GRIP FOR JAR LIDS AND THE LIKE
Joseph F. Gabriele, 1 Sunnybrook Rd., Bronxville, N.Y. 10708
Filed Sep. 21, 1994, Ser. No. 309,728
Int. Cl.[6] B65D *51/24*
U.S. Cl. 215—303 4 Claims



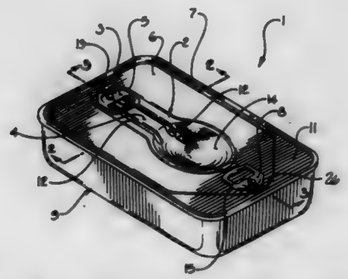
1. A non-slip closure grip for a receptacle having an upper portion with external threads, said closure comprising:
a) a cap member having a top surface and an annular depending skirt with internal threads for engaging with the external threads on the upper portion of the receptacle; and
b) means about the perimeter of the annular depending skirt of said cap member, for providing a gripping surface, so that reduced strength is required by a person to open said cap member, especially for the elderly and handicapped people, wherein said gripping surface means includes:
i) said cap member having an annular groove formed on the annular depending skirt;
ii) adhesive applied into said annular groove; and
iii) an elastomeric band placed onto said adhesive in said annular groove, wherein said annular groove is curved in cross section, while said elastomeric band is circular in cross section, so that said elastomeric band can snugly fit into said annular groove on said adhesive, with an outer surface of said elastomeric band extending beyond the perimeter of the annular depending skirt of said cap member.

5,443,173
COLLAPSIBLE BASKET
William W. Emery, Berkeley Heights, and Russell A. Fritts, Warren, both of N.J., assignors to Better Sleep Mfg. Co., Berkeley Heights, N.J.
Filed Aug. 17, 1994, Ser. No. 292,099
Int. Cl.[6] B65D *6/12*
U.S. Cl. 220—6 5 Claims



1. A basket of collapsible construction for attachment to substantially vertical surfaces, said basket comprising:
four individual members capable of being inter-lockedly assembled to form said basket, said members including three substantially rectangular walls including a front wall, a left wall, and a right wall, said walls capable of being assembled to form a bounded region having a four-sided cross-section when placed against a substantially vertical structure, each of said walls having at least two parallel center rods and at least two parallel outer rods;
said front wall having a locking mechanism comprising a structural member of upward facing concavity formed as an extension of both said center rods of said front wall;
said right wall comprising an upper left edge, an upper right edge, a lower left edge, a lower right edge, an upper hook extending from said upper left edge, a lower hook extending from said lower left edge, an upper mounting tip extending upwardly from said upper right edge, a lower mounting tip extending downwardly from said lower right edge, a loop formed by extending the right end rod downwardly and horizontally to terminate proximate said lower mounting tip, thereby forming a right aperture;
said left wall comprising an upper left edge, an upper right edge, a lower left edge, a lower right edge, an upper hook extending from said upper right edge, a lower hook extending from said lower right edge, an upper mounting tip extending upwardly from said upper left edge, a lower mounting tip extending downwardly from said lower left edge, a loop formed by extending the left end rod downwardly and horizontally to terminate proximate said lower mounting tip, thereby forming a left aperture; and
a four-sided base disposed within said cross-section formed by said three walls, said base comprising a front arm, a left arm forming an angle with said front arm, a rear arm forming an angle with said left arm and extending substantially parallel to said front arm, a right arm forming an angle with said rear arm and another angle with said front arm, a rear sliding pivot mechanism comprising a left end portion extending from said left arm, a right end portion extending from said right arm, said end portions being adapted for passage through a sliding engagement with said left aperture and said right aperture, a front locking mechanism comprising a structural member of downward facing concavity formed as an extension of said left arm and said right arm forwardly, downwardly, and toward each other until said two extensions meet at a position below the plane of said rods.

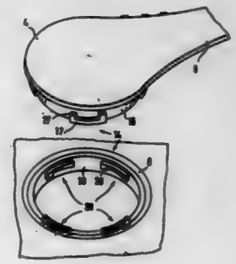
5,443,174
ZIP-TOP CAN WITH SPOON
Richard G. Bauer, 6848 N. Tara Rd., Federalsburg, Md. 21632
Filed Apr. 12, 1994, Ser. No. 226,569
Int. Cl.[6] B65D *51/24*
U.S. Cl. 220—212 13 Claims



1. A zip-top container and attached spoon comprising a container having a zip-top attached to a first pull-tab, wherein along the zip-top of the container there is an edge provided which is a first weakened seam which will part to open the zip-top when the first pull-tab is pulled, the zip-top of the container having the contour of a spoon unitarily formed within the zip-top, said contour of the spoon being formed by a second weakened seam along the outline of the spoon, and the spoon including a handle having an end provided with a second pull tab to facilitate the removal of the spoon by pulling the second pull-tab.

5,443,175
RESEALABLE CLOSURE DEVICE
Ronald L. Kelly, Chester, and Mike Price, Mechanicsville, both of Va., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed Apr. 19, 1994, Ser. No. 229,828
Int. Cl.[6] B65D *41/06*
U.S. Cl. 220—298 3 Claims

1. A plastic closure assembly for a can top comprising
a plastic insert to be installed in the can top and defining a pouring aperture; and
a closure element fitting in a sealing manner in said aperture, said closure element having
a cylindrical plug element extending into the pouring aperture, a plurality of angularly spaced apart dogs projecting radially outwardly from said plug element, each of said dogs having a bearing surface substantially perpendicular to said plug element,
said plastic insert having a cylindrical wall portion extending into the can to receive the plug element,
a plurality of angularly spaced dogs projecting radially inwardly from said wall portion,
each of said dogs having a bearing surface substantially perpendicular to said plug element,
the respective bearing surfaces on said plastic insert and the respective bearing surfaces on said plug element being so constructed and arranged to engage in pairs and to form a bayonet type connection,



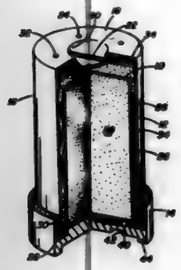
at least one of said bearing surfaces of each pair of dogs being slightly inclined with respect to a plane perpendicular to the longitudinal axis of said plug element, and
at least one pair of said bearing surfaces having interlocking means engaging when said closure element is forced away from said insert by pressure in the container so as to prevent disengaging the connection while there is pressure in the container.

5,443,176
Patent Not Issued For This Number

5,443,177
APPARATUS AND METHOD FOR ENCAPSULING DRUMS CONTAINING HAZARDOUS WASTES
Lynn M. Crayne, Jefferson, and Gary J. Zawada, Bethel Park, both of Pa., assignors to Nicholson Construction Company, Bridgeville, Pa.
Division of Ser. No. 105,718, Aug. 12, 1993, Pat. No. 5,416,249.
This application Oct. 13, 1994, Ser. No. 322,776
Int. Cl.[6] B65D *90/08*
U.S. Cl. 220—453 10 Claims

1. Apparatus for encapsuling a cylindrical drum containing hazardous waste material for subsequent transportation and storage of said drum comprising:

an over-capsule having a cylindrical wall longer than the overall length of said drum and having a greater inside diameter than the outside diameter of said drum, said over-capsule having a closed end wall and an open end, said over-capsule having spacer means abutting said drum outer surface when said over-capsule is positioned over said drum to maintain a uniform annular space between said cylindrical drum and the inner cylindrical surface of said over-capsule;



a seal formed on the open end of said over-capsule to cooperate with said cylindrical drum to thereby form a sealed annular space around said drum and a sealed cylindrical space above said drum;

encapsulation grout filling said sealed annular space around said drum and said sealed cylindrical space above said drum;

an under-capsule formed to receive the open end of said over-capsule with said cylindrical drum grouted inside to enclose the bottom of said drum and the open end of said over-capsule; and

encapsulation grout filling all spaces between the bottom of said drum and said under-capsule and between said over-capsule and said under-capsule.

5,443,178

TABLET DISPENSING SYSTEM

Alix A. Holmes, Costa Mesa, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Jun. 23, 1994, Ser. No. 263,571
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—64 **16 Claims**

1. A tablet dispensing system comprising:

arcuate housing means for containing a supply of tablets;

means for enabling said arcuate housing means to be removably attached around a generally cylindrical container, said arcuate housing means having sufficient length to extend around a majority, but not all, of a perimeter of said container in order to provide access to said supply of tablets; and



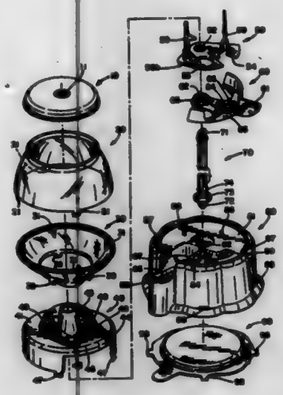
means, defining an open end of said arcuate housing means, for dispensing the tablets therefrom.

5,443,179

GUMBALL BANKS

Leonard H. Palmer, Addison, and Richard A. Freeland, Big Rock, both of Ill., assignors to Processed Plastic Company, Montgomery, Ill.

Filed Feb. 24, 1994, Ser. No. 201,383
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—265 **19 Claims**



1. A gumball bank for dispensing gumballs upon insertion of a coin and for storage of inserted coins, the gumball bank comprising:

a reservoir for gumballs;

a base defining an upper floor, the upper floor supporting the reservoir and having a gumball opening communicating with the reservoir and a coin slot;

the base further defining a lower floor, the lower floor having a chute adapted to receive gumballs, a coin slot, and a camming surface;

the base further defining a coin storage area in communication with the coin slot in the lower floor;

a dispensing mechanism disposed between the upper and lower floors and adapted to dispense gumballs from the reservoir to the chute and to deposit coins in the coin storage area;

the dispensing mechanism including an actuator arm having a socket for receiving a coin and a coin slot in alignment therewith and a transfer arm having a gumball opening and a coin slot with a relatively wide area and a relatively narrow area;

the actuator arm and transfer arm being mounted for movement in first and second directions between respective first and second positions, the actuator arm engaging the transfer arm when the actuator arm is moved in the second direction, the actuator arm and transfer arm being free of engagement when the actuator arm is moved in the first direction; such that

when the actuator arm and the transfer arm are in their respective first positions the upper floor coin slot, actuator arm coin slot, and transfer arm coin slot are aligned to allow insertion of a coin through the upper floor coin slot into the actuator arm coin slot and the transfer arm coin slot so as to couple the arms together and the upper floor gumball opening and the transfer arm gumball opening are aligned to allow passage of a gumball through the upper floor gumball opening into the transfer arm gumball opening;

subsequent movement of the actuator arm in the first direction from its first position to its second position, when a coin couples the arms, actuates movement of the transfer arm in the first direction from its first position to its second position and camming of the coin into the narrow area in the transfer arm coin clot by the lower floor camming surface;

when the actuator arm and the transfer arm are in their respective second positions, the actuator arm coin slot, transfer arm coin slot, and lower floor coin slot are aligned to allow passage of a coin through said slots into the coin storage area and the transfer arm gumball opening and the chute are aligned; and

subsequent movement of the actuator arm in the second direction from its second position back to its first position actuates movement of the transfer arm in the second direction from its second position back to its first position.

5,443,180

METHOD AND APPARATUS FOR VOLUME APPORTIONMENT OF AND DISTRIBUTING A QUALITY OF PASTY MATERIAL

Christian Dussau, Quartier Bourdos, 40320 Gesume, France, assignor to Sarl Dussau Distribution and Christian Dussau, both of Gesune, France

Filed Jun. 24, 1994, Ser. No. 265,715
Claims priority, application France, Jun. 25, 1993, 93 07834
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 **29 Claims**

8. Apparatus for distributing an apportioned quantity of paste substance, such as a food ration for force-feeding palmipeds, comprising:

a tank for the paste to be distributed in an apportioned ration including an outlet orifice;

at least one delivery and suction pump comprising a first cylindrical chamber including an inlet orifice and a delivery orifice;

an inlet conduit connecting said inlet orifice of said first chamber to said outlet orifice of said tank;

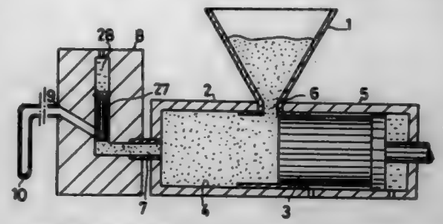
a first piston slidably mounted in said first chamber;

a motor member for activating said first piston between a rear neutral position and a front neutral position;

a delivery conduit connecting said delivery orifice to a distribution nipple;

a blocking element associated with one of said delivery orifice and said delivery conduit, said blocking element being positionable between a closed position wherein passage of the paste substance is blocked and an open position enabling passage of the paste substance to said distribution nipple;

a measuring element to measure displacement of said first piston in a direction of delivery between the rear neutral position and the front neutral position, said measuring element comprising a distance counter, a pressure sensor element, a comparator and a control element, said pressure sensor element being sensitive to pressure exerted by said first piston on the paste substance during pre-compression wherein the paste substance in the first chamber is pre-compressed by thrusts of said first piston on the paste substance in order to obtain a pre-compression value equal to a set point value at which the paste substance entirely fills said first chamber, and no gap is present in said first chamber and in the mass of the paste substance, said pressure sensor element being capable of sending a reset to zero signal to said distance counter when the pre-compression value is equal to the previously selected set point value, and said comparator continuously compares the value of distance measured by said distance counter to a previously selected distance set point value representative of a volume value of a portion of paste substance to be distributed, said comparator sending a signal when a value of distance measured is equal to the distance set point value, said signal being sent to said control element to activate or deactivate said motor member.



5,443,181

CARTRIDGE AND PISTON FOR DISPENSING MASS

Franz Popp, Bachlee, Germany, and Hans Häsler, Grabs, Switzerland, assignors to Hilti Aktiengesellschaft, Fürstentum Liechtenstein

Continuation-in-part of Ser. No. 123,392, Sep. 17, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 321,063
Claims priority, application Germany, Sep. 19, 1992, 42 31 421.6
Int. Cl.[6] B65D *81/32, 83/76*
U.S. Cl. 222—95 **8 Claims**

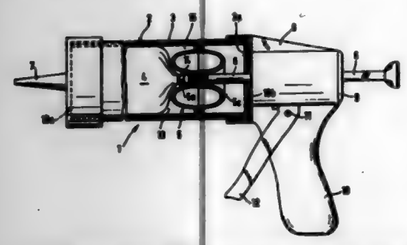
1. A replaceable cartridge for use in a dispensing tool having a mechanism for dispensing a component mass comprising at least one component out of foil bags received in said cartridge, said cartridge comprising:

an axially extending housing having open opposite ends;

a plurality of juxtaposed chambers extending between said open opposite ends and having different volumes for receiving a respective plurality of component mass-containing foil bags having different sizes, said receiving chambers having respective inner surfaces defining the respective different volumes of said receiving chambers; and

a plurality of pistons corresponding in number to the plural-

ity of receiving chambers and having different cross-sections corresponding to the different volumes of the receiving chambers, each of the plurality of pistons being axially displaceable in a sliding engagement with an inner surface of a respective receiving chamber, and each of the plurality of pistons having opposite end faces extending across a



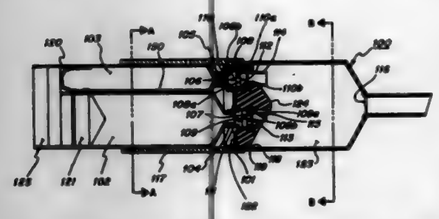
respective receiving chamber and being symmetrical with respect to a cross-section of the respective chamber, whereby each of said opposite end faces can be alternatively acted upon by the dispensing mechanism of the dispensing tool for displacing the piston in the respective chamber to squeeze a component mass out of a respective foil bag.

5,443,182

METHODS AND APPARATUS FOR PREPARING AND DELIVERING BONE CEMENT

Kazuaa Tanaka, 5 Frontier Rd., Cos Cob, Conn. 06807, and Jeffrey Kapec, 248 Wilton Rd., Westport, Conn. 06880

Filed Jun. 11, 1993, Ser. No. 76,557
Int. Cl.[6] A61M *5/145*
U.S. Cl. 222—137 **24 Claims**



7. A mixing device, used as part of a system for mixing powdered and liquid bone cement components and delivering the bone cement mix, comprising:

(a) a first evacuated container;

(b) a second container containing a powdered component of bone cement;

(c) a third container containing a liquid component of bone cement; and

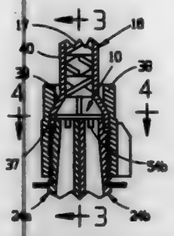
(d) means for simultaneously connecting said second and third containers to said first container allowing said powdered component and said liquid component to be simultaneously drawn into said first container by the vacuum therein, and be uniformly mixed within said first container by saturating said powdered component with said liquid component at a predetermined distance within said mixing chamber.

5,443,183

UNITARY CHECK VALVE

Kenneth H. Jacobsen, 921 N. Quentin Rd., Palatine, Ill. 60067, and Louis F. Cole, 672 Constitution Dr., Unit 93-5, Palatine, Ill. 60074

Continuation-in-part of Ser. No. 154,623, Nov. 18, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 284,092
Int. Cl.[6] B67D *5/60*
U.S. Cl. 222—145.6 **9 Claims**



1. For use in a multiple component reactive fluid system having separate material cartridges with respectively separate adjacent paired outlet nozzles, and a mixing tube having inlet structure sealed over the paired-nozzles and communicating via an interconnecting cavity with mixing structure and a single outlet downstream therefrom, to provide for composite reactive material discharge from said single outlet, a unitary piece check valve comprising

a generally flat base wall having openings spaced apart to correspond to the paired outlet nozzles, a partition wall upstanding from the base wall and crossing between the spaced openings, and flexible check structures cantilevered from the perimeter of each opening to overlie and normally close the opening;

said flat base wall being adapted to seat over the paired outlet nozzles with the spaced openings communicating respectively therewith, and the partition wall being adapted to seat against the mixing tube inlet structure and divide the interconnecting cavity into two portions respectively communicating with the outlet nozzles and to baffle the outlet nozzles from one another other than via over the partition wall, and

said check structures having shape memory effective to open only when the pressure in the material cartridge exceed the normal closing forces for allowing material flow therepast and through the mixing tube while yet restricting back flow of either material into either outlet nozzle.

5,443,184

FLUID POURING CONTAINER WITH ASYMMETRICAL SOLIDS SEPARATOR

Stephen K. Broitzman, P.O. Box 5992, Snowmass Village, Colo. 81615

Filed Sep. 20, 1993, Ser. No. 123,781
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[6] B67D *5/58*
U.S. Cl. 222—189.07 **20 Claims**

1. A container adaptable for retention and delivery of a liquid containing ice, the container comprising:

a substantially planar base;

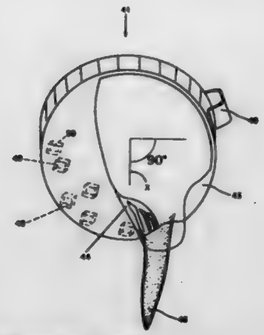
at least one wall;

an asymmetrical ice dam means for resisting pouring of said ice;

said at least one wall terminating in an upper edge parallel to said planar base, and said wall cooperating with said base to form a unitary liquid-retentive well; said well being substantially symmetrically disposed about an axial plane passing perpendicularly through said base;

a grasping means; and

said asymmetrical ice dam means further comprising a major lip comprising a half dome depending inwardly and upwardly over said well from said upper edge and terminating in an inner edge, said inner edge having a downward depending strainer means; a spout projecting distally from



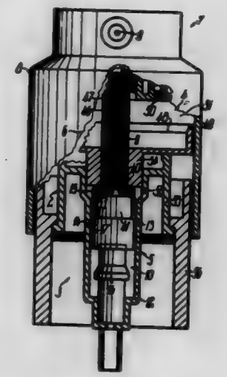
said rim adjacent the strainer means; and a minor lip adjacent said spout, thereby forming an asymmetrical ice dam through which said liquid can flow when said container is substantially horizontal, and said ice can be controllably retained by rotating said container to move said major lip in front of the flowing ice.

5,443,185

DISPENSER FOR MEDIA

Karl H. Fuchs, Radolfzell, Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. K.G., Germany

Continuation of Ser. No. 788,486, Nov. 6, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 151,480
Claims priority, application Germany, Nov. 9, 1990, 40 35 688.4
Int. Cl.[6] B05B *9/043*
U.S. Cl. 222—321.8 **28 Claims**



1. A dispenser for discharging at least one medium, the dispenser having an outlet (9) for release of the medium, the dispenser comprising:

a body (2);

at least one medium discharge unit (3) connected to said body (2), said discharge unit (3) being operable by an actuator (7) to perform a uni-directional stroke motion over a stroke path from a stroke beginning to a stroke end for dischargingly conveying a first discharge stream of a first one of said at least one medium at a standard quantity level, said uni-directional stroke motion including first, second and third partial strokes (34, 36, 37); and

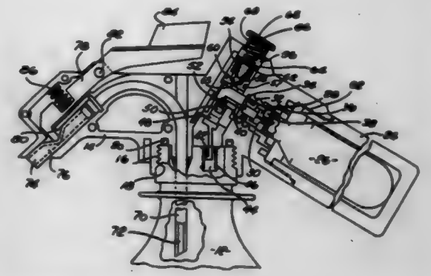
control means (10) for at least twice reducing the first discharge stream substantially below said standard quantity level over said first and third partial strokes (34, 37) of said uni-directional stroke motion as a path dependent function of said uni-directional stroke motion, said second partial stroke (36) being provided between said first and third partjal stroke (34, 37) said control means 10 supplying the first discharge stream at said standard quantity level over said second partial stroke (36).

5,443,186

FLUID DISPENSER WHICH HAS A BUTTON ACTUATED REGULATOR VALVE AND A PRESSURE RELIEF PORT IN THE BUTTON

Benjamin Grill, 9819 Etiwanda Ave., Northridge, Calif. 91329

Filed Jan. 5, 1994, Ser. No. 177,665
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—396 **1 Claim**



1. A dispenser that dispenses fluid from a container, comprising:

a housing with an opening, said housing being adapted to be coupled to the container;

a cartridge coupled to said housing, said cartridge containing a pressurized gas;

a valve having a first area in fluid communication with said cartridge, said valve being adapted to move between a closed position and an open position such that said valve allows said gas to flow through said housing opening and into the container when in the open position and prevents said gas flow when in the closed position;

a valve housing that is connected to said valve and has a second area greater than said first area of said valve and being in fluid communication with the container, said valve housing having an inner chamber, a first opening in fluid communication with said inner chamber and a second opening in fluid communication with the container;

a spring coupled to said valve housing;

a button that is coupled to said spring such that said valve is moved to the open position when said button is depressed, said spring provides a regulator which allows said valve to move to the closed position when a gas pressure within the container reaches a predetermined level, said button having an opening that is in fluid communication with said first opening of said valve housing;

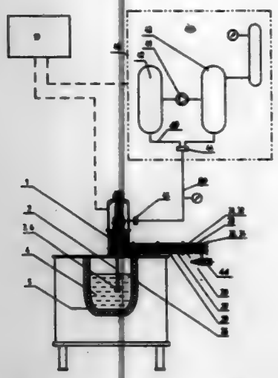
a spring biased ball valve that controls a flow of gas through said second opening of said valve housing and provides a pressure relief from the container through said button opening;

a tube that extends through said housing, said tube having an inlet in fluid communication with the container and an outlet that is in fluid communication with an ambient;

a lever valve that controls a flow of fluid through said tube, wherein said lever valve allows fluid to flow out of the

container when moved into an open position and prevents fluid from flowing out of the container when moved into a closed position.

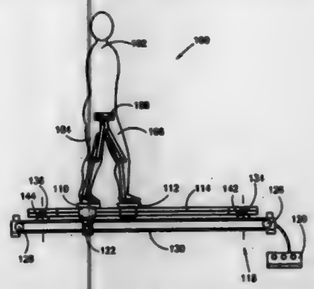
5,443,187
PUMP APPARATUS FOR PUMPING MELT METAL
Sven-Erik Samuelsson, Karlstad, Sweden, assignor to Metpump AB, Karlstad, Sweden
PCT No. PCT/SE93/00130, § 371 Date Aug. 2, 1994, § 102(e) Date Aug. 2, 1994, PCT Pub. No. WO93/16829, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 18, 1993, Ser. No. 284,416
Claims priority, application Sweden, Feb. 20, 1992, 9200512
Int. Cl.[6] B22D *39/06*
U.S. Cl. 222—595 20 Claims



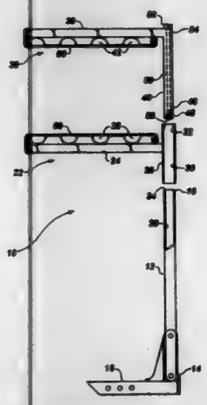
1. A pump apparatus for pumping molten metal from a furnace to a place where it is to be used, comprising: a gas-plunger pump having a container holding a chamber with an inlet for drawing molten metal from the furnace to the chamber via a suction pipe immersed in the furnace melt, and with an outlet for forcing molten metal out of the chamber to the place of use; a gas-operated suction and pressure system comprising a suction source with a vacuum pump, a pressure source with a compressor and a conduit providing with first valve means for alternately connecting and disconnecting the suction and pressure sources, the gas pressure of the latter acting directly on the melt in the chamber inside the container; a control system for controlling the pump apparatus; said container being vertically aligned and disposed immediately above and in line with the furnace, said outlet being disposed at the bottom of the container; said inlet of said container is disposed at the bottom of said container; wherein said suction and pressure system comprises a closed circuit containing a vacuum tank, a pressure tank, a vacuum pump/compressor unit connected therebetween, and said first valve means, and is connected to the chamber in the container via said conduit; and wherein that said control system is disposed to alternately connect and disconnect the vacuum tank and pressure tank and to substantially synchronously therewith alternately open and close said inlet and outlet.

5,443,188
SYSTEM FOR SIMULATING HUMAN GAIT
Boris Kotlarsky, 10/9 Shikun Yoseftal, Hadera, and Gideon Gelman, 36/4 Arlozoroff St., Petach Tikva, both of Israel
Filed Apr. 8, 1994, Ser. No. 225,289
Int. Cl.[6] D06C *15/00*; G09F *19/08*; A63H *11/00*; A63M *13/00*
U.S. Cl. 223—66 8 Claims

5. A system comprising:
(a) a first track;
(b) a second track, said second track being substantially parallel to and of substantially the same length as said first track, said first and second tracks terminating at a first end and a second end;
(c) an object having a left leg and a fight leg, said object being advanced along said first and second tracks, said left leg advancing along one of either said first track or said second track, said fight leg advancing along the other of said first track or said second track;
(d) driving means for intermittently and alternately advancing said left leg and said right leg such that said object advances along said first and second tracks either in a first direction from said first end to said second end or in a second direction from said second end to said first end;
(e) a first terminal at said first end for reversing the direction of advancement of said object from said first direction to said second direction; and
(f) a second terminal at said second end for reversing the direction of advancement of said object from said second direction to said first direction.



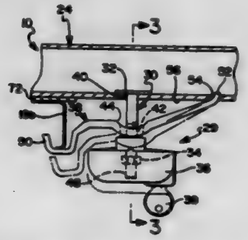
5,443,189
ARTICLE MOUNTING ASSEMBLY FOR A VEHICLE MOUNTED CARRIER
Ernest Hirschfeld, 1032-108 Street, Edmonton, Alberta, Canada T6J 6M2
Filed Oct. 26, 1994, Ser. No. 329,496
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—501 11 Claims



1. In an article mounting assembly for a vehicle mounted carrier having a tubular upright primary support member with a bottom end adapted for attachment to a square tube trailer hitch on a vehicle and a top end having means to secure articles to the primary support member, the improvement comprising:

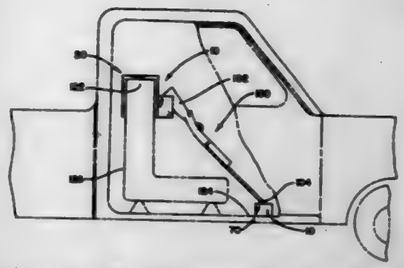
said tubular primary upright support member having an interior bore substantially parallel to the length of said support member and extending from said top end;
a lower mounting member having a first portion and a tubular second portion, the first portion having article receiving means, the second portion having an interior bore that telescopically receives the top end of the primary support member, stop means being provided to limit the relative telescopic movement of the tubular second portion of the lower mounting member and the primary support member; and
an upper mounting member having a first portion and a second portion, the first portion of said upper mounting member having article receiving means that cooperate with the article receiving means of the lower mounting portion such that an article is adapted to be held securely therebetween, the second portion of said upper mounting member being telescopically received in the interior bore of the primary support member, lock means being provided to lock the second portion of said upper mounting member in relative telescopic position within the interior bore of the primary support member.

5,443,190
TRUCK BED SUPPORT RAILS
John S. Cucheran, Lake Orion, and Jeffrey M. Aftanas, Sterling Heights, both of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.
Filed Sep. 14, 1993, Ser. No. 120,941
Int. Cl.[6] B60R *9/052*
U.S. Cl. 224—405 17 Claims



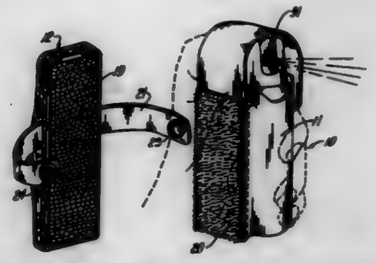
1. A truck bed support rail apparatus for securing objects elevationally above a cargo bed of a vehicle such as a pick-up truck having a pair of spaced apart, generally vertical sidewalls, wherein at least one of said sidewalls has a sidewall lip, said apparatus comprising:
at least one elongated cross rail having a length sufficient to approximately span a width of said cargo bed of said vehicle, said cross rail having at least one article supporting surface to at least partially support an object to be transported thereon and at least one aperture;
a securing assembly operably associated with at least one of said cross rail and said one sidewall for securing said cross rail to said one sidewall of said cargo bed, said securing assembly including a bracket member having a first lip and a second lip, said first lip being engageable with said one aperture in said cross rail and said second lip being engageable with said sidewall lip of said one sidewall of said cargo bed; and
a clamping assembly operable to engage said bracket member intermediate said first and second lips and said cross rail to releasably clampingly secure said cross rail to said one sidewall.

5,443,191
PORTABLE VEHICLE-MOUNTED GUN RACK
Darwyn J. Jorgenson, Rte. 1 Box 155, Emery, S. Dak. 57332-9761
Filed Apr. 25, 1994, Ser. No. 231,819
Int. Cl.[6] B60R *7/14*
U.S. Cl. 224—543 7 Claims



2. A new portable vehicle-mounted gun rack, for use in vehicles having a floor with at least one generally horizontal planar portion situated generally in front of a bench seat having an upwardly projecting backrest, for supporting a plurality of long-barreled firearms for safe transport whereby the firearms are readily accessible and no modification is required to the vehicle, the portable vehicle-mounted gun rack comprising:
lower floor engagable support structure for receiving a plurality of guns by the muzzle; and
upper seat backrest engagable support structure, the upper support structure being a separate, spaced structure from the lower support structure, the upper support structure for receiving the plurality of guns by the butt, the upper support structure being cooperably aligned with the lower support structure so the combined support structures in combination with the vehicle floor and seat backrest define a rack wherein the guns are firmly held in bridging fashion between the upper and lower support structures.

5,443,192
BELT-MOUNTED DETACHABLE HOLSTER FOR HOLDING A CHEMICAL DETERRENT CANISTER
James L. Hodges, Friendsville, Tex., and John H. McLaughlin, Glidden, Iowa, assignors to McLaughlin International, Inc., Scranton, Iowa
Filed May 10, 1994, Ser. No. 241,141
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—253 14 Claims



1. A holster apparatus for use in combination with a self-protection chemical dispenser having a cylindrical body equipped with a spray nozzle and an actuator button, wherein the holster apparatus comprises:
a casing including a body portion for receiving said dispenser, said casing also including a first retainer at one end

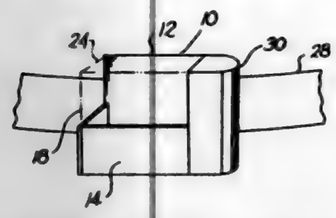
thereof and a second retainer at the other end thereof for selectively holding said dispenser in said casing in a position so that the dispenser can be actuated by the actuator button to cause protective chemicals to be sprayed from said spray nozzle while said dispenser is in said casing;
a belt connector adapted to be attached to a user's belt; and
attachment means for operably connecting or disconnecting said casing to said belt connector whereby said casing with said dispenser therein can be quickly and easily accessed for use or stored away ready for immediate access, said attachment means comprises hook and loop fasteners on said belt connector and on said casing.

5,443,193

PAGER CARRIER WITH COIN DISPENSER

Mark D. Lenard, 5030 Wishing Well, Grand Blanc, Mich. 48439

Filed Jul. 15, 1994, Ser. No. 275,438
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—252 **1 Claim**



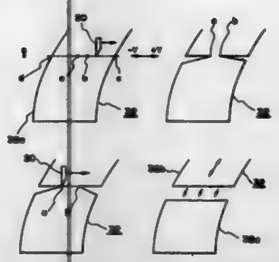
1. A combination carrying case for a portable electronic pager and a coin dispenser, comprising:
a case body that includes a bottom wall, a front wall extending upwardly from said bottom wall, a first side wall extending upwardly from said bottom wall, a rear wall extending upwardly from said bottom wall, and a second side wall extending upwardly from said bottom wall, the distance between said front wall and said rear wall being less than the distance between said first and second side walls, whereby said walls form an upwardly open rectangular receptacle for receiving an electronic pager;
a resilient clip secured to said rear wall for detachably mounting said case body in an upright position on a user's belt;
said front wall, first side wall, rear wall, and second side wall having upper edges located above the bottom wall, the upper edges of said front wall and said first side wall being located below the upper edges of said rear wall and said second side wall so that the front wall and first side wall have a decreased height relative to the height of the rear wall and the second side wall, whereby when the pager is placed in the receptacle a front surface and one side surface of the pager are partially exposed, said second side wall being joined to said front wall and said rear wall to form a front corner and a rear corner;
a coin chute comprising an upright arcuate end wall joined to said second side wall at said front and rear corners, said coin chute further comprising a chute top wall located in a plane coincident with the upper edge of the case body rear wall, and a chute bottom wall located in a plane defined by the case body bottom wall, whereby the coin chute and case body are integrally joined together without projections or surface discontinuities; and
said coin chute bottom wall having an upper surface for supporting a stack of coins in the chute; said upright arcuate end wall having a horizontal coin discharge slot communicating with the upper surface of the chute bottom wall; said chute bottom wall having a cut-out enabling a user's finger to draw a lowermost coin in the stack outwardly through said discharge slot.

5,443,194

METHOD OF CUTTING SHEET FOR PLOTTER

Izumu Takahashi, Tokyo, Japan, assignor to Mutoh Industries, Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 131,955
Claims priority, application Japan, Nov. 11, 1992, 4-326004
Int. Cl.[6] B26F *3/02*
U.S. Cl. 225—2 **3 Claims**



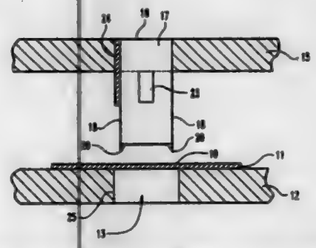
1. A method of cutting a sheet which is sandwiched between a drive roller and a pressure roller, the method comprising the steps of:
rotating said drive roller to convey a portion of said sheet past said drive roller and said pressure roller in a longitudinal direction;
cutting said sheet along a transverse line such that said portion of said sheet is separated from a remaining portion of said sheet along all but a centrally located segment of the transverse line;
applying a half-cut or perforation to said sheet along the centrally located segment of the transverse line;
repeatedly rotating said drive roller in one direction and then in an opposite direction to convey said sheet back and forth in a longitudinal direction, thereby causing said portion of said sheet to separate from said remaining portion of said sheet along the centrally located segment of the transverse line.

5,443,195

DEVICE FOR REMOVING KNOCKOUTS, SUCH AS SCRAP, FROM A SHEET OF MATERIAL CONTAINING BLANKS OR SIMILAR

Rolf Sinn, Leingarten, Germany, assignor to Karl Marbach GmbH Co., Germany

Filed Sep. 30, 1993, Ser. No. 129,981
Int. Cl.[6] B26D *7/18*
U.S. Cl. 225—104 **20 Claims**



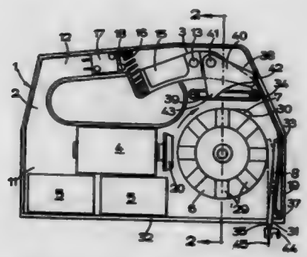
1. A device for removal of a knockout from a material sheet containing a blank, said blank having marginal bearing surfaces, comprising:
a material sheet containing a blank;
a support plate defining an opening, said support plate adapted to support said material sheet over said opening with said knockout overlapping said opening and said marginal bearing surfaces symmetrically disposed relative to said opening;
a tool holder plate operably associated with said support plate and capable of vertical movement towards and away from said support plate; and
a knockout tool having vertical and horizontal narrow sides disposed about a side center plane, said knockout tool fixed to said tool holder plate and extending towards said support plate, said knockout tool being arranged vertically relative to said knockout and symmetrically disposed relative to said marginal bearing surfaces of said knockout, said knockout tool including at least one point extending from one of said horizontally disposed sides towards said support plate, said point being disposed on one of said vertical narrow sides of said knockout tool aligned with said side center plane, said knockout tool having an inclined surface extending from said point to said one of said horizontal narrow sides, said inclined surface and said one of said narrow vertical sides forming an angle alpha in a range from 20°–50°, and wherein said material sheet has a material thickness and said vertical narrow side wall of said knockout tool featuring said point is horizontally spaced apart from an opposed one of said vertical walls of said opening a distance greater than about 2 times said material thickness.

5,443,196

FASTENER APPLICATOR

Geoffrey M. Burlington, Crowborough, Great Britain, assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Dec. 11, 1992, Ser. No. 989,374
Claims priority, application United Kingdom, Dec. 11, 1991, 9126338
Int. Cl.[6] B25C *5/15*
U.S. Cl. 227—131 **5 Claims**



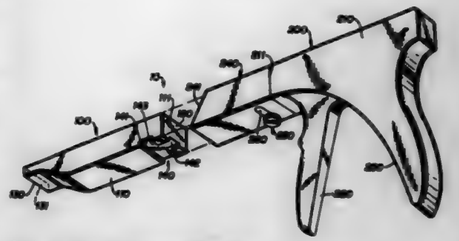
7. A fastener applicator comprising a body, a prime mover in said body, a flywheel driven by said prime mover, an actuator rotatable with said flywheel and having a striking surface, a fastener striker guided in said body for movement between a retracted position and a fired position to which it is urged by said actuator rotating with said flywheel so that said striking surface of said actuator strikes said striker, releasable transmission means operative between said prime mover and said flywheel, said transmission means causing said flywheel to be disconnected from said prime mover each time said actuator striking surface strikes said striker such that kinetic energy developed at said flywheel by its rotation is used to drive said striker to said fired position, and means on said body for retaining at least one fastener in position to be driven by said striker.

5,443,197

LOCKING MECHANISM FOR A SKIN STAPLER CARTRIDGE

Michael J. Malis, Trumbull, and Gilbert J. Neagle, West Haven, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jan. 16, 1993, Ser. No. 78,942
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—176 **17 Claims**



1. A surgical stapler comprising:
a) a cartridge for holding a plurality of surgical staples;
b) a stapler body for receiving said cartridge and having drive means for firing said staples from said cartridge, said stapler body having a longitudinal axis along which said drive means is at least partially movable; and
c) retaining means for retaining said cartridge in said stapler body, said retaining means moving between a locked configuration for locking said cartridge in said stapler body and an unlocked configuration for permitting engagement and disengagement of the cartridge from the stapler body, said retaining means including,
i) a projection associated with the stapler body said projection being mounted to an elongated shaft, said shaft being oriented in a direction orthogonal to the longitudinal axis of the stapler body and mounted for sliding movement in a direction orthogonal to the longitudinal axis if the stapler body, and
ii) reception means associated with the cartridge for receiving said projection, said reception means having at least one abutment surface for contacting said projection to inhibit relative movement between the projection and the reception means in the longitudinal direction.

5,443,198

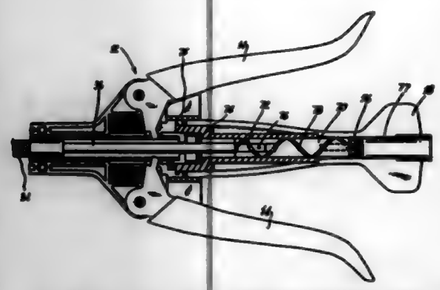
SURGICAL FASTENER APPLYING APPARATUS

Frank J. Viola, Sandy Hook, and John C. Robertson, Bloomfield, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 959,275, Oct. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 779,505, Oct. 18, 1991, abandoned, and a continuation-in-part of Ser. No. 779,097, Oct. 18, 1991, abandoned. This application Jul. 7, 1994, Ser. No. 271,580
Int. Cl.[6] A61B *17/115*
U.S. Cl. 227—179 **4 Claims**

1. A surgical stapler apparatus for applying an annular array of staples comprising:
a tubular body portion;
a staple pusher member disposed at a distal end of said body portion for expelling said annular array of staples;
an anvil member positioned opposite said staple pusher member to clench said staples in tissue upon expulsion of said staples; and
means for advancing at least one of said staple pusher member and said anvil member in a direction toward and away from each other between an extended position in which said staple pusher member is away from said anvil member to a position in which said staple pusher member is adja-

cent said anvil member, said advancing means including a cylindrical cam member having a helical groove, said helical groove having a pitch that varies along a length of said cam member for approximating at least one of said members a first distance relative to another of said members upon a first movement of said advancing means, said cam member further incrementally moving at least one of said members a subsequent second distance relative to said another member upon a second movement of said advancing means.

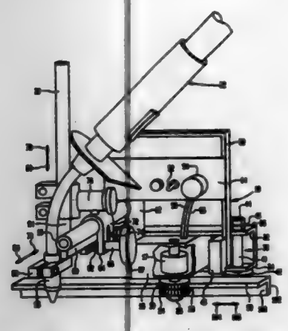


5,443,199

UNIVERSAL CARRIAGE FOR CUTTING AND WELDING

Luba M. Krasnoxya, and Zinovi Khabal, both of 125 The Crossway, Yonkers, N.Y. 10701

Filed Dec. 3, 1993, Ser. No. 161,068
Int. Cl.[6] B23K *37/02*
U.S. Cl. 228—29 17 Claims



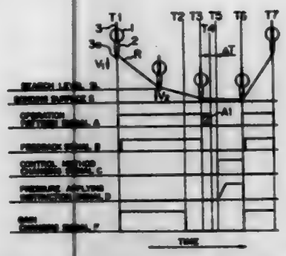
1. A universal carriage apparatus for cutting and welding comprising:
an enclosure;
motor means, with said motor means mounted in said enclosure;
a drive wheel rotatably mounted on said enclosure;
an idler wheel rotatably mounted on said enclosure;
driving connection means connecting said motor means and said drive wheel;
adjustable torch support means mounted on said enclosure and including a pair of support rods with a first of said pair of support rods projecting from said enclosure;
adjustment means adjustably mounted on said first support rod and with said adjustment means supporting said second support rod;
torch mounting means disposed on said second support rod;
track means disposed between said drive wheel and said idler wheel, with said track means having at least one edge portion, with said drive wheel having an axis of rotation, and with said idler wheel having an axis of rotation, with said axis of rotation of said drive wheel generally parallel to said axis of rotation of said idler wheel, and with said drive wheel and said idler wheel each having a pair of conical surfaces and with said drive wheel engaging said edge portion of said track means, thereby enabling said motor means to drive said enclosure along said track means.

5,443,200

BONDING APPARATUS AND BONDING METHOD

Kazuo Arikado, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1994, Ser. No. 216,402
Claims priority, application Japan, Oct. 13, 1993, 5-255756; Nov. 12, 1993, 5-283489
Int. Cl.[6] B23K *20/00*
U.S. Cl. 228—102 17 Claims



14. A bonding method for bonding an object to a bonding surface by a bonding tool attached to one end portion of a horn to be moved upwardly and downwardly by motor, a motor drive circuit and a drive control circuit, said method comprising the steps of:
moving said bonding tool together with said horn to said bonding surface;
changing a gain of said drive circuit from a high gain to a low gain just before said bonding tool contacts to said bonding surface; and
applying a bonding pressure to said bonding surface by said bonding tool after the contact of said bonding tool.

5,443,201

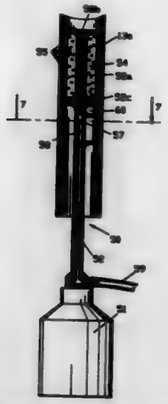
METHOD AND DEVICE FOR REPAIRING A DEFECTIVE ZONE OF THE WALL OF A METAL PART AND IN PARTICULAR OF A TUBULAR PART

Jean Pierre Cartry, Lyons, France, assignor to Framatome, Courbevoie, France

Filed Nov. 29, 1993, Ser. No. 158,881
Claims priority, application France, Nov. 30, 1992, 92 14407
Int. Cl.[6] B23P *15/26, 9/04*
U.S. Cl. 228—119 18 Claims

1. Method for repairing a defective zone of a wall of a metal part having a defective zone, said method comprising the steps of:
(a) moving a heat-source over said defective zone of said wall;
(b) melting the metal of said wall in said defective zone over a defined depth through said heat-source;
(c) allowing said metal after melting to solidify into a solidified metal layer of said wall; and

(d) subjecting at least a surface layer of said solidified metal layer of said wall to compression by repeated impacts of balls set into motion in the vicinity of the solidified metal layer of the wall by vibrating means.

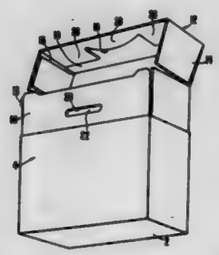


5,443,202

CARTON BOX OF THE PIVOT LID TYPE HAVING MEANS FOR SNAP LOCKING THE LID

Frode Jørgensen-Beck, and Heinrich W. Lambach, both of Horsens, Denmark, assignors to Schur Engineering A/S, Horsens, Denmark

PCT No. PCT/DK92/00220, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/01095, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 9, 1992, Ser. No. 178,231
Claims priority, application Denmark, Jul. 10, 1991, 1333/91
Int. Cl.[6] B65D *5/06*
U.S. Cl. 229—146 7 Claims



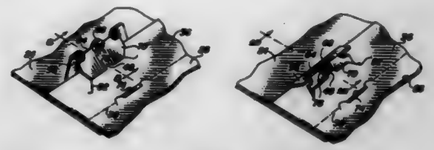
1. A carton box of the pivot lid type, in which an open end of the box is covered by a lid member, which is pivotal outwardly and upwardly about a hinge line at a rear side of the box, while at its remaining three sides it has depending skirt portions, which in a closed condition of the lid are projecting inwardly or downwardly so as to overlap a mouthing area of the box in an overlapping area, whereas at at least one place in the overlapping area there is provided a snap locking connection between the box and the lid by means of a locking nose which is arranged projecting from an inner side of a front skirt portion of the lid and is engageable with a locking edge on an opposed part of a front panel of the box, said locking nose being of the type formed by folding-over of an edge flap, outer side portions of which are fixed face-to-face to an underlying skirt portion while an intermediate locking nose portion is left slightly bulging out from said underlying skirt portion, characterized in that the locking nose portion is shaped with a convex, arched, free outer edge enabling the locking nose portion to engage into at least a depression defining the locking edge and having a width dimension of the same magnitude as that of the locking nose portion itself.

5,443,203

CARTON PANEL LOCK

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 3, 1994, Ser. No. 316,751
Int. Cl.[6] B65D *5/42*
U.S. Cl. 229—198.2 14 Claims



1. A wrap-around article carrier, comprising:
a top panel, opposite side panels and a bottom panel;
the bottom panel being comprised of inner and outer panel flaps, each panel flap having an end edge, a portion of the outer panel flap overlapping a portion of the inner panel flap;
the inner panel flap including a locking tab connected thereto by a fold line spaced from the end edge of the inner panel flap;
the locking tab including an intermediate fold line dividing the locking tab into a base portion and an end portion, the end portion of the locking tab containing a retaining opening adjacent the intermediate fold line; and
the outer panel flap containing a locking opening spaced from the end edge of the outer panel flap, one edge of the locking opening being comprised of an edge of a retaining flap connected to the outer panel flap along a fold line located between the locking opening and the end edge of the outer panel flap and an opposite edge of the locking opening including a retaining tab extending from said opposite edge toward the end edge of the outer panel flap;
the base portion of the locking tab overlapping an end portion of the outer panel flap and the end portion of the locking tab extending through the locking opening in the outer panel flap;
the retaining tab extending through the retaining opening in the end portion of the locking tab and the edge of the retaining flap contacting the end portion of the locking tab.

5,443,204

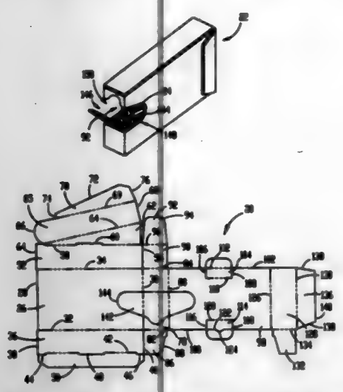
PACKAGE WITH RECLOSABLE LID

Brian D. O'Donnell, Columbia; Donald C. Secrist, Centralia, and William H. Nottke, St. Louis, all of Mo., assignors to Hubbell Incorporated, Orange, Conn.

Filed Apr. 26, 1994, Ser. No. 233,780
Int. Cl.[6] B65D *5/72*
U.S. Cl. 229—242 6 Claims

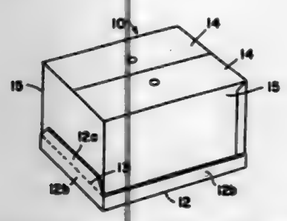
1. A dispenser carton for elongated articles comprising walls defining an upright, elongated cavity for receiving said articles to be dispensed, said walls including a pair of spaced apart, opposed sidewalls each having a forward margin, a rearward margin, an upper margin and a lower margin, a front wall spanning the forward margins of said sidewalls, structure defining an opening in said front wall and a respective recess in each of said sidewalls extending rearwardly from each corresponding front margin adjacent said opening, said opening and recesses being located above said sidewall bottom margins and configured for viewing of said articles within the cavity and permitting selective manual removal of articles therefrom, a

retainer flap at least partially covering said opening for preventing inadvertent loss of articles from said cavity, said flap being selectively shiftable away from said front wall, and an article-supporting bottom wall within said cavity above said



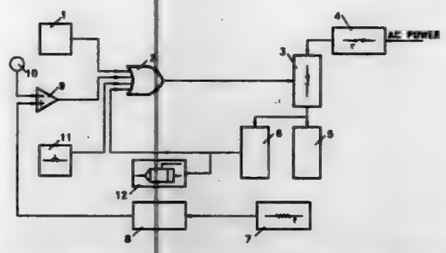
sidewall bottom margins and proximal to said opening and recesses for supporting said articles within the cavity at a level for dispensing thereof, said retainer flap having an upper end engageable with said front wall for releasably maintaining the retainer flap across said opening.

5,443,205
SHIPPING/DISPLAY CONTAINER
James O. Robotham, Nashville, Mich., and Noel J. Mertz, Geneva, Ill., assignors to Kellogg Company, Battle Creek, Mich.
Filed Mar. 24, 1994, Ser. No. 217,158
Int. Cl.[6] B65D *5/32, 5/54*
U.S. Cl. 229—243 13 Claims



1. A container adapted to ship and display a boxed product comprising:
- a top panel with side panels hingedly attached thereto forming a shroud;
- a bottom panel with lower side panels hingedly attached thereto forming a tray;
- the side panels of said shroud being disposed inside the lower side panels of the tray and resting against said bottom panel, thereby encasing said boxed product for shipment;
- said lower side panels of the tray having at least two flaps individually attached over substantially the entire lengths of individual ones of said lower side panels to at least two of said lower side panels of the tray at lines of demarcation therebetween, said flaps being adhered to said side panels of said shroud, said flaps being detachable at said lines of demarcation from said lower side panels of the tray and said shroud being removable from the container to display the boxed product.

5,443,206
STANDBY LOSS MINIMIZING CONTROLLER FOR BOILERS WITH TANKLESS WATER HEATERS
Isaac Cohen, 1171 Carll's Straight Path, Dix Hills, N.Y. 11746
Filed Jul. 21, 1994, Ser. No. 278,793
Int. Cl.[5] F23N *1/08;* F24D *3/00*
U.S. Cl. 236—20 R 6 Claims



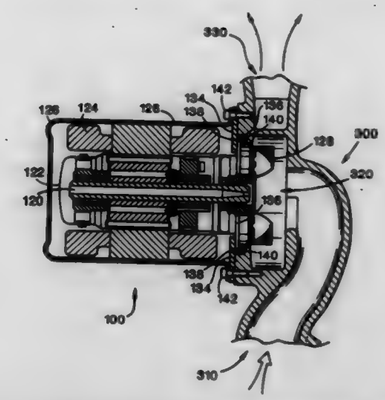
1. A standby loss minimizing controller for a boiler with a temperature control system consisting of a burner circuit connected to a voltage source thorough a boiler thermostat, the said controller comprising:
- a programmable clock to provide a first logic signal that is "TRUE" only for a short duration at several programmed times each day;
- a temperature sensing means for generating a temperature signal proportional to the internal temperature of the said boiler;
- a differentiating means responsive to the said temperature signal to generate a cooling rate signal proportional to the cooling rate of the boiler;
- a source to provide a cooling rate reference signal, of a magnitude that is selected to represent the cooling rate of the boiler caused by standby heat losses from the boiler, the said cooling rate being a measurable characteristic of the said boiler;
- a comparator means responsive to the said cooling rate signal and said cooling rate reference to produce a second logic signal that is "TRUE" only when the magnitude of the said cooling rate signal exceeds the magnitude of the said cooling rate reference;
- means to manually generate a third logic signal that is "TRUE" for a predetermined duration, the said third logic signal being used by the user of the said boiler to initiate said boiler operation;
- a switch means connected in series with the said thermostat in between the said thermostat and the said burner circuit;
- a voltage sensing means to generate a fourth logic signal that is "TRUE" when voltage is present across the said burner circuit is present;
- a multiple input logic "OR" gate means responsive to the four said logic signals to turn "ON" the said switch means if at least one of the said logic signals is "TRUE";

5,443,207
INTEGRATED ZONING CIRCULATOR
Richard A. Genga, East Greenwich, R.I., assignor to Taco, Inc., Cranston, R.I.
Filed Jul. 13, 1993, Ser. No. 91,214
Int. Cl.[6] F24D *3/00*
U.S. Cl. 237—8 R 15 Claims

1. An integrated zoning circulator for circulating fluid within a hydronic heating or cooling system, the integrated zoning circulator comprising:
- a wet-rotor circulator motor, the circulator motor comprising
- a motor housing,
- a stator disposed within the motor housing and sealed from the circulating fluid,
- a rotor housing disposed within the motor housing within the stator, the rotor housing being unsealed from the circulating fluid so that the fluid enters the rotor housing,
- a rotor disposed within the rotor housing and in contact with the fluid, and
- an impeller affixed to one end of the rotor, the stator and rotor configured with respect to one another so that the rotor is caused to rotate when the stator is energized;

an impeller casing fastened to the motor housing, the impeller casing comprising
- an inlet end for accepting the circulating fluid flowing into the impeller casing, the inlet end being configured for attachment to a pipe of the hydronic heating system,
- an impeller zone into which the impeller extends from the motor, the impeller zone being in fluid communication with the inlet of the impeller casing, and
- an outlet end for discharging the circulating fluid flowing from the impeller casing, the outlet end being configured for attachment to a pipe of the hydronic heating system;

a zoning circulator controller, the zoning circulator controller comprising
- a controller housing integral with the motor housing,



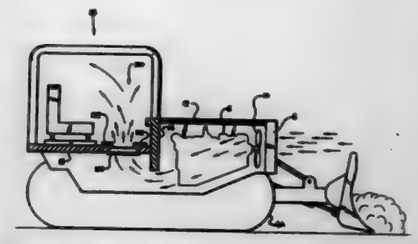
- electrical inlet ports in the controller housing for accepting low voltage thermostat leads and high voltage supply leads,
- a voltage transforming device disposed within the controller housing, the voltage transforming device being configured for transforming a high voltage delivered on the high voltage supply leads to a low voltage,

an electrical switching device disposed within the controller housing, the electrical switching device having low voltage activation input terminals and at least one pair of high voltage switched output terminals, the switching device being configured to switch the output terminals when low voltage is supplied to the activation input terminals,

low voltage conductors within the housing for connecting the low voltage thermostat leads to the low voltage output of the voltage transforming device and to the low voltage activation terminals of the electrical switching device,

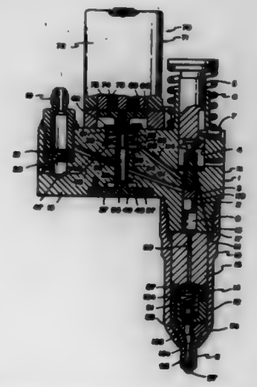
high voltage conductors within the housing for supplying the high voltage from the high voltage supply leads to at least one of the high voltage switched output terminals of the electrical switching device, and for connecting at least one other of the high voltage switched output terminals to the stator.

5,443,208
CAB HEATER
Jay E. Potter, 5700 E. Robinson, Springdale, Ark. 72764
Filed May 23, 1994, Ser. No. 247,852
Int. Cl.[6] B60H *1/02*
U.S. Cl. 237—12.3 A 6 Claims



6. In a tracked vehicle having endless tracks, an operator's compartment, an engine surrounded by an enclosure, a firewall, an idle space existing behind the engine and between the tracks, an operator's compartment floor, a radiator, and a radiator fan, said enclosure, said firewall, said operator's compartment floor, and said idle space defining a single continuous enclosed space, the improvement comprising:
- means defining an opening in the operator's compartment floor, said opening being in direct communication with the enclosed space, whereby air, heated by the radiator and the engine, within said enclosed space is forced through said opening and into the operator's compartment;
- a closure member pivotally attached to the operator's compartment floor at said opening, said closure member selectively movable to a fully open position, a closed position, and to any position therebetween; and
- a support member disposed below said closure member, enabling said closure member to rest thereon when in the closed position.

5,443,209
HIGH PRESSURE DIESEL FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINES
Michael VanAllsburg, Grand Rapids, Mich., assignor to Diesel Technology Company, Detroit, Mich.
Filed Aug. 2, 1994, Ser. No. 284,366
Int. Cl.[6] F02M *55/00*
U.S. Cl. 239—90 9 Claims



1. A fuel injector including a housing means having a fuel

passage means connectable at one end to a source of fuel for the ingress or egress of fuel at a suitable supply pressure;
- a fuel supply chamber in flow communication with said fuel passage means, a pump cylinder means in said housing means, an externally actuated plunger reciprocable in said cylinder means at a predetermined clearance therewith and defining at one end thereof a pump chamber open at one end for the discharge of fuel during a pump stroke and for fuel intake during a suction stroke of said plunger;
- said housing means including a valve body having a spray outlet at one end thereof for the discharge of fuel;
- a discharge passage means connecting said pump chamber to said spray outlet;
- a valve controlled passage means for effecting flow communication between said pump chamber and said fuel supply chamber; and
- said plunger including means for precluding elastic radial expansion of the plunger when under compression as caused by the force of the plunger actuator being transferred to the plunger to pressurize the fuel in the pump chamber, thereby maintaining the predetermined clearance between said plunger and the housing.

5,443,210

SPRAYING APPARATUS

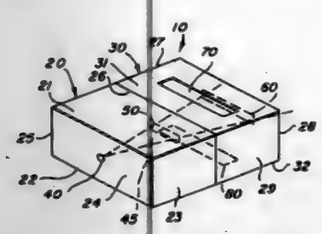
Nicholas J. Payne, Sault St. Marie, Canada, assignor to Her Majesty the Queen in the Right of Canada as Represented by the Minister of Energy, Mines, Resources and Forestry, Quebec, Canada

PCT No. PCT/CA92/00427, § 371 Date Mar. 30 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/06721, PCT Pub. Date Apr. 4, 1993

Continuation-in-part of Ser. No. 769,177, Sep. 30, 1991, Pat. No. 5,246,166. PCT filed Sep. 29, 1992, Ser. No. 211,368

Int. Cl.[6] B05B *1/28*

U.S. Cl. 239—104 15 Claims



1. A spraying apparatus for delivering a spray that is essentially without a small drop component, comprising:
- an atomizer adapted to produce a flat spray, having a small drop component, from a liquid;
- a separation chamber having a drop exit opening;
- means to pass said spray in a path across said chamber to be delivered through said exit opening;
- separation means to remove the small drop component of said spray so that the component passing through said exit opening is essentially free of the small drop component, wherein said separation means comprises means to pass a flow of air transversely through the spray, said flow of air being sufficient to deflect the small drop component out of the spray path without otherwise disrupting the spray; and
- ducting configured to duct said flow of air out of said separation chamber and after separation of the small drop components therefrom, to recirculate said flow of air to said separation chamber to pass repeatedly through said spray.

5,443,211

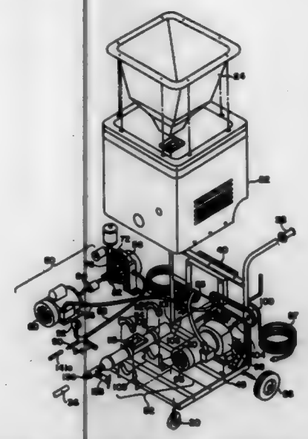
SPRAY MACHINE FOR GIVING A TEXTURE TO DRYWALL

Lesley Young, Belton, Mo.; Brian D. Rhodes, Olathe; Gary Acton, Kansas City, both of Kans.; Michael L. Oglesby, Lee's Summit, Mo., and Michael L. Fureigh, Shawnee Mission, Kans., assignors to The Stanley Works, New Brittain, Conn.

Continuation-in-part of Ser. No. 828,387, Jan. 30, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 147,383

Int. Cl.[6] B05B *7/02, 7/14, 7/24*

U.S. Cl. 239—146 16 Claims



1. A portable applicator machine for applying any selected one of a plurality of known particulate textured surfaces onto walls or ceilings, said machine comprising a cart having a housing mounted on two relatively large rear wheels and front supports, said large wheels having a diameter which is large enough to easily roll up or down stairs, said housing including a hopper for holding said particulate texture material, a spray gun for applying said particulate texture material to said walls or ceilings, first delivery means comprising means for pumping said particulate texture material from said hopper through a variable speed pump driven by a first electric motor for transporting said particulate texture material from said hopper through a hose to said spray gun, second delivery means separate from said first delivery means, said second delivery means comprising compressor means driven by a second and separate electric motor for delivering pressurized air through a separate hose to said spray gun in order to drive said particulate texture material out of said spray gun, at least one nozzle tip orifice to provide a selected diameter through which said particulate texture material is delivered under the urging of said variable speed pump and said pressurized air.

5,443,212

DRIP IRRIGATION APPARATUS

Eldad Dinur, Kibbutz Naan, Israel, assignor to Naan Irrigation Systems, Kibbutz Naan, Israel

Continuation of Ser. No. 187,807, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 21,484, Feb. 23, 1993, abandoned. This application Jul. 25, 1994, Ser. No. 280,147

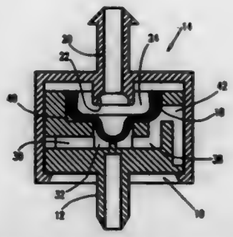
Claims priority, application Israel, Feb. 26, 1992, 101071

Int. Cl.[6] B05B *15/00*

U.S. Cl. 239—542 6 Claims

1. Drip irrigation apparatus comprising:
- a housing including a water inlet, a water outlet and a water flow path extending therebetween; and
- a pressure responsive membrane disposed within the housing and arranged to govern the flow of water, said pressure responsive membrane having a peripheral side wall portion and a central portion,

said water flow path including:
- a first relatively upstream flow path portion which passes adjacent said central portion of said membrane, said first relatively upstream flow path portion having a flow path cross section which is governed by the position of the central portion of said membrane, and
- a second relatively downstream flow path portion which passes adjacent said peripheral side wall portion of said membrane,



said membrane being positioned relative to said water flow path such that an inward displacement of the membrane at said second relatively downstream flow path, enables said central portion of said membrane to be displaced relative to said housing so as to decrease said flow path cross section of said first relatively upstream flow portion,

said water flow path also comprises a first pressure reducing pathway disposed upstream of said first relatively upstream flow portion.

5,443,213

SCREEN APPARATUS FOR PAPER MAKING

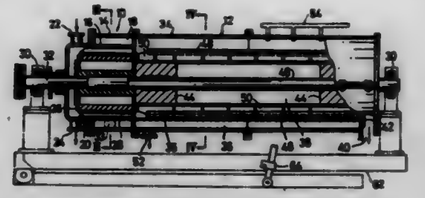
Yoshihiko Aikawa, Shizuoka, Japan, assignor to Aikawa Iron Works Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 936,568, Aug. 27, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,932

Claims priority, application Japan, Aug. 30, 1991, 3-244046; Jul. 24, 1992, 4-217404

Int. Cl.[6] B02C *13/10, 13/20, 13/284*

U.S. Cl. 241—73 38 Claims



1. A screen apparatus for paper making comprising:
- a first, vertically separable, horizontal drum defining a first screen chamber therein;
- a drum screen arranged in said first screen chamber, resulting in a first fiber recovery chamber being defined outside said drum screen;
- a feedstock intake port provided at said first screen chamber so as to be positioned inside said drum screen;
- a first macerating blade means, comprising replaceable blades rotatably arranged in proximity to said drum screen in said first screen chamber, said blade means disposed to allow adjustment of a gap between said blade means and said drum screen;
- a second,vertically separable, horizontal drum defining a second screen chamber therein;
- a screen arranged in said second screen chamber so as to be positioned on the side of a bottom of said second horizontal drum, resulting in a second fiber recovery chamber being defined outside said screen;
- a residue discharge port provided at said second screen chamber so as to be positioned inside said screen; and
- a second macerating blade means, comprising replaceable blades, rotatably arranged in proximity to said screen in said second screen chamber, said second blade means disposed to allow adjustment of a gap between said second blade means and said screen of said second screen chamber;
- an inside of said drum screen in said first screen chamber and that of said screen in said second screen chamber communicating with each other.

5,443,214

HARD MATERIAL COLLECTOR ASSEMBLY FOR A GRINDER

Nick J. Lesar, Palmyra, Wis., assignor to Weiler and Company, Inc., Whitewater, Wis.

Continuation-in-part of Ser. No. 654,942, Feb. 13, 1991, Pat. No. 5,251,829. This application Oct. 12, 1993, Ser. No. 133,900

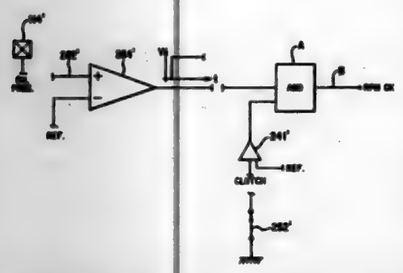
Int. Cl.[6] B02C *18/30, 18/36*

U.S. Cl. 241—82.2 10 Claims



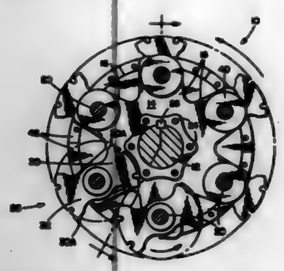
1. In a grinder for grinding material, comprising a housing having an outlet; a primary auger mounted within the housing for advancing material through the housing; a shaft extending from the primary auger and rotatable therewith; and an orifice plate mounted at the housing outlet; the improvement comprising:
- an opening formed in the orifice plate;
- a bushing mounted within the orifice plate opening, the bushing having a passage for receiving the shaft;
- wherein the orifice plate opening and the bushing include mating key-and-keyway structure for preventing rotation of the bushing relative to the orifice plate;
- a housing defining a hard material collection cavity located downstream of the orifice plate;
- an adaptor mounted to the orifice plate for interconnecting the housing with the orifice plate, wherein the bushing extends through the adaptor; and
- key-and-keyway structure interposed between the adaptor and the bushing for preventing rotation therebetween.

5,443,215
APPARATUS FOR ADJUSTING A SHEARBAR RELATIVE TO A CUTTERHEAD
Robert L. Packler, Ephrata, Pa., assignor to New Holland North America, Inc., New Holland, Pa.
Filed Apr. 4, 1994, Ser. No. 222,533
Int. Cl.[6] B02C 25/00
U.S. Cl. 241—101.3 5 Claims



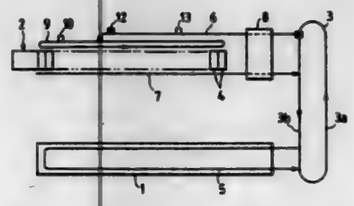
1. In machinery employing a prime mover which is coupled through a clutch to drive a rotatable member, and in which rotation of the rotatable member has to be established prior to initiating control action, the improvement comprising:
first means for producing a first steady state electrical signal substantially free of transients to indicate rotation of the prime mover;
second means for producing a second steady state electrical signal substantially free of transients to indicate that the clutch, interposed between the prime mover and the rotatable member, is engaged to drive said rotatable member in rotation; and
third means for combining the first and second steady state signals so that rotation of the rotatable member is established when both the first and second steady state signals are present.

5,443,216
HAMMER MILL
Donald L. Lajoie, 18 Sengo Rd., South Norwalk, Conn. 06854
Filed Sep. 12, 1994, Ser. No. 304,151
Int. Cl.[6] B02C 13/04
U.S. Cl. 241—194 10 Claims



1. A hammer mill rotor assembly comprising:
a rotor drive shaft;
a plurality of parallel plates secured to said drive shaft;
each plate having a plurality of equally spaced radial arms;
each radial arm having a bore passing therethrough;
the bores of corresponding arms being aligned;
rod means passing through the aligned bores of corresponding radial arms;
hammer means located between a pair of adjacent radial arms at the outer ends thereof;
said hammer means comprising an elongated body having a central bore and a plurality of hammer heads;
each hammer head having an outer impact portion to engage objects to be shredded in the hammer mill;
said hammer means central bore being aligned with the bores of adjacent radial arms and having the rod means passing therethrough;
said rod means and said hammer head means central bores being concentric and of approximately the same diameter for smooth rotatable movement of the hammer head means.

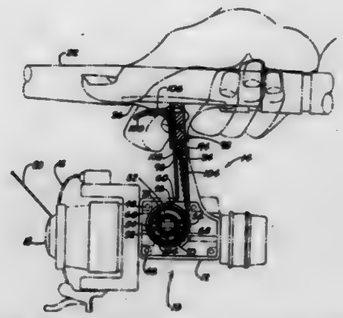
5,443,217
BOBBIN SUPPLYING SYSTEM HAVING A BOBBIN RESERVE LINE
Kazuo Nishikawa, Kyoto, and Takashi Nakagawa, Uji, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Division of Ser. No. 62,955, May 14, 1993. This application May 10, 1994, Ser. No. 240,522
Claims priority, application Japan, May 22, 1992, 4-130633; Jul. 28, 1992, 4-201811
Int. Cl.[6] B65H 54/02, 54/22
U.S. Cl. 242—35.5 A 2 Claims



1. A bobbin supplying system, comprising:
at least one spinning bobbin supplying passage having a plurality of multi-spindle winding units,
at least one reserve line provided on the spinning bobbin supplying passage for circulating or reciprocating spinning bobbins,
at least one bobbin sensor provided on the reserve line for detecting the passage of spinning bobbins and for generating detection signals, and
winder control means for receiving detection signals from the bobbin sensor and for issuing a stop knotting command to the winding units when the number of passing spinning bobbins detected by the bobbin sensor per predetermined time is less than a predetermined number.

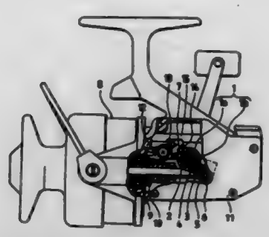
5,443,218
LINEAR WINDING ASSEMBLY
Quintino M. Cocca, 620 Saxonburg Blvd., Pittsburgh, Pa. 15238
Continuation-in-part of Ser. No. 876,443, Apr. 30, 1992, Pat. No. 5,303,877. This application Nov. 18, 1993, Ser. No. 153,993
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] A01K 89/01
U.S. Cl. 242—256 12 Claims

6. A winding assembly installed within a fishing reel housing attached to a fishing rod by a stem, wherein the winding assembly is actuated by a user from a disengaged position to an engaged position to rotate a main drive shaft which actuates a bail assembly, causing the line to be brought in, comprising:
a trigger member mounted to the stem and capable of slidable, reciprocable upward and downward movement for bringing in the fishing line;
connection means extending downward from the trigger member for attachment to a drive gear whereby upward movement of the trigger member causes the connection means to rotate the drive gear;
the drive gear mounted to the housing and offset from the main drive shaft;
return means for returning the drive gear to the disengaged position when the user releases the trigger member;
a driven gear mounted on the main drive shaft and actuated for rotatable motion thereon when engaged by the rotation of the drive gear;



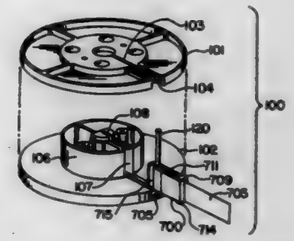
a bearing mounted to the main drive shaft and which is circumjacently encompassed by and fitted within the driven gear whereby rotatable motion of the driven gear causes the bearing to lock onto and rotate the main drive shaft and thus bring in the fishing line; and
connection means extending from the trigger member to the drive gear so that the upward movement of the trigger member causes the drive gear to rotate and engage the driven gear.

5,443,219
REVERSAL PREVENTIVE DEVICE FOR FISHING REEL
Hiroshi Hashimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 13, 1994, Ser. No. 274,559
Claims priority, application Japan, Jul. 14, 1993, 5-195359
Int. Cl.[6] A01K 89/027
U.S. Cl. 242—300 10 Claims



1. A reversal preventive device for a fishing reel, in which a pivotable reversal preventive claw is brought into engagement with a reversal preventive rachet wheel to prevent a rotation of a rotary shaft, said device comprising:
an operation member loosely and rotatably mounted on said rotary shaft;
a friction member contactable with a portion of said rotary shaft and coupled with said operation member;
biasing means for biasing said friction shaft onto said portion of said rotary member to cause a friction; and
an engagement member provided on said operation member for operating said reversal preventive claw when said operation member is rotated through said friction in linking with a rotation of said rotary shaft.

5,443,220
TAKE-UP REEL FOR MAGNETIC TAPE CARTRIDGE LEADER BLOCK
David T. Hoge, Westminster; Michael V. Konshak, Louisville, both of Colo., and George P. Rambacek, Shafer, Minn., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Dec. 30, 1993, Ser. No. 176,109
Int. Cl.[6] G11B 15/32
U.S. Cl. 242—332.8 14 Claims



1. A take-up reel apparatus for a tape drive comprising:
a hub having a substantially cylindrical shape, and having a first end and a second end;
a first plate having a substantially cylindrical shape, and having a top surface and a bottom surface, wherein said bottom surface of said first plate is connected to said first end of said hub to render said hub and said first plate cylindrically concentric;
a second plate having a substantially cylindrical shape, and having a top surface and a bottom surface, wherein said top surface of said second plate is connected to said second end of said hub to render said hub and said second plate cylindrically concentric;
wherein said hub includes an aperture in its cylindrical surface, extending substantially from said first end to said second end thereof, wherein said aperture is of dimensions to receive a leader block attached to one end of a magnetic tape;
said first plate having a guide channel formed in its bottom surface extending radially outward from said aperture to an edge of said first plate, wherein a tape threading arm threading pin engages said leader block to place said leader block into said aperture, said first plate further comprises a threading pin slot formed therein and extending through said first plate from said guide channel to said top surface to enable said threading pin to transport said leader block radially from said edge of said first plate to said aperture, said guide channel being dimensioned to receive said leader block and said threading pin slot being dimensioned to only receive said tape threading arm threading pin; and
said second plate having a guide channel formed in its top surface extending radially outward from said aperture to an edge of said second plate and being radially aligned with said guide channel in said first plate.

5,443,221
TAKE-OUT ARBOR FOR A STRIP ACCUMULATOR
David P. Petry, Columbia Station, Ohio, assignor to Kent Corporation, North Royalton, Ohio
Filed Jun. 22, 1993, Ser. No. 80,916
Int. Cl.[6] B65H 75/02
U.S. Cl. 242—364.1 31 Claims

1. A take-out arbor for receiving strip material in a strip accumulator comprising a first mandrel portion, means to

mount said first mandrel portion on a pivot point, a second mandrel portion carried by said first mandrel portion, means to pivot said mandrel portions on said pivot point, a plurality of roller assemblies supported by said mandrel portions, one end of each said roller assembly being supported by said first mandrel portion and the other end of each said roller assembly being supported by said second mandrel portion, and means to rotate said second mandrel portion relative to said first mandrel portion so that as said mandrel portions are being pivoted on said pivot point, said other end of each said roller assembly pivots with respect to said one end of each said roller assembly.

5,443,222

BELT RETRACTOR WITH A BELT PRETENSIONER ACTING ON THE BELT DRUM

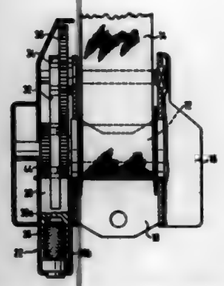
Thomas Mödinger, Aldorf-Verderstetnenberg, and Johannes Schmid, Schwäbisch Gmünd-Hussenhofen, both of Germany, assignors to TRW Repa GmbH, Aldorf, Germany

Filed Jul. 8, 1993, Ser. No. 88,823

Claims priority, application Germany, Jul. 13, 1992, 42 29 993.6

Int. Cl.[6] B60R *22/46*

U.S. Cl. 242—374 **8 Claims**



1. A belt retractor for vehicle safety belts comprising:
a housing;
a belt drum rotatably mounted in said housing;
a linear drive for providing a linear drive stroke;
an intermediate wheel rotatably supported on said housing;
conversion means for converting said linear drive stroke into rotation of said intermediate wheel to cause said intermediate wheel to rotate at a first rate;
a step-up gear having an input connected with said intermediate wheel and an output connected with said belt drum for transmitting rotation of said intermediate wheel to said belt drum to rotate said belt drum at a second rate substantially higher than said first rate; and
a freewheel coupling for coupling said intermediate wheel with a first end of a torsion rod which has a second end supported by said housing to be constrained in rotation.

5,443,223

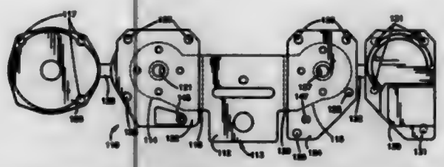
STRUCTURE FOR USE IN A SEAT BELT RETRACTOR AND METHOD OF USING THE STRUCTURE TO MAKE A SEAT BELT RETRACTOR

Dean T. Yosia, Sterling Heights, and Larry F. Emmerling, Clio, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 26, 1993, Ser. No. 142,762

Int. Cl.[6] B60R *22/00*

U.S. Cl. 242—379 **43 Claims**



1. A structure for use in a seat belt retractor having a frame, a spool supported in the frame and rotatable in belt winding and unwinding directions, a spring member biasing the spool in the belt winding direction, and a sensor member, said structure comprising:
a first plastic portion comprising at least a part of the frame of the retractor;
a second plastic portion comprising a cover for one of the members; and
a first plastic hinge portion interconnecting said first and second plastic portions for enabling said first and second plastic portions to pivot relative to each other and into position with said second plastic portion covering said one of the members.

5,443,224

EMERGENCY LOCKING PASSENGER SAFETY BELT MECHANISMS

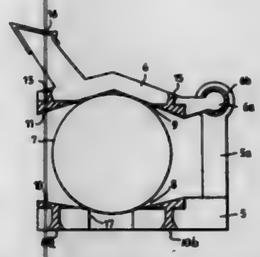
Michael Patterson, Wrexy; David Blackadder, and John F. Bell, both of Carlisle, all of England, assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 16, 1993, Ser. No. 92,291

Claims priority, application United Kingdom, Jul. 25, 1992, 9215855

Int. Cl.[6] B60R *22/40*

U.S. Cl. 242—384.2 **6 Claims**



1. A vehicle passenger seat belt emergency locking mechanism comprising a frame normally permitting free movement of belt material and an inertial sensing mechanism comprising one or more moulded parts cooperable with locking means to cause the belt material to be locked against withdrawal from the frame by the effect of belt tension at least one or more of said moulded parts comprises at least two acoustically different materials, said inertial sensing mechanism including a base part carried by said frame, a movable inertial part normally supported by said base part, in a predetermined position, and a pivotally supported member of a first material which rests against said inertial part to be deflectable thereby on movement of the inertial part said pivotally supported member supported by a pivot of a second acoustically different material.

5,443,225

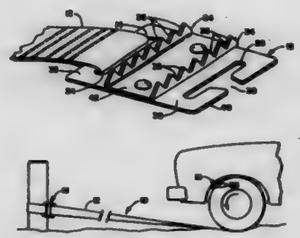
METHOD AND APPARATUS FOR PULLING A VEHICLE

John J. Tracy, 17 Staples Pl., and Robert A. Tracy, 23 Waterside La., both of West Hartford, Conn. 06107

Filed Sep. 2, 1993, Ser. No. 115,238

Int. Cl.[6] B65H *75/42*; B60C *27/06*

U.S. Cl. 242—392 **10 Claims**



1. Vehicle pulling apparatus comprising an elongated flexible strap, with a pair of opposed generally flat faces, adapted to be wrapped about a tire of a vehicle drive wheel with one face of the strap facing inwardly toward the tire, for pulling the vehicle with the drive wheel by using the drive wheel as a winch; an end plate mounted on one end of the strap for being wedged between the tire and the drive wheel support surface; gripping means on the end plate for gripping the tire and drawing the end plate and trailing strap around the tire to wrap a portion of the strap around the tire and over the end plate by rotation of the drive wheel in one direction with the vehicle engine; attachment means on the end plate for attaching the end plate to the strap wrapped over the end plate; and anchoring means on the strap longitudinally spaced from the end plate for anchoring the strap at a point aligned with and spaced from the vehicle drive wheel for pulling the vehicle toward the anchoring point with the strap by wrapping the strap further around the tire by further rotation of the drive wheel in said one direction with the vehicle engine.

5,443,226

CENTER WIND TAKEUP DRIVE AND METHOD

William J. Alexander, III, Mauldin, and Shala W. Summey, III, Greenville, both of S.C., assignors to Alexander Machinery, Inc., Mauldin, S.C.

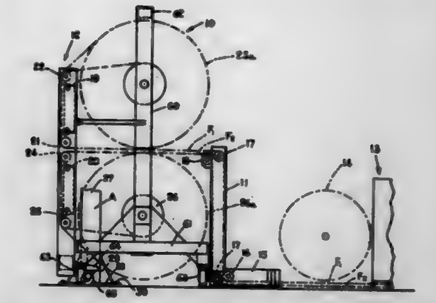
Filed Sep. 27, 1993, Ser. No. 126,401

The portion of the term of this patent subsequent to Jul. 25, 2012, has been disclaimed.

Int. Cl.[6] B65H *18/10*

U.S. Cl. 242—533.8 **7 Claims**

1. A drive for a movable takeup for web material having a horizontal shaft with a drive coupling adjacent one end comprising:
an upright support frame positionable adjacent a source of web material;
a motor driven power takeoff engageable with said coupling;
an articulated arm carried by said upright support frame extensible in relation thereto for horizontal movement in respect to said drive coupling carrying said motor driven power takeoff for horizontal alignment and for engagement with said coupling;
a mounting for said arm carried by said upright support frame including an upright pivotal member supporting said arm for said horizontal movement; and
vertically adjustable means carrying said power takeoff on said articulated arm for vertical alignment with said coupling;
whereby said takeup may be movably positioned in alignment with said source of web material, and said power takeoff mounted on said articulated arm carried by said upright support frame for horizontal and vertical alignment facilitating the use of a disengageable drive for a movable web takeup.



5,443,227

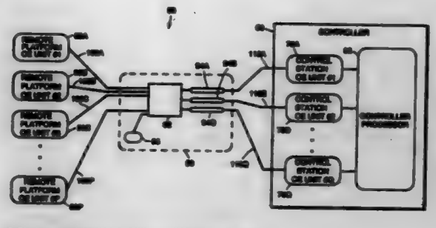
SWITCHING CONTROL FOR MULTIPLE FIBER-GUIDED MISSILE SYSTEMS

Hui-Pin Hsu, Northridge, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 15, 1993, Ser. No. 136,190

Int. Cl.[6] F41G *7/30*; H04J *4/00, 14/00*; H04B *10/24*

U.S. Cl. 244—3.12 **30 Claims**



16. A missile system comprising:
P fiber guided missiles;
a missile launcher controller for controlling said missiles; and
a multi-channel, bi-directional fiber optic data link (FODL) system, comprising:
Q uplink fiber optic channels;
P downlink fiber optic channels;
a fiber optic star coupler for coupling said Q uplink fiber optic channels and said P downlink channels;
P missile opto-electronic (OE) units respectively connected to said P downlink fiber optic channels;
Q launcher control station OE units respectively connected to said Q uplink channels; and
a controller for providing remote platform commands addressed to said missile opto-electronic (OE) units for

communication over said uplink channels in a time division multiplexed scheme, said commands comprising a subcarrier frequency (SCF) code specifying a subcarrier frequency to be utilized by a particular missile OE unit to which said command is addressed, said missile OE units comprising programmable means responsive to said commands for generating an upconversion subcarrier signal at a subcarrier frequency determined by said SCF code to upconvert remote platform data for downlink transmission to said launcher controller.

5,443,228

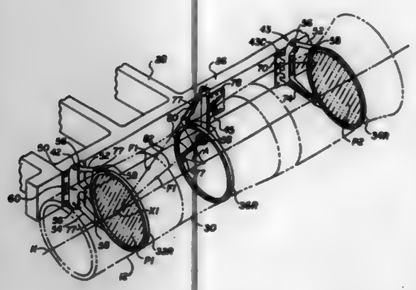
Patent Not Issued For This Number

5,443,229

AIRCRAFT GAS TURBINE ENGINE SIDEWAYS MOUNT

Michael T. O'Brien, Cincinnati, and Melvin Bobo, deceased, late of Cincinnati, both of Ohio by Beatrice L. Bobo, executor , assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 13, 1993, Ser. No. 165,627
Int. Cl.[6] B64D *27/00*; F02C *7/20*
U.S. Cl. 244—54 **10 Claims**



1. A mount assembly for mounting an aircraft gas turbine engine sideways to an aircraft by the engine's structure which rotatably supports the engine rotor assembly about an engine centerline, said mount assembly comprising;

a pivotable engine suspension including a pivotable support mount for mounting the engine structure sideways from the aircraft and which is operably constructed to permit at least limited axial movement of the engine,

a thrust mount having a thrust bar means for reacting out substantially all thrust load forces from the engine to the aircraft,

said thrust bar means is pivotably joined to the engine structure and is pivotably joined to the aircraft such that said thrust bar means has a line of action which intersects the engine centerline in a support mount plane through which said support mount suspends the engine and which is generally perpendicular the engine centerline, and

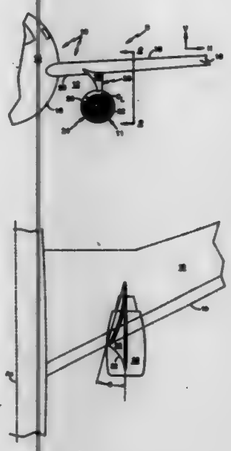
said thrust bar means compriaes a pair of spaced apart thrust links which are vertically spaced apart at their respective pivotal joints to the aircraft and circumferentially spaced apart at their respective pivotal joints to said engine structure.

5,443,230

AIRCRAFT WING/NACELLE COMBINATION

Wesley K. Lord, South Glastonbury, and Andrea L. Karalus, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1993, Ser. No. 171,301
Int. Cl.[6] B64D *27/00, 29/02*
U.S. Cl. 244—54 **7 Claims**



1. An aircraft having a vertical direction and a horizontal direction, the aircraft including an airframe and a powerplant for powering the airframe which is spaced outwardly from the airframe leaving a channel region therebetween, the aircraft having aerodynamic surfaces over which flow exterior to the aircraft passes, which comprises:

a fuselage having a side aerodynamic surface which extends vertically to inwardly bound the channel region having an uppermost part and a lowermost part;

a wing which extends horizontally from the fuselage and which is attached to the fuselage, the wing having a wing lower surface which bounds a portion of the uppermost part of the channel region;

a powerplant which includes an aircraft engine mounted below the wing, the aircraft engine having an engine center line which is spaced vertically away from the wing;

a nacelle which extends about the aircraft engine and which is spaced from the wing and which has a nacelle surface extending vertically to outwardly bound a portion of the channel region;

a pylon extending between the wing and the nacelle to support the aircraft engine, the pylon having

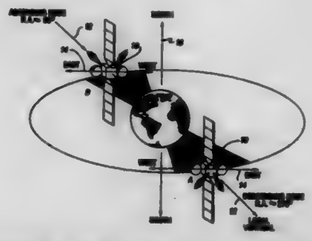
an airfoil extending in a generally vertical direction having a leading edge and a trailing edge, the airfoil being curved away from the aircraft in an axial rearward direction and having a portion of the airfoil curved toward the aircraft in the vertical direction from the nacelle toward the wing, the airfoil being curved (as measured from the nacelle toward the wing) over at least the uppermost seventy (70%) percent of the pylon.

5,443,231

METHOD AND APPARATUS FOR A SATELLITE STATION KEEPING

Bernard M. Ansel, El Segundo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 17, 1993, Ser. No. 153,512
Int. Cl.[6] B64G *1/26*
U.S. Cl. 244—166 **20 Claims**



1. A method of station keeping for a three-axis stabilized satellite having four thrusters mounted in a generally rectangular configuration on an anti-nadir face of the satellite, each of the four thrusters having a line of thrust which passes through the center of mass of the satellite, the four thrusters including a northwest thruster, a northeast thruster, a southwest thruster, and a southeast thruster, the method comprising the steps of:

canting the northwest thruster and the northeast thruster away from the anti-nadir face in a north direction with respect to a north-south axis which passes through the center of mass of the satellite;

canting the southwest thruster and the southeast thruster away from the anti-nadir face in a south direction with respect to the north-south axis;

slewing the northeast thruster and the southeast thruster in an east direction about the north-south axis;

slewing the northwest thruster and the southwest thruster in an west direction about the north-south axis;

firing the northeast thruster and the northwest thruster near an orbit ascending node; and

firing the southeast thruster and the southwest thruster near the orbit descending node;

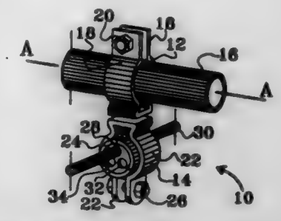
wherein each of the four thrusters is fired in accordance with a corresponding one of four firing time durations, each of the four firing time durations dependent upon a first predetermined quantity representative of a required change in tangential velocity to control longitude mean motion and a second predetermined quantity representative of a required change in tangential velocity to control an orbit eccentricity component along a first axis which connects the ascending node and the descending node, and wherein the four thrusters are slewed to provide effective control of the orbit eccentricity component.

5,443,232

APPARATUS FOR HANGING TV CABLE AND THE LIKE

Donald A. Kesinger, 8826 S. Deer Creek Canyon Dr., Morrison, Colo. 80465, and Eric S. Kesinger, 2466 S. Fig Ct., Lakewood, Colo. 80228

Filed May 24, 1993, Ser. No. 64,985
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—62 **11 Claims**



1. An apparatus for hanging and gripping the sides of one or more cables such as coaxial cable from a suspension structure, the apparatus comprising:

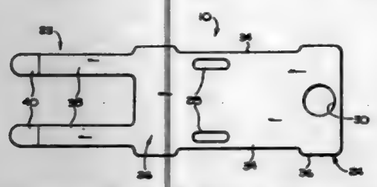
a support bracket having a first clamp with clamp arms and a second clamp with clamp arms, the clamp arms of said second clamp adapted for attachment to the suspension structure;

a grommet made of flexible pliable material, said grommet having a first hole for receiving a portion of a first cable therein and wherein sides of said first hole have sufficiently high coefficient of friction to grip the sides of said first cable, said grommet received on said first clamp and tightened thereon, said grommet disposed on said first clamp at an angle to an axis of the suspension structure, said grommet includes a second hole with a molded tear out hole plug integrally formed therein and connected to a connecting rib in said second hole, said hole plug extending along a length of said grommet and providing means for preventing the collapse of said grommet prior to removal from said second hole and receipt of a portion of a second cable therein;

index stops on a top and a bottom of a circumference of said grommet, said index stops preventing the turning of said grommet on the clamp arms of said first clamp when said first clamp is tightened on said grommet, said index stops providing for proper indexing of said grommet on said first clamp when installed; and

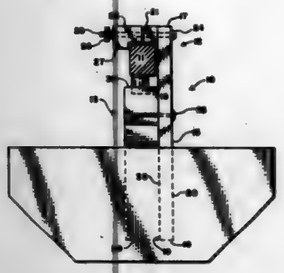
flanges on opposite sides of said grommet and therearound, the clamp arms of said first clamp received between said outwardly extending flanges and tightened around the circumference of said grommet, said flanges preventing said grommet when the cable is mounted therein from working free and slipping outwardly from the sides of the clamp arms.

5,443,233
ARM BOARD FOR GURNEY
Joseph Kabanek, 32390 IH-10 West, Boerne, Tex. 78006
Filed Dec. 28, 1993, Ser. No. 174,258
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 4 Claims



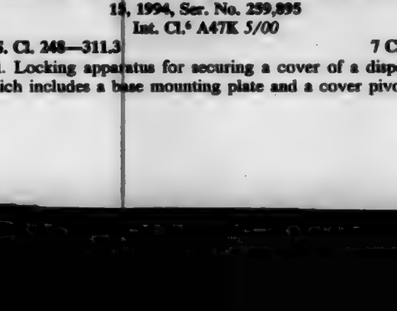
1. An arm board for use with a gurney having an elongated bed adapted to have a patient lying thereon, comprising,
a thin elongated panel having a near end and a remote end,
the panel being of flat shape, and having a uniform maximum thickness throughout its entire area except a small portion at its near end of less thickness,
the panel having a major portion at its remote end which includes lateral elements constituting maximum width of the panel,
the panel having legs at its near end, extending longitudinally and spaced apart laterally and having wedge shaped elements at their near ends which constitute said small portion of less thickness.

5,443,234
ADJUSTABLE SHELF FOR A VERTICAL POST
David R. Woods, P.O. Box 4482, Nooksack, Wash. 98276-4482
Filed May 19, 1994, Ser. No. 246,154
Int. Cl.[6] A47G *29/02*
U.S. Cl. 248—246 10 Claims



1. A shelf device which adjustably attaches to a vertical post at variable elevations, said shelf comprising:
a) a mounting base comprising a panel elongated between forward and rearward extremities and having a horizontally disposed upper abutment edge and flat interior and exterior sidewalls,
b) post-engaging abutment means disposed upon said interior sidewall adjacent said rearward extremity,
c) laterally adjustable gripping means interactively associated with said post-engaging abutment means,
d) a support arm pivotably attached to said sidewall and bounded by front and back extremities, upper and lower border surfaces, and interior and exterior side faces, said interior side face being flat and adapted to slideably contact the interior sidewall of said mounting base, said back extremity having a vertical portion adjacent said lower border surface, and an upper portion recessed forwardly toward said front extremity,
e) horizontally adjustable stop means protruding rearwardly from the vertical portion of said back extremity and positioned to press against a post intervening between said post-engaging abutment means and the back extremity of said support arm, and
f) a shelf member horizontally disposed upon the upper border surface of said support arm.

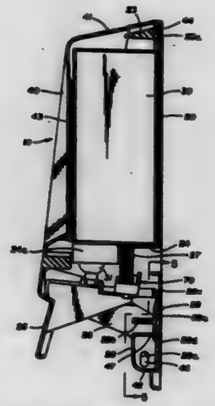
5,443,235
TILT-SWIVEL HEAD FOR OPTICAL APPARATUS
Rainer Bernhardt, Rosbach, Germany, assignor to Videor Technical E. Hartig GmbH, Rodermark, Germany
Filed Nov. 18, 1993, Ser. No. 154,182
Claims priority, application Germany, Nov. 19, 1992, 42 38 908.3
Int. Cl.[6] F16M *11/12*
U.S. Cl. 248—278 9 Claims



1. Tilt-swivel head for optical apparatus especially for surveillance cameras, comprising: a housing, a mounting base for mounting the housing, a support , a first, vertical swivel shaft (AS-AS) joining together the housing and mounting base, and a second, horizontal tilt shaft (AN-AN) joining the housing to the support, actuators for swiveling the apparatus about the first, vertical swivel shaft and for tilting about the second horizontal tilt shaft, the housing having a tubular extruded section and at least two covers,
a) the extruded section being mounted with a longitudinal axis (AP-AP) horizontal and said extruded section having at least two vertical end surfaces (S), a horizontal portion, and at least one vertical portion, and said extruded section having at least one additional wall portion said vertical portion, horizontal portion and said at least one additional wall portion and said vertical end surfaces (S) defining a tubular hollow body, said vertical end surfaces of said extruded section being covered by said covers,
b) the first vertical swivel shaft (AS-AS) passing through the horizontal portion and supported on the latter,
c) the second horizontal tilt shaft (AN-AN) passing through the at least one vertical portion and supported thereon, and
d) the covers being fastened with vertical sealing surfaces against said end surfaces of the extruded section and enclosing the actuators between said covers and the extruded section.

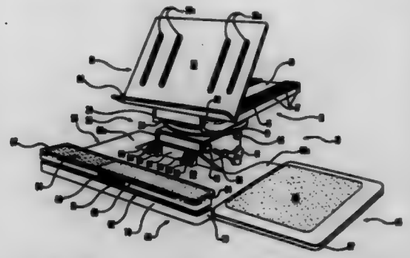
5,443,236
DISPENSING APPARATUS
Ronald F. Bell, Uniontown, and J. Christopher Wyscki, Stow, both of Ohio, assignors to GOJO Industries, Inc., Cuyahoga Falls, Ohio
Division of Ser. No. 941,726, Sep. 8, 1992. This application Jun. 15, 1994, Ser. No. 259,895
Int. Cl.[6] A47K *5/00*
U.S. Cl. 248—311.3 7 Claims

1. Locking apparatus for securing a cover of a dispenser which includes a base mounting plate and a cover pivotally attached thereto for movement between open and closed positions with respect thereto, the locking apparatus comprising:
a) latch means secured to the mounting plate and movable between a position of engagement with the cover and a position out of engagement with the cover; and



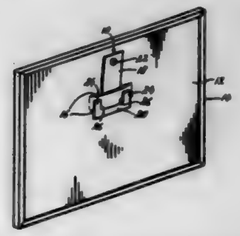
b) the cover and the mounting plate being pivotally interconnected such that the cover may move parallelly to the plane of the mounting plate and pivotally relatively of the mounting plate upon movement of said latch means to its position out of engagement with the cover.

5,443,237
COMPUTER KEYBOARD SUPPORT SYSTEM
Seymour H. Stadtmauer, 11539 E. De La O Rd., Scottsdale, Ariz. 85255
Filed May 6, 1994, Ser. No. 239,235
Int. Cl.[6] A47B *19/00*
U.S. Cl. 248—441.1 24 Claims



1. A computer keyboard support system comprising, an articulating arm means with means for connecting said articulating arm means between a work surface and a computer accessory holder and is arranged to both lower vertically from said work surface and tilt from the horizontal said computer accessory holder and includes a body that incorporates a first pivoting section that includes a top plate for fitting into a mount that is secured to an undersurface of said work surface, said first pivoting section provides a coupling across a top end of a pair of spaced parallel straight lock sides with a first pivot coupling arranged across a pair of straight flat links that are individually pivotally coupled to top ends of said first pivot coupling, said first pivoting section mounted to an undersurface of said top plate, and including a second pivoting section that provides a coupling across a bottom end of said pair of spaced parallel lock sides with a second pivot coupling arranged across bottom ends of said links, and with a keyboard holder mount as said second pivoting section for connection to said accessory holder, and means for clamping said spaced parallel lock sides against said links and against ends of said first and second pivoting sections, forming a rigid structure, until released.

5,443,238
FRAMED PICTURE HANGER SYSTEM
Lawrence Mitchell, 1073 Martingale Dr., Bartlett, Ill. 60103
Filed Feb. 9, 1994, Ser. No. 193,938
Int. Cl.[6] A47E *1/16*
U.S. Cl. 248—498 4 Claims

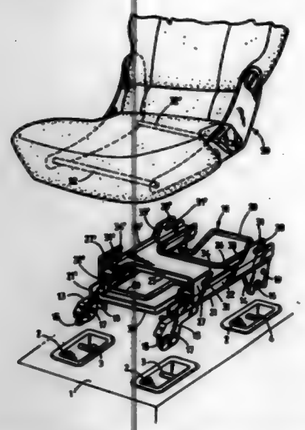


1. A hanger device for use with a picture frame, said picture frame having a top edge, a bottom edge, and a pair of side edges, said hanger device comprising:
a plate like backing member adapted to be secured to said frame, said backing member including upper and lower spaced apart slits, said slits being positioned centrally with respect to said side edges and above the center between said top and bottom edges; and
a flat, flexible, and generally T-shaped hanger device including a main leg having an outer end and a cross head having a pair of outer ends, with said main leg being threadable through said slits of said backing member until said cross head functions as a stop with respect to said lower slit, and said main leg of said hanger device having an opening adjacent its outer end adapted to be received by a wall fastener device.

5,443,239
SEAT SUPPORT FOR A MOTOR VEHICLE
Alain Leporte, Guyancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt Cedex, France
Filed Apr. 26, 1994, Ser. No. 233,806
Claims priority, application France, Apr. 27, 1993, 93 04935
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—503.1 3 Claims

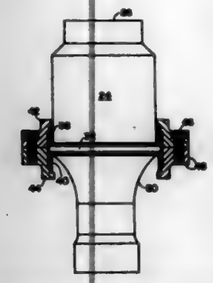
1. A motor vehicle seat support comprising:
front forks and rear forks which respectively cooperate with first fastening rods and second fastening rods, the first and second fastening rods being integral with a floor of a vehicle, each one of said front forks and rear forks comprising a mobile catch for locking each one of said front forks and rear forks to a corresponding one of said first and second fastening rods;
means for operating said catches to bring said catches into an unlocked position so as to permit a disengagement of said front forks and rear forks from said first and second fastening rods;
first and second lower guide rails which carry said front and rear forks;
first and second mobile upper guide rails in contact with said first and second lower guide rails, said first and second mobile upper guide rails being braced by a base for holding a seat and having first and second raised lateral edges;
front and rear secondary fastening supports incorporated into said lateral edges; and

notches on said secondary fastening supports which are transversely aligned, said notches comprising an opening



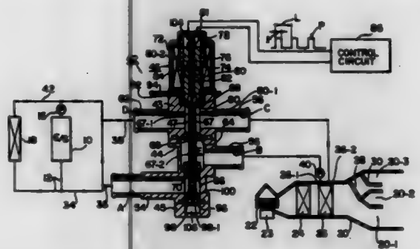
for permitting an insertion of longitudinally offset crossbars on said seat.

5,443,240
MOUNTING MEANS FOR VIBRATION MEMBER
Patrick M. Cunningham, Beacon Falls, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.
Filed Feb. 9, 1994, Ser. No. 194,108
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—638 7 Claims



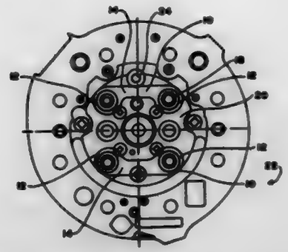
1. Mounting means for an elongated substantially cylindrical vibration member dimensioned to be resonant as a one-half wavelength resonator for vibrations of predetermined frequency traveling longitudinally therethrough, and when resonant exhibiting two respective antinodal regions and a nodal region of said vibrations, the improvement comprising:
flange means of substantially cylindrical cross-section radially extending from said vibration member substantially at said nodal region, and said flange means including seating means for receiving at either side of said flange means one end of a respective flexure tube and for tightly engaging such one end of each tube for inhibiting relative motion between said one end of each tube and said member;
a pair of metallic flexure tubes, one tube disposed on said seating means on one side of said flange means and the other tube disposed on said seating means on the other side of said flange means, and said tubes extending substantially axially and concentrically about said member;
annularly shaped clamping means disposed for engaging the other end of each of said tubes and including first surface means for tightly engaging such other end of each of said tubes for inhibiting radial motion of said other ends relative to said clamping means, and having second surface means for providing an axial engagement force between said tubes and said seating means;
said tubes having an axial length and a wall thickness dimensioned for enabling each tube to flex radially responsive to said member being resonant and thereby undergoing substantially radial motion at its nodal region,
whereby to decouple the vibrations of said member from said clamping means.

5,443,241
ELECTRO-MAGNETIC DRIVE CONTROL VALVE
Michiya Odaira, Nagoya; Kazunori Sugihara, Kariya; Noriyoshi Miyajima, Nukata; Takumi Miyaki, and Motohiko Hiramatsu, both of Obu, all of Japan, assignors to Nippondenso Co. Ltd., Kariya and Tokai Riki Mfg. Co., Obu, both of Japan
Filed Sep. 13, 1994, Ser. No. 304,814
Claims priority, application Japan, Mar. 9, 1992, 4-086242
Int. Cl.[6] F16K *31/06*
U.S. Cl. 251—129.07 7 Claims



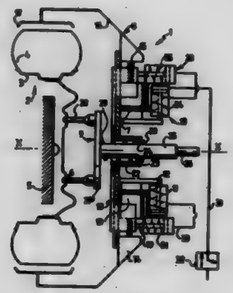
1. An electro-magnetic valve device for controlling a flow of a fluid, comprising:
a housing defining therein a passageway for the fluid;
a valve rod having at least one valve member, said valve rod being movably arranged in the housing for controlling the flow of the fluid in said passageway, said valve rod defining first and second axially opposite end surfaces extending transversely to an axis of the rod;
a solenoid mechanism that includes a solenoid for obtaining a reciprocating movement of said valve rod for a desired stroke, and a first chamber for storing the solenoid, a volume of the first chamber being varied in accordance with the movement of said valve rod;
a first seal member made of a flexible material arranged between the valve rod and the housing so that said first chamber is sealed with respect to the passageway;
means for defining a second chamber at the end of said valve rod, said rod being slidably supported solely at a location in the solenoid mechanism and being non-slidably supported at a location adjacent the second chamber; and
said valve rod having an axially extending through hole having a first end opened to the first chamber at the first end surface of the rod and a second end opened to the second chamber at the second end surface of the rod for obtaining fluid communication between the first and second chambers for equalizing the pressure between the first and second chambers, so that the volume of said second chamber is increased upon a stroke movement of the valve rod for decreasing the volume of the first chamber, and is decreased upon a stroke movement of the valve rod for increasing the volume of the first chamber,
the rod being supported with respect to the housing at a location opposite to the solenoid mechanism so that no additional force due to a pressure difference is generated in the rod opposing sliding movement of the rod.

5,443,242
CONFORMED VALVE SPRING WEAR PLATE
Jerry D. Gammill, and Randy Frank, both of Leland, Miss., assignors to Gammill Parts, Inc., Leland, Miss.
Filed Sep. 30, 1994, Ser. No. 315,434
Int. Cl.[6] F16K *31/00*
U.S. Cl. 251—337 7 Claims



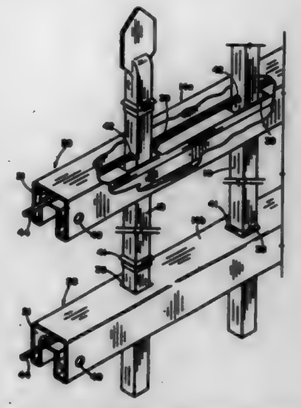
1. A conformed valve spring wear plate for use in protecting a cylinder head of an engine from wear caused by the valve springs seating thereagainst, the wear plate comprising a flat, planar element having two mirror image circular ends connected together by a narrow bridge, each circular end having a circular opening therein, with the narrow bridge being conformed to avoid interference with other structures of the cylinder head.

5,443,243
SUPPORT FOR A DEVICE FOR INSPECTING A SET OF WHEELS
Jacques Hennes, Ezy sur Eure, and Jean-Pierre Ancelin, Mesnil sur l'Estree, both of France, assignors to Facom, Morangis Cedex, France
Filed Sep. 3, 1993, Ser. No. 115,711
Claims priority, application France, Sep. 4, 1992, 92 10606
Int. Cl.[6] B66F *3/24*
U.S. Cl. 254—93 R 27 Claims



1. A support for a device for inspecting a set of wheels, said support having an axis and comprising in combination:
a mounting frame which carries:
a device for mounting said frame on the respective wheel, said mounting device comprising an arm for mounting said support on the wheel;
a device for thrusting toward the wheel a plate provided with a series of bearing pegs parallel to said axis of said support;
means for sequentially actuating said mounting device and then said thrust device; and
a lever pivotally mounted on said frame and having a first actuating branch and a second actuating branch, said first branch being cooperative with said mounting arm for mounting said support on said wheel, and said second branch being cooperative with and acting on said plate after a predetermined travel of said lever.

5,443,244
ROLLED METAL FENCE RAIL
Edward L. Gibbs, P.O. Box 581000, Tulsa, Okla. 74158-1000
Continuation-in-part of Ser. No. 35,166, Mar. 22, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 288,121
Int. Cl.[6] E04H *17/16*
U.S. Cl. 256—22 12 Claims



1. In a picket fence of the type having at least two parallel spaced-apart and horizontal extending rails supported by spaced vertical posts and having a plurality of spaced vertical pickets connected to the rails, the improvement wherein at least one of the horizontally extending rails consists of a metal sheet which has been rolled to enclose an upside down U-shaped channel, the sheet being rolled to form eight interconnecting walls comprising a top horizontal wall having first and second side edges, a first vertical outer side wall connected to said top wall along the first side edge thereof and terminating at a third edge spaced downwardly and parallel to the first edge, a second vertical outer side wall extending vertically downward from the second side edge of the top wall and terminating in a fourth side edge spaced below and parallel to the second side edge, the fourth side edge also being parallel to the third side edge and being in essentially the same horizontal plane, a pair of horizontal outer bottom walls connected to the third and fourth side edges respectively and extending inwardly towards each other and in the same horizontal plane and terminating in fifth and sixth side edges respectively, said fifth and sixth side edges being parallel to each other and being in the same horizontal plane as said third and fourth side edges, a pair of vertical inner side walls extending upwardly from said fifth and sixth side edges respectively, one of said inner side walls terminating at a seventh upper edge spaced above the sixth upper edge and constituting one end of the metal sheet, the other inner side wall extending upwardly from the fifth edge to an eighth edge spaced parallel with the seventh edge but slightly above the same, a horizontal inner bottom wall extending horizontally from said eighth edge over the seventh edge where the inner bottom wall forms a ninth edge, a vertical tab extending vertically downwardly from the ninth edge so as to overlap said one inner side wall, each vertical picket being defined as having a thickness measured in a direction transverse to that of said nil and a width measured in a direction longitudinally of said rail, said inner side walls being spaced apart a distance equal to the thickness of said picket whereby, when said picket extends into said rail said inner side walls bear against the sides of said picket, an opening in the top

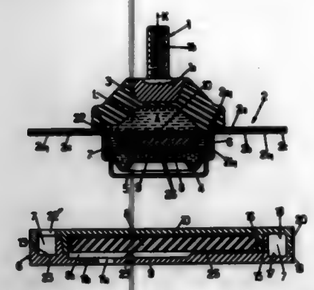
wall of said rail for said each picket, said opening being rectangular and being slightly larger than a cross sectional area of said picket, said inner bottom wall having an opening which measured in a transverse direction is equal to the thickness of said picket and when measured in a longitudinal direction is longer than the width of said picket and longer than the width of the opening in the top wall so that said picket can cant when the rail varies in position with respect to the longitudinal direction said each picket being provided with a pair of aligned apertures which are oriented in a longitudinal direction with respect to the rail, the apertures being positioned between the top wall the inner bottom wall of each said rail, and a retaining rod passing through the apertures of said each picket and extending wall.

5,443,245

HYDRAULIC ANTI-VIBRATION SUPPORTS

Alain Bellamy, Naveil; Emmanuel Blanchet, and Pascal Richard, both of Chatenoden, all of France, assignors to Hutchinson, France

Filed Oct. 28, 1993, Ser. No. 142,123
Claims priority, application France, Nov. 2, 1992, 92 13097
Int. Cl.[6] F16F *5/00*
U.S. Cl. 267—140.13 11 Claims



1. A hydraulic anti-vibration device designed to be interposed between two rigid elements, the device comprising:
two rigid frame members for securing to respective ones of the two rigid elements to be united;
an elastomer body interconnecting said two frame members and cooperating therewith to form, at least in part, two sealed chambers;
a constricted passage keeping said two sealed chambers permanently in communication with each other;
a mass of liquid filling said two sealed chambers and the constricted passage;
a valve member in the form of a plate of elastically deformable material defining in part at least one of said two sealed chambers and another chamber, said valve member having a central axis of revolution;
a grid limiting the displacements of said valve member; and
non-uniform means for causing the valve member to be pressed against said grid in an angularly varying manner around said central axis during displacement of said valve member, said non-uniform means being distributed in a non-repetitive manner angularly around said central axis.

5,443,246

CLAMP JAW EXTENDER FOR BAR CLAMPS

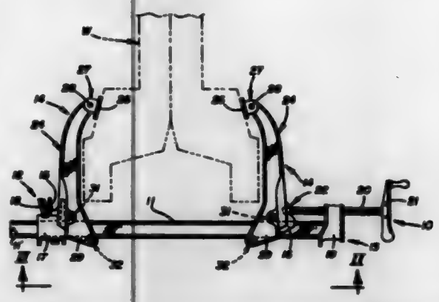
Donovan J. Peterson, 2835 N. Watts, Portland, Oreg. 97217

Filed Nov. 30, 1993, Ser. No. 159,123
Int. Cl.[6] B25B *1/24*
U.S. Cl. 269—283 11 Claims

1. A clamp jaw extender for use with a second identical and opposed clamp jaw extender, each extender adapted for releasable attachment to each respective jaw of a standard bar clamp to convert said standard bar clamp to a deep jaw bar clamp, said clamp jaw extender comprising

an elongated clamping member having upper and lower ends and frontal and back sides,

mounting means on the back side of said clamping member for detachably mounting said clamping member on a jaw of said standard bar clamp,



pressure pad means on the upper end and frontal side of said clamping member for engaging, clamping and holding a workpiece, and

a pair of laterally spaced mounting flanges on the lower end of said clamping member defining a mounting slot adapted to receive a slide bar of said standard bar clamp in closely fitted relationship therein.

5,443,247

TUNEABLE ROTATING UNBALANCED MASS DEVICE

Michael E. Polites, and Dean C. Alhorn, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed May 20, 1994, Ser. No. 246,460
Int. Cl.[6] B64G *1/66*; F16F *1/14*
U.S. Cl. 267—283 9 Claims



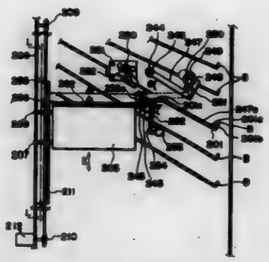
1. Suspension means for payloads rotatably supported in gimbals wherein payload rotation is restricted so that the payload moves in a scan pattern, comprising a gimbal, a payload to be supported in the gimbal, a first axle means having one end attached to one side of the payload and its other end attached to the gimbal, a second axle means having one end attached to the gimbal, and its other end attached to the other side of the payload, the first axle means having one of its ends journaled to permit payload rotation, the second axle means being a the torsion spring flexible about a torsional moment, but inflexible about bending moments to restrict said rotation, drive means effecting rotation of the payload, the rotation of the payload being limited by the torsional spring constant of the torsion spring so that the drive means imparts only an oscillatory motion to the payload to effect its scan pattern, positioning means coupled with the torsion spring, the positioning means being adapted to hold the torsion spring in a fixed position and to twist the torsion spring when the positioning means are actuated.

5,443,248

SHEET POST-PROCESSING APPARATUS

Kenichi Hayashi, Tokyo, and Yoshifumi Takehara, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 82,957
Claims priority, application Japan, Jun. 29, 1992, 4-171082; Jun. 30, 1992, 4-173240
Int. Cl.[6] B42C *1/12*; G03G *21/00*
U.S. Cl. 270—53 21 Claims



1. A sheet post-processing apparatus comprising:
at least one sheet discharging tray means for receiving and stacking discharged sheets;
feeding means for feeding a set of sheets from said discharging tray means;
stacking tray means for receiving and stacking the set of sheets fed by said feeding means;
an alignment reference member, disposed downstream of said stacking tray means with respect to a feeding direction of the set of sheets, for being abutted by an end surface of the sheet set coming thereto; and
lowering means for gradually lowering said stacking tray means in accordance with an amount of sheets tacked thereon, and shifting means for moving said reference plate from the end of the sheet set when said stacking tray means lowers.

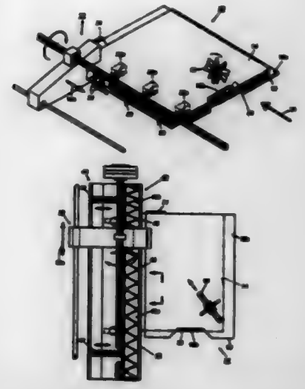
5,443,249

IN-BIN STAPLING SYSTEM WITH INTERACTIVE REGISTRATION WALL

Charles D. Rizzolo, and Charles E. Prevost, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 7,948, Jan. 25, 1993, abandoned. This application Feb. 18, 1994, Ser. No. 198,713
Int. Cl.[6] B31B *1/68*; B42C *1/12*
U.S. Cl. 270—53 10 Claims

1. A sheet stacking, registration and set fastening system for stacking, registering and fastening stacked sets of plural printed sheets fed from a reproduction apparatus onto a stacking area of a defined area stacking tray, comprising:
a vertically extending laterally movable sheet stacking edge registration system adjacent at least one edge of said stacking tray for edge registering sheets stacked in said stacking tray in an edge registration area;
a set fastening system laterally movable parallel to said edge registration area of said stacking tray to fasten a stack of sheets edge registered in said stacking tray in plural different fastening positions;
said sheet stacking edge registration system having plural movable components providing access therethrough to said stacking tray by said set fastening system;
said set fastening system continuously extending into said stacking area of said stacking tray through said edge registration system for said plural different fastening positions;
said sheet stacking edge registration system being automatically movable in coordination with said movement of said set fastening system to not obstruct said set fastening system for said plural different fastening positions yet maintain registration of a stack of sheets in said stacking tray stacking area at said edge registration area thereof with at least a portion of said plural components of said registration system;



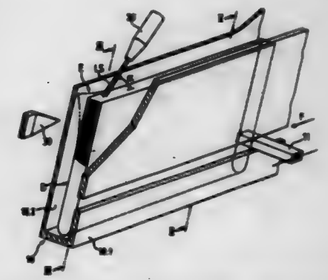
wherein said edge registration system comprises an expandable and contractable multielement wall backstop member extending on opposite sides of said set fastening system, which backstop member is movable with said set fastening system.

5,443,250

METHOD AND APPARATUS FOR INSERTING OBJECTS INTO MULTI-SHEET PRODUCTS, PARTICULARLY PRINTED PRODUCTS

Reinhard Gösslinghoff, Kempten, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jul. 6, 1993, Ser. No. 87,634
Claims priority, application Switzerland, Jul. 6, 1992, 2123/92
Int. Cl.[6] B65H *5/30*
U.S. Cl. 270—57 22 Claims



1. An apparatus for inserting insertion objects between the sheets of multi-sheet products, comprising
means for supporting and sequentially advancing the multi-sheet products along a path of travel with the products being in a closed state and so that the products each define an end face,
nozzle means positioned along the path of travel for directing a gas current (LS) in a direction substantially parallel to the surfaces of the sheets and against the end face of each product, so as to separate at least two neighboring sheets from each other in at least one location, and
means for relatively moving at least one insertion object and

each of the advancing products so that the insertion object is pushed between the separated sheets of each product.

5,443,251

SHEET FEEDING APPARATUS

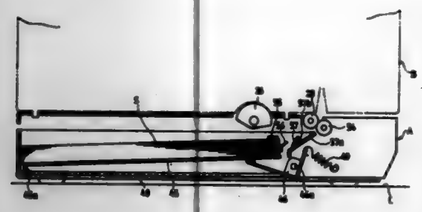
Shoichi Kan, Yokohama, and Tomoyuki Araki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 855,497, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 490,461, Mar. 8, 1990, abandoned. This application Jul. 27, 1994, Ser. No. 281,155

Claims priority, application Japan, Mar. 8, 1989, 1-057309; Jun. 8, 1989, 1-145679; Jun. 8, 1989, 1-145680; Sep. 14, 1989, 1-239321

Int. Cl.[6] B65H *3/42*

U.S. Cl. 271—16 **24 Claims**



1. A sheet feeding apparatus comprising:

sheet supporting means disposed in a lower position of the sheet feeding apparatus for supporting a sheet stack;

supply means contacting a surface of a sheet on the sheet stack, for feeding out the sheet;

first limiting means contacting a front edge of the sheet stack on said sheet supporting means;

second limiting means contacting the sheet surface contacted by said supply means, said first and second limiting means defining a clearance of a predetermined length in the sheet feeding direction therebetween, said first and second limiting means separating the sheets one by one by causing the sheet to pass over said first limiting means and through the clearance;

convey means arranged downstream of said first limiting means for conveying the sheet fed out by said supply means upwardly; and

friction means arranged between said first limiting means and said convey means for separating sheet which has not been separated by said first and second limiting means, said friction means changing a feeding orientation of the sheet to be separated to feed it to said convey means.

5,443,252

SHEET SUPPLYING APPARATUS FOR FEEDING SHEETS FROM CASSETTES HAVING DIFFERENT SHEET HOLDING CAPACITIES

Kazuyuki Morinaga, Yokohama; Sumitoshi Sootome, Yachiyo, and Hisayuki Tomura, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 849,616, Mar. 10, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 264,748

Claims priority, application Japan, Mar. 11, 1991, 3-072375

Int. Cl.[6] B65H *1/08*

U.S. Cl. 271—127 **22 Claims**

1. A sheet supplying apparatus, comprising:

first sheet containing means for containing a first quantity of stacked sheets therein;

second sheet containing means for containing a second quantity of stacked sheets larger than the first quantity of stacked sheets contained by said first sheet containing means;

support means for selectively supporting one of said first sheet containing means and said second sheet containing means;

sheet supplying means for feeding out a sheet contained in said one sheet containing means selectively supported by said support means;

first pressurizing means disposed in said first sheet containing means for biasing stacked sheets contained in said first sheet containing means toward said sheet supplying means; and



second pressurizing means disposed in said second sheet containing means for biasing stacked sheets contained in said second sheet containing means toward said sheet supplying means, said second pressurizing means comprising main pressurizing means for providing a constant bias force for biasing the stacked sheets toward said sheet supplying means, and auxiliary pressurizing means, for providing an auxiliary bias force for biasing the stacked sheets toward said sheet supplying means when said second sheet containing means is supported by said support means.

5,443,253

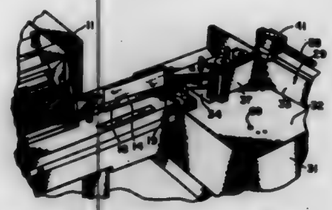
REMITTANCE PROCESSING APPARATUS AND METHOD

Amarjit Dale, Fremont, and George H. Bingham, Los Altos, both of Calif., assignors to Omation Corporation, Mountain View, Calif.

Filed Nov. 12, 1993, Ser. No. 151,250

Int. Cl.[6] B65H *29/38*

U.S. Cl. 271—177 **12 Claims**



1. In apparatus for processing documents such as payment coupons and checks extracted from envelopes: means for conveying a pair of documents along a path, gate means engagable with leading edges of the documents for controlling passage of the documents along the path, means for holding the gate means in a closed position for blocking engagement with the documents until the leading edges are aligned with each other and thereafter opening the gate means to release the documents, a stacker tray, a stacker belt for feeding the documents into the stacker tray, a constant force spring yieldably urging the tray toward the belt, and a pair of feed rollers engagable with respective ones of the documents as they are released by the gate means for feeding the two documents toward the stacker belt at different speeds so that the one of the two documents is fed into the stacker tray ahead of the other.

5,443,254

ACTIVE INTERFACE FOR AN IMBRICATED STREAM OF PRINTED PRODUCTS

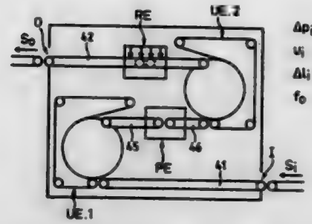
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Apr. 27, 1993, Ser. No. 53,918

Claims priority, application Switzerland, Apr. 27, 1992, 01325/92

Int. Cl.[6] B65H *29/66*

U.S. Cl. 271—225 **9 Claims**



1. An interface for imbricated formations of printed products for use between a delivering apparatus (2) delivering an imbricated stream and a processing apparatus (3) processing an imbricated stream, with an input (I) for in-running imbricated stream (S_i) of printed products delivered from the delivering apparatus (2) and an output (O) for an out-running imbricated stream (S_o) of printed products to be infed to the processing apparatus (3) and comprising a plurality of functional elements each for changing one or more of the stream parameters (v,a,p-,u,Δa,Δp,Δl,f) while maintaining an imbricated arrangement of the products as the stream passes through each of the elements, said plurality of functional elements being positioned in a series between said input (I) and said output (O) and including at least one deflecting element (UE) for changing the type of overlap (u) of the products in an imbricated stream and at least two other functional elements (PE, RE), wherein said one deflecting element is arranged between said two other functional elements, and further comprising a transport belt running between each adjacent pair of functional elements and so that each transport belt serves both as an out-running transport for one functional element and an in-running transport for another functional element.

5,443,255

PAPER TRANSPORT MECHANISM

Hideyuki Nanba, Kawasaki; Koji Hirata, Kato, and Shigenori Sasaki, Kawasaki, all of Japan, assignors to Fujitsu, Ltd., Kawasaki, Japan

Division of Ser. No. 3,801, Jan. 13, 1993, Pat. No. 5,368,290. This application Jul. 12, 1994, Ser. No. 273,703

Claims priority, application Japan, Jan. 16, 1992, 4-005369; May 8, 1992, 4-116063

Int. Cl.[6] B65H *5/02*

U.S. Cl. 271—273 **12 Claims**

1. A paper transport mechanism comprising:

a first guide plate having an end part, a rotation fulcrum located in a vicinity of the end part, and first rollers, said first guide plate having an open position and a closed position an being normally closed;

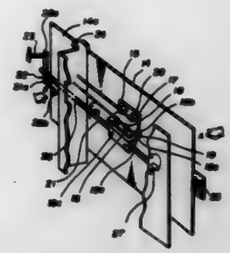
a second guide plate having a first surface part which confronts the first guide plate with a gap formed therebetween in the closed position of the first guide plate, a second surface part which is curved, second rollers, and fourth rollers which make pressing contact with the first rollers in the closed position of the first guide plate so as to transport a paper between the first and second guide plates;

a third guide plate having a third surface part which confronts the second surface part of the second guide plate with a gap formed therebetween, and third rollers which make pressing contact with the second rollers in the closed position of the first guide plate so as to transport a paper between the second and third guide plates;

means, coupled to the first and third guide plates, for urging the third rollers against the second rollers in the closed position of the first guide plate and for separating the third rollers from the second rollers in the open position of the first guide plate; and

a roller support structure for supporting supported rollers, the supported rollers being one of the first through fourth rollers, the roller support structure comprising:

a shaft having a peripheral surface, a plurality of first grooves and a second groove, the first and second



grooves being provided on the peripheral surface, said first grooves having a ring shape, said second groove having a semi-circular shape;

a pair of bearings for supporting the shaft and including an engaging part for engaging the second groove so as to restrict movement of the shaft in circumferential and axial directions thereof; and

spring means, provided on a guide plate, of the first, second and third guide plates, having the supported rollers, for urging the shaft in a direction so that said supported rollers make pressing contact with a corresponding one of the first through fourth rollers,

said supported rollers having resilient engaging parts for respectively engaging the first grooves of the shaft.

5,443,256

PROCESS AND DEVICE FOR THE FORMATION OF A SCALE-LIKE STREAM OF FOLDED PRINTED COPIES

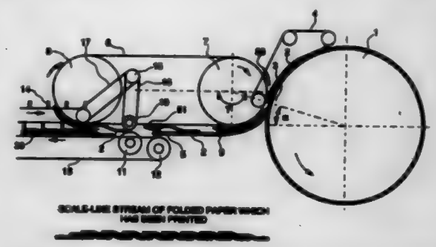
Tibor Ertavi, Kirchberg, and Roger Müller, Muri, both of Switzerland, assignors to Maschinenfabrik WIFAG, Bern, Switzerland

Filed Dec. 21, 1993, Ser. No. 171,103

Claims priority, application Germany, Dec. 28, 1992, 42 44 343.1

Int. Cl.[6] B65H *29/04*

U.S. Cl. 271—277 **31 Claims**



1. A device for the formation of a scale-like stream of folded printed copies, comprising:

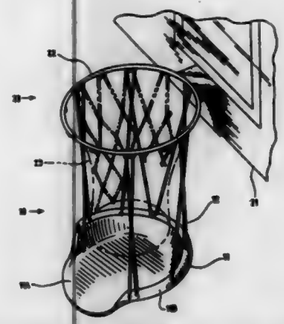
a folding jaw cylinder moving folded printed copies along a folding jaw cylinder periphery;
a traction device;.
a traction device drive for moving said traction device relative to said cylinder;
a plurality of claws, each of said plurality of claws having a leading end connected to said traction device and having a trailing end, each trailing end cooperating with said traction device to define a slot-like intake;
claw moving means for moving said trailing end from an open position for receiving folded printed copies from said folding jaw cylinder to a closed position wherein said trailing end presses said traction device for clamping a folded printed copy between said claw and said traction device.

5,443,257
SHEET PROCESSING APPARATUS
Katsuji Sakamori, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 124,604, Sep. 21, 1993. This application Sep. 12, 1994, Ser. No. 304,679
Claims priority, application Japan, Mar. 10, 1993, 5-049541; Sep. 16, 1993, 5-229903
Int. Cl.[6] B65H 7/02
U.S. Cl. 271—228 2 Claims



1. A sheet processing apparatus comprising:
storing means for storing a plurality of sheets in a stacked state;
means for taking in the sheets from said storing means one by one;
means for feeding the sheets taken by the taking means;
first, second and third detection means, disposed in a direction substantially perpendicular to a feeding direction of the sheets fed by the feeding means, for detecting passage of the sheet;
fourth detection means for detecting a difference between a passing timing of the sheet detected by the first detection means and a passing timing of the sheet detected by the third detection means;
fifth detection means for detecting a difference between the passing timing of the sheet detected by the third detection means and a passing timing of the sheet detected by the second detection means;
means for judging skew of the sheet based on the detection results from the fourth and fifth detection means;
sixth detection means for detecting a time period required for the passage of the sheet through the first detecting means;
seventh detection means for detecting a time period required for the passage of the sheet through the second detection means;
eighth detection means for detecting a time period required for the passage of the sheet through the third detection means; and
comparing means for comparing the detection results of the sixth, seventh, and eighth detection means, and determining that the sheet is skewed when the detection results of the sixth, seventh, and eighth detection means are equal to each other.

5,443,258
BASKETBALL RETURN DEVICE
Kevin G. Kinsella, R.R. 1, Box 29, Cooksville, Ill. 61730
Filed Dec. 6, 1994, Ser. No. 350,424
Int. Cl.[6] A63B 69/00
U.S. Cl. 273—1.5 A 15 Claims

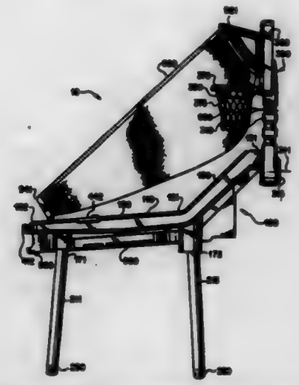


1. A basketball return device for returning a basketball to a player after he successfully shoots the basketball through a rim with a net, the device comprising:
(a) a platform adapted to be positioned directly under and a short distance below the bottom of the net, the platform having a disk-shaped base with a diameter of about 7 to 14 inches which is declined from back to front, the platform also having a substantially horizontal, outwardly tapering shoulder extending around the back of the base through an arc of about 120° to 300° so that a basketball dropping through the net and landing on the platform bounces back toward the shooter and rolls off the front; and
(b) a means for fastening the platform in a position directly under and a short distance below the bottom of the net.

5,443,259
GAME APPARATUS INCLUDING BASKETBALL, PINBALL, AND TARGET BOWLING
Marc H. Segan, New York; Gary Strauss, Mamaroneck, both of N.Y., and Gerald W. Cummings, Marlton, N.J., assignors to M. H. Segan Limited Partnership, Great Barrington, Mass.
Continuation-in-part of Ser. No. 194,443, Feb. 10, 1994, abandoned. This application Jul. 11, 1994, Ser. No. 273,426
Int. Cl.[6] A63B 63/08; A63F 7/02
U.S. Cl. 273—1.5 R 33 Claims

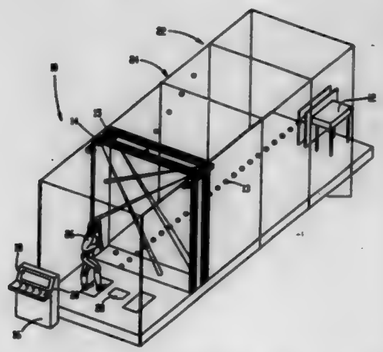
1. A game apparatus for playing target bowling and pinball, comprising:
a housing having a generally horizontal coffin portion having a proximate, player end, a distal, back end, and an upper surface thereon, and a back case portion generally inclined at an angle relative to said upper surface and having a first, lower end and a second, upper end;
a ramp disposed between said back end of said coffin portion and said lower end of said back case portion and having one end approximately contiguous with said upper surface;
a pinball apparatus disposed in said coffin portion below said upper surface; and

a target bowling scoring apparatus disposed in said back case, whereby a ball rolled across said upper surface



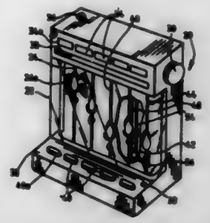
toward said back case portion is projected toward said target bowling scoring apparatus by said ramp.

5,443,260
VIRTUAL REALITY BASEBALL TRAINING AND AMUSEMENT SYSTEM
Larry D. Stewart, Independence; Steven Gautieri, Gladstone, both of Mo.; Jerome Simon, Shawnee, Kans., and Mark Greer, St. Charles, Mo., assignors to Dynamic Sports Technology, Independence, Mo.
Filed May 23, 1994, Ser. No. 247,360
Int. Cl.[6] A63B 69/00
U.S. Cl. 273—26 R 7 Claims



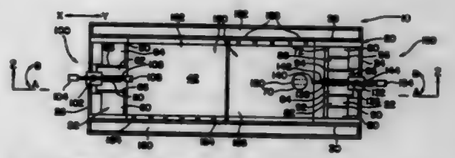
1. An apparatus for simulating the playing of baseball or softball comprising:
pitching means for delivering a pitched ball to a batter, wherein the batter attempts to bat the ball;
a plurality of spaced-apart detection planes disposed between said pitching means and the batter;
sensor means mounted on said detection planes including means for detecting the time and vertical and horizontal locations at which the pitched ball passes through said detection planes as it is delivered to the batter and for detecting the time and vertical and horizontal locations at which the batted ball passes through said detection planes after it is batted by the batter;
computing means coupled to and responsive to said sensor means for computing the velocity and trajectory of the pitched ball and the velocity and trajectory of the batted ball, said computing means being operable for generating graphical display information corresponding to the velocity and trajectory of the pitched ball and the batted ball; and
video display means coupled to said computing means for displaying said graphical display information.

5,443,261
ARCADE TYPE OF TOY HAVING CLIMBING OBJECTS
James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Kowloon, Hong Kong, assignors to C. J. Associates, Ltd., Hong Kong
Filed Feb. 25, 1994, Ser. No. 201,654
Int. Cl.[6] A63F 9/14
U.S. Cl. 273—86 R 21 Claims



1. A toy arcade game comprising a housing having at least one transparent side, a plurality of spaced parallel tracks positioned behind said transparent side, a plurality of objects, each of said objects movably associated with one of said tracks, means associated with each of said objects for engaging said object with the associated track to move said object in a forward climbing direction along said track, means for disengaging said object from its associated track, and means for re-engaging said object with its associated track, whereby the object of the game is to prevent said climbing objects from reaching an end of their climb.

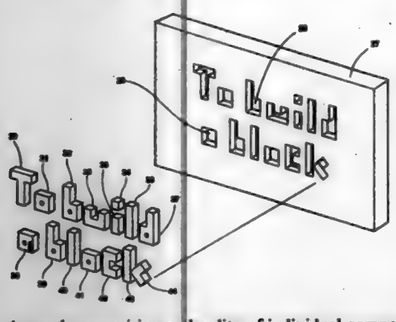
5,443,262
BASEBALL GAME
Walter A. Weng, 27 Clement St., Glen Cove, N.Y. 11542
Continuation-in-part of Ser. No. 38,701, Mar. 29, 1993, abandoned. This application Aug. 17, 1993, Ser. No. 107,061
Int. Cl.[6] A63F 7/06
U.S. Cl. 273—99 28 Claims



1. A simulated baseball game; comprising:
(a) base means defining a space within which the simulated baseball game is to be played;
(b) said base means including a pitching location and a batting location disposed one opposite the other;
(c) pitching means disposed at said pitching location for projecting a simulated baseball towards said batting location;
(d) batting means disposed at said batting location for intercepting a pitched simulated baseball and driving said pitched simulated baseball in a predetermined direction;
(e) said pitching means carrying a retaining rod for retaining a simulated baseball on said pitching means to facilitate projecting of the simulated baseball; and

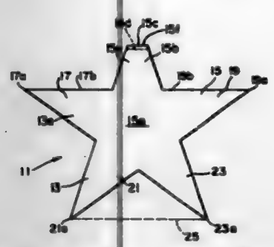
(f) at least one simulated baseball means, for use in playing the simulated baseball game, formed with an opening of a size and configuration to receive said retaining rod;
(g) said base means including a plurality of compartments disposed proximate said batting location and designated to correspond to balls and strikes and a plurality of compartments disposed proximate said pitching location designated to correspond to hits and outs.

5,443,263
SPACIAL COMPONENT CONFIGURATION SYSTEM
Robert G. Olmsted, Laurel Living Center, 91 Chestnut St., Manchester, Conn. 06040, and Alvah A. Russell, 237 Mountain Rd., Glastonbury, Conn. 06033
Filed Jan. 19, 1994, Ser. No. 183,518
Int. Cl.[6] A63F *9/12*; G09B *1/40*
U.S. Cl. 273—157 R **17 Claims**



1. A puzzle comprising a plurality of individual component pieces, wherein each component piece comprises a two dimensional shape and a third dimension of depth, wherein said two dimensional shapes of at least two of said component pieces are different, wherein said two dimensional shape of each said component piece comprises at least a portion of a two dimensional outline of an alphanumeric character, wherein said plurality of component pieces can be arranged and oriented by a user such that said alphanumeric characters outlined thereby communicate a comprehensible message, wherein said plurality of component pieces can be assembled into a three dimensional structure specified as a puzzle solution, and wherein said three dimensional structure comprises a hexahedron.

5,443,264
GOLF TRAINING AID FOR PUTTING
Rita L. Mehrens, 528 Brackenwood Pl., Palm Beach Gardens, Fla. 33418
Filed Mar. 29, 1994, Ser. No. 219,619
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.1 **4 Claims**



1. A method of practicing putting a golf ball comprising the steps of a golfer
taking a sheet (13) of stiff material made in the form of a five-pointed star (15) when flat with
a body portion (15*a*) and an upper surface (13*a*),
a forward point portion (15*b*) extending forwardly from the body portion (15*a*) with a digger forward flange (15*c*) at right angles to the body portion (15*a*) for aiming along a line to the target,
two side point portions (17, 19) extending sideways from the body portion (15*a*) and having forward edges (17*b*, 19*b*) which terminate in side points (17*a*, 19*a*),
two rear point portions (21, 23) extending rearwardly from the body portion (15*a*) which terminate in rear points (21*a*, 23*a*),
said digger flange (15*c*) being wide enough to prevent movement of the star (15) when the flange (15*c*) is inserted into the ground,
the forward edges (17*b*, 19*b*) of the two side point portions (17, 19) being square to the line of the forward point portion (15*b*) so that a putter face which is positioned on or parallel to the forward edges (17*b*, 19*b*) of the side point portions (17, 19) is square to the target line,
placing the star (15) perpendicular to the ground and holding it with the fingers so that its rear points (21*a*, 23*a*) are contacting the ground and the star (15) is supported upright,
aiming the digger flange (15*c*) of the star (15) along the target line whether it be the golf hole or a point on the green which allows the golf ball to curve into the golf hole,
flopping the star (15) forwardly using the rear points (21*a*, 23*a*) as pivot points,
inserting the digger flange (15*c*) into the ground to hold the star (15) in place with the forward edges (17*b*, 19*b*) of the side point portions (17, 19) being square to the target line,
placing a golf ball in front of the digger forward point portion (15*b*),
addressing the ball with the putter with the face of the putter blade on or parallel to the forward edges (17*b*, 19*b*) of the side point portions (17, 19) to insure that the face of the putter blade is square to the target line,
drawing the putter blade back low to the ground and sliding it over the upper surface (13*a*) of the star (15),
stroking the putter blade through the ball, and
keeping his head steady,
whereby the golfer knows that the face of his putter blade is square to the target line and so may work on speed and distance of his putts without worrying about whether his club face is square to the target line.

5,443,265
GOLFING STROKE TRAINER
Charles H. Wheeler, 5618 Lynwood Pl., Boise, Id. 83704
Filed May 13, 1994, Ser. No. 242,183
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—186.2 **16 Claims**



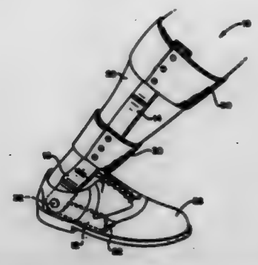
1. A golfing aid, comprising:
a) a rectangular mat (6) having a V shaped notch (15) with its apex between two ends of the mat and its open portion extending between two arms ending at one end of the mat, the mat extending sufficiently to provide visual feedback to a golfer for a backstroke, a follow through stroke and a trajectory of the ball after being struck without interfering with the golfer's stroke, and without interfering with the ball roll, thereby allowing putts to be off-center and yet provide feedback to the golfer;
b) at least one longitudinal horizontal line (12) extending down the length of an extension of the mat portion not having the arms, said line oriented along a desired golf club path and terminating at said apex; and
c) a plurality of lateral lines (14) being perpendicular to the longitudinal line, and located along the entire length of the mat, thereby providing said visual feedback to the golfer.

5,443,266
GOLF SWING PLANE TRAINING AID
Hugh A. Bursi, 4418 Nashwood La., Dallas, Tex. 75244
Filed May 13, 1994, Ser. No. 242,616
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187.2 **8 Claims**



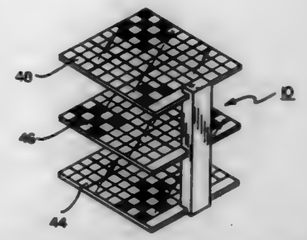
1. A method for training a golfer to maintain correct arm and body movement during the execution of a proper down swing comprising the steps:
moving a first signal generating means coupled to an arm of a golfer relative to a second signal generating means coupled to the torso of the golfer whereby a predetermined proximity relationship is established between the first and second signal generating means during the execution of a down swing; and,
generating a signal which may be perceived by the golfer when the predetermined proximity relationship is established.

5,443,267
GOLF TRAINING DEVICE
Ronald W. Thorson, 497 Georgia Hwy., Franklin, N.C. 28734
Filed Oct. 31, 1994, Ser. No. 331,744
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—188 A **9 Claims**



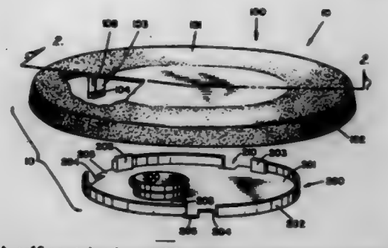
1. A golf training device for preventing undesirable swaying during a golf swing, comprising:
a lower base member;
an upper brace member;
attachment means for attaching said lower base member to said upper brace member such that said lower base member can rotate about an axis perpendicular to the plane of said upper brace member;
means for releasably securing said upper brace member to a leg of a golfer, said lower base member including an upper portion and a bottom portion which forms an L-shape in cross section,
said bottom portion including upper and lower planar surfaces for positioning underneath a foot of said golfer, and said bottom portion of said lower base member being of a size so as to fit inside a shoe of said golfer.

5,443,268
MILITARY CONFLICT BOARD GAME
George M. Mayfield, and Gladys L. Mayfield, both of HC 61 Box 51, Calico Rock, Ark. 72519
Filed Jun. 30, 1994, Ser. No. 269,018
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—241 **3 Claims**



2. A multiple-level board invasion game with game piece armaments and personnel comprising, in combination:
an upwardly extended and rigid pedestal;
at least two transparent game boards, each game board having a matrix of spaces with each matrix of each board being of equal size and with the spaces of each matrix defining a level for battle, each level being further delineated by a first pair of broadened, spaced, and parallel lines extending across and aligned with the matrix to divide each level into equal portions, one broadened line is defined as the home front and the other broadened line is defined as the opponent home front; and
a set of game pieces positionable on the levels for battle with the game pieces representing armaments and personnel.

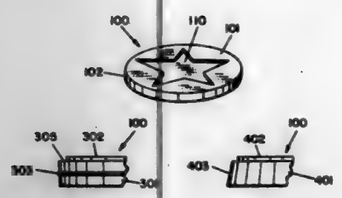
5,443,269
SELF CONTAINED GAME ASSEMBLY
Steven R. Loritz, 245 N. Singingwood, #9, Orange, Calif. 92669
Continuation of Ser. No. 200,276, Feb. 22, 1994, abandoned. This application Sep. 20, 1994, Ser. No. 308,980
Int. Cl.[6] A63F *7/02*
U.S. Cl. 273—241 **18 Claims**



1. A self-contained portable game assembly comprising,
a portable playing surface having a first horizontal component and a first vertical side component joined thereto

a vertical inner component joined to said horizontal component and depending therefrom,
said vertical inner component spaced away from said vertical side component,
a storage unit having a second horizontal component and a second vertical side component;
a plurality of tabs extending from said second horizontal component,
a plurality of post structures depending from said first horizontal component to selectively interconnect with said storage unit,
said post structures having a slot therein for receiving a corresponding tab on said storage unit for slidably locking said storage unit to said playing surface thereby forming an internal storage space therebetween, and
storage containers selectively stowed in said internal storage space,
said containers having a storage area component and a cover component which can be selectively engaged.

5,443,270
GAME PIECE FOR PLAYING MILK CAP OR POGS
Steven R. Loritz, 245 N. Singingwood, Orange, Calif. 92669
Filed Feb. 14, 1994, Ser. No. 195,040
Int. Cl.[6] A63F 7/00; A63B 65/10, 67/06
U.S. Cl. 273—290 10 Claims
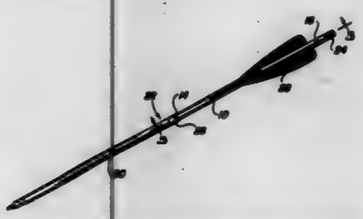


1. A disc comprising,
a thin wafer formed of a plastic material for use in a game,
said wafer having upper and lower surfaces which are substantially parallel to each other,
at least a portion of at least one of said upper and lower surfaces is raised to produce a design,
a groove formed in at least one of said upper and lower surfaces, and
an edge surface intermediate said upper and lower surfaces of said wafer,
said plastic material is polyphenlene sulfide.

5,443,271
AUTOMATED DRY DEPOSITION SAMPLER
Thomas M. Holsen, Oak Forest, and Kenneth E. Noll, Glen Ellyn, both of Ill., assignors to Illinois Institute of Technology, Chicago, Ill.
Filed Jun. 15, 1993, Ser. No. 77,615
Int. Cl.[6] G01N 1/04
U.S. Cl. 73—863.22 22 Claims



1. An automated dry deposition sampler comprising: at least one thin dry deposition plate having substantially parallel upper and lower horizontal plate surfaces and a sharp leading edge of less than about a 10° angle to said horizontal plate surfaces; said dry deposition plate mounted substantially horizontal on an elongated support structure, said support structure mounted to rotate about a vertical axis; wind vane means mounted fixedly to said support structure to maintain said sharp leading edge of said dry deposition plate headed into a wind; collection means mounted removably on at least said upper horizontal plate surface of said dry deposition plate; movable covering means covering said collection means on at least said upper horizontal plate surface in a first position and exposing said collection means to the atmosphere in a second position; precipitation sensing means sensing commencement and cessation of periods of precipitation; and driving means controlled by said precipitation sensing means moving said covering means into said first position covering said collection means upon commencement of precipitation and moving said covering means into said second position exposing said collection means to the atmosphere upon cessation of precipitation.

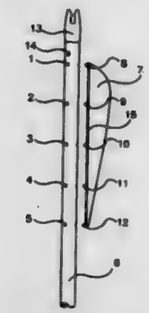
5,443,272
METHOD AND APPARATUS FOR COVERING ARROW SHAFTS
Richard G. Vincent, Sr., 719 E. 8th St., Mesa, Ariz. 85203
Filed Nov. 22, 1993, Ser. No. 155,802
Int. Cl.[6] F42B 6/04
U.S. Cl. 273—416 20 Claims



1. An arrow shaft sleeve for covering an arrow shaft having a tip end, a tail end and a middle portion located between said tip and tail ends, said arrow shaft sleeve comprising a one-piece hollow tubular sleeve of substantially overall equal wall thickness, being open at both ends for receipt of said arrow shaft, and extending over approximately one-third of a length of said arrow shaft such that said arrow shaft sleeve covers a substantial portion of the middle portion of said arrow shaft.

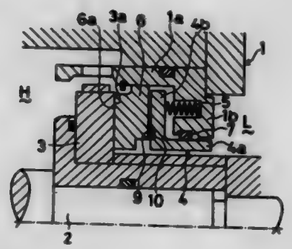
5,443,273
METHOD FOR ATTACHING FLETCH ON ARROW AND DEVICE FOR PRACTICING THE SAME
Joseph W. Lovern, 303 Plantation Rd., Dothan, Ala. 36303
Filed Oct. 29, 1993, Ser. No. 144,272
Int. Cl.[6] F42B 6/06
U.S. Cl. 273—423 13 Claims

1. An improved fletch mounting comprising
(a) an arrow shaft having a front and a rear and a length running between the front and the rear and wherein said arrow shaft defines at least one mounting means for mounting a fletch;
(b) at least one fletch having a base, said base having attached at least one attachment means for attachment to the mounting means; and wherein the mounting means comprises a plurality of holes defined by the arrow shaft located at the rear of the arrow shaft and wherein the attachment means is further defined as a plurality of anchor stems which may fit within the plurality of holes; and



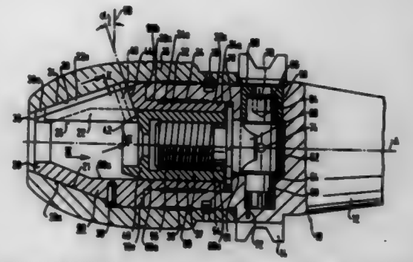
wherein the anchor stems are further defined as having an anchor pillar attached to the fletch base.

5,443,274
NON-CONTACT MECHANICAL SEAL
Toshihiko Fuse, Hyogo, Japan, assignor to Nippon Pillar Packing Co., Ltd., Osaka, Japan
Filed Jan. 14, 1993, Ser. No. 4,583
Claims priority, application Japan, Sep. 3, 1992, 4-062097 U
Int. Cl.[6] F16J 15/34
U.S. Cl. 277—38 1 Claim



1. A non-contact type mechanical seal comprising a rotary sealing ring fixed to a rotary shaft, a holding ring held movably in the axial direction to a seal case, springs mounted between said seal case and said holding ring, and a stationary sealing ring pressed and charged against said rotary sealing ring via said holding ring by said springs and means for generating dynamic pressure between opposite end faces of said rotary and stationary sealing rings, an outer peripheral surface of the stationary sealing ring being fitted to an inner peripheral surface of a cylindrical guide formed on said seal case so that an extremely small clearance is formed between said fitted outer and inner peripheral surfaces to prevent radial displacement of said stationary sealing ring but permit axial movement and fluid passage, and said stationary sealing ring and said holding ring being held sealed but free from contact in the axial direction by an O-ring positioned between opposing surfaces of said stationary sealing ring and said holding ring, wherein the difference between the outside diameter of the stationary sealing ring and the inside diameter of the guide is 10–100 μm.

5,443,275
CHUCK
Karl-Heinz Knobl, Trunkelsberg, and Dieter Schwedde, Kempten, both of Germany, assignors to Zettl GmbH CNC Präzisions- und Soderwerkzeuge, Dietmannsried, Germany
Filed Oct. 1, 1993, Ser. No. 153,868
Claims priority, application Germany, Apr. 4, 1991, 41 10 894.9
Int. Cl.[6] B23B 31/173
U.S. Cl. 279—60 21 Claims



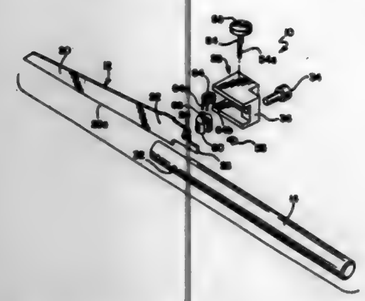
1. Chuck for being mounted on a tool and for clamping about an object, said chuck comprising:
a central longitudinal axis;
base unit means for being mounted on the tool;
jaw convergence means being disposed within said base unit means;
a plurality of clamping jaws being mounted within said jaw convergence means, said clamping jaws being movable along said longitudinal axis;
said jaw convergence means being configured for radially converging said clamping jaws upon axial movement of said clamping jaws, to effect clamping of said clamping jaws about the object;
thrust means for axially displacing said clamping jaws to effect clamping of said clamping jaws about the object;
spindle means being threadedly engaged with said thrust means for axially displacing said thrust means to thus displace said clamping jaws;
means for effecting relative rotational displacement between said spindle means and said thrust means to axially displace said thrust means;
guide sleeve means for guiding the axial displacement of said thrust means;
said guide sleeve means comprising an axial cylindrical passage for guiding the axial displacement of said thrust means, said thrust means being disposed within said axial cylindrical passage;
said thrust means comprising a first end portion and a second end portion, said first end portion being disposed towards said clamping jaws and said second end portion being disposed away from said clamping jaws;
said thrust means being radially supported by said guide sleeve means at least at said first end portion and said second end portion;
said first end portion of said thrust means extending substantially completely around said axial cylindrical passage such that said thrust means makes radial contact with, and is radially supported by, said guide sleeve means at said first end portion;
said second end portion of said thrust means extending substantially completely around said axial cylindrical passage such that said thrust means makes radial contact with, and is radially supported by, said guide sleeve means at said second end portion;
said first end portion and said second end portion making contact with said guide sleeve means along one unitary structure of said guide sleeve means.

5,443,276

SELF-LOCKING BLADE HOLDER

Edward A. Nasser, and Manfred Staebler, both of New Bern, N.C., assignors to S-B Power Tool Company, Chicago, Ill.

Filed Jul. 22, 1993, Ser. No. 279,052
Int. Cl.[6] B27B *19/02*
U.S. Cl. 279—77 3 Claims



1. A blade holder assembly for a blade having a planar cutting portion terminating at an outer end of the blade and a co-planar mounting portion terminating at an inner end of the blade, said assembly comprising:

(a) first means on a plunger defining a planar surface for substantial co-extensive engagement with one side of the mounting portion of plural ones of said blades of varying thicknesses;

(b) second means attached to the plunger and cooperating with said first means to define a cavity for receiving the mounting portion of the blade;

(c) a one-piece cam block mounted in the cavity for rotation about an axis parallel with the plane of the blade and perpendicular to the longitudinal axis of the blade;

(d) said cam block having an arcuate cam face defined by a segment of an imaginary cylinder having its central axis parallel and offset with respect to the axis of rotation of the cam block such that a leading portion of the cam surface is spaced from the axis of rotation of the cam block to an extent greater than a trailing portion of the cam surface;

(e) the axial extent of said arcuate cam face being substantially the same as the height of the mounting portion of the blade;

(f) wherein the cam face establishes respective plural axial lines of contact with the other side of the mounting portion of ones of said blades of varying thicknesses with (i) the line of contact for the thinnest blade being adjacent the leading portion of the cam face, (ii) the line of contact for the thickest blade being adjacent the trailing portion of the cam face, and (iii) the line of contact for a blade of intermediate thickness being intermediate said other lines of contact;

(g) each of said lines of contact occupying an over-center relationship with respect to a plane perpendicular to the blade and containing said axis of rotation of the cam block, each of the lines of contact being spaced from said last-mentioned plane in a direction toward the inner end of the blade thereby to increase the holding effect of the cam block when the blade is subjected to a force tending to pull the blade out of the cavity; and

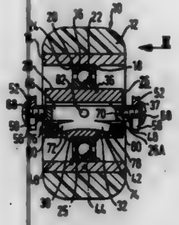
(h) spring means mounted by said second means and engaged with said cam block for biasing the latter to rotate about its axis of rotation in a direction urging said arcuate cam face into engagement with said other side of the mounting portion of ones of said blades of varying thicknesses.

5,443,277

SPORTING DEVICE STEERABLE BY WEIGHT DISPLACEMENT AND A STEERABLE WHEEL ASSEMBLY FOR USE THEREIN

Stefan Kubierschky, c/o Freiherr Ferdinand von Lilienecron Leopoldstr, 19, Munich D-8000, Germany

PCT No. PCT/EP92/02860, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993, PCT Pub. No. WO93/16079, PCT Pub. Date Aug. 19, 1993
PCT Filed Apr. 16, 1992, Ser. No. 133,146
Claims priority, application European Pat. Off., Apr. 18, 1991, 91106231; Oct. 7, 1991, 91117063
Int. Cl.[6] A63C *17/06*
U.S. Cl. 280—11.23 28 Claims



1. Sporting device steerable by weight displacement, for example in the form of a roller skate or roller ski, comprises at least first and second wheels (12A, 12B) mounted on bearing arrangements (22, 25) for rotation about respective axles (46), said axles being mounted on a chassis of the device, and spaced apart in the longitudinal direction of said device, with at least one of the wheels being steerable on displacement of the user's weight about an inclined steering axis (44) which intersects the ground substantially at the center of the contact portion (64A, 64B) of the respective wheel (12A, 12B) with the ground (65), said inclined steerable axis extending downwardly and rearwardly for a front wheel (12A) and downwardly and forwardly for a rear wheel (12B), said steering axis being defined by a pivot means cooperating with the associated wheel axle (46) and disposed substantially within inner race means (25) of the associated bearing arrangement (22, 25) disposed within said wheel (14, 12), characterised in that said pivot means comprises a generally arcuate guide track (40, 42; 38, 87) located generally within said inner race means, said guide track having a center of curvature defining a virtual axis (44) forming said steering axis (44) with said steering axis being on one of an inside and an outside location relative to said inner race means (25), and the associated axle (46) having means (72, 74; 47; 86) cooperating with said arcuate guide track to permit pivotal steering movement of said wheel (12A, 12B) by relative movement between said arcuate guide track and said axle.

5,443,278

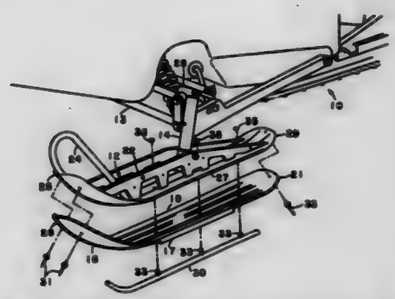
SNOWMOBILE SKI LINER

Joseph J. Berto, 6539 Rogue River Dr., Shady Cove, Oreg. 97539

Continuation-in-part of Ser. No. 2,875, Dec. 22, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 121,559
Int. Cl.[6] A63C *5/04*
U.S. Cl. 280—28 8 Claims

1. Apparatus for improving side hill traction and directional control of a snowmobile during traverse of deep powder, or hardpacked, snow, said snowmobile having a steering ski that includes a friction reducing liner covering a substantial portion of the terrain engaging surface thereof, said ski having an upwardly tilted prow and an elongated tracking surface, and wherein said steering ski is both turned and pivoted by a turning spindle tilted rearwardly from its connection to said ski toward said snowmobile so that the camber of said steering ski changes the turning radius in response to directional turning of said snowmobile;

said apparatus comprising a steering ski liner formed as a plastic molding having inner and outer surfaces generally conforming to and generally covering a substantial portion of the steering ski prow and the elongated terrain tracking surfaces thereof so that the outer surfaces of said liner is generally convex transversely over the length of said ski, and the upper longitudinal edges of said liner terminating above the ski terrain tracking surface, and at least one of said longitudinal edges supporting a fin member cantilevered from said edge to extend independently outwardly, downwardly and generally parallel to said one



edge so that from ⅓ to ½ of the length of said fin extends forwardly from the connection of said steering ski to said turning spindle and so that the lower edge of said fin member forms a snow or ice engaging blade generally above the terrain engaging portion of said ski liner, and said lower edge of said blade being tapered along its length with the forward portion higher than the rearward portion so that the rearward portion of said blade initially contacts the terrain and then the forward portion of said blade progressively increases contact with the terrain in response either to a reduction in the turning radius of said ski, or to compensate for inadvertent tilting of the snowmobile while traversing a side hill, or both.

5,443,279

BICYCLE AND BICYCLE WITH MULTISPEED WHEEL HUB

Günter Nürnberger, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Apr. 22, 1994, Ser. No. 231,308
Claims priority, application Germany, Apr. 26, 1993, 43 13 558.7
Int. Cl.[6] B62M *11/16*; B23F *5/22*; B23P *13/00*
U.S. Cl. 280—236 20 Claims

1. A wheel hub for a multi-speed bicycle, said wheel hub comprising:

at least one sun gear;

at least one ring gear;

a first planet gear wheel having a first longitudinal axis;

a second planet gear wheel having a second longitudinal axis;

said first planet gear wheel comprising:

a first gearing segment;

a clutch segment;

said clutch segment comprising a first plurality of projections projecting outwardly from said first longitudinal axis and said clutch segment further comprising spaces between ones of said first plurality of projections;

said second planet gear wheel comprising:

at least one second gearing segment;

an opening for receiving said clutch segment of said first planet gear wheel;

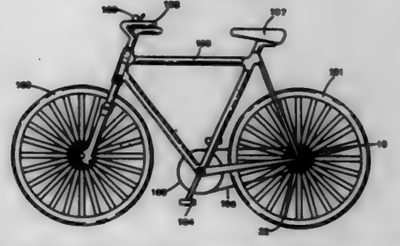
said opening comprising a second plurality of projections projecting inwardly toward said second longitudinal axis and said opening further comprising spaces between ones of said second plurality of projections;

said first planet gear wheel and said second planet gear wheel comprising at least two planet gear wheels;

said first plurality of projections and said spaces of said clutch segment of said first planet gear wheel being configured to engage with said second plurality of projections and said spaces of said opening of said second planet gear wheel;

at least one of said first planet gear wheel and said second planet gear wheel having means for moving said first





planet gear wheel and said second planet gear wheel with respect to one another to engage said first planet gear wheel and said second planet gear wheel with one another, and to disengage said first planet gear wheel and said second planet gear wheel with one another;

said wheel hub further comprising:

means for connecting spokes to said wheel hub;

sprocket means for connecting a bicycle chain to said wheel hub;

shifter means for shifting gears in said wheel hub; and

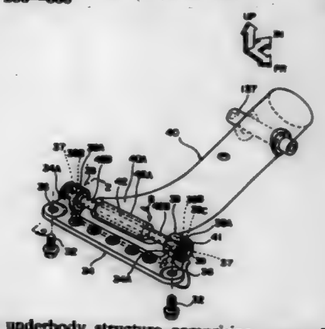
means for connecting said shifter means to a manual shifter on a bicycle remote from said wheel hub.

5,443,280

UNDERBODY STRUCTURE

Masakiyo Kawaguchi, Aichi; Keiichi Yonada, Nagoya; Naoto Hiranaka, Susono, and Akira Akiyama, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 26, 1993, Ser. No. 157,287
Claims priority, application Japan, Nov. 26, 1992, 4-317067
Int. Cl.[6] B60G *7/00*
U.S. Cl. 280—660 17 Claims



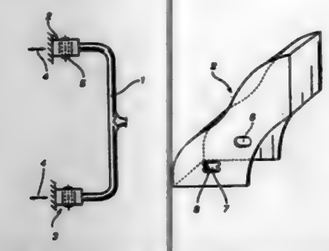
1. An underbody structure comprising a rear floor side member, a shaft member having one axis parallel to a longitudi-

nal direction of a vehicle body mounted to said rear floor side member, a suspension member collar rotatably mounted to said shaft member, and a suspension member attached to said suspension member collar.

5,443,281
VARIOUSLY POSITIONABLE PIVOT JOINT CONNECTION FOR WHEEL GUIDE ARMS IN MOTOR VEHICLES

Walter Burkard, Holzgerlingen; Ewald Ulrich, Schwaikheim, and Helmut Raichelt, Denkendorf, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Aug. 12, 1994, Ser. No. 289,390
Claims priority, application Germany, Aug. 12, 1993, 43 27 021.2
Int. Cl.[6] B62D *17/00*
U.S. Cl. 280—661 6 Claims



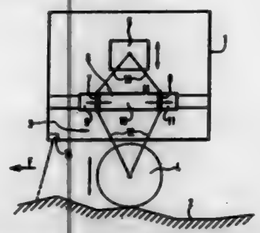
1. An adjustably positionable pivot joint connection assembly for wheel guide arms in motor vehicles, comprising:
a mounting bracket having two facing spaced apart legs, and
a bolt extending through the legs, said bolt being adjustably positionable in the mounting bracket in an adjustment direction transverse to a longitudinal direction of the bolt between a central position and end positions on respective opposite sides of the central position,
wherein an oblong hole guide extending in the adjustment direction is provided in at least one of the legs to receive the bolt,
wherein the oblong hole guide has snugs which extend from ends of the oblong hole guide toward one another, backs of said snugs forming abutment guides locating the bolt in its central position,
wherein the bolt includes a notch engageable over one of the snugs to accommodate locating the bolt in an end position, and
wherein a stop engaging in the oblong hole is provided for supporting the bole at a side opposite the engaged notch and snug when the bolt is in an end position.

5,443,282
ACTIVE WHEEL SUPPORTING SYSTEM FOR VEHICLES

Michael Gipser, Esslingen, Germany, assignor to Mercedes-Benz AG, Germany

Filed May 3, 1994, Ser. No. 237,097
Claims priority, application Germany, May 3, 1993, 43 14 516.7
Int. Cl.[6] B60G *3/00*
U.S. Cl. 280—690 4 Claims

1. Active wheel supporting arrangement for a vehicle of the type having a scanning device which detects unevenness in a vehicle operating surface, and a wheel supporting assembly controlled to actively adjust to said unevenness in response to an output from a scanner while the vehicle is travelling, said suspension arrangement comprising:
a counter-mass; and

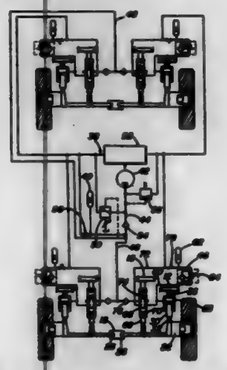


a drive coupling arrangement adjustably connected between said counter-mass, said vehicle body and at least one wheel of said vehicle, which drive coupling causes said counter-mass to move in a direction opposite to that of the wheel relative to the vehicle body, and compensates reaction forces generated by active adjustment of said wheel supporting assembly.

5,443,283
SUSPENSION SYSTEM

Gerald M. Hawkins, Moundsville, W. Va., and Carl H. Kutay, McMurray, Pa., assignors to Consol Inc., Library, Pa.

Filed Mar. 7, 1994, Ser. No. 206,699
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—709 4 Claims

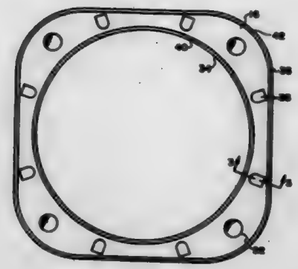


1. A hydraulic suspension system for a multi-wheeled vehicle adapted to be subjected to variable weight loading and roadbed conditions comprising;
a) a vehicle body portion
b) wheel assemblies independently pivotally suspended from said body portion;
c) a hydraulic cylinder positioned between each of said wheel assemblies and said body portion, said hydraulic cylinders supporting said body portion on said wheel assemblies;
d) a hydraulic system for supplying pressurized fluid to each of said hydraulic cylinders;
e) control linkage on each wheel assembly including a control valve interposed between said hydraulic system and each of said hydraulic cylinders, each control valve being responsive to movement of said control linkage in response to variable weight loading on a wheel assembly to supply pressurized fluid to said hydraulic cylinder or depressurize said hydraulic cylinder; and
f) each of said hydraulic cylinders being independently operable and dissociated from the function of other hydraulic cylinders so each wheel assembly is independently operable to main constant vehicle body-roadbed clearance in response to variable weight loading on the wheel assemblies.

5,443,284
AIR BAG CUSHION RIVETLESS RETAINER RING, AXIAL PIN METHOD

Paul E. Strahl; John E. Allard, both of Ogden, and Gary V. Adams, Brigham City, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 778,541, Oct. 17, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 48,567
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 7 Claims

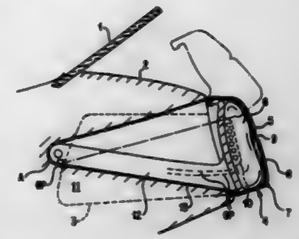


1. An air bag mounting system for assembling an air bag with a module housing consisting essentially of:
an annular retainer having a first inner boundary, a body with a top and bottom, a first outer boundary, a plurality of first holes passing through the body of the annular retainer, and a plurality of integral axial descending tab members formed out of said annular retainer and projecting away from said bottom of said body of said annular retainer, said axial descending tab members being formed by providing U-shaped openings in said annular retainer with tab-bent portions opposite the bites of said U-shaped openings and said tab-bent portions being circumferentially spaced at substantially the same radius along said annular retainer,
a module housing having a mounting edge, a module body with a module top and module bottom, and second inner boundary defining an opening matching the shape of the inflator with a plurality of second holes passing through said module body, and a plurality of third holes passing through said module body positioned to receive said axial descending members of said annular retainer when said annular retainer is brought into proper relation thereto; and
an air bag having a gas inlet opening conforming in shape to said opening of said annular retainer in a central region thereof, a plurality of fourth holes radially outwardly of said gas inlet opening, and a plurality of fifth holes radially outward of said gas inlet opening, wherein an annular portion of said gas inlet opening of said air bag is placed between said annular retainer and said module housing, and wherein said axial descending members of said annular retainer pass through said fifth holes and said third holes said axial descending members and the shear stress of the air bag in the area appurtenant to said fifth holes act in opposition to the radial forces generated upon deployment of said air bag and retain said air bag in place;
and a fastener means passed through said first, fourth and second holes to Join said annular retainer, said air bag, and said module housing.

5,443,285
INFLATABLE PASSENGER COLLISION PROTECTION ARRANGEMENT

Wolf Boll, Weinstadt, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Aug. 20, 1993, Ser. No. 109,239
Claims priority, application Germany, Aug. 20, 1992, 42 27 528.8
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—732 9 Claims



1. A passenger restraint arrangement for a motor vehicle, comprising:
a glove compartment disposed at a vehicle dashboard in facing relationship to a passenger space and having a cover and a receiving space,
a cover-linkage support arrangement supporting the cover for movement between a closed position covering the glove compartment and an open position opening the glove compartment for access from the passenger space side,
an airbag accommodating cavity in the cover for accommodating a folded airbag casing,
and a cap covering the cavity at its side facing the passenger space, said cap being openable in response to propellant gas expansion and unfolding of the folded airbag casing to accommodate expansion of the airbag casing to protect a passenger impacting thereagainst in the event of a vehicle collision,
wherein the cover linkage support arrangement is configured so that the cover is guided for movement between the closed and open positions while maintsining the cover and cap in facing relation to the passenger space to thereby accommodate effective utilization of the airbag casing to protect a passenger in both the open and closed positions of the cover.

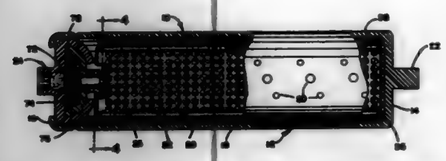
5,443,286
GAS GENERATOR FOR VEHICLE OCCUPANT RESTRAINT SYSTEM

Donald J. Cunningham, North Ogden, and James D. Ericksen, Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 958,934, Oct. 9, 1992. This application Aug. 13, 1993, Ser. No. 106,291
The portion of the term of this patent subsequent to Apr. 25, 2012, has been disclaimed.
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 42 Claims

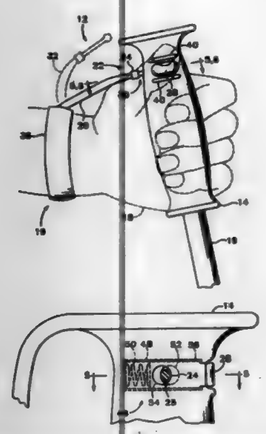
1. A gas generator for a vehicle occupant restraint system, comprising:
an elongated cylindrical housing having a length at least two times greater than its diameter and having gas outlet openings formed therethrough;
a pyrotechnic gas generant material contained within the housing, the gas generant material defining a single open elongated central passage therein;
an igniter capsule containing substantially all of the igniter material for igniting the pyrotechnic gas generant and having means for igniting the igniter material, the igniter

capsule positioned adjacent the pyrotechnic gas generant material and defining a single exit opening adjacent the open central passage formed in the gas generant material, the exit opening being of substantially the same diameter or smaller than the open central passage formed in the gas generant material;



whereby ignition and burning of the igniter material causes an expulsion of hot igniter material, combustion products from the igniter capsule into and along the length of the open central passage in the gas generant material, thereby igniting the gas generant material along the length of the open central passage.

5,443,287
QUICK RELEASE SKI POLE AND STRAP SYSTEM
Galen Wells, 9116 NE. 96th St., Vancouver, Wash. 98662
Filed Nov. 18, 1993, Ser. No. 154,865
Int. Cl.[6] A63C *11/22*
U.S. Cl. 280—822 **19 Claims**



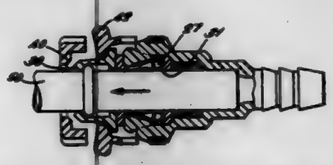
19. An attachment mechanism for coupling a hand of a skier to a ski pole, comprising:
a ski pole grip having a cross-sectional shape sized so that the hand of the skier can be wrapped around the ski pole grip in a gripping manner;
a strap having a first and second end, the first end attached to the skier;
a strap pin attached to the second end of the strap;
an attachment mechanism disposed within the ski pole grip for receiving and locking the strap pin to the ski pole grip, the attachment mechanism including a channel extending through the ski pole grip and a spring activated locking mechanism aligned perpendicular with the channel, the locking mechanism having at least one hole coaxially aligned with the channel when the locking mechanism is in an unlocked position and partially extending into the channel in a locked position; and
a button coupled to the locking mechanism for releasing the strap pin from the locking mechanism.

5,443,288
PREGNANCY ADVENT CALENDAR
Barbara L. Miles, 4720 Cheyenne Ct., Boulder, Colo. 80303
Filed Jul. 25, 1994, Ser. No. 280,000
Int. Cl.[6] B42D *5/04*
U.S. Cl. 283—2 **5 Claims**



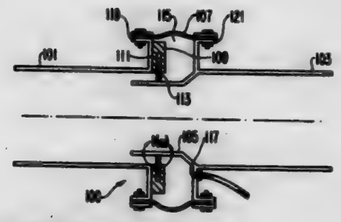
1. A calendar for informing a user regarding fetal development during a plurality of weeks of the human gestation period, said calendar comprising:
a first layer having a top surface;
a plurality of printed indicia on said top surface of said first layer, each of said printed indicia providing information regarding fetal development during a unique week of the human fetal development process;
a second layer having a top surface covering said top surface of said first layer, said second layer having an image disposed on said top surface of said second layer relating to a maternity motif;
a plurality of polygonal tabs formed in said second layer within said image, each of said plurality of polygonal tabs being moveable between an open position to reveal one of said plurality of printed indicia on said first layer and a closed position covering said one of said plurality of printed indicia on said first layer; and
indicia means on each of said polygonal tabs for associating the polygonal tab with a unique week of the human gestation period and with the corresponding printed indicia on said first layer covered by the polygonal tab.

5,443,289
TUBE COUPLINGS
John D. Guest, 'Iona', Cannon Hill Way, Bray, Maidenhead, Berks, United Kingdom
Filed Nov. 10, 1993, Ser. No. 150,495
Claims priority, application United Kingdom, Nov. 11, 1992, 9223632; Oct. 20, 1993, 9321605
Int. Cl.[6] F16L *37/084, 37/12*
U.S. Cl. 285—39 **21 Claims**



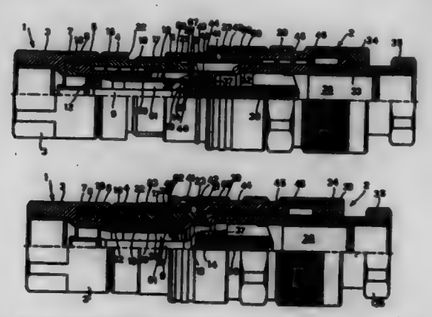
1. A tube coupling for releasably gripping a tube comprising a coupling body having a throughway open at one end to receive a tube, tube gripping means disposed in the throughway to grip and hold the tube and to resist extraction of the tube from the throughway, detent means mounted in the coupling body adjacent to the tube gripping means for engaging an annular abutment on the tube to retain the tube in the coupling body, and a single only release means disposed on the coupling body for releasing both the detent means and the tube gripping means to enable the tube to be extracted from the tube coupling.

5,443,290
FLOATING RING EXPANSION JOINT LINER SEAL
Robert C. Boyer, Annapolis, Md., and Vincent J. DiSciullo, Wilmington, Del., assignors to Mid-Atlantic Technical Services Incorporated, Annapolis, Md.
Filed Dec. 3, 1993, Ser. No. 160,880
Int. Cl.[6] F16L *17/02*
U.S. Cl. 285—95 **7 Claims**



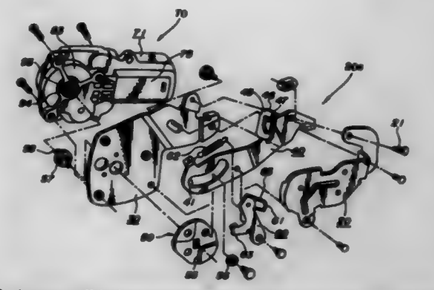
1. An expansion joint comprising:
first and second conduits connected by an expansion joint element, said second conduit having a liner portion which protrudes into said first conduit such that said expansion joint element, said first conduit, said second conduit and said liner portion define an expansion joint cavity therebetween;
a cartridge disposed within said expansion joint cavity and affixed to said first conduit around said liner portion, said cartridge including a groove which faces said liner portion;
a ring which is disposed within said groove and which has an inner surface forming a collar around said liner portion; and wherein
said expansion joint element is an elastic tube.

5,443,291
QUICK-COUPLING PIPE FITTING
Giovanni Stucchi, Treviglio, and Marco Gatti, Pognano, both of Italy, assignors to Stucchi s.r.l., 24053 Brignano Gera d'Adda (Bergamo), Italy
Filed Jul. 21, 1993, Ser. No. 93,959
Claims priority, application Italy, Jul. 22, 1992, MI92A1765
Int. Cl.[6] F16L *37/18*
U.S. Cl. 285—316 **4 Claims**



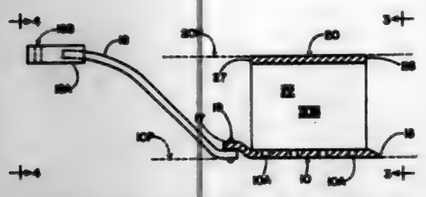
3. Quick-coupling pipe fitting comprising a female element and a male element that can be coupled together, which, elements are formed by fixed pain and by axially slidable parts that, when at rest, arrange themselves in a position wherein they close the passage of the fluid and, when the two elements are fully coupled together, they are displaced by engagement with corresponding parts of the other element in a position wherein the abovementioned passage is open, characterized in that said male and female elements can be coupled together by means of screw-based connecting means and wherein said parts of the male add female elements have coplanar front surfaces at mutually connectable ends before said screw-based connecting means are engaged, said screw-based connecting means comprising an internally threaded terminal portion of the external casing of the male element and a terminal portion of the external casing of the female element provided with an external thread, further including means for clamping the fitting in the coupled position, that comprise a ring nut elastically urged to slide on the external surface of said terminal portion of the external casing of said male element.

5,443,292
POWER LID CLOSING DEVICE
Junichi Shimada, and Yuichi Kato, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan
Filed Jul. 8, 1993, Ser. No. 87,335
Claims priority, application Japan, Jul. 8, 1992, 4-047772 U; Jul. 8, 1992, 4-047773 U; Jul. 8, 1992, 4-047774 U
Int. Cl.[6] E05B *15/02*
U.S. Cl. 292—341.16 **18 Claims**



1. A power lid closing device for use in a structure wherein a lid member is pivotally connected to a fixed member, comprising:
a lock mechanism mounted on said lid member;
a lid drawing mechanism mounted on said fixed member, said lid drawing mechanism including a motor mounting plate which is stationary, a striker base plate which is pivotally connected to said motor mounting plate and an output disc which pivots said striker base plate when rotated, said striker base plate having a striker engageable with said lock mechanism;
a power unit mounted to said motor mounting plate, said power unit including an electric motor and a speed reduction gear which are installed in a housing secured to said motor mounting plate, said speed reduction gear including a spur gear the axis of which is substantially perpendicular to said motor mounting plate;
means defining an eccentric cam groove in one side of said spur gear; and
a rotary switch having a pivotal switch lever, said switch lever having a projection slidably engaged with said eccentric cam groove, said rotary switch being electrically connected to said electric motor.

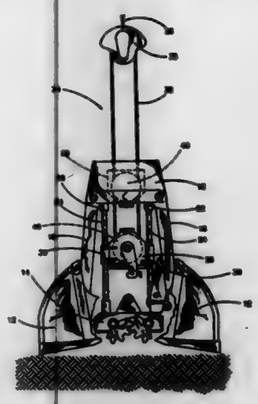
5,443,293
SPATULA FOR USAGE WITH FRYING GRILLS
Larry W. Foreman, 3947 W St., Omaha, Nebr. 68107
Filed Jul. 12, 1994, Ser. No. 274,035
Int. Cl.[6] *A47J 43/28*
U.S. Cl. 294—7 13 Claims



1. Spatula especially adapted for inverting frying-eggs from a horizontal frying-grill, and said spatula comprising:
(A) a multi-perforate laminar horizontal lower-plate predominately extending along a horizontal lower-plane and having a pair of directionally longitudinal lower-edges flanking a directionally longitudinal central vertical-plane and which lower-edges include a left-edge and a right-edge;
(B) a laminar horizontal upper-plate predominately extending along a horizontal upper-plane and having a pair of directionally longitudinal upper-edges flanking said central vertical-plane and which upper-edges include a leftward-edge overlying said left-edge and a rightward-edge overlying said right-edge;
(C) a pair of upright plates flanking said central vertical-plane and including a left-plate connecting said lower-plate to said upper-plate and further including a right-plate connecting said lower-plate to said upper-plate, and said left-plate and right-plate providing the sole connection between said upper-plate and said lower-plate; and
(D) located generally parallel to said directionally longitudinal central-plane, and attached to, and extending directionally longitudinally, upwardly, and rearwardly from said lower-plate, handle means for said spatula.

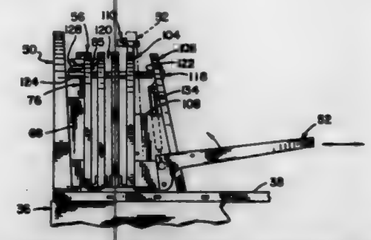
5,443,294
SINGLE-LINE CLAMSHELL BUCKET
Peter F. Prinz, Ethel; Jeffery L. Wallace, Baker, and Jon A. Craft, Slaughter, all of La., assignors to HAWCO Manufacturing Co., Slaughter, La.
Filed Sep. 22, 1993, Ser. No. 125,334
Int. Cl.[6] *B66C 3/02*
U.S. Cl. 294—68.23 27 Claims

1. A device, mountable in a single-line clamshell bucket, for engaging and disengaging a lower sheave assembly and a lower block assembly of a single-line clamshell bucket, said device comprising:
a hook assembly including a hook member pivotally mounted to said clamshell bucket;
a biasing element connected to said hook assembly in a manner such that said hook member is biased in a first rotational direction but is deflectable in a second rotational direction by a force generated by the weight of said lower sheave assembly;
a pin assembly having a pin including a first surface for engaging a second surface of said hook member in a manner such that, when said first and second surfaces are engaged, a force acting to separate said lower sheave assembly and said lower block assembly will act to generate a disengaging force against said hook member in said second rotational direction; and
an engagement retaining assembly including a bracket member, a pivoting member pivotally mounted to said bracket member in a manner such that a portion of said pivoting member may operatively contact said hook member when said hook member and pin are engaged, and a hydraulic locking assembly, in mechanical connection with said pivoting member, for locking said pivoting member in a desired position, said hydraulic locking assembly being



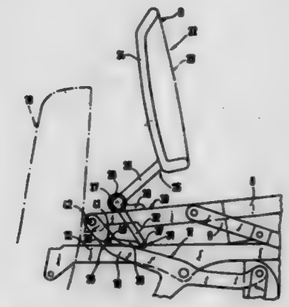
selectably unlockable by an operator and having sufficient holding strength to resist said disengaging force when locked.

5,443,295
COLLAPSIBLE CAP FOR A PICKUP TRUCK
Christopher R. Moberly, 6609 Pinehurst, Dearborn, Mich. 48126
Filed Jan. 26, 1994, Ser. No. 188,540
Int. Cl.[6] *B60P 7/02*
U.S. Cl. 296—105 7 Claims



1. A collapsible cap for use with a truck having a cab and a box extending rearwardly therefrom, the box including a pair of spaced side walls extending rearwardly from the cab and a rear wall extending between the side walls, comprising:
a front frame member stationarily mounted adjacent the cab;
a rear frame member movably mounted to the side walls of the box between a forward collapsed position and a rearward use position;
at least one intermediate frame member located between the front and rear frame members;
a collapsible cover mounted to the front and rear frame members; and
a door movably mounted to the rear frame member, the door being movable between an operative position in which the door and the rear frame member cooperate to enclose the rearward end of the cap between the box rear wall and the cover, and an inoperative storage position in which the door is raised upwardly and forwardly relative to the rear frame member above the box side walls, wherein the door defines a laterally extending upper edge, and wherein the door is pivotably mounted along is upper edge to the rear frame member; and
a releasable door retainer arrangement interposed between the door and the front frame member for maintsining the door in its inoperative position.

5,443,296
WIND PROTECTOR FOR A PASSENGER VEHICLE WITH A REARWARDLY FOLDING TOP
Jan Just, Leonberg, and Dieter Reuter, Ehningen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Sep. 28, 1994, Ser. No. 313,809
Claims priority, application Germany, Sep. 28, 1993, 43 32 938.1
Int. Cl.[6] *B60J 7/22*
U.S. Cl. 296—107 13 Claims



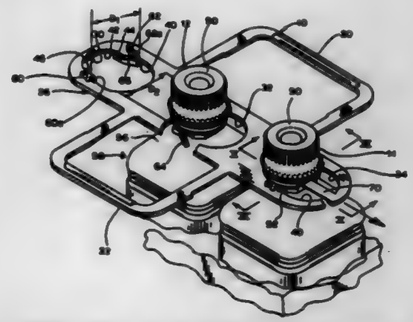
1. A wind protector for a passenger vehicle with a rearwardly folding top, the wind protector being displaceable from an inoperative position to an operative position and vice versa, wherein the wind protector is coupled via a control device with the top in such a manner that the wind protector is automatically moved into its operative position when the top is folded rearward into its rearward-side deposited position, and wherein the control device is formed by a first control arm and a second control arm which are rotatably connected with one another, the first control arm being rigidly mounted on the wind protector, and the second control arm being rotatably connected in an articulated manner with the folding top linkage and with the first control arm.

5,443,297
STRUCTURE OF SIDE PORTION OF VEHICLE BODY
Minoru Tanaka, and Tsutomu Shimizu, both of Toyota, Japan, assignors to Toyoda Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jan. 10, 1994, Ser. No. 179,244
Claims priority, application Japan, Jan. 22, 1993, 5-009223
Int. Cl.[6] *B62D 25/20*
U.S. Cl. 296—203 13 Claims



1. A structure of a side portion of a vehicle body having a side outer panel in which a side sill outer member and a pillar outer member are integrally formed, comprising:
a side sill inner member, which is provided inwardly with respect to said side sill outer member in a transverse direction of the vehicle body;
a side sill reinforcing member, which is provided between said side sill outer member and said side sill inner member;
a first enclosed cross-sectional member formed by connecting said side sill inner member and said side sill reinforcing member such that a longitudinal direction of said first enclosed cross-sectional member runs substantially along a longitudinal direction of the vehicle body, said first enclosed cross-sectional member having first connecting members which are formed by connecting said side sill reinforcing member and said side sill inner member; and
a second enclosed cross-sectional member formed by connecting said side sill outer member and said side sill reinforcing member such that a longitudinal direction of said second enclosed cross-sectional member runs substantially along the longitudinal direction of the vehicle body, said second enclosed cross-sectional member having second connecting members which are formed by connecting said side sill outer member and said side sill reinforcing member, and said second connecting members being located outwardly of said first connecting members in the transverse direction of the vehicle body and being apart from said first connecting members,
wherein said side sill reinforcing member has a side sill reinforcing member flange member at each end thereof transverse direction thereof, side sill member flange members forming said first connecting members by being connected with said side sill inner member.

5,443,298
DEVICE FOR TRANSPORTING FLUID FILLED BOTTLES
Michael J. Finley, Wilmot, Wis., and Nicholas Fotis, Crystal Lake, Ill., assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 882,206, May 13, 1992, abandoned.
This application Jan. 6, 1994, Ser. No. 177,805
Int. Cl.[6] *B65D 71/00*
U.S. Cl. 294—87.2 7 Claims



1. A bottle carrier for transporting a bottle having a neck and including an enlarged diameter section comprising:
a frame defining a composite opening therethrough for receiving the bottle therein, the composite opening including a first open section having sufficient size to allow a portion of the bottle to be received therethrough;
means for securing the bottle within the composite opening including a second open section in communication with the first open section, the second open section having a narrowed width;
a tang member hingedly connected to the frame member

such that the tang member is pivotable in relation to the first open section and the tang member being pivotable to project inwardly into the first open section of the composite opening to abut the neck section of the bottle once the bottle has been shifted to a second open section to secure the bottle in the second open section.

5,443,299

WINDSHIELD MOLDING FOR VEHICLES AND THE PRODUCTION METHOD THEROF

Yukihiko Yada, and Toshiaru Ito, both of Nagoya, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Obbu, Japan

Division of Ser. No. 953,968, Sep. 30, 1992, Pat. No. 5,350,211.
This application Jun. 9, 1994, Ser. No. 257,733
Claims priority, application Japan, Sep. 30, 1991, 3-278584; Sep. 30, 1991, 3-278585; Aug. 18, 1992, 4-063341
The portion of the term of this patent subsequent to Apr. 27, 2011, has been disclaimed.
Int. Cl.[6] B60J *10/02*
U.S. Cl. 296—93 **1 Claim**



1. A windshield molding for a vehicle installed with windshield glass, comprising:
an auxiliary molding;
a plurality of interconnected sections which upon being installed in the vehicle are of a substantially rectilinear shape; and
a plurality of bending sections, said interconnected sections and bending sections being connected to said auxiliary molding and including a decorative portion exposed externally and a support leg projecting from said decorative portion to be inserted and fixed to the vehicle body, wherein said decorative portion and support leg include a continuously and integrally extrusion molded body, at least the external surface of said decorative portion is made of a single type of material throughout the entire length thereof including the interconnected sections and bending sections, and wherein the support legs and said auxiliary molding corresponding to bending sections are more flexible than the interconnected sections.

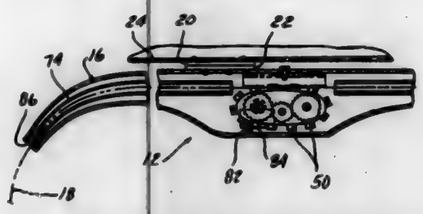
5,443,300

POWERED GLARE SCREEN DEVICE

Gaffar Mohammed, 3080 Peace Court, Windsor, Ontario N8T 2J4, Canada

Filed Mar. 4, 1994, Ser. No. 206,391
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.4 **14 Claims**

1. A portable, self-contained glare screen device for automotive vehicles such as cars and trucks comprising:
a hollow housing;
attachment means for attaching said housing within the passenger compartment of an automotive vehicle above a glass window to be screened against glare;
a tinted glare screen panel sufficiently stiff to be self supporting and mounted for movement in and out of a slot in said housing, from an extended position to a retracted position;
a drive mechanism including a selectively energizable reversible electric drive motor, a sprocket mechanism in said housing on each side of said glare screen, each sprocket mechanism including a series of recirculating sprocket pins linearly engaging sprocket openings along a respective side of said glare screen panel, said drive motor



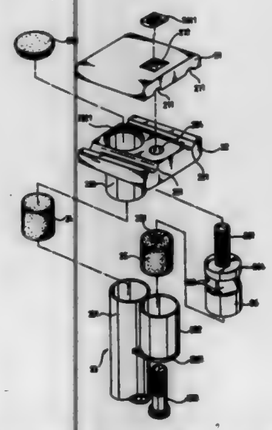
connected to a primary drive shaft driving each sprocket mechanism to cause recirculation of said sprocket pins and driving of said glare screen panel in and out of said housing.

5,443,301

SADDLE MOUNTING FRAME ASSEMBLY

Yen-Pin Lai, No. 199, Wu Tung South Road, Pu Hsin Hsiang, Changhwa Hsien, Taiwan

Filed Nov. 2, 1993, Ser. No. 144,520
Int. Cl.[6] B62J *1/02*
U.S. Cl. 297—195.1 **2 Claims**



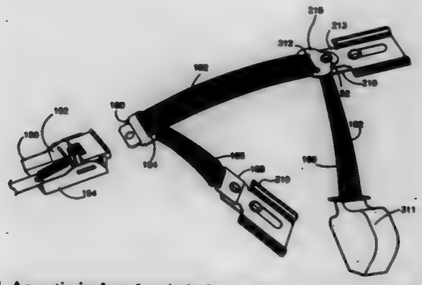
1. A saddle mounting frame assembly comprising:
a seat post which comprises a master tube, an auxiliary tube welded to said master tube at one side thereof, and a reinforcing plate welded to said master tube and said auxiliary tube in a horizontal position to support said auxiliary tube, said reinforcing plate comprising a hole axially aligned with said auxiliary tube, an interior of said master tube including a horizontally arranged blocking plate;
an upper clamping plate and a lower clamping plate connected together for holding mounting rods of a saddle, said upper clamping plate comprising a vertical hole and two horizontal grooves on a bottom surface thereof for holding said mounting rods of a saddle, said lower clamping plate comprising a vertical hole axially aligned with said vertical hole of said upper clamping plate and two horizontal grooves fitted under said horizontal grooves of said upper clamping plate for holding said mounting rods of a saddle, and a hollow bottom shaft received in said master tube, said hollow bottom shaft having a top opening sealed with a cap;
a fastening device for fastening said upper and lower clamping plates together, said fastening device comprising a head fitted into said auxiliary tube, and a screw rod received in said vertical holes of said lower and upper clamping plates and fastened with a nut to hold said upper and lower clamping plates to said mounting rods of a saddle; said head of said fastening device comprising a center screw hole connected to said hole of said reinforcing plate by an adjusting screw, and six planes arranged around a periphery thereof disposed outside said auxiliary tube for turning with a socket wrench;
a first shock absorbing element fitted into said master tube and arranged between said blocking plate and said hollow shaft of said lower clamping plate; and
a second shock absorbing element fitted into said auxiliary tube and arranged between said reinforcing plate and said head of said fastening device and mounted around said adjusting screw.

5,443,302

ANTI-CINCH AND ANTI-CHAFE SEAT BELT SYSTEM

Niels Dybro, Carmel, Ind., assignor to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation of Ser. No. 854,213, Mar. 20, 1992, Pat. No. 5,292,181. This application Dec. 2, 1993, Ser. No. 161,333
Int. Cl.[6] B60R *22/28*
U.S. Cl. 297—471 **1 Claim**



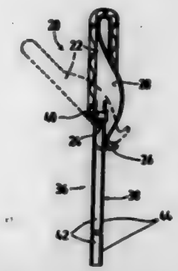
1. An anti-cinch and anti-chafe seat belt system for extending across the chest and lap of a passenger comprising:
first locking means;
second locking means releasably engageable with said first locking means;
retracting means having a web with an inner end wound therein and further having an outer end with said second locking means mounted between said inner end and said outer end, said web extending freely slidably at all times through said second locking means;
first bracket means attachable to a structure with said web attached thereto;
first connecting means connected with said web and said first bracket means and being movable relative to said first bracket means between first and second positions, said first connecting means being retracted relative said first bracket means in the first position and being extended relative said first bracket means in the second position, said first connecting means including a D-loop positioned with said first bracket means between said retracting means and said second locking means;
first spring means for biasing said first connecting means in the first position operable to allow limited web movement without web extension from said retracting means;
first fastening means coupling said first connecting means with said first bracket means;
second bracket means attachable to a structure with said outer end of said web attached thereto;
second connecting means connected with said web and said second bracket means and being movable relative to said second bracket means between a third position and a fourth position, said second connecting means being retracted relative said second bracket means in the third position and being extended relative said second bracket means in the fourth position;
second spring means for biasing said second connecting means in the third position operable to allow limited web movement without web extension from said retracting means, said first spring means and said second spring means releasably biasing respectively said first connecting means and said second connecting means limiting chafing by said web;
second fastening means coupling said second connecting means with said second bracket means;
third bracket means attachable to a structure with said first locking means attached thereto;
third connecting means connected with said third bracket means and being movable relative to said third bracket means between a fifth position and a sixth position, said third connecting means being retracted relative said third bracket means in the fifth position and being extended relative said third bracket means in the sixth position; and,
third spring means for biasing said third connecting means in the fifth position operable when said first locking means is locked to said second locking means to allow limited web movement without web extension from said retracting means, said first spring means and said third spring means limiting chafing by said web between said D-loop and said first locking means across the chest of the passenger with said second spring means and said third spring means limiting chafing by said web between said second bracket means and said first locking means across the lap of the passenger.

5,443,303

HEADREST FOR A VEHICLE SEAT

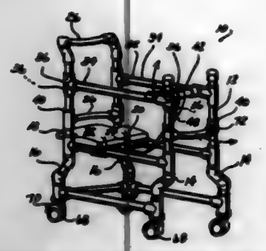
Heinz Bauer; Burckhard Becker, and Ernst-Reiner Frohnhaus, all of Solingen, Germany, assignors to C Rob. Hammerstein GmbH, Solingen, Germany

Filed Nov. 16, 1993, Ser. No. 152,716
Claims priority, application Germany, Nov. 23, 1992, 42 39 272.1
Int. Cl.[6] A47C *7/38*
U.S. Cl. 297—408 **8 Claims**



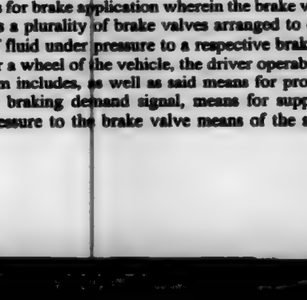
1. Headrest for a motor vehicle seat, which consists of a head-piece, comprising a supporting frame and an upholstery body, and of a single-strutted insertable holder being hinged to said head-piece, and being insertable into the back-rest, characterized in that the supporting frame and holder are manufactured from light metal, that the upholstery body is detachably attached to the supporting frame, that the holder is a hollow profile with an oblong cross-section, and that all components of the headrest with the exception of the upholstery body are manufactured from the same light metal.

5,443,304
RESTRAINT FREE AMBULATION DEVICE
Arthur J. Fochs, Appleton, Wis., assignor to Innovative Products Unlimited, Inc., Appleton, Wis.
Filed May 7, 1993, Ser. No. 59,827
Int. Cl.[6] A61H *3/00*
U.S. Cl. 297—467 15 Claims



1. A combination chair and walker for aiding the independent mobility of elderly or disabled persons in standing, walking and sitting, the chair/walker comprising:
a frame, comprising:
laterally spaced apart front legs; and
rear legs spaced rearwardly of the front legs, the front and rear legs supporting the chair/walker for movement over a floor in a stable, upright configuration;
means for sitting, the sitting means being supported from the frame at a predetermined sitting position, the sitting means having a forward edge spaced rearwardly of the front legs and defining an open space extending rearwardly of the front legs for accommodating a person's legs while in a standing, walking and sitting position;
means, disposed at a rearward portion of the frame, for supporting a person's back area;
means, adjustably attached to the frame and selectively positionable, for supporting at least one of a person's side and arms, wherein the adjustable side and arm support means is adjustable relative to the sitting means, and wherein the adjustable side and arm support means comprises:
two opposed side arms, each having forward and rearward ends;
a hollow sleeve extending substantially perpendicularly to, and attached to each of the side arm forward and rearward ends, each of the sleeves having a through bore therethrough and slidably attached on the frame; and
a plurality of spring biased detent pins, one of which is releasably receivable through a respective through bore, the detent pins positioned to selectively allow a plurality of side arm positions;
a frontal cross bar, attached to, and extending laterally between the adjustable side and arm support means, for supporting at least one of a person's front side and arms and for guiding the chair/walker, the cross bar having one end portion pivotally connected to one side of the adjustable side and arm support means for pivotal movement about a horizontal pivot axis toward an open position extending upwardly from the pivot axis when an opposite end portion of the cross bar is disconnected from an opposite side of the adjustable side and arm support means, to permit ingress and egress of the person from a front side of the chair/walker;
a crotch strap attached to the frame and extending between a person's legs into the open space, the strap being releasably attachable to the frontal cross bar while in a closed position; and
means, cooperable with the opposite side of the adjustable side and arm support means, for locking the cross bar against unwanted pivotal and vertical movement while in the closed position for providing a firm hand rail for guiding the chair/walker when secured to extend between the adjustable side and arm support means.

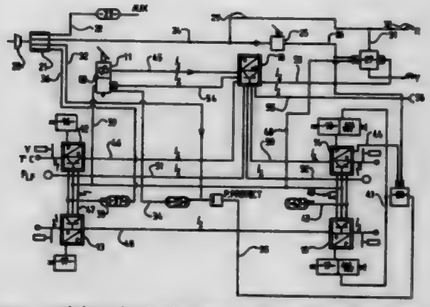
5,443,305
TUNNELLING MACHINE
Werner Heierli, Zurich, and Kurt Baumann, Alpnach-Dorf, both of Switzerland, assignors to Heierli & Co., Zurich, Switzerland
PCT No. PCT/CH92/00214, § 371 Date Aug. 27, 1993, § 102(e) Date Aug. 27, 1993, PCT Pub. No. WO93/09333, PCT Pub. Date May 13, 1993
PCT Filed Oct. 21, 1992, Ser. No. 81,364
Claims priority, application Switzerland, Oct. 30, 1991, 3182/91
Int. Cl.[6] E21D *9/08*
U.S. Cl. 299—33 29 Claims



1. A tunnelling machine including:
a shield having a cylindrical case, said cylindrical case being subdivided into a front rotary portion and a rear non-rotary portion, said front rotary portion having a face which at least in a radial zone outside a central area includes a helical shaped supporting surface and a work face area, said supporting surface being curved to extend about a shield axis, said work face area extending at an angle relative to said supporting surface and being located at an excavation gap of said supporting surface defined by an axial discontinuity in said supporting surface; and
an excavation apparatus is provided in said work face area at said excavation gap, said excavation apparatus extending across said excavation gap and sealing said excavation gap.

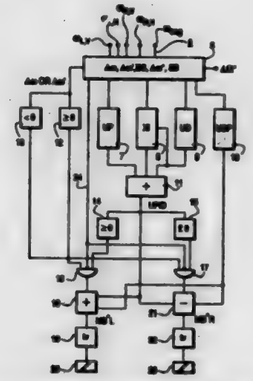
5,443,306
ELECTROHYDRAULIC BRAKE CONTROL SYSTEM
William S. Broome, Lakberrow, United Kingdom, assignor to Graseby Limited, Redditch, United Kingdom
Filed Jul. 19, 1993, Ser. No. 93,267
Claims priority, application United Kingdom, Jul. 22, 1992, 9215510
Int. Cl.[6] B60T *13/66, 8/36*
U.S. Cl. 303—3 18 Claims

1. A braking system comprising means operable by a driver of a vehicle and having a means for providing an electrical braking demand signal; electronic control means responsive to said braking demand signal, and brake valve means responsive to an instructing signal supplied to the brake valve means by the electronic control means and arranged to control supply of fluid under pressure from a source thereof to at least one actuator means for brake application wherein the brake valve means comprises a plurality of brake valves arranged to control the supply of fluid under pressure to a respective brake actuating means for a wheel of the vehicle, the driver operable means of the system includes, as well as said means for providing said electrical braking demand signal, means for supplying fluid under pressure to the brake valve means of the system, and each brake valve includes pressure sensing means to supply a signal responsive to the pressure of fluid supplied to the associated brake actuator means; electrically operable valve means for controlling the supply of fluid under pressure from the source to the actuator means; and the electronic control means receiving the signal supplied by the pressure sensing means being arranged to control said electrically operable valve means so that said pressure is in accordance with the instructing signal, and wherein said electronic control means comprises a main data processing means and local EBS data processing means for each brake valve, the main data processing



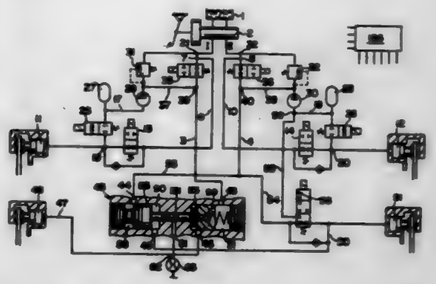
means receiving the brake demand signal from the driver operable means and transmitting said instructing signal to each EBS data processing means, each EBS data processing means receiving the signal supplied by the associated pressure sensing means and being arranged to effect said control of said electrically operated valve means so that said pressure is in accordance with the instructing signal, wherein each brake valve, in addition to providing a supply of fluid under pressure from the source thereof to the associated brake actuator means under the control of the electrically operable valve means also has an inlet for fluid under pressure to be supplied directly to the associated brake actuator means.

5,443,307
SLIP CONTROL SYSTEM FOR DRIVEN WHEELS
Rolf Maier, Kernen, Germany, assignor to Robert Bosch GmbH, Stuttgart-Feuerbach, Germany
Filed Sep. 7, 1993, Ser. No. 116,615
Claims priority, application Germany, Sep. 4, 1992, 42 29 560.2
Int. Cl.[6] B60K *28/16;* B60T *8/32*
U.S. Cl. 303—169 20 Claims



1. A slip control system for the driven wheels of a motor vehicle comprising: means for determining the rotational velocities of a left driven wheel w_L and of a right driven wheel w_R, and an engine rpm w_{eng}; a controller for determining desired braking moments M_{BL}* and M_{BR}* for the right driven wheel and the left driven wheel from the difference between the rotational velocities of the driven wheels $w=(w_L-w_R)$ and the engine rpm w_{eng}; and means for converting said desired braking moments to valve actuation times for the brakes of these driven wheels, and for applying the valve actuation times to the respective wheel brakes of said driven wheels; and wherein said controller exhibits a control behavior uPID and includes a proportional component uP, an integral component xI and a differential component uD, and produces the desired braking moments according to the following braking rules:
(1) if $w>0$ and uPID ≥ 0, the wheel brake of the left driven wheel is charged with a brake pressure that corresponds to the desired braking moment M_{BL}*=uPID+uDP;
(2) if $w<0$ and uPID ≤ 0, the wheel brake of the right driven wheel is charged with a brake pressure that corresponds to the desired braking moment M_{BR}*=−uPID+uDP; and
(3) if neither condition (1) nor (2) is met, no driven wheel is braked,
where uDP is a damping action that is a function of the engine rpm w_{eng} and of a selected vehicle gear i_g.

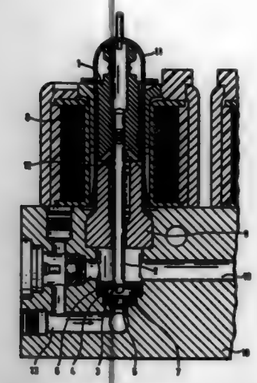
5,443,308
PRESSURE MODULATOR
Alwin Stegmaier, Charleston, S.C., assignor to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE92/00819, § 371 Date May 23, 1994, § 102(e) Date May 23, 1994, PCT Pub. No. WO93/09985, PCT Pub. Date May 27, 1993
PCT Filed Sep. 24, 1992, Ser. No. 244,226
Claims priority, application Germany, Nov. 22, 1991, 41 38 410.5
Int. Cl.[6] B60T *8/42*
U.S. Cl. 303—115.4 4 Claims



1. A pressure modulator (45) for a hydraulic brake system for a motor vehicle brake system, having a housing (66) which concentrically with a longitudinal axis has a first cylinder bore (70), a second cylinder bore (72) and a guide bore (74) that connects the first cylinder bore (70) with the second cylinder bore (72); a displaceable servo piston (83) disposed in the first cylinder bore (70); a displaceable control piston (99), disposed in the second cylinder bore (72), a first compression spring (119) acts upon said control piston in a direction of the servo piston (83); a shutoff valve (130), said shutoff valve has a valve seat (117), formed in a through bore (115) of the control piston (99), a closing body (129); an actuation member (146) which is disposed in a direction of the longitudinal axis between the closing body (129) and a face end (144) of the second cylinder bore (72) toward the servo piston (83); and a control tappet (131), said control tappet begins at the second cylinder bore (72), protrudes into the guide bore (74) and together with the

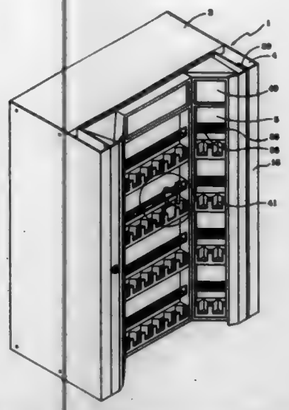
servo piston (83) and the control piston (99) forms a piston linkage, the control tappet (131), on an end protruding from the guide bore (74), has an operative segment (135) that has a greater width than the inside width of the guide bore (74); that the operative segment (135), on its face end (140) toward the control piston (99), has an open recess (142) that is embodied in slitlike fashion for an axially movable reception of the actuation member (146); the actuation member (146) protrudes with a crossbar (148), extending vertically of the longitudinal axis (68), into the recess (142) of the control tappet (131), and that a length of the recess (142) in a direction of the longitudinal axis (68) is greater than the length of the crossbar (148) in the direction of the longitudinal axis (68), and at least two longitudinal bars (150) of the actuation member (146), which extend parallel to the longitudinal axis (68), begin at the crossbar (148) and extend in the direction of the face end (144) of the second cylinder bore (72) and fit over the control tappet (131) on its circumference.

5,443,309
SOLENOID VALVE, IN PARTICULAR FOR HYDRAULIC BRAKE SYSTEMS WITH SLIP CONTROL
Erhard Beck, Weilburg, Germany, assignor to ITT Automotive Europe GmbH, Frankfurt, Germany
PCT No. PCT/EP92/02257, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO93/08051, PCT Pub. Date Apr. 29, 1993
PCT Filed Sep. 30, 1992, Ser. No. 211,911
Claims priority, application Germany, Oct. 25, 1991, 41 35 232.7
Int. Cl.[6] B60T *8/36*; F16K *31/06*, *47/00*
U.S. Cl. 303—119.2 2 Claims



1. A solenoid valve comprising:
a valve housing having a closure damping chamber and a valve seat in a first end of said closure damping chamber;
a valve armature disposed within said valve housing and movable along a longitudinal axis;
a magnet coil surrounding said valve armature for controlling stroke movement of said valve armature along said longitudinal axis;
a magnet core secured within said valve housing and spaced from said valve armature;
a valve tappet extending through said magnet core and movable with said valve armature along said longitudinal axis and having:
(a) an end remote from said valve armature which seats in said valve seat, and
(b) on a circumferential surface at said end at least one recess in the form of a notch having defined, width and depth extending partially along said longitudinal axis; and
a cup-shaped sleeve fitted within said valve housing and having a centering ring with a knife-type-taper defining a second end of said closure damping chamber and through which said end of said valve tappet extends with a small radial play between said recess in said valve tappet and said sleeve, said recess in said valve tappet and said centering ring defining a valve-opening orifice.

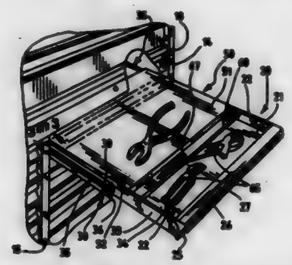
5,443,310
METHOD OF MERCHANDISING CUTTER BITS AND DISPLAY CASE THEREFOR
Thomas H. DeFelice, Canton, Ohio, and Michael M. Sherman, Lockport, N.Y., assignors to Oldham Saw Co., Inc., Burt, N.Y.
Filed Dec. 2, 1993, Ser. No. 161,145
Int. Cl.[6] A47B *96/00*
U.S. Cl. 312—329 21 Claims



1. A display case for displaying and storing and storing cutter bits comprising:
a cabinet;
a storage rack formed with a plurality of bit storage compartments mounted within said cabinet;
display means for displaying a plurality of cutter bits and securing said cutter bits against removal by a customer;
removable comparison means simulating the profile of an associated cutter bit for allowing a customer to compare the profile of the associated cutter bit adapted to be stored in said case to other cutter bits, and to a workpiece without the customer contacting the cutter bit; and
at least one receptacle formed in the display means adjacent each cutter bit displayed in the display means for retaining the plurality of removable comparison means.

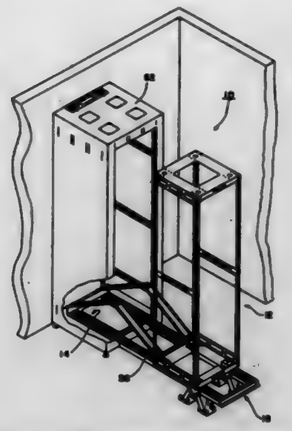
5,443,311
PULL-OUT WORK PLATFORM FOR DRAWER
Alois Kadlecek, Bradford; Kenneth J. Laver, Richmond Hill, both of Canada, and Jack A. Parise, Kenosha, Wis., assignors to Snap-on Incorporated, Kenosha, Wis.
Filed Oct. 25, 1993, Ser. No. 140,846
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—308 19 Claims

1. A sliding work platform for a drawer comprising: a substantially rectangular panel defining a work surface and having front and rear edges and opposed side edges, side flanges respectively integral with said panel adjacent to the side edges thereof and extending downwardly therefrom, a rear flange integral with said panel adjacent to the rear edge thereof and extending downwardly therefrom, and a narrow channel-shaped tray disposed along the front edge of said panel, said tray including a bottom wall and upstanding front and rear walls, said rear wall being integral with and extending downwardly from said panel adjacent to the front edge thereof, each



of said rear flange and said tray having opposite ends respectively spaced a predetermined distance inboard of said side edges of said work surface.

5,443,312
RACK ASSEMBLY FOR FACILITATING ACCESS TO WALL AND CABINET-MOUNTED SERVICEABLE EQUIPMENT
Robert J. Schluter, 3 Pine Hill Rd., Kinnelon, N.J. 07405
Filed Apr. 7, 1994, Ser. No. 224,282
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.27 20 Claims

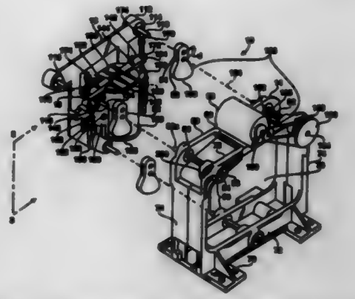


1. A rack assembly for securely accommodating a stack of assorted electronic units therein, wherein said rack assembly allows said stacked electronic units to be extensible along a detachable service stand so as to allow unrestricted service access thereto, said rack assembly comprising:
a frame assembly for securely accommodating a stack of assorted electronic units therein, said frame assembly having transport means attached thereto;
a base assembly for supporting said frame assembly, said base assembly having guide means for cooperatively engaging with and guiding said transport means; and
a service stand assembly for supporting said frame assembly, said service stand assembly having guide means for cooperatively engaging with and guiding said transport means, said service stand assembly being attachable to and detachable from said base assembly, said base assembly guide means and said service stand assembly guide means providing a continuous guide system for cooperatively engaging with and guiding said transport means when said base assembly and said service stand assembly are attached.

5,443,313
METHOD FOR PRODUCING CONSTRUCTION MIXTURE FOR CONCRETE
Vladlen Fridman, 738 Oceanview Ave., #1D, Brooklyn, N.Y. 11235
Filed Oct. 17, 1994, Ser. No. 323,663
Int. Cl.[6] B28C *1/16*
U.S. Cl. 366—2 6 Claims

1. A method of producing activated construction mixture composed of cement, sand, water and additive introduced at an end of mixing, the method comprising the steps of mixing components in a mixer with a specific consumed power of 30–600 watt/kg of mixture; using for the mixing an impeller; determining a consumed power and energy spent for mixing and establishing it within 5.0–400.0 kilo joule/kg of mixture; introducing an admixture.

5,443,314
MIXING ASSEMBLY
Noel A. Gatlin, Clifton, Ill., assignor to United Coatings, Inc., Kankakee, Ill.
Filed Jul. 9, 1993, Ser. No. 89,123
Int. Cl.[6] B01F *11/00*
U.S. Cl. 366—215 21 Claims

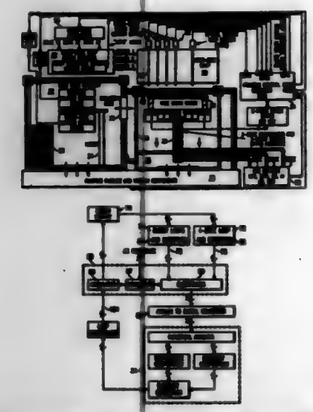


1. A mixing assembly for a fluid in a container comprising:
a rigid frame;
a support frame;
means for removably clamping the container, said clamping means being attached to said rigid frame for supporting a lower surface of the container,
an upper member adapted to fit about a top end portion of the container when said upper member is in a lower position, the top end portion of the container including a top surface, and means attached to one of said rigid frame and said supporting means and contacting said upper member for shifting said upper member from an upper position to said lower position, said member shifting means including means for urging said upper member against the top surface when said upper member is in said lower position;
said support frame including means for attaching said support frame to said rigid frame and moving the container in a planar orbit having a constant radius about a first axis.

5,443,315
MULTI-ZONE REAL-TIME EMISSIVITY CORRECTION SYSTEM

Yong J. Lee, Richardson, and Mehrdad M. Moslehi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1993, Ser. No. 168,450
Int. Cl.[6] G01J 5/02, 5/52; G01N 25/00
U.S. Cl. 374—126 8 Claims



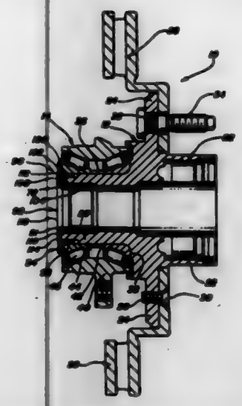
1. A method for multi-zone real-time emissivity correction for a multi-zone thermal processing system having a plurality of lamps arranged in a plurality of zones, comprising the steps of:
a. determining a plurality of geometry factors for each zone of said system;
b. modulating a plurality of power sources synchronized to a line frequency and connected to said plurality of zones;
c. monitoring a wafer using a first plurality of sensors, wherein each of said first plurality of sensors generates a first signal,
d. monitoring the modulation depth of said plurality of zones by monitoring a plurality of dummy lamps using a second plurality of sensors, one sensor of said second plurality of sensors for each zone, wherein each of said second plurality of sensors generates a second signal for each respective zone;
e. determining an emissivity factor for each of said zones based on said plurality of first signals and said second signal for each zone; and
f. correcting for effects of emissivity including determining an effective black body radiance for each zone based on a wafer radiance factor for each zone and said emissivity factors, said wafer radiance factor for each zone being based in part on said plurality of geometry factors for each zone.

5,443,316
LIVE SPINDLE HUB WITH INBOARD BEARING RETENTION

Alastair R. Deane, Novi; Stanley J. Kulczycki, Sterling Heights, and Vincent Mastrangelo, Ann Arbor, all of Mich., assignors to The Budd Company, Troy, Mich.

Continuation-in-part of Ser. No. 81,640, Jun. 24, 1993, Pat. No. 5,366,300. This application Apr. 29, 1994, Ser. No. 236,325
Int. Cl.[6] F16C 19/38
U.S. Cl. 384—485 24 Claims

1. In a vehicle wheel assembly having a live spindle supported by a wheel bearing for rotation relative to a mounting member, the live spindle having inboard and outboard ends and also having a central bore defined therein through which extends an axle driven for rotation, the vehicle wheel assembly also having a hub lock for coupling the axle to the spindle and transferring rotation therebetween, said improvement comprising:
a bearing retainer adapted to engage the inboard end of the live spindle for rotation therewith, said bearing retainer including portions defining a central aperture through which the axle extends and also including a portion



adapted to restrain inboard movement of at least a portion of the wheel bearing relative to the live spindle; and
locking means for preventing disengagement of said bearing retainer from the live spindle, said locking means being associated with the inboard end of the live spindle to interfere with and prevent relative movement between said bearing retainer and said live spindle so that inadvertent disengagement thereof will not occur.

5,443,317
ROLLING BEARING HAVING BALLS OF DIFFERENT DIAMETERS

Tatsuobu Momono, and Yasushi Matoh, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jan. 29, 1994, Ser. No. 267,237
Claims priority, application Japan, Jan. 29, 1993, 5-182257
Int. Cl.[6] F16C 33/32
U.S. Cl. 384—491 3 Claims



1. A rolling bearing comprising:
an outer race including an outer raceway on an inner circumferential surface thereof;
an inner race including an inner raceway on an outer circumferential surface thereof;
a cage including a plurality of pockets in the circumferential direction; and
a plurality of rolling elements being rollingly retained within the pockets, each of the rolling elements being abutted against the outer raceway at a predetermined angle of contact, and the inner raceway, and the rolling elements comprising a plurality of first and second rolling elements, each of the first rolling elements having a first outer diameter, and each of the second rolling elements having a second outer diameter which is smaller than the first outer diameter,
wherein a difference between the first outer diameter and the second outer diameter is larger than a variation in outer diameters of the first and second rolling elements derived from fabrication error,
wherein the inner and outer raceways comprise curved surfaces in the axial direction which substantially correspond to an outer surface of the rolling element.

5,443,318
PRINTING DEVICE FOR PRINTING IMAGE ON TAPE LIKE MEMBER

Yasunori Kitazawa, Anjou, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 898,239, Jun. 12, 1992, which is a continuation of Ser. No. 695,546, May 3, 1991, Pat. No. 5,302,034. This application Sep. 24, 1993, Ser. No. 126,267
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] B41J 2/00
U.S. Cl. 400—120.01 4 Claims

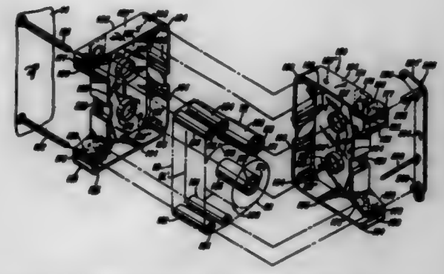


1. A printing device for printing an image on a tape like image receiving member having a first surface and a second surface opposite to said first surface, said device comprising:
a feeding mechanism for feeding the tape like image receiving member in a first direction;
a print head having an array of a plurality of image forming elements for forming an image on the tape like image receiving member, the array extending in a second direction perpendicular to the first direction;
a single cartridge accommodation means capable of accommodating in the same position relative to said print head either a first cartridge containing therein a first tape like image receiving member to which the image is applied in a normal printing mode so as to appear proper when viewed from said first surface or a second cartridge containing therein a second tape like image receiving member to which the image is applied in a reverse printing mode so as to appear proper when viewed from said second surface, said feeding mechanism feeding both said first and second tape like image receiving members in the same direction and said print head being adjacent to said first and said second tape like image receiving member first surface;
memory means for storing therein character patterns;
a print head driving means connected to the print head for selectively driving at least one of the image forming elements in accordance with printing data and a character pattern read from the memory means;
signal generation means for generating one of normal and reverse print mode signals, in the normal print mode the tape like image receiving member comprising said first tape like image receiving member and in the reverse printing mode the tape like image receiving member comprising said second tape like image receiving member;
switching means connected to the print head driving means for reversely driving the image forming elements with respect to the second direction in order to turn the character pattern from side to side with respect to the second direction so that the printed image has a normal orientation when viewed from a back surface of the image receiving member in the reverse printing mode; and
control means for selectively actuating the switching means in response to said normal and reverse printing mode signals from the signal generation means.

5,443,319
INK RIBBON CARTRIDGE INSTALLATION AND METHODS RELATING THERETO

Ikuso Sugiura, Sagamihara; Mitsuo Uchimura, Numazu, and Kouichi Kawamura, Mishima, all of Japan, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Sep. 3, 1993, Ser. No. 116,193
Int. Cl.[6] B41J 32/00
U.S. Cl. 400—250 5 Claims



1. An ink ribbon cartridge and an installation device for a printer having a print head and a locator pin, the ink ribbon cartridge having an ink ribbon, the ink ribbon having an ink ribbon portion passing outside the cartridge and adapted to extend along a non-linear printer path to the print head, wherein the installation device facilitates the mounting of the cartridge in the printer, wherein the installation device includes an arm, means for movably mounting the arm to the cartridge and a guide on the arm, the arm being pivotal to an extended position in which the guide is spaced outwardly from the cartridge and the ink ribbon portion passes about the guide along a non-linear path generally aligned with the printer path as the cartridge is loaded onto the printer, wherein the mounting means enables the arm and its guide to be moved to an effective position for loading of the ink ribbon cartridge into the printer, wherein the cartridge includes a tubular guide for guiding the ink ribbon, wherein the tubular guide is adapted to receive the locator pin, and wherein the mounting means includes a pivot received in the tubular guide prior to loading the cartridge onto the printer.

5,443,320
INFORMATION PROCESSING SYSTEM WITH PRINTING FUNCTION

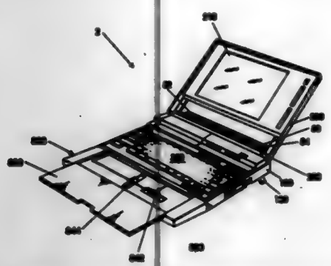
Hiroaki Agata, Yokohama; Toshitaka Imai, Sagamihara; Noboru Kamijo, Fujisawa, and Toshiki Takahashi, Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1993, Ser. No. 65,830
Claims priority, application Japan, May 21, 1992, 4-128498
Int. Cl.[6] B41J 11/58
U.S. Cl. 400—715 6 Claims

1. A computer accessory for use in combination with a

computer having a printer and a keyboard, said accessory comprising:

a palm rest for supporting the palm of a computer user when the computer user is typing on the keyboard of the computer;



a paper tray disposed at least partially within said palm rest for holding at least one sheet of paper and for guiding the sheet of paper into the printer of the computer; and

means for connecting said palm rest to the computer and printer.

5,443,321

DISPENSING BRUSH HEAD

Michael J. Dolan, 5006 SW. 9th Way, Cooper City, Fla. 33328, and William R. Dolan, 2101 N. 55th Ave., Hollywood, Fla. 33021

Filed Jan. 6, 1995, Ser. No. 369,691
Int. Cl.[6] A46B *11/00*
U.S. Cl. 401—28 3 Claims



1. A fluid dispensing brush head, comprising:

a body having an internal passage for the fluid;

a bristle carrier affixable to said body, said bristle carrier having an array of bristles projecting therefrom, and each of said bristles having a base portion;

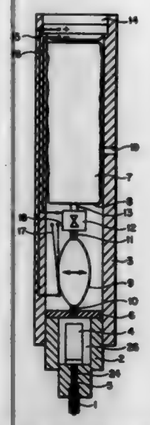
a resilient member having a plurality of apertures arranged in a pattern alignable with said array, said apertures being of a size and shape suitable to form a fluid seal about said base portions of said bristles when said bristles are received through corresponding ones of said apertures, said member being yieldable in response to deflection of said bristles when said brush head is in use so as to disrupt said seal and permit fluid to be dispensed from the brush head.

5,443,322

FLOW CONTROL FOR WRITING OR DRAWING INSTRUMENT

Walter Joszt, Bad Brauntedt, and Steffen Wünsche, Hamburg, both of Germany, assignors to rotring International GmbH & Co. KG, Hamburg, Germany

Filed Apr. 4, 1994, Ser. No. 222,394
Claims priority, application Germany, Apr. 19, 1993, 43 13 180.8
Int. Cl.[6] B43K *8/18, 5/18, 7/10*
U.S. Cl. 401—151 20 Claims



1. A writing or drawing instrument, comprising:

a writing tip (1) disposed at a front end of said writing or drawing instrument;

a writing fluid reservoir means (7) for supplying said writing tip (1) with writing fluid, wherein the volume of said writing fluid reservoir means (7) will decrease as writing fluid is used up;

a selectively operated fluid barrier means (12) connected to one end of said writing fluid reservoir means (7);

a writing fluid chamber (9) in fluid connection between said fluid barrier means (12) and said writing tip (1), said writing fluid chamber (9) being adapted to store writing fluid therein and being defined by at least one wall portion comprised of a flexible, inelastic material; and

control means for detecting a fill level of writing fluid in said writing fluid chamber (9), for selectively opening said fluid barrier means (12) when writing fluid in said writing fluid chamber (9) reaches a predetermined lower fill level, and for selectively closing said fluid barrier means (12) when writing fluid in said writing fluid chamber (9) reaches a predetermined upper fill level, wherein the predetermined upper fill level is higher than the predetermined lower fill level.

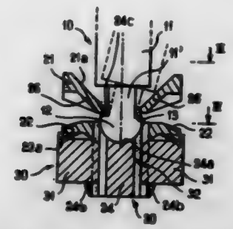
5,443,323

MOUNTING DEVICE FOR A MOBILE PART OF A HEADLAMP

Alain Preist, Paris; Gérard Elliot, Montfermeil, and Hervé Lequinio, Paris, all of France, assignors to Valeo Vision, Bobigny, France

Filed May 21, 1993, Ser. No. 65,184
Claims priority, application France, May 25, 1992, 92 06364
Int. Cl.[6] F16D *2/02*
U.S. Cl. 403—289 13 Claims

1. Device for mounting a mobile part of an automobile vehicle headlight on a relatively fixed part comprising a generally spherical head joined to a first of these parts by means of a rod and a substantially complementary cavity fastened to the other part, said head being snap fitted into said cavity through an opening of said cavity, at least one flexible tongue being provided in the vicinity of said cavity and adapted to deform elastically to enable insertion of said head therein and, after



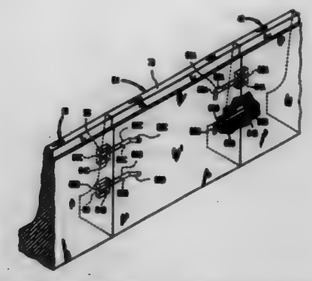
such insertion, to impede extraction of said head from said cavity, said cavity defining for said head a stable snap-fit position in which said at least one flexible tongue is not in contact with said head.

5,443,324

PINNING SYSTEM FOR PREFABRICATED BARRIERS

Keith D. Sullivan, Bridgeport, Conn., assignor to Waters Construction Co., Inc., New Milford, Conn.

Filed Jul. 21, 1994, Ser. No. 278,427
Int. Cl.[6] E01F *13/00*
U.S. Cl. 404—6 33 Claims



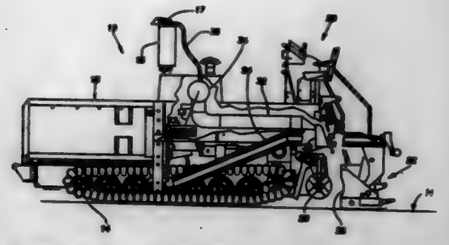
1. A pinning system for use with prefabricated barriers comprising: barrier means for forming a barrier, said barrier means having an exterior surface defining an interior area and at least one precast passageway extending from said interior area to said exterior surface; and at least one pin assembly including at least one elongate pin having a predetermined length and being slideably arranged within said at least one passageway for selective movement between a non-extended position at which said at least one elongate pin is located at least substantially within said at least one precast passageway prior to placement of said barrier means next to an adjacent barrier means and an extended position at which a portion of said at least one elongate pin protrudes from said at least one passageway beyond said exterior surface, whereby said at least one elongate pin can be concurrently arranged within at least one aligned passageway of said adjacent barrier means so that corresponding portions of said predetermined length of said at least one elongate pin partially extend within said at least one passageway of said barrier means and within the at least one aligned passageway of the adjacent barrier means.

5,443,325

ASPHALT FUME REDUCTION SYSTEM

Michael T. Simonelli, Mattoon; John D. Padgett, Charleston, and Garry Bowhall, Champaign, all of Ill., assignors to Blaw-Knox Construction Equipment Corporation, Mattoon, Ill.

Filed Feb. 4, 1994, Ser. No. 192,129
Int. Cl.[6] E01C *7/00*
U.S. Cl. 404—75 18 Claims



1. An apparatus for conveying paving material, said paving material exhaling noxious fumes, the apparatus comprising:

a paving material conveyance;

a fume processor for removing noxious components of the fumes; and

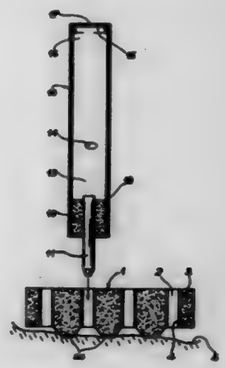
a fume conduit for directing the fumes from the conveyance to the processor.

5,443,326

METHOD AND DEVICE FOR PROVIDING AN AQUATIC PASSAGE IN RUNNING WATER

Gilles P. Bernard, Annecy; Jean-Michel Tinland, Paris; Jean-Marie Dechaure, Curat, and Pascal Simon, Annecy, all of France, assignors to Electricite De France, Paris, France

Filed Sep. 13, 1993, Ser. No. 94,112
Claims priority, application France, Jan. 31, 1991, 91 01105
Int. Cl.[6] E02B *3/02*
U.S. Cl. 405—25 16 Claims



1. Device for providing an aquatic passage in running water for nautical sports by modifying a rate and direction of water flowing within a river, comprising:

bases adapted to be removably placed on a bed of the river at predetermined locations, an upper surface of each base having a series of holes formed therein; and

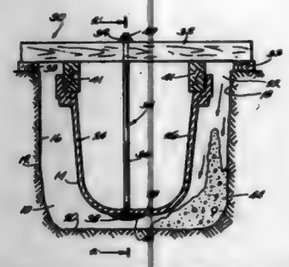
elements secured to the bases and comprising a rod and a voluminous upper portion, each of said rods being removably received by one of the holes in the bases and said

upper portions defining artificial volumes in the river and modifying the rate and direction of water flowing within the river.

5,443,327
METHOD AND APPARATUS FOR FORMING A LINED TRENCH

Steven M. Akkala; Andy Aylward, both of Neenah, and Tim J. Keller, Winneconne, all of Wis., assignors to Neenah Foundry Company, Neenah, Wis.

Filed Feb. 15, 1994, Ser. No. 196,306
Int. Cl.[6] E02B 3/00
U.S. Cl. 405—118 17 Claims



1. A reusable support structure for installing a trench liner in a trench formed in the top surface of the ground, the trench having an open top, trench walls spaced apart a predetermined trench width distance, and a bottom trench floor portion, said structure properly locating the trench liner in the trench, the trench liner having spaced apart liner side walls and a bottom liner floor portion, said support structure comprising:

a crossbar spanning the trench, and supported by the top surface of the ground;

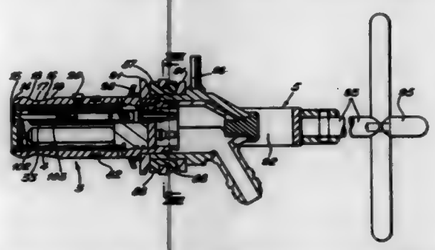
a support column adjustably connected at its top to the crossbar, and removably connected at its bottom to the bottom liner floor portion, for supporting the liner with respect to the trench, the support column including for adjusting the height of the trench liner over the bottom trench floor portion.

5,443,328
CONNECTING APPARATUS

John M. Alcock, Ulverston; Joseph A. Nicholson, Broughton-in-Furness; Trevor J. Thistlethwaite, Pennington, and Fred D. Myers, Ulverston, all of United Kingdom, assignors to Tronic Electronic Services Limited, Ulverston, United Kingdom

PCT No. PCT/GB92/00057, § 371 Date Sep. 17, 1993, § 102(e) Date Sep. 17, 1993, PCT Pub. No. WO92/12554, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 10, 1992, Ser. No. 87,706
Claims priority, application United Kingdom, Jan. 11, 1991, 9100634
Int. Cl.[6] H01R 13/00; F16L 1/26
U.S. Cl. 405—169 23 Claims

1. Apparatus for connecting first and second parts of an under water connector, comprising a first carrier adapted to receive the first connector part and having an axial guide socket, and a second carrier adapted to receive the second connector part and having a plug arranged to engage axially in the guide socket for connection of the first and second connector parts, wherein the plug has a nose portion which tapers forwardly to a front end having a lateral dimension less than that of the guide socket, and a waisted portion rearwardly of

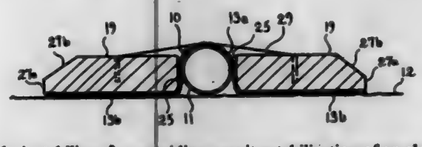


the nose portion with a lateral dimension less than that of the guide socket.

5,443,329
STABILIZATION MEANS

Pieter J. de Goeter, Western Australia, Australia, assignor to Spencon Pty. Ltd. and Marcon Pty. Ltd., both of Western Australia, Australia

Continuation of Ser. No. 583,727, Sep. 14, 1990, abandoned. This application Nov. 23, 1994, Ser. No. 345,009
Claims priority, application Australia, Feb. 23, 1990, PJ8797
Int. Cl.[6] F16L 1/00
U.S. Cl. 405—172 15 Claims



1. A stabilizer for providing gravity stabilization of an elongated object having a discrete transverse dimension, said stabilizer comprising a pair of spaced apart weights defining a space therebetween for receiving and retaining said object, each of said weights having a discrete transverse dimension greater than the transverse dimension of said object and defining an upper portion and a lower portion, a lower flexible member interconnecting said weights between said lower portions thereof, said lower flexible member having a length sufficient to rest on and across the top of and along the sides of said object in engagement therewith when said object is positioned between said weights so that said weights exert compressive side forces against said object, and an upper flexible member interconnecting said upper portions of said weights, said upper member having a length sufficient to position said weights with their centers of gravity below the geometric center of said object when said stabilizer weights are positioned on opposite sides thereof.

5,443,330
DEEP WATER PLATFORM WITH BUOYANT FLEXIBLE PILES

Robert W. Copple, 5 Glen Dr., Mill Valley, Calif. 94941

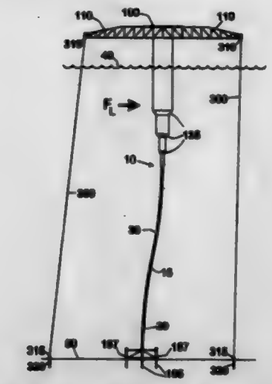
Continuation-in-part of Ser. No. 676,850, Mar. 28, 1991, Pat. No. 5,118,221. This application Feb. 3, 1993, Ser. No. 13,008
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[6] E02B 17/00; E21B 7/12
U.S. Cl. 405—224.2 9 Claims

1. A deep water support system for supporting a structure adjacent to the surface of a body of water at a preselected site, comprising;

a buoyant pile having a lower end rigidly anchored to the bottom of said body of water, said pile being of a length greater than the depth of said body of water at said site,

bending member means coupled to the upper end of said pile for securing said structure and for resisting any departure from the vertical of the portion of said upper end of said pile above the surface of said body of water,

a plurality of tendons coupled at their upper ends to said bending member means and anchored at their lower ends to the floor of the body of water



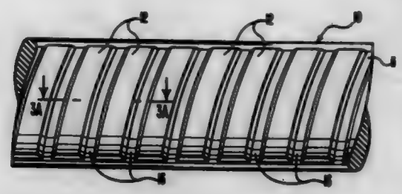
said pile comprising an elongate tubular structure having an interior watertight bulkhead means positioned at a predetermined location within said pile interior, said location selected so that said pile has a predetermined buoyancy when the portion of said pile below said bulkhead is open to the water and the portion of said pile above said bulkhead is filled with air,

said predetermined buoyancy being such that the portion of said pile below said bulkhead is in substantial tension.

5,443,331
THREADED BAR CONSTRUCTION

Ben L. Seegmiller, 143 S. 400 East, Salt Lake City, Utah 84111

Filed Aug. 16, 1993, Ser. No. 106,527
Int. Cl.[6] E21D 21/02
U.S. Cl. 405—259.1 8 Claims

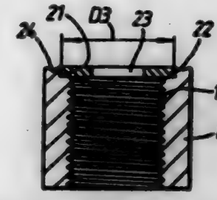


1. Elongated bar stock comprising: an elongate bar of nominally circular transverse cross-section, having a longitudinal axis, and also having opposite, rectilinearly parallel sides each of essentially one-hundred-eighty-degree peripheral extent, and plural, mutually spaced, raised, arcuate thread segments, comprising a regular thread pattern, integral with and disposed solely at one of said sides of said bar, the remaining one of said sides being free of threads, respective opposite ends of said thread segments essentially lying in respective, essentially straight lines parallel to each other and to said longitudinal axis of said bar.

5,443,332
ROCKBOLT TENSIONING

Ian Hollis, Shirland, United Kingdom, assignor to Exchem PLC, London, United Kingdom

Filed Feb. 9, 1993, Ser. No. 15,471
Int. Cl.[6] E21D 20/02
U.S. Cl. 405—259.6 10 Claims

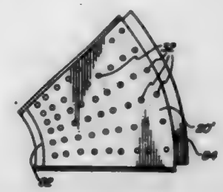


1. In a rockbolt assembly comprising an elongate rockbolt having a threaded first end portion and an opposite second end portion adapted to be anchored in a bore hole formed at a surface, a nut capable of threadedly engaging the threaded first end portion of the rockbolt so as to enable rotation of the nut and rockbolt as a unitary member substantially to be effected, in use, below a predetermined torque without affecting the position of the nut on the threaded end portion, and to allow rotation of the nut on said threaded end portion for the nut to be forced against said surface to cause tensioning of the rockbolt to take place when a torque equal to or greater than said predetermined torque is supplied to the nut after the rockbolt has been anchored in a said borehole, the improvement comprising provision of a recess within the proximal end of the nut which represents an extension of an internally threaded passage through the nut and of a disc seated in said recess and held therein by means of a plurality of deformations on the nut producing depressions in a proximal end surface and reduction in internal diameter of the recess in a position of such deformations to cause local areas of the nut to extend radially inwardly to abut the perimeter of the disc and exert a frictional restraining force on only the perimeter of the disc which is maintained until the nut is subject to a torque equal to or greater than said predetermined torque when the disc becomes separable from the nut, the disc width and the recess internal diameter at the deformations being greater than the major thread diameter of the passage.

5,443,333
PRESSURIZED AIR CONVEYOR CURVE AND METHOD

Brian K. Hilbish; Arnold C. Burgess, both of Bedford, and Michael A. Wilson, Big Island, all of Va., assignors to Simplimatic Engineering Company, Lynchburg, Va.

Division of Ser. No. 146,320, Nov. 1, 1993. This application Oct. 28, 1994, Ser. No. 331,125
Int. Cl.[6] B65G 51/03
U.S. Cl. 406—88 9 Claims



1. A curved portion of an air conveyor for articles comprising:

a plenum chamber having a deck plate on a side thereof;

a plurality of holes in said deck plate for directing air from

said plenum chamber toward the articles to move them along a conveyor path;

a holddown plate mounted spaced apart from said deck plate to form an article transport zone therebetween;

side walls enclosing said article transport zone; and

a plurality of holes in said holddown plate of an area density gradient increasing from an outer toward an inner side of the curved portion providing a flow of the air toward the inner side of the curved portion to draw the articles away from the outer side of the curved portion.

5,443,334

CUTTING INSERT WITH RECESS

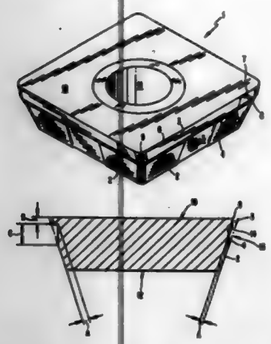
Göran Pantzar, Arsunda, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Jan. 24, 1994, Ser. No. 185,380

Claims priority, application Sweden, Jan. 27, 1993, 9300232-7

Int. Cl.[6] B23C *5/02*

U.S. Cl. 407—113 **21 Claims**



1. A cutting insert for chip forming machining tools, in particular milling cutters, comprising an upper chip surface, a planar bottom surface which is adapted to be located in abutment with a cooperating support surface of the machining tool, at least one side surface extending between the upper and lower surfaces, at least a portion of said one side surface being adapted to be placed in abutment with at least one cooperating side support surface of the machining tool, said at least one side surface being inclined at an acute angle in relation to the chip surface and at an obtuse angle in relation with the bottom surface, at least one cutting edge being formed along a transition line between the upper chip surface and said at least one side surface, a first relief surface being provided on said at least one side surface adjacent to the cutting edge, a secondary relief surface provided below said first relief surface, and a recess extending along at least a portion of the length of said at least one side surface between the first relief surface and the secondary relief surface, the plane of the secondary relief surface lying outside both the cutting edge and the plane of the first relief surface as viewed from a point substantially on a midpoint of the side surface of the cutting insert.

5,443,335

CUTTING INSERT

Takamasa Shimano; Tatsuo Arai, and Takayoshi Saito, all of Ibaragi, Japan, assignors to Mitsubishi Materials Corp., Tokyo, Japan

Filed Jan. 27, 1994, Ser. No. 187,283

Claims priority, application Japan, Feb. 1, 1993, 5-014973

Int. Cl.[6] B23C *5/06*

U.S. Cl. 407—113 **7 Claims**

1. A cutting insert, comprising: a polygonal tabular body including,

(a) two opposing end surfaces spaced apart in the thickness-wise direction,

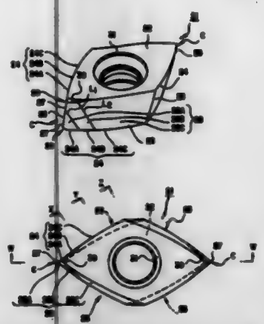
(b) side surfaces interconnecting and surrounding said end surfaces,

(c) a main cutting edge formed from at least one peripheral edge between one of said end surfaces and an adjacent one of said side surfaces,

(d) a sub-cutting edge formed from a corner edge line of said body at which said adjacent side surface intersects a second of said side surfaces and which intersects the peripheral edge where said main cutting edge is formed, said sub-cutting edge is connected to said main cutting edge so as to form a nose portion therebetween, and

(e) a rake surface formed by said adjacent side surface, and defined by said corner edge line where said sub-cutting edge is formed and by said at least one peripheral edge where said main cutting edge is formed,

wherein said rake surface has a plurality of consecutive component surfaces demarcated by edge lines, each of



which at one end thereof reaches said main cutting edge, so as to present a multi-face surface which is curved along said body so as to be convex outward, and further wherein intersection angles at which said component surfaces intersect said one of said end surfaces having said main cutting edge are varied in a stepped manner that the component surface most remote from said nose portion has the smallest intersection angle and the component surface closest to said nose portion has the greatest intersection angle,

wherein said component surface most remote from said nose portion is curved along the circumference of said body so as to be convex outward and wherein said intersection angle of said component surface most remote from said nose portion variably decreases towards the direction more remote from said nose portion, and

wherein said intersection angle of said component surface closest to said nose portion is substantially constant over the length thereof.

5,443,336

DIE HANDLE OILING SYSTEM FOR USE WITH A CUTTING DIE HEAD

John P. MacSaveny, 2425 Prince St., Bellmore, N.Y. 11710

Filed Jul. 18, 1994, Ser. No. 276,793

Int. Cl.[6] B23G *5/00*

U.S. Cl. 408—61 **6 Claims**

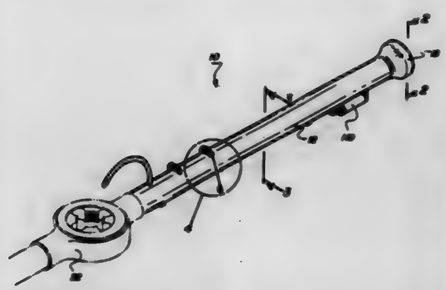
1. A die handle oiling system for use with a cutting die head for torquing and simultaneously lubricating a cutting die head for cutting threads on pipes, rods, and the like comprising, in combination:

a rigid, elongated, and tubular handle having a central axis, an interior and exterior surface, a sealed and outwardly bevelled base end, a sealed and outwardly threaded tip end for holding a cutting die head thereon with the tip end

further having a threaded filling bore disposed therethrough and aligned with the central axis, a lip extended radially inwards from the interior surface between the base and tip end to define an air cavity for holding air therein located adjacent to the base end and a plunger cavity for holding oil therein located adjacent to the tip end, an inlet ball valve extended between the exterior surface and air cavity for allowing air into the air cavity, a pressure release valve extended between the base end and air cavity with a depressible button extended therefrom for allowing air to be released from the air cavity when depressed, and a threaded oil outlet extended between the exterior surface and the plunger cavity for allowing oil disposed within the plunger cavity to exit therethrough;

a plunger slidably disposed within the plunger cavity, the plunger having a generally cylindrical head with a front end and a rear end and a plurality of seal rings disposed therearound in contact with the interior surface of the handle, the rear end of the head positionable against the lip of the handle when the plunger cavity is completely filled with oil through the filling bore, the front end of the head positionable near the tip end of the handle when the plunger cavity is nearly devoid of oil;

an elongated and flexible oil hose for allowing oil to be released from the plunger cavity, the oil hose having a base end threadably coupled within the oil outlet and a cone-shaped nozzle adapted to be positioned near a cutting die head for applying oil thereto for cutting;



an oil hose holder formed of two spaced, aligned, and rigid clamps coupled to the exterior surface of the handle for holding the oil hose in a stowed configuration;

an elongated and rigid push-rod having a handle end and a tip end with the tip end positionable through the filling bore for pushing the plunger back towards the base end of the handle, thereby allowing the plunger cavity to be refilled with oil;

a push rod holder formed of two spaced, aligned, and rigid clamps coupled to the exterior surface of the handle opposite the oil hose holder for holding the push rod in a stowed configuration;

an oil plug threadably coupled within the filling bore of the handle;

an oil cap securable over the nozzle of the oil hose for preventing oil leakage therefrom with the cap further having a tether extended therefrom and secured to a bracket of the oil hose holder for securing the cap in a proximal location for use; and

an air pump coupled to the handle directly below the inlet ball valve thereof, the air pump having a hollow housing with an open front end facing the tip end of the handle, a sealed rear end facing the base end of the handle, an air intake extended from the rear end, a trigger having a rear end slidably disposed within the front end of the housing and a front end extended therefrom, a rubber seal secured between the trigger and housing, a one-way check valve disposed within the air intake, and a spring disposed between the trigger and rear end of the housing, whereby when the trigger is depressed, the one-way check valve is closed and air within the housing is forced through the ball valve and into the air cavity for building pressure therein, thus forcing the plunger towards the tip end of the handle for allowing oil to be released through the oil hose, and when the trigger is released, the one-way check valve opens for allowing air into the housing.

5,443,337

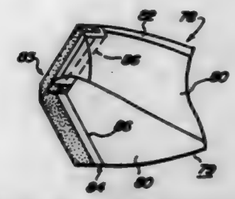
SINTERED DIAMOND DRILL BITS AND METHOD OF MAKING

Ichiro Katayama, Ohmori Sanso Homes 501, 3-31-21 Sanno, Ohta-ku, Tokyo 143, Japan

Filed Jul. 2, 1993, Ser. No. 85,078

Int. Cl.[6] B23B *51/02*

U.S. Cl. 408—145 **23 Claims**



1. An improved drill bit of the type having an elongated cylindrical body, a pair of helical flutes formed in said body, each of said flutes having an outer edge surface in the form of a strip-shaped margin, a central longitudinally disposed web section between said flutes, and a cutting point having a conical shape intersecting each said margin and forming therewith a cutting lip having the shape of a knife edge disposed between the apex of said point and each one of a pair of diametrically opposed margins, each of said cutting lips being located on diametrically opposite sides of said web and spaced laterally apart from the longitudinal center plane of said web, said improvement comprising; a first insert secured in a slot formed in said web and extending inward into said body from said point, said insert comprising a refractory material imbedded in an elongated, straight U-shaped channel formed in one surface of matrix material, at least a portion of one side wall of said channel being removed to expose refractory material forming at least a portion of at least one of said cutting lips of said drill bit.

5,443,338

MACHINE FOR THE PRECISION WORKING OF THE TOOTH FLANKS OF GEAR-SHAPED WORKPIECES WITH AN INTERNALLY TOOTHED TOOL

Manfred Huber; Richard Mueller, both of Munich, and Anton Schaller, Eching, all of Germany, assignors to Hurth Maschinen und Werkzeuge GmbH, Munich, Germany

Filed Jul. 7, 1994, Ser. No. 271,512

Claims priority, application Germany, Jul. 16, 1993, 43 23 935.8

Int. Cl.[6] B23F *19/06, 23/04*

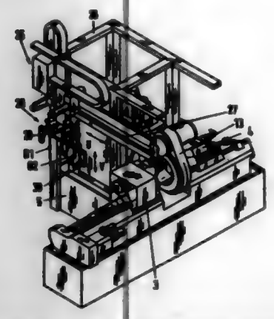
U.S. Cl. 409—7 **5 Claims**

1. In a machine for the precision working of tooth flanks of a gear-shaped workpiece, the workpiece having a first axis of rotation, said machine having a tool head for supporting and rotatably driving an annular internally toothed tool for rotation about a second axis of rotation and for angular movement about a third axis oriented transversely with respect to said first axis of rotation, said machine also having first means for supporting the workpiece to be machined and second means for accomplishing relative feeding and working movements between the tool and the workpiece, wherein the improvement comprises:

a machine bed on which is directly supported a first carriage movable along an X-direction oriented transversely with respect to the workpiece axis of rotation;

a drivingly movable second carriage guidingly mounted on said first carriage and for movement along a Y-direction oriented perpendicularly with respect to the workpiece axis of rotation and to the X-direction, said tool head being mounted on said second carriage on a side thereof remote from said first carriage and for movement therewith; and

wherein said first means includes a headstock and a tailstock movably supported on said machine bed and on opposite sides of said tool head and for movement along a Z-direction oriented perpendicularly with respect to the X-direction and to the Y-direction, the workpiece being supported by and between said headstock and said tailstock so that said first axis of rotation thereof extends in the Z-direction, and wherein said headstock is drivable along the Z-direction and the tailstock is suitably controlled to follow the headstock so as to facilitate a relative movement between the workpiece and the tool along the Z-direction.



3. The machine according to claim 1, wherein said machine bed further comprises an integrated handling mechanism for supplying workpieces to be machined to a transfer position laterally next to the tool head and for transferring of machined workpieces to and from the transfer position, said integrated handling mechanism including a frame connected to the machine bed and means guided movably thereon for receiving, moving and transferring of the workpieces.

5,443,329

METHOD AND APPARATUS FOR ALIGNING AND CUTTING SINGLE-SIDED AND DOUBLE SIDED KEYS

George L. Heredia, Paradise Valley, Ariz.; Robert E. Almblad, Mundelein, and Mike A. Mueller, Lindenhurst, both of Ill., assignors to Axxess Entry Technologies, Tempe, Ariz.

Continuation of Ser. No. 769,921, Sep. 30, 1991, Pat. No. 5,314,274, which is a continuation-in-part of Ser. No. 425,731, Oct. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,815, Oct. 21, 1988, abandoned. This application Mar. 8, 1994, Ser. No. 207,837

The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.

Int. Cl.[6] B23C *3/35*

U.S. Cl. 409—81 70 Claims

1. A key alignment device having a longitudinal axis and a lateral axis for laterally aligning a first key including a length, upper and lower surfaces, a tip, a shoulder, a root, and a bitted surface opposite the root, the key alignment device comprising:

a. upper and lower clamping surfaces displaceable between an open position for receiving the first key between the clamping surfaces and a closed position for engaging the upper and lower surfaces of the first key and retaining the first key in a fixed lateral position with a horizontal orientation;

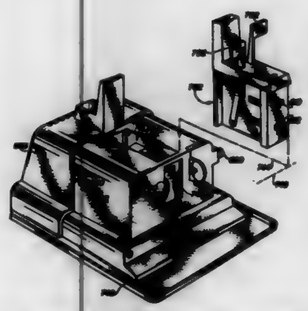
b. a root alignment surface laterally offset on a first side of the clamping surfaces for receiving the key root and for aligning the key root parallel to the longitudinal axis;

c. a tip alignment element for engaging the key tip and for aligning the key tip against the root alignment surface; and

d. a lateral alignment element for engaging the first key at a first position displaced along the length of the key away from the key tip after the clamping surfaces have been displaced into the closed position and for laterally displacing the first key toward the root alignment surface with a lateral force sufficient to overcome the clamping forces exerted on the first key by the clamping surfaces until the key root contacts the root alignment surface to thereby align the key root with the root alignment surface and with the longitudinal axis of the key alignment device.

64. A key cutting machine having a longitudinal axis and a horizontally oriented lateral axis for duplicating a two-sided master key onto a two-sided key blank, the master key and key blank each including a length, a centerline, an upper surface, a lower surface, a tip, a shoulder, a first bitted surface and an opposing second bitted surface, each bitted surface of the master key including cuts extending laterally between a first lateral position located in proximity to the key centerline and a second lateral position further displaced from the key centerline, the key cutting machine comprising:

a. a base;



b. a laterally displaceable first cutter head including a first key follower positioned at a first elevation, a spaced apart first cutting wheel positioned at a second elevation and a first motor coupled to rotate the first cutting wheel in a first direction;

c. a laterally displaceable second cutter head including a second key follower positioned at the first elevation, a spaced apart second cutting wheel positioned at the second elevation and a second motor coupled to rotate the second cutting wheel in a second direction;

d. a first linear displacement element for simultaneously laterally displacing the first key follower relative to a first horizontal plane and the first cutting wheel relative to a second horizontal plane toward and away from the first bitted surfaces of the master key and the key blank between the first and second lateral positions and for simultaneously laterally displacing the second key follower relative to the first horizontal plane and the second cutting wheel relative to the second horizontal plane toward and away from the second bitted surfaces of the master key and the key blank between the first and second lateral positions to enable the first cutter head to laterally follow and duplicate the first bitted surface of the master key onto the first bitted surface of the key blank and to enable the second cutter head to laterally follow and duplicate the second bitted surface of the master key onto the second bitted surface of the key blank without increasing or decreasing the elevation of the first or second cutter heads;

e. a key positioning fixture including

i. a first key positioning fixture for positioning the master key to engage the first and second key followers at an indexed position where the first and second key followers initially engage the beginning of the first and second bitted surfaces and for maintaining unobstructed access to the first and second bitted surfaces of the master key as the key positioning fixture and the first and second key followers are longitudinally translated relative to each other;

ii. a second key positioning fixture for positioning the key blank to engage the first and second cutting wheels at an indexed position with the first and second cutting wheels initially engaging the key blank where the beginning of the first and second bitted surfaces of the master key are to be reproduced and for maintaining unobstructed access to the first and second bitted surfaces of the key blank as the key positioning fixture and the first and second cutting wheels are longitudinally translated relative to each other; and

f. a second linear displacement element for longitudinally displacing the first and second bitted surfaces of the master key and the first and second key followers relative to each other along the longitudinal axis at the first elevation and for simultaneously longitudinally displacing the first and second bitted surfaces of the key blank and the first and second cutting wheels relative to each other along the longitudinal axis at the second elevation to reproduce the first and second bitted surfaces of the master key on the first and second bitted surfaces of the key blank.

69. A method for duplicating a master key onto a key blank, the master key and key blank each including a length, an upper surface, a lower surface, a tip, a shoulder, and a first bitted surface, the bitted surface of the master key including cuts extending laterally between a first lateral position and a second lateral position, comprising the steps of:

a. providing a laterally displaceable first cutter head including a first key follower positioned at a first elevation, a spaced apart first cutting wheel positioned at a second elevation and a first motor coupled to rotate the first cutting wheel in a first direction;

b. positioning the master key at the first elevation with a horizontal orientation to engage the first key follower at an indexed position where the first key follower initially engages the beginning of the first bitted surface while maintaining unobstructed access to the first bitted surface of the master key as the master key and the first key follower are longitudinally translated relative to each other;

c. positioning the key blank at the second elevation with a horizontal orientation to engage the first cutting wheel at an indexed position with the first cutting wheel initially engaging the key blank where the beginning of the first bitted surface of the master key is to be reproduced while maintaining unobstructed access to the first bitted surface of the key blank as the key blank and the first cutting wheel are longitudinally translated relative to each other;

d. laterally biasing the first cutter head toward the master key and key blank without the assistance of gravitational forces such that the first key follower engages the first bitted surface of the master key and the first cutting wheel engages the first bitted surface of the key blank;

e. laterally displacing the first key follower relative to a first horizontal plane and the first cutting wheel relative to a second horizontal plane toward and away from the first bitted surfaces of the master key and the key blank between the first and second lateral positions to enable the first cutter head to laterally follow and duplicate the first bitted surface of the master key onto the first bitted surface of the key blank without increasing or decreasing the elevation of the first cutter head; and

f. simultaneously longitudinally displacing the first bitted surface of the master key and the first key follower relative to each other at the first elevation and simultaneously longitudinally displacing the first bitted surface of the key blank and the first cutting wheel relative to each other at the second elevation to reproduce the first bitted surface of the master key on the first bitted surface of the key blank.

5,443,340

COUPLING DEVICE BETWEEN A WORKPIECE HOLDER OR A TOOL HOLDER AND AN ARRANGEMENT FOR HANDLING SAME

Josef Reinauer, Sigmaringen; Wolfgang Effenberger, Kempten, and Franz Friedl, Marktoberdorf, all of Germany, assignors to Gottlieb Gaehring KG, Ehingen, Germany

PCT No. PCT/EP88/00412, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO88/08766, PCT Pub. Date Nov. 17, 1988

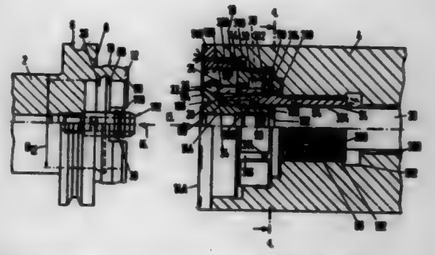
PCT Filed May 11, 1988, Ser. No. 445,834

Claims priority, application Germany, May 11, 1987, 37 15 658.6; May 22, 1987, 37 17 270.0; Feb. 2, 1988, 38 03 017.9; Mar. 4, 1988, 38 07 140.1

The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.

Int. Cl.[6] B23C *5/26*; B23B *31/02*

U.S. Cl. 409—233 41 Claims



1. Coupling system between a workpiece or tool carrier part, such as, e.g., a tool system module, for example in the form of a basic tool carrier, and a handling device, such as, e.g., a machine tool, with a carrier provided on the machine tool side for an extension of the tool system module and a clamping device to generate a contact pressure among plane surfaces of the elements to be coupled, and the clamping device exhibits an operating rod by which a wedge device can be actuated with which at least three clamping elements, placed at a uniform peripheral distance from one another and provided in one of the parts to be coupled, can be pressed essentially radially outward into a suitably configured recess on the other part to be coupled, characterized in that the clamping elements are made up of clamp-type claws (24; 424; 724; 824; 924) that are placed essentially parallel to extension (12; 12') of tool system module (2; 2') and can pivot, with bracing in carrier (18) with a claw section (26; 426; 726; 826; 926) lying radially inside extension (12; 12') in the coupled state, into a groovelike recess (36) of extension (12; 12') in that they engage, with their end sections (30; 430; 730; 830; 930) opposite the claw section, In a supporting groove (74; 474; 774; 874; 974) of carrier (18).

5,443,341

REMOVABLE TRUCK TIE-DOWN DEVICE

Jeffery L. Hamilton, 16818 S. 203rd East Ave., Broken Arrow, Okla. 74014

Filed May 26, 1994, Ser. No. 249,802

Int. Cl.[6] B61D *45/00*

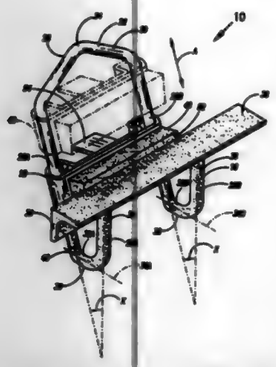
U.S. Cl. 410—116 12 Claims

1. A device removably securable without the need for tools

to a pickup truck bed for securing an object within the truck bed by means of a fastening device comprising:

a stationary portion having a front side engagable with a truck bed and an opposite rear side, said stationary portion being provided with two "U" shaped bends such that the "U" shaped bends are located between said front side of the stationary portion and said rear side of the stationary portion;

a front lip being provided on an upper end of said front side such that the front lip is removably engagable with an interior face of a downwardly oriented edge of a truck bed;



a movable portion being provided with a forward facing bumper, said movable portion being movably provided on said rear side of the stationary portion such that when the movable portion is moved upward relative to the stationary portion a gap formed between the bumper and the front lip increases in width; and

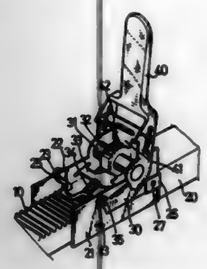
an upper end of said rear side being provided with loop means located between said two "U" shaped bends; a fastening device for holding an object in the truck bed being secured to said loop means.

5,443,342

DEVICE FOR POSITIONING CARGO

Han-Chiag Huang, No. 12, Avenue 111, Lane 437, Jeng Hsin Road, Taichung, Taiwan

Filed Mar. 14, 1994, Ser. No. 212,357
Int. Cl.[6] B60P *7/15*; B61D *45/00*
U.S. Cl. 410—151 **3 Claims**



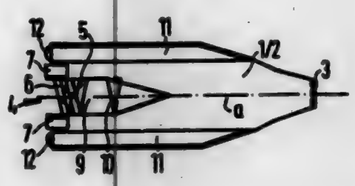
1. A device for positioning cargo and comprising a tube, a rack slidably engaged in said tube, a base secured to said tube, a shaft pivotally supported in said base, a ratchet gear fixed on said shaft and engaged with said rack so as to outstretch said rack from said tube when said ratchet gear rotates in an active direction, stop means disposed in said base for engaging with said ratchet gear so as to prevent said ratchet gear from rotating in a reverse direction, a handle pivotally coupled to said shaft, and catch means disposed in said handle for engaging with said ratchet gear so as to rotate said ratchet gear when said handle rotates in said active direction, whereby, said rack is outstretched from said tube when said handle is rotated with reciprocating action, a sleeve secured to said tube, said base being coupled pivotally to said sleeve at a pivot pin and including projection means, hook means coupled to said sleeve for engaging with said projection means so as to retain said base in place relative to said sleeve, and said base being rotatable about said pivot pin when said hook means is disengaged from said projection means.

5,443,343

METAL DOWEL FOR ANCHORAGE IN THIN WALL PANELS

Bernd Mutz, Schopfheim; Klaus Hullmann, and Helmo Daler, both of Lorrach, all of Germany, assignors to A. Raymond GmbH & Co., KG, Lorrach, Germany

Filed Jun. 17, 1994, Ser. No. 261,957
Claims priority, application Germany, Jun. 18, 1993, 43 20 163.6
Int. Cl.[6] F16B *13/04, 13/06*
U.S. Cl. 411—30 **6 Claims**



1. A metal dowel for anchorage in a wall panel, said dowel being made from a folded blank of sheet metal and comprising a pair of flat leg members folded over at one end to lie flat against each other, said legs tapering toward said folded end to form a pointed end to said dowel and being held together at said folded end by a breakable web formed by said fold between said legs, connecting means for fixedly connecting together the opposite end of each of said legs to form a head end to said dowel, a threaded hole formed out of and located between said legs adjacent said head end of the dowel and a funnel-shaped recess formed out of and located between said legs, said recess being axially aligned with said threaded hole and located between said threaded hole and said pointed end, whereby, after insertion of the dowel pointed end first into a panel, threading of a threaded member into said threaded hole, with the tip thereof entering into said recess, breaks said web and forces the legs apart to anchor the dowel in the panel.

5,443,344

METHOD AND APPARATUS FOR ATTACHING TWO MEMBERS TOGETHER FROM ONE SIDE THEREOF

Ted T. Underwood, Jr., Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 12, 1994, Ser. No. 304,408
Int. Cl.[6] F16B *13/04, 13/06*
U.S. Cl. 411—43 **5 Claims**

2. An apparatus for attaching things together comprising:

a first member having an opening therein;

a second member having a first portion thereof which is larger than said opening and a second portion disposed about a longitudinal axis and which second portion is smaller than and disposed through the opening in the first member said second portion being divided along said longitudinal axis into at least two sections;

a hole disposed through said second member along said longitudinal axis;

a washer having a hole therethrough;

an elongated member which is smaller in diameter than the hole in said washer and smaller than the hole in said second member, said elongated member having an enlarged portion thereon which is larger than the hole in the washer and larger than the hole in said second members,



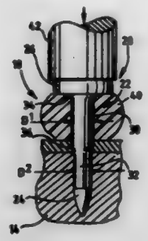
said elongated member being disposed through the hole in the washer and through the hole in said second member, said washer being disposed between said enlarged portion of the elongated member and one end of the second portion of the second member whereby pulling on said elongated member from the first portion side thereof will cause the washer to spread and hold said sections of the second portion apart thereby attaching said second member to said first portion.

5,443,345

FASTENER-SLEEVE ASSEMBLY AND STRIP OF COLLATED FASTENERS

Harish C. Gupta, Naperville, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 20, 1994, Ser. No. 262,566
Int. Cl.[6] F16B *15/00, 15/08*
U.S. Cl. 411—441 **11 Claims**



1. A fastener assembly for attaching a workpiece to a substrate and comprising

(a) a fastener having an elongate shank with a pointed end and having a head, the shank defining an axis and having two portions of different diameters, namely a thicker portion adjoining the head and a thinner portion adjoining the pointed end, the shank having a shoulder joining the thicker and thinner portions, and

(b) a polymeric sleeve disposed around the elongate shank, the sleeve having an initial, axially measured length, which the sleeve assumes when disposed around the shank but not compressed axially, the sleeve having a critical, axially measured length, at which the sleeve splits when disposed around the shank and compressed axially,

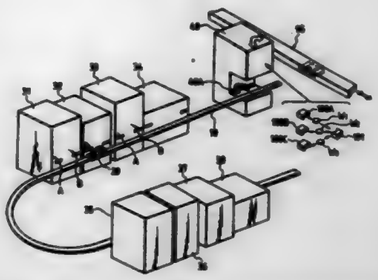
wherein the thicker portion of the shank has an axial length between the initial and critical lengths of the sleeve.

5,443,346

WAFER CONVEYING SYSTEM IN A CLEAN ROOM

Masanao Murata; Teppei Yamashita; Tsuyoshi Tanaka; Takahide Hoshiko; Mitsuji Karita; Hitoshi Kawano, and Tatsuo Shinya, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Japan

Filed Jul. 2, 1993, Ser. No. 85,109
Claims priority, application Japan, Jul. 3, 1992, 4-177218
Int. Cl.[6] B65G *49/07*
U.S. Cl. 414—222 **11 Claims**



1. A wafer conveying system in a clean room comprising:

interface equipment for transferring wafers between intra-bay wafer conveying equipment and inter-bay wafer conveying equipment, said inter-bay wafer conveying equipment including a main cassette for transferring said wafers between a plurality of wafer processing bays arranged along a first conveying path, and said intra-bay conveying equipment conveying said wafers from the main cassette to wafer processing equipment arranged along a second conveying path to form a processing line extending from the interface equipment to different processing equipment within a bay,

wherein said interface equipment operates to receive a specified number of wafers from said main cassette conveyed by said inter-bay wafer conveying equipment, and to transfer said specified number of wafers to at least one of a plurality of auxiliary cassettes provided for said processing line, said intra-bay wafer conveying equipment including means for receiving one of said auxiliary cassettes and including a robot which moves with said one of said auxiliary cassettes and said wafers to said wafer processing equipment, and individual removes wafers from said auxiliary cassette, transfers said wafers to said wafer processing equipment, receives said wafers therefrom, and places them back in the auxiliary cassette.

5,443,347

BAG OPENER

J. Keith Weisiader, 337 Ladwell Dr., Lancaster, Pa. 17601

Filed Mar. 31, 1994, Ser. No. 220,871
Int. Cl.[6] B65B *69/00*
U.S. Cl. 414—412 **12 Claims**

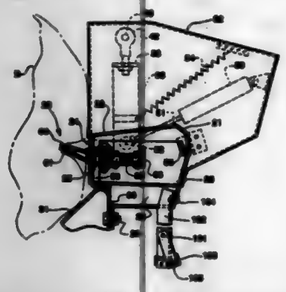
11. A bag opener for tearing a hole in a trash bag of plastic or other material comprising:

a support on which a bag is placed;

a pair of elongated fingers mounted on a rail in a co-extensive position adjacent each other and spaced from said bag; and

means for moving said rail in one direction toward said bag to project said fingers to puncture a hole in the bag and

then after a puncturing has occurred sliding the fingers away from each other on the rail and transverse to said



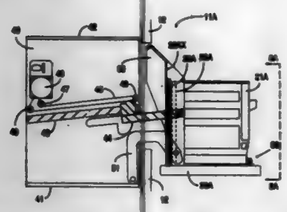
one direction to provide a positive tearing action on the bag.

5,443,348

CASSETTE INPUT/OUTPUT UNIT FOR SEMICONDUCTOR PROCESSING SYSTEM

Michael R. Biche, Union City, and Alexander Larye, Fremont, both of Calif., assignors to Semiconductor Systems, Inc., Fremont, Calif.

Filed Jul. 16, 1993, Ser. No. 92,842
Int. Cl.[6] B65G *21/02*; A47B *88/00*
U.S. Cl. 414—416 9 Claims



1. A semiconductor processing system including a cassette input/output unit for introducing wafers or other substrates to said semiconductor processing system, said input/output unit comprising:

a drawer front;

a motor;

a drive mechanism coupled to said motor and said drawer front for moving said drawer front between an open and a closed position, said drawer front being oriented substantially vertically when in said closed position and substantially horizontally when in said open position and rotating approximately 90° degrees about a horizontal axis as said drawer front is moved from said closed position to said open position; and

a drawer bottom rigidly connected to and oriented at a right angle to said drawer front;

a clamp positioned within said input/output unit for holding a cassette containing semiconductor wafers or other substrates inside said cassette input/output unit as said drawer front rotates between said open and closed positions and while said drawer front is in said closed position; and

a mechanism positioned within said semiconductor processing unit for transferring said wafers or other substrates from said input/output unit.

5,443,349

UNLOADING LEVER FOR HANDTRUCK

Maheshkumar M. Mehta, P.O. Box 1472, Rockingham, N.C. 28379

Continuation of Ser. No. 779,458, Oct. 18, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 142,932
Int. Cl.[6] B62B *1/06*
U.S. Cl. 414—490 1 Claim



1. In a hand truck for carrying an article, the hand truck having a frame with vertical side bars, sloping axle braces mounted to the side bars, an axle arranged transversely of the frame between the axle braces, wheels carried by the axle and a rigid loading tongue mounted to the bottom of the side bars, the improvement comprising: a transverse shaft joining the vertical side bars; and a one-piece freely suspended V-shaped unloading lever movable from an inactive position to a load engaging position having a forward end including a flange secured to the forward end, a transverse flat rectangularly shaped solid push plate rigidly mounted adjacent the forward end parallel to and in the plane of the flange, the flange and transverse push plate being in the plane of the side bars when the lever is in the inactive position, a foot-actuated pedal portion opposite the forward end, and a middle section joining the forward end and the foot-actuated pedal portion and having a hollow sleeve tube cooperatively receiving the transverse shaft to provide free rotational movement of the unloading lever about the transverse shaft at the middle section sleeve tube, the forward end and the foot-actuated pedal portion being of substantially the same length, the unloading lever being responsive to force exerted against the foot-actuated portion to apply simultaneous forward and upward pressure at the push plate against the article to be unloaded wherein the angle formed by the intersection of the foot-actuated pedal portion and the forward end is 40° to 50° in the unloading lever forward end upward pressure thrust the article to be unloaded is at an angle of 15° to 20° upwardly from the horizontal, the unloading lever engaging the hand truck solely at the transverse shaft.

5,443,350

GOODS VEHICLE OR A TRAILER FOR A GOODS VEHICLE

Frederick G. Wilson, 49 Hillsborough Old Rd., Lisburn, County Down BT27 5EN, Northern Ireland

Filed Feb. 10, 1994, Ser. No. 194,490
Claims priority, application United Kingdom, Feb. 10, 1993, 9302602
Int. Cl.[6] B60P *1/02*
U.S. Cl. 414—495 6 Claims

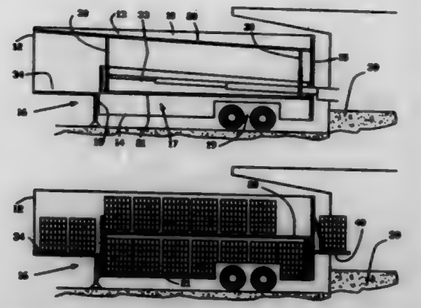
1. A goods vehicle trailer comprising:

a body defined by a roof, a base, sidewalls and a front bulkhead,

wheels at opposite sides of the body upon which the body is mounted, the base of the body being below the top of the wheels with the wheels being accommodated in wheel arches on the opposite sides of the body and the front bulkhead having upper and lower portions defining a swan neck, whereby a well is formed behind the lower portion of the front bulkhead and between the wheel arches,

upper and lower load-bearing floors each mounted for vertical movement within the body, the lower floor having sidewalls which define with the lower floor a tray whose external dimensions are approximately the same as the interior dimensions of the well, the lower floor having a rest position substantially at the bottom of the well,

hoist means for lifting and lowering the upper floor, and



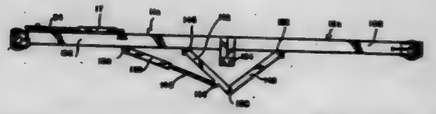
coupling means operative such that when the upper floor is less than a certain height above the lower floor it can move independently of the lower floor which remains in its rest position within the well, whereas when the upper floor is lifted above such height it entrains the lower floor upon continued lifting of the upper floor so that the lower floor is lifted in its entirety away from the bottom of the well.

5,443,351

MOBILE HYDRAULIC CONVEYOR

Michael J. Pettijohn, 15111 Oak Rd., Carmel, Ind. 46032

Continuation-in-part of Ser. No. 843,222, Feb. 28, 1992, Pat. No. 5,193,971. This application Mar. 16, 1993, Ser. No. 32,074
Int. Cl.[6] B60P *1/36*
U.S. Cl. 414—523 9 Claims



1. In a mobile hydraulic conveyor apparatus pivotally attachable to a rear end of a truck, said conveyor apparatus including a first elongated tray and second elongated tray pivotally attached at one end to each other, thereby enabling said trays to be folded during transport thereof from one location to another and to be unfolded to an unfolded operative position for supporting a conveyor belt, an improvement comprising:

means for folding and unfolding said trays, said folding and unfolding means including a hydraulic cylinder having a longitudinal axis, the hydraulic cylinder being pivotally mounted on said first tray about a pivot connection so that the longitudinal axis of the hydraulic cylinder is generally parallel to a longitudinal axis of the first tray when the first and second trays are in the unfolded position,

a piston rod carried by said at least one hydraulic cylinder, the piston rod being movable from an extended position to a retracted position within the hydraulic cylinder,

a linkage and

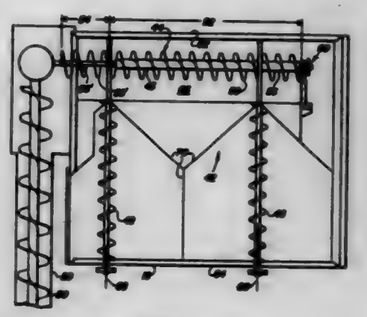
means for coupling the linkage means to the first and second trays and to the piston rod so that operation of said hydraulic cylinder to move the piston rod from the extended position to the retracted position causes the first and second trays to move to the unfolded position, and movement of the piston rod from the retracted position to the extended position causes the first and second trays to move to a folded position.

5,443,352

COMBINE GRAIN TANK DISCHARGE SYSTEM

Ernst Schuhmacher, Hesburg-Elsood, Germany, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 994,027, Feb. 8, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 369,993
Int. Cl.[6] A01D *41/12*; B65G *65/46*
U.S. Cl. 414—526 1 Claim



1. A combine grain tank comprising:

a grain tank floor;

opposite side walls and opposite front and rear walls extending upwardly from the floor;

a laterally extending trough in the floor extending between the side walls adjacent one of the other walls, one of the side walls having a discharge opening at the end of the trough;

a pair of fore-and-aft feed augers, each feed auger including an axial shaft having its opposite ends respectively journaled in the front and rear walls and extending above the floor and the trough, each of the feed augers having auger flighting extending the length of the augers except for the portion above the trough, the feed augers being operative to move grain along the floor to the trough;

and a transverse discharge auger mounted in the trough and having an axial auger support tube including a first constant diameter portion and a second constant diameter portion having a substantially smaller diameter than the first portion, the second portion extending downstream from the point where the feed auger nearest the discharge opening feeds the discharge auger, and auger flighting having a constant outside diameter mounted on the first and second portions of the auger support tube.

5,443,353

AUTOMATIC RAMP CAR

W. Eddie Raymer, Louisville, Ky., assignor to Lincoln Industries, Corp., Louisville, Ky.

Filed Sep. 14, 1993, Ser. No. 120,369
Int. Cl.[6] B60P *1/43*
U.S. Cl. 414—537 22 Claims

1. A deployable and retractable ramp assembly comprising:

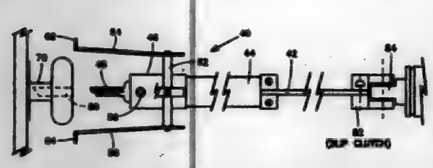
at least three Z-folded ramp sections, comprising first, second and third sections each having first and second ends, said second end of said first ramp section pivotally connected to said first end of said second ramp section, and said third section first end pivotally connected to said second section second end;

a first mast having a first end and a second end, said second end having first and second sheaves mounted thereon;
a first cable connecting element mounted to at least one of said ramp sections, for connecting a cable end thereto;
a first cable dimensioned to operatively engage either of said sheaves, and having a first, free, end adapted to be connected to said first cable connecting element; and



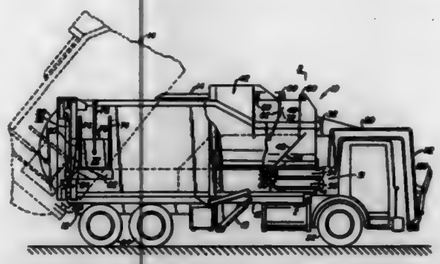
first power means connected to a second end of said first cable for selectively deploying or taking up said cable, to power said ramp sections to move from a stacked, Z-folded first position to an unfolded, substantially in-line second position, and vice-versa.

5,443,354
HAZARDOUS MATERIALS EMERGENCY RESPONSE MOBILE ROBOT
Henry W. Stone, Altadena; James W. Lloyd, Pasadena, and George A. Alahuzos, Sierra Madre, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jul. 20, 1992, Ser. No. 917,554
Int. Cl.[6] B25J 5/00
U.S. Cl. 414—729 15 Claims



1. A robot for inserting a key in a keyhole in a doorknob mounted on a door, said robot comprising a platform on which tracks for self-mobility and a first end of a robot arm are attached, and an end effector mounted to a second end of said robot arm, said robot further comprising:
a key;
tool means, grippable by said end effector, for holding said key while pressing said key against said keyhole, wherein the tool means includes,
means allowing rotation up to nearly 90 degrees about a vertical axis in relation to said end effector,
means for extending forwardly and adjacent the key for engaging plural points on a surface of the door adjacent the doorknob for centering the key with respect to the keyhole,
means for permitting bending of said tool means in at least one of two orthogonal axes; and,
said tracks comprising articulated means for rotating said robot forward about an end of said tracks relative to a center part of said tracks whereby said key travels in an arc of a radius corresponding to a distance between said tracks and said key, wherein said tool means for holding said key deforms so as to allow said key to travel in at least a nearly straight path through said key hole.

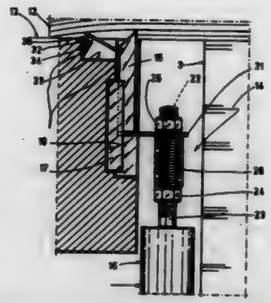
5,443,385
TRASH COLLECTION VEHICLE
Louis A. Pellegrini, 1231 Thurston Ave., Los Altos, Calif. 94022, and Tom T. Matsumoto, 909 Spinoza Dr., Sunnyvale, Calif. 94087
Continuation of Ser. No. 813,328, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 569,262, Aug. 17, 1990, Pat. No. 5,074,737, which is a continuation of Ser. No. 465,559, Jan. 16, 1990, abandoned, which is a continuation of Ser. No. 179,019, Apr. 8, 1988, abandoned. This application Dec. 7, 1993, Ser. No. 164,669
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[6] B65F 3/04; B65D 88/12
U.S. Cl. 414—786 1 Claim



1. A method for collecting waste materials comprising:
providing a waste-receiving container having a bottom, a front end, and a rear end;
pivotally mounting the container about a horizontal axis near one end thereof and adjacent to the bottom;
said container having a central compartment and a pair of side compartments extending longitudinally of the container, there being a rear side opening for each side compartment, respectively;
providing a top front opening on the container near the opposite end of the container;
directing segregated waste materials simultaneously into the compartments through said top front opening for collecting the waste materials while they remain segregated;
tilting the container to pivot the container about said axis to direct the materials therein toward said one end; and
allowing the materials in the central compartment to move out of the container rear end and to allow the materials of the side compartments to move out of the side openings when the container is tilted.

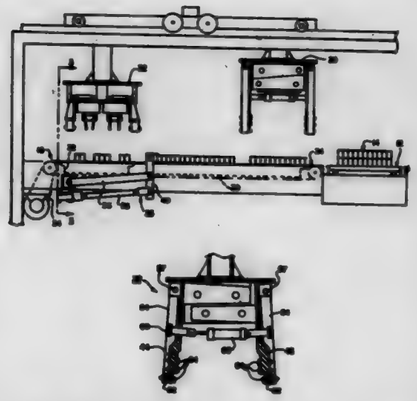
5,443,356
AUTOMATIC SLIDE-ON PANEL LOADING SYSTEM
Valter Naldi, Via Longo, Italy, assignor to Selco S.r.l., Crespellano, Italy
Filed Jan. 21, 1993, Ser. No. 6,650
Claims priority, application Italy, Jan. 21, 1992, B092A 000026
Int. Cl.[6] B65H 3/24
U.S. Cl. 414—790.3 8 Claims

1. An automatic slide-on panel loading system of the present invention comprising:
a vertical stack (3) of panels (2) from which a pack (12) representing any selected number of panels from the top of the stack may be removed;
a work station having a supporting surface (13);
a transfer bar (6) including a push member (11) for feeding said pack (12) onto said supporting surface (13); and
an arresting assembly (14) for arresting the panels in said stack underlying said pack to prevent slippage of the remaining panels in said stack when said pack is fed by said transfer bar, said arresting assembly comprising at least one body (15) disposed between said stack and said supporting surface (13), movable push means (16) for pushing said body (15) into direct contact with the bottom panel in said pack as it moves toward said supporting surface and sensing means for activating said movable push means in response to the movement of said pack over a predetermined distance, wherein said sensing means comprises at least one microswitch (32) having a fixed



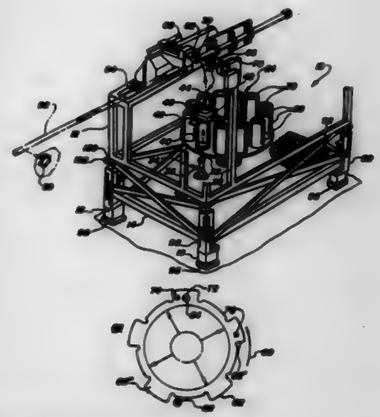
blade (34) housed inside a recess (33) in the top face of said supporting surface (13) and in which is defined a first electric contact, and a flexible blade (35) extending upwards beyond the top face of said supporting surface (13) and in which is defined a second electric contact, said pack (12) on being fed on the said supporting surface (13), pressing said flexible blade (35) on the said fixed blade (34) and so electrically contacting the same.

5,443,357
APPARATUS FOR FORMING A TYNE LAYER IN AN AUTOMATIC BRICK STACKING SYSTEM
Harry D. Leeds, Clarksville, Ark.; Thomas M. Fisher, Enka, and Paula S. Fuss, Asheville, both of N.C., assignors to Artech, Clarksville, Ark.
Filed May 28, 1993, Ser. No. 69,020
Int. Cl.[6] B65G 57/03
U.S. Cl. 414—792.9 26 Claims



1. An apparatus for forming a tyne layer in an automatic brick stacking system having a conveyor for moving courses of brick from a kiln car to a stacking and straping station, said apparatus comprising:
(a) a set-down transfer head for removing a course of brick from said conveyor;
(b) a separation conveyor located transversely to said conveyor for receiving brick from said set-down transfer head and conveying the bricks, said separation conveyor having a plurality of parallel, spaced-apart conveying means defining an upper surface for moving the bricks in a longitudinal direction along said upper surface;
(c) stop means attached to said separation conveyor for selectively engaging and stopping the movement of bricks therepast said stop means; and
(d) a first lift means disposed between said conveying means and between one end of said separation conveyor and said stop means for lifting and redepositing a portion of the bricks upstream of said stop means, whereby said conveying means, stop means, and first lift means are sequentially operated in a cooperative relationship to space the rows of brick apart in the longitudinal direction of conveyance and at predetermined intervals to form said tyne layer.

5,443,358
INDEXING PART LOADER
David J. Yasnicllo, Goodrich, Mich., assignor to Burton Industries, Inc., Goodrich, Mich.
Filed Apr. 30, 1993, Ser. No. 56,379
Int. Cl.[6] B65G 59/02
U.S. Cl. 414—796.9 2 Claims



1. A part transfer machine comprising:
a carousel magazine holder having a plurality of circumferentially spaced tubular magazines, each for containing a vertical stack of parts;
means for successively aligning one of said magazines with an unloading station;
an unloading mechanism at said station arranged to elevate a stack of parts in said aligned magazine;
means for sensing a part adjacent the top of said magazine;
means responsive to said sensor for separating the top part from the stack;
a pickup head arranged for rotation between a horizontally disposed pickup position in which the separated top part is gripped and a vertical transport position;
an indexing head;
displacement means in said pickup head for advancing said part into said indexing head;
means in said pickup head for rotating said part;
said indexing head stopping rotation of said part at a predetermined angular position;
said displacement means retracting said part from said indexing head to said transport position while maintaining said predetermined angular position; and

a shuttle mechanism for moving said pickup head into alignment with a use position;

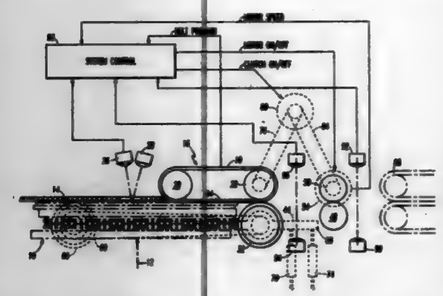
whereby said displacement means can advance said part into said use position.

5,443,359

APPARATUS FOR SEPARATING AND DELIVERING FLAT ARTICLES OF RANDOM LENGTH AND THICKNESS FROM A STACK

Charles M. Miller, Seven Valleys, Pa.; Mark W. Westerdale, Millersville, Md.; David J. Tilles, Baltimore, Md., and John O. Kurtz, Laurel, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 14, 1993, Ser. No. 61,384
Int. Cl.[6] B65G *59/00*
U.S. Cl. 414—798.9 13 Claims



1. Apparatus for separating individual flat articles of random thickness from one end of a stack of such articles and delivering separated articles, on command, to a transport device, said apparatus comprising:

a pick-off device having a friction surface drivable in a direction of article delivery and oriented to engage an exposed surface on one article of random thickness at the one end of the stack and advance said one article in the direction of delivery;

an anti-doubling device including a single roller having a friction surface selectably engagedly drivable only in the direction of article delivery for restricting advancing movement of other articles by said pick-off device;

a delivery device having a drivable friction nip for pulling a separated article from said pick-off device in the direction of article delivery;

means for operating said pick-off device and said delivery device to position each separated article in said friction nip in readiness for delivery, on command, to the transport device;

said means for operating said pick-off device and said delivery device further comprising an article sensing device having first and second states to indicate respectively, the absence and presence of an article in a reference plane normal to the direction of article delivery, the reference plane being located downstream from said delivery device and upstream from the transport device; and

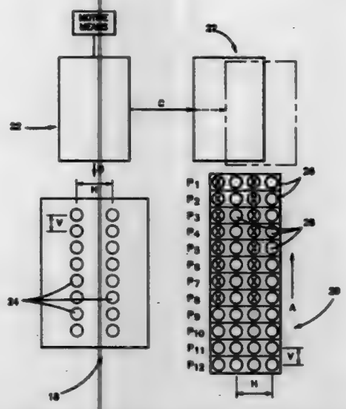
means for interrupting operation of the delivery device in response to a change of the sensing device from said first state to said second state.

5,443,360

METHOD AND APPARATUS FOR TRANSFERRING HOLLOW PLASTIC ARTICLES

Douglas Lamb, Toronto, and Gordon Elliott, Islington, both of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation of Ser. No. 957,888, Oct. 8, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,350
Int. Cl.[6] B65G *47/30*
U.S. Cl. 414—799 24 Claims



1. A method for continuous transfer of articles from a first station to a holding means at a second station for transfer to a final station, which comprises:

providing a plurality of articles at a first station arranged in a first number of N_1 columns;

transferring a batch of said articles, wherein said batch includes at least two articles from each of the N_1 columns, in a single transfer step on a carrying means from the first station to holding means which form an array of N_2 columns at a second station, wherein N_2 differs from N_1 and equals N_1 times a fixed number;

advancing at least a portion of said articles from said transferred batch from said second station to a final station, wherein said portion contains fewer articles than said transferred batch;

transferring a further batch of said articles from each of the N_1 columns in a single transfer step on a carrying means from the first station to holding means which form an array of N_2 columns at the second station;

advancing a further portion of said articles from the second station to the final station, wherein said portion contains fewer articles than said transferred batch;

including the step of retaining the articles on the holding means after transfer thereto from the carrying means, all the way to the final station;

wherein said first station is an injection molding station which molds A articles per unit time, and wherein said holding means is a plurality of pallets, each holding B articles, the method further including the step of advancing said pallets at a rate corresponding to A/B pallets per unit time so as to synchronize operation of said second station with operation of said first station; and

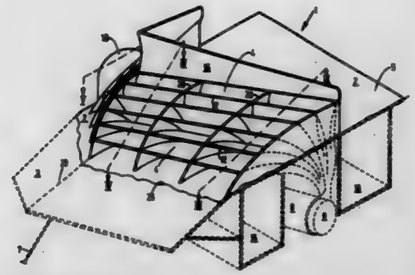
wherein a first batch of articles of the N_1 columns of the first station are transferred to a set of columns of the N_2 columns of the second station, and then another batch of articles of the N_1 columns of the first station are transferred to another set of columns of the N_2 columns of the second station after an advanced number of holding means has been replaced.

5,443,361

PLANT FOR THE RECOVERY OF ENERGY FROM WAVES IN WATER

Erik Skaarup, Jagersborg Alle 26, DK-2920 Charlottenlund, Denmark

PCT No. PCT/DK91/00329, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO93/09347, PCT Pub. Date May 13, 1993
PCT Filed Nov. 1, 1991, Ser. No. 211,840
Int. Cl.[6] F03B *13/12*
U.S. Cl. 415—3.1 10 Claims



1. A plant for floating on a surface of a body of water and recovering energy from wave action in said body of water comprising

a wedge shaped body with a central point and anchor means extending from the area of said central point so that wind action will maintain said body with a leading edge facing toward said waves;

said body having a ramp for entrance of said waves and a guide device for guiding said waves to a reception pipe located within said body;

an energy converting engine in communication with said reception pipe;

said guide device comprising a plurality of water reception funnels formed of curved plates arranged to define a plurality of gaps between adjacent plates, said gaps having a cross-section which narrows down in a direction toward said energy converting engine;

said curved plates having inlet edges positioned to receive said waves and exit edges facing toward said energy converting engine; said inlet edges being mutually displaced in a steplike configuration with a lowest positioned inlet edge being closest to said leading edge of said body.

5,443,362

AIR TURBINE

Timothy E. Crites; Douglas C. Barker; Joseph W. Clifford, all of North Canton, and Darwin S. Crouser, Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Mar. 16, 1994, Ser. No. 213,735
Int. Cl.[6] F01D *1/08*
U.S. Cl. 415—184 10 Claims

1. An air turbine including:

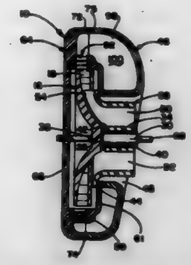
a) a turbine housing;

b) an inlet and an outlet for said housing;

c) a turbine rotor disposed in said turbine housing between said inlet and said outlet;

d) a stator also disposed in said turbine housing between said inlet and outlet;

e) said stator formed of two confronting pieces having oppositely extending stator blades; and



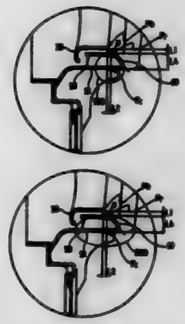
f) said stator blades being interleaved whereby stator blading may be more easily provided in said turbine housing.

5,443,363

ASSEMBLY OF FAN AND SHROUD

Kyung-cook Cho, Seoul, Rep. of Korea, assignor to Halla Climate Control Corporation, Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 95,920, Jul. 23, 1993, abandoned. This application Apr. 4, 1994, Ser. No. 222,237
Claims priority, application Rep. of Korea, Jul. 24, 1992, 92-13710
Int. Cl.[6] F04D *29/54*
U.S. Cl. 415—211.1 2 Claims



1. A fan and shroud assembly which includes a motor, said fan rotated by said motor and having a plurality of blades, and said shroud surrounds said fan, wherein said shroud comprises:

an inner ring which is substantially cylindrical to guide airflow by surrounding said blades;

an outer ring which has a diameter greater than that of said inner ring and surrounds both said blades and inner ring; and

a bell-mouthed airflow guide portion which structurally connects said inner ring and outer ring and has a diameter which is gradually enlarged in an air exhaust direction, and a section of said airflow guide portion having the shape of part of a circle or ellipse, which starts from a point on an air-exhaust-side extension line of said inner ring and is connected to said outer ring, with a center and a point of tangency of said circle or ellipse both lying along an extension line of said outer ring,

wherein a contact point of said inner ring and said airflow guide portion and a line perpendicular to the rotation axis of said fan and passing the center of the circle or ellipse deviates from a line perpendicular to the rotation axis of said fan and passes the edge point of said blade on the air exhaust side by a distance being less than or equal to a value in which the vertical distance between said edge

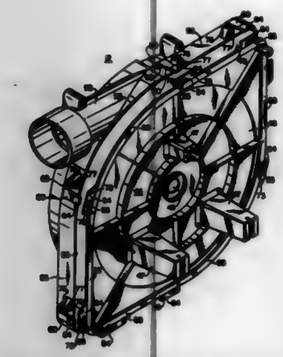
point of said blade and said contact point is divided by tan 10°.

5,443,364

SNAP-FIT INDUCER HOUSING AND COVER FOR GAS FURNACE

Mayank C. Mistry, Indianapolis; Timothy J. Waterman, Carmel, and Michael J. Larsen, Danville, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 18, 1993, Ser. No. 137,719
Int. Cl.[6] F01D 21/14
U.S. Cl. 415—214.1 6 Claims



1. An inducer for a gas furnace, said inducer of the type having a housing and a cover for the housing, the cover having an interior side and an exterior side for receiving an inducer motor with a drive shaft projectable through the cover to the opposing interior side to receive a fan, the housing having an intake port and a discharge port, the improvement comprising:

fastening means for snapping the housing and cover into a locked condition relative to each other, said fastening means being formed about the periphery of the inducer and including a plurality of flexible arms formed from a resilient material, each of the arms having a shoulder at its proximal end and a barbed detent at its distal end, said plurality of flexible arms being spaced around the periphery of the inducer with the shoulder of each arm integrally formed with the inducer to create a unitary structure;

receiving means for engaging said fastening means, said receiving means being formed about the periphery of the inducer a plurality of outwardly directed tabs spaced around the periphery of the inducer, each of the tabs corresponding to one of said plurality of flexible arms, being formed from a resilient material, and having an aperture for receiving the barb detent of a corresponding flexible arm;

sealing means for creating an air-tight seal between the inducer housing and cover wherein when said fastening means and receiving means are lockingly engaged with each other, an even pressure is exerted on said sealing means;

said inducer housing including a side wall with said plurality of flexible arms being spaced around the outside of the wall; and

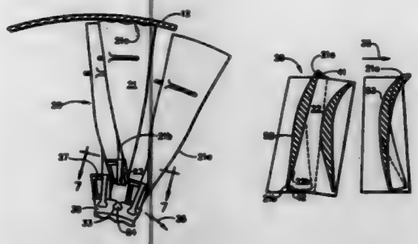
an outwardly directed boss formed proximate each of said plurality of flexible arms so that when the cover and housing are locked together, each tab is in supporting contact with a corresponding boss.

5,443,365

FAN BLADE FOR BLADE-OUT PROTECTION

Theodore R. Ingling, Loveland, and Gary B. Manharth, Milford, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 2, 1993, Ser. No. 160,650
Int. Cl.[6] F01D 5/22, 5/30
U.S. Cl. 416—193 A 15 Claims



11. In a turbofan engine a fan blade system comprising:

a blade retaining member having a plurality of dovetail slots for matingly engaging a plurality of fan blades, each of said fan blades comprising a dovetail portion, a shank portion, a platform portion, an airfoil portion;

said dovetail portion engaging a mating blade retaining dovetail slot;

said shank portion attaching to said dovetail portion;

said platform portion being asymmetrically attached to and supported by said shank portion and including a trailing side and a leading side;

said airfoil portion being asymmetrically attached to said platform portion and including a trailing edge, a leading edge, and a root chord line extending between said leading edge and said trailing edge on said platform;

said airfoil leading edge bowing forward in a region extending radially outward from said platform portion, said region including a primary location where a similarly configured leading blade would initially contact said airfoil during a blade-out condition of said leading blade, and a secondary location where said leading blade would have secondary contact with said airfoil during said blade-out condition, for reducing the possibility of failure of said airfoil;

said platform leading side running generally parallel to said airfoil root chord line and configured within approximately ½ of an inch of said airfoil root chord line, such that failure of said airfoil upon contact between said airfoil and said leading blade during said bade out condition is prevented by reducing impulse loading upon said airfoil; and

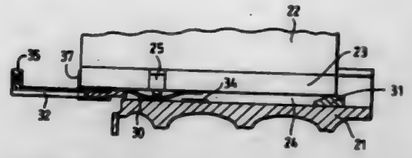
said platform trailing side including a structured rail to resist platform bending during contact loading, a chamfer positioned for avoiding penetration of said airfoil upon secondary contact between said leading blade and said airfoil during said blade-out condition, and a radiused forward corner for resisting puncture of said airfoil and establishing said primary location aft of a location contacted by a non-radiused corner.

5,443,366

GAS TURBINE ENGINE FAN BLADE ASSEMBLY

David S. Knott; Czeslaw Palasskiewicz, both of Loughborough; Martyn P. Adams, Leicestershire, and Sivasubramaniam K. Sathianathan, Burton-on-Trent, all of England, assignors to Rolls-Royce plc, London, England

Filed Oct. 19, 1993, Ser. No. 137,785
Claims priority, application United Kingdom, Nov. 11, 1992, 9223593
Int. Cl.[6] F01D 5/30
U.S. Cl. 416—221 14 Claims



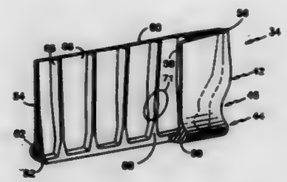
1. A fan blade assembly for a ducted fan gas turbine engine comprising a hub and an annular array of fan blades extending radially outwardly from said hub, each of said fan blades having a root portion which locates in one of a plurality of correspondingly shaped, generally axially extended grooves in the periphery of said hub to provide radial retention of said fan blades, each said root portion having an axial extent substantially the same as that of said respective groove and leading and trailing ends, each of said fan blade root portions and its corresponding hub groove being provided with generally radially extending slots with said slots being located intermediate said ends of said root portions and said hub grooves, each slot in said hub groove being aligned with a corresponding slot in its associated fan blade root portion, key means being provided to locate in said aligned slots and resilient biasing means being associated with each of said key means, each said resilient biasing means comprising a leaf spring which is positioned so as to extend parallel to said axial extent of an associated root portion to bias each of said key means into a first position in which it locates in said aligned slots to prevent relative axial movement between said fan blade root portions and said hub, from a second position in which said key means does not prevent such relative axial movement, whereby retention of said key means in said second position permits axial assembly and disassembly of each of said fan blade root portions and its corresponding hub groove, locking means being provided to selectively lock each of said key means in said first position.

5,443,367

HOLLOW FAN BLADE DOVETAIL

Marc Samit, Hartford, and Michael A. Weiss, Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 22, 1994, Ser. No. 200,128
Int. Cl.[6] F01D 5/30
U.S. Cl. 416—248 6 Claims



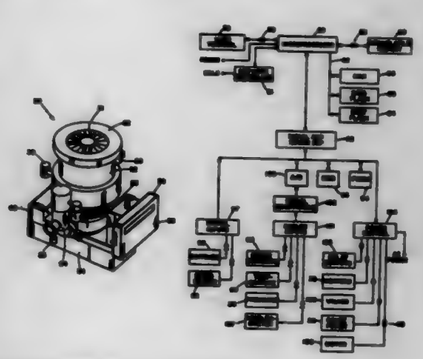
1. A gas turbine engine fan blade comprising an airfoil portion bounded by a wall structure having a concave wall and a convex wall spaced apart and integrally joined by a trailing edge and a leading edge, said airfoil portion having a plurality of spaced apart supporting ribs extending radially in a spanwise direction and connecting said convex wall and said concave wall in thickness direction, said airfoil portion terminating in a tip on a first end thereof and having a dovetail root portion formed on a second end of said airfoil portion of said fan blade, said spaced apart supporting ribs extending into said dovetail root portion of said fan blade, said supporting ribs defining hollow cavities therebetween, said hollow cavities terminating in a hollow-to-solid transition within said dovetail portion thereof.

5,443,368

TURBOMOLECULAR PUMP WITH VALVES AND INTEGRATED ELECTRONIC CONTROLS

Alan L. Weeks, South Easton; Gerald J. Fortier, Plainville; Stephen R. Matte', Norfolk; Peter W. Gaudet, Hyde Park; Martin Stein, Bedford; Steven C. Rosner, Charlestown, and Robert J. Lepofsky, Wellesley, all of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Filed Jul. 16, 1993, Ser. No. 92,692
Int. Cl.[6] F04B 49/00
U.S. Cl. 417—27 28 Claims



20. A vacuum system comprising:

a turbomolecular vacuum pump; a vent valve for introducing gas into the turbomolecular pump for slowing the pump;

a purge valve for introducing purge gas into the turbomolecular pump to dilute gas being pumped by the turbomolecular pump;

a roughing valve for opening a foreline of the turbomolecular pump to a roughing pump; and

an electronic controller for controlling shutdown of the vacuum system by turning off power to the turbomolecular pump and opening the vent valve, and subsequently closing the roughing valve.

5,443,369

SELF-CONTAINED INSTRUMENT AND SEAL AIR SYSTEM FOR A CENTRIFUGAL COMPRESSOR

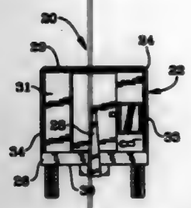
Daniel T. Martin, Clemmons, and Devin D. Biehler, Mocksville, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 9, 1993, Ser. No. 74,078
Int. Cl.[6] F04D 23/00
U.S. Cl. 417—53 4 Claims

1. A self-contained seal air and instrument air system comprising:

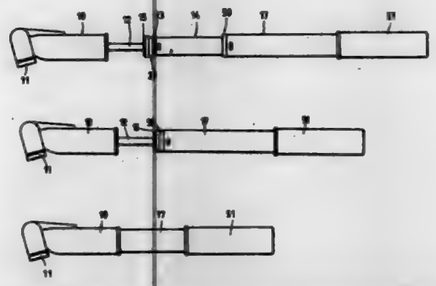
a compressor having an inlet, a discharge, and at least one rotating shaft which has disposed thereon at least one set of seals;

engine means for providing a motive force to the compressor;
a controllable inlet valve flow connected with the compressor inlet;
electronic controller means for directing compressor operation;
a receiver tank having an inlet through which compressed air enters and an outlet port;
means for filtering the compressed air flowing from the receiver tank outlet port;
means for separating the compressed air flowing from the receiver tank into a first path which provides a first source of seal air to the seals of the rotating shaft of the compressor, and a second path which provides instrument air;
controllable valve for depressurizing the compressed air system;
means for filtering and drying the compressed air entering the instrument air path;
means for separating the compressed air flowing in the instrument air path into a first path which provides actuating air to the controllable inlet valve and the controllable depressurizing valve, and a second path which provides a source of signal air;
pressure regulator means flow connected with the actuator air path;
filter regulator means for filtering the air entering the signal air path and for regulating the pressure in the signal air path to a predetermined pressure;
first and second current-to-pressure converter means flow connected in the signal air path and disposed in electronic signal receiving relation to the electronic controller, and wherein the first current-to-pressure converter is disposed in pneumatic signal transmitting relation to the controllable inlet valve and the second current-to-pressure converter is disposed in pneumatic signal transmitting relation to the controllable depressurizing valve;
pressure regulator means flow connected with the seal air path; and
a second source of seal air provided from a tap port disposed at a predetermined location on the compressor discharge.

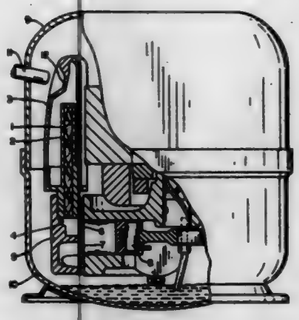


5,443,370
TWO CYLINDER MANUAL AIR PUMP
Ro-Pin Wang, 5F, No. 1, Lane 85 Kwang Fu North Rd., Taipei City, Taiwan
Filed May 2, 1994, Ser. No. 236,048
Int. Cl.[6] F04B *27/08, 33/00, 39/10*
U.S. Cl. 417—238 6 Claims

1. An air pump comprising:
a head provided with a connection head engageable with an air valve of a tire;
an air guiding tube fastened at one end thereof with said head;
a two-way air admitting piston fastened to another end of said air guiding tube such that said two-way air admitting piston is in communication with said connection head;
a first cylinder tubular in shape and fitted over said two-way air admitting piston such that said first cylinder can be moved back and forth in the direction of the axis of said air guiding tube; and
a first one-way valve disposed in an anterior end of said first cylinder, which is contiguous to said head, said first one-way valve being capable of permitting air to enter only said first cylinder;
wherein a second piston is disposed in a posterior end of said first cylinder, which is opposite to said anterior end of said first cylinder, said second piston having an outer diameter greater than that of said first cylinder and being capable of permitting air to move freely into and out of said first cylinder;
wherein a second cylinder is fitted pivotally over said second piston such that said second cylinder can be caused to move back and forth in the direction of the axis of said first cylinder, said second cylinder having an inner diameter greater than that of said first cylinder and communicating with said first cylinder via said second piston by which a pivoting portion of said second cylinder is sealed off in an airtight manner;
wherein a second one-way valve is disposed in a posterior end of said second cylinder such that said second one-way valve permits air to enter only said second cylinder; and
wherein said first one-way valve is provided in an outer side thereof with a connection portion engageable with a connection portion located at an anterior end of said second cylinder so as to permit said second cylinder to be fastened with said first cylinder in such a manner that said second cylinder can not be caused to move in relation to said first cylinder.



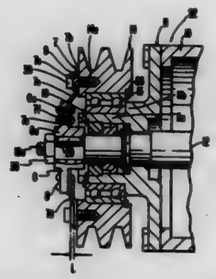
5,443,371
NOISE DAMPER FOR HERMETIC COMPRESSORS
Leonelo A. Calciolari, Sao Paulo, Brazil, assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Dec. 12, 1994, Ser. No. 353,826
Int. Cl.[6] F04B *53/00*
U.S. Cl. 417—312 9 Claims



1. A compressor comprising:

a housing;
a compressor unit disposed within said housing, said unit including a suction passageway for conveying refrigerant at suction pressure to said compressor unit; and
a damper member twisted in the form of a helix disposed within said suction passageway.

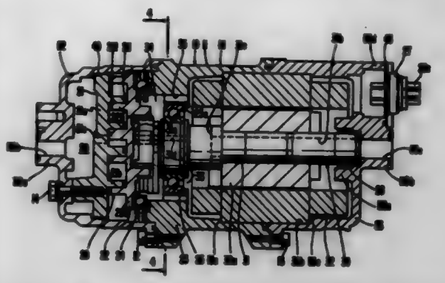
5,443,372
COUPLING MECHANISM FOR A COMPRESSOR
Hiroshi Kanoh, Gunma, Japan, assignor to Sanden Corporation, Isesaki, Japan
Filed Sep. 1, 1993, Ser. No. 114,188
Claims priority, application Japan, Sep. 2, 1992, 4-067248 U
Int. Cl.[6] F04B *9/00*
U.S. Cl. 417—319 32 Claims



1. A coupling mechanism for a compressor, said compressor comprising a compressor housing having an open end surface, a front end plate attached to said open end surface of said compressor housing, a drive shaft rotatably disposed within said compressor housing, said drive shaft having an outer end portion terminating outside of said compressor housing, and a tubular extension extending outwardly from said front end plate parallel to the rotational axis of said drive shaft, a pulley rotationally supported on a bearing fitted on a peripheral outer surface of said tubular extension, an armature including a hub formed at a center of said armature and an armature plate extending outwardly from said hub, said armature connected to said outer end portion of said drive shaft, the improvement comprising:
said coupling mechanism including at least two coupling plate members, each of said plate members including a first portion located at an inner radial end of said plate member, a second portion located at an outer radial end of said plate member, and a third portion located between said first portion and said second portion; said third portion connecting said first portion to said second portion and said plate members radially connected with said armature plate and said pulley at regular angular intervals around a circumference of said hub of said armature, so that said first portion of each of said plate members is secured to an axial end surface of said armature plate by at least one fastening means and said second portion of each of said plate members is secured to an axial end surface of said pulley by at least one fastening means, each of said plate members including at least one breakaway portion formed in said third portion of said plate member.

5,443,373
Patent Not Issued For This Number

5,443,374
MOTOR DRIVEN FLUID COMPRESSOR
Yuji Yoshii, Takaaki, and Takayuki Kudo, Isesaki, both of Japan, assignors to Sanden Corporation, Isesaki, Japan
Continuation of Ser. No. 966,397, Oct. 26, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 183,781
Claims priority, application Japan, Oct. 24, 1991, 3-278851
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.1 10 Claims



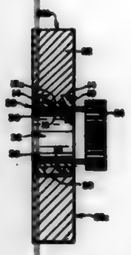
1. A motor driven hermetic fluid compressor with a hermetically sealed housing, said compressor housing including a first cup-shaped portion, a second cup-shaped portion, and a cylindrical portion disposed between said first and second cup-shaped portions, said compressor further comprising:
an inner block extending from said cylindrical portion and dividing said compressor housing into a first cavity and a second cavity;
a compressing mechanism disposed in said second cavity for compressing a gaseous fluid, said compressor comprising:
an inlet;
a fixed scroll having an end plate from which a first spiral wrap extends; and
an orbiting scroll having an end plate from which a second spiral wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets;
a driving mechanism disposed in said first cavity for driving said compressing mechanism, said driving mechanism comprising:
a drive shaft drivingly connected to said compressing mechanism, said drive shaft having a bore extending therethrough for conducting said gaseous fluid to said inlet of said compressing mechanism;
a rotor drivingly connected to said drive shaft for transferring rotational power to said drive shaft; and
a stator disposed outside of said rotor, said stator and rotor spaced by an air gap therebetween;
supporting means, integrally connected to said housing, for fixedly securing said stator within said first cavity;
said inner block rotatably supporting an inner end portion of said drive shaft through a bearing, said bearing disposed in a central hole in said inner block and forming a first flow passage through said inner block, said inner block dividing an inner space of said housing into a first inner space in which said driving mechanism is disposed and a second inner space in which said compressing mechanism is disposed; and
a second flow passage formed through said inner block.

5,443,375

TROCHOIDAL PISTON CONSTRUCTION

George K. Cureton, Croydon, and Mark S. Profaca, Kew, both of Australia, assignors to Scalzo Automotive Research Limited, Victoria, Australia

Filed May 24, 1994, Ser. No. 248,427
Claims priority, application Australia, May 24, 1993, PL8942
Int. Cl.[6] F01C *1/10*
U.S. Cl. 418—61.3 4 Claims



1. A multi-lobed rotor assembly, for a trochoidal rotary engine which includes a crankshaft having a crankpin within a working chamber, said assembly including:

i) a multi-lobed trochoidal rotor which defines a bore, extending between opposite, flat side faces of the rotor, by which the rotor is rotatably mountable on the crankpin of the crankshaft; and

ii) a steel hub which is secured in the bore so as to project beyond one of the opposite side faces of the rotor and which provides means by which the rotor is rotatably mountable on the crankpin;

characterized in that

a) the rotor is made of a material which has a co-efficient of thermal expansion which is different to the co-efficient of thermal expansion of the steel hub; and

b) the hub defines an outer peripheral surface which is provided with a circumferentially extending external keyway and the rotor is formed on and around the keyway such that the material of which the rotor is formed is interlocked with the keyway;

whereby the hub is mechanically inter-locked with the rotor to allow for differences in the thermal expansion co-efficient of the rotor and hub, while substantially preventing relative rotation between the rotor and hub and substantially preventing radial separation of the rotor and hub.

5,443,376

LUBRICATING DEVICE FOR HORIZONTAL TYPE ROTARY COMPRESSOR

Song Choi, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

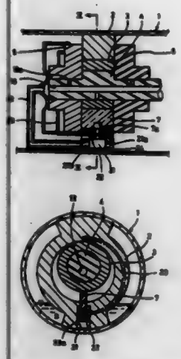
Filed Dec. 15, 1993, Ser. No. 168,373
Claims priority, application Rep. of Korea, Dec. 17, 1992, 25800/1992; Dec. 29, 1992, 27380/1992
Int. Cl.[6] F04C *18/00*
U.S. Cl. 418—63 12 Claims

1. A lubricating device for a horizontal type rotary compressor, said compressor having a compression cylinder fixed in a compressor shell and having a cylindrical cavity therein, an eccentric rotating shaft axially rotatably received in said cavity of the cylinder, main and sub bearings coupled to opposed sides of said cylinder for rotatably supporting said eccentric rotating shaft, and a roller mounted about said shaft, comprising:

a vane movably received in a vane slot provided in a lower section of said compression cylinder, a top of said vane contacting with an outer surface of said roller such that it vertically reciprocates in accordance with rotation of said shaft;

a cylindrical oil pumping chamber provided in said compression cylinder under said vane, said chamber having an oil inlet port and an oil outlet port for sucking and delivering lubrication oil, respectively, said ports having individual hydraulic diodes;

an oil piston received in said pumping chamber such that it elastically vertically reciprocates in said pumping chamber in accordance with vertical reciprocation of said vane;



a steel wire spring connected at one end thereof to said oil piston and at the other end thereof to one of said compression cylinder, said main bearing and said sub bearing for biasing said oil piston upwards at the outside of said pumping chamber; and

an oil feed pipe connected between said oil outlet port of the pumping chamber and an oil conduit of said eccentric rotating shaft.

5,443,377

INCREASED EFFICIENCY APPARATUS FOR LINING A PIPE WITH A CEMENT MORTAR

Alfred G. Perkins, McCormick, S.C., and Craig R. Perkins, Aurora, N.Y., assignors to Mainlining Service, Inc., Elma, N.Y.

Continuation-in-part of Ser. No. 792,138, Nov. 13, 1991, Pat. No. 5,246,641. This application Sep. 17, 1993, Ser. No. 122,997
Int. Cl.[6] B32B *35/00*; B05C *9/12*
U.S. Cl. 425—11 5 Claims



1. Apparatus for lining a section of water main pipe with a cement mortar, said apparatus comprising:

means for depositing a cement mortar lining on the interior surface of the section of water main pipe;

means for introducing carbon dioxide gas into the section of water main pipe in such a quantity that the carbon dioxide will react with calcium compounds in the mortar to cause a crust of calcium carbonate to be formed on the interior surface of the cement mortar lining; and

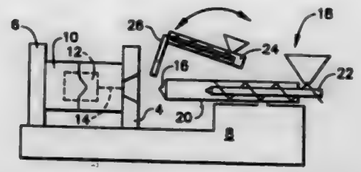
means for regulating the introduction of carbon dioxide gas to maintain a minimum positive pressure range thereof within the section of water main pipe, said regulating means comprising means for measuring pressure within the minimum positive pressure range within the interior of the section of water main pipe.

5,443,378

APPARATUS FOR THE SANDWICH METHOD OF INJECTION MOLDING

Christoph Jaroschek, Engingen; Reinhard Steger, Freiburg; Wolfgang Nesch, Lahr-Sulz; Alexander Gehring, Bahlingen, and Karlheinz Bourdon, Reute, all of Germany, assignors to Ferromatik Milacron Maschinenbau GmbH, Malterdingen, Germany

Filed Jul. 11, 1994, Ser. No. 272,483
Int. Cl.[6] B29C *45/16*
U.S. Cl. 425—130 5 Claims



1. Apparatus for injection molding a plastic article in a mold cavity, the molded article having a sandwich layer configuration that includes an outer surface of a skin material surrounding an inner core material, comprising:

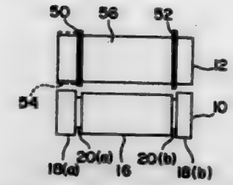
a main injection unit having a reciprocating feed screw for plasticizing the core material, an auxiliary unit for plasticizing the skin material, a hot runner manifold connected to the auxiliary unit, and means for alternately positioning the hot runner manifold between a first position wherein the hot runner is connected to the main injection unit and a second position wherein the hot runner does not obstruct positioning of the main injection unit, such that when the hot runner is in the first position, said skin material can be transferred from the auxiliary unit into the main injection unit.

5,443,379

PRODUCTION OF PRODUCT SHEETS HAVING WAVED MARGINAL PORTIONS

Jau Y. Hsu, Brookfield, and Thomas S. Orzech, New Milford, both of Conn., assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of Ser. No. 852,996, Mar. 13, 1992, abandoned. This application May 27, 1994, Ser. No. 250,039
Int. Cl.[6] A21C *11/00*
U.S. Cl. 425—335 2 Claims



1. An apparatus for preparing a plastic material sheet having a waved marginal portion comprising:

first and second circumferential surfaces positioned and configured for having parallel longitudinal axes and for forming therebetween at least one set of differing nip clearance gap portions comprising an intermediate nip clearance gap portion, defining an intermediate portion gap distance, flanked between a first flanking nip clearance gap portion, defining a first portion gap distance, and a second flanking nip clearance gap portion, defining a second portion gap distance, wherein the intermediate portion gap distance is greater than the second portion gap distance and the second portion gap distance is greater than the first portion gap distance, and wherein the flanking portions of the first surface have a diameter greater than a diameter of the intermediate portion of the first surface, and wherein the intermediate portion of the second surface has a diameter greater than a diameter of surface portions flanking the second surface intermediate portion;

means for counter-rotating the surfaces; and

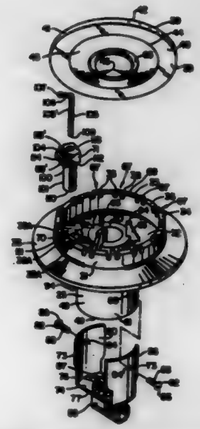
means for adjusting the distance of the nip clearance gap.

5,443,380

BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 147,662, Nov. 2, 1993, Pat. No. 5,328,358, which is a continuation of Ser. No. 942,434, Sep. 9, 1992, abandoned, which is a division of Ser. No. 795,106, Nov. 20, 1991, abandoned, which is a division of Ser. No. 710,657, Jun. 5, 1991, Pat. No. 5,083,915, which is a division of Ser. No. 508,799, Apr. 12, 1990, Pat. No. 5,040,970. This application Jul. 5, 1994, Ser. No. 270,449
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[6] F23Q *3/00*
U.S. Cl. 431—266 7 Claims



1. In a burner construction comprising a burner body means having a chamber means therein and having opposed end means one of which is open to said chamber means and the other of which has means for interconnecting a source of fuel to said chamber means, and a removable cap means closing said one end means of said body means, said burner construction having port means interconnecting said chamber means to the exterior of said burner construction and through which said fuel can issue to burn externally to said burner construction, the improvement wherein said body means has an annular surface means interrupted by a plurality of radially disposed groove means that are spaced apart by land means of said annular surface means and that define a generally repeating pattern of a set of a certain number of said groove means and said land means separated from the next adjacent set of said certain number of said groove means and said land means by one of said land means that is not part of said sets and that has an annular length that is longer than the annular length of any one of said land means of said sets separated thereby and wherein said cap means has an annular surface means cooperating with said annular surface means that has said groove means therein to close said groove means on one end thereof whereby said groove means define said port means, said annular surface

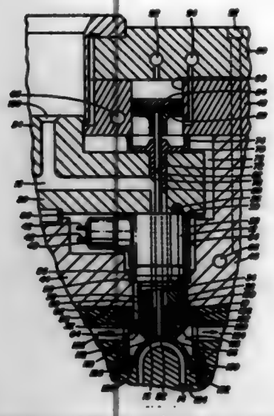
means that has said groove means therein having an igniter receiving slot means therein, said slot means in effect causing a side of each of the two said groove means that are respectively disposed at opposite ends of said slot means to be missing, and an igniter assembly having a part thereof disposed in said slot means and defining the missing side of each of the two of said groove means that are respectively disposed on opposite sides of said igniter assembly.

5,443,381

INJECTION MOLDING ONE-PIECE INSERT HAVING COOLING CHAMBER WITH RADIAL RIB PORTIONS

Johst U. Gellert, 7A Prince St., Georgetown, Ontario, Canada L7G 2X1

Filed Jul. 18, 1994, Ser. No. 276,623
Int. Cl.[6] B29C *45/23*
U.S. Cl. 425—549 5 Claims



1. In an injection molding one-piece gate and cavity insert to be mounted in a mold between a heated nozzle and the cavity, the gate and cavity insert having a rear surface with a recessed portion, a front surface which partially forms a cavity, and a gate extending centrally therethrough from the rear surface to the front surface to convey melt from the nozzle to the cavity, the gate and cavity insert having an outer surface, a cooling fluid inlet, a cooling fluid outlet, and a circular cooling fluid chamber, the outer surface of the gate and cavity insert having a generally cylindrical portion with the cooling fluid inlet and the cooling fluid outlet extending inwardly therefrom opposite to each other, the generally circular cooling fluid chamber extending in the gate and cavity insert to convey cooling fluid from the cooling fluid inlet both ways around the gate to the cooling fluid outlet, the improvement wherein;

the front surface of the gate and cavity insert has a recessed portion to partially form a convex portion of the cavity, the gate and cavity insert having a cavity wall portion with a predetermined thickness extending between the cooling fluid chamber and the cavity,

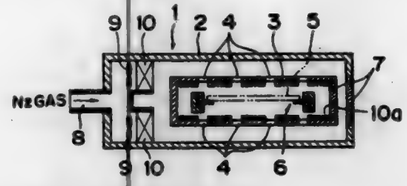
the gate and cavity insert having a plurality of first radially extending rib portions projecting frontwardly into the cooling fluid chamber, and a plurality of second radially extending rib portions projecting rearwardly from the cavity wall portion into the cooling fluid chamber, the first frontwardly extending rib portions alternating with and being sufficiently spaced from the second rearwardly extending rib portions to provide a pair of tortuous passages through the cooling fluid chamber for the cooling fluid flowing from the cooling fluid inlet to the cooling fluid outlet.

5,443,382

ATMOSPHERIC OVEN

Koichi Tsurumi, Neyagawa; Shinji Shimazaki, Nishinomiya, and Koichi Kumagai, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 935,987, Aug. 27, 1992, Pat. No. 5,370,531. This application Nov. 8, 1993, Ser. No. 148,494
Int. Cl.[6] F27B *9/28*
U.S. Cl. 432—59 10 Claims



1. An atmospheric oven, comprising:

an outer oven having side walls and an interior with upper and lower interior surfaces;

a gas supply extending from one of said side walls of said outer oven for supplying a gas to said outer oven;

a gas feeding fan disposed inside said outer oven adjacent to said gas supply for feeding supplied gas into said interior of said outer oven;

an inner oven disposed in and in gaseous communication with said interior of said outer oven and spaced from said upper and lower interior surfaces of said outer oven so as to define spaces between said outer oven and said inner oven such that gas fed to said interior of said outer oven can be introduced into said inner oven, and wherein said inner oven has upper and lower walls having a plurality of holes formed therein for introducing gas fed by said gas feeding fan into said interior of said outer oven into said inner oven;

a heater disposed between said outer oven and said inner oven for heating the gas supplied by said gas supply; and

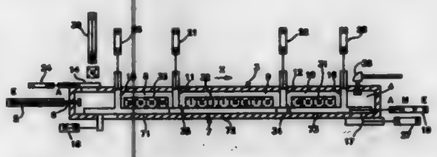
a transport extending through said inner oven for transporting an object along a transport path parallel with said side walls of said outer oven such that the object can be exposed to gas introduced into said inner oven.

5,443,383

PUSHER TYPE FURNACE FOR HEAT-TREATING CHARGES

Friedhelm Kuehn, Muelheim, Germany, assignor to Loi Industrieofenanlagen GmbH, Essen, Germany

Continuation of Ser. No. 218,999, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 51,002, Apr. 20, 1993, abandoned, which is a continuation of Ser. No. 783,840, Oct. 29, 1991, abandoned. This application Oct. 28, 1994, Ser. No. 331,334
Claims priority, application Germany, Oct. 31, 1990, 40 34 653.6
Int. Cl.[6] C21D *1/18*; F27B *9/28*; B65G *47/26*
U.S. Cl. 432—122 32 Claims



1. A pusher type furnace for heat-treating charges carried by charge holding devices, said pusher type furnace having:

an entry chamber;

an exit chamber;

a heat treatment chamber extending between said entry chamber and said exit chamber and comprising substantially rectilinear sections to hold at least one row of such charge holding devices which may be moved in the pusher operating direction;

first door means to separate said heat treatment chamber from said entry chamber;

second door means to separate said heat treatment chamber from said exit chamber;

pusher means for the cyclic transfer of said at least one row of charge holding devices through said heat treatment chamber;

charge holding device carrier means to support said charge holding devices in said heat treatment chamber, said carrier means having at least two sections, each of said sections being adapted to carry at least one of said charge holding devices, at least one of said sections near one end of said heat treatment chamber being adapted to be moved in said pusher operating direction by an actuator coupled to the charge holding device carrier means to create a gap in said row of charge holding devices between two adjecent sections; and

third door means to separate said heat treatment chamber into at least two compartments, said third door means being adapted to be inserted into said at least one gap.

5,443,384

ORTHODONTIC ASSEMBLY AND METHOD

Steven A. Franseen, Denver; David E. Watt, Nederland, both of Colo., and William J. Clark, Lundin Links, Scotland, assignors to RMO, Inc., Denver, Colo.

Filed Apr. 29, 1994, Ser. No. 235,176
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—18 19 Claims



1. An orthodontic assembly comprising:

a first lower bite block having an angled cam surface;

a first upper bite block having an angled cam surface complimentary to the cam surface of said first lower bite block; and

a mounting assembly for separately mounting at least one of said first lower bite block and first upper bite block, including:

attachment means adapted to be fixedly attached directly to a tooth;

block connection means connected to said at least one of said blocks; and,

interconnection means for selectively interconnecting said attachment means and said block connection means.

5,443,385

METHOD OF DISINFECTING AND LUBRICATING DENTAL/MEDICAL DEVICE

Thad J. Overmyer, 132 N. Second St., Danville, Ky. 40422

Filed May 3, 1994, Ser. No. 237,872
Int. Cl.[6] A61C *1/02*; A61L *2/08, 2/00*
U.S. Cl. 433—104 6 Claims

1. A method of disinfecting and lubricating a discrete dental-medical device which comprises

a) immersing said device in a solution comprising

i. about 35% to about 60% by volume of water,

ii. about 3% to about 20% by volume of potable alcohol,

iii. about 40% to about 50% by volume of glycerin,

iv. about 0.01% to about 2.0% by volume of chlorhexidine gluconate,

v. about 0.01% to about 5.0% by volume of polyglycol; and

vi. about one gram of methylcellulouse per liter of solution, and

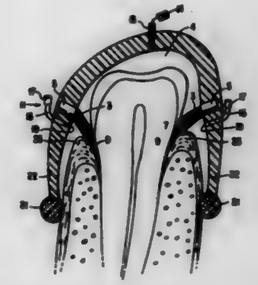
b) autoclaving the device by exposure to heated pressurized steam.

5,443,386

TOOTHBRUSH AND METHOD FOR TREATMENT OF PERIODONTAL DISEASE

John H. Viskup, 106 Main St., Vergennes, Vt. 05461

Filed Sep. 7, 1993, Ser. No. 116,696
Int. Cl.[6] A61C *15/00*
U.S. Cl. 433—216 21 Claims



1. A customized tooth cleansing device comprising:

a U-shaped tray customized to the user's maxillary or mandibular arch for fitting over the maxillary or mandibular arch of the user; and

at least one receptacle means embedded in said tray, said at least one receptacle means removably holding at least one cleaning bristle at a predetermined orientation and depth such that said at least one cleaning bristle in each receptacle is oriented toward a specific periodontal pocket of the user.

5,443,387

PLANNING TOOL INCLUDING SUPPORT HAVING DELIMITED RECEPTION ZONES TO RECEIVE MOVABLE SLIPS

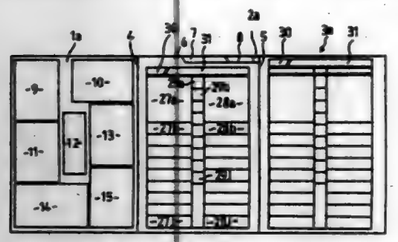
Jérôme Mortemard de Boisse, Boulogne, France, assignor to Avenay Partners S.A.R.L., Boulogne, France

Filed Dec. 23, 1992, Ser. No. 998,113
Claims priority, application France, Jan. 26, 1989, 89 00450
Int. Cl.[6] G09B *19/18*
U.S. Cl. 434—108 7 Claims

1. A planning tool comprising at least one series of movable slips with each of said slips having a first face and a second face,

a pressure sensitive adhesive layer deposited on and partially covering each of said second faces of said movable slips,

first support means having two opposite surfaces, with a first of said surfaces having a plurality of distinct and delimited reception zones for receiving said slips in a changeable



order of classification, with said reception zone positioned to receive said slips with partial overlap between said slips so that only a portion of each slip is visible,

a pad of said slips mounted on said first surface.

5,443,388

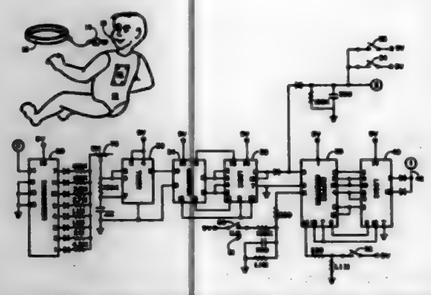
INFANT SIMULATION SYSTEM FOR PREGNANCY DETERRENCE AND CHILD CARE TRAINING

Richard N. Jurmain, and Mary M. Jurmain, both of 10321 Muchacha Way, San Diego, Calif. 92124

Filed Aug. 1, 1994, Ser. No. 283,547

Int. Cl.[5] A63H *3/28*

U.S. Cl. 434—238 **23 Claims**



1. An infant care simulation system for use by an individual in simulating early parenthood which comprises:

a doll having approximate shape and weight equivalent to a young baby;

means within said doll for generating sounds simulating a baby crying;

crying interval timer within said doll for randomly starting said crying sounds within a selected time range;

crying duration timer within said doll for randomly setting crying sound duration within a selected time range;

quieting means for actuation only by an assigned individual to quiet said crying sounds; and

said quieting means requiring continuous actuation by the assigned individual during said crying sound duration.

5,443,389

UNIFIED CONNECTOR INTERFACE

Michael T. Hughes, P.O. Box 1379, Berthoud, Colo. 80513

Filed Jul. 16, 1993, Ser. No. 91,927

Int. Cl.[5] H01R *23/02*

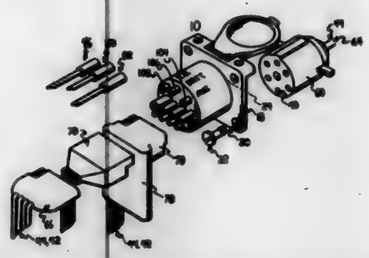
U.S. Cl. 439—35 **23 Claims**

1. A unified connector interface apparatus, comprising:

a) an electrical connector housing having a first end, and a second end;

b) a circular receptacle at the first end of the housing, the receptacle having a plurality of first electrical connectors mounted in a generally circular configuration within the receptacle;

c) a plurality of second electrical connectors extending from the second end of the housing, with four of said second electrical connectors arranged in linear spaced alignment on a first connector portion, and a second connector portion having at least one said second electrical connector extending in spaced offset alignment from the first connector portion; and



d) electrical circuitry located within the housing to interconnect the first electrical connectors located in the circular receptacle at the first end of the housing with the electrical connectors having a similar function located at the second end of the housing.

5,443,390

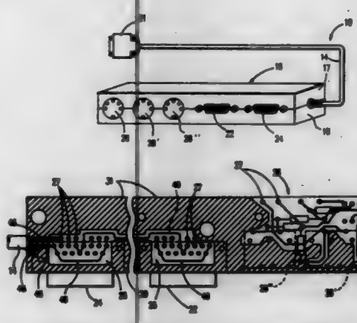
COMPUTER AUDIO JOYSTICK AND MIDI BREAKOUT BOX

George D. Kokkonoulis; Jorge E. Muyshondt, both of Austin, and Bruce J. Wilkie, Georgetown, all of Tex., assignors to International Business Machines, Corp., Armonk, N.Y.

Filed Jul. 14, 1993, Ser. No. 92,313

Int. Cl.[5] H01R *27/00*; H05K *9/00*

U.S. Cl. 439—76.1 **15 Claims**



1. An interface device for connecting computer audio adapters to MIDI compatible devices and joystick devices, said interface device comprising:

a MIDI-In connector;

a MIDI-Out connector;

a MIDI-Thru connector;

a plurality of joystick connectors;

a first connector having MIDI interface signals and joystick signals defined therein; and

a shielded multi-conductor cable for carrying said MIDI interface signals and said Joystick signals, said cable having a first end and second end, said first end attached to said first connector;

a circuit board having a ground plane with substantially all corners of said ground plane formed at angles greater than

90 degrees, said circuit board affixed to said MIDI-In connector, said MIDI-Out connector, said MIDI-Thru connector, said joystick connectors and said second end of said multiconductor cable at affixation points.

5,443,391

ELECTRIC WIRE-CONNECTING TERMINAL

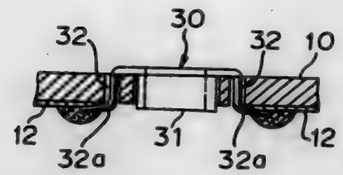
Osamu Maeda, and Yoshio Higuchi, both of Daito, Japan, assignors to Fuuai Electric Co., Ltd., Daito, Japan

Filed Oct. 27, 1993, Ser. No. 143,869

Claims priority, application Japan, Dec. 29, 1992, 4-361366

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—84 **2 Claims**



1. An electric wire-connecting terminal for insertion in a printed circuit board using a conventional automatic electronic parts-inserting machine, without the need for inserting and caulking of a grommet first in an aperture for seating said terminal, comprising:

a cylindrical sleeve for insertion in a hole provided for said terminal on said printed circuit board; and

a pair of extending legs integrally formed as one piece with said cylindrical sleeve, said legs being at generally right angles to a flat head portion of said terminal, and said legs protruding from beneath said board, and being bendable in predetermined directions after insertion into said boards; whereby

said automatic electronic panns-inserting machine is used to simultaneouly insert and solder said legs of the terminal to a circuit of said board without the prior need to insert an caulk a grommet in the aperture seating said terminal, thereby substantially reducing labor and other costs normally associated with such assembly operations.

5,443,392

SHIELDING DEVICE FOR RECTANGULAR CABLE PLUGS

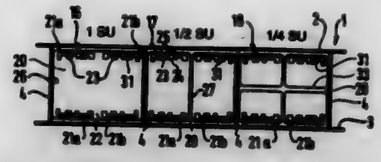
Jacques Longueville, Oostkamp, and Albert Hoolhorst, Aardenburg, both of Belgium, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 29, 1993, Ser. No. 145,462

Claims priority, application Germany, Mar. 31, 1993, 93 04 929.3

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—108 **14 Claims**



1. In a shielded transfer system being disposed on a back panel printed wiring board and having a strip body with partitions subdividing said strip body into individual rectangular chambers of equal size for receiving cable plugs having a shielding housing with a rectangular cross section,

a shielding device for the cable plugs, comprising additional function elements disposed in said strip body for guiding, contacting, encoding and locking the cable plugs, said additional function elements being disposed and having means for permitting the rectangular cable plugs with either a plug cross section of a certain unit size or smaller rectangular cable plugs with a plug cross section being one-half and one-fourth of the plug cross section of the unit size, to be selectively inserted into said chambers of said strip body, and said additional function elements being disposed such that all of the functions of said additional function elements are preserved and utilized regardless of whether the cable plugs of the unit size or the smaller cable plugs are inserted.

5,443,393

LEVER TYPE CONNECTOR

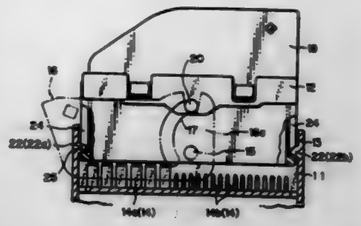
Hitoshi Okumura, and Osamu Tauiuchi, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jan. 18, 1994, Ser. No. 182,338

Claims priority, application Japan, Jan. 19, 1993, 5-004317 U; Feb. 5, 1993, 5-008315 U

Int. Cl.[6] H01R *13/629*

U.S. Cl. 439—157 **4 Claims**



1. A lever type connector comprising a male connector housing having a hood in which male terminals are mounted; an actuating lever rotatably attached to said connector housing and provided with cam grooves in two legs thereof; and a female connector housing adapted to be coupled to said male connector housing, provided with cam follower bosses to be engaged with said cam grooves, and having a fitting portion to be coupled to said hood, said fitting portion mounting female terminals to be coupled to said male terminals therein, said lever being turned from a detached position where said cam follower bosses are disposed in an inlet of said cam groove to a coupled position where said female terminals are coupled to said male terminals and vice versa, said male and female connector housings are provided with a first set of engaging means opposed to each other and a second set of engaging means opposed to each other and further recessed from said first set with respect to an insertion direction of said terminals, and wherein said first and second sets of engaging means are common to one of said housings and formed into opposing lock projection to be clamped around first and second engaging means in the other housing.

5,443,394

CARD EDGE CONNECTOR HAVING POSITIVE LOCK AND EXTRACTOR

Timothy B. Billman, King, and Roger L. Thrush, Clemmons, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 4, 1994, Ser. No. 237,753

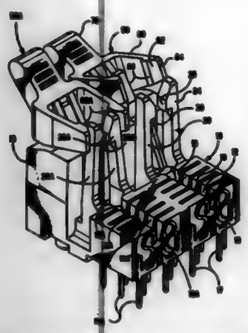
Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—157 **20 Claims**

1. A socket for electrically connecting a circuit card to a substrate, comprising:

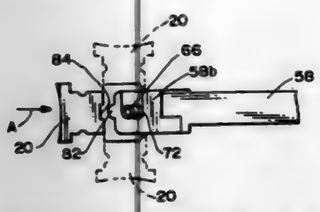
a housing which defines an upwardly open slot for receiving an edge portion of the circuit card, the slot having a pair

of opposite sides arranged in respective planes which define a card reception zone therebetween;
a plurality of contacts extending into the slot for electrically engaging respective contact pads on the circuit card, leads of the contacts extending to an exterior of the housing for electrically engaging respective circuit traces on the substrate;
a resilient beam connected to the housing and having a free end with a projection which is normally disposed outwardly of the card reception zone; and,



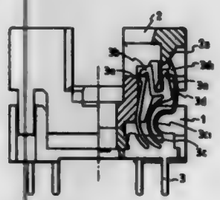
a lock lever movable on the housing between a lock position wherein the beam is deflected and the projection is moved into the card reception zone to a position above a ledge of the circuit card which is received in the slot, thereby preventing removal of the circuit card from the socket, and an unlock position wherein the beam resiles and the projection moves outwardly of the card reception zone to a position not above the ledge, thereby permitting removal of the circuit card from the socket.

5,443,395
EJECTOR SYSTEM FOR AN IC CARD CONNECTOR APPARATUS
Leland Wang, Hacienda Heights, Calif., assignor to Molex Incorporated, Lisle, Ill.
Filed Jun. 8, 1994, Ser. No. 255,601
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—159 **20 Claims**



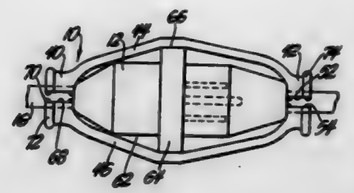
1. In an ejector system for ejecting an IC card from a connector apparatus which includes:
a header connector mateable with said IC card and including header terminals mounted therein adapted to mechanically and electrically engage corresponding IC card terminals mounted in the IC card, said IC card being moveable between an inserted position whereat the header terminals engage the IC card terminals, and an ejected position whereat said header terminals and said IC card terminals are disengaged,
an ejector mechanism operatively associated with the header connector for moving the IC card to its ejected position, the ejector mechanism having
a support structure mounted about the header connector,
an eject lever pivotally mounted on the support structure and including a first end adapted to move the IC card to its ejected position and a second end, and
a push-rod reciprocally mounted on the support structure having a distal end operatively associated with the second end of the eject lever and a proximal end adapted to be actuated by and to effect ejection of the IC card,
wherein the improvement comprises:
a push-button pivotally mounted on said proximal end of the push-rod for pivotal movement between an operative position projecting generally coaxially of the push-rod and an inoperative position whereat the push-button is rotated from its operative position to one side of the push-rod.

5,443,396
IC SOCKET
Yutaka Tokushige, Kawaguchi, Japan, assignor to Enplas Corporation, Japan
Filed Mar. 11, 1994, Ser. No. 209,828
Claims priority, application Japan, Mar. 31, 1993, 5-015866
U
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—266 **3 Claims**



1. An IC socket comprising:
a socket body;
a cover having a cam surface, for moving vertically with respect to said socket body; and
contact pins which are resiliently deformable and provided in said socket body, each having an engaging portion for engaging the cam surface of said cover and a contact portion for contacting each of lead terminals of an IC package mounted to said socket body,
wherein each of said contact pins further comprises a forced pin which is resiliently deformable and arranged adjacent to the engaging portion of each of said contact pins, said forced pin having an upper end portion which is engaged with the cam surface of said cover and also having an engagement working portion for engaging the engaging portion of each of said contact pins, so that when said cover is pressed downwardly, the engagement working portion of said forced pin moves outwardly relative to said socket body against resilience of said forced pin because the upper end portion of said forced pin is engaged with the cam surface of said cover, and as a result, the engagement working portion of said forced pin disengages from the engaging portion of each of said contact pins thereby reducing pressure on the engaging portion of each of said contact pins caused by the resilience of said forced pin, and so that while said cover is released, the engaging portion of each of said contact pins is disengaged from the cam surface of said cover and the engagement working portion of said forced pin is resiliently engaged with the engaging portion of each of said contact pins, thus pressing and moving forcedly the contact portion of each of said contact pins in an inward direction relative to said socket body.

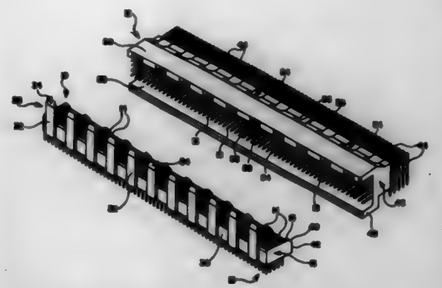
5,443,397
ELECTRIC CONNECTOR PLUG RETAINER
John L. Carl, 3301 Hanlan Rd., Millington, Mich. 48746
Filed Feb. 28, 1994, Ser. No. 202,356
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—369 **10 Claims**



1. An electric connector plug retainer in combination with a male electric plug and a female electric plug wherein said male electric plug includes a male rear wall, a male front wall, male side walls, a male electric cable passing through the male rear wall and at least one male terminal extending axially from the male front wall; a female electric plug having a female front wall, a female rear wall, female side walls, and at least one female terminal receptacle in the female front wall in telescopic engagement with at least one male terminal of the male electrical plug for conducting electrical current, and a female cable extending through the female rear wall; said electrical connector plug retainer including a first ring section with an aperture which the male electrical cable passes through, a radially extending male electric plug rear wall contact surface on the first ring section, a second ring section with an aperture which the female electric cable passes through, a radially extending female electric plug rear wall contact surface on the second ring section, at least one elastic member integral with the first ring section and the second ring section which axially biases the male electric plug rear wall contact surface into continuous contact with the male rear wall and biases the female electric plug rear wall contact surface into continuous contact with the female rear wall, the male electrical plug and the female electric plug having a combined axial length between the male rear wall and the female rear wall, when the at least one male terminal is in telescopic engagement with the at least one female terminal receptacle, that exceeds the axial distance between the first and second ring sections when the at least one elastic member is in an unstretched state, the male rear wall of the male electric plug and the female rear wall of the female electric plug axially separating the first ring section and the second ring section and elongating the at least one elastic member when the at least one male terminal is telescopically received in the at least one female terminal receptacle and the male front wall is in contact with the female front wall, and a slit in one of said first or second ring sections for the lateral passage of the cable integral with the male or female electrical plug into and out of the first or second ring section aperture.

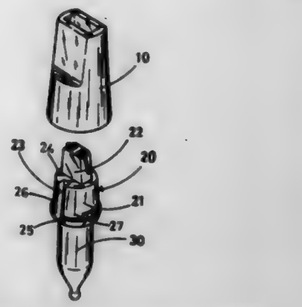
5,443,398
INVERSE BACKPLANE CONNECTOR SYSTEM
Jose L. Ortega, Louisville, Ky., assignor to Robinson Nugent, Inc., New Albany, Ind.
Filed Jan. 31, 1994, Ser. No. 189,201
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—378 **32 Claims**

1. An electrical connector system for coupling a first printed circuit board to a second printed circuit board, the connector system comprising:
a socket connector including a socket housing having a top surface formed to include an array of pin-receiving windows therein, a plurality of receptacle contacts located within the socket housing in alignment with the pin-receiving windows, the receptacle contacts including tail sections configured to be electrically coupled to the first printed circuit board, and a plurality of cantilevered guide posts one-piece with and extending away from the socket housing above the top surface of the socket housing; and
a header connector including a header housing and an array of contact pins secured in the header housing for engaging the receptacle contacts of the socket connector, the contact pins including tail sections configured to be electrically coupled to the second printed circuit board, the



header housing being formed to include a plurality of guide slots aligned axially with the plurality of cantilevered guide posts formed on the socket connector, the guide slots being configured to surround a distal end of the guide posts as the socket connector and the header connector are mated to align the array of pin-receiving windows of the socket connector with the array of pins of the header connector prior to engagement of the array of contact pins with the plurality of receptacle contacts.

5,443,399
ELECTRIC LIGHT BULB SOCKET POSITIONER FOR LAMP ASSEMBLIES
Wang S. Jing, 8-2, Pei Di Fen, and Tai S. Yea, 2F, No. 2, Lane 86, Hsin Kuang Street, both of Chupei, Hsinchu, Taiwan
Filed Feb. 1, 1994, Ser. No. 189,763
Int. Cl.[6] H01R *17/00*
U.S. Cl. 439—619 **1 Claim**



1. An electric light bulb socket assembly, comprising:
a longitudinally extended sleeve member having a through passage formed longitudinally therein, said through passage extending to an opening formed at one end of said sleeve member, said opening having an inner diameter dimension, said through passage being defined by an inner wall surface having a conical contour;
a light bulb having a at least a portion of one end thereof adapted for insert into said through passage of said sleeve member through said opening formed in said sleeve member; and,

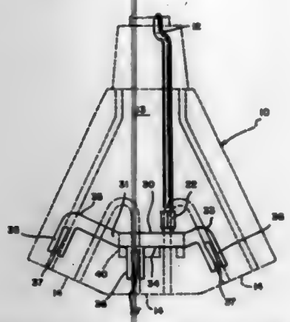
a socket member disposed within said through passage intermediate said light bulb portion and said inner wall surface of said sleeve member, said socket member being defined by a longitudinally extended tubular wall extending from a bottom wall thereof to an open end of said socket member, said tubular wall having an outer surface conical contour for contiguous interface with said inner wall surface of said sleeve member through passage, said open end of said socket member having an outer diameter dimension, said outer diameter dimension being greater than said inner diameter dimension, said tubular wall having a pair of opposing slotted through openings extending from said bottom wall to said open end to define a pair of tubular wall portions, said tubular wall portions being displaceable to reduce said outer diameter dimension to accommodate insertion of said socket member into said through passage of said sleeve member and said contiguous interface therebetween.

5,443,400

MULTIPLE OUTLET RECEPTACLE AND METAL STAMPING THEREFOR

Donald C. Brown, Freehold, and Suzanne V. Hickey, Brick, both of N.J., assignors to Heyco Stamped Products, Inc., Toms River, N.J.

Filed Oct. 18, 1993, Ser. No. 137,347
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—650 **38 Claims**



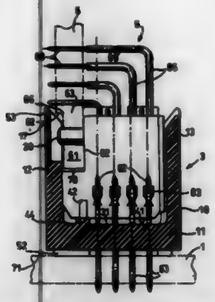
1. A unitary multi-outlet receptacle for male plugs, said receptacle including two substantially, flat parallel sides; and including at least two outlets, each said outlet including a face; said faces in flat array and at a substantially a right angle to said parallel sides; and radially aligned having a substantially common radius with regard to each other, each said outlet including at least two female openings for male contacts from a male plug, said receptacle including at least two unitary multi-station stamped metal conductors, each said conductor; being substantially planar; and having a spine said spine including a crimp end; and at least one said station for each said outlet, each said station including a female contact receptacle, said stations radially aligned and having a substantially common radius with regard to each other, said female contact receptacle at each station oriented to access one said opening in one said outlet, and at least two conductor wires; one conductor wire each for said conductors, each said conductor wire crimped to one said crimp end.

5,443,401

ELECTRICAL CONNECTOR FOR MOTHER AND DAUGHTER PRINTED CIRCUIT BOARDS

Patrick Champion, and Jacky Thomains, both of Le Mans, France, assignors to Framatome Connectors International, France

Continuation of Ser. No. 16,637, Feb. 12, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 331,143
Claims priority, application France, Feb. 13, 1992, 92 01618
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—680 **7 Claims**



1. A connector set for connecting a mother circuit board (1) to a daughter circuit board (2), said daughter circuit board having an edge portion (61) which may be of reduced thickness with respect to an adjacent thicker portion of said daughter circuit board, said connector set comprising:

a first connector member (3) including a first insulating body (10) having first contact elements (60) with first ends (63) suitable for insertion in the mother circuit board and having second ends (62), said first insulating body having two spaced lateral branches (12,13) with a central part (11) therebetween;

a second connector member (5) mounting said daughter printed circuit board at said edge portion, said second connector member comprising a second insulating body (81) suitable for being received in said first insulating body between said spaced lateral branches along a direction of insertion, said second connector member having second contact elements (85) with first ends (83) adapted to engage with respective second ends (62) of corresponding ones of said first contact elements (60) when said second insulating body is received in said first insulating body, thereby to connect said first and second connector members together, said second contact element and said first contact elements being formed to maintain the engagement of said first and second ends over a predetermined distance along the direction of insertion, said second contact elements having second ends (88) adapted to be inserted in the daughter circuit board, said first and second insulating bodies having respective, generally planar surfaces (31,41) transverse to the direction of dimension and which face each other when said second insulating body is received in said first insulating body, a portion of said central part (11) of said first insulating body forming one of said surfaces (41); and

spacer means (40,46) located on ode of said facing surfaces said spacer means having an end defining a maximum spacing dimension thereof, said spacer means establishing a predetermined spacing gap between said facing planar surfaces of said first and second insulating bodies by the abutment of the other of said facing planar surfaces with said end of said spacer means;

one of said lateral branches of said first insulating body having an outer end (17) with a recess disposed on the internal face of said lateral branch that faces the edge portion of said daughter circuit board when said second insulating body is received in said first insulating body, said predetermined spacing gap between said facing surfaces being of a magnitude less than said predetermined distance along said direction of insertion so that the connection of said first and second elements is maintained and being such that said adjacent portion of said daughter circuit board is disposed in immediate proximity to said outer end of said one lateral branch, thereby to allow said second insulating body and said edge portion of the daughter circuit board mounted on said second insulating body to be received in said first insulating body.

5,443,402

CHRISTMAS LAMP SOCKET

Shun-Feng Huang, No. 13, Lane 84, Nei Hu Road, Hsin-Chu City,

Filed Nov. 7, 1994, Ser. No. 336,733
Int. Cl.[6] H01R *17/00*
U.S. Cl. 439—699.2 **1 Claim**



1. A Christmas lamp socket comprising an upper socket and a lower socket combined together, said upper socket having a center hole for a Christmas lamp to fit therein, and two holes in its bottom for two lead pins of said lamp to pass through and then are bent over an outer surface of a lower portion of said upper socket, said lower socket having a center round hole for said upper socket to fit therein, and characterized by said lower socket having a C-shaped projection extending from a side of an upper circumferential wall of said lower socket, said C-shaped projection having a substantially circular cylindrical through opening formed therein, said upper socket having an annular flat portion extending around an upper circumferential edge thereof and an elastic circular cylindrical fitting bar extending transversely from said annular flat portion, said elastic fitting bar having a stop projection formed at a substantially right angle at its tip, said fitting bar being displaceable to be tightly engaged within said substantially circular cylindrical opening of said C-shaped projection after said upper socket is deposited in said lower socket.

5,443,403

COMPOSITE ELECTRICAL CONNECTOR ASSEMBLY WITH SNAP-IN HOUSING

Charles H. Weidler, Lancaster, and George H. Douty, Mifflintown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 29,085, Mar. 9, 1993, Pat. No. 5,314,357. This application Nov. 3, 1993, Ser. No. 148,763
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—701 **16 Claims**

1. A composite electrical connector assembly comprising:

a plurality of cable connectors each having a contact-receiving body, each of said cable connector bodies having a front mating portion, an enlarged portion rearwardly of its front mating portion and a back surface on its enlarged portion facing away from its front mating portion; and

a unitary housing for said plurality of cable connectors, said housing including:

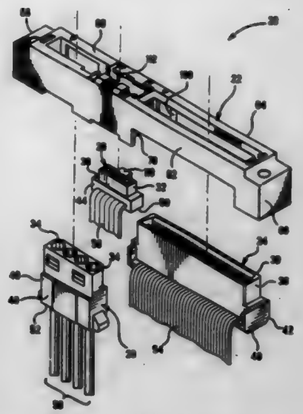
a front wall;

upper, lower and lateral side walls extending rearwardly from said front wall to define a cavity;

said front wall having a plurality of open regions each corresponding to a respective one of said plurality of cable connector bodies, each of said plurality of open regions being sized to allow the front mating portion of the respective one of the plurality of cable connector bodies to extend therethrough and being configured to prevent the enlarged portion of the respective one of the plurality of cable connector bodies from passing therethrough;

said cavity being configured to contain therein, in laterally spaced relation, said enlarged portions of said plurality of cable connector bodies with said front mating portions of said plurality of cable connector bodies extending through the respective open regions and outwardly beyond said housing front wall; and

latch means within said cavity for engaging the back surface



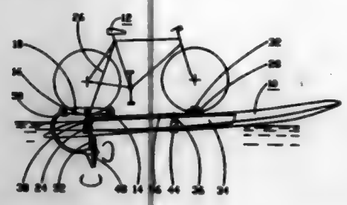
of each of said plurality of cable connector body enlarged portions as each cable connector body is inserted in said cavity toward said front wall and its front mating portion extends through the respective open region and outwardly beyond said front wall so that the enlarged portion of said each cable connector body is held within said cavity between said front wall and said latch means, said latch means including a plurality of resilient latch members, each of which includes a forward facing surface for interfering engagement with a respective cable connector body enlarged portion back surface, each of said resilient latch members having a relaxed position in which it extends in a front to rear direction within said cavity and within the insertion path of the respective cable connector body enlarged portion and being adapted to be moved from its relaxed position transversely out of said path as said respective enlarged portion passes thereby and to subsequently return to its relaxed position with its forward facing surface in engagement with the respective enlarged portion back surface, and wherein at least one pair of said plurality of resilient latch members for one of said plurality of cable connector bodies are cantilevered and integral spaced from said upper and lower walls rearwardly away from said front wall.

5,443,404
SOCKET FOR ELECTRIC PART
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 7, 1993, Ser. No. 162,325
Claims priority, application Japan, Dec. 7, 1992, 4-351764
Int. Cl.[6] H01R 9/22
U.S. Cl. 439—717 8 Claims



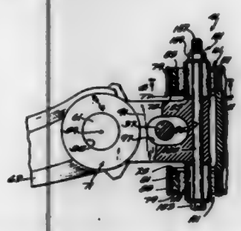
1. An apparatus comprising:
a socket having first and second sides opposite one another along a first direction;
a first engagement hook structure provided on said first side of said socket;
a second engagement hook structure provided on said second side of said socket;
wherein said first engagement hook structure constitutes a means for engaging with a third engagement hook structure of an adjacent socket member, wherein the third engagement hook structure is identical in size and shape to said second engagement hook structure, with a clearance between said first engagement hook structure and the third engagement hook structure to allow for relative movement in the first direction between said first engagement hook structure and the third engagement hook structure so as to allow for thermal expansion of said socket;
wherein said second engagement hook structure constitutes a means for engaging with a fourth engagement hook structure of an adjacent socket member, wherein the fourth engagement hook structure is identical in size and shape to said first engagement hook structure, with a clearance between said second engagement hook structure and the fourth engagement hook structure to allow for relative movement in the first direction between said second engagement hook structure and the fourth engagement hook structure so as to allow for thermal expansion of said socket;
wherein said socket comprises an electrical socket for receiving an electrical component; and
wherein said electrical socket is adapted to be mounted on a horizontal wiring board as part of a row of a plurality of electrical sockets.

5,443,405
BIKE BOARD
Yevgenly Zeyger, 835 Huntington Ave. #608, Boston, Mass. 02115
Filed Mar. 25, 1994, Ser. No. 217,557
Int. Cl.[6] B63H 21/175
U.S. Cl. 440—12 1 Claim



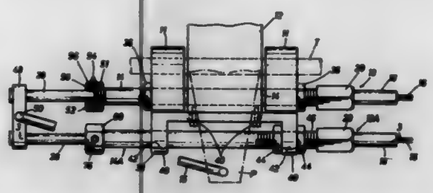
1. A bike-board comprising:
(a) a bicycle, having front and rear tires, being mounted on a sailboard with a mast track;
(b) propulsion means driven by the rear tire of the bicycle by drive module means, the drive module means being in the form of a drive roller, a supporting roller which supports the rear tire, flexible shafts which are each connected at one end to the drive roller and at the other end to said propulsion means, a frame which mounts the rollers to the sailboard, a module securing straps to retain the frame on the sailboard, and a pair of bicycle securing straps to secure the bicycle to the frame;
(c) steering means driven by the front tire of the bicycle and connected to the propulsion means to steer the propulsion means, said steering means includes a support for the front tire, a pin which is adapted to fit into the holes in the mast track to allow adjustment of the bike-board for various sized bicycles, and a clamp to secure the front tire;
(d) said propulsion means being in the form of a pair of propellers;
(e) said sailboard includes a pair of stabilizing pontoons, each said pontoon supporting one of said propellers.

5,443,406
VIBRATION ISOLATING MOUNTING FOR OUTBOARD MOTOR
Martin J. Moudek, Wonder Lake, and Donald K. Sullivan, Prospect Heights, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Sep. 24, 1993, Ser. No. 126,784
Int. Cl.[6] B63H 21/30
U.S. Cl. 440—52 15 Claims



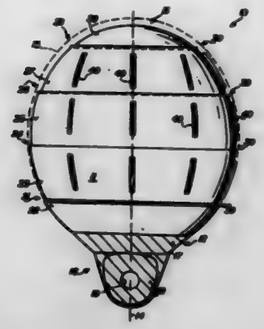
1. A marine propulsion device comprising a propulsion unit assembly having laterally spaced portions respectively including laterally aligned outwardly opening sockets, a king pin assembly including a portion located between said laterally extending portions, rubber mount assemblies including outer sleeves respectively engaged in said sockets, inner sleeves, and rubber cores bonded to and extending between said inner and outer sleeves, and means for fastening said inner sleeves to said portion of said king pin assembly.

5,443,407
LUBRICATING MEANS FOR MARINE STEERING SYSTEM
Thomas C. Burroughs, 711 St. Ives Ct., Houston, Tex. 77079
Filed Jan. 2, 1994, Ser. No. 252,887
Int. Cl.[6] B63H 25/10
U.S. Cl. 440—63 10 Claims



1. In a dual cable steering system for an outboard motor on a marine craft having a steering wheel and a pair of generally parallel cable devices extending between the steering wheel and a tiller arm of the outboard motor for steering of the motor, and mounting means for the outboard motor including a tilt tube between a pair of spaced brackets secured to the transom of the marine craft;
one of said cable devices being an inner cable device with said tilt tube defining a cable housing and the other of said cable devices being an outer cable device with respect to said motor, said other cable device having a generally channel shaped support bracket secured to said mounting means for said motor and having a pair of extensions supporting a cable housing thereon;
each of said cable devices including a control cable and a slidable rod secured to an end of said control cable and mounted in telescoping relation within the associated cable housing;
a lubricating nut mounted on an end of the cable housing for each cable device and receiving the associated slidable rod, said lubricating nut having a body with an annular groove therein; an O-ring in said annular groove engaging said slidable rod in sealing relation, a lateral opening extending through said body in fluid communication with said slidable rod, and a lubricant fitting mounted within said opening to permit the supply of lubricant therein;
the lubricating nut for said inner cable device being internally threaded with the associated cable housing being externally threaded for receiving said nut thereon in threaded relation;
the lubricating nut for said other cable device having a generally smooth internal bore defining a small diameter smooth bore portion and a large diameter smooth bore portion, said large diameter smooth bore portion having a second annular groove therein, and an O-ring in said second annular groove engaging said associated cable housing in sealing relation, said associated cable housing having an end portion with a smooth outer surface thereon supporting said lubricating nut; and
means securing said lubricating nut for said other cable device onto said smooth outer surface of said associated cable housing.

5,443,408
LOW DRAG BUOY
William C. Kimball, Gloversville, N.Y., assignor to N. A. Taylor Co., Inc., Gloversville, N.Y.
Filed Mar. 8, 1994, Ser. No. 207,128
Int. Cl.[6] B63C 9/08
U.S. Cl. 441—22 20 Claims



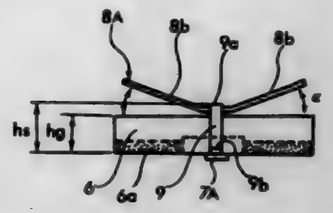
1. A low drag buoy comprising:
a buoyant body having first and second ends spaced from each other along a longitudinal axis, said body having the general configuration of a body of revolution;
an end structure at said first end allowing connection of said first end to a line;
said body having a plurality of different diameter portions between said first and second ends, a step reduction in diameter being provided at a juncture between each of said different diameter portions moving from said first to said second end; and
a spoiler provided on the larger diameter portion at each juncture.

5,443,409
WATER SADDLE
Keith Adamson, Mission Viejo, Calif., assignor to Orca Industries, Inc., Mission Viejo, Calif.
Filed Mar. 14, 1994, Ser. No. 212,248
Int. Cl.[6] B63C 9/08
U.S. Cl. 441—130 3 Claims



1. A saddle for use in the water by a rider, said saddle comprising a unitary member of expanded polystyrene having closed cells on the surface, said member having a raised forward end, a raised rear end, a seat section substantially centered between said forward and rear ends, a bottom surface extending in a continuous smooth curved convex surface from said raised forward end a substantial distance below said seat section to said raised rear end, a top surface extending in a continuous curved surface from the top of said raised forward end across said seat section to said raised rear end, said seat section being centered in said top surface and tapering forwardly and rearwardly from its narrowest width at the center of said top surface toward said ends, said saddle tapering downwardly and outwardly from the center of said top surface to said bottom surface, said saddle being substantially symmetrical forwardly and rearwardly of said seat section.

5,443,410
GETTER FIXING DEVICE FOR A CATHODE RAY TUBE
Byoung D. Ko, Chilgok, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Apr. 8, 1994, Ser. No. 224,974
Claims priority, application Rep. of Korea, Jul. 24, 1993, 1993-14110
Int. Cl.[6] H01J 9/39
U.S. Cl. 445—73 6 Claims



1. A getter fixing device for a cathode ray tube comprising:

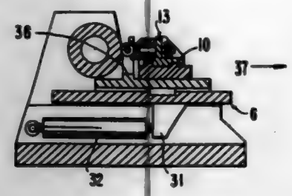
a getter ring including getter material;
a support member for attaching said getter ring., said support member having protrusions at two sides of the getter ring;
a getter cover including a central portion with two side portions and two wing portions attached to the central portion, each of said two wing portions inclined at a prescribed angle away from the getter ring so as to direct diffusion of the getter material;
and a single or a plurality of means, each positioned outside said getter ring for connecting a respective one of said protrusions of said support member with said getter cover.

5,443,411

DEVICE FOR MACHINING AND FACING RESILIENT MATERIALS

Louis Rouyer, Clamart, and Jacques Bastin, Sainte-Genevieve des Bois, both of France, assignors to Createc Rollers, Sainte-Genevieve des Bois, France

PCT No. PCT/FR91/00972, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO92/10331, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 5, 1991, Ser. No. 70,433
Claims priority, application France, Dec. 5, 1990, 90 15220
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 **12 Claims**



1. A cylindrical grinding device for the machining and the facing of a workpiece made of resilient or semi-resilient material by the "in-feed" technique by using a grinding wheel of width at least equal to the length of said workpiece to be machined, characterized in that said device includes
(a) means (32, 33, 39) which are capable of ensuring, for a certain time at the end of a machining operation, that a workpiece (25) is held in a position in which its rotation spindle (26) is located, at spindle supports (11), at a distance in relation to the rotation spindle (3) of the grinding wheel (2) equal to the sum of the theoretical radius of the desired finished workpiece and the radius of said grinding wheel; and
(b) flexible drive means (27) allowing, during the rough-machining period, a slight drift of the rotation spindle (26) of the workpiece (25) being machined.

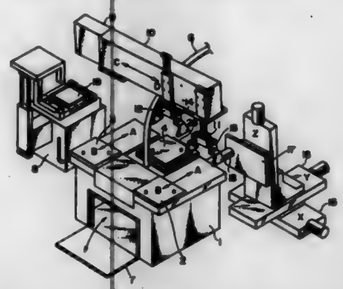
5,443,412

BLASTING MACHINING APPARATUS USING ABRASIVE PARTICLES LIKE POWDER

Takashi Yoshikawa, Kanagawa, and Shigeo Kobayashi, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 943,491, Sep. 11, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 312,174
Claims priority, application Japan, Sep. 20, 1991, 3-270391
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **4 Claims**

1. A blasting machining apparatus using abrasive particles having a particle size of less than 50 μm for blasting a surface of an object, comprising:
a blasting chamber in which an object is blasted by said abrasive particles;
a nozzle provided in said blasting chamber for supplying said abrasive particles to said object;
a table provided in said blasting chamber for placing said object thereon;
washing means provided adjacent to said blasting chamber for washing said object after being blasted;
first carrier means moveable into and out of said blasting chamber for supplying said object to be blasted onto said table in said blasting chamber and discharging said object after being blasted out of said blasting chamber to a position outside of said blasting chamber; and



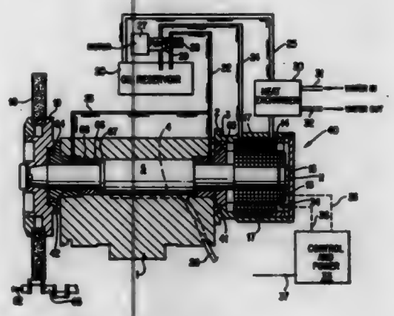
second carrier means independent of said first carrier means and moveable between said outside position and said washing means for supplying said object after being blasted and discharged out of said blasting chamber into said washing means and discharging said object after being washed back out of said washing means, wherein said first carrier means does not contact said object after it has been washed and said second carrier means does not contact said blasting chamber.

5,443,413

BRUSHLESS SPINDLE MOTOR FOR A GRINDING MACHINE INCLUDING HYDROSTATIC BEARINGS

William W. Pflager, Waynesboro, and Timothy W. Hykes, Greencastle, both of Pa., assignors to Western Atlas Inc., Paramus, N.J.

Filed Jul. 30, 1993, Ser. No. 99,588
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 **13 Claims**



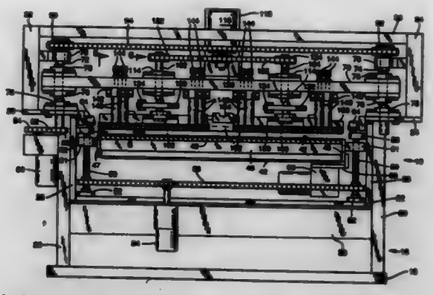
1. A grinding machine comprising:
a rotating elongated spindle provided with a first end and a second end;
a rotating grinding wheel connected to said first end of said elongated spindle;
a means for holding a workpiece proximate to said rotating grinding wheel;
a permanent magnet motor including a rotatable rotor provided within a stationary stator, said rotor directly clamped over said second end of said elongated spindle and;
control means connected to said permanent magnet motor for controlling the rotation of said rotor;
whereby rotation of said rotor directly forces said elongated spindle to rotate.

5,443,414

SANDER WITH ORBITING PLATEN AND ABRASIVE

Donald E. Hasey, 11376 Ramsey Rd., Gold Hill, Oreg. 97525

Continuation of Ser. No. 6,379, Jan. 19, 1993, Pat. No. 5,321,913, which is a continuation of Ser. No. 787,897, Nov. 5, 1991, Pat. No. 5,181,342, which is a division of Ser. No. 568,902, Aug. 17, 1990, Pat. No. 5,081,794. This application Jun. 15, 1994, Ser. No. 260,360
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[6] B24B *7/06, 7/02*
U.S. Cl. 451—28 **16 Claims**



1. A method of sanding wood products comprising:
placing a product on a conveyor belt;
securing an abrasive sheet onto an elongate platen that is positioned substantially across the conveyor;
mechanically moving the abrasive sheet and platen in a first motion and a second motion, wherein said first and second motions move simultaneously, so that the first motion and the second motion are superimposed on the abrasive sheet and the platen, and where the abrasive sheet's motion is solely dependent on and controlled by the platen's motion and where the first motion is a circular orbital motion and the second motion is a circular orbital motion;
conveying the product on the conveyor belt adjacent the abrasive sheet; and
abrading the product by the motion of the abrasive sheet.

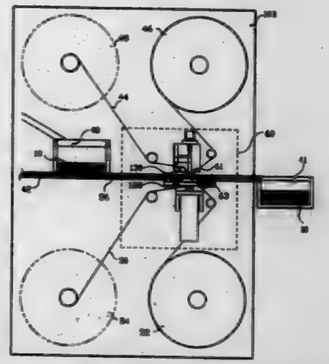
5,443,415

BURNISHING APPARATUS FOR FLEXIBLE MAGNETIC DISKS AND METHOD THEREFOR

Michael S. Shebanow; Thomas R. Plourde, and Bill M. Mullinax, all of Tucson, Ariz., assignors to International Technology Partners, Inc., Tucson, Ariz.

Filed Sep. 24, 1993, Ser. No. 126,358
Int. Cl.[6] B24B *21/00*
U.S. Cl. 451—302 **30 Claims**

1. A machine for the sequential burnishing of a plurality of assembled computer diskettes, each diskette consisting of a magnetic disk enclosed in a protective shell, said disk having a center hub for engagement with a driving mechanism in a computer disk drive and said shell having an access window for engagement of a side of the disk by a read/write head, comprising:
(a) a burnishing assembly comprising a spindle plate adapted to engage the hub of the disk; an abrasive tape disposed in alignment with said access window after engagement of the hub by the spindle plate; and a burnishing roller aligned with said tape and access window and adapted to alternately assume a working position, wherein the roller urges the tape through the access window against the disk to cause the burnishing thereof, and an idle position, wherein the roller is withdrawn from the disk;
(b) means for alternately causing the burnishing roller to assume said working position for a first predetermined period of time while the disk is engaged by the spindle plate and to assume said idle position for a second predetermined period of time at the end of said first period of time;



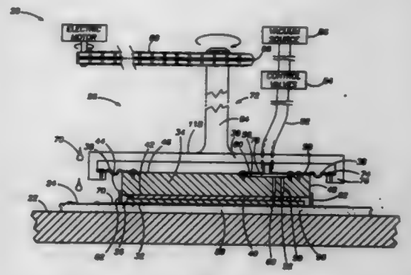
(c) means for spinning said spindle plate during said first predetermined period of time; and
(d) means for sequentially feeding an unprocessed diskette through said burnishing assembly for engagement with the spindle plate when said burnishing roller is in the idle position and for contemporaneously removing a last-processed diskette from the burnishing assembly.

5,443,416

ROTARY UNION FOR COUPLING FLUIDS IN A WAFER POLISHING APPARATUS

Konstantine Volodarsky, San Francisco; Jiro Kajiwara, Foster City; Herbert W. Owens, Jr., San Jose, and Jan H. King, Sunnyvale, all of Calif., assignors to Cybeq Systems Incorporated, Menlo Park, Calif.

Filed Sep. 9, 1993, Ser. No. 119,972
Int. Cl.[6] B24B *47/00*
U.S. Cl. 451—388 **15 Claims**



1. A device for use with a polishing apparatus, which apparatus includes a polishing head having a non-rotatable portion and a rotatable portion including a rotatable shaft, and a first chamber enclosed within said rotatable portion of said polishing head; and a non-rotatable pressurized fluid source; said device comprising the combination of:

first means adapted to mount to said non-rotatable portion of said polishing head for confining and continually coupling a pressurized fluid between said non-rotatable fluid source and a region adjacent an exterior surface of said rotatable shaft;

second means for confining and continually coupling a pressurized fluid between a region adjacent said exterior surface of said rotatable shaft and said enclosed chamber;

whereby said pressurized fluid may be continually communicated between said non-rotating pressurized fluid source and said rotating first chamber enclosed by said rotatable portion of said polishing head.

5,443,417
ON EDGE HONING DEVICES

John J. Schimweg, St. Charles, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Nov. 18, 1992, Ser. No. 977,917
Int. Cl.[6] B24D *3/00*
U.S. Cl. 451—540 **13 Claims**



1. A honing member for mounting on a honing assembly comprising an elongated metal body having opposite end surfaces, opposed side surfaces extending between the end surfaces and a work engaging surface extending between the end and side surfaces, a thin layer formed of particles of a superabrasive material and a binder attached to one of the side surfaces, the layer of superabrasive material being between about 0.04 mil to about 60 mils thick and extending between the end surfaces and adjacent to the work engaging surface forming a thin work engaging edge formed of superabrasive material therealong, and means for mounting the honing member on a honing assembly so that there is minimal edge to surface contact between the work engaging edge of the layer superabrasive material and the workpiece surface to be honed.

5,443,418
SUPERABRASIVE TOOL

James E. Frodin, Bertrange, Luxembourg; Scott Pellow, Niagara Falls, Canada, and Jean Kramp, Rumelange, Luxembourg, assignors to Norton Company, Worcester, Mass.

Filed Mar. 29, 1993, Ser. No. 38,301
Int. Cl.[6] B24D *5/02, 5/04*
U.S. Cl. 451—540 **8 Claims**

1. An abrasive tool having a cutting or abrading surface, said tool comprising a bond material having dispersed therein abrasive grains comprising at least one superabrasive component and microcrystalline alumina filamentary abrasive particles with an essentially uniform orientation, wherein the filamentary abrasive particles are located predominantly along two

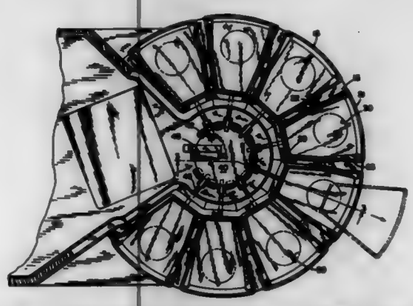


opposed parallel sides of the tool perpendicular to the cutting or abrading surface thereof.

5,443,419
COLLECTOR ASSEMBLY FOR COIN HANDLING MACHINE

Thomas P. Adams, Oconomowoc; Joseph P. Hanus, Johnson Creek; Kenneth G. Ebenhoch, Mukwonago, and Roger Klemp, Watertown, all of Wis., assignors to Brandt, Inc, Watertown, Wis.

Filed Mar. 15, 1994, Ser. No. 213,322
Int. Cl.[6] B65B *57/06*; G07D *3/00*
U.S. Cl. 453—17 **15 Claims**



1. In a coin handling machine having a plurality of spaced stations at which coins are ejected, the combination comprising:

a shelf beneath the stations for supporting a collector at each station;

a plurality of collectors, one for each station;

a switch connected to disable the operation of the machine when actuated;

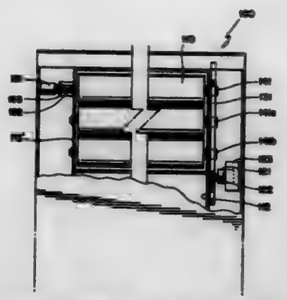
an actuator for the switch; and

levers at the stations for engaging the actuator whereby the actuator is responsive to the presence of all of the collectors in place at all of the stations to actuate the switch when any one of the collectors is absent.

5,443,420
AIR FLOW DIRECTION CONTROL APPARATUS AND THE METHOD THEREOF

Dong J. Kim, Incheon, and Duk J. Yang, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 8, 1994, Ser. No. 225,400
Claims priority, application Rep. of Korea, Jun. 18, 1993, 1993-11192; Jul. 13, 1993, 1993-12847
Int. Cl.[6] F24F *13/15*
U.S. Cl. 454—256 **4 Claims**

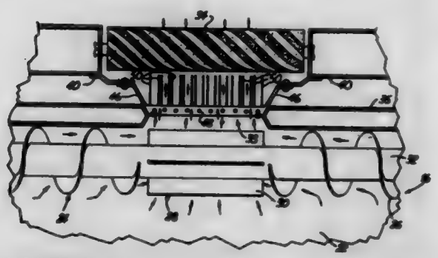


3. A method for controlling air flow through an air flow passage by a plurality of rotatably adjustable blades extending across said passage and being rotatable by a motor between passage-opening and passage-closing positions and intermediate positions therebetween, said method comprising the steps of sensing a rotary position of said blades, comparing said sensed rotary position with a selected rotary position and actuating a motor for moving said blades to said selected position when a deviation exists between said sensed position and said selected position, to enable said blades to be returned to said selected position after being displaced therefrom by a force applied independent of said motor.

5,443,421
ROCK DISCHARGE ASSEMBLY FOR HAY CRUSHER

Rick Heintzman, R.R. 2, Box 265, Onaka, S. Dak. 57466

Filed Jul. 20, 1993, Ser. No. 94,523
Int. Cl.[6] A01F *12/16*
U.S. Cl. 460—106 **11 Claims**

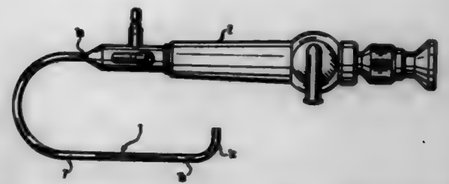


1. In a forage crop conditioning machine having a mechanism for severing forage crop plants and feeding forage crop material to conditioning rolls for crushing, and frame means for supporting the mechanism for severing and the conditioning rolls with a space between the conditioning rolls and the mechanism for severing, the space being substantially unobstructed for passage of material therethrough to a ground surface, the improvement comprising a dense object discharge assembly positioned in the space and having a support frame, a plurality of horizontally and vertically resiliently deflectable members each having a first end attached to the support frame and a second end being freely deflectable, the deflectable members being spaced-apart at a selected spacing and extending substantially across at least portions of the space between the cutting mechanism and the conditioning rolls, the deflectable members being weight sensitive to permit dense objects larger than the selected spacing to deflect the deflectable members and drop through the space therebetween while providing support for forage crop material coming from the cutting mechanism and being fed to the conditioning rolls and to resiliently return to a rest position.

5,443,422
SHAFT FOR FLEXIBLE TECHNICAL AND SURGICAL ENDOSCOPES

Rudolf Heimberger, Oberderdingen, Germany, assignor to Richard Wolf GmbH, Knittlingen, Germany

Filed May 5, 1993, Ser. No. 58,115
Claims priority, application Germany, Mar. 12, 1993, 93 03 603.5
Int. Cl.[6] A61B *1/00*; G02B *23/24*
U.S. Cl. 464—57 **1 Claim**

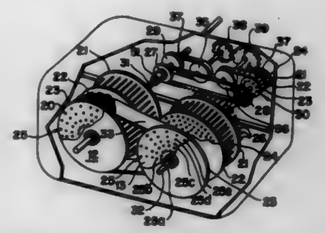


1. A shaft for flexible technical and surgical endoscopes, said shaft comprising at least in part a circular braiding of webs interwoven with each other, said webs comprising flat wires and said braiding being single-braided, the flat wires having regions of crisscrosses with each other, the circular braiding being machined by hammering in the regions of the crisscrosses, and the flat wires being bonded together adjacent to at least one end of the circular braiding to form a rigid tube at the end.

5,443,423
VARIABLE BOLT PIN CHAIN BELT TRANSMISSION SYSTEM

Jin S. Ha, 17578 Tuscan Dr., Granada Hills, Calif. 91344

Filed Oct. 3, 1994, Ser. No. 317,640
Int. Cl.[6] F16H *55/00*
U.S. Cl. 474—47 **6 Claims**



1. A variable bolt pin chain belt transmission, comprising:

a first variable bolt pin pulley and a second variable bolt pin pulley disposed within a housing, each variable bolt pin pulley including first, second, and third disks, and a plurality of bolt pins which are slidably inserted in a plurality of apertures disposed thereon, said apertures being formed in

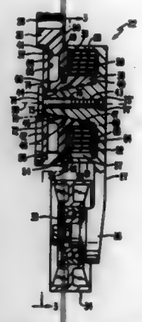
gradually different sized radial circles for forming different sized bolt pin pulleys,
a main chain belt engaging with said first and second variable bolt pin pulleys, and
a plurality of guide members connected to drive solenoids for pushing and pulling said plurality of bolt pins for forming said different sized bolt pin pulleys.

5,443,424

BELT TENSIONER AND METHOD OF MAKING THE SAME

Dewey D. Henderson, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Filed Oct. 20, 1994, Ser. No. 326,559
Int. Cl.[6] F16H *7/12*
U.S. Cl. 474—135 **20 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a one-piece support member for being fixed relative to said belt, a belt engaging arm movably carried by said support member, and mechanical spring means operatively interconnected to said support member and to said belt engaging arm for urging said belt engaging arm relative to said support member and against said belt with a force to tension said belt, said support member having a pivot opening passing therethrough and having an annular surface disposed substantially concentrically about the longitudinal axis of said pivot opening thereof, said belt engaging arm having a pivot part thereof rotatably disposed in said pivot opening so as to rotate therein, the improvement wherein said support member is formed of polymeric material and wherein said belt engaging arm has an annular surface directly disposed in sliding engagement with said annular surface of said support member.

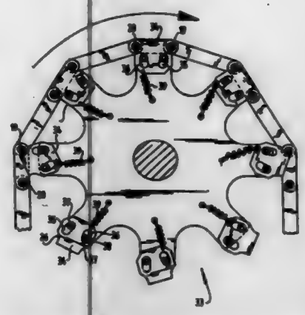
5,443,425

ADJUSTABLE CHAIN WHEEL AND COMPONENTS THEREOF

Hendrik J. Korenberg, Winterswijk; Arjen R. Roth, Doetinchem, and Leonardus J. A. Tiggeloven, Groenlo, all of Netherlands, assignors to Stork R.M.S. B.V., Netherlands

Filed Feb. 9, 1994, Ser. No. 194,177
Claims priority, application Netherlands, Feb. 10, 1993, 9300268; Jun. 8, 1993, 9300985
Int. Cl.[6] F16H *55/12*
U.S. Cl. 474—163 **7 Claims**

1. A tooth wheel intended to co-act with a transmission member with transmission elements, said tooth wheel bearing a plurality of protrusions arranged on a periphery of said tooth wheel, which each said protrusion is provided with at least one contact surface for co-action with the transmission elements, each said protrusion comprising self-adjusting adjusting means for adjusting a pitch of said contact surfaces, wherein each said protrusion can swivel substantially in a main plane of said tooth wheel around at least one centre outside a connecting line between a centre line of said tooth wheel and a zone of engagement between said contact surface and a transmission element, wherein



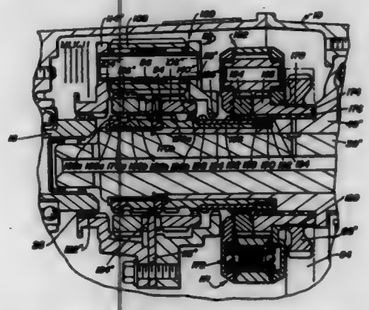
during a swivelling of each said protrusion a contact surface of the transmission element co-acting therewith undergoes a radial displacement in relation to said tooth wheel.

5,443,426

TRANSFER CASE WITH INTEGRATED PLANETARY GEAR ASSEMBLY AND "ON-DEMAND" FOUR-WHEEL DRIVE

Barry L. Frost, Waterford, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 148,470, Nov. 5, 1993, which is a continuation-in-part of Ser. No. 961,486, Oct. 15, 1992, Pat. No. 5,284,068. This application Jan. 14, 1994, Ser. No. 182,795
Int. Cl.[6] F16H *3/44*
U.S. Cl. 475—91 **20 Claims**



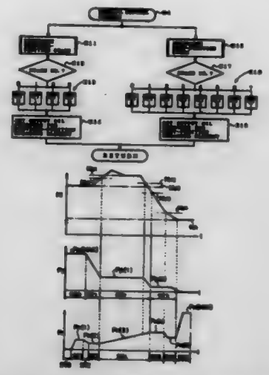
1. A transfer case for a four-wheel drive vehicle comprising:
a housing;
an input member supported for rotation in the housing;
first and second output means supported for rotation in the housing;
a planetary gear assembly that is axially moveable relative to the input member and the first and second output means between a plurality of positions for establishing a plurality of drive modes at least one of which is a two-wheel drive high-range with on-demand four-wheel drive high-range mode; and
torque coupling means disposed between the planetary gear assembly and the second output means for selectively transferring torque to the second output means in response to the traction experienced by the first output means and when the planetary gear assembly is in the two-wheel high-range with on-demand four-wheel high-range mode position for establishing the on-demand four-wheel high-range mode.

5,443,427

APPARATUS FOR CONTROLLING AUTOMATIC TRANSMISSION

Hiroshi Ataka, Asaki, and Tsunefumi Niiyama, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 80,859
Claims priority, application Japan, Jun. 23, 1992, 4-188572; Apr. 19, 1993, 5-115437
Int. Cl.[6] B60K *41/18*; F16H *61/06*
U.S. Cl. 475—123 **11 Claims**



1. An apparatus for controlling an automatic transmission, comprising:
a plurality of power transmitting paths disposed between an input and an output shafts of said automatic transmission for establishing respective gear positions; a plurality of engaging elements for selecting one of said power transmitting paths at a time; and engaging control means for controlling forces applied to engage the engaging elements;
said engaging control means comprising means for disengaging a previous-position engaging element of said engaging elements based on a plurality of previous-position stages and engaging a next-position engaging element thereof based on a plurality of next-position stages to execute an upshift of the automatic transmission;
said plurality of previous-position stages in said upshift comprising a standby stage (ST0) for waiting with a maximum controlling force of the previous-position engaging element, a first stage (ST1) for reducing the controlling force of the previous-position engaging element at a predetermined rate, a second stage (ST2) for controlling the controlling force of the previous-position engaging element in a feedback loop to equalize the input speed with a target speed, and a third stage (ST3) for releasing the controlling force of the previous-position engaging element; and
said plurality of next-position stage in said upshift comprising a standby stage (ST0') for waiting with a minimum controlling force of the next position engaging element, a first stage (ST1') for setting the controlling force of the next position engaging element at a level required to reduce â play in the next position engaging element, a second stage (ST2') for lowering the controlling force of the next position engaging element slightly, a third stage (ST3') for keeping the slightly lowered force of the next position engaging element, a fourth stage (ST4') for gradually increasing the controlling force of the next position engaging element, a fifth stage (ST5') for keeping the increased controlling force of the net position engaging element, a sixth stage (ST6') for keeping the controlling force of the next position engaging element at a level lowered by a specified value, and a seventh stage (ST7') for increasing the controlling force of the next position engaging element to a maximum;
wherein only said standby stage (ST0'), said first stage (ST1'), said second stage (ST2') and said third stage (ST3') of said next-position stages are allowed to execute under said standby stage (ST0) and said first stage (ST1) of said previous-position stages in said upshift,
only said first stage (ST1') and said fourth stage (ST4') of said next-position stages are allowed to execute under said second stage (ST2) of said previous-position stages in said upshift, and
only said fifth stage (ST5'), said sixth stage and said seventh stage (ST7') of said next-position stages are allowed under said third stage (ST3) of said previous position stages in said upshift.

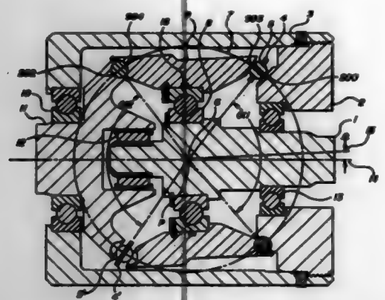
7. An apparatus for controlling an automatic transmission, comprising:
a plurality of power transmitting paths disposed between an input and an output shafts of said automatic transmission for establishing respective gear positions; a plurality of engaging elements for selecting one of said power transmitting paths at a time; and engaging control means for controlling forces applied to engage the engaging elements;
said engaging control means comprising means for disengaging a previous-position engaging element of said engaging elements based on a plurality of previous-position stages and engaging a next-position engaging element thereof based on a plurality of next-position stages to execute a downshift in the automatic transmission;
said plurality of previous-position stages in said downshift comprising a standby stage (ST0) for waiting with a maximum controlling force of the previous-position engaging element, a first stage (ST1) for reducing the controlling force of the previous-position engaging element at a predetermined rate, a second stage (ST2) for controlling the controlling force of the previous-position engaging element to increase the input speed at a specified rate, a third stage (ST3) for controlling the controlling force of the previous-position engaging element in a feedback loop to equalize the input speed with a target speed, and a fourth stage (ST4) for releasing the controlling force of the previous-position engaging element; and
said plurality of next-position stages in said downshift comprising a standby stage (ST0') for waiting with a minimum controlling force of the next position engaging element, a first stage (ST1') for setting the controlling force of the next position engaging element at a level required to reduce a play in the next position engaging element, a second stage (ST2') for keeping the controlling force of the next position engaging element, a third stage (ST3') for gradually increasing the controlling force of the next position engaging element, and a fourth stage (ST4') for increasing the controlling force of the next position engaging element to a maximum;
wherein only said standby stage (ST0'), a said first stage (ST1') and said second stage (ST2') of said next-position stages are allowed to execute under said standby stage (ST0) and said first stage (ST1) of said previous-position stages in said downshift,
only said first stage (ST1') and said second stage (ST2') of said next-position stages are allowed to execute under said second stage (ST2) of said previous-position stages in said downshift,
only said first stage (ST1') and said third stage (ST3') of said next-position stages are allowed to execute under said third stage (ST3) of said previous-position stages in said downshift, and
only said fourth stage (ST4'), of said next-position stages is allowed under said fourth stage (ST4) of said previous-position stages in said downshift.

5,443,428

GEARLESS MECHANICAL TRANSMISSION

Edward April, and Martha April, both of Mystic, Conn., assignors to April Engineering Corporation, Mystic, Conn.

Filed Apr. 29, 1994, Ser. No. 235,356
Int. Cl.[6] F16H *23/00*
U.S. Cl. 475—163 11 Claims



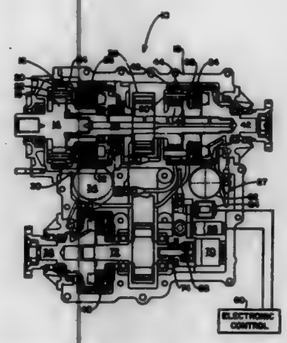
1. A gearless mechanical transmission comprising:
a housing having a first cam element therein, said first cam element including a first plurality of identical, smoothly undulating, spherically directed lobes;
a high-speed shaft supported by said housing for rotation about a main rotational axis, and including a skewed journal thereupon, said skewed journal defining a skew axis which is displaced at a fixed angle from said main axis and which intersects said main axis at a point P;
a low-speed shaft supported by said housing for rotation about said main rotational axis, said low speed shaft including a second cam element having a second plurality of identical, smoothly undulating, spherically directed lobes;
a precession link rotatably supported by a bearing which engages the skewed journal of said high-speed shaft so that said link rotates thereabout on said skew axis, said precession link including a third cam element having a third plurality of identical, smoothly-undulating, spherically directed lobes which are two greater in number than the first plurality of lobes, and a fourth cam element having a fourth plurality of identical, smoothly-undulating, spherically directed lobes, which are two greater in number than the second plurality of lobes;
a first cam follower element which includes a cage supporting a first plurality of rollers which is one greater in number than the first plurality of lobes;
a second cam follower element which includes a cage supporting a second plurality of rollers which is one greater in number than the second plurality of lobes;
wherein said first cam follower element is disposed between the first and third cam elements so that every roller of said first cam follower element is simultaneously and continuously in contact with the surfaces of one of said first plurality of lobes and one of said third plurality of lobes, such that both single lobe contact paths are spherically directed and have the same three dimensional length; and said second cam follower element is disposed between the second and fourth cam elements so that every roller of said second cam follower element is simultaneously and continuously in contact with the surfaces of one of said second plurality of lobes and one of said fourth plurality of lobes such that both single lobe contact paths are spherically directed and have the same three dimensional length; wherein all moving elements of said transmission have only angular velocity, and no element experiences reciprocating, translational motion with respect to any other fixed or moving element of said transmission; and wherein, at any given instant, at least one-third of the rollers of each of said first and second cam follower elements share a torque load imposed between the high speed shaft and the low speed shaft and wherein the rotational velocity of said low speed shaft is always a direct, fixed ratio of the rotational velocity of said high speed shaft.

5,443,429

AUTOMATIC POWERSHIFTING TRANSFER CASE FOR A VEHICLE

Ralph W. Baxter, Jr., Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 30, 1993, Ser. No. 159,862
Int. Cl.[6] F16H *48/02*
U.S. Cl. 475—204 20 Claims



1. An automatic powershifting vehicle transfer case, comprising,
a housing supporting a rotatably driven input shaft, a first output shaft rotatably coupled to one of the front or rear axles of a vehicle and a second output shaft rotatably coupled to the other of said front or rear axles of said vehicle,
a first planetary gear set associated with said input shaft, including a sun gear connected to said input shaft to rotate therewith, a ring gear and a pinion gear set supported in a carrier, said planetary gear set being drivingly coupled to one of said output shafts,
a first clutch associated with said first planetary gear set, which in relation therewith will provide a predetermined output drive ratio to at least one of said first or second output shafts,
a second planetary differential gear set associated with said first output shaft, and having second clutch associated with said second planetary differential gear set to selectively control torque transfer to the second output shaft, and
a third clutch associated with said second output shaft, being selectively actuated to drivingly couple means to drive said second output shaft to said second output shaft, such that torque is selectively transferred to drive said second output shaft, and
a control system for automatically actuating said first, second or third clutch means to provide two-wheel, four-wheel and all-wheel drive modes of operation.

5,443,430

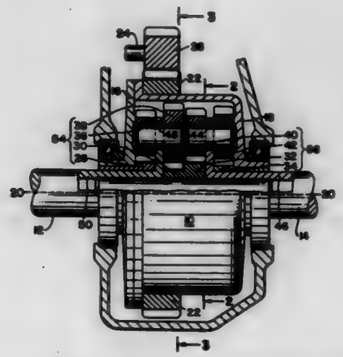
SPUR GEAR DIFFERENTIAL FOR A VEHICLE

Frederick L. Parsons, Pearce, Ariz., assignor to Neuberne H. Brown, Jr., Frankford, W. Va., a part interest

Filed May 2, 1994, Ser. No. 236,999
Int. Cl.[6] F16H *48/10*
U.S. Cl. 475—248 15 Claims

1. A differential for transmitting rotational power to the left and right axles of a vehicle whereby the torque output between the right and left axles can be biased or varied, comprising:

a differential housing which rotates about a central axis, the housing having spaced left and right walls transverse to the central axis;
a left axle section extending through the left wall of the housing and a right axle section extending through the right wall of the housing, the left and right axle sections being coaxial with the central axis and rotatable relative to the housing;
a right sun gear coaxial with the central axis and drivably connected to the right wall of the housing for rotation therewith relative to the right axle;
a left sun gear coaxial with the central axis and drivably connected to the left wall of the housing for rotation therewith relative to the left axle;
a center-left sun gear and a center-right sun gear coaxial with the central axis and disposed between the left sun gear and the right sun gear, the center-left and center-right sun gears being drivably connected for concurrent rotation about the central axis;



two or more right planet gears meshing with the right sun gear and rotatable around the circumference thereof;
two or more center-right planet gears meshing with the center-right sun gear and rotatable around the circumference thereof;
two or more center-left planet gears meshing with the center-left sun gear and rotatable around the circumference thereof;
two or more left planet gears meshing with the left sun gear and rotatable around the circumference thereof;
each of the right planet gears being paired with an associated center-right planet gear, the pair being drivably connected to a common right shaft for concurrent rotation;
each of the left planet gears being paired with an associated center-left planet gear, the pair being drivably connected to a common left shaft for concurrent rotation;
means for drivably connecting the left shaft to the left axle section; and
means for drivably connecting the right shaft to the right axle section.

5,443,431

DIFFERENTIAL WITH FRICTION-ENHANCING WEDGE

Joseph E. Cilano, Bergen, N.Y., assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed Oct. 13, 1993, Ser. No. 135,927
Int. Cl.[6] F16H *48/10, 48/22*
U.S. Cl. 475—249 11 Claims

1. A differential assembly for dividing drive torque between a pair of output shafts comprising:
a housing rotatable about a common axis of the pair of output shafts;
planetary gearing mounted within said housing for interconnecting the output shafts;
a casing portion of said housing surrounding said planetary gearing;
a wedge supported by said casing portion and having first and second bearing surfaces rotationally supporting outside diameter surfaces of adjacent gear members of said planetary gearing;
said casing portion including an inner support surface and said wedge including a third bearing surface engaging said inner support surface of the casing portion;



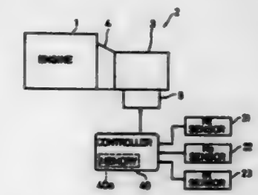
said first and second bearing surfaces of the wedge being positioned with respect to said third bearing surface of the wedge for preventing contact between said adjacent gear members and said inner support surface of the casing;
said third bearing surface of the wedge slidably engaging said inner support surface of the casing; and
said third bearing surface of the wedge and said inner support surface of the casing being shaped for permitting angular motion between said wedge and said casing about the common axis of the pair of output shafts.

5,443,432

METHOD AND APPARATUS FOR SPEED CHANGE CONTROL OF AN AUTOMOTIVE AUTOMATIC TRANSMISSION

Kenjiro Fujita, Kusatsu; Katsutoshi Usuki, Kyoto, and Katsuhiro Hatta, Uji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 45,714, Apr. 14, 1993. This application Jun. 13, 1994, Ser. No. 257,907
Claims priority, application Japan, Apr. 15, 1992, 4-95510
Int. Cl.[6] F16H *5/40*
U.S. Cl. 477—155 16 Claims





1. In an automotive automatic transmission including a first frictional engaging element for establishing a first gear stage, a second frictional engaging element for establishing a second

gear stage, a first electromagnetic valve for controlling an operating oil pressure supplied to the first frictional engaging element, and a second electromagnetic valve for controlling an operating oil pressure supplied to the second frictional engaging element, a speed change control apparatus for controlling the first and second electromagnetic valves such that the first frictional engaging element, which has been engaged, is released, and the second frictional engaging element, which has been released, is engaged, to carry out a shift from the first gear stage to the second gear stage, said speed change control apparatus comprising:

synchronized point detecting means for detecting a time point, as a synchronized point, at which the rotational speed of an input shaft of the automatic transmission reaches a rotational speed which is regarded as corresponding to the second gear stage;

first pressure increasing means for increasing the oil pressure supplied to the second frictional engaging element to a predetermined pressure, less than a pressure necessary for engagement of the second frictional engaging element, when the synchronized point is detected; and

second pressure increasing means for further increasing the oil pressure supplied to the second frictional engaging element beyond the predetermined pressure to thereby provide a two-stage supply of oil pressure to the second frictional engaging element.

9. A speed change control method for an automotive automatic transmission in which a first frictional engaging element, which has been engaged, is released, and a second frictional engaging element, which has been released, is engaged, to carry out a shift from a first gear stage to a second gear stage, said speed change control method compriaing the steps of:

(a) detecting a time point, as a synchronized point, at which the rotational speed of an input shaft of the automatic transmission reaches a rotational speed which is regarded as corresponding to the second gear stage;

(b) increasing the oil pressure supplied to the second frictional engaging element to a predetermined pressure, less than a pressure necessary for engagement of the second frictional engaging element, when the synchronized point is detected in step (a); and

(c) further increasing the oil pressure supplied to the second frictional engaging element beyond the predetermined pressure to thereby provide a two-stage supply of oil pressure to the second frictional engaging element.

5,443,433

SKI POLE ENHANCEMENT FOR CROSS-COUNTRY SKI SIMULATOR

Niels Krag, 639 Enchanted Way, Pacific Palisades, Calif. 90272-2017

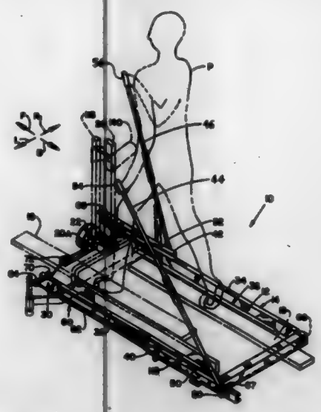
Filed Aug. 24, 1994, Ser. No. 295,290

Int. Cl.[6] A63B *23/00*

U.S. Cl. 482—70 **6 Claims**

1. An attachment for use with a ski simulating machine that has a frame and a pair of skis mounted on the frame to move in forward and rearward directions on the frame, comprising:

an attachment framework that includes a pair of stationary guides and a coupling device that is removably mountable on said frame, a pair of slides each resistance slidable in forward and rearward directions on a corresponding one



of said guides, a pair of ski poles each having a lower end pivotally mounted on a corresponding one of said slides.

5,443,434

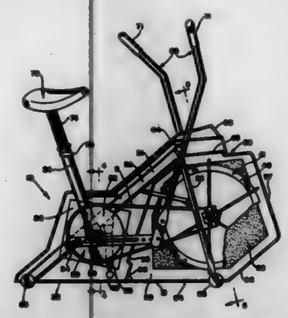
EXERCISE DEVICE

Matthew D. Buchanan, Olney; Jeffrey D. Metcalf, Albion, and Craig A. Topp, Olney, all of Ill., assignors to Roadmaster Corporation, Olney, Ill.

Continuation-in-part of Ser. No. 9,633, Jun. 17, 1993, Pat. No. Des. 353,638. This application Sep. 7, 1993, Ser. No. 117,581

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—59 **15 Claims**



1. An air resistance exercise cycle comprising:

a) a frame;

b) pedals attached to a crank rotatably mounted to said frame;

c) a wheel comprising air resistance blades rotatably supported by said frame and connected to said crank so as to be driven by rotation of said crank; and

d) a housing, comprising solid panels, surrounding and enclosing said wheel so as to generally prevent air from outside the housing from contacting the wheel ,said housing having an internal shape that provides dead space within the housing such that the air moved by rotation of the wheel eddies inside of said housing.

5,443,435

ADJUSTABLE LENGTH, ADJUSTABLE WEIGHT, ADJUSTABLE SHOCK ABSORPTION, MULTI-PURPOSE EXERCISE/SPORT POLES

William T. Wilkinson, P.O. Box 378, Chesapeake City, Md. 21915

Continuation of Ser. No. 846,053, Mar. 5, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,916

Int. Cl.[6] A63B *23/12*

U.S. Cl. 482—74 **27 Claims**



1. A pole device for the aiding of forward movement comprising:

(a) a handle,

(b) means for exercising a user's arms during the course of forward movement of the user's legs, during relative movement of the user's arms with respect to the user's body while said handle is gripped by the user's hand during the course of forward movement of the user's legs,

(c) a first shaft connected to said handle,

(d) a second shaft connected to said first shaft, one of said first and second shafts is an outer shaft and the other of said shafts is an inner shaft, said inner shaft being telescopically mounted in said outer shaft to comprise a telescopic assembly, said telescopic assembly has a ground contacting surface remote from said handle, said handle being separate and distinct from said telescopic assembly,

(e) a weight attached to one of said shafts either in the inside or on the outside of said shaft below said handle, or attached as said handle,

(f) said handle is attached to a top end of said device and said handle is capable of being gripped by user's hand, said device having a bottom end, said device being of sufficient length for the user to grip said handle during the course of forward movement while said bottom end of said device touches a ground surface, and

(g) the touching of said bottom end with the ground surface comprising a push-off means to assist the user in moving forward.

5,443,436

AUTOMATIC EXCHANGING DEVICE OF CROSS BAR OF TRANSFER FEEDER AND CONTROL SYSTEM THEREFOR

Hideaki Kawakami, and Satoru Enomae, both of Ishikawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

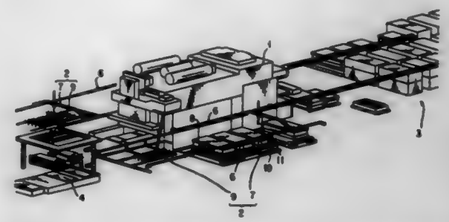
PCT No. PCT/JP92/00310, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO92/16320, PCT Pub. Date Jan. 10, 1992

PCT Filed Mar. 13, 1992, Ser. No. 117,060

Claims priority, application Japan, Mar. 15, 1991, 3-022407 U; Mar. 15, 1991, 3-074274

Int. Cl.[6] B21J *13/08*; B23Q *3/155*

U.S. Cl. 483—9 **16 Claims**



7. A system for exchanging a cross bar in a transfer feeder for exchanging a first cross bar adapted to a first die and a second cross bar adapted to a second die and distinct from said first cross bar, the system comprising:

first means for carrying the first cross bar between a first position where said first cross bar is set in a press body and a second position where said first cross bar is withdrawn out of said press body;

second means for storing said first and second cross bars in one of a plurality of storage spaces;

third means active while said first means is in second position, for removing said first cross bar from said first means, carrying said first cross bar to one of the storage spaces for storing said first cross bar, moving to another storage space where said second cross bar is stored for picking up said second cross bar, carrying said second cross bar to said first means placed at said second position for setting said second cross bar thereon; and

fourth means for controlling operation of said third means for automatically exchanging the first cross bar and the second cross bar.

5,443,437

DEVICE FOR AUTOMATICALLY ADJUSTING A FOLD IN A FOLDING APPARATUS OF A ROTARY PRINTING MACHINE

Richard Mack, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen, Heidelberg, Germany

Continuation of Ser. No. 973,310, Nov. 9, 1992, abandoned. This application Apr. 13, 1994, Ser. No. 227,200

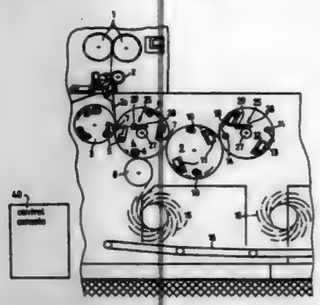
Claims priority, application Germany, Nov. 8, 1991, 41 36 792.8

Int. Cl.[6] B65H *45/16*

U.S. Cl. 493—359 **9 Claims**

1. In a folding apparatus of a rotary printing machine, the combination comprising at least one cylinder with adjustable folding blades and impaling pins mounted thereon, perforating rollers disposed upstream of said at least one cylinder as seen in a direction of travel of a web of printed product travelling through the folding apparatus, at least one further cylinder with folding jaws mounted thereon, and a folded-product guiding cylinder with gripper devices mounted thereon, said folding blades, said impaling pins, said folding jaws and said gripper devices being adjustably mounted in the respective cylinders adjacent and with respect to outer cylindrical sur-

faces thereof, a gear train for driving at least one of said cylinders, a device being integrated into said gear train and operatively connected to at least one of said cylinders for automatically adjusting the folding apparatus, and remotely controllable drive means for actuating said adjusting device for varying respective operating positions of said folding blades, said impaling pins, said folding jaws and said gripper elements relative to one another and relative to the respective outer cylindrical surfaces of the respective cylinders.

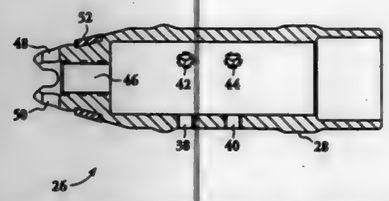


5,443,438

CENTRIFUGE DRIVE-TO-ROTOR ASSEMBLY

Herschel E. Wright, Gilroy, and Cory Y. Chern, Mountain View, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 29, 1994, Ser. No. 282,707
Int. Cl.[6] B04B *9/00*
U.S. Cl. 494—84 **16 Claims**



1. An assembly for transferring rotation from a centrifuge drive system to a centrifuge rotor comprising:
a hub connected to be driven by said centrifuge drive system, said hub having means for translating rotational motion to said centrifuge rotor, said hub being formed of a material having a first coefficient of friction; and
a sleeve member attached to said hub in a position to support said centrifuge rotor, said sleeve member being formed of a material having a second coefficient of friction that is less than said first coefficient of friction.

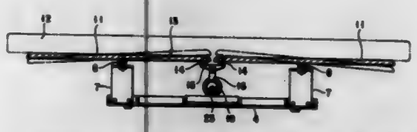
5,443,439

BED APPARATUS AND METHOD FOR DRIVING A BEDSTEAD

Shoji Ohshita, Miyoshi, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 46,522
Claims priority, application Japan, Apr. 21, 1992, 4-101329
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—90 **17 Claims**

1. A bed apparatus comprising:
a bedframe;
a bedstead comprising a plurality of separation pieces that are divided in a longitudinal direction of the bedframe such that said separation pieces are arranged in two arrays in a width direction of the bedframe so that separation pieces of each array are adjacent to each other and are spaced apart from each other;
a plurality of coupling means for rotatably coupling adjacent end portions of a separation piece in each array to each other so that the two arrays are coupled to each other via said coupling means;
a drive shaft divided into a plurality of drive shaft sections coupled to drive one of said arrays of separation pieces and a plurality of driven shaft sections coupled to drive the other array of separation pieces such that said plurality of drive shaft sections and said plurality of driven shaft sections are rotatable in the width direction of the bed frame;
drive means for rotatably driving said plurality of drive shaft sections of said drive shaft;
power transmission means comprising:
a plurality of circular disks, each circular disk being mounted to be eccentrically rotatable on each of said plurality of drive shaft sections and each of said plurality of driven shaft sections; and



a plurality of movable arms respectively having first and second end portions, each movable arm having said first end portion thereof rotatably coupled to a respective one of said plurality of circular disks to enable each of said plurality of movable arms to be moved in an up and down direction by an eccentric rotation of said respective one of said plurality of circular arms, and said second end portion of each movable arm being coupled to a respective one of said plurality of coupling means coupling adjacent end portions of said separation pieces to each other; and
phase control means for coupling an end portion of each of said plurality of drive shaft sections to an end portion of a respective one of said plurality of driven shaft sections of the drive shaft and for setting a circumferential coupling angle between said plurality of drive shaft sections and said plurality of driven shaft sections to thereby selectively control a phase of a swinging motion of the separation pieces in one array that are driven by said plurality of drive shaft sections relative to said plurality of separation pieces in the other array that are driven by said plurality of driver shaft sections.

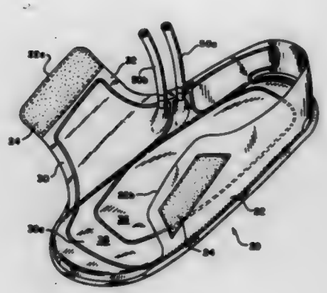
5,443,440

MEDICAL PUMPING APPARATUS

David M. Tumey, Huber Heights; Robert L. Cartmell, Bellbrook; Timothy J. Riazzi, Kettering; Abdou F. DeBan, and David B. McQuain, both of Dayton, all of Ohio, assignors to NDM Acquisition Corp., Minneapolis, Minn.

Filed Jun. 11, 1993, Ser. No. 76,575
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—152 **18 Claims**

1. A medical device for applying compressive pressures against a patient's foot comprising:
first and second panels of flexible material secured to one another to form an inflatable bag to be fitted upon the foot, said bag having first and second separate fluid bladders with said second fluid bladder surrounding a substantial portion of said first fluid bladder, said first fluid bladder being adapted to engage a first portion of the foot which generally includes the plantar arch and said second fluid bladder being adapted to engage a second portion of the foot which generally includes the heel, the dorsal aspect, and a forward portion of the sole beneath the toe phalanges;
securing means for holding said inflatable bag to the foot; and
fluid supply means for applying pressurized fluid to said first and second fluid bladders such that said first fluid bladder applies a first compressive pressure upon the plantar arch and said second fluid bladder applies a second compressive pressure upon the heel, the dorsal aspect of the foot and the forward portion of the sole beneath the toe phalanges.



5,443,442

METHOD AND APPARATUS FOR CONTROLLED ENVIRONMENT ELECTROTRANSPORT

Joseph B. Phipps, Plymouth, and Lyn C. Moodie, St. Paul, both of Minn., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 831,804, Feb. 5, 1992, abandoned, which is a division of Ser. No. 502,232, Mar. 30, 1990, Pat. No. 5,125,894. This application Dec. 22, 1993, Ser. No. 173,149
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 **8 Claims**

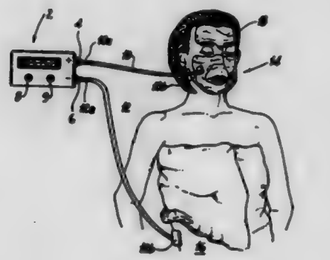
(a) an electrical power source for generating a predetermined level of current, said power source comprising at least one positive electrode, and one negative electrode, said power source further comprising current varying means for varying the output of current from said power source in a range of about 0.1 mA to about 10 mA.;
(b) a mask configured to be placed on the face of a person, said mask configured and dimensioned for receiving said cosmetic composition therein, said mask having a selectively permeable membrane portion disposed to lie between said cosmetic composition and the face of a person and wherein said mask is formed with a plurality of holes therethrough so that when said mask is placed on the face of a person, said holes will be positioned substantially over the nostrils, eyes and mouth of the person;
(c) means for connecting said positive electrode to said mask so that said cosmetic composition in said mask is in electrical cooperation with said electrical power source; and
(d) means for connecting said negative electrode to an area of skin not having a cosmetic composition applied thereto.

5,443,441

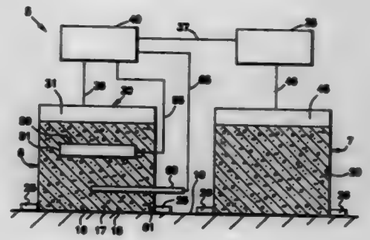
APPARATUS AND METHOD FOR TRANSDERMAL DELIVERY OF COSMETIC COMPOSITIONS

Anne Marie De Claviere, 92 Sunken Orchard La., Oyster Bay Cove, N.Y. 11771

Continuation-in-part of Ser. No. 26,949, Mar. 5, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 151,606
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 **5 Claims**



1. An apparatus for transdermal delivery of cosmetic compositions, which comprises:



4. An electrotransport apparatus comprising:
(a) an active electrode reservoir including a concentration of target species and a concentration of hydronium ions;
(b) a primary electrode arrangement, in said active electrode reservoir, having means for adjusting a rate of transport of the target species from the active electrode reservoir;
(c) a secondary electrode system, in said active electrode reservoir, having means for adjusting hydronium ion content in said reservoir; and,
(d) means for operating said secondary electrode system to achieve maintenance of a constant hydronium ion concentration throughout operation of said apparatus.

5,443,443

ATHERECTOMY SYSTEM

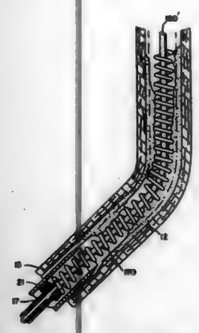
Samuel Shiber, Atkinson, N.H., assignor to Surgical Systems & Instruments, Inc., Libertyville, Ill.

Continuation-in-part of Ser. No. 913,231, Jul. 14, 1992, Pat. No. 5,334,211, which is a continuation-in-part of Ser. No. 662,558, Feb. 28, 1991, Pat. No. 5,306,244, which is a continuation-in-part of Ser. No. 499,726, Mar. 27, 1990, Pat. No. 5,135,531, which is a continuation-in-part of Ser. No. 350,020, May 12, 1989, Pat. No. 4,979,939, which is a continuation-in-part of Ser. No. 326,967, Mar. 22, 1989, Pat. No. 4,957,482, Ser. No. 324,616, Mar. 16, 1989, Pat. No. 5,007,896, Ser. No. 323,328, Mar. 13, 1989, Pat. No. 5,002,553, and Ser. No. 332,497, Mar. 13, 1989, Pat. No. 5,024,651, said Ser. No. 326,967, Ser. No. 324,616, Ser. No. 323,328, and Ser. No. 332,497, each is a continuation-in-part of Ser. No. 286,509, Dec. 19, 1988, Pat. No. 4,894,051, which is a continuation-in-part of Ser. No. 243,900, Sep. 13, 1988, Pat. No. 4,886,490, which is a continuation-in-part of Ser. No. 225,880, Jul. 29, 1988, Pat. No. 4,842,579, Ser. No. 205,479, Jun. 13, 1988, Pat. No. 4,883,458, and Ser. No. 78,042, Jul. 27, 1987, Pat. No. 4,819,634, said Ser. No. 225,880, Ser. No. 205,479, and Ser. No. 78,042, each is a continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, Pat. No. 5,041,082, which is a continuation-in-part of Ser. No. 874,546, Jun. 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Aug. 17, 1993, Ser. No. 107,453

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[6] A61B *17/22*

U.S. Cl. 604—22 **15 Claims**



1. A system for removing an obstruction, in sections, from within a vessel of a body, comprising in combination:

a flexible guide wire insertable into the vessel,

a flexible rotary catheter slidable over the flexible guide wire and having a tubular blade at its distal end for separating the obstruction from a wall of the vessel, the tubular blade being affixed to the flexible rotary catheter for rotating together with it,

a passage, defined around the flexible guide wire by the flexible rotary catheter for accepting sections of the obstruction which was separated from the wall of the vessel.

5,443,444

ORTHOPAEDIC POLYCENTRIC HINGE

Adriaan C. Prayssers, Encinitas, Calif., assignor to Professional Care Products Incorporated, Vista, Calif.

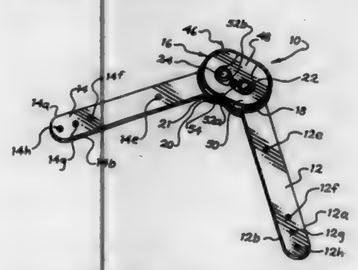
Filed Jul. 19, 1994, Ser. No. 276,935

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **10 Claims**

8. A hinge for an orthopaedic brace having a pair of support arms, a hinge plate associated with the arms, at least one pivot pin for connecting the arms for pivotal movement relative to one another, pivotal movement limit apertures in the hinge plate, and a plurality of limit pins selectively insertable in the apertures to govern relative pivotal movement of the arms, and including

a cover of a size and shape conformed substantially to the size and shape of the hinge plate for covering the hinge plate, the limit apertures and the limit pins and for retaining the limit pins in selected apertures;



said cover being hingedly connected to the hinge plate adjacent a marginal edge of the hinge plate and on an axis parallel to the hinge plate, said cover being movable from a closed position overlying and covering the hinge plate, the limit apertures and the limit pins to an open position wherein the hinge plate and all of the limit apertures and all of the limit pins are exposed to accommodate simultaneous access to all of the limit pins and limit apertures.

5,443,445

SURGICAL DEVICE

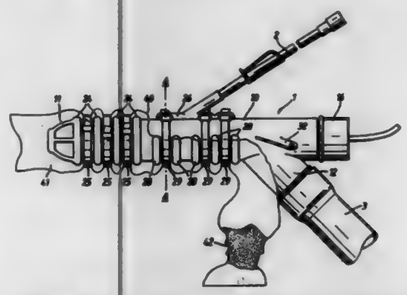
Joseph L. Peters, Ware, and James W. Kerr, Gravesend, both of England, assignors to Clinical Product Development Limited, Gravesend, England

Filed Oct. 8, 1993, Ser. No. 129,127

Claims priority, application United Kingdom, Apr. 8, 1991, 9107296

Int. Cl.[6] A61M *1/00, 31/00*

U.S. Cl. 604—27 **17 Claims**



1. A drain tube for an intra-operative colon irrigation system, comprising a tubular body with a forward end portion for insertion into the bowel, screen means forming a dome-shaped nozzle at the forward end of the tubular body for preventing intussusception of the bowel into the tubular body, (10) the nozzle having several forwardly directed holes and including a ring defining a central hole and a plurality of spokes extending outwardly and rearwardly from the ring to separate a plurality of further holes spaced around the central hole.

5,443,446

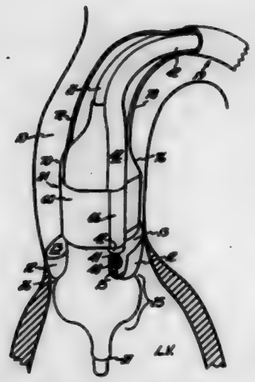
METHOD AND APPARATUS FOR IN VIVO HEART VALVE DECALCIFICATION

Leonid Shturman, Minnetonka, Minn., assignor to Shturman Cardiology Systems, Inc., Minnetonka, Minn.

Division of Ser. No. 680,705, Apr. 4, 1991, Pat. No. 5,295,958. This application Feb. 3, 1994, Ser. No. 190,990

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **14 Claims**



1. A method of removing deposits from an aortic heart valve having a superior surface, comprising;

advancing through the aorta an anchoring balloon and a deposit removal tool movably connected with respect to an exterior surface of the anchoring balloon;

positioning the anchoring balloon across the aortic valve and positioning the deposit removal tool near the superior surface of the aortic valve;

inflating the anchoring balloon sufficiently to fixate it with respect to the aorta and aortic valve without completely collapsing the aortic valve; and

operating the deposit removal tool to remove the deposits.

5,443,447

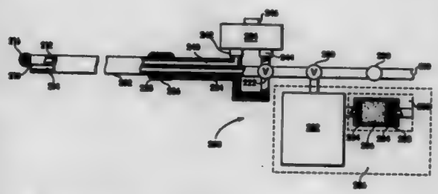
INTRACAVITARY DELIVERY OR WITHDRAWAL DEVICE

Amin I. Kassis, 28 South St., Chestnut Hill, Mass. 02167, assignor to Amin I. Kassis, Boston, Mass.

Continuation of Ser. No. 950,158, Sep. 24, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 212,681

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **23 Claims**



1. In combination,

a catheter comprising, in combination,

a first and second conduit each with an aperture at its distal and proximal end,

an atomizer flexibly connected to the distal end of the first conduit,

a balloon surrounding the conduits,

a multi-port valve operatively connected to the proximal end of said second conduit, and

an inflation tube with its input in fluid communication with said multi-port valve and its output in fluid communication with said balloon,

a chamber for introducing a fluid agent comprising, in combination,

a fluid input operatively connected to said multi-port valve through a first valve means for delivery of pressurized fluid flow,

a chamber inlet port, and

an output operatively connected to the proximal end of said first conduit by a second valve means for delivery of pressurized fluid flow,

a collection system comprising a three-way valve operatively connected to said multi-port valve by a third conduit and a vessel comprising an input port operatively connected to said three-way valve and a gas exhaust port,

a two-port filter system with one end operatively connected to said gas exhaust port, and

a gas/liquid inlet operatively connected to said three-way valve comprising a fourth conduit with a means for controlling flow rate.

5,443,448
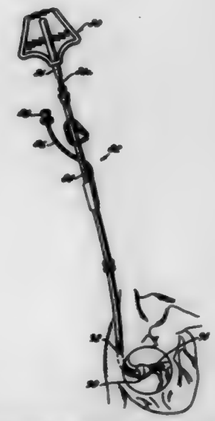
DUAL FLEXIBLE INTRODUCER AND CANNULA

James H. DeVries, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.

Division of Ser. No. 27,506, Mar. 5, 1993, Pat. No. 5,344,399, which is a continuation-in-part of Ser. No. 888,517, May 26, 1992, abandoned. This application May 31, 1994, Ser. No. 251,093

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—96 **7 Claims**



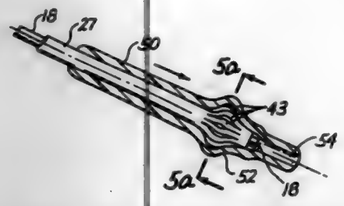
1. A flexible cannula having an interior lumen and a distal end to be introduced into body vessels and chambers for medical procedures, and a removable introducer stylet to be carried in said lumen comprising a relatively rigid proximal end portion to be manipulated by an attendant physician and a relatively flexible distal end, said stylet comprising an integral shaft heat treated to render the distal end more flexible than the proximal end.

5,443,449

CHOLANGIOGRAPHY CATHETER

Terrance J. Buelna, Rancho Santa Margarita, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 664,067, Mar. 1, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 80,972
Int. Cl.[6] A61M 29/00
U.S. Cl. 604—105 29 Claims



1. An occlusion catheter sized and configured for insertion into a body conduit having a wall extending axially of the conduit, the catheter being operable to occlude the body conduit and comprising:

a catheter body having a longitudinal axis and an outer surface extending between a proximal end and a distal end of the catheter body;

occlusion and anchoring means disposed in proximity to the distal end of the catheter body and having a low profile state and a high profile state, the occlusion and anchoring means in the low profile state facilitating insertion of the catheter into the body conduit, and in the high profile state anchoring the catheter body within the conduit and facilitating occlusion of the body conduit by the catheter;

a plurality of fingers included in the occlusion and anchoring means and expandable from the low profile state to the high profile state, the fingers in the high profile state including a concave surface extending increasingly radially outwardly with progressive proximal positions along the surface to an outer radius to reduce the area of contact between the occlusion and anchoring means and the conduit and thereby increase the pressure of the occlusion and anchoring means on the conduit; and

an elastomeric sleeve included in the occlusion and anchoring means and disposed in circumferential relationship with the fingers, the sleeve being expandable radially outwardly by the fingers to sealingly engage the wall of the body conduit at the outer radius of the fingers when the occlusion and anchoring means is in the high profile state.

5,443,450

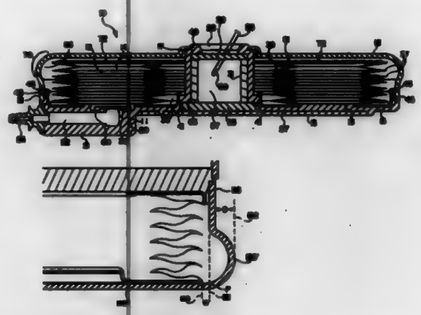
MEDICATION DELIVERY DEVICE AND METHOD OF CONSTRUCTION

Paul S. Kratoska, Brooklyn Park, and Chris C. Christiansen, Oakdale, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 29, 1994, Ser. No. 235,442
Int. Cl.[6] A61M 5/152
U.S. Cl. 604—141 11 Claims

1. A medication delivery device comprising:

a housing including a base and a cover, said cover having a peripheral side portion, a substantially planer surface and a curved portion joining said side portion and said substantially planer surface, whereby an internal cavity is formed bounded by said side portion, said substantially planer surface and said base, said side portion being substantially linear along a side portion axis extending between said base and said substantially planer surface, said side portion axis being approximately perpendicular to said substantially planar surface, said curved portion having a radius centered on said side portion axis a distance from said planar surface equal to the length of said radius, said curved portion extending away from said internal cavity, said curved portion contacting said substantially planar surface and said side portion approximately along said side portion axis, whereby the area of said internal cavity includes substantially all of the area that would be formed if said side portion and said substantially planer surface were extended and joined in the absence of said curved portion,



a reservoir within said housing,

a reservoir refill port in fluid communication with said reservoir,

an outlet port, and

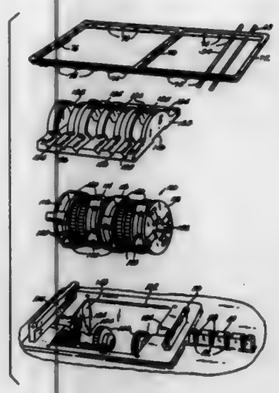
means connected between said reservoir and said outlet port for dispensing medication from said reservoir through said outlet port.

5,443,451

PERISTALTIC PUMPING ASSEMBLY

Arthur S. Chapman, Solvang, Calif., and Tsuyoshi Tsuji, Ohmiya, Japan, assignors to Baxter International Inc., Deerfield, Ill.

Filed Nov. 17, 1993, Ser. No. 153,615
Int. Cl.[6] A61M 1/00; F04B 43/08, 43/12, 45/06
U.S. Cl. 604—153 10 Claims



1. A pumping module comprising

at least two axially aligned peristaltic pumping rotors rotatably carried side by side on a single axle,

a race aligned with each of the pumping rotors to engage flexible tubing to cause peristaltic flow upon rotation of the rotors,

a separate motor associated with each of the peristaltic pumping rotors, and

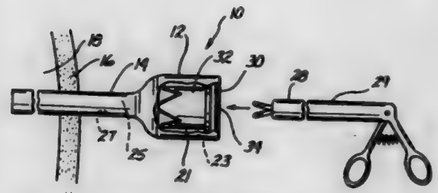
a drive mechanism for operatively connecting each of the pumping rotors to a different one of the motors.

5,443,452

SEAL ASSEMBLY FOR ACCESS DEVICE

Charles C. Hart, Huntington Beach, and Donald L. Gadberry, San Clemente, both of Calif., assignors to Applied Medical Resources, Laguna Hills, Calif.

Continuation of Ser. No. 907,706, Jul. 2, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 51,609
Int. Cl.[6] A61M 5/178
U.S. Cl. 604—167 19 Claims



1. A surgical device having a longitudinal configuration and an axis extending between a proximal end and an opposing distal end, the device comprising:

a housing disposed at the proximal end of the device and having an inner surface defining a chamber;

a cannula extending distally of the housing and having at least one lumen communicating with the chamber of the housing;

a first valve disposed in the housing and having a plurality of walls forming a first seal with the inner surface of the housing and a second seal;

the walls being foldable between a first position wherein the second seal closes the at least one lumen of the cannula and a second position wherein the second seal opens the lumen of the cannula; and

a second valve disposed proximally of the first valve and having an aperture therein which is adapted to receive a surgical instrument therethrough and to form a seal about an outer surface of said instrument.

5,443,453

STOP-COCK VALVE

Clarence L. Walker, Webster Groves; Frederick F. Schweitzer, Jr., Glencoe; Alfredo E. Patag, St. Louis, and Gerald J. Garvey, II, Maryland Heights, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

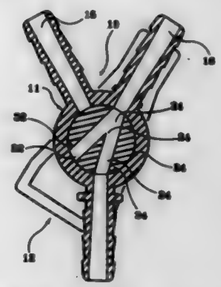
Filed Apr. 21, 1994, Ser. No. 230,657
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—248 15 Claims

1. A valve comprising:

a valve body having at least one inlet port and at least one outlet port;

a valve stem positioned at least partially within said valve body and including a handle, said valve stem including at least one fluid flow passage therethrough, said valve stem being rotatable relative to said valve body between a first position in which fluid flow between said at least one inlet port and said at least one outlet port is prevented, and a second position in which said at least one fluid flow passage connects said at least one inlet port with said at least one outlet port for fluid flow therethrough; and

rotation interference members for substantially inhibiting initial relative rotation between said valve stem and said valve body between said first position and said second position, said rotation interference members including a rigid protrusion extending either from said valve body or said valve stem and a shear-away interference member extending from the other of said valve body or said valve stem, said rigid protrusion and said shear-away interference member being positioned on said valve body and said valve stem such that said shear-away interference member and said rigid protrusion contact each other and interfere with initial rotation of said valve stem relative to said



valve body between said first position and said second position,

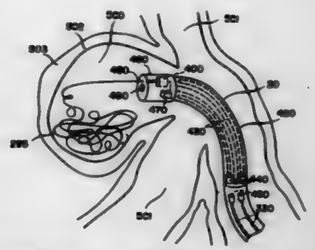
whereby, said shear-away interference member is removed from its attachment with said valve body or said valve stem by said rigid protrusion when rotational force exerted on said valve relative to said valve body to move said valve stem from said first position to said second position exceeds a predetermined value.

5,443,454

CATHETER FOR EMBOLECTOMY

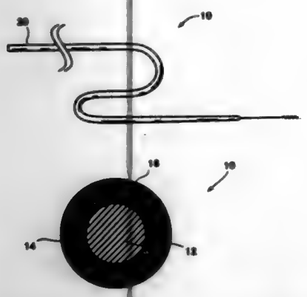
Susumu Tanabe, and Fumihiro Hirose, both of Nakai, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 164,218
Claims priority, application Japan, Dec. 9, 1992, 4-329722
Int. Cl.[6] A61M 5/00, 25/00
U.S. Cl. 604—264 22 Claims



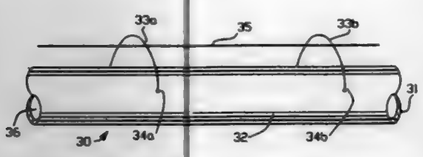
1. An embolectomy catheter containing a lumen for the introduction of a liquid substance, and a filament forming device provided in a distal end of the catheter and arranged to receive the liquid substance introduced through said lumen for extruding said received liquid substance in the form of a filamentous embolic material, and wherein said filament forming device is dimensioned and arranged to extrude said liquid substance such that said liquid substance hardens in the form of said filamentous material immediately after exiting from said filament forming device at the distal end of the catheter.

5,443,455
GUIDEWIRE AND METHOD OF PRETREATING METAL SURFACES FOR SUBSEQUENT POLYMER COATING
Robert Hergenrother, Fremont; Uriel H. Chee, San Carlos, and Laurent Schaller, Los Altos, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.
Filed Jul. 27, 1993, Ser. No. 97,458
Int. Cl.[6] A61M *25/00*
U.S. Cl. 428—380 6 Claims



1. A guidewire comprising a metal core, a plasma deposited hydrocarbon residue tie layer surrounding at least a portion of the metal core, and an outer polymer coating covalently bonded to the tie layer.

5,443,456
CATHETER WITH COLLAPSIBLE WIRE GUIDE
Howard M. Alliger, Melville; Joseph Librizzi, Huntington, both of N.Y., and Robert Ginsburg, Greenwood Village, Colo., assignors to Misonix, Inc., Farmingdale, N.Y.
Division of Ser. No. 9,207, Jan. 22, 1993, Pat. No. 5,306,261.
This application Feb. 10, 1994, Ser. No. 195,915
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 4 Claims



1. A catheter comprising:
an elongate substantially cylindrical catheter wall having an outer surface, said catheter wall having a distal tip; and
flexible guide means attached to said outer surface of said wall at a distal end thereof for flexing between a neutral configuration relatively collapsed against said outer surface and a guide configuration extending laterally outwardly from said outer surface and for slidably attaching, while in said guide configuration, a guidewire to said catheter wall, said flexible guide means including a thread-like loop attached to said wall, said thread-like loop being substantially spaced from said distal tip so that said thread-like loop can assume said neutral configuration, relatively collapsed against said outer surface.

5,443,457
TRACKING TIP FOR A SHORT LUMEN RAPID EXCHANGE CATHETER
Richard S. Glan, San Jose, and Stephen M. Salmon, Sunnyvale, both of Calif., assignors to Cardiovascular Imaging Systems, Incorporated, Sunnyvale, Calif.
Filed Feb. 24, 1994, Ser. No. 201,101
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 26 Claims



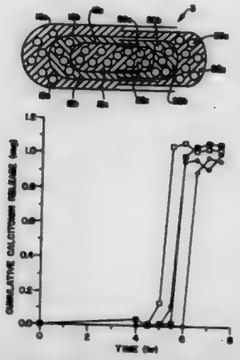
1. A catheter system comprising:
a catheter sheath including a tubular body having a proximal end, a distal end, and a working lumen and a guidewire lumen, extending therethrough wherein the guidewire lumen extends between a side port and a distal port;
a flexible working shaft having a proximal end and a distal end, the shaft being disposed in the working lumen and having a work element attached to the shaft near the distal end of the shaft; and
a stiffening member disposed in the working lumen, distal to the work element on the working shaft said stiffening member having a distal end and a proximal end, the distal end being located distal to the side port and the proximal end being located proximal to the side port.

5,443,458
MULTILAYERED BIODEGRADABLE STENT AND METHOD OF MANUFACTURE
Robert P. Eury, Cupertino, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 995,529, Dec. 22, 1992, abandoned.
This application Dec. 3, 1993, Ser. No. 162,670
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—891.1 25 Claims



1. A method of fabricating a biodegradable, drug releasing stent for implantation within a lumen, comprising the steps of:
forming a first layer of biodegradable material having physical properties necessary to enable a stent to maintain patency of said lumen;
forming a second layer of biodegradable material which releases a selected drug upon exposure to an environment such as is encountered within said lumen; and
superposing said second layer on said first layer to provide a laminated structure that is biodegradable, drug releasing and has the physical properties necessary for said stent to perform its structural function within said lumen.

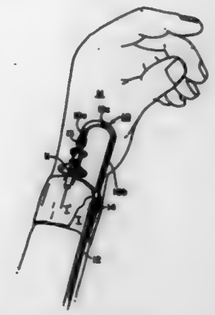
5,443,459
OSMOTIC DEVICE FOR DELAYED DELIVERY OF AGENT
Patrick S. L. Wong, Palo Alto; Felix Theeuwes, Los Altos Hills; Steven D. Larsen, Dublin, and Liang C. Dong, Mountain View, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 830,160, Jan. 31, 1992, Pat. No. 5,312,388, which is a continuation-in-part of Ser. No. 648,270, Jan. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 871,465, Apr. 20, 1992, which is a continuation-in-part of Ser. No. 745,822, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,270, Jan. 30, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,120
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—892.1 1 Claim



1. A dispensing device for providing a pulsed delivery of at least one active agent formulation to a fluid-containing environment of use, which device comprises a plurality of nested capsules, each succeeding capsule being nested within the preceding capsule, each capsule comprising a housing having a first wall section and a second wall section in reversibly sliding telescopic arrangement, which wall sections are assembled together to define an internal compartment which contains an active agent formulation and expansion means and the next succeeding capsule, if any, wherein at least one of said wall sections of each capsule is, at least in part, permeable to fluid in the environment of use, the arrangement being such that in said environment of use fluid enters into the internal compartment of the first outer capsule and interacts with said expansion means, thereby causing the expansion means to expand and to exert a separating force on the wall sections of said first capsule, whereby, after a period of time, said wall sections of said first capsule are disassembled from each other thereby exposing the contents of the said internal compartment to the said environment of use and allowing delivery of said active agent formulation therein and the ingress of fluid into the next succeeding capsule, thereby to provide the said pulsed delivery of active agent.

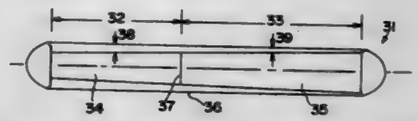
5,443,460
NON-KINKING TUBING ADAPTOR FOR INTRAVENOUS CATHETER AND ASSOCIATED FLEXIBLE TUBING
John M. Mikhaeck, 135 S. Marshall St., York, Pa. 17402
Filed Jun. 10, 1993, Ser. No. 75,221
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 8 Claims

1. In an intravenous system for supplying fluid from a fluid source through a flexible intravenous tubing to an intravenous catheter, the combination comprising a non-kinking tubing adaptor connected between the flexible intravenous tubing and the intravenous catheter, said adaptor comprising a rigid one-piece tubing having a pair of straight tube sections interconnected by a U-shaped tube section, all of said sections being rigid throughout the length of said tubing forming a hollow elongated cylindrical body, a connector on the free end of one



of said straight sections constructed for connection to the intravenous catheter and the end of the other straight section remote from said U-shaped section being constructed for connection to the flexible intravenous tubing.

5,443,461
SEGMENTED DEVICE FOR SIMULTANEOUS DELIVERY OF MULTIPLE BENEFICIAL AGENTS
Linda E. Atkinson, Portola Valley; John T. Dunn, Palo Alto; Robert M. Gale, Los Altos, and David L. Rivera, San Jose, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Aug. 31, 1993, Ser. No. 114,800
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—892.1 18 Claims



1. A diffusional delivery device for placement in an aqueous environment for delivery to said environment of a plurality of beneficial agents each at a preselected rate for a predetermined duration of use, said device comprising:
a plurality of beneficial agent formulations, each formulation being in physical contact with its adjacent formulation and each said beneficial agent formulation comprising said beneficial agent and a dilution agent in which it is lowly soluble, the amount of said beneficial agent in said formulation being in excess of saturation in their respective dilution agent throughout said duration of use,
an elongate enclosure defined by a wall at least a portion of which is permeable by diffusion to said beneficial agents, said formulation together with said segment of said wall defining a plurality of compartments along said enclosure,
each of said wall segments being capable of releasing said beneficial agent confined therein by diffusion at the preselected rate for each said beneficial agent, thereby causing preselected quantities of beneficial agent to diffuse from said plurality of compartments through said wall segments per unit time when said device is placed in said aqueous environment.

5,443,462

ELECTRICAL APPARATUS FOR CONTROLLING THE SUPPLY OF POWER TO AN INSERTABLE ELECTRODE

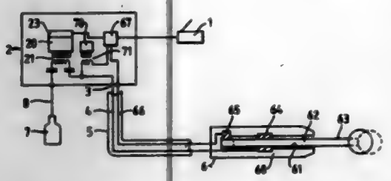
Keith Hennent, Rustington, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Apr. 13, 1993, Ser. No. 45,178

Claims priority, application United Kingdom, May 7, 1992, 9209859

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—34 10 Claims



1. Electrosurgery apparatus comprising: a power supply unit; an electrode; a handset having a barrel with a forward end and a rear end, said forward end of the barrel being open and receiving a rear end of said electrode inserted therein; a first contact mounted in said barrel of said handset at a location forwardly of the rear end of the barrel; insertion detection means located in the barrel rearwardly of said first contact for detecting insertion of said rear end of the electrode rearwardly of said first contact; a cable connecting said power supply unit to said first contact in the handset; and switch means that is actuable by a user to cause said power supply unit to supply power to said electrode only if the electrode is inserted correctly into said handset as far as said insertion detection means.

5,443,463

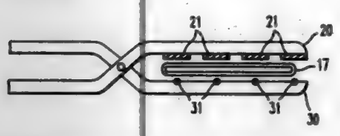
COAGULATING FORCEPS

Roger A. Stern, Cupertino, Calif.; Richard M. Soderstrom, Seattle, Wash.; Vincent N. Sullivan, and Robert L. Marion, both of San Jose, Calif., assignors to Vesta Medical, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 877,567, May 1, 1992, Pat. No. 5,277,201, and Ser. No. 46,583, Apr. 14, 1992. This application Aug. 16, 1993, Ser. No. 106,601

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—51 6 Claims



1. An implement for selectively coagulating blood vessels or tissues containing blood vessels, comprising:

at least two opposable members and a means for permitting movement of said at least two opposable members toward and away from each other;

electroconductive electrode means positioned on at least one of said at least two opposable members for effecting electrical contact with said vessels to be coagulated, said electroconductive electrode means includes a plurality of electrically isolated separate electrodes positioned on at least one of said at least two opposable members; and

radio frequency power means connected to said electrodes for selectively delivering radio-frequency energy to each electrode to pass current through and coagulate said vessels positioned between said at least two opposable members.

5,443,464

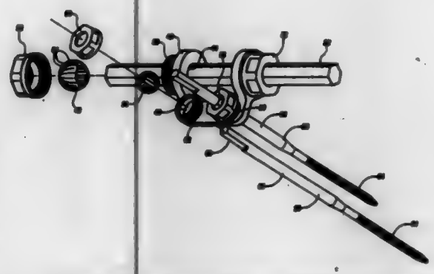
EXTERNAL FIXATOR APPARATUS

Thomas A. Russell, Memphis, Tenn., and Harry E. Lee, Jr., Southhaven, Miss., assignors to Memphis Orthopaedic Design, Inc., Memphis, Tenn.

Filed Feb. 16, 1993, Ser. No. 17,933

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—54 11 Claims



1. An apparatus for external fixation and stabilization of a bone fracture, having:

a plurality of pins insertable into the bone at discrete longitudinal positions, at least two said pins being insertable on opposite sides of the fracture, said pins having distal ends extendable laterally from said bone;

a bar having a non-circular cross sectional configuration, disposed adjacent said distal ends of said pins and securable to said pins at an orientation generally parallel to said bone; and

first and second clamping means for anchoring said pins to said bar to prevent relative movement therebetween, each said clamping means comprising:

a clamp removably securable to said bar for interconnecting said bar and at least one of said pins, said clamp having a body with a pair of substantially perpendicular holes formed therethrough, the first said hole being adapted to allow said bar to pass therethrough and rotate freely therein, and the second said hole being adapted to allow said distal end of one of said pins to pass therethrough and rotate freely therein;

first and second annular shoulders formed in said body adjacent said first and second holes, respectively, each said shoulder having an interior surface forming a seat;

a first ball collet having an aperture formed therethrough, said aperture being adapted to slidably receive said bar and grippingly engage said bar upon compression of said ball collet, said aperture having a non-circular cross sectional configuration conforming to the cross sectional configuration of said bar whereby rotational movement of said ball collet about said bar is prohibited, said ball collet being seatable within said seat formed in said first shoulder; and

a first nut, having a central opening formed therein for allowing said bar to pass therethrough, said nut being adapted to engage said shoulder formed adjacent said first hole thereby retaining and compressing said ball collet within said seat, whereupon

loosening said first nut allows free rotation of said clamp about said bar, and tightening said nut causes said ball collet to grippingly engage said bar such that said clamp is fixed with respect to said bar.

5,443,465

OSTEOSYNTHESIS AID

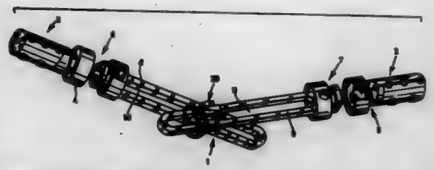
Dietmar Pennig, Hans-Driesch-Strasse 12, 50935, Köln, Germany

Filed Sep. 17, 1993, Ser. No. 123,302

Claims priority, application Germany, Sep. 19, 1992, 42 31 443.7

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—59 10 Claims



5. An osteosynthesis device for external fixation of a bone, comprising a central multi-part body of variable length between spaced ends of said body, first and second bone-pin or screw clamps having a releasably lockable ball-joint connection to the respective ends of said body; said body comprising at least two arm or link members, each of which has an elongate slot, and a lock bolt through the slot of each of two of said arm or link members, for releasably locked retention of said link members in a selected position of adjusted angular relation and overall length; said lock bolt comprising a shank of length to exceed passage through the slot of each of two arm or link members to be connected, a head at one end of the shank and of diametral extent exceeding the width of the arm or link-member slot adjacent thereto, said shank having a cylindrical portion extending through the thickness of the arm or link member adjacent said head, said shank being enlarged and configured distally of said cylindrical portion for keying engagement with at least a portion of the other arm or link member and distally projecting beyond said other arm or link member; and locking means including a seating washer of width exceeding the slot width of the other arm or link member with the distal end of said shank projecting beyond said seating washer, a transverse rotatable pin that is centrally engaged to the distally projecting end of said shank and that has cylindrical bearing portions eccentric to the central engagement, said bearing portions riding diametrically opposite portions of said washer.

5,443,466

METHOD AND APPARATUS FOR TREATING FRACTURES OF A BONE

Mrugesh K. Shah, 4314 Monte Video, Pasadena, Tex. 77504

Filed Dec. 13, 1991, Ser. No. 806,485

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—62 31 Claims

1. A condylar anchor for use in a bone with an elongate intramedullary nail, the nail having a longitudinal axis, a smooth outer surface with no openings formed therein, and a cross-sectional configuration, comprising:

an intramedullary nail receiving member having a passageway extending through the intramedullary nail receiving member, the passageway having a longitudinal axis and first and second ends, and having a cross-sectional configuration which permits the intramedullary nail to pass through the first end and beyond the second end of the passageway, the longitudinal axes of the passageway and the intramedullary nail being substantially parallel and coincident with each other;

the passageway of the intramedullary nail receiving member along the longitudinal axis of the passageway being larger than the cross-sectional configuration of the intramedullary nail to permit relative movement between the intramedullary nail and the intramedullary nail receiving member; and

means for positioning the intramedullary nail receiving member within the bone, the positioning means including



an elongate member having a longitudinal axis, the elongate member extending outwardly and angularly from the intramedullary nail receiving member, and prevents rotational movement of the intramedullary nail receiving member within the bone.

5,443,467

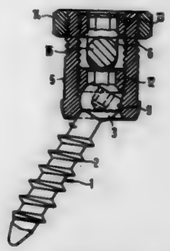
BONE SCREW

Lutz Biedermann, VS-Villingen, and Jürgen Harms, Waldbronn-Reichenbach, both of Germany, assignors to Biedermann Motech GmbH, VS-Schwenningen, Germany

Filed Feb. 18, 1994, Ser. No. 198,949

Int. Cl.[6] A61F *5/04*

U.S. Cl. 606—65 7 Claims



1. A bone screw for connecting a bone with a rod, said bone screw comprising

a screw member having a threaded portion and a head, said head having a spherical segment-shaped portion,

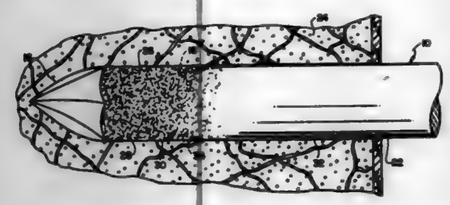
a cylindrical receiver member for receiving said head of said screw member and said rod, said receiver member having a first end and a second end, a bore provided in said receiver member between said first and second ends, a hollow spherical portion in said bore for receiving said head at a position inwards of said second end, said cylindrical receiver member further having a substantially U-shaped cross-section with two free legs which are provided with an external thread, and an internal thread,

a pressure means having a portion acting on said head, and

a locking screw screwed onto said receiver member internal thread at said first end thereof for locking said rod in place

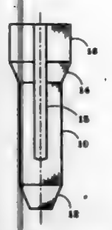
when inserted into said U-shaped member cross-section and;
a lock nut screwed onto said external thread.

5,443,468
METHOD FOR DRILLING A BORE IN BONE USING A COMPACTION DRILL
Lanny L. Johanson, 4528 S. Hagadorn Rd., East Lansing, Mich. 48823
Filed Feb. 4, 1994, Ser. No. 191,610
Int. Cl.[6] A61B 17/56
U.S. Cl. 606—80 2 Claims



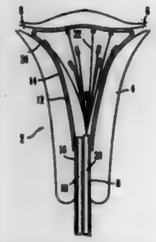
1. A method of forming a bore in bone comprising the steps of:
initiating a bore in said bone utilizing a drill bit of the type comprising an elongated shaft having a cylindrical proximal portion of substantially constant diameter and cross-sectional area and a distal portion, said distal portion including a cutting element at a free end thereof and a segment having varying cross-sectional area less than that of said proximal portion, said segment joining the cutting element to the proximal portion and increasing in cross-sectional area between said element and the proximal portion;
advancing said drill bit further into the bone to lengthen the bore and move fragments of bone, created by advancing the drill bit, to said segment of varying cross-sectional area thereby retaining said bone fragments between a wall of the bore and said segment;
further advancing said drill bit into the bone whereby additional creation of bone fragments causes retained fragments to be moved against the wall of the bore and forced between the wall and said proximal portion whereby the bone fragments are compacted against and along a portion of the wall to increase the density of said portion of the wall; and
removing said drill bit from said bore.

5,443,469
INTRAMEDULLARY REAMING TISSUE PROTECTION GUARD
Aubrey L. Smith, 13 Medical Dr., Amarillo, Tex. 79106
Filed May 2, 1994, Ser. No. 236,197
Int. Cl.[6] A61F 5/00
U.S. Cl. 606—86 3 Claims



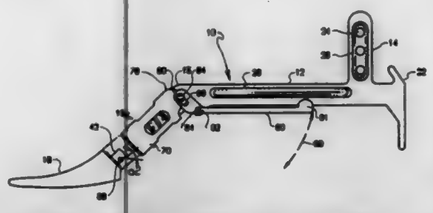
1. An intramedullary reaming, tissue protection guard comprising a cylindrical tube, said tube having a tapered leading end, at least a portion of said tube being double walled and having opening means therein for applying suction at or adjacent to said leading end and said tube having a slot incorporated within it at its other end and in a portion of said tube to accommodate the insertion and withdrawal of the reaming apparatus.

5,443,470
METHOD AND APPARATUS FOR ENDOMETRIAL ABLATION
Roger A. Stern, Cupertino; Vincent N. Sullivan, and Robert L. Marion, both of San Jose, all of Calif., assignors to Vesta Medical, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 877,567, May 1, 1992, Pat. No. 5,277,201. This application Apr. 14, 1993, Ser. No. 46,683
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] A61N 5/00
U.S. Cl. 607—98 22 Claims



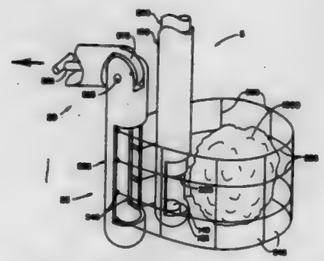
1. An endometrial ablation apparatus for selectively destroying the endometrial lining of a body organ, said apparatus comprising:
an electroconductive, expandable electrode means for effecting electrical contact with said endometrial lining to be destroyed, said expandable electrode means containing an electrically non-conductive expansion medium for extending said electrode means to provide said effected electrical contact with said organ;
a radio frequency power means connected to said expandable electrode means at a frequency greater than 250 kHz for selectively providing current to said electrode means to heat said endometrial lining to a uniform temperature of between 45° C. to 90° C.

5,443,471
QUICK RELEASE HANDLE ASSEMBLY
Glenn Swajger, Wayne, N.J., assignor to Howmedica, Inc., N.Y., N.Y.
Filed Feb. 16, 1993, Ser. No. 17,924
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—99 7 Claims



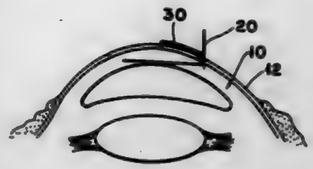
1. Handle assembly for retaining a tool, comprising:
(a) a first member defining a bore for receiving the tool and a channel disposed at an angle to and communicating with the bore;
(b) a pin member disposed within the channel and movable from a first locked position extending at least partially into the bore and a second unlocked position;
(c) a movable collar slidable over the first member;
(d) means for biasing the collar to retain the pin in communication with the bore;
(e) a slide lever adapted to slide the sleeve; and
(f) a pivot pin interconnecting the lever and the first member whereby the lever moves between a position adjacent and a position away from the first member.

5,443,472
MORCELLATOR SYSTEM
Lehmann K. Li, Milford, Conn., assignor to Li Medical Technologies, Inc., Trumbull, Conn.
Continuation-in-part of Ser. No. 134,142, Oct. 8, 1993. This application Oct. 13, 1993, Ser. No. 135,750
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—114 16 Claims



14. A morcellator system comprising a morcellator device in combination with a tissue containment device,
said morcellator device comprising:
an outer tube having a distal end terminating in a distal end surface, a proximal end, an internal passageway extending between said distal end and said proximal end, and an opening formed in said distal end at a location proximal to said distal end surface and communicating with said internal passageway;
an inner tube having a distal end terminating in a distal end surface adapted for morcellating tissue, a proximal end, and an interior passageway extending between said distal end of said inner tube and said proximal end of said inner tube, with said inner tube being sized and disposed so as to make a close sliding fit within said outer tube;
a handle assembly comprising a body and actuating means, with said proximal end of said outer tube being attached to said body and with said proximal end of said inner tube being attached to said actuating means;
said actuating means being adapted to move said inner tube between (1) a first distal position wherein said opening formed in said distal end of said outer tube is closed off by said inner tube, and (2) a second proximal position wherein said opening formed in said distal end of said outer tube is at least part way open;
first tissue holding means connected to said inner tube and projecting into the interior passageway of said inner tube so as to permit tissue to move proximally through said inner tube and to prevent tissue from moving distally through said inner tube; and
second tissue holding means connected to said outer tube and projecting into said interior passageway of said inner tube so as to permit tissue to move proximally through said outer tube and to prevent tissue from moving distally through said outer tube; and
said tissue containment device comprising:
a shaft having a distal end, a proximal end, and an interior passageway extending between said distal end and said proximal end;
a cylindrical body releasably connected to said distal end of said shaft, said cylindrical body comprising a distal end, a proximal end and an interior passageway extending between said distal end and said proximal end of said cylindrical body, and further comprising at least one manifold located within said cylindrical body's interior passageway, said manifold being adapted to guide closure means;
containment means deployable from said cylindrical body, said containment means comprising a flexible, generally cylindrical containment element, at least one substantially rigid, longitudinally-extending spar connected to said flexible, generally cylindrical containment element, a plurality of openings formed in said spar, and closure means extending out of said at least one manifold and through said plurality of openings formed in said spar wherein said containment element is sized so as to receive both said tissue and said distal end of said outer tube of said morcellator device;
a handle assembly;
release means for permitting said containment means to be moved from (1) a first fully retracted position wherein said containment element is substantially fully withdrawn into said cylindrical body's interior passageway, and (2) a second fully deployed position wherein said containment element is substantially fully extended out of said cylindrical body's interior passageway; and
retracting means connected to said closure means and adapted to move said containment means from said aforementioned second fully deployed position wherein said containment element is substantially fully extended out of said cylindrical body's interior passageway, to (3) a third intermediate position wherein said containment element is partially withdrawn into said cylindrical body's interior passageway, said retracting means being adapted to progressively retract said containment element further and further into said cylindrical body's interior passageway.

5,443,473
METHOD FOR TREATING MYOPIA
David Miller, Brookline, and Edward Perez, Cambridge, both of Mass., assignors to Anika Research, Inc., Woburn, Mass.
PCT No. PCT/US92/02100, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994, PCT Pub. No. WO92/16172, PCT Pub. Date Oct. 1, 1992
Continuation-in-part of Ser. No. 670,340, Mar. 15, 1991, abandoned. This PCT application Mar. 15, 1992, Ser. No. 117,153
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—166 4 Claims



1. A method for changing the radius of curvative of the cornea of an eye to correct a refractive error, comprising the steps of:
a) forming a first circular incision partially into the anterial lamina of the cornea of the eye to weaken said anterial lamina;
b) forming a second incision which is separate from and

adjacent to said first incision, said second incision extending into the lamella of the cornea to form a pocket within the lamella beneath the weakened anterial lamina;

c) enclosing a hydrogel lens within said pocket, said hydrogel lens having a refractive index substantially equal to the refractive index of the cornea and said hydrogel lens cooperating with said weakened anterial lamina to change said radius of curvature of said cornea and thereby correct said refractive error; and

d) closing said second incision, thereby sealing said hydrogel lens within the alamella.

5,443,474

MENISCECTOMY KNIFE

Peter Sfakianos, Shingle Springs, Calif., and Fredric L. Milder, Brookline, Mass., assignors to Implemed, Inc., Brookline, Mass.

Filed Mar. 7, 1994, Ser. No. 207,363
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **29 Claims**



1. A meniscectomy knife comprising

a handle having distal and proximal ends and a handle axis,

a guide tube affixed to the distal end of the handle and extending away from the handle along the handle axis, at least a portion of the guide tube being preformed to include an arc portion defined by a cutting radius, the arc portion having a first surface and a slot extending along at least a portion thereof to define a cutting trace therein,

an actuating wire disposed within the guide tube and movable therethrough along a longitudinal axis thereof,

motion producing means disposed within said handle for imparting longitudinal motion to the actuating wire along the actuating wire axis, a proximal end of the actuating wire being affixed to said motion producing means such that activation of said motion producing means causes longitudinal movement of the actuating wire within the guide tube along the actuating wire axis, a distal end of the actuating wire moving along the arcuate path defined by the arc portion of the guide tube, and

a cutting element affixed to the distal end of the actuating wire and extending through the slot in the arc portion of the guide tube, the cutting element being movable along the cutting trace.

5,443,475

SURGICAL INSTRUMENT

Burt J. Auerbach, Pasadena, and George V. Shutt, Glendora, both of Calif., assignors to Arthrotek, Inc., San Dimas, Calif.

Continuation of Ser. No. 612,106, Nov. 9, 1990, abandoned. This application Aug. 3, 1992, Ser. No. 925,225
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—170 **19 Claims**



12. A surgical instrument for cutting body tissue, comprising: a support shaft having a longitudinal axis;

a tip assembly attached to a distal end of the support shaft, said tip assembly comprising a stationary portion and a movable portion, said stationary portion having a pair of opposing sidewalls;

means for pivotally connecting a distal end of the movable portion between distal ends of the opposing sidewalls of the stationary portion so as to form a cutting jaw;

means extending coaxially with the support shaft for applying closing and opening forces to the movable portion of the cutting jaw, said means comprising an elongate, substantially straight member pivotally connected to the movable portion of the tip assembly; and

wherein said stationary and movable portions comprise a plurality of cooperating cutting edges which define a plurality of cutting planes, said cutting edges being disposed between substantially parallel planes which extend substantially transversely through the pivotable connections at the distal ends of the opposing sidewalls.

5,443,476

MICROSURGICAL SCISSOR APPARATUS WITH ROTARY CUTTING BLADE

Henry Shapiro, 328 Downham Ct., Walnut Creek, Calif. 94598

Filed Nov. 12, 1993, Ser. No. 151,354
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—174 **8 Claims**



1. A rotary scissor action cutting attachment for a hand held portion of a microsurgical instrument, said instrument including means in said hand held portion for producing rotary motion within said hand held portion with respect to the exterior of said instrument, said rotary scissor action cutting attachment comprising:

a) an elongated, axial, hollow tubular housing member, said housing member having a central axis and having a first end and a free end including a stationary blade and a movable blade,

b) said tubular housing member including a hollow rotary bushing on the interior surface of said tubular housing member adjacent to said free end of said tubular housing member, said movable blade being rotatably supported within said hollow rotary bushing,

c) support means for attaching said first end of said elongated tubular housing member to said hand held portion of said instrument,

d) said stationary blade being attached to said hollow rotary bushing of said tubular housing member adjacent to said free end and having a stationary blade cutting surface extending at a transverse angle to said central axis of said tubular housing member,

e) said movable blade including an elongated shaft portion and a movable blade cutting surface, said elongated shaft being rotatably supported within said hollow rotary bushing of said tubular housing member, said movable blade cutting surface extending at a transverse angle to said central axis of said tubular housing member at said free end of said tubular housing member,

f) said extending transverse angle of said movable blade cutting surface being substantially similar to said extending transverse angle of said stationary blade cutting surface, said cutting surface of said stationary blade and said cutting surface of said movable blade facing each other and being adapted to contact each other in said scissor action with rotary movement of said movable blade with respect to said stationary blade,

g) means in said support means for adjustably fixing said movable blade axially with respect to said tubular housing member to align axially said stationary blade cutting surface with said movable blade cutting surface,

h) means in said support means for rotatably fixing said elongated shaft of said movable blade within said tubular housing member to align rotationally said movable blade cutting surface with respect to said stationary blade cutting surface to establish an open scissor alignment of said cutting surfaces,

i) and means for engaging said rotary motion producing means within said hand held portion of said instrument with said means for rotatably fixing said elongated shaft of said movable blade within said tubular housing member adjacent to said first end,

whereby rotary motion within said hand held portion of said instrument causes rotary scissor action between said cutting surface on said stationary blade and said cutting surface on said movable blade at said free end of said tubular housing member.

5,443,477

APPARATUS AND METHOD FOR DEPLOYMENT OF RADIALLY EXPANDABLE STENTS BY A MECHANICAL LINKAGE

Michael L. Marin, and Ralph Marin, both of New York, N.Y., assignors to Stentco, Inc., Cross River, N.Y.

Filed Feb. 10, 1994, Ser. No. 196,278
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **45 Claims**



1. In combination with an expandable prosthesis, an apparatus for intraluminal delivery and deployment of the expandable prosthesis at a site within a body lumen, comprising:

a support for supporting the expandable prosthesis while being delivered to the site within the body lumen; and

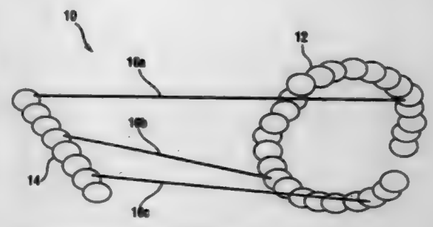
a radially displaceable mechanical linkage connected to said support for radially displacing said support, said linkage adapted to deploy the expandable prosthesis when said linkage is displaced radially outward, said linkage permitting continuous fluid flow within the body lumen while the expandable prosthesis is being deployed.

5,443,478

MULTI-ELEMENT INTRAVASCULAR OCCLUSION DEVICE

Phillip D. Purdy, Dallas, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Sep. 2, 1992, Ser. No. 939,296
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—200 **7 Claims**



1. A multi-element intravascular occlusion device comprising:

(a) at least one anchoring means for anchoring the device to a wall of a vessel; and

(b) at least one lead element for travelling distal to the anchoring means and producing thromboeis within the vessel, said lead element being attached to said at least one anchoring means by a means for attaching,

wherein said anchoring means comprises a coil, and

wherein in use, the device is free-standing within the vessel, and blood in the vessel clots on the anchoring means, the lead element, and the attaching means to produce total occlusion of the vessel.

5,443,479

SURGICAL FORCEPS

Thomas E. Broad, Jr., 909 Waverly Rd., Bryn Mawr, Pa. 19010

Filed Feb. 7, 1994, Ser. No. 193,400
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—205 **8 Claims**



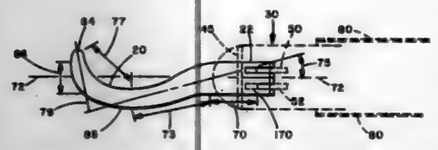
1. In a surgical forceps of the type having a handle, an elongated tube mounted to said handle, first and second jaw members, and means for attaching said jaw members to said handle so that manipulation of said handle will open and close said jaw members, wherein the improvement comprises each of said jaw members having a large curved segment, a reduced curved segment and a slot positioned between said large curved segment and said reduced curved segment, said large curved segments of said jaw members form in association with one another a first rounded shape and said reduced curved segments of said jaw members form in association with one another a second rounded shape, said slot defining an inside shoulder on said reduced diameter segment.

5,443,480

SHARPLY ANGLED KELLY (JACOBS) CLAMP

Moises Jacobs, Miami; Charles R. Slater, Fort Lauderdale, and Kevin W. Smith, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 780,035, Oct. 21, 1991, Pat. No. 5,215,101, which is a continuation-in-part of Ser. No. 521,766, May 10, 1990, Pat. No. 5,139,727, and a continuation-in-part of Ser. No. 680,392, Apr. 4, 1991, Pat. No. 5,192,298. This application Apr. 19, 1993, Ser. No. 49,633
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—207 15 Claims



1. In a surgical instrument adapted for insertion through a trocar tube and having a hollow tube with distal and proximal ends and a first longitudinal axis, a clevis coupled to the distal end of said hollow tube, first and second pivot pins, first and second elongate opposed clamp members each having a proximal base portion having a first through-hole for pivotally engaging said clevis with a respective one of said first and second pivot pins, and an actuation means extending through said hollow tube and coupled to said base portion of said first and second clamp members for effecting pivotal rotation of said clamp members, an improvement in said first and second clamp members comprising

a) each said clamp member further including an intermediate portion and a distal portion integral with said base portion, said intermediate portion and said distal portion of said second clamp member being substantially a mirror image of said intermediate portion and said distal portion of said first clamp member, each said base portion having a second longitudinal axis substantially parallel said first longitudinal axis, each said intermediate portion angling away from said second longitudinal axis of said base portion at an angle of between about 5 to 20 degrees, and each said distal portion angling back toward and past said first longitudinal axis at an angle of between about 70 to 90 degrees relative thereto, wherein at least a portion of said intermediate portion extends along a horizontal axis perpendicular to said first longitudinal axis beyond a longitudinal projection of said base portion in a first direction, and at least a portion of said distal portion extends along said horizontal axis beyond the longitudinal projection of said base portion in a second direction opposite said first direction.

5,443,481

METHODS AND DEVICE FOR PERCUTANEOUS SEALING OF ARTERIAL PUNCTURE SITES

Benjamin I. Lee, 4911 Van Ness St. NW., Washington, D.C. 20016

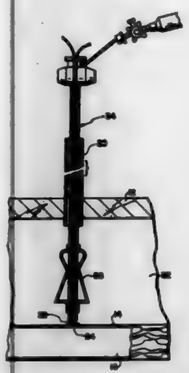
Continuation-in-part of Ser. No. 918,614, Jul. 27, 1992, Pat. No. 5,292,332. This application Apr. 5, 1993, Ser. No. 41,573
Int. Cl.[6] A61B *17/04*; A61M *29/00, 39/00*
U.S. Cl. 606—213 46 Claims

1. A method of closing a puncture in a wall of an artery, the method comprising the steps of:

extending a removable guide wire into a passage leading to the puncture so that a distal end of the guide wire is disposed within the artery and a proximal end of the guide wire extends through the puncture,

moving an elongated cardiovascular catheter over the guide wire and into the artery,

withdrawing the cardiovascular catheter from the artery leaving the guide wire extending through the puncture,



introducing a thrombogenic, hemostatic material over the guide wire so as to contact the artery at the puncture enabling the material to precipitate clot formation and seal the puncture, and

withdrawing the guide wire from the puncture leaving the puncture sealed by a precipitated clot.

5,443,482

SUTURE ANCHOR ASSEMBLY

Kevin R. Stone, 1 Throckmorton La., Mill Valley, Calif. 94941, and Allen H. DeSatnick, Marblehead, Mass., assignors to Kevin R. Stone, San Francisco, Calif.

Continuation of Ser. No. 81,516, Jun. 23, 1993, Pat. No. 5,370,662. This application Dec. 5, 1994, Ser. No. 349,677
The portion of the term of this patent subsequent to Dec. 6, 2011, has been disclaimed.
Int. Cl.[6] A61B *17/00*; A61F *1/00*
U.S. Cl. 606—232 15 Claims



1. A surgical anchor assembly, comprising:

an elongated, generally cylindrical member extending along a central axis and having a maximum outer diameter, said member including an anchor portion at a first end there of rigidly coupled to a suture/drive portion at a second end thereof, said second end being opposite said first end,

wherein said anchor portion includes drilling and tapping means for positioning said anchor portion in a bone and for anchoring said anchor portion therein in response to rotational and axial forces applied to said suture/drive portion, and

wherein said suture/drive portion includes

A. at least one eyelet positioned at or near said second end, said eyelet having a central aperture, whereby a suture path extending between two end points is defined by a region adjacent to said second end, through said aperture of said eyelet and back to said region adjacent to said second end, wherein the end points of said suture path are less than a distance equal to D'/2 from said central axis,

where D' is less than or equal to said maximum outer diameter; and

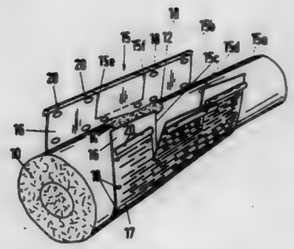
B. coupling means for receiving a distal tip of a cannulated driver rotatable about a drive axis, whereby said cylindrical member and said distal tip are mechanically coupled for mutual rotation with said drive axis and said central axis being coaxial when said distal tip of said drive is received by said coupling means.

5,443,483

APPLIANCE FOR ACCELERATING THE HEALING OF A BONE SURGERY SITE

Axel Kirsch, Postfach 11 68, D70772 Filderstadt, Germany, assignor to Axel Kirsch, Filderstadt, Germany

Filed Apr. 20, 1994, Ser. No. 230,217
Claims priority, application Germany, Apr. 22, 1993, 43 13 192.1
Int. Cl.[6] A61F *2/28*
U.S. Cl. 606—74 21 Claims



1. An appliance for temporarily covering a surgery site of a bone in vivo comprising:

a flexible sleeve adapted for wrapping around said bone having a covering membrane consisting of material for accelerating healing of said surgical site disposed at a side of said sleeve adapted to face toward said bone, and a reinforcing ply disposed at an opposite side of said sleeve adapted to face away from said bone;

said sleeve having two closure edges proximate each other when said sleeve is wrapped around said bone, said reinforcing ply being exposed along said closure edges;

connecting means, engaging said reinforcing ply along said two closure edges, for connecting said closure edges for firmly holding said sleeve around said bone with said covering membrane covering said surgery site;

said reinforcing ply having exposed edges, extending parallel to said closure edges, said exposed edges being bent away from said bone and forming said closure edges engaged by said connecting means; and

said covering membrane projecting beyond said reinforcing ply along one of said closure edges, and terminating the other of said closure edges along a line wherein said reinforcing ply bends away from said bone.

5,443,484

TROCAR AND METHOD FOR ENDOSCOPIC SURGERY

Wolff M. Kirsch, Redlands, and Yong H. Zhu, Loma Linda, both of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Continuation of Ser. No. 899,605, Jun. 16, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,317
Int. Cl.[6] A61B *17/34*
U.S. Cl. 604—164 14 Claims

11. A trocar system for assisting in the establishment of a port in a patient's body for endoscopic surgery, comprising:

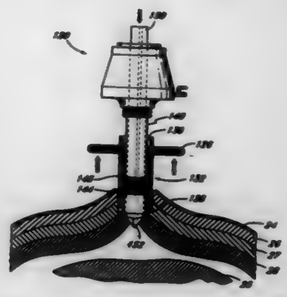
a trocar for penetrating the exterior tissues and peritoneum of said patient to produce a hole therethrough;

a cannula for surrounding said trocar and forming said port in said hole upon removal of said trocar;

a retractor for penetrating the exterior tissues of said patient to allow said tissues to be lifted away from vital organs thereof, whereby the penetration of said trocar can be better controlled so as to avoid accidental injury to said vital organs;

said retractor comprising:

a hollow guide portion for receiving said cannula and said trocar and for guiding the direction of penetration of said trocar, said guide portion being slidable with respect to said cannula and said trocar, and having a distal end;



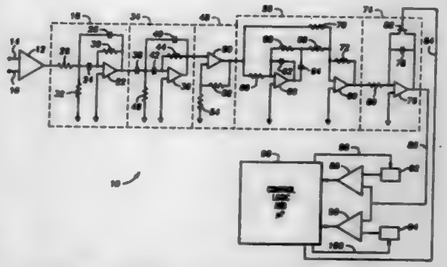
a leading edge comprising at least one blade extending distally past the terminal, distal end of the guide portion, said blade having an exposed sharp distal tip for puncturing the exterior tissues and a proximal end, each of said blades being mounted on said guide portion solely at said proximal end and being exposed along its entire length from said proximal end to said distal tip in order to permit said blade to pass though a perforation in said exterior tissues formed by said sharp distal tip.

5,443,485

APPARATUS AND METHOD FOR CAPTURE DETECTION IN A CARDIAC STIMULATOR

Craig M. Housworth, and Edward A. Schroeppel, both of Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Sep. 8, 1993, Ser. No. 117,854
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—28 15 Claims



1. In a cardiac stimulator having an electrode and having a cardiac stimulation pulse generator means for delivering a cardiac stimulation pulse to the heart, the improvement comprising a capture detector for detecting an electrical signal at said electrode that is evoked in said heart in response to said cardiac stimulation pulse having:

a highpass filter having an input in circuit communication with said electrode and having an output;

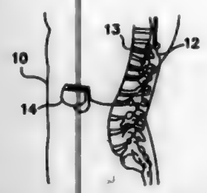
an absolute value circuit having an input in circuit communication with the output of said highpass filter and having an output;
an integrator having an input in circuit communication with the output of said absolute value circuit and having an output;
a comparator having a first input in circuit communication with the output of said integrator and having a second input in circuit communication with a reference value, said comparator having an output; and
means for causing said integrator to integrate over a selected window of time beginning at a selected time delay following delivery of said cardiac stimulation pulse;
whereby said output of said comparator has a value that is indicative of whether capture has occurred.

5,443,486

METHOD AND APPARATUS TO LIMIT CONTROL OF PARAMETERS OF ELECTRICAL TISSUE STIMULATORS

Gregory A. Hrdlicka, Plymouth, and David L. Thompson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 26, 1994, Ser. No. 312,340
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—59 **44 Claims**



1. An electrical tissue stimulator comprising:
a plurality of electrodes to be implanted in a patient;
a first memory for holding a stimulation pulse parameter limit value of a stimulation pulse;
a second memory for holding a programmed parameter value of a stimulation pulse;
a pulse generator for applying electrical stimulation pulses to said electrodes in accordance with said programmed parameter value;
programming means for receiving remotely generated programming signals and altering the contents of at least one of said first and second memories in accordance with said signals; and
means for comparing said stimulation pulse parameter limit value and said programmed parameter value and for preventing said programming means from increasing said programmed parameter value unless said programmed parameter value is less than said stimulation pulse parameter limit value.

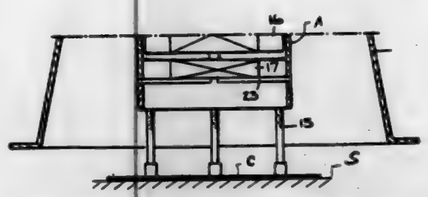
5,443,487

COMBINED CHEMO-THERMO THERAPY TECHNIQUE

Raul Guibert, and Bettina Guibert, both of 750 S. Bundy Dr., Apt. 101, Brentwood, Calif. 90049

Continuation-in-part of Ser. No. 26,756, Mar. 5, 1993, Pat. No. 5,315,994. This application Dec. 20, 1993, Ser. No. 169,356
The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—101 **9 Claims**

1. A combined chemo-thermo therapy technique comprising the steps of:
A. topically applying to a localized skin surface of a patient overlying a problem region a pharmaceutical agent which when absorbed by the skin and diffused throughout tissues in the problem region interacts therewith to produce beneficial effects; and
B. applying to the same skin surface a stream of air whose temperature alternates periodically from a high peak level to a lower base level in a pulsatory heat energy wave



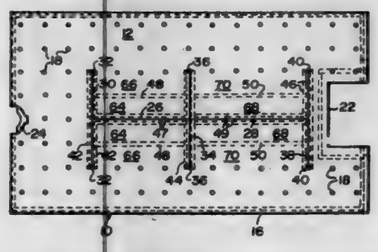
pattern which acts to markedly raise the temperature of the problem region without raising the temperature at the skin surface above a tolerable level, whereby the absorption and diffusion of the agent is accelerated and its interaction with the tissues is promoted to enhance the effectiveness of the treatment.

5,443,488

THERMAL BLANKET WITH SURGICAL ACCESS

Joseph A. Namenye, Elkhart, Ind.; James G. Stephenson, Marshall, Mich., and Corrie T. M. Anderson, Woodland Hills, Calif., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Filed Aug. 15, 1994, Ser. No. 290,523
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **20 Claims**



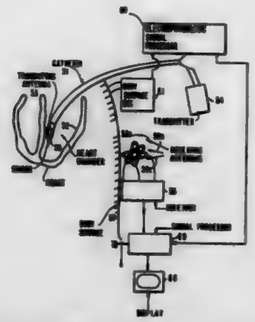
1. In a pneumatic, disposable, temperature control blanket having a periphery defined by a head end, a foot end, and lateral sides and having a central region, the blanket being formed by an envelope defined by an upper thermoplastic flexible air impervious sheet and a lower thermoplastic flexible sheet heat sealed together at the blanket periphery, a pneumatic flow chamber defined between the upper and lower sheets, an air inlet port defined in the envelope in communication with the flow chamber for supplying pressurized air thereto, and a plurality of spaced orifices defined in the lower sheet in communication with the flow chamber to convey temperature controlled air to the patient, the improvement comprising, a plurality of elongated access slits defined in the envelope in the blanket central region having opposite edges and extending through the upper and lower sheets forming envelope flap portions whereby said flap portions may be folded away from each other to provide open access through the envelope wherein said elongated access slits do not intersect the blanket periphery, and heat seals sealing said slits' opposite edges to prevent air loss at said slits.

5,443,489

APPARATUS AND METHOD FOR ABLATION

Shlomo Ben-Haim, Haifa, Israel, assignor to Biosense, Inc., Orangeburg, N.Y.

Division of Ser. No. 94,539, Jul. 20, 1993, Pat. No. 5,391,199. This application Sep. 23, 1994, Ser. No. 311,596
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—115 **56 Claims**



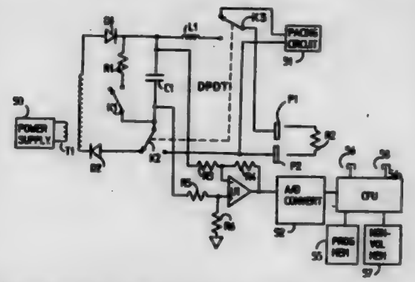
1. A method of ablating a portion of an organ or a bodily structure of a patient, which comprises the steps of:
(a) positioning the distal tip of each of one or more catheters at a site adjacent to or within an organ or bodily structure;
(b) sensing location information at the site;
(c) sensing local information at the site;
(d) processing sensed information from steps (b) and (c) to create one or more data points;
(e) repeating steps (a), (b), (c) and (d) one or more times to create sufficient data points for a map; and
(f) ablating a portion of an organ or a bodily structure of a patient.

5,443,490

DEFIBRILLATOR PATIENT CIRCUIT

Benjamin A. Flugstad, McMinnville, Oreg., assignor to Hewlett Packard Corporation, Palo Alto, Calif.

Filed Mar. 2, 1993, Ser. No. 25,011
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—5 **10 Claims**



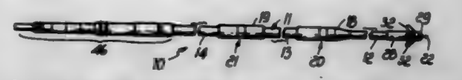
1. A defibrillator patient circuit, comprising:
a capacitor having a first terminal and a second terminal;
a first double-throw relay having a common terminal, a first contact terminal, and a second contact terminal, where the common terminal of the first double-throw relay is connected to the first terminal of the capacitor;
a high-voltage charger circuit having a first terminal and a second terminal, where the first terminal of the charger circuit is connected to the first contact terminal of the first double-throw relay and where the second terminal of the charger circuit is connected to the second terminal of the capacitor;
a second double-throw relay having a common terminal, a first contact terminal, and a second contact terminal;
a first defibrillation contact connected to the common terminal of the second double-throw relay;
a second defibrillation contact connected to the second contact terminal of the first double-throw relay; and
an inductor connected to the second contact terminal of the second double-throw relay and to the second terminal of the capacitor.

5,443,491

THREE-POLE ELECTROCATHETER

Eugenio Snichelotto, Padova, Italy, assignor to M.E.D.I.C.O. Italia S.r.l., Padova, Italy

Continuation of Ser. No. 984,624, Dec. 2, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 302,966
Claims priority, application European Pat. Off., Dec. 16, 1991, 91121508
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **18 Claims**



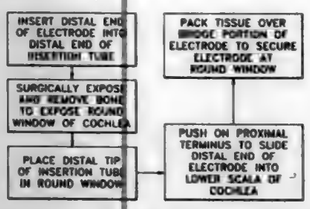
1. An improved three-pole electrocatheter for permanent cardiac stimulation, comprising:
a flexible body of biocompatible material, comprising a first segment, a second segment and a third segment which extend successively and substantially axially, the first segment defining a first end of the first segment and a second end of the first segment, the second segment defining a first end of the second segment and a second end of the second segment and the third segment defining a first and a second end of the third segment;
a ventricular electrode provided at the first end of the first segment;
a first shell connecting the second end of the first segment to the first end of the second segment;
a proximal atrial electrode accommodated in the first shell;
a second shell connecting the second end of the second segment to the first end of the third segment;
a distal atrial electrode accommodated in the second shell;
axial holes provided within the first, the second and the third segment;
coaxial coiled insulated electric conductors extending through the axial holes;
a three-pole connector provided at the second end of the third segment and connected to the electrodes by the coiled insulated electric conductors, wherein said proximal atrial electrode has a larger-diameter cylindrical portion which protrudes from the first shell and two smaller-diameter cylindrical portions which extend axially from the larger-diameter cylindrical portion towards the first and the second segments respectively and are contained in the first shell, said cylindrical portions being axially crossed by a hole, a first pair of said electric conductors passing through the hole and ending at one of said smaller-diameter cylindrical portions, an adapted hole being radially provided in said one of the smaller-diameter cylindrical portions, the first pair of electric conductors passing through the adapted hole and being electrically connected to said one of said smaller-diameter cylindrical portions.

5,443,492
MEDICAL ELECTRICAL LEAD AND INTRODUCER SYSTEM FOR IMPLANTABLE PULSE GENERATOR
Kenneth B. Stokes, Brooklyn Park; Keith J. Proctor, Lino Lakes, and Rick D. McVenes, Isanti, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 2, 1994, Ser. No. 189,565
Int. Cl.[6] A61N *1/04*
U.S. Cl. 607—131 18 Claims



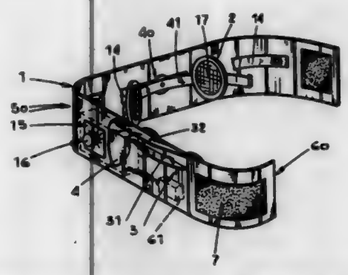
1. An implantable lead for establishing electrical contact between a medical device and body tissue, comprising:
an elongated lead body having proximal and distal ends and having at least one electrical conductor extending between said proximal and distal ends;
a terminal assembly disposed on said proximal end of said lead body;
an electrode assembly disposed proximate said distal end of said lead body, said electrode assembly including a first electrode, said first electrode electrically connected to said conductor;
a curved fixation hook disposed on said lead body, said curved fixation hook disposed at a point spaced back from said distal end of said lead and extends radially outward from said lead for a first distance and then coiling around at least a portion of said lead's circumference.

5,443,493
COCHLEA STIMULATING ELECTRODE ASSEMBLY, INSERTION TOOL, HOLDER AND METHOD OF IMPLANTATION
Charles L. Byers; James W. Beazell, Los Angeles, and Matthew C. Fleming, Antioch, all of Calif., assignors to Alfred E. Mann Foundation For Scientific Research, Sylmar, Calif.
Continuation of Ser. No. 915,026, Jul. 15, 1992, which is a continuation of Ser. No. 780,825, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 411,875, Sep. 22, 1989, abandoned. This application Dec. 29, 1992, Ser. No. 999,461
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—137 14 Claims



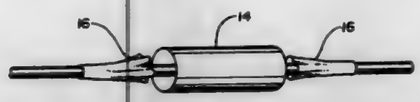
1. A cochlea stimulation electrode having a resilient curved distal tip portion for insertion into and stimulation of a cochlea, the stimulating electrode further comprising:
a lead offset laterally from the distal tip portion for connection to a stimulator for the electrode; and
a bridge extending from the lead and connecting to the distal tip portion adjacent a proximal terminus thereof, the bridge defining a slide for guiding the distal tip portion from an insertion tool during insertion of the distal tip portion into a round window of the cochlea and the proximal terminus defining a push point for a push rod assembly for forcing the distal tip portion from the insertion tool.

5,443,494
SUPPORT FOR BEARING AND POSITIONALLY ADJUSTING ELECTRODES OF PORTABLE BELT DEVICES FOR PASSIVE GYMNASTICS
Marco Paolizzi, and Marco Valentini, both of Rimini, Italy, assignors to Vupiesse Italia S.A.S. Di Valentini E Paolizzi E.C., Rimini, Italy
Filed Dec. 20, 1993, Ser. No. 170,406
Claims priority, application European Pat. Off., Dec. 23, 1992, 92830683.6
Int. Cl.[6] A61N *1/22*
U.S. Cl. 607—149 8 Claims



1. A device for bearing and positionally adjusting electrodes of a portable belt for passive gymnastics, wherein the electrodes transmit electric pulses to a person wearing the belt, the device comprising a belt at least an arcuate shaped support element having opposing end portions, each end portion supporting an electrode, an intermediate portion of said arcuate shaped support element rotatably coupled to an inner surface of the belt, a concavity of the arcuate shaped support element turned inward from the inner surface of the belt so as to be toward the person wearing the belt so that the electrodes project towards the person wearing the belt, wherein the arcuate shaped support element maintains the electrodes in contact with the person wearing the belt.

5,443,495
POLYMERIZATION ANGIOPLASTY BALLOON IMPLANT DEVICE
Paul J. Buscemi, Long Lake; Andrew W. Buirge, Minneapolis, and Fertac Bilge, Arden Hills, both of Minn., assignors to Scimed Lifesystems Inc., Maple Grove, Minn.
Filed Sep. 17, 1993, Ser. No. 122,158
Int. Cl.[6] A61F *2/06*; A61M *29/00*
U.S. Cl. 623—1 12 Claims



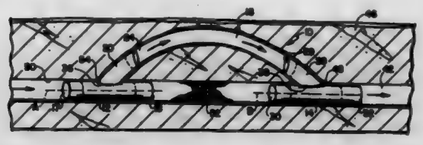
1. A balloon for catheters, the balloon comprising a body portion and two end portions, the balloon being inflatable from a first condition to a second enlarged condition, and wherein:
a) said body portion of the balloon is made of a material which will undergo a transformation from a flexible, elastic condition to a rigid, inelastic condition upon an application of energy thereto; and
b) said two end portions detach from said body portion by a degradation of a scission material, said degradation initiated by the application of energy thereto.

5,443,496
INTRAVASCULAR RADIALLY EXPANDABLE STENT
Robert S. Schwartz; John Bresnahan, both of Rochester; Rebecca M. Bergman, North Oaks; Arthur J. Coury, St. Paul; Elaine Lindell, Blaine; Vincent W. Hull, Fridley, and Michael Dror, Edina, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 853,682, Mar. 19, 1992, Pat. No. 5,282,823. This application Oct. 15, 1993, Ser. No. 138,041
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 12 Claims



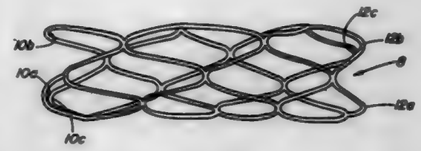
1. In a radially expandable stent for implantation within a body lumen, the stent having a generally cylindrical body with a longitudinal axis and open proximal and distal ends, the cylindrical body comprising a plurality of metal elements, the metal elements including means for expanding the cylindrical body from a first diameter to a second diameter and means for providing radial support for the body lumen at the expanded diameter, the metal elements joined together from the proximal to the distal end of the cylindrical body to allow flexing of the stent along the longitudinal axis to permit the stent to conform to a curved body lumen, the improvement comprising:
a bioabsorbable polymeric film extending between the metal elements of the stent, the polymeric film having strain relief means located between the elements.

5,443,497
PERCUTANEOUS PROSTHETIC BY-PASS GRAFT AND METHOD OF USE
Anthony Venbrux, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed Nov. 22, 1993, Ser. No. 155,641
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 22 Claims



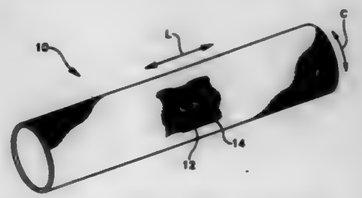
1. A prosthetic device comprising:
a generally tubular proximal stent having a central axis and a flow passage defined therethrough and being sized for insertion into a target lumen, said proximal stent including a proximal member extending from a sidewall thereof so as to be in flow communication with said flow passage;
a generally tubular distal stent having a central axis and a flow passage defined therethrough and being sized for insertion into a target lumen, said distal stent including a distal member extending from a sidewall thereof so as to be in flow communication with the flow passage of the distal stent; and
a generally tubular central member having first and second ends and extending between the said proximal member and said distal member and being in flow communication therewith so as to provide flow communication between said proximal and said distal stents,
said proximal and distal stents being constructed collapsible expandable and are and arranged so as to engage walls of the target lumen.

5,443,498
VASCULAR STENT AND METHOD OF MAKING AND IMPLANTING A VACSULAR STENT
Arthur B. Fontaine, Fresno, Calif., assignor to Cook Incorporated, Bloomington, Ind.
Continuation of Ser. No. 874,347, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 858,304, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 769,216, Oct. 19, 1991, Pat. No. 5,314,472. This application Dec. 6, 1993, Ser. No. 162,825
Int. Cl.[6] A61F *2/06*; A61M *29/02*
U.S. Cl. 623—1 21 Claims



1. A vascular stent, comprising:
a continuous wire forming a substantially tubular body with a plurality of cells staggered around a circumference of the tubular body, the tubular body being longitudinally flexible and having an expanded state, an unexpanded state, and a wall thickness that is not substantially greater than said wire, each of said cells having a plurality of sides formed by said continuous wire and shared with an other of said cells, adjacent sides in individual ones of said cells being joined by a bend in said continuous wire, selected of said cells each making non-overlapping and abutting contact with an other of said cells;
said sides of said cells extending substantially parallel to a longitudinal axis of the tubular body when the tubular body is in said unexpanded state; and
said sides of said cells extending oblique to said longitudinal axis of the tubular body when the tubular body is in said expanded state, whereby said tubular body when positioned in a tortuous vessel bends along said longitudinal axis and conforms to the shape of the tortuous vessel an axial length of the tubular body being substantially equivalent in said unexpanded and said expanded state.

5,443,499
RADIALLY EXPANDABLE TUBULAR PROSTHESIS
Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.
Continuation of Ser. No. 4,699, Jan. 14, 1993, abandoned. This application Mar. 8, 1994, Ser. No. 208,182
Int. Cl.[6] A61F *2/04, 2/06*
U.S. Cl. 623—1 10 Claims



1. A radially expandable prosthesis, comprising:
an implantable elongate hollow body having a length and a

circumference and formed from a polymeric fabric having circumferentially-extending yarns selected from the group consisting of undrawn and partially drawn yarns which allow said body following implantation to undergo controlled inelastic radial expansion upon application thereto of a preselected radial force.

5,443,500
INTRAVASCULAR STENT

Ulrich Sigwart, Morges, Switzerland, assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 958,460, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 464,401, Jan. 12, 1990, abandoned. This application Apr. 8, 1994, Ser. No. 225,421
Claims priority, application Switzerland, Jan. 26, 1989, 237/89
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **11 Claims**



1. An elongated cylindrically shaped intravascular stent assembly, comprising:
a) a rectangularly shaped sheet which is in a rolled-up state with overlapping inner and outer longitudinal sections;
b) means to expand the rolled-up sheet from a first rolled-up state with a first relatively small diameter;
c) means to expand the rolled-up sheet to a second rolled-up state with a second relatively large diameter by unrolling the sheet;
d) outwardly projecting fingers extending from the inner overlapping longitudinal section of the sheet; and
e) openings in the outer overlapping longitudinal section of the sheet which are adapted to receive the projecting fingers which extend outwardly from the inner overlapping longitudinal section thereby locking the rolled-up longitudinal section thereby locking the rolled-up sheet in the second rolled-up state, said outwardly projecting fingers engaging with a select number of said openings to permit the selective radial expansion and locking of the tubular prosthesis in at least one fixed diameter.

5,443,501
METHOD FOR MAKING AN ARTIFICIAL HEART VALVE

Hazem Barmada, 1132 Cedar St., Lake Oswego, Oreg. 97034

Filed Jul. 26, 1993, Ser. No. 97,763
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **11 Claims**

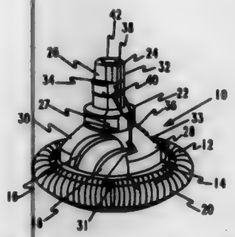
1. A method of making a leaflet for a heart valve for regulating a flow of blood, comprising the steps of:
forming a leaflet having a straight leading edge that faces an upstream flow of blood when the valve is open; scanning the straight leading edge with an optical profile interferometer to determine if the convexity of the surface profile of the straight leading edge is above a predetermined value;
if the convexity is above the predetermined value, then scanning the straight leading edge to determine the roughness of the straight leading edge; and
incorporating the leaflet into the heart valve only if the roughness of the straight leading edge is less than a predetermined roughness value beyond which clinically unacceptable hemolysis tends to occur.



5,443,502
ROTATABLE HEART VALVE HOLDER

Roberto Candillo, and Rebecca Scoggins, both of Austin, Tex., assignors to Carbomedics, Inc., Austin, Tex.

Filed Jun. 2, 1994, Ser. No. 253,097
Int. Cl.[6] A61F *2/24*; A61M *1/00*
U.S. Cl. 623—2 **9 Claims**

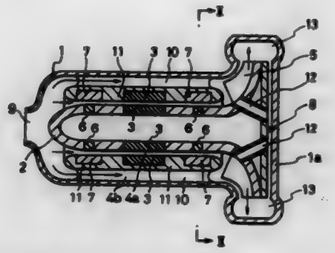


1. A combination comprising a mechanical heart valve and heart valve holder,
said heart valve having
a rigid annular valve body,
at least one leaflet pivotally received in said rigid valve body for controlling the flow of blood therethrough, and
a sewing ring circumferentially surrounding said valve body, said valve body being rotatable within said sewing ring, and
said heart valve holder having
a holding structure consisting of
first arm means for selectively engaging said annular valve body,
second arm means for selectively engaging said annular valve body, said second arm means being pivotally connected to said first arm means, and
a front shaft part attached to said first arm means, said front shaft part having thereon means for engaging a handle.
a back shaft part attached to said second arm means, said front and back shaft parts being configured such that when they are held adjacent each other said first and second arm means are forced against said annular valve body and
a single suture having first and second ends,
means for securing said first end of said suture to said holding structure, and
means for securing said second end of said suture to said holding structure, said single suture acting to hold said front shaft part against said back shaft part and passing though said sewing ring, thereby securing said sewing ring against rotation, and permitting said holding structure, together with said single suture, to be removed from said heart valve when said suture has been severed at a single location between said first and second ends.

5,443,503
ARTIFICIAL HEART PUMP

Takashi Yamane, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 8, 1994, Ser. No. 194,459
Claims priority, application Japan, Feb. 18, 1993, 5-053081
Int. Cl.[6] A61M *1/12*
U.S. Cl. 623—3 **5 Claims**



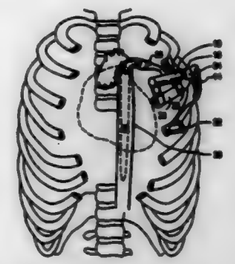
1. An artificial heart pump comprising:
a cylindrical casing closed at one end by a floor,
a rotor rotatably disposed in the casing,
a cylindrical stator provided between the casing and the rotor and establishing a blood flow channel between its outer surface and the inner surface of the casing,
an impeller provided to rotate integrally with the rotor for imparting centrifugal force to blood flowing through the blood flow channel,
stationary magnetic means constituted as at least one permanent magnet provided on the inner surface of the stator,
rotating magnetic means constituted as at least one permanent magnet provided on the rotor for producing between itself and the stationary magnetic means a force of magnetic repulsion for supporting the rotor in a noncontacting state with respect to the stator, and
a pivot provided at the rotational center of a rear surface of the impeller to abut on the floor of the casing.

5,443,504
BASIC SKELETAL MUSCLE ENERGY CONVERSION SYSTEM

John D. Hill, 2040 Broadway, Apt. 101, San Francisco, Calif. 94115

Continuation of Ser. No. 43,600, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 767,328, Sep. 30, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 267,131
Int. Cl.[6] A61M *1/12*
U.S. Cl. 623—3 **16 Claims**

6. A method for improving the flow rate in a cardiovascular circulatory system, said method comprising the steps of:
surgically anchoring directly to the skeleton hydraulic conversion means for converting contraction of a skeletal muscle attached to said conversion means at one end to hydraulic energy, the conversion means being coupled to a circulatory support device by coupling means including a hydraulic transmission line such that the hydraulic energy is transmitted through the hydraulic transmission line and drives the circulatory support device;
attaching stimulating means to the skeletal muscle whereby the muscle contracts upon adequate stimulation from the stimulating means and pulls in tension against said conversion means;
conditioning of the skeletal muscle by stimulating the muscle periodically with the stimulating means, thereby generating alternate contraction and relaxation of the muscle for a time sufficient to convert fast-twitch fibers of the muscle to slow-twitch fibers; and

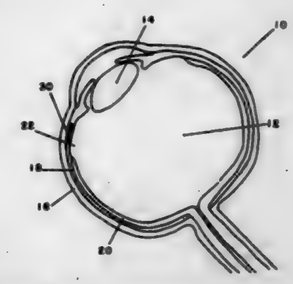


continuing periodic stimulation of the conditioned skeletal muscle to generate contractile tensile force such that the contractile tensile force is converted into hydraulic energy by said conversion means which actuates said circulatory support device; wherein said conversion means is implanted within the thoracic cavity.

5,443,505
BIOCOMPATIBLE OCULAR IMPLANTS

Vernon G. Wong, Rockville, Md., and Frank Kochinke, San Jose, Calif., assignors to Oculex Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Nov. 15, 1993, Ser. No. 153,184
Int. Cl.[6] A61F *2/14*
U.S. Cl. 623—4 **19 Claims**



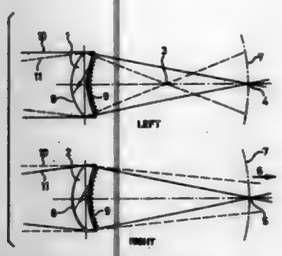
1. A method for treating an eye condition which comprises:
preparing an implant by combining a physiologically active therapeutic agent and a permeability enhancing agent encapsulated in a pharmacologically acceptable biocompatible polymer; and
introducing said implant extrinsic to the vitreous and incapable of migration from an implantation site, wherein said site is characterized by being avascular, permitting diffusion of a physiologically active agent from said implant into the vitreous, and in proximity to said eye condition,
wherein said therapeutic agent is maintained at an effective dosage for said eye condition at the site of said eye condition for an extended period of time.

5,443,506
LENS WITH VARIABLE OPTICAL PROPERTIES
Antoine L. Garabet, 840 N. Pennsylvania, Glendora, Calif. 91740
Filed Nov. 18, 1992, Ser. No. 977,663
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 17 Claims



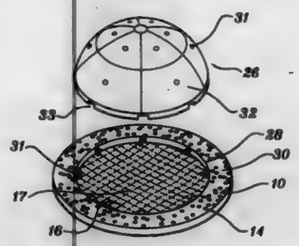
1. A variable focus intraocular lens comprising:
a first lens portion with at least one lens surface and at least one fluid channel;
a second lens portion with at least one lens surface;
an optical zone defined in the center of each of said first and second lens portions;
a fluid reservoir between said first and second lens portions;
at least one flow loop connecting said fluid reservoir to said fluid channel to define a fluid path, such that said fluid path contains multiple discrete segments of fluid which move through the fluid path, said multiple segments including at least one segment of charged solution.

5,443,507
INTRAOCULAR LENS SET
Karl W. Jacobi, Giessen, Germany, assignor to adatomed Pharmazeutische und medizintechnische Gesellschaft mbH, Munich, Germany
Filed Apr. 5, 1993, Ser. No. 41,582
Claims priority, application European Pat. Off., Apr. 3, 1992, 92105814
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 2 Claims



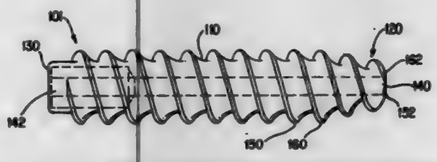
1. An intraocular lens set comprising:
first and second intraocular lenses, each having a front side, a rear side, a far vision focus, a near vision focus, a refractive power and a diffractive power, and
a diffractive structure, providing the diffractive power, disposed on the rear side of each of the lenses,
a profile height of the diffractive structure consisting of a profile height corresponding to a wavelength in the green spectral region of visible light,
the diffractive and the refractive powers being added such that the far vision focus of the first intraocular lens has a higher contribution to a total light distribution passing through the first lens than the second lens and the near vision focus of the second intraocular lens has a higher contribution to the total light distribution passing through the second lens than the first lens.

5,443,508
SUBCUTANEOUS IMPLANTABLE MULTIPLE AGENT DELIVERY SYSTEM
Vincent C. Giampapa, 89 Valley Rd., Montclair, N.J. 07042
Continuation-in-part of Ser. No. 24,426, Mar. 1, 1993, Pat. No. 5,391,164. This application Nov. 12, 1993, Ser. No. 151,377
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] A61F 2/02; A61K 9/22
U.S. Cl. 623—11 14 Claims



1. A removable subcutaneously implantable, multiple-agent delivery system, comprising:
(a) a pod for subcutaneous implantation beneath the dermis of the human body, said pod comprising a porous surface between an interior and exterior of a bottom thereof and further comprising fluid transfer means in fluid communication with said porous surface, said pod having an opening at a top thereof, said pod formed of a biocompatible material, the exterior of the bottom of said pod provided with one or more vascular growth factors to promote growth of blood capillaries into and about said porous surface;
(b) a dome proportioned for detachable securement about said opening of said pod, said dome including at least one chamber having selectable fluid communication with said fluid transfer means of said pod, in which bio-acting materials may be stored within said chambers of said dome prior to implantation, said dome formed of a biocompatible material; and
(c) programmable time dependent biological agent release means within said chambers of said dome and said fluid transfer means of said pod, whereby said agents are controllably released from said chamber of said dome and into said pod and, therefrom, through said porous surface into the bloodstream, in which said dome, after exhaustion of the agents there within, may be removed, refilled and resecured to said pod.

5,443,509
INTERFERENCE BONE-FIXATION SCREW WITH MULTIPLE INTERLEAVED THREADS
James A. Boucher; Matthew R. Frushell, both of Clearwater, and Niles Mallory, St. Petersburg, all of Fla., assignors to Linvatec Corporation, Largo, Fla.
Filed Dec. 10, 1992, Ser. No. 988,555
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 27 Claims



1. A bio-compatible screw for fixation-use in bone tissue and adapted to be rotated by a driver, said screw comprising:

a shank having a longitudinal axis, a distal tip,, and a proximal end;
plural interleaved helical threads disposed about said shank for engaging the bone tissue;
driver receiving means at said proximal end for engaging the driver; and
termination means for minimizing net lateral force exerted on said distal tip during insertion of the screw into bone tissue;
wherein said termination means comprises plural respective planar tip surfaces of said plural threads at said distal tip at plural respective locations disposed symmetrically about said longitudinal axis.

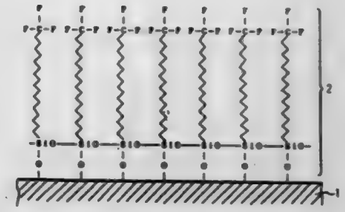
5,443,510
POROUS COATED IMPLANT AND METHOD OF MAKING SAME
H. Ravindranath Shetty, and Clarence M. Paschison, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Apr. 6, 1993, Ser. No. 43,456
Int. Cl.[6] A61F 2/28
U.S. Cl. 419—2 11 Claims



1. A method of forming an orthopaedic implant having a porous outer coating, said method comprising the steps of:
a) providing an orthopaedic implant having an outer surface;
b) forming a plurality of elongate metal beads in a predetermined pattern on the outer surface of the orthopaedic implant, each of said elongate metal beads having an outer surface and being metallurgically bonded to the orthopaedic implant;
c) providing a porous metal layer; and
d) metallurgically bonding said porous metal layer to the outer surface of the plurality of elongate metal beads.

11. An implant constructed in accordance with the method of claim 1 is formed from a material from the group consisting of; Ti—6Al—4V alloy, beta titanium alloys, alpha+beta titanium alloys, and high strength titanium, a layer of metal mesh bonded to the implant, the metal mesh being formed from a material from the group consisting of commercially pure titanium, beta titanium alloys, and alpha+beta titanium alloys, and a porous surface layer metallurgically bonded to the metal mesh, the porous surface layer being formed from a material from the group consisting of commercially pure titanium, beta titanium alloys, and alpha+beta titanium alloys.

5,443,511
MEDICAL MEMBER AND METHOD OF MANUFACTURING THE SAME
Kazufumi Ogawa, Hirakata; Norihiro Mise, Setta, and Masaru Soga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 824,314, Jan. 23, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,629
Claims priority, application Japan, Jan. 28, 1991, 3-008323; Feb. 6, 1991, 3-038134; Mar. 14, 1991, 3-049841
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[6] A61F 2/28; A61K 6/08
U.S. Cl. 623—16 6 Claims



1. A medical member comprising a chemically adsorbed monolayer as a surface layer covalently bonded to a surface of said medical member by silicone bonds, said chemically adsorbed monolayer containing fluorocarbon chain groups, wherein the fluorocarbon chain groups have proximal ends near the medical member and distal ends away from the medical member, further wherein the fluorocarbon chain groups contain end groups comprising $-CF_3$ groups at the distal ends of the fluorocarbon chain groups.

5,443,512
ORTHOPAEDIC IMPLANT DEVICE
Jack E. Parr, North Webster; Roy D. Crowninshield; Thirumalai N. C. Devanathan, both of Warsaw, and Helen Chu, Goshen, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Division of Ser. No. 15,044, Feb. 8, 1993, abandoned, which is a continuation of Ser. No. 605,335, Oct. 30, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,234
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 8 Claims



1. An orthopaedic implant device comprising a body, a casing attached to the body and a porous metal surface layer attached to the casing and adapted for contact with the bone to receive bony ingrowth into the pores, the casing including adhesive characteristics for attachment to the body and porous metal surface layer, the improvement wherein, the body is a

metal made from cobalt chrome and the porous metal surface layer is made from titanium.

5,443,513

COMPOSITE ORTHOPEDIC IMPLANT

Missoum Moumene, Teaneck, N.J.; Ruey Y. Lin, New City, N.Y., and Casper F. Stark, Pompton Lakes, N.J., assignors to Howmedica Inc., New York, N.Y.

Continuation of Ser. No. 858,282, Mar. 23, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,870
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 15 Claims



1. A beam of predetermined length adapted for implantation within a bone to support a load capable of applying bending and torsional loading forces, consisting essentially of:

an injection molded elongated core formed of short filament fibers having a length of less than four millimeters embedded in a thermoplastic polymer, said short filament fibers generally oriented parallel to a longitudinal axis of the core; and

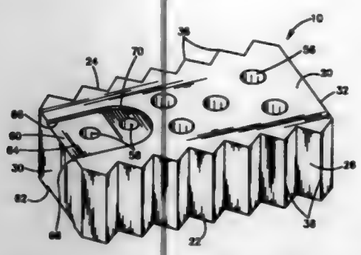
encasing the core, a sheath formed of a plurality of elongated carbon filament fibers embedded in a thermoplastic polymer, each fiber individually helically wound around the core to form a layer so that a plurality of layers are formed and molded thereto, wherein the sheath and the core each have a stiffness as defined by a modulus of elasticity wherein the core has a lower modulus than the sheath.

5,443,514

METHOD FOR USING SPINAL INPLANTS

Arthur D. Steffee, Novelty, Ohio, assignor to AcroMed Corporation, Cleveland, Ohio

Filed Oct. 1, 1993, Ser. No. 130,288
Int. Cl.[6] A61F 2/44
U.S. Cl. 623—17 7 Claims



1. A method of fusing together adjacent vertebrae of a spinal column comprising the steps of:

removing at least a portion of the disc between the adjacent vertebrae;

providing a spinal implant with first and second side surfaces substantially parallel to each other and upper and lower surface means extending between the first and second side surfaces;

inserting the spinal implant between the adjacent vertebrae with the first and second substantially parallel side surfaces of the spinal implant facing the adjacent vertebrae; and

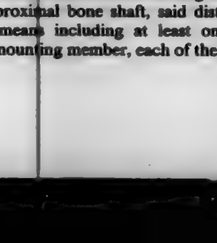
rotating the spinal implant into a position in which the parallel side surfaces of the spinal implant extend from one of the adjacent vertebrae to the other adjacent vertebrae and the upper and lower surface means engage the adjacent vertebrae.

5,443,515

VERTEBRAL BODY PROSTHETIC IMPLANT WITH SLIDABLY POSITIONABLE STABILIZING MEMBER

Robert C. Cohen, Rockaway Township, and Robert G. Averill, Ringwood, both of N.J., assignors to Implex Corporation, Allendale, N.J.

Filed Jan. 26, 1994, Ser. No. 187,990
Int. Cl.[6] A61F 2/44
U.S. Cl. 623—17 20 Claims



1. A vertebral body prosthetic device for replacing a surgically removed natural vertebral body, comprising:

a vertebral body prosthesis dimensioned and arranged to be positioned between first and second separated natural vertebral bodies, said vertebral body prosthesis having a first end surface for engaging the first natural vertebral body, a second end surface substantially opposite said first end surface for engaging the second natural vertebral body, an external peripheral surface connecting said first and second surfaces, and at least one axially extending channel formed on said external peripheral surface along a length extending between said first end surface and said second end surface; and

stabilizing means including axially extending plate means dimensioned and arranged to attach to one of said first and second natural vertebral bodies for securing said prosthetic vertebral body to said one of said first and second natural vertebral bodies, said stabilizing means being slidably positionable along said length of said at least one channel.

5,443,516

JOINT PROSTHESIS

Björn Albrektsson, Svangatan 11, Göteborg, Sweden S-413 14, and Stig Wennberg, Villa Holma 6266, Angered, Sweden S-424 57

Continuation of Ser. No. 768,779, Oct. 9, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,679
Claims priority, application Sweden, Apr. 11, 1989, 8901315
Int. Cl.[6] A61F 2/30, 2/42
U.S. Cl. 623—18 20 Claims

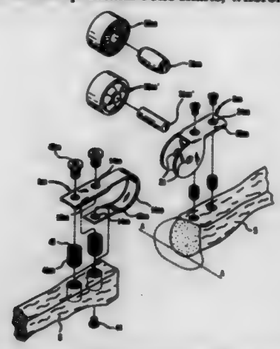
1. A joint prosthesis adapted to permanently replace a natural articulated joint between distal and proximal bone shafts comprising:

distal prosthesis means for connecting said joint prosthesis to the distal bone shaft;

proximal prosthesis means for connecting said joint prosthesis to the proximal bone shaft, said distal and proximal prosthesis means including at least one longitudinally extending mounting member, each of the distal and proximal bone shafts having periosteal parts thereon, and at least one of the distal and proximal bone shafts including at least one generally transverse bore therein;

articulated prosthetic joint means having a positive interlocking connector means arranged between said distal prosthesis means and said proximal prosthesis means for hingedly connecting said distal prosthesis means to said proximal prosthesis means; and

securing means for securing said at least one longitudinally extending mounting member of said distal and proximal prosthesis means to the periosteal parts of respective ones of the distal and proximal bone shafts, wherein said at least



one longitudinally extending member is sized to extend a greater distance along the respective distal or proximal bone shafts than any other portion of joint prosthesis, said at least one of said distal and proximal prosthesis means associated with a corresponding one of the distal and proximal bone shafts having at least one passageway extending therethrough for alignment with the at least one generally transverse bore, said securing means including anchoring means for insertion at least partially within the at least one generally transverse bore and structured to extend through said at least one passageway whereby said securing means can be permanently fixed to the corresponding one of the distal and proximal bone shafts.

5,443,517

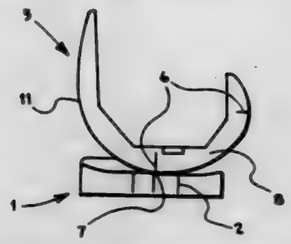
Patent Not Issued For This Number

5,443,518

KNEE POSITION INDICATOR

John N. Insall, Scarsdale, N.Y., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jul. 20, 1993, Ser. No. 94,636
Int. Cl.[6] A61F 2/38
U.S. Cl. 623—20 4 Claims



1. An apparatus for determining knee position during knee joint replacement comprising:

a prosthetic tibial knee component having medial, lateral and superior tibial surfaces; and

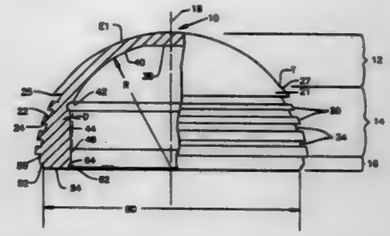
a femoral knee component, the superior tibial surface configured to accommodate articulation with the femoral knee component, wherein the medial and lateral tibial surfaces each contain at least three uniformly spaced tibial reference marks extending down the surface for visually indicating relative location between the tibial knee component and the femoral knee component.

5,443,519

PROSTHETIC ELLIPSOIDAL ACETABULAR CUP

Robert G. Averill, Ringwood, and Robert C. Cohen, Rockaway Township, both of N.J., assignors to Implex Corporation, Allendale, N.J.

Filed Apr. 22, 1993, Ser. No. 52,248
Int. Cl.[6] A61F 2/34
U.S. Cl. 623—22 15 Claims



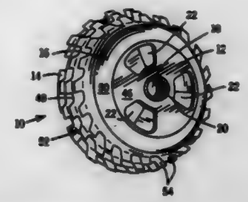
1. A prosthetic acetabular cup having an outer surface for insertion into a patient's acetabulum, wherein said outer surface includes at least one ellipsoidally shaped region that defines an elliptical plane section having a major axis and a minor axis, wherein said major axis is longer than said minor axis.

5,443,520

CEMENTLESS FIXATION ELEMENT FOR AN ARTIFICIAL HIP JOINT WITH ROTATING COVER ELEMENT

K. Zweymüller, Vienna, Austria, and André Deckner, Paris, France, assignors to Plus Endoprothetik AG, Switzerland

Filed Dec. 7, 1993, Ser. No. 166,388
Claims priority, application European Pat. Off., Dec. 7, 1992, 92120836
Int. Cl.[6] A61F 2/32, 2/34
U.S. Cl. 623—22 15 Claims



1. A fixation element for receiving a socket component of an artificial hip joint, comprising:

a frontal region for facing a pelvic bone and having a screw-threaded central bore to receive an insertion tool and said frontal region having at least one aperture therein;

a first conically tapering wall located adjacent said frontal region and having an outer surface including a self-tapping screw thread for cementless fixation of the element in the pelvic bone;

a second conically tapering wall disposed between said frontal region and said first conically tapering wall;

a cover element to close said at least one aperture defined by the frontal region, said cover element engages to an inner surface of said frontal region and having a rotational axis

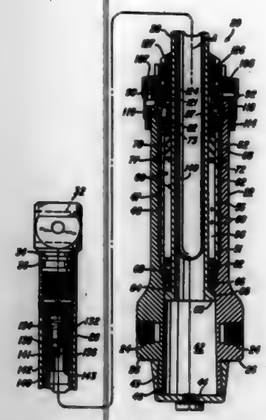
perpendicular to said frontal region, said cover element being rotated on said axis.

5,443,521

HYDRAULIC CONTROL UNIT FOR PROSTHETIC LEG

Donald E. Knoth, and William L. Phillips, both of Dayton, Ohio, assignors to Mauch Laboratories, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 993,678, Dec. 21, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,645
The portion of the term of this patent subsequent to Apr. 11, 2012, has been disclaimed.
Int. Cl.[6] A61F *2/64*
U.S. Cl. 623—44 6 Claims



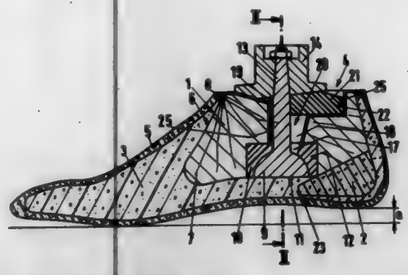
1. A hydraulic control unit for use with a prosthetic leg assembly comprising an elongated tubular housing having an axis, said housing including a first end portion including means defining a displacement chamber for receiving hydraulic fluid and a second end portion defining a bore, flow control means disposed within said bore and defining an operating chamber for receiving hydraulic fluid, a piston rod having an inner portion extending into said housing and an outer portion projecting from said housing, a piston on said inner portion of said piston rod within said operating chamber, means defining a fluid accumulating chamber connected to receive fluid from said displacement chamber, a supply of hydraulic fluid within each of said operating and displacement chambers, said fluid flowing within said flow control means and said operating chamber in response to axial movement of said piston and said piston rod within said operating chamber to effect damping of said piston rod, a flexible bladder within said accumulating chamber for accumulating said fluid displaced from said displacement chamber to said accumulating chamber when said piston rod moves into said housing and for maintaining a continuous static pressure on said piston rod for urging said piston rod outwardly from said housing, an annular sealing member supported by said housing and engaging said piston rod for confining said fluid within said operating chamber, said bladder including opposing films of flexible plastics material, said films having adjacent peripheral portions heat sealed together to form a pressure chamber between said films, a pressurized gas within said pressure chamber, a second annular sealing member supported by said housing inwardly of the first said sealing member and engaging said piston rod between said operating chamber and said displacement chamber, and said second sealing member having means for preventing the continuous hydraulic static pressure within said displacement chamber from transferring past said second sealing member to said operating chamber and to said first sealing member to avoid leakage of hydraulic fluid from said housing past said first sealing member for significantly extending the service life of said unit.

5,443,522

ARTIFICIAL FOOT HAVING A LOW-POSITIONED JOINT AND A HORIZONTAL PLANTAR BUFFER

Christian Hiemisch, Duderstadt, Germany, assignor to Otto Bock Orthopaedische Industrie Besitz und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany

Filed Apr. 26, 1993, Ser. No. 37,163
Claims priority, application Germany, Mar. 27, 1992, 42 09 974.9
Int. Cl.[6] A61F *2/66*
U.S. Cl. 623—49 21 Claims



1. An artificial foot comprising:
- a practically incompressible core which forms an upper connecting surface in an ankle area, a front of the core adjoining the connecting surface and extending over a base located in an instep area of the foot, which tapers downwardly toward the front, and overall is about half as long as the entire foot;
- a heel wedge made of soft synthetic foam joined to an under side of the core;
- an inner foot connected to the front of the core and to a front end of the heel wedge, extending to a toe area and composed of a synthetic foam; and
- an outer foot which completely covers the inner foot with the exception of the upper connecting surface, constructed of a soft, easily deformable, skin-forming synthetic foam layer, whose restoring force is slight compared to that of the inner foot; and
- a low-positioned joint which moves in all directions;
- wherein the joint includes a virtually perpendicular bolt, a lower end of which is shaped like a condyle and a top and sides of the condyle are covered by a bearing shell;
- wherein at the rear facing the heel, the bolt rests against a horizontal plantar buffer, which buffer is inserted into a space in the core which is open to the connecting surface and to the front, and which buffer is configured to essentially act upon the bolt like a horizontally operating pressure spring; and
- wherein an upper end of the bolt is attached to an adapter, a bottom of which adapter is supported on the core in a front area located in front of the bolt and on the plantar buffer in a rear area behind the bolt.

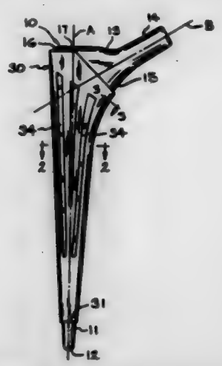
5,443,523

FEMORAL STEM CEMENT MANTLE

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Filed Mar. 18, 1994, Ser. No. 210,713
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—23 3 Claims

1. A cement mantle adapted for use with a femoral hip joint prosthesis having an elongated stem having a length extending from a proximal end to a distal end, said stem tapering from larger to progressively smaller cross-sectional sizes from said proximal end to said distal end, said cement mantle comprising a wall extending from a lower end of relatively small cross-sectional size to an upper end of greater cross-sectional size, a plurality of elongated interstices extending uninterruptedly from a first end adjacent but spaced from said upper end to a second end spaced from said lower end, said interstices tapering from a greater breadth at said first end to a lesser breadth at said second end, at least some of said interstices having a length greater than one-half the distance of the length of said item.

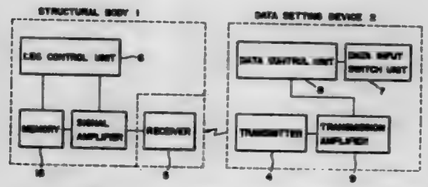


5,443,524

TEACHING PLAYBACK SWING-PHASE-CONTROLLED ABOVE KNEE PROSTHESIS

Seishi Sawamura, Kobe; Sakuya Nakajima, Nishinomiya; Kunio Amemori, Kobe; Hidehisa Oku, Akashi; Akio Nakagawa, Itami; Ichiro Kitayama, Kobe; Mikio Yuki, Akashi; Shiro Horiguchi, Takasago; Yoshihisa Araki, Takasago; Shigeru Yuki, Takasago, and Toshihiro Hamada, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho and Hyogo Prefectual Social Welfare Corporation, both of Kobe, Japan

Filed Jun. 9, 1993, Ser. No. 73,418
Claims priority, application Japan, Jun. 9, 1992, 4-149315
Int. Cl.[6] A61F *2/64, 2/70*
U.S. Cl. 623—24 8 Claims



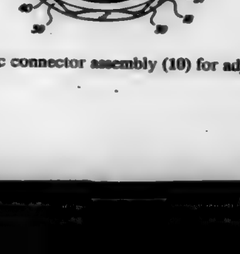
1. A teaching playback swing-phase-controlled above knee prosthesis comprising:
- a structural body comprising a thigh frame and a leg frame pivotally joined to the thigh frame;
- a cylinder interconnecting the thigh frame and the leg frame;
- means for adjusting the opening of a valve of the cylinder;
- a remote control means comprising at least a data input means for entering data concerning the opening of the valve, and a signal transmitting means for transmitting the data, the signal transmitting means comprising an infrared transmitter for transmitting a setting operation start signal and a radio transmitter for transmitting the data concerning the opening of the valve;
- a signal receiving means for receiving the data transmitted by the signal transmitting means of the remote control means, disposed within the structural body, the signal receiving means comprising an infrared receiver for receiving the setting operation start signal and a radio receiver for receiving the data concerning the opening of the valve, the radio receiver being turned on and off based on the setting operation start signal; and
- a leg control unit disposed within the structural body to control the means for adjusting the opening of the valve of the cylinder according to the data received by the radio receiver of the signal receiving means so that the leg frame will swing relative to the thigh frame properly according to a predetermined speed.

5,443,525

CONDUCTIVE PATCH FOR CONTROL OF PROSTHETIC LIMBS

Aldo A. Laghi, 13 Meridian La., Ballston Lake, N.Y. 12019

Filed Jun. 27, 1994, Ser. No. 266,042
Int. Cl.[6] A61F *2/70*
U.S. Cl. 623—25 4 Claims



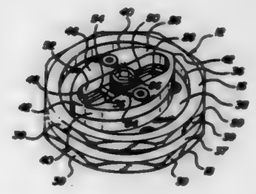
1. A myoelectric control device, comprising:
- a silicone pad of soft, flexible construction;
- said silicone pad being bonded to an interior surface of a silicone liner that provides a non-slip interface between a residual limb and a prosthesis socket;
- a window formed in said silicone liner to enable attachment of control electrodes to said silicone pad;
- said silicone pad having a plurality of electrically conductive contacts embedded in a non-conductive silicone matrix;
- said electrically conductive contacts being made of a silicone/conductor mixture;
- said electrically conductive contacts being arranged in a grid pattern throughout said silicone pad; and
- each of said electrically conductive contacts having a low resistivity for detecting low strength myoelectric signals;
- whereby said electrically conductive contacts collectively supply signals that may be employed to control movements of a prosthetic hand.

5,443,526

ADJUSTABLE PROSTHETIC CONNECTOR ASSEMBLY

Jeffery S. Hoerner, 1726 Sequoia Ct., Allentown, Pa. 18104

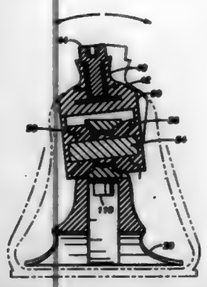
Filed Jun. 29, 1994, Ser. No. 267,493
Int. Cl.[6] A61F *2/80, 2/62*
U.S. Cl. 623—38 19 Claims



1. A prosthetic connector assembly (10) for adjustably con-

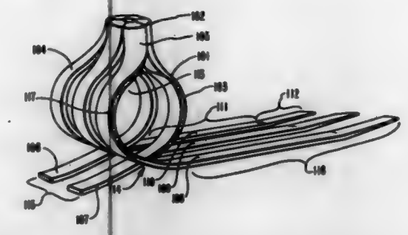
necting a socket (22) with a prosthetic limb, said connector assembly (10) comprising:
- a plate member (12) including a top side (16), a bottom side (18), and an outer periphery (20);
- said plate member (12) defining a first opening (14) disposed therethrough;
- a socket (22) including a wall member (24) extending upwardly from said top side (16) of said plate member (12) and surrounding said first opening (14) in spaced relation thereabout;
- a washer (26) disposed within said socket (22), extending across said first opening (14) in said plate member (12) and supported by said top side (16) of said plate member (12);
- said washer (26) including a length (L) and a width (W) and being moveable within said socket (22) in the direction of said width (W);
- said washer (26) including a top surface (46);
- said washer (26) including an inner wall surface (52) defining a longitudinal opening (48) in said washer (26);
- said inner wall surface (52) including a groove (54) disposed therein and spaced below said top surface (46) of said washer (26);
- an attachment member (30) for joining a prosthetic limb adjacent said bottom side (18) of said plate member (12) to said washer (26) while permitting relative movement of said washer (26) and the limb with respect to said plate member (12); and
- characterized by a nut (56) slidably disposed within said groove (54) and securely retained therein to remain attached to said washer (26) while supporting a bolt (84) in slidable lateral adjustment with respect to said washer (26).

5,443,527
PROSTHETIC FOOD AND THREE-WAY ANKLE JOINT
Michael T. Wilson, 3131 Villa La., Missouri City, Tex. 77459
Filed Mar. 31, 1993, Ser. No. 40,905
Int. Cl.[6] A61F 2/66, 2/62
U.S. Cl. 623—49 11 Claims



1. A lightweight foot prosthesis, comprising:
- an integral foot having a heel, a toe, and a raised instep, said instep including a dorsal surface and a plantar surface;
- an ankle joint affixed to said foot and capable of motion around each of three perpendicular axes;
- means for limiting rotation of said ankle joint; and
- means for connecting said ankle joint to a leg;
- said ankle joint comprising a body, a swivel means housed in said body, a shaft rotatably mounted in said swivel means, and means for transmitting a force from the leg to said shaft, said rotation limiting means being disposed between said shaft and said body;
- said swivel means including a housing having a transverse main bore therethrough, an outer race fixed herein, and an inner race rotatably housed in said outer race, said inner race having a central bore therethrough, said bore being sized to receive said shaft;
- said rotation limiting means comprising a pair of annular compression mounts; and
- said housing including a pair of annular beveled seating faces, each such face centered on said main bore, each of said compression mounts being seated on one such face.

5,443,528
COIL SPRING PROSTHETIC FOOT
Scott Allen, 2286 Harvest Ln., West Jordan, Utah 84084
Filed Nov. 17, 1992, Ser. No. 977,806
Int. Cl.[6] A61F 2/66, 2/70
U.S. Cl. 623—52 7 Claims

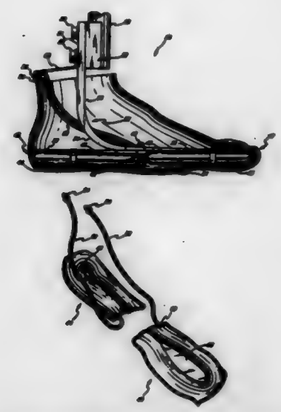


3. A foot comprising:
- (a) a foot center coil section having a top and a bottom,
- (b) a heel extension section extending in a first direction from the bottom of said foot center coil section,
- (c) a forefoot extension section extending in a second direction from the bottom of said foot center coil section,
- (d) a shin section which extends from said foot center coil section;
- (e) means for accommodating torsional movement about a longitudinal axis through said shin section;
- wherein said foot center coil section comprises an anterior coil spring section and a posterior coil spring section and wherein said heel extension section extends from said anterior coil spring section and said forefoot extension section extends from said posterior coil section;
- wherein said foot center coil section, heel extension section, and forefoot extension section constitute a coil spring to form the foot;
- wherein said foot center coil section is adapted to serve as the unitary center of the coil spring in absorbing, storing and releasing energy;
- wherein said torsional movement means comprises a plurality of torsional beams; and
- wherein said torsional beams extend from said anterior coil spring section and from said posterior coil spring section,

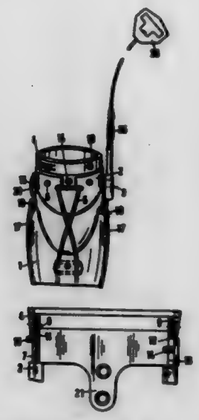
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5,443,529
PROSTHETIC DEVICE INCORPORATING MULTIPLE SOLE BLADDERS
Van L. Phillips, 5499 Maravillas, Rancho Santa Fe, Calif. 92067
Continuation-in-part of Ser. No. 951,857, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 662,783, Feb. 28, 1991, Pat. No. 5,290,319. This application Feb. 19, 1993, Ser. No. 23,897
Int. Cl.[6] A61F 2/66
U.S. Cl. 623—56 16 Claims

13. A foot prosthesis, comprising:
- a prosthetic foot portion being flexible to store and release energy, said foot portion having a sole extending from the heel end to the toe end; and
- two or more bladders positioned on the bottom of said sole, said bladders being adapted to absorb, store and release energy, each of said bladders including a pair of arm portions and a connecting portion, said bladders each defining a cavity between said pair of arm portions to permit each of said bladders to expand laterally outward and laterally inward toward said cavity so as to improve the energy storage and release capabilities of said bladders, and to provide the amputee with a sensation of being low-centered rather than high-centered.

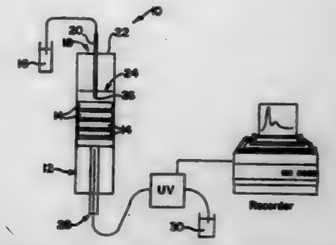


5,443,530
ELBOW FITTING PART
Richard Globiszewski, Duderstadt Ot Westerode, Germany, assignor to Otto Bock Orthopaedische Industrie Besitz- und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany
PCT No. PCT/DE92/00891, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO93/07836, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 26, 1992, Ser. No. 78,301
Claims priority, application Germany, Oct. 25, 1991, 41 35 229.7
Int. Cl.[6] A61F 2/56, 2/58
U.S. Cl. 623—59 9 Claims



1. An elbow fitting part for an upper arm stump comprising:
- an elbow ball connected by a hinged axle to a lower arm, configured as a hollow synthetic part, and being detainable by a latch-locking device in various bending positions, wherein a proximal connection to the upper arm stump includes a cast-in ring and an upper arm rotating joint provided for an adjustable rotation of the lower arm,
- wherein the upper arm rotating joint is configured as an annular bearing and the latch-locking device is a traction lock which is disposed outside the elbow ball and is integrated into a rotating connection forming a section of the hinged axle;
- wherein the upper arm rotating joint comprises a bearing ring which is inserted into the elbow ball and is connected thereto in a rotationally secure manner and which includes an annular crosspiece, the annular crosspiece being embraced by a brake ring connected in a rotationally secure manner to the cast-in ring, and the cast-in ring being twistable by 180° in relation to the bearing ring;
- wherein the brake ring can be acted upon by a braking piece;
- wherein an annular edge, facing the elbow ball, of the brake ring is acted upon by the braking piece; and
- wherein the braking piece bears against a chamfering of the annular edge of the brake ring, which chamfering extends over 180 peripheral degrees and defines a pivotal range of the cast-in ring.

5,443,531
DELIVERY SYSTEM FOR BIOLOGICALLY ACTIVE GROWTH OR MORPHOGENETIC FACTORS AND TO A METHOD FOR PREPARING SUCH A DELIVERY SYSTEM
Ugo Ripamonti, Johannesburg, South Africa, assignor to South African Medical Research Council, South Africa
Filed Apr. 29, 1992, Ser. No. 875,368
Claims priority, application South Africa, Apr. 29, 1991, 91/3225
Int. Cl.[6] A61F 2/02
U.S. Cl. 623—66 4 Claims



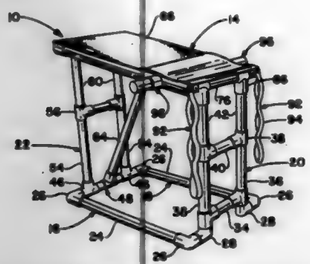
1. A method of preparing a delivery system for a biologically active growth or morphogenic factor, comprising the steps of
- (a) providing, in a chromatography column, a porous carrier comprising an adsorbent selected for its specific affinity for such biologically active factor,
- (b) dissolving or suspending the biologically active factor in a suitable fluid vehicle therefor,
- (c) introducing into the column above the carrier the vehicle carrying the biologically active factor at a controlled rate,
- (d) contacting the biologically active factor with the porous carrier in the column so that the factor is adsorbed onto the carrier,
- (e) collecting the non-adsorbed fraction of the biologically active factor carried in the vehicle from the column at a point below the carrier,
- (f) analyzing the non-adsorbed fraction to determine the saturation state of the carrier, and
- (g) until saturation of the carrier is reached, returning the non-adsorbed fraction to the column and repeating steps (c) through (f).

5,443,532

APPARATUS FOR ENHANCING SEXUAL INTIMACY

Thomas P. Hudak, 31790 US 19 N., Unit 196, Palm Harbor, Fla. 34684

Filed Jan. 4, 1994, Ser. No. 177,216
Int. Cl.[6] A47C *20/00*
U.S. Cl. 5—652 13 Claims



1. An apparatus for facilitating sexual intercourse between a female partner in a supine position and a male partner in a standing position, comprising a frame and a platform mounted on said frame at an angle and at an elevation which places the vaginal passage of the female in alignment with the distended genitalia of a male partner standing adjacent to the lower end of the platform, said apparatus further comprising means for supporting the lower limbs of the female partner while the female partner is supported in a supine position on the platform with her vagina overlapping the lower end of the platform.

5,443,533

PAINT TRIMMING APPARATUS

Walter Magnica, Box 1146, Camrose, Alberta, Canada T4V 1X2

Filed Sep. 22, 1994, Ser. No. 310,318
Int. Cl.[6] B05C *1/06, 11/00*
U.S. Cl. 15—201.1 16 Claims



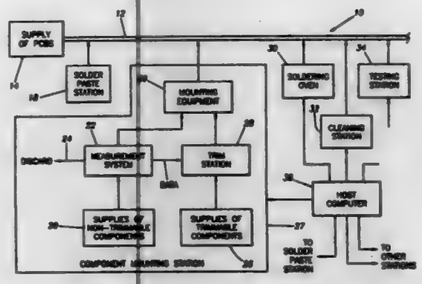
1. A paint trimming apparatus, comprising:
a body;
a pad removably secured to the body, the pad having a top, a bottom and an edge angled outwardly from the top toward the bottom, the edge being covered with a liquid impermeable membrane;
a guide support pivotally secured to the body and moveable between a first position covering the impermeable membrane and a second position spaced from the pad;
a guide blade removably secured to the guide support;
a handle secured to the body; and
means for moving the guide support between the first position and the second position.

5,443,534

PROVIDING ELECTRONIC COMPONENTS FOR CIRCUITY ASSEMBLY

Patrizio Vinciarelli, Boston, and Hubert R. Zeller, III, Billerica, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Continuation-in-part of Ser. No. 916,490, Jul. 21, 1992, abandoned. This application Sep. 21, 1992, Ser. No. 947,937
Int. Cl.[6] H01C *17/00*
U.S. Cl. 29—593 27 Claims



1. A method for providing an electronic component for connection in a corresponding one of a plurality of electronic circuits being manufactured on a production line, comprising
providing a supply of component blanks,
making a measurement of at least one of the following:
a parameter of another component to be included in the corresponding one
of the electronic circuits, and
a parameter of a portion of the corresponding one of the electronic circuits,
determining from the measured parameter an an appropriate value for the electronic component,
forming said electronic component by removing material from one of said blanks to cause the blank to have the appropriate value, and
delivering said electronic component for connection in the corresponding one of said electronic circuits.

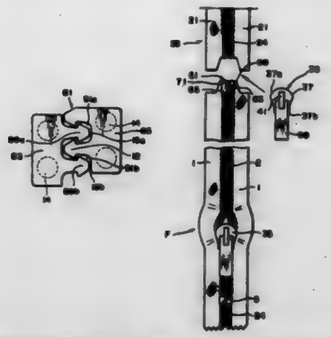
5,443,535

METHOD OF MANUFACTURING A SLIDE FASTENER

Kiyoshi Oda, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Division of Ser. No. 78,105, Jun. 18, 1993, Pat. No. 5,400,482. This application Aug. 19, 1994, Ser. No. 293,436
Claims priority, application Japan, Jun. 30, 1992, 4-172203
Int. Cl.[6] B23P *17/00*; B21D *53/50*
U.S. Cl. 29—408 2 Claims

1. A method of manufacturing a slide fastener comprising the steps of:
providing a continuous slide fastener chain comprising a pair of continuous stringer tapes and a succession of fastener element rows mounted at intervals on inner longitudinal edges of the continuous stringer tapes with element-free space portions interposed between each adjacent fastener element rows;
providing a slider with a flared front end;
threading a slider from its flared front end through the foremost element-free space portions of the stringer tapes into reciprocal engagement with the foremost element rows;
mounting a bottom stop to the fastener element rows at their leading end;
mounting a pair of opposed first and second lugs on trailing ends of the foremost element rows, the first lug having a plug projecting toward the second lug, the second lug having a socket open toward the first lug for coupling engagement with the plug, the width and the thickness of the first and second lug as coupled being equal or slightly



less than the width and the thickness of the fastener element rows as coupled; and
severing the continuous slide fastener chain across the ensuing element-free space portion.

5,443,536

TUBE SLITTING TOOL FOR ACCESSING OPTICAL FIBERS IN A BUFFER TUBE

Emmett R. Kiritsy, and Grant M. Davidson, both of Columbia, S.C., assignors to Pirelli Cable Corporation, Lexington, S.C.

Filed Sep. 26, 1994, Ser. No. 312,473
Int. Cl.[6] H02G *1/12*
U.S. Cl. 30—90.8 25 Claims

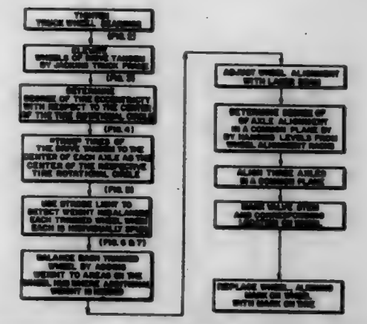
1. A tube slitting tool comprising:
a first holder having opposite ends and a first inner surface between said ends, and a second inner surface between said ends and extending at a substantially perpendicular angle to said first surface, said first holder having an outwardly-opening first channel extending inwardly into one of said first surface and said second surface and from one of said ends to the other of said ends, a first slot spaced from and extending parallel to said channel and extending inwardly into said first surface and a second slot spaced from and extending parallel to the channel and extending inwardly into said second surface, at least one of said first slot and said second slot having a terminus at one end;
a second holder having opposite ends and an outer third surface and an outer fourth surface extending at a substantially perpendicular angle to said third surface, said second holder having an outwardly-opening second channel extending inwardly from one of said third surface and said fourth surface and from one end of said second holder to the other end of said second holder, said first channel and said second channel interfacing and forming a passageway for receiving a tube to be slit therein when said first holder and said second holder are positioned with said first surface engaging said third surface and said second surface engaging said fourth surface, at least one first pin extending outwardly from said third surface and at least one second pin extending from said fourth surface, said first pin entering into said first slot and said second pin entering into said second slot when said first holder and said second holder are positioned with said first surface engaging said third surface and said second surface engaging said fourth surface, at least one of said first pin in said first slot and said second pin in said second slot abutting said terminus in said one of said first and said second slots when said first and said second holders engage; and
two cutting blades mounted on one of said first holder and said second holder and extending into the channel in said one of said first holder and said second holder.

5,443,537

METHOD OF BALANCING AND ALIGNING WHEELS ON TRUCKS

Julian L. Hankins, P.O. Drawer 7729, Longview, Tex. 75607

Filed Sep. 29, 1993, Ser. No. 129,251
Int. Cl.[6] G01B *5/255*
U.S. Cl. 33—193 17 Claims



1. A method of balancing and aligning the wheels on trucks having a truck frame, said wheels fitted with tires and having wheel bearings, brake drums and wheel hubs and mounted on axles carried by the truck frame, comprising the steps of raising the rear end of the truck frame and said tires from a supporting surface; trimming the tires of said wheels substantially true to the center of wheel rotation; placing supports under selected ones of said wheels and said tires and dynamically balancing the remaining ones of said wheels and said tires while said remaining ones of said wheels and said tires are spun by operation of the truck when the truck frame is jacked and adding balancing weight to said remaining ones of said wheels; removing said supports, lowering the rear end of the truck frame to position said tires on the supporting surface; and levelling said axles in substantially parallel, vertical planes.

5,443,538

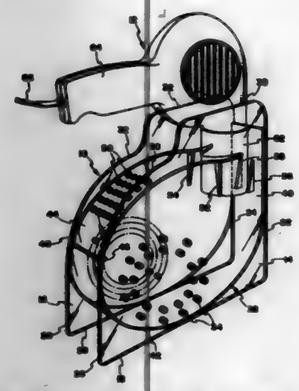
METHOD AND APPARATUS FOR DRYING SMALL ARTICLES OF WEARING APPAREL

David H. Little, 2187-G Cassia Cir., Kissimmee, Fla. 34741

Filed Jan. 22, 1993, Ser. No. 7,882
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—91 15 Claims

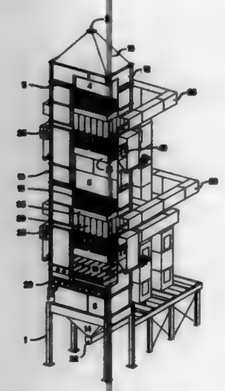
1. A method for drying small articles of wearing apparel comprising the steps of:
a) placing articles of wearing apparel on the rigid curved surface of a stationary drying chamber, said rigid curved surface maintaining its shape when subjected to circulating drying air; and
b) tumbling and drying articles of wearing apparel placed on

the rigid curved surface by forcing air under pressure along the rigid curved surface, the articles of apparel



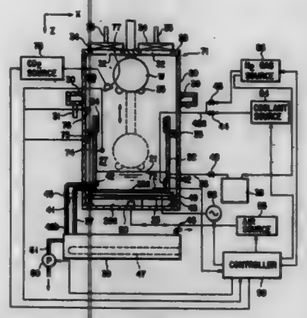
being tumbled by application of air under pressure, to expedite the drying thereof.

5,443,539
PARTICULATE DRYER
Christianus M. T. Westelaken, P.O. Box 1349, Grand Bend, Ontario, Canada N0M-1T0
Filed Sep. 8, 1994, Ser. No. 302,169
Int. Cl.[6] F26B *3/08*
U.S. Cl. 34—370 37 Claims



35. A method for the uniform drying of particulate material comprising
feeding particulate material to be dried to a concurrent-countercurrent flow dryer comprising a tower with side walls, a top, a bottom, an upper section, a middle section and a lower section, said tower having a receiving bin in the upper section for receiving particulate material to be dried and serving to deliver particulate material into a drying zone located in the middle section of the dryer below the receiving bin;
drying said particulate material in said drying zone with heated air, wherein said drying zone contains a heated air inlet for delivering heated air into said drying zone;
cooling said particulate material with cooling air in a cooling zone located below said drying zone, said cooling zone containing a cooling air inlet and a dry material outlet for collection and discharge of dry material; and
controlling an amount of air exhausted from said drying and cooling zones through one or more exhaust assemblies having adjustable apertures by adjusting said apertures to control the amount air exiting said dryer, said exhaust assemblies located intermediate said drying and cooling zones, each exhaust assembly extending horizontally across said tower between the side walls for receiving and exhausting air from said drying zone through said bed of material to be dried in a concurrent direction to material flow and for receiving and exhausting cooling air from said cooling zone through said bed of material in a countercurrent direction to material flow.

5,443,540
APPARATUS AND METHOD FOR DRYING SUBSTRATES
Yuuji Kamikawa, Kumamoto, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Tosu, both of Japan
Filed Dec. 22, 1993, Ser. No. 171,643
Claims priority, application Japan, Dec. 25, 1992, 4-357985
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—471 10 Claims

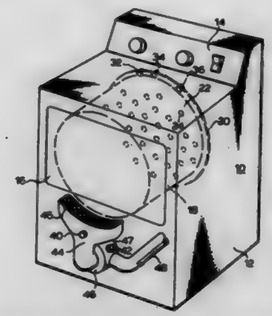


10. A substrate-drying method comprising:
heating a process solution stored in a vessel to evaporate the process solution within the vessel;
arranging at least one substrate in a vapor-generating region within the vessel;
applying the vapor of the process solution to the substrate to remove from the substrate other solutions attached to the substrate;
draining process solution from the vessel; and
releasing a heater block from the bottom of the vessel when the process solution is drained from the vessel.

5,443,541
DUAL ELEMENT ELECTRICAL CLOTHER DRYER WITH SINGLE ELEMENT INTERRUPT CIRCUIT
Robert M. St. Louis, 8980 Rochette,, St. Leonard, Quebec, Canada
Filed Sep. 28, 1993, Ser. No. 135,182
Claims priority, application Canada, Mar. 18, 1993, 2091940
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—486 5 Claims

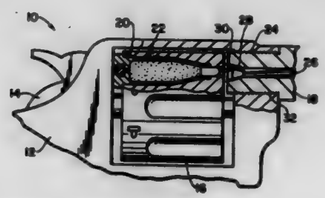
3. A method of operating a domestic clothes dryer of the type wherein a blower causes the drying air to be circulated through the dryer in a predetermined path comprising at least:
a housing containing a heating device,
a rotating clothes drum,
a filter,
a blower,
an exhaust duct,
wherein the path may at times be subject to restrictions tending to impede the circulation of drying air, and

wherein a timing device is used to control the length of time that the dryer operates, and
wherein a control circuit senses the temperature of the drying air in said housing, as well as the temperature of the drying air at some suitable location after the drying air has left the rotating drum, said control circuit having a first switching means to sense a first predetermined temperature in said housing and a second switching means to sense a second predetermined temperature in said housing which is slightly above said first temperature, and third switching means to sense a third predetermined temperature of the drying air at said some suitable location which is less than either of said first or second predetermined temperature,



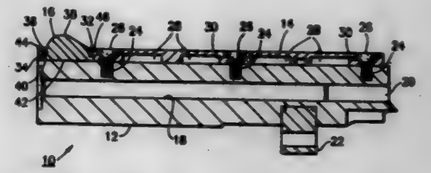
said control circuit energizing said timing device, and de-energizing said heating device during periods when either said first or third switching means reaches the first and third predetermined temperatures respectively, so that said timing device advances toward its timed expiration during this time,
said control circuit partially de-energizing said heating device during periods when said second switching means senses said second predetermined temperature in said housing, and said control circuit also operates to prevent energization of said timing means during such periods when said second temperature is sensed by said second switching means.

5,443,542
REVOLVER BARREL WITH IMPROVED BARREL THROAT AND METHOD OF MANUFACTURE
Donald S. Khoury, Granby, Mass., assignor to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Dec. 9, 1994, Ser. No. 353,517
Int. Cl.[6] F41C *3/14*; F41A *21/16*; B23P *13/00*
U.S. Cl. 42—59 12 Claims



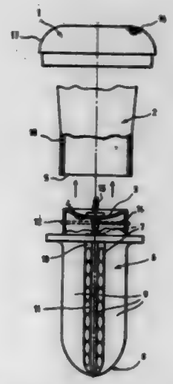
10. A revolver barrel comprising:
a rifled barrel bore;
a general cone shaped barrel throat at a rear end of the barrel bore; and
an entrance at a rear end of the barrel throat having a constant diameter along the length of the entrance.

5,443,543
FIREARM BARREL ASSEMBLY WITH REMOVABLE SIGHT
Dennis O. Epes, Colchester, and Scott A. Ladd, Coventry, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Sep. 21, 1994, Ser. No. 309,765
Int. Cl.[6] F41G *1/08*, *1/42*
U.S. Cl. 42—102 13 Claims



1. A firearm having a barrel assembly, the barrel assembly comprising:
a barrel;
a barrel rib connected to the barrel; and
a sight stationarily connected to the barrel by entrapment of a portion of the sight by the rib against the barrel, the entrapment being the sole connection of the sight to the barrel and barrel rib, wherein the barrel rib has a sight mounting aperture extending through the rib from a top of the rib to a bottom of the rib, the sight mounting aperture having a first lower section and a smaller second upper section.

5,443,544
DEVICE FOR THE CONTINUOUS WATERING OF PLANTS
Serge Azoulay, 46, rue Barbès, 94200 Ivry-sur-Seine, France
PCT No. PCT/FR92/00700, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO93/03605, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 7, 1992, Ser. No. 196,064
Claims priority, application France, Aug. 26, 1991, 91 10600; Feb. 25, 1992, 92 02143
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—48.5 10 Claims



1. A device for the continuous watering of plants, comprising a reservoir provided with a base having at least one opening defined therein, an elongate stabilization leg joined to said reservoir by said base, said stabilization leg, longitudinally

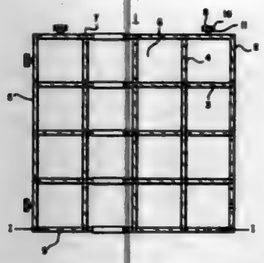
remote from said base, terminating in a tapered soil penetration guide, said stabilization leg comprising a central hollow tube aligned with said at least one opening and containing an absorbing material, at least one blade fixed to said tube and extending laterally therefrom, said central hollow tube having a longitudinal aperture defined therein and offset from said at least one blade, at least one wick extending through said opening in said base and extending below said opening to a point in spaced relation above said absorbing material for a drip transfer of watering liquid from said reservoir to said absorbing material in said central hollow tube for subsequent distribution to the plant through said longitudinal aperture in a controlled manner.

5,443,545

MULTIPURPOSE PLASTIC BUILDING COMPONENT AND METHOD FOR LAYING OUT SUCH COMPONENTS

Wolfgang Weber, Arzloherweg 5, D-8569 Förrenbach, Germany

Filed Jun. 25, 1993, Ser. No. 82,881
Claims priority, application Germany, Jun. 25, 1992, 9208359 U
Int. Cl.[6] E04H *12/00*
U.S. Cl. 52—653.1 **28 Claims**



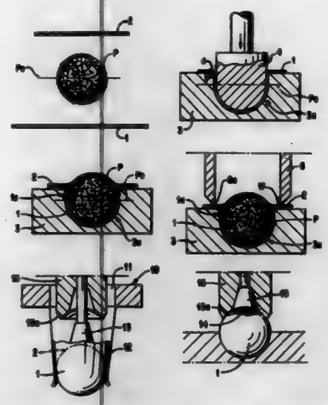
1. In a generally flat composite structure having building blocks in the form of a plurality of multipurpose plastic building components, each of the building components comprising:
an encompassing outer frame having a lateral surface and an interior;
at least one coupling device disposed at said lateral surface for joining two adjacent building components;
crosswise members and lengthwise members dividing the interior of said outer frame into a grid of individual openings; and
said outer frame and said crosswise and lengthwise members being formed of plastic waste having been previously comminuted, then melted down and then injected or cast into a suitable mold; and said outer frame having outer surfaces including upper and lower surfaces, said coupling device including at least one T-shaped hook part integrally formed at a given position on one of said outer surfaces, and another of said outer surfaces opposite said one outer surface having a cutout formed therein at said given position being open toward one of said upper and lower surfaces for receiving said hook part, wherein said at least one hook part has a lower surface, and at least said lower surface is flush with said lower surface of said outer frame.

5,443,546

METHOD AND A DEVICE FOR WRAPPING A PRODUCT IN A WRAPPER OF SHEET MATERIAL

Roberto Bertalero, Acqui Terme, Italy, assignor to Soremartec S.A., Schoppach-Arlon, Belgium

Filed Dec. 20, 1993, Ser. No. 174,432
Int. Cl.[6] B65B *47/00*; B68G *49/00*
U.S. Cl. 53—453 **28 Claims**



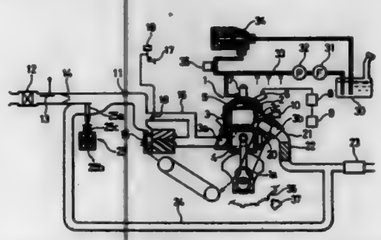
1. A method of wrapping a product in a wrapper of sheet material, including the steps of:
providing first and second sheets of wrapping material,
shaping the first sheet to a shape substantially complementary to that of the product in conditions such that, once the first sheet is shaped, it covers the greater part of the product,
inserting the product in the first shaped sheet,
applying the second sheet to the portion of the product which is left uncovered by the first sheet so that the second sheet assumes a shape complementary to the respective portion of the product,
joining the first and second sheets together to form a substantially closed wrapper around the product, and
further shaping the first sheet around the product and over the second sheet so that the first sheet hides substantially all of the second sheet from the exterior.

5,443,547

EXHAUST GAS RECIRCULATION SYSTEM

Koji Morikawa, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,225
Claims priority, application Japan, Aug. 28, 1992, 4-060733 U
Int. Cl.[6] F02M *25/06*
U.S. Cl. 60—274 **12 Claims**



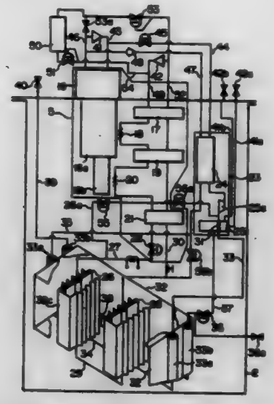
1. An exhaust gas recirculation (EGR) system for an internal combustion engine, having an EGR control valve for reducing the NOx emission in the engine by recirculating a portion of exhaust gases into an induction air conduit through an EGR passageway, the system comprising:
a take-out port of exhaust gases located at a portion of an exhaust pipe downstream of a catalytic converter and upstream of a muffler;
a control valve provided on said induction air conduit for controlling an amount of air flowing through said control valve;
a confluence portion of said induction air conduit and said EGR passageway located between an air cleaner and said control valve; and
an electrically operative EGR control valve disposed at said confluence portion so as to control the amount of the recirculated exhaust gas in accordance with an opening area of said EGR control valve.

5,443,548

CRYOGENIC REFRIGERATION SYSTEM AND REFRIGERATION METHOD THEREFOR

Norihide Saho, Tsuchiura; Hisashi Isogami, Ibaraki; Yasuo Yamashita, Hitachi; Hiroyuki Kawakami, Hitachi, and Taisei Uede, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,893
Claims priority, application Japan, Jul. 9, 1992, 4-182110
Int. Cl.[6] F17C *13/00*; B01D *8/00*
U.S. Cl. 62—51.1 **13 Claims**



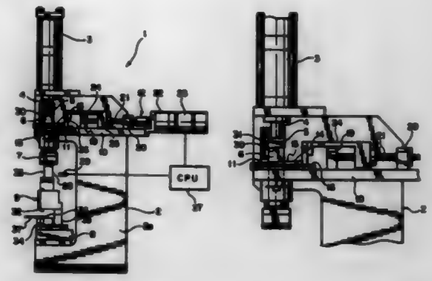
1. A cryogenic refrigeration system comprising:
a refrigerated body refrigerated to a cryogenic temperature;
a radiant heat shield body refrigerated to a low temperature for preventing the entrance of radiant heat into said refrigerated body from a high temperature portion;
a thermal insulating container for containing said refrigerated body and said radiant heat shield body; and
a refrigerating machine comprising a cold generating circuit having a first cold generating means and a first compression means for supplying a working fluid to said first cold generating means, a cryogenic refrigeration circuit having a second cold generating means and a second compression means for supplying a working fluid to said second cold generating means, and a pre-refrigeration generating circuit having a pre-refrigeration generating means for supplying a pre-refrigeration working fluid at a temperature between room temperature and a cryogenic temperature, wherein said cold generating circuit and said cryogenic refrigeration circuit share at least a portion of a circuit in common; and
wherein said refrigerated body is thermally connected to said cold generating circuit and said cryogenic refrigeration circuit, and said radiant heat shield body is connected to and refrigerated by said pre-refrigeration generating circuit.

5,443,549

TERMINAL CRIMPING MACHINE

Shuji Mimuro; Kazuhiko Takada, and Mitsugu Iwata, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 253,920
Claims priority, application Japan, Jun. 15, 1993, 5-143633
Int. Cl.[6] H01R *43/04*; B21J *13/02*
U.S. Cl. 72—482 **5 Claims**



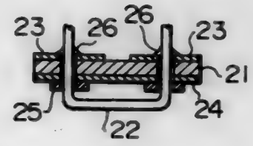
1. A terminal crimping machine provided with an applicator having a crimper for crimping a terminal to a wire and an anvil, said terminal crimping machine comprising:
a frame;
a cylinder being fixed to said frame and having a rod, wherein said cylinder moves the crimper up and down;
a bumping member fixed on the rod of said cylinder, said bumping member having a contact surface;
a height adjusting plate, having a side of a gradually changing height, provided on said frame oppositely to said bumping member, said side of a gradually changing height directly contacting said contact surface of said bumping member; and
driving means for sliding said height adjusting plate in a direction orthogonal to said rod.

5,443,550

ELECTRONIC CIRCUIT APPARATUS, APPARATUS FOR REMOVING ELECTROMAGNETIC WAVE NOISE AND THE METHOD OF MANUFACTURING THE SAME

Hiroshi Yoneda, Katsuta, and Kaoru Uchiyama, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi AUtomotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed May 14, 1992, Ser. No. 882,907
Claims priority, application Japan, May 14, 1991, 3-107949
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—118.2 **3 Claims**



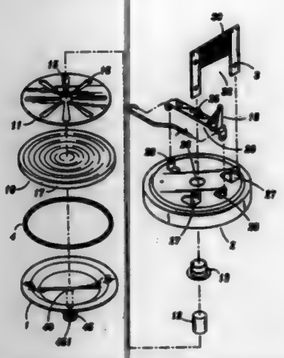
1. An electronic circuit apparatus comprising an electronic circuit having a circuit substrate, and a flat metallic base for accommodating said electronic circuit and on which said cir-

cuit substrate is mounted, wherein said flat metallic base has a groove in one of its surfaces for mounting a flat feedthrough ceramic capacitor therein, said flat feedthrough ceramic capacitor having one electrode in contact with a portion of said metallic base in said groove so that said one electrode is grounded to said metallic base.

5,443,551
WIPER ACTUATING MECHANISM FOR AN OIL-PRESSURE GAUGE

Paul Liu, Room 1004, No. 600, Min Chuan E. Road, Taipei, Taiwan

Filed Apr. 19, 1994, Ser. No. 229,785
Int. Cl.[6] G01L *9/02, 27/00*
U.S. Cl. 73—725 2 Claims

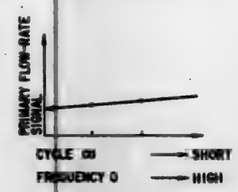


1. An improved wiper actuating mechanism particularly for use in an oil pressure gauge, comprising:
an upper cap;
a lower case being in tight sealing engagement with said upper cap;
a packing means;
a diaphram board disposed under said packing means;
an auxiliary spring plate disposed under and in abutment against said diaphram board;
a push rod disposed under said spring plate and in abutment with said diaphram board;
a push rod guide sleeve in which said push rod is slidably confined being securedly retained at a central opening of said lower case;
said upper cap being provided with a bolt like member having a through aperture for the passage of oil which can actuate said diaphram to expand;
a spring biased wiper mounting seat which is pivotally secured to the bottom of said lower case by a pair of lugs;
an adjustable actuation pin mounted on said mounting seat being in contact with an off-set point on the periphery of said push rod so as to make said mounting seat pivot in response to the oil pressure delivered via said aperture of said upper cap;
a winding board on which a well arranged resistive wire is wound;
a wiper means in contact with said resistive wire disposed on both sides of said winding board.

5,443,552
ELECTROMAGNETIC FLOWMETER AND METHOD FOR ELECTROMAGNETICALLY MEASURING FLOW RATE

Toyofumi Tomita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 21, 1994, Ser. No. 262,877
Claims priority, application Japan, Jun. 21, 1993, 5-148976
Int. Cl.[6] G01F *1/00*
U.S. Cl. 73—861.17 19 Claims



1. An electromagnetic flowmeter comprising:
a measurement tube through which a fluid flows the rate of flow of which is to be measured;
a plurality of electrodes disposed on the inner wall of said measurement tube to face each other;
excitation coils for applying a magnetic field to the inside of said measurement tube in a direction orthogonal to the axis of the tube;
excitation means for supplying said excitation coils with a rectangular excitation current in at least two excitation cycles;
flow-rate value calculating means for extrapolating, when electromotive force is generated between said electrodes in each of said excitation cycles, from flow-rate signals corresponding to said electromotive force a flow-rate value signal corresponding to when said excitation cycles are made infinitely long; and
flow-rate value outputting means for outputting said flow-rate value signal obtained by said flow-rate value calculating means through extrapolation.

5,443,553
STARTER

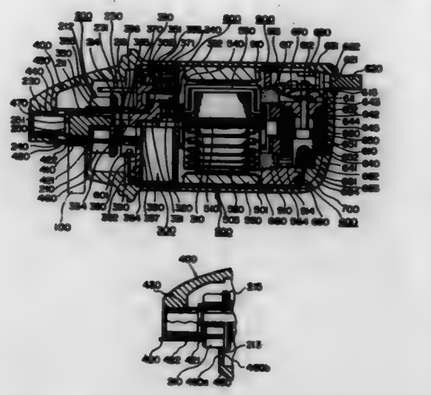
Tsutomu Shiga, Nukata; Nobuyuki Hayashi, Nagoya; Masanori Ohmi, Anjyo, and Masami Niimi, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 13, 1994, Ser. No. 357,242
Claims priority, application Japan, Dec. 16, 1993, 5-316729; Oct. 6, 1994, 6-242910
Int. Cl.[6] F02N *15/06*; F16H *1/32*
U.S. Cl. 74—7 R 14 Claims

1. A starter for an engine having a ring gear, comprising:
an output shaft for slidably holding a pinion engageable with said ring gear of said engine axially;
a housing having a window portion that rotatably supports one end of said output shaft and enables said pinion to engage with said ring gear when said pinion advances, said housing further having a projection portion that projects to the end of said pinion when said pinion retracts; and
a window shutter having a barrier portion that normally covers said window portion, said barrier portion being moved to open said window portion by an advance movement of said pinion toward said ring gear.

9. A starter having an armature comprising:
a housing including a water barrier wall;
a drive shaft disposed in said housing;
a pinion gear having a flange portion;
wherein said flange portion comes into contact with said barrier wall when said armature is rotated;

wherein said pinion gear is adapted to engage with a ring gear of an engine when said armature is rotated; and

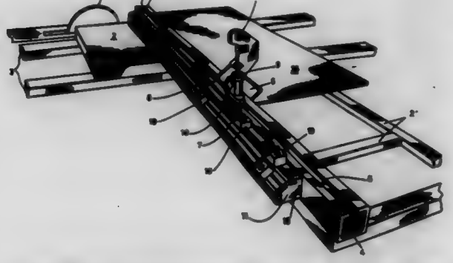


wherein said pinion gear contacts said drive shaft through a sliding portion.

5,443,554
POSITIONING DEVICE FOR WOODWORK

Denis Robert, P.O. Box 1916, Val d'Or Quebec, Canada J9P 6C8

Filed Nov. 24, 1993, Ser. No. 156,726
Int. Cl.[6] B27B *27/10*
U.S. Cl. 83—468.7 2 Claims

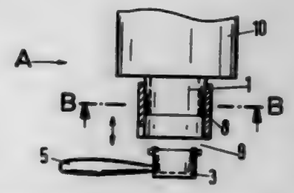


1. A positioning device, for use in combination with a table saw of the type comprising a circular saw extending in a given direction and a worktable that is movable in said given direction relative to the saw, said worktable being provided with an abutment beam perpendicular to said given direction and with a transverse stop member that is slidably movable along the beam, said stop member comprising an abutment plate which is pivotally secured to the beam in such a manner as to form a stop on the worktable on one side of the beam when pivoted in a downward position, said positioning device comprising:
(a) an elongated slide support secured to another side of the beam that is opposite to the one on which the abutment plate extends, said slide support being formed with rail-defining surfaces;
(b) at least two block members slidably mounted on said rail-defining surfaces to as to be positionable anywhere along the length of the slide support;
(c) lock means for securing each block member in place at any selected position along the slide support;
(d) an alignment arm pivotally secured to a lug forming part of the stop member, said alignment arm extending substantially in line with said stop member and being pivotable from an upright, disengaged position to a lowered, block-engaging position; and
(e) cooperating engagement means provided on the arm and on each block member to allow releasable engagement of said arm with said block members after the block members have been set at predetermined distances from the saw and the stop member has been slid along the beam to reach said block members, said cooperating engagement means including a slot formed in each of the block members and a projection projecting from said alignment arm to engage said slot when said arm is in its lowerod position;
wherein the rail defining surfaces include three rail-defining surfaces, one horizontal, one inclined and one vertical, and wherein the alignment arm has a curved profile which defines a vertical bottom surface provided with an end-most projection adapted to engage the slot of each block member mounted on the vertical rail-supporting surface, said alignment arm also having second and third bottom surfaces adapted to closely overlie the inclined and horizontal rail-defining surfaces of the slide support, respectively, each of these two other bottom surfaces having a slidable plate retractably mounted in a cutout portion, said slidable plate being designed to engage the slot formed in each of the block members mounted on the inclined and horizontal rail-defining surfaces when said plate is in precise alignment with said slot, and to retract when said plate is in contact with any other part of said block members.

5,443,555
INSERTION AID FOR THE STRAINER HOLDER AND AN ESPRESSO MACHINE

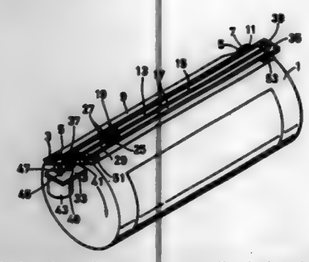
Daniel Fischer, Romanshorn, Switzerland, assignor to Arthur Eugster AG, Romanshorn, Switzerland

Filed Jul. 12, 1994, Ser. No. 273,942
Claims priority, application European Pat. Off., Jul. 16, 1993, 931114870
Int. Cl.[6] A47J *31/06, 31/30*
U.S. Cl. 99—295 6 Claims



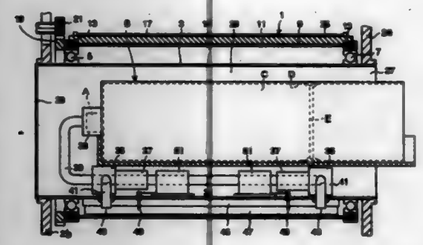
1. In an espresso machine having an underside provided with a brewing head into which a strainer holder having a handle can be inserted from below with a strainer inserted in the holder, wherein the brewing head has slots and the strainer holder includes corresponding lugs that fit through the slots so that the strainer holder can be locked to or released from the brewing head by a pivoting movement of the strainer holder around an axis of the brewing head which places the lugs in or out of alignment with the slots, respectively, the improvement comprising:
a positioning ring having a top end rotatably secured to said brewing head, a bottom end and a cutout that is open toward said bottom end for receiving the handle of said strainer holder; and
means cooperating between said positioning ring and said brewing head for locating the positioning ring in an initial position so that when the cutout in the positioning ring receives the handle of the strainer holder, the strainer holder can be raised and inserted into the brewing head with the lugs on the strainer holder in alignment with the slots in the brewing head.

5,443,556
METHOD AND APPARATUS FOR MOUNTING A MASTER PLATE ON A PRINTING DRUM HAVING AN INTEGRAL CUTTER
Takanori Hasegawa, and Shoji Nonoyama, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Mar. 15, 1994, Ser. No. 212,839
Claims priority, application Japan, Mar. 18, 1993, 5-058573
Int. Cl.[6] B41L *13/14*
U.S. Cl. 101—116 11 Claims



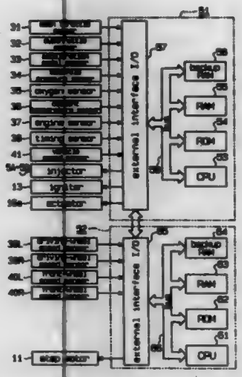
1. A printing drum for a rotary stencil printing device, comprising:
clamping means for clamping a leading edge of a stencil master plate sheet along a line extending axially on an outer circumferential surface of said printing drum before said stencil master sheet is wrapped around said outer circumferential surface of said printing drum; and
cutting means mounted on said outer surface of said printing drum for cutting said stencil master plate sheet to define a trailing edge of said stencil master plate sheet mounted on said printing drum as said stencil master plate sheet is mounted on said drum.

5,443,557
PRINTING DRUM ASSEMBLY FOR A STENCIL PRINTING DEVICE
Takanori Hasegawa, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Filed May 16, 1994, Ser. No. 242,986
Claims priority, application Japan, May 25, 1993, 5-122648
Int. Cl.[6] B41L *13/04, 13/18*
U.S. Cl. 101—119 10 Claims



1. A printing drum assembly for a stencil printing device, comprising:
a frame of a stencil printing device;
a hollow cylindrical member fixed to and supported by said frame;
a printing drum having an inner circumferential surface rotatably supported by said hollow cylindrical member at two axially spaced positions thereof, said printing drum including an ink permeable outer shell;
a printing ink container disposed inside said hollow cylindrical member; and
printing ink supplying means for feeding printing ink from said printing ink container to said inner circumferential surface of said printing drum.

5,443,558
ENGINE POWER REGULATOR
Toshikazu Ibaraki, Susono, and Naoto Kushi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 17, 1994, Ser. No. 245,081
Claims priority, application Japan, May 21, 1993, 5-120276
Int. Cl.[6] F02D *9/06*
U.S. Cl. 123—325 20 Claims



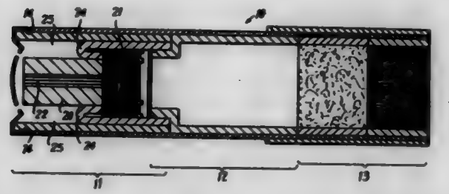
1. An apparatus for regulating power produced by a motor vehicle engine cooperating in association with a throttling means and engine power moderating means, said apparatus comprising:
first detecting means for detecting an operating condition of said engine and for generating a signal in response thereto;
second detecting means for detecting of a malfunction in said throttling means and for generating a signal in response thereto;
control means responsive to the signals generated by said first and second detecting means for generating first and second engine power values representative of a range of engine power in accordance with said operating condition prior to the occurrence of malfunction of said throttle means, said control means controlling said engine power moderating means to moderate engine lower based on said first and second engine power values.

5,443,559
BRUSH-TIP ELECTRODE
Yunquan Chen; Charles A. Lazzio, and Cecil Hershler, all of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, B.C., Canada
Continuation-in-part of Ser. No. 969,458, Oct. 30, 1992, Pat. No. 5,299,572. This application Nov. 24, 1993, Ser. No. 156,732
Int. Cl.[6] A61B *5/0492*
U.S. Cl. 128—639 19 Claims

1. An electrode used for connecting apparatuses to the skin surface of a living body, the electrode comprising:
a conductive tube having an end; and
a plurality of hard, resilient, conductive wires extending outwardly from the end of the tube, the wires having spaced-apart ends and being splayed in a brush-tip-like arrangement having an end formed by the spaced-apart ends of the wires, the end of the arrangement being multipointed and abrasive.

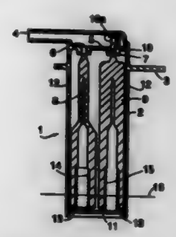


5,443,560
CHEMICAL HEAT SOURCE COMPRISING METAL NITRIDE, METAL OXIDE AND CARBON
Seetharama C. Deevi, Midlothian, and Bruce D. Losee, Jr., Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 443,636, Nov. 29, 1989, Pat. No. 5,188,130. This application Dec. 14, 1992, Ser. No. 990,126
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[6] A24B *15/00*
U.S. Cl. 131—359 40 Claims



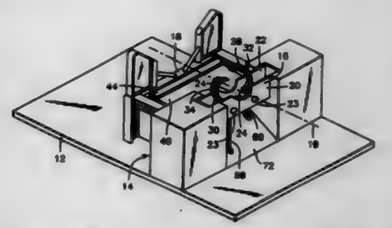
1. A method of making metal nitride, comprising the steps of:
a) mixing a metal species and a carbon source to form a mixture;
b) supplying heat to the mixture, wherein the heat is provided by electromagnetic radiation having a frequency in the range from radio frequency to microwave frequency; and
c) contacting the mixture with a nitriding material to form metal nitride.

5,443,561
FUEL VAPOR DISCHARGE LIMITING DEVICE FOR FUEL TANK
Yoshiyasu Sakata, and Mitsuo Sugiyama, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 16, 1994, Ser. No. 213,970
Claims priority, application Japan, Apr. 9, 1993, 5-105922
Int. Cl.[6] F16K *31/18*
U.S. Cl. 137—202 7 Claims



1. A fuel vapor discharge limiting device for limiting communication between a fuel tank and a fuel vapor discharge pipe for discharging a fuel vapor in said fuel tank, said fuel vapor discharge limiting device comprising:
a first float valve means for cutting off the communication between said fuel tank and said fuel vapor discharge pipe when a liquid level in said fuel tank rises near a predetermined full level;
a relief valve means for allowing the communication between said fuel tank and said fuel vapor discharge pipe when an internal pressure in said fuel tank becomes not less than a predetermined value; and
a second float valve means for blocking the communication allowed by said relief valve when the liquid level in said fuel tank abnormally rises over said predetermined full level.

5,443,562
TREE DELIMBER
Jim Parks, 500 Long Branch Rd., Shady Cove, Oreg. 97539, and John A. Parks, 2908 Provincial St., Medford, Oreg. 97504
Filed Sep. 20, 1994, Ser. No. 309,161
Int. Cl.[6] B27L *1/00*; A01G *23/00*
U.S. Cl. 144—2 Z 11 Claims



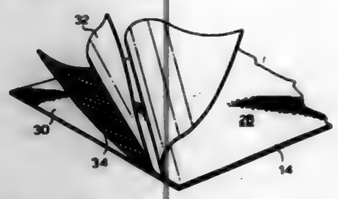
1. A tree delimber including support structure defining a generally horizontal path along which an elongated log may be longitudinally guidingly shifted, said support structure including front and rear guide means at first and second locations spaced along said path operative to oppose and retain opposite longitudinal side portions of a log being moved longitudinally along said path against shifting laterally of said path and to guidingly support said log from beneath against downward shifting relative to said path, said front guide means including a pair of curved limb stripping levers operatively associated therewith and pivotally supported from said support structure

for movement toward and away from each other laterally of said path, said levers including curvilinear blades mounted thereon and defining a tree encircling opening therebetween generally coaxial with said path, said support structure including horizontal transverse pressure bar means supported therefrom, to the rear of said front guide means, for guided up and down movement relative to said support structure and path, and motion transmitting structure operatively connected between said pressure bar means and said levers for moving said levers toward and away from each other responsive to down and up movement, respectively, of said pressure bar means relative to said path.

5,443,563
ROLLER BLINDS AND PROCESSES FOR THEIR MANUFACTURE

Josef Hindel, 47 Black Forest Drive, Richmond Hill, Ontario, Canada L4E 2N6, and Sam Hindel, 17 Vesta Road, Richmond Hill, Ontario, Canada L2B 2M2

Filed Apr. 5, 1993, Ser. No. 43,220
Int. Cl.[6] A47G *5/02*
U.S. Cl. 160—238 **8 Claims**

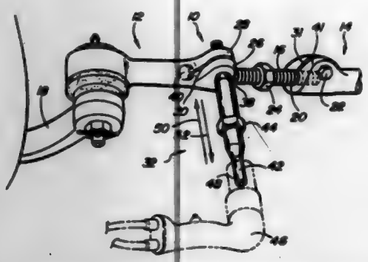


1. A roller window shade comprising:
(a) a roller; and
(b) a shade secured thereto for being rolled up onto, and rolled down from the roller, the shade having a face which carries a clear, undistorted, high definition imprint selected from a photograph, picture, icon, logo, trade mark, cartoon character or scene, applied directly onto the face, the shade comprising non-stretchable material to make the window shade non-stretchable.

5,443,564
TIE ROD LOOSENING TOOL FOR USE WITH A TIE ROD ASSEMBLY

Donald G. Reaves, 2641 Eaton Rapids Rd., Lansing, Mich. 48910

Filed Apr. 14, 1994, Ser. No. 227,594
Int. Cl.[6] F16B *35/00*
U.S. Cl. 173—200 **7 Claims**



1. A combination tie rod loosening tool and tie rod assembly, comprising:
an outer tie rod, an inner tie rod and a threaded adjustment sleeve extending from the inner tie rod which is received within the outer tie rod; and
a tool member having an elongated body with a first end for engaging with an appropriately formed aperture in said outer tie rod, said tool member having a second end which substantially defines a tool bit capable of being received within an engaging portion of a power tool;
wherein the power tool is activated to introduce impact force to said elongated tool member which are transferred from the outer tie rod to the adjustment sleeve and the inner tie rod in order to overcome corrosive buildup between the inner and outer tie rods and the adjustment sleeve.

5,443,565
DRILL BIT WITH FORWARD SWEEP CUTTING ELEMENTS

William S. Strange, Jr., P.O. Box 1298, Waskom, Tex. 75692

Filed Jul. 11, 1994, Ser. No. 272,559
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—431 **16 Claims**

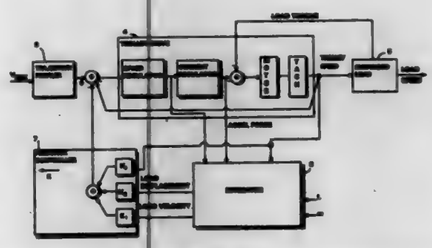


1. A drill bit for attachment to a drill string, rotation with the drill string and drilling through earth formations, said drill bit comprising a bit body attached to the drill string, said bit body having a center, a crown encircling said center and a rounded side extending from said crown; a plurality of blade means shaped in said bit body, said blade means curving from substantially said center of said bit body around said crown of said bit body and to said side of said bit body in the direction of bit rotation; and a plurality of cutting elements fixedly carried by said blade means for engaging and cutting the earth formations responsive to rotation of the drill string and said drill bit.

5,443,566
ELECTRONIC ANTISWAY CONTROL

Michael W. Rushmer; Thomas A. Ruddy; Krzystof Brukalo, and Allen M. Ritter, all of Roanoke, Va., assignors to General Electric Company, Salem, Va.

Filed May 23, 1994, Ser. No. 247,687
Int. Cl.[6] B66C *13/06*
U.S. Cl. 212—275 **15 Claims**

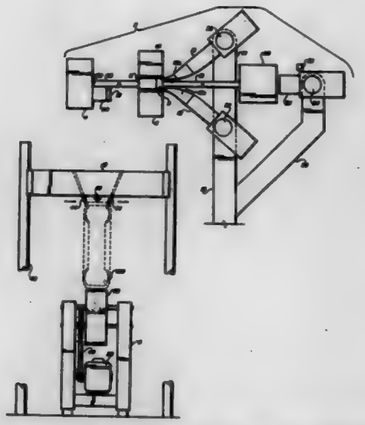


1. A method of controlling the sway of a suspended load traveling at a speed x in the x direction comprising: estimating the speed of the load in the x direction,
measuring the accelerating force produced by a speed regulator driving the suspended load in the x direction,
correcting the load speed estimate as a function of the measured accelerating force produced by the speed regulator driving the suspended load in the x direction,
continuously modifying the speed of the load in the x direction in response to the corrected load speed estimate so as to reduce the sway of the load.
wherein the estimating of the speed of the load is based on an equation of motion for a simple pendulum, and
wherein an estimated load displacement in the x direction is derived and is modified in accordance with a derived load displacement which is proportional to the measured accelerating force, whereby the estimated load displacement is driven to converge with the derived load displacement.

5,443,567
TIRE CARCASS SHREDDING METHOD AND APPARATUS

Kearney L. Pruett, P.O. Box 297, Keithville, La. 71047

Filed Oct. 20, 1994, Ser. No. 327,692
Int. Cl.[6] B02C *18/02, 19/12, 23/02*
U.S. Cl. 241—29 **20 Claims**

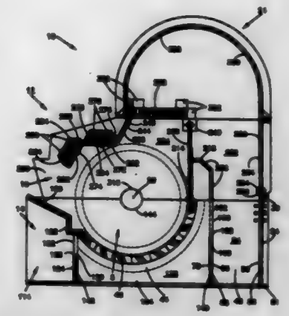


18. A method of shredding a tire having a main axis of rotation into a plurality of substantially uniformly-sized pieces, comprising the steps of;
(a) orienting and releasably and rotatably fixing said tire such that said main axis of rotation is horizontal;
(b) rotating said tire about said main axis of rotation;
(c) contacting said rotating tire with a plurality of cutting means for circumferentially slitting said tire into at least one center tread section and right and left side wall sections, each of said right and left side wall sections rotating about said main axis of rotation, whereby said center tread section falls free of said right and left side wall sections and said center tread section is transported by its rotational momentum away from said right and left side wall sections;
(d) releasing said right and left side wall sections, whereby said right and left side wall sections are each transported by their rotational momentum to one of two radial cutting presses;
(e) biasing each of said right and left side wall sections against a blade assembly, said blade assembly including a plurality of blades; and
(f) radially cutting each of said right and left side wall sections into a plurality of substantially uniformly-sized pieces by operation of said plurality of blades.

5,443,568
SCRAP PROCESSOR

Paul Popovich, Solon, Ohio, assignor to Atlas Iron Processors Inc., Cleveland, Ohio

Division of Ser. No. 862,978, Apr. 3, 1992, Pat. No. 5,244,158, which is a continuation of Ser. No. 561,875, Aug. 2, 1990, abandoned. This application Jun. 24, 1993, Ser. No. 82,265
Int. Cl.[6] B02C *13/282*
U.S. Cl. 241—189.1 **16 Claims**



1. A scrap processor comprising:
a housing having a chamber;
a rotor supported within said housing for rotation relative to said housing about an axis which extends in a first direction;
hammer means on said rotor for comminuting scrap material in said housing;
parts for defining an outlet passage from said chamber to a location outside of said housing for the comminuted scrap material, said parts including a deflector box for deflecting the comminuted scrap material as the comminuted scrap material moves from said chamber toward said location outside said housing, said deflector box having first and second curved deflector portions, the curvature of said first and second deflector portions extending about a line parallel to said first direction, said first and second deflector portions being mirror images of each other and located on respective sides of a plane which is parallel to said first direction, said first and second deflector portions having surfaces that the comminuted scrap material impinges upon in sequence; and
means for releasably securing said deflector box to said housing in any one of two positions, in one position the comminuted scrap material first impinges on said first deflector portion and in the other position the comminuted scrap material first impinges upon said second deflector portion.

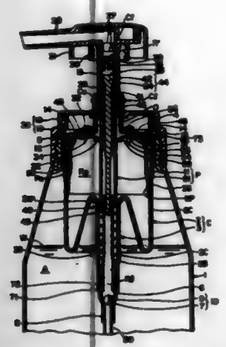
5,443,569
FOAM DISPENSING PUMP CONTAINER

Shoji Uehira, Joyo, and Masako Matsura, Ibaraki, both of Japan, assignors to Daiwa Can Company, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,172
Claims priority, application Japan, Mar. 5, 1993, 5-014585 U
Int. Cl.[6] B05B *7/00*
U.S. Cl. 222—190 **15 Claims**

1. A foam dispensing pump container comprising: a lid means; a double cylinder which is fastened to the container by the lid means mounted on an opening portion of said container and which comprises an air cylinder and a liquid cylinder which is smaller in diameter than said air cylinder, both arranged concentrically; an air piston accommodated in said air

cylinder for reciprocal movements in an axial direction of said air cylinder and urged upwardly by a spring means, an air chamber formed below said air piston in said air cylinder; a liquid piston accommodated in said liquid cylinder for reciprocal movements in an axial direction of said liquid cylinder and urged upwardly by said spring means, said liquid piston forming, in conjunction with said air piston, an integral piston body having a hollow rod portion extending upwardly through an opening of said lid means; a liquid chamber formed below said liquid piston in said liquid cylinder; an air passage formed in a space defined by inner surfaces of an upper portion of said air piston and outer surfaces of said liquid piston; a liquid passage formed in said liquid piston, a mixing chamber formed above and communicating with both said air chamber and said liquid chamber through said air passage and said liquid passage respectively; a hollow bent nozzle member having a nose portion and a stem portion and mounted at its stem portion to an upper end of said piston body; a foam passage formed through said nozzle member and communicating with said mixing chamber; at least one porous member disposed across said foam passage; a first check valve disposed in a lower end portion of said liquid chamber and adapted to be opened when a negative pressure is created in said liquid chamber; a dip tube attached to a lower end of said liquid cylinder below said first check valve and extending to a bottom portion of said container; a second check valve at least partially disposed in an upper end



of said liquid passage for opening an outlet of said liquid passage to said mixing chamber when said liquid chamber is pressurized; an air hole disposed in said air cylinder for introducing external air into a head space created in said container when said container is filled to a fill level; at least one suction hole provided in an upper wall of said air piston; and a third check valve disposed to be adapted to open and close said at least one suction hole for introducing air into said air chamber when a negative pressure is created in said air chamber,

wherein said third check valve includes an elastic valve member, comprising a cylindrical wall portion, an outer thin annular valve portion extending outwardly from said cylindrical wall portion and an inner thin annular valve portion extending inwardly from said cylindrical wall portion, and being held at an inner surface of said upper wall of said air piston,

said cylindrical wall portion at least partially contacting a first portion of said inner surface of said upper wall extending between said suction hole and said air passage, said outer thin annular valve portion contacting, at an outer annular rim portion, a second portion of said inner surface of said upper wall extending outwardly beyond said suction hole, and said inner thin annular valve portion contacting, at an inner annular rim portion, an annular projection which is formed below said air passage and on an outer surface of said liquid piston.

5,443,570

HANDLE FOLDING DEVICE FOR FISHING REEL

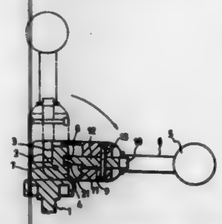
Kazuo Hirano, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 850,807, Mar. 13, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,574

Claims priority, application Japan, Mar. 20, 1991, 3-024323 U; Mar. 20, 1991, 3-024322 U

Int. Cl.[6] A01K *89/00*

U.S. Cl. 242—284 **19 Claims**



1. A handle folding device adapted to a fishing reel having a handle arm for manual rotation and a handle shaft for transmitting the manual rotation to a spool, said folding device comprising:

means for allowing said handle arm to be pivoted between first and second positions relative to said handle shaft about a pivot axis, said pivot axis defining an axial direction;

first means for retaining said handle arm only in said first position for use;

second means for retaining said handle arm only in said second position, said second means includes a retaining member provided on one of said handle arm and said handle shaft, and a recess provided on the other of said handle arm and said handle shaft, said retaining member entering said recess only when said handle arm is pivoted to said second position; to provide positive locking engagement therewith; and

wherein said retaining member is biased substantially in said axial direction with respect to said pivot axis.

5,443,571

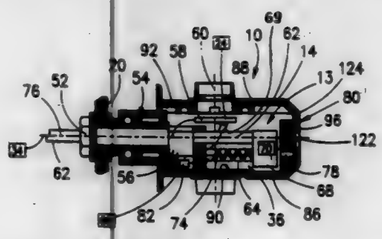
WRAP AROUND SIDE COVER FOR A SPINNING FISHING REEL

Young Kang, Seoul, Rep. of Korea, assignor to Zebco Corporation, Tulsa, Okla.

Filed Jul. 15, 1992, Ser. No. 916,225

Int. Cl.[6] A01K *89/01*

U.S. Cl. 242—311 **21 Claims**



1. A fishing reel comprising:

a frame including a housing defining a receptacle for an operating mechanism,

said frame having a front and rear and opposite side walls;

a rotor;

means for mounting the rotor on the reel frame for rotation about a fore and aft axis;

a line carrying spool;

a bail assembly;

means for mounting the bail assembly to the rotor for movement selectively between a cast position and a retrieve position,

said bail assembly in its retrieve position directing line onto the line carrying spool as the rotor is rotated; and

means for moving the line carrying spool in a reciprocating path in a fore and aft direction to cause the bail assembly to evenly direct line onto the line carrying spool,

said frame housing including first and second housing parts,

one of said first and second housing parts having one piece defining a rear wall to support a portion of the spool moving means and a portion of only one of the side walls at the rear of the housing,

the other of the first and second pans having a first section defining at least a portion of the other of the side walls,

there being a second section formed as one piece with the first section to overlie the rear wall,

said one piece defining the first and second sections not defining any portion of the one of the side walls at the rear of the housing.

5,443,572

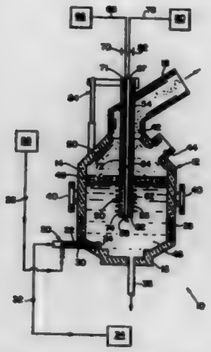
APPARATUS AND METHOD FOR SUBMERGED INJECTION OF A FEED COMPOSITION INTO A MOLTEN METAL BATH

Mark A. Wilkinson, Lexington, and Christopher J. Nagel, Wayland, both of Mass., assignors to Molten Metal Technology, Inc., Waltham, Mass.

Filed Dec. 3, 1993, Ser. No. 162,347

Int. Cl.[6] C22B *7/00*

U.S. Cl. 266—46 **27 Claims**



1. A lance for submerged injection of a feed composition into a molten metal bath, comprising:

a) an injection tube for conducting the feed composition through the lance and into the molten metal bath;

b) a perforate refractory tube, wherein said refractory tube defines the perforations and extends substantially coaxially about the injection tube for shielding the injection tube from the molten metal bath during partial submersion of the lance into the molten metal bath; and

c) a perforate support liner located between the injection tube and the perforate refractory tube and supporting the perforate refractory tube, the perforate support liner and the injection tube defining an annulus for conducting a coolant from a coolant source and through the annulus to perforations defined by the perforate support liner and the perforate refractory tube, whereby coolant can be directed through said perforations and into the molten metal bath, thereby cooling the lance during submerged injection of the feed composition through the injection tube into the molten metal bath.

5,443,573

GUIDE MEANS FOR TELESCOPING CYLINDRICAL PARTS AND A COLUMN UNIT COMPRISING SUCH GUIDE MEANS

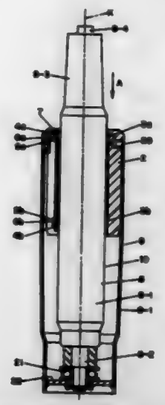
Harry Thiele, Saarburg; Rainer Neser, Fachbach, and Hans-Josef Hosan, Neuwied, all of Germany, assignors to Stabilus GmbH, Koblenz, Germany

Filed Oct. 4, 1993, Ser. No. 131,466

Claims priority, application Germany, Oct. 5, 1992, 42 33 407.1

Int. Cl.[6] F16F *5/00*; F16M *11/00*

U.S. Cl. 267—64.12 **20 Claims**



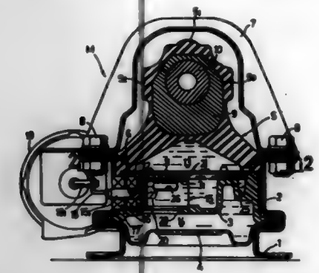
1. A column unit comprising a base tube having an axis, a first end and a second end, support means adjacent said second end, a height adjusting unit partially inside said base tube, said height adjusting unit having a first height adjusting component extending along said axis inward and outward of said first end of said base tube and further having a second height adjustment component, said second height adjustment component being substantially axially fixed with respect to said support means and said first height adjustment component being selectively axially movable with respect to said second height adjustment component among a plurality of fixed axial positions with respect to said second height adjustment component, said first height adjustment component having a substantially cylindrical external surface along at least a part of its axial length, said base tube being provided adjacent its first end with a guiding sleeve unit, said first height adjustment component being slidingly guided for at least one of axial and rotational movement by said guiding sleeve unit, said guiding sleeve unit comprising a main sleeve body and at least one guiding sleeve body substantially radially inside of said main sleeve body and slidingly engaging said substantially cylindrical external surface of said first height adjustment component, said at least one guiding sleeve body being axially secured with respect to said main sleeve body in an operating position with respect thereto by snapping engagement means of said main sleeve body and said guiding sleeve body snappingly engaging each other in response to axially sliding said guiding sleeve body inwards with respect to said main sleeve body toward said operating position, said snapping engagement means providing a considerably increased resistance force against withdrawal of said guiding sleeve body away from said operating position in an outward direction with respect to said main sleeve body as compared with a force required for axially sliding said guide sleeve

body inwards with respect to said main sleeve body toward said operating position.

5,443,574
LIQUID-SEALING TYPE VIBRATION-ISOLATING DEVICE

Shuji Obtake; Hideki Matsuoka; Tetsuo Mikuni, all of Wako; Takeo Nagamura, and Kazuto Ohno, both of Fujisawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Nok-Megnalastik Co., Ltd., Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,618
Claims priority, application Japan, May 26, 1993, 5-124489
Int. Cl.[6] F16M *7/00*; F16F *13/00*; B60K *5/12*
U.S. Cl. 267—140.14 9 Claims



1. In an improved liquid-sealing type vibration-isolating device for an engine having a rotating shaft, the device including a primary fluid chamber defined by an elastomer so that volume of said primary fluid chamber is varied by a load, a subsidiary fluid chamber communicating with said primary fluid chamber via a main communication passage means, and a fluid sealedly charged within both said primary and subsidiary fluid chambers, the improvement wherein:
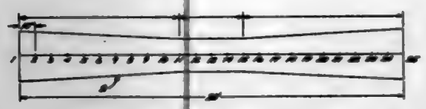
said main communication passage means includes a first passage which is opened and closed by a switch-over valve means in response to a number of revolutions of said rotating shaft; and

wherein an auxiliary communication passage means is provided for permitting communication therethrough between said primary and subsidiary fluid chambers only when said switch-over valve means is in a change-over operation thereof.

5,443,575
RACQUET STRINGING

Ben Husag, 19472 Woodlands La., Huntington Beach, Calif. 92648

Filed Oct. 13, 1993, Ser. No. 136,333
Int. Cl.[6] A63B *51/02*
U.S. Cl. 273—73 D 4 Claims



1. A method of stringing a racquet frame head with two lengths of dual taper strings, each such string length including a mid-portion of smallest diameter with the string uniformly increasing in diameter outwardly of said mid-portion to the ends of each such string, said method comprising:

attaching the mid-portion of one of the strings to the lower central portion of the racquet frame head;

vertically stringing the string segments disposed on opposite sides of the lower central portion of the frame head upwardly and downwardly along the width of the upper and lower portions of the racquet frame head;

attaching the free ends of said segments to the opposite sides of the racquet frame head;

attaching the mid-portion of the second of the strings to the intermediate portion of one side of the frame head;

horizontally stringing the segments of said second string disposed on opposite sides of said mid-portion upwardly and downwardly along the height of the racquet frame head starting from said intermediate portion;

attaching the free ends of such segments to an upper side and a lower side of the frame head; and

whereby the smallest diameter portions of the first and second strings will be disposed at the approximate center of the string bed defined by said strings, with the diameter of most of the strings gradually increasing from the approximate center of the string bed to the periphery of the frame head.

5,443,576
SOCCER TRAINING BELT FOR USE WTIH A CORD SUSPENDED SOCCER BALL

Bradley D. Hauter, 433 Harvest Gate, Lake In The Hills, Ill. 60102

Filed Jul. 12, 1994, Ser. No. 273,761
Int. Cl.[6] A63B *67/10*
U.S. Cl. 273—58 C 17 Claims



1. In a soccer training apparatus, comprising a mesh soccer net sized for encapsulating a soccer ball, a cord physically attached at a first end to the mesh soccer net, and a waist belt connected to the cord,

the improvement comprising,

the waist belt having an inner lapped belt end and an outer lapped belt end, hook and loop fastening means provided on confronting faces of the inner lapped belt end and outer lapped belt end for securing the inner lapped belt end and outer lapped belt end in detachable assembly together, means for securing a portion of the cord to the inner lapped belt end, and the outer lapped belt end having an elongated slot of sufficient size to permit a soccer ball to be inserted through the elongated slot of the waist belt leaving the mesh soccer net carrying the soccer ball suspended from the waist belt.

5,443,577
AUTOMATICALLY PUT-ON AUTOMOBILE SAFETY BELT

Jong K. Kim, 56-5 2Street Soosung Soosung-Koo, Taegu City, Rep. of Korea

Filed May 6, 1994, Ser. No. 239,396
Claims priority, application Rep. of Korea, Dec. 10, 1993, 93-27405
Int. Cl.[6] B60R *22/04*
U.S. Cl. 280—802 3 Claims

1. An automatically put-on safety belt for a vehicle having at least one seat and a door adjacent said seat, comprising:

a winder for winding a safety belt;

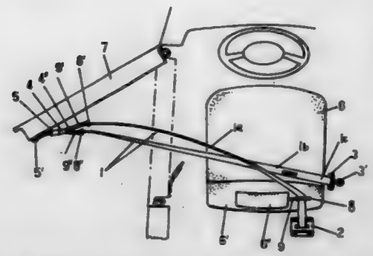
a fixed member for securing an end of said safety belt;

a hook supported on the safety belt;

a buckle for being coupled with said hook;

wherein said winder, said fixed member and the buckle and hook coupling constitute three securing points for said safety belt;

wherein said winder is installed behind said seat; said fixed member is installed at a side of said seat; said buckle is



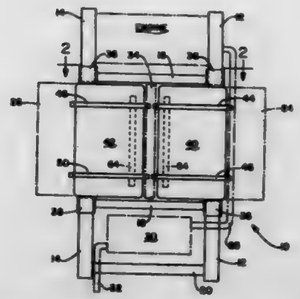
installed on a lower portion of said door; a first guide ring is installed over a top of said seat for guiding said safety belt; said hook is provided with second and third guide rings supported by elastic rods, whereby said safety belt can be guided therethrough;

whereby said belt is secured to the three securing points, so that said belt is automatically put on a passenger upon closing said door.

5,443,578
COMPRESSED NATURAL GAS FUEL TANK FOR VEHICLES

William F. Davis, Jr., 148 Auble St., Wadsworth, Ohio 44281

Filed May 17, 1993, Ser. No. 62,279
Int. Cl.[6] B60P *3/22*
U.S. Cl. 280—834 12 Claims



1. A compressed natural gas fuel tank assembly in combination with a vehicle, comprising:

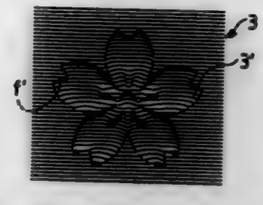
a tank; and

a pair of channel members extending from opposite ends of said tank, said channel members engaging respectively associated ends of a side rail of the vehicle, said side rail being discontinuous between said respectively associated ends thereof, said channel members being fixedly secured to said tank and to said respectively associated ends of said side rail, said tank and said channel members comprising a continuation of said side rail where said side rail is discontinuous, said channel members being welded to said tank and to said respective ends of said side rails.

5,443,579
PRINTED MATTER AND METHOD FOR PRINTING THE SAME

Toshinori Tanaka, Tokyo, and Mitsuo Inoue, Kawasaki, both of Japan, assignors to Director-General, Printing Bureau, Ministry Finance, Tokyo, Japan

Filed Jan. 2, 1993, Ser. No. 70,243
Claims priority, application Japan, Jan. 4, 1992, 4-168253
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—93 24 Claims



1. A latent image printed matter comprising:

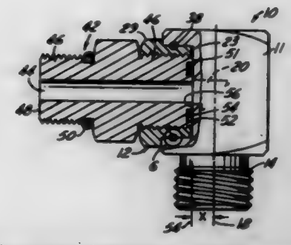
a first printed pattern printed by raised printing on a substrate, said raised printed pattern having a first portion which comprises a plurality of straight parallel spaced apart lines and having a second portion which comprises a plurality of spaced apart wavy lines, or a plurality of straight parallel spaced apart lines slanted with respect to the straight lines of said first portion, or both, said raised printed pattern having a color substantially the same as the color of said substrate; and

a second printed pattern printed over said first printed pattern, said second printed pattern having a color substantially different from the color of said substrate and being made up of a plurality of spaced apart straight parallel lines, or a plurality of spaced apart straight parallel lines of dots, or both, said lines of said second printed pattern being either parallel to or slanted with respect to the straight spaced apart parallel lines of said first portion of said first printed pattern.

5,443,580
COMPACT FITTING

Jonathan P. Cotter, Dearborn, Mich., assignor to Diebolt International, Inc., Detroit, Mich.

Filed Oct. 18, 1994, Ser. No. 324,722
Int. Cl.[6] F16L *43/00*
U.S. Cl. 285—179 14 Claims



1. A fluid connector fitting for use with an adapter having a body with a threaded portion with an end face, a passage opening through the end face and an annular seal received on the end face, encircling the passage and opening through the end face, the fitting comprising, a fitting body having a nut receiving bore opening to the exterior of the body and having a circumferential side wall and an end wall, a threaded connector portion spaced from said bore, a first internal passage com-

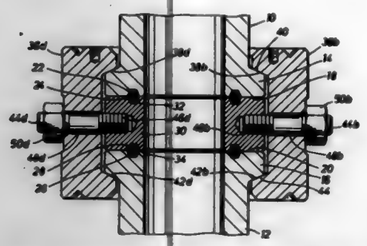
municating said connector portion with said bore through said end wall and opening through said end wall, and a first circumferential groove in said side wall and opening into said bore, a nut having a non-circular head portion, an annular portion receivable in said bore of said body, a second passage through said nut and communicating with said first internal passage in said body and having internal threads substantially coaxial with said annular portion, and a circumferential groove in said annular portion opening to the exterior thereof and complementary with said groove in said body to define a retainer passage, a retainer received in said retainer passage to rotatably mount said nut in said body for relative rotational movement between them, and said end wall of said bore having a sealing surface encircling said opening of said first passage through said end wall, disposed radially inward of said annular portion of said nut and being constructed and arranged for sealing engagement with an annular seal carried by an adapter threaded into said nut to urge the annular seal into engagement with said sealing surface of said end wall and without engagement of the annular seal by the nut.

5,443,581

CLAMP ASSEMBLY FOR CLAMP HUB CONNECTORS AND A METHOD OF INSTALLING THE SAME

Tommy W. Malone, Houston, Tex., assignor to Wood George & Co., Inc., Houston, Tex.

Filed Dec. 3, 1992, Ser. No. 984,696
Int. Cl.[6] F16L *23/00, 23/04*
U.S. Cl. 285—364 **2 Claims**



1. A hub connection comprising two aligned fluid conduits having hubs attached to the ends of the conduits, the hubs having opposite flat faces provided with ring grooves and inclined surfaces facing away from the flat faces, an adapter ring having flat sides with ring grooves in each side located between the faces of the hubs, a seal ring located between each hub face and the adapter and positioned in the opposed ring grooves in the face and the adapter, a plurality of clamp segments positioned around the adapter, each segment having inclined surfaces for engaging the inclined surfaces on the hubs, and means for holding the clamp segments in position to hold the hubs and the adapter ring in sealing engagement with the seal rings.

5,443,582

WHEEL CAPS

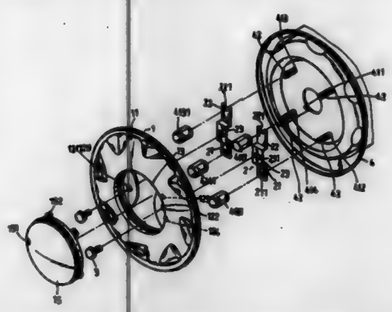
Sheu L. Ching, No. 39-65, Ta Jen Temple, Ta Jen Village, Kuei Jen Hsiang, Tainan Hsien, Taiwan

Filed Feb. 28, 1994, Ser. No. 202,585
Int. Cl.[6] B60B *7/14*
U.S. Cl. 301—37.37 **4 Claims**

1. A wheel cap assembly, comprising:

a wheel cap member having bulging portions formed on an external surface thereof, said wheel cap member having a centrally disposed circular recess defined by a cylindrical wall, said cylindrical wall having an annular groove formed therein, said circular recess is further defined by a bottom wall having a centrally disposed aperture formed therethrough and a pair of first through bores formed on opposing sides of said aperture and defining a first axis therebetween, said bottom wall having a pair of second through bores disposed on opposing sides of one of said pair of first through bores and defining a second axis therebetween, said second axis being disposed at an angle of 36 degrees with respect to said first axis; and,

at least two fixture members adapted for threaded engagement with a vehicle's wheel, each of said fixture members having a raised central portion disposed in spaced parallel relation with respect to a pair of opposing end portions



thereof, said raised central portion having a slotted through opening formed therein for securement of said wheel cap member to said fixture member by a threaded fastener passing through one of said first or second through bores, each of said fixture members having a through opening formed in one said pair of opposing end portions and a slotted opening in the other of said end portions for coupling with a vehicle wheel by a threaded fastener passed therethrough.

5,443,583

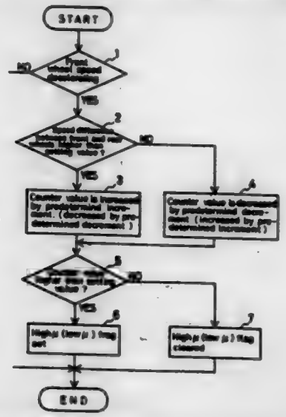
METHOD FOR JUDGING FRICTION COEFFICIENT OF ROAD SURFACE AND METHOD FOR ANTI-SKID BRAKE CONTROL USING SAID METHOD

Ryuta Sugawara, and Satoshi Akimoto, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,376
Claims priority, application Japan, May 23, 1991, 3-118761
Int. Cl.[6] B60T *8/58*
U.S. Cl. 303—169 **6 Claims**

1. A method for adjusting braking pressure during anti-skid brake control in a vehicle, which comprises determining a friction coefficient of a road surface when front wheels of said vehicle are in a decelerating state increasing a counter value with a preset initial value by a predetermined increment when a speed difference between rear and said front wheels of said vehicle is higher than a first setting value, decreasing said counter value by a predetermined decrement when said speed difference between said rear and front wheels of said vehicle is lower than or equal to said first setting value, setting said friction coefficient as a high friction coefficient when the resultant counter value is higher than a second setting value, setting said friction coefficient as a low friction coefficient

when the resultant counter value is lower than said second setting value, and adjusting pressure increase and decrease



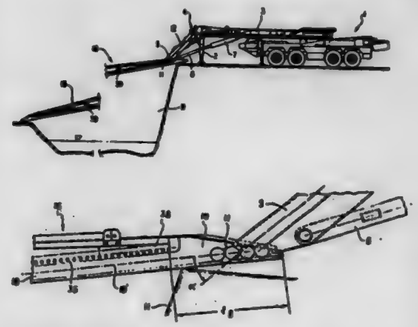
during said anti-skid brake control to match the set friction coefficient.

5,443,584

DEPLOYMENT VEHICLE FOR A DEPLOYABLE BRIDGE

Wolfgang Diefendahl, Straelen, and Hans-Norbert Wiedack, Mülheim, both of Germany, assignors to Krupp Fördertechnik GmbH, Duisburg, Germany

Filed Feb. 4, 1994, Ser. No. 191,915
Claims priority, application Germany, Feb. 4, 1993, 43 03 222.2
Int. Cl.[6] E01D *15/127*
U.S. Cl. 14—2.4 **6 Claims**



1. A combination of a bridge deploying vehicle with a deployable bridge; said bridge having a length dimension and an end, comprising

(a) a runner rail mounted on said bridge and extending parallel to the length dimension of said bridge substantially to said end thereof;

(b) an open entrance pocket situated in a zone of the bridge end and leading to said runner rail;

(c) a deployment arm mounted on the vehicle for pivotal motion; said deployment arm having a length dimension and a frontal end oriented toward said bridge end while the bridge is being handled by the deployment arm;

(d) a first roller assembly formed of a plurality of rollers;

(e) first pivot means for mounting said first roller assembly on said deployment arm for pivotal motion relative to said deployment arm about an axis perpendicular to said length dimension of said deployment arm;

(f) a second roller assembly formed of a plurality of rollers;

(g) second pivot means for mounting said second roller assembly on said deployment arm for pivotal motion relative to said deployment arm about an axis perpendicular to said length dimension of said deployment arm; said first roller assembly being spaced from said second roller assembly along said length dimension; said first roller assembly being closer to said frontal end of said deployment arm than said second roller assembly; during handling of the bridge by said deployment arm said first and second roller assemblies enter said entrance pocket and are guided onto said runner rail;

(h) an angle measuring means mounted on said deployment arm for measuring an angular position of said first roller assembly relative to said length dimension of said deployment arm; and

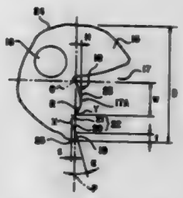
(i) a length measuring means mounted on said deployment arm for measuring a distance between said first roller assembly situated on said runner rail and said entrance pocket.

5,443,585

GUN DRILL

Haruo Kawase; Katsunori Matsumoto, and Shinichi Nakamura, all of Gifu, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 266,706
Claims priority, application Japan, Feb. 25, 1994, 6-028543
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—199 **6 Claims**



1. A gun drill, comprising a shank which is rotatable about an axis of rotation and a cutter tip at an outer free end of said shank, said cutter tip having a cut chip discharge flute formed in a side wall thereof extending from an outer free end towards a base end of said tip, said cutter tip further having a cutting edge formed at an outer edge line of said flute facing forward in the direction of rotation of said shank,

wherein said cutting edge has: a convex curved cutting edge portion which is adjacent to the axis of rotation and which is convex in the forward direction of rotation, as viewed in the axial direction from the free end of said cutter tip, a radially outermost straight cutting edge portion which is on an imaginary plane containing said axis of rotation, and a concave cutting edge portion which is intermediate between said straight cutting edge portion and said convex curved cutting edge portion, said concave cutting edge portion including a slant portion connected to said straight cutting edge portion and slanted backward from the rotation direction towards said axis of rotation and a concave portion which interconnects a radially inner end of said slat portion and a radially outer end of said convex curved cutting edge portion, said convex curved cutting edge portion having an arc shape as viewed in said axial direction, a radius of curvature of said arc-shape being between 0.1–0.4× the diameter D of said shank of said gun drill.

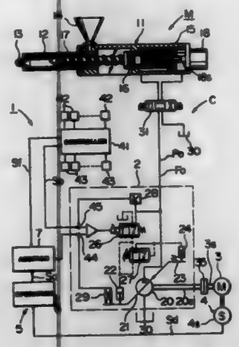
5,443,586
CARGO RESTRAINT APPARATUS FOR A PICK-UP TRUCK
Lee B. Cargill, Coronado, Calif., assignor to Enel Company, Coronado, Calif.
Filed Jul. 5, 1994, Ser. No. 270,767
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—143 1 Claim



1. A multi-purpose cargo restraint apparatus in combination with a pick-up truck including a cargo box with a pair of opposing side rails, comprising:
a first elongate beam member comprising a first end and a second end,
a second elongate beam member of the same length as the first beam member and comprising a first end and a second end,
each second end of the beam members including a connecting means for adaptably connecting each second end of the beam members to said cargo box side rails, said connecting means comprising a slot in each second end of the beam members and a bolt extending through each said slot and connecting each said second end to a respective one of said side rails,
each said first end of the beam members including joining means whereby the beam first ends are joined together to form a single cross beam assembly which spans the width of the cargo box from one said side rail to the other, said joining means comprising an extension at the first ends of both beam members, each said extension having a different cross sectional area from the respective beam member to which each is attached and including two fastener apertures, the extensions of each beam member being positioned adjacent one another such that the two fastener apertures of each extension are aligned to form two sets of aligned apertures, a bolt extending through each set of aligned apertures and releasably connecting the beam member first ends together such that the beam members may be disassembled for storage,
each said elongate beam member further including a plurality of holes for receiving cargo anchoring devices.

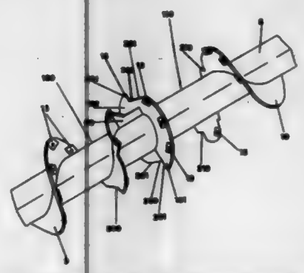
5,443,587
INJECTION MOLDING MACHINE CONTROL HAVING MOTOR SLIP COMPENSATOR
Michiaki Takizawa, Nagano, assignor to Nissei Plastic Industrial Co., Ltd., Nagano, Japan
Filed Jun. 9, 1993, Ser. No. 73,599
Claims priority, application Japan, Jun. 9, 1992, 4-174873
Int. Cl.[6] F04B *1/26*; B29C *47/92*
U.S. Cl. 417—222.1 2 Claims

1. An apparatus for controlling an injection molding machine provided with a hydraulic pump, a discharge flow rate of which varies in accordance with a magnitude of a flow rate instruction signal to be inputted, said apparatus comprising:
slipping detection means for detecting a rotational velocity of a pump motor which drives the hydraulic pump by a rotational velocity sensor, and for detecting a slippage of the pump motor; and
instruction signal correcting means, having a calculating circuit which obtains a flow rate instruction correcting signal, for compensating for a reduction of the discharge flow rate due to increased slippage on the basis of a detected signal obtained from said slipping detection means,



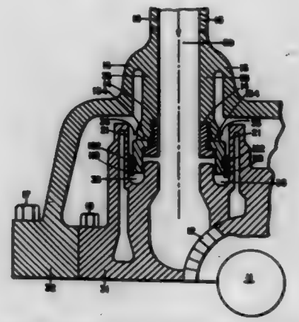
and having adding means for adding the flow rate instruction correcting signal to the flow rate instruction signal.

5,443,588
CUTTER-MIXER-FEEDER WAGON WITH CENTRALLY IMPROVED SCREW PROFILE
Giuseppe Loppoli, Grantorto, Italy, assignor to Seko Spa, Cartarolo, Italy
Filed Feb. 23, 1994, Ser. No. 200,281
Claims priority, application Italy, Feb. 26, 1993, VI93A0028
Int. Cl.[6] A01K *5/00*
U.S. Cl. 414—526 14 Claims



1. An apparatus for cutting, mixing and feeding fiber material comprising:
a container having side and end walls and a curved bottom wall forming a compartment with a curved profile corresponding to the curved bottom wall, said container having an open top for introducing the material and at least one of the side walls having an opening for discharging the material;
at least one screw feeder having a central axis and being located in the compartment, said at least one screw feeder having distal end portions and a central portion and including at least one pair of first and second coaxially aligned spirals, each spiral having a distal end located near a corresponding distal end of the screw feeder and a proximal central end located near the central portion of the screw feeder, each of the first and second spirals having a peripheral edge extending radially from the axis and a plurality of cutters fixed to said peripheral edge, the first spiral being clockwise and the second spiral being counterclockwise beginning from the corresponding distal ends of the screw feeder and extending to the central portion, said first and second spirals for conveying the material towards the central portion thereof;
a discoidal element including a right half spiral and a left half spiral coaxially aligned on the screw feeder and being located respectively at the proximal ends of the first and second spirals and disposed in confronting spaced apart relation, said right half spiral and said left half spiral having a peripheral edge formed with at least one cut out portion forming an outlet therein.

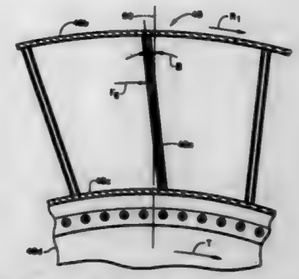
5,443,589
STEAM TURBINE BELL SEALS
Ronald E. Brandon, 627 Jubilee St., Melbourne, Fla. 32940
Filed Dec. 30, 1993, Ser. No. 175,522
Int. Cl.[6] F01D *25/26*
U.S. Cl. 415—134 4 Claims



1. In a turbine employing a double shell construction of inner and outer shells and bell seals having a radial sealing portion, the improvement comprising flexing ring permitting deflection and differential expansion of the bell seals and shells caused by thermal gradients without causing either surface damage to the inner shell or permanent stretching of the radial sealing portion, the flexing ring being secured to the inner shell surface facing the bell, and being arranged to provide zero radial clearance with the shell at a point of fastening to the shell and very small radial clearance with the shell at a point of contact with the bell; said flexing ring also being of relatively thin thickness so as to require relatively small forces to cause sufficient stretching to match the thermal growth occurring in the bell and being fabricated from material to tolerate the stress of being stretched without creep and permanent distortion and having sufficient radial clearance with the shell to permit the aforementioned stretching while maintaining a zero clearance with the shell at the point of fastening.

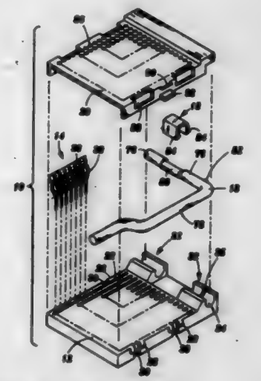
5,443,590
ROTATABLE TURBINE FRAME
John J. Ciokajlo, Henderson, Nev.; Ambrose A. Hauser, Wyoming, and Samuel H. Davison, Milford, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Jun. 18, 1993, Ser. No. 80,669
Int. Cl.[6] F01D *1/24*
U.S. Cl. 416—128 5 Claims

1. A rotatable turbine frame combination for a gas turbine engine comprising:
a rotatable turbine frame including;
an annular outer band;
an annular inner band spaced radially inwardly from said outer band and disposed coaxially therewith;
a plurality of circumferentially spaced apart struts extending radially between said outer and inner bands and fixedly Joined thereto;
an annular drive shaft fixedly joined to said inner band for transmitting output torque upon rotation of said frame in a first direction upon gas flow between said struts; and
said struts being radially inclined in a second direction opposite to said first direction so that said gas flow between said struts tends to straighten said inclined struts by decreasing inclination thereof to effect a compressive load component therein; and



an annular rotor fixedly joined to one of said outer and inner bands, and having a plurality of stages of rotor blades for rotating said rotor and in turn rotating said drive shaft.

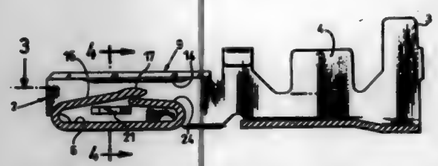
5,443,591
CONNECTOR SOCKET
Tien C. Tsai, No. 28, Wu-Chuan 8 Rd., Wu-Ku Hsiang, Taipei Hsien, Taiwan
Filed May 24, 1994, Ser. No. 248,035
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—342 3 Claims



1. A connector socket comprising:
a base frame having a plurality of receptacles therein, each receptacle having three-level indent steps on one lateral side and two-level indent steps on another lateral side, said base frame further having two snap studs on each of two lateral sides thereof, said snap studs each having a recess formed in the middle;
a plurality of contact elements including a stamping strip, each said contact element having first and second contact beams, said first contact beam being above said second contact beam and separable from said second contact beam, said first contact beam having a leg formed as an inclined section, said second contact beam also having a leg forming an inclined section but shorter and in the opposite direction of that of said first contact beam, thus making contact points on said first and second contact beams being generally at the same height, an upper side and a lateral side of said first and second contact beams

having a curved surface to allow a limb of an electronic device to be vertically or laterally inserted therebetween;
a metal bushing having a reversed "U" shape cross section and having a plurality of locking studs on its lateral sides; and
a removable socket cover having two cutaway openings on each of its lateral sides, said socket cover having a holding projection formed under one end, the holding projection having a recess formed therein to house said metal bushing.

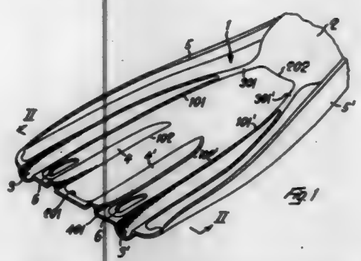
5,443,592
FEMALE ELECTRICAL CONTACT MEMBER
Jean Ittah, Villeneuve la Garenne, and Olivier Plessis, Chaville, both of France, assignors to Connecteurs Cinch, Montigny le Bretonneux, France
Filed Oct. 4, 1994, Ser. No. 317,866
Claims priority, application France, Oct. 26, 1993, 93 12749
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—851 **4 Claims**



1. Female electrical contact member made from a strip of a material which is a good conductor of electricity and has some degree of elasticity, the strip of material comprising two ends and being cut and bent to have at one of the two ends lugs for crimping an electrical conductor and at the other of the two ends a rectangular cross-section receptacle comprising an interior formed by a floor wall, two side walls and a ceiling wall, said floor wall being extended and bent towards the interior of said receptacle to form a spring strip so that a male tab inserted into said receptacle is gripped between said strip and said ceiling wall, said floor wall including a cut-out bar which is bent to extend under said spring strip and cooperate therewith, said bar being cut out from the one of the two ends comprising lugs and bent to extend towards said other end of said receptacle adapted to receive said male tab, said side walls including plunged bosses forming internal abutments limiting movement of said spring strip, and said bar having a width less than the gap between said plunged bosses.

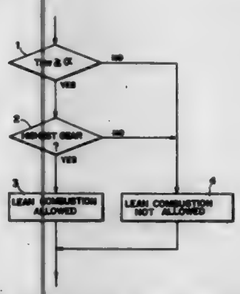
5,443,593
SWIMMING FLIPPER
Giovanni Garofalo, Rapallo, Italy, assignor to H.T.M. Sport S.p.A., Italy
Filed Dec. 15, 1993, Ser. No. 167,081
Claims priority, application Italy, Jan. 20, 1993, GE93A0002
Int. Cl.[6] A63B *31/08, 31/11*
U.S. Cl. 441—64 **17 Claims**

1. A swimming flipper comprising:
a shoe portion;
a flipper part extending forwardly from said shoe portion to a fore edge, said flipper part being of a first material which is relatively stiff and having longitudinal slits therein;
flow channels formed in each of said longitudinal slits and extending rearwardly from said fore edge of the flipper part, said flow channels being of a second material which is less stiff than said first material;
at least one of said flow channels extending concavely away from the flipper part in one direction and another of said



flow channels extending concavely away from said flipper part in the opposite direction.

5,443,594
AIR-FUEL RATIO CONTROL APPARATUS OF VEHICLE EQUIPPED WITH AUTOMATIC TRANSMISSION
Mitsuru Takada, Aichi, and Hiroshi Okano, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 26, 1993, Ser. No. 67,007
Claims priority, application Japan, May 27, 1992, 4-160124; Feb. 12, 1993, 5-047426; Mar. 26, 1993, 5-091970
Int. Cl.[5] F16H *59/24, 59/78, 61/16*
U.S. Cl. 477—98 **4 Claims**

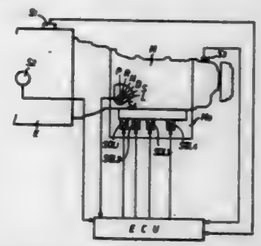


1. A control apparatus of a vehicle wherein an automatic transmission having a frictional engagement device which is engaged by hydraulic pressure and sets up a gear shift stage is coupled to an engine which can set up a plurality of output characteristics by varying an air fuel ratio, comprising a hydraulic pressure adjustment means which sets up the pressure adjustment level of the hydraulic pressure supplied to the frictional engagement device in accordance with the maximum output characteristic of the engine, and means for varying the air fuel ratio to lower the output characteristic of the engine only when a gear shift stage set up by the automatic transmission is a highest gear shift stage.

5,443,595
CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION
Masato Shimei, Nagoya; Shigeki Goto, Kariya; Takahiro Sakai, Toyota, and Masahiko Nakagawa, Nagoya, all of Japan, assignors to Aisin Seiki Kabishuki Kaisha, Kariya, Japan
Filed Jul. 23, 1993, Ser. No. 95,840
Claims priority, application Japan, Jul. 24, 1992, 4-198470
Int. Cl.[6] B60K *41/10*
U.S. Cl. 477—155 **5 Claims**

1. A control apparatus for an automatic transmission having

a set of frictional engagement elements arranged to be selectively engaged or disengaged in shift-up operation of the transmission, a shift timing valve arranged to be switched over by hydraulic pilot pressure applied thereto for switching over discharge of fluid under pressure from one of said frictional engagement elements to be disengaged in the shift-up operation from a slow-drain condition to a quick-drain condition, and a solenoid valve arranged to interrupt the hydraulic pilot pressure applied to the Shift timing valve when maintained in a deenergized condition and to permit the hydraulic pilot pressure to be applied to the shift timing valve when energized, comprising:
detection means for detecting a drive torque of a vehicle engine;
means for determining; a timing period for energization of said solenoid valve in the shift-up operation in accordance with the drive torque of the vehicle engine detected by said detection means; and
control means for maintaining said solenoid valve in its deenergized condition during the timing period and for



energizing said solenoid valve upon lapse of the timing period.

5,443,596

KERATINOUS FIBER DYEING COMPOSITIONS AND PROCESSES UTILIZING OXIDATION DYE PRECURSORS IN COMBINATION WITH DIMETHOXY META-AMINOPHENOL COUPLERS

Alex Junino, Livry-Gargan; Nicole Bonaventure, Vincennes, and Alain Lagrange, Coupvray, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR92/00980, § 371 Date Dec. 21, 1993, § 102(e) Date Dec. 21, 1993, PCT Pub. No. WO93/00066, PCT Pub. Date Jul. 1, 1993

PCT Filed Jun. 25, 1992, Ser. No. 167,918

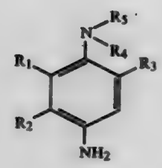
Claims priority, application France, Jun. 26, 1991, 91 07889

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—442 16 Claims

1. A composition for dyeing keratinous fibers comprising, in a medium suitable for dyeing said fibers, at least

one oxidation dye precursor selected from the group consisting of a para-aminophenol, a para type heterocyclic precursor, a bis(phenylene)alkylenediamine and a para-phenylenediamine of formula (III):



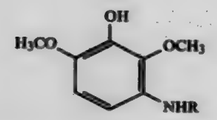
(III)

wherein

R_1, R_2 and R_3, each independently, represent hydrogen, halogen, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, carboxyl, sulfo, or C_1–C_4 hydroxyalkyl,

R_4 and R_5, each independently, represent hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, carbamylalkyl, mesylaminoalkyl, acetylaminoalkyl, ureidoalkyl, carbalkoxyaminoalkyl, sulfoalkyl, piperidinoalkyl, morpholinoalkyl or morpholinoalkoxy wherein the said alkyl or alkoxy groups contain 1 to 4 carbon atoms, phenyl and phenyl substituted at the para position with an amino group, or alternatively, R_4 and R_5, together with the nitrogen atom to which they are linked, form a piperidino or morpholino heterocycle, with the proviso that R_1 or R_3 represents hydrogen when R_4 and R_5 do not represent hydrogen, or a salt thereof,

at least one coupler of formula:



(I)

wherein

R represents hydrogen, C_1–C_4 alkyl, C_1–C_6 monohydroxyalkyl, C_2–C_6 polyhydroxyalkyl, or alkylcarbonyl wherein the alkyl moiety contains from 1–4 carbon atoms,

or an addition salt with an acid.

5,443,597

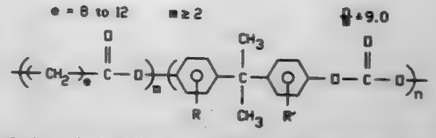
METHOD OF TINTING POLYCARBONATE-POLYESTER COPOLYMERS

Paresh V. Kitchloo, North Attleborough, Mass., and Robert A. Sallavanti, Dalton, Pa., assignors to Gentex Optics, Inc., Carbondale, Pa.

Filed Mar. 23, 1994, Ser. No. 216,613

Int. Cl.[6] D06P *5/20*

U.S. Cl. 8—444 6 Claims



1. A method of tinting a surface of an article formed of a polycarbonate-polyester copolymer including the steps of subjecting said surface to ultraviolet radiation of pretermined intensity for a predetermined period of time sufficient to permit subsequent tinting of said surface to a predetermined agree and then tinting said surface, said intensity being sufficiently low that substantially no change occurs in the mechanical properties of the surface.

5,443,598

DYEING ASSISTANTS AND THEIR USE

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed Jun. 17, 1992, Ser. No. 900,035

Claims priority, application Germany, Jun. 17, 1991, 41 19 861.1

Int. Cl.[6] D06P *5/12*

U.S. Cl. 8—455 13 Claims

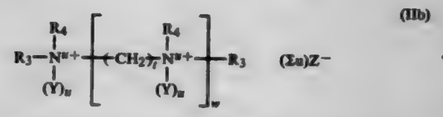
1. A dyeing assistant for the treatment with anionic dyes or optical brighteners of substrates that are dyeable with anionic dyes comprising:

(a) a cationic surfactant which acts as a reserving agent in the dyeing of substrates dyeable with anionic dyes, which is a polyoxyalkylated and quaternized fatty amine, fattyamino(oligo)amine or fattyamido(oligo)amine or a mixture of such surfactants

and,

(b) a cationic surfactant which acts as a retarder in the dyeing of polyacrylonitrile with cationic dyes, which is selected from the group consisting of:

(b') at least one compound of the formula:



(IIb)

in which each R_3 independently signifies a C_{10-22}-fatty radical or R_4,

R_4 signifies aryl-(C_{1-3}alkyl) or C_{1-4}-alkyl,

Y signifies aryl-(C_{1-3}-alkyl) or C_{1-4}-alkyl,

t signifies an integer from 2 to 6, and,

w signifies 0 or an integer from 1 to 6, and if w=0, one R_3 signifies a C_{10-22}-fatty radical and the other R_3 signifies R_4,

Z^- signifies an equivalent of an anion,

u signifies 0 or 1

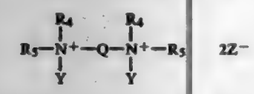
and,

Σu signifies a number from 1 to (w+1)

or a mixture of such compounds,

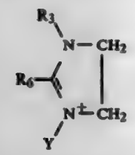
with the proviso that the cation of the quarternization product of formula (b') contains at least 16 carbon atoms;

(b'') a compound of the formula:



(Ib'')

in which
R_4 signifies aryl-(C_{1-3}alkyl) or C_{1-4}-alkyl,
Y signifies aryl-(C_{1-3}-alkyl) or C_{1-4}-alkyl,
R_5 signifies a C_{10-22}-fatty radical, an aryl-(C_{1-3}-alkyl) radical, a C_{1-4}-alkyl
radical or a radical of the formula R_2—CONH—Alkylen,
where R_2 is an acyl radical of a C_{12-22} fatty acid, and where,
Alkylen signifies ethylene or propylene,
Z^- signifies the equivalent of an anion,
Q signifies an aliphatic C_{3-18} hydrocarbon radical, substituted with -OH or if it contains 4–18 carbon atoms, signifies an aliphatic C_{3-18} hydrocarbon radical interrupted by oxygen and substituted with -OH; or a mixture of such compounds;
and,
(b''') compounds of the formula



(Ib''')

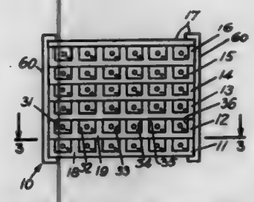
in which R_3 signifies a C_{10-22} fatty radical or aryl-(C_{1-3}-alkyl) or C_{1-4}-alkyl
R_6 signifies hydrogen or has one of the significances of R_3,
or a mixture of such compounds,
or a mixture of such surfactants.

5,443,599
PROCESS FOR REDUCTION OF TEXTILE DYESTUFFS
Thomas Bechtold, and Eduard Burtscher, both of Dornbirn, Austria, assignors to Verein zur Forderung der Forschung und Entwicklung in der Textilwirtschaft, Feldkirch, Austria
Continuation of Ser. No. 916,150, Jul. 31, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 358,689
Claims priority, application Austria, Dec. 3, 1990, 2436/90
Int. Cl.[6] C07B *31/00*
U.S. Cl. 8—623 **10 Claims**

1. A process for the reduction of textile dyestuffs comprising the step of mixing (i) a textile dyestuff selected from the group consisting of vat dyestuffs, sulfur dyestuffs, indigo dyestuffs and azo dyestuffs, (ii) a reducing compound which is a complex of an organic complexing agent and an iron (II)-salt, (iii) water and (iv) an alkalinity source, such that the resultant mixture has an alkaline pH level, wherein the iron (II)-salt is present in an amount such that oxidation of said iron (II)-salt to an iron (III)-salt generates a reduction potential sufficient to reduce the dyestuff.

5,443,600
GROOVED SEPARATOR ELECTRODE COMPOSITE
William H. Tiedemann, Cedarburg, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Sep. 30, 1993, Ser. No. 129,890
Int. Cl.[6] H01M *10/04*
U.S. Cl. 429—134 **15 Claims**

1. A method of making a cell for a battery comprising the steps of:
(a) providing a support member of an electrically insulating material having a surface with a plurality of parallel grooves therein, said grooves having first and second ends;
(b) providing a plurality of first lead wires having coating of a paste of a positive active material in alternate ones of said grooves with each of said first lead wires having a terminal end extending beyond said first ends of said alternative grooves at a first end of said support member;
(c) providing a plurality of second lead wires having a coating of a paste of a negative active material in the remaining ones of said grooves with each of said second lead wires having a terminal end extending beyond said second ends of said remaining grooves at a second end of said support member;
whereby said support member, said first lead wires with said

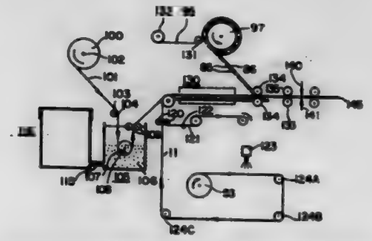


paste of said positive active material and said second lead wires with said paste of said negative active material form a composite structure;
(d) repeating steps (a) through (c) to form a plurality of said composite structures;
(e) stacking said plurality of composite structures one upon the other to form a stack of said composite structures;
(f) interconnecting the terminal ends of said first lead wires at said first end of said support member to provide a positive lead termination for the stack of composite structures; and,
(g) interconnecting the terminal ends of said second lead wires at said second end of said support member to provide a negative lead termination for the stack of composite structures.

5,443,601
METHOD FOR INTERCALATING ALKALI METAL IONS INTO CARBON ELECTRODES
Marca M. Doeff, Hayward; Yaoping Ma; Steven J. Visco, both of Berkeley, and Lutgard DeJonghe, Lafayette, all of Calif., assignors to Regents, University of California, Berkeley, Calif.
Filed May 3, 1993, Ser. No. 55,709
Int. Cl.[6] H01M *6/18, 4/62*
U.S. Cl. 29—623.5 **20 Claims**

1. A method for intercalating metal ions into carbon for use as an electrode in a secondary cell comprising the steps of:
a) Admixing a carbon powder, an ion conducting polymer, a powder of an alkali metal salt, and a powder of a carbon dispersant,
b) Mixing together the resulting dry combination with a solvent,
c) Applying the resulting mixture onto a drying surface,
d) Evaporating said solvent,
e) Removing the resulting electrode from said drying sheet,
f) Cutting said electrode into desired shapes,
g) removing residual water from said electrode.

5,443,602
APPARATUS AND METHOD FOR AUTOMATIC MASS PRODUCTION AND PACKAGING OF ELECTROCHEMICAL CELLS
Joseph B. Kejha, c/o Hope Technologies, Inc., 3701 Welsh Rd., Willow Grove, Pa. 19090-1293
Filed Sep. 8, 1994, Ser. No. 302,536
Int. Cl.[6] B23P *19/00*; H01M *6/00*
U.S. Cl. 29—730 **27 Claims**



1. Apparatus for automatic mass production and packaging of a plurality of electrochemical single cells which comprises
a spool containing a web of cathode coated current collector wound thereon,
a plurality of spaced terminals attached to said collector web,
a spool containing a length of adhesive tape wound thereon,
a length of anode material with terminals thereon in spaced relation and carried by said adhesive tape,
release paper or tape on said adhesive tape and anode material in overlying relation,
a spool containing a length of insulating plastic net web,
a tank containing a quantity of liquid polymer electrolyte,
electrolyte coating means including roller means in said tank and in contact with said plastic net web to cause said net web to be pulled through said tank to coat and to encapsulate said net web with electrolyte,
roller means in contact with said length of cathode coated web to advance said web into intimate contact with said electrolyte coated net web to cause said webs to join,
means for removing said release paper or tape from said anode carrying tape,
means for advancing said anode carrying tape into contact with said electrolyte coated web,
means for pressing said webs and said anodes and tapes together to form at least one cell having a layered assembly.

5,443,603
LIGHT WEIGHT CERAMIC ABRASIVE MEDIA
Gregory S. Kirkendall, Lake Wales, Fla., assignor to Washington Mills Ceramics Corporation, North Grafton, Mass.
Filed Jan. 11, 1994, Ser. No. 179,935
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—296 **6 Claims**

1. A method for manufacturing abrasive tumbling media comprising discrete abrasive ceramic particles having a formed size and shape made by firing a formed mixture primarily comprising a particulate raw material used to manufacture a ceramic product, which method comprises adding at least 10% of hollow ceramic microspheres to said mixture prior to firing to obtain particles having a final fired bulk density below about 65 lbs/ft^3.

5,443,604
POLISHING COMPOUND FOR PLASTIC SURFACES
Michael S. Stowell, New Ellenton, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 798,778, Nov. 27, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,391
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—307 **17 Claims**

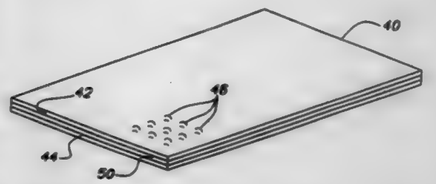
1. A polishing compound for plastic surfaces, said compound comprising:
a mixture containing, by weight, approximately
4 to 17 parts at least one petroleum distillate lubricant;
1 to 6 parts mineral spirits;
2.5 to 15 parts abrasive particles, said abrasive particles being generally rounded in form, a substantial portion of said abrasive particles being less than approximately 10 microns in size; and
2.5 to 10 parts water.

5,443,605
POLYCRYSTALLINE CUBIC BORON NITRIDE ABRASIVE
Masaharu Suzuki, Kawasaki; Tomoki Nikaido, Tokyo, and Takeshi Mabuchi, Machida, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 53,093, Apr. 26, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 253,196
Claims priority, application Japan, Apr. 30, 1992, 4-135593
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—307 **2 Claims**



1. A polycrystalline cubic boron nitride abrasive wherein a mean size of each primary crystal grain forming the abrasive is not more than 1.0 μm and a standard deviation thereof is not more than 0.5, said polycrystalline cubic boron nitride abrasive having a molar ratio of boron to nitrogen of not less than 0.95 and less than 1.00.

5,443,606
POST-TREATMENT OF LAMINATED NONWOVEN CELLULOSIC FIBER WEBS
Charles B. Hassenboehler, Jr., and Larry C. Wadsworth, both of Knoxville, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.
Continuation-in-part of Ser. No. 858,182, Mar. 26, 1992, Pat. No. 5,244,482, and Ser. No. 37,228, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 858,182, Mar. 26, 1993. This application Jul. 22, 1993, Ser. No. 95,932
Int. Cl.[6] B01D *39/16*
U.S. Cl. 55—486 **69 Claims**



1. A planar nonwoven elastic web made from a laminated

precursor nonwoven web which planar nonwoven elastic web is of reduced maximum pore size relative to the precursor nonwoven web, comprising first and second layers of randomly deposited nonelastomeric thermoplastic man-made fibers and a third layer of cellulose-based staple fibers sandwiched between said first and second layers, said web being uniaxially drawn and heat set wherein the uniaxial heating and drawing are carried out continuously by passing the precursor web through a lateral strain mechanism, whereby a majority of the thermoplastic fibers are aligned transverse to the direction of draw and a minority of segments of thermoplastic fibers are disposed lengthwise to the direction of draw, whereby the web is consolidated in the longitudinal direction and characterized by a maximum pore size of less than 80% that of the precursor web and has an elasticity in the longitudinal direction of at least 70% recovery from a 50% elongation in the longitudinal direction.

5,443,607

PROCESS FOR THE PRODUCTION OF A HOMOGENEOUS REAM-FREE BODY MADE OF QUARTZ GLASS

Wolfgang Englisch, Kelkheim; Heinrich Goy, Hasselroth; Paul Sauerwein; Peter Hitzschke, both of Rodenbach; Fritz Simmat, Gelnhausen; Rolf Takke, Hanau, and Gerhard Steiner, Seligenstadt, all of Germany, assignors to Heraeus Quarzglas GmbH, Hanau, Germany

Filed Dec. 21, 1993, Ser. No. 170,925
Int. Cl.[6] C03B *23/04, 20/00*
U.S. Cl. 65—64 **13 Claims**



1. A process for the production of a homogeneous ream-free body made of quartz glass or of a glass having a high content of silicic acid comprising twisting an essentially bar-shaped initial body of one of said glasses in a first shaping step about its longitudinal axis to form a twisted body radially homogenized in layers and having axially extending layering, softening the twisted body in a second shaping step in a heated mold under a force acting in the axial direction of the twisted body to deform the twisted body into the mold in a direction transverse to its axial direction and form a glass body having a longitudinal axis that extends essentially perpendicular to said layering, forming the glass body into a glass bar having a longitudinal axis that extends essentially perpendicular to said layering, and thereafter twisting the glass bar about its longitudinal axis to form said homogeneous ream-free body.

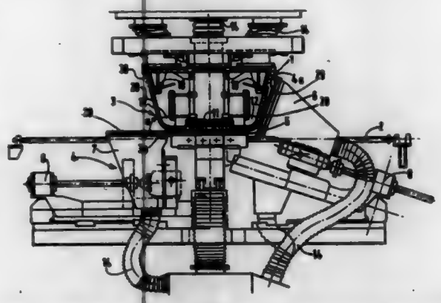
5,443,608

MODULAR INSTALLATION FOR CURVING AND TEMPERING A GLASS SHEET

Michel Agius, Santeuil, France, assignor to Selas S.A., Gennevilliers, France

Filed Apr. 19, 1994, Ser. No. 229,832
Claims priority, application France, May 5, 1993, 93 05359
Int. Cl.[6] C03B *23/03*
U.S. Cl. 65—268 **19 Claims**

1. In a modular installation for curving and tempering a heated glass sheet (1), comprising members for shaping the heated glass sheet, means (2) for positioning the heated glass sheet (1) horizontally between said members for shaping the heated glass sheet (1), means for applying the shaping members on either side of the heated glass sheet (1) and for curving the heated glass sheet and means (14) for directing jets of gas onto the heated glass sheet (1) in order to temper the heated glass sheet, the shaping members including a first series (3) of members (20) exhibiting a surface (3*a*) intended to come into contact with one of the faces of the heated glass sheet (1) and a second series (4) of members exhibiting a surface (4*a*) intended to come into contact with the other face of the heated glass sheet (1) including a central surface portion (5) to which at least one movable part (6,7) is attached; the improvement which comprises first adjustment means (10,11,12) for modifying the profile of said surface (3*a*) exhibited by the first series (3) of members (20) as a function of the curvature which it is desired to give the heated glass sheet (1), means (8) for controlling the movement of the movable part (6,7) of the second series (4) of members in a curve parallel to the profile of the surface (3*a*) of the first series (3) of members (20) and second adjustment means (50,51) suitable for modifying the profile of said central surface portion (5) of the second series (4) of members as a function of the profile of the surface (3*a*) of said first series (3) of members (20) which is located opposite.



5,443,609

BENDING AND TEMPERING STATION FOR GLASS SHEETS

Esko Lehto, Kangasala, Finland, assignor to Tamglass Engineering Oy, Tampere, Finland

Filed May 11, 1994, Ser. No. 240,614
Claims priority, application Finland, Apr. 26, 1994, 941931
Int. Cl.[6] C03B *23/023, 27/00*
U.S. Cl. 65—268 **10 Claims**

1. A bending and tempering station for glass sheets, comprising:

a roll conveyor comprising a plurality of conveyor rollers having means for adjusting a relative vertical position of the conveyor rollers for arching the conveyor to a curvature corresponding to a desired degree of bending;

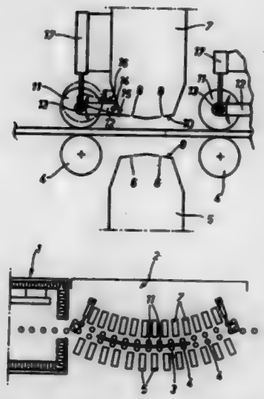
lower tempering boxes having top surfaces provided with tempering orifices positioned below the conveyor; and

upper tempering boxes having bottom surfaces provided with tempering orifices positioned above the conveyor;

wherein the upper and lower tempering boxes are movable relative to the conveyor to maintain said top and bottom surfaces a constant distance from the conveyor;

a plurality of press rollers movably mounted on the upper tempering boxes having a top rest position and a bottom working position;

spring force means for biasing each press roller in the working position; and



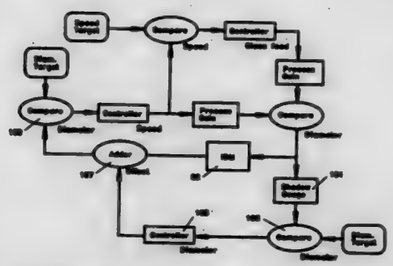
wherein the press rollers are movable from the bottom working position to the top rest position against the spring force means.

5,443,610

APPARATUS FOR CONTROLLING FIBER DIAMETER DURING DRAWING

Eric H. Urruti, Wilmington, N.C., assignor to Corning Incorporated, Corning, N.Y.

Filed Jan. 29, 1994, Ser. No. 11,384
Int. Cl.[6] C03B *37/07*
U.S. Cl. 65—486 **5 Claims**



1. Apparatus for controlling the diameter of an optical fiber during drawing comprising:

interference diameter measuring means for generating a first signal indicative of the diameter of the fiber at a first location;

means for generating a second signal indicative of the diameter of the fiber at a second location different from the first location;

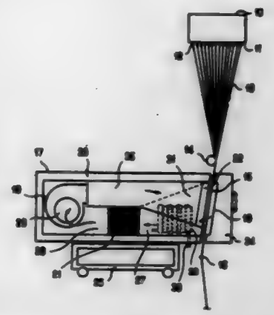
means for generating a control signal from the first and second signals for controlling the diameter of the fiber.

5,443,611

APPARATUS FOR PRODUCING AND TREATING GLASS THREADS

Yvan Salvador, Chambery; Dominique Gerard, La Motte Servolex, and Eric Huet, Barberaz, all of France, assignors to Vetrotex France, Chambery, France

Filed Dec. 13, 1993, Ser. No. 165,510
Claims priority, application France, Dec. 11, 1992, 92 14910
Int. Cl.[6] C03B *37/12*
U.S. Cl. 65—507 **9 Claims**



1. A device for producing and treating glass threads by drying glass filaments moving in at least one fan of filaments, comprising:

a first housing part having an adjustable flow rate air blowing device, an adjustable air heater, a device for removing moisture from air and ducting for delivery heated, low moisture air blown by the air blowing device to one end of the first housing part; and

a second housing part positionable adjacent said one end of said first housing part and shaped to deflect air blown from said one end of said first housing part,

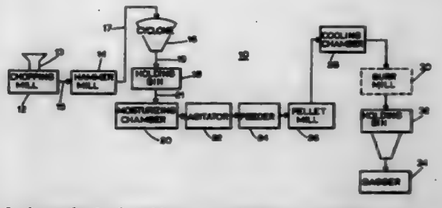
wherein said second housing part may be positioned to cover said one end of said first housing part while leaving a gap therebetween through which said at least one fan may pass to blow on and dry the glass filaments of the fan.

5,443,612

METHODS OF MAKING AGRICULTURAL MATERIALS

Terry L. Havens, 209 Oak St., Wenona, Ill. 61377

Filed Feb. 22, 1994, Ser. No. 199,111
Int. Cl.[6] C05F *9/00*
U.S. Cl. 71—5 **14 Claims**



1. A method of making an agricultural material and using said agricultural material in a casing layer for a mushroom tray, said agricultural material being made from waste paper and a pH adjusting material, said method comprising the steps of:

(a) providing an amount of waste paper to a grinding apparatus;

(b) providing an amount of pH adjusting material to the grinding apparatus;

(c) grinding the waste paper and pH adjusting material together to form a lower density material, the density of said lower density material being lower than the density of said waste paper, substantially all of said lower density material having a substantially uniform carbon-to-nitrogen ratio in excess of about 70:1 and a substantially uniform pH of between about 7 and 9;
(d) densifying the lower density material to form an agricultural material having a density higher than the density of said lower density material; and
(e) providing said agricultural material in the casing layer of a mushroom tray, said casing layer being provided above a compost layer in the mushroom tray.

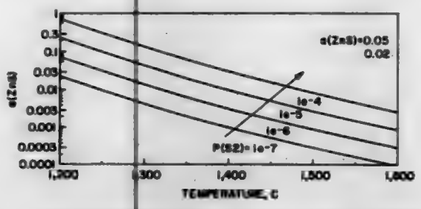
5,443,613
METHOD FOR PRODUCING SUSPENSION FERTILIZER

Elmo C. Robinson, P.O. Box 27, Paragonah, Utah 84760
Continuation of Ser. No. 736,477, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 432,528, Nov. 6, 1989, abandoned. This application Apr. 19, 1994, Ser. No. 231,432
Int. Cl.[6] C04F *3/00*
U.S. Cl. 71—12 **16 Claims**

1. A method for producing a high analysis suspension fertilizer, containing a predetermined amount of available nitrogen, containing a predetermined amount of one or more other inorganic plant nutrients other than nitrogen and having a pH within the range of about 6.5 to about 7, from a low plant nutrient-containing organic material, said method comprising the steps of
(a) preparing an aqueous initial suspension of a low plant nutrient-containing organic material by admixing said organic material with a sufficient amount of water to permit said organic material to be substantially uniformly dispersed throughout said initial suspension, the total dry weight of said organic material being within the range of about 2 to about 20 weight %, based on the total weight of the finished suspension fertilizer;
(b) admixing with said initial suspension a sufficient amount of an acid selected from the group consisting of sulfuric, phosphoric, nitric and hydrochloric acids and mixtures thereof to provide a weight ratio of said acid to the total weight of the initial suspension within the range of about 0.2 to about 2 and a weight ratio of said acid to the total dry weight of said organic material within the range of about 0.5 to about 5;
(c) allowing said acid to react with said organic material under substantially atmospheric pressure conditions for a time period of at least 5 minutes and sufficient for substantially all of said organic material to be transformed into a colloidal form and remain substantially suspended in the resulting acidified suspension;
(d) admixing with said acidified suspension under substantially atmospheric pressure conditions an ammoniacal compound selected from the group consisting of anhydrous ammonia, aqueous ammonia, ammonium nitrate, ammonium chloride, ammonium sulfate, ammonium phosphate, urea and mixtures thereof and one or more supplemental inorganic compounds required to provide said other inorganic plant nutrient(s), the amounts of said ammoniacal compound and said supplemental inorganic compound(s) being sufficient to provide said predetermined amount of available nitrogen, said predetermined amount of said other inorganic plant nutrient(s) and a pH within said predetermined range in the finished suspension fertilizer; and
(e) adding a sufficient amount of water to the acidified suspension after step (c) and prior to, during and/or after step (d), as required, to provide the finished suspension fertilizer with the amount of dry organic material set forth in step (a).

5,443,614
DIRECT SMELTING OR ZINC CONCENTRATES AND RESIDUES

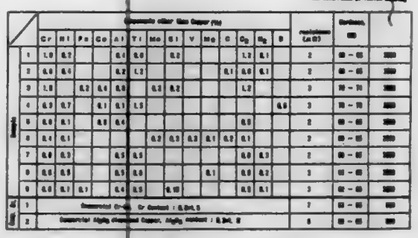
Rui-Qing Li, Pointe-Claire, and John G. Peacey, Lancaster, both of Canada, assignors to Noranda, Inc., Toronto, Canada
Filed Jul. 28, 1994, Ser. No. 281,609
Int. Cl.[6] C22B *7/02, 19/04*
U.S. Cl. 75—10.29 **19 Claims**



1. A pyrometallurgical process for the direct smelting of zinc, comprising the steps:
feeding zinc-containing material and sulphur-containing material, or feeding a material containing at least zinc and sulphur, or feeding mixtures thereof in a furnace containing a molten Fe-S matte while maintaining a temperature of from 1200° to 1600° C.;
feeding an iron-containing material to fix sulphur in an amount sufficient to maintain the Fe/S ratio in the matte above 1.8;
feeding an inert gas or an oxygen-containing gas into the matte to cause zinc to vaporize in a substantially pure form; and
recovering the substantially pure zinc through a condenser.

5,443,615
MOLDED CERAMIC ARTICLES

Mitsuo Kuwabara; Kiyoshi Ikegami; Teruaki Yoshida; Koji Takahashi; Tamotsu Harada; Takeshi Komiyama; Fumio Hirai, and Masamichi Hayashi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 652,884, Feb. 8, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,085
Int. Cl.[6] B22F *7/00*
U.S. Cl. 75—230 **6 Claims**



1. A molded ceramic article comprising, as a principal component, copper and, as essential components, Cr and Ni within the following composition ranges:

$0.1 \leqq Cr < 2$ wt. %

$0.1 \leqq Ni < 10$ wt. %

and further comprising at least one additive component selected from the group consisting of the following composition ratios:

$0 < Fe < 5$ wt. %

$0 \leqq Co < 5$ wt. %

$0 \leqq Al < 10$ wt. %

$0 \leqq Ti < 20$ wt. %

$0 \leqq Mo < 3$ wt. %

$0 \leqq Si < 3$ wt. %

$0 \leqq V < 3$ wt. %

$0 \leqq Mg < 1$ wt. %

$0 \leqq C < 5$ wt. %

and having at least one composition range selected from the group consisting of the following composition ratios:

$0 < O_2 < 10$ wt. %

$0 < N_2 < 5$ wt. %

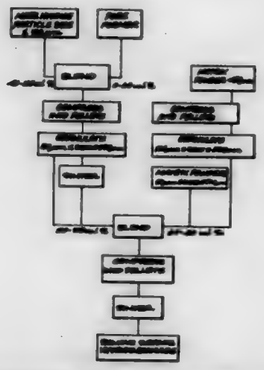
$0 < B < 5$ wt. %

wherein said copper as a principal component is electrolytic copper or oxygen free copper in the form of powder having a particle size of 100 μm or smaller, and wherein Ti, Al or Si is incorporated in the form of an organic compound represented by the general formula $Ti(OR)_4$, $Al(OR)_3$ or $Si(OR)_4$.

3. A molded ceramic article having an outer surface comprising copper as a base metal and chromium within a composition range of from at least 0.4 wt. % to at most 3.0 wt. % based on whole weight of the ceramic article or in a proportion of from at least 4 mg to at most 30 mg per gram of the ceramic article, and having, on the outer surface of a part of the chromium, a reinforcement obtained by depositing a carbide layer and/or a nitride layer.

5,443,616
METAL HYDRIDE COMPOSITION AND METHOD OF MAKING

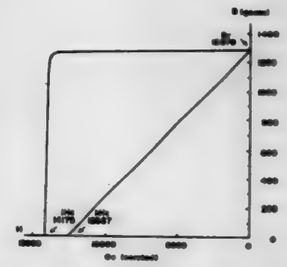
James W. Congdon, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 14, 1993, Ser. No. 91,013
Int. Cl.[6] C22C *21/00*; B22F *1/00*
U.S. Cl. 75—240 **20 Claims**



1. A composition for use in absorbing hydrogen, said composition made by a process comprising the steps of:
forming particles of a metal hydride into granules;
mixing said metal hydride granules with a removable pore former;
mixing said hydride granules with a matrix material to form a uniformly blended mixture; and
forming said mixture into pellets.

5,443,617
POWDERY RAW MATERIAL COMPOSITION FOR A PERMANENT MAGNET

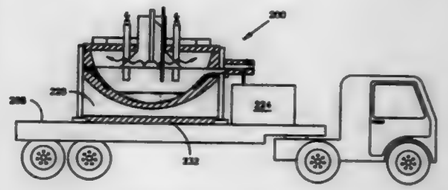
Yasunori Takahashi, Tokyo, Japan, assignor to Kawasaki Teitoku Co., Ltd.; Komeya Inc. and Sanei Kasei Co., Ltd., all of Japan
Filed Sep. 30, 1994, Ser. No. 316,354
Claims priority, application Japan, Oct. 6, 1993, 5-272967
Int. Cl.[6] B22F *1/00*
U.S. Cl. 75—254 **2 Claims**



1. A powdery raw material composition for a permanent magnet, wherein said composition has been prepared by subjecting a mixture composed of 13–18 weight % of a neodymium powder, 4–10 weight % of a boron powder and the rest of an acicular iron powder coated with aluminum phosphate to a temperature above 600° C. in an atmosphere of a hydrogen-containing reducing gas followed by subjecting said mixture to a temperature above 600° C. in an inert gas.

5,443,618
EARTH MELTER

Christopher C. Chapman, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.
Continuation-in-part of Ser. No. 24,886, Mar. 1, 1993, Pat. No. 5,354,355, which is a continuation of Ser. No. 805,444, Dec. 9, 1991, abandoned. This application Aug. 3, 1994, Ser. No. 285,389
Int. Cl.[6] C22B *9/20, 9/21*
U.S. Cl. 75—414 **17 Claims**



13. A method of disposing of feed materials, in a melter constructed above grade, comprising the steps of:
(a) forming side walls of soil or rock in a containment vessel to provide a melt zone, said soil or rock having refractory properties to contain the melt zone between the side walls;
(b) covering the containment vessel with a cover;
(c) feeding waste materials into the melt zone through the cover;

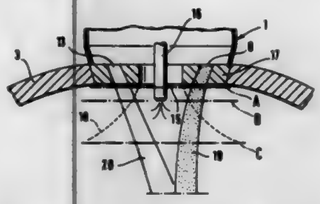
(d) heating the waste materials such that a melt pool of melted waste materials is produced in the melt zone; and
(e) withdrawing the melted waste materials from the melt zone.

5,443,619
PROCESS FOR EXTRACTING METALS FROM SOLUTION
C. Dale McDoulett, Jr., Tulsa, Okla., and George W. Reschke, Oakville, Canada, assignors to North American Palladium Ltd., Toronto, Canada
Filed Oct. 4, 1994, Ser. No. 317,371
Int. Cl.[6] C22B 3/46
U.S. Cl. 75—421 7 Claims



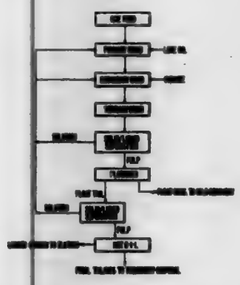
1. A process for extracting iron, copper, nickel from a solution containing iron, copper, nickel and at least one contaminant selected from the group consisting of magnesium, aluminium, calcium and sodium wherein each of said solutes is present as a metal chloride and said solution has a pH of less than 1.0, said process comprising the steps of:
i) adding a precipitating agent selected from the group consisting of calcium oxide and calcium hydroxide to raise the pH of said solution to approximately 1.0thereby causing said iron to precipitate as ferric hydroxide;
ii) separating said ferric hydroxide precipitate from the remaining solution;
iii) adding more of said precipitating agent to said remaining solution to raise the pH of said remaining solution from step ii to approximately 3.0 thereby causing said copper to precipitate as cupric hydroxide;
iv) separating said cupric hydroxide precipitate from the remaining solution;
v) adding more of said precipitating agent to said remaining solution to increase the pH of said remaining solution from step iv to about 4.0 thereby causing said nickel to precipitate as nickel hydroxide;
vi) separating said nickel hydroxide precipitate from the remaining solution;
vii) adding more of said precipitating agent to said remaining solution to increase the pH of said remaining solution from step vi to approximately 8.8 thereby causing said contaminants to precipitate as their respective hydroxides;
viii) separating said precipitated contaminants from the remaining solution;
ix) adding a sufficient amount of sulphuric acid to said remaining solution from step viii to convert said remaining solution from step viii to calcium sulphate and hydrochloric acid; and
x) separating said calcium sulphate from said hydrochloric acid.

5,443,620
METHOD FOR OXIDIZING PULVEROUS FUEL WITH TWO GASES HAVING DIFFERENT OXYGEN CONTENTS
Pentti J. Kaasinen, Harjavalta; Launo L. Lilja; Valto J. Mäkitalo, both of Pori, and Lasse J. Valli, Harjavalta, all of Finland, assignors to Outokumpu Engineering Contractors Oy, Espoo, Finland
Division of Ser. No. 68,980, May 28, 1993, Pat. No. 5,358,222. This application Sep. 22, 1994, Ser. No. 310,942
Claims priority, application Finland, Jun. 1, 1992, 922532
Int. Cl.[6] C22B 5/12, 23/00
U.S. Cl. 75—629 8 Claims



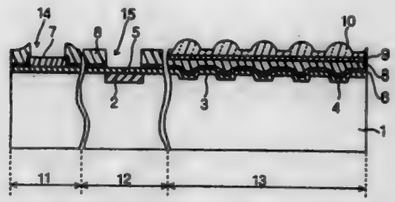
1. A method for oxidizing pulverous fuel to be fed into a furnace having a cylindrical reaction space with a central vertical axis, wherein combustion gas is fed into the reaction space as a turbulent flow, comprising feeding a flow of oxygen as a first reaction gas downwardly to the center of the reaction space as a turbulent jet flow around the reaction space axis; feeding at least three separate flows of a second reaction gas into the reaction space as second reaction gas jets directed downwardly and toward the oxygen flow; and feeding pulverous fuel into the reaction space downwardly and toward the oxygen flow as at least three fuel jets spaced between the second reaction gas jets.

5,443,621
METHOD FOR RECOVERING GOLD AND OTHER PRECIOUS METALS FROM CARBONACEOUS ORES
William J. Kohr, San Mateo, Calif., assignor to Gliobiotics, Inc., Hayward, Calif.
Continuation of Ser. No. 57,300, May 3, 1993, Pat. No. 5,364,453, which is a continuation-in-part of Ser. No. 950,576, Sep. 22, 1992, Pat. No. 5,338,338. This application Oct. 14, 1994, Ser. No. 324,363
Int. Cl.[6] C01G 7/00; C22B 11/04
U.S. Cl. 75—711 7 Claims



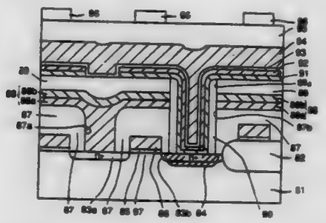
1. A process for recovering a precious metal from carbonaceous ores comprising:
a. leaching the carbonaceous ore with a lixiviant;
b. preg-robbingly sorbing precious metal-lixiviant complexes from the lixiviant to the native carbonaceous component of said ore;

5,444,277
SOLID IMAGING PICK-UP ELEMENT
Junichi Nakai; Yasuhiro Imanaka; Tetsuro Aoki; Shouichi Ishihe, all of Fukuyama, and Tooru Watanabe, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 913,686, Jul. 14, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 275,072
Claims priority, application Japan, Jul. 15, 1991, 3-174169
Int. Cl.[6] H01L 27/14; G02F 1/015
U.S. Cl. 257—223 12 Claims



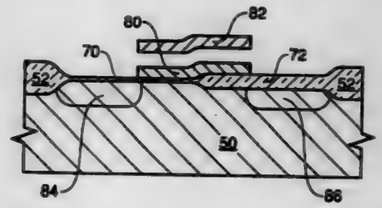
1. A solid state image pick-up element comprising:
a semiconductor substrate;
a plurality of light receiving portions, formed on said semiconductor substrate, for performing photoelectric conversion with respect to light received thereby;
a plurality of transfer portions, formed on said semiconductor substrate, for transferring signals obtained through photoelectric conversion;
an output portion, formed on said semiconductor substrate, for outputting said signals transferred from said transfer portions;
a first insulating film covered on said light receiving portions, said transfer portions and said output portion;
a pad portion formed on said first insulating film; and
a second insulating film covered on said semiconductor substrate over said first insulating film, said second insulating film having openings therethrough formed at locations above said pad portion and said output portion to thereby enhance an electric charge-to-voltage conversion efficiency of said output portion.

5,444,278
SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF
Toshiharu Katayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 997,755, Dec. 30, 1992, abandoned. This application May 9, 1994, Ser. No. 240,283
Claims priority, application Japan, Jan. 18, 1992, 4-007001; May 20, 1992, 4-127419
Int. Cl.[6] H01L 31/06
U.S. Cl. 257—296 19 Claims



1. A semiconductor device, comprising:
a semiconductor substrate of a first conductivity type having a main surface;
first and second impurity regions of a second conductivity type formed spaced apart on the main surface of said semiconductor substrate on opposite sides of a channel region interposed therebetween;
a gate electrode formed on said channel region with a gate insulating film interposed therebetween;
a lower capacitor electrode comprising:
a first conductive polycrystalline silicon layer including predetermined impurities connected to said first impurity region, said first conductive polycrystalline silicon layer having an upper surface, and
a second conductive polycrystalline silicon layer including predetermined impurities formed only on said first conductive polycrystalline silicon layer; wherein
an impurity concentration of said first conductive layer is lower than that of said second conductive layer,
said upper surface of said first conductive polycrystalline silicon layer and a lower surface of said second polycrystalline silicon conductive layer are in contact with each other over their entire respective surfaces, and
said lower capacitor electrode does not contain any conductive polycrystalline silicon having an impurity concentration greater than the impurity concentration of said first conductive polycrystalline silicon layer and extending beyond the lateral extent of said first conductive polycrystalline silicon layer.

5,444,279
FLOATING GATE MEMORY DEVICE HAVING DISCONTINUOUS GATE OXIDE THICKNESS OVER THE CHANNEL REGION
Roger R. Lee, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Continuation of Ser. No. 104,753, Aug. 11, 1993, abandoned. This application May 16, 1994, Ser. No. 243,442
Int. Cl.[6] H01L 29/68
U.S. Cl. 257—316 22 Claims



1. A programmable read-only memory cell, comprising:
a) a semiconductor substrate;
b) a source region formed in said substrate;
c) a drain region formed in said substrate;
d) a transistor channel formed in said substrate between said source and drain regions, said channel having a first region with a first impurity concentration and a second region with a second impurity concentration, said second impurity concentration being higher than said first impurity concentration;
e) first gate oxide having a thickness of from about 100 Å to about 120 Å formed over said first channel region;
f) second gate oxide having a thickness of from about 200 Å to about 350 Å formed over said second channel region;
g) a control gate formed over said channel region,
wherein in a cross-section perpendicular with a control line across said channel, said source region, and said drain region, said control gate overlies said first and second gate oxide.

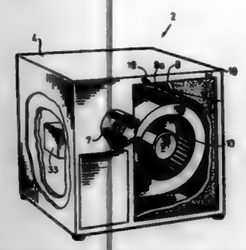
sorbing chamber, whereby the guard region serves as a safeguard for the sorbing region.

5,443,624

METHOD AND APPARATUS FOR INCREASING THE YIELD OF AN AIR-DRYING PROCESS

Knut Claesson, Stocksund, Sweden, assignor to Corroventa Avfuktning AB, Sollentuna, Sweden

PCT No. PCT/SE92/00585, § 371 Date Jan. 12, 1994, § 102(e) Date Jan. 12, 1994, PCT Pub. No. WO93/04764, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 25, 1992, Ser. No. 175,419
Claims priority, application Sweden, Aug. 30, 1991, 91 02488
Int. Cl.[6] B01D *41/00*
U.S. Cl. 95—113 8 Claims



1. A method of increasing the yield of an air-drying process in which fan-driven process air is delivered to a dehumidifier and there dehumidified and dried during heat-exchange with heated regenerating air, comprising the steps of:

a) delivering relatively moist, heated regenerating air exiting from the dehumidifier to one side of a condenser/heat-exchanger so as to deliver heat to the process air delivered to another side of said condenser/heat-exchanger and to cool the regenerating air;

b) collecting and carrying away condensation obtained from the regenerating air; and

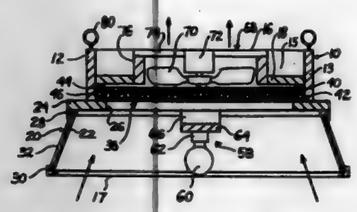
c) delivering the process air heated and relatively dried in the condenser/heat-exchanger to the dehumidifier so as to extract moisture from the process air and further dry said process air.

5,443,625

AIR FILTERING FIXTURE

John M. Schaffhausen, 8217 Nicollet Ave., Bloomington, Minn. 55420

Filed Jan. 18, 1994, Ser. No. 181,838
Int. Cl.[6] B01D *46/00*
U.S. Cl. 95—273 19 Claims



19. A method of filtering and recirculating air in a room, comprising:

(a) forming an air filtering fixture comprising:

(i) a housing having peripheral walls defining a generally vertical air path for an upwardly moving air stream, said vertical air path being centrally located in said housing, said housing having a horizontal bottom opening defining an air intake mouth and a horizontal top opening defining an air exhaust for directing air upwardly from said housing, said top opening being centrally located vertically above said bottom opening, said peripheral walls of said housing having an upper portion within which an air propulsion means is adapted to be received and having a horizontally oriented access opening therethrough at a location above said horizontal bottom opening and below said upper portion,

(ii) a horizontally oriented air filter removably mounted in the interior of said housing at the location of said horizontally oriented access opening and extending transversely of said vertical air path, said air filter being slidably removable and replaceable in a horizontal direction through said horizontally oriented access opening, and

(iii) an axial flow air propulsion means mounted in said housing above said horizontally oriented air filter and within said upper portion of said peripheral walls,

(b) providing sloped peripheral walls for said fixture with the slope thereof being such as to extend outwardly and downwardly below said horizontally oriented filter,

(c) suspending said air filtering fixture in spaced relationship from the ceiling of a room and in an elevated condition above an area where persons may congregate, and

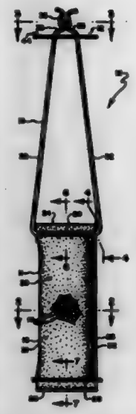
(d) activating said air propulsion means to pull air from below said housing upwardly through said air intake mouth and through said air filter and to propel said air as an air stream out of said top opening toward the ceiling so as to thereby cause the formation of a toroidal air movement about said peripheral walls of said housing, with air within said housing moving upwardly and air laterally external to said housing induced to move downwardly and enter said air intake mouth by virtue of the displacement of air caused by the exhaust air stream above said housing.

5,443,626

FLUID COLLECTING DEVICE FOR COLLECTING MOISTURE FROM TANKS

M. Reza Kiyani, Amherst, N.Y., assignor to Multiform Desiccants, Inc., Buffalo, N.Y.

Division of Ser. No. 975,707, Nov. 13, 1992. This application Sep. 28, 1994, Ser. No. 314,143
Int. Cl.[6] B01D *53/04*
U.S. Cl. 96—108 4 Claims



1. In a container having an opening leading to the inside thereof and having water vapor therein, a collecting device for collecting said water vapor from said container comprising a porous bag, a desiccant in said porous bag for collecting said water vapor, said porous bag being of a size to fit through said opening for entry into said inside of said container, a disc for being positioned on the opposite side of said opening from said inside of said container, said disc being of larger size than said opening and being incapable of passing through said opening, and cord means for connecting said porous bag with said disc for pulling said porous bag from said inside of said container after said desiccant has collected water vapor from said inside of said container, said disc by being of larger size than said opening thereby preventing said end of said cord means connected to said disc from passing through said opening and falling into said container.

5,443,627

ORGANOPOLYSILOXANE-ALKYLTRIALKOXYSILANE EMULSIONS FOR IMPREGNATING STRUCTURAL FIBRE-REINFORCED CEMENT COMPONENTS

Günter Von Au, and Dieter Gerhardinger, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

PCT No. PCT/EP92/00948, § 371 Date Aug. 20, 1993, § 102(e) Date Aug. 20, 1993, PCT Pub. No. WO92/19671, PCT Pub. Date Nov. 12, 1993
PCT Filed Apr. 30, 1992, Ser. No. 107,786
Claims priority, application Germany, May 3, 1991, 41 14 498.8
Int. Cl.[6] C04B *24/42, 41/64*
U.S. Cl. 106—2 2 Claims

1. A process for imparting water-repellency to structural components of cement reinforced with cellulosic fiber, consisting essentially of impregnating the cement reinforced with cellulosic fiber after setting with an aqueous emulsion containing

(A) an organopolysiloxane which is free of basic nitrogen,

(B) an alkyltrialkoxysilane,

(C) polyvinyl alcohol which contains 8% to 20% vinyl acetate units and has a degree of polymerization of from 500 to 3000 and

(D) water,

in which the organopolysiloxane (A) has the formula

$$R_aSi(OR^1)_bO_{\frac{4-a-b}{2}}$$

where

R is a monovalent substituted SiC-bonded C_1 to C_{18} hydrocarbon radical, optionally substituted with cyanoalkyl radicals and/or halogenated hydrocarbon radicals,

R^1 is a monovalent C_1 to C_6-hydrocarbon radical,

a is 0, 1, 2 or 3, with an average of from 0.75 to 1.5, and

b is 1, 2 or 3, with an average of from 0.2 to 2.0,

and has a molecular weight of at least 600 g/mol.

5,443,628

HIGH TEMPERATURE JET PRINTING INK

Adrian M. Loria, Wilmette, and Lily Tai, Chicago, both of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Aug. 8, 1994, Ser. No. 287,269
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—20 C 8 Claims

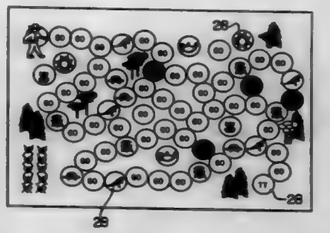
1. An ink composition suitable for ink jet printing operations, comprising a dispersion of synthetic pigment particles that have a particle size from about 0.02 to about 0.20 microns, with at least about 90 percent of said particles having diameters less than about 0.1 micron, a carrier and a binder.

5,443,629

LATENT IMAGE INK

Jacqueline M. Saville, and William G. A. Ferguson, both of Dryden, Canada, assignors to Alex Wilson Coldstream, Ltd., Dryden, Canada

PCT No. PCT/CA92/00511, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO93/11198, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 26, 1992, Ser. No. 244,479
Claims priority, application Canada, Nov. 27, 1991, 2056283
Int. Cl.[6] C09D *11/10*
U.S. Cl. 106—21 A 7 Claims



1. A latent image ink capable of being printed with conventional lithographic "wet" offset printing technology comprising:

an oleoresinous vehicle suitable for lithographic "wet" offset printing containing an amount, effective to provide a latent image of a colorless or light-colored, water soluble, particulate color forming inorganic compound capable of forming a strongly colored complex or compound when reacted with an appropriate agent dispersed throughout the vehicle, wherein the inorganic compound is potassium ferrocyanide.

5,443,630

INKJET SINGLE-PHASE REACTIVE PRINTING

Andreas von der Eltz; Andreas Schrell, both of Frankfurt am Main, and Hans-Helmut Steuernagel, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 2, 1994, Ser. No. 204,741
Claims priority, application Germany, Mar. 2, 1993, 43 06 433.7
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 R 23 Claims

1. A process for printing cellulose fiber sheet materials or sheet materials containing cellulose fibers using a single-phase inkjet process or a noncontact minimal add on spray technique to print said sheet materials with a reactive dye and subsequent fixation of the reactive dyes on the fiber, which comprises the steps of:

providing an aqueous ink formulation comprising a reactive dye and a salt selected from the group consisting of an alkali metal fluoride, an alkali metal citrate, an alkali metal salt of a C_2–C_4-dicarboxylic acid and a mixture thereof, and

contacting said sheet material with a reactive dye using a single-phase non-contact add on spray technique.

5,443,631
PROCESS FOR THE QUATERNIZATION OF TRIETHANOLAMINE FATTY ACID ESTERS AND IMIDAZOLINAMIDES AND THE USE OP THE REACTION MIXTURES IN LAUNDRY SOFTENER COMPOSITIONS

Michael Brock, Schermbeck; Peter Hardt, Monheim; Helmut Klimmek, and Dolf Stockhausen, both of Krefeld, all of Germany, assignors to Hoels Aktiengesellschaft, Marl, Germany

Filed Dec. 23, 1993, Ser. No. 172,276
Claims priority, application Germany, Dec. 23, 1992, 42 43 862.4
Int. Cl.[6] C08L *91/00*; C07D *233/00*; C07C *229/00*
U.S. Cl. 106—244 4 Claims

1. A process for the quaternization of triethanolamine fatty acid esters or imidazolinamides comprising:
contacting the triethanolamine fatty acid esters or imidazolinamides with a quaternization agent in a reaction medium comprising alkoxylated naturally occurring fats or oils, or mixtures thereof to provide a quaternized product mixture substantially free of 2-propanol.

5,443,632
CATIONIC AQUEOUS BITUMINOUS EMULSION-AGGREGATE SLURRIES

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 23, 1994, Ser. No. 200,386
Int. Cl.[6] C09D *195/00*
U.S. Cl. 106—277 33 Claims

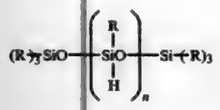
1. A paving slurry seal mixture of a cationic aqueous bituminous emulsion and mineral aggregate capable of being worked comprising: a densely graded mineral aggregate passing through No. 4 and at least 80% retained on 200 mesh screen, and from about 15–25%, based on the weight of the aggregate, of an oil-in-water type emulsion; wherein the emulsion is comprised of about 30–80% by weight of the emulsion of bitumen, from about 3–20% by weight of the emulsion of water, and about 0.3–10.0% by weight of the emulsion of a cation-active emulsifier; wherein the emulsifier is selected from the group consisting of reaction products of one or more polyamines reacted in a condensation reaction with a member selected from the group consisting of fatty acids and rosins, and a quaternizing agent selected from the group consisting of 2,3-epoxy-propyl-trimethyl ammonium chloride and 3-chloro-2-hydroxy propyl-trimethyl ammonium chloride.

5,443,633
SOIL TREATMENT WITH POLYMERIC HYDROGEN SILOXANE

Pierre Hirsbrunner, Les Monts-De-Corsier, and Denys Roulin, Clarens, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 337,345, Apr. 13, 1989, abandoned.
This application Oct. 22, 1993, Ser. No. 141,414
Claims priority, application European Pat. Off., May 13, 1988, 88107715
Int. Cl.[6] C09K *17/00*
U.S. Cl. 106—287.13 11 Claims

1. A process for treating soil comprising applying on soil in situ a composition comprising a liquid carrier and a polymeric hydrogen siloxane compound of the formula

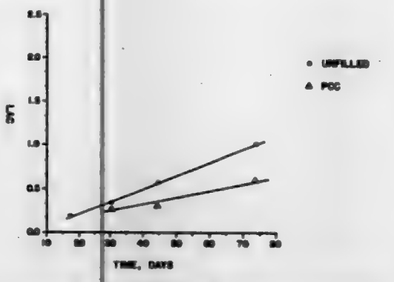


wherein n is a number of from 1 to 70, wherein R is selected from the group consisting of alkyl, hydroxyalkyl, aminoalkyl, a haloalkyl and aryl and wherein the composition contains the siloxane compound in an amount so that upon application of the composition to the soil to provide treated soil, water penetrates through the treated soil and water is retained in soil beneath the treated soil.

5,443,634
METHOD FOR REDUCING THERMAL AND LIGHT-INDUCED BRIGHTNESS REVERSION IN LIGNIN-CONTAINING PULPS

Raymond C. Francis, Dewitt, N.Y., and Daniel B. Evans, Bethlehem, Pa., assignors to The Research Foundation of the State University of New York, Albany, N.Y. and Minerals Technologies Inc., New York, N.Y.

Division of Ser. No. 111,627, Aug. 25, 1993, Pat. No. 5,360,515.
This application Jul. 28, 1994, Ser. No. 281,824
Int. Cl.[6] C09C *1/02*
U.S. Cl. 106—465 1 Claim

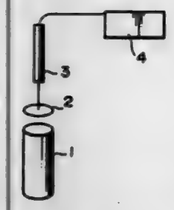


1. A composition for inhibiting brightness reversion comprising a mixture of 2,5-dihydroxydioxane and calcium carbonate in water.

5,443,635
CEMENT COMPOSITIONS

Masashi Sugiyama; Kyoichi Tanaka, both of Tsukuba, and Kazuo Komatsu, Ibaragi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00826, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/01144, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 30, 1992, Ser. No. 170,253
Claims priority, application Japan, Jul. 1, 1991, 160428
Int. Cl.[6] C04B *22/00*
U.S. Cl. 106—717 6 Claims



1. A cement composition comprising cement, aggregate, water and tetrahydroborate, said tetrahydroborate being present in an amount of from 0.001 to 0.03 parts by weight per 100 parts by weight of cement.

5,443,636
COMPOSITION FOR AND METHOD OF PUMPING CONCRETE

Daniel P. Montgomery, Mesquite, Tex., assignor to Fritz Industries, Inc., Mesquite, Tex.

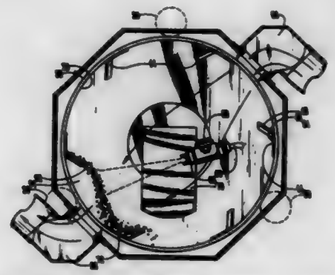
Filed Jul. 29, 1994, Ser. No. 282,879
Int. Cl.[6] C04B *24/10*
U.S. Cl. 106—805 13 Claims

1. In the method of formulating a flowable concrete slurry comprised of the steps of mixing solid ingredients comprised of hydraulic cement and aggregate with water for a time sufficient to uniformly disperse said solid ingredients in said water to thereby make said concrete slurry;
the improvement consisting of adding to said solid ingredients and water an additive comprised of a water soluble, inorganic, alkaline material and a solvatable, organic polymeric material wherein said additive is added in an amount in the range of from about 1 pound per 1,000 pounds to about 1 pound per 165,000 pounds of said solid ingredients and water.

5,443,637
MEANS FOR CONTINUOUSLY COATING PARTICULATE MATERIAL

Richard L. Long, Jr., and Donald E. Barber, both of Ames, Iowa, assignors to Coating Machinery Systems, Inc., Ames, Iowa

Filed Sep. 17, 1993, Ser. No. 123,337
Int. Cl.[6] B05C *5/00*; A01C *1/06*
U.S. Cl. 118—16 13 Claims

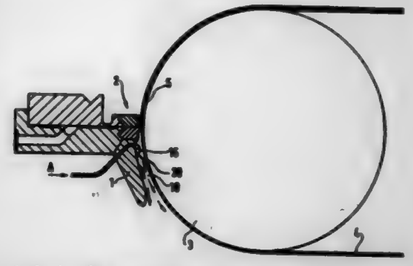


1. An apparatus for continuously coating particulate material, comprising:
a support frame;
a first cylindrical drum having a plurality of radially spaced perforations therein for retaining particulate material, the drum being rotatably mounted on the frame and being inclined from a horizontal position so as to define opposite upper and lower ends which are open for continuous flow through of particulate material;
rotation means on the frame connected to the drum to rotate the drum about an axis of rotation;
radially spaced apart flighting members on the drum for lifting particulate material in the drum from approximately a six o'clock position to a nine o'clock position and then depositing the particulate material in a substantially uniform downwardly extending curtain of material spaced from the drum, and whereby a group of the perforations lies behind the curtain and between adjacent flighting members and is accessible to a substantially linear flow of air through the curtain of material and out the group of perforations;
a coating material spray bar extending longitudinally through the drum and secured to the frame;
a plurality of spray nozzles mounted on the bar for directing a spray of a coating solution towards the curtain of material; and
air supply means on the frame for supplying the substantially linear flow of air through the curtain of material and through the group of perforations in the drum behind the curtain of material.

5,443,638
DEVICE FOR GENERATING A SUBATMOSPHERIC PRESSURE

Uwe Gartmann, Wiesbaden; Hermann Idstein, Oestrich-Winkel, and Guenter Hultzsch, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 19, 1993, Ser. No. 109,069
Claims priority, application Germany, Aug. 22, 1992, 42 27 908.9
Int. Cl.[6] B05D *1/40*
U.S. Cl. 118—50 19 Claims



1. A device for generating a subatmospheric pressure at a region near the intersection of a web-shaped carrier material and a coating layer which is being dispensed onto said carrier material as it is conveyed in a conveying direction, comprising a housing disposed immediately adjacent said carrier material to define between said housing and said carrier material a subatmospheric pressure channel having an originating end communicating with said region and a terminal end, said housing defining therein a pressure chamber; means for supplying said pressure chamber with compressed gas; an outlet channel leading from said pressure chamber to an opening in said housing, said opening being oriented to extend laterally across substantially the entire coating width of said carrier material; means attached to said housing for directing a flow of said compressed gas in a direction generally opposite to said conveying direction; and diffuser means, integral with said directing means, for tangentially merging said flow of directed compressed gas with the terminal end of said subatmospheric pressure channel, to generate a subatmospheric pressure in said subatmospheric pressure channel.

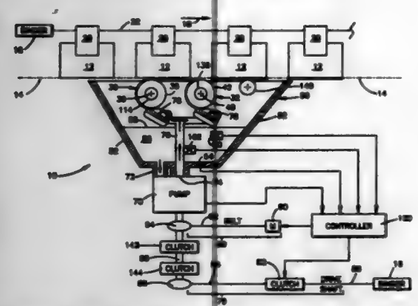
5,443,639
GLUE APPLICATION SYSTEM FOR BOOK BINDING

Richard B. Hawkes, Bethlehem, Pa., assignor to AM International, Inc., Mt. Prospect, Ill.

Filed Nov. 22, 1994, Ser. No. 343,232
Int. Cl.[6] B05C *1/08*
U.S. Cl. 118—244 17 Claims

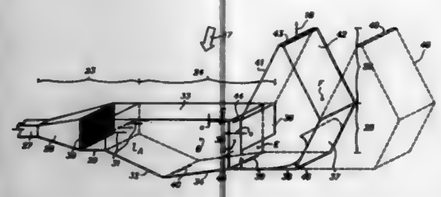
1. An apparatus for applying glue to books moving from a binder along a predetermined path, said apparatus comprising:
a first roller rotatable about its central axis and having a cylindrical outer surface for receiving glue;
means for supporting said first roller so that said outer surface of said first roller rotates in the predetermined path to apply glue to the books;
first heating means disposed within said first roller for maintaining the temperature of said first roller at a first predetermined temperature above ambient temperature;
a second roller rotatable about its central axis and having a cylindrical outer surface for receiving glue;
means for supporting said second roller so that said outer surface of said second roller rotates in the predetermined

path, downstream of said first roller, to apply glue to the books;
second heating means disposed within said second roller for maintaining the temperature of said second roller at a second predetermined temperature less than said first predetermined temperature, said second predetermined temperature being above ambient temperature;
a glue reservoir disposed below said first and second rollers for containing a supply of liquid melted glue;
a body of liquid melted glue in said glue reservoir;



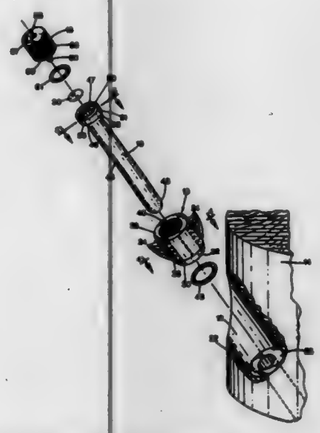
glue heater means in communication with said glue reservoir for heating the body of glue and for maintaining the body of glue in a liquid melted state;
a pump connected with said glue reservoir for pumping liquid melted glue up to said first and second rollers; and
glue applicator means disposed adjacent to said first and second rollers for receiving glue from said pump and for applying glue to said outer surfaces of said first and second rollers.

5,443,640
STATION FOR THE CONTROL OF AN ATOMIZED CURTAIN
André L. Heyvaerts, Hemiksem, Belgium, and Jan M. Leeuws, Mount Plaisant, S.C., assignors to Agfa-Gevaert, N.V., Mortsel, Belgium
Filed Oct. 1, 1993, Ser. No. 94,179
Claims priority, application European Pat. Off., Feb. 4, 1991, 91200202.9
Int. Cl.[6] B05B *7/06*
U.S. Cl. 118—313 **5 Claims**



1. A coating station for coating a thin layer of coating composition on a web in the production of a photographic material, said station comprising a housing having a first section with an inlet connected to a source of pressurized air and being provided with a plurality of air jet nozzles for the coating composition arranged in a row running parallel to the path of the web, said first section further having parallel side walls and mutually diverging upper and lower wall means defining a space with a rectangular cross-section operative to decrease the velocity of the air current loaded with atomized coating composition, parallel side walls and converging upper and lower wall means causing an homogenizing of said loaded air current, and a first elongate outlet port causing an acceleration of said air current, a second section also having parallel side walls and transverse wall means that first diverge and next converge to cause corresponding deceleration and homogenizing of said loaded air current, a third section located between said first and second sections, which further reduces the velocity of said air current leaving said first outlet port, said third section having vertical front and rear walls for directing said air current vertically downwardly and a second elongate outlet port causing re-acceleration of said air current and application thereof onto said web.

5,443,641
WOOD-TREATING DEVICE
Guy G. Helsing, Albany, and Jon Atherton, Hillsboro, both of Oreg., assignors to National Wood Treating Company, Corvallis, Oreg.
Filed Apr. 21, 1993, Ser. No. 51,042
Int. Cl.[6] A01G *29/00*
U.S. Cl. 118—407 **6 Claims**

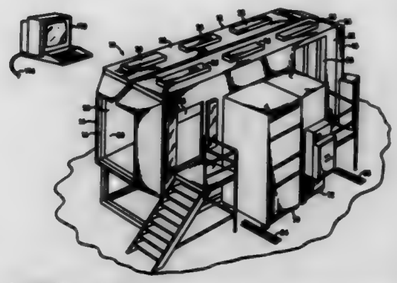


1. A wood-treating device comprising:
a docking sleeve having an aperture extending therethrough, the docking sleeve being adapted to be received within a bore having a surrounding wall in a work-piece, and comprising an outer portion operable to bear against and produce a substantially fluid-tight seal against the wall of the bore and external projecting barbs;
a container holding wood-treating materials dimensioned to extend through the aperture, the container having an opening adjacent the docking sleeve;
a frangible seal covering the opening; and
an actuator mounted for shifting in the docking sleeve toward the seal operable to break the seal, the actuator and docking sleeve comprising co-acting sealing coupling means operable to provide a fluid-tight seal therebetween.

5,443,642
APPARATUS FOR ELECTROSTATIC SPRAY PAINTING
Thomas J. Bienduga, Glendale Heights, Ill., assignor to Wagner Systems Inc., Glendale Heights, Ill.
Filed Oct. 22, 1993, Ser. No. 141,247
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—688 **6 Claims**

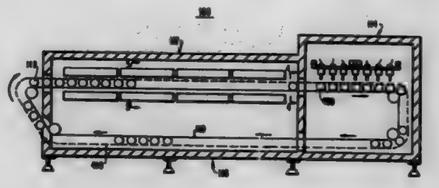
1. Apparatus for electrostatic spray painting, comprising:
a painting chamber for receiving a workpiece to be spray painted;
a paint powder delivery system for storing and supplying paint powder;

a spray gun coupled to said paint powder delivery system, said spray gun being adapted to receive the paint powder from said paint powder delivery system and eject the paint powder into said painting chamber;
a high voltage electrostatic supply coupled to said spray gun for applying an electrical force to the paint powder to transport the paint powder toward the workpiece;
process condition responsive means for sensing a process condition characteristic and producing a process condition responsive signal;
a processor for executing a personal computer operating system and for receiving the process condition responsive



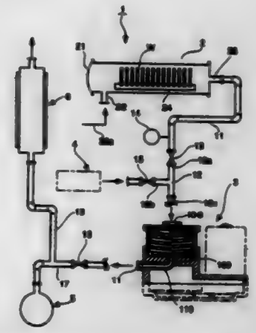
signal from said process condition responsive means and generating a second process condition responsive signal;
a memory coupled to said processor for storing the personal computer operating system;
means connected to said processor for receiving said second process condition responsive signal and for providing an output indication responsive to the second process condition responsive signal; and
communication means connected to said processor for remote transmission of a digital signal indicative of said second process condition responsive condition responsive signal.

5,443,643
HEATLESS RESIN COATING SYSTEM
Giuseppe Cardini, and Alessandro Farsoni, both of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.
Filed Apr. 21, 1993, Ser. No. 50,832
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—712 **31 Claims**



1. A resin coating system comprising:
a coating station for dispensing resin and applying the resin to uncoated components, said coating station comprising a plurality of resin dispensers for applying resin to said components in said coating station and means for preventing coating of a coated component in said coating station by preventing dispensing of resin from an individual resin dispenser onto a coated component while uncoated components in said coating station continue to be coated with resin;
a gelification station downstream of said coating station in which the resin on components coated in said coating station solidifies;
a transfer station at which components to be coated are loaded for transfer into said coating station and components which have been coated and have passed through said gelification station are unloaded after transfer out of said gelification station; and
an endless conveyor for conveying components through said coating station, said gelification station and said transfer station.

5,443,644
GAS EXHAUST SYSTEM AND PUMP CLEANING SYSTEM FOR A SEMICONDUCTOR MANUFACTURING APPARATUS
Osamu Ozawa, Nagano, Japan, assignor to Kashiyama Industry Co., Ltd., Tokyo, Japan
Filed Mar. 15, 1994, Ser. No. 213,087
Int. Cl.[6] C23C *16/00*; F01C *1/16*; B08B *3/00*
U.S. Cl. 118—715 **2 Claims**



1. A gas exhaust system for use in a semiconductor manufacturing process wherein mechanical or chemical processing is applied on silicon wafers arranged in an air-tight process chamber thereof, comprising:
a vacuum chamber having a gas suction port formed on an upper side thereof and a gas exhaust port formed on a lower side thereof;
a branched passage which has a main passage connected to said gas suction port and first and second branch passages branched from said main passage, said first branch passage being designed to connect to said process chamber via a gas exhaust line, and said second branch passage designed to connect to a washing-liquid supplying line through which a washing liquid is supplied to said vacuum chamber;
a first valve provided between said first branch passage and said process chamber;
a second valve provided between said second branch passage and said washing-liquid supplying line;
a first rotational shaft which has an upper-side shaft portion extending vertically and upwardly in said vacuum chamber from said lower side of said vacuum chamber and a lower-side shaft portion extending vertically and downwardly from said lower side of said vacuum chamber;
a second rotational shaft, arranged parallel to said first shaft portion and apart therefrom, which has an upper-side shaft portion extending vertically and upwardly in said vacuum chamber from said lower side of said vacuum chamber and a lower-side shaft portion extending vertically and downwardly from said lower side of said vacuum chamber;
first and second rotors fixed on said upper-side shaft portions of said first and second shaft, respectively which are

formed with rectangular-shaped screws on their circumferential surfaces, said screws being same shape and size but extending in opposite rotational directions so as to engage with each other;

first bearing means for rotationally supporting upper sides of said lower-side shaft portions of said first and second shafts;

second bearing means for rotationally supporting lower sides of said lower-side shaft portions of said first and second shafts; and

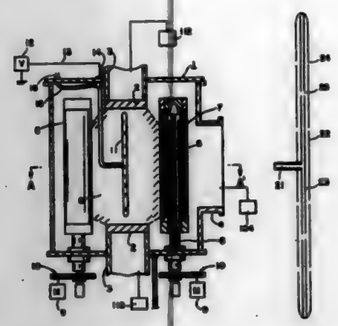
drive means for rotating said first and second shafts in opposite directions.

5,443,645

MICROWAVE PLASMA CVD APPARATUS COMPRISING COAXIALLY ALIGNED MULTIPLE GAS PIPE GAS FEED STRUCTURE

Hirokazu Otoshi; Tetsuya Takei; Yasuyoshi Takai, all of Nagahama; Ryuji Okamura, Shiga; Shigeru Shirai, Hikone, and Teruo Misumi, Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,644, Jan. 21, 1992, abandoned. This application Dec. 28, 1993, Ser. No. 173,948
Claims priority, application Japan, May 19, 1990, 2-128155
Int. Cl.[6] C23C *16/50*
U.S. Cl. 118—718 8 Claims



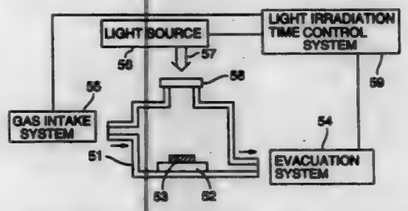
1. A deposited film-forming apparatus comprising a reaction chamber capable of maintaining at a reduced pressure, means for arranging a substrate on which a film is to be formed in said reaction chamber, a gas feed means for supplying a gaseous raw material into said reaction chamber and means for introducing a microwave energy into said reaction chamber, characterized in that said gas feed means is arranged in the space circumscribed by said substrate, said gas feed means comprises a coaxially aligned multiple pipe structure disposed such that the longitudinal exterior of said coaxially aligned multiple pipe structure is positioned along the surface of said substrate on which said film is to be formed, said coaxially aligned multiple pipe structure being provided with a connection at the central position thereof in the longitudinal direction such that said coaxially aligned multiple pipe structure is connected to a gas supply source through said connection so as to allow said gaseous raw material to supply into said coaxially aligned multiple pipe structure through said central position, the respective constituent pipes of said coaxially aligned multiple pipe structure being provided with a plurality of gas spouting holes such that said gas spouting holes are in communication with each other and wherein the gas spouting holes of adjacent coaxially aligned pipes of said coaxially aligned multiple pipe structure are not horizontally overlapped to provide a pressure drop in a space between said adjacent coaxially aligned pipes and means for supplying a bias voltage between said substrate and said gas feed means.

5,443,646

METHOD AND APPARATUS FOR FORMING THIN FILM AND MULTILAYER FILM

Yuka Yamada, and Katsuhiko Mutoh, both of Kanagawa, Japan, assignors to Matsushita Research Institute Tokyo, Inc., Kanagawa, Japan

Continuation of Ser. No. 887,540, May 22, 1992, abandoned.
This application Oct. 12, 1994, Ser. No. 322,106
Claims priority, application Japan, Jun. 4, 1991, 3-132635
Int. Cl.[6] C23C *16/48*
U.S. Cl. 118—722 8 Claims



1. A thin film depositing apparatus using a photo-induced CVD technique for depositing a thin film having a desired film thickness on a substrate in a reaction chamber by introducing a reactive gas and irradiating light through a light introducing window into the reaction chamber to decompose the reactive gas,

characterized by the provision of means for studying the standard clouding characteristics of the light introducing window in advance of depositing film on the substrate, and determining the time duration of light irradiation for film deposition on the substrate depending on the current degree of clouding of the light introducing window by reference to the standard clouding characteristics, thereby accommodating a reduced deposition rate due to said clouding, enabling the deposition of the thin film of the desired film thickness.

5,443,647

METHOD AND APPARATUS FOR DEPOSITING A REFRACTORY THIN FILM BY CHEMICAL VAPOR DEPOSITION

Thomas R. Aucoin, Ocean; Richard H. Wittstruck, Howell, both of N.J.; Jing Zhao, Ellicott, Md.; Peter A. Zawadzki, Plainfield, N.J.; William R. Baarck, Fair Haven, N.J., and Peter E. Norris, Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 55,499, Apr. 28, 1993, abandoned. This application Jul. 11, 1994, Ser. No. 273,054
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 ME 4 Claims

1. A chemical deposition reactor chamber comprising:

means for providing excitation energy;

a reactor chamber connected to said excitation energy means;

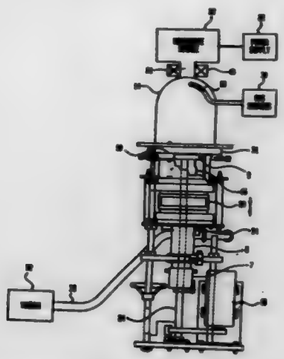
means to infuse reactant gases into the reactor chamber;

a susceptor/wafer carrier which is rotatably mounted and vertically movable within the reactor chamber;

means to move said susceptor/wafer carrier vertically with respect to the means for providing excitation energy during chemical deposition of the reactant gases;

means to rotate said susceptor/wafer carrier during chemical deposition of the reactant gases at a rate of speed within the range of 200 to 1500 rotations per minute;

means to heat said susceptor/wafer carrier; and



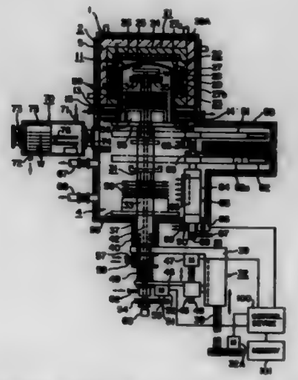
means to evacuate the reactor chamber to a pressure within the range of 1 to 100 torr.

5,443,648

VERTICAL HEAT TREATMENT APPARATUS WITH A ROTARY HOLDER TURNING INDEPENDENTLY OF A LINER PLATE

Wataru Ohkase, Sagamihara, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kabushiki Kaisha, Iwate, both of Japan

Filed Apr. 11, 1994, Ser. No. 225,618
Claims priority, application Japan, Apr. 13, 1993, 5-086340
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—724 8 Claims



1. A vertical heat treatment apparatus comprising:

a vertical processing vessel additionally including a heat source; and

a loading mechanism for holding an object to be treated and loading the same into the processing vessel from below;

the loading mechanism including a lift member to be loaded into and unloaded out of the processing vessel through the bottom thereof by a lift drive unit, a liner plate provided on the upper end of the lift member; and a rotary holder for holding the object to be treated horizontal above the liner plate while turning the object to be treated independently of the liner plate,

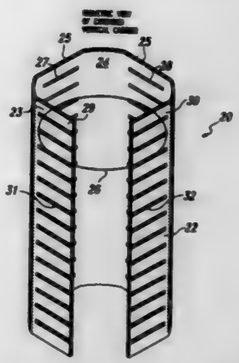
whereby the object to be treated is heated to a treating temperature in the processing vessel so as to be heat treated, and wherein there is provided means for moving the rotary holder up and down between a heating position and a treating position independently of the liner plate.

5,443,649

SILICON CARBIDE CARRIER FOR WAFER PROCESSING IN VERTICAL FURNACES

Thomas Sibley, 5439 McCommas, Dallas, Tex. 75206

Filed Nov. 22, 1994, Ser. No. 343,824
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—728 13 Claims



1. A carrier for holding semiconductor wafers, consisting of a single piece of silicon carbide having a purity of at least 99.99% and a bulk density of at least 3.18 grams per cubic centimeter, said carbide having the shape of a generally cylindrical shell section, portions thereof extending outwardly beyond the radius of the wafers to be held, and other portions thereof having a more limited outward extension, within the radius of the wafers to be held, the latter portions having a plurality of parallel slots therein to support the wafers, said slots being distributed around more than 180 degrees of the shell perimeter, such that the carrier is useful for supporting the wafers horizontally in a vertical furnace.

5,443,650

PROCESS FOR SOFTENING A SUGAR-CONTAINING AQUESOUS SOLUTION, SUCH AS SUGAR JUICE OR MOLASSES

Michael Saska, Baton Rouge, La., and Xavier Lancreaux, Chicago, Ill., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La. and Societe Nouvelle de Recherches et D'Applications Industrielles D'Echangeurs D'Ions Applexion, Epone, France

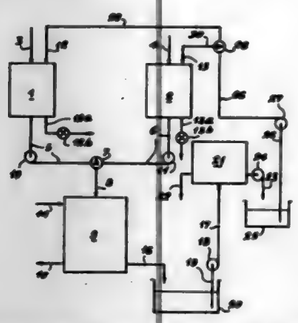
Filed Jun. 11, 1993, Ser. No. 75,634
Int. Cl.[6] C13J *1/06*; B01J *49/00*; B01D *15/00*
U.S. Cl. 127—46.2 7 Claims

1. A process comprising the steps of:

(a) contacting an aqueous solution of sugar and calcium or magnesium divalent cations with an ion-exchange resin comprising sodium or potassium monovalent cations, until the concentration of sodium or potassium cations in said aqueous solution has been enriched in comparison to the initial concentration of sodium or potassium cations in said aqueous solution, and the concentration of calcium or magnesium cations in said aqueous solution has been depleted in comparison to the initial concentration of calcium or magnesium cations in said aqueous solution;

(b) separating the sodium-or-potassium-cation-enriched solution into two fractions: a first fraction comprising a major portion of the sugar from the sodium-or-potassium-

cation-enriched solution, and a second, raffinate fraction comprising an aqueous effluent containing concentrated sodium or potassium cations from the sodium-or-potassium-cation-enriched solution; and



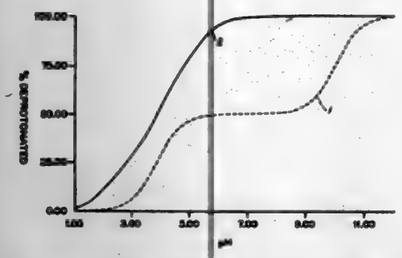
(c) regenerating the ion-exchange resin by contacting the resin with the effluent until a major portion of the calcium or magnesium cations in the resin have been replaced by potassium or sodium cations.

5,443,651

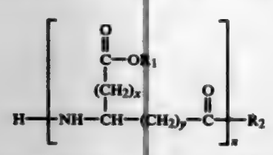
PROCESS FOR METAL CLEANING

Dennis J. Kalota, Fenton, and David C. Silverman, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 92,932, Jul. 19, 1993, which is a continuation-in-part of Ser. No. 475,506, Feb. 6, 1990, abandoned. This application Mar. 11, 1994, Ser. No. 212,450
Int. Cl.[6] C23G *1/02*
U.S. Cl. 134—2 12 Claims



1. A method for cleaning the surface of ferrous metals containing ferrous metal compounds which comprises contacting said surface at a pH of about 7 or below with an effective amount of an aqueous cleaning composition comprising:
(a) a polyamino acid represented by the formula



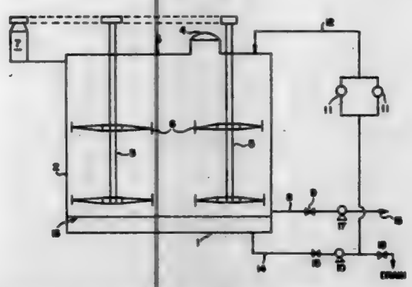
wherein R_1 is selected from the group consisting of hydrogen and M wherein M is an alkali metal or alkaline earth metal, R_2 is selected from the group consisting of OH and OM, y is an integer from 0 to 2 and x is an integer from 0 to 2 provided that when y is 1 or 2 then x is 0 and when y is 0 then x is 1 or 2 and n is an integer of from about 3 to about 1000 whereby the metal surface is uniformly and mildly corroded to remove said ferrous metal compounds.

5,443,652

METHOD AND APPARATUS FOR CLEANING CONTAMINANTS FROM PLASTICS

Leonard S. Scarola, Union; Ernest H. Roberts, Somerset; Kenneth E. Hubbs, Helmetta, and Richard G. Angell, Jr., Bridgewater, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 85,754, Jun. 30, 1993, abandoned. This application Jan. 31, 1994, Ser. No. 189,127
Int. Cl.[6] B08B *3/00*
U.S. Cl. 134—7 4 Claims



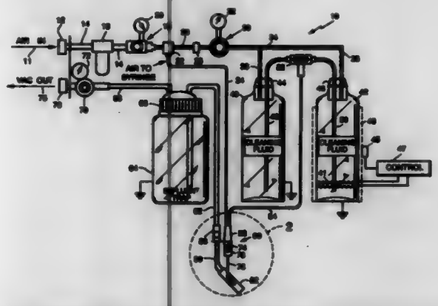
1. Method for cleaning plastic flakes comprising:
a) providing a source of plastic flakes;
b) providing a source of water;
c) combining the plastic flakes and the water;
d) agitating the plastic flakes and water such that the mixture has a shear rate greater than 40 reciprocal seconds whereby the surface of said plastic flakes becomes abraded; and
e) separating the water from the plastic flakes.

5,443,653

SYSTEM FOR CLEANING CONTAMINANTS FROM SMALL AREAS WITH MINIMAL INCONTAINED WASTE

Sean F. Riley, Tucson, Ariz., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 1, 1994, Ser. No. 252,471
Int. Cl.[6] B08B *5/04*
U.S. Cl. 134—8 18 Claims



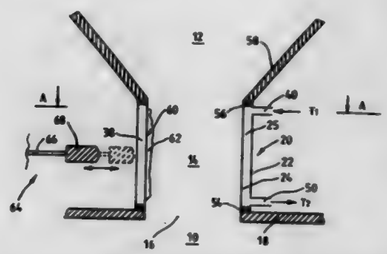
1. A system for cleaning contaminants from small areas with minimal uncontained waste comprising:
nozzle means having a first aperture for ejecting a fluid and a second aperture for providing suction;
first means for providing pressurized fluid to said nozzle means, said first means including first storage means for providing a first fluid and second storage means for providing a second fluid; and
second means for providing vacuum pressure to said nozzle means.

5,443,654

METHOD OF REMOVING DEPOSITS FROM THE WALLS OF A GAS COOLER INLET DUCT, AND A GAS COOLER INLET DUCT HAVING A COOLED ELASTIC METAL STRUCTURE

Matti A. Hiltunen, Karhula, and Ossi Ikonen, Pieksämäki, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/FI92/00210, § 371 Date Jan. 24, 1994, § 102(e) Date Jan. 24, 1994, PCT Pub. No. WO93/02331, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 9, 1992, Ser. No. 185,834
Claims priority, application Finland, Jul. 23, 1991, 913515
Int. Cl.[6] B08B *5/00, 9/00, 7/00*
U.S. Cl. 134—22.12 26 Claims



1. A method of introducing hot process or flue gases into a fluidized bed gas cooler using an inlet duct having inner and outer surfaces, the fluidized bed gas cooler having a bottom and fluidized bed of cooling particles, and removing deposits which form on the inlet duct, comprising the steps of substantially simultaneously:
(a) introducing hot process or flue gases through the inlet duct, in contact with the inner surface thereof, into the bottom of the fluidized bed gas cooler as fluidizing gas for the cooling particles in the fluidized bed cooler; and
(b) cooling the inlet duct by passing a cooling fluid into and then out of contact with the outer surface of the inlet duct in such a way that the cooling fluid increases in temperature but does not change phase, and so that deposits which form on the inlet duct interior surface become brittle, and readily disengageable.

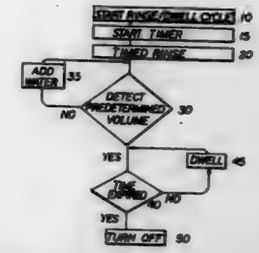
5,443,655

METHOD FOR ADJUSTING THE RINSE CYCLE OF A WAREWASHER

Kevin L. Stover, Pleasant Hill; Richard W. Cartwright, Piqua; Thomas A. Graeser, Donnelsville, and Walter J. Boryca, Troy, all of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Apr. 13, 1994, Ser. No. 226,885
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—18 18 Claims

1. A method for rinsing washed ware in a warewashing machine comprising the steps of:
adding fresh rinse water to a wash chamber of the warewashing machine to rinse said ware in a rinse cycle;
detecting the water level in the wash chamber;
upon detecting a level below a selected volume, continuing to add rinse water to said chamber; and



upon detecting a level of water equal to said selected volume, discontinuing the step of adding rinse water to said chamber.

5,443,656

CELLULASE, SODIUM BICARBONATE AND CITRIC ACID CLEANING SOLUTION AND METHODS OF USE

Mary R. Burrows, Pinckney, and Martha K. Johansson, Ann Arbor, both of Mich., assignors to Thetford Coporation, Ann Arbor, Mich.

Filed Jul. 30, 1993, Ser. No. 100,547
Int. Cl.[6] B08B *9/08*; C11D *3/386*
U.S. Cl. 134—42 2 Claims

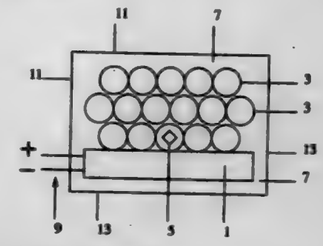
1. A process for increasing fibrous material degradation of toilet tissue and other cellulose products comprising:
a) providing a composition comprising from about 0.01 gm/L to about 1 gm/L cellulase, from about 0.02 gm/L to about 0.4 gm/L sodium bicarbonate and from about 0.02 gm/L to about 0.4 gm/L citric acid; and
b) adding the composition of a) to the fibrous material.

5,443,657

POWER SOURCE USING A PHOTOVOLTAIC ARRAY AND SELF-LUMINOUS MICROSPHERES

Howard C. Rivenburg, 32 Berrien Ave., Princeton Junction, N.J. 08550-1302; Paul Bilhuber, 89 Claremont Ave., Maplewood, N.J. 07040; Edward F. Divers, III, 14022 Vista Dr., #70A, Laurel, Md. 20707, and Michael Arneson, 1500 Conroe Dr., Westminster, Md. 21157

Filed Sep. 16, 1993, Ser. No. 121,486
Int. Cl.[6] G21H *1/12*
U.S. Cl. 136—253 6 Claims



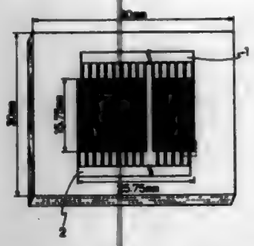
1. A power source comprising:
a) a photovoltaic array;
b) at least one self-luminous microsphere arranged on said photovoltaic array, where said at least one self-luminous microsphere is comprised of;
i) a gas-tight enclosure less than or equal to 250 microns in diameter;

ii) a radioactive gas contained within said gas-tight enclosure at a pressure of at least 30 atmospheres; and
iii) at least one phosphor particle contained within said gas-tight enclosure, where the amount of radioactive material contained within said at least one self-luminous microsphere is minimized, where said radioactive gas causes said at least one phosphor particle to emit photons, where the pressure of said radioactive gas maximizes the number of photons emitted, and where the photons strike said photovoltaic array so that electrical power is generated.

5,443,658
BRAZE FILLER METAL ALLOY PASTE
Frank J. Hermanek, Indianapolis, Ind., assignor to Praxair S.T. Technology, Inc., Danbury, Conn.
Filed Jan. 8, 1994, Ser. No. 257,244
Int. Cl.[6] B23K *35/34*
U.S. Cl. 148—23 20 Claims

1. A brazing paste which comprises at least one braze filler metal or metal alloy powder homogeneously dispersed throughout an aqueous gel, said braze filler metal alloy powder present in an amount from 80 to 93 weight percent based on the weight of the paste with the remainder the aqueous gel, and wherein said aqueous gel comprises from 70 to 90 weight percent water based on the weight of the gel, 7 to 27 weight percent of at least one dispersant based on the weight of the gel and 1 to 5 weight percent of at least one binder based on the weight of the gel.

5,443,659
FLUX FOR SOLDERING AND SOLDER COMPOSITION COMPRISING THE SAME AND SOLDERING METHOD USING THE SAME
Mitsuhiro Nonogaki; Junji Fujino; Akira Adachi; Kohei Murakami; Yoshiyuki Morihiro, and Osamu Hayashi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1994, Ser. No. 335,348
Claims priority, application Japan, Dec. 24, 1993, 5-327771
Int. Cl.[6] B23K *35/34*
U.S. Cl. 148—23 19 Claims

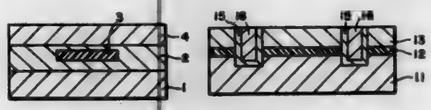


1. A flux for soldering comprising an inorganic ion-exchanger capable of capturing and fixing an ionic impurity which promotes ionization and an activator containing a halogen atom.

5,443,660
WATER-BASED NO-CLEAN FLUX FORMULATION
Guillan Gee, Novi; Jay D. Baker, Dearborn; Brenda J. Nation, Troy, and Karen M. Adams, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 24, 1994, Ser. No. 327,941
Int. Cl.[6] B23K *35/34*
U.S. Cl. 148—24 16 Claims

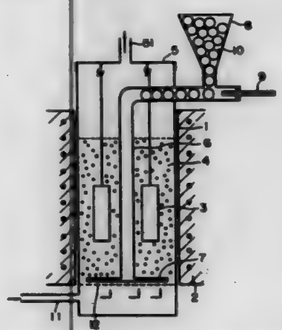
1. A flux formulation for use in the assembly of electronic circuit boards having a conformal coating, the formulation comprising:
a solvent;
a water-soluble weak organic acid;
a halide-free non-ionic surfactant; and
a biocidal co-solvent, the formulation being compatible with the conformal coating, the formulation allowing elimination of post-soldering cleaning steps and emitting no or low VOCs into the environment during fluxing and soldering, thereby providing a non-VOC or low-VOC, no-clean flux.

5,443,661
SOI (SILICON ON INSULATOR) SUBSTRATE WITH ENHANCED GETTERING EFFECTS
Shinzo Oguro, and Tatsuya Suzaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 27, 1994, Ser. No. 280,994
Claims priority, application Japan, Jul. 27, 1993, 5-184561
Int. Cl.[6] H01L *21/20*
U.S. Cl. 148—33.5 11 Claims



1. A silicon-on-insulator (SOI) substrate comprising:
a first single crystal silicon substrate;
a polycrystalline silicon film provided on an entire upper surface of said first single crystal silicon substrate;
a silicon oxide island film provided in said polycrystalline silicon film with all surfaces including an upper surface of said silicon oxide island film being covered by said silicon polycrystalline silicon film; and
a second single crystal silicon substrate provided on an entire upper surface of said polycrystalline silicon film.

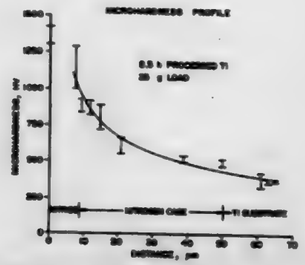
5,443,662
METHOD OF FORMING A NITRIDE OR CARBONITRIDE LAYER
Tohru Arai; Kazuyuki Nakanishi; Hiromasa Takeda, and Hideo Tachikawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Continuation of Ser. No. 740,943, Aug. 6, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 84,322
Claims priority, application Japan, Aug. 10, 1990, 2-211811
Int. Cl.[6] C23C *16/44*; B05D *1/22*
U.S. Cl. 148—209 8 Claims



1. A method of forming a nitride or carbonitride layer on a substantially FE—N— free surface of a metal material comprising the steps of:

(a) disposing in a fluidized bed furnace a treating agent comprising a refractory powder and a powder of at least one material selected from the group consisting of metal for forming a nitride or a carbide and alloy of said metal; and introducing an inert gas into said fluidized bed furnace to fluidize said treating agent and to form a fluidized bed;
(b) heating said fluidized bed furnace to a temperature of not higher than 700° C.;
(c) intermittently supplying a halogenated ammonium salt as an activator to said fluidized bed at a rate of 0.001 to 5 wt % of salt per total amount of said treating agent per hour; and
(d) disposing said metal material in said fluidized bed during or after said step (a), (b) or (c);
thereby forming a layer of a nitride or carbonitride of at least one of said metals for forming a nitride or a carbide on the surface of said metal material.

5,443,663
PLASMA NITRIDED TITANIUM AND TITANIUM ALLOY PRODUCTS
Efstathius Meletis, Baton Rouge, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, Calif.
Division of Ser. No. 906,929, Jun. 30, 1992, Pat. No. 5,334,264. This application Apr. 29, 1994, Ser. No. 235,171
Int. Cl.[6] C22C *14/00*
U.S. Cl. 148—222 9 Claims



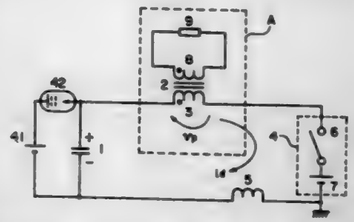
1. A product having improved wear and corrosion-resistance characteristics comprising a surface nitrided titanium or titanium-containing alloy having been prepared by an intensified nitriding process, said process comprising plasma nitriding the surface of said product with a plasma nitriding glow discharge source while simultaneously intensifying said glow discharge with a thermionic emission source and maintaining the temperature of said surface at about 300° C. to about 600° C.

5,443,664
SURGE CURRENT-SUPPRESSING CIRCUIT AND MAGNETIC DEVICE THEREIN
Shin Nakajima; Noriyoshi Hirao; Kiyotaka Yamauchi, and Osamu Shimoe, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Nov. 8, 1989, Ser. No. 433,287
Claims priority, application Japan, Nov. 16, 1988, 63-289617; Apr. 4, 1989, 1-84964
Int. Cl.[6] H01F *1/047*
U.S. Cl. 148—307 10 Claims

9. A surge current-suppressing circuit for an accelerator having a high-voltage DC power supply, an ion source operatively connected thereto, the circuit comprising a magnetic device inserted between said high-voltage DC power supply and said ion source for suppressing surge current generated when electric charge stored in a stray capacitance existing between said high-voltage DC power supply and said ion source is released at the time of short-circuiting of said ion source said magnetic device comprising a magnetic core constituted by interlaminar-insulated thin ribbons of an iron-base fine crystalline soft magnetic alloy halving the composition represented by the general formula:

$$(Fe_{1-a}M_a)_{100-x-y-z-\alpha}Cu_xSi_yB_zM'_\alpha$$

wherein M is Co and/or Ni, M' is at least one element selected



from the group consisting of Nb, W, Ta, Zr, Hf, Ti and Mo, and a, x, y, z and α respectively satisfy $0 \geq a \geq 0.5$, $0.1 \geq x \geq 3$, $0 \geq y \geq 30$, $0 \geq z \geq 25$, $5 \geq y+z \geq 30$ and $0.1 \geq \alpha \geq 30$, at least 50% of the alloy structure being fine crystal grains made of a bcc Fe solid solution having an average crystal grain size of 1000Å or less when determined from a maximum size of each crystal grain, wherein said magnetic core has a relative pulse permeability μ_{sp} of 1000 or more at a pulse width of 1 μs and an operating magnetic flux density of 0.2 T.

5,443,665
METHOD OF MANUFACTURING A COPPER ELECTRICAL CONDUCTOR, ESPECIALLY FOR TRANSMITTING AUDIO AND VIDEO SIGNALS AND QUALITY CONTROL METHOD FOR SUCH CONDUCTORS
Tadanori Sano; Kazuo Sawada; Yoshihiro Nakai, and Kenji Miyazaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 862,818, Apr. 3, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,179
Claims priority, application Japan, Apr. 5, 1991, 3-73241; Dec. 6, 1991, 3-323277
Int. Cl.[6] C21D *8/06*
U.S. Cl. 148—509 34 Claims

1. A method of manufacturing an electrical conductor wire having an improved transmission quality for audio and video signals to be conducted by said wire, said method comprising the following steps:
(a) casting from molten copper a rod of high purity copper having a purity of at least 99.9 wt. % copper;
(b) maintaining said purity of at least 99.9 wt. % throughout all steps of said method;
(c) performing a first heat treating of said rod of high purity copper at a temperature within the range of 400° C. to 700° C. for a time within the range of 1 minute to 24 hours, expressly excluding cold working steps between said casting step and said first heat treating step;
(d) performing a second heat treating at a temperature within the range of about 200° C. to about 400° C. for a time within the range of about 1 hour to about 5 hours; and
(e) cold working said heat treated rod to form said electrical conductor wire;
wherein after said heat treating steps and said cold working step, a residual resistance ratio in said electrical conductor wire is at least 20% higher than a conventional residual resistance ratio of a high purity copper conductor wire that is not heat treated according to said heat treating steps.

5,443,666

ACICULAR FINE PARTICLES CONTAINING METALLIC IRON, IRON CARBIDE AND CARBON, PROCESS THEREOF, AND MAGNETIC COATING COMPOSITION AND MAGNETIC RECORDING MEDIUM CONTAINING THE SAME

Ikuo Kitamura; Takuya Arase; Fumihiro Kamiya, and Shigeo Daimon, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/00060, § 371 Date Sep. 17, 1993, § 102(e) Date Sep. 17, 1993, PCT Pub. No. WO93/14896, PCT Pub. Date May 8, 1993
PCT Filed Nov. 20, 1993, Ser. No. 117,169
Claims priority, application Japan, Jan. 22, 1992, 4-034086
Int. Cl.[6] B22F *1/00*; H01F *1/03*
U.S. Cl. 148—513 16 Claims

1. Acicular fine particles having mean particle sizes, in their long axis, of 0.1 to 0.5 μm, and an average axial ratio of 3 to 15;

wherein said particles comprise 15 to 80 weight percent metallic iron, 10 to 75 weight percent iron carbide, and 5–13 weight percent free carbon; and

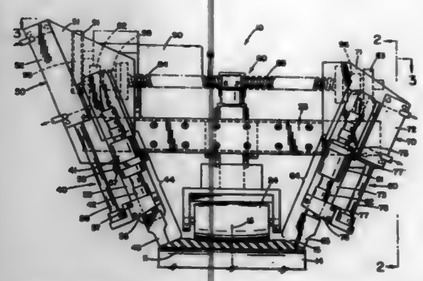
wherein said particles have been made by reducing a starting material, comprising iron carbide, by effective contact with a reducing gas comprising a ratio of hydrogen to a reduction control agent of 1:0.004 to 1:0.0005.

5,443,667

DEVICE AND METHOD FOR SPLICING TIRE TREAD STRIP EDGES USING TRAVERSING ULTRASONIC TRANSDUCERS

Ira L. Wood, Akron, and Wayne A. Wurzbacher, Stow, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Continuation of Ser. No. 850,187, Mar. 11, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,293
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.4 11 Claims



1. A method for splicing by forming a splice joint along a top edge of a single strip of uncured tire tread stock strip having two mating, beveled ends into a single, uncured, continuous strip, the strip having a top edge, a first shoulder portion having a wing, an opposed, second shoulder portion having a wing, and a centerline located midway between the shoulder portions, a first crest between the first wing and the centerline, and a second crest between the second wing and the centerline, comprising:

positioning at a starting position a first ultrasonic transducer assembly adjacent a first shoulder portion and a second ultrasonic transducer assembly adjacent a second shoulder portion of the tread stock strip mounted on a cylindrical tire building drum so that the mating, beveled ends are adjacent; then

engaging a first horn of said first ultrasonic transducer assembly at a first contact point located in the wing area of the first shoulder of the strip by actuating a first engagement cylinder which applies a first preselected pressure to the tread strip at a first preselected contact point on the top edge at the first shoulder along the mating, beveled ends, and a second horn of said second ultrasonic transducer assembly at a second contact point located in the wing area of the second shoulder of the strip by actuating a second engagement cylinder which applies a second preselected pressure to the tread strip at a second preselected contact point on the top edge at the second shoulder along the mating, beveled ends;

activating said transducer assemblies to generate ultrasonic energy of a preselected frequency and amplitude to initiate the splice joint;

releasing preselected pressure at the contact points;

reapplying pressure to the tread strip; then

traversing said horns toward the centerline of the tire tread strip along the mating beveled ends while said horns are activated at a preselected frequency and amplitude and in engagement with the tread to seal the mating, beveled ends at the top edge across the strip to form the splice joint; and

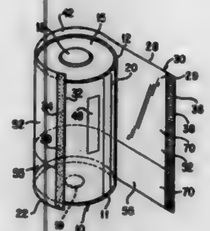
retracting said horns from the tread near the tread centerline, deenergizing the ultrasonic energy and returning said horns to their starting position.

5,443,668

METHOD FOR LABELING AN ELECTROCHEMICAL CELL

John F. Zaborney, Carmel, N.Y., and William N. Tinsley, Brookfield, Conn., assignors to Duracell, Inc., Bethel, Conn.

Division of Ser. No. 214,711, Mar. 14, 1994, Pat. No. 5,368,953, which is a continuation of Ser. No. 19,931, Feb. 19, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,188
Int. Cl.[6] H01M *2/02*; B32B *31/00*
U.S. Cl. 156—86 4 Claims



1. A method for applying a film label to an electrochemical cell having a cylindrical casing, comprising the steps of:

a) heat-stretching a polymeric film in a first direction to a greater degree than in a second direction at right angles to said first direction;

b) printing a cell label design on one surface of said film;

c) cutting said film to form a label, said label being longer than the length of the cell casing and wider than the circumference of the cell;

d) contacting a first edge of said label to the casing;

f) wrapping said label around the casing such that said first direction follows the cell's circumference and said second direction is substantially parallel to said cell's longitudinal axis and a portion of said label extends beyond each end of the casing; and

g) overlapping and bonding a second edge of said label to an adjacent portion of the outer surface of said first edge; and

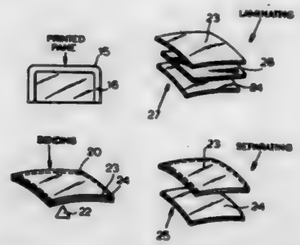
h) applying heat to the label to shrink said extending portions around the ends of the casing.

5,443,669

PROCESS FOR PRODUCING A LAMINATED GLASS PANE, ESPECIALLY FOR A MOTOR VEHICLE

Gerhard Tünker, Duisburg, Germany, assignor to Flachglas Aktiengesellschaft, Furth, Germany

Continuation of Ser. No. 950,798, Sep. 24, 1992, abandoned. This application Aug. 17, 1994, Ser. No. 291,743
Claims priority, application Germany, Oct. 1, 1991, 41 32 652.0
Int. Cl.[6] B32B *31/20*; C03C *8/16, 27/12*
U.S. Cl. 156—102 14 Claims



1. A process for producing a curved glass laminate, comprising the steps of:

(a) forming a screen-printable enamel ink consisting essentially of a glass-flux paste, at least one ceramic pigment, a binder forming component and an organic screen-printing oil volatile at a temperature below 300° C.;

(b) screen-printing said enamel ink in a predetermined pattern on one side of a first flat glass pane;

(c) drying said ink in said pattern at a drying temperature at which said screen-printing oil is volatile and below 300° C. to evaporate said screen-printing oil from the ink in said pattern and dry said pattern without firing of said enamel ink;

(d) placing said pane with the dry pattern and another glass pane on top of one another with said other glass pane lying against said one side to produce a paired stack of said panes and heating said stack to a temperature sufficient to soften the glass of said panes, and bending said stack with at least a single curvature at a pane-deformation temperature sufficient to effect bending of said panes and baking of the dry pattern only on said one side of said first pane simultaneously with the bending to produce curved panes in said stack;

(e) separating said curved panes from one another;

(f) interposing between the separated panes a plastic sheet bondable to said panes and forming another stack of said panes with said plastic sheet between them; and

(g) heating said other stack to simultaneously bend said panes and said plastic sheet to effect a double curvature and to bond said other stack together into said curved glass laminate.

5,443,670

METHOD FOR MAKING A BOUQUET WITH AN IMPROVED WRAP INCLUDING AN INTEGRAL RIBBON

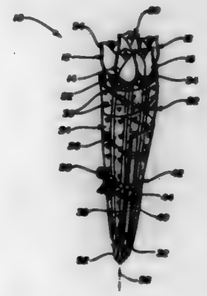
Simcha London, 71 Garwood Rd., Fair Lawn, N.J. 07410

Continuation of Ser. No. 602,756, Oct. 24, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 53,307
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—191 2 Claims

1. A method of making a flower bouquet including the steps of: providing a decorative ribbon over an adhesive layer along an end portion of a sheet, said decorative ribbon protecting said adhesive laver;

peeling off said decorative ribbon from said adhesive layer , wrapping said sheet around the stem of at lest one flower in a conical shape with an upward flare;

pressing the sheet outer surface adjacent to said end edge portion and affixing said adhesive layer to a portion of said sheet outer surface;



encircling said conically shaped sheet with the peeled-off decorative ribbon; and

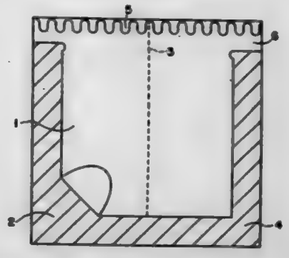
tying the ends of said decorative ribbon together.

5,443,671

PROCESS FOR MANUFACTURING A CUSHIONED EYEGLASS CASE

Bernard G. Stechler, 36-20 34th St., Long Island, N.Y. 11106

Division of Ser. No. 979,335, Nov. 20, 1992, Pat. No. 5,310,048. This application Jan. 25, 1994, Ser. No. 186,122
Int. Cl.[6] B32B *31/04, 31/12, 31/26, 31/24*
U.S. Cl. 156—226 14 Claims



1. A process for manufacturing an open end type case comprising a heat sealable polyvinyl chloride film outer layer secured to at least one edge of a lining layer comprising a cushioning material having a plastic coating on one side, said process comprising the steps of:

(1) cutting the outer layer into a shape suitably dimensioned for a substantially rectangular case and cutting the lining layer to a substantially rectangular shape similar to but smaller than that of the outer layer said lining layer having a top part having identical ears on both sides which extend the top part of the lining layer to a width corresponding to the width of the outer layer,

(2) superimposing the lining layer on the outer layer to form a composite sheet in which the top edge of the lining layer is substantially centered on and is flush with the top edge of the outer layer and the plastic coating of the lining layer is in contact with the inner surface of the outer layer whereby the inner surface of the polyvinyl chloride film outer layer is exposed along both side edges and the bottom edge,

(3) folding the composite sheet over onto itself along its longitudinal axis whereby the exposed side edges of the polyvinyl chloride outer layer thereof are superimposed

over each other and the exposed bottom edge is folded over on itself, and

(4) heat-sealing the superimposed side and bottom edges of the outer layer and simultaneously heat-sealing the outer layer to the lining layer along the top edge of the composite sheet to form the open end of the case.

5,443,672

PROCESS FOR COATING CIRCUIT BOARDS

Rainer Stoll, Seligenstadt, and Britta Schulmeyer, Frankfurt, both of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1994, Ser. No. 317,495
Int. Cl.[6] B29C *47/00*
U.S. Cl. 156—244.17 11 Claims

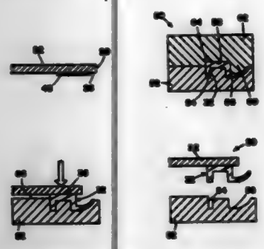
1. A process for a coating circuit board with a photopolymerizable material containing a thermoplastic, polymeric binder, an addition-polymerizable, ethylenically unsaturated compound, and an initiator activatable by radiation, comprising the steps of (a) applying by extrusion the photopolymerizable material at a temperature of 100° to 180° C. onto a surface of the circuit board and (b) distributing the photopolymerizable material under pressure over the surface of the board by at least one roller.

5,443,673

VEHICULAR PANEL ASSEMBLY AND METHOD FOR MAKING SAME

Daniel J. Fisher; Raj K. Agrawal; Douglas Crank, and John W. Carter, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Jun. 12, 1992, Ser. No. 898,094
Int. Cl.[6] B32B *31/00*; B60J *1/00*
U.S. Cl. 156—245 59 Claims



1. A method for making a vehicle window assembly, comprising:

forming a polymeric gasket by injection molding in a mold, said formed gasket having at least one surface;

providing a panel in the form of a sheet having at least one surface, said panel being separate from said formed gasket;.

applying a primer coating to at least one of said surfaces of said panel and said formed gasket;

locating said panel on said formed gasket while said formed gasket remains in the mold so that said one surface of said formed gasket and said one surface of said panel form a contact area; and

forcing said formed gasket against said panel to promote adhesion between said panel and said formed gasket.

5,443,674

POLYURETHANE DISPERSIONS FOR BOOK BINDING

Flavia M. Froseke, Spring Lake Park, and Ramesh Mehta, Roseville, both of Minn., assignors to H. B. Fuller Licensing & Financing Inc., Wilmington, Del.

Filed Aug. 31, 1992, Ser. No. 938,872
Int. Cl.[6] C09J *4/00*
U.S. Cl. 156—331.7 11 Claims

1. A method of binding a book block having a spine area to form a book comprising the step of applying to the spine area of the book block an aqueous composition having a solids content of about 30 to 70 wt-% and comprising:

(a) an aqueous vehicle;

(b) about 1 to 90 wt-% (based on the solids) of a polymeric, thermoplastic, film-forming resin; and

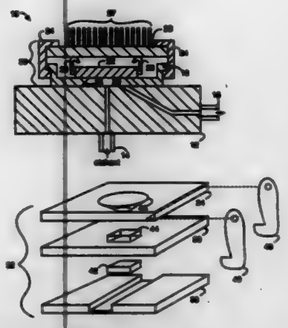
(c) about 10 to 99 wt-% (based on the solids) of a polyurethane resin.

5,443,675

PLASTIC MOLD PACKAGE DEVICE DECAPSULATOR WITH FLAT, SEPARATE ETCH HEAD AND ETCH PLATE

Ben L. Wessiak, 171 Big Horn Ridge NE., Albuquerque, N. Mex. 87122

Filed Sep. 15, 1993, Ser. No. 121,720
Int. Cl.[6] C23F *1/02*
U.S. Cl. 156—345 7 Claims



5. A decapsulation fixture, comprising:

an etch-resistant top plate having an opening in a contact side for a flat contact with a plastic mold packaged device-under-test (DUT) and an opening in an opposite flat side for circulation of an etchant solution from an etch head that is opposite to said contact side;

clamping means for holding the top plate in contact with said DUT; and

a connector board for electrically contacting said DUT and bringing out a plurality of connections external to said decapsulation fixture for electrical characterization of said DUT.

5,443,676

METHOD AND APPARATUS FOR ETCHING ROUND TEMPLATES

Jakob Achreiner, Hopfgarten, Austria, assignor to Schablonentechnik Kufstein Ges. m.b.H., Germany

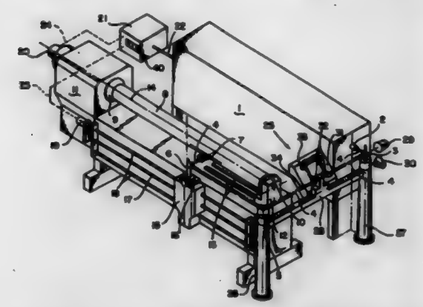
Division of Ser. No. 124,455, Sep. 22, 1993, Pat. No. 5,378,509.
This application Jul. 6, 1994, Ser. No. 268,574
Claims priority, application European Pat. Off., Sep. 28, 1992, 92116579
Int. Cl.[6] B44C *1/22*
U.S. Cl. 156—345 6 Claims

1. Apparatus for etching a round template such as a hollow cylindrical metal screen having a thin lacquer layer on the outer surface thereof, comprising

(a) means for rotating the metal screen about a longitudinal axis;

(b) laser means for generating a linear polarized laser beam;

(c) a first deflector mirror movable parallel to said axis for deflecting said laser beam onto the surface of the screen to erode predetermined pattern regions of the lacquer layer, said laser means being continuously energized during



erosion of the pattern region and deenergized at the end of each pattern region within a time interval of 12 μs to 30 μs;

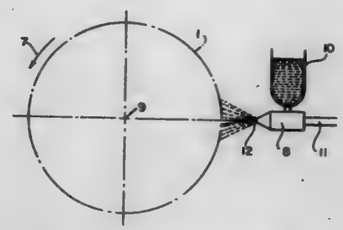
(d) means arranged between said laser means and said first deflector mirror for rotating the plane of oscillation of radiation reflected from the metal screen by 90 degrees with respect to the plane of the laser beam for decoupling the reflected radiation from the laser beam path.

5,443,677

APPARATUS FOR MANUFACTURING A SCREEN PRINTING STENCIL

Hans Fischer, Worgl, Austria, assignor to Schablonentechnik Kufstein Ges. m.b.H., Kufstein, Austria

Division of Ser. No. 135,528, Oct. 13, 1993, Pat. No. 5,384,007.
This application Oct. 6, 1994, Ser. No. 318,972
Claims priority, application European Pat. Off., Oct. 21, 1992, 92118032
Int. Cl.[6] B44C *1/22*; B29C *37/00*
U.S. Cl. 156—345 9 Claims



1. A rotary exposure machine (14), comprising:

a guide bed (26);

means (15, 16) for rotably supporting a round screen (1) on said guide bed (26);

driving means (19, 20) for rotably driving said round screen (1);

an optical slide (21) moved along guides (22) while the round screen (1) is turning, said guides (22) are mounted on said guide bed (26); and

a laser (27) for exposing a photosensitive coating layer (L) provided on the outer surface of said round screen (1), wherein

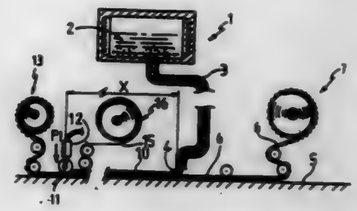
said laser (27) is carried along with the optical slide (21).

5,443,678

METHOD AND APPARATUS FOR MANUFACTURING A PRODUCT COMPRISING A SUBSTRATE ON WHICH AN ADHESIVE WITH DELAYED ACTION AND A PROTECTION STRIP ARE LOCATED

Pierre A. M. Chevalier, 31, Boulevard d'Auteuil, Boulogne, Hauts de Seine 92100; Jacques P. Chevalier, Neuilly sur Seine, and Gilbert E. Veziard, Paris, all of France, assignors to Pierre A. Chevalier, Boulogne, France

Division of Ser. No. 656,177, Apr. 23, 1991, Pat. No. 5,350,477.
This application Aug. 31, 1993, Ser. No. 114,085
Claims priority, application France, Jun. 28, 1989, 89 08680; WIPO, Jun. 28, 1990, PCT/FR90/00482
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—356 28 Claims



1. An apparatus for producing a substrate having an extended action adhesive for delayed use thereof, said apparatus comprising:

a frame;

a reservoir for containing heated adhesive in a flowable state operably positioned with respect to said frame;

adhesive supply means including a discharge orifice extending from said reservoir;

means for establishing relative movement between a substrate and said adhesive discharge orifice;

means for controlling the discharge of adhesive as strands on onto said substrate extending longitudinally in the direction of movement of said substrate;

means for cooling said adhesive strand on said substrate to decrease the adhesion properties of its the exposed surface of said strand;

means for dispensing a thin protective strip onto said strand downstream of said orifice, said strip being substantially coextensive with said strand and formed of material which is substantially impermeable to the adhesive and poorly sensitive to the action thereof;

means for applying pressure simultaneously to said protective strip and to said adhesive strand following cooling thereof of said strand for spreading the adhesive across with respect to said substrate; and

means for removing said substrate from said frame following reception of said adhesive.

5,443,679

TAPE BONDING APPARATUS

Akihiro Nishimura, and Koji Sato, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Continuation of Ser. No. 860,286, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 534,158, Jun. 6, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 101,775
Claims priority, application Japan, Jun. 7, 1989, 1-143041
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—361 10 Claims

1. A tab tape bonding apparatus for bonding semiconductor chips to a perforated tab tape with inner leads provided thereon comprising:

a bonding device which bonds semiconductor chips to inner leads on a perforated tab tape which is supplied from a supply reel;

a first roller driving means which feeds said perforated tab

tape with said semiconductor chips bonded thereto from said bonding device;

a detection means which detects a number of perforations formed in said perforated tab tape fed by said first roller driving means; and



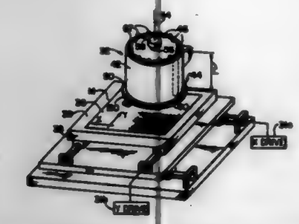
a control device which controls said first roller driving means in accordance with the detection results obtained by said detection means.

5,443,680

MOSAIC TILE MAKER

David J. Gerber, Hartford, Conn., assignor to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Aug. 12, 1993, Ser. No. 105,603
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—362 24 Claims



1. An apparatus for automatically assembling tile pieces in a predetermined arrangement to create a simulated mosaic made up by an ordered collection of plates containing the tile pieces attached to a material, said apparatus comprising:

a support surface for providing a base support surface to which a material is supported and onto which material tile pieces are deposited;

delivery means disposed in a spatial relationship relative to said base support surface for depositing tile pieces at predetermined locations onto the material supported by said base support surface;

drive means for controllably positioning said base support surface and said delivery means relative to one another to effect positioning of said delivery means relative to said base support surface at said predetermined locations;

supply means communicating with said delivery means for providing a supply of tile pieces to be deposited on said support surface through the action of said delivery means; said supply means including a plurality of cassettes in which are disposed a plurality of tile pieces, each of said cassettes having a central axis and being an elongate tubular member having releasable connecting means formed at its lower end; and

control means connected to said drive means and to said delivery means for controllably positioning said delivery means relative to said base support surface at said predetermined locations and for causing said delivery means to discharge a tile piece at one of said predetermined locations; and

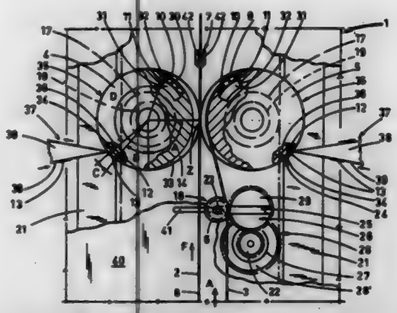
said predetermined locations being defined by control data used by said control means to effect positioning of said delivery means and said support surface relative to one another and to effect discharge of said tile pieces onto the material by said delivery means at said predetermined locations.

5,443,681

DEVICE FOR SPLICING RIBBONS OF SMALL TRANSVERSE DIMENSIONS AUTOMATICALLY

Eros Stivani, and Alessandro Minarelli, both of Bologna, Italy, assignors to G. D. S.p.A., Bologna, Italy

Filed Jun. 1, 1994, Ser. No. 252,178
Claims priority, application Italy, Jun. 1, 1993, B093A0257
Int. Cl.[6] B65H *21/00*
U.S. Cl. 156—504 9 Claims



1. A device for splicing ribbons of small transverse dimensions automatically, typically a first ribbon currently in use, feeding to a user machine, and a new ribbon restrained motionless and ready to feed as replacement for the ribbon in use, comprising a pair of jointing rollers operating in conjunction and in substantially tangential association one with another during both a first operating configuration and a second operating configuration, arranged in symmetry on opposite sides of the ribbons with their respective axes disposed transversely to the feed direction of the ribbon in use, and designed to assume at least said first operating configuration in which both rollers are motionless, the ribbon in use is able to pass freely between the rollers and the leading end of the new ribbon is restrained by one roller, also said second operating configuration in which the rollers contrarotate synchronously and in directions concurrent with the feed direction of the ribbon in use, completing one full revolution during which the new strip is accelerated by one of the rollers to a linear velocity not less than the rate of feed of the ribbon in use, whereupon the two ribbons are pinched together by both rollers and retained thus between jointing means disposed and operating on the selfsame rollers and designed to secure the leading end of the new ribbon to the trailing end of the ribbon in use.

5,443,682

SECURING OBJECTS SUCH AS SCALLOPS TO A BACKING MATERIAL

Timothy K. Edmonds, Halifax, and James D. MacAulay, Dartmouth, both of Canada, assignors to Fisheries Resource Development (1988) Limited, Dartmouth, Canada

Filed Jun. 18, 1993, Ser. No. 79,996
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—552 34 Claims

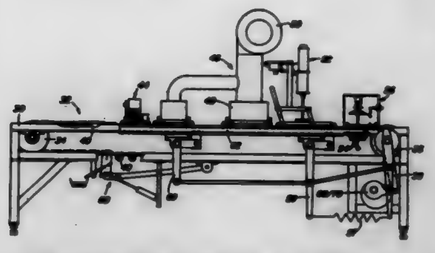
1. An apparatus for securing groups of objects to opposing sides of elongated strips of material, said apparatus comprising:

(a) a conveyor having upper and lower runs and being movable step-by-step in an endless path of travel and having spaced pairs of elongated conveyor flights each having a plurality of seats for holding a linear array of the objects and said flights extending transversely to said path of travel;

(b) said flights of each said pair being pivotable relative to each other about an axis which extends generally transverse to the path of travel, and at least one spring coacting between the flights of each said pair and arranged in relation to said axis to provide an over-centre bi-stable effect such that said flights are movable between a stable open position for loading of the objects onto said seats and a stable closed position wherein the seats of one said flight are brought into face-to-face correspondence with the seats of the opposing flight;

(c) a conveyor flight closer located at a closure station in the path of movement of the conveyor to effect movement of said flights from the stable open to the stable closed position after each pair of flights arrives at said closure station in the course of said step-by-step movement of the conveyor;

(d) a material strip positioner located at the closure station for positioning a strip of said material between the flights



of the respective pairs when in the open position and holding the strip such that the seats of said flights during closure come into said face-to-face relation on opposing faces of said strip to bring objects in said seats into contact with opposing faces of said strip;

(e) an adhesive applicator to apply adhesive in such manner that the applied adhesive can interact between the strip and said objects after said objects have been brought into contact with the strip;

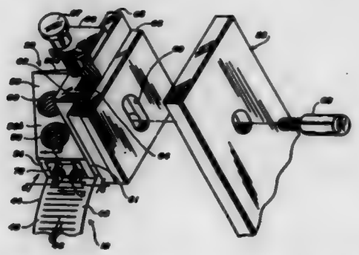
(f) a conveyor flight opener located at a release station to open said flights and release said objects and the strip to which they have become bonded by said adhesive after each pair of flights arrives at said release station in the course of said step-by-step motion of the conveyor and to allow for the loading of a further group of the objects onto the seats of said flights after they have reached the upper run of the conveyor path of travel.

5,443,683

GLUE UNIT

Jimmy R. Garrett, Rte. 1, Box 569, Worden, Ill. 62097

Filed Sep. 24, 1993, Ser. No. 125,786
Int. Cl.[6] B05C *1/00*
U.S. Cl. 156—578 10 Claims



1. A glue unit for applying glue having a rotatable glue wheel and a glue shoe, means for adjusting the glue shoe linearly towards and away from the glue wheel and locking it in a selected position spaced from the glue wheel a distance sufficient to avoid wear but close enough to prevent leakage of the glue between the glue shoe and the glue wheel, said glue wheel having a rim with depressions flanked with smooth side sections, said glue shoe having side walls and front and rear walls, said side walls disposed transversely of the axis of said wheel and having bottom surfaces, said bottom surfaces of the side walls being curved complementary to and for sealing engagement with the smooth side sections of the rim when the glue shoe is locked in said selected position, said front and rear walls disposed parallel of the axis of said wheel, said rear wall having an adjustable metering plate extending across the rim to the smooth side sections, and means on said glue shoe for mounting said metering plate for adjustment out of contact with the wheel whereby the bottom surfaces of the side walls of the glue shoe clean the smooth side sections of the rim while the metering plate applies a film of glue to the depressions without the glue shoe wearing against the glue wheel or the glue wheel slinging glue.

5,443,684

METHOD FOR MEASURING THIN FILM THICKNESS

Donald W. Eckart, Wall; Luis M. Casas, Jersey City, and Richard T. Lareau, Lakewood, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1994, Ser. No. 204,018
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—626.1 3 Claims



1. A method to determine thicknesses of layers in heterostructure devices comprising the steps of:

forming a heterostructure device on a wafer;

etching a crater in the wafer and heterostructure with an ion beam at a low angle wherein the low angle is below 2°;

removing material from the crater with an etchant; and

measuring the thickness of any layers in the crater along the low angle with magnifying measurement technique wherein the magnifying measurement technique includes the use of viewing the crater through an optical microscope and determining the thicknesses of layers of the heterostructure.

5,443,685

COMPOSITION AND METHOD FOR OFF-AXIS GROWTH SITES ON NONPOLAR SUBSTRATES

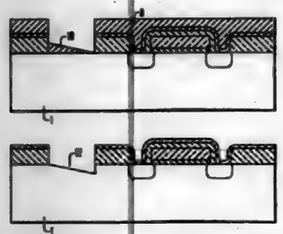
Keith W. Goossen, Aberdeen, and James A. Walker, Howell, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 1, 1993, Ser. No. 146,511
Int. Cl.[6] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—635.1 47 Claims

1. A method of treating the surface of a nonpolar substrate comprising the steps of:

(a) providing a taper in an erodible material which has been applied to a site on the nonpolar substrate; and

(b) cresting a taper in the nonpolar substrate at said site by exposing the erodible material to conditions which erode



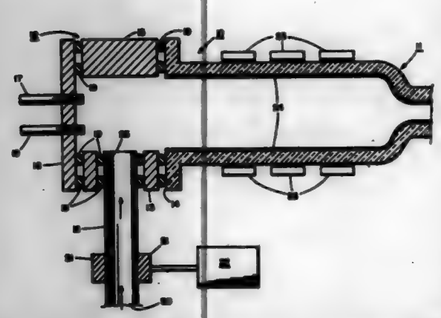
both the erodible material and a portion of the nonpolar substrate.

5,443,686

PLASMA CVD APPARATUS AND PROCESSES

Fletcher Jones, Ossining; Kenneth J. Maroski, Jr., Millbrook, and Bennett Robinson, New York, all of N.Y., assignors to International Business Machines Corporation Inc., Armonk, N.Y.

Filed Jan. 15, 1992, Ser. No. 821,515
Int. Cl.[6] H01L *21/00*
U.S. Cl. 216—37 19 Claims



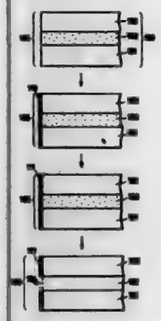
1. An apparatus for the chemical vapor deposition of thin films of silicon onto a suitable substrate within a reaction chamber, and for the periodic removal of undesirable silicon deposits from the interior surface of the reaction chamber, comprising a chemical vapor deposition reaction chamber comprising a fused quartz housing having an interior surface carrying a continuous thin barrier layer of a refractory metal oxide having a thickness between about 0.25 and 1.0 microns, first inlet means for supplying processing gas to said reaction chamber under temperature and vacuum conditions which cause the desired deposit of a silicon film onto the surface of a suitable substrate within said reaction chamber and which produce the undesired deposit of a silicon film onto the interior surface of said reaction chamber including onto said continuous thin barrier layer of refractory metal oxide, and second inlet means for generating and supplying etchant gas plasma to said reaction chamber to react with, volatilize and remove said undesired deposit, said etchant gas normally etching and/or corroding a fused quartz housing, and said barrier layer of refractory metal oxide being inert to said etchant gas and providing a protective barrier on said fused quartz housing.

5,443,687

METHOD FOR MANUFACTURING AN INK JET HEAD HAVING AN IMPROVED DISCHARGING PORT SURFACE

Shuji Koyama, Kawasaki; Yukio Kawajiri, Yokohama; Makoto Shibata, Kawasaki; Masaku Sucoka, Yokohama; Toshio Suzuki, Isogi; Hitoshi Yamamoto, Machida, and Takumi Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,355
Claims priority, application Japan, Oct. 30, 1991, 3-284673
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—27 7 Claims



1. A method for manufacturing an ink jet head comprising the steps of:

forming a head main body by providing a positive resist layer to constitute ink passages for a substrate having ink ejection pressure generating means and then a ceiling member therewith;

forming a carbon-contained film for a surface where ink discharging ports of said head main body are formed;

conducting a fluoric plasma treatment to said carbon-contained film by utilizing a hydrofluoride compound; and

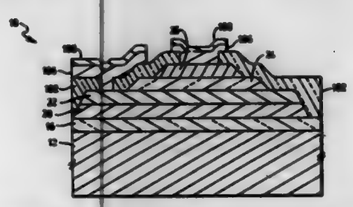
removing said positive resist layer to form said ink passages communicating with said ink discharge ports.

5,443,688

METHOD OF MANUFACTURING A FERROELECTRIC DEVICE USING A PLASMA ETCHING PROCESS

Abron S. Toure, Stoughton; Steven R. Collins, Lexington, both of Mass., and Bruce W. LeBlanc, Manchester, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 2, 1993, Ser. No. 161,280
Int. Cl.[6] B44C *1/22*; H01L *21/70*
U.S. Cl. 216—13 20 Claims



1. A method of patterning a film of PZT material comprising the steps of:

deposing an electrode over the film of PZT material;

providing a masking layer over a selected surface portion the PZT material and the electrode:

removing unwanted portions of the masking layer with the remaining portions of the masking layer; and

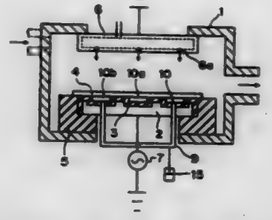
plasma etching unmasked portions of the PZT material and the masking layer and removing any remaining portions of the masking layer and any resulting reactants formed about the remaining portions of the masking layer.

5,443,689

DRY ETCHING PROCESS UTILIZING A RECESSED ELECTRODE

Tadashi Kimura; Yoshinobu Nagano, both of Kyoto; Kazuyuki Tomita, Osaka, and Tetsu Ikeda, Oita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 988,692, Dec. 10, 1992, abandoned.
This application Feb. 28, 1994, Ser. No. 202,882
Claims priority, application Japan, Dec. 11, 1991, 3-327180
Int. Cl.[6] H05H *1/00*
U.S. Cl. 216—63 3 Claims



1. In a dry etching process, the improvement comprising: providing an electrode having at least one recess in a surface thereof that faces toward another electrode disposed parallel thereto, and an insulating layer covering said surface; placing a base material atop said electrode with a rear surface of the base material contacting said insulating layer and covering said at least one recess in its entirety, said rear surface having such an area that the opening ratio of the entirety of the at least one recess over which the rear surface of the base material lies is not less than 20% with respect to said rear surface; and impressing a high frequency voltage between said electrodes.

5,443,690

PATTERN FORMATION MATERIAL AND PATTERN FORMATION METHOD

Satoshi Takechi; Makoto Takahashi, and Yuko Kaimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1994, Ser. No. 206,177
Claims priority, application Japan, May 12, 1993, 5-110471
Int. Cl.[6] B44C *1/22*; B29C *37/00*
U.S. Cl. 430—286 5 Claims

3. A pattern formation method comprising:

providing a pattern formation material comprising:

a copolymer containing units selected from a polycyclic aromatic ring, a condensed ring having at least one aromatic ring, or an aromatic ring having, as a substituent, an alicyclic group, a branched alkyl or a halogen, and units from a monomer containing a photosensitive group, and

a compound generating an acid by irradiation with ultraviolet rays;

coating a resist containing said pattern formation material on a substrate;

prebaking said resist to form a resist layer on said substrate;

selectively exposing said resist layer on said substrate to ultraviolet rays;

developing said resist layer after baking; and

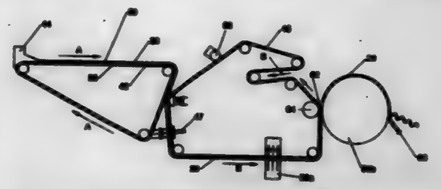
forming a resist pattern.

5,443,691

METHOD FOR MAKING CELLULOSIC FIBROUS STRUCTURES HAVING AT LEAST THREE REGIONS DISTINGUISHED BY INTENSIVE PROPERTIES

Dean V. Phan, Cincinnati, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 724,551, Jun. 28, 1991, Pat. No. 5,277,761. This application Jul. 28, 1993, Ser. No. 71,834
Int. Cl.[6] D21H *27/02*; D21F *11/00*
U.S. Cl. 162—115 4 Claims



1. A process of producing a single lamina cellulosic fibrous structure comprising three regions, said process comprising the steps of:

providing a fibrous slurry;

providing a liquid pervious fiber retentive forming element having mutually opposed first and second faces, said first face having two distinct topographical regions, said topographical regions orthogonally varying in elevation from said second face;

providing a means to deposit said fibrous slurry on said forming element;

depositing said fibrous slurry onto said forming element in two intensively distinct regions registered with said topography of said forming element, wherein said fibrous slurry is dewatered into an embryonic fibrous structure;

providing a means to apply a differential pressure to selected portions of said embryonic fibrous structure;

transferring said embryonic fibrous structure from said forming element to an air pervious differential pressure cooperating member having projections not coincident said topographical regions of said forming element;

selectively applying a differential pressure to said embryonic fibrous structure to form three intensively distinct regions, wherein said step of applying a differential pressure comprises mechanically compressing the fibers of selected regions of said embryonic fibrous structure by compressing said embryonic fibrous structure between said projections and a rigid surface to impart mechanical compression to selected portions of said embryonic fibrous structure;

providing a means to dry said embryonic fibrous structure; and

drying said embryonic fibrous structure to a cellulosic fibrous structure comprising three regions.

5,443,692

CAM ACTUATED TIMING AND OPERATING SYSTEM FOR A LEVER LOCKING MECHANISM

Roy W. Emery, 1 Donino Crt., Toronto, Ontario M4N 2H6, Canada

Filed May 20, 1994, Ser. No. 246,809
Int. Cl.[6] D21J *7/00*
U.S. Cl. 162—396 1 Claim

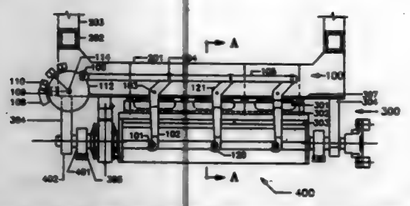
1. A cam actuated system for accurately timing and quickly operating a multiple lever locking and unlocking mechanism in a quick change press as said quick change press travels along a predetermined path, where said press is comprised of a fixedly mounted first outer element, a transferable second outer element and an intermediate pressing element, said locking and unlocking mechanism comprising at least four levers, at least two of said levers being located at each side of said fixedly

mounted first outer element of said quick change press, each of said levers having a locking arm and a pivoted connection to a side of said fixedly mounted outer element of said quick change press, said cam actuated system including and being actuated by a series of at least two cam rollers rolling along a first series of at least two cam tracks to actuate the lever locking stage of said operation, and along a second series of at least two cam tracks for the lever unlocking operation, each of said series of cam tracks being fixedly mounted at a predetermined location along said travel path, and said cam actuated timing and operating system further comprising:

two linkage bars, one at each side of said fixedly mounted outer element, each of said linkage bars being pin-connected to each one of said lever actuating arms located at intervals along the same side of said fixedly mounted outer element;

a cam wheel and a companion wheel fixedly mounted, one at each end of a common shaft, said cam wheel and said companion wheel being located at opposite sides of said fixedly mounted outer element, and each of said wheels being connected by a link pin to one of said linkage bars;

said at least two cam rollers being mounted at predetermined intervals around the perimeter of said cam wheel;



said first series of at least two cam tracks with a predetermined location, length, and angle of slope to deflect each of said at least two cam rollers through a predetermined arc of rotation, thus to rotate said cam wheel and said companion wheel through a predetermined total arc, and thereby to return all of said locking levers to the locking position, with each of said levers in locking contact with each of a series of locking posts appropriately located and rigidly mounted on each side of said transferable outer element of said press, all of said locking action to take place following the transfer of said transferable outer element into position on said quick change pressing mechanism, and

said second series of at least two cam tracks in another arrangement of predetermined location, length, and angle of slope to deflect each of said at least two cam rollers through a predetermined arch of rotation, and thus to rotate said cam wheel and said companion wheel through a predetermined total arc of rotation, and thus to move all of said locking levers, each of which is pin-connected to one of said wheels by said linkage bars, through the predetermined total arc of rotation from the locked position to the final unlocked position, prior to the transfer of the transferable outer element.

5,443,693

METHOD OF RECOVERING COMPONENTS FROM COKE OVEN GASES USING PREDICTIVE TECHNIQUES

Shinichi Inoue; Katsutoshi Abeyama; Fuminori Munekane; Hisanobu Watanabe, and Yasuyuki Misake, all of Kagawa, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 254,922, Oct. 7, 1988, abandoned. This application Apr. 19, 1993, Ser. No. 47,350

Claims priority, application Japan, Oct. 12, 1987, 62-254700

Int. Cl.[6] G01D *1/00*

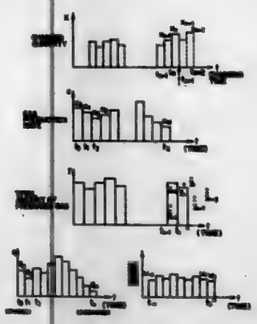
U.S. Cl. 201—1 **5 Claims**

1. A method of recovering at least one component from coke oven gas that is produced by a coke oven battery that includes a plurality of coke ovens with a plurality of carbonization chambers, by controlling operating conditions of recovery of said at least one component from coke oven gas in response to the amount of coke oven gas which is predicted to be produced by the coke oven battery, said method comprising the steps of:

a) determining a quantity of coal charged into each coke oven of said battery and determining variations of gas production rate during the time from charging of coal to discharge of coke in the entire battery,

b) determining a prediction value of gas to be produced from the coke oven battery based the determined quantities of charged coal and the determined variations in gas production rate,

c) determining an error at an optional time between an actually measured value of amount of the gas produced



from said coke oven battery during a definite time span in the past and a prediction value for the same time span,

d) correcting the prediction value of step b) based on the error determined in step c),

e) repeating prediction of the gas to be produced while correcting parameters by the operations at each of the said steps a, b, c and d based on the quantity of coal newly charged and the amount of produced gas actually measured at each time within the definite time intervals within said time span, and

f) recovering said component and controlling recovering conditions when said component is being recovered from the coke oven gas based on said prediction of gas amount in step e), to most efficiently recover said at least one component of the gas.

5,443,694

METHOD OF RESTORING HEATING WALLS OF COKE OVEN BATTERY

Werner Hippe, Gladbeck; Günter Meyer, Essen, and Martin Reinke, Dortmund, all of Germany, assignors to Krupp Koppers GmbH, Essen, Germany

Filed Sep. 10, 1993, Ser. No. 120,575

Claims priority, application Germany, Sep. 24, 1992, 42 31 922.6

Int. Cl.[6] C10B *29/00*; F27D *1/16*

U.S. Cl. 201—41 **3 Claims**

1. A method of renovating a portion of heating wall of a coke oven battery, comprising the steps of constructing new masonry starting with the wall head of the wall portion to be renovated and abutting the new masonry exactly on the wall protection plate of the heating wall; and arranging between the new masonry and the old masonry of the heating wall a vertically extending welding joint for sealing by ceramic welding

maining in said condensing chamber back to said distillation apparatus.

5,443,696

COKE OVEN DOOR

William R. Baird, and Billy C. Baird, both of Sturgis, Ky., assignors to Saturn Machine & Welding Co., Inc., Sturgis, Ky.

Continuation of Ser. No. 700,031, May 19, 1991, abandoned, which is a continuation of Ser. No. 82,205, Aug. 6, 1987, abandoned. This application Dec. 13, 1991, Ser. No. 808,960

Int. Cl.[6] C10B *25/02*

U.S. Cl. 202—248 **11 Claims**



1. A coke oven door mounted on a coke oven door jamb, said door comprising a main frame, means interconnecting the door with the door jamb for removably mounting the door on the door jamb, sealing means mounted on said main frame for sealing contact with the door jamb, said sealing means including a diaphragm plate mounted on the main frame, a diaphragm sealing edge mounted peripherally on the diaphragm plate and including a sealing edge engaging the face of the door jamb, and spring means mounted peripherally on the diaphragm plate and contacting the sealing edge for biasing the sealing edge toward the face of the door jamb, said spring means comprising a plurality of leaf springs providing an even application of sealing pressure on the sealing edge throughout the periphery of the diaphragm plate, said main frame including a peripheral plate extending outwardly from the main frame in generally perpendicular relation to the main frame and diaphragm plate, said peripheral plate including scalloped cutouts in the inner edge portion thereof adjacent the main frame to increase heat dissipation from the main frame and the diaphragm plate for reducing distortion/warpage of the door and frame.

9. A coke oven door adapted to be mounted on a coke oven door jamb, said door comprising:

a generally rectangular main frame having two sides and ends;

a diaphragm plate mounted on said main frame;

said main frame and diaphragm plate comprising seal mounting means;

seal means having a sealing edge and being mounted on said seal mounting means for providing a seal between said door and a door jamb, and

a plurality of individual leaf springs per each said side and said end of said mainframe, arranged in end-to-end relation and circumferentially spaced about said mainframe, each said leaf spring backing said seal means and placing said sealing edge of said seal means in contact with a door jamb to provide a seal therewith when said door is closed.

5,443,695

DISTILLATION APPARATUS FOR CONCENTRATING LESS VOLATILE LIQUIDS

Wallace I. Yuan, Irvine, Calif., assignor to Athens Corporation, Oceanside, Calif.

Filed Feb. 26, 1993, Ser. No. 22,995

Int. Cl.[6] B01D *3/26*, *3/42*

U.S. Cl. 202—153 **35 Claims**

1. An apparatus for removing a liquid contaminant from a chemical compound, wherein said chemical compound is less volatile than said contaminant, comprising:

a distillation apparatus, wherein said distillation apparatus further comprises:

means for introducing said contaminated chemical compound into said distillation apparatus at a constant flow rate;

a container for receiving said contaminated chemical compound;

means for applying heat to said container at a constant rate to vaporize said contaminant;

a condensing chamber in fluid communication with said container for condensing the vaporized contaminant at a particular rate;

means for removing condensed contaminant from said condensing chamber and said distillation apparatus at a constant rate that is less than the rate at which said contaminant is condensed in said condensing chamber;

means for removing said chemical compound from said container;

means for maintaining a constant reflux ratio by removing the vaporized contaminant at a constant rate so as to maintain a constant reflux ratio within said distillation apparatus; and

means for returning refluxed condensed contaminant re-

5,443,697

SEPARATION OF HEPTANE FROM 1-HEPTENE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed May 19, 1994, Ser. No. 246,151

Int. Cl.[6] B01D *3/40*; C07C *7/08*

U.S. Cl. 203—57 **2 Claims**

1. A method for recovering heptane from a mixture of heptane and 1-heptene which comprises distilling a mixture of heptane and 1-heptene in the presence of from one to five parts by weight of an extractive agent per part of heptane-1-heptene mixture, recovering the heptane as overhead product and obtaining the 1-heptene and the extractive agent as bottoms

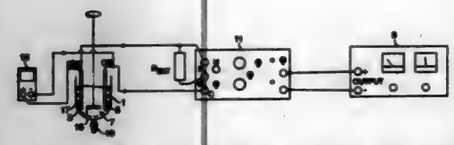
product, wherein said extractive agent consists of one material selected from the group consisting of diacetone alcohol, amyl acetate, acetophenone and dimethylsulfoxide.

5,443,698

ELECTROSYNTHESIS OF METAL CARBOXYLATES

Dennis M. Mahoney, Long Valley, and George S. Mousad, So. Toms River, both of N.J., assignors to Hüls America Inc., Piscataway, N.J.

Filed May 6, 1994, Ser. No. 238,955
Int. Cl.[6] C25B 3/12
U.S. Cl. 204—59 QM 20 Claims



1. A method of synthesizing a metal carboxylate comprising:
placing an anode and a cathode in contact with an emulsion, wherein said anode comprises a metal or metal alloy which includes cobalt, copper, zirconium, aluminum, titanium, vanadium, iron, molybdenum, nickel, silver, or gold, said cathode comprises a material selected from the group consisting of platinum, stainless steel and graphite, and said emulsion comprises a carboxylic acid selected from the group consisting of 2-ethylhexanoic, naphthenic, oleic, lauric, palmitic, phthalic, acetic, gluconic, neodecanoic acids, and mixtures thereof, an aqueous phase containing an electrolyte selected from the group consisting of sodium hydroxide, tetraethylammonium chloride, tetraethylammonium iodide, sodium chloride,tetrabutylammonium perchlorate, tetraethylammonium bromide, tetraethylammonium p-toluene sulfonate, ammonium acetate, and mixtures thereof, at a concentration within the range of 0.02 to 1.5N, and an organic phase selected from the group consisting of mineral spirits, heptane, hexane, petroleum ether, and mixtures thereof; and,
passing a current between the anode and cathode to effect electrolytic reaction between the metal of the anode and the carboxylic acid to form the metal carboxylate.

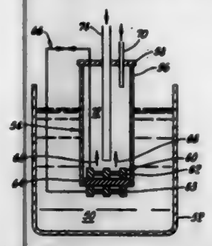
5,443,699

METHOD FOR REFINING MOLTEN METALS AND RECOVERING METALS FROM SLAGS

Uday B. Pal, Needham; Kuo-Chih Chou, Cambridge; Shi Yuan, Cambridge, and Zain Hasham, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 1,092, Jan. 6, 1993, Pat. No. 5,312,525. This application Feb. 25, 1994, Ser. No. 201,812
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] C25C 3/34; H01M 6/00
U.S. Cl. 204—64 R 17 Claims

1. A method for electrochemically refining a low carbon steel melt comprising the steps of:
(1) providing a low carbon steel melt including an impurity and characterized by a first impurity concentration;
(2) providing a refining gas;
(3) exposing said low carbon steel melt to a refining device wherein said refining device further comprises a solid electrolyte ionic conductor, including said impurity as an ionically conductive species and characterized by a solid electrolyte electronic conductivity in electrical contact with an electrode, a refining gas inlet and a gas outlet;
(4) introducing into said refining gas inlet said refining gas wherein said refining gas is further characterized by a second impurity concentration less than said first impurity concentration and wherein said second impurity concentration is selected to result in transport of said impurity from said low carbon steel melt and through said solid electrolyte ionic conductor driven by the difference between said first impurity concentration in said low carbon steel melt and said second impurity concentration in said



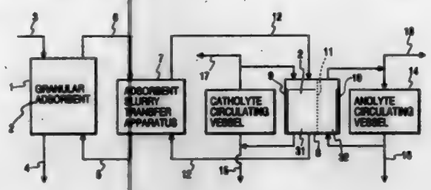
refining gas and resulting in removal of said impurity from said low carbon steel melt to produce a refined melt characterized by a third impurity concentration, less than said first impurity concentration; and
(5) short-circuiting said electrode so that transport of said impurity from said melt to said refining gas is not limited by said solid electrolyte electronic conductivity.

5,443,700

METHOD FOR TREATING WASTE WATER CONTAINING OIL COMPOSED OF ESTERS, AND TREATING APPARATUS THEREOF

Yasuo Hirose, and Kikuo Okada, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 283,175
Claims priority, application Japan, Aug. 6, 1993, 5-195817
Int. Cl.[6] C02F 1/461
U.S. Cl. 204—149 11 Claims



1. A method for treating waste water containing oil composed of esters comprising the steps of;
adsorbing the oil in a solid adsorbent by contacting with the adsorbent, and
separating the adsorbed oil from the adsorbent by hydrolyzing the oil to water soluble alcohol and water soluble acid.

5,443,701

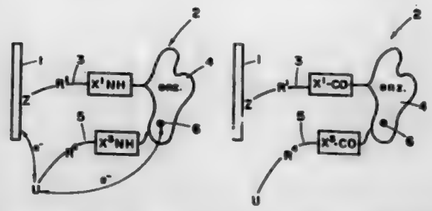
ELECTROBIOCHEMICAL ANALYTICAL METHOD AND ELECTRODES

Itamar Willner, Mevaseret-Zion; Evgeny Katz, Jerusalem; Azalia Riklin, Jerusalem; Ron Kasher, Jerusalem, and Benjamin Shoham, Jerusalem, all of Israel, assignors to Yissum Research Development Company of Hebrew University of Jerusalem, Israel

Filed Aug. 23, 1993, Ser. No. 109,922
Claims priority, application Israel, Aug. 25, 1992, 102930
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—153.12 45 Claims

1. An analytical method for determining the presence or concentration of an analyte in a liquid medium comprising the steps of:

selecting an electrobiochemical system, the electrobiochemical system comprising a test electrode which has chemisorbed sulfur containing moieties;
selecting a redox enzyme, the redox enzyme selectively converts the analyte to a product;
binding the redox enzyme to the test electrode;
selecting an electron mediator material which transfers electrons to and from the redox enzyme and test electrode;



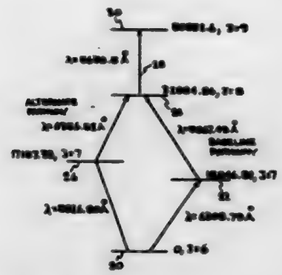
introducing a liquid medium with an analyte to the electrobiochemical system;
applying a constant or alternating electric potential to the test electrode so that electrons pass between the redox enzyme and the test electrode allowing the redox enzyme to catalyze the reaction of the analyte; and
measuring the concentration of the analyte.

5,443,702

LASER ISOTOPE SEPARATION OF ERBIUM AND OTHER ISOTOPES

Christopher A. Haynam, 3035 Fardale Ct., Pleasanton, Calif. 94566, and Earl F. Worden, 117 Verada del Cierro, Diablo, Calif. 94528

Filed Jun. 22, 1993, Ser. No. 79,583
Int. Cl.[6] B01D 5/00
U.S. Cl. 204—157.22 18 Claims



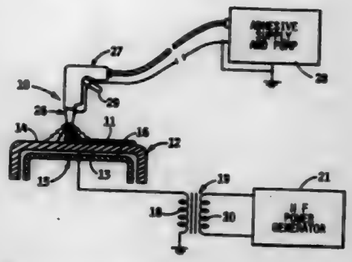
9. A method for selective ionization of an erbium isotope of atomic mass 167 in an atomic vapor containing a plurality of erbium isotopes, comprising:
(a) applying to the atomic vapor a first beam of laser-produced radiant energy sufficient to excite the ^{167}Er atoms from a ground state having an orbital angular momentum (J) of 6 to a first excited state of J=7 at an energy level of 15846.52 cm^{-1} relative to the zero energy of the ground state;
(b) applying to the atomic vapor a second beam of laser-produced radiant energy sufficient to excite the ^{167}Er atoms in the first excited state to a second excited state of J=8 at an energy level of 32884.86 cm^{-1} relative to the zero energy of the ground state; and
(c) applying to the atomic vapor a third beam of laser-produced radiant energy sufficient to excite the ^{167}Er atoms in the second excited state to an autoionizing state.

5,443,703

METHOD AND APPARATUS FOR SIMULTANEOUS ELECTRICAL DISCHARGE TREATMENT OF AND ADHESIVE APPLICATION TO A POLYMER COMPONENT

Mark Blitshteyn, Bloomingdale, Ill., assignor to Tantec, Inc., Schaumburg, Ill.

Filed Aug. 2, 1994, Ser. No. 284,197
Int. Cl.[6] H05F 3/00
U.S. Cl. 204—165 26 Claims



25. A method of simultaneous electrical discharge treatment of and adhesive application to a first surface of a polymer component having an oppositely facing second surface, said method comprising the steps of:
(A) providing (i) a jig having an electrically conductive region conforming at least in part to said second surface of said component, and (ii) an adhesive dispenser having an electrically grounded dispensing tip with a dispensing orifice which functions as an electrode,
(B) placing the second surface of said component immediately adjacent said electrically conductive region of said jig,
(C) applying voltage to the electrically conductive region of said jig,
(D) locating said dispensing tip in close proximity to said first surface of said component to cause said tip to coact with said electrically conductive region and direct an electrical discharge onto said first surface of said component,
(E) moving said along a selected path across said first surface of said component and, during such movement,
(F) dispensing adhesive from said orifice and onto areas of said first surface at substantially the same time that said electrical discharge is directed onto said areas.

5,443,704

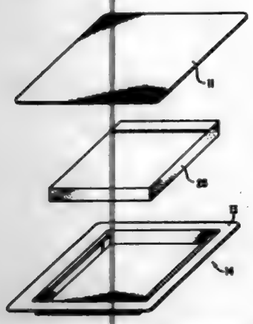
ELECTROPHORESIS GEL CONTAINER ASSEMBLIES

Francis H. Kirkpatrick, Owls Head; T. Chad Willis, Bowdinham, both of Me.; William Watt, Barto, Pa.; Henry A. Dunn, III, Camden, Me.; Satyin Kaura, Oslo, Norway, and Pegram A. Johnson, Wayne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 31, 1991, Ser. No. 816,448
Int. Cl.[6] G01N 27/26, 27/447
U.S. Cl. 204—180.1 11 Claims

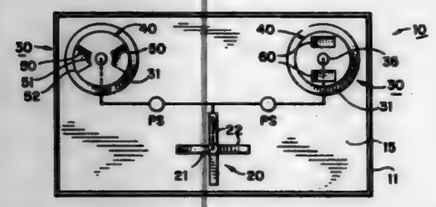
11. A method for packaging an electrophoresis gel comprising the steps of:
preforming said gel outside of a container;

depositing more than one said preformed gel in a container having a flange; and



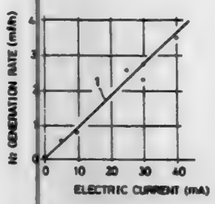
sealing said container with a cover releasably sealed to said flange.

5,443,705
ELECTROREFINER
William E. Miller, Naperville, and Zygmunt Tomczuk, Lockport, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 6, 1994, Ser. No. 272,376
Int. Cl.[6] C25C *7/08*; C25B *9/00*
U.S. Cl. 204—227 16 Claims



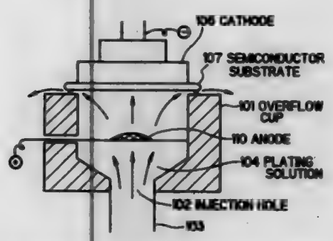
15. An electrolytic cell for refining a spent nuclear fuel, comprising a molten salt electrolyte surrounding electrode means including at least one cathode capable of functioning as a solid cathode or a liquid cathode, said cathode including an electrically insulating container circular in transverse cross section and a vertically extending metallic support associated therewith, an anode adapted to be in contact with said molten salt electrolyte, a cylindrical piston of electrically insulating material mounted on said metallic support for vertical and rotational movement with respect thereto and having a collar extending downwardly therefrom, at least two portions of said piston remote from said metallic support being removed therefrom, mechanism for cyclically lowering said piston to the surface of the liquid cathode and raising said piston from said surface, mechanism for rotating said piston around its longitudinal axis, and electrical power means selectively connected to said anode and cathode for providing electrical power to the cell.

5,443,706
BIOCATALYST-IMMOBILIZED ELECTRODE AND METHOD FOR TREATMENT OF WATER BY USE OF THE ELECTRODE
Masao Kuroda, 15-10 Kotobukicho, Ashikaga-shi, Tochigi-ken, and Yutaka Sakakibara, Gunma, both of Japan, assignors to Masao Kuroda, Ashikaga and Yamato Setubi Construction Co., Ltd., Maebashi, both of Japan
Division of Ser. No. 54,197, Apr. 30, 1993, Pat. No. 5,360,522.
This application Jun. 28, 1994, Ser. No. 266,626
Claims priority, application Japan, Jun. 1, 1992, 4-163381
Int. Cl.[6] C02F *1/461*, *3/00*
U.S. Cl. 204—242 9 Claims



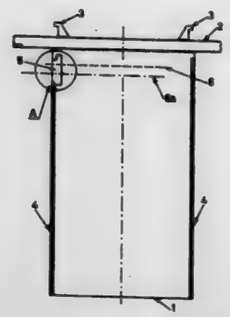
1. An electrode for treating water comprising:
(i) an electrical conductor; and
(ii) a biocatalyst which reduces organic substances or inorganic ions immobilized on the surface of said conductor, wherein said biocatalyst uses hydrogen as a reducing agent.

5,443,707
APPARATUS FOR ELECTROPLATING THE MAIN SURFACE OF A SUBSTRATE
Hiroyuki Mori, Tokyo, Japan, assignor to NEC Corporation, Japan
Continuation of Ser. No. 89,761, Jul. 9, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 361,865
Claims priority, application Japan, Jul. 10, 1992, 4-182753
Int. Cl.[6] C25D *17/00*, *17/12*
U.S. Cl. 204—242 20 Claims



1. An apparatus for electroplating a main surface of a substrate, said apparatus comprising:
a plating cup for containing a plating solution;
a cathode for holding a substrate having a circular main surface which is to be plated, said main surface comprising a conductor which is electrically connected to said cathode, and said main surface being located to come into contact with said plating solution; and
a circular anode provided within said plating cup such that said anode faces said main surface with a central axis of said anode coincident with a central axis of said main surface, said circular anode having a diameter which is equal to or smaller than one-third of the diameter of said circular main surface.

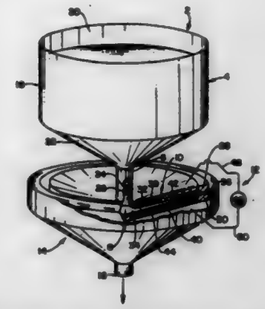
5,443,708
CATHODE FOR THE ELECTROLYTIC DEPOSITION OF NON-FERROUS METALS
Francisco J. Sitges Menendez, Madrid; Fernando Sitges Menendez, Salinas; Francisco Alvarez Tamargo, Lunace; Ives Lefevre, Salinas, and Jose M. Martinez Valdes, Arnao-Castrillon, all of Spain, assignors to Asturiana De Zinc, Spain
Filed May 18, 1994, Ser. No. 245,564
Claims priority, application Spain, Jun. 18, 1993, 9301366
Int. Cl.[6] C25C *7/02*
U.S. Cl. 204—286 5 Claims



1. A cathode for the electrolytic deposition of non-ferrous metals, comprising:
an aluminum plate of rectangular shape, the plate having opposite first and second surfaces and having a first edge with a supporting bar at the first edge, and a pair of second edges meeting the first edge,
dielectric material at one of the second edges, the dielectric material having an end region,
penetrators for detaching deposited layers of zinc from the surfaces of the plate,
a slot into said one of the second edges of the plate, the slot extending from the first surface of the plate to the second, opposite surface, an opening into the slot at the corresponding second edge of the plate and an edge of the opening at the end region of the dielectric material, said slot having a height which is greater than a width of the penetrators,
a flat piece of acid resistant dielectric material in the slot extending from the first surface of the plate to the second surface, and having opposite surfaces which are coplanar with the respective surfaces of said plate, said piece corresponding in shape to the slot, and the slot is provided with means of preventing movement of said piece.

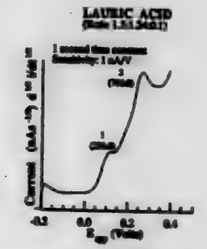
5,443,709
APPARATUS FOR SEPARATING CAFFEINE FROM A LIQUID CONTAINING THE SAME
James R. Cross, Chelmsford, Mass., and Alan A. Waldman, Oceanside, N.Y., assignors to Imaco, Inc., North Andover, Mass.
Filed Dec. 17, 1993, Ser. No. 168,956
Int. Cl.[6] A23F *5/20*
U.S. Cl. 204—302 9 Claims

1. A device for removing caffeine from a conductive liquid containing the same comprising:
(a) channel means for transporting said conductive liquid to a caffeine separation means; and
(b) caffeine separation means comprising:
(i) an inlet for receiving the conductive fluid from the channel means,
(ii) an outlet positioned upwardly and outwardly from the inlet for discharging a substantially caffeine-free liquid,
(iii) a passageway angled upwardly from the inlet to the outlet for transporting the conductive liquid while the caffeine is being removed therefrom, said passageway comprising at least one pair of opposed partitions, each of said partitions containing an electrode with at least one of said electrodes being insulated, a porous ionic resin-containing layer between said partitions adapted to receive and retain the caffeine therein, and



(iv) an electrostatic field generating means for impressing a voltage on one of the electrodes to thereby generate an electrostatic field transverse to the direction of flow of the conductive fluid, wherein the caffeine is drawn out of the direction of flow of the conductive fluid and retained by the ionic resin-containing layer.

5,443,710
MICROELECTRODES AND THEIR USE IN A CATHODIC ELECTROCHEMICAL CURRENT ARRANGEMENT WITH TELEMETRIC APPLICATION
Patricia A. Broderick, Bronx, N.Y., assignor to Research Foundation, The City University of New York, New York, N.Y.
Continuation-in-part of Ser. No. 565,821, Aug. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 395,431, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 905,579, Sep. 9, 1986, Pat. No. 4,883,057, which is a continuation-in-part of Ser. No. 608,426, May 9, 1984, abandoned. This application Nov. 18, 1992, Ser. No. 978,449
Int. Cl.[6] G01N *27/26*; A61B *5/07*
U.S. Cl. 204—403 32 Claims



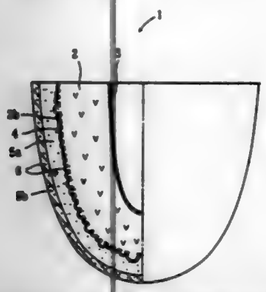
1. A microelectrode for inserting in vivo, in situ or in vitro into a warm-blooded or cold-blooded animal brain or body, or extra-corporeally of said animal brain or body and measuring, in vivo, in situ, or in vitro, intracellular and/or extracellular concentrations and/or release and/or reuptake inhibition of one or more biogenic chemicals, comprising, a mixture of graphite, oil and at least one compound selected from the group consisting of complex lipids and simple lipids and salts thereof and wherein the complex lipid is selected from the group consisting of acylglycerols, phosphoglycerides, sphingolipids, glycolipids, lipoproteins and waxes and the simple lipid is selected from the group consisting of terpenes, steroids

and prostaglandins, said graphite, said oil, and the compound being present in said microelectrode in a ratio of graphite, in weight in grams, oil, in volume, in cubic centimeters, and compound, in weight in grams, of 0.15 to 7.5:0.1 to 5.0:0.01 to 0.5, respectively, the diameter of the microelectrode ranging from about 0.001 μm to about 10 mm, and said oil has a specific gravity from 0.5 to 2.

5,443,711
OXYGEN-SENSOR ELEMENT

Takao Kojima; Hiroyuki Ishigaro; Masaru Yamane; Noriaki Kondo; Masahiko Yamada, and Toshiki Sawada, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 429,938, Nov. 1, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 997,127
Claims priority, application Japan, Dec. 2, 1988, 63-306279
Int. Cl.[6] G01N *27/417*
U.S. Cl. 204—429 55 Claims



1. An oxygen-sensor element comprising a reference-gas-side electrode on one surface of a solid-electrolyte body, a detection-gas-side electrode on another surface, and a porous protective layer on the surface of said detection-gas-side electrode, for measuring oxygen concentration of a gas to be measured using an electromotive force produced in accordance with a difference in oxygen concentration between the reference-gas-side and the detection-gas side, wherein

at least a part, including at least a surface layer, of said porous protective layer comprises a granular mixture made up of grains formed substantially of a nonstoichiometric compound of a transition metal oxide, as defined in the International Periodic Table,

said grains making up the granular mixture have a grain size of 0.1 to 0.5 μm, and

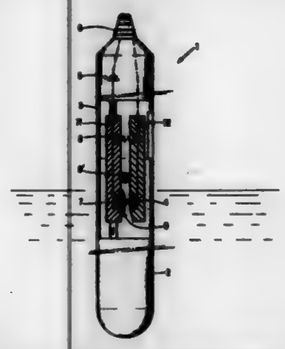
a catalyst for causing reaction with the gas to be measured is carried in at least a part, including at least a surface layer, of the porous protective layer.

5,443,712
DEVICE FOR DETECTING POLLUTANT TRACES IN AN AQUEOUS MEDIUM

François Dawans; Michel Huvey, both of Bougival, and Jean Lesage, Elancourt, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Apr. 13, 1994, Ser. No. 226,831
Claims priority, application France, Apr. 13, 1993, 93 04418
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—400 6 Claims

1. A device for detecting traces of hydrocarbon-containing pollutants present in an aqueous medium which comprises at least one sensitive element that degrades in the presence of said hydrocarbon-contsining pollutants in an aqueous medium, an electric circuit, electrical contacts within said electric circuit being in contact with said sensitive element, means for determining a flow of electricity within said circuit and means for pressing the contacts towards each other so that the sensitive element is held between the contacts in compression, the thickness of said sensitive element at a zone of compression ranging

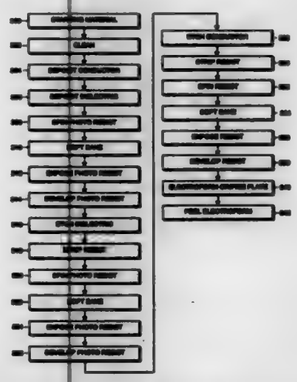


between 0.05 mm and 0.60 mm and said sensitive element being a film formed of a thermoplastic elastomer.

5,443,713
THIN-FILM STRUCTURE METHOD OF FABRICATION

Gregory T. Hindman, Albany, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Nov. 8, 1994, Ser. No. 336,355
Int. Cl.[6] C25D *1/10*
U.S. Cl. 205—70 22 Claims



1. A process for fabricating a thin-film structure, comprising:

a. forming a conductive material layer on a first surface of a transparent substrate;

b. forming a first construct of a dielectric material on said conductive material layer;

c. removing said conductive material layer from said first surface in a region substantially adjacent at least a portion of said first construct to uncover said first surface at said region; and

d. forming a second construct of a photoresist material on said first surface of said transparent substrate in said region by exposing said photoresist material through said transparent substrate in said region.

5,443,714
PROCESS AND ELECTROLYTE FOR DEPOSITING LEAD AND LEAD-CONTAINING LAYERS

Karl-Jürgen Schmidt, Solingen, and Eberhard Knaut, Langenfeld, both of Germany, assignors to Blasberg Oberflachentechnik, GmbH, Germany

PCT No. PCT/EP90/01670, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/05890, PCT Pub. Date Mar. 2, 1991
PCT Filed Oct. 5, 1990, Ser. No. 848,952
Claims priority, application Germany, Oct. 19, 1989, 39 34 866.0
Int. Cl.[6] C25D *3/32, 3/36, 3/38*
U.S. Cl. 205—241 20 Claims

11. An electrolyte for acidic electrolytical deposition of lead layers and predominantly lead-containing layers onto surfaces consisting essentially of:

a) a soluble alkanesulfonate lead salt;

b) a free acid selected from the group consisting of alkanesulfonic acid, borofluoric acid, and silicofluoric acid; and

c) an agent selected from the group consisting of a nonionic surfactant, a cationic surfactant, an amphoteric surfactant, a mixture of a nonionic surfactant and a cationic surfactant, and a mixture of a nonionic surfactant and an amphoteric surfactant; maintained at a pH less than 1.

13. The electrolyte of claim 11 further consisting of a soluble copper salt, a soluble tin salt, or a combination thereof, the weight percent of the copper salt, tin salt, or combination thereof being substantially less than the weight percent of the lead salt.

5,443,715
METHOD FOR UPGRADING STEAM CRACKER TARS

Dane C. Grenoble; Roy T. Halle, both of Houston, Tex.; Martin L. Gorbaty, Westfield, N.J., and Harold W. Helmke, Kingwood, Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 517,994, May 2, 1990, Pat. No. 5,215,649. This application Mar. 25, 1993, Ser. No. 37,041
Int. Cl.[6] C10G *57/00*
U.S. Cl. 208—95 12 Claims

1. A process for cracking a hydrocarbon feedstock to produce normally gaseous olefins comprising the steps of:

(a) supplying a hydrocarbon feedstock stream into a high temperature cracking zone to produce a high temperature cracked product stream comprising aromatic molecules containing unsaturated functional groups;

(b) introducing at least one hydrogen donor diluent into said high temperature cracked product stream by injecting said hydrogen donor diluent at or downstream of a point where high temperature cracking reactions are stopped by cooling below high temperature cracking reaction temperatures, wherein said aromatic molecules containing unsaturated functional groups react with said hydrogen donor diluent to inhibit Said aromatic molecules containing unsaturated groups from reacting to form heavier molecular weight products; and

(c) recovering a liquid product stream containing a diminished asphaltic material content.

5,443,716
PROCESS FOR CONVERTING OLIGOMER-CONTAINING WASTE STREAMS TO FUELS

Kan B. Anderson, Lisle, and Jeffrey T. Miller, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

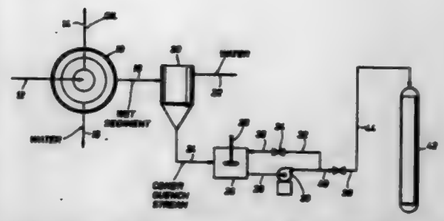
Filed Sep. 28, 1994, Ser. No. 314,360
Int. Cl.[6] C10G *11/00; C07C 4/06*
U.S. Cl. 208—113 20 Claims

1. A process for converting a hydrocarbon feedstock comprising at least 2 volume percent of a low molecular weight oligomer having a molecular weight ranging from about 58 to about 55,000 to hydrocarbon product useful in the manufacture of fuels comprising contacting said hydrocarbon feedstock with a catalytic cracking catalyst at catalytic cracking conditions for convening at least a portion of said low molecular weight oligomer to hydrocarbon suitable for blending into fuels.

5,443,717
RECYCLE OF WASTE STREAMS

Robert M. Scalliet, Houston; Craig A. Koopersmith, Spring, both of Tex., and Walter A. Carter, Baton Rouge, La., assignors to Scaltech, Inc., Houston, Tex.

Filed Jan. 19, 1993, Ser. No. 6,382
Int. Cl.[6] C10G *9/14, 17/00*
U.S. Cl. 208—131 10 Claims



1. In a process for producing delayed petroleum coke, wherein a liquid hydrocarbon feed stream is introduced into a delayed coking vessel under delayed coking conditions and the coke produced is quenched, the improvement comprising:

treating a waste stream containing water, organic compounds and solids so as to cause attrition of said solids to produce a delayed coker quench stream containing from about 5 to about 35% by weight solids, water and less than about 6% by weight mobile organics, said solids in said coker quench stream having a particle size distribution such that greater than about 70% of the total solids volume comprises solids having a particle size of less than about 15 microns; and

introducing said coker quench stream into said coking vessel during quenching.

5,443,718
REDUCED GAS HOLDUP IN EBULLATED REACTOR

Robert D. Buttke, Naperville, and John R. Frey, Aurora, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 158,038, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 533,388, Jun. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,685, Sep. 26, 1988, Pat. No. 4,950,459, which is a division of Ser. No. 87,394, Aug. 20, 1987, Pat. No. 4,804,458. This application Jan. 13, 1995, Ser. No. 373,534
Int. Cl.[6] C10B *31/02*
U.S. Cl. 208—157 9 Claims

1. A process for refining resid in an ebullated bed reactor having a downcomer for recirculating refined liquid product and a liquid recycle pan fitted to an upper end thereof comprising the steps of:

charging the reactor with catalyst particles, hydrogen and resid feedstock;

ebullating the catalyst particles, hydrogen and resid feedstock within the reactor, thereby producing a mixture catalyst particles, refined product, resid feedstock and buoyant gases including oil vapors and hydrogen;

collecting a first fraction of buoyant gases present below the recycle pan in a first reactor region and allowing the first fraction of gases to flow directly to a reactor vapor space located above an upper edge of the recycle pan, and thereby bypassing a reactor liquid located within and the above said recycle pan and below said vapor space; and

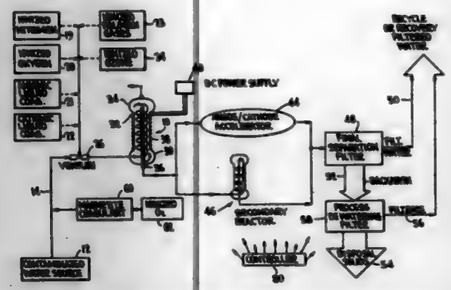
collecting a second fraction of bouyant gases from a second reactor region located below the first reactor region and allowing the second fraction of gases to flow directly to the reactor vapor space, thereby bypassing a reactor liquid located within and above said recycle pan and below said vapor space.

5,443,719

SYSTEM AND REACTOR FOR MIXING COAGULATING AGENTS INTO A CONTAMINATED WATER FLOW, AND FOR REMOVING CONTAMINANTS THEREFROM

Dennis E. J. Johnson, Englewood, and Clifford F. Frith, Boulder, Colo., assignors to Aqua-Ion Systems, Inc., Littleton, Colo.

Filed Feb. 23, 1994, Ser. No. 200,749
Int. Cl.[6] C02F 1/48
U.S. Cl. 210—101 23 Claims



1. An apparatus for turbulent mixing and magnetic entrainment of a stream of an ionized liquid or gas within a stream of a liquid to be treated, comprising:

a junction tube for receiving a stream of said liquid to be treated and a stream of said ionized liquid or gas, and for mixing said streams and conveying the mixed streams to an inlet of a vertically elongated vessel,

said vertically elongated vessel comprising a first lower mixing chamber, an intermediate elongated tubular portion extending vertically, and a second upper mixing chamber, and a fluid tube extending vertically through the center of said vertically elongated vessel, said first lower and said second upper mixing chambers each defining an interior space having a major diameter and a port of lesser diameter in communication with said intermediate elongated tubular portion, said first lower mixing chamber having an inlet in communication with said junction tube for receiving said streams of said liquid to be treated and of said ionized liquid or gas, said inlet defining a horizontal inlet axis spaced from a vertical centerline of said lower mixing chamber, so as to define a liquid flow stream extending tangentially around said lower mixing chamber, so that liquid flowing along said liquid flow stream flows in a generally spiral pattern around said lower mixing chamber, upwardly through said intermediate elongated tubular portion, around said fluid exit tube, and into said upper mixing chamber,

said fluid exit tube having an open upper end disposed in said upper mixing chamber for receiving liquid from said upper mixing chamber and extending downwardly through said intermediate elongated tubular portion and said lower mixing vessel to a lower discharge end, and

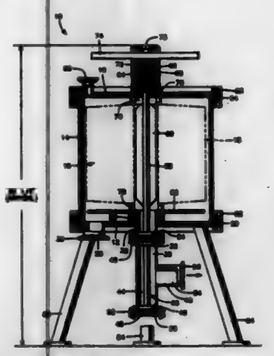
means for applying an electromagnetic field to fluid flowing at least in said intermediate elongated tubular portion of said vertically elongated vessel.

5,443,720

SANITARY CARTRIDGE FILTER HOUSING

Sytze A. Keuning, Saugerties, N.Y., assignor to Stavo Industries, Inc., Kingston, N.Y.

Filed Feb. 1, 1994, Ser. No. 189,835
Int. Cl.[6] B01D 35/30
U.S. Cl. 210—232 14 Claims



1. A filter housing comprising:

a bottom plate,

a top plate,

a cylindrical wall member extending between said bottom plate and said top plate,

said bottom plate, said top plate and said cylindrical wall member defining a fluid tight cavity having a cavity inlet,

an outlet opening formed in said bottom plate,

a central post extending through said top plate and into said outlet opening for supporting a filter element, and

means for securing said bottom plate, said top plate and said cylindrical wall member together to form said liquid tight cavity for transfer of liquid from said cavity to said outlet opening,

said means for securing including a threaded end of said central post extending above said top plate and externally of said liquid tight cavity.

5,443,721

FILTER CARTRIDGE MOUNTING ASSEMBLY

Maher I. Kelada, Pearland, and J. Bruce Silberts, Surfside, both of Tex., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Feb. 10, 1994, Ser. No. 194,900
Int. Cl.[6] B01D 27/08
U.S. Cl. 210—232 20 Claims

1. A filter cartridge mounting assembly comprising:

a tubular support post for supporting the filter cartridge; and

a sealing bolt subassembly coupled to one end of the tubular support post for sealing an adjacent end of the filter cartridge, said sealing bolt subassembly including;

(i) a head portion;

(ii) a threaded shank portion which is threadably coupled to said one end of the support post;

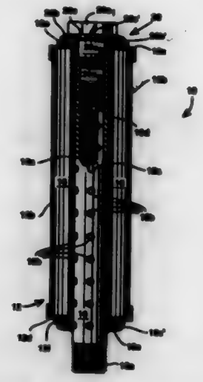
(iii) a smooth shank portion defining an annular groove in close proximity to, but axially spaced from, said head portion;

(iv) a retaining ring seated in said annular groove;

(v) a sealing cup-flange surrounding said smooth shank portion between said head portion and said retaining ring; and

(vi) an O-ring disposed between said head portion and said sealing cup-flange, wherein

said sealing bolt is threadably tightened relative to said support post so as to cause fluid-tight seals to form between said cup-flange and said end of said filter cartridge,



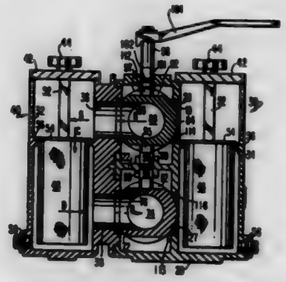
and between said O-ring and an adjacent surface of said sealing cup-flange.

5,443,722

DUPLEX STRAINER

Ashvin D. Desai, and Robert Whitemour, both of Lumberton, N.C., assignors to Mueller Steam Specialty, St. Paul, N.C.

Filed Jan. 1, 1994, Ser. No. 252,092
Int. Cl.[6] B01D 29/27
U.S. Cl. 210—253 6 Claims



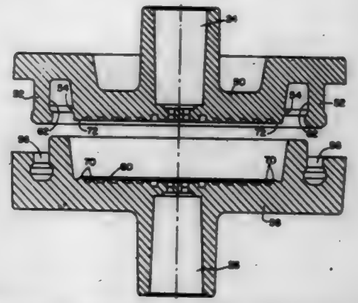
1. A duplex strainer for straining a fluid comprising a housing having an inlet port through which material enters the housing and an outlet port through which strained material leaves the housing, a first strainer chamber for straining said fluid having first and second ports in separate fluid communication with the housing, a second strainer chamber for straining said fluid having a third port opposing said first port and a fourth port which opposes said second port in separate fluid communication with said housing, a first three-way ball valve for controlling the flow of fluid between said housing, first port and second port, and a second three-way ball valve for controlling the flow of fluid between said second port and said fourth port and a coupling for coupling said first three way ball valve to said second three-way ball valve, said coupling causing said first three-way ball valve and said second three-way ball valve to move in unison, causing fluid to flow either entirely through said first strainer chamber, entirely through said second strainer chamber, or through both said first strainer chamber and said second strainer chamber simultaneously.

5,443,723

MEMBRANE SUPPORT AND SEALING APPARATUS

Ralph Stankowski, Westford, and John Milcetich, Dover, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Feb. 22, 1994, Ser. No. 199,487
Int. Cl.[6] B01D 63/00
U.S. Cl. 210—321.75 13 Claims



1. A membrane support apparatus formed from a top section and a base section, said apparatus having a fluid inlet and a fluid outlet

one of said top section or said base section having a peripheral extension or a peripheral groove, said peripheral extension frictionally fits within said peripheral groove of said top section or base section lacking said peripheral extension to form a first peripheral seal,

said top section or said base section including said extension having a first peripheral surface

said base section having a membrane support surface,

said top section or said base section having said peripheral grove having a second peripheral surface within said peripheral groove,

a peripheral sealing ridge on one of said first peripheral surface or said second peripheral surface to mate with a smooth surface on said first peripheral surface or second peripheral surface lacking said ridge, said smooth surface and said ridge being in frictional contact to form a second peripheral seal,

at least one membrane positioned on said membrane support.

5,443,724

APPARATUS FOR SEPARATING THE COMPONENTS OF A LIQUID/LIQUID MIXTURE

Kenneth M. Williamson, Jamesville; Scott A. Whitney, Marathon; Alan R. Rausch, Cortland, and Thomas C. Welch, Jr., Homer, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

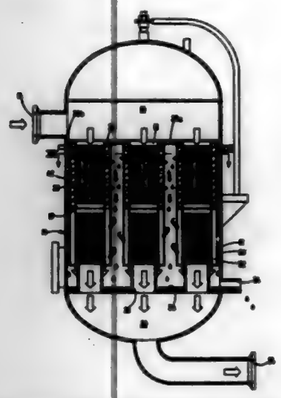
Continuation-in-part of Ser. No. 996,128, Dec. 23, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,231
Int. Cl.[6] B01D 36/00, 36/02
U.S. Cl. 210—323.2 22 Claims

22. A liquid purification system capable of separating a first liquid from a second liquid in which the first liquid is wholly or partly immiscible in and forms a discontinuous phase with a second, continuous phase-forming liquid comprising

at least one coalescing assembly for coalescing said first liquid having at least one fluid inlet at the top thereof; and

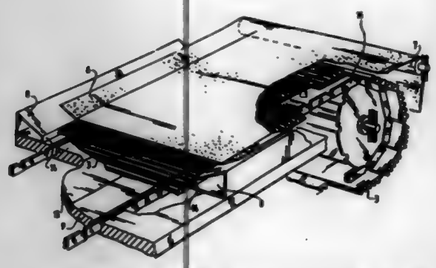
at least one separating assembly for separating droplets of

said first liquid from said second liquid, said at least one coalescing assembly being arranged in superposed and



fluid communicable relationship above said at least one separating assembly.

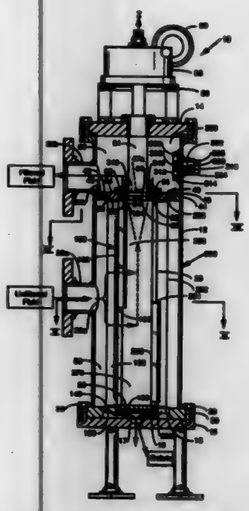
5,443,725
CONTINUOUSLY OPERATING FILTERING DEVICE
Karel A. Thissen, Utrecht, Netherlands, assignor to Pannevis B.V., Netherlands
Filed Dec. 8, 1993, Ser. No. 164,053
Claims priority, application Netherlands, Dec. 9, 1992, 9202132
Int. Cl.[6] B01D *33/04, 33/056*
U.S. Cl. 210—401 20 Claims



1. A continuously operating filtering device comprising a carrier belt having two sides movable round guide rollers and at least one drive roller, a filter belt supported thereby, belt supporting means for supporting the carrier belt, and a suction box disposed on each side of the carrier belt, wherein the carrier belt is made of plastic.

5,443,726
SELF-CLEANING FILTER ASSEMBLY
Carl A. Steiner, Erie, and Ricky L. Jackson, Union City, both of Pa., assignors to TM Industrial Supply, Inc., Erie, Pa.
Filed Oct. 13, 1993, Ser. No. 136,953
Int. Cl.[6] B01D *29/075, 29/64*
U.S. Cl. 210—393 6 Claims

1. A fluid filter assembly comprising:
a filter body defining a chamber, an inlet, an outlet, and a backwash outlet;
a cylindrical filter element positioned within said chamber and supported by said body through which a fluid entering the inlet must pass to exit the outlet, said filter element having an inlet side and an outlet side, said filter body and the inlet side of said cylindrical filter element defining an inlet cavity;
a cap attached to an end of said filter element;
a support plate secured to said filter body;
a sealing member captured between said cap and support plate;
said support plate having an outer edge and said cap having an outer edge, wherein a V-shaped annular space is defined by said support plate outer edge and said cap outer edge;
a V-shaped cross section annular bearing received in said V-shaped annular space;
an annular ring secured to said support plate holding said bearing in place, whereby said bearing is wedged between said cap and said support plate; and
means for cleaning the inlet side of the filter element comprising:
a hollow duct for collecting particulate matter dislodged from said filter element, said duct supported by said body



and positioned within said inlet cavity adjacent to said inlet side of said filter element, said duct and said filter element being movable relative to each other, said duct including a slot opening so that said duct is in fluid communication with said inlet cavity; an elongated adjustable scraper attached to said duct and slidably contacting the inlet side of said filter element, said scraper substantially equal in length to said slot opening; a fluid deflector attached to said duct, said deflector substantially equal in length as said scraper, said deflector being positioned forwardly of said scraper, said slot opening in said duct being positioned between said deflector and said scraper, said deflector having a leading edge positioned in close proximity to said filter element; a cleaning chamber defined by said scraper, said deflector, and said duct, said cleaning chamber in fluid communication with said inlet cavity, whereby when a fluid to be filtered passes from the inlet through the filter element and to the outlet and said duct and said filter element move relative to each other, fluid is directed from said inlet cavity into said cleaning chamber and said duct through which it can be exhausted to said backwash outlet.

5,443,727
ARTICLES HAVING A POLYMERIC SHELL AND METHOD FOR PREPARING SAME
David R. Gagnon, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 775,969, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,834, Oct. 30, 1990, abandoned, Ser. No. 605,754, Oct. 30, 1990, abandoned, Ser. No. 605,948, Oct. 30, 1990, abandoned, Ser. No. 605,921, Oct. 30, 1990, abandoned, Ser. No. 605,828, Oct. 30, 1990, abandoned, and Ser. No. 605,757, Oct. 30, 1990, abandoned. This application Sep. 16, 1993, Ser. No. 122,807
Int. Cl.[6] B01D *71/38*
U.S. Cl. 210—490 30 Claims



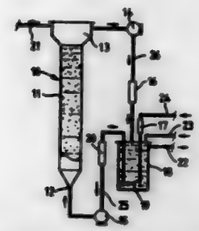
12. An article having a hydrophilic, polymeric shell, comprising:
a hydrophobic supporting structure having a complex geometric configuration and surfaces about said structure and an extremely thin, self-interlocking, tactic, hydrophilic poly(vinyl alcohol) shell mechanically enveloping said surfaces to render the article hydrophilic, without chemical crosslinking of poly(vinyl alcohol) within the shell and without chemical grafting of poly(vinyl alcohol) to said surfaces, while substantially retaining said complex geometric configuration of said supporting structure.

5,443,728
METHOD OF PREPARING MEMBRANES FROM BLENDS OF POLYETHERIMIDE AND POLYIMIDE POLYMERS
James T. Macheras, Quincy; Benjamin Bikson, Brookline, and Joyce K. Nelson, Lexington, all of Mass., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Apr. 28, 1994, Ser. No. 234,037
Int. Cl.[6] B01D *69/08*
U.S. Cl. 210—500.23 19 Claims

1. A fluid separation membrane comprising the blend of polyetherimide and phenylindane containing polyimide, wherein the weight ratio of said phenylindane containing polyimide to said polyetherimide is less than 0.2 and wherein said fluid separation membrane contains a discriminating layer that is less than 1000 Å thick.

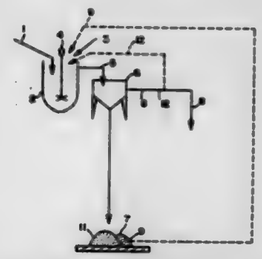
5,443,729
METHOD POR REMOVING MANGANESE FROM WATER
Lindsay I. Sly, Brookfield, Australia; Vullapa Arunpairojana, Bangkok, , assignors to The University of Queensland, St. Lucia and Commonwealth Scientific and Industrial Research Organization, Canberra, both of Australia
PCT No. PCT/AU92/00579, § 371 Date May 9, 1994, § 102(e) Date May 9, 1994, PCT Pub. No. WO93/08128, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 26, 1992, Ser. No. 211,965
Claims priority, application Australia, Oct. 25, 1991, PK9104
Int. Cl.[6] C02F *1/64, 3/34*
U.S. Cl. 210—611 13 Claims

1. A process for removal of manganese from water which includes the steps of:
(i) preparing a fluidised bed of particles in a bioreactor capable of adsorbing a strongly adherent biofilm of microorganisms capable of metabolising manganese to provide an actively propagated biomass; and



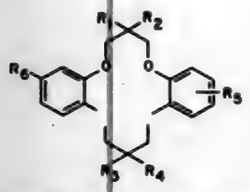
(ii) passing a stream of water through the fluidised bed where manganese is adsorbed by said biomass and is thus removed from the stream of water to provide a purified effluent of water exiting from the bioreactor.

5,443,730
PROCESS FOR THE PURIFICATION OF A POLLUTED AQUEOUS EFFLUENT
Jean-Pierre Letourneux, Montelimar, and Alain Bourdeau, Pierrelatte, both of France, assignors to Lafarge Fondu International, Neuilly sur Seine, France
Continuation-in-part of Ser. No. 53,978, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 817,808, Jan. 8, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 87,096
Claims priority, application France, Jan. 8, 1991, 91 00260; Nov. 20, 1992, 92 14002
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[6] C02F *1/52, 1/58*
U.S. Cl. 210—631 19 Claims



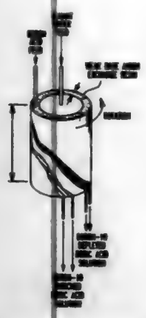
1. A process of purification of a polluted aqueous effluent to lower COD therein, said polluted aqueous effluent comprising air least one organic or inorganic anion selected from the group consisting of monocarboxylates, dicarboxylates, phenylcarboxylates, hydroxycarboxylates, borates, nitrates, phosphates, chromates, selenates, permanganates, chlorates, iodates, and carbonates, said process comprising:
introducing into said polluted aqueous effluent a reagent comprising an agent supplying active alumina and quick or hydrated lime in sufficient proportions so that
said reagent in said aqueous effluent reacts to form a complex hydrate with at least one of said anions resulting in a precipitate constituting mineral sludge and a supernatant effluent, and
separating resultant mineral sludge from said supernatant effluent.

5,443,731
PROCESS FOR EXTRACTING TECHNETIUM FROM ALKALINE SOLUTIONS
Bruce A. Moyer, Oak Ridge; Richard A. Sachleben, and Peter V. Bonnesen, both of Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 21, 1994, Ser. No. 278,211
Int. Cl.[6] B01D *11/00*
U.S. Cl. 210—634 15 Claims



1. A process for extracting technetium values from an aqueous alkaline solution, comprising the steps of:
contacting said aqueous alkaline solution containing at least one alkali metal hydroxide and at least one alkali metal nitrate with a solvent consisting of a crown ether in a diluent for a period of time sufficient to selectively extract said technetium values from said aqueous alkaline solution into said solvent, said at least one alkali metal nitrate having a concentration of from about 0.1 to 6 molar and said diluent being a water-immiscible organic liquid in which said crown ether is soluble;
separating said solvent containing said technetium values from said aqueous alkaline solution; and
stripping said technetium values from said solvent by contacting said solvent with water.

5,443,732
BORON ISOTOPE SEPARATION USING CONTINUOUS ION EXCHANGE CHROMATOGRAPHY
Edward J. Laboda, Pittsburgh; C. Y. Lin, Monroeville; J. A. Battaglia, Forest Hills, and A. J. Impink, Jr., Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 1, 1994, Ser. No. 222,427
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 18 Claims



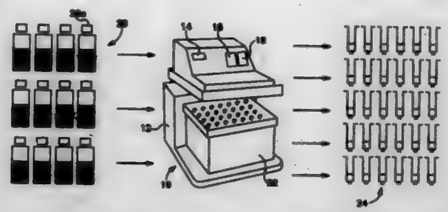
8. A continuous method for separating boron isotopes in aqueous boric acid solutions, comprising the steps of:
(a) preparing an aqueous boric acid feed solution comprising a mixture of boron isotopes;
(b) loading said boric acid feed solution onto an ion exchange resin contained in an annular column of a continuous annular chromatograph at a first location at the top of said annular column having a vertical height and diameter sufficient to resolve isotopes of boron into distinct product fractions;
(c) feeding an aqueous eluant onto said ion exchange resin of said continuous annular chromatograph at a second location angularly displaced from the first location at the top of said annular column to elute said boric acid feed solution along said annular column of said continuous annular chromatograph;
(d) continuously rotating said continuous annular chromatograph during steps (b) and (c) while said boric acid feed solution and said eluant solution diffuse through said ion exchange resin to effect separation of boron isotopes in the feed solution into distinct product fractions so that each product fraction is angularly and longitudinally displaced from the first location along the length of the annular column;
(e) separately collecting said distinct boron isotope product fractions at distinct angularly displaced locations on the continuous annular chromatograph;
(f) separately volume reducing said distinct boron isotope product fractions to form concentrated boron isotope fractions and recovering said aqueous eluant therefrom;
(g) recycling said aqueous eluant for reuse in step (c).

5,443,733
METHOD AND APPARATUS FOR TREATING WASTE WATER
Mario Mueller, Reinbek, and Ivan Sekoulow, Hamburg, all of Germany, assignors to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany
Filed May 21, 1993, Ser. No. 65,607
Claims priority, application Germany, May 21, 1992, 42 16 742.6; Jan. 28, 1993, 43 02 319.3
Int. Cl.[6] B01D *61/04*
U.S. Cl. 210—651 13 Claims



1. A method for treating and recovering waste water in an aircraft or a spacecraft comprising the following sequence of steps: first mechanical filtering, second at least one freeze concentration as a main cleaning operation immediately downstream of said mechanical filtering, third at least one membrane separating directly downstream of said freeze-concentration, fourth charcoal filtering, and fifth disinfection, whereby said main cleaning operation by freeze concentration is performed between said mechanical filtering and said membrane separating for protecting a membrane in said membrane separating, and wherein heat is removed from said heat concentration by using cold temperatures prevailing outside said aircraft or spacecraft.

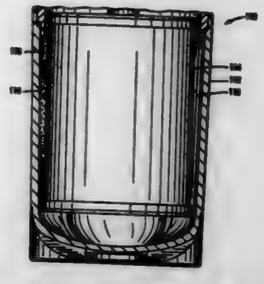
5,443,734
PROGRAMMABLE SOLID PHASE EXTRACTION AND ELUTION DEVICE
Martin J. Fetner, and Elwood F. Sessoltz, both of Allentown, Pa., assignors to Applied Separations, Inc., Allentown, Pa.
Continuation of Ser. No. 788,578, Nov. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 488,306, Mar. 5, 1990, abandoned. This application Aug. 3, 1993, Ser. No. 101,704
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—656 12 Claims



1. A method for extracting one or more particular solutes from a sample solution, said method comprising the steps of:
a. placing an amount of said sample solution into a non-contaminating receptacle, said receptacle being operatively connected to means adapted to meter predetermined amounts of said solution therefrom;
b. programmably introducing at least one metered amount of said sample solution into a selected one or more of a plurality of cartridge receiver tubes, each of said selected receiver tubes containing an amount of the same or a different solid phase extractant or sorbent through which said solution will pass, said sorbent being selected to remove substantially all of one of said particular solutes from said sample solution;
c. programmably introducing into said selected receiver tubes a predetermined amount of one or more solvents to pass through said sorbent, said solvents being adapted to selectively dissolve and remove substantially all of any residual sample solution and residual contaminants remaining on or absorbed by said sorbent while permitting substantially all of said particular solute to remain;
d. programmably introducing into said selected receiver tubes one or more predetermined amounts of at least one solvent to pass through said sorbent and selectively form a contamination-free solution with a selected one of said particular solutes resident therein; and
e. removing said contamination-free solution from said selected receiver tubes for further use.

5,443,735
METHOD AND DEVICE FOR INHIBITING BACTERIAL GROWTH ON SORBENT MEDIA
Erwin Kirnbauer, Lattingtown; Donald H. White, Jr., House, both of N.Y., and Joseph D. Adiletta, Thompson, Conn., assignors to Pall Corporation, East Hills, N.Y.
Continuation of Ser. No. 758,682, Sep. 12, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,998
Int. Cl.[6] C02F *9/00*
U.S. Cl. 210—668 32 Claims

1. An immobilized, composite, sorbent purification element for use in a potable water purification system, said element having increased resistance to microorganism growth, said element comprising (a) from about 50 percent to about 95 percent of at least one sorbent selected from the group consisting of absorbents and adsorbents in the form of particles of granulated or powdered activated carbon, having particle diameters from about 44 μ to about 18 μ; (b) from about 10 to about 50 percent of a fibrous component; (c) from about 0.2 percent to about 5 percent of brass particles having particle diameters from about 149 μ to about 44 μ, the average particle size of the brass particles being from about one-fourth to about four times the average particle size of said sorbent particles; and (d) from about 0.5 to about 2 percent of a binding agent that is present in sufficient quantity to immobilize the sorbent and brass particles in the element, while allowing water to



penetrate into and out of said element; with the distribution of brass particles being substantially uniform throughout the element; and said element having a greater resistance to microorganism growth than such an element without said brass particles.

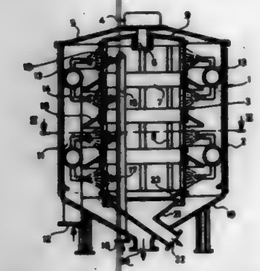
5,443,736
PURIFICATION PROCESS
Charles R. Szmanda, Westborough, and Richard J. Carey, Sherborn, both of Mass., assignors to Shipley Company Inc., Marlborough, Mass.
Filed Oct. 20, 1993, Ser. No. 139,923
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—668 20 Claims

1. A process for the removal of multivalent metal ions from an organic solution, said process comprising the steps of providing an organic solution containing chelated multivalent metal ions dissolved in solution and contact of said solution containing said dissolved chelated multivalent ions with granulated activated carbon for a time sufficient to substantially reduce the multivalent metal ion content of said solution.

5,443,737
ROTARY DRUM WITH RADIAL SPRAY JETS
Roland Fjallstrom, Lawrenceville, Ga.; Rune Frykhult, Stockholm, Sweden, and Charles Atkinson, Norcross, Ga., assignors to Celleco Hedemora AB, Stockholm, Sweden
PCT No. PCT/SE91/00505, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/02676, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 22, 1991, Ser. No. 966,195
Claims priority, application Sweden, Jul. 27, 1990, 9002516-4
Int. Cl.[6] B01D *33/06*
U.S. Cl. 210—360.1 10 Claims

1. A device for separating suspensions, comprising:
a housing,
a substantially circular cylindrical drum arranged in the housing and having a circumferential wall of filter material extending around a vertical central axis of the drum,
means for turning the drum about said vertical central axis,
spray means positioned to spray jets of a suspension to be separated in a radial direction generally transverse to said vertical central axis and directly onto one side of said circumferential wall, whereby said jets of suspension hit the filter material and are separated into a fine fraction, which passes through the filter material and which contains fine particles, and a coarse fraction, which does not

pass through the filter material and which contains coarse particles and some fine particles, and



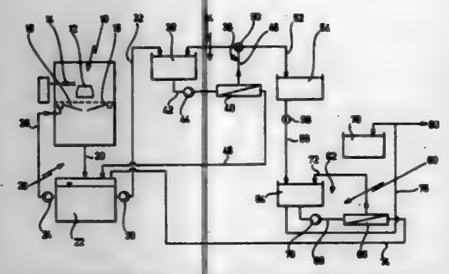
means forming an outlet for discharging said coarse fraction from the device.

5,443,738

RECOVERY PLANT FOR SURPLUS WATER PAINT

Satpal Bhatnagar, Vaihingen; Haas-Ulrich Frey, Fellbach, and Juergen Weschke, Weil der Stadt, all of Germany, assignors to Duerr GmbH, Stuttgart, Germany

Filed Jan. 26, 1993, Ser. No. 9,562
Claims priority, application Germany, Jan. 30, 1992, 42 02 539.7
Int. Cl.[6] B01D *61/04*
U.S. Cl. 210—641 14 Claims



9. A method for the recovery of surplus water paint from a paint-spraying booth, comprising the steps of:

circulating booth water in a booth water circuit between a drain of said booth and a system tank;

removing booth water from said booth water circuit and feeding it into a preconcentration ring circuit of a continuously operating preconcentration stage;

producing a preconcentrate in said preconcentration ring circuit by ultrafiltration;

continuously producing a permeate by said ultrafiltration and feeding said permeate into said booth water circuit;

continuously removing part of said preconcentrate from said ring circuit and feeding it into a ring circuit of a concentration stage;

keeping a concentration of solids in said booth water circuit essentially constant through said removing of said booth water from said booth water circuit, said feeding of said permeate back into said booth water circuit and said continuous removing of part of said preconcentrate; and

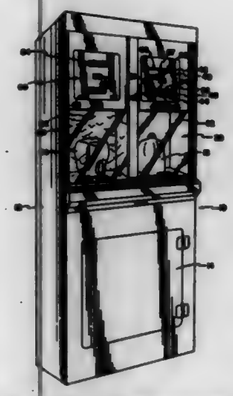
ultrafiltering said preconcentrate in said concentration stage to produce a permeate and to increase the concentration of the preconcentrate in batches to a final concentrate for output as recovered water paint.

5,443,739

WATER PURIFICATION AND DISPENSER WITH UNCONTAMINATED MINERAL ADDITION

Gerald Vogel, Willmar, and Joseph Thelen, Waconia, both of Minn., assignors to J. Vogel Premium Water Company, st. Cloud, Minn.

Continuation-in-part of Ser. No. 947,125, Sep. 17, 1992. This application Apr. 12, 1993, Ser. No. 47,122
Int. Cl.[6] B01D *61/10*
U.S. Cl. 210—652 18 Claims



11. A process for purifying, mineralizing and dispensing water comprising the steps of:

a) obtaining water from a supply source;

b) purifying said source water by passing it through a reverse osmosis membrane;

c) adding minerals into the purified water from a mineral addition system including means for sealing the minerals within said mineral addition system to exclude airborne contaminants; and

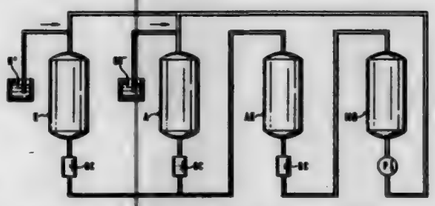
d) dispensing the purified, mineralized water into a container.

5,443,740

PROCESS FOR THE CONDITIONING OF ION EXCHANGE RESINS

Serge Schmitt, Hagenthal-le-Bas, France, assignor to Christ AG, Aesch, Germany

Filed Sep. 16, 1993, Ser. No. 121,560
Claims priority, application Switzerland, Oct. 7, 1992, 3132/92
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—673 14 Claims



1. A process for the conditioning of ion exchange resins used in the production of ultra pure water, said resins being selected from the group consisting of fresh resins and newly regenerated resins, said process comprising recirculating pure water having a residual salt content of less than 50 ppb and a content of free acid or free base of less than 5,000 ppb over a bed of the resin to be purified or of the resins to be purified, said free acid

providing a source of protons (H+) and said free base providing a source of alkali (OH—), said process further comprising removing organic and inorganic substances washed out of the resin or the resins continuously from the circulating water.

5,443,741

TREATMENT OF DILUTE ACIDIC SOLUTIONS

John A. Stott, and John G. Allen, both of Warrington, England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Continuation of Ser. No. 64,786, May 21, 1993, abandoned, which is a continuation of Ser. No. 791,160, Nov. 13, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,059
Claims priority, application United Kingdom, Nov. 19, 1990, 9025126
Int. Cl.[6] C02F *1/58, 1/54*
U.S. Cl. 210—726 8 Claims

1. In a process for the treatment of acidic fluoride-containing solutions to neutralize them and to remove fluoride ion which comprises mixing the acidic solution with a suspension of an alkaline earth metal oxide or hydroxide as neutralizing agent, and flocculating the resulting precipitate with a flocculating agent, the improvement wherein said flocculating agent is incorporated in the acidic solution before mixing thereof with the alkaline earth metal oxide or hydroxide and only thereafter mixing the solution with the alkaline earth metal oxide or hydroxide to thereby remove the fluoride as a readily filterable precipitate.

5,443,742

PURIFICATION OF STABLE ORGANIC COMPOUNDS

Roger A. Mader, Stillwater, and Robert J. Ryther, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 7, 1994, Ser. No. 335,450
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—758 7 Claims

1. A process for removing undesirable reducing compounds from an organic material toning agent for silver halide based photothermographic imaging comprising phthalazine comprising the steps of:

a) providing said organic material with undesirable reducing compounds in a liquid carrying medium,

b) adding to said liquid carrying medium and organic material at least one metal oxidizing agent,

c) oxidizing said undesirable reducing compounds, and

d) removing said metal oxidizing agent from said liquid carrying medium.

5,443,743

GAS PLASMA TREATED POROUS MEDIUM AND METHOD OF SEPARATION USING SAME

Thomas C. Goell, Glen Cove, N.Y., assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 990,794, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 757,535, Sep. 11, 1991, abandoned. This application May 31, 1994, Ser. No. 252,044
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[6] B01D *39/00, 37/00*; B05D *3/04*
U.S. Cl. 210—767 23 Claims

11. A method for the separation of a substance from a leukocyte-containing biological fluid comprising passing the fluid through a porous medium which has been treated with a gas plasma generated from a mixture including ammonia gas and argon gas, and removing leukocytes from the fluid, said gas plasma being free of polymeric substances.

5,443,744

NON SILICONE AGGRESIVE ALKYL PHOSPHATES AS LUBRICATION OIL ADDITIVES

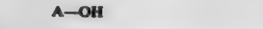
Ricardo A. Block, Scotch Plains; Antonio Gutierrez, Mercerville; Jack Ryer, East Brunswick; Raymond F. Watts, Long Valley, and Craig W. Gleason, Scotch Plains, all of N.J., assignors to Exxon Chemical Patent Inc., Linden, N.J.

Filed Dec. 17, 1993, Ser. No. 168,840
Int. Cl.[6] C10M *137/14*
U.S. Cl. 252—32.7 E 8 Claims

1. A lubricating oil composition comprising:

(a) a major amount of a lubrication oil basestock; and

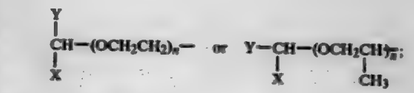
(b) a lubrication oil additive and the amine salts thereof, wherein the additive comprises the reaction product of a phosphating agent and an alcohol represented by formula I:



(I)

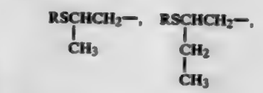
wherein

A is



X is H or $RSCH_2$—;

Y is $RSCH_2$—,



n is an integer from 0–12;

R is H or a hydrocarbyl group containing up to 50 carbon atoms; and the molar ratio of alcohol to phosphating agent ranges from about 4:1 to 10:1.

5,443,745

LUBRICANT FOR REFRIGERATING MACHINE

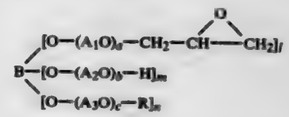
Tetsuro Sakamoto, Yokohama; Motoshi Sunami, Nerima, and Hiroshi Hasegawa, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Japan

Continuation of Ser. No. 892,668, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 687,770, Apr. 18, 1991, abandoned, which is a continuation of Ser. No. 564,190, Aug. 8, 1990, abandoned. This application Oct. 6, 1993, Ser. No. 132,237
Claims priority, application Japan, Aug. 11, 1989, 1-206660
Int. Cl.[6] C10M *105/18*
U.S. Cl. 252—52 A 6 Claims

1. A refrigerant lubricant for a refrigerating machine which comprises:

50 wt % or less of a base oil selected from the group consisting of polyglycol oils, minerals oils, poly-α-olefins and alkylbenzenes; and

50–100 wt % of a polyoxyalkylene glycidyl ether represented by the general formula



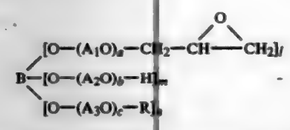
wherein B is a residue of a compound having 2 to 8 hydroxyl groups, A_1O, A_2O, and A_3O each is an oxyalkylene group having 2 to 18 carbon atoms, R is a hydrocarbon group having 1 to 24 carbon atoms, a is an integer of from 1 to

100, b is an integer of from 1 to 100, c is an integer of from 1 to 100, l is an integer of from 1 to 8, m is an integer of from 0 to 7, n is an integer of from 0 to 7, and l+m+n is an integer of from 2 to 8, and wherein said glycidyl ether has a pour point of −10° C. or less and a kinematic viscosity of from 2 to 50 cSt at 100° C.

4. A method for improving lubrication in a refrigerating machine, said method comprising using in said refrigerating machine a lubricant which has a pour point of −10° C. or less, a kinematic viscosity of from 2 to 50 cSt at 100° C., and which comprises;

50 wt % or less of a base oil selected from the group consisting of polyglycol oils, minerals oils, poly-α-olefins and alkylbenzenes; and

50–100 wt % of a polyoxyalkylene glycidyl ether represented by the general formula,



wherein B is a residue of a compound having 2 to 8 hydroxyl groups, A_1O, A_2O, and A_3O each is an oxyalkylene group having 2 to 18 carbon atoms, R is a hydrocarbon group having 1 to 24 carbon atoms, a is an integer of from 1 to 100, b is an integer of from 1 to 100, c is an integer of from 1 to 100, is an integer of from 1 to 8, m is an integer of from 0 to 7, n is an integer of from 0 to 7, and l+m+n is an integer of from 2 to 8.

5,443,746

FERROELECTRIC AEROGEL COMPOSITES FOR VOLTAGE-VARIABLE DIELECTRIC TUNING, AND METHOD FOR MAKING THE SAME

Norman H. Harris, Newhall; Brian M. Pierce, Moreno Valley; Carl W. Townsend, Los Angeles, and Thomas K. Dougherty, Playa Del Rey, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 14, 1994, Ser. No. 195,111
Int. Cl.[6] C04B 35/46, 41/48
U.S. Cl. 252—62.9 19 Claims



1. A process for preparing a ferroelectric composite comprising a sol-gel of a ferroelectric material comprising an oxide of at least two metals, said ferroelectric composite impregnated with a polymer, comprising:

(a) providing alcoholates of said at least two metals to form metal alcoholates;

(b) combining said metal alcoholates and subjecting them to an equilibration reaction to form an equilibrated metal alcoholate solution;

(c) hydrolyzing and condensing said equilibrated metal alcoholate solution by addition of water to form a gel having pores permeated with water and alcohol;

(d) removing said water and alcohol from said pores of said gel to leave an aerogel foam;

(e) heat-treating said aerogel foam; and

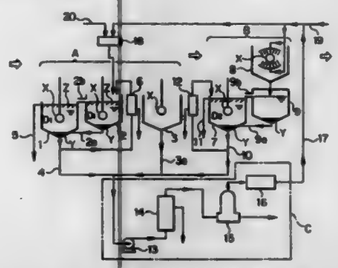
(f) filling said pores with said polymer to form said ferroelectric composite, said polymer having a dielectric constant of less than 3.

5,443,747

CLEANING COMPOSITIONS

Minoru Inada, Yokohama; Kimiaki Kabuki, Tokyo; Yasutaka Imajo, Hachioji; Takayuki Oguni; Noriaki Yagi, both of Yokohama; Nobuhiro Saitoh, Ota; Akitsugu Kurita, Ota, and Yoshiaki Takezawa, Ota, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCt/JP90/01372, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991, PCT Pub. No. WO91/06621, PCT Pub. Date May 16, 1991
PCT Filed Oct. 25, 1990, Ser. No. 651,370
Claims priority, application Japan, Oct. 26, 1989, 1-280860; Nov. 21, 1989, 1-302586; Mar. 16, 1990, 2-065841; Mar. 16, 1990, 2-065842
Int. Cl.[6] C11D 3/395
U.S. Cl. 252—94 25 Claims



1. A method for cleaning and dewatering metal parts, glass parts, ceramic parts, or plastic parts having a hard surface, comprising the step of:

(a) washing a part with an aqueous composition whereby water remains on the part,

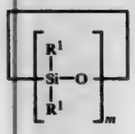
(b) treating the part which contains water on its surface with a cleaning composition consisting essentially of

(i) at least one polyorganosiloxane not-compatible with water selected from the group consisting of a straight chain polyorganosiloxane represented by the formula:



and

a cyclic polyorganosiloxane represented by the formula:



wherein R^1 in each of the above formulas is independently selected from the group consisting of methyl, ethyl, propyl, butyl, phenyl, trifluoro-methyl, amino, amide, acrylic acid ester and mercaptan; l is an integer from 0 to 5; and m is an integer from 3 to 7, and

(ii) at least one of a surfactant and hydrophilic solvent wherein the cleaning composition is substantially free of water, whereby water is removed from the surface of the part and residual cleaning composition remains on the part, and

(c) removing residual cleaning composition by treatment with a rinsing agent comprising the same or different said straight-chain polyorganosiloxane or said cyclic polyorganosiloxane used in step (b), and

(d) drying said part to completely remove said rinsing agent from the part.

5,443,748

PAINT CLEANING COMPOSITION AND METHOD

Flan Bergishagen, West Bloomfield, and Jay W. Pease, Grosse Pointe Park, both of Mich., assignors to Product-Sol, Inc., Birmingham, Mich.

Continuation of Ser. No. 755,675, Sep. 6, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 41,907
Int. Cl.[6] C09D 9/00; C11D 7/50
U.S. Cl. 252—162 4 Claims

1. A cleaning composition for removing deposits from internal and external surfaces of a paint delivery system consisting essentially of:

an effective amount from about 0.1% by weight to about 20.0% by weight of a non abrasive organic rheological material; and from about 80.0% to about 99.9% by weight of an organic aromatic or aliphatic solvent vehicle selected from the group consisting of aliphatic and aromatic hydrocarbons, lactones, esters, ketones, alcohols and glycol ethers, said organic rheological material forming an insoluble gel structure in said solvent vehicle for removing deposits from the paint delivery system, said insoluble particulate gel structure adapted to coagulate, remove and suspend encrusted paint deposits, said insoluble particulate gel structure adapted to be resolubilized by a rinsing agent, said organic rheological material being selected from the group consisting of cross-linked and converted starches and dextrins, methyl cellulose, hydroxypropyl methyl-cellulose, hydroxyethyl cellulose, carboxymethyl-cellulose, ethylene oxide polymers, an derivative of castor oil, and combinations thereof.

5,443,749

GLOVE DYE STAIN REMOVER

Vincent A. Dotolo, Clearwater, Fla., assignor to Citra Science Ltd., Largo, Fla.

Filed Aug. 2, 1994, Ser. No. 284,848
Int. Cl.[6] C11D 10/04
U.S. Cl. 252—170 21 Claims

1. A glove dye stain remover, consisting of:

d-limonene;

an ionic surfactant;

nonylphenol +9 EO polyethoxylate;

C-11 alcohol ethoxylate;

butylated hydroxytoluene;

pumice; and

water.

5,443,750

DETERGENT COMPOSITIONS WITH HIGH ACTIVITY CELLULASE AND SOFTENING CLAYS

André Convents, Diegem; Alfred Busch, Londerzeel, and André C. Baeck, Boutersem, all of Germany, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US92/00190, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993, PCT Pub. No. WO92/13053, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 13, 1992, Ser. No. 90,013
Claims priority, application European Pat. Off., Jan. 16, 1991, 91870006; Nov. 6, 1991, 91202880
Int. Cl.[6] C11D 3/386; C12N 9/42, 15/56, 15/80
U.S. Cl. 252—174.12 26 Claims

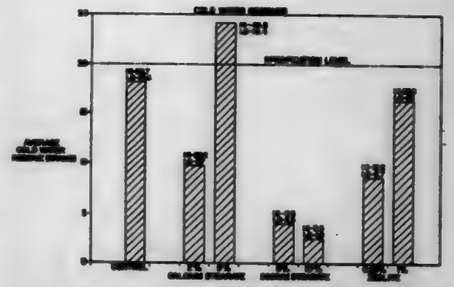
1. A detergent composition comprising a surface active agent, a builder system, a softening clay, a clay flocculating agent in an amount from about 0.005% to 20% by weight of said clay, and a cellulase characterized in that said cellulase provides at least 10% removal of immobilized, radio-active labelled carboxylmethylcellulose according to the C14CMC-method at 25×10^{-6}% by weight of cellulase protein in the laundry test solution.

5,443,751

POWDER DETERGENT COMPOSITION FOR COLD WATER WASHING OF FABRICS

Louis R. Mazzola, Mahwah, N.J., assignor to Church & Dwight Co. Inc., Princeton, N.J.

Continuation of Ser. No. 27,198, Mar. 5, 1993, abandoned. This application May 11, 1994, Ser. No. 241,460
Int. Cl.[6] C11D 17/06, 3/10, 9/12, 11/00
U.S. Cl. 252—174.13 9 Claims



1. A laundry detergent composition which is a granulated blend of ingredients comprising (a) between about 40–90 weight percent of water-soluble inorganic salt detergent builder ingredient, wherein at least one third of the inorganic salt detergent builder ingredient is sodium carbonate; (b) between about 2–20 weight percent of an anionic detergent ingredient; and (c) between about 2–20 weight percent of a nonionic detergent ingredient; and wherein between about 0.7–5 weight percent of an ingredient consisting of particulate fatty acid salt selected from alkali metal and ammonium salts of stearic acid and oleic acid, having an average particle size between about 50–200 microns, is coated on the surfaces of the detergent granules.

5,443,752

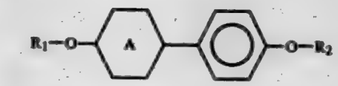
SMECTIC LIQUID-CRYSTAL MIXTURE

Barbara Hornung, Hasselroth; Dietmar Jaugbauer, Welterstadt, and Javier Manero, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 7, 1994, Ser. No. 224,325
Claims priority, application Germany, Apr. 10, 1993, 43 11 968.9
Int. Cl.[6] C09K 19/52, 19/34; G02F 1/13
U.S. Cl. 252—299.01 8 Claims

1. A smectic liquid-crystal mixture comprising:

A. at least one compound of the formula (I)

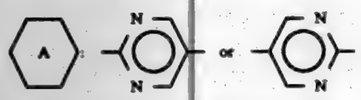


(I)

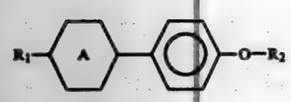
in which:

R_1 and R_2 are identical or different and are a straight-chain or branched alkyl group having 1 to 18 or 3 to 18 carbon

atoms respectively, where a —CH_2— group adjacent to the oxygen can also be replaced by —CO,



and/or at least one compound of the formula (II)



(II)

in which:

R_1 and R_2 are identical or different and are a branched or unbranched alkyl group having 1 to 18 or 3 to 18 carbon atoms respectively, where a —CH_2— group adjacent to the oxygen can also be replaced by —CO—;



B. at least one compound of the formula (III)



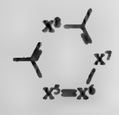
(III)

in which:

R^1 and R^2 are identical or different and are a straight-chain or branched alkyl radical having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO—, —O—CO—O— or —$Si(CH_3)_2$—;

A^1, A^2 and A^3 are identical or different and are 1,4-phenylene, where one or two H atoms may be replaced by F, 2,5-pyridinediyl, where one or two H atoms can be replaced by F, 2,5-pyrimidinediyl, where one or two H atoms can be replaced by F, trans-1,4-cyclohexylene, where one or two H atoms can be replaced by —CN and/or $—CH_3$, or 1,3,4-thiadiazole-2,5-diyl,

and A^1 is



M^1, M^2 and M^3 are identical or different and are —O—, —CO—O—, —O—CO—, $—CH_2—O—$, $—O—CH_2—$, $—CH_2—CH_2—$,

X^1, X^2, X^3, X^4, X^5, X^6, X^7 and X^8 are CH or N, the number of N atoms per six-membered ring being 0, 1 or 2,

a, b, c, d, e and f are zero or one, on condition that the sum of a+c+e is 0, 1, 2 or 3;

C. at least one compound of the formula (IV)



(IV)

in which:

R^1 and R^2 are identical or different and are a straight-chain or branched alkyl group having 1 to 22 or 3 to 22 carbon atoms respectively,

A^1, A^2 and A^3 are identical or different and are 1,4-phenylene, where one or two H atoms can also be replaced by F, 2,5-pyrimidinediyl, where one or two H atoms can also be replaced by F, or 2,5-pyridinediyl, where one or two H atoms can also be replaced by F,

M^1 and M^2 are identical or different and are —O—, —CO—, —CO—O—, —O—CO—, $—CH_2—O—$, $—O—CH_2—$ or $—CH_2—CH_2—$,

a, b, c, d, e and f are zero or one, on condition that the sum a+c+e is 1, 2 or 3;

and at least one compound from groups D to H;

D. silicon compounds of the formula (V)



(V)

in which:

R^1 is straight-chain or branched alkyl having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO— or —O—CO—O—,

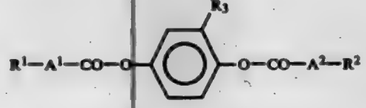
R^2 is straight-chain or branched alkyl having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO— or —O—CO—O—, with the proviso that one —CH_2— group not attached to oxygen is replaced by —$Si(CH_3)_2$—,

A^1, A^2 and A^3 are identical or different and are 1,4-phenylene, where one or two H atoms can be replaced by F, trans-1,4-cyclohexylene, 2,5-pyridinediyl, where one or two H atoms can be replaced by F, 2,5-pyrimidinediyl, where one or two H atoms can be replaced by F, or 1,3,4-thiadiazole-2,5-diyl,

M^1 and M^2 are identical or different and are —CO—O—, —O—CO—, $—CH_2—O—$ or $—O—CH_2—$,

i, k, l, m and n are zero or one, with the proviso that i+1+n=2 or 3;

E. hydroquinone derivatives of the formula (VI)



(VI)

in which:

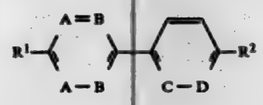
R^1 and R^2 are identical or different and are a straight-chain or branched alkyl radical having 1 or 3 to 16, preferably 1 or 3 to 10, carbon atoms, respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO—, —O—CO—, —CO—O— or —O—CO—O—,

R^3 is $—CH_3$, $—CF_3$ or $—C_2H_5$,

A^1 and A^2 are identical or different and are



F. pyridylpyrimidines of the formula (VII)



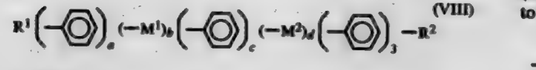
(VII)

in which:

A is N and B is CH or A is CH and B is N, C is N and D is CH or C is CH and D is N, where one or two CH groups can be replaced by CF groups,

R^1 and R^2 are identical or different and are a straight-chain or branched alkyl radical having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO— or —O—CO—O—;

G. phenylbenzoates of the formula (VIII)



(VIII)

in which:

R^1 and R^2 are identical or different and are a straight-chain or branched alkyl radical having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2— groups can also be replaced by —O—, —CO— or —CO—O—, —O—CO— or —O—CO—O—,

M^1 and M^2 are identical or different and are —CO—O—, —O—CO—,

a, b, c, d and e are zero or one, on condition that a+c+e=2 or 3 and b+d=1 or 2; and

H. compounds of the formula (IX)



(IX)

in which:

R^1 is a straight-chain or branched alkyl radical having 1 to 22 or 3 to 22 carbon atoms respectively, where one or two nonadjacent —CH_2 groups can also be replaced by —O—, —CO—, —CO—O—, —O—CO—, —O—CO—O— or —$Si(CH_3)_2$—,

A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, where one or two H atoms can be replaced by F or CN, 2,5-pyridinediyl, where one or two H atoms can be replaced by F, 2,5-pyrimidinediyl, where one or two H atoms can be replaced by F, trans-1,4-cyclohexylene, 1,3,4-thiadiazole-2,5-diyl or 2,6-naphthalenediyl,

M^1, M^2 and M^3 are identical or different and are —CO—O—, —O—CO—, $—CH_2—O—$, $—O—CH_2—$ or $—CH_2—CH_2—$,

a, b, c, d, e and f are zero or one, on condition that the sum a+c+e is 0, 1, 2 or 3.

5,443,753

REACTION PRODUCTS OF LYOTROPIC LIQUID CRYSTAL SALT COMPLEXES

Stanley B. Elliott, 7125 Conelly Blvd., Walton Hills, Ohio 44146

Continuation of Ser. No. 954,556, Sep. 30, 1992, Pat. No. 5,354,499, which is a continuation-in-part of Ser. No. 821,084, Jan. 16, 1992, Pat. No. 5,354,496, which is a continuation-in-part of Ser. No. 642,009, Jan. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,017, Aug. 2, 1990, Pat. No. 5,082,588, which is a division of Ser. No. 444,559, Dec. 1, 1989, Pat. No. 4,975,249, which is a continuation of Ser. No. 78,186, Jul. 27, 1987, abandoned. This application May 9, 1994, Ser. No. 239,619

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[6] C09K *19/52*

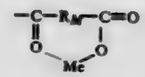
U.S. Cl. 252—299.01 10 Claims

1. A polymeric chemical complex that is the covalent reaction product of the polymerization of

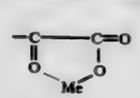
(a) a lyotropic liquid crystal precursor salt complex that is one or more metal salts of acids having an organic ring structure portion that is hydrophobic and an unsaturated ionic polar head ring complex phase portion that is hydrophilic, the acid having an unsaturated main chain of carbon atoms or carbon atoms and a nitrogen atom, the polar ring complex phase having a ring formed from the keto group of the acid portion, intervening ring members, and a metal ion, the complex having the general structure:



in which the 5 to 13 member ring is formed from the metal (Me) ring member that bonds to the keto group according to the following structure:



where R_M is one or more ring members when the ring is a 6 to 13 ring member; and the following structure represents the 5 member ring:



, and

(b) one or more unsaturated acids as defined in (a).

5,443,754

PYRIDYLPYRIMIDINES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Claus Escher, Mühltal; Gerhard Illian, Frankfurt am Main; Wolfgang Hemmerling, Sulzbach, and Rainer Wingen, Hattersheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP92/00142, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/12974, PCT Pub. Date Aug. 6, 1992

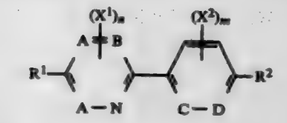
PCT Filed Jan. 23, 1992, Ser. No. 64,024

Claims priority, application Germany, Jan. 24, 1991, 41 02 016.2

Int. Cl.[6] G02F *1/13*; C07D *213/53, 239/02, 401/04*

U.S. Cl. 252—299.61 6 Claims

1. A pyridylpyrimidine compound of the formula I



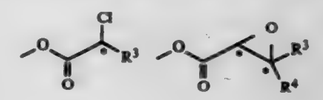
(I)

in which

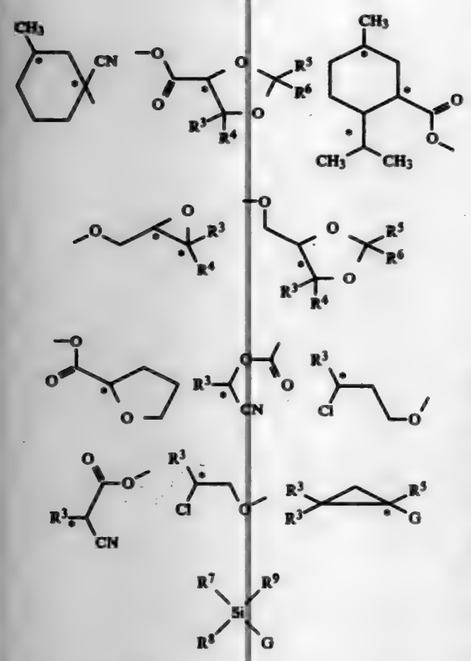
A is N and B is CH or A is CH and B is N,

C is N and D is CH or C is CH and D is N,

R^1 is straight-chain or branched (chiral or achiral) alkyl having 1 to 16 carbon atoms or alkenyl having 2 to 16 carbon atoms, it also being possible for one or two nonadjacent —CH_2— groups to be replaced by —O—, —S—, —CO—, —CO—O—, —O—CO— or —O—CO—O— and it also being possible for one H to be replaced by F, or is one of the following radicals OCF_3, $OCHF_2$,



-continued



or R^{10}—E—M—,

with the proviso that if A is N, must not be R^1 must not be linked with the pyrimidine via a —CO—O— or O—CO—O— group,

R^2 is identical to R^1, with the proviso that if D is N, the radicals R^1 linked to the pyridine ring via an O—CO— or an —O—CO—O— group are excluded,

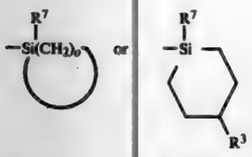
X^1, X^2 are F, Cl, CN,

n,m, identical or different, are zero, 1 or 2,

R^3, R^4, R^5, R^6 are H, straight-chain or branched alkyl having 1 to 16 carbon atoms or alkenyl with 2 to 16 carbon atoms, in which a $—CH_2—$ group not adjacent to the linkage point can also be replaced by —O—, —CO—O— or —O—CO— or

R^3 and R^4 or R^5 and R^6 together are cyclic alkyl having 3 to 8 carbon atoms,

R^7, R^8, R^9 are straight-chain or branched alkyl having 1 to 16 carbon atoms or alkenyl having 2 to 16 carbon atoms, in which one or two non-adjacent $—CH_2—$ groups can also be replaced by —O—, —CO—O— or —O—CO—, with the proviso that silicon is only bound to a carbon which has hydrogen and/or carbon as neighboring atoms, or are cyclic alkyl having 3 to 8 carbon atoms, or together with silicon can also be



G is straight-chain or branched alkylene having 1 to 16 carbon atoms or alkenylene having 2 to 16 carbon atoms, in which one or two non-adjacent $—CH_2—$ groups can also be replaced by —O—, —S—, —O—CO—, —CO—O—, —S—CO— or —CO—S—, R^{10} is identical to R^1 but is not R^{10}—E—M and without the abovementioned proviso for R^1,

E is 1,4-phenylene in which 1 or 2 H can also be replaced by F, Cl and/or CN, trans-1,4-cyclohexylene in which 1 or 2 H can also be replaced by F, Cl, CN and/or CH_3, pyrazine-2,5-diyl, pyridazine-3,6-diyl, pyridine-2,5-diyl, pyrimidine-2,5-diyl, 1,3,4-thiadiazole-2,5-diyl, 1,3-dioxane-2,5-diyl or 1,3-dithiane-2,5-diyl;

M is —CO—O—, —O—CO—, —CO—S—, —S—CO—, $—CH_2O—$, $—O—CH_2—$, —C≡C—, —CH=CH— or a single bond,

o is an integer from 3 to 8.

5,443,755

OPTICALLY ACTIVE TETRAHYDROPYRANE DERIVATIVES, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE CONTAINING THE SAME

Masaaki Namekawa; Shinichi Nayuki; Keizou Itoh; Mitsunori Takeda, and Yoshinobu Murayama, all of Iharaki, Japan, assignors to Kashima Oil Company, Tokyo, Japan

Continuation-in-part of Ser. No. 107,717, Aug. 24, 1993, Pat. No. 5,368,771. This application Jun. 8, 1994, Ser. No. 255,985

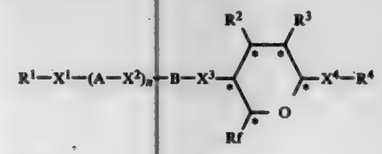
Claims priority, application Japan, Dec. 26, 1991, 3-344202; May 11, 1992, 4-117488; Jul. 28, 1992, 4-201189

The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.

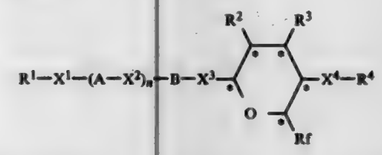
Int. Cl.[6] C09K *19/34*; G02F *1/13*; C07D *309/10*

U.S. Cl. 252—299.61 6 Claims

1. An optically active tetrahydropyrane derivative represented by the formula (I):



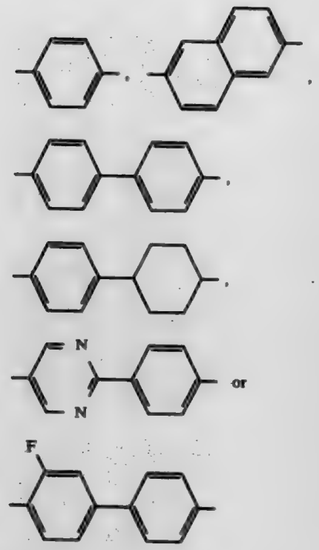
or (I'):



wherein Rf represents a trifluoromethyl or pentafluoroethyl group, R^1 represents a straight alkyl group having 4 to 15 carbon atoms, R^2 and R^3 each independently represent a hydrogen or methyl group, R^4 represents a straight or branched alkyl group having 1 to 10 carbon atoms, X^1 represents —O— or a single bond, X^2 represents —COO—, or a single bond, X^3 represents —COO—, $—CH_2O—$ or —O—, X^4 represents —O— or —OCO—, * represents an asymmetric carbon, A represents



B represents



and n represents 0 or 1.

5,443,756

LIQUID CRYSTAL COMPOSITION

Tetsuhi Yoshida, Hachioji; Yutaka Fujita, Urawa, and Kunihiko Kotani, Gyoda, all of Japan, assignors to Casio Computer Co., Ltd. and Rodic Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 766,859, Sep. 27, 1991, abandoned. This application Jun. 8, 1994, Ser. No. 255,573

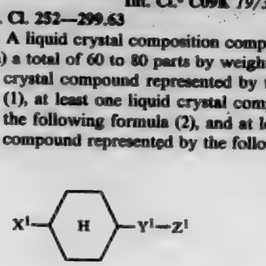
Claims priority, application Japan, Oct. 1, 1990, 2-260500

Int. Cl.[6] C09K *19/30*

U.S. Cl. 252—299.63 12 Claims

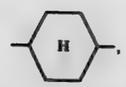
1. A liquid crystal composition comprising:

(a) a total of 60 to 80 parts by weight of at least one liquid crystal compound represented by the following formula (1), at least one liquid crystal compound represented by the following formula (2), and at least one liquid crystal compound represented by the following formula (3):

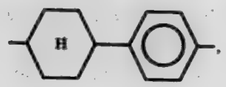


(1)

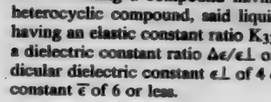
where X^1 is $CH_3CH=CHCH_2CH_2—$ when Y^1 is



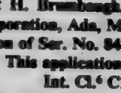
$CH_3CH=CH—$ or $CH_2=CHCH_2CH_2—$ when Y^1 is



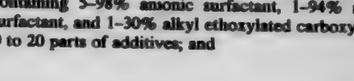
and $CH_3CH=CHCH_2CH—$ when Y^1 is



and Z^1 is an alkoxy group having 1 to 5 carbon atoms when Y^1 is

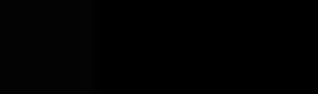


and an alkyl group having 1 to 5 carbon atoms when Y^1 is



(2)

where R^1 is an alkyl group having 3 or 4 carbon atoms, and



(3)

where R^2 is an alkyl group having 1 to 5 carbon atoms, and R^3 is an alkoxy group having 1 to 5 carbon atoms; and

(b) 20 to 30 parts by weight of at least one liquid crystal compound represented by the following formula:

(4)

where X^2 is $CH_3CH=CH—$ or $CH_3CH=CHCH_2CH_2—$, wherein said composition contains at least 70 parts by weight of the liquid crystal compounds represented by formulas (1), (2) and (4), said liquid crystal composition not containing a compound having an ester bond or a heterocyclic compound, said liquid crystal composition having an elastic constant ratio K_{33}/K_{11} of 1.75 or more, a dielectric constant ratio $\Delta\epsilon/\epsilon\perp$ of 2.0 or less, a perpendicular dielectric constant $\epsilon\perp$ of 4 or less and an average constant $\bar{\epsilon}$ of 6 or less.

5,443,757

LIQUID DISHWASHING DETERGENT

Ernest H. Brumbaugh, Rockford, Mich., assignor to Amway Corporation, Ada, Mich.

Division of Ser. No. 848,449, Mar. 9, 1992, Pat. No. 5,298,195. This application Nov. 12, 1993, Ser. No. 150,842

Int. Cl.[6] C11D *1/06, 1/14, 1/83, 3/32*

U.S. Cl. 252—548 8 Claims

1. A liquid dishwashing detergent compositions consisting essentially of, per 100 parts by weight:

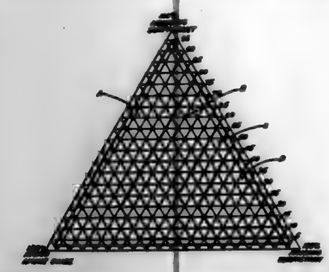
a. 20 to 60 parts by weight of a three component mixture containing 5–98% anionic surfactant, 1–94% nonionic surfactant, and 1–30% alkyl ethoxylated carboxylate;

b. 0 to 20 parts of additives; and

c. water comprising the balance wherein the anionic surfactant is selected from the group consisting of C_8–C_{20} secondary alkane sulfonates and mixtures thereof; the nonionic is an amide selected from the group consisting of amides of the formula

$$R_1—CO—N(H)_{m-1}(R_2OH)_{3-m}$$

wherein R_1 is a saturated or unsaturated aliphatic hydro-

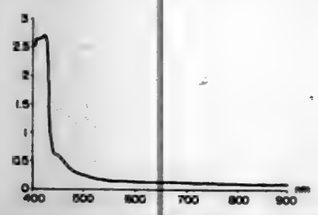


carbon radical having from 8 to 18 carbon atoms; R_2 is methylene, ethylene or propylene group; and m is 1, 2 or 3, and mixtures thereof; and the alkyl ethoxylated carboxylate is selected from the group consisting of carboxylates of the formula

$$R_1(OC_2H_4)_n—OCH_2COO^-M^+$$

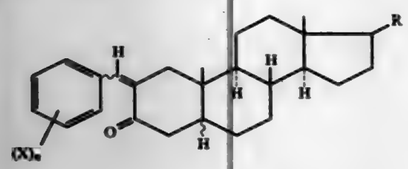
wherein R_1 is a C_{4-18} alkyl, n is from about 3 to about 20, and M is hydrogen, a solubilizing metal, ammonium, and lower alkanolammonium, and mixtures thereof.

5,443,758
NON-LINEAR OPTICAL MATERIAL CONTAINING STEROIDAL KETONE COMPOUND
Makoto Kaji, Hatachi, Japan, assignor to Hatachi Chemical Company, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 724,186, Jul. 1, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 942,153
Claims priority, application Japan, Jun. 29, 1990, 2-172898; Nov. 30, 1990, 2-329466
Int. Cl.[6] F21V 9/00; G02F 1/37
U.S. Cl. 252—582 **24 Claims**



11. A non-linear optical device using a non-linear optical material comprising a steroidal ketone compound represented by the formula:

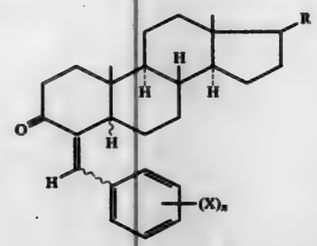
[IV]



-continued

or the formula:

[V]



wherein R is an alkyl group having 1–20 carbon atoms; X is an amino group, an alkylamino group having 1 to 6 carbon atoms, a dialkylamino group having 1 to 6 carbon atoms in each alkyl group, an acylated amino group having 1 to 6 carbon atoms, a hydroxyl group, an alkoxy group having 1 to 6 carbon atoms, a thioalkyl group having 1 to 6 carbon atoms, an alkyl group having 1–20 carbon atoms, a nitro group, a cyano group or a halogen atom, provided that when n is two or more these groups and atoms may be different from one another; the bond shown by ~~ denotes a cis- or trans-position; and n is an integer of 1 to 5.

5,443,759
OIL-IN-WATER EMULSIONS
Gerd H. Dahms, Velbert, Germany, assignor to Tioxide Specialties Limited, London, England
Filed Mar. 1, 1993, Ser. No. 24,069
Claims priority, application United Kingdom, Feb. 29, 1992, 9204387.6
Int. Cl.[6] B01J 13/00
U.S. Cl. 252—302 **29 Claims**

1. An oil-in-water emulsion comprising from 0.5 percent to 30 percent by weight with respect to the total weight of emulsion of particles of a metallic oxide having an average primary particle size of less than 0.2 micron, said emulsion containing an emulsifier system comprising one or more emulsifiers, said emulsifier system being present in an amount of less than 10 percent by weight with respect to the total weight of emulsion and said emulsifier system having a hydrophile-lipophile balance of less than 6, from 5 percent to 30 percent by weight with respect to the total weight of emulsion of an oil phase and at least 60 percent by weight with respect to total weight of emulsion of an aqueous phase.

5,443,760
SILICONE CONTAINING OIL-IN-WATER EMULSIONS
Kenneth A. Kasprzak, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Jan. 3, 1993, Ser. No. 71,734
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] B01J 13/00; A61K 31/765
U.S. Cl. 424—78.03 **10 Claims**

1. A method of making an emulsion comprising (i) preparing an oil phase having a silicone oil and a first silicone oxyalkylene copolymer; (ii) preparing an aqueous phase having water and a second silicone oxyalkylene copolymer; the combined hydrophile-lipophile balance (HLB) of the first and second silicone oxyalkylene copolymers having a value in the range of 4 to 7; and (iii) forming an oil-in-water emulsion by adding the oil phase to the aqueous phase and mixing the phases.

5,443,761
ELASTIC SOLIDS HAVING REVERSIBLE STRAIN-INDUCED FLUIDITY
John L. Burba, III, and Christopher P. Christenson, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 698,428, May 10, 1991, Pat. No. 5,196,143, Ser. No. 686,098, Apr. 16, 1991, Pat. No. 5,232,627, Ser. No. 526,970, May 16, 1990, Pat. No. 5,094,778, Ser. No. 877,825, Sep. 4, 1990, Pat. No. 5,154,932, Ser. No. 568,480, Aug. 15, 1990, abandoned, Ser. No. 577,408, Sep. 4, 1990, abandoned, and Ser. No. 609,966, Nov. 6, 1990, Pat. No. 5,084,200, said Ser. No. 526,970, is a continuation of Ser. No. 282,445, Dec. 9, 1988, abandoned, which is a continuation of Ser. No. 47,880, May 7, 1987, Pat. No. 4,790,954, which is a continuation of Ser. No. 752,326, Jul. 5, 1985, Pat. No. 4,664,843, said Ser. No. 577,825, is a continuation of Ser. No. 282,281, Sep. 4, 1990, abandoned, and a continuation-in-part of Ser. No. 698,428, May 10, 1991, Pat. No. 5,196,143, Ser. No. 686,098, Apr. 16, 1991, Pat. No. 5,232,627, and Ser. No. 526,970, May 16, 1990, Pat. No. 5,094,778, said Ser. No. 282,281, is a continuation-in-part of Ser. No. 60,133, Jun. 9, 1987, Pat. No. 4,998,268, which is a continuation of Ser. No. 752,325, Jul. 5, 1985, abandoned. This application Oct. 11, 1991, Ser. No. 775,662
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[6] B01J 13/00; C01B 33/39, 33/36
U.S. Cl. 252—315.5 **27 Claims**

1. An elastic solid composition which instantly undergoes a phase change to a fluid phase upon application of a stress force, and which instantly reverts back to its elastic solid phase upon cessation of the stress force, said composition comprising

(a) a fluid having distributed throughout finely-divided particles having surface ionic charge sites, in admixture with

(b) an amount of colloidal, monodispersed particles having counter-ionic surface charges effective to form an elastic solid when at rest, and which is fluid under stress.

12. An elastic solid composition exhibiting stress-dependent fluidity, said composition comprising

a fluid containing an amount, sufficient to cause the fluid to be an elastic solid exhibiting stress-dependent fluidity, of a crystalline mixed metal hydroxide conforming essentially to the empirical formula

$$Li_mD_dT(OH)_{(m+2d+3+na)}(A^n)_e{\cdot}xH_2O$$

where m is an amount, in the range of zero to about 1, of Li cations,

D represents divalent metal cations, d is an amount of D and is in the range of zero to about 4,

T represents a unit amount of trivalent metal cations,

A represents monovalent or polyvalent anions or negative-valent radicals of valence -n, with a being the amount of A anions;

m+d is greater than zero and (m+2d+3+na) is equal to or greater than 3,

and x is zero or more if there are excess waters of hydration, said discontinuous phase being essentially uniformly distributed in the fluid system in an amount which produces a gel which has the characteristics of an elastic solid having stress-dependent fluidity.

5,443,762
SOLVENT MIXTURES HAVING ENHANCED EVAPORATION
Edward A. Rowe, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 844,861, Mar. 2, 1992, Pat. No. 5,240,641. This application Jul. 26, 1993, Ser. No. 96,250
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[6] C23G 5/028
U.S. Cl. 252—364 **16 Claims**

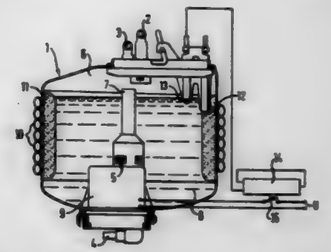
1. A mixture consisting essentially of

(1) about 10 to about 60 volume % monochlorobenzotrifluoride;

(2) about 30 to about 60 volume % monochlorotoluene; and

(3) about 20 to about 60 volume % perchloroethylene.

5,443,763
APPARATUS FOR MIXING WATER WITH CO_2 GAS TO PRODUCE CARBONATED WATER
Robert Notar, Knittlingen, and Udo Schwander, Karlsruhe, both of Germany, assignors to The Coca-Cola Company, Atlanta, Ga. and Bosch-Siemens Hausgerate GmbH, Munich, Germany
Filed Apr. 28, 1994, Ser. No. 233,971
Claims priority, application Germany, Aug. 28, 1992, 42 28 771.5
Int. Cl.[6] B01F 3/04
U.S. Cl. 261—140.1 **10 Claims**



1. Apparatus for mixing fresh water with CO_2 gas to produce carbonated water, comprising:

a storage tank which operates to cool its contents;

a cooling circuit including a set of cooling coils for forming an ice bank on an inner wall surface of the storage tank;

a circulating pump located inside the storage tank for mixing CO_2 gas from a head region of the storage tank with water in the storage tank and forming carbonated water thereby and/or imparting a circular flow to the carbonated water inside the storage tank;

outlet means for removing carbonated water from a bottom portion of the storage tank; and

control means for operating said circulating pump in repetitive cycles of consecutive ON and OFF time periods of respective predetermined lengths for causing relatively warmer water to sink and relatively colder water to rise, thereby causing any ice formed and floating in the water to come together and attach itself to the ice bank while keeping the outlet means free of floating ice.

5,443,764

WATER-DISPERSIBLE GRANULES

John M. Lloyd, Richmond, and Audrey G. Stuart, Nelson, both of New Zealand, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

Continuation of Ser. No. 144,610, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 967,547, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 746,207, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 327,983, Mar. 1, 1989, abandoned. This application Oct. 11, 1994, Ser. No. 321,441

Claims priority, application New Zealand, Jul. 1, 1987, 220920

Int. Cl.[6] B29B 9/00

U.S. Cl. 264—15 17 Claims

1. A process for the preparation of water dispersible granules comprising an active agricultural chemical for use in preparing aqueous dispersions suitable for application of the active agricultural chemical by spraying, the process comprising mixing the granule components, including the active agricultural chemical and a surfactant therefor, in the presence of water to form an extrudable wet mix, the amount of water being in the range of 5–50 liters per 100 Kg of the granule components, extruding the resulting wet mix to form a plurality of wet extrusions of a compactness such that on rolling the extrusions break down into discrete sections of substantially uniform length and then rolling the wet extrusions on each other or on a surface to break down said extrusions into said discrete sections, continuing the rolling action so that said sections are rounded into granules of a length generally not exceeding three times their diameter and thereafter drying the granules thus obtained, the rolling being carried out in a rolling apparatus rotating at a speed in the range of from 1 to 100 rpm for a period of at least 30 seconds such that the resulting granules demonstrate more rapid dispersion and superior suspensability in water than obtainable with a corresponding composition using pan granulation, said granules being further characterized by their lower tendency to powder and form a dust than granules obtained by pan granulation.

5,443,765

METHOD FOR PRODUCING A HIGHLY STRETCHED MULTI-LAYERED FILM

Isao Yoshimura, Fujisawa, and Shin Kahata, Tsu, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 863,307, Jul. 13, 1992, Pat. No. 5,300,353. This application Jan. 19, 1994, Ser. No. 183,424

Claims priority, application Japan, Nov. 14, 1990, 2-306301

Int. Cl.[6] B29C 71/04

U.S. Cl. 264—22 7 Claims

1. A method for producing a highly stretched multi-layered film which comprises melt kneading each of resins arranged in at least five layers comprising a surface layer (S layer) and as inner layers at least one base layer (SBC layer), at least one core layer (H layer), and at least one auxiliary layer (R layer), the resin for the surface layer (S layer) comprising at least one polymer selected from (A), (B), crystalline 1,2-polybutadiene and soft ethylenic copolymer ionomer resin, the resin for the base layer (SBC layer) comprising a mixed composition selected from (A)+(B)+(C), (A)+(B) and (B)+(C), the resin for the core layer (H layer) comprising a polymer selected from (C), and the resin for the auxiliary layer (R layer) comprising an ethylene-α-olefin copolymer soft elastomer selected from component (B) and having a melt index of 0.1 to 10, a density of 0.870 to 0.905 g/cm^3 and an ethylene content of 85 to 95 mol %, or an ethylene-α-olefin copolymer selected from component (A) and having a melt index of 0.1 to 10, a density of 0.905 to 0.935 g/cm^3, an ethylene content of 90 to 99 mol % and whose α-olefin monomeric unit has 4 to 12 carbon atoms, with a proviso that when the R layer is adjacent to the S layer, the R layer comprises a resin different from that of the S layer and the R layer being an ethylene-α-olefin copolymer selected from component (A), having a density of 0.905 to 0.935 g/cm^3 and a Vicat softening point 1.05 times or more of the Vicat softening point of the S layer, said (A) layer being a low-density polyethylene or at least one copolymer of ethylene with at least one monomer selected from the group consisting of a vinyl ester, an aliphatic unsaturated monocarboxylic acid and an alkyl ester of said monocarboxylic acid or a derivative thereof, said (B) being a soft thermoplastic elastomer having a Vicat softening point of 80° C. or lower, and said (C) being selected from the group consisting of a crystalline polypropylene, a crystalline polybutene-1, a crystalline poly-4-methylpentene-1, and mixtures thereof, extruding the respective kneaded resins through a multi-layer die to form an extrudate, rapidly cooling and solidifying the extrudate by a liquid cooling medium to produce a tubular or flat raw film, and then stretching the raw film at an area stretching ratio of 4 to 30 times at a stretching temperature of 30°–100° C.

5,443,766

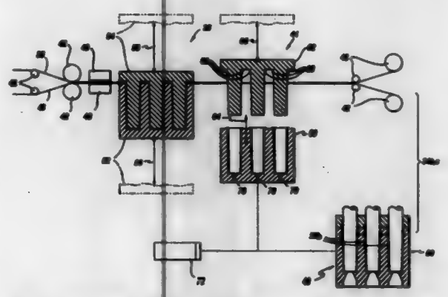
METHOD OF MAKING MULTI-LAYER PREFORM USED FOR PLASTIC BLOW MOLDING

William A. Slat, Brooklyn, Mich., and Richard C. Darr, Seville, Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.

Filed Sep. 10, 1993, Ser. No. 120,038

Int. Cl.[6] B29C 45/14, 49/20, 49/06

U.S. Cl. 264—37 14 Claims



1. A method for making a multi-layer preform used for plastic blow molding, the method comprising:

thermoforming a sheet of polyethylene naphthalate to provide an inner layer that functions as a gas barrier;

thermoforming a sheet of virgin polyethylene terephthalate to provide a further inner layer that has a direct interface with the inner layer of polyethylene naphthalate; and

injection molding an outer layer of post consumer recycled polyethylene terephthalate around the inner layer of virgin polyethylene terephthalate and the inner layer of polyethylene naphthalate which limits the transmission of gas through the outer layer of polyethylene terephthalate upon blow molding of the preform into a container.

5,443,767

PROCESS FOR MOLDING A MULTIPLE STRUCTURE AND A CONTAINER MADE THEREIN

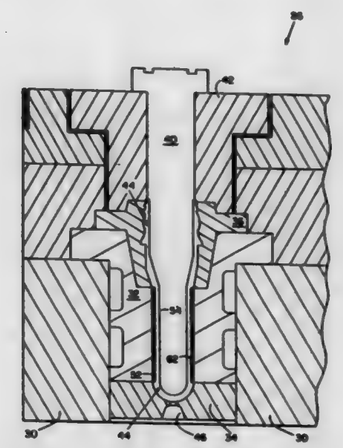
John W. Cahill, Yorktown Hts., N.Y., assignor to PepsiCo., Inc., Purchase, N.Y.

Continuation of Ser. No. 951,319, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 546,093, Jun. 29, 1990, abandoned, which is a division of Ser. No. 238,979, Aug. 25, 1988, Pat. No. 4,942,008, which is a continuation of Ser. No. 753,402, Jul. 10, 1985, abandoned. This application Oct. 15, 1993, Ser. No. 137,888

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[6] B29C 49/20

U.S. Cl. 264—37 26 Claims



1. An injection molding process for forming a partially laminated preform for a beverage container comprising the steps of:

(a) providing a plastic tube;

(b) cutting off a portion of the plastic tube to form a hollow, plastic sleeve having an initial, generally hollow cylindrical shape and including a cylindrical side wall and first and second opposite, open axial ends;

(c) providing a mold cavity having at least first, second and third cavity surfaces, said first cavity surface for forming a neck portion of said preform, said second cavity surface for forming a side wall portion of said preform and said third cavity surface for forming a bottom wall of said preform;

(d) placing the plastic sleeve adjacent said second cavity surface such that at least a portion of the side wall of said sleeve is in firm contact with said second cavity surface for forming a preform having a laminated side wall portion;

(e) closing the mold to enclose the sleeve in the mold cavity;

(f) conducting a flowing, heated plastic into the mold cavity and through the first open axial end of the sleeve and into the interior thereof;

(g) forcing the flowing plastic radially outward against the sleeve to force the sleeve outward from said initial shape and into a shape conforming with the shape of said cavity surface, and to form, with the sleeve, a preform having a neck portion, a bottom portion and an integrally bonded laminated sidewall portion;

(h) opening the mold; and

(i) removing the preform from the mold.

5,443,768

ABRASIVE AND PURGE COMPOSITIONS

Anthony S. Scheibelhoffer, Norton; Dianna B. Dusek, Oakwood Village; Dennis L. Hammond, Richfield; Serachai Wimolkiatisak, Strongsville; William R. Myers, Bryan; Robert J. Opalko, Middleburg Heights, and Richard L. Abrams, North Royalton, all of Ohio, assignors to The Ferro Corporation, Cleveland, Ohio

Filed Dec. 21, 1993, Ser. No. 171,062

Int. Cl.[6] B08B 9/00

U.S. Cl. 264—39 24 Claims

1. A method of purging polymer processing equipment comprising the steps of (1) adding at least one abrasive composition comprising (a) a major amount of at least one abrasive powder, (b) at least one resin selected from the group consisting of a homopolymer of a diene or a copolymer of a diene and a monomer selected from the group consisting of ethylene, propylene and styrene, a rosin material, a coumarone-indene resin, and a mixture of two or more thereof, and (c) at least one copolymer of an olefin and an acrylate or a methacrylate to the processing equipment, and (2) operating the equipment.

5,443,769

POLYSTYRENE FOAM SHEET MANUFACTURE

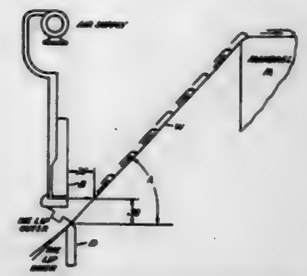
James A. Karabedian, Toledo, Ohio, and Maurice W. Blackwelder, Bardstown, Ky., assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Division of Ser. No. 752,430, Aug. 30, 1991, abandoned, which is a continuation of Ser. No. 538,291, Jun. 14, 1990, Pat. No. 5,082,608. This application Nov. 24, 1993, Ser. No. 118,081

The portion of the term of this patent subsequent to Feb. 21, 2009, has been disclaimed.

Int. Cl.[6] B29C 47/06, 47/90

U.S. Cl. 264—46.1 15 Claims



1. The method of making heat shrinkable foam sheet material adapted to be used to form shrinkable labels on containers or cups which comprises

introducing atmospheric gas as the blowing agent into a molten thermoplastic resin in an amount of less than 2% by weight,

coextruding a plastic film layer and a foam layer such that the foam layer and plastic film layer form a frustoconical tubular web comprising a foam layer and a plastic film at an angle to the axis of the extruder,

passing said frustoconical web over an internal cooling mandrel to cool the interior of the web,

simultaneously applying cooling air to the outside of the frustoconical web,

said step of applying cooling air to the outside of the frustoconical web comprising applying cooling air axially to the outside of said frustoconical web at an acute angle tangentially to the web whereby the cooling air moves in a direction parallel to the frustoconical web from adjacent the extruder to adjacent the internal cooling mandrel such that the external surface of the frustoconical web is cooled by cooling air and by the ambient air drawn by the cooling air against the external surface of the frustoconical web,

such that the resultant coextruded sheet material comprises a foam layer and a plastic film has substantially no residual blowing agent, and is substantially dimensionally stable at ambient temperatures and has greater shrinkage in a machine direction than in a cross direction at elevated temperatures, and shrinkage properties which do not change substantially when the foam material is stored.

10. An apparatus for forming an extruded thermoplastic foam product comprising

means for heating and extruding a resin in the form of a tubular web,

means for introducing said resin to said means for heating and extruding,

means for introducing an atmospheric gas as a blowing agent to said means for heating and extruding,

means for coextruding a plastic film layer with said foam layer to form a frustoconical web at an acute angle to the axis of the extruder,

means for passing said frustoconical web over an internal cooling mandrel to cool the interior of the web, and

said means for applying cooling air to the outside of the frustoconical web comprising means for applying cooling air axially to the outside of said frustoconical web at an acute angle tangentially to the web whereby the cooling air moves in a direction parallel to the frustoconical web from adjacent the extruder to adjacent the internal cooling mandrel such that the external surface of the frustoconical web is cooled by cooling air and by the ambient air drawn by the cooling air against the external surface of the frustoconical web,

means for simultaneously applying cooling air axially to the outside of said web whereby the cooling air moves in a direction along the frustoconical web from adjacent the extruder to adjacent the internal cooling mandrel such that the external surface of the frustoconical web is cooled by the cooling air against the external surface of the frustoconical web and such that the resultant foam has substantially no residual blowing agent and is substantially dimensionally stable at ambient temperatures and has substantially no corrugations.

5,443,770

HIGH TOUGHNESS CARBIDE CERAMICS BY SLIP CASTING AND METHOD THEREOF

Vladimir D. Krstic, Queen's University, Department of Materials and Metallurgical Eng., and Lanyin Zhang, Queen's University, Department of Materials and Metallurgical Eng., Nicol Hall, both of Kingston, Ontario, Canada K7L 3N6

Filed Sep. 20, 1993, Ser. No. 123,916

Int. Cl.[6] C04B *33/28*

U.S. Cl. 264—60 **8 Claims**

1. A method of producing a layered structure comprising, which method comprises:

(a) forming a ceramic slurry consisting essentially of about 5 percent to about 40 percent by weight of ceramic particles having a size of about 0.1 to about 5 micrometers and about 95 percent to about 60 percent by weight of a liquid;

(b) forming a carbon slurry consisting essentially of about 1 to about 10 percent by weight of carbon particles having a size of about 0.1 to about 5 micrometers and about 99 percent to about 90 percent by weight of a liquid;

(c) slip casting by pouring or spraying the ceramic and carbon slurries alternately into a slip casting mould to produce a layered ceramic structure having ceramic layers with a thickness of from about 50 to about 1000 micrometers and carbon layers with a thickness of from about 1 to about 20 micrometers;

(d) drying the layered ceramic structure in air or under vacuum at temperatures of about 30° C. to about 180° C. to produce a green body;

(e) firing the green body at high temperature, so as to produce a resultant sintered layered body having a fracture toughness of over 19.7 MPa.M[½] and fracture strength of over 300 MPa.

5,443,771

CERAMIC FIBRE AND PROCESS THEREFOR

Sankar D. Gupta, c/o Electrofuel Manufacturing Co, Unit 10, 37 Hanna Ave., Toronto, Ont., Canada M6K 1W8

Continuation-in-part of Ser. No. 944,941, Sep. 15, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,829

Int. Cl.[6] C04B *35/655, 35/58*

U.S. Cl. 264—82 **14 Claims**



1. A process for obtaining a ceramic fibre comprised of titanium boride, zirconium boride or hafnium boride, comprising the steps of:

a) heating boron oxide above its melting point and producing a precursor fibre of boron oxide by a method selected from the group consisting of pulling a thread of molten boron oxide, forcing the molten boron oxide through an aperture and spinning the molten boron oxide, said precursor fibre having a shape defined by the cross-section of said precursor fibre;

b) stabilizing the shape of the boron oxide fibre so obtained by encasing said boron oxide precursor fibre in a continuous skin made of a boron oxide containing substance, said boron oxide containing substance having a melting point which is above the melting point of said boron oxide;

c) reacting said encased boron oxide precursor fibre at a temperature above the melting point of boron oxide with a gas comprising hydrogen and a gaseous halide selected from the group consisting of titanium halide zirconium halide and hafnium halide, to yield a homogeneous boride fibre, and

d) allowing the boride fibre so formed to cool.

5,443,772

METHOD OF RECLAIMING PLASTIC PRODUCT WITH PAINT FILM

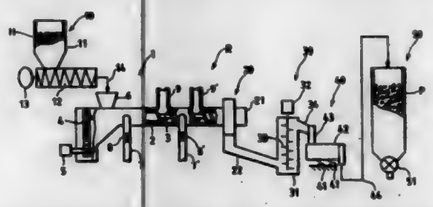
Shigeki Inoue; Fumiaki Tanda; Mitsuo Nagai; Tadamoto Sakai, and Kazuyuki Nakamura, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,321

Claims priority, application Japan, Jul. 9, 1992, 4-204334

Int. Cl.[6] B29B *17/02*; B29C *47/76*; B29K *105/26*

U.S. Cl. 264—102 **6 Claims**



1. A method of reclaiming a plastic product having a paint film, comprising the steps of:

obtaining crushed particles by crushing a plastic product having a paint film into particles of a predetermined size;

supplying the crushed particles to a screw extruder;

kneading and fusing the crushed particles while supplying water thereto such that the paint film is separated from the plastic body, decomposed and gasified into decomposed gas; and

obtaining a plastic by discharging said decomposed gas.

5,443,773

PROCESS FOR PRODUCING HIGH STRENGTH ALUMINA

James M. Staehler; William W. Predebon, and Bruce J. Pletka, all of Houghton, Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Division of Ser. No. 970,615, Nov. 3, 1992, Pat. No. 5,352,643. This application Mar. 14, 1994, Ser. No. 212,158

Int. Cl.[6] B28B *3/00*

U.S. Cl. 264—102 **36 Claims**

1. A method for producing a high strength alumina material in a vacuum hot press having a chamber including a die cavity comprising the steps of:

(a) introducing an alumina powder containing at least about 98% alumina, substantially free of sintering agents and organic contaminants, and having a median particle size less than about 3 microns into the die cavity;

(b) evacuating said chamber; and

(c) vacuum hot pressing said powder at a temperature greater than about 1350° C. but below that which can cause substantial grain growth, at a die pressure greater than about 24 MPa (3500 PSI), and for a period greater than about 1.5 hours but shorter than that which can cause substantial grain growth to produce a high strength alumina material.

5,443,774

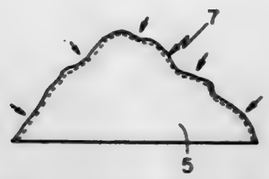
METHOD FOR MAKING ARTIFICIAL ROCKS, IN PARTICULAR LARGE-SCALE ROCK IMITATIONS

Gordon Klüh, Schweinfurt, and Sven Precht, Oberwerrn, both of Germany, assignors to Fa Feladekor Klüh und Precht, Dittelbrunn, Germany

Filed Dec. 2, 1992, Ser. No. 983,439

Int. Cl.[6] B28B *11/06*; B29C *33/38, 33/56*

U.S. Cl. 264—130 **4 Claims**



1. A method for manufacturing artificial rocks, in particular large-scale rock imitations, comprising the steps of:

(a) making a malleable-plastic reproduction negative from a natural stone object,

(b) removing the reproduction from the natural-stone object and bracing the reproduction by coating its back side with a hardening plastic,

(c) following bracing of the reproduction, moving the reproduction into a work position wherein the reproduction can be used as a work mold,

(d) adding a parting compound and a hardening plastic into the work mold and coating the reproduction with synthetic resin to manufacture a positive in the form of a hardened artificial rock blank,

(e) removing the hardened artificial rock blank from the work mold and depositing a coat of synthetic resin onto the artificial rock blank, and

(f) depositing and embedding fine-grain natural sand onto and into the still moist coat of synthetic resin and thereupon drying and hardening the coat of synthetic resin with its incorporated natural sand.

5,443,775

PROCESS FOR PREPARING PIGMENTED THERMOPLASTIC POLYMER COMPOSITIONS AND LOW SHRINKING THERMOSETTING RESIN MOLDING COMPOSITION

Selby M. Brannon, Geneva, Ohio, assignor to Plasticolors, Inc., Ashtabula, Ohio

Continuation of Ser. No. 884,255, May 8, 1992, abandoned. This application May 10, 1993, Ser. No. 59,815

The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.

Int. Cl.[6] B29C *47/36*

U.S. Cl. 264—143 **3 Claims**

1. A process for preparing a pigmented curable molding compound of improved homogeneity comprising mixing together

A) an unsaturated polyester;

B) a monomer which is copolymerizable with A;

C) a thermoplastic polymer having a refractive index which is within about 0.06 unit of the refractive index of said unsaturated polyester, said thermoplastic polymer being polystyrene;

D) a color pigment, and optionally further customary additives;

forming a premix of the pigment by dispersing it in at least some of the thermoplastic polymer C with the aid of an extruder at temperatures within the range of the melting point of the thermoplastic, said premix containing from about 1% to about 40% by weight of said pigment, and

dissolving said premix in said monomer B, the resulting pigmented thermoplastic polymer composition containing from about 10% to about 70% by weight of said monomer B, then mixing said premix with said unsaturated polyester A, the resulting pigmented curable molding compound containing from about 1 to about 40 parts by weight of said thermoplastic polymer C per 100 parts of the combination of said thermoplastic polymer C, unsaturated polyester A and monomer B.

5,443,776

PROCESS OF IMPROVING AT LEAST ONE PROPERTY OF VISCOSE FILAMENTS

Alan J. Bartholomew, Coventry; Paul L. Probert, Rugby; Michael Richardson, Derby, and Andrew G. Wilkes, Coventry, all of United Kingdom, assignors to Courtaulds plc, London, United Kingdom

Filed Mar. 14, 1994, Ser. No. 212,154

Claims priority, application United Kingdom, Mar. 24, 1993, 9306074

Int. Cl.[6] D01F *2/06*; D02G *1/00*

U.S. Cl. 264—168 **8 Claims**



1. In a process for improving at least one property of a continuous filament tow of regenerated viscose cellulose filaments in which process a running tow in a flowing liquid in the form of a spread band is overfed onto a moving foraminous

support to separate it from the liquid, so as to form a coherent web, which web is dried, the improvement of having the continuous filament tow of cellulosic viscose filaments in the partially regenerated state when it is overfed onto the moving foraminous support so that the regeneration of the partially regenerated viscose occurs prior to and after the filament tow is overfed onto the moving foraminous support.

5,443,777

METHOD FOR PRODUCING AN INVISIBLE TEAR SEAM FOR AN AIR BAG DEPLOYMENT OPENING COVER

Daniel H. Mills, Durham, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Dec. 4, 1992, Ser. No. 985,916
Int. Cl.[6] B28B 7/22
U.S. Cl. 264—255 **13 Claims**



1. A method for forming a cover for an air bag deployment opening, the cover having a tear seam which is separable upon an air bag being deployed, the method comprising the steps of:

(a) providing a mold shell having a backside with a multiplicity of heat transfer pins surrounding an open portion in the shape of a tear seam;

(b) disposing a thermoplastic material on a front surface of the mold shell;

(c) heating said heat transfer pins and said open portion to cause a first portion of said front surface to be heated to a first temperature and a second portion of said front surface surrounding said first portion to be heated to a second temperature that is greater than said first temperature, said first and second temperatures being sufficient to cause a unitary layer of said thermoplastic material to form on said front surface, whereby said layer of thermoplastic material has a thinned portion disposed on said first portion; and

(d) cooling said layer of thermoplastic material.

5,443,778

VENT APPARATUS AND METHOD FOR THERMOSET INJECTION MOULDING SYSTEMS

Robert M. Schlingman, Mount Vernon, Wash., assignor to Tempress Incorporated, Seattle, Wash.

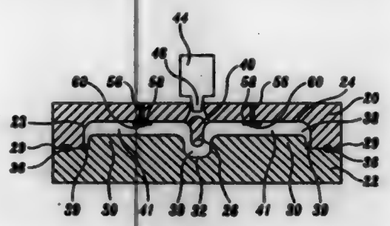
Filed Dec. 23, 1993, Ser. No. 173,609
Int. Cl.[6] B29C *45/14, 45/34*
U.S. Cl. 264—257 **22 Claims**

1. A method of injection molding a part comprising the steps of:

(a) providing a mold having an interior cavity defining a shape of the part, the mold having an inlet through which resin is injected into the mold and a vent that extends through a surface of the interior cavity to allow air to exit the interior cavity of the mold;

(b) placing a porous flow regulator in the interior cavity so that the flow regulator abuts the surface of the interior cavity adjacent and surrounding the vent and is spaced a distance away from the inlet;

(c) injecting a resin into the mold through the inlet, the porous flow regulator regulating the flow of resin adjacent the vent as the resin flows toward the vent to allow air within the interior cavity to escape through the vent



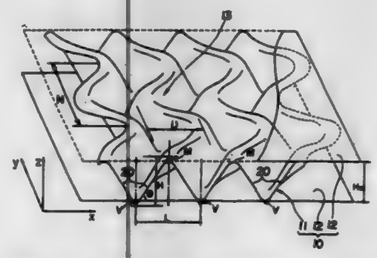
before the resin flows into the vent to reduce the formation of voids in the molded part.

5,443,779

METHOD OF PRODUCTION OF REINFORCED COMPOSITE CORRUGATED BODY AND METHOD OF FORMATION OF CORRUGATING ROLLERS FOR USE THEREIN

Hiroo Ichikawa, 18-9, Nishi-Waseda 3-chome, Shinjuku-ku, Tokyo 160, Japan

Division of Ser. No. 796,916, Nov. 22, 1991, Pat. No. 5,314,738, which is a continuation of Ser. No. 613,536, Nov. 6, 1990, abandoned. This application Mar. 11, 1994, Ser. No. 209,220
Int. Cl.[6] B31F *1/20*
U.S. Cl. 264—286 **15 Claims**



1. A method of producing a reinforced composite corrugated body, said method comprising:

forming a corrugated body by forming in a sheet material corrugate lines including, with respect to an x-y-z coordinate system, ridges and grooves formed alternately in an x direction and located in respective planes spaced in a z direction and parallel to an x-y plane, each said ridge and groove of each said corrugate line having a smooth meandering waveform in a y direction as viewed in said x-y plane, and said ridges and grooves defining a smooth meandering sectional waveform in said x direction as viewed in an x-z plane;

forming said sectional waveform to have an amplitude H in said z direction and a wavelength L in said x direction defining a substantial amplitude ratio H/L;

forming said meandering waveform of each said corrugate line to have an amplitude D in said x direction and a wavelength N in said y direction defining a substantial meandering ratio D/N;

forming said corrugate lines to define a substantial meandering overlapping ratio $D/L \geqq 0.5$;

forming said corrugate lines to have a width narrowing ratio i, equal to a coefficient of contraction of said sheet material in said y direction after formation therein of said corrugate lines to a width in said y direction of said sheet material in the form of a flat sheet before formation therein of said corrugate lines, satisfactory to prevent substantial wrinkling or breakage of said corrugate lines in said x direction;

forming said waveform of each said corrugate line to have crest and bottom portions spaced in said y direction, each said crest and bottom portion being curved or chamfered and having a relatively small dimension in said y direction;

forming said width narrowing ratio i, said substantial amplitude ratio H/L and said meandering ratio D/N to substantially satisfy a profile curve relationship such that the values of H/L and D/N change proportionally when i is changed; and

adhering a flat liner to at least one opposite face of said corrugated body.

5,443,780

ORIENTED FILMS OF POLYLACTIC ACID AND METHODS OF PRODUCING SAME

Kiyoichi Matsumoto, Kyoto; Shu Tahara, Shiga; Eiichi Ozeki, Kyoto; Makoto Ogaito, Kyoto, and Masakazu Kobayashi, Kyoto, all of Japan, assignors to Shimadzu Corporation, Japan

Filed Jun. 24, 1994, Ser. No. 265,348
Int. Cl.[6] B29C *55/00*
U.S. Cl. 264—290.2 **17 Claims**

1. A method of producing an oriented polylactic acid film, said method comprising the steps of:

melting polylactic acid;

extruding melted polylactic acid;

forming a film from said extruded polylactic acid;

cooling said film rapidly; and

thereafter subjecting said rapidly cooled film to a stretching process selected from the group of processes consisting of uniaxial stretching with constant width, successive biaxial stretching and simultaneous biaxial stretching, at a temperature above the glass transition temperature and below the crystallization temperature.

5,443,781

METHOD OF PREPARING DISPOSABLE SHEATH WITH OPTICALLY TRANSPARENT WINDOWS FORMED CONTINUOUSLY INTEGRAL THEREWITH

Mark A. Saab, 396 Andover St., Lowell, Mass. 01852

Division of Ser. No. 968,538, Oct. 29, 1992, Pat. No. 5,337,734. This application Apr. 8, 1994, Ser. No. 225,172
Int. Cl.[6] B29C *55/22*
U.S. Cl. 264—291 **67 Claims**

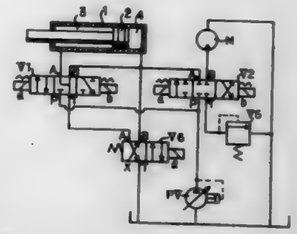
1. Method of preparing an elongated, tubular sleeve for covering an optical medical instrument used for internal body applications, said method comprising the steps of: (a) heating a first film of a polymeric material to a malleable temperature; (b) inserting into said heated first film the distal end of an elongated forming tool comprising a proximal end, a distal end, and sidewalls joining said proximal and distal ends, and at least one shaped surface at or near the distal end of said forming tool, said surface being shaped so as to conform with the geometry of the optical portion of said medical instrument, causing the film to stretch into an elongated shape comprising a closed distal end, an open proximal end, sidewalls around and conforming to the sidewalls of said forming tool, and an optically transparent window adjacent each said shaped surface of said forming tool; and (c) removing the forming tool from said film to create said sleeve.

5,443,782

METHOD OF SHORTENING A RISING TIME OF EACH INJECTION-MOLDING OPERATION IN ASSOCIATION WITH CONTROLLING OF INJECTION-MOLDING SPEED

Nobuyuki Nakamura; Toshiyasu Koda, and Takayoshi Shioiri, all of Nagano, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano, Japan

Filed Sep. 7, 1994, Ser. No. 302,360
Int. Cl.[6] B29C *45/50*
U.S. Cl. 264—328.1 **3 Claims**



1. A method of shortening a rising time of each injection-molding operation in association with the controlling of an injection-molding speed wherein a first direction shifting valve adapted to supply pressurized hydraulic oil delivered from a hydraulic pump to a hydraulic chamber of an injection cylinder on the rearward displacement side and discharge hydraulic oil from said hydraulic chamber on the rearward displacement side, and moreover, discharge hydraulic oil from a hydraulic chamber on the forward displacement side and a second direction shifting valve adapted to supply said pressurized hydraulic oil to said hydraulic chamber on the forward displacement side are disposed in a hydraulic path extending between said hydraulic pump and said injection cylinder, comprising the steps of;

shifting said first direction shifting valve and said second direction shifting valve so as to allow said pressurized hydraulic oil to be exerted on said hydraulic chamber on the forward displacement side while a hydraulic path on the rearward displacement side is blocked by a third direction shifting valve adapted to build a bleeding-off circuit in cooperation with said second direction shifting valve, causing a hydraulic path on the forward displacement side to be hydraulically connected to the tank side,

allowing most of hydraulic oil to bleed off to a tank via said third direction shifting valve,

shifting said third direction shifting valve so as to allow said hydraulic path on the rearward displacement side to be hydraulically connected to the tank side, and

blocking said hydraulic path on the forward displacement side, whereby said injection molding operation can be started.

5,443,783

PROCESS FOR BLOW MOLDING ARTICLES FROM LIQUID CRYSTAL POLYMERS

James P. Shepherd, Springfield; Linda C. Sawyer, Chatham, both of N.J., and Gerald Farrow, Charlotte, N.C., assignors to Hoechst Celanese Corp., Somerville, N.J.

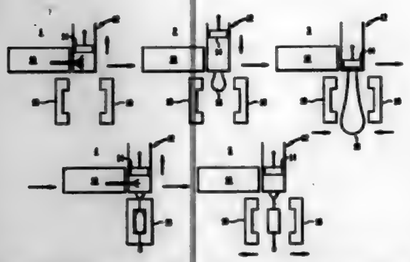
Filed Mar. 23, 1993, Ser. No. 35,831
Int. Cl.[6] B29C *49/04*
U.S. Cl. 264—540 **13 Claims**

1. A process to make hollow articles from a wholly aromatic liquid crystal polymer, comprising:

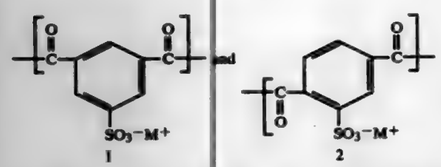
(a) providing a wholly aromatic liquid crystal polymer comprising, in its backbone, in the range of about 0.05–2 mole %, a recurring ionic moiety;

(b) melting said liquid crystal polymer of step (a) in a vessel suitable to extrude it;

(c) extruding the melted polymer into a parison;
(d) bringing a mold in contact with said parison, said mold being operative to define the desired shape of said hollow article; and



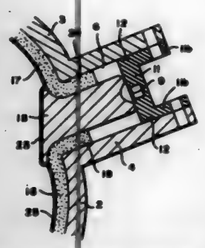
(e) blowing a gas into said parison to form the hollow article, wherein said ionic moiety is selected from the formulae:



1 2

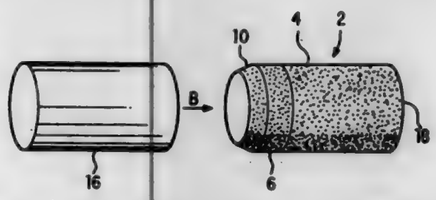
wherein M+ is a cation selected from the group consisting of sodium, lithium, potassium, zinc, calcium, cadmium, magnesium, barium, quaternary ammonium NR_3, and mixtures thereof, with R being the same or different C_1–C_6 groups.

5,443,784
METHOD FOR SIMULTANEOUSLY MOLDING PORTIONS OF SEPARABLE ARTICLE
Eric P. G. Calarier, Gonnevilliers, and Philippe Henrio, Lardy, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.A.), Paris, France
Division of Ser. No. 70,672, Jun. 2, 1993, Pat. No. 5,304,057. This application Jan. 31, 1994, Ser. No. 188,730
Claims priority, application France, Jun. 30, 1992, 92 06697
Int. Cl.[6] B29C *51/10, 51/28*
U.S. Cl. 264—571 **6 Claims**



1. A method for simultaneously molding portions of a separable article having a plurality of separable portions comprising the steps of:
a) providing a mold defining a molding cavity and having a first mold portion and a second mold portion removably attachable to the first mold portion, each mold portion having a flange extending outwardly therefrom along its length and defining a portion of the molding cavity;
b) separating the first and second mold portions;
c) placing molding material in the molding cavity of the separated first and second mold portions such that a first portion of the molding material is located on the first mold portion flange and a second portion of the molding material is located on the second mold portion flange;
d) assembling the first and second mold portions such that their flanges are adjacent, but spaced apart a distance greater than twice the thickness of the molding material on the flanges so that a space is defined between the molding material on the flanges;
e) locating a silicone bead element in the space between the molding material on the adjacent flanges;
f) placing a vacuum pouch in the molding cavity;
g) drawing a vacuum within the molding cavity such that the vacuum pouch expands thereby exerting a force on the molding material urging it against a surface defining the molding cavity; and
h) heating the assembled mold so as to cure the molding material and form the separable portions from the first and second portions of molding material.

5,443,785
METHOD OF TREATING SEAMLESS BELT SUBSTRATES AND CARRIERS THEREFOR
Henry T. Mastalski, Webster, and Clifford H. Griffiths, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 3, 1994, Ser. No. 176,380
Int. Cl.[6] B23P *11/02*
U.S. Cl. 264—573 **11 Claims**

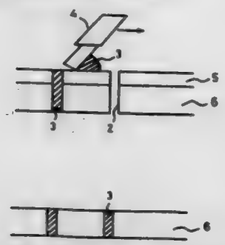


1. A process for treating a seamless substrate to fabricate an electrostatographic imaging member comprising:
elastically stretching said substrate over a hollow cylindrical porous mandrel having a thermal expansion coefficient not greater than the thermal expansion coefficient of the substrate by applying fluid under pressure through said mandrel;
relieving the pressure of said fluid so that the substrate relapses to a shape in close contact with said mandrel; and
treating said substrate in contact with the mandrel by an electrostatographic imaging member fabricating process to form an electrostatographic imaging member.

5,443,786
COMPOSITION FOR THE FORMATION OF CERAMIC VIAS
Hiromitsu Yokoyama, Sagamihara; Koji Omote, Atsugi; Hitoshi Suzuki, Zama; Mineharu Tsukada, Yamato; Nobuo Kamehara, Isehara, and Koichi Niwa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP90/01202, § 371 Date Dec. 17, 1991, § 102(e) Date Dec. 17, 1991, PCT Pub. No. WO91/04650, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 19, 1990, Ser. No. 700,163
Claims priority, application Japan, Sep. 19, 1989, 1-240684
Int. Cl.[6] B22F *7/00*; H01B *1/02, 1/04*
U.S. Cl. 419—9 **7 Claims**

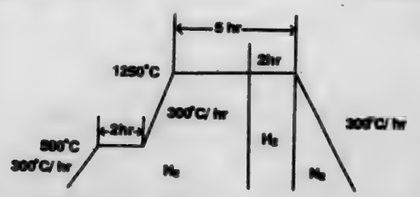
1. A composition for use in forming ceramic via, comprising:
(a) at least one powder containing copper, gold, silver, tungsten, molybdenum, nickel, palladium, platinum, aluminium, or an alloy thereof; and

(b) 5 to 40 wt %, based on the weight of the powder in the composition, of one or more of an organosilicic compound, an organoaluminium compound, an organozirconium compound and an organomagnesium compound.
3. A method of forming ceramic vias, comprising:
providing a substrate, having holes bored therein, selected from the group comprising a glass ceramic composite substrate, an alumina substrate, a magnesia substrate, a zirconia substrate, an aluminum nitride substrate, and green sheets thereof;
forming a composition comprising:



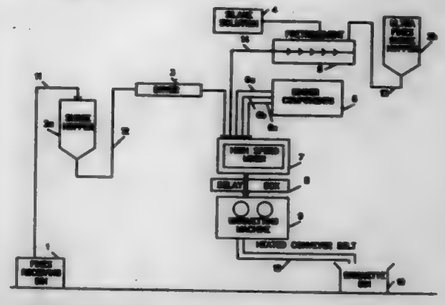
(a) at least one powder containing copper, gold, silver, tungsten, molybdenum, nickel, palladium, platinum, aluminium, or an alloy thereof, and
(b) 5 to 40 wt %, based on the weight of the powder in the composition, of one or more of an organosilicic compound, an organoaluminium compound, an organozirconium compound and an organomagnesium compound;
filling the composition into the holes of the substrate; and
calcinating the substrate.

5,443,787
METHOD FOR PREPARING IRON SYSTEM SOFT MAGNETIC SINTERED BODY
Teruo Mori; Norishige Yamaguchi, both of Chiba, and Katsuhiko Wakayama, Ibaraki, all of Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Jul. 13, 1994, Ser. No. 274,451
Claims priority, application Japan, Jul. 13, 1993, 5-195337
Int. Cl.[6] B22F *1/00, 31/2, 9/04*
U.S. Cl. 419—32 **20 Claims**



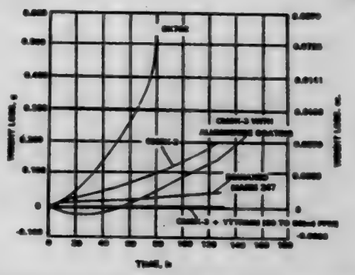
1. A method for preparing an iron system soft magnetic sintered body comprising the steps of:
blending an iron powder with at least one metal powder selected from metals to be alloyed with iron and ferroalloys so as to give a desired chemical composition,
treating the blend by a mechanical alloying process, thereby alloying at least a portion of the metal with iron,
shaping the blend into a compact, and
firing the compact into an iron system soft magnetic sintered body,
wherein the treatment by a mechanical alloying process is effected in the presence of a solid lubricant, and the solid lubricant is added in an amount of 0.1 to 5% by weight of the blend.

5,443,788
METHOD AND APPARATUS FOR FORMATION OF BRIQUETTES COMPRISING BALANCING THE SURFACE AREA BETWEEN ATOMIZED BINDER AND FINES
Francis S. Palowitz, Boardman, and Sudarshan R. Sathe, Canfield, both of Ohio, assignors to Palest International, Inc., Boardman, Ohio
Continuation of Ser. No. 968,386, Oct. 29, 1992, Pat. No. 5,302,341. This application Dec. 9, 1993, Ser. No. 164,381
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—65 **23 Claims**



7. A process for briquetting fines comprising:
charging the fines to a mixer;
charging a binder material to the mixer through at least one fog nozzle, the binder material being fractionated to a size such that the average particle size of the binder material is smaller than the average particle size of the fines and a surface area balance is substantially achieved therebetween;
mixing the fines and the binder material continuously to form a homogeneous mixture;
discharging the mixture to a delay box for a period of time such that the homogeneous mixture is at the point of incipient cure;
discharging the mixture from the delay box to a briquetter; and
forming briquettes.

5,443,789
LOW YTTRIUM, HIGH TEMPERATURE ALLOY
Kenneth Harris, Spring Lake; John M. Eridon, Whitehall, and Steven L. Sikkenga, North Muskegon, all of Mich., assignors to Cannon-Muskegon Corporation, Muskegon, Mich.
Continuation-in-part of Ser. No. 944,458, Sep. 14, 1992, abandoned. This application Nov. 18, 1992, Ser. No. 977,899
Int. Cl.[6] C22C *19/05*
U.S. Cl. 420—443 **4 Claims**



1. An improved nickel based superalloy for casting single crystal turbine engine blades, vanes or combustion components for use at operating temperatures up to 2100° F. without incipient melting porosity, said alloy consisting essentially of the

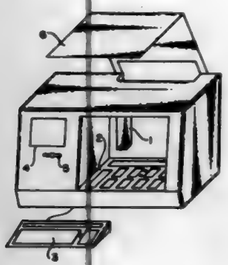
following elements in the following proportions expressed as percentages of weight except where otherwise noted as ppm by weight:

Co	9.3–10.0
Cr	6.4–6.6
Mo	0.5–0.7
W	6.2–6.6
Ta	6.3–6.7
Al	5.45–5.75
Ti	0.8–1.2
Hf	0.07–0.12
Re	2.8–3.2
S	2 ppm max.
P	2 ppm max.
La	5–20 ppm
Ni	Balance.

5,443,790
DEVICE FOR AUTOMATICALLY ANALYZING SAMPLES

Michel Coeurveille, Martigues sur Jalle; Christiane Raffiliponnanas, Pessac; Yves Barach, Merignac, and Magali Millet, Salles, all of France, assignors to Societe Francaise de Recherches et d'Investissements (SFRI), Martigues sur Jalle

Filed Jul. 23, 1992, Ser. No. 917,327
Claims priority, application France, Jul. 26, 1991, 91 09833
Int. Cl.[6] G01N *35/02, 21/00*
U.S. Cl. 422—63 12 Claims

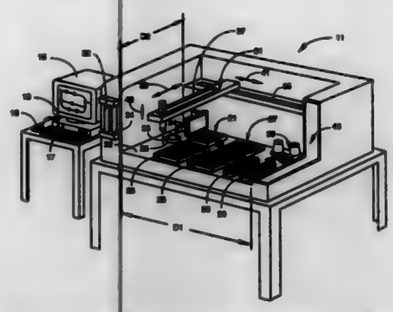


1. Device for automatically analyzing samples, comprising:
at least one head comprising at least one first subunit for sampling and distributing liquids, said first subunit comprising a first vertically movable carriage having at least one first tube for distributing and aspirating liquid product, said at least one first tube being connected to an aspirating and distributing system mounted on a frame;
a working surface for fixedly holding samples to be analyzed, reagents and reaction supports;
a mechanical system for moving said at least one head within a horizontal plane above said working surface, along two perpendicular directions, said mechanical system comprising a belt integral with said at least one head and driven by motors integral with said frame;
at least one washing bowl positioned to wash said at least one first tube, said at least one washing bowl being constructed and arranged so that said at least one first tube is at least partially insertable therein, said at least one washing bowl comprising a lower orifice through which said at least one washing bowl is emptied, and said at least one washing bowl comprising at least one liquid injection nozzle for supplying washing solution to wash an outside portion of said at least one first tube when said at least one first tube is at least partially inserted in said at least one washing bowl;
means for thermally regulating reaction the supports through a thermal regulating liquid in at least partial contact with said reaction supports;
at least one reading system to measure results of reaction between samples to be analyzed and reagents; and
means for controlling, checking and coordinating said at least one head, said mechanical system, said washing bowl, said means for thermally regulating said reaction supports and said at least one reading system to automatically analyze samples.

5,443,791
AUTOMATED MOLECULAR BIOLOGY LABORATORY

G. Richard Cathcart, San Carlos; Thomas Brennan-Marquez, Sunnyvale; John A. Bridgham, Hillsborough; George S. Golda, El Granada; Harry A. Guiremand, Half Moon Bay; Marianne Hane, Burlingame; Louis B. Hoff, Belmont; Eric Lachenmeier, Cupertino; Melvyn N. Kronick, Palo Alto; Douglas H. Keith, Oakland; Paul E. Mayrand, Pacifica; Michael L. Metzker, San Bruno; Michael L. Metzker, San Bruno; William J. Mordan, Mountain View; Lincoln J. McBride, Belmont; John Shigeura, Fremont; Chen-Hassun Ting, San Mateo; Norman M. Whiteley, San Carlos, all of Calif.; Lincoln J. McBride, Belmont; John Shigeura, Fremont; Chen-Hassun Ting, San Mateo, and Norman M. Whiteley, San Carlos, all of Calif., assignors to Perkin Elmer - Applied Biosystems Division, Foster City, Calif.

Continuation of Ser. No. 505,626, Apr. 6, 1990, abandoned. This application Aug. 7, 1992, Ser. No. 927,254
Int. Cl.[6] G01N *21/01, 35/08, 1/10, 21/11*
U.S. Cl. 422—65 32 Claims

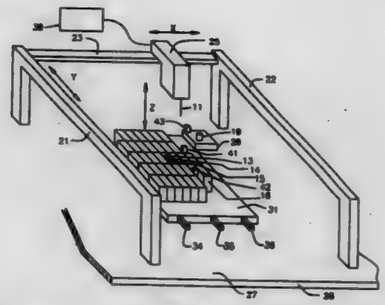


1. A liquid-handling instrument for transferring liquid from one container to another comprising:
a stationary worksurface having machined registration elements for accurately locating and supporting a modular container station for holding said containers of liquid;
a pipette subsystem for aspirating and dispensing liquid, said pipette subsystem comprising a pipette tip coupled to a capacitance sensor;
a robotic translation subsystem for moving said pipette tip to all containers on said worksurface and into and out of said containers;
a gauge block securely fastened to and accurately positioned on said worksurface relative to said registration elements, and having surfaces substantially orthogonal to directions of movement of said pipette tip by said robotic translation subsystem; and
a control subsystem for automatically managing said liquid transfers;
wherein said control subsystem controls said robotic translation subsystem to move said pipette tip to each of said surfaces on said gauge block wherein the pipette tip and the capacitance sensor sense the position of the machined surface of said gauge block thereby establishing a home position on said worksurface for said liquid transfers.

5,443,792
PIPETTING DEVICE

Jürg Bühler, Rothenburg, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 16,405, Feb. 11, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 325,732
Claims priority, application Switzerland, Feb. 13, 1992, 428/92
Int. Cl.[6] G01N *35/10*
U.S. Cl. 422—67 10 Claims



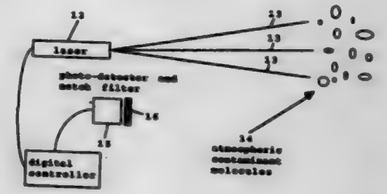
1. A pipetting device for pipetting fluid between a primary vessel and a secondary vessel contained in one or more vessel containers, the device comprising:
(a) at least one removable vessel carrier unit configured and dimensioned to carry one or more vessel containers each having a defined position relative to its vessel carrier unit;
(b) a baseplate having a surface on which the at least one removable vessel carrier unit can be placed;
(c) an electrically conductive pipetting needle constructed and positioned for transferring a volume of liquid from one primary vessel to one secondary vessel when the primary vessel and the secondary vessel are contained in one or more of the at least one vessel container placed on the surface of the at least one carrier unit and the at least one carrier unit is placed on the surface of the baseplate;
(d) means for controllably moving the pipetting needle in three dimensions, thereby bringing the pipetting needle to a predetermined pipetting position;
(e) at least two electrically conductive reference members secured to each vessel carrier unit, each reference member having a plurality of flat surfaces;
(f) control means for causing the pipetting needle to be conveyed to the plurality of flat surfaces of the at least two reference members; and
(g) means for electrically detecting contact between the pipetting needle and each of the plurality of flat surfaces of the at least two reference members.

5,443,793
ATMOSPHERIC CONTAMINANT DETECTOR

John J. Ehrlich; Wayne E. Davenport, both of Huntsville, and Travis S. Taylor, Somerville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 5, 1993, Ser. No. 146,842
Int. Cl.[6] G01N *21/63;* G01J *3/28*
U.S. Cl. 422—83 3 Claims

1. An atmospheric contaminant detector system comprising:
(i) an excitation source of a pulsed laser selected from the group consisting of a tripled Nd:Yag laser, a N_2 discharge laser, and a tunable dye laser to achieve excitation of an atmospheric contaminant in the form of dispersed gaseous molecules, said dispersed gaseous molecules being hazardous gas elements selected from the group consisting of chemical agents, nerve agents, and hazardous atmospheric pollutants, said excitation causing said dispersed gaseous molecules to be excited above ground state resulting in raising the electronic state to an excitational energy level which first undergoes vibrational relaxation by a transition route to the lowest vibrational energy level for said excited gaseous molecule where a transition route takes place while returning to a ground state which results in fluorescence as a result of emitting a photon at a measurable frequency to thereby determine the identify of said atmospheric contaminant;



(ii) a digital controller having a means for firing said selected pulsed laser in direction of an atmospheric contaminant in the form of dispersed gaseous molecules, said digital controller also having means for determining the range and density of said excited gaseous molecules which fluoresces as a result of photo emission; and,
(iii) a photo-detector having a plurality of notch filters in combination therewith which enables said photo-detector to detect more than one hazardous gas element or other atmospheric pollutant at a time by detecting each photon emission from each excited gaseous molecule returning to ground state, said photo-detector having an output which is subsequently transmitted to said digital controller which determines the distance and intensity of each of said photon emission via said photo-detector system.

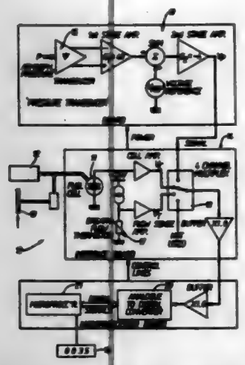
5,443,794
MEASURING APPARATUS

Paul M. Williams, Barry, United Kingdom, assignor to Lion Technology Limited, Barry, United Kingdom

Continuation of Ser. No. 382,663, filed as PCT/GB88/00236, Mar. 29, 1988, abandoned. This application filed May 6, 1991, Ser. No. 696,198
Claims priority, application United Kingdom, May 15, 1987, 8711573
Int. Cl.[6] G01N *1/22*
U.S. Cl. 422—84 7 Claims

1. Apparatus for measuring the concentration of a volatile component in a gas, including a detector for detecting the volatile component and producing an output signal representing the detected concentration of the volatile component in the gas, a gas standard containing a predetermined concentration of the volatile component in a diluent gas pressurized in a container, the standard being prepared for a predetermined atmospheric pressure, sampling means for delivering alternately a sample from the standard and a test sample to the detector, means for outputting from the detector successively one signal representative of the concentration of the volatile component in the test sample and another signal representative of the concentration of the volatile component in the sample from the standard, means for measuring the ambient atmospheric pressure when the sample from the standard is delivered, means for determining the difference between the measured ambient atmospheric pressure and said predetermined

atmospheric pressure, means for generating a correction signal in accordance with said difference, means for generating a concentration signal from said one and said another signals,



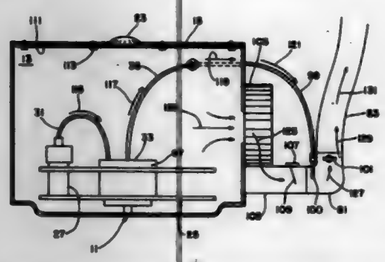
and means for correcting the concentration signal in accordance with the correction signal and for displaying the result as an indication of the concentration of the volatile component in a source from which said test sample was taken.

5,443,795

EXPLOSION PROOF MICROWAVE HEATED SOLVENT EXTRACTION APPARATUS

Robert N. Revesz, Monroe, N.C., assignor to CEM Corporation, Matthews, N.C.

Filed Jun. 9, 1993, Ser. No. 74,324
Int. Cl.[6] G05D *16/08*; H05B *6/80*
U.S. Cl. 422—90 9 Claims



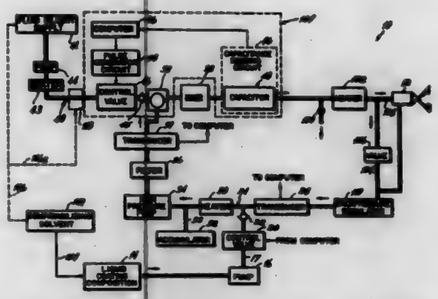
1. An explosion proof microwave heated solvent extraction apparatus which comprises a source of microwave radiation, a walled chamber into which such microwave radiation is directed from said source, an outlet from said chamber through which gas can be withdrawn, a microwave transmissive extraction container in said chamber, adapted to contain, under pressure, liquid solvent extraction medium and material to be extracted by said solvent medium, safety rupture means associated with said extraction container, which rupture means ruptures when pressure in the container is above a predetermined safe limit and thereby releases solvent vapor from said container, a collection container in said chamber, into which collection container said released solvent vapor and any entrained liquid solvent, any entrained material to be extracted and any extracted material are directed and in which they are collected, gas exhausting means for removing gas from said chamber through said chamber outlet, which gas exhausting means also exhausts gas from the collection container, a solvent vapor detector for detecting a presence of solvent vapor in gas exiting said collection container and passing through said chamber outlet, which solvent vapor detector is located in the path of gas being removed from said chamber and controls operation of the source of microwave radiation by turning said source off when solvent vapor is detected by it, and a gas flow rate detector, which is located in the path of gas being removed from said chamber and controls operation of the source of microwave radiation by turning said source of radiation off when gas flow is halted.

5,443,796

METHOD AND APPARATUS FOR PREVENTING THE FORMATION OF A SOLID PRECIPITATE IN A COATING MATERIAL FORMULATION

Kenneth J. Coeling, Westlake; Laurence B. Saidman, Avon Lake; James C. Smith, Amherst; James W. Messerly, Stow, and Stanley E. Mayer, Avon Lake, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Oct. 19, 1992, Ser. No. 963,075
Int. Cl.[6] C23F *11/00*
U.S. Cl. 422—129 19 Claims



1. Apparatus for preventing the formation of a solid precipitate in a system for dispensing a coating material formulation, comprising:

first supply means for supplying supercritical carbon dioxide;

second supply means for supplying a nitrocellulose, lacquer-based liquid coating composition containing dissolved solids;

combining means, connected to said first and second supply means, for combining the supercritical carbon dioxide as a fluid diluent with the nitrocellulose, lacquer-based liquid coating composition containing dissolved solids to form the coating material formulation;

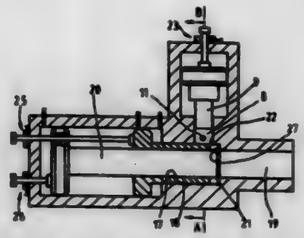
means, connected to at least one of said first and second supply means, for combining a compatabilizing solvent with at least one of the supercritical carbon dioxide and nitrocellulose, lacquer-based liquid coating composition in an effective amount to substantially prevent the formation of a solid precipitate in the coating material formulation.

5,443,797

PROCESS AND APPARATUS FOR THE PRODUCTION OF A FLOWABLE REACTION MIXTURE FROM AT LEAST TWO FLOWABLE REACTIVE COMPONENTS

Ferdinand Prokas, Leverkusen; Hans-Michael Salzbach, Königswinter; Ferdinand Althausen, Neunkirchen; Helmut Duschanek, Königswinter, and Reiner Raffel, Siegburg, all of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Division of Ser. No. 830,164, Jan. 31, 1992, Pat. No. 5,143,946.
This application Jun. 8, 1992, Ser. No. 895,485
Claims priority, application Germany, Feb. 6, 1991, 41 03 532.1
Int. Cl.[6] B29D *27/02*; C08F *2/00*; B01F *15/02*
U.S. Cl. 422—133 4 Claims



1. An apparatus for the production of a flowable reaction mixture comprising:

(a) feed containers, from which

(b) supply lines lead via dispensing pumps to a

(c) mix head, said mix head comprising:

1) a housing containing

2) a mixing chamber in which a discharging piston is mounted and into which the supply lines lead via injection nozzles, said mixing chamber opening into a transversely disposed guide bore of said housing,

3) a throttle slide disposed in said guide bore and being moveable therein,

4) an outlet channel located in said guide bore through which the reaction mixture exits said mix head, and

5) a cleaning piston disposed in said guide bore and being capable of cleaning said outlet channel, wherein said throttle slide concentrically surrounds said cleaning piston, wherein said guide bore extends beyond the point where the mixing chamber opens into said guide bore, and wherein said guide bore has a larger diameter than said outlet channel and said cleaning piston and wherein the walls of the guide bore and the cleaning piston form an annular channel, said annular channel leading to said outlet channel.

5,443,798

SEPARATOR PLATE FOR A CHEMICAL OXYGEN GENERATOR CANDLE AND ASSEMBLY AND GENERATOR MADE THEREFROM

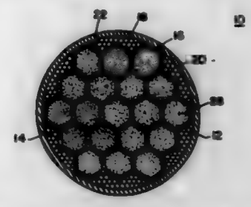
Peter Kerrebrock, Attleboro, Mass., assignor to The Charles Stark Draper Laboratories, Cambridge, Mass.

Filed Oct. 27, 1993, Ser. No. 143,859
Int. Cl.[6] B01J *10/00*; A62B *7/08*; C06D *5/00*; C01B *7/00*
U.S. Cl. 422—129 30 Claims

1. A separator plate for a chemical oxygen generator candle comprising:

an elongate rigid thermal insulating section; and

at least a first conduit section on one side of said rigid section including means for providing a multiplicity of gas flow paths for conducting released oxygen from a burning candle longitudinally along said plate for increasing the burning action of the burning portion of the candle and pre-heating the unburned portion of the candle and for



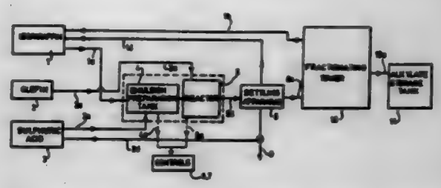
retaining gas to act as an additional thermal insulator when the candle is not burning.

5,443,799

PROCESS FOR THE ALKYLATION OF OLEFINS AND APPARATUS FOR CARRYING OUT THIS PROCESS AND OTHERS

Georgy G. Alexanyan; Nikolay B. Librovitch, both of Moscow, and Yuri A. Prochukhanc, Ufa, all of Russian Federation, assignors to Orgral International Technologies Corporation, St. Michael, Barbados

Filed Aug. 3, 1993, Ser. No. 101,302
Int. Cl.[6] B01J *14/00*
U.S. Cl. 422—231 10 Claims



1. An apparatus for mixing and reacting at least two liquid compounds, said apparatus comprising:

a) a generally cylindrical tank having a longitudinal axis, a length l_1 and a diameter D1, said tank defining an emulsion preparation zone and being provided with a centrally positioned, axially oriented outlet opening having a diameter D6 smaller than D1;

b) means for injecting into said tank a first one of said liquid compounds, said injecting means comprising a plurality of nozzles of average diameter D2 located within said tank opposite said outlet opening, said nozzles extending into said emulsion preparation zone in a direction generally parallel to said longitudinal axis over a distance l_2;

c) means for feeding into the emulsion preparation zone of said tank a second one of said liquid compounds in a generally radial direction relative to said longitudinal axis; and

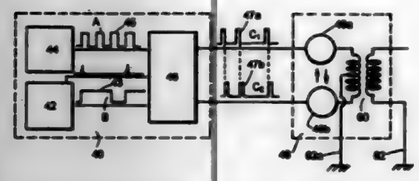
d) a generally cylindrical reactor vessel having a longitudinal axis aligned with the axis of the tank, a length l_3 and a diameter D4 which is larger than D1, said reactor vessel defining a reaction zone separate and downstream from said emulsion preparation zone and having at one end an inlet conduit of diameter D6 and length l_4 that is centrally positioned and axially oriented and in direct communication with the outlet opening of the tank, and, opposite said inlet conduit, a discharge opening that is centrally positioned and axially oriented.

5,443,800

PULSE TRAIN GENERATING CIRCUIT FOR CONTROL OF AN OZONE GENERATING MEANS

Ove K. Dunder, Mississauga, Canada, assignor to Liftech Corporation, Canada

Filed Jun. 1, 1993, Ser. No. 69,775
Int. Cl.[6] B01J 19/12; H01T 23/00
U.S. Cl. 422—186.16 15 Claims



1. An electronic control circuit for accurately controlling the rate of generation of ozone gas molecules, for use in conjunction with an ozone generating means, said electronic control circuit comprising:

a source of electrical power;

ozone production adjustment means for generating a first signal which is indicative of a target rate of ozone gas molecule production;

control signal generation means for accepting said first signal from said ozone production adjustment means, and for generating a control signal a predetermined length first time period and comprising a plurality of consecutive enable and disable portions, where the temporal sum of said enable portions within said first time period is representative of said first signal from said ozone production adjustment means;

pulse generating means;

pulse train gate means having conductive and non-conductive states, where said conductive state is enabled by said enable portion of said control signal a train of pulses from said pulse generating means is passed by said pulse train gate means, and wherein said pulses in said train of pulses correspond to said enable portions of said control signal within said first time period;

wherein, in response to said enable portion of said control signal from said control signal generation means, said pulse train gate means passes said train of pulses, and wherein the time period of one cycle of said first and second portions of each of said pulses is a second time period which is shorter than said first time period;

wherein, in response to said disable portion of said control signal from said control signal generation means, said pulse train gate assumes its non-conductive state;

wherein said train of pulses that is passed by said pulse train gate means is fed to said ozone generating means so as to cause generation of ozone therewithin during the occurrence of said pulses; and

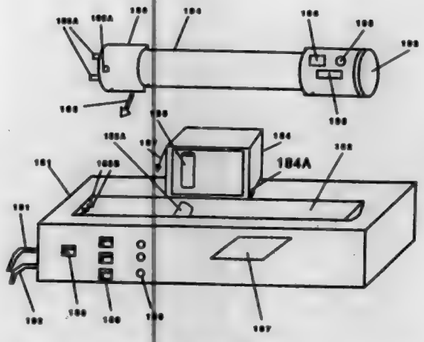
whereby the amount of ozone generated during said first time period is directly related to the temporal sum of the enable portions of pulses in said train of pulses passed by said pulse train gate means during said first time period, so as to thereby provide accurate control of the amount of ozone gas molecules being generated.

5,443,801

ENDOSCOPE CLEANER/STERILIZER

Terrence R. Langford, Tucson, Ariz., assignor to KEW Import-/Export Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 954,979, Sep. 30, 1992, Pat. No. 5,245,845, which is a continuation-in-part of Ser. No. 774,047, Oct. 8, 1991, Pat. No. 5,184,633, which is a continuation-in-part of Ser. No. 556,570, Jul. 20, 1990, abandoned. This application May 14, 1993, Ser. No. 62,958
Int. Cl.[6] A61L 2/00
U.S. Cl. 422—294 29 Claims



1. A tubing cleaning mechanism comprising:

a) a capsule for holding said tubing, said capsule having,

1) a liquid inlet port and a liquid outlet port, said liquid inlet port and said liquid outlet port automatically sealing upon disengagement,

2) a resealable entry port for depositing said tubing in said capsule, and,

3) a flexible peristaltic zone being deformable under pressure, said peristaltic zone forming a wall portion of said capsule;

b) a diaphragm placed in said capsule and encircling said tubing, said diaphragm forming a partial seal in said capsule and dividing said capsule into a first section and a second section;

c) a liquid source providing as chosen liquid; and,

d) an agitator having,

1) a tray for accepting and holding said capsule,

2) pressure means for applying pressure to said flexible peristaltic zone,

3) motor means for moving said pressure means over a portion of said peristaltic zone proximate to said diaphragm,

4) communication means for communicating said liquid from said liquid source to said capsule via the liquid inlet port, and,

5) control means for,

A) causing said communication means to communicate said liquid to said capsule,

B) directing said motor means to cycle said pressure means over said peristaltic zone for a selected period of time, and,

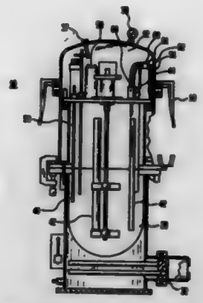
C) opening the liquid outlet port to drain liquid from said capsule.

5,443,802

STERILIZATION OF FERMENTATION EQUIPMENT WITH SHROUD ASSEMBLY

David Freedman; Yinliang Chen, both of Highland Park, and Zhenbin Zheng, Edison, all of N.J., assignors to New Brunswick Scientific Co., Inc., Edison, N.J.

Filed Jul. 29, 1993, Ser. No. 99,622
Int. Cl.[6] A61L 2/20
U.S. Cl. 422—298 11 Claims



1. An apparatus for in-place sterilization of fermentation equipment comprising:

a base;

a fermentation vessel attached to said base, said fermentation vessel including a wall;

steam generation means for producing steam;

a removable shroud having an interior and selectively attachable to said base for surrounding said fermentation vessel when such shroud is attached to said base; and,

steam delivery means for selectively delivering steam from said steam generation means to a space defined between said shroud an said fermentation vessel,

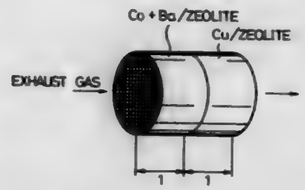
wherein said fermentation vessel can be sterilized in-place.

5,443,803

CATALYST FOR PURIFYING EXHAUST GAS

Tetsuji Mizuno, Toyota; Shinichi Takeshima, Susono; Kazuhiko Sekizawa, and Seushi Kasahara, both of Shinnanyo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Tosoh Corporation, Shinnanyo, both of Japan

Filed Aug. 7, 1992, Ser. No. 925,669
Claims priority, application Japan, Aug. 7, 1991, 3-198018
Int. Cl.[6] B01D 53/94
U.S. Cl. 423—213.2 10 Claims



1. A method for purifying an exhaust gas containing nitrogen oxides, carbon monoxide and hydrocarbons in an oxygen rich atmosphere comprising:

i) bringing said exhaust gas into contact with two different catalysts, said catalysts comprising (i) a first zeolite catalyst ion-exchanged with cobalt and at least one alkaline earth metal, the amount of cobalt is 0.1 to 1.7 times, in terms of molar ratio to alumina in said first zeolite catalyst and the amount of the alkaline earth metal is 0.1 to 1 times, in terms of molar ratio to alumina in said first zeolite catalyst, provided on an inlet side of an exhaust gas stream and (ii) a second zeolite catalyst ion-exchanged with copper, the amount of copper is 0.1 to 2 times, in terms of molar ratio to alumina in said second zeolite catalyst, provided on an outlet side of said exhaust gas stream; and

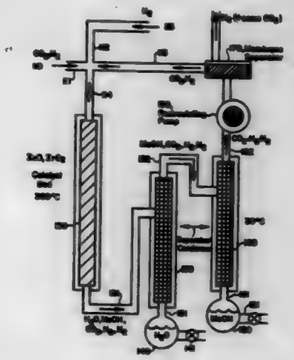
ii) wherein some unconsumed hydrocarbon components are passed from the contact with said first catalyst into contact with said second catalyst and consumed prior to discharging said exhaust gas from said outlet side of said exhaust gas stream.

5,443,804

SYSTEM FOR THE MANUFACTURE OF METHANOL AND SIMULTANEOUS ABATEMENT OF EMISSION OF GREENHOUSE GASES

Robin Z. Parker, Miami, and Robert J. Hanrahan, Gainesville, both of Fla., assignors to Solar Reactor Technologies, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 526,435, May 22, 1990, Pat. No. 5,219,671, which is a continuation-in-part of Ser. No. 393,814, Aug. 14, 1989, abandoned, which is a continuation of Ser. No. 133,239, Dec. 14, 1987, abandoned, which is a continuation of Ser. No. 804,518, Dec. 4, 1985, abandoned. This application Jun. 30, 1992, Ser. No. 906,854
Int. Cl.[6] C01B 31/20; C07C 27/06
U.S. Cl. 423—230 13 Claims



1. A method for the joint i) abatement of emission of a "greenhouse" gas by removing carbon dioxide from a water vapor-bearing effluent and ii) manufacture of methanol by reaction of hydrogen with the removed carbon dioxide, comprising:

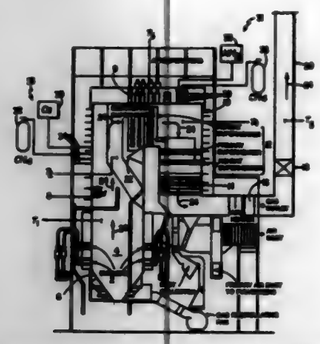
a) reacting carbon dioxide in a water vapor-bearing waste gas stream from one of burning fossil fuel, conducting a fermentation process, conducting municipal waste treatment process and operating a lime kiln by flowing contact of the water vapor-bearing waste gas stream with a bed of basic metal oxide at a temperature and pressure suitable to form a metal carbonate,

b) terminating said contact when said bed has been substantially converted to said carbonate,

c) heating said carbonate to a temperature and pressure suitable to release carbon dioxide therefrom, and

d) mixing said released carbon dioxide with hydrogen from a source of hydrogen and passing the resulting mixture over a catalyst of another metal oxide at a suitable temperature and pressure for a reaction to form methanol, and thereby forming methanol.

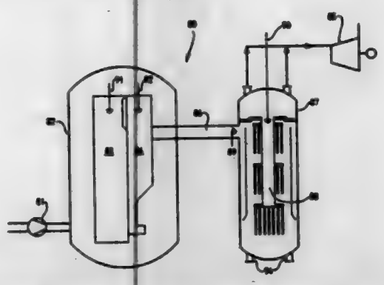
5,443,805
REDUCTION OF COMBUSTION EFFLUENT POLLUTANTS
Jesse M. Bodr, Winchester; Maged A. Toqan, Wellesley, both of Mass.; Alessandro Marotta, and Alberto Beretta, both of Milan, Italy, assignors to Massachusetts Institute of Technology, Cambridge and Enitecnche S.P.A., Italy
Filed Aug. 21, 1991, Ser. No. 748,194
Int. Cl.[6] C10B *21/00*; C10L *1/22*
U.S. Cl. 423—235 17 Claims



1. A method for reducing the amount of NO_x pollutants in the effluent of a combustion process, comprising:
providing an atomizing medium in the form of a hydrocarbon gas at atomizing pressures that is substantially free of nonhydrocarbon diluents such as steam or air, said hydrocarbon gas selected from the group consisting of methane and natural gas,
providing an additive effective to reduce said pollutant in said effluent, the efficiency of said additive in reducing said pollutant being enhanced by the presence of said hydrocarbon gas, said additive is ammonia or ammonia-producing compound and being selected from the group consisting of urea, cyanuric acid, ammonium hydroxide and aqueous solutions thereof and mixtures thereof,
providing an atomizing nozzle, located to inject into the effluent at a selected temperature regime of about 1300° F. to 2100° F. in a fuel lean region of said effluent, downstream of the combustion, said atomizing nozzle constructed to receive said hydrocarbon gas atomizing medium, at said atomizing pressure, and said additive and
atomizing said additive with said hydrocarbon gas atomizing medium to inject an atomized spray of a mixture of said hydrocarbon gas and said additive, to simultaneously mix said hydrocarbon and additive with effluent in a selected effluent temperature regime and efficiently remove said pollutants.

5,443,806
TREATING EXHAUST GAS FROM A PRESSURIZED FLUIDIZED BED REACTION SYSTEM
Jukani Isaksson, and Jari Koskinen, both of Karhula, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Mar. 22, 1994, Ser. No. 215,945
Int. Cl.[6] F22B *1/00*
U.S. Cl. 423—237 28 Claims

1. A method of purifying exhaust gases having a temperature of at least about 300° C. from a pressurized fluidized bed reactor system including a fluidized bed reactor within a first pressure vessel, a filtering surface filtration device separate and distinct from any cyclone separators for separating particulates from the exhaust gases and forming filtrate cake on surface of the filtration device, the filtration device mounted in a second pressure vessel exteriorly of and distinct from the first pressure vessel, and a gas expansion device for expanding the gas after separation of particles therefrom, comprising the steps of:
(a) compressing gas to superatmospheric pressure;
(b) supplying the superatmospheric pressure gas to the fluidized bed reactor and pressure vessel so that the pressure within the pressure vessel is also superatmospheric;
(c) effecting chemical reactions in the fluidized bed reactor at superatmospheric pressure to produce exhaust gases having a temperature of at least about 300° C. containing gaseous impurities and particulates;
(d) while maintaining superatmospheric pressure conditions, conveying the exhaust gases to the filtration device, effecting filtration of particles from the exhaust gases with the filtration surface to produce clean gas while causing particles filtered out to form a filtrate cake, and conveying the clean gas to the gas expansion device and reducing the velocity of the exhaust gases between the first pressure vessel and the filtration device so that the velocity of the exhaust gases when flowing through the filtration device is about 1–20 cm/s and
(e) during the practice of step (d), introducing a reducing agent into the exhaust gases effective to reduce at least a significant proportion of the gaseous impurities in the exhaust gases.



5,443,807
CONVERSION OF CARBON MONOXIDE UTILIZING A PEROVSKITE-TYPE RARE EARTH COMPLEX OXIDE CATALYST
Youqi Tang, and Bingxiong Lin, both of Beijing, China, assignors to Peking University, Beijing, China
Division of Ser. No. 624,319, Dec. 4, 1990, Pat. No. 5,242,881.
This application Aug. 30, 1993, Ser. No. 114,491
Claims priority, application China, Jul. 26, 1990, 90104880.1
Int. Cl.[6] B01D *53/62*
U.S. Cl. 423—247 10 Claims

1. A method of catalytic conversion of CO, said method comprising catalytically combusting CO with a rare earth complex oxide combustion catalyst comprising active components having the following formula (I)

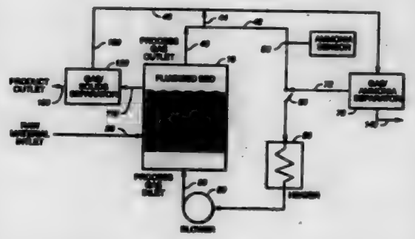
$$\{[A_{1-x}A'_x]_{1-y}\square_y\}\{[B_{1-z}B'_z]_{1-w}\square_w\}O_{3-\delta} \quad (I)$$

wherein A represents rare earth-metal element; A' represents alkaline earth metal element; □ represents the vacancy in the structure; B and B' represent transition metal element; $0 \leq x \leq 0.9$; $0 \leq y \leq 0.2$; $0 \leq z \leq 0.9$; $0 \leq w \leq 0.05$; $0 \leq \delta \leq 0.8$; and a support having mullite as a main phase and additional phases of alumina, silica, and their complex oxides; wherein said addition phases are less than 30 percent by weight of said support; and wherein said active elements are impregnated onto said support.

5,443,808
METHOD OF PRODUCING ALKALI METAL PHOSPHATE
Stig-Göran A. Weckman, Espoo; Robert Peraaho, Helsinki, and Sakari Rihmaki, Vantaa, all of Finland, assignors to Kemira Oy, Espoo, Finland
Continuation of Ser. No. 776,324, filed as PCT/FI91/00100, Apr. 5, 1991, abandoned. Filed Dec. 12, 1994, Ser. No. 356,783
Claims priority, application Finland, Apr. 6, 1990, 901770
Int. Cl.[6] C01B *25/30*, *25/445*
U.S. Cl. 423—309 15 Claims

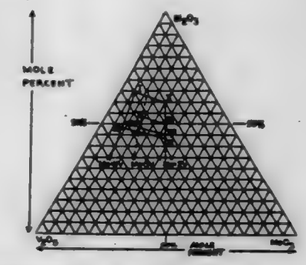
1. A method for producing an aqueous solution of an alkali metal phosphate or a water soluble alkali metal phosphate comprising the steps of:
reacting a phosphoric acid component with an alkali metal chloride in a molar ratio of phosphorus to alkali metal in the range of 1:1 to 1.3:1 and at a temperature ranging from 350° C. to 700° C., the reaction time ranging from 15 to 120 minutes, to produce an alkali metal metaphosphate and hydrogen chloride, said phosphoric acid component comprising fertilizer-grade phosphoric acid;
removing said hydrogen chloride liberated during said reacting step to produce a solid reaction product comprising said alkali metal metaphosphate;
selectively hydrolyzing said solid reaction product at a temperature ranging from 60° C. to 100° C. to produce an aqueous hydrolyzing solution of said alkali metal phosphate and an insoluble residue containing impurities; and
separating said insoluble residue from said hydrolyzing solution to produce a pure aqueous solution of said alkali metal phosphate; and optionally crystallizing and recovering said alkali metal phosphate from said pure aqueous solution.

5,443,809
MANUFACTURE OF CATHODE MATERIALS BY THE DECOMPOSITION OF AMMONIUM METAL OXIDES IN A FLUIDIZED BED
Ib I. Olsen, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.
Filed May 24, 1994, Ser. No. 248,024
Int. Cl.[6] C01G *31/02*
U.S. Cl. 423—592 3 Claims



1. A continuous process for the preparation of electrode-quality vanadium oxide, having the formula V_6O_{13} from NH_4VO_3 which process comprises:
feeding NH_4VO_3 particulates into a fluidized bed reactor;
feeding a process gas comprising ammonia and an inert gas into the reactor wherein the process gas has an ammonia content of from about 10 to about 30 volume percent of the process gas;
contacting said NH_4VO_3 particulates with said process gas and maintaining the NH_4VO_3 particulates at a temperature from about 400° C. to about 480° C. to produce particles of said V_6O_{13};
removing process gas and gaseous reaction products in an exit gas stream from said reactor;
removing gaseous reaction products from said exit gas stream and adjusting the ammonia content in said exit gas stream by separating ammonia from, or adding ammonia to, said exit gas stream to produce a process gas having said ammonia content for recycling into said reactor; and
removing said particles of said V_6O_{13} from said reactor.

5,443,810
PROCESS FOR MAKING BISMUTH-VANADIUM-MOLYBDENUM-CONTAINING COMPOSITIONS
Christine J. Byrne, Olmsted Township; Robert P. Blonski, North Royalton, and John J. Welch, Cleveland, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Apr. 24, 1991, Ser. No. 690,677
Int. Cl.[6] C01G *1/00*, *29/00*, *31/00*, *39/00*
U.S. Cl. 423—593 35 Claims



35. A process for making a bismuth-vanadium-molybdenum-containing composition comprising:
(A) preparing three separate aqueous compositions comprising: a first aqueous composition comprising nitric acid and having a pH in the range of about 0.5 to about 4; a second aqueous composition comprising bismuth nitrate and nitric acid, said second aqueous composition having a pH in the range of about 0.2 to about 3; and a third aqueous composition comprising ammonium metavandate, at least one alkali metal salt of molybdenum and at least one alkali metal hydroxide, said third aqueous composition having a pH in the range of about 9 to about 14;
(B) adding said second aqueous composition and said third aqueous composition simultaneously to said first aqueous composition to form a fourth aqueous composition, and maintaining said fourth aqueous composition at a temperature in the range of about 30° C. to about 90° C. for up to about 4 hours, said fourth aqueous composition precipitated solids;
(C) separating said solids from said fourth aqueous composition; and
(D) heating said solids to an intermediate temperature in the range of about 250° C. to about 450° C. over a period of about 1 minute to about 4 hours, maintaining said solids at said intermediate temperature for about 1 to about 10 hours, heating said solids to a peak temperature in the range of about 525° C. to about 675° C. over a period of about 1 minute to about 4 hours, maintaining said solids at said peak temperature for about 1 to about 10 hours, and cooling said solids to ambient temperature to provide said bismuth-vanadium-molybdenum-containing composition.

5,443,811

METHOD OF PREPARING TITANIUM DIOXIDE

Saila Karvinen, Pori, Finland, assignor to Kemira Oy, Helsinki, Finland

Continuation of Ser. No. 663,492, Mar. 1, 1991, abandoned. This application May 28, 1993, Ser. No. 66,915
Claims priority, application Finland, Mar. 1, 1990, 901053
Int. Cl.[6] C01G *23/04*
U.S. Cl. 423—616 13 Claims



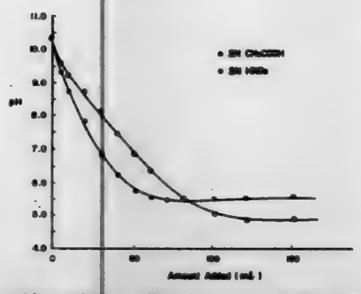
1. Method of preparing rutile microcrystalline titanium dioxide having crystals with an average crystal size in the range of 24 nm to 30 nm from solid titanium dioxide hydrate comprising the steps of:
(a) forming an aqueous alkaline pH slurry comprising said titanium dioxide hydrate and a base;
(b) separating solids from said alkaline pH slurry;
(c) forming an acidic slurry comprising said solids and hydrochloric acid, said acidic slurry having an hydrochloric acid content of between about 8–12 g/l which precipitates rutile titanium dioxide particles;
(d) adjusting said acidic slurry formed in step (c) to a pH value of 4–6 to form a neutralized slurry containing said rutile titanium dioxide particles;
(e) separating said rutile titanium dioxide particles from said neutralized slurry
(f) washing the rutile titanium dioxide particles to obtain washed rutile titanium dioxide particles; and
(g) calcining said washed rutile titanium dioxide particles at a temperature of 400°–950° C. to form said rutile microcrystalline titanium dioxide.

5,443,812

STABILIZED SYNTHETIC ZEOLITE AND A PROCESS FOR THE PREPARATION THEREOF

Kazuhiko Nakajima; Satoshi Ando; Akira Dohn, all of Osaka, and Hideo Yoshitome, Kishiwada, all of Japan, assignors to Kaneko Ltd., Tokyo, Japan

Continuation of Ser. No. 884,289, May 13, 1992, abandoned, which is a continuation of Ser. No. 511,427, Apr. 23, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,415
Claims priority, application Japan, Apr. 24, 1989, 1-1017772; Jul. 24, 1989, 1-188884; Aug. 18, 1989, 1-211259; Dec. 27, 1989, 1-339222; Feb. 20, 1990, 2-37355; Feb. 23, 1990, 2-43269; Feb. 23, 1990, 2-43270
The portion of the term of this patent subsequent to Apr. 22, 2010, has been disclaimed.
Int. Cl.[6] C01B *39/02*
U.S. Cl. 423—700 24 Claims



1. A stable synthetic zeolite, characterized in that when said stable synthetic zeolite is dispersed in water at a concentration of 50 g/liter and maintained at a temperature of 20° to 25° C. for 24 hours, said water has a pH in the range of from 5 to 7.

5,443,813

LOADING AND CONJUGATING CAVITY BIOSTRUCTURES

James F. Hainfeld, Shoreham, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Jun. 6, 1991, Ser. No. 711,208
Int. Cl.[6] A61K *51/10*
U.S. Cl. 424—1.17 5 Claims

1. A biological delivery system comprising apoferritin, said apoferritin having a load-bearing structure and being biologically compatible with a host, said load-bearing structure loaded with uranium-235 and conjugated to biospecific affinity ligand.

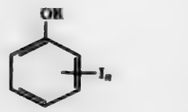
5,443,814

X-RAY CONTRAST COMPOSITIONS CONTAINING IODOPHENOXYALKANES AND CELLULOSE DERIVATIVES

Carl R. Illig, Phoenixville; John L. Toner, Downingtown; Robert W. Lee, Gilbertsville, all of Pa., and Edward J. Baker, Northumberland, England, assignors to Sterling Winthrop, Inc.

Continuation-in-part of Ser. No. 104,744, Aug. 11, 1993, Pat. No. 5,405,600, which is a continuation-in-part of Ser. No. 877,690, May 1, 1992, abandoned. This application Mar. 4, 1994, Ser. No. 206,552
The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.
Int. Cl.[6] A61K *49/04*
U.S. Cl. 424—9.45 15 Claims

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:
(a) from about 0.01 to 200 mg of iodine per ml of the composition of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



(I)

wherein
R is a substituted or unsubstituted alkyl group containing from 2 to 8 carbon atoms, wherein said substituents are selected from the group consisting of C_1–C_6 alkyl, hydroxy and alkoxy; and n is 1 to 5;
(b) from 0.05 to 10% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;
(c) from 0 to 55% w/v of an oily vehicle;
(d) from 0 to 20% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(e) from 0 to 15% w/v of a viscosity modifying excipient; and
(f) water to make 100% by volume.

5,443,815

TECHNETIUM-99M LABELED PEPTIDES FOR IMAGING

Richard T. Dean, Bedford; William McBride, Manchester, and Scott Buttram, Derry, all of N.H., assignors to Diatech, Inc., Londonderry, N.H.

Filed Nov. 27, 1991, Ser. No. 807,062
Int. Cl.[6] A61K *51/08*
U.S. Cl. 424—1.41 8 Claims

1. A composition comprising a peptide reagent for preparing an imaging agent for imaging target sites within a mammalian body, wherein the peptide reagent is comprised of a peptide of between 4 and 100 amino acid residues that is covalently attached to a non-Tc-99m complexing Tc-99m complexing moiety comprising a single thiol group, and a stannous ion.

3. A method for radiolabeling a peptide reagent to prepare an imaging agent for imaging target sites within a mammalian body, wherein the reagent is comprised of a peptide of between 4 and 100 amino acid residues that is covalently attached to a non-Tc-99m complexed Tc-99m complexing moiety comprising a single thiol group, the method comprising reacting the peptide reagent with Tc-99m in the presence of a reducing agent.

5,443,816

PEPTIDE-METAL ION PHARMACEUTICAL PREPARATION AND METHOD

Paul O. Zamora, and Buck A. Rhodes, both of Albuquerque, N. Mex., assignors to Rhomed Incorporated, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 565,275, Aug. 8, 1990, Pat. No. 5,102,990. This application Feb. 20, 1992, Ser. No. 840,077
Int. Cl.[6] A61K *49/00, 51/08*
U.S. Cl. 424—1.69 18 Claims

1. A method of preparing a diagnostic pharmaceutical and performing a diagnostic procedure in a patient, comprising the steps of:
a) preparing a diagnostic pharmaceutical comprising a peptide comprising a biological-function domain and a metal ion-binding domain, wherein the metal ion-binding domain comprises amino acids available for binding selected from the group consisting of cysteine, histidine, penicillamine, deacylated methionine, lysine, arginine, aspartic acid, glutamic acid, tyrosine and mixtures thereof, and a positively-charged transition metal, wherein complexes comprising the positively-charged transition metal and amino acids selected from the group consisting of cysteine, histidine, penicillamine, deacylated methionine, lysine, arginine, aspartic acid, glutamic acid, tyrosine and mixtures thereof, are formed, and wherein the peptide is selected from the group consisting of
(R_1)-$[Y_1]_n$-(R_2),
(R_1)-$[Y_1$-(R_2)-$Y_1]_n$-(R_3)
and (R_1)-$[Y_1$-(R_2)-$Y_2]_n$-(R_3)
and wherein the medically useful metal ion-binding domain is unrelated to metallothionein, requires no initial reduction of disulfide bonds, and is selected from one of the group consisting of $[Y_1]_n$, $[Y_1$-(R_2)-$Y_1]_n$ and $[Y_1$-(R_2)-$Y_2]_n$ in which n is a number between 1 and about 6 and Y_1 and Y_2 are amino acids comprising a sulfur, nitrogen or oxygen which is available for binding to mental ions, or can be made available for binding to metal ions, selected from the group consisting of cysteine, histidine, penicillamine, deacylated methionine, lysine, arginine, aspartic acid, glutamic acid, tyrosine and mixtures thereof; the biological-function domain comprises at least one of the group consisting of R_1, R_2, and R_3 and further comprises an amino acid sequence containing from 1 to about 20 amino acids; and those portions of R_1, R_2, and R_3 not comprising the biological-function domain each comprise an amino acid sequence containing from 0 to about 20 amino acids;
b) labeling the pharmaceutical with a medically useful metal ion, wherein the medically useful metal ion displaces the positively-charged transition metal, wherein complexes comprising the medically useful metal ion and metal ion-binding domain comprising amino acids selected from the group consisting of cycteine, histidine, penicillamine, deacylated methionine, lysine, arginine, aspartic acid, glutamic acid; tyrosine and mixtures thereof, are formed;
c) administering to a patient the medically useful metal ion-labeled peptide in an amount effective for imaging; and
d) imaging by metal ion detection means.

5,443,817

SELF-FOAMING CLEANSER

Amy C. Zimmerman, Ansonia, Conn., and David A. Rosser, Heswall, United Kingdom, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 23, 1993, Ser. No. 110,275
Int. Cl.[6] A61K *7/00*
U.S. Cl. 424—47 22 Claims

1. A cosmetic product comprising:
(i) a clear bottle capable of withstanding at least 10 paig, the bottle including at an open mouth thereof a spray nozzle; and
(ii) a clear, single-phase cosmetic composition essentially free of C_1–C_3 monohydric alcohol comprising:
(a) from about 0.5 to about 3% of a hydrocarbon propellant selected from the group consisting of isobutane, isopropane and mixtures thereof; and
(b) from about 0.5 to about 40% of at least one surfactant in an aqueous medium;
wherein upon actuation of the spray nozzle the cosmetic composition is expressed from the bottle as a creamy foam mousse.

5,443,818

PROCESS FOR THE USE OF 4-ISOPROPYLBENZYL SALICILATE AS CUTANEOUS ANTILIPOPEROXIDANT

Giorgio Risaldi, 18, Via Semeria, Genova, Italy

Filed Nov. 2, 1993, Ser. No. 144,519
Claims priority, application Italy, Nov. 4, 1992, GE 92 A 000115
Int. Cl.[6] A61K *7/42, 7/48, 9/10*
U.S. Cl. 424—59 2 Claims

1. A method of reducing lipidic peroxidation of the skin which comprises applying to the skin an effective amount of a composition consisting essentially of 4-isopropylbenzylsalicylate.

5,443,819

COMPOSITION AND METHOD OF ENHANCING SUN TANNING

John M. Wood, and Karin U. Schallreuter, both of Quickborn, Germany, assignors to Stiefel Laboratories, Inc., Coral Gables, Fla.

PCT No. PCT/GB92/00877, § 371 Date Nov. 15, 1993, § 102(e) Date Nov. 15, 1993, PCT Pub. No. WO92/20321, PCT Pub. Date Nov. 26, 1992

PCT Filed May 15, 1992, Ser. No. 150,015

Claims priority, application United Kingdom, May 15, 1991, 9110651

Int. Cl.[6] A61K *7/021, 7/42, 7/44*

U.S. Cl. 424—59 15 Claims

1. A topical composition for enhancing tanning of the skin, comprising: an effective amount of a pseudocatalase; an effective amount of a sunscreen agent; and a physiologically acceptable topical vehicle, wherein the pseudocatalase is a transition metal bicarbonate complex.

5,443,820

ESTERS AND AMIDES OF AMINOMETHYLENECYANOACETIC ACID A COSMETIC PREPARATION CONTAINING THE SAME AS A SUNSCREEN AGENT AND A METHOD FOR PROTECTING HUMAN SKIN USING THE SAME

Martin Holderbaum, Ludwigshafen; Alexander Aumueller, Neustadt, and Hubert Trauth, Dudenhofen, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/01432, § 371 Date Jan. 5, 1994, § 102(e) Date Jan. 5, 1994, PCT Pub. No. WO93/01164, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 25, 1992, Ser. No. 170,314

Claims priority, application Germany, Jul. 6, 1991, 41 22 475.2

Int. Cl.[6] A61K *7/42;* C07D *239/42, 213/72;* C07C *255/09*

U.S. Cl. 424—59 8 Claims

1. An ester or amide of aminomethylenecyanoacetic acid of the formula I



(I)

where R^1 and R^2 are each, independently of one another, phenyl, naphthyl, biphenylyl, pyridine or pyrimidine, it being possible for these radicals to be substituted by one to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or groups of the formulae $COOR^3$, COR^3, $CONHR^3$, $OCOR^3$ or $NHCOR^3$, and where

R^3 is C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl or phenyl,

X is C_2–C_{30}-alkylene which can be interrupted by non-adjacent oxygens, or is C_4–C_{12}-alkenylene or C_4–C_{12}-alkynylene where the unsaturated bonds are not adjacent to the ester oxygens, or is C_5–C_8-cycloalkylene or phenylene, and

Y is O or NH.

5,443,821

ALKOXYLATED COMPOUNDS AND THEIR USE IN COSMETIC STICK FORMULATIONS

Ronald J. Smith, River Vale, and Steele Ehni, Hawthorne, both of N.J., assignors to Application Chemicals, Inc., Glen Rock, N.J.

Division of Ser. No. 845,680, Mar. 4, 1992, Pat. No. 5,258,136. This application Nov. 10, 1992, Ser. No. 974,161

Int. Cl.[6] A61K *7/32, 7/42;* C11D *3/48, 9/50*

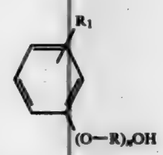
U.S. Cl. 424—65 11 Claims

1. A sodium stearate based gel comprising:

(a) water;

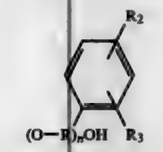
(b) about 1 to about 30 parts of sodium stearate per 100 parts water (by weight);

(c) an amount of a phenol compound of the formula:



FORMULA A

wherein R_1 is an alkyl substituent of from 8 to 18 carbon atoms, R is an ethyl or propyl substituent, and n is from about 50 to 200, or



FORMULA B

wherein R_2 and R_3 are each, independently, an alkyl substituent of 8 to 15 carbon atoms, R is an ethyl or propyl substituent, and n is from about 50 to 200,

wherein the amount of phenol is from about 1% to about 8% by weight of the gel; and

d) a cosmetically active ingredient intended to be deposited on human skin in the range from about 0.05 to about 50 weight percent of the gel.

5,443,822

ANTIPERSPIRANT-DEODORANT COSMETIC STICK PRODUCTS

Wendy R. Greczyn, Randolph; M. Stephen Lajoie, Basking Ridge; John R. Berschied, Lawrenceville, and Lawrence Kirschner, Flanders, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 986,916, Dec. 8, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,777

Int. Cl.[6] A61K *7/32, 7/34, 7/38, 9/14*

U.S. Cl. 424—65 15 Claims

1. An antiperspirant-deodorant cosmetic stick product comprising the following weight percent of ingredients:

volatile silicone oil	25–50
liquid emollient	2–20
low melting point wax	15–20
antiperspirant	20–25
particulate alkali metal bicarbonate deodorant	0.1–25
surfactant	1–3

wherein the particulate alkali metal bicarbonate deodorant ingredient has an average particle size between about 1–100 microns, and the surfaces of the particles are coated with a hydrophilic polymeric coating having a thickness in the range between about 0.1–10 microns.

5,443,823

COMBINATION OF PYRIMIDINE DERIVATIVES AND OF SALICYLIC ACID DERIVATIVES FOR INDUCING AND STIMULATING THE GROWTH OF HAIR AND REDUCING ITS LOSS

Georges Rosenbaum, Asnieres, and Michel Hocquaux, Paris, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 721,922, Jun. 21, 1991, abandoned, which is a continuation of Ser. No. 330,755, Mar. 30, 1989, abandoned. This application Dec. 24, 1992, Ser. No. 995,553

Claims priority, application Luxembourg, Mar. 31, 1988, 87187

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—70.1 11 Claims

1. A combination of components, which is useful for the treatment of the hair and scalp and is effective for inducing and stimulating hair growth and for decreasing hair loss, comprising:

(a) a first component (A), comprising a composition containing a physiologically acceptable medium and 6-amino-1,2-dihydro-1-hydroxy-2-imino-4-piperidinopyrimidine or minoxidil; and

(b) a second component (B), comprising a composition containing a physiologically acceptable medium and 5-n-octanoyl salicylic acid, wherein said components are intended for use as a composition comprising said components or as separate components that are used either simultaneously, successively or intermittently; and wherein minoxidil consists of between 0.05 and 10% by weight of component (A), and 5-n-octanoyl salicylic acid consists of between 0.05 and 10% by weight of component (B).

5,443,824

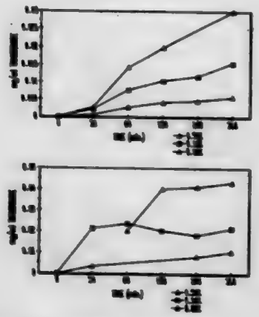
TOPICAL THALIDOMIDE COMPOSITIONS FOR SURFACE OR MUCOSAL WOUNDS, ULCERATIONS, AND LESIONS

Daniel J. Piacquadio, 9723 Saskatchewan, San Diego, Calif. 92129

Filed Mar. 14, 1994, Ser. No. 212,520

Int. Cl.[6] A61K *31/445*

U.S. Cl. 424—78.02 14 Claims



1. A method of treating skin and mucosal ulcerations and lesions, comprising:

topically applying to an affected skin area a small but treatment effective amount of a thalidomide composition comprising, from about 0.01% to about 30% by weight thalidomide and medium range molecular weight polymers of polyethylene glycol having an average molecular weight of from about 200 to about 600 average molecular weight.

5,443,825

HUMAN LEUKEMIA INHIBITORY FACTOR

David P. Gearing, North Fitzroy; Nicholas M. Gough, North Balwyn; Douglas J. Hilton, Warrandyte; Julie A. King, Nunawading; Donald Metcalf, Balwyn; Edouard C. Nice, St. Kilda; Nicos A. Nicola, Regent; Richard J. Simpson, Richmond, and Tracy A. Willson, North Balwyn, all of Australia, assignors to Amrad Corporation Limited, Kew, Australia

Continuation of Ser. No. 667,159, Mar. 11, 1991, which is a division of Ser. No. 294,514, Dec. 9, 1988, Pat. No. 5,187,077. This application Sep. 22, 1992, Ser. No. 948,614

Claims priority, application Australia, Apr. 2, 1987, 1209/87; Jul. 24, 1987, 3317/87; Oct. 15, 1987, 4903/87; Dec. 21, 1987, 6005/87

Int. Cl.[6] A61K *37/02;* C07K *7/10, 9/00*

U.S. Cl. 424—85.1 11 Claims

1. Purified and isolated human leukemia inhibitory factor (LIF) which is substantially free of other human proteins.

5,443,826

TREATMENT OF GASTRO-INTESTINAL DISORDERS WITH A FECAL COMPOSITION OR A COMPOSITION OF BACTEROIDES AND *E. COLI*

Thomas J. Borody, 144 Great North Road, Five Dock, New South Wales 2046, Australia

Continuation of Ser. No. 646,784, Jan. 24, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 103,176

Claims priority, application Australia, Aug. 2, 1988, PI9613; Apr. 21, 1989, PI3837; WIPO, Aug. 2, 1989, PCT/AU89/00328

Int. Cl.[6] A61K *35/24*

U.S. Cl. 424—93.3 6 Claims

1. A method for the treatment of chronic gastrointestinal disorder selected from the group consisting of ulcerative colitis, Crohn's disease, and irritable bowel syndrome, in a human host, which method comprises the removal of at least the portion of the host's existing enteric microflora that is removed using a lavage and the substitution of an effective amount of fresh or dried or reconstituted feces from a disease-screened human donor or a composition comprising Bacteroides and *Escherichia coli* species in liquid culture or dried viable form.

5,443,827

FIBRIN-TARGETED INHIBITORS OF THROMBIN

Edgar Haber, Salisbury, N.H.; Christoph Bode, Heidelberg, Germany, and Marschall S. Runge, Atlanta, Ga., assignors to President and Fellows of Harvard College, Cambridge, Mass. and Emory University, Atlanta, Ga.

Filed May 3, 1993, Ser. No. 58,699

Int. Cl.[6] A61K *39/395;* C07K *16/00, 16/18, 7/50*

U.S. Cl. 424—133.1 14 Claims

1. A chimeric molecule comprising a fibrin specific antibody or a fibrin-binding portion of a fibrin specific antibody linked by a covalent bond to an inhibitor of thrombin.

5,443,828

CHIMERIC HIV-2 GAG PARTICLES

Chil-Yong Kang, and Linhong Luo, both of London, Canada, assignors to Korea Green Cross Corporation, Rep. of Korea, a part interest

Filed Dec. 18, 1992, Ser. No. 992,618

Claims priority, application Rep. of Korea, Jun. 17, 1992, 10493/1992

Int. Cl.[6] A61K *39/21;* C12N *15/48, 15/49*

U.S. Cl. 424—188.1 4 Claims

1. A recombinant Gag-Env chimeric polypeptide particle of human immunodeficiency virus, comprising:

an HIV-2 Gag polypeptide selected from the group consisting of HIV-2 Gag polypeptides which extend from the N-terminal amino acid of Gag to a minimum of amino acid 376 and a maximum of amino acid 425 and wherein said Gag polypeptides have a proline at amino acid 373, 375 or 377; and an Env polypeptide from HIV comprising the V3

loop domain of gp120; the Env polypeptide linked to the C-terminus of the Gag polypeptide.

5,443,829
MODIFIED SAPONINS ISOLATED FROM *QUILLAJA SAPONARIA*
Charlotte A. Kensil, Milford; Sean Soltysik, Worcester, both of Mass., and Dante J. Marciani, Birmingham, Ala., assignors to Cambridge Biotech Corporation, Worcester, Mass.
Continuation-in-part of Ser. No. 906,870, Jul. 2, 1992, Pat. No. 5,273,965. This application Sep. 24, 1993, Ser. No. 126,190
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] A61K *35/78*; A01N *65/00, 43/04, 45/00*
U.S. Cl. 424—195.1 22 Claims

1. A composition comprising a chemically modified saponin or a fraction thereof obtainable from a crude *Quillaja saponaria* extract, wherein the chemically modified saponin or fraction thereof comprises at least one of QA-17, QA-18, QA-21, QA-21-V1 and QA-21-V2, and wherein the chemical modification of the saponin or fraction thereof consists of
(1) the reduction of the triterpene aldehyde group of QA-17, QA-18, QA-21, QA-21-V1 and QA-21-V2 to a methylenealcohol or a methyleneamino group; alone or in combination with
(2) the hydrolysis of the fatty acid arabinose moiety or fatty acid arabinose-rhamnose moiety of QA-17, QA-18, QA-21, QA-21-V1 and QA-21-V2 to give the corresponding glycoside fragment.

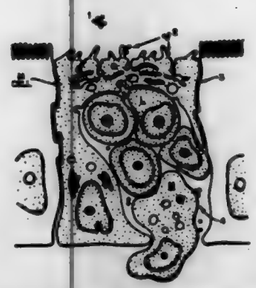
5,443,830
DRINK CONTAINING MUCILAGINOUS POLYSACCHARIDES AND ITS PREPARATION
D. Eric Moore, Richardson, and Bill H. McAnalley, Grand Prairie, both of Tex., assignors to Carrington Laboratories, Inc., Irving, Tex.
Continuation-in-part of Ser. No. 864,583, Apr. 7, 1992, Pat. No. 5,308,838, which is a division of Ser. No. 558,905, Jul. 27, 1990, Pat. No. 5,118,673, which is a continuation-in-part of Ser. No. 229,164, Aug. 5, 1988, Pat. No. 5,106,616, which is a continuation-in-part of Ser. No. 144,872, Jan. 14, 1988, Pat. No. 4,851,224, which is a continuation-in-part of Ser. No. 869,261, Jun. 5, 1986, Pat. No. 4,735,935, which is a continuation-in-part of Ser. No. 810,025, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 754,859, Jul. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 750,321, Jun. 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 649,967, Sep. 12, 1984, abandoned, which is a continuation of Ser. No. 375,720, May 7, 1982, abandoned. This application Oct. 13, 1993, Ser. No. 136,076
Int. Cl.[6] A61K *35/78, 31/715*; C08B *37/00*
U.S. Cl. 424—195.1 38 Claims

1. A drank comprising:
from about 0.001 to about 0.5 weight percent, based on total weight of the drink, of aloe vera mucilaginous polysaccharides prepared by the process of: removing leaf rind of an aloe vera leaf to give an aloe vera gel; grinding said aloe vera gel to give an aloe vera juice; adding a water-soluble lower aliphatic polar solvent to said aloe vera juice to give said aloe vera mucilaginous polysaccharides; and isolating and drying said aloe vera mucilaginous polysaccharides; and
water.

5,443,831
GENE ENCODING GLYCOPROTEIN B OF INFECTIOUS LARYNGOTRACHEITIS VIRUS
Calvin L. Keeler, and David J. Poulsen, both of Newark, Del., assignors to University of Delaware, Newark, Del.
Continuation of Ser. No. 788,123, Oct. 29, 1991. This application Nov. 19, 1993, Ser. No. 156,866
Int. Cl.[6] A61K *39/245, 39/275*; C12N *15/38*; C07K *14/03*
U.S. Cl. 424—199.1 9 Claims

1. An isolated nucleic acid molecule encoding the gB glycoprotein gene of Infectious Laryngotracheitis Virus having the sequence shown in SEQ ID NO: 1.

5,443,832
HYDROXYAPATITE-ANTIGEN CONJUGATES AND METHODS FOR GENERATING A POLY-IG IMMUNE RESPONSE
Helen M. Amerongen, Jamaica Plain; Marian R. Neutra, Sherborn, both of Mass., and Jean-Pierre Kraehenbuhl, Rivaz, Switzerland, assignors to Institut Swisse de Recherches Experimentales sur le Cancer, Lausanne, Switzerland
Filed Apr. 16, 1990, Ser. No. 510,154
Int. Cl.[6] A61K *39/39, 39/02, 39/12*
U.S. Cl. 424—278.1 6 Claims



1. A method for vaccinating a mammal to cause an immunogenic response comprising IgA antibodies, said method comprising the step of administering to a mucosal surface of the mammal an immunogen comprising an antigen or antigen mixture in association with particulate hydroxylated calcium phosphate of a size suitable for transport across epithelium.

5,443,833
PHARMACEUTICAL COMPOSITIONS
Andrew R. Clark, Loughborough; Paul Wright, Bramcote, and Julia H. Ratcliffe, Gosport, all of England, assignors to Fisons plc, Ipswich, England
Continuation of Ser. No. 742,574, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 410,020, Sep. 20, 1989, abandoned, which is a continuation of Ser. No. 133,520, Dec. 16, 1987, abandoned. This application Jun. 25, 1993, Ser. No. 82,804
Claims priority, application United Kingdom, Dec. 23, 1986, 8630767; Dec. 23, 1986, 8630769; Dec. 24, 1986, 8630904; Mar. 20, 1987, 8706684
Int. Cl.[6] A61K *9/00*
U.S. Cl. 424—400 3 Claims

1. A method of treating a reversible obstructive airways disease comprising administering, by inhalation, to a patient suffering from, or susceptible to, such a condition the nebulized contents of an ampoule of carbon dioxide permeable plastics material filled with a unit dose of an aqueous pharmaceutical solution containing, as active ingredient, from 0.1 to 5% w/v of 9-ethyl-6,9-dihydro-4,6-dioxo-10-propyl-4H-pyrano(3,2-g)quinoline-2,8-dicarboxylic acid or a pharmaceutically acceptable salt thereof, the solution having a pH of 3.5 to 6.0.

5,443,834
SOAP COMPOUNDED WITH VITAMIN B_1-CONTAINING GARLIC EXTRACT
Osami Aki, Kawanishi; Rikujiro Kashi, Kawaguchi; Kanji Nakatani, Tokyo, and Atsunori Okada, Mitoyo, all of Japan, assignors to Fuji Sangyo Kaisha, Ltd., Kagawa and Takeda Chemical Industries, Ltd., Osaka, both of Japan
Continuation of Ser. No. 847,308, Mar. 6, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,824
Claims priority, application Japan, Mar. 8, 1991, 3-043484
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 14 Claims

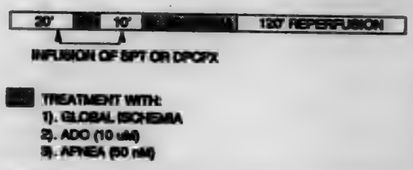
1. A composition consisting essentially of solid soap compounded with a garlic extract containing thiamine or a thiamine derivative or a salt thereof having vitamin B, activity by mixing neat soap which consists essentially of beef tallow and coconut oil in a ratio of 8:2, said garlic extract, perfume and glycerin and kneading the mixture, said garlic extract being compounded in an amount of 0.05 to 1.0% by weight based on the total weight of said solid soap, and said thiamine or thiamine derivative or salt thereof being compounded in an amount of 0.05 to 3.0% by weight based on the weight of raw garlic used for preparing said garlic extract.

5,443,835
BICARBONATE SALT PESTICIDE COMPOSITION CONTAINING A CLATHRATE SPREADER-STICKER INGREDIENT
Anthony E. Winston, East Brunswick, N.J., assignor to Church & Dwight Co. Inc., Princeton, N.J.
Filed Sep. 30, 1993, Ser. No. 129,429
Int. Cl.[6] A01N *25/24*
U.S. Cl. 424—407 14 Claims

1. A method of controlling fungal disease in cultivated plants which comprises applying a fungicidal aqueous formulation to the plant foliage by spraying to prevent or eradicate fungal infections; wherein the aqueous formulation is prepared by dispersing in an aqueous medium a dry blend formulation comprising (1) between about 45–80 weight percent of a fungicidal ingredient selected from alkali metal and ammonium bicarbonates; (2) between about 0–35 weight percent of a fungicidal ingredient selected from alkali metal and ammonium carbonates; and (3) between about 0.5–50 weight percent of a spreader-sticker ingredient which is a crystalline clathrate of (a) a urea constituent complexed with (b) a spreader-sticker organic constituent which individually in a free-state is non-crystalline at 20°–25° C.; and wherein the aqueous formulation has a content of bicarbonate ingredient between about 0.1–5 weight percent, based on the aqueous formulation weight, and has a pH between about 7.5–11.

5,443,836
METHODS FOR PROTECTING TISSUES AND ORGANS FROM ISCHEMIC DAMAGE
James M. Downey, Mobile, Ala., and Kevin Mullane, Del Mar, Calif., assignors to Genela, Inc., San Diego, Calif. and South Alabama Medical Science Foundation, Mobile, Ala.
Filed Mar. 15, 1993, Ser. No. 33,310
Int. Cl.[6] A61F *2/02*; A61K *9/48, 9/20, 9/14*
U.S. Cl. 424—423 15 Claims

1. A method for reducing ischemic damage to an organ having A3 adenosine receptors for those patients at risk of ischemic damage, comprising the step of:
administering an ischemic damage reducing amount of an agonist to the A3 adenosine receptor using an administration technique selected from the group consisting of intravenous administration and perfusion of the organ.



5,443,837
ESTRUS SYNCHRONIZATION METHOD
Alain Jobard, Aulnay sous Bois, France, assignor to Roussel Uclaf, France
Filed Oct. 13, 1993, Ser. No. 136,458
Claims priority, application France, Oct. 13, 1992, 92 12220
Int. Cl.[6] A61F *2/02*; A61K *31/58, 31/585*
U.S. Cl. 424—423 7 Claims

1. A method of synchronizing estrus in breeding mammals comprising parenterally administering to breeding mammals an estrus synchronizing amount of 17α-allyl-$\Delta^{4,9,11}$-estratriene-17β-ol-3-one.

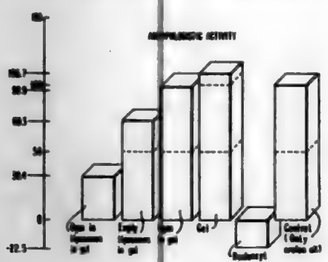
5,443,838
NUTRITIONAL SUPPLEMENTATION SYSTEM
Steven M. Koenig, Jr., 4520 Toby La., Metairie, La. 70003-7630
Filed Sep. 15, 1993, Ser. No. 121,749
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—439 14 Claims

1. A method of supplementing one's nutritional diet, comprising the following steps:
a) performing on a substantially daily basis three stages of nutritional supplementation, morning, pre-workout, and night stages, by ingesting different, varying dosages and nutritional ingredients in three stages, the third or night stage using no stimulants and the pre-work-out stage utilizing heavy stimulants, comprising the substeps of
i. in the morning stage, ingesting in combination, a stimulant, vanadyl sulfate, and GABA;
ii. in the pre-workout stage, ingesting in combination, a greater dosage of stimulant than in the morning stage, vanadyl sulfate, and GABA; and
ii. In the night stage, ingesting in combination, GABA and vanadyl sulfate, with no stimulants;
b) performing at least one work-out on a substantially daily basis after said second stage;
thereby enhancing one's health and nutritional well-being.

5,443,839
LIPOSOMES CONTAINING SCUTELLARIA EXTRACTS
Alain Meybeck, Courbevoie, France, assignor to 501 LVMH Recherche, Colombes Cedex, France
Continuation of Ser. No. 576,441, filed as PCT/FR89/00020, Jan. 23, 1989, abandoned. This application Feb. 12, 1992, Ser. No. 835,004
Claims priority, application France, Mar. 9, 1988, 88 03066
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 18 Claims

1. Hydrated lipidic lamellar phases or liposomes consisting essentially of an extract of Scutellaria as the active ingredient,

said extract being obtained by extraction with a solvent selected from the group consisting of a polar organic solvent, a



polar water and organic solvent mixture, and an apolar organic solvent.

5,443,840

COSMETIC AND/OR PHARMACEUTICAL COMPOSITION CONTAINING A DISPERSION OF LIPID VESICLES, PROCESS FOR THE PREPARATION OF THE SAID DISPERSION AND DISPERSION OF LIPID VESICLES

Jean-Luc Moracasin, Ozoir-la-Ferriere; Alain Lety, Lagny-sur-Marne, and Guy Vanlerberghe, Villevaude, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR93/00128, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993, PCT Pub. No. WO93/15708, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 8, 1993, Ser. No. 133,140

Claims priority, application France, Feb. 18, 1992, 92 01821

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 15 Claims

1. A composition comprising, in an aqueous dispersion phase, a dispersion of lipid vesicles encapsulating an aqueous phase, said lipid vesicles comprising a lipid phase containing a compound selected from the group consisting of

phytanetriol,

5,9,13,17-tetramethyloctadecanoic acid,

3,7,11,15-tetramethyl-1,2,3,4-tetrahydrohexadecane and

3-hydroxymethyl-7,11,15-trimethyl-1,2,4-trihydroxyhexadecane,

together with (a) an ionic amphiphilic lipid or (b) a nonionic amphiphilic lipid, or a mixture of (a) and (b).

5,443,841

PROTEINOID MICROSPHERES AND METHODS FOR PREPARATION AND USE THEREOF

Sam J. Milstein, Brooklyn, and Martin L. Kantor, Mamaroneck, both of N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 858,909, Jun. 15, 1992, abandoned. This application Jul. 27, 1992, Ser. No. 920,346

Int. Cl.[6] A61K *9/50*

U.S. Cl. 424—451 23 Claims

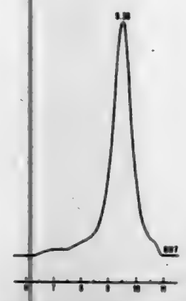
1. A composition comprising:

(A) a biologically active agent encapsulated within,

(B) a microsphere carrier, said carrier comprising a proteinoid comprising

(i) at least one monomer selected from the group consisting of tyrosine and phenylalanine;

(ii) at least one monomer selected from the group consisting of glutamic acid, pyroglutamic acid, glutamine, and aspartic acid; and



(iii) optionally at least one monomer selected from the group consisting of lysine, arginine, and ornithine,

said proteinoid being soluble within a selected pH range.

5,443,842

ORAL FORMULATIONS OF UBIDECARENONE IN FORM OF CAPSULES

Roberto Seghizzi, and Giuseppe Furiosi, both of Milan, Italy, assignors to Isvemi Della Beffa Farmaceutici S.r.l., Milan, Italy

Filed Mar. 30, 1994, Ser. No. 220,258

Claims priority, application Italy, Mar. 30, 1993, MI93A0605

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—456 5 Claims

1. A pharmaceutical formulation for oral use, comprising a capsule containing as the active ingredient ubidecarenone dispersed in a mixture of a) isopropyl myristate or isopropyl palmitate and b) polyethoxylated, hydrogenated or non-hydrogenated castor oils, wherein said isopropyl myristate or isopropyl palmitate is in an amount of 1–5 times the weight of said ubidecarenone and said polyethoxylated hydrogenated or non-hydrogenated castor oils are in an amount of 1–5 times the weight of said ubidecarenone and the ratio of ubidecarenone and said isopropyl myristate or isopropyl palmitate to said polyethoxylated castor oils ranges from 1:0.3 to 1:2.5.

5,443,843

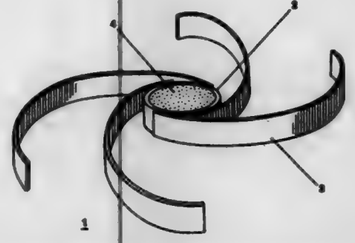
GASTRIC RETENTION SYSTEM FOR CONTROLLED DRUG RELEASE

William J. Curatolo, Niantic, and Jeelin Lo, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 200,801, May 31, 1988, Pat. No. 5,002,772. This application Dec. 24, 1990, Ser. No. 632,877

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—464 8 Claims



1. A modular system for use in an oral drug delivery system in a mammal, having delayed gastrointestinal transit, which

releases a drug or drugs in a controlled manner in said gastrointestinal tract and exits said gastrointestinal tract after said drug or drugs have been substantially released, said modular system comprising a receptacle means for receiving and containing an orally administrable controlled release device and one or more fibers or ribbons attached to said receptacle means, said fibers or ribbons, collectively:

(a) being restrained in a contracted configuration at the time of dosing, and

(b) uncoiling, unrolling, or unfolding after entry into the stomach, into a configuration having a circular or roughly circular cross-section having a diameter of at least about three centimeters,

said modular system capable of softening, disintegrating, dissolving or degrading in the biological environment of the stomach in order to permit the exit of the modular system therefrom.

5,443,844

LINOLEIC ACID PREPARATIONS FOR TOPICAL TREATMENT OF ACNE VULGARIS

William R. McDaniel, 9158 Saddlebow Dr., Brentwood, Tenn. 37027

Continuation of Ser. No. 985,103, Dec. 3, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,138

Int. Cl.[6] A61K *7/48, 7/00*

U.S. Cl. 424—484 4 Claims

1. A method of treating human skin against Propioni-bacterium acnes, comprising applying directly to the affected skin linoleic acid in a carrier vehicle, the linoleic acid having a concentration of about 0.1% to about 10% by volume.

5,443,845

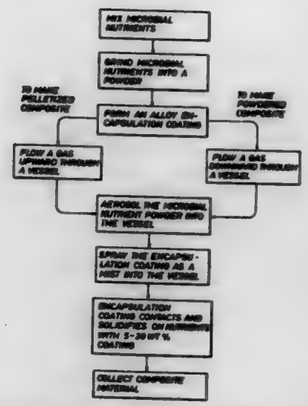
COMPOSITION FOR ENHANCED BIOREMEDIATION OF PETROLEUM

Edward A. Felix, Houston, Tex., assignor to BioNutraTech, Inc., Houston, Tex.

Filed Apr. 22, 1993, Ser. No. 51,626

Int. Cl.[6] A61K *9/16*; C02F *1/40*

U.S. Cl. 424—490 11 Claims



1. A composite material for promoting growth of hydrocarbon degrading microorganisms, comprising:

a core having water soluble, microbial available nutrients, wherein said nutrients include nitrogen in the form of an ammonium compound, phosphorous in the form of a microbial available phosphate compound, and iron in a form of microbial available iron compound; and

a sacrificial oleophilic, lipophilic, partially oil soluble and biodegradable coating having a saturated fatty acid and an unsaturated fatty acid, wherein said coating encapsulates said core.

5,443,846

GRANULATED PREPARATIONS AND METHOD OF PRODUCING THE SAME

Minoru Yoshioka, Kyoto; Hidetoshi Horibe, and Toshio Kashihara, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 908,865, Jul. 1, 1992, abandoned, which is a continuation of Ser. No. 692,384, Apr. 26, 1991, abandoned. This application Mar. 25, 1994, Ser. No. 217,770

Claims priority, application Japan, Apr. 28, 1990, 2-114382

Int. Cl.[6] A61K *9/16*

U.S. Cl. 424—498 6 Claims

1. A granulated preparation consisting essentially of a powder at least partially embedded or wholly included in a granular polyglycerol fatty acid ester having a melting point of 40° to 80° C. and a grain size of 10 to 150 mesh, wherein the powder constitutes 10–1,000 parts by weight per 100 parts by weight of the polyglycerol fatty acid ester, which preparation is obtained by heating the ester together with the powder up to a temperature in the vicinity of the melting or softening point of the ester without fusing the granular ester, while fluidizing, and which preparation is uncoated or coated with either a sugar or enteric coating.

5,443,847

SPECIFIC DETOXIFICATION OF URUSHIOL WITH MANGANESE SALTS

Philip W. West, 605 Nelson Dr., Baton Rouge, La. 70808

Filed Jul. 15, 1993, Ser. No. 92,129

Int. Cl.[6] A61K *33/32, 31/28*

U.S. Cl. 424—639 2 Claims

1. A method for treating thus dermatitis caused by exposure to urushiol, comprising the step of applying to an area of skin affected by said thus dermatitis an aqueous solution consisting essentially of a therapeutically effective amount of a soluble manganese salt;

wherein said soluble manganese salt is selected from the group consisting of $MnSO_4$, $MnSO_4$ hydrate, $MnCl_2$, $MnCl_2{\cdot}4H_2$), $Mn(C_7H_3O_2)_2$, $Mn(C_2H_3O_2)_2{\cdot}4H_2$), and $Mn(CHO_2)_2{\cdot}H_2O$;

wherein said aqueous solution contains 0.01% to 10.0% by weight of manganese; and

wherein said aqueous solution has a pH of between pH 5 and pH 7.

5,443,848

HYPERTONIC ISOCHLOREMIC FORMULATIONS FOR TREATMENT OF HYPOVOLEMIC AND CIRCULATORY SHOCK

George C. Kramer, Galveston, Tex.; Mauricio Rocha-e-Silva, Sao Paulo; Irineu T. Velasco, S. Paulo, both of Brazil, and Charles E. Wade, Sausalito, Calif., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 708,029, May 31, 1991, Pat. No. 5,248,507. This application Sep. 24, 1993, Ser. No. 126,242

The portion of the term of this patent subsequent to Sep. 23, 2010, has been disclaimed.

Int. Cl.[6] A61K *33/32, 33/26, 33/14, 33/06*

U.S. Cl. 424—643 25 Claims

1. An isochloremic pharmaceutical composition for improving oxygen delivery and oxygen consumption in an individual in need of fluid resuscitation consisting essentially of about 2 molar parts of sodium chloride and about 6 molar parts of sodium acetate in a solution having a total osmolarity of at least 500 mOsm.

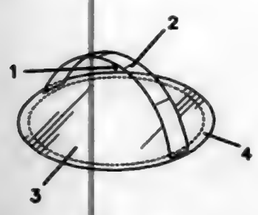
5,443,849
SPORICIDAL DISINFECTANT COMPOSITIONS, PRODUCTION AND USE THEREOF
Michael P. Corby, Ravensheed, England, assignor to Diversey Corporation, Mississauga, Canada
Filed Aug. 19, 1992, Ser. No. 932,077
Claims priority, application United Kingdom, Aug. 21, 1991, 9118000
The portion of the term of this patent subsequent to Apr. 18, 2006, has been disclaimed.
Int. Cl.[6] A01N *59/12, 59/00*
U.S. Cl. 424—667 8 Claims

1. A sporicidal composition comprising:
iodine bromide in aqueous solution at a pH between 3 and 7, the iodine bromide being such that a used solution from said composition comprises at least 0.1 w/w I_2.

5,443,850
METHOD FOR TREATING SYMPTOMS ASSOCIATED WITH VASCULAR HEADACHES BY ADMINISTERING A COMBINATION OF CALCIUM AND VITAMIN D
Susan Thys-Jacobs, 135 Hickory Grove Dr., Larchmont, N.Y. 10538
Continuation-in-part of Ser. No. 59,682, May 10, 1993, which is a continuation-in-part of Ser. No. 945,319, Sep. 15, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 203,259
Int. Cl.[6] A61K *33/06, 33/10, 31/59*
U.S. Cl. 424—682 18 Claims

1. A method for treating a vascular headache comprising administering to an individual having symptoms associated with vascular headache symptomatology an amount of a combination of calcium and vitamin D effective to significantly reduce said symptoms.

5,443,851
TEMPERATURE SENSITIVE VALVE FOR ATMOSPHERE CONTROL FOR FILM PACKAGED PRODUCTS
Gregor B. Y. Christie, Middle Park; David Wexler, Keiraville, and Terence W. Turney, Mount Waverley, all of Australia, assignors to Commonwealth Scientific and Industrial Research Org., Australian Capitol Territory, Australia
PCT No. PCT/AU92/00080, § 371 Date Nov. 8, 1993, § 102(e) Date Nov. 8, 1993, PCT Pub. No. WO92/15499, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 27, 1992, Ser. No. 108,739
Claims priority, application Australia, Mar. 1, 1991, PK4881
Int. Cl.[6] A23B *7/148*
U.S. Cl. 426—88 10 Claims



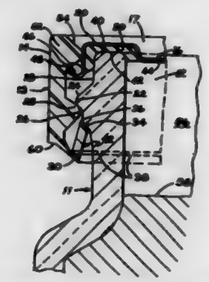
1. A packaging apparatus comprising:
(a) a packaging film; and,
(b) a valve apparatus mounted on or in the packaging film, and comprising:
(i) a base member for attaching the valve apparatus to the packaging film;
(ii) a temperature-sensitive sensor including an actuating member controlled by the sensor; and,
(iii) a valve member on, or in communication with the sensor.

5,443,852
PROTEINACEOUS FOOD PRODUCT CONTAINING STABILIZED COOKED CURED-MEAT PIGMENT
Farokh Shahidi, and Ronald B. Pegg, both of Department of Biochemistry, Memorial University, St. John's, NF, Canada A1B 3X9
Continuation-in-part of Ser. No. 743,502, Aug. 9, 1991, Pat. No. 5,230,915, which is a continuation-in-part of Ser. No. 602,867, Oct. 8, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 54,976
The portion of the term of this patent subsequent to Jun. 20, 2012, has been disclaimed.
Int. Cl.[6] A23L *1/314, 1/315, 1/317, 1/325*
U.S. Cl. 426—92 19 Claims

1. An edible muscle food product comprising:
(A) an encapsulated powdered cooked cured-meat pigment comprising a mononitric oxide complex of protoporphyrin (IX) Fe (II) compound derived from red blood cells, from a hemin intermediate or from a derivative thereof, said pigment being encapsulated within a treating mixture consisting of: (i) a carbohydrate-based wall material selected from the group consisting of starch, modified starches, a starch polymer, a starch derivative, maltodextrins, starch products, chitinous compounds, β-cyclodextrin and a modified β-cyclodextrin; (ii) a binding agent selected from the group consisting of gums and glycerin; and (iii) at least one member selected from the group consisting of a reducing agent and a sequestrant; and
(B) a proteinaceous material selected from the group consisting of:
(iv) an emulsion-type meat product;
(v) an emulsion-type fish mince product;
(vi) an emulsion-type surimi-based product;
(vii) an emulsion-type meat product, when in canned form;
(viii) an emulsion-type fish mince product, when in canned form;
(ix) an emulsion-type surimi-based product, when in canned form;
(x) an emulsion-type meat product, when packed under reduced pressure (vacuum packaged);
(xi) an emulsion-type fish mince product, when packed under reduced pressure (vacuum packaged);
(xii) an emulsion-type-surimi-based product, when packed under reduced pressure (vacuum packaged);
(xiii) an emulsion-type meat product, when packed under a modified atmosphere;
(xiv) an emulsion-type fish mince product, when packed under a modified atmosphere; and
(xv) an emulsion-type surimi-based product, when packed under a modified atmosphere; and
(xvi) solid pieces of meat.

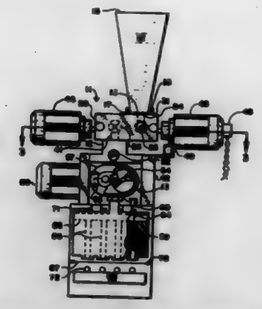
5,443,853
PRESS-ON, PRY-OFF CLOSURE FOR MICROWAVABLE VACUUM SEALED CONTAINER
Thomas H. Hayes, Loveland, Ohio, assignor to Anchor Hocking Packaging Co., Lancaster, Ohio
PCT No. PCT/US93/00222, § 371 Date Jul. 1, 1994, § 102(e) Date Jul. 1, 1994, PCT Pub. No. WO93/13990, PCT Pub. Date Jul. 22, 1993
Continuation-in-part of Ser. No. 820,445, Jan. 13, 1992, Pat. No. 5,258,191, which is a continuation-in-part of Ser. No. 819,462, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 694,903, May 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 694,149, May 1, 1991, abandoned. This PCT application Jan. 8, 1993, Ser. No. 256,242
Int. Cl.[6] B65B *55/00, 41/00, 85/00*; H05B *6/00*
U.S. Cl. 426—107 40 Claims

1. A resealable vacuum-sealed package containing a food product for retorting in a shorter period of time, said food product having improved flavor, color, texture, and/or nutrient retention, and longer shelf life following retorting in said package, said package comprising:
a press-on, pry-off closure;
a container filled with said food product, said container being vacuum sealed with said closure; and
a head space in said container defined between said closure and said food product, said head space being under vacuum of at least about 20" Hg, said head space being at least



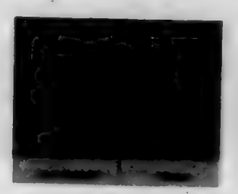
about 8% of the total internal space within said package above said food product and being an effective amount of space for reducing the amount of time required to effectively retort said food product in said vacuum-sealed package and for improving the flavor, color and texture of said food product following retorting, as compared to a similar vacuum-packed package containing a similar food product but with a head space occupying from about 0 to about 6% of the total internal space.

5,443,854
DOUGH TREATING AND DISPENSING METHOD AND APPARATUS
Donald L. Cummins, deceased, late of Mechanicsville, Va. by Marian G. Cummins executor , assignor to Cummins Eagle, Inc., Mechanicsville, Va.
Filed Aug. 29, 1994, Ser. No. 297,123
Int. Cl.[6] A21C *1/00*; A21D *6/00*
U.S. Cl. 426—231 10 Claims



1. A dough treating and dispensing method comprising:
a) entering dough into a vertically oriented hopper having a lowermost exit extremity that joins with the upstream extremity of a cylindrical low-friction first bore which houses an auger,
b) degassing said dough by exposure to vacuum means applied within said bore before said auger,
c) advancing the dough within said first bore by rotary motion of said auger, said rotation being produced by an electric motor,
d) subjecting the dough to a homogenizing treatment in a second low-friction bore disposed downstream from said first bore,
e) causing said dough to advance from said second bore into a transition zone wherein the pressure of the dough is measured, and an electrical control signal proportionate to the measured pressure is routed to the motor that drives the auger, whereby the speed of rotation of said auger is adjusted so as to maintain constant pressure on the dough,
f) advancing the dough from said transition zone through a rotary positive displacement metering pump,
g) receiving the dough from the pump into a horizontally elongated distribution zone which communicates with a plurality of downwardly directed extrusion channels, and
h) controllably restricting passage of the dough through said channels by adjustable pressure drop regulators, whereby
i) the dough is maintained at a controlled pressure throughout its journey from said auger to said adjustable pressure drop regulators.

5,443,855
COSMETICS AND PHARMACEUTICALS CONTAINING EXTENSINS AND RELATED METHODS
Barbara Wolf, Scarsdale, and Marlene Tietjen, New York, both of N.Y., assignors to Revlon Consumer Products Corporation, New York, N.Y.
Continuation of Ser. No. 27,996, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 933,130, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 761,574, Sep. 18, 1991, abandoned. This application Aug. 26, 1994, Ser. No. 296,585
Int. Cl.[6] A61K *7/00, 7/02, 7/04, 7/075*
U.S. Cl. 424—401 17 Claims

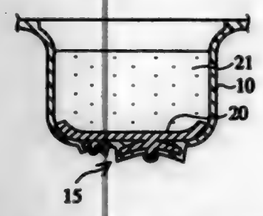


1. A cosmetic composition for external application to human skin, nails, or hair for the purpose of beautifying, coloring, conditioning, or protecting the body surface, said cosmetic composition selected from the group consisting of a cream, lotion, gel, makeup, eyeshadow, blush, shampoo, hair conditioner, cleanser, toner, aftershave, fragrance, nail enamel, or nail treatment product and comprising 0.001–30% of a non-hydrolyzed soluble precursor form of extensin extracted from plant species in the growth phase by salt extraction of extensin fractions from plant cell suspensions or explant homogenates, which extensin precursor has a molecular weight of 100,000 to 150,000 daltons.

5,443,856
METHOD FOR PRODUCING MOLDED CHOCOLATE PRODUCT HAVING COMPLICATED CONCAVED AND CONVEXED DECORATIVE PATTERN THEREON
Tokuji Akutagawa, and Uichi Otani, both of Tokyo, Japan, assignors to Akutagawa Confectionery Co., Ltd., Tokyo, Japan
Filed Jun. 15, 1994, Ser. No. 260,094
Claims priority, application Japan, Jun. 24, 1993, 5-153962
Int. Cl.[6] A23G *1/00*
U.S. Cl. 426—515 6 Claims

1. A method for producing a molded chocolate product having a complicated concaved and convexed decorative pattern thereon comprising the steps of:
(a) charging a low viscosity fluidized chocolate material into a complicated concaved and convexed decorative pattern

portion of an elastic mold in bag form for forming said complicated concaved and convexed decorative pattern of said chocolate product so that air bubbles necessarily incorporated into the low viscosity fluidized chocolate material ascend therethrough so as to be removed,



(b) charging an ordinarily tempered fluidized chocolate material into said elastic mold to form a main body of said chocolate product, and

(c) solidifying said low viscosity fluidized chocolate material and said ordinarily tempered fluidized chocolate material charged into said elastic mold followed by taking the molded chocolate product out of the elastic mold.

5,443,857

METHOD AND APPARATUS FOR CONTINUOUS STERILIZATION OF A LIQUID MILK BASED PRODUCT

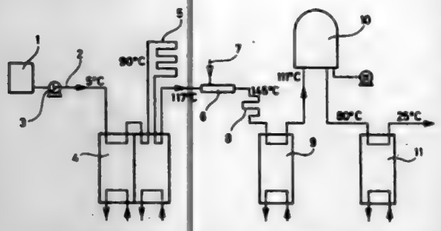
Olle Arph, Lund; Bengt Palm, Genarp; Bosena Malmgren, Lund, and Roland Ringstrom, Vebered, all of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Mar. 11, 1994, Ser. No. 208,592

Claims priority, application Sweden, Mar. 29, 1993, 9301027

Int. Cl.[6] A23L *1/00*; A23C *3/00*

U.S. Cl. 426—522 **9 Claims**



1. In a method for the continuous sterilization of a liquid milk based product which comprises preheating the product by indirect heating, heating the preheated product to a sterilization temperature of 140°–50° C. by direct injection of steam into the product, cooling the heated product by flash/cooling in which steam corresponding to the added amount of steam is evaporated and finally cooling by indirect cooling, the improvement which comprises cooling the product, prior to said flash cooling, from the sterilization temperature of 140°–150° C. to a temperature in the range of 90°–120° C. in an indirect cooling step, and subsequently cooling the product by flash cooling to a temperature of 70°–85° C.

5,443,858

COMPOSITION FOR SWEETENING MICROWAVE POPCORN; METHOD AND PRODUCT

Michael L. Jensen, Spring Lake Park, and Sara J. Risch, Edina, both of Minn., assignors to Golden Valley Microwave Foods, Inc., Eden Prairie, Minn.

Filed Nov. 18, 1993, Ser. No. 154,299

Int. Cl.[6] A21L *1/09*, *1/18*

U.S. Cl. 426—618 **8 Claims**

1. A microwavable mixture useable in preparing a microwavable popcorn product with a sugar based flavoring; said mixture comprising:

(a) unpopped popcorn;

(b) a sweetening blend mixed with the unpopped popcorn; the sweetening blend comprising:

(i) an oil component having a melting point of at least 115° F.; and,

(ii) a crystalline sugar component having a moisture content of no greater than about 2% by weight; a weight ratio of sweetening blend to unpopped popcorn in the microwavable mixture being within the range of 0.5/1 to 1.5/1;

(c) a glazing blend mixed with the unpopped popcorn, the glazing blend comprising a mixture of corn syrup and an oil having a melting point of at least 115°F.; said glazing blend including:

(i) a sufficient amount of corn syrup to coat the unpopped corn;

(ii) a sufficient amount of emulsifier to provide a homogeneous mixture of the corn syrup and the oil in the glazing blend;

(iii) 10–20% by weight of the oil; and,

(iv) 80–90% by weight corn syrup; and,

(d) a total NaCl content, if any, in the glazing blend and sweetening blend together, of no more than about 200 mg per 100 g total of glazing blend and sweetening blend.

5,443,859

CARBON FILM AND PROCESS FOR PREPARING THE SAME

Yasuhisa Nagata, Shizuoka, Japan, assignor to Toho Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 890,155, May 29, 1992, Pat. No. 5,352,524. This application May 25, 1994, Ser. No. 248,690

Claims priority, application Japan, May 31, 1991, 3-129277; May 15, 1992, 4-123972

Int. Cl.[6] B05D *3/02*; C01B *31/00*

U.S. Cl. 427—122 **24 Claims**

1. A process for preparing a carbon film which comprises the following steps:

(1) reacting a monomer combination selected from the group consisting of: (a) a combination comprising a tetracarboxylic acid dianhydride and an aromatic diamine; and, (b) a combination comprising a tetracarboxylic acid dianhydride, an aromatic diamine, and a polyamino compound having at least three amino groups, to form a polyamic acid;

(2) forming a film of said polyamic acid;

(3) imidizing the polyamic acid film by carrying out a dehydration-cyclization reaction to form a polyimide film having a tensile strength of at least 10 Kgf/mm^2 and a tensile modulus of elasticity of at least 500 Kgf/mm^2; and

(4) carbonizing the polyimide film in an inert gas or in a vacuum until a carbon film having a tensile strength of at least 15 Kgf/mm^2, a tensile modulus of elasticity of at least 5000 Kgf/mm^2 and an electric conductivity of at least 200 S/cm is formed.

5,443,860

SEALING METHOD FOR REACTION GASES

Thomas F. Wilkinson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 827,780, Jan. 29, 1992, Pat. No. 5,312,490, which is a division of Ser. No. 674,417, Mar. 22, 1991, Pat. No. 5,105,762, which is a continuation of Ser. No. 287,171, Dec. 20, 1988, abandoned. This application Mar. 2, 1994, Ser. No. 204,912

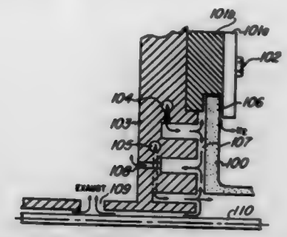
Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—248.1 **5 Claims**

1. A method for preventing reaction gases within a reaction chamber from escaping to the atmosphere through an interface between said reaction chamber and a reaction chamber junction, said method comprising the steps of:

introducing a reaction gas through a first gas inlet located in said reaction chamber junction into said reaction chamber at a first pressure;

introducing a second gas through a second gas inlet located



in said reaction chamber junction into said reaction chamber between said first gas inlet and said interface, said second gas being introduced at a second pressure higher than said first pressure; and

exhausting a portion of said second gas and a portion of said first gas through an exhaust port located between said first gas inlet and said second gas inlet.

5,443,861

PROCESS FOR MANUFACTURE OF SYNTHETIC DIAMOND LAYERS ON SUBSTRATES

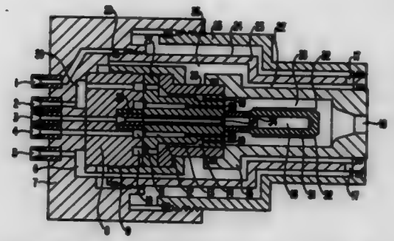
Erwin D. Hubne, Schallstadt, Germany, assignor to UTP Schweissmaterial GmbH & Co. KG, Krozingen, Germany

Continuation of Ser. No. 878,544, May 5, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,595

Claims priority, application Germany, May 16, 1991, 41 15 930.6

Int. Cl.[6] C23C *16/26*

U.S. Cl. 427—249 **25 Claims**



1. A method for the production of a polycrystalline diamond coating, comprising the steps of:

(a) mounting a substrate inside a combustion chamber of a high velocity burner system;

(b) creating an atmosphere preventing oxidation of the surface of the substrate in the combustion chamber by introducing combustible oxidation preventing gas;

(c) burning the combustible oxidation preventing gas and thereby heating the substrate to a selected substrate temperature between 450° C. and 1200° C. in the atmosphere preventing oxidation, the selected substrate temperature being capable of causing an automatic ignition of a mixture of oxygen and hydrocarbon gas at the substrate;

(d) replacing the atmosphere preventing oxidation with a combustible carbon containing mixture of gases by introducing said mixture of oxygen and hydrocarbon gas into the combustion chamber;

(e) allowing said automatic ignition, and maintaining combustion by introducing into the combustion chamber additional amounts of the mixture of oxygen and hydrocarbon gas; and

(f) maintaining the substrate essentially at the selected substrate temperature,

wherein polycrystalline diamond is coated on the substrate.

5,443,862

PROCESS FOR THE TREATMENT OF THIN FILMS HAVING PROPERTIES OF ELECTRICAL CONDUCTION AND/OR REFLECTION IN THE INFRARED

Bernard Buffat, Paris; Daniele Pillias, Aulnay sous Bois, and Francois Larbet, Paris, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Aug. 30, 1993, Ser. No. 112,979

Claims priority, application France, Aug. 28, 1992, 92 10300

Int. Cl.[6] B05D *3/06*, *5/12*

U.S. Cl. 427—526 **8 Claims**

8. A method for preparing a transparent heating pane which has uniform heating of the pane regardless of geometry, wherein said pane comprises one or more semi-conducting thin films of metallic oxide or oxides, comprising:

generating differentiated zones of electrical conductivity or infrared emissivity in said one or more semi-conducting thin films of metallic oxide or oxides, by subjecting said one or more semi-conducting thin films to an oxygen ion beam having sufficient energy to reduce the electrical conductivity or increase the infrared emissivity of said one or more zones without atomizing said zones, wherein said one or more semi-conducting thin-films is at a temperature of at least 150° C. during said subjecting step, and said ion beam has an energy at impact on said semi-conducting thin film of less than 100 eV.

5,443,863

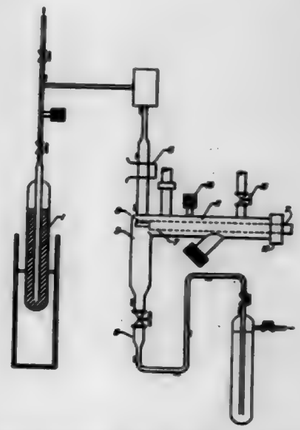
LOW-TEMPERATURE OXIDATION AT SURFACES USING OZONE DECOMPOSITION PRODUCTS FORMED BY MICROWAVE DISCHARGE

William C. Neely; William F. Welch, and Raymond F. Askew, all of Auburn University, Ala., assignors to Auburn University, Auburn, Ala.

Filed Mar. 16, 1994, Ser. No. 214,795

Int. Cl.[6] B05D *3/06*

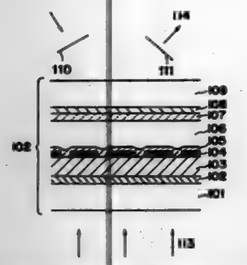
U.S. Cl. 427—579 **17 Claims**



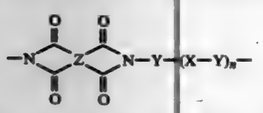
1. A method of forming a film of silicon dioxide at a surface of a silicon-containing solid comprising reacting at a temperature under about 300° C. the silicon-containing solid with an ozone decomposition product stream formed by the decomposition of ozone at a pressure up to about 1 torr in a microwave

discharge cavity, said product stream containing excited molecular oxygen and excited atomic oxygen selected from the group consisting of $O(^1D)$, $O(^1S)$ and combinations thereof.

5,443,864
SPATIAL LIGHT MODULATOR AND A NEURAL NETWORK CIRCUIT
Akio Takimoto; Koji Akiyama, both of Neyagawa; Michihiro Miyauchi, Nagoya; Yasunori Kuratomi, Suita; Koji Nomura; Hisahito Ogawa, both of Ibaraki, and Junko Asuyama, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 816,734, Jan. 3, 1992, Pat. No. 5,364,668. This application Jul. 8, 1994, Ser. No. 270,492
Claims priority, application Japan, Jan. 9, 1991, 3-001145
Int. Cl.[6] G02F *1/1337*
U.S. Cl. 428—1 **2 Claims**



1. A spatial light modulator comprising a photoconductive layer having a rectification function for receiving incident lights to generate charges, an electrode for accumulating the charges and a ferroelectric liquid crystal layer for modulating the incident light, wherein the ferroelectric liquid crystal layer is arranged between a pair of alignment layers made of polyimide represented by the general formula (I);

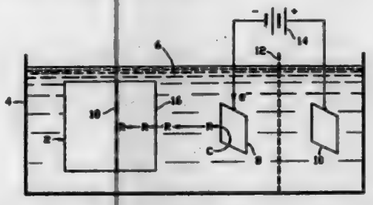


(I)

wherein n is 2 or more, X is S, Se or Te, Y is an aromatic group or a substituted aromatic group, and Z is a group containing an aromatic group.

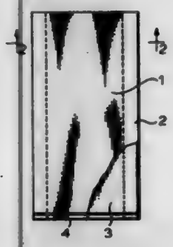
5,443,865
METHOD FOR CONDITIONING A SUBSTRATE FOR SUBSEQUENT ELECTROLESS METAL DEPOSITION
Stephen L. Tisdale, Vestal, and Alfred Viehbeck, Stormville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 626,127, Dec. 11, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,594
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—304 **33 Claims**

1. A method for conditioning a location on surface of a substrate comprising:
providing at said location from the exterior of said substrate an anionic chemical reducing agent;
sorbing said anionic chemical reduce agent at said location;
thereafter contacting said location with a solution that contains cations, said cations receiving electrons from said anionic chemical reducing agent to reduce said cations to a species of a lower valent oxidation state positioned in the interior of said substrate at a distance of no greater than about 800 Å from said surface;



said cations being selected from the group consisting of palladium, platinum, ruthenium, silver, gold, copper, nickel, cobalt, tin and combinations thereof.

5,443,866
UNI-AXIALLY CO-ORIENTED THERMOPLASTIC FILM AND BAGS MADE THEREFROM
Charles R. Murray, Brampton, Canada, assignor to At Plastics Inc., Ontario, Canada
Filed Feb. 19, 1993, Ser. No. 19,674
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—35.7 **7 Claims**

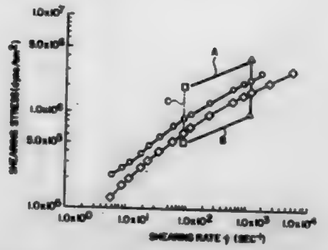


1. A thermoplastic uniaxially co-oriented film comprising a plurality of simultaneously cold drawn thermoplastic films uniaxially oriented to form a unified uni-axially co-oriented film.

5,443,867
ARTICLES INCORPORATING BARRIER RESINS
Vinodkumar Mehra, and Edmund A. Flexman, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 25, 1993, Ser. No. 142,096
Int. Cl.[6] B32B *5/02*
U.S. Cl. 428—35.7 **18 Claims**

1. A laminar, shaped article comprising a blend of (a) polyolefin, (b) a barrier resin comprising a blend of a condensation polymer incompatible with the polyolefin and a phenol-formaldehyde resin, wherein the polyolefin is present in the article as a continuous polyolefin matrix phase and the barrier resin is present in the article as a discontinuous distributed phase in the form of a multitude of thin, substantially two-dimensional, parallel and overlapping layers of material embedded in the continuous polyolefin, and (c) a compatibilizer.

5,443,868
BLOW-MOLDED MULTI-LAYER CONTAINERS HAVING EXCELLENT SURFACE LUSTER AND PROCESS FOR PRODUCING THE SAME
Yasuhiro Oda; Yoshitugu Maruhashi; Kouzaburo Sakano, and Yuji Yamaguchi, all of Yokohama, Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan
Filed Dec. 23, 1993, Ser. No. 172,260
Claims priority, application Japan, Dec. 25, 1992, 4-344975
Int. Cl.[6] B32B *27/32*; B65D *65/40*
U.S. Cl. 428—35.7 **7 Claims**



1. A blow-molded multi-layer plastic container of a structure in which two or more resin layers are laminated one upon the other and having excellent surface luster, wherein the outermost surface layer is composed of an olefin polymer which has fluidity properties satisfying the following formulas (1) and (2),

$$\log \tau \leq n \log \dot{\gamma} + 5.15 \quad (1)$$

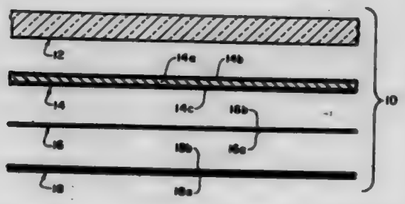
and

$$\log \tau \geq n \log \dot{\gamma} + 4.95 \quad (2)$$

wherein,

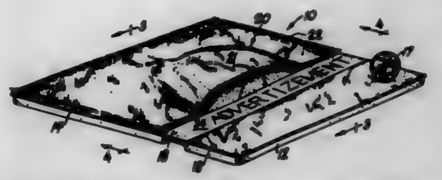
τ is a shearing stress (dynes/cm^2) as measured using a capillary rheometer in accordance with JIS K 7199, a flow property testing method, $\dot{\gamma}$ is a shearing rate (sec^{-1}) as measured by the same method, n is a number of from 0.39 to 0.41, and $\dot{\gamma}$ lies from 9×10^1 to 1.2×10^3 sec^{-1},
as measured by the capillary rheometer having a nozzle of a diameter of 1 mm and a length of 10 mm at a temperature of 190° C. in accordance with said flow property testing method, and the outermost surface of the container is melt-treated.

5,443,869
LAMINATED GRAPHICS-TO-GLASS COMPOSITE BACK-LIT DISPLAY PANELS
Gary L. Harris, 8128 Horizon Lake Dr., Las Vegas, Nev. 89128
Filed Jul. 15, 1994, Ser. No. 275,681
Int. Cl.[6] G09F *7/12*
U.S. Cl. 428—13 **8 Claims**



1. A composite laminated film-to-glass panel for the display by back-lighting of graphic designs and/or advertising and instructional alpha-numerical information for incorporation in game machines, product dispensing apparatus and wall displays comprised of:
a) a sheet of glass forming the primary front viewing face component of said panel; and
b) a secondary composite pre-laminated rear layered component of said panel comprised of:
i) a mounting sheet of optically transparent plastic film material bearing clear laminating adhesive material on the front and rear surfaces thereof;
ii) an intermediate sheet of positive image photographic film bearing said graphic designs and/or alpha-numerical information and adhesively affixed at its front image side to the rear surface of said mounting sheet; and
iii) a photographic film-protecting sheet of optically transparent plastic material bearing on its front surface a clear laminating adhesive including ultraviolet light screening material, said film-protecting sheet being affixed by said laminating adhesive to the rear side of said photographic film to protect said film from ultraviolet image degradation by the back-lighting of said panel,
said secondary pre-laminated layered component being permanently adhesively affixed by the clear laminating adhesive on the front surface of said mounting sheet to said sheet of glass to form said composite panel.

5,443,870
GOLF MAT TO SIMULATE COURSE CONDITIONS
Lewis Lurie, 393 Massapoag Ave., Sharon, Mass. 02067, and James W. Lyman, 150 Hope St. #15, Stamford, Conn. 06906
Filed May 24, 1994, Ser. No. 248,235
Int. Cl.[6] A63B *57/00*
U.S. Cl. 428—17 **14 Claims**



1. A golf mat for simulating conditions on a golf course comprising:
a supporting surface; and
a plurality of artificial blades of grass attached to said supporting surface to form an artificial grass surface on which a golf ball can be placed;
wherein said supporting surface comprises an elevated section which raises a first portion of said grass surface a predetermined distance above a second portion of said grass surface, said first portion of said grass surface being connected to said second portion of said grass surface by an inclined grass surface having blades of grass that have an average height of at least three quarters of one inch.

5,443,871
INSULATION STRIP AND METHOD FOR SINGLE AND MULTIPLE ATMOSPHERE INSULATING ASSEMBLIES
Lac Lafond, 23 Woodvalley Dr., Etobicoke, Ontario N9A 4H4, Canada
Filed Oct. 21, 1992, Ser. No. 964,851
Claims priority, application Canada, Oct. 25, 1991, 2054272; Apr. 2, 1992, 2064988
Int. Cl.[6] E06B *3/24*
U.S. Cl. 428—54 **13 Claims**

1. An insulated glass assembly comprising:
a pair of glass lites;

an elastically deformable tubular body having a first substrate engaging member associated therewith;
a second substrate engaging member spaced from said first substrate engaging member, said second substrate engaging member being operatively associated with said body; and



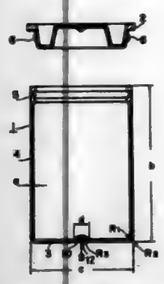
an angularly disposed support member extending between said first substrate engaging member and said second substrate engaging member whereby when a glass lite is engaged with a respective substrate engaging member, said body facilitates limited resilient compression of said assembly.

5,443,872

CONTAINER FOR PHOTOGRAPHIC FILM CARTRIDGE

Mutsuo Akao, and Koji Inoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 480,797, Feb. 16, 1990, Pat. No. 5,106,665. This application Dec. 17, 1991, Ser. No. 808,780
Claims priority, application Japan, Feb. 16, 1989, 1-35072, Feb. 23, 1989, 1-41770; Feb. 27, 1989, 1-20138; Mar. 20, 1989, 1-68771; Jun. 20, 1989, 1-71173
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[6] B65D *85/672*
U.S. Cl. 428—35.7 21 Claims



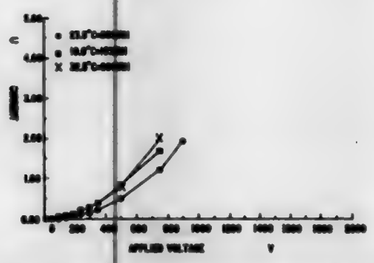
1. A container body for a photographic film cartridge having a peripheral wall portion and a bottom portion, said container body being composed of more than 70wt. % of a propylene-ethylene random copolymer resin having an ethylene content of 1 to 5 wt. %, said propylene-ethylene random copolymer resin having a melt index of 10 to 60 g/10 minutes, a notched Izod impact strength at 23° C. of more than 2.0 kg-cm/cm, and a bending elastic modulus of more than 9,000 kg/cm^2 and containing at least 0.005 to 0.3 wt. % of a fatty acid amide lubricant and 0.005 to 0.6 wt. % of a surfactant lubricant different from said fatty acid amide lubricant and the sum of both lubricants being 0.01 to 0.9 wt. %, wherein the Rockwell hardness of the bottom portion is not less than 85 R.

5,443,873

SILICONE RUBBER ROLLER FOR ELECTROPHOTOGRAPHY AND METHOD OF PRODUCING THE SAME

Hitoshi Itani; Yuji Yamasaki, and Hirotoshi Murakami, all of Hyogo, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Nov. 12, 1992, Ser. No. 974,059
Claims priority, application Japan, Nov. 12, 1991, 3-295399; May 14, 1992, 4-122231
Int. Cl.[6] B32B *1/08*
U.S. Cl. 428—36.5 9 Claims



1. A rubber roller for use in electrophotography to produce an image, said rubber roller comprising a porous body which comprises:
100 parts by weight of a rubber, consisting essentially of a crosslinked rubbery polysiloxane polymer;
about 18 to 28 parts by weight of silica; and
about 5 to 12 parts by weight of carbon black;
wherein said amounts of said silica and said carbon black are sufficient for said body to have an Asker C hardness of up to about 35° and an electrical resistance of about 10^3 to 10^8 ohms; and
wherein the quality of the image produced when using said roller is substantially without fault and is substantially the same regardless of whether the ambient atmospheric temperature and humidity during said electrophotography are high, ordinary or low.

5,443,874

HOLLOW MULTI-LAYER MOLDING

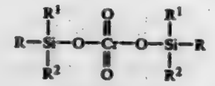
Kazuhisa Tachi; Takeshi Okamoto, and Mikiko Muramatsu, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1994, Ser. No. 235,336
Claims priority, application Japan, May 24, 1993, 5-121643
Int. Cl.[6] B29D *22/00*; B32B *1/02, 27/08*
U.S. Cl. 428—36.7 9 Claims

1. A hollow multi-layer molding made of a multi-layer laminate material, said multi-layer laminate material comprising:
i) a polyethylene layer;
ii) a barrier layer comprising a substance selected from the group consisting of a polyamide resin, a saponified derivative of an ethylene-vinyl acetate copolymer, a thermoplastic polyester, and a mixture of at least two of said polyamide resin, said saponified derivative and said thermoplastic polyester; and
iii) an adhesive layer of a modified polyethylene obtained by modifying polyethylene with 0.005 to 10% by weight of an unsaturated carboxylic acid or anhydride thereof, said polyethylene layer and said barrier layer being laminated to each other with said adhesive layer sandwiched therebetween,
said polyethylene layer being made of a high-molecular-weight polyethylene obtained by using a reducing agent, comprising an alkylaluminum alkoxide of formula:

$R'_xAl(OR'')_y$

where x and y are integers of 1 or 2 which total 3; and R′ and R″ each represent a C_{1-14} hydrocarbon group, and
a silyl chromate catalyst of formula (III):



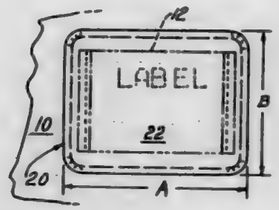
where R^1 and R^2 each represent a C_{1-14} hydrocarbon group, said high-molecular-weight polyethylene having a high-load melt flow rate (at a temperature of 190° C. under a load of 21.6 kg) of 3 to 8 g/10 min., and a density of 0.940 to 0.970 g/cm^3.

5,443,875

LABEL PATCH FOR GARMENTS

Warren S. Liu, 7500 Lilla Pl., West Hills, Calif. 91304

Filed May 25, 1993, Ser. No. 67,237
Int. Cl.[6] B65C *5/00*
U.S. Cl. 428—40 18 Claims



1. A protective patch for smoothly covering a label in an existing garment, the patch comprising:
(a) a flexible member having a perimeter edge margin, entire perimeter edge marginal region of the flexible member being folded against a facing portion of the flexible member for forming a double thickness of the flexible member with the edge margin being spaced inwardly from an outer perimeter extremity of the patch; and
(b) an adhesive material on the flexible member, the adhesive material forming a first adhesive on the flexible member within a ring-shaped region of the patch for affixing to the garment with the first adhesive surrounding but not contacting the label, an outer perimeter of the ring-shaped region extending proximate the perimeter extremity, a second adhesive securing only the marginal region to the facing portion, the marginal region having a corner width at locations of minimum radius of the outer perimeter extremity, the corner width being less than half of the minimum radius for limiting projections of the perimeter margin away from the facing flexible material, the minimum radius being not less than approximately 0.1 inch for avoiding high-pressure local contact of the patch against a wearer of the garment.

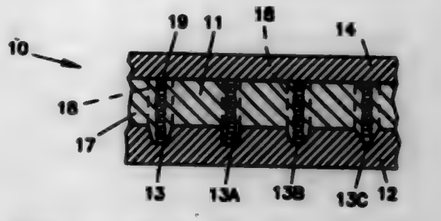
5,443,876

ELECTRICALLY CONDUCTIVE STRUCTURED SHEETS

David C. Koskenmaki, St. Paul, and Clyde D. Calhoun, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1993, Ser. No. 175,921
Int. Cl.[6] A61F *13/02*
U.S. Cl. 428—40 15 Claims

1. An electrically conductive sheet material conductive through its thickness but not measurably conductive in the transverse direction, said sheet comprising:
a polymeric sheet having first and second faces;
said first face having a regular array of protrusions extending therefrom, said protrusions defining conductive corridors lying between said protrusions and said second face, with a dielectric region surrounding said conductive corridors;
a plurality of magnetic columns, each column including individual electrically conductive ferromagnetic particles magnetically aligned from a mixture of said ferromagnetic



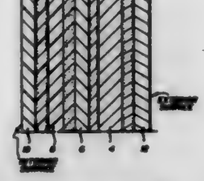
particles and a dielectric binder to form a continuous column, said magnetic columns lying in said conductive corridors, extending from protrusions in said first face to said second face; and providing conductivity between said first and second faces;
said dielectric region surrounding said conductive corridors preventing electrical conductivity therebetween.

5,443,877

GLAZING LAMINATE HAVING A REPLACEABLE SACRIFICIAL LAYER

John R. Kramer, Midlothian, Ill., and Larry V. Young, Trafalgar, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 1, 1994, Ser. No. 204,123
Int. Cl.[6] B32B *17/00, 27/36*; B65D *65/28*
U.S. Cl. 428—43 15 Claims



1. A laminate consisting essentially of:
(a) a substrate selected from the group consisting of glass, polycarbonate, and polymethylmethacrylate;
(b) a film selected from the group consisting of polycarbonate and polymethylmethacrylate; and
(c) an adhesive means for replaceably adhering the film to the substrate whereby the laminate may be repaired by replacing the film.

5,443,878

COMPOSITE WEATHERBOARD

Kerry R. Treloar; Johannes La Grouw, and Cornelius La Grouw, all of Rotorua, New Zealand, assignors to La Grouw Corporation Limited, Rotorua, New Zealand

Filed Jul. 20, 1994, Ser. No. 278,037
Int. Cl.[6] E04D *13/00*
U.S. Cl. 428—60 7 Claims

1. A prefinished composite weatherboard comprising a wooden plank having top and bottom edges machined to allow mating engagement with the opposite edge of the planks of identically formed weatherboards and a metal sheathing fixed

to the outer face of said plank to cover the exposed surface of the weatherboard in use, said sheathing being at least in part



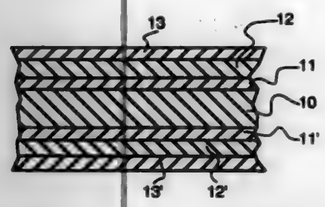
secured to said plank by fixing means attached to the inner surface of said sheathing which frictionally engage within a longitudinal notch provided in the outer face of said plank.

5,443,879

LONGITUDINAL MAGNETIC RECORDING MEDIUM EXHIBITING VARIOUS COERCIVITIY RELATIONSHIPS

Naoki Kodama, Kamakura, and Hiroyuki Suzuki, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 117,330
Claims priority, application Japan, Sep. 9, 1992, 4-240585
Int. Cl.[6] B32B *3/02*; G11B *5/66, 5/70*
U.S. Cl. 428—65.7 8 Claims



1. A longitudinal magnetic recording medium having a substrate and a magnetic layer formed on the substrate by applying a magnetic coating material, containing a magnetic powder mixed with a binder, comprising:

said medium having a CRP value of 0.5 or less, wherein the CRP value is defined by

$$CRP=[H_c(R)\times H_c(P)]/[H_c(C)]^2$$

where $H_c(C)$ represents a coercive force in a recording direction, $H_c(R)$ represents a coercive force in the medium plane in a direction perpendicular to the recording direction, and $H_c(P)$ represents a coercive force in a direction of medium thickness, wherein $H_c(P)\leq H_c(R)\leq H_c(C)$.

5,443,880

POCKET-CONTAINING TOWEL OR BLANKET

Curtis J. Wike, Charlotte, N.C.

Filed Aug. 11, 1992, Ser. No. 929,167
Int. Cl.[6] B32B *3/14*
U.S. Cl. 428—78 11 Claims



1. A towel having an integral compartment therein, comprising:

a first piece of textile material defining the maximum dimensions of the towel;

a second piece of textile material fixed to said first piece of material creating a first compartment between the two pieces of material;

access means through said first piece of material to the interior of said first compartment;

a third piece of textile material fixed to said first piece of material, extending over said second piece on the side away from said first piece creating a second embodiment between said second and third pieces of material; and

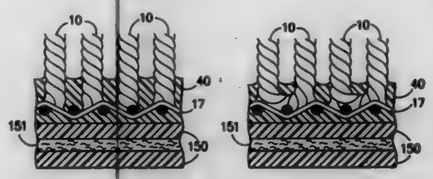
access means through said first piece of material to the interior of said second compartment.

5,443,881

HEAT STABILIZED PILE FABRIC

Kenneth B. Higgins, and Benjamine A. Gaddis, both of LaGrange, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 674,427, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 457,612, Dec. 27, 1989, abandoned. This application Jul. 14, 1993, Ser. No. 91,309
Int. Cl.[6] D04H *11/00*
U.S. Cl. 428—93 6 Claims



1. An adhesive bonded pile fabric comprising a base layer of liquid permeable open scrim material, a pile forming yarn adjacent to and in contacting relationship with the base layer at points of contact across the base layer and a bonding adhesive disposed around the pit forming yarn and the base layer at said points of contact across the base layer, the pile forming yarn having been tacked to the base layer by the application of heat prior to application of said bonding adhesive around said base layer and said pile forming yarn such that the pile forming yarn and the base layer are tacked together by a dual mechanism of heat tacking and adhesive bonding.

5,443,882

ARMORED GARMENT

Andrew D. Park, 2851 E. Brigstock Rd., Midlothian, Va. 23113

Division of Ser. No. 243,976, May 17, 1994. This application Oct. 21, 1994, Ser. No. 327,309
Int. Cl.[6] F41H *1/02*
U.S. Cl. 428—103 14 Claims



1. In an armored garment including at least one ballistic panel contained within a supporting structure of the garment for being worn on a body part, the improvement comprising a plurality of ballistic laminate structure in sheet form assembled together to form the ballistic panel, said laminate structure comprising:

(a) a first array of high performance, unidirectionally-oriented fiber bundles;

(b) a second array of high performance, unidirectionally-oriented fiber bundles cross-plied at an angle with respect to said first array of fiber bundles, and laminated to said first array of fiber bundles in the absence of adhesives or bonding agents, said first and second arrays of high performance, unidirectionally-oriented fiber bundles comprising fibers chosen from the group consisting of aramid fiber, ultra high molecular weight polyethylene, high molecular weight polyethylene, high modulus vinylon, and liquid crystal polymer-based fiber; and

(c) first and second thermoplastic films bonded to outer surfaces of said laminated first and second arrays of unidirectional fiber bundles without penetration of said films into said fiber bundles or through the laminate structure from one side to the other, whereby a sufficient amount of film resides between the laminated first and second arrays of unidirectional fiber bundles to adhere the first and second arrays of fiber bundles together to form the ballistic laminate structure.

5,443,883

BALLISTIC PANEL

Andrew D. Park, 2851 E. Brigstock Rd., Midlothian, Va. 23113

Division of Ser. No. 243,976, May 17, 1994. This application Oct. 21, 1994, Ser. No. 327,310
Int. Cl.[6] F41H *1/02, 1/04*; B32B *5/00*
U.S. Cl. 428—103 12 Claims



1. In a ballistic panel for preventing penetration of high-velocity bullets and fragments through the panel from one side to the other, the improvement comprising a plurality of ballistic laminate structure in sheet form assembled together to form the ballistic panel, said laminate structure comprising:

(a) a first array of high performance, unidirectionally-oriented fiber bundles;

(b) a second array of high performance, unidirectionally-oriented fiber bundles cross-plied at an angle with respect to said first array of fiber bundles, and laminated to said first array of fiber bundles in the absence of adhesives or bonding agents, said first and second arrays of high performance, unidirectionally-oriented fiber bundles comprising fibers chosen from the group consisting of aramid fiber, ultra high molecular weight polyethylene, high molecular weight polyethylene, high modulus vinylon, and liquid crystal polymer-based fiber; and

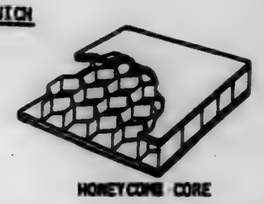
(c) first and second thermoplastic films bonded to outer surfaces of said laminated first and second arrays of unidirectional fiber bundles without penetration of said films into said fiber bundles or through the laminate structure from one side to the other, whereby a sufficient amount of film resides between the laminated first and second arrays of unidirectional fiber bundles to adhere the first and second arrays of fiber bundles together to form the ballistic laminate structure.

5,443,884

FILM-BASED COMPOSITE STRUCTURES FOR ULTRALIGHTWEIGHT SDI SYSTEMS

Richard W. Lusignea, Brighton, Mass.; Joseph J. Stanco, Clinton, N.Y., and Uday Kashalikar, Natick, Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 394,764, Aug. 15, 1989, abandoned. This application Feb. 14, 1992, Ser. No. 834,283
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 33 Claims



1. An ultralightweight (ULW) shaped structural member formed from a single-layer biaxially-oriented polymer film comprising an ordered rod-shaped extended chain polymer, wherein said polymer is an aromatic heterocyclic polymer selected from the group consisting of poly-(p-phenylene benzobisoxazole) and poly-(p-phenylene benzobisthiozole), wherein said polymer has a binder interpenetrated in the micro-infrastructure, the polymer being infiltrated with the binder to form a microcomposite of the polymer and binder, and wherein said structural member is a honeycomb structure comprising a honeycomb core formed from said film.

5,443,885

FLOOR AND COUNTERTOP PROTECTOR PAD

Roger D. Wilson, 10635 Winterhawk, Boise, Id. 83709

Filed Apr. 8, 1993, Ser. No. 45,517
Int. Cl.[6] B32B *3/26, 23/02*
U.S. Cl. 428—121 5 Claims

1. A floor and countertop protector pad for temporarily covering and protecting a building interior horizontal surface from damage by liquids, by falling, scraping, and gouging objects, and by particulate and small objects lying on the horizontal surface, the protector pad consisting of:

a barrier means comprising a moisture-impermeable and deformation-, puncture-, and tear-resistant high density

polymeric film sheet having an upper surface and a lower surface, and having a thickness of 0.025 inches or less, and a cushion means comprising a closed-cell polymeric foam sheet having a top surface bonded to the lower surface of the film sheet for resiliently deforming to dissipate the forces of said falling, scraping, and gouging objects impacting on the film sheet, and the foam sheet having a



bottom surface for placement on the horizontal surface and for resiliently deforming to lie over the said particulate and small objects,

wherein the foam sheet has a thickness less than three times the thickness of the film sheet, and

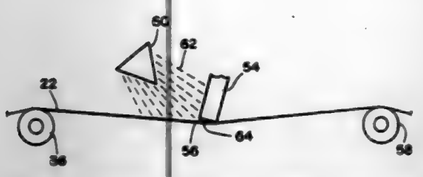
wherein the protector pad is flexible for rolling for transport and for unrolling flat to contact the horizontal surface.

5,443,886

HYDROSONICALLY EMBEDDED SOFT THIN FILM MATERIALS

Bernard Cohen, Berkley Lake, and Lee K. Jameson, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 30, 1991, Ser. No. 768,494
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—131 **18 Claims**



1. A thin soft film having a material embedded therein and wherein the embedded material consists of individual fibers.

5,443,887

ASBESTOS-FREE COMPOSITION FOR GASKETS CONTAINING AN OIL ABSORBENT AGENT AND GASKETS INCLUDING THE COMPOSITION

Sadao Nakao, Yamato, Japan, assignor to Nippon Reinz Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 881,762, May 12, 1992, abandoned. This application May 23, 1994, Ser. No. 247,489
Claims priority, application Japan, May 15, 1991, 3-139645; May 15, 1991, 3-139646; Sep. 11, 1991, 3-261061
Int. Cl.[6] F16J *15/00*; C09K *3/10*
U.S. Cl. 428—137 **6 Claims**

3. A gasket made from a composition comprising (a) 100 parts by weight of a styrene-butadiene rubber, (b) 50–500 parts by weight of an aromatic polyamide fiber, (c) 1–300 parts by weight of an oil absorbent agent which is a self-swelling acrylic polymer having a crosslinked structure, and (d) 100–2000 parts



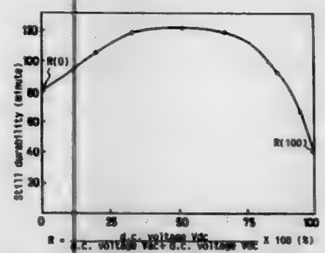
by weight of a filler comprising a Group II metal sulfate, talc and clay.

5,443,888

MAGNETIC RECORDING MEDIUM HAVING A CARBON PROTECTIVE LAYER AND PARTIALLY FLUORINATED ALKYL CARBOXYLIC ACID LUBRICANT LAYER

Mikio Mursi, Hirakata; Kiyoshi Takahashi, Ibaraki; Masaru Odagiri, Kawanishi; Yoshiaki Kai, Neyagawa; Takashi Suzuki, Takatsuki, and Toshiaki Kunieda, Mino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 956,106, Oct. 2, 1992, abandoned, which is a division of Ser. No. 621,464, Dec. 3, 1990, Pat. No. 5,182,132. This application Dec. 28, 1993, Ser. No. 174,685
Claims priority, application Japan, Dec. 11, 1989, 1-321698
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—143 **1 Claim**



1. A magnetic recording tape comprising:

a ferromagnetic metal thin film formed on a protrusion layer comprising $10^4 - 10^8$ particles/mm^2 on a substrate,

a polymer film formed on said ferromagnetic metal thin film,

a diamond-like carbon film with a Vickers hardness in a range of 3000–3500 kg/mm^2 formed on said polymer film by plasma CVD method utilizing a.c. power (voltage Vac) in the frequency range of 80 Hz to 200 kHz which has peak voltage more than +500 V and hydrocarbon having at least 3 carbon atoms as material gas and d.c. power which superimposes on said a.c. power at a superimposing ratio R(%) of

$$R = \frac{\text{d.c. voltage } Vdc}{\text{a.c. (effective) voltage } Vac + \text{d.c. voltage } Vdc} \times 100(\%)$$

and $20\% \leq R \leq 70\%$

and said plasma CVD method further utilizes one inert gas selected from the group consisting of helium, neon, argon, krypton, xenon, radon, and

a lubricant film consisting of:

partially fluorinated alkyl carboxylic acid having a melting point from 50° C. to 90° C., on said diamond-like carbon film.

5,443,889

MARKED MULTI-PLY PAPER SHEETS AND METHOD AND EQUIPMENT FOR THEIR MANUFACTURE

Remy Ruppel, Durrenentzen; Pierre Laurent, Colmar, and Joel Huegler, Urschenheim, all of France, assignors to Kayserberg, France

Filed Oct. 20, 1993, Ser. No. 107,708
Claims priority, application France, Feb. 20, 1991, 91 02003
Int. Cl.[6] B32B *3/00*; B31F *1/20*; D21H *11/00*
U.S. Cl. 428—172 **13 Claims**



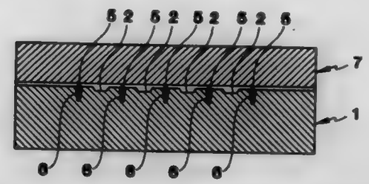
1. A multi-ply sheet with two external surfaces comprising (a) at least a first ply and a second ply, each of said first ply and said second ply having an unembossed inner surface and wherein the unembossed inner surface of said first ply faces toward the unembossed inner surface of said second ply; and (b) an adhesive bonding the inner surface of said first ply to the inner surface of said second ply in discrete zones which provide areas of decreased thickness on the two external surfaces of said multi-ply sheet such that the multi-ply sheet evinces patterns corresponding to said discrete zones.

5,443,890

METHOD OF PRODUCING A SEALING MEANS IN A MICROFLUIDIC STRUCTURE AND A MICROFLUIDIC STRUCTURE COMPRISING SUCH SEALING MEANS

Ove Ohman, Uppsala, Sweden, assignor to Pharmacia Biosensor AB, Uppsala, Sweden

PCT No. PCT/SE92/00062, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO92/14132, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 4, 1992, Ser. No. 90,119
Claims priority, application Sweden, Feb. 8, 1991, 9100392
Int. Cl.[6] B32B *3/28*; B28B *5/00*; D01D *5/20*
U.S. Cl. 428—167 **15 Claims**



1. A method for producing a leakage-proof sealing means in a microfluidic channel assembly comprising first and second flat surface members which when pressed against each other define at least part of a microfluidic channel system between them, which method comprises the steps of

(i) recessing at least one groove structure into a flat surface of the first flat surface member;

(ii) providing a counter mould, the mould surface of which has at least one groove structure or at least one ridge structure, said structure or structures having an extension corresponding to, but a smaller width than, the groove structure or structures of the first member;

(iii) applying the counter mould against the first member to define a mould cavity or cavities by the groove structure or structures of the first member with the counter mould portions comprising said groove or ridge structure or structures;

(iv) introducing a fluid sealing material, capable of hardening to form a resilient sealing structure, into the mould cavity or cavities; and

(v) after hardening of the fluid sealing material, removing the mould from the first member;

the top part of the mould cavity or cavities being configured in dependence of the shrinkage or expansion properties of the fluid sealing material whereby the resulting moulded resilient sealing structure projects above groove edges of the first member while leaving sufficient space in an upper part of said groove to permit complete accommodation therein of a deformed top part of the resilient sealing structure when compressed by the second member.

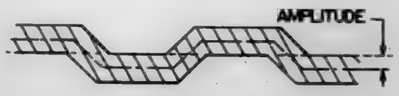
6. A microfluidic system device comprising a first member of a substantially rigid material having a substantially flat surface and designed to be applied to a substantially flat surface of a second member of a substantially rigid material, one or both of the surfaces of said members being provided with a first groove structure wherein a corresponding fluid channel system is defined between the members when applied to each other, characterized in that said first member includes at least one second groove structure having a resilient sealing means moulded into it for sealing off parts of said fluid channel system from adjacent areas, a top portion of said sealing means projecting above the surface of said first member and being spaced from at least one side edge of said second groove structure wherein the top portion is capable of being substantially accommodated in the groove space when it is deformed by the application of said two members against each other.

5,443,891

LOW AMPLITUDE WAVE-BOARD

Lars Bach, Edmonton, Canada, assignor to Alberta Research Council, Edmonton, Canada

Continuation of Ser. No. 658,791, Feb. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 365,307, Jun. 13, 1989, abandoned. This application Mar. 15, 1994, Ser. No. 213,329
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[6] B32B *31/20*; F04C *2/32*
U.S. Cl. 428—182 **9 Claims**



1. A waveborad panel formed by compression and curing of a mat of wafers and binder in admixture, the waveboard panel comprising: a panel having a predetermined thickness; and, a plurality of waves defining an amplitude and a wavefront; wherein the amplitude of said waves is substantially equal to or less than half of the thickness of said board.

5,443,892

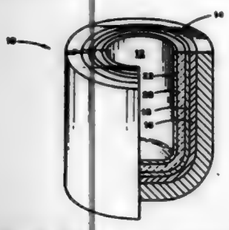
COATED GRAPHITE ARTICLES USEFUL IN METALLURGICAL PROCESSES AND METHOD FOR MAKING SAME

Cressie E. Holcombe, and Eugene L. Bird, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 19, 1993, Ser. No. 34,439
Int. Cl.[6] C04B *41/06*
U.S. Cl. 428—216 **12 Claims**

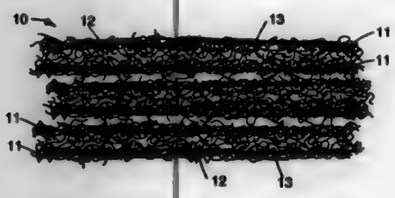
1. A coated graphite article contactable by molten metal and alloy systems in metallurgical procedures involving molten metal or alloys thereof reactive with carbon in the molten state at temperatures up to about 2000° C., comprising a graphite substrate and a multiple-layer coating on surface regions of the substrate exposed to the molten metal or alloys with said coat-

ing providing a barrier for inhibiting diffusion of carbon from the graphite substrate into the molten metal or alloy, said coating comprising a first coating increment supported on said surface regions of the graphite substrate with said first coating increment being of a thickness in the range of about 0.005–0.060 inch and substantially formed of a carbide-forming metal selected from the group consisting of molybdenum, tungsten, niobium, tantalum, hafnium, titanium, zirconium, and combinations thereof, a second coating increment supported on the first coating increment with said second coating increment being of a thickness in the range of about 0.005–0.025



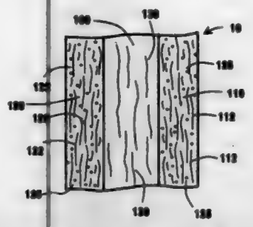
inch and substantially formed of a carbide-forming metal selected from the group consisting of molybdenum, tungsten, niobium, tantalum, hafnium, titanium, zirconium, and combinations thereof and a refractory metal oxide selected from the group consisting of partially stabilized zirconia, yttria, alumina, and combinations thereof, and a third coating increment supported on the second coating increment with said third coating increment being of a thickness in the range of about 0.005–0.030 inch and substantially formed of refractory metal oxide selected from the group consisting of partially stabilized zirconia, yttria, alumina, and combinations thereof.

5,443,893
MULTILAYER NONWOVEN THERMAL INSULATING BATTS
Carol E. Herzberg, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 20, 1994, Ser. No. 247,216
Int. Cl.[6] B23B *27/12*
U.S. Cl. 428—198 9 Claims



1. A nonwoven thermal insulating batt comprising a blend of bonding staple fibers and staple fill fibers, the fibers having a fiber length ratio of staple fill fibers to staple bonding fibers of at least 2:1 and the fibers being formed into a multilayer batt, the bonding fibers subsequently bonded sparingly to staple fill fibers at the points of contact to enhance the structural stability of the multilayer batt but allow delamination of the individual web layers under mechanical action.

5,443,894
FIRE RETARDANT ORIENTED STRAND BOARD STRUCTURE ELEMENT
Mark W. Pollock, Avon; John J. Wetula, Richmond Heights, both of Ohio, and Brian M. Ford, Grayslake, Ill., assignors to Ucar Carbon Technology Corporation, Danbury, Conn.
Filed Jul. 29, 1994, Ser. No. 282,908
Int. Cl.[6] B32B *5/02*
U.S. Cl. 428—213 4 Claims



1. Oriented strand board panel formed by hot pressing a mat of resin coated wood strands in which expandable graphite particles are incorporated, said panel comprising a core of resin bonded wood strands with opposite sides and a covering layer of resin bonded wood strands on each side of said core, each said covering layer containing from about 1 to 20% by weight of expandable graphite particles dispersed therein and said core being free of expandable graphite.

5,443,895
MULTI-LAYER TRANSPARENT POLYOLEFIN FILM FOR APPLICATION IN SHRINK LABELLING
Herbert Peiffer, Mainz; Gunter Schloegl, Kelkheim, and Lothar Bothe, Mainz-Gonsenheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 525,600, May 21, 1990, Pat. No. 5,212,009. This application Apr. 16, 1993, Ser. No. 46,729
Claims priority, application Germany, May 31, 1989, 39 17 652.5
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[6] B32B *27/32*
U.S. Cl. 428—220 28 Claims

1. A stretched transparent shrinkable film being predominately shrinkable in the transverse direction comprising a base layer comprising:
(a) about 5 to 40 wt % of a propylene homopolymer,
(b) 0 to about 30 wt % of a hydrogenated hydrocarbon resin having a softening point in the range from about 80° to 125° C., and
(c) about 30 to 95 wt % of a random ethylene-propylene copolymer,
wherein all percentages are related to the total weight of the mixture;
and a top layer which comprises at least one α-olefin polymer on each side of said base layer, said film having a capacity for shrinkage in the transverse direction of greater than 15% at 90° C. and greater than 40% at 120° C.

5,443,896
SURFACE TREATED ARAMID FIBERS AND A PROCESS FOR MAKING THEM
Serge Rebouillat, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 844,270, Mar. 2, 1992, Pat. No. 5,275,625. This application Jun. 23, 1993, Ser. No. 79,652
Claims priority, application Germany, Mar. 2, 1991, 41 06 748.7
Int. Cl.[6] B32B *7/00*; D03D *3/00*
U.S. Cl. 428—267 1 Claim

1. A fabric woven from aramid fibers having a surface coated by a reaction product of the aramid and a surface reactant wherein the reaction product was formed at the surface of a never-dried aramid fiber, wherein the surface reactant was applied to the aramid fiber while the aramid was swollen with 15 to 200 percent water, the reaction product was formed, and the coated aramid fiber was dried, and wherein the surface reactant comprises a ketene dimer of the general formula

$$[R^1R^2C_2O]—[R^{1'}R^{2'}C_2O]$$

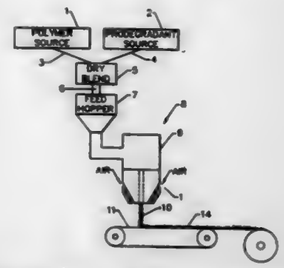
wherein each of the groups R^1 and $R^{1'}$, which may be same or different, are alkyl or alkenyl and have from 8 to 24 carbon atoms; and each of the groups R^2 and $R^{2'}$, which may be same or different, are C_1–C_3-alkyl, C_1–C_4-alkenyl, or hydrogen.

5,443,897
ELECTRICALLY CONDUCTIVE DECORATIVE MATERIAL
Yoji Kawaguchi; Hirofumi Amano, both of Itami, and Satoshi Kashihara, Kawanishi, all of Japan, assignors to Toyo Linoleum Company Limited, Itami, Japan
Continuation of Ser. No. 879,837, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 606,970, Oct. 31, 1990, abandoned. This application May 23, 1994, Ser. No. 247,487
Claims priority, application Japan, Nov. 7, 1989, 1-289052
Int. Cl.[6] B32B *5/00*
U.S. Cl. 428—237 4 Claims



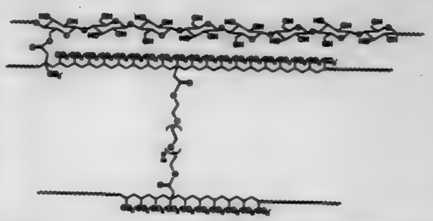
1. An electrically conductive decorative material comprising:
(a) a layer of a resin containing 0.5 to 5 weight percent of an electrically conductive fiber which renders the resin layer electrically conductive, and
(b) a plurality of pattern pieces spaced apart one from another and embedded in the resin layer, the pattern pieces containing an antistatic agent,
the fiber-containing conductive resin penetrating into and filling interstices between the pattern pieces, the electrically conductive decorative material having a maximum surface resistivity of 1.3×10^4 ohms at 15% relative humidity.

5,443,898
NONWOVEN WEBS AND METHOD OF MAKING SAME
Scott L. Gessner, Encinitas, Calif.; Marcus C. Merriman, Fairport, N.Y., and Charles H. Parsen, Durham, Pa., assignors to Fiberweb North America, Inc., Simpsonville, S.C.
Filed Jun. 29, 1993, Ser. No. 84,523
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—286 30 Claims



1. A process for producing a nonwoven web, the process comprising:
forming a non-uniform dry blend of a polyolefin with a powder form of a prodegradant wherein said prodegradant is dispersed in the polyolefin so that the actual concentration of prodegradant in some portions of the non-uniform blend is significantly higher than the theoretical concentration of prodegradant based upon the total prodegradant concentration distributed equally throughout the blend;
heating the non-uniform blend to a temperature sufficient to cause the substantially immediate thermal degradation of said prodegradant and thereby provide a non-uniformly degraded polyolefin having a fraction substantially reduced in molecular weight and a fraction substantially unaffected in molecular weight as compared to the starting polyolefin; and
meltblowing said non-uniformly degraded polyolefin.

5,443,899
FIBERS AND PULPS FOR PAPERMAKING BASED ON CHEMICAL COMBINATION OF POLY(ACRYLATE-CO-ITACONATE), POLYOL AND CELLULOSIC FIBER
Robert L. Barcus, Springfield Township, and David W. Bjorkquist, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 458,265, Dec. 28, 1989, Pat. No. 5,160,789. This application Jun. 2, 1992, Ser. No. 880,843
Int. Cl.[6] D04H *1/58*
U.S. Cl. 428—288 8 Claims



1. A wet-laid paper web, comprising from about 5% to about 60% of chemically modified fiber having a water absorbency and retention value in the range from about 15 g/g to about 130 g/g comprising, chemically bonded together:
(a) a cellulosic fiber selected from the group consisting of

chemithermomechanical pulp fiber, bleached hardwood Kraft pulp fiber, bleached softwood Kraft pulp fiber, unbleached hardwood Kraft pulp fiber, unbleached softwood Kraft pulp fiber, bleached softwood sulfite pulp fiber, unbleached softwood sulfite pulp fiber, cotton linters, mercerized dissolving pulp fiber, unmercerized dissolving pulp fiber, and mixtures thereof;

(b) a poly(acrylate-co-itaconate) copolymer having a weight average molecular weight in the range from about 60,000 to about 1,000,000, an acrylate content of from about 50 mole % to about 99 mole % and an itaconate content of from about 1 mole % to about 50 mole %, and

(c) a polyol;

wherein the proportion by weight of said poly(acrylate-co-itaconate) copolymer to polyol is from about 250:1 to about 3:1 and the weight of said poly(acrylate-co-itaconate) copolymer plus said polyol per unit weight of said cellulosic fiber, (a), is in the range from about 0.3 to about 2, the poly(acrylate-co-itaconate) copolymer weight being expressed on an acid equivalent basis.

5,443,900

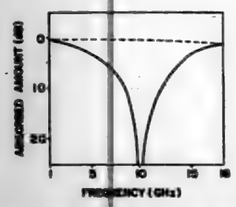
ELECTROMAGNETIC WAVE ABSORBER

Toshiaki Nagano; Heihachi Murase, and Hideo Kogure, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 757,276, Sep. 10, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 115,252

Int. Cl.[6] B32B *5/16*; H05K *9/00*

U.S. Cl. 428—332 2 Claims



1. An electromagnetic wave absorber comprising two or more multilayered films each consisting of a resin layer (A) composed of a resin or a resin containing a pigment and having a film thickness of 1 μm to 1 mm, and a layer (B) having a film thickness of 1 nm to 50 nm, wherein the layer (B) is applied onto the resin layer (A) and is selected from the group consisting of a metal layer and an alloy layer, the metal constituting the metal layer being selected from the group consisting of nickel, iron, copper and silver, and the alloy constituting the alloy layer being terbium-iron-cobalt alloy, said electromagnetic wave absorber being formed onto a base structure selected from the group consisting of (i) a metal structure, (ii) a metallic sheet and (iii) a plastic film laminated on a metallic sheet, and an uppermost clear or colored film layer on the layer (B) away from the layer (A).

5,443,901

MAGNETIC RECORDING MEDIUM HAVING AN ADSORBED FILM OF MOLECULES COMPRISING TWO SPECIES OF STRAIGHT CARBON CHAIN MOLECULES

Norihisa Mino, Settu; Masaru Soga, Osaka, and Ogawa Kazufumi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

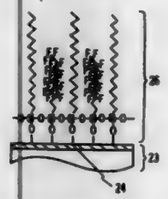
Continuation of Ser. No. 831,052, Feb. 4, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,244

Claims priority, application Japan, Feb. 5, 1991, 3-036774; Apr. 30, 1991, 3-098911; Jun. 14, 1991, 3-143494

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—336 10 Claims

1. A magnetic recording medium comprising a ferromagnetic film formed on a non-magnetic substrate, and a chemically adsorbed film containing siloxane groups formed on surface of at least one of said ferromagnetic film and said non-magnetic substrate, wherein said chemically adsorbed film comprises at least first and second straight carbon chain molecules covalently bonded to said surface or surfaces by siloxane groups at one end of each molecule, wherein said first straight



carbon chain molecules contain a fluorocarbon group on the end of each bonded to a surface and said second straight carbon chain molecules contain a C_3–C_{25} carbon chain and a methyl group on the end of each molecule not bonded to surface, and wherein the first and second straight carbon chain molecules have a difference in the number of carbon atoms in the chain of between 1 and 15.

5,443,902

POSTFORMING DECORATIVE LAMINATES

David E. Knox, Goose Creek; J. Donato Fortin, Charleston, both of S.C., and Harold L. Hintz, Mount Kisco, N.Y., assignors to Westvaco Corporation, New York, N.Y.

Filed Jan. 31, 1994, Ser. No. 188,718

Int. Cl.[6] B32B *29/00*

U.S. Cl. 428—340 20 Claims

1. An improved postformable laminate comprising a decorative layer, a core layer of saturable kraft, and a postforming sheet wherein the improvement comprises, as the postforming sheet, a sheet prepared from wood pulp and characterized by a basis weight of from about 80 lbs./3,000 ft^2 to about 185 lbs./3,000 ft^2, tensile modulus below about 2.5 kpsi, and cross directional stretch of from about 1% to about 3%, wherein said pulp is refined wood pulp subsequently subjected to a mechanical treatment at an energy input of from about 2 to about 15 hp-days/ton which imparts kinking and curling characteristics to individual pulp fibers.

5,443,903

HOT MELT STICK

Dennis D. Hansen, Luck, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 25, 1993, Ser. No. 23,050

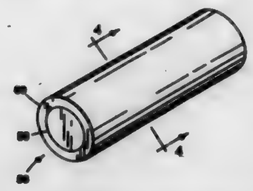
Int. Cl.[6] B32B *7/12*, *15/04*

U.S. Cl. 428—355 20 Claims

1. A hot melt stick comprising

a) a core comprising a moisture-curable hot melt composition; and

b) a moisture-resistant shell coaxial with the core comprising one or more ethylene-containing copolymers that are compatible with the core upon melting,



said hot melt stick being adapted for delivery to the melting chamber of a hot melt applicator.

5,443,904

HIGH-TENACITY POLYETHYLENE FIBER

Yasuo Ohta; Tadao Kuroki, and Yoshinobu Oie, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1994, Ser. No. 355,910

Claims priority, application Japan, Dec. 16, 1993, 5-316954

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 9 Claims

1. A high-tenacity polyethylene fiber comprising an ethylene component as a main repeating unit, the fiber exhibiting an intrinsic viscosity [η_B] of at least 7 and having a tenacity of at least 30 g/d and an elastic modulus of at least 900 g/d; the peak value of loss tangent in the γ-dispersion being 0.025 to 0.06 and the peak temperature of loss modulus in the α-dispersion being 85° C. or higher, as determined by measurement of temperature dispersion of viscoelastic properties of the fiber.

5,443,905

HEAT AND OXIDATION RESISTANT COMPOSITE ELECTRICAL CONDUCTOR

Kazuo Sawada; Shinji Inazawa, and Kouichi Yamada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 823,995, Jan. 22, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,276

Claims priority, application Japan, Jan. 24, 1991, 3-007269

Int. Cl.[6] B32B *15/02*

U.S. Cl. 428—368 16 Claims



1. A composite heat resistant and oxidation resistant electrical wire comprising: an electrically conducting core consisting essentially of copper or a copper alloy and trace amounts of naturally occurring impurities, an electrically conducting intermediate layer circumferentially surrounding said core, said intermediate layer being made of an electrically conducting material including naturally occurring impurities, said electrically conducting material being selected from the group consisting of titanium boride and carbon, and a nickel layer circumferentially surrounding said electrically conducting intermediate layer.

5,443,906

ABRASIVE FILAMENTS COMPRISING ABRASIVE-FILLED THERMOPLASTIC ELASTOMER, METHODS OF MAKING SAME, ARTICLES INCORPORTING SAME AND METHODS OF USING SAID ARTICLES

Richard M. Pihl, Cottage Grove, Minn.; Duane J. Hayes, Ellsworth, Wis.; Loren L. Barber, Jr., Lake Elmo, Minn.; Dennis G. Welygan, Woodbury, Minn.; R. Eugene Hardwick, Maplewood, Minn., and Ronald O. Zemke, deceased, late of White Bear Lake, Minn. by Joy D. Zemke, legal representative, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 65,864, May 21, 1993, abandoned, which is a continuation of Ser. No. 854,330, Mar. 19, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 351,884

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—370 23 Claims



1. An abrasive filament comprising:

(a) a first elongate filament component having continuous surface throughout its length and being comprised of a first hardened organic polymeric material; and

(b) a second elongate filament component coterminous with said first elongate filament component comprised of a second hardened organic polymeric material in melt fusion adherent contact with the first elongate filament component along said continuous surface, the second hardened organic polymeric material being the same or different than the first hardened organic polymeric material,

wherein at least one of the first and second hardened organic polymeric materials comprises a thermoplastic elastomer., the thermoplastic elastomer having abrasive particles dispersed and adhered therein.

5,443,907

COATING FOR MEDICAL INSERTION GUIDES

Paul Slaikeu, Vadnais Heights; Paul H. Burmeister, White Bear Lake; Richard E. Cappetta, Plymouth, and Steven S. Hackett, Minnetonka, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 25,720, Mar. 2, 1993, abandoned, which is a continuation of Ser. No. 799,449, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 716,678, Jun. 18, 1991, abandoned. This application Dec. 7, 1994, Ser. No. 350,714

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—375 9 Claims



1. A guide for medical insertion device comprising:

a core;

a jacket surrounding the core, the jacket being composed of a hydrophobic polymer; and

a hydrophilic coating applied to the jacket, the hydrophilic coating being composed of a blend of about 10 to about 90

weight percent of a hydrophobic polymer and about 90 to about 10 weight percent of a hydrophilic polymer;
the hydrophilic coating being free of unreacted chemicals;
the guide being free of chemical reaction between the hydrophilic coating and the jacket;
the hydrophobic polymer of the jacket and the hydrophobic polymer of the hydrophilic coating comprising the same polymer, said hydrophobic polymer being selected from the group consisting of nylon, polyvinyl chloride, silicone, fluroelastomers, polyester, acrylic, polycarbonate, polyimides, and combinations thereof; and
the hydrophilic polymer of the coating being selected from the group consisting of polyacrylamide, polyvinyl alcohol, poly(sodium styrene sulfonate), poly(2-acrylamido-2-methylpropane sulfonic acid), poly(sodium vinyl sulfonate), poly(vinyl pyridine), proteins, and combinations thereof.

5,443,908

HEAT SENSITIVE RECORDING COMPOSITION AND PROCESS FOR PRODUCING SAME

Toshihiko Matsushita, and Syunsuke Takahashi, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Japan

Continuation of Ser. No. 755,731, Sep. 6, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 135,652

Claims priority, application Japan, Sep. 17, 1990, 2-246681; Sep. 17, 1990, 2-246682; Oct. 29, 1990, 2-293248; Feb. 4, 1991, 3-035418; Mar. 8, 1991, 3-068765; Apr. 1, 1991, 3-096298

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[6] B01J *13/18*; B05D *7/00*

U.S. Cl. 428—402.24 **13 Claims**

6. A heat-sensitive recording composition comprising agglomerates which comprise a colorless or light-colored dye precursor, a color developer which reacts with the dye precursor upon heating to form a color, and a sensitizer and have an average diameter of 2–30 μm.

8. A composition according to claim 6, wherein the agglomerates are microencapsulated using a thermocurable wall material.

5,443,909

MICROCAPSULE CONTAINING ULTRAVIOLET ABSORBER

Ritsuo Mandoh, Sakai; Takehiro Minami, Osaka; Katsuhiko Ishida, Takatsuki, and Hiroyoshi Mitoh, Nagaokakyo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 985,727, Dec. 19, 1992, Pat. No. 5,272,127. This application Sep. 23, 1993, Ser. No. 125,165

Claims priority, application Japan, Dec. 6, 1991, 3-349550; Dec. 11, 1991, 3-327703; Apr. 30, 1992, 4-111584

Int. Cl.[6] B01J *13/16*; F21V *9/06*; G02B *5/22*

U.S. Cl. 428—402.21 **5 Claims**

1. Microcapsules having an ultraviolet absorber comprising a benzotriazole derivative which is liquid at ordinary temperature and as required an organic solvent enclosed therein, which have capsule wall film of synthetic resin selected from the group consisting of polyurea resin, polyurethane polyurea resin and aminoaldehyde resin, and mean particle size of 0.1 to 3 μm.

5,443,910

AQUEOUS ADDITIVE SYSTEMS, METHODS AND POLYMERIC PARTICLES

William C. Gose, and Kenneth W. Hyche, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 31,371, Mar. 2, 1993, Pat. No. 5,334,644, which is a division of Ser. No. 476,071, Feb. 7, 1990, Pat. No. 5,190,579, which is a continuation-in-part of Ser. No. 240,903, Sep. 6, 1988, Pat. No. 5,007,961, which is a continuation-in-part of Ser. No. 197,946, May 24, 1988, Pat. No. 4,975,120, which is a continuation-in-part of Ser. No. 827,042, Feb. 7, 1986, Pat. No. 4,893,616, which is a continuation-in-part of Ser. No. 701,888, Feb. 15, 1985, abandoned. This application Aug. 2, 1994, Ser. No. 286,831

The portion of the term of this patent subsequent to Aug. 2, 2007, has been disclaimed.

Int. Cl.[6] B32B *5/16*, *9/00*

U.S. Cl. 428—407 **5 Claims**

1. Polymeric particles treated by the method of applying additives to polymeric particles comprising contacting said particles with an aqueous system free from in situ formation of color producing complexes comprising:
a) an emulsified wax,
b) in the range of 0.025 up to 60 parts by weight of surfactant per part of emulsified wax,
c) in the range of 0.005 up to 2 parts by weight of a base per part of emulsified wax, with a pH in the range of greater than 7 to equal to or less than about 12,
d) in the range of 0.05 up to 160 parts by weight of at least one processing, stabilizing or other functional polymer additive, per part of emulsified wax, and
e) at least enough water to render the resulting combination fluid; and
drying said particles wherein said particles are produced from polymers selected from the group consisting of polyolefins, polyimides, polyamides, polystyrene, polyethylene terephthalate, and acrylonitrile-butadiene-styrene.

5,443,911

CURABLE RESINS COMPRISING HALOGENATED EPOXY RESINS AND 1-OXA-3-AZA TETRALINE COMPOUNDS, METHOD FOR PREPARING AND USE OF RESINS

Herbert Schreiber, Wollerau; Günter Burkart, Rufi, and Bruno Knaus, Wollerau, all of Switzerland, assignors to Gurit-Essex AG, Freienbach, Switzerland

Continuation-in-part of Ser. No. 703,193, May 20, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 150,975

Claims priority, application Germany, May 21, 1990, 40 16 296.6

Int. Cl.[6] C08G *59/24*, *59/50*

U.S. Cl. 428—413 **22 Claims**

1. A curable resin mixture comprising:
a) a resin component consisting of at least one compound containing at least one thermically curable 1-oxa-3-aza tetraline group; and
b) a resin component consisting of at least one curable brominated epoxy resin;
the bromine content being in the range of 0.5 to 12 percent by weight based on the total weight of said resin components (a) and (b);
wherein a composition consisting of components (a) and (b) when cured forms a polymeric resin having a flame resistance of class V0 or VI in the UL 94 Vertical Test.

5,443,912

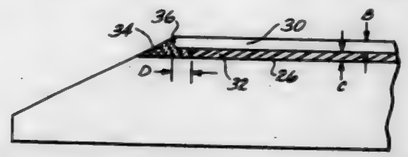
LAMINATED ENVIRONMENTAL PROTECTION LAYER FOR ACRYLIC AIRCRAFT WINDOWS

Jan B. Olson, Playa del Rey, Calif., assignor to Sierracin Corporation, Sylmar, Calif.

Filed Nov. 24, 1993, Ser. No. 157,954

Int. Cl.[6] B32B *27/00*; B60J *1/00*; B64C *1/14*

U.S. Cl. 428—425.6 **10 Claims**



1. A protective laminate for aircraft windows, the laminate comprising:
a transparent outer protective layer having a first thickness;
a urethane interlayer having a second thickness, said urethane layer bonding said outer protective layer to an outer surface of the aircraft window, the second thickness sufficient to allow the urethane interlayer to accommodate thermal stresses arising between the outer protective layer and the aircraft window and said second thickness sufficiently thin to limit deflection of the outer protective layer for impact resistance; and
the combined first and second thickness equal to about 0.070 inch or less.

5,443,913

MAGNETIC RECORDING MEDIUM

Masahide Kohno, Nagano; Kazuhiro Kuroda, Tokyo; Yasushi Ishikawa, Nagano; Hideki Sasaki, Nagano; Yasufumi Takasugi, Nagano; Tsunehiko Ikarashi, Nagano, and Osamu Inoue, Nagano, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 136,281

Claims priority, application Japan, Oct. 16, 1992, 4-304739; Oct. 16, 1992, 4-304740; Oct. 16, 1992, 4-304741; Jun. 30, 1993, 5-187299

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—425.9 **14 Claims**

1. A magnetic recording medium comprising:
(a) a non-magnetic substrate;
(b) a magnetic layer on said substrate; and
(c) a backcoat layer on said substrate;
wherein said magnetic layer and said backcoat layer comprise a resin cured with electron beams,
said magnetic layer comprises a binder and magnetic particles, and
said resin comprises,
(1) an electron beam-curable vinyl chloride resin having a sulfur-containing polar group, and
(2) an electron beam-curable urethane resin having a phosphorous-containing polar group,
wherein said sulfur-containing polar group is selected from the group consisting of a sulfate group and a sulfonate group, said phosphorous-containing polar group is selected from the group consisting of phosphoric group, phosphinic group and phosphinous group, said electron beam-curable vinyl chloride resin is obtained by modifying a vinyl chloride resin having a sulfur-containing polar group with a monomer having ethylenically unsaturated double bond and an isocyanato group, and
said electron beam-curable urethane resin is obtained from a monomer having a phosphinic moiety, phosphinous moiety or phosphoric moiety.

5,443,914

CHEMICALLY INDUCED CRAZING RESISTANT ACRYLIC

Robert N. Hart, Tulsa, and Christopher S. Simmons, Catoosa, both of Okla., assignors to Nordam, Tulsa, Okla.

Filed Dec. 17, 1993, Ser. No. 169,160

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—447 **10 Claims**

9. A process for treating stretched acrylic which comprises the steps of:
drying said stretched acrylic at a temperature of 40° C. to 82° C. and at a pressure of 512–717 mm of mercury for 24 to 28 hours;
immersing said stretched acrylic in a polydimethyl siloxane fluid bath at a temperature of 70° C. to 110° C. and a pressure from 1 to 10 atmospheres for 12 to 16 hours.

5,443,915

BIAXIALLY ORIENTED POLYPROPYLENE METALLIZED WHITE FILM FOR COLD SEAL APPLICATIONS

Andrew F. Wilkie, Haverhill, and Michael D. Butler, North Andover, both of Mass., assignors to Bordon, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 223,171, Apr. 5, 1994. This application Jan. 28, 1994, Ser. No. 267,420

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—461 **23 Claims**

1. An oriented composite polyolefin film comprising:
A. a polyolefin cold seal receptive layer containing (a) a slip agent in an amount sufficient to provide a coefficient of friction to such layer of not greater than about 0.4 and (b) from about 10% to 40% by weight of titanium dioxide;
B. a polyolefinic core layer on one side of the sealable layer, said core layer being substantially free of cavitations, voids and fillers; and
C. an obverse metallized layer on the side of the core opposite the cold seal receptive layer of the film, said metallized layer being sufficient to provide an optical density of at least 1.50 to the film and wherein the titanium dioxide in the cold seal receptive layer is enhanced by the obverse metallized layer to provide a white-opaque coloration to the cold seal receptive layer.

5,443,916

HARD FACING CASTING SURFACES WITH WEAR-RESISTANT SHEETS

Gopal S. Revankar, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 822,904, Jan. 21, 1992, Pat. No. 5,267,600. This application Aug. 27, 1993, Ser. No. 112,530

Int. Cl.[6] B22F *3/00*

U.S. Cl. 428—539.5 **11 Claims**



1. A cast metal product having a wear-resistant material surface layer on a surface thereof wherein
(a) the surface layer comprises a wear-resistant material and which material is metallurgically bonded to the metal and,
(b) the wear-resistant layer is mechanically bonded to the surface of the metal by way of (i) a plurality of pins which pins comprise the wear-resistant material and are integrally attached to the wear-resistant layer and (ii) a tex-

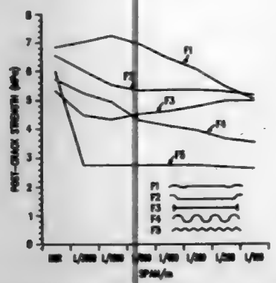
tured pattern on the surface of the wear resistant layer which pattern is effective to resist shear forces.

5,443,917
CERAMIC ARMOR
Christopher A. Tarry, Natick, Mass., assignor to GTE Products Corporation, Danvers, Mass.
Filed May 24, 1991, Ser. No. 705,279
Int. Cl.[6] F41H *1/00, 5/00*; C04B *35/58, 35/71*
U.S. Cl. 428—545 17 Claims

1. A densified armor material consisting essentially of a sintered mixture of titanium nitride and aluminum nitride, said armor material having a theoretical density of greater than 98 percent, a Young's modulus of greater than 300 GPa and a compressive strength of less than 5.5 GPa.

13. A densified armor material comprising a body having an impact receiving surface and an oppositely positioned surface, said body consisting essentially of sintered mixtures of titanium and aluminum nitride, said body adjacent to said impact receiving surface having an amount of titanium nitride greater than said oppositely positioned surface, said impact receiving surface having a Young's modulus greater than about 400 MPa and a density greater than about 4.8 grams cm^{-3}, said oppositely positioned surface having a Young's modulus greater than about 300 MPa and a density less than about 3.7 grams cm^{-3} whereby there is a gradation of body composition, density and Young's modulus from the impact receiving surface to the opposite surface, said body having a compressive strength less than 5.5 GPa.

5,443,918
METAL FIBER WITH OPTIMIZED GEOMETRY FOR REINFORCING CEMENT-BASED MATERIALS
Nemkumar Banthia, Burnaby, and Madhavarao Krishnadev, Sainte-Foy, both of Canada, assignors to Universite Laval, Quebec, Canada
Filed Sep. 7, 1994, Ser. No. 301,577
Int. Cl.[6] E04C *5/03*
U.S. Cl. 428—603 28 Claims



1. A metal fiber for reinforcing cement-based materials, which comprises an elongated, substantially straight central portion and sinusoid shaped end portions, the sinusoid of each end portion having an optimum amplitude $A_{o,opt}$ defined by:

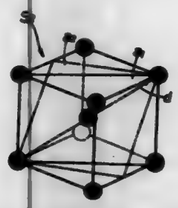
$$A_{o,opt}=(k_1(\sigma_c)\ k_2)\ (\sigma_u\alpha\epsilon_f\beta)\ (A_f/P_f)$$

where
$k_1=2.025\times10^2$,
σ_c=compressive strength of the cement-based material ranging from about 30 to about 60 MPa,
$k_2 3.19\times10^{-1}$,
σ_u=ultimate tensile strength of the metal in MPa,
$\alpha=6.60\times10^{-1}$,
ϵ_f=ductility of the metal in percent, and
$\beta=3.20\times10^{-1}$,
A_f=cross-sectional area of the fiber in mm^2, and
P_f=perimeter of the fiber in mm,
said sinusoid further having a wavelength L_s defined by:

$$L_s=(L_f-L_m)/2$$

where
L_f=length of the fiber,
L_m=length of the central portion,
and wherein $0.5\ L_f<L_m<0.75\ L_f$.

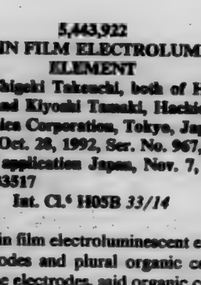
5,443,919
SLIDE MEMBER
Yoshikazu Fujisawa; Makoto Tsuji; Takeshi Narishige; Takahiro Gunji, and Kazuhisa Okamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 917,164, Jul. 20, 1992, Pat. No. 5,340,660.
This application Mar. 2, 1994, Ser. No. 205,030
Claims priority, application Japan, Jul. 18, 1991, 3-202193; Jul. 18, 1991, 3-202194; Jul. 18, 1991, 3-202197
Int. Cl.[6] F16C *33/12*
U.S. Cl. 428—687 4 Claims



1. A slide member comprising a surface layer having a slide surface for a mating member, wherein
said surface layer includes metal crystals of a body-centered cubic structure, said metal crystals having crystal planes directed so as to define said slide surface, said crystal planes having secondary slip planes, respectively, and
wherein a percent area of the secondary slip planes in said slide surface is set at 50% or more.

5,443,920
SLIDE MEMBER
Yoshikazu Fujisawa; Makoto Tsuji; Takeshi Narishige; Takahiro Gunji, and Kazuhisa Okamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 917,164, Jul. 20, 1992, Pat. No. 5,340,660.
This application Mar. 2, 1994, Ser. No. 205,051
Claims priority, application Japan, Jul. 18, 1991, 3-202193; Jul. 18, 1991, 3-202194; Jul. 18, 1991, 3-202197
Int. Cl.[6] F16C *33/12*
U.S. Cl. 428—687 5 Claims

1. A slide member comprising a surface layer having a slide surface for a mating member, wherein
said surface layer includes metal crystals belonging to a cubic system, said metal crystals having crystal planes directed so as to define said slide surface, said crystal planes being close-packed planes of the metal crystals, respectively; and



an inclination angle of said close-packed planes relative to the plane on which said slide surface lies is in a range of $0°\leq\theta\leq20°$.

5,443,921
THIN FILM ELECTROLUMINESCENCE DEVICE AND PROCESS FOR PRODUCTION THEREOF
Chishio Hosokawa; Hisahiro Higashi, and Tadashi Kusumoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Filed Mar. 15, 1991, Ser. No. 669,754
Claims priority, application Japan, Mar. 26, 1990, 2-73484
Int. Cl.[6] H05B *33/14*
U.S. Cl. 428—690 9 Claims

1. An organic thin film electroluminescence device comprising an anode, a cathode and a light emitting layer disposed between said anode and said cathode, said light emitting layer being smooth, uniform and pinholeless and consisting essentially of a heat resistant polymer thin film having groups with an electroluminescence light emitting layer function as repeating units, said polymer thin film having a thickness of not more than 0.5 μm, and said polymer thin film being prepared by a vacuum evaporation polymerization method.

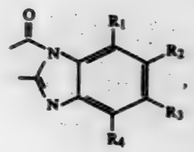
5,443,922
ORGANIC THIN FILM ELECTROLUMINESCENCE ELEMENT
Kouji Nishizaki; Shigeki Takeuchi, both of Hachioji; Toyoko Shibata, Hino, and Kiyoshi Tanaki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 28, 1992, Ser. No. 967,997
Claims priority, application Japan, Nov. 7, 1991, 3-291541; Dec. 17, 1991, 3-333517
Int. Cl.[6] H05B *33/14*
U.S. Cl. 428—690 9 Claims

1. An organic thin film electroluminescent element comprising counter electrodes and plural organic compound layers located between the electrodes, said organic compound layers comprising a luminescent layer, and a hole injection layer wherein said luminescent layer comprises a compound of formula I defined below; or said organic compound layers comprise an electron injection layer, a luminescent layer and a hole injection layer wherein said electron injection layer comprises an organic compound represented by formula I,

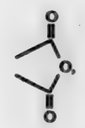


I

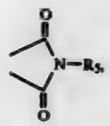
wherein Z is



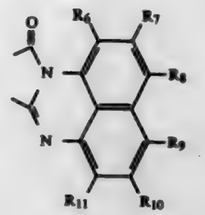
Z_1



Z_2

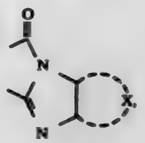


Z_3



Z_4

or



Z_5

wherein R_1 to R_{11} independently represent the hydrogen atom, halogen atom, alkyl group with or without substituent, univalent group derived from an unsaturated chain hydrocarbon with or without substituent, heterocyclic compound with or without a substituent, aryl group with or without substituent, group including more than two nitrogen atoms with or without substituent, styryl group, anisyl group, amino group, alkyl amino group, dialkyl amino group, alkoxy group, alkoxy carbonyl group, amino carbonyl group, aryloxy carbonyl group, carboxyl group, acyl group, aryloxyl group, aralkyl group, acylamino group, acyloxyl group, hydroxyl group, cyano group, nitro group, sulfo group, sulfonium group and heterocyclic group, and R_1 and R_2, R_2 and R_3, R_3 and R_4, R_5 and R_7, R_7 and R_8, R_8 and R_9, R_9 and R_{10}, and R_{10} and R_{11} may com-

bine with each other to form an unsaturated ring structure with or without substituent;

X represents the heterocyclic ring with or without substituent.

5,443,923

PAPER/PLASTIC COMPOSITE SHEET AND METHOD OF MANUFACTURING

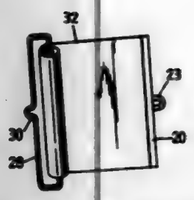
Josepho Lantado, and Moshe Har-El, both of Jerusalem, Israel, assignors to Roll-Screens, Inc., Hachensin, Del.

Division of Ser. No. 645,765, Jan. 25, 1991, Pat. No. 5,176,774, which is a continuation of Ser. No. 269,176, Nov. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 4,342, Jan. 16, 1987, Pat. No. 4,848,437. This application Oct. 14, 1992, Ser. No. 960,788

Claims priority, application Israel, Jan. 24, 1986, 77697

Int. Cl.[6] B41M *3/12*

U.S. Cl. 428—476.1 14 Claims



1. A multilayer, self-rollable sheet, comprising a layer of paper joined to at least a first layer of stretched, laminatable plastic material, said sheet being capable of spontaneously alternating between a relaxed and a tensioned state and pre-treated, by heating and stretching in a range of about 4 to 15% in the longitudinal direction, to inherently assume a rolled-up configuration around an axis in said relaxed state as a result of the lamination of one stretched layer and one unstretched layer, and being further pre-treated, by irradiation, heating or exposure to moisture, to retain said spontaneous self-rolling capability.

5,443,924

DISCRIMINATING CHARGER AND COMPATIBLE BATTERY

Patrick J. Spellman, Middleton, Wis., assignor to Rayovac Corporation, Madison, Wis.

Filed Oct. 29, 1992, Ser. No. 968,337

Int. Cl.[6] H02J *7/00*; H01M *10/46*

U.S. Cl. 429—65 14 Claims



1. A battery comprising:

a) a first end comprising an anode;

b) a second opposing end comprising a cathode, said second end having a perimeter defining outer extremities thereof;

c) a cylindrical connecting wall which extends between the first end and the second end; and

d) electrically insulating material surrounding the connecting wall and projecting outwardly therefrom to form an electrically insulative barrier, wherein said second end is free from electrically insulating material at locations disposed inwardly and less than 40 thousandths of an inch from an imaginary line extending around said perimeter.

5,443,925

NONAQUEOUS ELECTROLYTE BATTERY

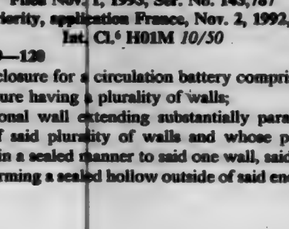
Toyoji Machida, Tamagun; Mitsunori Hara, Sumoto; Kazuo Moriwaki, Sumoto; Kaiichi Tanjioka, Sumoto; Tooru Amazutsumi, Tamagun; Hiyoshi Tsuzuki, Sumoto; Yasuhiro Yamauchi, Sumoto, and Satoshi Narukawa, Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 15, 1993, Ser. No. 151,899

Claims priority, application Japan, Nov. 16, 1992, 4-305298

Int. Cl.[6] H01M *6/14, 2/02, 4/36*

U.S. Cl. 429—94 5 Claims



1. A nonaqueous electrolyte battery comprising:

an external case;

a spiral electrode unit mounted in said external case, said spiral electrode unit including a positive electrode, a negative electrode and a separator sandwiched between said positive electrode and said negative electrode;

a nonaqueous electrolyte filled in said external case;

wherein said battery has a voltage of 3.5 V to 5 V, inclusive, when fully charged;

wherein said positive electrode is formed by a positive electrode supporting member and a positive electrode active material attached to said positive electrode supporting member;

wherein said positive electrode active material comprises a compound containing lithium;

wherein said negative electrode is formed of a carbonaceous material capable of absorbing and releasing lithium ions;

wherein said external case and said positive electrode supporting member are formed of aluminum; and

wherein an outermost winding of said positive electrode active material constitutes an outermost winding of said spiral electrode unit, except that a portion of an outermost winding of said positive electrode supporting member is exposed, and an outer surface of the exposed portion of said positive electrode supporting member is in contact with an interior surface of said external case.

5,443,926

THERMOREGULATED BATTERY OF ACCUMULATORS, ESPECIALLY FOR AN ELECTRIC VEHICLE

Gunther Holland, and Günter Jeremias, both of Budingen, Germany, assignors to Compagnie Europeenne D'Accumulateurs, Clichy, France

Filed Nov. 1, 1993, Ser. No. 143,787

Claims priority, application France, Nov. 2, 1992, 92 13086

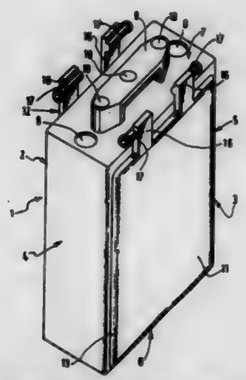
Int. Cl.[6] H01M *10/50*

U.S. Cl. 429—120 13 Claims

1. An enclosure for a circulation battery comprising:

an enclosure having a plurality of walls;

an additional wall extending substantially parallel to one wall of said plurality of walls and whose periphery is joined in a sealed manner to said one wall, said additional wall forming a sealed hollow outside of said enclosure and between said one wall and said additional wall in order to contain heat-transfer fluid in said hollow, and



at least one inlet orifice and one outlet orifice extending into said hollow in order to allow circulation of said heat-transfer fluid.

5,443,927

CATHODE COMPOSITE

Yasumasa Nakajima; Syuichi Izuchi; Hiroshi Imachi, and Hiroyuki Fukutome, all of Takatsuki, Japan, assignors to Yuasa Corporation, Osaka, Japan

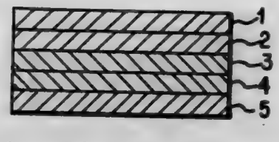
PCT No. PCT/JP92/01252, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO93/07648, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 30, 1992, Ser. No. 70,379

Claims priority, application Japan, Oct. 9, 1991, 3-290511

Int. Cl.[6] H01M *4/62*

U.S. Cl. 429—215 2 Claims



1. A cathode composite comprising (i) a polar organic macromolecule having a pyridine ring, (ii) a chalcogen-containing positive active compound, (iii) a conductive agent, and (iv) a diluent; wherein the polar organic macromolecule having a pyridine ring functions as a dispersant for the positive active compound and the conductive agent.

5,443,928

CARBON ELECTRODE FOR A NONAQUEOUS SECONDARY ELECTROCHEMICAL CELL

Esther S. Takeuchi, and Randolph A. Leising, both of Williamsville, N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

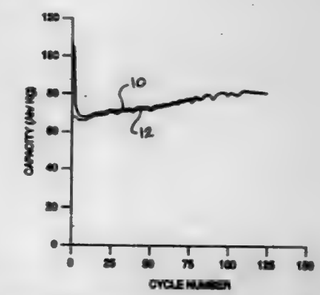
Filed Feb. 18, 1994, Ser. No. 199,891

Int. Cl.[6] H01M *4/58*

U.S. Cl. 429—218 74 Claims

1. An electrochemical cell, which comprises:

(a) a positive electrode which intercalate with an alkali metal;



(b) a negative electrode comprising submicron carbon filaments which intercalate with the alkali metal; and

(c) an electrolyte operatively associated with the electrodes.

5,443,929

NONAQUEOUS SECONDARY BATTERY

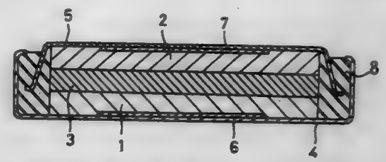
Yuji Yamamoto, Hirakata; Toshiyuki Nohma; Hiroshi Kurokawa, both of Kadoma; Mayumi Uehara, Kyoto; Koji Nishio, Hirakata, and Toshihiko Saito, Tsuzuki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 16, 1993, Ser. No. 106,611

Claims priority, application Japan, Sep. 25, 1992, 4-280469

Int. Cl.[6] H01M *4/50, 6/16*

U.S. Cl. 429—224 13 Claims



1. A nonaqueous secondary battery having an active material of a positive electrode comprising a composite powder comprising $Li_{1-x}Mn_2O_4$ ($0 \leq X \leq 1$) and Li_2MnO_3.

5,443,930

NONAQUEOUS ELECTROLYTE BATTERY

Yoshihiro Shoji; Mikiya Yamasaki; Koji Nishio, all of Hirakata, and Toshihiko Saito, Tsuzuki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 2, 1994, Ser. No. 285,009

Claims priority, application Japan, Aug. 3, 1993, 5-212323

Int. Cl.[6] H01M *4/50*

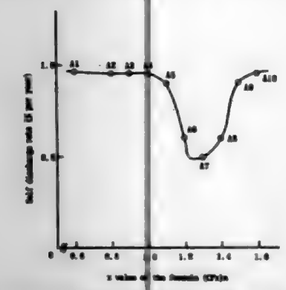
U.S. Cl. 429—224 6 Claims

1. A nonaqueous electrolyte battery comprising:

a positive electrode comprising a mixture of manganese dioxide and a fluorinated graphite as a positive electrode active material,

a negative electrode comprising lithium metal or a substance being capable of occluding and discharging lithium ions as a negative electrode material, and

a nonaqueous electrolyte, said fluorinated graphite being represented by the formula (CFx)n wherein $1.2 \leq X \leq 1.4$



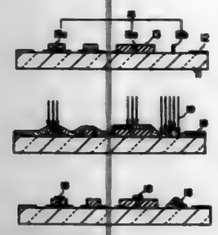
and contained in said mixture in a ratio by weight of 0.1 to 4%.

5,443,931

PHOTO MASK AND REPAIR METHOD OF THE SAME

Hisaki Watanabe, Nagaokakyo, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,495
Claims priority, application Japan, Mar. 31, 1992, 4-076708
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 14 Claims



1. A photo mask comprising:
a transparent substrate,
a light-shield film pattern formed on said transparent substrate;
a transparent film for providing transmission light with a phase difference formed on said transparent substrate, said transparent film having a defect, and
a transparent photosensitive resin permanently formed on at least said defect defined in such a film thickness as to provide transmission light with a desired phase difference and retained on said defect after manufacturing of the photo mask is complete.

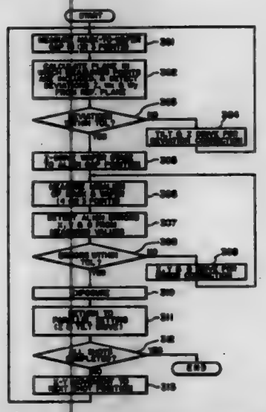
5,443,932

EXPOSURE METHOD

Hirohisa Ohta, Sagamihara; Kunitaka Ozawa, Isehara; Eigo Kawakami, Ebina, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 892,722, May 29, 1992, abandoned, which is a continuation of Ser. No. 413,732, Sep. 28, 1989, abandoned. This application Dec. 3, 1993, Ser. No. 161,099
Claims priority, application Japan, Sep. 30, 1988, 63-246259
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—22 5 Claims

1. An exposure method for printing a pattern of an original on a workpiece, said method comprising the steps of:
moving the workpiece along an X-Y plane so that a first zone of the workpiece is placed opposed to the original in a Z direction intersecting the X-Y plane;
optically measuring the spacing between the original and the workpiece in the Z direction, at least at four points in the vicinity of the first zone;
approximately determining an imaginary plane of the first zone of the workpiece from the measured values obtained with respect to the at least four points, and adjusting any relative inclination of the first zone of the workpiece with respect to the original on the basis of the approximately determined imaginary plane; and
decreasing, after said adjusting step, the spacing between the original and the first zone of the workpiece in the Z direction without causing contact between them;
exposing the first zone of the workpiece to a pattern of the original with radiation;
increasing the spacing between the original and a first zone of the workpiece in the Z direction;



moving the workpiece along the X-Y plane so that a second zone of the workpiece is placed opposed to the original in the Z direction;
optically measuring the spacing between the original and the workpiece in the Z direction, at least at four points in the vicinity of the second zone;
approximately determining an imaginary plane of the second zone of the workpiece from the measured valued obtained with respect to the at least four points, and adjusting any relative inclination of the second zone of the workpiece with respect to the original on the basis of the approximately determined imaginary plane of the second zone;
decreasing the spacing between the original and the second zone of the workpiece in the Z direction; and
exposing the second zone of the workpiece to the pattern of the original with radiation.

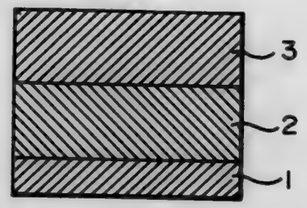
5,443,933

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

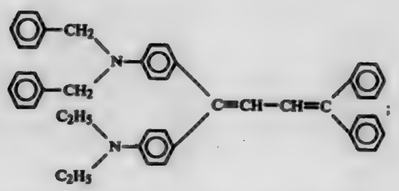
Kenichi Fujimori; Yoshitaro Nakayama, both of Yamanashi; Takumi Shinohara; Atsushi Iwanami, both of Kofu; Toshimitsu Hagiwara, and Tokru Kobayashi, both of Hiratsuka, all of Japan, assignors to Shindengen Electric Manufacturing Co., Ltd., Tokyo; Yamanashi Electronics Co., Ltd., Yamanashi and Takasago International Corporation, Tokyo, all of Japan

Filed Sep. 10, 1993, Ser. No. 118,823
Claims priority, application Japan, Sep. 18, 1992, 4-249679
Int. Cl.[6] G03G 5/047
U.S. Cl. 430—59 8 Claims

1. A laminate electrophotographic photoreceptor comprising and electroconductive support, a charge-generating layer and a charge-transfer layer, the two layers being placed on the electroconductive support, said charge-generating layer containing a hydroxy-titanium phthalocyanine and said charge-transfer layer consisting essentially of a butadiene compound represented by formula (I);



(I)



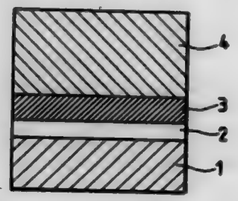
a monophenolic antioxidant, the weight ratio of the monophenolic antioxidant/the butadiene compound of formula (I) ranging from 5/95 to 40/80; and an electrically insulating binder.

5,443,934

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Takahiro Suzuki; Seiji Ashiya, and Masaneri Marase, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,755
Claims priority, application Japan, Jan. 31, 1992, 4-040697
Int. Cl.[6] G03G 5/14
U.S. Cl. 430—64 5 Claims



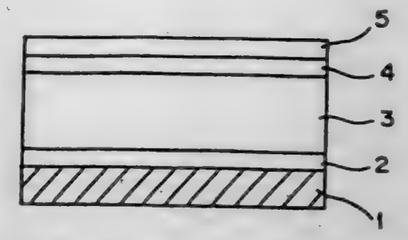
1. An electrophotographic photoreceptor comprising an electrically conductive substrate having thereon a subbing layer and a photosensitive layer in sequence, wherein said subbing layer is a layer formed by coating a coating composition comprising hydrolyzable compounds and an organic solvent, said hydrolyzable compounds having been hydrolyzed in said organic solvent to a degree of 50% to 95% and then cured, wherein said hydrolyzable compounds comprise a hydrolyzable zirconium chelate or zirconium alkoxide and a hydrolyzable silane coupling agent.

5,443,935

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

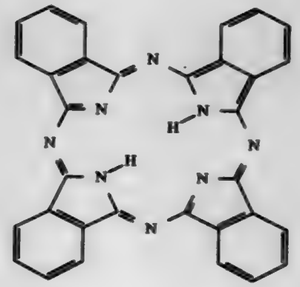
Takashi Kojima; Shinichi Suzuki, and Yasuyuki Shigenoyu, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,087
Claims priority, application Japan, May 11, 1992, 4-117585
Int. Cl.[6] G03G 5/06, 5/05
U.S. Cl. 430—78 10 Claims

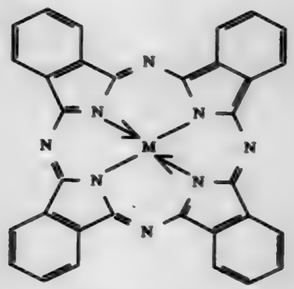


1. An electrophotographic photoreceptor comprising a conductive substrate having thereon a photosensitive layer comprising a binder resin having dispersed therein a phthalocyanine composition, in which said binder resin is a curable fluorine resin comprising a copolymer of a fluorinated ethylenically unsaturated monomer selected from the group consisting of fluorine-containing olefins, fluorinated alkyl vinyl ethers and fluorinated fatty acid vinyl esters with an ethylenically unsaturated monomer containing no fluorine atoms, and said phthalocyanine composition comprises (A) an unsubstituted phthalocyanine compound represented by formula (Ia) or (Ib):

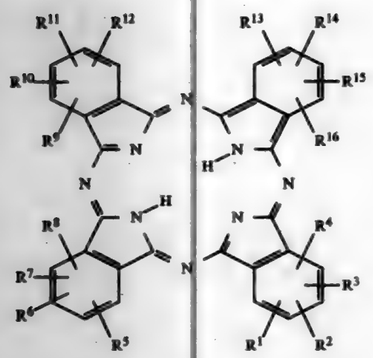
I(a)



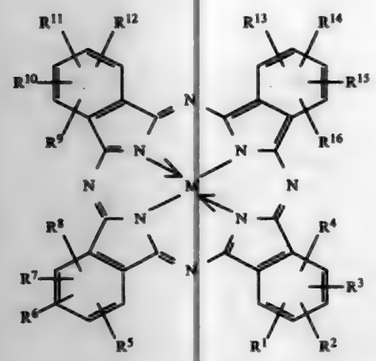
(Ib)



wherein M represents ah atom or compound residue capable of covalent bonding or coordinate bonding to the phthalocyanine ring, and (B) a phthalocyanine derivative represented by formula (IIa) or (IIb):



II(a)



II(b)

wherein M is as defined above; and R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, and R^{16}, which may be the same or different, each represent a hydrogen atom, a halogen atom or an electron attractive group, provided that at least one of them represents a halogen atom or an electron attractive group, with the proviso that the ratio of the number of the halogen atom(s) and/or electron attractive group(s) to the total number of the phthalocyanine units in said unsubstituted phthalocyanine compound (A) and said phthalocyanine derivative (B) is from 0.001 to 0.5.

5,443,936

DEVELOPING METHOD AND METHOD FOR FORMING FIXED IMAGES USING MAGNETIC ENCAPSULATED TONER

Shin-ichiro Yasuda, Osaka; Kuniyasu Kawabe, and Mitsuhiro Sasaki, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 28, 1993, Ser. No. 142,081

Claims priority, application Japan, Oct. 30, 1992, 4-316412

Int. Cl.[6] G03G *9/083, 9/093, 13/16*

U.S. Cl. 430—99 **8 Claims**

1. A method for forming fixed images using a magnetic encapsulated toner which can be fixed even at a low nip pressure of 0.01 to 0.1 kg/cm and without a supply of silicone oil onto a surface of a heat roller, the method comprising the steps of:

(a) charging a photoconductor;

(b) exposing the photoconductor to light to form an electrostatic latent image on the photoconductor;

(c) developing the electrostatic latent image, by using an apparatus comprising a non-magnetic sleeve having a magnet roller therein, said non-magnetic sleeve being arranged opposite to the photoconductor and forming a gap therebetween, said gap having a thickness of more than that of a layer of magnetic encapsulated toner on said non-magnetic sleeve, and a blade arranged opposite to the non-magnetic sleeve, said developing comprising:

i) forming a uniform layer of said magnetic encapsulated toner on said non-magnetic sleeve with said blade, said magnetic encapsulated toner capable of being fixed at a nip pressure of 0.01 to 0.1 kg/cm and without a supply of silicone oil onto a surface of a heat roller;

ii) rotating the photoconductor and said non-magnetic sleeve in the same direction at said gap; and

iii) supplying an alternating electric current with a frequency of 10 to 500 Hz, so as to produce an alternating electric field in said gap, to form a visible image;

(d) transferring the formed visible image to a recording medium; and

(e) fixing the transferred visible image onto the recording medium at a temperature of not more than 120° C. and a nip pressure of 0.01 to 4 kg/cm.

5,443,937

AQUEOUS DEVELOPABLE PRECOLORED DIAZO IMAGING ELEMENT

Gregory A. Bodager, Moorestown, Pa., and Robert W. Peiffer, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 732,871, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 661,289, Feb. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 559,463, Jul. 30, 1990, abandoned. This application Jul. 20, 1994, Ser. No. 277,850

Int. Cl.[6] G03C *1/52, 5/18*

U.S. Cl. 430—143 **41 Claims**

1. An image reproduction process comprising the steps of:

(A) providing a precolored, water-developable, photosensitive element comprising:

(1) a support;

(2) a single colorant-containing layer consisting essentially of:

(a) a colorant, and

(b) a polyvinyl alcohol binder, said binder being about 87–100% hydrolyzed and being of sufficiently high molecular weight to be film-forming; and

(3) a photosensitive layer consisting essentially of:

(c) a photosensitive, water-soluble, polymeric diazo resin; and

(d) a polyvinyl alcohol binder, said binder being about 87–100% hydrolyzed and being of sufficiently high molecular weight to be film-forming; and

(4) an adhesive layer; wherein said colorant-containing layer (2) and said photosensitive layer (3) may be combined into a single layer colorant-containing, photosensitive coating (5) which must be in contact with the adhesive layer (4) or alternatively said colorant-containing layer (2) and said photosensitive layer (3) may be in separate but contiguous layers provided that either layer (2) or (3) must be in contact with the adhesive layer (4), and provided that either the colorant-containing layer (2), the photosensitive layer (3) or the adhesive layer (4) is in contact with the support (1);

(B) exposing imagewise the precolored photosensitive element to actinic radiation;

(C) developing the image by washing out the unexposed areas with a solvent consisting essentially of water.

5,443,938

PHOTOSENSITIVE PRINTING MEMBER HAVING INK-RECEPTIVE CAPILLARY STRUCTURES IN THE SUPPORT AND PHOTOSENSITIVE LAYER

Jun Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 24, 1993, Ser. No. 125,790

Claims priority, application Japan, Sep. 25, 1992, 4-256431; Oct. 20, 1992, 4-281543; Oct. 20, 1992, 4-281546; Oct. 23, 1992, 4-283890

Int. Cl.[6] G03C *5/60;* **G03F** *7/11*

U.S. Cl. 430—162 **13 Claims**

7. A photosensitive printing member comprising:

a porous supporting member having ink-receptive minute holes of a capillary shape; and

a photosensitive layer provided on said supporting member, said photosensitive layer comprising a foaming material melted or dispersed in a photosensitive material, the ratio by weight of the photosensitive material to foaming material in the photosensitive layer being from about 1000:1 to about 10:1, wherein upon exposure to heat said foaming material generates gas and upon exposure to light said photosensitive material becomes hardened so as to form hardened, ink-receptive capillary structures in said photosensitive layer, whereby ink is capable of infiltrating through said ink-receptive minute holes of said porous supporting member into said hardened, ink-receptive capillary structures in said photosensitive layer.

9. A photosensitive printing member comprising:

a porous supporting member having ink-receptive minute holes of a capillary shape;

a photosensitive layer provided on said supporting member, said photosensitive layer comprising filler particles dispersed in a photosensitive material, the ratio by weight of photosensitive material to filler particles in the photosensitive layer being from about 1:100 to about 1:1, wherein upon exposure to light said photosensitive material hardens so as to form hardened, ink-receptive capillary structures in said photosensitive layer, said hardened, ink-receptive capillary structures comprising filler particles joined together by said hardened photosensitive material, whereby ink is capable of infiltrating through said ink-receptive minute holes of said porous supporting member into said hardened, ink-receptive capillary structures in said photosensitive layer.

5,443,939

LIGHT-SENSITIVE MATERIAL FOR PRODUCING A MULTI-COLOR IMAGE

Karin Maerz, Mainz, and Stephan J. W. Platzer, Eltville, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 915,647, Jul. 21, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,691

Claims priority, application Germany, Aug. 2, 1991, 41 25 723.5

Int. Cl.[6] G03F *7/027, 7/34*

U.S. Cl. 430—253 **14 Claims**

1. A light-sensitive material for producing color-test films for multi-color printing for producing a positive image consisting essentially of:

(A) a transparent flexible base film of a plastic,

(B) a photopolymerizable layer containing

(B1) a polymeric binder,

(B2) a compound polymerizable by a free-radical mechanism,

(B3) a compound capable of initiating the polymerization of (B2) under the action of actinic light, and

(B4) from about 8 to about 40% by weight, relative to the weight of the solid layer, of a dye or a colored pigment in one of the main colors of the multi-colored print, and

(C) a thermoplastic adhesion layer on the light-sensitive layer,

wherein a polymer of a vinyl alkyl ether in a quantity from about 1 to 10% by weight, relative to the non-volatile constituents of the layer, is present in layer (B) or layers (B) and (C).

5,443,940

OPTICAL RECORDING MATERIAL AND OPTICAL RECORDING MEDIUM EMPLOYING THE SAME

Fumio Tatemoto; Toshio Harada, both of Moriguchi; Masahiro Irie, Kasuga, and Megumi Ohara, Akashi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Kobe Natural Products & Chemicals Co., Ltd., Kobe, both of Japan

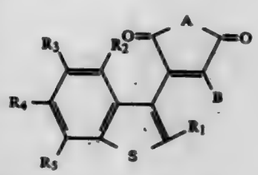
Filed Apr. 14, 1993, Ser. No. 45,785

Claims priority, application Japan, Apr. 16, 1992, 4-096304; Jul. 9, 1992, 4-182623; Sep. 30, 1992, 4-261701; Mar. 19, 1993, 5-060591

Int. Cl.[6] G11B *7/24*

U.S. Cl. 430—270 **26 Claims**

1. An optical recording material containing a photochromic compound being expressed in the following general formula (I):



(I)

where A represents an oxygen atom or a nitrogen atom, R_1 represents an alkoxy group, R_2 to R_5 represent atoms or groups selected from a group of a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group, an alkoxy group, a cyano group, a nitro group, an alkylcarbonyl group, an alkoxycarbonyl group, a perfluoroalkyl group, an aryl group, a cycloalkyl group, an arylcarbonyl group, an aryloxycarbonyl group, a mono- or dialkylaminocarbonyl group, an alkylcarbonyloxy group, an arylcarbonyloxy group, an aryloxy group, an alkoxycarbonyloxy group and an aryloxycarbonyloxy group respectively, and B represents a thiophene ring, benzothiophene ring, pyrrole ring or indole ring.

5,443,941

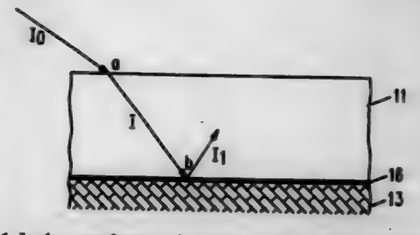
PLASMA POLYMER ANTIREFLECTIVE COATING

Anand J. Bariya, Mountain View, Calif.; Satyendra S. Sethi, Austin, Tex., and Kevin C. Brown, Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 1, 1993, Ser. No. 25,040

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **10 Claims**



1. In the manufacture of an integrated circuit by means of a photolithographic process, a method comprising the steps of:

providing a material having a surface to be patterned using said photolithographic process;

onto said surface, depositing a layer of halocarbon plasma polymer anti-reflective coating;

thereafter, applying a layer of photoresist onto said layer of halocarbon plasma polymer anti-reflective coating;
using patterning means, forming a pattern into said photoresist by exposing and developing portions of said photoresist; and
etching said pattern into said material.

5,443,942
PROCESS FOR REMOVING RESIST
Isao Imamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP91/01635, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/09935, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 28, 1990, Ser. No. 910,286
Claims priority, application Japan, Nov. 28, 1990, 2-322451; Nov. 28, 1990, 2-322452
Int. Cl.[6] G03C 5/00
U.S. Cl. 430—329 27 Claims

1. A process for removing a resist in the formation of an ink pathway pattern for an ink jet recording head by disposing a resist on a base member, comprising jetting a removing liquid and gas to said base member having said resist thereon while mixing said resist removing liquid and gas and while immersing said base member having said resist thereon in said resist removing liquid, thereby removing said resist from said base member to thereby form an ink jet recording head by the removal of the resist.

5,443,943
METHOD OF PROCESSING ORIGINATING PHOTOGRAPHIC ELEMENTS CONTAINING TABULAR SILVER CHLORIDE GRAINS BOUNDED BY {100} FACES
Richard P. Szajewski, and John M. Buchanan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 22, 1993, Ser. No. 35,347
Int. Cl.[6] G03C 5/44, 1/035, 1/43
U.S. Cl. 430—393 14 Claims



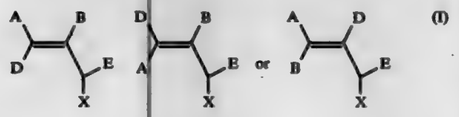
1. A method of processing an exposed and developed originating color silver halide photographic element comprising the steps of desilvering the photographic element, by blixing the photographic element with a solution containing a bleaching agent and a fixing agent, or bleaching the photographic element with a solution containing a bleaching agent and fixing the photographic element with a solution containing a fixing agent;
wherein the photographic element comprises a radiation sensitive emulsion containing a silver halide grain population comprised of at least 50 mole percent chloride, based on total silver forming the grain population projected area, wherein at least 50 percent of total grain projected area is accounted for by intrinsically stable tabular grains (1) bounded by {100} major faces having adjacent edge ratios of less than 10 and
(2) having an aspect ratio of at least 2;
wherein the silver halide content of the photographic element comprises at least 50 mole % silver chloride and no more than 2 mole % silver iodide;
wherein the photographic element further contains a bleach accelerator releasing compound; and
wherein the photographic element is free of a desilvering rate retarding amount of a development inhibitor having a free sulfur valence which binds to silver.

5,443,944
PHOTOGRAPHIC MATERIAL
Werner Krafft, Leverkusen; Friedrich Jonas, Aachen; Prem Lalvani, Leverkusen, all of Germany; Hartwig Andries, Mortsel, and Willem Müss, Tremelo, both of Belgium, assignors to Agfa-Gevaert AG, Leverkusen, Germany
Continuation-in-part of Ser. No. 145,577, Nov. 4, 1993, abandoned. This application Aug. 15, 1994, Ser. No. 290,597
Claims priority, application Germany, Nov. 16, 1992, 42 38 628.4
Int. Cl.[6] G03C 1/89, 1/76
U.S. Cl. 430—529 11 Claims

1. Photographic material comprising a transparent film support having on one side at least one light-sensitive layer and on the other side a transparent magnetic layer, characterised in that an antistatic layer of a polythiophene is arranged on the same side of the transparent film support as said transparent magnetic layer below or above said transparent magnetic layer.

5,443,945
ACTIVATED PROPENES AS COLOUR COUPLERS
Hugh M. Williamson, Hauwell, Scotland, assignor to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/EP91/02162, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/09010, PCT Pub. Date May 29, 1992
PCT Filed Nov. 13, 1991, Ser. No. 66,029
Claims priority, application United Kingdom, Nov. 20, 1990, 9025212
Int. Cl.[6] G03C 7/32
U.S. Cl. 430—543 7 Claims

1. A photographic composition comprising as a ballasted coupling agent a propene isomer of the formula



(I)

wherein
A, B and E, each individually represent hydrogen or an electron withdrawing group;
D represents a substituent incorporating a lone pair of electrons selected from the group consisting of —NH_2, —NHR, —NR^1R^2, —OAr, alkyl(carbonyl)oxy, aryl(carbonyl)oxy, alkoxycarbonylamino, acylamino, ureido, alkylsulphonylamino and arylsulphonylamino, wherein Ar is an optionally substituted phenyl group and R, R^1, and R^2 are each an alkyl or aryl group which may be substituted; and
X is a hydrogen or a group releasable during a coupling reaction.

5,443,946
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMING COLOR IMAGE
Masahiro Asami, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Continuation of Ser. No. 894,553, Jun. 5, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 151,763
Int. Cl.[6] G03C 1/035, 1/08
U.S. Cl. 430—567 9 Claims

1. A silver halide color photographic material having photographic constitutional layers that comprise at least three photosensitive layers each containing respectively different dye-forming couplers and at least one non-photosensitive hydrophilic layer, on a support, wherein said three photosensitive layers have spectral sensitivity maxima in respectively different wavelength regions that are over 650 nm; the silver halide emulsion in these three photosensitive layers contain at least 96 mol % silver chloride, 0.01 to 3 mol % of silver iodide and an iron compound in an amount of 10^{-7} to 10^{-3} mol per tool of the silver halide, and 80% or more of the total content of each of the silver iodide and the iron compound is present in the surface layer corresponding to no greater than 50% of the volume of grains from the surface of said silver halide grains.

5,443,947
HEAT STABILIZED SILVER CHLORIDE PHOTOGRAPHIC EMULSIONS CONTAINING THIOSULFONATE/SULFINATE COMPOUNDS
Roger Lok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 30, 1993, Ser. No. 159,877
Int. Cl.[6] G03C 1/34, 1/035
U.S. Cl. 430—569 15 Claims

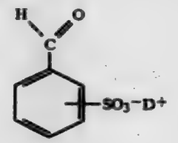
1. A silver halide photographic element comprising a silver halide emulsion which is greater than 50 mole % silver chloride, said emulsion being in reactive association with a compound represented by Formula I

$$MO_2S—Z—SO_2SM^1 \quad (I)$$

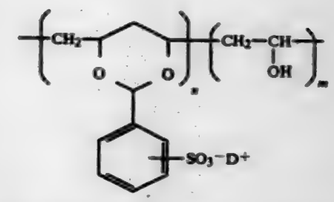
wherein Z is a non-metallic arylene, alkylene or heterocyclic group, and M and M^1 are independently cationic counter ions.

5,443,948
PROCESS FOR PREPARATION OF A PHOTOGRAPHIC ELEMENT
Mark D. Franke, Greenville, S.C.; Richard J. Legg, Colts Neck, N.J.; Alden D. West, Hendersonville, N.C., and Anna E. Doyle, Westfield, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 995,514, Dec. 21, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 215,389
Int. Cl.[6] G03C 1/14, 1/22, 1/28
U.S. Cl. 430—572 17 Claims

1. A process for the preparation of a photosensitive silver halide emulsion comprising the steps of:
a) reacting $Ag^+NO_3^-$ with G^+X^- to form Ag^+X^- and $G^+NO_3^-$; G^+ is Na^+, K^+, NH_4^+ or a combination thereof; X^- is Cl^-, Br^-, I^- or a combination thereof;
b) decreasing the concentration of $G^+NO_3^-$ by ultrafiltration;
c) adding at least one compound selected from the group consisting of:



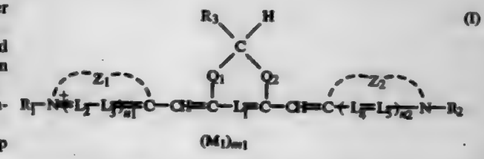
-continued
and



wherein D^+ is Na^+, K^+, Li^+, NH_4^+; n/m is 0.1 to 5.0;
d) adding at least one spectral sensitizer capable of increasing the sensitivity to actinic radiation.

5,443,949
SILVER HALIDE PHOTOGRAPHIC MATERIAL
Takasori Hioki; Takashi Kato; Tadashi Ikeda, and Naoto Ohshima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 772,746, Oct. 7, 1991, Pat. No. 5,290,675. This application Apr. 5, 1993, Ser. No. 43,022
Claims priority, application Japan, Oct. 8, 1990, 2-270161
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[6] G03C 1/20
U.S. Cl. 430—576 15 Claims

1. A silver halide photographic material comprising on a support at least one silver halide emulsion layer having a silver chloride content of not lower than 90 mol %, wherein a silver halide emulsion in at least one of said silver halide emulsion layers having a silver chloride content of not lower than 90 mol % contains at least one compound represented by formula (I):



(I)

wherein Z_1 and Z_2 each represents an atomic group required for forming a nitrogen-containing five-membered or six-membered heterocyclic ring; Q_1 and Q_2 each represents a methylene group; R_1 and R_2 each represents an alkyl group; R_3 represents an alkyl group or a heterocyclic group; L_1, L_2, L_3, L_4 and L_5 each represents a methine group; n_1 and n_2 each represents 0 or 1; M_1 represents a counter ion for neutralizing electric charge; and m_1 represents a number not less than 0 required for neutralizing electric charge in the molecule.

5,443,950

THREE-DIMENSIONAL CELL AND TISSUE CULTURE SYSTEM

Gail K. Naughton, and Brian A. Naughton, both of Groton, Vt., assignors to Advanced Tissue Sciences, Inc., La Jolla, Calif.

Division of Ser. No. 575,518, Aug. 30, 1990, Pat. No. 5,266,480, which is a division of Ser. No. 402,104, Sep. 1, 1989, Pat. No. 5,032,508, which is a continuation-in-part of Ser. No. 242,096, Sep. 8, 1988, Pat. No. 4,963,489, which is a continuation-in-part of Ser. No. 38,110, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,154, Apr. 3, 1987, Pat. No. 4,721,096, which is a continuation of Ser. No. 853,569, Apr. 18, 1986, abandoned. This application Oct. 4, 1993, Ser. No. 131,361

Int. Cl.[6] C12N 5/00, 5/22, 11/14, 11/00

U.S. Cl. 435—1 10 Claims

1. A method for implantation of stromal cells in vivo comprising implanting a living stromal tissue prepared in vitro, comprising stromal cells and connective tissue proteins naturally secreted by the stromal cells attached to and substantially enveloping a framework composed of a biocompatible, nonliving material formed into a three-dimensional structure having interstitial spaces bridged by the stromal cells for the formation of a tissue equivalent.

5,443,951

SPECIES-SPECIFIC OLIGONUCLEOTIDES FOR BIFIDOBACTERIA AND A METHOD OF DETECTION USING THE SAME

Takakura Yamamoto; Masami Morotomi, and Ryuichiro Tanaka, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,884

Claims priority, application Japan, Jul. 20, 1992, 4-192183; Jul. 20, 1992, 4-192184; Oct. 2, 1992, 4-287095; Oct. 2, 1992, 4-287097; Oct. 2, 1992, 4-287100

Int. Cl.[6] C12Q 1/68

U.S. Cl. 435—6 20 Claims

1. An oligonucleotide having the sequence of formula (I) or a sequence fully complementary to the sequence of formula (I):

5'-UAUCGGGGAGCAAGCGUGA-3' (I)

SEQ ID NO:1.

5,443,952

AUTOANTIBODIES AND THEIR TARGETS IN THE DIAGNOSIS OF PERIPHERAL NEUROPATHIES

Alan Pestronk, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Continuation of Ser. No. 743,005, Aug. 9, 1991, abandoned. This application Aug. 5, 1993, Ser. No. 102,338

Int. Cl.[6] G01N 33/53, 33/564

U.S. Cl. 435—7.1 10 Claims

1. A method aiding in the diagnosis of a peripheral neuropathy in a patient comprising:

reacting a serum sample from the patient with sulfatide; and determining the titer of antisulfatide IgG and IgM antibody in the serum sample that binds to sulfatide, in which a titer greater than about 1:900 correlates positively with a predominantly axonal neuropathy.

5,443,953

PREPARATION AND USE OF IMMUNOCONJUGATES

Hans J. Hansen, Mystic Island; Shui-on Leung, Madison, and Jerry Shevitz, Livingston, all of N.J., assignors to Immunomedics, Inc., Morris Plains, N.J.

Filed Dec. 8, 1993, Ser. No. 162,912

Int. Cl.[6] A61K 39/395; C07K 16/00

U.S. Cl. 424—1.49 17 Claims

1. A soluble immunoconjugate, comprising:

(a) a glycosylated antibody fragment selected from the group consisting of Fab, Fab', $F(ab)_2$, $F(ab')_2$, Fv and single chain Fv, which comprises a light chain variable region having a carbohydrate moiety attached at about amino acid position 18 of said light chain variable region; and

(b) a loaded carrier, comprising a polymer carrier having at least one free amine group and a plurality of drug, toxin, chelator, boron addend or detectable label molecules covalently bound to said polymer carrier,

wherein said loaded carrier is covalently bound through said at least one free amine group of said polymer carrier to said carbohydrate moiety of said antibody fragment,

and wherein said immunoconjugate retains the immunoreactivity of said antibody fragment.

5,443,954

IMMORTALIZED NON-TUMORIGENIC HUMAN BRONCHIAL EPITHELIAL CELL LINES

Roger R. Reddel, Camperdown, Australia; Yang Ke, Beijing, China; Johng S. Rhim, Bethesda, Md.; Douglas E. Brash, New Haven, Conn.; Robert T. Su, Lawrence, Kans.; John F. Lechner, Bethesda, Md.; Brenda L. Gerwin, Bethesda, Md.; Curtis C. Harris, Bethesda, Md., and Paul Amstad, Epalinges, Switzerland, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 265,883, Nov. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,508, Oct. 30, 1987, Pat. No. 4,885,238. This application Jan. 2, 1991, Ser. No. 636,712

The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.

Int. Cl.[6] C12Q 1/02; C12N 5/10

U.S. Cl. 435—7.21 19 Claims

1. A substantially pure cell line of immortalized non-tumorigenic, human bronchial epithelial cells, said cells transformed with a gene encoding the large T-antigen of Simian Virus 40 and said cell line originating from individual cells that remain living in a cell culture of non-immortal bronchial epithelial cells transformed with a gene encoding the large T-antigen of Simian Virus 40 wherein the cell culture has undergone crisis.

5,443,955

RECEPTOR MEMBRANES AND IONOPHORE GATING

Bruce A. Cornell; Vijoleta L. B. Braach-Maksvytis, both of New South Wales; Ronald J. Pace, Australian Capital Territory; Lionel G. King, New South Wales; Burkhard Ragnse, New South Wales; Claire R. Baxter, New South Wales; Ruth M. Hall, New South Wales; Carol A. Merris, New South Wales, and Peter D. J. Osman, New South Wales, all of Australia, assignors to Australian Membrane and Biotechnology Research Institute, New South Wales, Australia

PCT No. PCT/AU90/00025, § 371 Date Jul. 3, 1991, § 102(e) Date Jul. 3, 1991, PCT Pub. No. WO90/08783, PCT Pub. Date Aug. 9, 1990

PCT Filed Jan. 29, 1990, Ser. No. 721,431

Claims priority, application Australia, Jan. 27, 1989, PJ2441; Jan. 30, 1989, PJ2469; Jan. 30, 1989, PJ2470

The portion of the term of this patent subsequent to Jul. 25, 2012, has been disclaimed.

Int. Cl.[6] G01N 33/567

U.S. Cl. 435—7.21 25 Claims

1. A membrane in which the conductance of a membrane is dependent on the presence or absence of an analyte, the membrane comprising:

a first and second layer;

a closely packed array of amphiphilic molecules and a plurality of gramicidin ionophores comprising a first and second half membrane spanning monomer, the first half membrane spanning monomers being provided in the first layer and the second half membrane spanning monomers being provided in the second layer, the second half membrane spanning monomers being capable of lateral diffusion within the second layer independent of the first half membrane spanning monomers, the first half membrane spanning monomers being prevented from lateral diffusion in the first layer, the first half membrane spanning monomers in the first layer being prevented from lateral diffusion in the first layer by cross-linking the monomers and the amphiphilic molecules or by covalent attachment of the monomers to a solid surface; and

a first receptor molecule provided on at least the second half membrane spanning monomers, the first receptor molecule being reactive with the analyte or a portion thereof, the binding of the analyte to the first receptor molecule causing a change in the relationship between the first half membrane spanning monomers and the second half membrane spanning monomers such that the flow of ions across the membrane via the ionophores is allowed or prevented.

5,443,956

DETECTION, QUANTITATION AND CLASSIFICATION OF RAS PROTEINS IN BODY FLUIDS AND TISSUES

Walter P. Carney, Brighton, Mass., assignor to Oncogene Science, Inc., Uniondale, N.Y.

Continuation of Ser. No. 815,577, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 334,823, Apr. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 185,582, Apr. 22, 1988, abandoned, and a continuation-in-part of Ser. No. 185,194, Apr. 22, 1988, abandoned, and a continuation-in-part of Ser. No. 71,175, Jul. 8, 1987, Pat. No. 5,081,230, and a continuation-in-part of Ser. No. 158,730, Feb. 22, 1988, Pat. No. 5,028,527, and a continuation-in-part of Ser. No. 111,315, Oct. 22, 1987, Pat. No. 4,898,932, which is a continuation-in-part of Ser. No. 713,905, Oct. 1, 1986, abandoned, and a continuation-in-part of Ser. No. 696,197, Jan. 29, 1985, abandoned. This application Jun. 17, 1993, Ser. No. 78,485

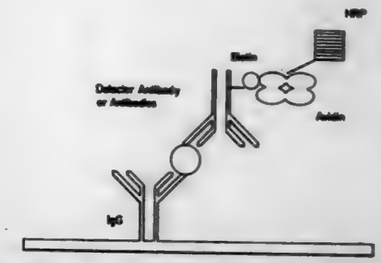
Int. Cl.[6] G01N 33/573, 33/574, 33/577

U.S. Cl. 435—7.23 6 Claims

1. An immunoassay for detecting an activated ras p21 in a bodily fluid comprising:

(a) reacting each of a plurality of samples of the bodily fluid with an immobilized anti-p21 pan reactive antibody as a capture reagent so as to form complexes with any activated ras p21 present in the samples;

(b) reacting each of the resulting samples of step (a) with (i) a detectably labeled, or (ii) an unlabeled, monoclonal antibody selected from the group consisting of (i) monoclonal antibodies which specifically bind to an epitope of an activated ras protein having an amino acid substitution of arginine, glutamic acid, aspartic acid, serine, valine or cysteine at position 12 but do not bind to an epitope containing glycine at position 12, (ii) monoclonal antibodies which specifically bind to an epitope of an activated ras protein having an amino acid substitution of arginine, aspartic acid or valine at position 13, but do not bind to an



epitope containing glycine at position 13, and (iii) monoclonal antibodies which specifically bind to an epitope of an activated ras protein having an amino acid substitution of histidine, lysine, leucine or arginine at position 61, but do not bind to an epitope containing glutamine at position 61, the monoclonal antibody capable of binding to an epitope on the activated ras p21 which is both different from any epitope with which the capture reagent reacts and is not present in normal ras p21; and

(c) detecting either (i) the unlabeled monoclonal antibody with a labeled antibody specific for the unlabeled monoclonal antibody, or (ii) the labeled monoclonal antibody, within one of the reaction products of step (b) so as to thereby detect the activated ras p21 in the bodily fluid.

5,443,957

ANTI-ASIALO-GM1 MONOCLONAL ANTIBODIES AND METHOD OF USE

Shizio Shimada; Tadashi Sudo, and Daiji Iwata, all of Chiba, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 701,564, May 14, 1991, abandoned, which is a continuation of Ser. No. 438,994, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 888,712, Jul. 24, 1986, abandoned. This application Apr. 8, 1994, Ser. No. 225,075

Claims priority, application Japan, Jul. 30, 1985, 60-166693

Int. Cl.[6] G01N 33/53, 33/577; C12N 5/20; C07K 16/28

U.S. Cl. 435—7.24 3 Claims

2. A monoclonal anti-asialo GM1 antibody which binds specifically to glycolipid asialo GM1 but does not bind specifically to any of GlcCer, LacCer, Gb3, Gb4, GA2, GM2, GM3, GM1, GDla and GDlb, and is produced by a hybridoma cell line selected from the group consisting of MW-1 FERM BP-2412, MW-2 FERM BP-2413, and MW-3 FERM BP-2414.

5,443,958

2-ACRYLAMINE-2-METHYL-1-PROPANESULFONIC ACID ENHANCEMENT OF ALKALINE PHOSPHATASE LABEL DETECTION

Hiroshi Yasue, Sakura, Japan, assignor to Director-General, National Institute of Animal Industry, Ibaragi, Japan

Continuation-in-part of Ser. No. 230,338, Aug. 9, 1988, abandoned. This application Jun. 5, 1992, Ser. No. 895,172
Claims priority, application Japan, Aug. 14, 1987, 62-203292
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.9 **5 Claims**

5. In a membrane-based specific binding assay for determining an amount of an analyte in a test sample comprising immobilizing any of said analyte in the sample on said membrane, and then contacting said membrane with a binder labeled with alkaline phosphatase, whereby said binder specifically binds to said analyte bound to said membrane, the improvement comprising:

subsequently contacting said membrane with a first solution comprising 0.7% agarose, Tris-HCl, $MgCl_2$ and 2-acrylamide-2-methylpropane sulfonate homopolymer;

then allowing said first solution to solidify to form a first film layer;

then contacting said membrane with a second solution comprising 0.7% agarose, Tris-HCl, $MgCl_2$, 2-acrylamide-2-methylpropane sulfonate homopolymer, 5-bromo-4-chloroindoxyl phosphate and nitro blue tetrazolium;

then allowing said second solution to solidify to form a second film layer; and

then determining the amount of said alkaline phosphatase bound to said membrane as an indication of the amount of said analyte in said test sample.

5,443,959

METHOD OF ASSAYING FIBRINOGEN, DRY REAGENT THEREFOR, AND PROCESS FOR THE PREPARATION THEREOF

Masayoshi Kikuchi, Tsukuba; Kenji Kunai, Ushiku, and Takafumi Yamada, Sagamihara, all of Japan, assignors to Tokuyama Corporation, Yamaguchi, Japan

Filed Jul. 29, 1993, Ser. No. 98,825
Claims priority, application Japan, Sep. 9, 1992, 4-240681; Nov. 12, 1992, 4-302368; Jan. 19, 1993, 5-006646
Int. Cl.[6] C12Q *1/56*; G01N *33/86*; C07K *14/75*
U.S. Cl. 435—13 **22 Claims**

1. A dry reagent for fibrinogen assay, consisting essentially of:

(a) a protein having thrombin activity (component a),

(b) at least one additive selected from the group consisting of acidic amino acids, basic amino acids, glycine, alanine, a salt of said amino acids, sucrose, lactose, trehalose, dextrin, glucose, and fructose (component b), and

(c) magnetic particles (component c).

5,443,960

METHOD FOR THE DIAGNOSIS OF BLOOD COAGULATION DISORDERS

Björn Dahlbäck, Plantskolevägen 10, S-216 21 Malmö, Sweden

PCT No. PCT/SE92/00310, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO93/10261, PCT Pub. Date May 27, 1993
PCT Filed May 13, 1992, Ser. No. 199,328
Claims priority, application Sweden, Nov. 13, 1991, 9103332-4
Int. Cl.[6] C12Q *1/56*; G01N *33/86*
U.S. Cl. 435—13 **22 Claims**

1. An in vitro method for screening and diagnosing activated protein C (APC) resistance which is recognized by a low anti-coagulant response to exogenous activated Protein C (APC) not related to Protein S deficiency or defective FVIII/FVIII$_a$ and recognized by a low anti-coagulant response to exogenous activated Protein C (APC) in the absence of APC immunoglobulin inhibitors said method comprising the steps of:

(i) incubating a human plasma sample from a human in need of screening and diagnosing for APC resistance with

(1) exogenous APC, or exogenous Protein C and an exogenous reagent that transforms exogenous Protein C to APC;

(2) an exogenous reagent (I) which at least partially activates a coagulation factor of the blood coagulation system of said human plasma sample; and optionally

(3) an exogenous substrate for an enzyme wherein the activity of said enzyme is influenced by APC, to prepare a final assay medium;

(ii) measuring a substrate conversion rate for a coagulation factor directly or indirectly activated in step (i), the activity of which is influenced by APC; and

(iii) comparing said substrate conversion rate measured in step (ii) with a standard value obtained from samples of normal individuals, said samples of normal individuals having been subjected to steps (i) and (ii)

wherein when said substrate conversion rate obtained for said human plasma sample in step (ii) is higher than the standard value, said human has APC resistance.

5,443,961

METHOD FOR DIAGNOSING CELLULAR AGING OR INFLAMMATION CONDITION OF KERATINOCYTES, AND KIT FOR IMPLEMENTING SUCH METHOD

Michel Prunieras; Michel Kermici, and Francis Pruche, all of Paris, France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR92/00034, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO92/13098, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 16, 1992, Ser. No. 87,806
Claims priority, application France, Jan. 16, 1991, 91 00457
Int. Cl.[6] C12Q *1/30, 1/26, 1/28*; G01N *33/48*
U.S. Cl. 435—27 **17 Claims**

1. A process for diagnosing a state of keratinocyte cell aging or of keratinocyte inflammation in an individual or for diagnosing the efficacy of a treatment designed to combat keratinocyte cell aging or keratinocyte inflammation, said process comprising:

(a) taking a first sample of keratinocytes from a pathologically-suspect or treated area of an individual,

(b) taking a second sample of keratinocytes from a non-pathological control or untreated area of said individual,

(c) establishing the amount of a marker of said keratinocyte cell aging or keratinocyte inflammation in said first and second keratinocyte samples,

(d) comparing the amount of said marker in said first and second keratinocyte samples, said marker being selected from the group consisting of catalase activity, glutathione activity and glutathione peroxidase activity,

wherein a larger amount of catalase activity or a lesser amount of glutathione activity or glutathione peroxidase activity in said first sample as compared to the second sample indicate a keratinocyte inflammation or keratinocyte cell aging state or the ineffectiveness of said treatment.

5,443,962

METHODS OF IDENTIFYING INHIBITORS OF CDC25 PHOSPHATASE

Giulio Draetta, Winchester; Guillaume Cottarel, Chestnut Hill, and Veronique Dumontpex, Cambridge, all of Mass., assignors to Mitotix, Inc., Cambridge, Mass.

Filed Jun. 4, 1993, Ser. No. 73,383
Int. Cl.[6] C12Q *1/02, 1/18, 1/42, 1/68*
U.S. Cl. 435—29 **42 Claims**

1. An assay for identifying an inhibitor of a cdc25 phosphatase, comprising

i. providing a cell expressing a recombinant cdc25 phosphatase, and having an impaired checkpoint which can cause premature entry of the cell into mitosis resulting in inhibition of proliferation of the cell, the premature entry into mitosis being mediated at least in part by the cdc25 phosphatase;

ii. contacting the cell with a candidate agent;

iii. measuring a level of proliferation of the cell in the presence of the candidate agent; and

iv. comparing the level of proliferation of the cell in the presence of the candidate agent to a level of proliferation of the cell in the absence of the candidate agent, wherein an increase in the level of proliferation in the presence of the candidate agent is indicative of inhibition of the cdc25 phosphatase by the candidate agent.

5,443,963

METHOD FOR DETECTING STAPHYLOCOCCI

Mariya E. Land, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1994, Ser. No. 189,182
Int. Cl.[6] C12Q *1/04, 1/54*; C12N *1/00*
U.S. Cl. 435—34 **12 Claims**

1. A method to identify and enumerate staphylococci in a sample containing more than one species of bacteria comprising the steps of

i) inoculating a selective medium with an aliquot of a sample, wherein the medium comprises inhibitors to promote the growth of staphylococci, an indolylglucopyranoside substrate which provides a visible first color change in the presence of beta-glucosidase and a phosphate substrate which provides a visible second color change in the presence of staphylococci,

ii) incubating the inoculated medium to produce bacterial colonies of sufficient size to allow visualization of the colonies in the presence of said substrates in the medium,

iii) enumerating the colonies identified by the presence of the second color of the phosphate substrate to give the number of staphylococci in the sample.

5,443,964

POXVIRUS INSERTION/EXPRESSION VECTOR

David J. Pickup, and Dhavalkumar D. Patel, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Aug. 10, 1987, Ser. No. 84,406
Int. Cl.[6] C12N *15/86, 15/11, 5/16*; C12P *21/00*
U.S. Cl. 435—69.1 **12 Claims**

1. A recombinant vector comprising:

i) a vaccinia virus,

ii) a 3' cis-acting element II (CAE-II) of a gene encoding the major component of a cowpox virus A-type inclusion body, and

iii) a gene encoding a protein other than the major component of a cowpox virus A-type inclusion body;

wherein said gene (iii) is present in said vaccinia virus (i) operably linked to and upstream of said CAE-II.

5,443,965

HEPATITIS C VIRUS EPITOPES

Gregory R. Reyes; Jungsuh P. Kim, both of Palo Alto, and Randolph Moeckli, Redwood City, all of Calif., assignors to Genelabs Incorporated, Redwood City, Calif.

Continuation-in-part of Ser. No. 594,854, Oct. 10, 1990, which is a continuation-in-part of Ser. No. 505,611, Apr. 6, 1990. This application Apr. 5, 1991, Ser. No. 681,703
Int. Cl.[6] C12P *21/06*; C12Q *1/70*; A61K *39/29*; C07H *17/00*
U.S. Cl. 435—693 **7 Claims**

1. A method of producing a polypeptide which is immunoreactive with sera from humans infected with hepatitis C virus (HCV), comprising

introducing into a suitable non-human host, a recombinant expression system containing an open reading frame (ORF) having a polynucleotide sequence which encodes a polypeptide immunoreactive with sera from humans infected with hepatitis C virus (HCV), where (i) the polypeptide has the sequence presented as SEQ ID NO: 2, (ii) the polynucleotide has the sequence presented in SEQ ID NO:1, and (iii) the vector is designed to express the ORF in said host, and

culturing said host under conditions resulting in the expression of the ORF sequence.

5,443,966

EXPRESSION OF TETANUS TOXIN FRAGMENT C

Neil F. Fairweather, and Andrew J. Makoff, both of Langley Court, Beckenham, Kent, United Kingdom BR 3 3BS

Continuation of Ser. No. 777,337, Nov. 29, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,786
Claims priority, application United Kingdom, Jun. 20, 1989, 8914122; WIPO, Jun. 20, 1990, PCT/GB90/00943
Int. Cl.[6] C12P *21/02*; C12N *15/70, 1/21*
U.S. Cl. 435—69.3 **7 Claims**

1. A process for producing fragment C of tetanus toxin in soluble form, which process comprises:

(i) culturing an *Escherichia coli* host cell transformed with an expression vector comprising a coding sequence consisting of a Met start codon immediately followed by a sequence encoding fragment C, wherein said culturing is effected under conditions such that said coding sequence is expressed and fragment C thereby produced in soluble form; and

(ii) recovering said soluble fragment C from the cytoplasm of said *Escherichia coli* host cell.

5,443,967

DNA ENCODING THE CANCER ASSOCIATED SCM RECOGNITION FACTOR

Boris Cercek, and Lea Cercek, both of 4318 Campher Ave., Yorba Linda, Calif. 92686

Division of Ser. No. 539,686, Jun. 18, 1990, Pat. No. 5,270,171, which is a continuation-in-part of Ser. No. 167,007, Mar. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 22,759, Mar. 6, 1987, abandoned. This application Aug. 25, 1993, Ser. No. 112,760
Int. Cl.[6] C12N *5/12, 15/15*
U.S. Cl. 435—69.3 **40 Claims**

1. A DNA sequence encoding a peptide active in the structuredness of the cytoplasmic matrix (SCM) test, the peptide being a peptide of 22 amino acid residues to 35 amino acid residues with the first two amino-terminal amino acid residues being M-I with no intervening amino acid residue, the peptide encoded by the DNA sequence including a core sequence of 9 amino acid residues having an amphipathicity profile substantially equivalent to the sequence F-L-M-I-D-Q-N-T-K, wherein the sixth amino acid of the core sequence is selected from the group consisting of Q and N, the seventh amino acid of the core sequence is selected from the group consisting of N and Q, and the ninth amino acid of the core sequence is selected from the group consisting of K and R, the peptide producing at least a 10% decrease in the intracellular fluorescence polarization value of lymphocytes capable of responding in the SCM test as isolated from donors afflicted with cancer, in substantial isolation from DNA encoding proteins normally accompanying a peptide active in the SCM test.

5,443,968
FED BATCH CULTURE METHOD FOR PROTEIN SECRETING CELLS

Yoshiharu Takazawa, and Seiichi Yokoyama, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP93/00586, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/22448, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 30, 1993, Ser. No. 170,361
Claims priority, application Japan, May 1, 1992, 4-112653
Int. Cl.[6] C12N *5/08*; C12P *21/00*
U.S. Cl. 435—70.3 24 Claims

1. In a process for the production of a protein by culturing mammalian cells in a suspension state, the improvement comprising culturing as the mammalian cells a human embryonal kidney cell-derived 293 strain which is transformed with a gene encoding the protein, and the improvement further comprising culturing the mammalian cell using a process which comprises

(a) starting the culture of the mammalian cells in a culture medium contained in a culture vessel at a cell density of 5×10^4 to 5×10^5 cells/ml,

(b) adding a sugar to the culture vessel to give a sugar concentration of 1 to 7 g/l at any time after the cell density of the mammalian cells in the culture vessel has become three times higher than the starting cell density and when the cell density is in a range of 5×10^5 to 5×10^6 cells/ml,

(c) continuing the culture until the concentration of the protein is no longer substantially increasing, while maintaining the pH of the culture fluid, and then stopping the culture, and

(d) taking out culture fluid from the culture vessel and recovering the protein from the culture fluid.

5,443,969
RNA PACKAGING SYSTEM

Thomas M. A. Wilson, Dundee, Scotland, and Duk-Ju Hwang-Lee, Piscataway, N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Oct. 29, 1992, Ser. No. 971,101
Int. Cl.[6] C12N *15/10, 1/21, 15/40, 7/01*
U.S. Cl. 435—91.32 68 Claims

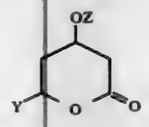
1. A method of producing and encapsidating a recombinant RNA molecule in a plant pseudovirus particle comprising culturing a bacterium containing (a) a first recombinant nucleic acid encoding a tobacco mosaic virus coat protein, and (b) a second recombinant nucleic acid that can be transcribed to produce RNA molecule comprising a tobacco mosaic virus origin-of-assembly sequence operatively linker to an RNA sequence of interest, with the proviso that the RNA sequence of interest is not a tobacco mosaic virus RNA; whereby the tobacco mosaic virus coat protein is expressed and the second recombinant nucleic acid is transcribed in the bacterium, and the coat protein assembles into a particle encapsidating the RNA molecule.

5,443,970
PYRANONES

Andrew J. Blacker, Ripon; John Crosby, Altrincham, and John A. L. Herbert, Bury, all of England, assignors to Zeneca Limited, London, England

Filed Sep. 17, 1992, Ser. No. 946,193
Claims priority, application United Kingdom, Sep. 20, 1991, 9120110; Sep. 20, 1991, 9120133; Sep. 20, 1991, 9120134; Sep. 20, 1991, 9120135; Sep. 20, 1991, 9120137; Sep. 20, 1991, 9120138; Sep. 20, 1991, 9120152; Sep. 20, 1991, 9120153; Sep. 20, 1991, 9120157; Sep. 20, 1991, 9120158; Sep. 20, 1991, 9120173; Jun. 4, 1992, 9211795
Int. Cl.[6] C12P *17/06*
U.S. Cl. 435—125 14 Claims

1. A process for the separation of at least one isomer from a mixture of isomers of tetrahydropyran-2-one, having at least two chiral centres, which comprises selective reaction of at least one isomer with a reagent catalysed by a hydrolase enzyme selected from an esterase, lipase, nitrilase, amidase, peptidase, glycosidase and phosphatase derived from microbial, animal and plant sources whereby at least one isomer is preferentially converted into a distinct chemical species from the other isomers so that it is susceptible of separation by an appropriate chemical or physical separation process in which the tetrahydropyran-2-one is of Formula (I):



Formula (1)

wherein

Z is —H or a protecting group susceptible of reaction with the reagent under the influence of the enzyme, said protecting group being selected from the group consisting of $—NO_2$; $—PO.(OR^3)_2$; $—CO.R^3$; $—SO.OR^3$; and $—CO.OR^3$ in which each R^3 independently is optionally substituted alkyl, optionally substituted alkenyl or optionally substituted phenyl; and

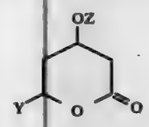
Y is optionally substituted hydrocarbyl wherein when Z is —H the reagent is an ester or an acid capable of reacting with —OZ and when Z is a protecting group the reagent is water or an alkanol.

5,443,971
PYRANONES

Andrew J. Blacker, Ripon; John Crosby, Altrincham, and John A. L. Herbert, Bury, all of England, assignors to Zeneca Limited, London, England

Filed Sep. 17, 1992, Ser. No. 946,194
Claims priority, application United Kingdom, Sep. 20, 1991, 9120110; Sep. 20, 1991, 9120134; Sep. 20, 1991, 9120138; Sep. 20, 1991, 9120152; Sep. 20, 1991, 9120153; Sep. 20, 1991, 9120157; Sep. 20, 1991, 9120173; Jun. 4, 1992, 9211795
Int. Cl.[6] C12P *17/06*
U.S. Cl. 435—125 14 Claims

1. A process for the separation of at least one isomer from a mixture of isomers of tetrahydropyran-2-one, having at least two chiral centres, which comprises selective reaction of at least one isomer with a reagent catalysed by a hydrolase enzyme selected from an esterase, lipase, nitrilase, amidase, peptidase, glycosidase and phosphatase derived from microbial, animal and plant sources whereby at least one isomer is preferentially converted into a distinct chemical species from the other isomers so that it is susceptible of separation by an appropriate chemical or physical separation process in which the tetrahydropyran-2-one is of Formula (I):



Formula (1)

wherein

Z is —H or a protecting group susceptible of reaction with the reagent under the influence of the enzyme, said protecting group being selected from the group consisting of $—PO.(OR^3)_2$; $—CO.R^3$; $—SO.OR^3$; $—NO_2$ and $—(CO).OR^3$ in which each R^3 is independently optionally substituted alkyl, optionally substituted alkenyl or optionally substituted phenyl; and

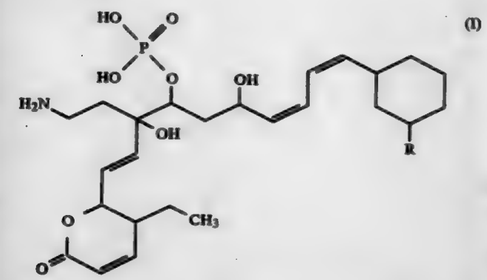
Y is formyl or protected formyl wherein when Z is —H the reagent is an ester or an acid capable of reacting with —OZ and when Z is a protecting group the reagent is water or an alkanol.

5,443,972
PROCESS TO PREPARE LEUSTRODUCSINS

Takafumi Kohama; Isao Kaneko; Takeuchi Nakamura, all of Tokyo; Takeshi Kagasaki, Iwaki; Ryuzo Enokita, Tsukuba, and Keiichi Matsuda, Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 857,162, Mar. 25, 1992, Pat. No. 5,334,587.
This application May 6, 1994, Ser. No. 239,284
Claims priority, application Japan, Mar. 27, 1991, 3-63087
Int. Cl.[6] C12P *17/06*
U.S. Cl. 435—125 10 Claims

1. A process for producing at least one leustroducsin of formula (I):



(I)

in which R represents a 5-methylhexanoyloxy group, a 6-methyloctanoyloxy group or a 7-methyloctanoyloxy group, or a pharmaceutically acceptable salt thereof, which comprises cultivating a microorganism strain of the genus *Streptmyces* and the species *platensis* which produces said at least one leustroducsin of said formula (I), separating from the resultant culture said at least one leustroducsin of said formula (I) and purifying said at least one leustroducsin of said formula (I).

5,443,973
METHOD OF PRODUCING α-HYDROXYISOBUTYRAMIDE FROM ACETONE CYANOHYDRIN BY NITRIL HYDRATASE

Kenichi Shiwata; Masao Shimoda, both of Kanagawa, and Akira Hatamori, Chiba, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 929,574
Claims priority, application Japan, Aug. 16, 1991, 3-206032; Nov. 21, 1991, 3-305995
Int. Cl.[6] C12P *13/02*; C12N *9/78*
U.S. Cl. 435—129 18 Claims

1. A method of producing α-hydroxyisobutyramide, which comprises the steps of:

(a) culturing a microorganism effective for producing α-hydroxyisobutyramide from acetone cyanohydrin in a cultivation medium to produce cultured cells of the microorganism and a culture liquid, wherein said microorganism is selected from the group consisting of *Rhodococcus erythropolis* ATCC 4277, ATCC 11048 and FERM BP-3933;

(b) reacting the culture liquid obtained from culturing said microorganism, the cultured cells of the microorganism, or the processed cells of the cultured microorganism, with acetone cyanohydrin in an aqueous reaction solution to form α-hydroxyisobutyramide in the aqueous reaction solution; and

(c) thereafter recovering α-hydroxyisobutyramide from said aqueous reaction solution.

5,443,974
NUCLEOTIDE SEQUENCE OF SOYBEAN STEAROYL-ACP DESATURASE GENE

William D. Hitz; Narendra S. Yadav, and Luis Perez-Grau, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 529,049, May 25, 1990, abandoned. This application Dec. 11, 1992, Ser. No. 995,687
Int. Cl.[6] C12N *15/00, 15/05, 15/11*
U.S. Cl. 435—172.3 13 Claims

1. A nucleic acid fragment comprising an isolated nucleotide sequence encoding the soybean seed stearoyl-ACP desaturase cDNA corresponding to the nucleotides 1 to 1552 in SEQ ID NO:1.

5,443,975
METHOD OF BINDING ENZYMES TO SINTERED EXPANDED CLAYS

Stefano Cervelli, Pisa, and Vincenzo Capasso, Anguillara Sabazia, both of Italy, assignors to Ente Per Le Nuove Technologie, L'Energia E L'Ambiente (ENEA) and Consiglio Nazionale Delle Ricerche, both of Rome, Italy

Continuation-in-part of Ser. No. 712,878, Jun. 11, 1991, abandoned. This application Dec. 10, 1992, Ser. No. 986,045
Claims priority, application Italy, Jun. 13, 1990, 48058/90
Int. Cl.[6] C12N *11/18, 11/14, 11/08, 11/04*
U.S. Cl. 435—175 12 Claims

1. A method of binding enzymes to an insoluble sintered expanded clay support matrix, comprising the steps of:

a) combining a solution of enzyme having biological catalytic activity with an insoluble sintered expanded clay support matrix whereby the support matrix absorbs the enzyme solution and the enzyme is bound to surfaces of the support matrix;

b) combining the support matrix containing bound enzyme from step a with a solution containing an enzyme having biological catalytic activity different from the enzyme bound to the support matrix and a phenolic monomer selected from the group consisting of catechol, pyrogallic acid, resorcinol and mixtures thereof; and

c) copolymerizing the enzyme and phenolic monomer combined with the support matrix in step b to form a layer of copolymer of enzyme and phenolic monomer on the support matrix containing bound enzyme.

5,443,976
IMMOBILIZATION OF *CROTALUS ATROX* AND *CROTALUS DURISSUS TERRIFICUS* WHOLE VENOMS ON ALDEHYDE-ACTIVATED AGAROSE

Sean B. Carroll, 3066 Streb Way, Cottage Grove, Wis. 53527

Continuation of Ser. No. 983,668, Dec. 1, 1992, abandoned, which is a division of Ser. No. 429,791, Oct. 31, 1989, Pat. No. 5,196,193. This application Jul. 14, 1994, Ser. No. 275,304
Int. Cl.[6] C12N *11/10, 11/08*; G01N *33/544*; C07K *17/10*
U.S. Cl. 435—178 1 Claim

1. A method for immobilizing whole venom, comprising:

a) providing an aldehyde-activated agarose support;

b) providing two whole venoms having antibody binding capacity from the sources consisting of *C. atrox* and *C. durissus terrificus*; and

c) attaching said two whole venoms to said insoluble support by covalent bonding whereby said antibody binding capacity of said venoms is substantially retained.

5,443,977

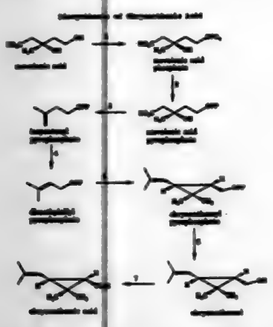
Patent Not Issued For This Number

5,443,978

CHRYSANTHEMYL DIPHOSPHATE SYNTHASE, CORRESPONDING GENES AND USE IN PYRETHRIN SYNTHESIS

Suzanne R. Ellsworger, Salem, Utah; Galen D. Peiser, Cupertino, Calif.; Russell N. Bell, Salt Lake City, Utah; Charles E. Hussey, Jr., Salt Lake City, Utah; Donna M. Shattuck-Eidens, Salt Lake City, Utah, and Bradley D. Swedlund, Salt Lake City, Utah, assignors to Agridyne Technologies, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 29,480, Mar. 11, 1993, abandoned. This application Jun. 25, 1993, Ser. No. 82,844
Int. Cl.[6] C12N *9/10, 15/54*
U.S. Cl. 435—193 35 Claims



1. A cloned DNA encoding a chrysanthemyl diphosphate synthase capable of catalyzing the conversion of dimethylallyl pyrophosphate to chrysanthemyl diphosphate, said cloned DNA hybridizing under stringent conditions to a nucleotide sequence comprising SEQ ID NO: 9 or SEQ ID NO: 10 and wherein said cloned DNA is extracted and purified from a chrysanthemyl diphosphate synthase-containing or pyrethrin-producing species of the family Compositae.

5,443,979

COMPOSITION CONTAINING PHYTASE AND ACID PHOSPHATASE FOR HYDROLYZING PHYTATE

E. M. M. Vanderbeke, Kessel-Lo; M. De Schrijver, Destelbergen, and A. M. M. Vermeire, Evergem, all of Belgium, assignors to Avave N.V., Merksem, Belgium

Filed Apr. 1, 1994, Ser. No. 221,695
Claims priority, application European Pat. Off., Apr. 5, 1993, 93200989
Int. Cl.[6] C12N *9/14, 9/00, 9/16;* A23B *7/10*
U.S. Cl. 435—195 14 Claims

1. An enzyme composition having phytate hydrolyzing activity comprising:

an isolated phytase having a phytate hydrolyzing activity at a pH range from 2.5 to 5.0; and

an isolated acid phosphatase having phytate hydrolyzing activity at a pH of 2.5;

wherein said phytase and said acid phosphatase and in a mixture in a ratio which provides said mixture with phytate hydrolyzing activity units in a ratio, a/p, wherein a is the activity at pH 2.5 and p is the activity at pH 5.0, of 0.8/1 to 3/1, and wherein said activity unit is the amount of enzyme that liberates one micromole of phosphorus/-min. at 40° C., respectively, at pH 2.5 and 5.0.

5,443,980

PROCESS TO OBTAIN EXTRA-CELLULAR RECOMBINANT PRODUCTS USING *XANTHOMONAS CAMPESTRIS* PV *CAMPESTRIS* AS HOST

Gloria Soberon-Chavez, San. Cristobalcuernavaca, Mexico, assignor to Univeridad Nacional Autonoma de Mexico (UNAM), Mexico City, Mexico

Continuation of Ser. No. 929,378, Aug. 14, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 215,975
Int. Cl.[6] C12N *1/21, 9/20;* C12P *21/00*
U.S. Cl. 435—198 8 Claims

1. A process to obtain lipase using *Xanthomonas campestris* pv *campestris* as a host organism, comprising growing a *Xanthomonas campestris* pv *campestris* strain transformed with a recombinant plasmid containing a DNA sequence encoding lipase from a species of Pseudomonas, thereby producing lipase, and recovering the resulting culture supernatant containing lipase.

5,443,981

ACREMONIUM TYPHINUM ATCC 74228 WHICH EXHIBITS ENDOPROTEOLYTIC ACTIVITY

Faith C. Belanger, East Brunswick, and Jon T. Lindstrom, South River, both of N.J., assignors to Rutgers, the State University, New Brunswick, N.J.

Continuation-in-part of Ser. No. 74,137, Jun. 9, 1993, abandoned. This application Mar. 24, 1994, Ser. No. 217,489
Int. Cl.[6] C12N *9/58, 1/00, 1/14;* A01N *63/00*
U.S. Cl. 435—223 12 Claims

1. A crude membrane fraction of *Acremonium typhinum* ATCC 74228 exhibiting endoproteolytic activity, said activity:

being reactive with bicinchoninic acid;

being optimal at 35°–40° C. and at pH 10–11;

being exhibited only when a reductant is present;

being inhibited by the protease inhibitor phenylmethylsulfonyl fluoride, but not by protease inhibitors ethylenediamine tetraacetic acid, ethylenebis(oxyethylenenitrilo)tetraacetic acid, phenanthroline, L-transepoxysuccinyl-leucylamido(4-guanidino)butane and 3,4-dichloroisocumarin, by the presence of detergent, or by methanol precipitation;

being associated with a first gel electrophoresis band having apparent molecular weight of 205,000 daltons when said extract is electrophoresed without prior boiling, said extract, when boiled prior to electrophoresis, instead producing a band having apparent molecular weight of 34,000 daltons;

said 34,000 dalton band comprising a thiol group, reacting with biotinylated lectins selected from the group consisting of *Pisum sativum* agglutinin, wheat germ agglutinin, and peanut agglutinin, and giving rise to polyclonal rabbit antibodies which do not cross react with proteinase K.

3. An intracellular extract of *Acremonium typhinum* ATCC 74228, said extract being reactive with bicinchoninic acid and exhibiting the endoproteolytic activity of claim 1.

8. A proteinase which is derived from said intracellular extract of claim 3, said proteinase being reactive with bicinchoninic acid and exhibiting endoproteolytic activity, said activity:

being optimal at 35°–40° C. and at pH 10–11;

being exhibited only when a reductant is present;

being inhibited by the protease inhibitor phenylmethylsulfonyl fluoride, but not by protease inhibitors ethylenediamine tetraacetic acid, ethylenebis(oxyethylenenitrilo)tetraacetic acid, phenanthroline, L-transepoxysuccinyl-leucylamido(4-guanidino)butane and 3,4-dichloroisocoumarin, by the presence of detergent, or by methanol precipitation;

being associated with a first gel electrophoresis band having apparent molecular weight of 205,000 daltons when said proteinase is electrophoresed without prior boiling, said proteinase, when boiled prior to electrophoresis, instead

producing a band having apparent molecular weight of 34,000 daltons;

said 34,000 dalton band comprising a thiol group, reacting with biotinylated lectins selected from the group consisting of *Pisum sativum* agglutinin, wheat germ agglutinin, and peanut agglutinin, and giving rise to polyclonal rabbit antibodies which do not cross react with proteinase K.

11. A biologically pure culture of *Acrmonium typhinum* ATCC 74228 which produces recoverable amounts of the proteinase of claim 8.

5,443,982

METHODS FOR THE CULTIVATION OF INFECTIOUS LARYNGOTRACHEITIS VIRUS

Ellen Weiniak, Eagan, and Gary R. Peterson, Lakeville, both of Minn., assignors to Solvay Animal Health, Inc., Mendota Heights, Minn.

Filed Jul. 13, 1993, Ser. No. 91,826
Int. Cl.[6] C12N *7/02;* A61K *39/245*
U.S. Cl. 435—235.1 5 Claims

4. A method for obtaining infectious laryngotracheitis virus comprising (i) infecting a continuous avian hepatocellular cell line, wherein said cell line is CH-SAH, with infectious laryngotracheitis virus, (ii) culturing said virus, and (iii) recovering virus produced thereby.

5,443,983

METHOD OF CULTURING LYMPHOCYTES AND METHOD OF TREATMENT USING SUCH LYMPHOCYTES

Augusto C. Ochoa, St. Paul; Fritz H. Bach, Minneapolis; Barbara Alter, Marine on St. Croix, all of Minn., and Paul Sondel, Madison, Wis., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 895,042, Aug. 8, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 170,755
Int. Cl.[6] C12N *5/02, 5/08*
U.S. Cl. 435—240.2 8 Claims

1. A method of developing LAK activity in a population of cultured lymphocytes, said method comprising:

(a) culturing said lymphocytes in a medium comprising IL-2 and an anti-CD3 antibody, in combination, for at least about 48 hours;

(b) removing said lymphocytes from said medium comprising IL-2 and an anti-CD3 antibody; and

(c) culturing said lymphocytes in a medium comprising IL-2 without any additional anti-CD3 antibody,

whereby LAK activity in said lymphocytes is developed.

5,443,984

METHOD FOR CULTURING MAMMALIAN CELLS IN A MEDIUM CONTAINING FISH SERUM

Evelyn S. Sawyer, and Philip J. Sawyer, both of Kennebunkport, Me., assignors to Sea Run Holdings, Inc., Kennebunkport, Me.

Continuation of Ser. No. 263,250, Jun. 21, 1994, Pat. No. 5,401,654, which is a continuation-in-part of Ser. No. 168,865, Dec. 16, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,763
The portion of the term of this patent subsequent to Jun. 20, 2012, has been disclaimed.
Int. Cl.[6] C12N *5/00;* A61K *35/56, 35/60*
U.S. Cl. 435—240.2 8 Claims

1. A method of culturing mammalian cells comprising the steps of:

(a) seeding mammalian cells in a vessel containing a defined cultured medium and 10% fetal bovine serum;

(b) culturing the cells of step (a);

(c) subculturing the cells of step (b) in a vessel containing a defined culture medium and 10% fetal bovine serum;

(d) removing the defined culture medium and fetal bovine serum from the vessel of step (c);

(e) adding defined culture medium with a lower concentration of fetal bovine serum to the vessel of step (d);

(f) harvesting the cells of step (e);

(g) suspending the cells of step (f) in a defined culture medium;

(h) centrifuging the cells of step (g) at 300 g for about 3.5 minutes at room temperature;

(i) resuspending the cells of step (h) in a vessel containing defined culture medium;

(j) seeding at least a portion of the cells of step (i) in a vessel containing a defined culture medium and about 2.5% to about 5% fish serum;

wherein said fish serum is prepared by:

(i) raising fish under controlled conditions such that the diet, habitat, genetics, life history, and reproductive status of the fish remains substantially constant and reproducible;

(ii) starving the fish for up to about forty-eight hours;

(iii) withdrawing whole blood from the fish;

(iv) separating the serum from the whole blood; and

(iv) sterilizing the serum;

and,

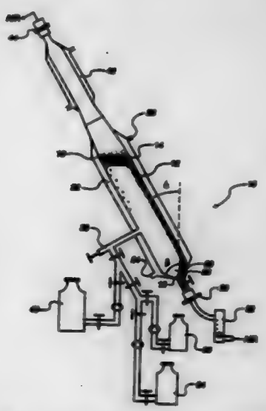
(k) culturing the cells of step (k).

5,443,985

CELL CULTURE BIOREACTOR

George Z. Lu; Murray R. Gray, and Bradley G. Thompson, all of Edmonton, Canada, assignors to Alberta Research Council and The Governors of the University of Alaska, both of Edmonton, Canada

Filed Jul. 22, 1993, Ser. No. 95,681
Int. Cl.[6] C12N *5/02;* C12M *3/02*
U.S. Cl. 435—240.25 16 Claims



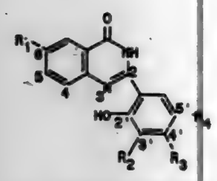
9. A method of culturing living cells, comprising the steps of:

(a) providing a vessel having oppositely spaced walls inclined at an angle to the vertical so as to form an upper and a lower wall, said walls being tapered at their lower ends to form an apex;

(b) introducing a liquid culture medium and the cells to the vessel;

(c) introducing a gas at the lower end of the walls at a rate sufficient to circulate the cells and liquid culture medium, such that the cells and the liquid culture medium are lifted with the gas upwardly along the upper wall, the gas disengages from the medium at the upper wall, and the cells and the liquid culture medium fall downwardly along the lower wall.

5,443,986
ENZYMATIC ANALYSIS USING SUBSTRATES THAT YIELD FLUORESCENT PRECIPITATES
Richard P. Haughland; Zhijian Huang; Karen D. Larison, and Yu-zhong Zhang, all of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.
Division of Ser. No. 748,860, Aug. 23, 1991, Pat. No. 5,316,906.
This application Jul. 6, 1993, Ser. No. 88,894
Int. Cl.[6] C12Q *1/00*; C08G *63/48*; A61K *37/02*; C04B *35/00*
U.S. Cl. 435—4 39 Claims





1. A method for detecting the activity of an enzyme comprising:

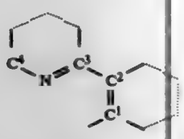
a) combining a sample suspected of containing the enzyme, with a substrate of the formula:

(BLOCK-O-)—X_{fl}

where BLOCK is a blocking group that is capable of being cleaved from the remainder of the substrate by action of the enzyme resulting in a visible precipitate of the formula:

H—O—X_{fl}

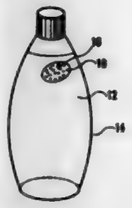
where X_{fl} has the structure



where carbon atoms of —C^1=C^2— are further joined so as to complete a first 5- or 6-membered aromatic ring which may contain at least one of the hetero atoms N, O or S,
where carbon atoms of —C^4—N=C^3— are further joined so as to complete a second 5- or 6-membered aromatic ring that contains at least the nitrogen between C^3 and C^4 and may contain at least one additional hetero atom N, O or S,
where the first and second aromatic rings may be joined by a 5- or 6-membered bridging ring that contains at least the C^2 from the first aromatic ring and the C^3 from the second aromatic ring, which bridging ring may be saturated or unsaturated and may contain a hetero atom N, O, or S,
where each of the first and second aromatic rings may be fused to at least one additional aromatic ring that may contain at least one of the hetero atoms N, O or S, and
where each of said aromatic rings may be further modified by substitution of any hydrogens on an aromatic carbon by substituents that are halogen, nitro, cyano, aryl, lower alkyl (1–4 carbons), perfluoroalkyl (1–4 carbons), or alkoxy (1–4 carbons), or any combination thereof; and
X_{fl} is covalently linked to the oxygen —O— at C_1; under conditions suitable for formation of said visible precipitate; and

b) qualitatively or quantitatively detecting the precipitate.

5,443,987
DETECTION SYSTEM FOR MICROBIAL CONTAMINATION IN HEALTH-CARE PRODUCTS
Benedict T. DeCicco, 12505 Caswell La., Bowie, Md. 20715, and James K. Koeven, 1215 N. Fort Myer Dr., #305, Arlington, Va. 22209
Filed Sep. 2, 1993, Ser. No. 115,543
Int. Cl.[6] C12N *1/00*; C12Q *1/00, 1/02*
U.S. Cl. 435—4 18 Claims

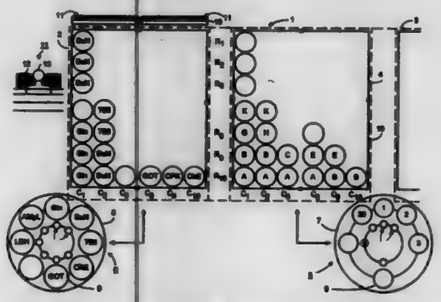


1. A product, comprising:

a liquid health care product positioned within product packaging for containing said liquid health care product; and

means for sensing the presence of microbial contaminants selected from the group consisting of C. albicans, P. cepacia, S. marcescens, E. cloacae, E. gergoviae, E. aerogenes, K. pneumoniae, E. coli, S. aureus and P. aeruginosa within said liquid health care product and providing a visible indication of microbial contamination of the packaged product, said means for sensing being positioned inside said product packaging for containing said liquid health care product, said means for sensing responding to enzymes produced by said microbial contaminants and metabolic processes involving enzymes produced by said microbial contaminants.

5,443,988
METHOD FOR HIGH SPEED ANALYSIS OF A DRY ANALYTICAL ELEMENT
Masao Kitajima, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 30, 1993, Ser. No. 138,503
Claims priority, application Japan, Sep. 2, 1992, 4-234775
Int. Cl.[6] G01N *35/02*
U.S. Cl. 436—46 8 Claims



1. A method for measuring a plurality of analytical samples using a high speed analyzer which comprises spotting of samples onto a dry analytical element comprising a plurality of reaction zones, one sample being spotted on each reaction zone and composed of a porous spreading layer, a hydrophilic polymer layer and a water-impermeable support laminated in this order, said dry analytical elements being positioned on a movable sample tray, introducing the thus spotted analytical elements to an incubator wherein the spotted samples are dried, spotting a plurality of measuring reagent solutions onto the dried analytical element and then subjecting the analytical element having the measuring reagent solution spotted thereon to measurement conditions to analyze the samples spotted thereon, attaching evaporation preventing members to the element having the reagent solution thereon to prevent evaporation of moisture from the thus spotted portions, and each reaction zone of the analytical element being formed, such that the spotted reagent solutions do not permeate into adjacent reaction zones and the reactions proceed independently at each reaction zones.

5,443,989
METHOD FOR ASSESSING FETAL LUNG MATURITY USING AMNIOTIC FLUID SAMPLES
Juan G. Alvarez, Boston, and Jack Ludmir, Chestnut Hill, both of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.
Filed Oct. 25, 1993, Ser. No. 140,569
Int. Cl.[6] G01N *33/92*
U.S. Cl. 436—71 7 Claims

1. A method for assessing lung maturity of a fetus in a pregnant woman prior to labor, said method comprising tile steps of:

providing a sample of an amniotic fluid surrounding a fetus in a pregnant woman, said amniotic sample containing an aliquot of lung surfactant phosphoglycerides then present within the lungs of the fetus, wherein at least one of the phosphoglycerides is dipalmitoyl phosphatidyl choline (DPPC);

combining said amniotic fluid sample with at least one phospholipase as an enzyme reaction mixture for enzymatic cleavage of polar head moieties, of such lurig surfactant phosphoglycerides as are present in said sample and to release a plurality of diacylglycerols as enzyme reaction products, wherein at least one of said released diacylglycerols is dipalmatoyl glycerol (DPG);

adding at least one organic solvent to said enzyme reaction mixture for organic solvent extraction and fluid phase separation of said released plurality of diacylglycerols from the remainder of said enzyme reaction mixture, said extracted plurality of diacylglycerols residing within an isolatable organic solvent layer;

isolating and drying said organic solvent layer to yield an organic residue; and

determining the quantity of DPG, in said organic residue using high performance thin layer chromatography detection means, wherein for a normal pregnant women, a value of less than 8 μg DPG/mL amniotic fluid is indicative of an immature fetal lung, a value of between 8 to 10 μg DPG/mL amniotic fluid is indicative of borderline maturity, and a value of greater than 10 μg DPG/mL amniotic fluid is indicative of a mature fetal lung; and for a diabetic pregnant women, a value of less than 14 μg DPG/mL amniotic fluid is indicative of an immature fetal lung, a value of between 14 to 16 μg DPG/mL amniotic fluid is indicative of borderline maturity, and a value of greater than 16 μg DPG/mL amniotic fluid is indicative of a mature fetal lung.

5,443,990
COMPOSITION FOR MEASURING IONIC STRENGTH OR SPECIFIC GRAVITY OF LIQUID SPECIMEN AND TEST PIECE PREPARED FROM SAID COMPOSITION
Mieko Harako, Ichikawa, Japan, assignor to Eiken Kagaku Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP92/00459, § 371 Date Oct. 1, 1993, § 102(e) Date Oct. 1, 1993, PCT Pub. No. WO92/18863, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 122,570
Claims priority, application Japan, Apr. 11, 1991, 3-106735
Int. Cl.[6] G01N *33/52, 33/48*
U.S. Cl. 436—74 6 Claims

1. A method for measuring ionic strength or specific gravity of a liquid specimen making use of a relationship between (a) at least one of the ionic strength and the specific gravity and (b) the color of a solution containing an anionic ion-associable reagent and a cationic ion-associable reagent, wherein the color is based on the ion-association of the reagents, which is influenced by salts of said liquid specimen, said method comprising the steps of:

preparing a solution of a composition comprising an anionic ion-associable test reagent and a cationic ion-associable reagent, and optionally containing a pH buffer agent;

adding a liquid specimen to be measured to said solution;

measuring absorbance of said solution; and

calculating the ionic strength or the specific gravity of said liquid specimen by using said relationship.

5,443,991
METHOD FOR THE DETERMINATION OF DISSOLVED CARBON IN WATER
Richard D. Godec, Eric; Paul K. Kosenka, Estes Park, and Richard Hutte, Boulder, all of Colo., assignors to Sievers Instruments, Inc., Boulder, Colo.
Division of Ser. No. 487,720, Mar. 2, 1990, Pat. No. 5,132,094.
This application Apr. 16, 1992, Ser. No. 869,308
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—145 11 Claims

1. A process for the measurement of carbon compounds, comprising: acidifying an aqueous sample in a sample stream containing carbon dioxide, bicarbonate, carbonate and organic carbon, to convert bicarbonate and carbonate into carbon dioxide; removing the carbon dioxide from said sample stream in an inorganic carbon removal module;

converting organic carbon in said sample stream into carbon dioxide in an oxidation reactor; and

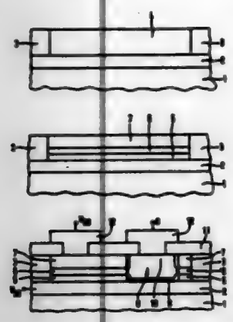
passing the sample stream containing carbon dioxide into carbon dioxide detection means including a carbon dioxide permeable membrane with two sides, having the sample stream on one side and deionized water on the other side, whereby carbon dioxide passes through the membrane from the sample stream to the deionized water to form water with carbon dioxide in solution; and measuring the conductivity and temperature of the dioxide concentration in the water with carbon dioxide in solution.

5,443,992
METHOD FOR MANUFACTURING AN INTEGRATED CIRCUIT HAVING AT LEAST ONE MOS TRANSISTOR
Lothar Risch, Neubiberg; Thomas Vogelsang; Franz Hofmann, both of Munich, and Karl Hofmann, Wessiggen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 1, 1994, Ser. No. 332,733
Claims priority, application Germany, Dec. 1, 1993, 43 40 947.9
Int. Cl.[6] H01L *21/265, 21/302, 21/76, 21/20*
U.S. Cl. 437—29 10 Claims

1. Method of manufacturing a semiconductor device comprising the steps of:

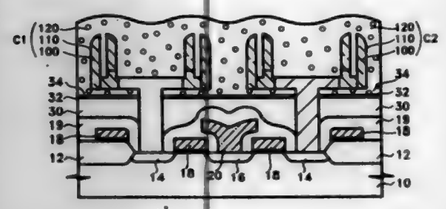
producing a source terminal region on a substrate;

applying a first insulating layer on the source terminal region;
providing a first opening in the first insulating layer that exposes a surface of the source terminal region;
applying a first doped layer on the surface of the source terminal region;
applying a second doped layer on the first doped layer;
applying a third doped layer on the second doped layer;
providing a second opening located in the third doped layer which extends at least into the first doped layer;



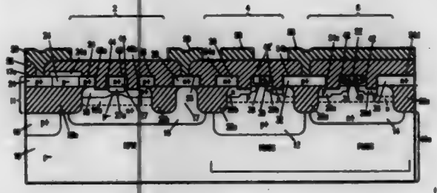
applying a dielectric to an inside surface of the second opening;
filling the second opening with doped polysilicon to form a gate electrode;
applying a second insulating layer to the doped polysilicon;
providing an electrical connection to the third doped layer;
providing an electrical connection to the gate electrode; and
providing an electrical connection to the source terminal region.

5,443,993
METHOD FOR MANUFACTURING A CAPACITOR FOR A SEMICONDUCTOR DEVICE
Won-mo Park, and Jong-jin Lee, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 23, 1994, Ser. No. 347,246
Claims priority, application Rep. of Korea, Nov. 24, 1993, 93-25136
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **10 Claims**



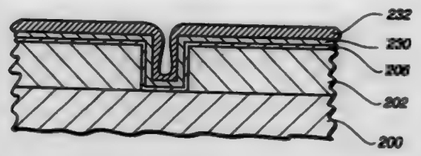
1. A method for manufacturing at least one capacitor for a semiconductor device including a semiconductor substrate having a multi-layer gate and insulation structure formed thereon, comprising the steps of:
forming a first conductive layer on the gate and insulation structure, said first conductive layer including a portion extending through a contact hole provided in the gate and insulation structure to thereby electrically connect said first conductive layer with an active region of a transistor formed in the substrate;
forming a first pattern by patterning said first conductive layer;
forming a second conductive layer on said first pattern and exposed portions of the gate and insulation structure;
forming a first material layer on said second conductive layer;
forming a spacer on a sidewall of said second conductive layer by anisotropically etching said first material layer;
forming a second pattern by etching said second conductive layer and said first pattern using said spacer as an etching mask;
forming a third conductive layer on said second pattern and exposed portions of the gate and insulation structure;
forming a cylindrical storage electrode by anisotropically etching said third conductive layer; and,
removing said spacer.

5,443,994
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING A BOROSILICATE GLASS SPACER
Alan G. Solheim, Puyallup, assignor to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 73,645, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 774,123, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 503,346, Apr. 2, 1990, abandoned. This application Sep. 23, 1994, Ser. No. 311,837
Int. Cl.[6] H01L *21/225*
U.S. Cl. 437—164 **6 Claims**



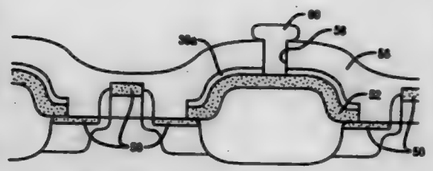
1. A method for forming an extrinsic base region in a bipolar transistor comprising:
forming an intrinsic base region in a substrate;
providing a plurality of polysilicon regions on the surface of the substrate, each polysilicon region having at least a first sidewall portion, wherein one of the polysilicon regions comprises an emitter contact disposed over the intrinsic base region and another one of the polysilicon regions comprises a base contact spaced apart from the emitter contact;
doping the base contact to the same conductivity type as the intrinsic base region;
depositing a borosilicate glass layer on at least said emitter contact;
etching selected portions of said borosilicate glass layer to provide a borosilicate glass sidewall spacer adjacent a sidewall of said emitter contact facing a sidewall of said base contact, wherein a gap exists between said sidewall spacer and said sidewall of said base contact;
annealing said substrate, polysilicon base contact and sidewall spacer following said steps of depositing and etching to cause diffusion of dopants from said borosilicate glass spacer and said polysilicon base contact for forming said extrinsic base without a link implant, wherein substantially all diffusion of said dopants from said borosilicate glass spacer takes place after said step of etching.

5,443,995
METHOD FOR METALLIZING A SEMICONDUCTOR WAFER
Jaim Nulman, Palo Alto, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Sep. 17, 1993, Ser. No. 122,851
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—197 **18 Claims**



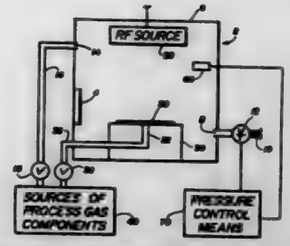
1. A method of simultaneously metallizing the surface of a semiconductor wafer and filling contact-holes, comprising the steps in the order listed of:
providing a semiconductor wafer;
forming an insulating layer over the semiconductor wafer;
forming a contact-hole through the insulating layer;
depositing a layer of alloy including aluminum and a refractory metal, the layer of alloy being deposited in a single step from a single target formed of both the aluminum and the refractory metal, the deposition being continued for a time period such that only a portion of the contact-hole is filled with the layer of alloy; and
depositing a layer of aluminum over the layer of alloy including the layer of alloy present in the hole substantially filling the contact-hole thereby.

5,443,996
PROCESS FOR FORMING TITANIUM SILICIDE LOCAL INTERCONNECT
Steven S. Lee; Kenneth P. Fuchs, and Gayle W. Miller, all of Colorado Springs, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio and Hyundai Electronics America, Milpitas, Calif.
Filed May 14, 1990, Ser. No. 522,775
Int. Cl.[6] H01L *21/768, 21/44*
U.S. Cl. 437—200 **11 Claims**



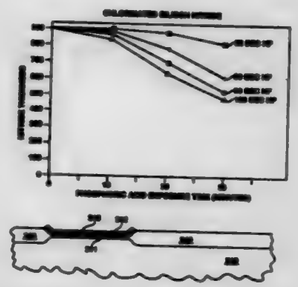
1. A process for forming a metal silicide local interconnect between contact points separated by a dielectric insulator on an integrated circuit comprising:
forming a first layer of metal on said insulator;
forming a layer of silicon on said metal;
masking and etching said silicon layer to form a silicon strip connecting said contact points;
forming an overlying second layer of metal;
heating said metal and silicon to form a nonsilicidized metal over a strip of metal silicide;
removing said nonsilicidized metal; and
reheating said metal silicide strip after removing said nonsilicidized metal.

5,443,997
METHOD FOR TRANSFERRING HEAT TO OR FROM A SEMICONDUCTOR WAFER USING A PORTION OF A PROCESS GAS
Chiu-Wing Tsui, 613 Azevedo Ct., Santa Clara, Calif. 95051, and Richard H. Crockett, 2783 Creekside Dr., San Jose, Calif. 95132
Continuation of Ser. No. 789,396, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 734,027, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 348,527, May 8, 1989, abandoned. This application May 13, 1992, Ser. No. 884,456
Int. Cl.[6] H01L *21/00, 21/02;* G03F *7/26*
U.S. Cl. 437—225 **19 Claims**



1. A method for transferring heat between a semiconductor wafer and a thermally conductive surface within a reaction chamber of a semiconductor processing apparatus comprising:
directing a thermally conductive gas selected from the group consisting of 1–4 carbon fluorinated hydrocarbons into contact with a rear surface of said wafer through one or more openings in said thermally conductive surface to transfer heat between said wafer and said thermally conductive surface; and
releasing said thermally conductive gas into said reaction chamber.

5,443,998
METHOD OF FORMING A CHLORINATED SILICON NITRIDE BARRIER LAYER
George R. Meyer, Fremont, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.
Continuation-in-part of Ser. No. 681,411, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 388,169, Aug. 1, 1989, abandoned. This application May 4, 1992, Ser. No. 878,051
Int. Cl.[6] H01L *21/02*
U.S. Cl. 437—241 **17 Claims**



1. A method of forming a patterned silicon nitride layer over a semiconductor substrate comprising the steps of:
depositing a silicon nitride layer over the substrate;
exposing the silicon nitride layer to an ambient including chlorine at an elevated temperature for a period of time to

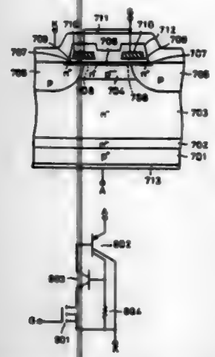
form a chlorinated silicon nitride barrier layer that is resistant to attack by at least one reactive compound, wherein the step of exposing is performed before forming a photosensitive layer over the silicon nitride layer;
forming the photosensitive layer over the chlorinated silicon nitride barrier layer;
patterning the photosensitive layer to form a patterned photosensitive layer having an opening exposing a portion of the chlorinated silicon nitride barrier layer;
dry etching the exposed portion of the chlorinated silicon nitride barrier layer to form the patterned silicon nitride layer;
removing the photosensitive layer;
performing a thermal oxidation; and,
removing the patterned silicon nitride layer after the step of performing the thermal oxidation.

5,443,999

METHOD OF FABRICATING A FLASH CONTROL DEVICE WHICH USES CASCADE-CONNECTED THYRISTOR AND MOSFET

Akio Uenishi; Hiroshi Yamaguchi, and Yasuaki Fukumochi, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 911,670, Jul. 9, 1992, Pat. No. 5,379,089, which is a division of Ser. No. 663,431, Mar. 1, 1991, Pat. No. 5,151,762. This application Sep. 1, 1994, Ser. No. 298,955
Claims priority, application Japan, Apr. 12, 1990, 2-98021; Apr. 26, 1990, 2-111119; Nov. 2, 1990, 2-298668
Int. Cl.[6] H01L *49/00*
U.S. Cl. 437—6 **6 Claims**



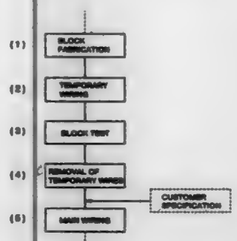
1. A method of fabricating a semiconductor device, comprising the steps of:
preparing a first conductivity type first semiconductor layer having first and second major surfaces;
forming a second conductivity type second semiconductor layer on said first major surface of said first semiconductor layer;
selectively forming a first conductivity type first semiconductor region of relatively low first impurity concentration in a surface of said second semiconductor layer;
selectively forming a first conductivity type second semiconductor region of relatively high second impurity concentration in the surface of said second semiconductor layer adjacently to said first semiconductor region;
forming a second conductivity type third semiconductor region in at least a portion of a surface of said first semiconductor region;
selectively forming a second conductivity type fourth semiconductor region in a surface of said second semiconductor region at a distance from said first semiconductor region,
surface portions of said first and second semiconductor regions between said third and fourth semiconductor regions being defined as a channel;
forming a gate insulation film on said channel;
forming a gate electrode on said gate insulation film;
forming a first main electrode to spread on said second and fourth semiconductor regions; and
forming a second main electrode on said second major surface of said first semiconductor layer, wherein
said first impurity concentration is so set that said first semiconductor region is completely depleted when a working voltage is applied across said first and second main electrodes in an off state of said semiconductor device, and
said second impurity concentration is so set that said channel has a threshold voltage of a predetermined value in an enhancement mode.

5,444,000

METHOD OF FABRICATING INTEGRATED CIRCUIT WITH IMPROVED YIELD RATE

Norio Ohkubo, Machida; Makoto Suzuki, Niiza, both of Japan; Katsuro Sasaki, Burlingame, Calif., and Yoshio Homma, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,159
Claims priority, application Japan, Mar. 5, 1993, 5-044876; Sep. 7, 1993, 5-221497
Int. Cl.[6] H01L *21/66*; G01R *31/26*
U.S. Cl. 437—8 **25 Claims**



17. A method of fabricating semiconductor integrated circuits, comprising:
the first step of connecting at least a first conductor wire to a plurality of circuit blocks and testing said circuit blocks thereby to discriminate normal circuit blocks from defective circuit blocks, wherein said first conductor wire is electrically connected to wiring electrodes of semiconductor elements of the semiconductor integrated circuits, a first insulating film being provided between the wiring electrodes and first conductor wire;
the second step of removing said first conductor wire both from defective circuit blocks and from normal circuit blocks; and
the third step of removing the first insulating film; and
after the third step of removing the first insulating film, the fourth step of forming at least a second conductor wire for interconnecting said normal circuit blocks.

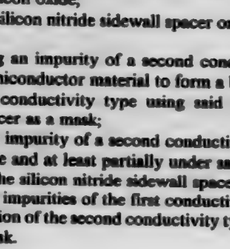
5,444,001

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE READILY CAPABLE OF REMOVING CONTAMINANTS FROM A SILICON SUBSTRATE

Michiko Tokuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 172,248
Claims priority, application Japan, Dec. 25, 1992, 4-347134
Int. Cl.[6] H01L *21/306*
U.S. Cl. 437—10 **6 Claims**

1. A method of manufacturing a semiconductor device from a silicon substrate, said silicon substrate having a principal surface for use in forming a circuit element, said method comprising the steps of:
selectively forming a selective oxidation film at said principal surface of the silicon substrate, said selective oxidation film defining a particular area for formation of said circuit element;



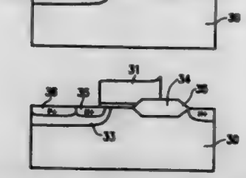
oxidizing said principal surface of the silicon substrate to produce an oxidation film;
forming a polycrystalline silicon film on said oxidation film; and
deleting said oxidation film and said polycrystalline silicon film.

5,444,002

METHOD OF FABRICATING A SHORT-CHANNEL DMOS TRANSISTOR WITH REMOVABLE SIDEWALL SPACERS

Sheng-Hsing Yang, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Dec. 22, 1993, Ser. No. 172,616
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—27 **2 Claims**



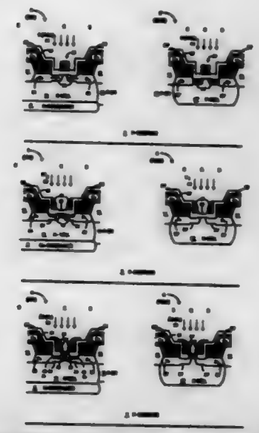
1. A method of making a lateral double-diffused metal-oxide-semiconductor transistor comprising the steps of:
(a) forming a gate on a substrate of semiconductor material of a first conductivity type, wherein said substrate has a region of silicon oxide formed therein and wherein said gate is formed over said substrate of semiconductor material of a first conductivity type and over a portion of said region of silicon oxide;
(b) forming a silicon nitride sidewall spacer on a sidewall of said gate;
(c) introducing an impurity of a second conductivity type into said semiconductor material to form a base region of the second conductivity type using said gate and the sidewall spacer as a mask;
(d) driving the impurity of a second conductivity type into said substrate and at least partially under said gate;
(e) removing the silicon nitride sidewall spacer; and
(f) introducing impurities of the first conductivity type into said base region of the second conductivity type using said gate as a mask.

5,444,003

METHOD AND STRUCTURE FOR CREATING A SELF-ALIGNED BICMOS-COMPATIBLE BIPOLAR TRANSISTOR WITH A LATERALLY GRADED EMITTER STRUCTURE

Chung S. Wang, Fremont; Ying-Tsung Loh, and Ho-Yuan Yu, all of Saratoga, Calif., assignors to VLSI Technology, Inc., San Jose

Filed Jun. 23, 1993, Ser. No. 81,761
Int. Cl.[6] H01L *21/265, 21/70, 27/00, 21/255*
U.S. Cl. 437—31 **26 Claims**



1. A method of fabricating on a substrate a bipolar transistor having reduced hot carrier generation and self-aligning emitter and base contacts, the method comprising the following steps:
(a) forming, at least above a portion of a region where a base will be formed on the substrate, a polysilicon conductor doped with a dopant of a first conductivity type
(b) following step (a), implanting a dopant of a first conductivity type into substrate regions overlying regions where lateral emitter regions will be formed adjacent said portion;
(c) driving-in said dopant of a first conductivity type from said polysilicon conductor into said region where said base will be formed, and driving-in said dopant of a first conductivity type from said substrate into said regions where said lateral emitter regions will be formed, forming thereby an extrinsic base region and a base-link region;
(d) implanting a dopant of a second conductivity type into said regions where a said lateral emitter regions will be formed to form said lateral emitter regions, wherein said dopant of a second conductivity type is of opposite conductivity type from said dopant of a first conductivity type;
(e) forming spaced-apart side-walled spacers overlying at least a portion of said lateral emitter regions, said side-walled spacers being spaced-apart by a distance defining a region where an active emitter will be formed bounded laterally by said lateral emitter regions;
(f) following step (e), performing a second implantation step to implant a dopant of a first conductivity type into a region of said substrate laterally bounded by said spaced-apart side-walled spacers, forming thereby an intrinsic base region;
(g) implanting into said region where said active emitter will be formed a dopant of the second conductivity type having a higher impurity concentration than has said dopant of the first conductivity type implanted at step (b), forming thereby said active emitter region of higher dopant impurity than said lateral emitter regions;
(h) providing an external base contact to said bipolar transis-

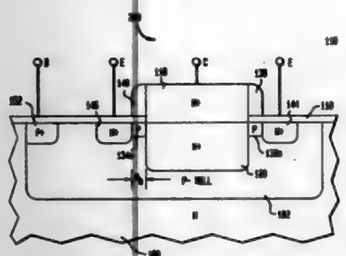
tor, said contact being coupled to said polysilicon conductor overlying said extrinsic base region; and
(i) providing an external emitter contact to said active emitter region of said bipolar transistor;
wherein said bipolar transistor has a laterally graded emitter that reduces generation of hot carriers, and wherein said spaced-apart side-walled spacers permit self-alignment of said external emitter contact and self-alignment of said external base contact to said bipolar transistor.

5,444,004

CMOS PROCESS COMPATIBLE SELF-ALIGNMENT LATERAL BIPOLAR JUNCTION TRANSISTOR

Wen-Yueh Jang, Hsin Chu, Taiwan, assignor to Winbond Electronics Corporation, Hsin Chu, Taiwan

Filed Apr. 13, 1994, Ser. No. 227,358
Int. Cl.[6] H01L *21/331*
U.S. Cl. 437—31 **5 Claims**



1. A process for manufacturing a lateral bipolar transistor which is CMOS process compatible comprising the steps of:
forming a collector region by:
forming a heavily doped polysilicon region of a second conductivity type, on a portion of a lightly doped first region of a first conductivity type, and
forming a heavily doped second collector region of said second conductivity type by thermally diffusing an impurity from said polysilicon region into said first region, and
forming an emitter region and a base region by:
forming a third region of said first conductivity type adjacent to said second collector region,
covering a portion of a surface of said third region with an oxide region, said covered portion of said third region delineating a width of said base region, and
forming a heavily doped fourth emitter region of said second conductivity type adjacent to said base region by implanting ions into a surface portion of said third region other than said surface portion covered by said oxide region and adjacent to said covered base region.

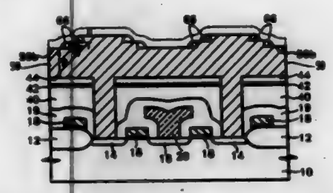
5,444,005

METHOD FOR MANUFACTURING A CAPACITOR OF A SEMICONDUCTOR MEMORY DEVICE

Yun-gi Kim, Wonju; Fu-sung Kim, Incheon; Jin-seok Choi, Suwon, and Joong-ho Park, Kangnam-gu, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 19, 1994, Ser. No. 246,277
Claims priority, application Rep. of Korea, May 19, 1993, 93-9579
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—52 **23 Claims**

1. A method for manufacturing a capacitor of a semiconductor memory device, comprising the steps of:
forming a conductive layer on a semiconductor substrate;
forming a photoresist pattern on said conductive layer;
etching said conductive layer, using said photoresist pattern as a mask, to form a first step-portion in said conductive layer;
forming a first spacer on a sidewall of said photoresist pattern and said first step-portion;
etching said conductive layer, using said first spacer as a mask, to form a second step-portion in said conductive layer;



removing said photoresist pattern and said first spacer to form a resultant structure;
forming a first material layer on said resultant structure;
etching said first material layer to form a second spacer on a sidewall of said first and second step-portions;
etching said conductive layer, using said second spacer as a mask, to form a storage electrode of a capacitor; and
removing said second spacer.

5,444,006

METHOD OF MANUFACTURING A CAPACITOR IN A SEMICONDUCTOR MEMORY DEVICE

Jeong-Su Han, and Seung-Hee Lee, both of Cheongju-si, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Nov. 5, 1993, Ser. No. 147,634
Claims priority, application Rep. of Korea, Nov. 7, 1992, 92-20848
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **16 Claims**



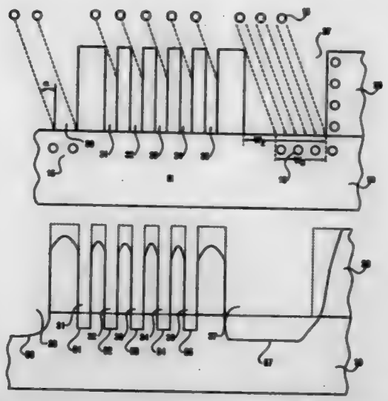
1. A method of manufacturing a capacitor in a semiconductor device, comprising the steps of:
depositing a doped polysilicon layer on a semiconductor substrate to form a storage node electrode;
oxidizing the polysilicon storage node electrode to form a silicon oxide layer;
depositing a tantalum layer and a tantalum silicide layer on the silicon oxide layer in the cited order;
annealing and oxidizing said tantalum and tantalum silicide layers to form a silicon oxide-tantalum oxide-silicon oxide stacked structure on said storage node electrode; and
forming a plate electrode on the stacked structure.

5,444,007

FORMATION OF TRENCHES HAVING DIFFERENT PROFILES

Masakatsu Tsuchiaki, Fishkill, N.Y., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 3, 1994, Ser. No. 283,162
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—35 **20 Claims**



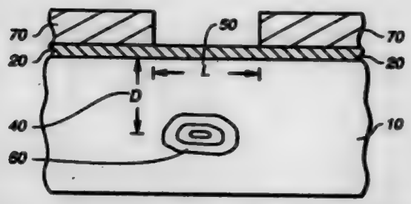
1. A method of forming trenches in a surface of a material, comprising the steps of:
forming a mask material pattern on said material, wherein the mask material pattern has first and second windows;
bombarding a surface of said material with ions at a predetermined angular orientation with respect to the material surface such that said ions impinge on said material through said first window but not through said second window; and
etching said material to form a first trench having a first profile in a region of said first window and a second trench having a second profile in a region of said second window, said first profile being different from said second profile as a consequence of ion impingement in the region of said first window.

5,444,008

HIGH-PERFORMANCE PUNCHTHROUGH IMPLANT METHOD FOR MOS/VLSI

Yu P. Han, Dallas, Tex., and Samuel J. S. Nagalingam, Los Gatos, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 24, 1993, Ser. No. 126,248
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—45 **11 Claims**



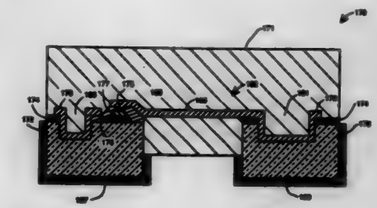
1. A method of making a high performance metal-oxide-semiconductor field-effect transistor device comprising the steps of:
a) providing a p-doped silicon substrate for the device;
b) forming a patterned layer of silicon dioxide on the surface of said substrate to serve as gate oxide;
c) placing a positive photoresist layer on the surface of the device
d) by means of image reversal photolithography opening an aperture in said photoresist, said aperture defining a gate region, wherein the step of opening the aperture comprises the steps of:
(i) placing a reverse gate mask over said photoresist;
(ii) exposing said photoresist to UV light;
(iii) neutralizing the photoproducts in the exposed region of said photoresist;
(iv) flooding entirely said photoresist with UV light; and
(v) developing said photoresist to remove the portion of the photoresist exposed in step (iv);
e) implanting a p-type dopant in said substrate below said oxide layer in said gate region; and
f) removing residual photoresist.

5,444,009

FABRICATING A SEMICONDUCTOR WITH AN INSULATIVE COATING

John G. Richards; Hector Flores, both of San Jose, and Wendell B. Sander, Los Gatos, all of Calif., assignors to Micro Technology Partners, San Jose, Calif.

Division of Ser. No. 889,832, May 27, 1992, Pat. No. 5,403,729.
This application Dec. 23, 1994, Ser. No. 363,733
Int. Cl.[6] H01L *29/00*
U.S. Cl. 437—51 **9 Claims**



1. A method of fabricating an electrical apparatus, comprising the steps of:
forming a mesa comprised of a layer of a first type of semiconductor material and a layer of second type of semiconductor material, wherein the mesa resides on a top of a substrate of a wafer of a third type of semiconductor material;
forming a first well in the substrate of the wafer, wherein the first well includes a bottom;
covering the mesa, the top of the substrate, and the first well with a first insulating layer;
forming a first opening through the first insulating layer to the top of mesa;
forming a second opening through the first insulating layer to the bottom of the first well;
forming a metallic interconnecting structure that electrically couples the bottom of the first well to the top of the mesa over the first insulating layer between the mesa and the first well;
removing the first insulating layer between the mesa and the first well to expose a portion of the substrate;
forming a second well in the exposed portion of the substrate between the mesa and the first well, wherein the second well resides below the metallic interconnecting structure, wherein the second well is deeper than the first well;
applying a metal layer to a bottom of the substrate residing below the mesa and the first well;
covering the metallic interconnecting structure, the first insulating layer, and the first and second wells with a second insulating layer, wherein the first well and the second well are filled with the second insulating layer,

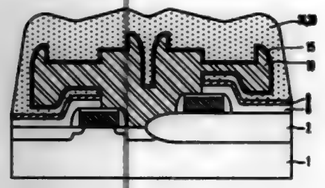
wherein the metallic interconnecting structure is sandwiched by the second insulating layer; and
removing the third type of semiconductor material residing below a bottom of the second well in order to form a first discrete region of semiconductor material that includes the first well and a second discrete region of semiconductor material that includes the mesa, wherein the metal layer still resides on a bottom of the first discrete region and a bottom of the second discrete region.

5,444,010

METHOD FOR FORMING A STACKED CAPACITOR IN A SEMICONDUCTOR DEVICE

Sang Hoon Park, Kyunggi-do, and Ho Young Choi, Seoul, both of Rep. of Korea, assignors to Hyusdai Electronics Industries, Ltd., Kyunggi-do, Rep. of Korea

Filed May 13, 1994, Ser. No. 242,398
Claims priority, application Rep. of Korea, May 13, 1993, 93-8193
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **5 Claims**



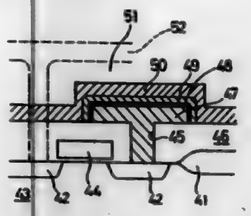
1. A method for forming a stacked capacitor in a semiconductor device, comprising the steps of:
forming a field oxide layer on a silicon substrate;
sequentially forming a gate oxide layer, a gate electrode layer and an insulating layer on said silicon substrate;
etching said gate oxide layer, said gate electrode layer and said insulating layer to form a gate electrode;
forming an impurity region on said silicon substrate;
forming oxide spacers on exposed areas of said gate electrode side walls;
sequentially forming a first oxide layer, a nitride layer and a second oxide layer on said silicon substrate including on said gate electrode and said oxide spacers;
etching a portion of said first oxide layer, nitride layer and second oxide layer using a first mask to expose a portion of said impurity region, thereby forming a contact hole;
depositing a first polysilicon layer on said second oxide layer and said contact hole, and planarizing said first polysilicon layer;
etching portions of said first polysilicon layer using a second mask to a depth that does not expose said second oxide layer;
sequentially forming a third oxide layer and a photoresist on said first polysilicon layer, and then patterning said photoresist to expose portions of said third oxide layer;
sequentially etching exposed areas of said third oxide layer and said first polysilicon layer to expose portions of said second oxide layer and said first polysilicon and forming recesses adjacent said first polysilicon layer and in said first polysilicon;
removing said photoresist and then depositing a second polysilicon layer on said third oxide layer including on said recesses;
etching said second polysilicon layer to form a polysilicon spacer on each inner wall of said recesses;
removing said third oxide layer and said second oxide layer to form a charge storage electrode;
forming a capacitor dielectric layer on the surface of said charge storage electrode; and
forming a plate electrode on the surface of said capacitor dielectric layer.

5,444,011

METHOD FOR FORMING A THIN FILM CAPACITIVE MEMORY DEIVCE WITH A HIGH DIELECTRIC CONSTANT

Kouji Taniguchi, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 881,633, May 12, 1992, Pat. No. 5,365,096. This application Jan. 3, 1994, Ser. No. 253,296
Claims priority, application Japan, Oct. 18, 1991, 3-271410
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—60 **7 Claims**



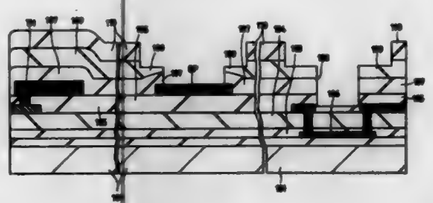
1. A method for manufacturing a semiconductor device comprising the steps of:
(a) forming a layer of polysilicon on a semiconductor substrate;
(b) forming a lower electrode of yttrium or hafnium on the polysilicon layer;
(c) forming a dielectric insulating film of a metal oxide on the lower electrode;
(d) annealing the dielectric insulating film such that at thinner portions of the dielectric insulating film, the lower electrode is oxidized more heavily than at thicker portions of the dielectric insulating film; and
(e) forming an upper electrode on the dielectric insulating film.

5,444,012

METHOD FOR MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A FUSE ELEMENT

Keiichi Yoshizumi, Kokubunji; Kazushi Fukuda, Kodaira; Seiichi Ariga, Ohme; Shuji Ikeda, Koganei; Makoto Saeki, Ohme; Kiyoshi Nagai, Kodaira; Soichiro Hashiba, Nagoya; Shinji Nishihara, Koganei, and Fumiyuki Kanai, Hoya, all of Japan, assignors to Hitachi, Ltd. and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 278,073
Claims priority, application Japan, Jul. 20, 1993, 5-178676
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—60 **12 Claims**



1. A method for manufacturing a semiconductor integrated circuit device, comprising steps of:

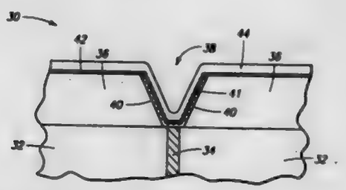
(a) providing a semiconductor substrate having a main surface, with a fuse element on said main surface;
(b) forming an interlayer insulating film over said fuse element so as to cover said fuse element and said main surface;
(c) forming a wiring line having a bonding pad forming region on said interlayer insulating film;
(d) forming a first insulating film on said wiring line and said interlayer insulating film so as to cover said main surface;
(e) selectively removing said first insulating film on said bonding pad forming region by etching;
(f) forming a second insulating film on said bonding pad forming region and said first insulating film so as to cover said main surface;
(g) selectively removing said second insulating film on said bonding pad forming region and said fuse element so as to expose said bonding pad forming region of said wiring line and so as to form an aperture over said fuse element by etching;
(h) conducting an electrical test while applying a probe to said bonding pad forming region; and
(i) cutting the fuse element under said aperture in accordance with the results of said electrical test.

5,444,013

METHOD OF FORMING A CAPACITOR

Salman Akram, Boise, Id.; Charles Turner, Chandler, Ariz., and Alan Lauluna, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 2, 1994, Ser. No. 333,262
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **28 Claims**



1. A method of forming a capacitor comprising the following
steps:
providing a substrate;
etching into the substrate to provide a depression in the substrate, the depression having a sidewall which is angled from vertical;
providing a conformal layer of hemispherical grain polysilicon within the depression and over the angled sidewall, the layer of hemispherical grain polysilicon less than completely filling the depression; and
ion implanting the hemispherical grain polysilicon layer with a conductivity enhancing impurity.

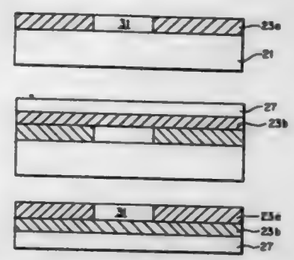
5,444,014

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE

Byung-Ryul Ryun; Tae-Hyeon Han; Soo-Min Lee; Deok-Ho Cho; Seong-Hearn Lee, and Jin-Young Kang, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute and Korea Telecommunication Authority, both of Rep. of Korea

Filed Dec. 16, 1994, Ser. No. 357,021
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—62 **5 Claims**

1. A method for fabricating a semiconductor device, comprising the steps of:
forming a first insulating layer on a single crystal silicon substrate;
patterning the first insulating layer to form an opening;
growing a single crystal silicon in the opening to form active and inactive regions;
polishing the active region using the first insulating layer as a polishing stopper to form a planarized surface;



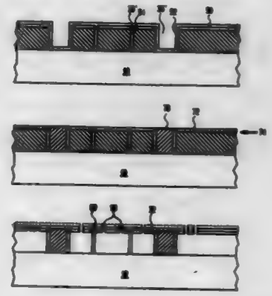
depositing a second insulating layer on the planarized surface;
bonding a bonding substrate to the second insulating layer; and
polishing the silicon substrate using the first insulating layer as a stopper up to a surface of the active region.

5,444,015

LARCE SCALE IC PERSONALIZATION METHOD EMPLOYING AIR DIELECTRIC STRUCTURE FOR EXTENDED CONDUCTORS

John M. Aitken, Mahopac; Klaus D. Beyer, Poughkeepsie; Billy L. Crowder, Putnam Valley, and Stephen E. Greco, Lagrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

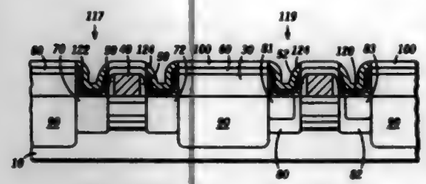
Division of Ser. No. 990,678, Dec. 15, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,685
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—182 **5 Claims**



1. A method of forming an air dielectric structure including the steps of
forming a layer of removable material on a surface,
patterning said layer of removable material to form relatively narrow wall openings and relatively wide stud openings,
conformally depositing an insulating material on said removable material to cover the interior of said relatively wide stud openings and to fill said relatively narrow wall openings,
directionally etching said insulating material deposited by said conformally depositing step,
filling resulting remaining volume in said relatively wide stud openings with conductive material,

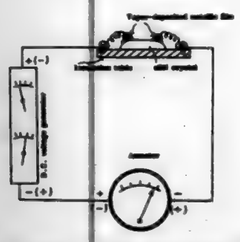
forming a patterned layer over said layer of removable material including said relatively narrow wall openings which have been filled by said conformally depositing step and said filling step, and
removing said removable material.

5,444,016
METHOD OF MAKING OHMIC CONTACTS TO A COMPLEMENTARY III-V SEMICONDUCTOR DEVICE
Jonathan K. Abrokwah, 1963 E. Ranch Rd., Tempe, Ariz. 85284; Jeun-Hwa Huang, 1426 W. Tara Dr., Gilbert, Ariz. 85234, and Jasshin Cho, 507 E. Page Ave., Gilbert, Ariz. 85234
Filed Jun. 25, 1993, Ser. No. 83,751
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—184 **6 Claims**



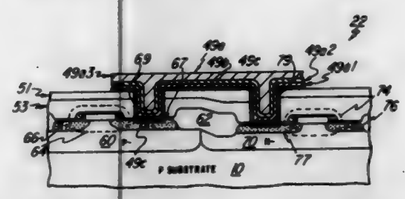
1. A method of making ohmic contacts to a complementary semiconductor device comprising the steps of:
forming an N-type region in a gallium arsenide epitaxial structure by means of a single doping step;
forming a P-type region in the gallium arsenide epitaxial structure;
heavily doping the P-type region by co-implanting beryllium and a dopant selected from the group consisting of fluorine, arsenic, phosphorus, nitrogen and krypton, to create a sheet resistance in the range of 250–400 ohms per square;
activating the N-type region and P-type region by thermal annealing;
depositing nickel on the N-type region and the P-type region;
depositing germanium on the deposited nickel; and
depositing tungsten on the deposited germanium.

5,444,017
METHOD OF MAKING CBN SEMICONDUCTOR DEVICE HAVING AN OHMIC ELECTRODE
Koh Era, Tsukuba; Yoshiyuki Sada, Koganei; Satoshi Agawa, Omiya, and Osamu Mishima, Tsukuba, all of Japan, assignors to National Institute for Research in Inorganic Materials, Tsukuba, Japan
Division of Ser. No. 124,754, Sep. 22, 1993, Pat. No. 5,414,279. This application Sep. 14, 1994, Ser. No. 305,658
Claims priority, application Japan, Sep. 28, 1992, 4-282444
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—184 **11 Claims**



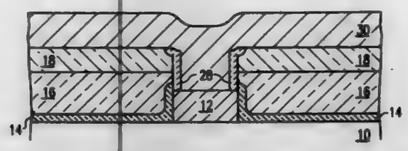
9. A method of making a cBN semiconductor device of the pn junction type having p and n type doped regions and ohmic electrodes deposited thereon comprising depositing platinum directly onto the p-portion of the pn-junction, and depositing molybdenum directly onto the n-portion of the pn-junction and annealing said device at a temperature of 300° C. to 1100° C. in an inert atmosphere.

5,444,018
METALLIZATION PROCESS FOR A SEMICONDUCTOR DEVICE
Dennis J. Yost; Thomas D. Bonifield, both of Dallas, and Roc Blumenthal, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 925,228, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 708,593, May 31, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,863
Int. Cl.[6] H01L *21/441*
U.S. Cl. 437—190 **5 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:
providing a silicon substrate;
forming a device region at the surface of said substrate;
forming an insulating layer overlying said surface;
forming an opening through said insulating layer to expose a portion of said device region;
sputter depositing a film consisting only of titanium into the opening;
annealing said titanium film in nitrogen to form silicide & nitride, and then chemical vapor depositing a film consisting essentially of tungsten into the opening, with silane reduction during said tungsten deposition, to prevent the tungsten from attacking the TiN;
depositing a second tungsten film by hydrogen reduction to conformally fill the opening; and
depositing a third tungsten film by hydrogen reduction to smooth the tungsten layers.

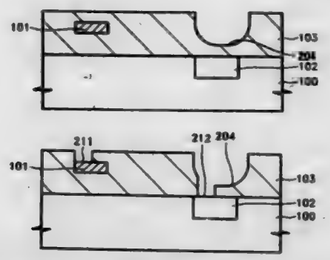
5,444,019
SEMICONDUCTOR CONTACT VIA STRUCTURE AND METHOD
Fusen E. Chen; Girish A. Dixit, both of Dallas, and Che-Chia Wei, Plano County, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Division of Ser. No. 879,190, May 6, 1992, Pat. No. 5,317,192. This application Nov. 24, 1993, Ser. No. 157,571
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—192 **6 Claims**



1. A method for forming an integrated circuit contact structure, comprising the steps of:

forming a conductive region on a semiconductor substrate;
forming a first conformal oxide layer over the conductive region and the substrate;
forming a planarizing oxide layer over the first conformal oxide layer;
forming a second conformal oxide layer over the planarizing layer;
forming an opening through the first, second, and conformal oxide layers to expose a portion of the conductive region;
depositing a thin layer of amorphous silicon over the second conformal oxide layer and in the opening;
backsputtering the integrated circuit contact structure to remove at least a portion of the thin layer over the exposed portion of the conductive region and over the second conformal oxide layer, leaving thin sidewall regions on sides of the opening; and
depositing a conductive metal layer over the second conformal oxide layer and in the opening.

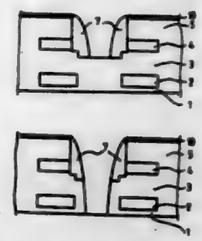
5,444,020
METHOD FOR FORMING CONTACT HOLES HAVING DIFFERENT DEPTHS
Seung-ku Lee, Kwangmyeong, and Kyung-seok Oh, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Oct. 13, 1993, Ser. No. 135,495
Claims priority, application Rep. of Korea, Oct. 13, 1992, 92-18791
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 **15 Claims**



1. A method for forming a plurality of contact holes having different depths in an insulating layer that covers a semiconductor substructure comprising the steps of:
partially etching a first etch region in an upper portion of said insulating layer using a first mask pattern; and
simultaneously etching said etched first etch region and a second etch region spaced away from said etched first etch region using a second mask pattern to thereby form first and second contact holes respectively which expose said semiconductor substructure.

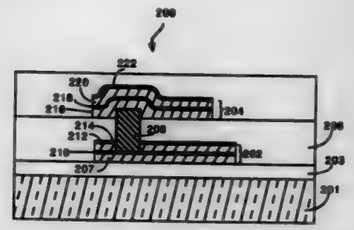
5,444,021
METHOD FOR MAKING A CONTACT HOLE OF A SEMICONDUCTOR DEVICE
In S. Chung, Ichonkun, and Youn J. Kim, Bundangku, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea
Filed Oct. 22, 1993, Ser. No. 141,821
Claims priority, application Rep. of Korea, Oct. 24, 1992, 19682/1992
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—195 **3 Claims**

1. A method for making a contact hole during manufacture of a semiconductor device whereby, in a state that there is formed an arrangement which consists of first and second layers of conductive material insulated therebetween and with respect to a contact region with a first insulating film, the contact hole is so formed on the contact region as not to electrically connect with the arrangement, comprising the steps of:
using a photosensitive pattern, applying a first etching process to the first insulating film to expose a part of said first layer of said conductive material, said first insulating film remaining in part;
removing said part of said first layer of said conductive material exposed by said first etching process to form a resulting structure with remaining conductive material relative to said first layer;



forming a second insulating film over the resulting structure;
applying an anisotropic etching process to said second insulating film to form a spacer insulating film over said remaining conductive material to have an opening width; and
applying a second etching process to the first insulating film along said spacer insulting film through said opening width so as to avoid said second layer of conductive material and form the contact hole on said contact region.

5,444,022
METHOD OF FABRICATING AN INTERCONNECTION STRUCTURE FOR AN INTEGRATED CIRCUIT
Donald S. Gardner, Mountain View, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Dec. 29, 1993, Ser. No. 175,053
Int. Cl.[6] H01L *21/44, 21/48*
U.S. Cl. 437—195 **9 Claims**



1. A method of forming an interconnection structure for an integrated circuit comprising the steps of:
forming a first interconnection on a first insulating layer of said integrated circuit wherein said step of forming said first interconnection comprises the steps of:
forming a first layer comprising aluminum;
forming a first refractory metal layer on said first layer;
forming a second layer comprising aluminum on said first refractory metal layer;
patterning said first layer, said first refractory metal layer, and said second layer into said first interconnection;
forming a second insulating layer on said first interconnection;
etching a via opening through said second insulating layer and partially into said first interconnection;

filling said via opening with a conductive material to form a conductive via; and

forming a second interconnection on said second insulating layer in electrical contact with said conductive via.

5,444,023

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING A MULTILAYER WIRING STRUCTURE AND USING A FLUORINE COMPOUND-CONTAINING GAS

Tetsuya Homma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 11, 1994, Ser. No. 179,718
Claims priority, application Japan, Jan. 11, 1993, 5-002263
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—195 14 Claims



1. A method of fabricating a semiconductor device, comprising the steps of

a) forming a wiring on a semiconductor substrate having a first insulating film provided thereon;

b) treating said wiring with a fluorine compound-containing gas;

c) spin coating an insulating material onto said semiconductor substrate to form a planar surface on said substrate, the spin coated insulating material substantially not forming on the treated wiring;

d) exposing said spin coated insulating material to a fluoroalkoxysilane compound-containing vapor to compact said spin coated insulating material; and

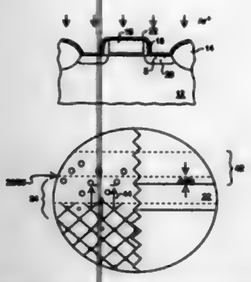
e) forming a second insulating film on said wiring and said compacted insulating material.

5,444,024

METHOD FOR LOW ENERGY IMPLANTATION OF ARGON TO CONTROL TITANIUM SILICIDE FORMATION

Mohammed Anjum; Ibrahim K. Burki, both of Austin, and Craig W. Christian, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 10, 1994, Ser. No. 258,542
Int. Cl.[6] H01L *21/265, 21/28*
U.S. Cl. 437—200 13 Claims



1. A method for controlling the growth of titanium silicide, comprising the steps of:

implanting p-type ions into a silicon substrate to form an ultra shallow junction region less than 1000 Angstroms in thickness;

sputter depositing a layer of titanium upon said junction region, said layer of titanium having an upper and lower surface wherein the titanium upper surface is exposed and the titanium lower surface is adjacent said junction region;

implanting argon ions into said layer of titanium to a concentration peak density at a midline between the titanium upper and lower surfaces; and

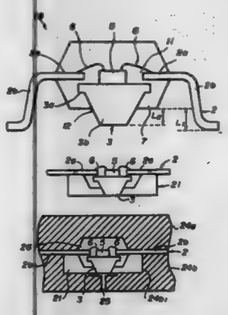
heating in the presence of nitrogen to react a portion of the titanium lower surface beneath the midline with the junction region to form a titanium silicide layer.

5,444,025

PROCESS FOR ENCAPSULATING A SEMICONDUCTOR PACKAGE HAVING A HEAT SINK USING A JIG

Michio Sono; Kouji Saito; Masashi Takenaka, and Masanori Yoshimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 962,117, Oct. 16, 1992, abandoned.
This application Oct. 18, 1994, Ser. No. 324,494
Claims priority, application Japan, Oct. 23, 1991, 3-275710
Int. Cl.[6] H01L *21/52, 21/56, 21/58, 21/60*
U.S. Cl. 437—207 12 Claims



1. A method of producing a semiconductor device comprising the steps of:

(a) fitting a bottom part of a radiator block within a tapered hole which is provided at a bottom of a recess of a jig;

(b) positioning on the jig a lead frame which has an opening at a central part thereof, said opening being located above a top surface part of the radiator block, said lead frame having inner leads and outer leads;

(c) mounting a semiconductor chip on the top surface part of the radiator block and bonding the semiconductor chip to the lead frame by a plurality of wires;

(d) positioning at least the radiator block on a lower die;

(e) positioning an upper die on top of the lower die and injecting a resin into a cavity which is formed inside the upper and lower dies so as to mold the resin and form a package which encapsulates at least a part of the radiator block, the semiconductor chip, the wires and inner leads of the lead frame so that the outer leads of the lead frame extend outwardly of the package,

the bottom part of the radiator block projecting from the package by a length to conduct heat generated from the semiconductor chip outside the package; and

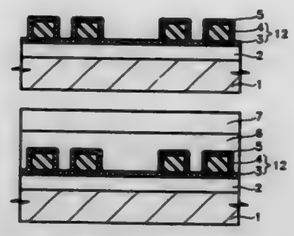
(f) removing the jig from the package.

5,444,026

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE BY FORMING INSULATOR-LAYER TO SUPPRESS BUBBLE FORMATION

Chang-kyu Kim, Suwon; Myeong-beom Lee; Ji-hyun Choi, both of Seoul; Woo-in Joung, Kyungki-do; Young-jin Im, Seoul; Won-joo Kim; Jin-gi Hong, both of Kyungki-do, and Geung-won Kang, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 10, 1993, Ser. No. 74,761
Claims priority, application Rep. of Korea, Jun. 10, 1992, 92-10069
Int. Cl.[6] H01L *21/316*
U.S. Cl. 437—240 7 Claims



1. A method for manufacturing a portion of a semiconductor device comprising the steps of:

forming a conductive layer on a semiconductor substrate;

forming an intermediate layer of plasma-enhanced oxide having thickness of substantially 400 A^0–700 A^0 to entirely cover the conductive layer; and

forming a BPSG layer on said intermediate layer, so that during formation of said BPSG layer, bubbles are substantially eliminated due to the presence of said intermediate layer.

5,444,027

COMPOSITIONS OF HIGH FREQUENCY DIELECTRIC CERAMICS

Hyung J. Jung; Ki H. Yoon; Dong P. Kim, and Eung S. Kim, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed May 12, 1994, Ser. No. 241,587
Int. Cl.[6] C04B *35/00*
U.S. Cl. 501—135 1 Claim

1. A composition of high frequency dielectric ceramics of $(1-x)[Ba(Mg_1Ta_2)O_3]+xBaWO_4+0.1xMnO_2$ $(0.01 \leq x \leq 0.09)$.

5,444,028

MICROWAVE DIELECTRIC CERAMIC COMPOSITION

Hisakazu Takahashi; Kenichi Ezaki; Yoko Baba, and Kenichi Shibata, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 186,869, Jan. 27, 1994, Pat. No. 5,423,796.
This application Nov. 16, 1994, Ser. No. 342,012
Claims priority, application Japan, Feb. 3, 1993, 5-016384; Dec. 21, 1993, 5-321542
Int. Cl.[6] C04B *35/26*
U.S. Cl. 501—136 2 Claims

1. In a microwave dielectric ceramic composition expressed by a composition formula of $w\ Li_2O-x\cdot CaO-y\cdot A_2O_3-z\cdot TiO_2$, wherein A is selected from Sm and Nd, and w, x, y and z are in the following ranges:

0.0 mole % < w ≦ 25.0 mole %,

0.0 mole % < x ≦ 50.0 mole %,

0.0 mole % < y ≦ 30.0 mole %,

0.0 mole % < z ≦ 80.0 mole %,

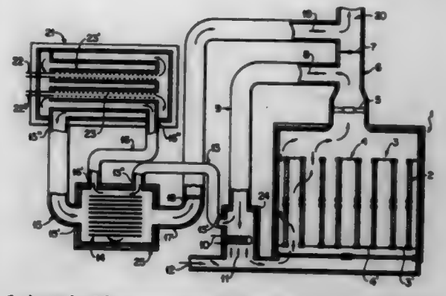
the microwave dielectric ceramic composition being characterized in that w+x+y+z=100 mole % and more than zero to not more than 5 parts by weight of one selected from zinc oxide, cobalt oxide, nickel oxide, and magnesium oxide is contained in 100 parts by weight of $w\cdot Li_2O-x\cdot CaO-y\cdot A_2O_3-z\cdot TiO_2$.

5,444,029

PROCESS FOR DESTROYING SUSPENDED PARTICLES

Guy Martin, Magnac sur Touvre, France, assignor to Omia, Saint-Yrieix-sur-Charente, France

Continuation of Ser. No. 103,707, Aug. 10, 1993, abandoned.
This application Nov. 30, 1994, Ser. No. 351,139
Int. Cl.[6] B01J *20/34*; B01D *53/74*
U.S. Cl. 502—38 5 Claims



1. A method for regenerating an activated charcoal filter for a spray paint booth exhaust, the method comprising the steps:

passing a first gas flow of inlet air through the filter;

preheating the first gas flow;

combining the preheated first gas flow with additional air to form a preheated second gas flow;

recirculating the preheated second gas flow through the filter for desorbing filtered contaminants into the second gas flow;

diverting a portion of the second gas flow to a heat contributing heat exchanging point for further heating;

pyrolytically oxidizing the further reheated gas flow, thereby oxidizing substantially all of the suspended particles therein;

passing the resulting oxidized flow, at elevated temperature, to the heat exchanging point for cooling the oxidized gas flow and contributing exchanged heat to the second gas flow to achieve heating of second gas flow entering the heat exchanging point; and

discharging the cooled flow, devoid of noxious particles, to the atmosphere.

5,444,030

METAL COMPLEXES WITH A HIGH COORDINATION NUMBER

Axel Böttcher, Wesel; Manfred Düring, Jena, and Jürgen Zeitfeld, Voerde, all of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Germany

Filed Sep. 9, 1993, Ser. No. 119,031
Claims priority, application Germany, Sep. 22, 1992, 42 31 680.4
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—150 10 Claims

1. A process for the preparation of neutral metal complex salts of the formula $M^{a+}(SR^{b-})_{n-o}L_xB_y$ wherein M is an ion of a metal selected from the group consisting of cobalt, nickel, iron, zinc, manganese, copper, mercury, zirconium, tin, cadium, titanium, vanadium, indium, silver, chromium and antimony, SR is an acid radical of an organic or inorganic acid, B is a Lewis base of the group consisting of pyridine or an imidazole and L is a chelating ligand, wherein

a=an integer of 1–8,
b=an integer of 1–3,
n=an integer of 1–8,
o=an integer of 0–8,
x=an integer of 0–4, and
y=an integer of 8–15

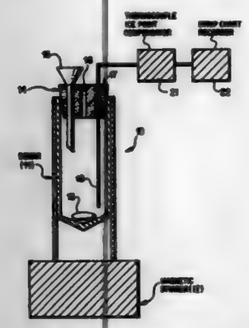
wherein $(n-o)+x+y \leqq 16$, characterized in that the metal salt, chelating ligand and Lewis base are mixed together in stoichiometric amounts in the absence of a solvent and reacted in a molten stage at a temperature of 20° to 200° C.

5,444,031

PROCESS FOR MAKING CATALYTIC CARBON

Richard A. Hayden, Pittsburgh, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1993, Ser. No. 7,169
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[6] B01J *21/18*; C01B *31/12, 31/10*
U.S. Cl. 502—180 **14 Claims**



1. A process for the manufacture of carbonaceous char having catalytic activity which comprises the steps of (a) carbonizing a bituminous coal or a coal having bituminous properties at temperatures below 700° C. in the presence of an oxidant gas; (b) oxidizing said bituminous coal or coal having bituminous properties at temperatures below 700° C. during or after said carbonization; and (c) contacting said carbonized and oxidized bituminous coal or coal having bituminous properties with a nitrogen-containing compound and during said contacting increasing the temperature to above 700° C., to provide said carbonaceous char.

10. The carbonaceous char prepared by the process of claim 1.

5,444,032

PROCESS FOR PREPARING AN EFFECTIVE CATALYST FOR N-PARAFINS HYDROISOMERIZATION

Carlo Perego, Milan; Giuseppe Bellussi, Piacenza, and Vincenzo Calemma, Milan, all of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Sep. 21, 1993, Ser. No. 124,203
Claims priority, application Italy, Sep. 29, 1992, MI92A2242
Int. Cl.[6] B01J *21/12*
U.S. Cl. 502—235 **8 Claims**

1. A process for preparing difunctional catalysts, comprising the steps of:
heating a solution to form a gel;
drying and calcining said gel under an inert atmosphere and then under an oxidizing atmosphere;
wherein said solution comprises,
(a) a tetraalkylammonium hydroxide (TAA-OH), wherein said alkyl is selected from the group consisting of ethyl, n-propyl and n-butyl;
(b) a soluble aluminum compound capable of undergoing hydrolysis to yield Al_2O_3;
(c) a noble metal (M) complex or salt;
(d) a soluble silicon compound capable of undergoing hydrolysis yielding SiO_2; and
(e) H_2O;
wherein said solution has a molar ratio of $SiO_2:Al_2O_3$ in the range of from 30:1 to 500:1,
a molar ratio of TAA-OH:SiO_2 in the range of from 0.05:1 to 0.2:1,
a molar ratio of $H_2O:SiO_2$ in the range of from 5:1 to 40:1, and
a molar ratio of M:SiO_2 in the range of from 0.0002:1 to 0.05:1.

5,444,033

CATALYST COMPOSITIONS FOR HYDROTREATING OF HYDROCARBON OILS AND PROCESS FOR MANUFACTURING THE SAME.

Kazushi Usui, Noda; Shigenori Nakashizu, Souka, and Kentaroo Ishida, Saitte, all of Japan, assignors to Cosmo Research Institute, Saitama and Cosmo Oil Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 955,252, Oct. 1, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,424
Claims priority, application Japan, Oct. 18, 1991, 3-299742; Oct. 18, 1991, 3-299743; Nov. 1, 1991, 3-315402
Int. Cl.[6] B01J *21/02, 23/00*
U.S. Cl. 502—314 **23 Claims**

1. A catalyst composition for hydrotreating of hydrocarbon oils which comprises a Group VIB metal in an amount of 5–30% by weight, as oxide, and a Group VIII metal in an amount of 1–10% by weight, as oxide, wherein said Group VIB metal and said Group VIII metal are impregnated into an alumina carrier and are distributed in a catalyst particle with a concentration gradient which becomes higher from the surface toward the center of the catalyst particle according to the formulas, $0.9 > h_2/h_1 \geqq 0$, wherein h_1 is the Group VIB metal concentration at the center of the catalyst particle and h_2 is the Group VIB metal concentration at the outermost surface of the catalyst particle, and $0.9 > h_4/h_3 \geqq 0$, wherein h_3 is the Group VIII metal concentration at the center of the catalyst particle and h_4 is the Group VIII metal concentration at the outermost surface of the catalyst particle, wherein in the catalyst particle starting from a first outside surface through the center and to a second outside surface which is opposite to the first outside surface, the Group VIB metal and the Group VIII metal each have a concentration distribution as shown in FIG. 2.

5,444,034

PROCESS FOR PREPARING SILVER AND ALKALI CATALYST

Nabil Rizkalla, River Vale, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 24,477, Mar. 1, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,550
Int. Cl.[6] B01J *37/08, 23/04, 23/50, 23/66*
U.S. Cl. 502—347 **13 Claims**

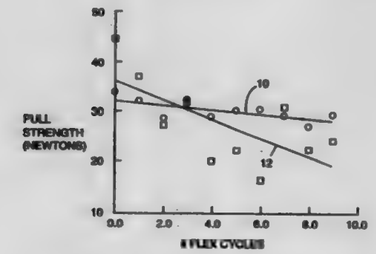
1. A process for preparing a supported silver catalyst for the vapor-phase oxidation of ethylene to ethylene oxide, consisting essentially of the steps of:
(a) impregnating a porous support having a surface area of about 0.2 to 2.0 m^2/g with a hydrocarbon solution of an organic silver salt of an acid sufficient to provide 3 to 25 wt % silver on the support;
(b) subjecting the silver impregnated support of step (a) to activation by heating at a first temperature in the range of 150° to 200° C. for less than an hour, heating at a second temperature in the range of from greater than 200° C. to 300° C. for less than one hour, heating at a third temperature in the range of from greater than 300° C. to 400 ° C. for less than one hour and finally heating at a fourth temperature of greater than 400° C. to 500° C. for less than an hour in an inert atmosphere consisting of one or more inert gases; and
(c) impregnating the activated silver impregnated support of step (b) with a substantially anhydrous alcoholic solution containing an alkali metal compound to obtain a finished catalyst having about 1 to 6×10^{-3} gew of the alkali metal per kg of catalyst.

5,444,035

LASER PERFORATION OF PAPER

Kenneth J. Perrington, Maplewood, and Robert D. Kampfer, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 768,429, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 570,127, Aug. 17, 1990, abandoned. This application Jun. 23, 1994, Ser. No. 264,848
Int. Cl.[6] B41M *5/20*
U.S. Cl. 503—201 **32 Claims**



1. A method of forming a form-set of carbonless papers comprising a plurality of perforated sheets, said form-set including at least a first sheet containing a first coating of an encapsulated color-former and a second sheet containing a second coating of a developer, said first and second sheets being positioned such that said first and second coatings are juxtaposed, said method comprising the steps, in order, of:
(a) providing perforated sheets of carbonless paper by a process including the steps of (i) providing a first carbonless paper having said first coating on at least on surface thereof and a second carbonless paper having said second coating on at least one surface thereof, and (ii) exposing each of said first carbonless paper and second carbonless paper to a laser beam to create a plurality of perforations in each of said first carbonless paper and second carbonless paper, said perforations defining a line between first and second portions of each of said first carbonless paper and second carbonless paper;
(b) processing said perforated sheets by sheet-fed equipment; and
(c) securing said first sheet to said second sheet to form a form-set such that said first and second coatings are juxtaposed;
wherein said sheets have i) a Post-Flex Pull Strength after 3 cycles of no less than about 60% of Initial Pull Strength; and ii) a Tear Strength that is no more than about 75% of the force required to tear a like sheet with no perforation.

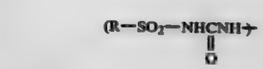
5,444,036

THERMOSENSITIVE RECORDING MATERIAL

Akiko Iwasaki, Urawa; Kunitaka Toyofuku, Sakura; Kyoko Uchida, Machida, and Masatoshi Fujino, Tokyo, all of Japan, assignors to New Oil Paper Co., Ltd., Tokyo, Japan

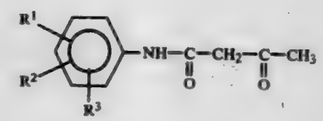
Filed Jan. 7, 1994, Ser. No. 178,830
Claims priority, application Japan, Jan. 8, 1993, 5-002000
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[6] B41M *5/30*
U.S. Cl. 503—209 **7 Claims**

1. A thermosensitive recording material comprising:
a substrate sheet; and
a thermosensitive colored image-forming layer formed on a surface of the substrate sheet and comprising a substantially colorless dye precursor, a color developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder,
said color developing agent comprising at least one compound comprising, per molecule thereof, at least one arylsulfonylureido group of the formula (I):



(I)

wherein R represents a member selected from the group consisting of unsubstituted aromatic groups and substituted aromatic groups having at least one substituent selected from the group consisting of lower alkyl groups, lower alkoxyl groups and halogen atoms, and
said thermosensitive colored image-forming layer further comprising a thermally fusible additive comprising at least one compound selected from the group consisting of:
(1) acetoacetanilide compounds of the formula (II):



(II)

wherein R^1, R^2 and R^3 respectively and independently from each other represent a member selected from the group consisting of alkyl groups, alkoxyl groups, aralkyl groups, aryl groups, aryloxy groups, nitro group, acetylamino group, acetoacetylamino group, hydrogen atom and halogen atoms; and
(2) sulfonamide compounds of the formula (III):



(III)

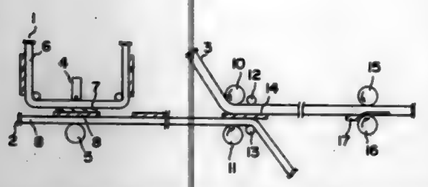
wherein Ar_1 and Ar_2 respectively and independently from each other represent a member selected from the group consisting of unsubstituted phenyl and naphthyl groups, and substituted phenyl and naphthyl groups each having 1 to 3 substituents selected from the group consisting of aryl groups, alkyl groups, alkoxyl groups, nitro group, halogen atoms, alkylamino groups, allyloxy group, aryloxy groups, and aralkyloxy groups, and one of Ar_1 and Ar_2 has at least one substituent selected from the group consisting of alkoxyl groups, allyloxy group, phenoxy group and benzyloxy group.

5,444,037

THERMAL DYE TRANSFER PRINTING METHOD AND INTERMEDIATE MEDIA THEREFOR

Akihiro Imai, Ikoma; Hiroyuki Matsuo, Neyagawa; Yasuo Fukui, Kadoma, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 28, 1992, Ser. No. 997,199
Claims priority, application Japan, Dec. 27, 1991, 3-346127
The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.
Int. Cl.[6] B41M *5/035, 5/38*
U.S. Cl. 503—227 6 Claims



1. Thermal transfer printing method using the combination of a transfer printing member having a coloring material layer on the substrate A, an intermediate medium having a dye-receiving layer on the substrate B and an image receiving member comprising paper, said dye-receiving layer being formed by using at least a polymer having flow softening point of less than 300° C., wherein first the coloring material layer of the transfer printing member is overlapped with the dye-receiving layer of the intermediate medium and then a sublimation thermal transfer image is transfer-printed in the dye-receiving layer of the intermediate medium by heating the transfer printing member with a printing head and subsequently the intermediate medium is overlapped with said image receiving member in the manner that the dye-receiving layer with printed image comes to the side of said image receiving member and the dye-receiving layer with printed image is transferred from the substrate B of the intermediate medium directly on to said image receiving member by head and/or pressure and further the dye-receiving layer is fixed on the image receiving member by heat and/or pressure.

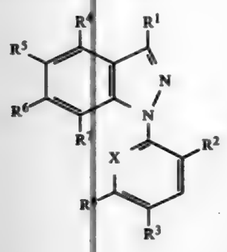
5,444,038

ARYLINDAZOLES AND THEIR USE AS HERBICIDES

Donald R. James, El Sobrante; Don R. Baker, Orinda; Steven D. Mielich, Palo Alto; William J. Michaely, El Cerrito, all of Calif.; Steven Fitzjohn, Bracknell, England; Christopher G. Knudsen, Berkeley, Calif.; Christopher Mathews, San Francisco, Calif., and John M. Gerdes, Fairfax, Calif., assignors to Zeneca Limited, London, United Kingdom

Continuation-in-part of Ser. No. 848,622, Mar. 9, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 18,871
Int. Cl.[6] A01N *43/38;* C07D *401/04*
U.S. Cl. 504—253 53 Claims

1. A compound having the formula



wherein

R^1 is hydrogen or halogen;

R^2 is hydrogen; nitro; halogen; C_1–C_6 alkyl; cyano; C_1–C_6 alkylthio; C_1–C_6 alkylsulfinyl; C_1–C_6 alkylsulfonyl; C_1–C_6 alkoxy; acetylamino; or amino;

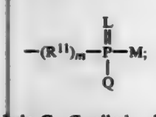
R^3 is hydrogen; chloro, fluoro or iodo; halo-C_1–C_6-alkyl; halo-C_1–C_6-alkoxy; cyano; amino or SO_yR^{13} and R^{13} is C_1–C_6 alkyl or halo-C_1–C_6-alkyl and y is 0, 1, or 2;

R^4, R^5 and R^6 are independently hydrogen; halogen; nitro; hydroxy; cyano; C_1–C_6 alkyl; C_1–C_6 alkoxyimino-C_1–C_6-alkyl; hydroxy-C_1–C_6-alkyl; C_1–C_6-alkoxy-C_1–C_6-alkyl; C_1–C_6-alkylsulfonylamino-C_1–C_6-alkyl; halo-C_1–C_6-alkylsulfonylamino-C_1–C_6-alkyl; $(C_1$–C_6-alkyl$)_n$amino-C_1–C_6-alkyl; $(C_1$–C_6-alkylcarbonyloxy$)_z$-C_1–C_6-alkyl; halo-C_1–C_6-alkyl; formyl; C_1–C_6-alkylcarbonyl; carboxy or its salt; COO-C_1–C_6-alkyl; carboxamido; substituted carboxamido wherein the nitrogen substituents can be selected from hydrogen, C_1–C_6-alkyi, C_1–C_6-haloalkyl-sulfonyl, and C_1–C_6-alkylsulfonyl; sulfonamido wherein the nitrogen substituents can be selected from hydrogen and C_1–C_6-alkyl; $(C_1$–C_6-alkylsulfonyl$)_z$amino; (acetyl)-$_z$amino;



wherein L, M, P and Q are as described below;

YR[9] wherein Y is O, NR^{12}, or $S(O)_n$; R^9 is $-(R^{11})_m-COR^{10}$; $-(R^{11})_m-SO_2R^{10}$;



C_1–C_6-alkyl; halo-C_1–C_6-alkyl; hydroxy-C_1–C_6-alkyl; phenyl-C_1–C_6-alkyl; cyano-C_1–C_6-alkyl; acetoxy-C_1–C_6-alkyl; C_1–C_6-alkoxy-C_1–C_6-alkyl; C_2–C_8-alkenyl; or C_2–C_8-alkynyl;

R^{10} is C_1–C_6-alkyl; halo-C_1–C_6-alkyl; hydrogen; hydroxy; C_1–C_6-alkoxy; C_1–C_6-alkoxy-C_1–C_6-alkyl; C_1–C_6-alkoxy-C_1–C_6-alkoxy; C_1–C_6-alkoxy-C_1–C_6-alkylamino; di-C_1–C_6-alkoxy-C_1–C_6-alkylamino; phenoxy; phenyl-C_1–C_6-alkyl; aralkyl; C_1–C_6-alkoxycarbonyl; hydroxycarboxyl; C_1–C_6-alkoxycarbonyl-C_1–C_6-alkyl; hydroxycarbonyl-C_1–C_6alkyl; $(C_1$–C_6-alkyl$)_n$amino; $(C_1$–C_6-alkyl$)_n$hydrazino; C_1–C_6-alkoxycarbonyl-C_1–C_6-alkylamino; hydroxy-C_1–C_6-alkylamino; $(C_1$–C_6-alkyl)-$_n$amino-C_1–C_6-alkylamino; $(C_1$–C_6-alkyl$)_n$aminocarbonyl-C_1–C_6-alkylamino; hydroxycarbonyl-C_1–C_6-alkylamino; C_1–C_6-alkylsulfonylamino; phenylsulfonylamino; acetylamino-C_1–C_6-alkylamino; N-C_1–C_6-alkoxy-N-$(C_1$–C_6-alkyl$)_m$amino; N-hydroxy-N-(alkyl)$_m$amino; cyano-C_1–C_6-alkyl-amino; $(C_1$–C_8-alkenyl$)_n$amino; C_1–C_6-alkoxy-C_1–C_6 -alkylamino; $(C_2$–C_8-alkynyl)-$_n$amino; C_2–C_8-alkenyloxy; C_2–C_8-alkynyloxy; or semicarbazido;

R^{11} is C_1–C_4 alkylidene;

R^{12} is hydrogen; C_1–C_6-alkyl; C_2–C_8-alkenyl; C_2–C_8-alkenyl or C_1–C_6-alkylcarbonyl;

M or W is C_1–C_6-alkoxy; C_1–C_6-alkyl; $(C_1$–C_6-alkyl$)_n$amino; hydroxy; hydrogen; C_2–C_8-alkenyloxy; $(C_2$–C_8-alkenyl)-$_n$amino; C_2–C_8-alkynyloxy; or $(C_2$–C_8-alkynyl$)_n$amino;

L is oxygen or sulfur;

P is phosphorus;

m is 0, 1;

n is 0, 1, 2;

z is 1, 2;

R^7 is hydrogen; halogen; C_1–C_6-alkyl; or nitro;

R^8 is hydrogen or halogen;

X is nitrogen;

or an agriculturally acceptable salt thereof.

5,444,039

(HG,PB)-BA-CA-CU-O SUPERCONDUCTOR AND METHOD OF MANUFACTURING THE SAME

Kazuyuki Isawa, Tokyo; Ayako Yamamoto, Minamiashigara; Makoto Itoh, Tokyo; Seiji Adachi, Urayasu, and Hisao Yamauchi, Nagareyama, all of Japan, assignors to Tohoku Electric Power Copany, Incorporated, Miyagi; Sumitomo Electric Industries, Ltd.; Matsushita Electric Industrial Co., Ltd., both of Osaka and International Superconductivity Technology Center, Tokyo, all of Japan

Filed Sep. 12, 1994, Ser. No. 304,494
Claims priority, application Japan, Sep. 17, 1993, 5-231891
Int. Cl.[6] C01F *11/02;* C01G *3/02*
U.S. Cl. 505—125 8 Claims

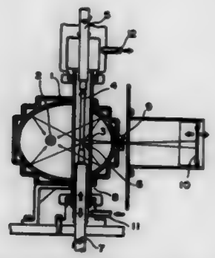
1. An oxide superconductor represented by $(Hg_{1-x}Pb_x)Ba_2Ca_2Cu_3O_8$ wherein $0.08 \leq x \leq 0.41$, $7,625 \leq \delta \leq 9.15$, and having a crystal structure in which a blocking layer of $(Hg, Pb)O_x$-BaO-CuO_2-Ca-CuO_2-Ca-CuO_2-BaO, wherein $0.625 \leq z \leq 2.15$, is laminated in a c-axial direction of the crystal structure.

5,444,040

SUPERCONDUCTIVE OXIDE SINGLE CRYSTAL AND MANUFACTURING METHOD THEREOF

Hironao Kojima, and Isao Tanaka, both of Yamanashi, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 451,769, Dec. 18, 1989, abandoned. This application Nov. 6, 1992, Ser. No. 973,608
Int. Cl.[6] C30B *13/26*
U.S. Cl. 505—238 8 Claims



1. A method for manufacturing a single crystal of a superconductive oxide by growing a single crystal on a seed crystal based on the traveling solvent floating zone method, wherein the solvent is sandwiched between a sintered feed rod and the seed crystal, said solvent being melted so as to fuse together the sintered feed rod and the seed crystal, wherein said superconductive oxide is selected from the group consisting of:

$La_{2-a}Sr_aCuO_4$	$0 \leq a \leq 0.3$
$La_{2-b}Ba_bCuO_4$	$0 \leq b \leq 0.13$
$Nd_{2-c}Ce_cCuO_4$	$0.12 < c < 0.17$
$YBa_2Cu_3O_{7-d}$	$0 < d < 0.5$
$BiSrCaCu_2O_e$ and	$8.5 < e < 9.5$
$Tl_2Ba_2Ca_2Cu_3O_f$	$9.5 < f < 10.5$

which comprises selecting the starting materials on the basis of the stoichiometric composition of said superconductive oxide and mixing them in ethanol, then preliminarily calcining the material at 800° C. to 950° C., forming the thus-calcinated powder onto a round rod by the application of pressure, sintering the rod at 1000° to 1200° C. in the presence of oxygen, thus resulting in said sintered feed rod and said solvent, melting said sintered feed rod in the presence of a solvent stratum, the solvent having a composition of 55 to 91 mol % CuO, and placing these materials in an infrared heating furnace under oxygen pressure, thus affording the growth of a single crystal of said superconductive oxide to a size greater than 5 mm in diameter and greater than 40 mm in length under the following growth conditions:

Oxygen pressure	0.15 MPA or more
Growth temperature	1100° to 1300° C.
Growth rate	0.15 to 3 mm/h.

5,444,041

CONVERTIBLE MICROEMULSION FORMULATIONS

Albert J. Owen, West Chester, Pa.; Seang H. Yiv, Wilmington, Del., and Ani B. Sarkahian, Bryn Mawr, Pa., assignors to Ibah, Inc., Blue Bell, Pa.

Continuation-in-part of Ser. No. 841,931, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 837,347, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,691, Apr. 19, 1991, abandoned. This application May 20, 1992, Ser. No. 885,202
Int. Cl.[6] A61K *9/107, 38/00, 38/16, 39/00*
U.S. Cl. 514—2 137 Claims



1. A liquid biologically compatible water-in-oil microemulsion composition which converts to an oil-in-water emulsion by the addition of water, comprising:

(a) up to about 20 volume percent of an internal dispersed aqueous phase comprising an effective amount of a biologically-active material, said biologically-active material consisting of therapeutic water-soluble materials,

(b) from about 30 to 99 volume percent of a continuous oil phase comprising diesters of propylene glycol having from about 15 to 40 carbon atoms, and

(c) from about 1 to 70 volume percent of a surfactant or mixture of surfactants, wherein the surfactant or surfactant mixture has a hydrophilic-lipophilic balance value of from 7 to 14.

5,444,042

METHOD OF TREATMENT OF NEURODEGENERATION WITH CALPAIN INHIBITORS

Raymond T. Bartus, Laguna Hills; David D. Eveleth, Irvine, both of Calif., and James C. Powe, Atlanta, Ga., assignors to Cortex Pharmaceuticals, Irvine, Calif. and Georgia Tech Research Corporation (GTRC), Atlanta, Ga.

Continuation of Ser. No. 816,120, Dec. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 682,925, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 635,952, Dec. 28, 1990. This application Mar. 7, 1994, Ser. No. 207,881
Int. Cl.[6] A61K *37/00;* C12Q *1/37;* C12N *9/99*
U.S. Cl. 514—2 35 Claims

1. A method of treating neurodegeneration due to ischemia in a mammalian patient, comprising the steps of:

selecting a patient who is experiencing or who has experienced neurodegeneration due to ischemia;

monitoring said patient for indicia of the onset or existence of neurodegeneration due to ischemia; detecting said indicia; and

in response to the detecting of any such indicia of the onset or existence of neurodegeneration due to ischemia, administering to said patient a therapeutically efficacious amount of a Peptide Ketoamide compound, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier, said Peptide Ketoamide compound having the general formula M-(aa)$_n$—CO—Q—R, wherein:

M is selected from the group consisting of NH2—CO—, NH2—CS—, NH2—SO2—, X—NH—CO—, X—NH—CS—, X—NH—SO2—, X—CO—, X—CS—, X—SO2—, X—O—CO—, X—O—CS—, H, acetyl, carbobenzoxy ("Z"), succinyl, methyloxysuccinyl, and butyloxycarbonyl;

X is selected from the group consisting of C1–6 alkyl, C1–6 fluoroalkyl, C1–6 alkyl substituted with J, C1–6 fluoroalkyl substituted with J, 1-admantyl, 9-fluorenyl, phenyl, phenyl substituted with K, phenyl disubstituted with K, phenyl trisubstituted with K, naphthyl, naphthyl substituted with K, naphthyl disubstituted with K, naphthyl trisubstituted with K, C1–6 alkyl with an attached phenyl group, C1–6 alkyl with two attached phenyl groups, C1–6 alkyl with an attached phenyl group substituted with K, and C1–6 alkyl with two attached phenyl groups substituted with K;

J is selected from the group consisting of halogen, COOH, OH, CN, NO2, NH2, C1–6 alkoxy, C1–6 alkylamine, C1–6 dialkylamine, C1–6 alkyl-O—CO—, C1–6 alkyl-O—CO—NH, and C1–6 alkyl-S—;

K is selected from the group consisting of halogen, C1–6 alkyl, C1–6 perfluoroalkyl, C1–6 alkoxy, NO2, CN, OH, CO2H, amino, C1–6 alkylamino, C2–12 dialkylamino, C1–6 acyl, C1–6 alkoxy-CO—, and C1–6 alkyl-S—;

aa is a blocked or unblocked amino acid of the L or D configuration selected from the group consisting of alanine, valine, leucine, isoleucine, proline, methionine, methionine sulfoxide, phenylalanine, tryptophan, glycine, serine, threonine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, histidine, phenylglycine, beta-alanine, norleucine (nle), norvaline (nva), alpha-aminobutyric acid (abu), epsilon-aminocaproic acid, citrulline, hydroxyproline, homoarginine, ornithine and sarcosine;

n is a number from 1 to 20;

Q is NH; and

R is selected from the group consisting of H, C1–6 alkyl, C1–6 fluoroalkyl, C1–6 chloroalkyl, benzyl, C1–6 alkyl substituted with phenyl, and C1–6 alkyl with an attached phenyl group substituted with K.

5,444,043

CYCLIC HEPTAPEPTIDE ANTI-INFLAMMATORY AGENT

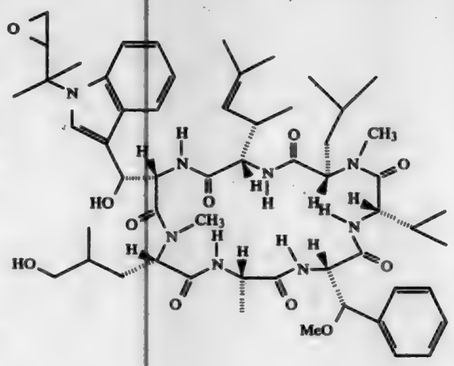
William H. Fenical, Del Mar; Robert S. Jacobs, Santa Barbara, and Paul R. Jensen, San Diego, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 18, 1994, Ser. No. 198,859

Int. Cl.[6] A61K *38/12, 38/00*

U.S. Cl. 514—9 5 Claims

1. A biologically purified composition of matter comprising a cyclic depsipeptide identified as cyclo-marin-A which has the structure



5,444,044

SYNTHETIC POLYPEPTIDES AS INHIBITORS OF HIV-1

Shibo Jiang; Kang Lin, and A. Robert Neurath, all of New York, N.Y., assignors to New York Blood Center, New York, N.Y.

Filed Mar. 26, 1992, Ser. No. 859,923

Int. Cl.[6] A61K *38/00*; C07K *5/00, 7/00, 17/00*

U.S. Cl. 514—12 20 Claims

1. A prophylactic method of topically inhibiting HIV-1 infectivity or replication, comprising:

topically administering to a subject an effective amount of a prophylactic antiviral substance, wherein said prophylactic antiviral substance includes:

an HIV-1-based polypeptide having an amino acid sequence of the envelope glycoprotein of HIV-1$_{IIIB}$ or a natural variant thereof from amino acid 600 to amino acid 862, or a portion thereof containing the sequence from amino acid residue 637 to amino acid residue 666.

5,444,045

METHOD OF ADMINISTERING IGF-1, IGF-2, AND ANALOGS THEREOF TO BIRDS

Geoffrey L. Francis, Athelstone SA; Paul E. Walton, Clarence Park SA; F. John Ballard, Kensington, all of Australia; John P. McMurty, Beltsville, Md., and Patricia V. Phelps, Durham, N.C., assignors to GroPep, Pty. Ltd., Adelaide, Australia; U.S.D.A., Beltsville, Md. and Embrex, Inc., N.C.

Filed Sep. 17, 1992, Ser. No. 947,035

Int. Cl.[6] A61K *38/00, 38/22, 35/12*; C07K *14/00*

U.S. Cl. 514—12 35 Claims

1. A method of enhancing the growth of a bird comprising:

(a) administering a compound selected from the group consisting of IGF-1, IGF-2 and active analogs thereof to a bird in ovo; then

(b) incubating said bird to hatch; and then

(c) growing said bird for at least three weeks after hatch,

wherein said compound is administered in ovo in an amount sufficient to enhance the growth of said bird at least three weeks after hatch.

5,444,046

AMYLASE INHIBITORS

Toshiyuki Miyazaki, Fujimi; Toshihisa Morimoto, Tokyo; Ryuji Maruyama, Hyogo, and Hiroshi Matsubara, Osaka, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo and Nagata Seagyo Co., Ltd., Hyogo, both of Japan

Filed Mar. 24, 1994, Ser. No. 216,846

Claims priority, application Japan, Mar. 29, 1993, 5-091881; May 28, 1993, 5-148423

Int. Cl.[6] A23J *1/12*; A61K *38/16*; C07K *1/18, 14/415*

U.S. Cl. 514—12 13 Claims

1. A purified protein composed of two subunits, each having the following amino acid sequence:

Ser Gly Pro Trp Met Cys Tyr Pro Gly Tyr Ala Phe Lys Val Pro
1 5 10 15

Ala Leu Pro Gly Cys Arg Pro Val Leu Lys Leu Gln Cys Asn Gly
20 25 30

Ser Gln Val Pro Glu Ala Val Leu Arg Asp Cys Cys Gln Gln Leu
35 40 45

Ala Asp Ile Ser Glu Trp Cys Arg Cys Gly Ala Leu Tyr Ser Met
50 55 60

Leu Asp Ser Met Tyr Lys Glu His Gly Val Gln Glu Gly Gln Ala
65 70 75

Gly Thr Gly Ala Phe Pro Ser Cys Arg Arg Glu Val Val Lys Leu
80 85 90

Thr Ala Ala Ser Ile Thr Ala Val Cys Lys Leu Pro Ile Val Ile Asp
95 100 105

Ala Ser Gly Asp Gly Ala Tyr Val Cys Lys Gly Val Ala Ala Tyr
110 115 120

Pro Asp Ala (SEQ ID NO:1)

having at least 23,300 μmg of human pancreatic α-amylase inhibitory activity.

5,444,047

TREATMENT OF ARTHRITIC AND POST-SURGICAL ORTHOPEDIC CONDITIONS WITH INSULIN-LIKE GROWTH FACTOR-I

Gene DiPasquale, 75D Winthrop Rd., Jamesburg, N.J. 08831

Filed Jun. 16, 1994, Ser. No. 261,849

Int. Cl.[6] A61K *38/00, 38/17*; C12N *15/63*

U.S. Cl. 514—12 6 Claims

1. A method for enhancing the effect of physical therapy on a joint of an individual, wherein said joint has reduced mobility and is associated with a skeletal muscle which provides muscular support for said reduced mobility of said joint comprising the steps of:

a) administering a therapeutically effective amount of Insullin-Like Growth Factor-I to said individual to increase the mass of said skeletal muscle and strengthen the muscular support of said reduced mobility joint; and

b) conducting physical therapy, associated with said reduced mobility of said joint, on said individual, whereby said physical therapy is enhanced by administration of Insulin-Like Growth Factor-I.

5,444,048

BRADYKININ ANTAGONIST PSEUDOPEPTIDE DERIVATIVES OF OLEFINIC AMINOALKANOIC ACIDS

Donald J. Kyle, Abingdon, Md., assignor to Scios Nova, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 957,879, Oct. 8, 1992. This application Sep. 9, 1993, Ser. No. 118,981

Int. Cl.[6] A61K *38/08*

U.S. Cl. 514—16 9 Claims

1. A pseudopeptide which has an affinity for a bradykinin receptor having the formula:

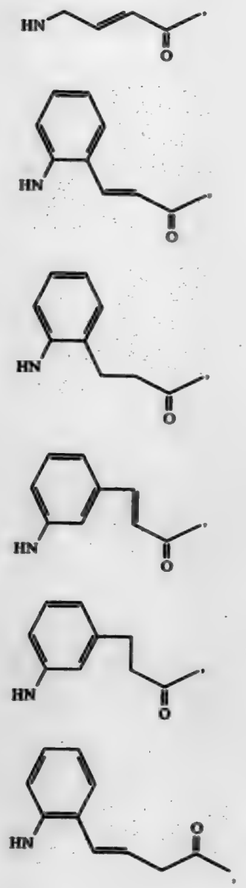
A-B-C-D-E-F-G-Cn

wherein,

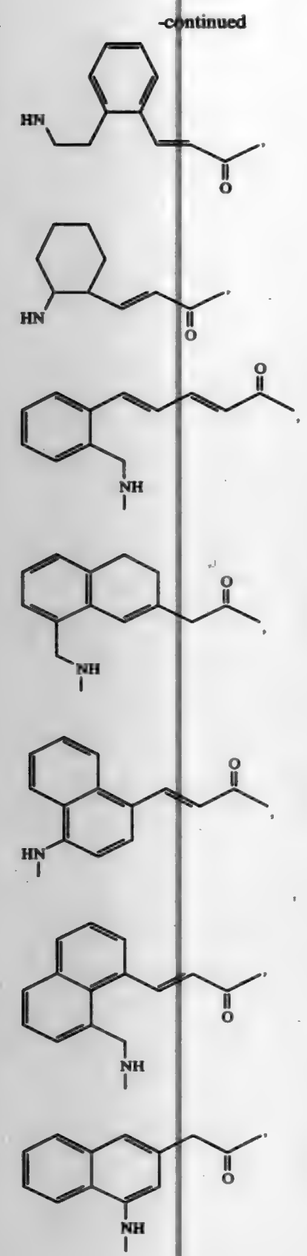
A is selected from the group consisting of the L-and D-isomers of Arg and Lys;

B is selected from the group consisting of the L-and D-isomers of Arg and Lys;

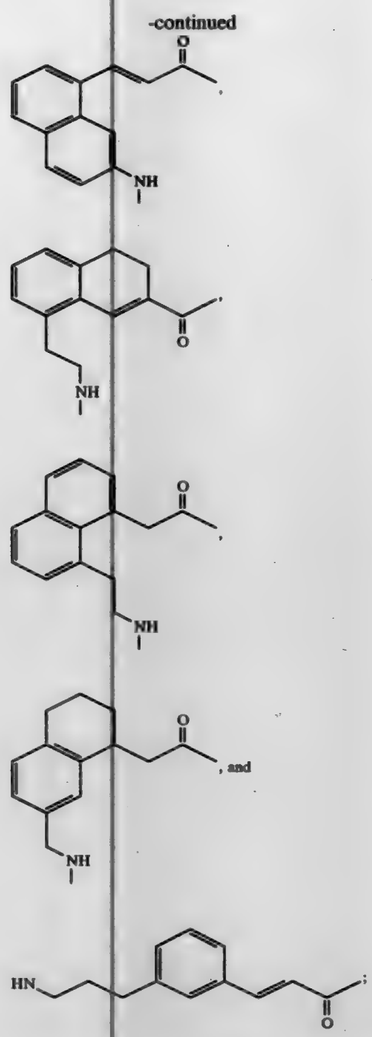
C is selected from the group consisting of:



-continued



-continued



D is a direct bond or selected from the group consisting of Ser, Thr, Gly, Ala and Val;

E is selected from the group Consisting of a D-Phe, D-Tic and a

D-trans-Hype wherein aryl is selected from the group consisting of a phenyl, naphthyl, benzyl, and naphthylmethyl group;

F is selected from the group consisting of Oic, Aoc, Phe, Tic, and a Hype wherein aryl is selected from the group consisting of a phenyl, naphthyl, benzyl, and naphthylmethyl group;

G is selected from the group consisting of Arg and Lys;

Cn is selected from the group consisting of a hydroxyl group, an amino group, and an alkoxy group;

and pharmaceutically accepted salts thereof.

5,444,049

PEPTIDE COMPOUNDS DERIVED FROM BORONIC ACID

Guillaume de Nanteuil, Suresnes; Christine Lila, Viroflay; Michel Lauble, Vaucresson; Tony Verbeuren, Vernouillet; Serge Simonet, Couflans Sainte Honorine; Alain Rupin, Savonnieres, and Bernard Portevin, Elancourt, all of France, assignors to Adir et Compagnie, Courbevoie, France

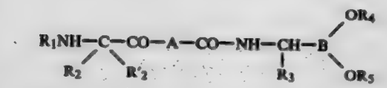
Filed Feb. 22, 1994, Ser. No. 199,473

Claims priority, application France, Feb. 24, 1993, 93 02082

Int. Cl.[6] A61K *38/06*

U.S. Cl. 514—18 12 Claims

1. A compound selected from those of formula(I):



(I)

in which:

R_1 represents hydrogen or linear or branched (C_1–C_6) acyl, benzyl, linear or branched (C_1–C_6) alkoxycarbonyl, benzyloxycarbonyl, or phenoxycarbonyl,

R_2 represents hydrogen or one of the following groups:

benzyl (unsubstituted or substituted on the phenyl ring with one or more halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, hydroxyl or bicyclooct-1-yl (unsubstituted or substituted with hydroxyl or linear or branched (C_1–C_6) alkoxy)),

diphenylmethyl,

naphthylmethyl,

(dicyclopropylmethyl)methyl,

indanyl, or

(C_3–C_7 cycloalkyl)methyl,

R'_2 represents hydrogen

R_3 represents one of the following groups:

linear or branched (C_2–C_4) alkyl substituted with linear or branched (C_1–C_6) alkoxy, guanidino, or amino,

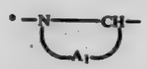
(C_3–C_7) cycloalkyl,

R_4 and R_5 each represent hydrogen or linear or branched (C_1–C_6) alkyl, or



forms a boronic ester of pinanediol,

A represents one of the following groups:



in which

A_1, with the nitrogen and carbon atoms to which it is linked, represents a cyclic structure chosen from the following structures:

perhydroindole,

2-azabicyclo[2.2.2]octane,

2-azabicyclo[3.3.0]octane,

2-azabicyclo[2.2.1]heptane,

perhydroisoindole,

indoline,

isoindoline,

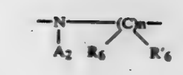
perhydroquinoline,

perhydroisoquinoline,

1,2,3,4-tetrahydroquinoline,

1,2,3,4-tetrahydroisoquinoline,

thiazolidine, optionally substituted with one or more linear or branched (C_1–C_6) alkyl, or



in which:

n represents 1 or 2,

R_6 represents hydrogen

R'_6 represents hydrogen,

or alternatively

A_2 represents indanyl, (C_3–C_7) cycloalkyl (unsubstituted or substituted with one or more methyl),

its enantiomers, diastereoisomers and epimers as well as its addition salts with a pharmaceutically-acceptable acid or base.

5,444,050

BINDING OF E-SELECTIN OR P-SELECTIN TO SIALYL LEWIS[x] OR SIALYL-LEWIS[a]

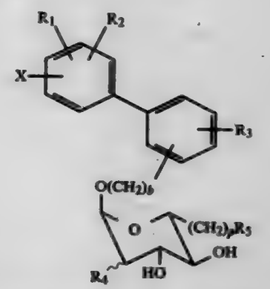
Timothy P. Kogan, Sugar Land; Brian Dupré, Houston; Ian L. Scott, Houston; Karin Keller, Houston; Huong Dao, Houston, and Pamela J. Beck, Houston, all of Tex., assignors to Texas Biotechnology Corporation, Houston, Tex.

Filed Apr. 29, 1994, Ser. No. 235,293

Int. Cl.[6] A61K *31/70*; C07H *15/20*

U.S. Cl. 514—25 19 Claims

1. A compound having the formula:



wherein X is selected from the group consisting of —$(CH_2)_nCO_2H$, —$O(CH_2)_mCO_2H$, —$(CH_2)_nO(CH_2)_mCO_2H$, —$CONH(CH_2)_mCO_2H$, —$CH(OZ)(CO_2H)$, —$CH(Z)(CO_2H)$, —$(CH_2)_nSO_3H$, —$(CH_2)_nPO_3D_1D_2$, —$NH(CH_2)_mCO_2H$, —$CONH(CHR_6)CO_2H$, (1-H-tetrazolyl-5-alkyl-), and —OH;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl, halogen, —OZ, —NO_2, —NH_2 and —NHZ;

R_3 is selected from the group consisting of hydrogen, halogen, alkyl, —OZ and —NHZ;

R_4 is selected from the group consisting of hydrogen, halogen, alkyl, hydroxyl, hydroxyl-O-sulfate and —OZ;

R_5 is selected from the group consisting of hydroxyl, —CN, —N_3, —NH_2, —$NHNH_2$, —NE_1E_2, —NHE_1, —$NHCO(CH_2)_nCO_2H$, —$S(CH_2)_mCO_2H$ and —$NHCHNHNH_2$; and

R_6 is selected from the group consisting of hydrogen, alkyl, aralkyl, hydroxyalkyl, aminoalkyl, alkyl carboxylic acid and alkyl carboxamide;

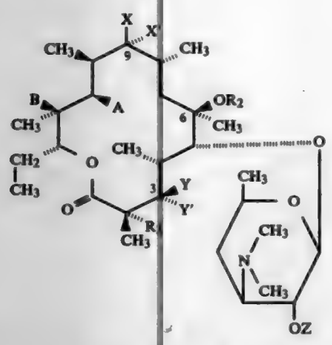
wherein n is 0 to 6, m is 1 to 6, p is 0 to 6, b is 0 to 2, Z is alkyl, aryl or aralkyl, D_1 and D_2 are independently hydrogen or alkyl, E_1 is alkyl or —$(CH_2)_8CO_2H$, and E_2 is alkyl, and the pharmaceutically acceptable salts, esters, and amides thereof.

5,444,051
ERYTHROMYCIN COMPOUNDS

Constantin Agouridas, Nogent sur Marne; Yannick Benedetti, Rosny Sous Bois; Jean-Francois Chantot, Gressy en France; Alexis Denis, Paris; Claude Fromentin, Paris, and Odile Le Martret, Paris, all of France, assignors to Roussel UCLAF, France

Continuation of Ser. No. 793,864, Nov. 18, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 83,636
Claims priority, application France, Nov. 21, 1990, 90 14499; May 27, 1991, 91 06333; Aug. 29, 1991, 91 19728
Int. Cl.[6] A61K *31/70*; C07H *17/08*
U.S. Cl. 514—29 26 Claims

1. A compound selected from the group consisting of a compound of the formula



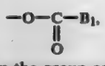
I

wherein X and X' together with the carbon atoms to which they are attached is —C=O or C=NOR, R is selected from the group consisting of a) hydrogen, b) alkyl, alkenyl and alkynyl of up to 18 carbon atoms, each optionally substituted by at least one member of the group consisting of —OH, halogen, cyano, nitro, amidinyl, quanidinyl, alkoxy of up to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkynyloxy of up to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkenylthio of 2 to 6 carbon atoms, alkynylthio of up to 6 carbon atoms, each sulfur atom being optionally oxidized into sulfoxide or sulfone, phenyl, phenylalkyl, phenoxy, phenylalkoxy, phenylthio and phenylalkylthio, each sulfur atom being optionally oxidized into sulfoxide or sulfone, each of said alkoxy, elkenyloxy, alkynyloxy, alkylthio, alkenylthio or alkynylthio, phenyl, phenylalkyl, phenoxy, phenylalkoxy, phenylthio, or phenylalkylthio being optionally substituted by at least one member of the group consisting of hydroxy, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkenylthio of 2 to 6 carbon atoms, alkynylthio of 2 to 6 carbon atoms, amino, monoalkylamino of 1 to 6 alkyl carbon atoms, dialkylamino of up to 12 alkyl carbon atoms, amidinyl, quanidinyl, phenyl, phenylalkyl, phenoxy, phenylalkoxy, phenylthio, and phenylalkylthio, each phenyl optionally substituted by a member of the group consisting of methyl, ethyl, propyl, carbamoyl, aminomethyl, dimethylaminomethyl, aminoethyl, dimethylaminoethyl, carboxyl, methoxycarbonyl and ethoxycarbonyl, and



c)

wherein R'_1 and R'_2 are individually selected from the group consisting of hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of up to 18 carbon atoms, alkenyl of up to 18 carbon atoms, alkynyl of up to 18 carbon atoms, phenyl, and phenylalkyl of 1 to 4 alkyl carbons, each member of R'_1 and R'_2 other than hydrogen being optionally substituted by at least one member of the group consisting of hydroxy, alkoxy of 1 to 8 carbon atoms, alkenyloxy of up to 8 carbon atoms, alkynyaoxy of up to 8 carbon atoms, alkylthio of up to 8 carbon atoms, alkenylthio of up to 8 carbon atoms, alkynylthio of up to 8 carbon atoms, amino, monoalkylamino of up to 4 carbon atoms, dialkylamino of up to 8 carbon atoms, cyano, free carboxyl, carboxyl salified with a non-toxic, pharmaceutically acceptable salt, lower alkoxycarbonyl, acyl of an organic carboxylic acid of up to 8 carbon atoms, carbamoyl of up to 8 carbon atoms, Si(alk)$_3$, Si(Oalk)$_3$, quaternary ammonium, 1,2-epoxyethyl, 2,2-dimethyl-1-1,2-epoxyethyl and —O—



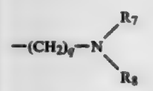
—B_1, B_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, phenyl, phenylalkyl phenoxy, phenylalkoxy, free, esterified, salified carboxyl, thiocyanate, acyl, carbamoyl and —$(CH_2)_n$—R^1, alk is alkyl of up to 4 carbon atoms, R^1 is the remainder of an amino acid, and n is an integer between 0 and 6 or X is



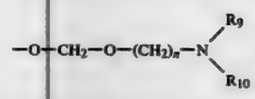
R_a and R_b are individually selected from the group consisting of a) hydrogen and b) hydrocarbon of up to 18 carbon atoms optionally containing at least one heteroatom, or R_a and R_b form with A a 9-N, 11-O ring, and X' is hydrogen, Y and Y^1 individually have the meaning of X and X', B is hydrogen or OR_4, R_4 is hydrogen, or forms with A a carbonate or carbamate, A forms with the carbon which carries it and the carbon in position 10 a double bond, or A is OR^1_4, R^1_4 is hydrogen, or forms with B a carbonate or A is



R^1_5 is C=O forming with B a carbamate group, R^1_6 is selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, aralkyl of up to 12 carbon atoms, alkoxy of up to 12 carbon atoms and

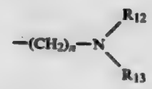


R_7 and R_8 are individually selected from the group consisting of hydrogen, alkyl of up to 18 carbon atoms, and aralkyl of up to 18 carbon atoms, q is an integer between 1 and 6, or A is

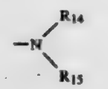


R_9 and R_{10} are individually hydrogen or alkyl of 1 to 8 carbon atoms, n is an integer between 1 and 6, R_2 is selected from the group consisting of alkyl of 1 to 8 carbon atoms, —$CONH_2$, —$CONHCOR_{11}$, and —$CONHSO_2R_{11}$, R_{11} is a hydrocarbon of 1 to 8 carbon atoms optionally containing at least one heteroatom, R_3 in α or β position is selected from the group consisting of

a) hydrogen,
b) alkyl of 1 to 8 carbon atoms,
c)



R_{12} and R_{13} are individually selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms, n is an integer between 1 and 6 and d)



R_{14} and R_{15} are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms and alkoxy of 1 to 8 carbon atoms, Z is hydrogen or an acyl of a carboxylic acid of 1 to 18 carbon atoms, the oximes that can be represented by X and ' or Y and Y' can be of syn or anti configuration and their non-toxic, pharmaceutically acceptable acid addition salts.

22. A method of treating bacterial infections in warm-blooded animals comprising administering to warm-blooded animals an antibactericidally effective amount of a compound of claim 1.

5,444,052
AMPHOTERICIN B COMPOSITION WITH ENHANCED FUNGAL ACTIVITY

Ronald A. Pieringer, Lafayette Hill, Pa.; Mary P. Haynes, Largo, Fla.; Haresh S. Ved, Upper Darby, and Erlinda A. Cabacungan, Philadelphia, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 805,425, Dec. 11, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,770
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—31 31 Claims

18. A method of treating fungal infection by a species of the genus Candida or by a species of the genus Cryptococcus comprising intravenously administering to a mammal in need of such treatment an antifungal effective amount of

(a) from about 0.4 to about 90 wt. % amphotericin B, and
(b) from about 10 to about 99.6 wt. % of a glycerol ether selected from the group consisting of
(i) $HOCH_2CHOHCH_2OR$,
(ii) $HOCH_2CH(OR_1)CH_2OH$, and
(ii) combinations thereof,

wherein R and R_1 are independently selected from the group consisting of C_8–C_{18} alkyl and C_{10}–C_{18} alkenyl.

5,444,053
METHOD FOR TREATING SYMPTOMS OF ALZHEIMER'S WITH NADH AND NADPH

Joerg G. D. Birkmayer, Vienna, Austria, assignor to Labor Birkmayer Ges. m.b.H., Vienna, Austria

Filed Sep. 15, 1993, Ser. No. 122,035
Claims priority, application Germany, Sep. 30, 1992, 42 32 899.3
Int. Cl.[6] A61K *31/70, 31/455*
U.S. Cl. 514—52 12 Claims

1. A method for improving the cognitive function, memory, and orientation abilities of persons having senile or presenile dementia of the Alzheimer's type comprising the step of administering to a patient suffering from Alzheimer's disease a therapeutic effective amount of NADH or a physiologically compatible salt thereof.

5,444,054
METHOD OF TREATING ULCERATIVE COLITIS

Keith A. Garleb, Powell, and Stephen J. Demichele, Dublin, both of Ohio, assignors to Abbott Labatories, Abbott Park, Ill.

Filed Apr. 1, 1994, Ser. No. 221,440
Int. Cl.[6] A61K *31/70, 31/715*
U.S. Cl. 514—54 19 Claims

1. A method of improving the nutritional status and reversing the characteristic diarrhea and inflammatory condition in a mammalian creature having ulcerative colitis or inflammation of the colon by enterally feeding to said mammalian creature a therapeutically effective amount of a liquid nutritional product which comprises:

(a) a source of indigestible carbohydrate which is metabolized to short chain fatty acids by microorganisms present in the human colon and which comprises at least one material selected from the group consisting of dietary fibers and indigestible oligosaccharides; and
(b) an oil blend containing certain fatty acids, expressed as percentages by weight of total fatty acids in the oil blend, as follows:

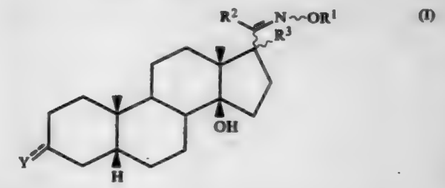
FATTY ACID	% OF TOTAL FATTY ACIDS
Oleic acid (18:1n9)	11.5–15.7
Linoleic acid (18:2n6)	6.6–9.0
Alpha-Linolenic acid (18:3n3)	1.5–2.1
Eicosapentaenoic acid (20:5n3)	15.1–20.5
Docosahexaenoic acid (22:6n3)	6.3–8.6

5,444,055
17-HYDROXYIMINOMETHYL-5-β, 14 β-ANDROSTANE DERIVATIVES ACTIVE ON THE CARDIOVASCULAR SYSTEM, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Alberto Cerri, Gessate MI; Luigi Bernardi; Giuseppe Bianchi, both of Milan MI; Monica Florio, Bresso MI; Elena Folpini, Milan MI, and Piero Melloni, Bresso MI, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Aug. 16, 1993, Ser. No. 106,892
Claims priority, application Germany, Aug. 20, 1992, 42 27 603.5
Int. Cl.[6] C07J *41/00, 1/00*; A61K *31/565, 31/57*
U.S. Cl. 514—182 5 Claims

1. A 17-Hydroxyiminomethyl-14β-hydroxy5β-androstane derivative compound of the formula I:



(I)

wherein:
the symbol ⁓ represents a single or a double bond;
the symbol ⁓ means α or β configuration or a Z or E configuration:
when ⁓ is a single bond, Y represents β-OR^4;
when ⁓ is a double bond, Y represents a N⁓OR^1 or a N⁓NHC(=N⁓R^5)NR^6R^7 group;
R^1 represents C2-C6 alkyl substituted by one or more NR^8R^9 or NHC(=NH)NH_2;
R^2 represents hydrogen or methyl;
R^3 represents hydrogen or hydroxy;

R^4 represents hydrogen, C2–C4 alkyl unsubstituted or substituted by one or more $NR^{10}R^{11}$ or $NHC(=NH)NH_2$;
R^5 represents hydrogen, methyl or C2–C4 alkyl;
R^6, R^7 which may be the same or different, represent hydrogen, methyl or C2–C4 alkyl;
R^8, R^9 which may be the same or different, represent hydrogen, methyl or C2–C4 alkyl;
R^{10}, R^{11} which may be the same or different, represent hydrogen, methyl or C2–C4 alkyl.

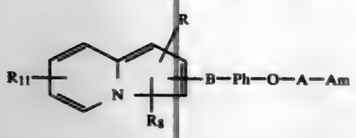
5,444,056

AMINOALKOXYPHENYL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

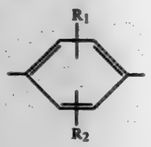
Jean Gubin; Pierre Chatelain; Henri Inion, all of Brussels, and Gilbert Rousseels, Emmel, all of Belgium, assignors to Sanofi, Paris, France

Filed Feb. 7, 1990, Ser. No. 476,342
Claims priority, application France, Feb. 7, 1989, 89 01554
Int. Cl.[6] C07D *221/02*; A61K *31/33*
U.S. Cl. 514—18.3 **22 Claims**

1. An aminoalkoxyphenyl compound of general formula:

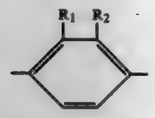


and pharmaceutically acceptable salts thereof, wherein:
B is selected from the group consisting of —S—, —SO— and —SO_2—;
Ph is selected from the group consisting of



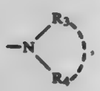
(D)

and



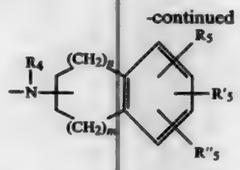
(E)

in which R_1 and R_2 are identical or different and are selected from the group consisting of hydrogen, methyl, ethyl and halogen;
A is selected from the group consisting of a straight or branched C_2–C_5 alkylene radical, a 2-hydroxypropylene radical and a 2-(C_1–C_4)alkoxypropylene radical;
Am is selected from the group consisting of



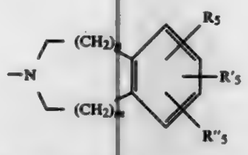
(F)

-continued



(G)

and



(H)

in which R_3 is selected from the group consisting of a C_1–C_8 alkyl, C_3–C_6 cycloalkyl and a radical of formula:

Alk—Ar

in which Alk is selected from the group consisting of a single bond and a linear or branched alkylene radical having from 2 to 5 carbon atoms, and Ar is selected from the group consisting of pyridyl, phenyl, 2,3-methylenedioxyphenyl, 3,4-methylenedioxyphenyl and a phenyl substituted by one or several substituents, identical or different, selected from the group consisting of a halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy,
R_4 is selected from the group consisting of hydrogen and C_1–C_8 alkyl, or
R_3 and R_4, taken together, are selected from the group consisting of an alkylene and an alkenylene radical having from 3 to 6 carbon atoms and optionally substituted by a phenyl radical or optionally interrupted by —O—, —N= or >N—R_6, R_6 being selected from the group consisting of a C_1–C_4 alkyl, C_3–C_6 cycloalkyl, phenyl optionally substituted by a radical selected from halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy,
R_5, R'_5 and R''_5, identical or different, are selected from the group consisting of hydrogen, halogen and C_1–C_4 alkyl, and n and m, identical or different, are 0, 1, 2 or 3;
R is selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_3–C_6 cycloalkyl, benzyl and phenyl optionally substituted by one or several substituents, identical or different, selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy and nitro;
R_8 is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, hydroxy, benzyloxy, nitro, amino, (C_1–C_4 alkyl)amino, di(C_1–C_4 alkyl)amino, sulfonamido, (C_1–C_4 alkyl)sulfonamido, phenylsulfonamido, cyano(C_1–C_4 alkoxy)carbonyl and (C_1–C_4 alkyl)carbonyl; and
R_{11} is selected from the group consisting of a C_1–C_4 alkyl, halogen, hydroxy, benzyloxy, nitro, amino, (C_1–C_4 alkyl-)amino, di(C_1–C_4 alkyl)amino, sulfonamido, (C_1–C_4 alkyl)sulfonamido, phenylsulfonamido, cyano, (C_1–C_4 alkoxy)carbonyl and (C_1–C_4 alkyl)carbonyl.

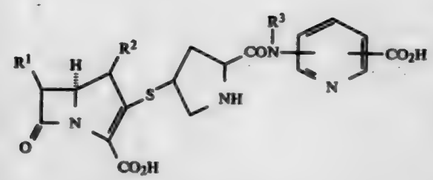
5,444,057

CARBAPENEM-ANTIBIOTIC COMPOUNDS

Frederic H. Jung, Rilly La Montagne, France, assignor to Zeneca Limited, London, England

Continuation of Ser. No. 86,835, Jul. 7, 1993, abandoned. This application Sep. 15, 1994, Ser. No. 309,594
Claims priority, application European Pat. Off., Jul. 21, 1992, 92402104
Int. Cl.[6] A01N *43/00*; A61K *31/395*; C07D *487/04*
U.S. Cl. 514—210 **8 Claims**

1. A compound of the formula (I):



(I)

wherein:
R^1 is 1-hydroxyethyl, 1-fluoroethyl or hydroxymethyl;
R^2 is hydrogen or C_{1-4}alkyl;
R^3 is hydrogen or C_{1-4}alkyl;
and the pyridyl group is bonded to the nitrogen of the linking carbamoyl group by a carbon atom, is substituted with the carboxy group on a carbon atom, and is optionally substituted on one or two pyridyl ring carbon atoms by a substituent selected from halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, trifluoromethyl, C_{1-4}alkoxycarbonyl, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, C_{1-4}alkylS(O)$_n$- (wherein n is 0–2), C_{1-4}alkylamino, C_{1-4}alkanoyl(N-C_{1-4}alkyl)amino, carbamoyl, C_{1-4}alkylcarbamoyl and di-C_{1-4}alkylcarbamoyl:
or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof.

5,444,058

Patent Not Issued For This Number

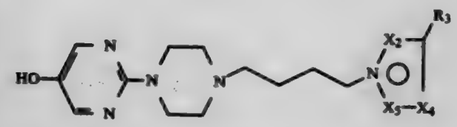
5,444,059

2-(4-AZOLYLBUTYL)-1-PIPERAZINYL)-5-HYDROXY-PYRIMIDINE DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION AS MEDICINAL PRODUCTS

Jordi Frigola-Constansa, and Ramon Merce-Vidal, both of Barcelona, Spain, assignors to Laboratorios Del.Dr. Esteve, S.A., Barcelona, Spain

Filed Feb. 4, 1994, Ser. No. 192,142
Claims priority, application France, Feb. 5, 1993, 93 01293
Int. Cl.[6] C07D *403/14*; A61K *31/495*
U.S. Cl. 514—252 **4 Claims**

1. 2-[4-(4-azolylbutyl)-1-piperazinyl]pyrimidine derivatives, characterized in that they correspond to the general formula I,



I

in which X_2 represents a nitrogen atom or a C-R_2 group, X_4 represents a nitrogen atom or a C-R_4 group, X_5 represents a nitrogen atom or a C-R_5 group, and R_2, R_3, R_4 and R_5, which are identical or different, represent a hydrogen atom, a halogen, a lower alkyl radical, a nitro radical, a hydroxy radical, an alkoxy radical, a cyano radical, a carboxylic radical, a carboxamide radical, an alkyl carboxylic radical, an aryl radical, a sulphonamido radical, an amino or substituted amino radical, as well as their physiologically acceptable salts.

4. Pharmaceutical compositions characterized in that they contain, in addition to a pharmaceutically acceptable carrier, at least one compound of general formula I or one of its physiologically acceptable salts, according to claim 1.

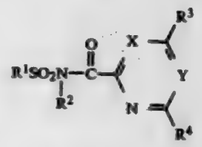
5,444,060

N-SULFONYL CARBOXYLIC AMIDE DERIVATIVE INCLUDING AN N-CONTAINING 6-MEMBERED AROMATIC RING, OR THE SALT OF THE SAME, METHOD FOR PRODUCING THE SAME, AND BIOCIDE

Ikumi Urushibata; Takumi Yoshimura; Takashi Daguchi; Noriharu Yonekura; Junstsu Sakai, and Shigeru Hayashi, all of Shizuoka, Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP93/00273, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO93/18012, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 137,190
Claims priority, application Japan, Mar. 3, 1992, 4-080264
Int. Cl.[6] B07D *239/26, 239/34, 401/12*; A01N *43/54*
U.S. Cl. 514—25.6 **4 Claims**

1. A compound of the formula:



wherein R^1 represents
a) a C_{1-10} alkyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{3-8} cycloalkyl group, an R^7O group (wherein R^7 represents a hydrogen atom, a C_{1-10} alkyl group, a C_{2-8} alkenyl group, a C_{2-8} alkynyl group, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group)), an $R^7S(O)_n$ group (wherein R^7 has the same meaning as defined above, n is an integer from 0 to 2), an R^7R^8N group (wherein R^7 has the same meaning as defined above, R^8 represents a C_{1-10} alkyl group, a C_{2-8} alkenyl group, a C_{2-8} alkynyl group, a C_{1-6} alkoxy group, a C_{2-8} alkenyloxy group, a C_{2-8} alkynyloxy group, or a phenyl group (optionally having monosubstituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group)), a trimethylsilyl group, a cyano group, a C_2 oxiranyl group, an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C{=}NOR^9$ group (wherein R^8 has the same meaning as defined above, and R^9 represents a C_{1-10} alkyl group, a C_{2-8} alkenyl group, or a C_{2-8} alkynyl group)},
b) a C_{2-8} alkenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), a C_{3-8} cycloalkyl group, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), a trimethylsilyl group, a cyano group, an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C{=}NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},
c) a C_{2-8} alkynyl group,
d) a C_{3-8} cycloalkyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a phenyl group (optionally having mono-substituent or poly-sub-

stituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meaning as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meaning as defined above), a trimethylsilyl group, a cyano group, an oxo group, a $=NOR^9$ group (wherein R^9 has the same meaning as defined above), an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

e) a C_{3-8} cycloalkenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, an C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), a trimethylsilyl group, a cyano group, an oxo group, a $=NOR^9$ group (wherein R^9 has the same meaning as defined above), an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

f) an R^5R^6N group wherein R^5 represents

i) a C_{1-10} alkyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{3-8} cycloalkyl group, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meaning as defined above), a trimethylsilyl group, a cyano group, an oxiranyl group, an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

ii) a C_{2-8} alkenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, an C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), a C_{3-8} cycloalkyl group, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), a trimethylsilyl group, a cyano group, an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

iii) a C_{2-8} alkynyl group,

iv) a C_{3-8} cycloalkyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), a trimethylsilyl group, a cyano group, an oxo group, a $=NOR^9$ group (wherein R^9 has the same meaning as defined above), an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

v) a C_{3-8} cycloalkenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a phenyl group (optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group), an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), a trimethylsilyl group, a cyano group, an oxo group, a $=NOR^9$ group (wherein R^9 has the same meaning as defined above), an R^8CO group (wherein R^8 has the same meaning as defined above), and an $R^8C=NOR^9$ group (wherein R^8 and R^9 have the same meanings as defined above)},

vi) an R^7O group (wherein R^7 has the same meaning as defined above), and

R^6 represents a hydrogen atom or R^5, R^5 and R^6 may be independent of each other, or R^5 may form a 3-member to 8-member ring with R^6 and the nitrogen atom,

g) an $R^{10}CON(R^6)$ group (wherein R^6 has the same meaning as defined above), and R^{10} represents

i) a C_{1-10} alkyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), and a cyano group},

ii) a C_{2-8} alkenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8N group (wherein R^7 and R^8 have the same meanings as defined above), and a cyano group},

iii) a phenyl group {optionally having mono-substituent or poly-substituents selected from the group consisting of a halogen atom, a C_{1-10} alkyl group, a C_{1-6} alkoxy group, a C_{1-10} haloalkyl group, and a C_{1-6} alkoxycarbonyl group}, or

h) an $R^{10}SO_2N(R^6)$ group (wherein R^6 and R^{10} have the same meanings as defined above);

R^2 represents a hydrogen atom or a C_{1-10} alkyl group (optionally having a substituent selected from the group consisting of a C_{1-6} alkoxy group and a C_{1-6} alkoxycarbonyl group), a benzyl group, or a C_{2-8} alkenyl group;

R^3 and R^4 represent independently a hydrogen atom, a halogen atom, a C_{1-10} alkyl group, an R^7O group (wherein R^7 has the same meaning as defined above), an $R^7S(O)_n$ group (wherein R^7 and n have the same meanings as defined above), an R^7R^8n group (wherein R^7 and R^8 have the same meanings as defined above), a C_{1-10} haloalkyl group, or a C_{1-6} haloalkoxy group;

X is a nitrogen and Y is a methyne group; or salt thereof.

5,444,061

ANTI-CANCER COMPOUNDS

Graham M. F. Bisset, Sutton; Ann L. Jackman, Wallington, and Duncan I. Jodrell, London, all of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB92/00476, § 371 Date Sep. 2, 1993, § 102(e) Date Sep. 2, 1993, PCT Pub. No. WO92/16512, PCT Pub. Date Oct. 1, 1992

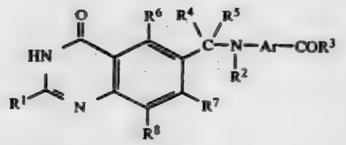
PCT Filed Mar. 18, 1992, Ser. No. 122,473

Claims priority, application United Kingdom, Mar. 19, 1991, 9105771

Int. Cl.[6] A61K *31/505*; C07D *239/72*

U.S. Cl. 514—259 19 Claims

1. A quinazoline of the formula (I):



(I)

wherein R^1 is hydrogen or amino;

or R^1 is alkyl, alkoxy or alkylthio each of up to 6 carbon atoms;

or R^1 is aryl or aryloxy, each of up to 10 carbon atoms;

or R^1 is halogeno, hydroxy or mercapto;

or R^1 is alkyl of up to 3 carbon atoms which bears one or more substituents selected from halogeno, hydroxy and alkanoylamino each of up to 6 carbon atoms; or R^1 is alkoxy of up to 3 carbon atoms which bears one or more substituents selected from hydroxy and alkoxy of up to 6 carbon atoms;

wherein R^2 is hydrogen or alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, mercaptoalkyl, alkylthioalkyl, halogenoalkyl, cyanoalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkanoylalkyl, carboxyalkyl, carbamoylalkyl or alkanoyl each of up to 6 carbon atoms;

wherein Ar is phenylene, thienylene, pyridylene, pyrimidinylene, thiazolylene or oxazolylene which is substituted or which bears one or more substituents selected from halogeno, cyano, nitro, hydroxy, amino and carbamoyl and alkyl, alkoxy, halogenoalkyl, alkenoylamino and alkoxycarbonyl each of up to 6 carbon atoms;

wherein R^3 is a grouping $—NHCH(CO_2H)—A—CONH—CH(Y)—CO_2H$,

in which A is an alkylene group of up to 6 carbon atoms; and Y is alkyl, alkenyl or alkynyl each of up to 6 carbon atoms;

or Y is alkyl of up to 6 carbon atoms which bears one or more substituents selected from amino, carboxy, hydroxy and mercapto;

or Y is phenyl or benzyl;

or Y is an alternative group present in a naturally occurring amino acid $H_2NCH(Y)CO_2H$;

the configuration at the asymmetric carbon atom of the first amino acid residue $—NHCH(CO_2H)—A—CO—$ of R^3 being L or D and the configuration at the asymmetric carbon atom of the second amino acid residue $—NHCH(Y)—CO_2H$ of R^3 being D;

wherein R^4 is hydrogen or alkyl of up to 4 carbon atoms;

wherein R^5 is hydrogen or alkyl of up to 4 carbon atoms; and

wherein each of R^6, R^7 and R^8 is hydrogen or alkyl or alkoxy each of up to 4 carbon atoms; or is halogeno;

the quinazoline optionally being in the form of a pharmaceutically acceptable salt, ester or amide thereof.

5,444,062

QUINAZOLINES DERIVATIVES FOR ENHANCING ANTITUMOR ACTIVITY

Jotham W. Coe, Mystic; Anton F. J. Flirl, Norwich; Takashi Kaneko, Guilford, and Eric R. Larson, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

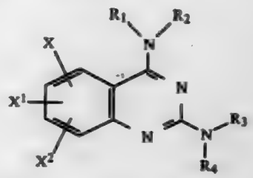
PCT No. PCT/US91/07254, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993

Continuation of Ser. No. 609,986, Nov. 6, 1990, abandoned. This PCT application Oct. 10, 1991, Ser. No. 50,047

Int. Cl.[6] A61K *31/505*; C07D *239/95*

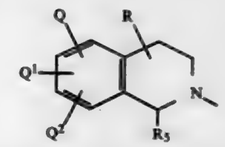
U.S. Cl. 514—260 27 Claims

1. A compound of the formula



and pharmaceutically acceptable acid addition salts thereof wherein X and X^1 are each hydrogen, alkyl having one to four carbon atoms, alkoxy having one to four carbon atoms, bromo, iodo, nitro, amino, alkylamino having one to three carbon atoms, $(CH_3)_2S^{\oplus}$, aminomethyl, methylsulfinyl, dialkylaminomethyl having three to seven carbon atoms, methylthio, hydroxymethyl, benzoylamino, substituted benzoylamino wherein said substituent is azido, methoxy, methyl, fluoro, chloro or trifluoromethyl, alkanoylamino having two to four carbon atoms, 4-methylpiperazino, morpholino, thiomorpholino, piperazino, piperidino, pyrrolidino, dialkylamino having two to six carbon atoms, fluoro or chloro; X^2 is hydrogen, alkyl having one to four carbon atoms or alkoxy having one to four carbon atoms; or X and X^1 together are ethylenedioxy or methylenedioxy; R_1 is alkoxyalkyl said alkoxy having from one to three carbon atoms and said alkyl having two to three carbon atoms, cycloalkyl having three to seven carbon atoms, alkyl having one to four carbon atoms or benzodioxan-2-ylmethyl; R_2 is hydrogen, alkyl having one to eight carbon atoms or benzyl; or R_1 and R_2 when taken together with the nitrogen atom to which they are attached form

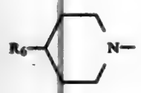
(a) a moiety of the formula



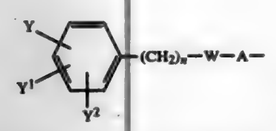
wherein Q is hydrogen, alkoxy having one to three carbon atoms, hydroxy, alkanoylamino having two to four carbon atoms, alkyl having one to three carbon atoms, bromo, iodo, fluoro, chloro, nitro, morpholino, amino, alkylamino having one to three carbon atoms or dialkylamino having two to six carbon atoms, Q^1 is hydrogen, fluoro, chloro, bromo, alkyl having one to three carbon atoms or alkoxy having one to three carbon atoms and Q^2 is hydrogen or alkoxy having one to three carbon atoms, or Q^1 and Q^2 together are ethylenedioxy or methylenedioxy, R is hydrogen, alkyl having one to four carbon atoms or alkoxy having one to three carbon atoms, R_5 is hydrogen or dialkoxybenzyl said alkoxy having one to three carbon atoms or R and R_5 together are alkylene having one to three carbon atoms,

(b) 1,2,3,4-tetrahydro-beta-carbol-2-yl,

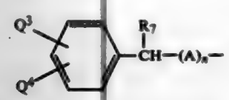
(c) piperidino of the formula



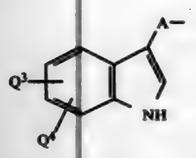
wherein R_6 is pyridylmethoxy, alkoxyalkyleneoxy said alkoxy having from one to three carbon atoms and said alkylene having from two to three carbon atoms or benzoxazol-2-ylmethyl,
(d) octahydroisoindol-2-yl or
(e) decahydroisoquinol-2-yl;
R_3 is
(a) cycloalkyl having three to seven carbon atoms,
(b) benzodioxan-2-ylmethyl,
(c) aralkyl of the formula



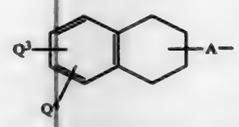
wherein n is an integer of 1 or 0, W is O, S or a chemical bond, A is alkylene having one to four carbon atoms, Y is hydrogen, alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms, fluoro, chloro, bromo, hydroxy, benzyloxy, nitro, dimethylamino or amino, Y^1 is hydrogen, alkoxy having one to three carbon atoms, chloro, fluoro, hydroxy or benzyloxy, Y^2 is hydrogen or alkoxy having one to three carbon atoms or Y and Y^1 together are ethylenedioxy or methylenedioxy,
(d) aralkyl of the formula



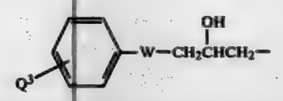
wherein R_7 is hydroxy, alkoxy having one to three carbon atoms or $C_6H_5(CH_2)_t$—, n is 1, t is an integer of 0 or 1, A is alkylene having one to four carbon atoms, Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy;
(e) pyridylalkyl said alkyl having from one to four carbon atoms,
(f) alkoxyalkyl said alkoxy having from one to three carbon atoms and said alkyl having two to three carbon atoms,
(g) indolylalkyl of the formula



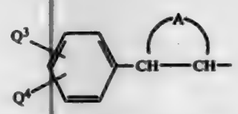
wherein A is alkylene having one to four carbon atoms, Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy,
(h) tetrahydronaphthalene of the formula



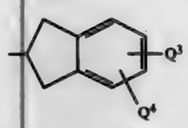
wherein A is alkylene having one to four carbon atoms, Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy,
(i) aralkanol of the formula



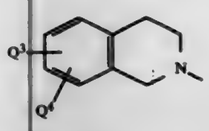
wherein W is O, S or a chemical bond and Q^3 is hydrogen or alkoxy having one to three carbon atoms,
(j) 2,3-dihydro-2-hydroxyinden-1-yl,
(k) aracycloalkyl of the formula



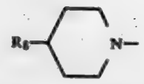
wherein A is alkylene having one to four carbon atoms, Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy,
(l) indene of the formula



wherein Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy,
(m) naphthyl or
(n) 1-methylpyrrol-2-yl;
R_4 is hydrogen or alkyl having one to eight carbon atoms, or R_3 and R_4 when taken together with the nitrogen atom to which they are attached form
(a) a tetrahydro isoquinoline of the formula



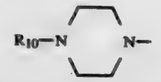
wherein Q^3 and Q^4 are each hydrogen or alkoxy having one to three carbon atoms or Q^3 and Q^4 together are ethylenedioxy or methylenedioxy,
(b) piperidino of the formula



wherein R_8 is benzyl, alkoxyalkyleneoxy said alkoxy having from one to three carbon atoms and said alkylene having two to three carbon atoms or alkyl sulfonamide of the formula



wherein R_9 is alkyl having from one to four carbon atoms,
(c) 3-methyl-3-phenylpiperidino or
(d) piperazino of the formula



wherein R_{10} is hydrogen, alkoxycarbonyl having from two to six carbon atoms, acyl having one to six carbon atoms, hydroxyalkoxy carbonyl having three to six carbon atoms, furoyl, benzoxazol-2-yl, pyrimid-2-yl or benzodioxan-2-carbonyl, provided that at least R_1 and R_2 are taken with the nitrogen atom to which they are attached to form a ring as defined hereinabove or R_3 and R_4 are taken with the nitrogen atom to which they are attached to form a ring as defined hereinabove and provided further that when X, X^1 and X^2 are each hydrogen;
or X and X^1 are each hydrogen and X^2 is alkyl having one to three carbon atoms;
or X and X^2 are each hydrogen and X^1 is alkyl having one to three carbon atoms, iodo, bromo, chloro or fluoro;
or X^1 and X^2 are each hydrogen and X is alkyl having one to three carbon atoms, iodo, bromo, chloro or fluoro;
R_1 is cycloalkyl having three to seven carbon atoms or alkyl having one to four carbon atoms;
R_2 is hydrogen or alkyl having one to six carbon atoms; or R_1 and R_2 when taken together with the nitrogen atom to which they are attached form octahydroisoindol-2-yl or decahydroisoquinol-2-yl; and
R_3 is cycloalkyl having three to seven carbon atoms;
then R_4 cannot be hydrogen or alkyl having one to six carbon atoms;
or R_3 and R_4 when taken together with the nitrogen atom to which they are attached cannot form piperazin-1-yl.

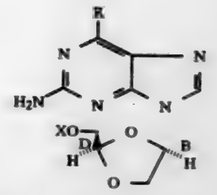
5,444,063

ENANTIOMERICALLY PURE β-D-DIOXOLANE NUCLEOSIDES WITH SELECTIVE ANTI-HEPATITIS B VIRUS ACTIVITY

Raymond F. Schinazi, Decatur, Ga., assignor to Emory University, Atlanta, Ga.

Continuation-in-part of Ser. No. 935,515, Aug. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 622,762, Dec. 5, 1990, Pat. No. 5,179,104. This application Oct. 28, 1992, Ser. No. 967,460
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—262 **12 Claims**

1. A method for the treatment of HBV infection in a human or other host animal, comprising administering an HBV treatment amount of an enantiomerically pure β-D-dioxolanyl nucleoside of the structure:



wherein R is OH, and X is selected from the group consisting of hydrogen, alkyl, acyl, monophosphate, diphosphate, and triphosphate, or its pharmaceutically acceptable salt, and wherein the compound is at least 95% free of the corresponding β-L enantiomer.

5,444,064

METHOD OF TREATING GASTROINTESTINAL MALIGNANCIES

Scott Wadler, Larchmont, N.Y., assignor to Montefiore Medical Center, Bronx, N.Y.

Filed Feb. 28, 1989, Ser. No. 317,014
Int. Cl.[6] A61K *31/505, 37/66*
U.S. Cl. 514—274 **10 Claims**

1. A method for the treatment of a malignancy sensitive to a treatment regimen which comprises administering by injection to a host afflicted with said malignancy 5-fluorouracil at a dose of 600–1000 mg/m²/day followed by the administration of from 2–40 million international units of alpha-2a-interferon.

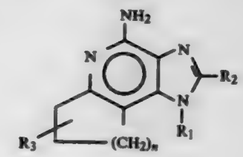
5,444,065

FUSED CYCLOALKYLIMIDAZOPYRIDINES AS INDUCER OF INTERFERON α BIOSYNTHESIS

Nick Nikolaides, and John F. Gerster, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 92,014, Jul. 15, 1993, Pat. No. 5,352,784. This application Jul. 20, 1994, Ser. No. 277,959
Int. Cl.[6] A61K *31/47*; C07D *401/04*
U.S. Cl. 514—293 **7 Claims**

1. A method of inducing interferon alpha biosynthesis in an animal, comprising the step of administering to said animal in an amount effective to induce said interferon alpha biosynthesis a compound of the formula:



wherein
n is 1, 2, or 3, and
R_1 is selected from the group consisting of hydrogen; cyclic alkyl of three, four, or five carbon atoms; straight chain or branched chain alkyl containing one to about ten carbon atoms and substituted straight chain or branched chain alkyl containing one to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; fluoro- or chloroalkyl containing from one to about ten carbon atoms and one or more fluorine or chlorine atoms; straight chain or branched chain alkenyl containing two to about ten carbon atoms and substituted straight chain or

branched chain alkenyl containing two to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms: hydroxyalkyl of one to about six carbon atoms: alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms; acyloxyalkyl wherein the acyloxy moiety is alkanoyloxy of two to about four carbon atoms or benzoyloxy, and the alkyl moiety contains one to about six carbon atoms, with the proviso that any such alkyl, substituted alkyl, alkenyl, substituted alkenyl, hydroxyalkyl, alkoxyalkyl, or acyloxyalkyl group does not have a fully carbon substituted carbon atom bonded directly to the nitrogen atom; benzyl; (phenyl)ethyl; and phenyl; said benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring one or two moieties independently selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms and halogen, with the proviso that when said benzene ring is substituted by two of said moieties, then the moieties together contain no more than six carbon atoms;

and $-CHR_xR_y$

wherein

R_y is hydrogen or a carbon-carbon bond, with the proviso that when R_y is hydrogen R_x is alkoxy of one to about four carbon atoms hydroxyalkoxy of one to about four carbon atoms, 1-alkynyl of two to about ten carbon atoms, tetrahydropyranyl, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, 2-, 3-, or 4-pyridyl, and with the further proviso that when R_y is a carbon-carbon bond R_y and R_x together form a tetrahydrofuranyl group optionally substituted with one or more substituents independently selected from the group consisting of hydroxy and hydroxyalkyl of one to about four carbon atoms,

R_2 is selected from the group consisting of hydrogen, straight chain or branched chain alkyl containing one to about eight carbon atoms, benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by a moiety selected from the group consisting of methyl, methoxy, and halogen; and

$-C(R_S)(R_T)(X)$ wherein R_S and R_T are independently selected from the group consisting of hydrogen, alkyl of one to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen;

X is selected from the group consisting of alkoxy containing one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, haloalkyl of one to about four carbon atoms, alkylamido wherein the alkyl group contains one to about four carbon atoms, amino, substituted amino wherein the substituent is alkyl or hydroxyalkyl of one to about four carbon atoms, azido, alkylthio of one to about four carbon atoms, and morpholinoalkyl wherein the alkyl moiety contains one to about four carbon atoms, and

R_3 is selected from the group consisting of hydrogen, fluoro, chloro, straight chain or branched chain alkyl containing one to about four carbon atoms, and straight chain or branched chain fluoro- or chloroalkyl containing one to about four carbon atoms and at least one fluorine or chlorine atom.

5,444,066

THIOFORMAMIDE DERIVATIVES HAVING HYPOTENSIVE ACTIVITY

Yasuhiro Kabasawa; Fumihiro Ozaki; Keiji Ishibashi; Takashi Hasegawa; Hitoshi Oinuma; Toshiaki Ogawa; Hideyuki Adachi; Hiroshi Kato; Kohtarou Kodama; Hideto Ohara; Nobuyuki Mori, and Norio Minami, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01297, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/08168, PCT Pub. Date Apr. 29, 1993

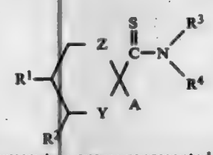
PCT Filed Oct. 6, 1992, Ser. No. 211,701

Claims priority, application Japan, Oct. 14, 1991, 3-264622

Int. Cl.[6] A61K *31/435*; C07D *471/04*

U.S. Cl. 514—300 6 Claims

1. A thioformamide derivative represented by the general formula (I) or a pharmacologically acceptable salt thereof:



(I)

wherein Y represents a group represented by formula



Z represents a group represented by formula $-(CH_2)_p-$ (wherein p is zero or an integer of 1 to 2);

A represents imidazopyridyl, imidazopyrazinyl, imidazopyrimidinyl, imidazopyridazinyl, imidazoxazinyl or imidazothiazinyl, with the proviso that each heteroaryl group may have one or two substituents;

R^1 and R^2 may be the same or different from each other and each represents hydrogen, lower alkyl, optionally substituted arylalkyl or optionally substituted heteroarylalkyl, or alternatively R^1 and R^2 may together represent a benzene ring; and

R^3 and R^4 may be the same or different from each other and each represents hydrogen, lower alkyl, cycloalkyl, lower alkoxy, hydroxyl, aryl, arylalkyl, heteroaryl or heteroarylalkyl, or alternatively R^3 and R^4 may represent, together with the nitrogen atom to which they are bonded, a cyclic group which may further contain an oxygen or sulfur atom.

5,444,067

PHARMACEUTICAL TREATMENT METHODS USING ANGIOTENSIN II RECEPTOR AGONISTS BEARING A THIOPHENE MOIETY

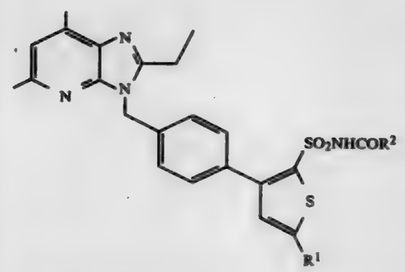
Salah Kivlighn, Blue Bell; Victor J. Lotti, Harleysville, both of Pa.; Ralph A. Rivero, Tinton Falls, N.J.; Peter K. S. Siegl, Blue Bell, and Gloria J. Zingaro, Harleysville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 30, 1993, Ser. No. 113,874

Int. Cl.[6] A61K *31/435*

U.S. Cl. 514—303 6 Claims

1. A method of treating a condition in a mammal, the treatment of which is effected or facilitated by a increase in angiotensin II mediated actions, comprising the administration, in an amount that is effective for agonizing the effect of angiotensin II, of a compound of structural formula I:



I

or a pharmaceutically acceptable salt thereof, wherein:

R^1 is: n-butyl or isobutyl; and

R^2 is: O-n-butyl or CH_2-O-n-butyl.

5,444,068

IMIDAZOPYRIDINE DERIVATIVES AS ANGIOTENSIN II RECEPTOR ANTAGONISTS, PHARMACEUTICALS, AND TREATMENT OF HYPERTENSION THEREWITH

Holger Heitsch, Hofheim am Taunus; Adalbert Wagner, Hattersheim am Main; Heinz-Werner Kleemann, Bad Homburg; Hermann Gerhards, Hofheim am Taunus, and Berward Schölkens, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

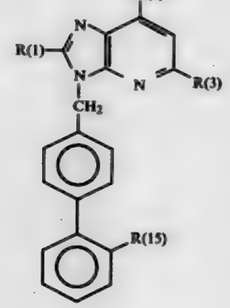
Division of Ser. No. 942,769, Sep. 10, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 165,655

Claims priority, application Germany, Sep. 14, 1991, 41 30 659.7; Sep. 20, 1991, 41 31 325.9

Int. Cl.[6] A61K *31/535, 31/435*; C07D *471/04*

U.S. Cl. 514—303 13 Claims

1. A compound of the formula



wherein

R(1) is C_1-C_7 alkyl,

R(2) and R(3) are the same or different and are selected from hydrogen and C_1-C_6 alkyl,

R(15) is $-SO_2-NR(18)-CO-OR(17)$ or $-SO_2-N(CO-OR(17))_2$,

R(17) is hydrogen, C_1-C_6 alkyl, C_3-C_8 cycloalkyl, C_6-C_{12} aryl, C_6-C_{10}-aryl-(C_1-C_4)-alkyl, C_3-C_6-alkenoyl, C_2-C_6 alkenyl or (C_3-C_8)-cycloalkyl-(C_1-C_4)-alkyl,

R(18) is hydrogen, C_1-C_6 alkyl, C_3-C_8 cycloalkyl, C_6-C_{12}-aryl-(C_1-C_6)-alkyl, phenyl or C_1-C_9 heteroaryl; or a physiologically tolerable salt thereof.

5,444,069

IMIDAZO-PYRIDINE ANGIOTENSIN II ANTAGONISTS USED TO TREAT MEMORY LOSS

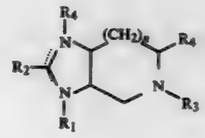
David T. Dudley; John C. Hodges; Thomas A. Pugsley, and Michael D. Taylor, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 13, 1994, Ser. No. 227,223

Int. Cl.[6] A61K *31/415, 31/34*

U.S. Cl. 514—303 3 Claims

1. A method for treating memory disorder in a patient in need of treatment comprising administering an effective amount of a compound of Formula I



I

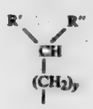
wherein

(1)—is a single or a double bond;

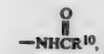
(2) one of R_1 is present and is

(a) alkyl of from four to twenty carbons, inclusive,

(b)



wherein y is zero, one, two, three, four, or five, R' is cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three-saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, heteroaryl consisting of 2-, 3-, or 4-pyridyl; 1-, 2-, or 4-imidazolyl; 1-, 2-, 3-, 4-, 5-, 6-, or 7-indolyl; 2-, or 3-thienyl; 2-, or 3-furyl; or 1-, 2-, or 3-pyrazolyl, phenyl unsubstituted or substituted with of from one through five substituents selected from the group consisting of lower alkyl, halo, trifluoromethyl, hydroxy, lower alkoxy, lower alkyl acyloxy, amino, N-lower monoalkylamino, N, N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, nitro and



wherein R^{10} is lower alkyl, phenyl unsubstituted or substituted by lower alkyl, or $-NHR_{11}$ wherein R_{11} is hydrogen or lower alkyl, and R'' is hydrogen, lower alkyl, cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three-saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, phenyl unsubstituted or substituted with of from one through five substituents selected from the group consisting of alkyl, halo, trifluoromethyl, amino, N-lower monoalkylamino, N, N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, and nitro;

(3) R_2 is

(a) hydrogen,

(b) halo,

(c) lower alkyl,

(d) R'—$(CH_2)_x$ wherein x is one, two, three, four, or five and R' is independently as defined above,

(e)



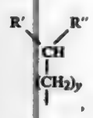
wherein R′ is independently as defined above, or

(f) R′—CH(OH)— wherein R′ is independently as defined above;

(4) R_3 is

(a) R′—(—CH—)$_x$ wherein x and R′ are independently as defined above,

(b)



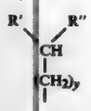
wherein R′ and y are independently as defined above, and R‴ is lower alkyl, cycloalkyl of from four to twenty carbons, inclusive in a one-, two-, or three-saturated ring system, said ring consisting of from four to eight carbons inclusive, each ring unsubstituted or substituted by a straight or branched lower alkyl group, naphthyl, phenyl unsubstituted or substituted with of from one to five substituents selected from the group consisting of alkyl, halo, trifluoromethyl, amino, N-lower monoalkylamino, N,N-lower dialkylamino, lower thioalkyl, lower alkylsulfonyl, and nitro;



wherein R_5 is

(i) alkyl of from one to fifteen carbons, inclusive,

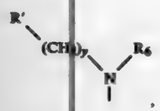
(ii)



wherein R′, R″, and y are independently as defined above,

(iv) —(—CH=CR$_6$—)—R$_1$ wherein R_6 is hydrogen or lower alkyl and R_1 is as defined above,

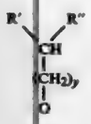
(v)



wherein y, R′, and R_6 are independently as defined above,

(vi) R′—(—CH$_2$—)$_y$—O— wherein y and R′ are independently as defined above,

(vii)



wherein R′, R″, and y are independently as defined above,

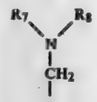


wherein R_5 is independently as defined above;

(5) R_4 is

(a) —CH$_2$OR$_7$ wherein R_7 is hydrogen, lower acyl, a lower alkyl,

(b)



wherein R_7 is independently as defined above and R_8 is hydrogen, lower alkyl, or benzyl,

(c)



(d) —C≡N,

(e)

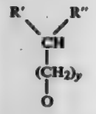


wherein R_9 is hydrogen, lower alkyl, or benzyl; and

(6) n is one; with the overall proviso that R_9 cannot be hydrogen, methyl, or ethyl when R_3 is R′—(CH$_2$)$_x$ or



wherein R_5 is R′—(CH$_2$)$_6$O— or



wherein each of R′, R″, x, and y are as defined above.

5,444,070

PHENYL SUBSTITUTED HETEROCYCLIC COMPOUNDS

Peter Moldt, Humleb k; Jorgen Scheel-Krüger, Glostrup, and Leif H. Jensen, Copenhagen, all of Denmark, assignors to NeuroSearch A/S, Glostrup, Denmark

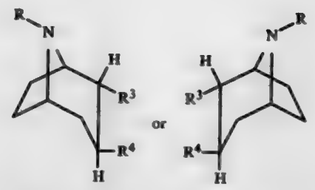
Filed Jul. 16, 1993, Ser. No. 93,181

Claims priority, application Denmark, Dec. 23, 1992, 1541/92

Int. Cl.[5] C07D *413/04, 401/04;* A61K *31/44*

U.S. Cl. 514—304 **9 Claims**

7. A compound having the formula



any mixture thereof, or a pharmaceutically-acceptable salt thereof; wherein

R is hydrogen, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{3-7}-cycloalkyl-C_{1-6}-alkyl or 2-hydroxyethyl;

R^3 is 1,2,4-oxadiazol-3-yl which may be substituted in the 5-position with phenyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, or nitro; phenylphenyl; or benzyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-}-alkenyl, C_{2-6}-alkynyl, amino, or nitro; or

1,2,4-oxadiazol-5-yl which may be substituted in the 3-position with phenyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, or nitro; phenylphenyl; or benzyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, or nitro; and

R^4 is phenyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, nitro, or phenyl;

3,4-methylenedioxyphenyl;

benzyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, or nitro; or

naphthyl which may be substituted one or two times with a substituent selected from the group consisting of halogen, CF_3, CN, C_{1-6}-alkoxy, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, amino, or nitro.

5,444,071

QUINOLINE DERIVATIVES AND USE THEREOF AS ANGIOTENSIN II ANTAGONISTS

David A. Roberts, Congleton; Simon T. Russell, Macclesfield, and Robert J. Pearce, Wilmslow, all of England, assignors to Imperial Chemical Industries PLC, England

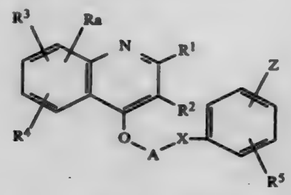
Continuation of Ser. No. 565,764, Aug. 10, 1990, abandoned. This application May 4, 1993, Ser. No. 58,825

Claims priority, application United Kingdom, Aug. 11, 1989, 8918402; Feb. 13, 1990, 9003187

Int. Cl.[6] A61K *31/47;* C07D *215/233*

U.S. Cl. 514—312 **22 Claims**

1. A quinoline compound of the formula I



I

wherein R^1 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, phenyl or substituted (1–4C) alkyl, the latter having one or more fluoro substituents or bearing a (3–8C)cycloalkyl, hydroxy, (1–4C)alkoxy or phenyl substituent; R^2 is hydrogen, methyl, ethyl, propyl, butyl, isObutyl, sec-butyl, pentyl or hexyl; R^3 and R^4 are independently selected from hydrogen (1–4C)alkyl, (1–4C)alkoxy, fluoro(1–4C)alkoxy, halogeno, hydroxy, trifluoromethyl, cyano, nitro, amino, (1–4C)alkanoylamino, alkylamino and dialkylamino of up to 6 carbon atoms, dialkylamino-alkyl of 3 to 8 carbon atoms, (1–4C)alkanoyl, carbamoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, carboxy, (1–4C)alkoxycarbonyl, (1–6C)alkylthio, and substituted (1–4C)alkyl, the latter bearing an amino, hydroxy or (1–4C)alkoxy substituent; or R^3 and R^4 together form (1–4C)alkylenedioxy attached to adjacent carbon atoms of the benzene moiety of formula I; R_a and R^5 are independently selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro; A is methylene; X is phenylene optionally bearing a substituent selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro Z is 1H-tetrazol-5-yl, —CO.NH.(1H-tetrazol-5-yl) or a group of the formula —CO.OR^6 or —CO.NH.SO$_2$.R^7 in which R^6 is hydrogen or a non-toxic, biodegradable residue of a physiologically acceptable phenol, and R^7 is (1–6C)alkyl, (3–8C)cycloalkyl or phenyl; and wherein any of said phenyl moieties may be unsubstituted or bear one or two substituents independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, cyano and trifluoromethyl; or a non-toxic salt thereof; but excluding methyl 2-((3-methoxycarbonylquinolin-4-yloxy)-methyl) benzoate.

5,444,072

6-SUBSTITUTED MYCOPHENOLIC ACID AND DERIVATIVES

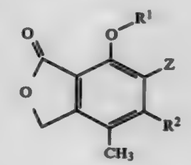
John W. Patterson, Mountain View; David Morgans, Jr., Sunnyvale; David B. Smith, San Bruno, all of Calif.; Francisco X. Talamás, Cuernavaca, Mexico; Dean R. Artis, Menlo Park, Calif.; Alicia Cervantes, Col. Campestre Churubusco, Mexico; Todd R. Elworthy, Palo Alto, Calif.; Mario Fernández, Cuernavaca; Fidencio Franco, San Pedro Xalpa, both of Mexico; Ronald C. Hawley, Woodside, Calif.; Teresa Lara, Toluca, Mexico; David G. Loughhead, Belmont, Calif.; Peter H. Nelson, Los Altos, Calif.; Eric B. Sjogren, Mountain View, Calif.; Alejandra Trejo, Col. Reforma, Mexico; Ann M. Waltos, San Ramon, and Robert J. Weikert, Woodside, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 18, 1994, Ser. No. 198,725

Int. Cl.[6] A61K *31/445;* C07D *307/83*

U.S. Cl. 514—320 **28 Claims**

1. A compound of the formula:



Formula A

wherein:

R^1 is H or C(O)R^{10}, where R^{10} is lower alkyl, aryl or NH-aryl;

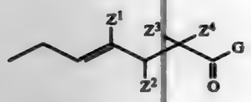
R^2 is lower alkyl, cycloalkyl, vinyl, fluorovinyl, difluorovinyl, trifluorovinyl, alkenyl, —C≡C—R^{11}, allenyl, CHO or CH$_2$OR^{12}, where

R^{11} is H or lower alkyl, and

R^{12} is H or 4-methoxybenzyl; and

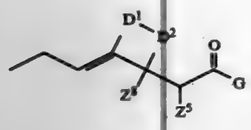
Z is a side chain selected from Formulae ZA, ZB, ZC, ZD, ZE, ZF, ZG and ZH:

Formula ZA



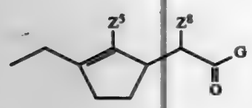
wherein:
Z^1 is H, lower alkyl, halo or CF_3;
Z^2 is H, lower alkyl, lower alkoxy, aryl, or $CH_2—Z^{11}$, where
Z^{11} is halo, CN, aryl or heteroaryl;
Z^3 is H, lower alkyl, lower alkenyl, lower alkoxy, phenyl, or $S(O)_m$-lower alkyl, where m is 0, 1 or 2;
Z^4 is H, lower alkyl, halo, or phenyl;
or Z^3 and Z^4 taken together with the carbon to which they are attached form cycloalkyl of three to five carbon atoms; and
G is OH, lower alkoxy, lower thioalkyl, NG^1G^2, O—$(CH_2)_n$—NG^1G^2, or O—$(CH_2)_n$—N=G^3, where
n is an integer from 1 to 6,
G^1 is H or lower alkyl,
G^2 is H or lower alkyl, and
=G^3 is lower alkylene of four to six carbon atoms, or lower alkylene of three to five carbon atoms plus one member that is —O—, —S—, or —N(G^4)— where G^4 is H or lower alkyl; or

Formula ZB



wherein:
Z^5 is H or lower alkyl;
Z^8 is H, lower alkyl or forms a double bond with D^2;
D^1 and D^2 together with their adjacent carbon atoms form an optionally substituted, saturated or unsaturated carbocyclic or heterocyclic ring of 3 to 7 atoms; and
G is as defined above; or

Formula ZC



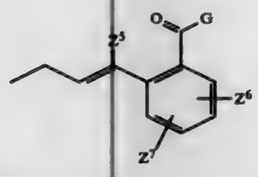
wherein:
Z^8 is H or lower alkyl; and
Z^5 and G are as defined above; or

Formual ZD



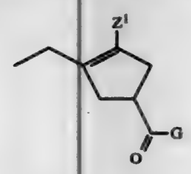
wherein:
D^3 is —CH_2— or —CH_2—CH_2—; and
G is as defined above; or

Formula ZE



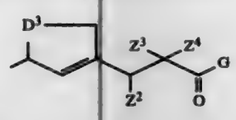
wherein:
Z^6 is H, lower alkyl, COOH, NH_2, azido or halo;
Z^7 is H, lower alkyl or halo; and
Z^5 and G are as defined above; or

Formula ZF



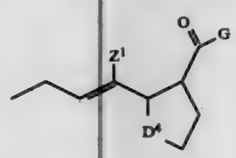
wherein:
Z^1 and G are as defined above; or

Formula ZG



wherein:
D^3, Z^2, Z^3, Z^4 and G are as defined above; or

Formula ZH



wherein:
D^4 is —CH_2—, —CH_2—CH_2—, —CH_2—CH_2—CH_2—, —O—, or —O—CH_2—; and
Z^1 and G are as defined above;
or a pharmaceutically acceptable salt thereof.

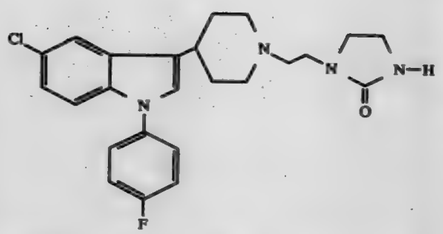
5,444,073

METHOD FOR TREATING MEMORY IMPAIRMENT

Jens K. Perregaard, Jaegerspris, Denmark, and Brenda Costall, Bradford, United Kingdom, assignors to H. Lundbeck A/S, Copenhagen-Valby, Denmark

Filed Sep. 1, 1993, Ser. No. 115,449
Claims priority, application Denmark, Mar. 1, 1991, 0362/91
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—323 **3 Claims**

1. A method for treating memory impairment comprising administering a therapeutically effective amount of a compound having the formula:



or a pharmaceutically acceptable acid addition salt or prodrug therefor to a patient in need thereof.

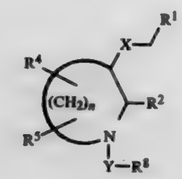
5,444,074

PIPERIDINE TACHYKININ RECEPTOR ANTAGONISTS

R. Baker, Herts; T. Ladduwahetty, Essex; E. M. Seward, Herts, and C. J. Swain, Cambridge, all of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

Filed Apr. 13, 1993, Ser. No. 46,538
Claims priority, application United Kingdom, Apr. 15, 1992, 9208323; Jul. 28, 1992, 9216065; Sep. 17, 1992, 9219686; Dec. 14, 1992, 9226069
Int. Cl.[6] A61K *31/445*; C07D *401/06*
U.S. Cl. 514—326 **13 Claims**

1. A compound of formula (I), or a salt or prodrug thereof:



(I)

wherein:
n is 3;
X represents O or S;
Y represents a hydrocarbon chain of 1, 2, 3, or 4 carbon atoms which may optionally be substituted by oxo;
R^1 represents unsubstituted phenyl or phenyl substituted with 1, 2 or 3 substituents selected from the group consisting of: C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a, and —$CONR^aR^b$;
R^2 represents phenyl or benzhydryl, wherein the phenyl or benzhydryl moiety is unsubstituted or substituted with a substituent selected from the group consisting of: C_{1-6}alkyl, C_{1-6}alkoxy, halo, and trifluoromethyl;
R^4 and R^5 may be present on any available carbon atom of the azacyclic ring and are each independently selected from the group consisting of: hydrogen, halo, C_{1-6}alkyl, oxo, CH_2OR^a, CO_2R^a, and $CONR^aR^b$;
R^8 represents an aromatic heterocycle selected from the group consisting of: imidazolyl, benzimidazolyl, triazolyl, and tetrazolyl, wherein the heterocycle is unsubstituted or substituted with a substituent selected from the group consisting of: C_{1-6}alkyl, C_{1-6}alkoxy, phenyl, oxo, thioxo, halo, trifluoromethyl, trimethylsilyl, —NR^aR^b, —NR^aCOR^b, —$CONR^aR^b$, —CO_2R^a, —SR^a, —SOR^a, —SO_2R^a, and —CH_2OR^a; and
R^a and R^b are each independently selected from the group consisting of: hydrogen, trifluoromethyl, C_{1-6}alkyl, unsubstituted phenyl and phenyl substituted by a substituent selected from the group consisting of C_{1-6}alkyl, halo and trifluoromethyl.

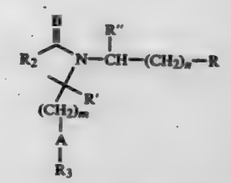
5,444,075

PENETRATION ENHANCERS FOR TRANSDERMAL DELIVERY OF SYSTEMIC AGENTS

Gevork Minaskanian, 8 Havenwood, Irvine, Calif. 92714, and James V. Peck, 2524 Bowdoin Pl., Costa Mesa, Calif. 92626

Continuation of Ser. No. 193,990, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 989,434, Dec. 11, 1992, abandoned, which is a division of Ser. No. 611,613, Nov. 13, 1990, Pat. No. 5,234,959, which is a continuation of Ser. No. 199,801, Jun. 20, 1988, Pat. No. 4,996,199, which is a continuation-in-part of Ser. No. 179,144, Apr. 8, 1988, abandoned. This application Oct. 20, 1994, Ser. No. 326,353
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[6] A61K *31/445, 31/56, 31/44, 31/40, 31/34, 31/195, 31/155, 31/135, 47/00*
U.S. Cl. 514—327 **3 Claims**

1. A method for topically administering systemically active agents through the skin or mucosal membranes of humans and animals, which method comprises the topical administration of effective amounts of a systemically active agent selected from the group consisting of haloperidol, isosorbide dinitrate, nitroglycerine, estradiol, clonidine, propranolol, indomethacin, nifedipine, nicardipine, diclorofenac, and metaproterenol and a membrane penetration enhancer having the structural formula:



wherein B represents oxygen, sulfur, or two hydrogen radicals;
wherein A represents oxygen, sulfur, or —(CH_2)—;
wherein R, R_2 and R_3 independently represent alkyl optionally substituted with 1 to 3 double or triple bonds, —SR''', —OR''', —NHR''', —CH_3, or $COOR_1$;
wherein R''' represents hydrogen, alkyl, alkylthioalkyl, alkoxyalkyl, amino-alkyl or aminoalkyl, substituted with a phenyl or benzoyl;
wherein R' represents hydrogen, alkyl, alkoxy, acyloxy, alkylthio, hydroxy, or —$(CH_2)_yCOOR_1$;
wherein R'' represents —$(CH_2)_yCOOR_1$;
wherein R_1 represents a hydrogen or lower alkyl radical and y is between zero and 3, inclusive; and
wherein m is between zero and 5, while n is between 1 and 24, inclusive.

5,444,076

PHARMACEUTICAL PREPARATION FOR TOPICAL APPLICATION

Carlos E. M. Vásquez, Buenos Aires, Argentina, assignor to Roemmers S.A.I.C.F., Argentina

Continuation of Ser. No. 817,332, Jan. 6, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,930
Claims priority, application Germany, Nov. 26, 1990, 40 37 554.4
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—352 **13 Claims**

1. A pharmaceutical preparation for topical application comprising:
1 to 10% by weight L-lysine salt of the 2-[(3-chloro-2-methylphenyl)amino]-3-pyridine carboxylic acid as active

substance, 2 to 15% by weight pharmaceutically acceptable emulsifier, 2 to 20% by weight pharmaceutically acceptable emollient, and 0.01 to 0.2% by weight pharmaceutically acceptable preservation substance.

5,444,077

AMELIORANT OF CEREBRAL CIRCULATION AND OPTICAL ISOMER OF NB-818, PROCESSES FOR ITS USE

Masaru Nishikibe, Urayasu; Kazuo Kamei, Fuchu; Jun Nagura, Ichikawa, and Takahiro Fukuroda, Tokyo, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 635,309, Jan. 24, 1991, abandoned, which is a continuation of Ser. No. 254,106, Oct. 6, 1988, abandoned. This application Jul. 29, 1994, Ser. No. 282,657
Claims priority, application Japan, Oct. 6, 1987, 62-251988; Feb. 26, 1988, 63-43526
Int. Cl.[6] A61K *31/44*; C07D *211/90*
U.S. Cl. 514—356 **3 Claims**

1. (−)-2-Carbamoyloxymethyl-4-(2,3-dichlorophenyl)-6-methyl-1,4-dihydropyridine-3,5-dicarboxylic acid 3-isopropyl ester, 5-methyl ester.

5,444,078

FULLY WATER-DILUTABLE MICROEMULSIONS

Bing Yu, Horsham, and John R. Mattox, Perkasie, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 1, 1993, Ser. No. 130,614
Int. Cl.[6] A01N *25/02, 25/30, 43/80*; C02F *1/50*
U.S. Cl. 514—372 **12 Claims**

1. Composition useful as a biocide consisting essentially of

(A) one or more active ingredient compounds which are less than 1000 ppm soluble in water at room temperature and having a melting point of less than 100 ° C. selected from the group consisting of 4,5-dichloro-2-n-octyl-3-isothiazolone and 2-n-octyl-3-isothiazolone;

(B) one or more non-polar, water immiscible solvent selected from the group consisting of benzyl alcohol, benzyl acetate, pine oil, phenethyl alcohol, xylene, phenoxyethanol, butyl phthalate, 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate, and alkylbenzene, said solvent being capable of dissolving at least 5% by weight of (A) at room temperature;

(C) a surfactant system consisting essentially of:

(C1) one or more sulfated of sulfonated anionic surfactants having about 3–17% sulfation or sulfonation, selected from the group consisting of sulfated and/or sulfonated castor oil, sulfated and/or sulfonated ethoxylated alkylphenols, sulfated and/or sulfonated ethoxylated fatty alcohols, sulfated and/or sulfonated fatty acids, and sulfated alkanolamides; and

(C2) one or more ethoxylated surfactant selected from the group consisting of ethoxylated (C_{10}–C_{18})alkyl phosphate monoesters and/or diesters and/or triesters, ethoxylated (C_{10}–C_{18})alkaryl phosphated monoesters and/or diesters, ethoxylated (C_8–C_{20})monoalkyl- or dialkylphenols, ethoxylated alkylamides, ethoxylated alkanols, and ethoxylated cator oil;

(D) 0 to 99.9% by weight water; and optionally,

(E) one or more adjuvants selected from the group consisting of antifreeze agents, water soluble inorganic salts, thickeners, and defoamers;

wherein

the weight ratio of (C1) to (C2) being about 10/90 to 90/10;

the weight ratio of said (A) to (B) being about 95/5 to about 1/99, and

the weight ratio of said (A) to (C) being about 1/99 to about 86/14;

said composition being thermodynamically stable and clear, opalescent, or only slightly cloudy at all levels of water dilution up to 99.99%.

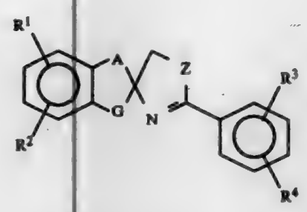
5,444,079

ARTHROPODICIDAL OXAZOLINES

Victor E. Amoo, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US93/03563, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO93/21165, PCT Pub. Date Oct. 28, 1993
Continuation of Ser. No. 976,587, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 872,493, Apr. 23, 1992, abandoned. This PCT application Apr. 21, 1993, Ser. No. 318,742
Int. Cl.[6] A61K *31/42*; C07D *263/12*
U.S. Cl. 514—374 **5 Claims**

1. A compound of the formula



wherein

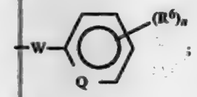
A is selected from the group a direct bond, and C_1–C_3 straight or branched chain alkylene;

G is selected from C_1–C_3straight or branched chain alkylene; the ring containing A and G has 5–7 members;

Z is O;

R^1 is selected from the group H, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl and C_1–C_6 haloalkoxy;

R^2 is selected from the group H, halogen, C_1–C_{16} alkyl, C_3–C_7 cycloalkyl, C_4–C_7 cycloalkylalkyl, C_1–C_{16} haloalkyl, C_2–C_{16} alkenyl, C_2–C_{16} haloalkenyl, C_2–C_{16} alkynyl, C_2–C_{16} haloalkynyl, C_2–C_{16} alkoxyalkoxy, OR^5, $R^5OC(O)$—, $R^5C(O)$— and



W is selected from the group direct bond, S, O, C(=O), C(=O)O, C(=O)O—C_1–C_2 alkylene, C_1–C_4 alkylene, O—C_1–C_4 alkylene and O—C_2–C_4 alkenylene, wherein when W is O—C_1–C_4 alkylene or O—C_2–C_4 alkenylene, the oxygen atom can be attached to either aromatic ring and when W is C(=O)O or C(=O)O—C_1–C_2, the C(=O) moiety can be attached to either aromatic ring;

Q is selected from CH and N;

R^3 and R^4 are independently selected from the group H, halogen, C_1–C_6alkyl, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, C_1–C_6 alkylthio, CN and NO_2;

R^5 is selected from the group H, C_3–C_7 cycloalkyl, C_4–C_{16} cycloalkylalkyl, C_1–C_{16} alkyl, C_1–C_{16} haloalkyl, C_2–C_{16} alkenyl, C_2–C_{16} haloalkenyl, C_2–C_{16} alkynyl and C_2–C_{16} haloalkynyl;

R^6 is selected from the group halogen, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, C_1–C_{10} haloalkyl, C_1–C_{10} haloalkoxy and $Si(R^7)(R^8)R^9$;

R^7, R^8 and R^9 are independently C_1–C_3 alkyl; and

n is 0 or an integer from 1 to 5.

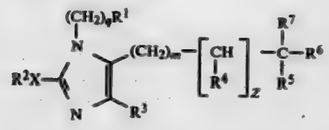
5,444,080

SUBSTITUTED [1H-IMIDAZOL-5-YLIALKANOIC ACIDS HAVING ANGIOTENSION II RECEPTOR ANTAGONIST ACTIVITY

Gerald R. Girard, Bensalem, Pa.; Judith Hampel, Cardiff, Calif.; David T. Hill, North Wales, Pa.; James Samanen, and Joseph Weinstock, both of Phoenixville, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US91/05391, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/02510, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 30, 1991, Ser. No. 965,291
Int. Cl.[6] A61K *31/415*; C07D *233/64, 233/68, 233/84, 233/88, 403/10*
U.S. Cl. 514—397 **10 Claims**

1. A compound of the formula:



in which:

R^1 is adamanthylmethyl, or phenyl, biphenyl, or naphthyl, with each aryl group being unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_1-$_6$alkyl, nitro CO_2R^8, tetrazol-5-yl, C_1-$_6$alkoxy, hydroxy, SC_1-$_4$alkyl SO_2NHR^8, $NHSO_2R^8$, SO_3H, $CONR^8R^8$, CN, SO_2C_1-$_4$alkyl, or C_nF_{2n+1}, wherein n is 1–3;

R^2 is C_2-$_{10}$alkyl, C_3-$_{10}$alkenyl, C_3-$_{10}$alkynyl, C_3-$_6$cycloalkyl, or $(CH_2)_0$-$_4$phenyl unsubstituted or substituted by one to three substituents selected from C_1-$_6$alkyl, nitro, Cl, Br, F, I, hydroxy, C_1-$_6$alkoxy, NR^8R^8, CO_2R^8, CN or $CONR^8R^8$;

X is a single bond, S, or O;

R^3 is hydrogen, Cl, Br, F, I, CHO, hydroxymethyl, CO_2R^8, NO_2, or C_nF_{2n+1}, wherein n is 1–3;

q is 0 to 4;

m is 0 to 2;

R^4 is H or C_1-$_6$alkyl;

z is 0 to 1;

R^5 is C_3-$_6$alkenyl, phenyl-Y-, 2- or 3- thienyl-Y-, 2-or 3-furyl-Y-, 2-, 3-, or 4-pyridyl-Y-, tetrazolyl-Y-, triazolyl-Y-, imidazolyl-Y-, pyrazolyl-Y-, thiazolyl-Y-, pyrrolyl-Y-, or oxazolyl-Y-, with each aryl ring being unsubstituted or substituted by C_1-$_6$alkyl, Cl, Br, F, I, C_1-$_6$alkoxy, NR^8R^8, CO_2R^8, or $CONR^8R^8$;

Y is a single bond or C_1-$_6$alkyl which is branched or unbranched;

R^6 is CO_2R^8, $CONR^8R^8$, or tetrazol-5-yl;

R^7 is H, CO_2R^8, or C_1-$_6$alkyl; and

each R^8 independently is hydrogen, C_1-$_6$alkyl, or $(CH_3)_0$-$_4$ phenyl;

or a pharmaceutically acceptable salt thereof.

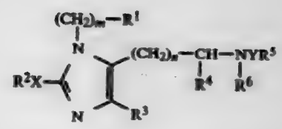
5,444,081

SUBSTITUTED HISTIDINES HAVING ANGIOTENSION II RECEPTOR ANTAGONIST ACTIVITY

John G. Gleason, Downingtown, Pa.; Judith Hempel, Cardiff, Calif.; David T. Hill, North Wales, Pa.; James Samanen, and Joseph Weinstock, both of Phoenixville, Pa., assignors to SmithKline Beecham Corp, Philadelphia, Pa.

PCT No. PCT/US91/04561, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/00068, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 26, 1991, Ser. No. 965,370
Int. Cl.[6] A61K *31/415*; C07D *233/84, 233/68, 233/54, 403/12*
U.S. Cl. 514—399 **12 Claims**

1. A compound of the formula:



in which:

R^1 is adamantyl, or phenyl, biphenyl, or naphthyl, with each aryl group being unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_1-C_6alkyl, nitro, CO_2R^7, tetrazol-5-yl C_1-C_6alkoxy, hydroxy, SC_1-C_6alkyl, $SO_2NR^7R^7$, $NHSO_2R^7$, SO_3H, $CONR^7R^7$, CN, SO_2C_1-C_6alkyl, or C_nF_{2n+1};

R^2 is C_2-C_{10} alkyl unsubstituted or substituted by CO_2H, OH, or NR^7R^7, C_3-C_{10}alkenyl, C_3-C_{10}alkynyl, C_3-C_6cycloalkyl, or $(CH_2)_0$-$_4$phenyl unsubstituted or substituted by one to three substituents selected from C_1-C_6alkyl, nitro, Cl, Br, F, I, hydroxy, C_1-C_6alkoxy, NR^7R^7, CO_2R^7, CN, or $CONR^7R^7$;

X is a single bond, S, or O;

R^3 is hydrogen, Cl, Br, F, I, CHO, hydroxymethyl, $COOR^7$, $CONR^7R^7$, NO_2, or C_nF_{2n+1};

each n is 1-3;

m is 0-4;

R^4 is 2 , $CONR^7R^7$ or tetrazol-5-yl;

Y is a single bond or a carbonyl group;

R^5 is hydrogen, C_1-C_8alkyl, C_3-C_8cycloalkyl, $(CH_2)_0$-$_4$phenyl, or $(CH_2)_0$-$_3$CH-diphenyl wherein each phenyl group independently is unsubstituted or substituted by one to three substituents selected from C_1-C_6alkyl, nitro, Cl, Br, F, I, hydroxy, C_1-C_6alkyl, NR^7R^7, CO_2R^7, or $CONR^7R^7$;

R^6 is hydrogen or C_1-$_6$alkyl; and

each R^7 independently is hydrogen, C_1-C_4alkyl, or $(CH_2)_0$-$_4$phenyl; or a pharmaceutically acceptable salt thereof.

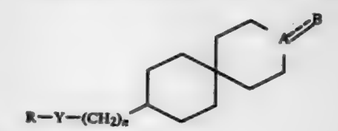
5,444,082

3,9-DISUBSTITUTED-SPIRO(5.5)UNDECANES ACTIVE ON THE CARDIOVASCULAR SYSTEM, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITION CONTAINING SAME

Marco Frigerio, Milan; Patrizia Ferrari, Varese; Piero Melloni, Bresso, and Giuliana Salani, Villongo, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Jun. 28, 1993, Ser. No. 82,372
Claims priority, application Germany, Jul. 8, 1992, 42 22 459.4
Int. Cl.[6] A61K *31/415*; C07D *405/08, 405/12*
U.S. Cl. 514—409 **6 Claims**

1. 3,9-disubstituted-spiro[5.5]undecanes of formula (I):



(I)

wherein:

R represents:

hydrogen or

a C_2–C_6 alkyl or C_2–C_6 alkenyl group unsubatituted or substituted independently by a quaternary ammonium group or one or more hydroxy, C_1–C_6 alkoxy, carboxy, NR^4R^5, $NHC(NH)NHR^6$ or $C(NH)NR^7R^8$ groups,

wherein NR^4R^5 represents amino, methylamino, ethylamino, propylamino, isopropylamino, allylamino, propargylamino, dimethylamino, pyrrolidinyl, morpholino, piperazinyl, 4-methylpiperazinyl, 4-ethylpiperazi-

nyl, 4-phenylpiperazinyl, 1-imidazolyl, guanidino, 2-aminoethylamino, 3-aminopropylamino, 2-(1-pyrrolidinyl)ethylamion, 3(1-pyrrolidinyl)propylamino, 3-amino-2-hydroxypropylamino, 3-(1-pyrrolidinyl)-2-hydroxypropylamino or 2,3-diaminopropylamino

R^6, R^7 and R^8, which are the same or different, are H or C_1–C_4 lower alkyl;

n is an integer from 0 to 4; and

Y is oxygen or sulphur;

the symbol - - - means single or double bond with the proviso that

(i) when - - - is a single bond

A represents a C—H or C—OR^1 group wherein R^1 is H or CH_3 and

B represents:

a C_1–C_6 lower alkyl or C_2–C_6 alkenyl chain substituted by hydroxy, amino, oxo, =N—NR^2—C(=Z)NHR^3, or a saturated or unsaturated mono-heterocyclic ring, wherein =N—NR^2—C(=Z)NHR^3 is guanidinoimino, ureidoimino, thioureidoimino, N-methylguanidinoimino, N,N'-dimethylguanidinoimino, (2-imidazolin-2-yl)hydrazono or 2-(2-imidazolyl)hydrazono, and,

the saturated or unsaturated mono-heterocyclic ring is isoxyranyl, 2-aziridinyl, 2-furyl, 2-thienyl, 2-imidazolyl, 2-pirrolyl, 2-tetrahydrofuryl, 3-furyl, 3-thienyl, 4-imidazolyl, 3-pirrolyl, 3-tetrahydrofuryl, 2-oxo-(5H)-3-furyl, 2-oxo-(5H)-4-furyl, 2-thiazolyl, 2-pyridinyl, 3-pyridinyl, 4-pyridinyl, 2-pyrimidyl, 4-pyrimidyl, 5-pyrimidyl, 2-pyridinyl-N-oxide, 3-pyridinyl-N-oxide, 2-oxo-(1H)-4-pyridinyl, 2-oxo-(1H)-5-pyridinyl or 2-oxo-(2H)-5-pyranyl, and

(ii) when - - - is a double bond

A represents a carbon atom C and

B represents:

a =N—NR^2—C(=Z)NHR^3 group as above-identified;

and the pharmaceutically acceptable salts as well as the optical antipodes, i.e. the enantiomers, the racemic mixture of the optical antipodes, or other mixtures thereof, the geometric isomers and their mixtures, the diastereoisomers and mixtures of diastereoisomers of the compounds of formula (I).

5,444,083

PYRROLIDINE COMPOUND AND PHARMACEUTICAL USE

Motosuke Yamanaka, Chiba; Tomonori Hoshiko, Ibaraki; Shinji Suda, Ibaraki; Naoki Yoneda, Ibaraki; Nobuyuki Mori, Ibaraki; Mitsumasa Shino, Ibaraki; Hiroki Ishihara, Ibaraki; Mamoru Saito, Ibaraki, and Toshiyuki Matsuoka, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Japan

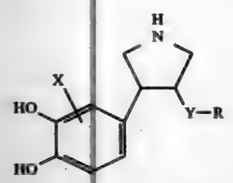
Filed Jan. 22, 1990, Ser. No. 468,147

Claims priority, application Japan, Feb. 3, 1989, 1-25262; Sep. 29, 1989, 1-254349

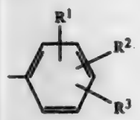
Int. Cl.[6] A61K *31/40*; C07D *207/08*

U.S. Cl. 514—429 **15 Claims**

1. A pyrrolidine compound having the formula or a pharmacologically acceptable salt thereof:



in which X is hydrogen, a halogen or a lower alkyl, Y is $—(CH_2)_n—$, n being zero, 1 or 2, and R is naphthyl, a substituted naphthyl wherein the substituents are selected from the group consisting of lower alkyl, lower alkoxy, halogen, hydroxy, and trifluoromethane, or a group of the formula:



wherein R^1, R^2 and R^3 are each independently a hydrogen, a lower alkyl, a lower alkoxy, a halogen, hydroxy, trifluoromethyl or —NR4R5, R4 and R5 are each hydrogen or a lower alkyl.

5,444,084

SUBSTITUTED HETEROCYCLIC DERIVATIVE HAVING SQUALENE EPOXIDASE INHIBITION ACTION AND ITS USE

Yoshimi Tsuchiya; Takashi Nomoto; Morihiro Mitsuya; Katsumasa Nonoshita; Masahiro Hayashi; Toshihiko Satoh; Yushio Sawazaki, and Toshio Kamei, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00723, § 371 Date Feb. 11, 1994, § 102(e) Date Feb. 11, 1994, PCT Pub. No. WO93/24478, PCT Pub. Date Dec. 9, 1993

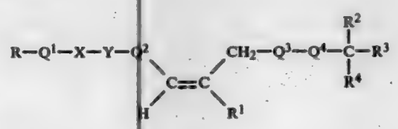
PCT Filed May 28, 1993, Ser. No. 190,065

Claims priority, application Japan, Jan. 6, 1992, 4-165393; Apr. 6, 1992, 4-170122

Int. Cl.[6] C07D *333/16*, *333/18*; A61K *31/38*

U.S. Cl. 514—438 **10 Claims**

1. A substituted heterocyclic derivative having squalene epoxidase inhibiting activity and represented by the following formula (I)



(I)

wherein

R represents a thienyl group;

Q^1 represents a divalent group selected from the group consisting of



—CH=CH—CH_2—, —CH_2—CH=CH—, —CH-2—O—CH_2—, and trimethylene;

X and Y, are the same or different, and represent methylene group, oxygen atom or sulfur atom; or X and Y combine to form a vinylene group or ethylene group;

Q^2 represents (a) phenyl or furyl; or (b) a group represented by the formula —F—G—I—, where Z, G, and I are the same or different, and each represents an oxygen atom, a sulfur atom, a methylene group or a group represented by the formula —CH=;

R^1 represents a lower alkyl group, a lower alkenyl group, a lower hydroxyalkyl group, a lower alkoxy-alkyl group, a lower alkanoyloxyalkyl group or a lower alkylthioalkyl group; ---denotes a single bond or double bond provided that in the case of the single bond it is a group formed by addition of two hydrogen atoms to the corresponding double bond; Q^3 denotes an ethylene group, a vinylene group or an ethynylene group; Q^4 denotes a vinylene group or an ethynylene group; R^2 and R^3 are the same or different and denote lower alkyl groups, or they combine to denote a group forming a cycloalkane together with the adjacent carbon atom; and R^4 denotes a hydrogen atom, a lower alkyl group or a lower alkoxy group.

5,444,085

METHODS OF INHIBITING HIV AND INHIBITING THE ACTIVATION OF HIV

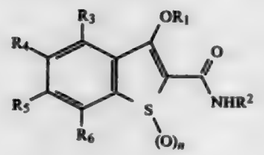
David T. Connor; Stephen J. Gracheck, and Leonard Post, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 106,505, Aug. 13, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,643

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—443 **21 Claims**

1. A method for substantially inhibiting HIV or the activation of HIV in an HIV-infected individual which comprises administering a therapeutically effective amount of a compound of the following formula:



I

wherein

R_1 is lower alkyl, phenyl, or benzyl;

R_2 is hydrogen, lower alkyl, phenyl, benzyl, thiophene, $(CH_2)_mQ$, or phenyl, benzyl, or thiophene substituted with $(CH_2)_mQ$;

n is an integer from 0 to 2;

m is an integer from 0 to 6;

Q is CO_2R_7 where R_7 is hydrogen or lower alkyl; and

R_3, R_4, R_5, R_6 are independently hydrogen, halo, hydroxy, nitro, amino, lower alkyl, and lower alkoxy

as well as of the pharmaceutically acceptable salts of compounds of Formula I.

5,444,086

NAPHTHALENYLMETHYL THIOPHENONES AS ANTIHYPERGLYCEMIC AGENTS

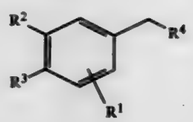
Michael S. Malamas, Jamison, Pa., assignor to American Home Products Corporation, Madison, N.J.

Filed Mar. 31, 1994, Ser. No. 220,753

Int. Cl.[6] C07D *333/32*; A61K *31/38*

U.S. Cl. 514—445 **6 Claims**

1. A compound according to the formula



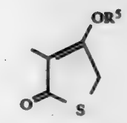
wherein:

R^2 together with R^3 forms a benzo ring fused to the phenyl ring and optionally substituted with one or two substituents independently selected from C_{1-6} alkyl, halogen, C_{1-6} alkoxy, thio-C_{1-6} alkyl, or trifluoromethyl;

R^1 is selected from hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, thio-C_{1-6} alkyl, or trifluoromethyl;

and

R^4 is:



wherein R^5 is H or C_{1-6} alkyl, or a pharmaceutically acceptable salt thereof.

5,444,087

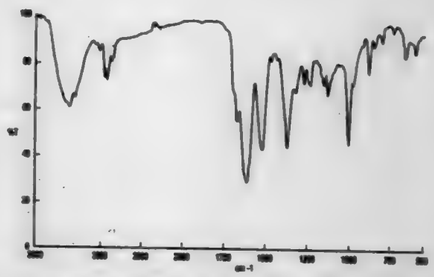
MANUMYCIN COMPOUNDS

Pramathesh S. Patel, Ringoes, N.J., and Yue-Zhong Shu, Cheshire, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Oct. 19, 1993, Ser. No. 139,231

Int. Cl.[6] C07D *303/14*, *303/32*; A01N *43/20*, *31/06*

U.S. Cl. 514—475 **12 Claims**



1. A compound which is Manumycin C, having a stereoisomeric form corresponding to that produced by Streptomyces sp. A.T.C.C. No. 55484. oxidized Manumycin C having said stereoisomeric form, or a salt or prodrug thereof.

5. A composition for the inhibition of bacterial growth, comprising a compound of claim 1 which is Manumycin C, oxidized Manumycin C, or a salt thereof, in an mount effective therefor, and a vehicle or diluent.

5,444,088

SYNERGISTIC ANTI-MICROBIAL COMPOSITIONS COMPRISING 2-BROMO-2-(BROMOMETHYL)-GLUTARONITRILE AND 2-BROMO-2-NITRO-PROPANE-1,3-DIOL

Allen R. Syrinek, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Oct. 5, 1993, Ser. No. 131,883

Int. Cl.[6] A01N *33/18*, *33/24*, *37/34*

U.S. Cl. 514—526 **15 Claims**

1. An anti-microbial composition comprising synergistic effective amounts of 2-bromo-2-(bromomethyl)-glutaronitrile and 2-bromo-2-nitro-propane-1,3-diol in a ratio ranging from 0.15 parts 2-bromo-2-(bromomethyl)glutaronitrile to 1 part 2-bromo-2-nitro-propane-1,3-diol to 40 parts 2-bromo-2-(bromomethyl)-glutaronitrile to 1 part 2-bromo-2-nitro-propane-1,3-diol.

5,444,089
NEUTRAL LIPIDS FROM ENDOSPERM OF JOB'S TEARS
Da P. Li, 3-201, 19 Youdian Road, Hangzhou, China, assignor to Da P. Li and Zhejiang Provincial Hospital of Traditional Chinese Medicine, both of Hangzhou, China
Filed Sep. 14, 1993, Ser. No. 120,549
Claims priority, application China, Sep. 16, 1992, 92110677.7; Sep. 17, 1992, 92110839.7; Jan. 1, 1993, 93100735.6
Int. Cl.[6] A61K *35/78*
U.S. Cl. 514—547 15 Claims

1. A neutral lipid isolated from the endosperm of Job's tears (NLEJ) consisting essentially of glycerides and alkylacylactin, wherein the lipoclastic fatty acid residues of said NLEJ comprise saturated and unsaturated fatty acids, and wherein said neutral lipid has the following physicochemical properties: acid value <0.20, iodine value 95.00–107.00, saponification value 185.00–195.00, relative density 0.915–0.918 (20° C.) and diopter 1.470–1.475 (20° C.).

5,444,090
METHOD OF REDUCING THE RATE OF HAIR GROWTH
Gurpreet S. Ahluwalia, 8632 Stable View Ct., Gaithersburg, Md. 20879
Continuation-in-part of Ser. No. 788,168, Nov. 5, 1991, abandoned. This application Mar. 11, 1994, Ser. No. 212,584
Int. Cl.[6] A61K *31/225, 31/195, 31/19*
U.S. Cl. 514—547 19 Claims

1. A method of reducing the rate of mammalian hair growth which comprises
selecting an area of mammalian skin from which a reduced rate of hair growth is desired; and
applying a composition containing an effective amount of an organic inhibitor of L-asparagine synthetase to said area of mammalian skin, causing a reduction in the rate of hair growth from said area of mammalian skin.

5,444,091
METHOD OF APPLYING ALPHA HYDROXY ACIDS FOR TREATING STRIAE DISTENSAE
Jeffrey Rapaport, Fort Lee, N.J., and Burt Shaffer, Huntington, N.Y., assignors to Dermatology Home Products, Inc., Fort Lee, N.J.
Filed May 24, 1994, Ser. No. 248,026
Int. Cl.[6] A61K *31/19*
U.S. Cl. 514—557 3 Claims

1. A method of treating striae distensae lesions comprising applying topically to the area of the skin affected with the lesions an effective amount of a treatment composition comprising glycolic acid in a concentration of from 15–20 percent by weight of said treatment composition, wherein said treatment composition is applied in a pharmaceutically acceptable vehicle.

5,444,092
METHOD AND COMPOSITION FOR TREATING PSORIASIS
Jerry Collias, 401 Ocean Bluffs Blvd., #101, Jupiter, Fla. 33477
Filed Jul. 20, 1994, Ser. No. 279,804
Int. Cl.[6] A01K *7/00, 31/00*
U.S. Cl. 514—560 5 Claims

1. A novel skin lotion admixed with water comprising the following ingredients:

-continued

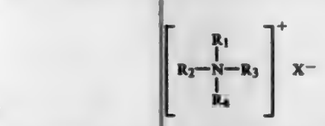
palmitic	5.5%
palmitoleic	.4%
stearic	.6%
oleic	46.8%
linoleic	40.5%
linolenic	.9%
arachidic	2.3%
behenic	2.9%

5,444,093
WOOD PRESERVATIVES
Reimer Goettsche, and Hans-Volker Borck, both of Baden-Baden, Germany, assignors to Dr. Wolman GmbH, Sinzheim, Germany
Continuation-in-part of Ser. No. 607,691, Nov. 1, 1990, Pat. No. 5,276,029. This application Nov. 3, 1993, Ser. No. 145,219
Claims priority, application Germany, Nov. 11, 1989, 39 37 658.3
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[6] A01N *33/00, 33/04, 55/02, 59/20*
U.S. Cl. 514—611 13 Claims

1. A wood preservative composition, comprising:
(A) from 5.0 to 50% by weight of a polyamine having from 3 to 9 carbon atoms and from 2 to 4 nitrogen atoms;
(B) from 2.5 to 50% by weight of a fatty amine selected from the group consisting of a fatty amine of the formula NRR^1R^2, wherein R is C_6–C_{20}-alkyl and R^1 and R^2 are each independently hydrogen or C_1–C_4-alkyl or C_6–C_{20}-alkyl; and, octyldiethanolamine, N,N'-didodecyl-1,3-propylene diamine, C_{13}–C_{15}-alkyltrimethylenediaminelaurylpropylenediamine and N,N-bis-(3-aminopropyl)-laurylamine; and
(C) an amount of a mixture of (N-cyclohexyldiazeniumdioxy)potassium and a copper compound equal to an amount of bis(N-cyclohexyldiazeniumdioxy)copper, said amount of bis(N-cyclohexyldiazeniumdioxy)copper being in a weight ratio of from 5:1 to 1:5 with respect to said fatty amine.

5,444,094
METHODS AND COMPOSITIONS FOR DISINFECTING SURFACES CONTAINING TUBERCULOSIS CAUSING BACTERIA
Arshad Malik, Mundelein, and Thomas W. Isaac, Chicago, both of Ill., assignors to Stepan Company, Northfield, Ill.
Filed Aug. 24, 1993, Ser. No. 111,197
Int. Cl.[6] A01N *31/14, 33/12*
U.S. Cl. 514—643 10 Claims

1. A method for disinfecting a surface containing or suspected to contain tuberculosis causing bacteria consisting essentially of contacting the surface with a solution comprising a quaternary ammonium salt and about 8 to 80% by weight of a glycol ether,
the quaternary ammonium salt having the formula



wherein R_1 and R_2 are straight or branched chain lower alkyl groups having between one to seven carbon atoms;
R_3 is a straight or branched chain higher alkyl group having between eight and twenty carbon atoms, or a benzyl group;
R_4 is a straight or branched chain higher alkyl group having between eight and twenty carbon atoms; and
X is a halogen or a methosulfate or a saccharinate ion; and the glycol ether being a mono-, di- or trialkylene glycol ether where the alkylene portion is straight or branched chain alkylene having from about 2–6 carbon atoms and the alkyl portion of the ether is an alkyl group having from about 1–6 straight or branched carbon atoms.

5,444,095
USE OF DEPRENYL TO RESCUE DAMAGED NERVE CELLS
William G. Tatton, and Carol E. Greenwood, both of Toronto, Canada, assignors to University of Toronto, Innovations Foundation, Toronto, Canada
Continuation of Ser. No. 929,579, Aug. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 772,919, Oct. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 751,186, Aug. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 678,873, Apr. 4, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,726
Int. Cl.[6] A01N *33/02;* A01K *31/135*
U.S. Cl. 514—654 15 Claims

1. A method for rescuing damaged nerve cells in a patient, comprising:
administering to a patient having damaged nerve cells an amount of deprenyl, a pharmaceutically acceptable salt of deprenyl, or an ester of deprenyl such that rescuing of damaged nerve cells occurs in the patient wherein the patient has damage resulting from a condition selected from the group consisting of hypoxia, ischemia, stroke and trauma.

5,444,096
STABLE ANHYDROUS TOPICALLY-ACTIVE COMPOSITION AND SUSPENDING AGENT THEREFOR
Andrew D. McCrea, Chicago, and Michael P. Diulus, Oak Park, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.
Division of Ser. No. 770,888, Oct. 4, 1991, Pat. No. 5,292,530, which is a continuation-in-part of Ser. No. 360,418, Jun. 2, 1989, abandoned. This application Nov. 9, 1993, Ser. No. 149,320
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] A61K *47/04, 47/44*
U.S. Cl. 514—770 17 Claims

1. A suspending agent for suspending a particulate compound having an average particle size less than about 1000 microns in a liquid anhydrous composition, said suspending agent comprising:
(a) from about 0.1 to less than 2 parts of a finely-divided silica; and
(b) from about 1 to about 15 parts of a suspending wax composition, said suspending wax composition comprising from about 5% to about 50% by weight of a wax having a melting point of at least 150° F.; from about 0.1% to about 94.9% by weight of a volatile solvent selected from the group consisting of a volatile silicone, a volatile hydrocarbon and a combination thereof, said volatile silicone having a viscosity of about 0.5 to about 10 centistokes and said volatile hydrocarbon including from about 10 to about 30 carbon atoms; and from about 0.1% to about 94.9% by weight of an ester including at least 10 to about 32 carbon atoms, wherein the liquid anhydrous composition includes about 4.5% or less by weight of the wax.

5,444,097
POROUS POLYMERIC STRUCTURES AND A METHOD OF MAKING SUCH STRUCTURES BY MEANS OF HEAT-INDUCED PHASE SEPARATION
Gabriel Tkacik, Bedford, Mass., assignor to Millipore Corporation, Bedford, Mass.
Filed Jul. 7, 1992, Ser. No. 909,904
Int. Cl.[6] C08J *9/26;* B01D *39/14*
U.S. Cl. 521—61 30 Claims

1. A process for making microporous polymeric structure having pores of an average size between about 0.05 and 10 micrometers which comprises:
a) preparing a homogeneous solution of a polymer composition consisting of at lease one polymer in a solvent system, said solvent system consisting of at least one component which is solvent for said polymer composition, and containing zero, one or more components which are non-solvents for said polymer composition, said homogeneous solution exhibiting a lower critical solution temperature,
b) forming the polymeric solution into a desired shape,
c) heating the shaped polymeric solution until it phase separates and becomes cloudy, wherein the heating is effected during or after forming the desired shape, and
d) removing the components of the solvent system from said at least one polymer wherein the removing is effected when said solution is cloudy and either by immersing the shaped, phase-separated polymeric solution in at least one liquid bath comprising at least one non-solvent for the polymer which is miscible with at least one of the components of the solvent system, or by evaporating the components of the solvent system.

5,444,098
MAINLY CLOSED CELL PHENOLIC FOAM AND PROCESS FOR PRODUCING THIS FOAM
Bart Wallaeys, Wetteren, and Peter Spanhove, Serskamp, both of Belgium, assignors to Recticel, Brussels, Belgium
Continuation-in-part of Ser. No. 89,195, Jul. 12, 1993, abandoned. This application Jan. 14, 1994, Ser. No. 181,045
Claims priority, application Belgium, Jul. 13, 1992, 09200648
Int. Cl.[6] C08J *9/00*
U.S. Cl. 521—95 19 Claims

1. A process for producing a mainly closed cell phenolic foam having a closed cell content of at least 80% by curing a foam system, comprising at least a phenolic resin, a blowing agent and a foam stabilizer substantially free of fluorochemical surfactant said curing being effected in the presence of morpholine, an alkylated morpholine, a fluorated morpholine, or a fluorated, alkylated morpholine and which corresponds to the following general structural formula:

$$C_nH_xF_yNO$$

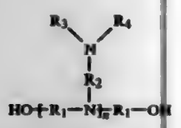
wherein: $n > 4$

$$x = 2n+1-y$$

$$y = 2n+1-x$$

5,444,099
TERTIARY AMINOALCOHOL ANE PROCESS FOR PRODUCING THE SAME, AND, POLYURETHANE AND PROCESS FOR PRODUCING THE SAME
Hiroshi Abe, Albany, Calif.; Tetsuaki Fukushima, Wakayama, Japan; Kohshiro Sotoya, Wakayama, Japan; Shoichiro Harada, Wakayama, Japan; Hiroshi Kitagawa, Wakayama, Japan; Masayoshi Morii, Ibaraki, Japan, and Yasutoshi Isayama, Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan
Division of Ser. No. 845,594, Mar. 4, 1992, Pat. No. 5,315,041. This application Sep. 20, 1993, Ser. No. 123,165
Claims priority, application Japan, Mar. 5, 1991, 3-38574; Mar. 8, 1991, 3-43849; Feb. 19, 1992, 4-32014
Int. Cl.[6] C07C *215/02;* C08G *18/14*
U.S. Cl. 521—129 20 Claims

1. A process for producing a polyurethane comprising a step of reacting a polyisocyanate component with a polyol component, wherein a tertiary aminoalcohol represented by the following general formula (I) is used as at least part of the polyol component:



(I)

wherein R_1 each represents a straight-chain or branched alkylene group having 2 to 24 carbon atoms, a cycloalkylene group having 3 to 24 carbon atoms, a cycloalkyl alkylene group having 4 to 24 carbon atoms, an arylene group having 6 to 24 carbon atoms, an aralkylene group having 7 to 24 carbon atoms or $-(CH_2CH_2O)_p-(CH_2CH_2)_q-$ (p being 0 or a positive number and q being a positive number),

R_2 each represents a straight-chain or branched alkylene group having 1 to 9 carbon atoms,

R_3 each represents a straight-chain or branched alkyl group having 1 to 4 carbon atoms,

R_4 each represents a straight-chain or branched alkyl group having 1 to 4 carbon atoms

and n, which is an average polymerization degree, represents a positive number of 2 to 50.

5,444,100

METHOD FOR THE MIXING OF LOW-BOILING FOAMING AGENT

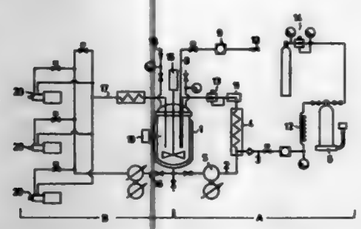
Minoru Takezawa, Ohta; Shigeo Yatsu, Tatebayashi; Fumihisa Endo, Ohta; Akihiro Morita, Ohragun, and Yuji Kishi, Ohta, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 836,133, Feb. 14, 1992, abandoned. This application Oct. 28, 1993, Ser. No. 144,804

Claims priority, application Japan, Feb. 22, 1991, 3-60779

Int. Cl.[6] C08G 18/14

U.S. Cl. 521—131 19 Claims



1. A method of mixing a low-boiling point foaming agent with polyol for producing rigid polyurethane foam comprising the steps of:

producing a pre-mixture of a polyol and a foaming agent as a blend of chlorodifluoromethane (HCFC-22) and chlorodifluoroethane (HCFC-142b), with HCFC-22 being in the range of 40–60% of the blend and HCFC-142b in the range of 60–40% and having a low boiling point below 0° C. at a low temperature and at a pressure sufficient to maintain the foaming agent in a liquid state,

transferring the pre-mixture in liquid form to a main mixing body,

mixing said pre-mixture in said main mixing body, and

discharging the final mixture from the main mixing body.

5,444,101

PROCESS FOR RIGID POLYURETHANE FOAMS

Rik De Vos, Rotselaar, and Guy Biesmans, Tienen, both of Belgium, assignors to Imperial Chemical Industries plc, London, England

Continuation-in-part of Ser. No. 113,146, Aug. 27, 1993, abandoned. This application Mar. 11, 1994, Ser. No. 212,634

Claims priority, application United Kingdom, Apr. 23, 1993, 9308449; Jul. 20, 1993, 9315130

Int. Cl.[6] C08J 9/14

U.S. Cl. 521—131 5 Claims

1. Process for the preparation of a rigid polyurethane or urethane-modified polyisocyanurate foam by reaction of a polyisocyanate composition with a polyfunctional isocyanate-reactive composition under foam-forming conditions in the presence of a blowing agent mixture comprising cyclopentane, characterised in that said blowing agent mixture further comprises certain amounts of other organic compounds as co-blowing agents, wherein said co-blowing agent is selected from the group consisting of an alkane, a cycloalkane and a hydrofluorocarbon, the saturated vapour pressure of said co-blowing agents in bar at T_{use} (v.p.) complying with the following Equation (I):

$$v.p. \geq 0.7 \text{ bar} \times \frac{T_{use}}{298° \text{ K.}} \times \frac{C}{100} \qquad (I)$$

wherein C is the mole % of said co-blowing agent in gaseous form on the total blowing agent mixture in the gaseous phase after foaming and T_{use} is the temperature in °K. at which the foam is used.

5,444,102

FLUOROIODOCARBON BLENDS AS CFC AND HALON REPLACEMENTS

Jonathan S. Nimitz, Albuquerque, N. Mex., and Lance H. Lankford, Newcastle, Calif., assignors to Ikon Corporation, Albuquerque, N. Mex.

Division of Ser. No. 27,227, Mar. 5, 1993. This application Jun. 30, 1994, Ser. No. 269,324

Int. Cl.[6] C08J 9/14

U.S. Cl. 521—131 11 Claims

1. A method of using a foam blowing agent comprising the steps of:

a) injecting a foam blowing agent into a monomer, where the foam blowing agent is a fluoroiodocarbon having the general formula $C_aH_bBr_cCl_dF_eI_fN_gO_h$, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 17, and f is between and including 1 and 2;

b) allowing the monomer to polymerize;

c) allowing the said foam blowing agent to substantially vaporize; and

d) allowing the cell walls to harden.

5,444,103

MODIFIED POLYTETRAFLUOROETHYLENE AND PROCESS FOR ITS PRODUCTION BY IRRADIATION

Yoneho Tabata; Kazushige Otsuhata, both of Tokyo; Tetsuya Ikeda, Fukuoka; Kohji Ueno, Ehime; Yuichi Yoshida, Saitama; Akihiro Oshima, Tochigi; Tadao Sugaehi, and Hisaki Kodoh, both of Gunma, all of Japan, assignors to Raytech Corporation, Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 130,847

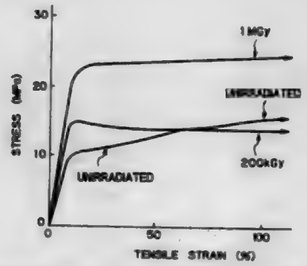
Claims priority, application Japan, Oct. 5, 1992, 4-266257

Int. Cl.[6] C08F 2/46, 2/54, 2/48; C08J 3/28

U.S. Cl. 522—5 7 Claims

1. A process for producing a modified polytetrafluoroethylene that is reduced in the radiation-induced deterioration of breaking extension and breaking strength, is low in crystallinity, and which has rubber characteristics, comprising:

exposing a starting polytetrafluoroethylene to an ionizing radiation for a total dose of from 100 kGy to 5 MGy in the



absence of oxygen at a temperature of from 330° C. to 350° C.

5,444,104

DENTAL RESIN MATERIALS

Samuel Wakuine, Branford, Conn., assignor to Jeneric/Pentron, Inc., Wallingford, Conn.

Division of Ser. No. 827,566, Jan. 28, 1992, Pat. No. 5,276,068, which is a continuation of Ser. No. 339,097, Apr. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 195,351, May 12, 1988, abandoned, which is a continuation of Ser. No. 843,081, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 717,332, Mar. 29, 1985, abandoned. This application Oct. 12, 1993, Ser. No. 135,303

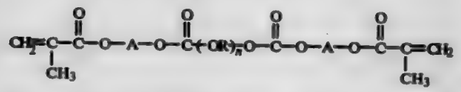
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[6] C08F 2/50

U.S. Cl. 522—24 20 Claims

1. A dental resin composition which comprises:

(A) from about 30 to about 80 weight percent of a polycarbonate dimethacrylate of the formula:



wherein A is C_1–C_6 alkylene, R is C_2–C_6 alkylene, R is C_2–C_5 alkylene having at least 2 carbon atoms in its principal chain and n is an integer from 1 to 4;

(b) from about 5 to about 60 weight percent of a secondary monomer suitable for dental applications for imparting strength and rigidity to said dental resin composition, said secondary monomer being urethane dimethacrylate; and

(c) from about 0 to about 50 weight percent of a diluent monomer for decreasing the viscosity of said dental resin composition,

wherein each of the components (A), (B), and (C) is a different monomer and such that the specific amounts within the ranges yield a 100% by weight polymerization system.

5,444,105

SPECIMEN MOUNTING ADHESIVE COMPOSITION

Leonard Ornstein, White Plains, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation of Ser. No. 922,349, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 196,807, May 17, 1988, abandoned, which is a continuation of Ser. No. 852,592, Apr. 16, 1986, abandoned, which is a continuation of Ser. No. 417,254, Sep. 13, 1982, abandoned. This application Jul. 30, 1993, Ser. No. 100,333

Int. Cl.[6] C08F 2/46

U.S. Cl. 522—40 12 Claims

1. A highly viscous and substantially indiffusible curable adhesive composition for transferring and mounting a tape-supported thin histological tissue section onto a specimen support for further processing, comprising a high molecular weight polymerizable component wherein said component contains one or more high molecular weight polymerizable interractive difunctional oligomers selected from acryl or methacryl esters of epoxy resins or mixtures thereof with acryl- or methacryl-terminated polyurethane resins, and a polymerization curing initiator therefor, which polymerized composition is characterized in that before cure:

a. it is a high tack pressure-sensitive adhesive having a viscosity greater than 10^5 cps at the temperature of use;

b. it does not substantially diffuse into a thin tissue section at the temperature of use;

c. it does not substantially flow into said tissue section at the temperature of use;

d. it is rapidly curable, and after cure;

e. it is substantially non-swelling, tack-free, insoluble, unreactive and non-ionic;

f. it has a refractive index between about 1.53 and about 1.56; and

g. it bonds strongly to both the surface of said thin tissue section and said support surface.

5,444,106

HIGH REFRACTIVE INDEX SILICONE COMPOSITIONS

Stephen Q. Zhou, Hacienda Heights; Jennifer C. Sy; Michelle A. Berteig, both of Monrovia, all of Calif., and Thomas P. Richards, Shelton, Wash., assignors to Kabi Pharmacia Ophthalmics, Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 871,335, Apr. 21, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,187

Int. Cl.[6] C08K 3/36

U.S. Cl. 523—107 22 Claims

1. A high refractive index, curable polyorganosiloxane composition useful for fabricating intraocular lenses, said composition comprising:

about 30 wt. % to about 55 wt. % of a first vinyl terminated copolymer resin based on the total amount of the first and second vinyl terminated copolymer resins, said first vinyl terminated copolymer resin having about 80 mole % to about 95 mole % dimethylsiloxane and about 5 mole % to about 20 mole % diphenylsiloxane, said first vinyl terminated copolymer resin having a molecular weight sufficient to provide a first vinyl terminated copolymer resin viscosity of about 400 cps to about 2500 cps;

about 45 wt. % to about 70 wt. % of a second vinyl terminated copolymer resin based on the total amount of the first and second vinyl terminated copolymer resins, said second vinyl terminated copolymer resin having about 80 mole % to about 95 mole % dimethylsiloxane and about 5 mole % to about 20 mole % diphenylsiloxane, said second vinyl terminated copolymer resin having a molecular weight sufficient to provide a second vinyl terminated copolymer resin viscosity of about 2500 cps to about 9500 cps;

about 8 to about 25 parts of fumed silica filler per hundred parts resin;

tetrakis(dimethylsiloxy) silane crosslinking reagent; and

2-[5-chloro-2H-benzotriazol-2-yl]-6-[1,1-dimethylethyl]-4-[2-propenyloxypropyl]phenol hydrosilylated with tetrakis(dimethylsiloxy)silane.

5,444,107
DEGRADABLE POLYMER COMPOSITION
Masanobu Ajioka; Katashi Enomoto; Akihiro Yamaguchi, all of Kanagawa, and Hosei Shinoda, Aichi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 917,351
Claims priority, application Japan, Aug. 8, 1991, 3-199163
Int. Cl.[6] C08K 5/00; C08L 3/00
U.S. Cl. 523—124 4 Claims

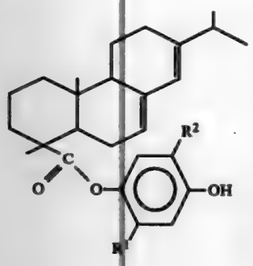
1. A degradable polymer composition comprised of a mixture of a thermoplastic polymer composition consisting essentially of a lactic acid-hydroxycarboxylic acid copolymer having a molecular weight of 50,000~1,000,000 wherein the hydroxycarboxylic acid is other than lactic acid, and modified starch.

5,444,108
MECHANICALLY PEELABLE MASKING COATING COMPOSITION
James A. E. Hagquist, St. Paul, and Lawrence L. Micek, Woodbury, both of Minn., assignors to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.
Filed Apr. 8, 1994, Ser. No. 225,133
Int. Cl.[6] C08L 27/06; C08K 5/12
U.S. Cl. 523—455 6 Claims

1. A heat curable masking coating that is partly curable at a first elevated temperature and becomes mechanically strippable after heating at a second elevated temperature above said first temperature, the composition consisting essentially of a mixture of:
a) a dispersion grade of poly(vinyl chloride) in an amount of about 47.75% by weight of said mixture;
b) a monomeric plasticizer in an amount of about 47.75% of weight of said mixture, the plasticizer capable of migrating to the surface of said coating;
c) an epoxy resin of epichlorohydrin/bisphenol A with an epoxide equivalent weight of 175–210 in an amount of about 2% by weight of said mixture, and;
d) optionally a thixotrope in an amount of about 2.0% by weight of said mixture.

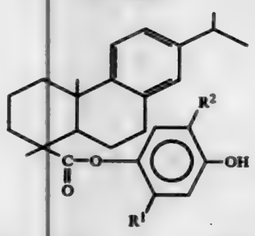
5,444,109
MONOESTERS OF ROSIN ACID
Lawson G. Wideman, and Paul H. Sandstrom, both of Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 7, 1993, Ser. No. 72,259
Int. Cl.[6] C08K 5/34
U.S. Cl. 524—91 12 Claims

1. A rubber composition which comprises (1) a rubber selected from the group consisting of natural rubber, homopolymers of conjugated diolefins and copolymers of conjugated diolefins, ethylenically unsaturated monomers or mixtures thereof; (2) a monoester of rosin acid of the formula:



or

-continued



wherein R^1 and R^2 are the same or different hydrocarbon radicals selected from the group consisting of saturated alkyl and cycloalkyl radicals containing 3 to 20 carbon atoms, aryl radicals containing 6 carbon atoms and aralkyl radicals containing 7 to 20 carbon atoms and (3) from 0.5 to 10 phr of a methylene donor.

5,444,110
CROSSLINKING PLASTISOL AND PROCESS FOR CROSSLINKING VINYL CHLORIDE RESIN
Koujin Kitazawa, Yokosuka; Kouichi Ohrui, Yokohama, and Eitaro Nakamura, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Feb. 1, 1994, Ser. No. 189,610
Claims priority, application Japan, Feb. 2, 1993, 5-037457
Int. Cl.[6] L08K 5/34
U.S. Cl. 524—100 18 Claims

1. A crosslinking plastisol comprising (A) epoxy group-containing vinyl chloride resin particles having an average particle diameter of 0.05 to 5 μm, wherein the concentration of epoxy group at the particle surface is at least 1×10^{-2}% by weight and the concentration of epoxy group in the entire particle is not greater than 10% by weight, (B) a triazine compound and (C) a plasticizer.

5,444,111
AMMONIUM CHLORIDE AS A PVC CO-STABILIZER
George F. Beekman, Middletown; Gary M. Conroy, Cincinnati; Jeffrey R. Hyde, West Chester, and Gene K. Norris, Cincinnati, all of Ohio, assignors to Morton International, Inc., Chicago, Ill.
Division of Ser. No. 4,815, Jan. 15, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,460
Int. Cl.[6] C08K 5/58
U.S. Cl. 524—180 9 Claims

1. A composition comprising a halogen-containing polymer, a metal mercaptide of a mercaptoester as the primary heat stabilizer and from about 0.01 to about 0.2 percent by weight of, based on the total weight of the composition, of an ammonium halide having the formula:

$R_4N^+X^-$

wherein R is hydrogen, alkyl, aryl, alkaryl, aralkyl, or hydroxyalkyl; and X is a chloride or bromide ion.

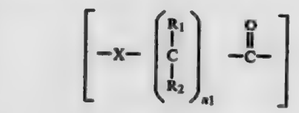
5,444,112
SPRAYABLE NONIONIC NEOPRENE LATEX ADHESIVE AND METHOD OF PREPARATION
David W. Carnahan, White, Ga., assignor to CJ's Distributing, Inc., Cartersville, Ga.
Filed May 16, 1994, Ser. No. 243,468
Int. Cl.[6] C08J 3/26; C08L 11/02
U.S. Cl. 524—272 19 Claims

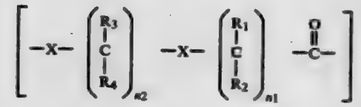
1. A sprayable adhesive composition comprising:
an aqueous dispersion of the following components on a dry weight basis:

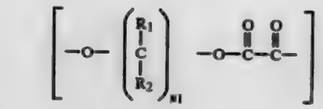
a nonionic neoprene latex consisting of a copolymer of chloroprene and methacrylic acid dispersed and stabilized with polyvinyl alcohol - 100 parts;
a tackifier - 10 to 50 parts;
zinc oxide unreacted with a caustic material - 1 to 10 parts;
an antioxidant - 1 to 3 parts; and
a nonionic surfactant - 0.5 to 3 parts; and
said composition being free of coalescence aids and thickeners.

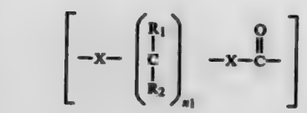
5,444,113
END USE APPLICATIONS OF BIODEGRADABLE POLYMERS
Richard G. Sinclair, Columbus; Edward S. Lipinsky, Worthington; James D. Browning; Donald Bigg, both of Columbus, all of Ohio, and Thomas A. Rogers, Golden, Colo., assignors to Ecopol, LLC, Golden, Colo.
Continuation-in-part of Ser. No. 950,854, Sep. 22, 1992, which is a continuation-in-part of Ser. No. 579,000, Sep. 6, 1990, Pat. No. 5,216,050, Ser. No. 579,005, Sep. 6, 1990, Pat. No. 5,180,765, Ser. No. 579,460, Sep. 6, 1990, Pat. No. 5,252,642, and Ser. No. 579,465, Sep. 6, 1990, which is a continuation-in-part of Ser. No. 387,670, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,939, Aug. 8, 1988, abandoned, said Ser. No. 579,000, is a continuation-in-part of Ser. No. 387,676, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,894, Aug. 8, 1988, abandoned, said Ser. No. 579,005, is a continuation-in-part of Ser. No. 387,678, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,896, Aug. 8, 1988, abandoned, said Ser. No. 579,460, is a continuation-in-part of Ser. No. 386,844, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 317,391, Mar. 1, 1989, abandoned. This application Sep. 29, 1993, Ser. No. 128,520
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[6] C08K 5/10
U.S. Cl. 524—306 22 Claims

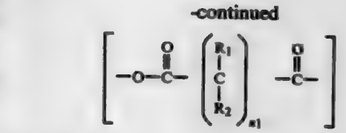
1. An adhesive product comprising a hydrolytically degradable polymer and a modifier, wherein said modifier is compatible with said polymer and is non-volatile and non-fugitive and wherein said polymer comprises repeating monomer or comonomer units selected from the group consisting of:

i)


ii)


iii)


iv)


v)


wherein X is the same or different and is O or NR' with R' being the same or different and being H, hydrocarbyl, or substituted hydrocarbyl; R_1, R_2, R_3 and R_4 can be the same or different and are hydrogen, hydrocarbyl containing 1 to 24 carbon atoms, or substituted hydrocarbyl containing 1 to 24 carbon atoms, and where n_1 and n_2 can be the same or different and are an integer of from 1–12.

5,444,114
THERMOPLASTIC RESIN COMPOSITION
Hisanaga Shimizu; Shinji Takeshita, and Kazuo Kitamura, all of Mihara, Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan
Continuation of Ser. No. 930,439, Sep. 16, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 214,047
Int. Cl.[6] C08K 3/10
U.S. Cl. 524—413 12 Claims

1. A thermoplastic resin composition wherein 1 part by weight or more of potassium titanate and 0.1–10% by weight, based on the potassium titanate, of an organic acid or anhydride selected from the group consisting of aromatic carboxylic acids and anhydrides having 15 or less carbon atoms and aliphatic carboxylic acids and anhydrides having 20 or less carbon atoms are mixed with 100 parts by weight of a thermoplastic resin component which is an aromatic polycarbonate resin or a mixture of an aromatic polycarbonate resin and 70% by weight or less of other thermoplastic resin selected from the group consisting of thermoplastic polyester resin, polyarylene ester resin, polystyrene resin, diene resin, polyamide resin, polyether resin, polysulfone resin and polyphenylene sulfide resin.

5,444,115
FIRE RESISTANT POLY(METHYL METHACRYLATE) COMPOSITION
Yung-Haw Hu, and Robert V. Kasowski, both of West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 21, 1994, Ser. No. 342,970
Int. Cl.[6] C08K 7/06, 3/22
U.S. Cl. 524—437 13 Claims

1. A composition comprising from about 15 to about 80 percent by weight of a poly(methyl methacrylate) polymer, from about 20 to about 84.9 percent by weight of alumina trihydrate, and from about 0.1 to about 10 percent by weight of at least one chopped fiber selected from the group consisting of an aramid fiber and a carbon fiber.

5,444,116
PERFLUOROELASTOMERIC COMPOSITIONS AND SEALS HAVING IMPROVED CHEMICAL RESISTANCE AND METHODS OF MAKING THE SAME
Harshad P. Amin, West Point, Pa., and Carl A. Auffermann, West University Place, Tex., assignors to Greene, Tweed & Co., Kulpsville, Pa.
Filed Jul. 14, 1993, Ser. No. 92,144
Int. Cl.[6] C08K 3/04; C08L 27/12
U.S. Cl. 524—495 17 Claims

1. An elastomeric composition having improved resistance to chemical attack, comprising a mixture of:
a perfluoroelastomer and
a particulate fluorinated graphite having a composition of

$(CF_2)_n$ where x ranges from about 0.25 to about 1.20 and n is at least about 10^3.

5,444,117

COATING COMPOSITIONS CONTAINING POLYISOCYANATES AND ALDIMINES WHICH HAVE IMPROVED STORAGE STABILITY

Robert A. Wade, Carnegie, Pa., and Terrell D. Wayt, Moundsville, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1994, Ser. No. 193,978
Int. Cl.[6] C08G 18/00; C08K 5/16, 3/00
U.S. Cl. 524—590 18 Claims

1. A coating composition which has an improved pot life without a corresponding increase in dry time when cured under ambient conditions comprising

a) a polyisocyanate component,

b) an aldimine based on the reaction product of a polyamine having 2 or more primary amino groups with an aldehyde corresponding to the formula:

$$O{=}CHCH(R_1)(R_2)$$

wherein R_1 and R_2 may be the same or different and represent optionally substituted hydrocarbon radicals, or R_1 and R 2 together with the β-carbon atom form a cycloaliphatic or heterocyclic ring and

c) 0.1 to 15 weight percent, based on the total weight of the coating composition, of a water-adsorbing zeolite,

wherein components a) and b) are present in an amount sufficient to provide an equivalent ratio of isocyanate groups to aldimine groups of 0.5:1 to 20:1.

5,444,118

PROCESS FOR PRODUCING COPOLYMER LATEX AND PAPER COATING COMPOSITION, CARPET BACKING COMPOSITION OR ADHESIVE COMPOSITION COMPRISING SAID LATEX

Katsuhiko Tsuruoka; Shozo Nishida; Masafumi Wakamori; Takemitsu Tanaka; Masaaki Yada; Osamu Ishikawa, and Hiroyuki Miki, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 540,948, Jun. 20, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 34,210
Claims priority, application Japan, Jun. 30, 1989, 1-169142; Nov. 16, 1989, 1-298581; Nov. 24, 1989, 1-306056; Nov. 24, 1989, 1-306057; Dec. 15, 1989, 1-326930; Dec. 18, 1989, 1-327973
Int. Cl.[6] C08L 31/00
U.S. Cl. 524—828 20 Claims

1. A two-stage process for producing a copolymer latex having a gel content of 5% by weight of more, comprising:

emulsion polymerizing;

(a) 2–80% by weight of a conjugated diene compound,

(b) 0.1–10% by weight of an ethylenically unsaturated carboxylic acid, and

(c) 10–97.9% by weight of an ethylenically unsaturated compound other than the components (a) and (b), the total of (a), (b) and (c) being 100% by weight, in the presence of

(d) α-methylstyrene dimer,

wherein in a first stage, 10–50% by weight of the total amount of the components (a), (b) and (c) are added and polymerized at 70°–80° C. for 2–6 hours after the addition of the monomer, and

after said first stage, 50–90% by weight of the total amount of the components (a), (b) and (c) are continuously fed and polymerized in a second stage.

5,444,119

THERMOPLASTIC RESIN COMPOSITION

Yuji Fujita; Tetsuya Kawamura; Kouichi Yokoyama; Katsuyuki Yokomizo, and Shigeyuki Toki, all of Ooi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 648,932, Feb. 1, 1991, Pat. No. 5,298,557. This application Dec. 3, 1993, Ser. No. 160,804
Claims priority, application Japan, Feb. 2, 1990, 2-24063; Feb. 2, 1990, 2-24064
Int. Cl.[6] C08L 23/12, 67/02
U.S. Cl. 525—64 2 Claims

1. A thermoplastic resin composition comprising:

(a) 10–90 weight % of polypropylene;

(b) 90–10 weight % of polyethylene terephthalate or polybutylene terephthalate;

(c) 5–30 parts by weight, per 100 parts by weight of the total of said (a) + said (b), of a polyolefin-polyester graft copolymer, said polyolefin-polyester graft copolymer comprising (A) 10–90 parts by weight of polyethylene terephthalate having an intrinsic viscosity [η] of 0.30–0.80 and an end carboxyl group content of 15–200 milliequivalent/kg; and (B) 90-20 parts by weight of a modified polypropylene prepared by grafting a polypropylene random copolymer containing an unconjugated diene comonomer represented by the following formula



wherein R_1–R_4 are H or alkyl groups having 1–6 carbon atoms, and n is an integer of 1–20, with an unsaturated carboxylic acid or an anhydride thereof, said modified polypropylene having a carboxyl group content of 0.2–5 mol % and a weight-average molecular weight of 8,000–140,000; and

(d) a modified polypropylene grafted with 0.1–5 weight % of an unsaturated carboxylic acid or its anhydride, a weight ratio (c)/(d) being 5/95-95/5.

5,444,120

THERMOPLASTICALLY PROCESSABLE ELASTOMERIC BLOCK COPOLYETHERESTERETHERAMIDES AND PROCESSES FOR THE PRODUCTION AND USE THEREOF

Hanns-Jörg Liedloff, Domat/Ems, Switzerland, assignor to EMS-Inventa AG, Switzerland

Division of Ser. No. 988,346, Dec. 9, 1992, Pat. No. 5,331,061, which is a continuation of Ser. No. 526,842, May 22, 1990, abandoned. This application Feb. 18, 1994, Ser. No. 198,829
Claims priority, application Germany, May 24, 1989, 37 17 017.9
Int. Cl.[6] C08L 77/12
U.S. Cl. 525—66 3 Claims

1. A thermoplastically processable composition comprising;

(i) an elastomeric block copolyetheresteretheramide consisting of recurring polyetheresteramide units A and polyetheramide units B in a ratio of units A to units B of 5:1 to 1:5, said units A and said units B being connected through ester and/or amide linkages, said units A being of Formula I

there being 3 to 35 of said Formula I in each of said units A; said units B being of Formula II



there being 3 to 35 of said Formula II in each of said units B; and wherein

D represents a divalent radical which remains after the removal of the carboxylic groups from a polyamide with terminal carboxylic groups having an average molar mass of 700 to 10,000 g/mol,

E is a divalent radical which remains after the removal of the hydroxyl groups from poly-(oxytetramethylene) with terminal hydroxyl groups having an average molar mass of 600 to 3,500 g/mol, and

F is a divalent radical which remains after the removal of the amino group from poly-(oxy-1,2-propylene) with terminal amino groups having an average molar mass of 350 to 2500 g/mol, said copolyetheresteretheramide having a modulus of flexural elasticity of about 40 to about 700 N/mm^2, and

(ii) a polar copolyolefin.

5,444,121

THIN-WALLED RUBBER ARTICLE WITH WALLS HAVING A RELATIVELY HIGH DEGREE OF TEAR

Torbjorn Greaves, Horsholm, and Bent Nielsen, Frederiksberg, both of Denmark, assignors to DanPren A/S, Albertslund, Denmark

Filed Oct. 15, 1993, Ser. No. 136,459
Claims priority, application Denmark, Jun. 18, 1993, 0722/93
Int. Cl.[6] C08L 53/02
U.S. Cl. 525—89 7 Claims

1. A thin-walled rubber article, said walls consisting essentially of styrene-isoprene-styrene (S-I-S) triblock copolymer, and styrene-butadiene-styrene (S-B-S) triblock copolymer and, optionally, styrene-olefin-styrene (S-O-S) triblock copolymer, with a S-I-S content from 10 to 75% by weight and an S-B-S content from 1 to 90% by weight, and said walls having a relatively high degree of tear resistance.

5,444,122

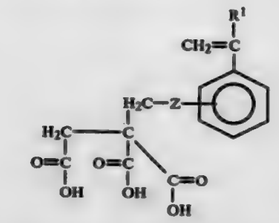
TRICARBOXYLIC ACID-FUNCTIONAL MONOMERS AND POLYMERS PREPARED FROM SAME

Rodney M. Harris, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 176,605, Jan. 3, 1994, Pat. No. 5,391,818. This application Feb. 17, 1995, Ser. No. 389,856
Int. Cl.[6] C08F 8/14
U.S. Cl. 525—119 37 Claims

1. An acid-functional polymer which comprises the free radical polymerization reaction product of:

(i) 1% to 100% by weight of an unsaturated acid-functional monomer having the structure:



wherein R^1 is hydrogen or methyl and Z is a direct bond or is a divalent radical having 1 to about 20 carbon atoms; and

(ii) 0% to 99% by weight of at least one other unsaturated monomer copolymerizable with the unsaturated acid-functional monomer.

5,444,123

HALOGEN-FREE FLAMEPROOFED THERMOPLASTIC MOLDING MATERIALS BASED ON POLYPHENYLENE ETHERS AND POLYSTYRENE

Doris Zeltner, Roemerberg; Norbert Niessner; Friedrich Seitz, both of Friedelsheim; Rainer Neumann, Mutterstadt, and Stefan Seelert, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 940,337, Sep. 3, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,512
Claims priority, application Germany, Sep. 6, 1991, 41 29 765.2
Int. Cl.[6] C08F 30/02, 230/02; C08L 43/02, 71/12
U.S. Cl. 525—133 6 Claims

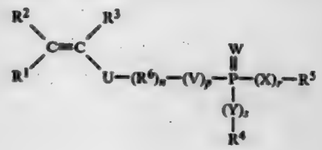
1. A halogen-free flameproofed thermoplastic molding material based on polyphenylene ethers and polystyrene, containing, as essential components,

A) from 5 to 92% by weight (based on the total weight of the material) of one or more polyphenylene ethers,

B) from 5 to 92% by weight (based on the total weight of the material) of a vinylaromatic polymer

C) from 3 to 25% by weight (based on the total weight of the material) of a flameproofing agent based on

C1) from 20 to 100% by weight (based on the total amount of C) of a polymeric phosphorous compound which is obtained by polymerizing or copolymerizing one or more compounds of the following structure:



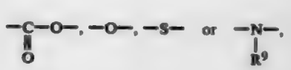
R^1, R^2, R^3, R^4, R^5, R^9 and R^{10} are each hydrogen, alkyl, cycloalkyl, aralkyl or aryl,

R^7 and R^8 are each alkylidene, cycloalkylidene, aralkylidene or arylydene,

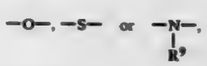
p, r, s, t, u and v are each 0 or 1,

n is 0, 1 or 2,

U is



V, X and Y are each



W is =O, =S or $=NR^9$,

Z is =O, =S or $=NR^{10}$,

with the proviso that the sum of m+n+p is equal to or greater than 1,

and

C2) from 0 to 80% by .weight (based on the total amount of C) of a low molecular weight phosphorous compound selected from the group consisting of the phosphine oxides, phosphates,

phosphonic acids and salts and esters thereof, phosphonic acids and salts and esters thereof and red phosphorous.

5,444,124

COMPATIBILIZED FLUOROPOLYMER/AROMATIC POLYESTER THERMOPLASTIC POLYBLENDS

Bruno Schlund, Chaponost, and Alain Bouilloux, Bernay, both of France, assignors to Elf Atochem S.A., Puteaux, France

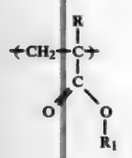
Filed Jun. 17, 1994, Ser. No. 261,703
Claims priority, application France, Jun. 17, 1993, 93 07298
Int. Cl.[6] C08L *67/02*
U.S. Cl. 525—166 **12 Claims**

1. A thermoplastic polyblend composition, which comprises (i) a fluoropolymer, (ii) an aromatic polyester and (iii) a copolymeric compatibilizing agent therefor, said compatibilizing copolymer (iii) comprising recurring structural units of the formulae:



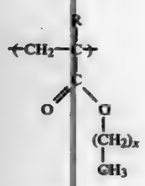
(I)

and



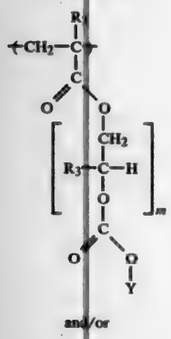
(II)

and



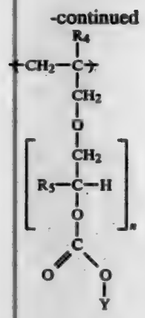
(III)

and, optionally,



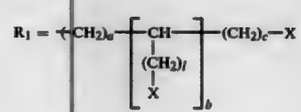
and/or

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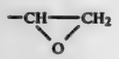


(V)

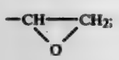
in which R and R_2 are each a hydrogen atom or an alkyl radical having 1 or 2 carbon atoms;



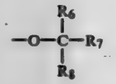
wherein X is CH_3 or



and at least one X

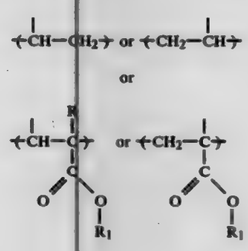


a is a number ranging from 1 to 10; b is 0 or 1; c is a number ranging from 0 to 10; and l is a number ranging from 0 to 10; R_3 and R_5 are each a hydrogen atom or a methyl radical; R_4 is a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms; m is 1 or 2; n is 0, 1 or 2; x is a number ranging from 0 to 10; and Y is a hydrogen atom or a radical:



in which R_6 and R_7, which may be identical or different, are each an alkyl having from 1 to 4 carbon atoms, and R_8 is an alkyl radical having from 1 to 12 carbon atoms, or a phenyl, alkylphenyl or cycloalkyl radical having from to 12 carbon atoms; or else Y is

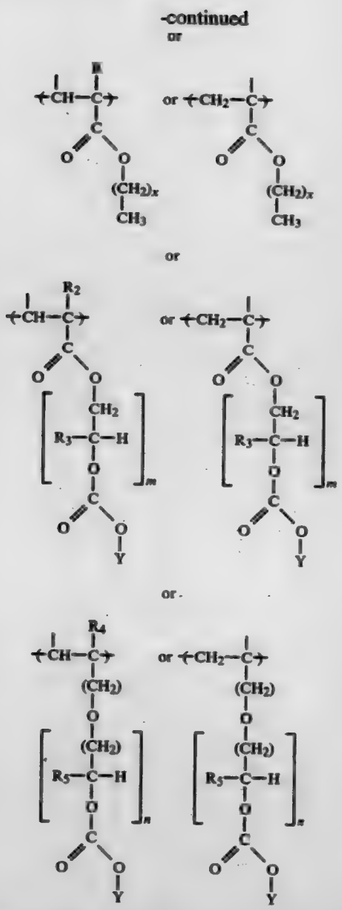
(IV)



(Ia)

(IIa)

-continued



with the proviso that the amount of said structural units of formulae (Ia), (IIa), (IIIa), (IVa) and (Va), when present, is such that the thermoplasticity of the polyblend is maintained, and said structural units of formulae (Ia), (IIa), (IIIa), (IVa) and (Va) may be directly bonded to structural units of formulae (I), (II), (III), (IV) or (V).

5,444,125

AMINATED OLEFIN POLYMERS

Masayuki Tomita; Hideshi Uchino; Toshihiko Sugano; Takashi Fujita, and Mitsutoshi Aritomi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,037
Claims priority, application Japan, Apr. 30, 1991, 3-098821
Int. Cl.[6] C08F *8/32*
U.S. Cl. 515—293 **24 Claims**

1. An aminated olefin polymer which is such a modified α-olefin polymer comprising at least one α-olefin of 2 to 20 carbon atoms polymerized and having an olefinic unsaturated bond at its terminus, that the α-olefin polymer has been modified so that the olefinic unsaturated bond at the terminus has been aminated by generating an amino group on the olefinic unsaturated bond or by bonding through addition reaction a compound containing an amino group to the olefinic unsaturated bond, the amino group being introduced in an amount of 10 to 100% of the total number of olefinic unsaturated bonds in the mass of the unsaturated polymer.

(IIIa)

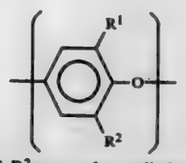
5,444,126

PROCESS FOR PRODUCING A MODIFIED POLYPHENYLENE ETHER

Akihiko Okada, and Akitoshi Maeyama, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 968,462, Dec. 10, 1992, Pat. No. 5,326,813. This application Feb. 24, 1994, Ser. No. 201,035
Claims priority, application Japan, Dec. 10, 1991, 3-325796; Jan. 30, 1992, 4-014815
Int. Cl.[6] C08F *283/08*
U.S. Cl. 525—391 **5 Claims**

1. A process for producing a polyphenylene ether that is modified with a compound having an ethylenic double bond and a polar group in the same molecule, said ether having a modification rate of 1.3% to 10% by weight which comprises reacting 100 parts by weight of a polyphenylene ether consisting of the repeating units each represented by the general formula (I)



(I)

(Va)

wherein R^1 and R^2 are each an alkyl group having 1 to 4 carbon atoms or a halogen atom, with 1 to 20 parts by weight of the compound having an ethylenic double bond and a polar group in the same molecule in an aromatic hydrocarbon solvent in the presence of 15 or less parts by weight of a radical generator at a reaction temperature at which the half-life period of the radical generator is not longer than one hour and for a reaction time which is not shorter than 3 times the half-life period of the radical generator at that reaction temperature.

5,444,127

TERTIARY AMINE DERIVATIVES AS COMPONENTS OF POLYMER FORMING SYSTEMS

John J. Miskel, Jr., Mendham, N.J.; Reuben H. Grinstein, Blue Bell, and Stephen A. Fischer, Yardley, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 963,789, Oct. 19, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,625
Int. Cl.[6] C08G *59/42, 59/50*
U.S. Cl. 525—504 **11 Claims**

1. A method of curing an epoxy resin comprising:
preparing a mixture comprised of an epoxy resin and at least one condensation reaction product of a) and b):
a) from about 2 to about 3 mols of a polyamine having only one tertiary amino group, and a non-cyclic backbone containing from 1 to 18 carbon atoms; and
b) about 1 mol of at least one member selected from the group consisting of urea, guanidine, guanylurea, thiourea, mono -N alkyl substituted urea having from 1 to 3 carbon atoms in the alkyl moiety, di —N,N' alkyl substituted urea having from 1 to 3 carbon atoms in the alkyl moieties, mono-N alkyl substituted thiourea having from 1 to 3 carbon atoms in the alkyl moiety and di-N,N' alkyl substituted thiourea having from 1 to 3 carbon atoms in the alkyl moieties; and
c) a polymercaptan curing agent, and curing said mixture at a temperature below room temperature.

5,444,128

WATER-SEALING SHEET

Isamu Ichizuka; Shuitsu Takahashi; Kouzi Hara; Hiroshi Waki; Shinji Kobe; Tadayuki Sakurada; Yoshitaka Okouchi; Ken Ohkubo, and Hiroshi Shimizu, all of Tokyo, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha and Riken Vinyl Industry Co., Ltd., both of Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,538
Claims priority, application Japan, Sep. 14, 1992, 4-245268
Int. Cl.[6] C08K 3/10; C08L 27/06, 75/08
U.S. Cl. 524—507 3 Claims

1. A water-sealing sheet comprising a waterswelling resin obtained by kneading together 10 to 97% by weight of a polyvinyl chloride containing 50 to 200 parts by weight of a plasticizer based on 100 parts by weight of said polyvinyl chloride, and 3 to 90% by weight of a water-swelling urethane resin which is a prepolymer having isocyanate groups in which the content of terminal NCO groups amounts to 1 to 12%, obtained by the reaction of polyisocyanate with at least one polyether polyol of the formula

$$R[(OR_1)n\ OH]p$$

wherein R is a polyhydric alcohol residue;

$(OR_1)n$ is a polyoxyalkylene chain comprising oxyalkylene groups each having an oxyethylene group and an alkylene group carrying three or four carbon atoms, and wherein the content of the oxyethylene groups is 20 to 100% of the total molecular weight;

n is a number corresponding to the degree of polymerization of the oxyalkylene groups and giving a hydroxyl group equivalent of 200 to 2500; and

p is 2 to 8.

5,444,129

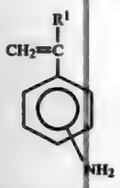
STYRENE TYPE MONOMERS CONTAINING SUBSTITUENTS THEREON, E.G. UREA, AND POLYMERS AND COPOLYMERS THEREOF

David W. Kurz, Concord Township, Lake County, Ohio, assignor to Gould Inc., Eastlake, Ohio

Division of Ser. No. 56,931, May 5, 1993, Pat. No. 5,401,825.
This application Jan. 11, 1995, Ser. No. 371,400
Int. Cl.[6] C08G 18/10, 59/14; C08F 26/02
U.S. Cl. 525—528 15 Claims

1. A thermoset composition comprising the reaction product of at least one aminostyrene compound and at least one polyisocyanate having the formula $R^2-(NCO)_x$, where x is from about 1 to about 4, reacted with one or more epoxy oligomers having two or more reactive epoxy groups, said aminostyrene compound having the formula:

(Formula I)



wherein R^1 is H, fluorine, chlorine, iodine, bromine, an alkyl having 1 to 44 carbon atoms, an aryl or alkyl substituted aryl having 6 to 40 carbon atoms, and wherein R^2 is an alkyl having from 2 to 20 carbon atoms, a cycloalkyl having 4 to 20 carbon atoms, an aromatic or an alkyl substituted aromatic having 6 to 20 carbon atoms, or an aromatic substituted alkyl having 6 to 20 carbon atoms.

5,444,130

PROCESS FOR PRODUCING VINYL CHLORIDE-BASED POLYMER

Shuji Ohnishi, Lake Jackson, Tex., and Tadashi Amano, Ibaraki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,605
Claims priority, application Japan, May 19, 1992, 4-151503
Int. Cl.[6] C08F 14/06
U.S. Cl. 526—67 2 Claims

1. A process for producing a vinyl chloride-based polymer which comprises the step of subjecting an aqueous suspension of a monomeric material containing at least vinyl chloride to suspension polymerization in a polymerizer, while circulating said aqueous suspension from the interior to the exterior and back to the interior of said polymerizer by a circulating passage connected to said polymerizer,

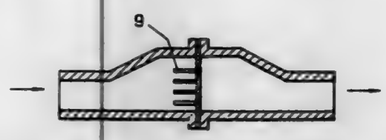
wherein the said aqueous suspension comprising a polymer slurry circulated through said circulating passage is returned during its polymerization into said polymerizer so as to wet entirely the inside wall portion of said polymerizer in a gas-phase zone.

5,444,131

POLYMERIZATION PROCESS WITH RECYCLE LINE CONTAINING SCREEN WITH RODLIKE PROJECTION

Shuji Ohnishi, Lake Jackson, Tex.; Yoichi Tanifuji, Matsudo, and Tadashi Amano, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,822
Claims priority, application Japan, Apr. 26, 1993, 5-121973
Int. Cl.[6] C08F 14/06
U.S. Cl. 526—67 3 Claims



1. A method of producing a polymer which comprises polymerizing a monomer having an ethylenically unsaturated double bond using a polymerization apparatus that is equipped with a circulation path for the flow of a reaction mixture that comprises a polymerization vessel, a heat exchanger arranged outside said polymerization vessel, and a pipeline that is extended from said polymerization vessel, is returned to said polymerization vessel through said heat exchanger, and is provided with a strainer in the course thereof, wherein the surface facing upstream of a filter provided in said strainer has rodlike projections.

5,444,132

CONTROLLED ADDITION OF ALKALI OR ALKALINE EARTH SALTS TO A CHROMIUM OXIDE CATALYST

Donald R. Witt; Elizabeth A. Benham, and Max P. McDaniel, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 69,695, Jan. 1, 1993, Pat. No. 5,284,811, which is a continuation of Ser. No. 804,631, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 522,683, May 14, 1990, abandoned. This application Dec. 6, 1993, Ser. No. 162,231
Int. Cl.[6] G08F 4/24
U.S. Cl. 526—106 16 Claims

1. In a process wherein at least one olefin monomer having from 2 to about 8 carbon atoms is contacted under polymerization conditions with a catalyst to produce a polymer, said catalyst being comprised of chromium oxide and a support containing one or more of silica, titania, thoria, alumina, zirconia or aluminophosphates, the improvement which comprises prior to effecting said contact:

purifying said catalyst support to remove residual alkali metal and alkaline earth metal salts therefrom;

impregnating said catalyst after its formation with a metal salt selected from the group consisting of alkali metal salts, alkaline earth metal salts and mixtures thereof in an amount in the range of from about 50 to about 500 micromoles of metal salt per gram of catalyst to improve the catalytic properties of said catalyst by mixing said catalyst with a non-aqueous solution of said salt and then removing the non-aqueous solvent from said mixture; and

activating said salt-impregnated catalyst.

5,444,133

PROCESS FOR PRODUCING POLYETHYLENE

William G. Todd, Victoria; Patrick A. Grimm, Bay City, and Joe C. Daws, Victoria, all of Tex., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 22, 1993, Ser. No. 51,147
Int. Cl.[6] C08F 2/06, 4/64, 4/68
U.S. Cl. 526—116 17 Claims

1. In a high pressure solution process for making polyethylene or a copolymer of ethylene and an α-alkene from C_3 to C_{10} wherein ethylene, a catalyst of a mixture of titanium and vanadium halides or oxyhalides, a cocatalyst having the formula R_3Al or R_2AlX, where R is alkyl from C_2 to C_{20} and X is chlorine, bromine, or —$OSiR_3$, and a solvent are added to a reactor, the improvement comprising forming a first mixture which consists essentially of said ethylene and said solvent and a second mixture which consists essentially of said solvent, including all of said catalyst in one of said mixtures and all of said cocatalyst in the other of said mixtures, and keeping said first and second mixtures apart until they have been added to said reactor.

5,444,134

PROCESS FOR PRODUCING OLEFIN BASED POLYMERS AND OLEFIN POLYMERIZATION CATALYST

Junichi Matsumoto, Sodegaura, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,478
Claims priority, application Japan, Jul. 11, 1991, 3-197188; Jan. 8, 1992, 4-019558
Int. Cl.[6] C08F 4/44
U.S. Cl. 526—159 13 Claims

1. A process for polymerizing an olefin, which comprises contacting an olefin with a catalyst, wherein said catalyst comprises:

(A) a transition metal compound containing a transition metal selected from Group IVB of the periodic table; and

(B) a compound, wherein compounds (A) and (B) are carried on a carrier (C); and

(D) an organoaluminum compound of formula (VIII):

$$R^{14}_rAlQ_{3-r} \quad \text{(VIII)}$$

wherein R^{14} is an alkyl group, alkenyl group, aryl group or arylalkyl group, having 1 to 20 carbon atoms; Q is a hydrogen atom, a C_{1-20} alkoxy group or a halogen atom; and r is a number between 1 and 3,

wherein compound (A) is a transition metal compound (A') represented by the following Formula (IV):

$$M^1R^1_aR^2_bR^3_cR^4_d \quad \text{(IV)}$$

wherein M^1 is a Ti, Zr, or Hf atom; R^1, R^2, R^3, and R^4 may be the same as or different from each other and are independently selected from the group consisting Of hydrogen atom, oxygen atom, halogen atom, C_{1-20} alkyl, C_{1-20} alkoxy, C_{6-20} aryl, tolyl, xylyl, benzyl, C_{1-20} acyloxy, allyl, trimethylsilyl, and (trimethylsilyl)methyl, acetylacetonate, substituted acetylacetonate, dimethyl ether, diethyl ether, tetrahydrofuran, tetrahydrothiophene, ethylbenzoate, acetonitrile, benzonitrile, trimethylamine, triethylamine, tributylamine, N,N-dimethylaniline, pyridine, 2,2'-bipyridine, phenanatholorine, triethylphosphine, triphenylphosphine, ethylene, butadiene, 1-pentene, isoprene, pentadiene, 1-hexene, benzene, toluene, xylene, cycloheptatriene, cyclooctadiene, cyclooctatriene, and cyclooctatetraene; and a, b, c and d are independently an integer of 0 to 4; and

wherein said compound (B) is a member selected from the group consisting of triethylammonium tetraphenylborate, tri(n-butyl)ammonium tetraphenylborate, trimethylammonium tetraphenylborate, tetraethylammonium tetraphenylborate, methyltri(n-butyl)ammonium tetraphenylborate, benzyltri(n-butyl)ammonium tetraphenylborate, dimethyldiphenylammonium tetraphenylborate, methyltriphenylammonium tetraphenylborate, trimethylanilinium tetraphenylborate, methylpyridinium tetraphenylborate, benzylpyridinium tetraphenylborate, methyl(2-cyanopyridinium) tetraphenylborate, trimethylsulfonium tetraphenylborate, benzyldimethylsulfonium tetraphenylborate, triethylammonium tetrakis(pentafluorophenyl)borate, tri(n-butyl)ammonium tetrakis(pentafluorophenyl)borate, triphenylammonium tetrakis(pentafluorophenyl)borate, tetrabutylammonium tetrakis(pentafluorophenyl)borate, tetraethylammonium tetrakis(pentafluorophenyl)borate, methyltri(n-butyl)ammonium tetrakis(pentafluorophenyl)borate, benzyltri(n-butyl) ammonium tetrakis(pentafluorophenyl)borate, methyldiphenylammonium tetrakis(pentafluorophenyl)borate, methyltriphenylammonium tetrakis(pentafluorophenyl)borate, dimethyldiphenylammonium tetrakis(pentafluorophenyl)borate, anilinium tetrakis(pentafluorophenyl)borate, methylanilinium tetrakis(pentafluorophenyl)borate, dimethylanilinium tetrakis(pentafluorophenyl)borate, trimethylanilinium tetrakis(pentafluorophenyl)borate, dimethyl(m-nitroanilinium) tetrakis(pentafluorophenyl)borate, dimethyl(p-bromoanilinium) tetrakis(pentafluorophenyl)borate, pyridinium tetrakis(pentafluorophenyl)borate, p-cyanopyridinium tetrakis(pentafluorophenyl)borate, N-methylpyridinium tetrakis(pentafluorophenyl)borate, N-benzylpyridinium tetrakis(pentafluorophenyl)borate, o-cyano-N-methylpyridinium tetrakis(pentafluorophenyl)borate, p-cyano-N-methylpyridinium tetrakis(pentafluorophenyl)borate, p-cyano-N-benzylpyridinium tetrakis(pentafluorophenyl)borate, trimethylsulfonium tetrakis(pentafluorophenyl) borate, benzyldimethylsulfonium tetrakis(pentafluorophenyl) borate, tetraphenylphosphonium tetrakis(pentafluorophenyl) borate, triphenylphosphonium tetrakis(pentafluorophenyl) borate, dimethylanilinium tetrakis(3,5-ditrifluoromethylphenyl)borate, ferrocenium tetraphenylborate, silver tetraphenyl borate, trityl tetraphenylborate, tetraphenylporphyrin manganese tetraphenylborate, ferrocenium tetrakis(pentafluorophenyl)borate, 1,1'-dimethylferrocenium tetrakis(-pentafluorophenyl)borate, decamethylferrocenium tetrakis(pentafluorophenyl)borate, acetylferrocenium tetrakis(pentafluorophenyl)borate, formylferrocenium tetrakis(pentafluorophenyl)borate, cyanoferrocenium tetrakis(pentafluorophenyl)borate, silver tetrakis(pentafluorophenyl)borate, trityl tetrakis(pentafluorophenyl)borate, lithium tetrakis(pentafluorophenyl)borate, sodium tetrakis(pentafluorophenyl)borate, tetraphenylporphyrin manganese tetra(pentafluorophenyl)borate, tetrakis(pentafluorophenyl)boric acid (tetraphenylporphyrin iron chloride), tetrakis(pentafluorophenyl)boric acid (tetraphenylporphyrin zinc), tetrafluorosilver borate, tris(pentafluorophenyl)boron, tris(3,5-di(trifluoromethyl)phenyl)-boron, and triphenyl boron.

5,444,135
DIRECT SYNTHESIS BY LIVING CATIONIC POLYMERIZATION OF NITROGEN-CONTAINING POLYMERS
Herve M. Cheradame, Grigasia, France; Frank J. Chen, Edison; Jon E. R. Stanat, Westfield, both of N.J.; Hung A. Nguyen, Le Kremlin Bicetre, and Behrooz R. Tabar, Paris, both of France, assignors to Exxon Chemical Patents Inc., Linden, N.J.
Filed Dec. 17, 1992, Ser. No. 992,511
Int. Cl.[6] C08F *4/04, 112/08, 110/10*
U.S. Cl. 526—219.2 24 Claims

1. A method for the direct synthesis of polymeric materials functionalized with nitrogen-containing functional groups, comprising the steps of providing a cationically polymerizable monomer, and initiating living polymerization by the addition of a cationic polymerization catalyst, in the presence of a nitrogen-containing initiator compound having said nitrogen-containing functional group chemically bound to a release moiety, wherein the ratio of moles of catalyst to nitrogen-containing functional groups is greater than about 3.95:1.

5,444,136
OPTIONALLY ORIENTED, MONOMERIC AND POLYMERIC NONLINEARLY OPTICALLY ACTIVE MATERIALS AND DERIVATIVES THEREOF
Yves Camberlin, Caluire; Gerard Mignani, Lyons; Remi Meyrueix, Lyons, and Gilles Tapolsky, Lyons, all of France, assignors to Flamel Technologies, Venissieux Cedex, France
Division of Ser. No. 118,286, Sep. 9, 1993, Pat. No. 5,324,827, which is a continuation of Ser. No. 766,514, Sep. 27, 1991, abandoned. This application Mar. 15, 1994, Ser. No. 213,090
Claims priority, application France, Sep. 28, 1990, 90 11956
Int. Cl.[6] C08F *226/06*
U.S. Cl. 526—262 14 Claims

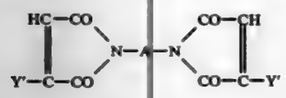
1. A (co)polymerizate of nonlinearly optically active monomer species comprising at least two carbon-carbon activated double bonds and a non-centrosymmetric system of pi (π) conjugated bonds bearing at least one electron attracting group on one terminal thereof and at least one electron donor group on the other terminal, wherein the monomer species has the formula (I):



(I)

wherein R is hydrogen atom or a lower alkyl or alkylidene radical, or a substituted such radical; R′ is a lower acyl or acylidene radical, or a substituted and/or saturated such radical, with the proviso that R and R′ may together form a heterocycle having from 5 to 7 atoms; and A comprises said non-centrosymmetric system of π conjugated bonds; and wherein Y′ is H, CH_3 or Cl.

9. The (co)polymerizate of claim 1, wherein the monomer species has the formula (I′):

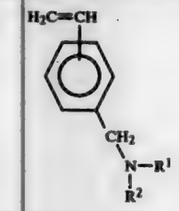


(I′)

wherein Y′ is H, CH_3 Cl.

5,444,137
HIGHLY SELECTIVE CHELATING RESINS AND MONOMERS FOR THEIR PREPARATION
Donald W. McQuigg, and Edward E. Sowers, both of Mooresville, Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.
Division of Ser. No. 750,467, Aug. 20, 1991, Pat. No. 5,180,822, which is a continuation-in-part of Ser. No. 609,393, Nov. 5, 1990, Pat. No. 5,147,954, which is a division of Ser. No. 352,980, May 17, 1989, Pat. No. 4,968,806, which is a continuation-in-part of Ser. No. 247,152, Sep. 21, 1988, Pat. No. 5,015,706. This application Jan. 19, 1993, Ser. No. 5,291
Int. Cl.[6] C08F *26/06, 212/06, 212/08*
U.S. Cl. 526—263 15 Claims

1. A selective chelating resin comprising repeating units derived from a polymerizable monomer having the formula:



wherein

$R=(CH_2)_n-Py$ wherein n=1 to 3 and Py=a pyridyl group; and

R^2=H, a C_1 to C_{12} alkyl group, optionally hydroxyalkyl, or, independently, another group of the formula R^1.

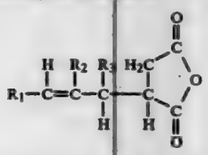
5,444,138

Patent Not Issued For This Number

5,444,139
ANHYDRIDE-FUNCTIONAL POLYMERS DERIVED FROM ALKENYL SUCCINIC ANHYDRIDE
Richard S. Valpey, III, Matteson; John D. Kraus, Hometown, both of Ill., and H. James Harwood, Stow, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio
Continuation of Ser. No. 176,149, Jan. 3, 1994, abandoned. This application Dec. 29, 1994, Ser. No. 366,002
Int. Cl.[6] C08F *222/04*
U.S. Cl. 526—271 7 Claims

1. An ungelled anhydride-functional polymer obtained by polymerizing under free radical addition polymerization reaction conditions, a monomer mixture comprising:

(i) 20 to 75 weight percent of an alkenyl succinic anhydride having the structure:



wherein R_1, R_2 and R_3 are each independently hydrogen or alkyl or substituted alkyl of 1 to about 30 carbons; and

(ii) 25 to 80 weight percent of at least one (meth)acrylic monomer copolymerizable with the alkenyl succinic anhydride; and, optionally

(iii) 0 to 75 weight percent of at least one unsaturated monomer, other than a (meth)acrylic monomer, which is copolymerizable with the anhydride and the (meth)acrylic monomer;

and wherein at least part of the monomer mixture comprises acrylic monomers or monomers having allylic hydrogens.

5,444,140
STARVE FED EMULSION POLYMERIZATION PROCESS
Anthony J. Paine; Fatima M. Pontes, both of Mississauga, and Karen A. Moffat, Brantford, all of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 22, 1994, Ser. No. 264,205
Int. Cl.[6] C08F *12/08, 2/42, 2/24*
U.S. Cl. 526—346 27 Claims

1. A process for producing a polymer resin, comprising:

selecting a desired molecular weight and molecular weight distribution of said polymer resin;

determining a starve fed fraction of less than 1 but more than 0 that will achieve said molecular weight and molecular weight distribution; and

charging a reaction vessel with a chain transfer agent and a first monomer emulsion, and polymerizing monomer in said first monomer emulsion while simultaneously adding to said reaction vessel additional said monomer, in the form of a second monomer emulsion, and additional chain transfer agent;

wherein said reaction vessel is charged and said monomer is added in accordance with said starve fed fraction and said molecular weight and molecular weight distribution of the polymer resin are independently controlled by said charging, and

wherein said starve fed fraction is a fraction representing an amount of said monomer in said first monomer emulsion compared to a total amount of said monomer in said first monomer emulsion and additional said monomer, and

wherein said monomer comprises an olefinically unsaturated monomer.

5,444,141
PROCESS FOR MAKING VINYL AROMATIC/ALLYLIC ALCOHOL COPOLYMERS
Shao-Hua Guo, West Goshen, Pa., assignor to Arco Chemical Technology, L.P., Greenville, Del.
Filed Jul. 6, 1994, Ser. No. 271,306
Int. Cl.[6] C08F *212/08, 216/08*
U.S. Cl. 526—347 17 Claims

1. A process for making a vinyl aromatic/allylic alcohol copolymer, said process comprising:

a) charging a reactor with an allylic alcohol, 10–30% of the total amount to be used of a vinyl aromatic monomer, and 45–75% of the total amount to be used of a free-radical initiator;

b) heating the reaction mixture at a temperature within the range of about 125° C. to about 185° C., and

c) gradually adding to the reaction mixture, at a decreasing rate, the remaining 70–90% of vinyl aromatic monomer and 25–55% of free-radical initiator, to produce a vinyl aromatic/allylic alcohol copolymer having a number average molecular weight within the range of about 800 to about 2000 and a hydroxyl number within the range of about 180 mg KOH/g to about 280 mg KOH/g;

wherein the mole ratio of vinyl aromatic monomer to allylic alcohol used in the process is within the range of about 0.1 to about 0.5, and the yield of the copolymer is enhanced as a result of gradual addition of the free-radical initiator.

5,444,142

Patent Not Issued For This Number

5,444,143
PREPARATION PROCESS OF POLYHYDROXYCARBOXYLIC ACID
Masahiro Ohta; Shoji Obuchi, and Yasunori Yoshida, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Dec. 21, 1993, Ser. No. 170,873
Claims priority, application Japan, Dec. 25, 1992, 4-346329; Dec. 25, 1992, 4-346330; Apr. 2, 1993, 5-077002; Apr. 6, 1993, 5-079219; Apr. 9, 1993, 5-082867; Sep. 16, 1993, 5-229796; Sep. 17, 1993, 5-231526; Sep. 17, 1993, 5-231527
Int. Cl.[6] C08G *63/06*
U.S. Cl. 528—361 29 Claims

1. A preparation process of polyhydroxycarboxylic acid having an inherent viscosity of 0.3 dl/g or more by dehydrating polycondensation of lactic acid containing hydroxycarboxylic acid in an organic solvent in the presence or absence of a catalyst, comprising using a hydroxycarboxylic acid raw material which comprises one or more impurities selected from the group consisting of methanol, ethanol, acetic acid, pyruvic acid, fumaric acid, methyl lactate, ethyl lactate and butyl lactate in a total amount of 0.3% by mol or less for the amount of said hydroxycarboxylic acid raw material.

5,444,144
PROCESS FOR PRODUCING POLYETHYLENE TEREPHTHALATE
Katsuji Tanaka, Machida; Kazuyoshi Mino, Yokkaichi, and Yuka Nakazima, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Filed Sep. 19, 1994, Ser. No. 292,763
Claims priority, application Japan, Aug. 19, 1993, 5-205383
Int. Cl.[6] C08J *3/00*
U.S. Cl. 528—503 6 Claims

1. A process for producing polyethylene terephthalate comprising the following steps (1) and (2):

(1) a moisture conditioning step of contacting a polyethylene terephthalate having an intrinsic viscosity of from 0.5 to 1.5 dl/g, a density of at least 1.37 g/cm^3 and a cyclic trimer content of at most 5,000 ppm, with water to bring the water content of the polyethylene terephthalate to from 1,000 to 5,000 ppm, and

(2) a heat aging step of holding the moisture-conditioned polyethylene terephthalate obtained by the above moisture conditioning step, in a state where its water content is maintained at a level of at least 1,000 ppm.

5,444,145
ETHYLENE/BRANCHED OLEFIN COPOLYMERS
Patrick Brant, Seabrook; Jo Ann M. Canich, and Natalie A. Merrill, both of Webster, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.
Continuation of Ser. No. 871,248, Apr. 20, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 81,960
Int. Cl.[6] C08F *10/14, 210/14*
U.S. Cl. 526—348.3 30 Claims

1. A copolymer comprising ethylene and at least about 2.5 to less than 50 mole percent of an α-olefin comonomer having at least two C_1 to C_3 branches and said copolymer having a composition distribution breadth index within the range of 50% to less than 100%.

5,444,146
POLYISOCYANATES CONTAINING ALLOPHANATE AND ISOCYANURATE GROUPS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE IN TWO-COMPONENT COATING COMPOSITIONS
Terry A. Potter, Beaver, Pa., and William E. Slack, Moundsville, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 771,086, Oct. 2, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,779
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[6] C08G *18/79*; C07D *251/34*
U.S. Cl. 528—49 15 Claims

1. A process for the production of a polyisocyanate mixture which comprises

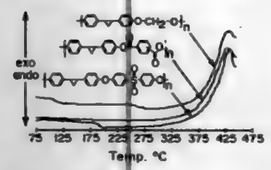
a) catalytically trimerizing and allophanatizing a portion of the isocyanate groups of an organic diisocyanate having (cyclo)-aliphatically bound isocyanate groups in the presence of 0.01 to 0.5 moles, per mole of said organic diisocyanate, of an aromatic monoalcohol containing 6 to 9 carbon atoms at a temperature which is sufficient to provide a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5,

b) terminating the trimerization and allophanatization reaction at an NCO content of 10 to 47% by weight by adding a catalyst poison and/or by thermally deactivating the catalyst and

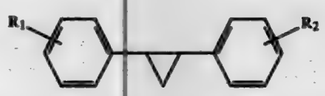
c) removing unreacted organic diisocyanate to obtain a product which contains less than 2% of unreacted organic diisocyanate and has a viscosity of less than 10,000 mPa.s.

5,444,147
CYCLOPROPANE MONOMERS AND POLYMERS DERIVED THEREFROM
Allan S. Hay, 5015 Glencairn Ave., Montreal, Quebec H3W 2B3, Canada, and Chunping Gao, 3440 Durocher Ave., Apt. 1106, Montreal, Quebec H2X 2E2, Canada
Filed May 13, 1994, Ser. No. 242,428
Int. Cl.[6] C08G *63/02*
U.S. Cl. 528—193 14 Claims

DSC Thermograms of Polymers



1. A cyclopropane of formula (I):



(I)

wherein R_1 and R_2 are selected from H or OH, at least one of R_1 and R_2 being o, m or p-OH.

5,444,148
IMPROVED TRANSESTERIFICATION PROCESS FOR THE PRODUCTION OF POLYCARBONATES
Wolfgang Alewelt; Steffen Kühling, and Hermann Kauth, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 19, 1993, Ser. No. 155,391
Claims priority, application Germany, Dec. 3, 1992, 42 40 587.4
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 7 Claims

1. In the transesterification process for the production of aromatic polycarbonates having a weight average molecular weight of 3000 to 200000 in a melt from diphenols, carbonic acid diaryl esters and optionally branching agents at temperatures of 130° C. to 400° C. and in the presence of catalysts, the improvement comprising mixing in said melt or passing thereover, without the simultaneous application of a vacuum, inert gas selected from the group consisting of noble gases, nitrogen and CO_2, in a quantity of at least 0.5 Nm^3 per Kg of oligocarbonate/polycarbonate melt per hour.

5,444,149
METHODS AND COMPOSITIONS USEFUL IN THE RECOGNITION, BINDING AND EXPRESSION OF RIBONUCLEIC ACIDS INVOLVED IN CELL GROWTH, NEOPLASIA AND IMMUNOREGULATION
Jack D. Keene, Durham, N.C., and Peter H. King, Birmingham, Ala., assignors to Duke University, Durham, N.C.
Filed May 11, 1992, Ser. No. 881,075
Int. Cl.[6] C07K *14/00*
U.S. Cl. 530—300 1 Claim

1. A polypeptide consisting of the amino acid sequence of from amino acid position 259 to an amino acid position selected from the group consisting of amino acid positions 349 through 359 of Hel-N1 (SEQ ID NO:2).

5,444,150
AMINO ACID DERIVATIVE AND BROMOACETYL MODIFIED PEPTIDES FOR THE PREPARATION OF SYNTHETIC PEPTIDE POLYMERS, CONJUGATED PEPTIDES, AND CYCLIC PEPTIDES
John K. Inman, and Frank A. Robey, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Division of Ser. No. 715,650, Jun. 14, 1991, Pat. No. 5,286,846. This application Nov. 19, 1993, Ser. No. 154,786
Int. Cl.[6] A61K *37/02*; C08G *63/48*
U.S. Cl. 530—300 8 Claims

1. A compound comprising a moiety of the formula N^{α}-tert-butoxycarbonyl-N^{α}-(N-bromoacetyl-β-alanyl)-L-lysine and further comprising a peptide moiety.

5,444,151
PLATELET DERIVED GROWTH FACTOR ANTAGONISTS
Flemming S. Vassbotn; Maria Andersson; Gudrun Backstrom; Ulla Engstrom; Carl-Henrik Heldin; Ulf Hellman; Arne Ostman, and Bengt Westermark, all of Uppsala, Sweden, assignors to Ludwig Institute for Cancer Research, New York, N.Y.
Continuation-in-part of Ser. No. 883,949, May 15, 1992, Pat. No. 5,326,695. This application Nov. 16, 1992, Ser. No. 977,234
Int. Cl.[6] C07K *13/00, 7/00, 99/00*
U.S. Cl. 530—324 5 Claims

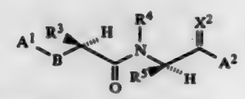
1. Isolated peptide antagonist for platelet derived growth factor, consisting of amino acid sequence:

Ala Asn Phe Leu Val Xaa Xaa Glu Ile Val Arg Lys Lys Pro (SEQ ID NO: 2)

wherein the first Xaa is modified tryptophan, and the second Xaa is anywhere from 0 to 35 amino acids.

5,444,152
ENDOTHELIN ANTAGONISTIC PEPTIDE DERIVATIVES
Kiyofumi Ishikawa; Takehiro Fukami; Takashi Hayama; Kenji Niiyama; Toshio Nagase; Toshiaki Mase; Kagari Fujita; Masaki Ihara; Fumihiko Ikemoto, and Mitsuo Yano, all of Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 884,642, May 18, 1992, abandoned, which is a division of Ser. No. 712,095, Jun. 7, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 214,679
Claims priority, application Japan, Jun. 7, 1990, 2-149105
Int. Cl.[6] A61K *38/06*
U.S. Cl. 530—331 14 Claims

1. A peptide of the formula



wherein A^1 is

(1) a group of the formula R^{11}—CO—, wherein R^{11} is a lower alkyl group;

(2) a group of the formula $R^{12}O$—CO—, wherein R^{12} is a lower alkyl group, or

(3) a group of the formula $R^{13}R^{14}N$—C(=O)—, wherein R^{13} is a lower alkyl group, and R^{14} is a hydrogen atom or a lower alkyl group or R^{13} and R^{14} form, together with the adjacent nitrogen atom, a 5- to 9-membered nitrogen-containing saturated heterocyclic ring having 4 to 8 carbon atoms, wherein among methylene groups forming the ring, one optional methylene group not adjacent to the above nitrogen atom may be replaced by an oxy group, a thio group or a group of the formula —NR^{15}— wherein R^{15} is a lower alkyl group, and one to four optional hydrogen atoms on the carbon atoms of the heterocyclic ring may independently be replaced by a hydroxyl group or a lower alkyl group which may be substituted by a hydroxyl group;

B is —NR^2— wherein R^2 is hydrogen or a methyl group;

R^3 is a lower alkyl group having three to five carbon atoms;

R^4 is a hydrogen atom or a methyl group;

R^5 is a 3-indolylmethyl group, a (2,3-dihydro-2-oxo-3-indolyl)methyl group, a 3-indolylmethyl group wherein the indole ring is substituted at the 1-position by a group of the formula R^{51}—CO—$(CH_2)_s$ wherein R^{51} is a hydrogen atom, a lower alkyl group, a hydroxyl group, a lower alkoxy group, s is an integer of from 0 to 6, provided that when s=0, R^{51} is other than a hydroxyl group, a 3-benzothienylmethYl group, a (1-oxo-3-benzothienyl)methyl group, or a (1,1-dioxo-3-benzothienyl)methyl group;

X^2 is an oxygen atom;

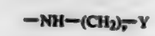
A^2 is selected from the group consisting of groups of the formulas (III), (IV) and (VI)



(III)



(IV)



(VI)

wherein Y is SO_3H or PO_3H_2, R^{61} is a hydrogen atom or a lower alkyl group, R^{71} is a hydrogen atom, a lower alkyl group, a phenyl group, a thienyl group, a phenyl lower alkyl group wherein an optional hydrogen atom on the benzene ring may be replaced by a hydroxyl group or a benzyloxy group, a thienyl lower alkyl group, a thiazolyl lower alkyl group, a 4-imidazolylmethyl group, a 3-indolylmethyl group, a carbamoyl lower alkyl group or an N-benzyloxycarbonyl-ω-amino lower linear alkyl group, provided than when R^{61} is a lower alkyl group, said R^{71} is not a hydrogen atom; R^{62} is a hydrogen atom, a phenyl group, a benzyl group, or together with R^8 represents a single bond, R^{72} is a hydrogen atom, a lower alkyl group, a phenyl group, a benzyl group, or a 3-indolylmethyl group, provided that when R^{62} is a group other than a hydrogen atom, R^{72} iS a hydrogen atom or a lower alkyl group; R^8 is a hydrogen atom or a lower alkyl group, or together with R^{62} represents a single bond, and v is 3, 4 or 5;

or a pharmaceutically acceptable salt thereof.

5,444,153
VARIANTS OF PAI-2
Neil H. Goss, Wahroonga, and Michael A. Richardson, Belrose, both of Australia, assignors to Biotech Australia Pty Limited, Roseville, Australia
PCT No. PCT/AU90/00603, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO91/09124, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 20, 1990, Ser. No. 768,286
Claims priority, application Australia, Dec. 20, 1989, PJ7924
Int. Cl.[6] C07K *13/00*; C12Q *1/00*
U.S. Cl. 424—141 14 Claims

1. A plasminogen activator inhibitor type 2 variant in which the 66–98 amino acid residue region of SEQ ID NO: 2 has been altered to eliminate at least one protease sensitive site, which variant maintains biological activity of plasminogen activator inhibitor type 2 of SEQ ID NO: 2 amino acids up to 65 and from 99 of plasminogen activator inhibitor type 2 in frame.

5,444,154
CROSSLINKED PROTEIN POLYMERS AS HUMECTANTS
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.
Continuation-in-part of Ser. No. 183,754, Jan. 24, 1994, Pat. No. 5,350,858, which is a division of Ser. No. 901,200, Jun. 19, 1992, Pat. No. 5,298,656, which is a continuation-in-part of Ser. No. 813,449, Dec. 26, 1991, Pat. No. 5,153,294. This application Jun. 15, 1994, Ser. No. 260,737
Int. Cl.[6] C07K *3/00*; C07D *403/12*; A61K *7/06*
U.S. Cl. 530—356 16 Claims

1. A crosslinked protein polymer prepared by the reaction of an intermediate conforming to the following structure:

R^1—O—[—CH_2—CH_2—O]$_a$—[—CH(CH_3)—CH_2—O]$_b$—[—CH_2—CH_2O]$_c$[—CH_2—CH(CH_3)—O]$_d$—R^1

wherein;

R^1 is —C(O)—CH_2—Cl

a, b c and d are independently integers from 0 to 100, with the proviso that a+b+c+d be greater than 2; with an amino acid source compound selected from the group consisting of a protein or an amino acid, said reaction carried out in aqueous solution at a concentration of between 20 and 80% solids and at a temperature of between 40° and 100° C.

5,444,155

MOLECULES WITH ANTIBODY COMBINING SITES THAT INDUCE ASYMMETRY

Kim Janda, San Diego; Richard A. Lerner, La Jolla, both of Calif., and Samuel J. Danishefsky, New Haven, Conn., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Sep. 10, 1991, Ser. No. 757,442

Int. Cl.[6] A61K *35/14*; C02K *3/00*; C12N *5/00*

U.S. Cl. 530—388.1 2 Claims

1. Monoclonal antibody molecules secreted by hybridoma 37E8 having ATCC accession number HB 10868, or paratope-containing portions thereof that catalytically hydrolyze a pre-selected carboxylic ester bond of a substrate meso diester reactant ligand containing two prochiral centers to yield a product that is one of a pair of enantiomers.

5,444,156

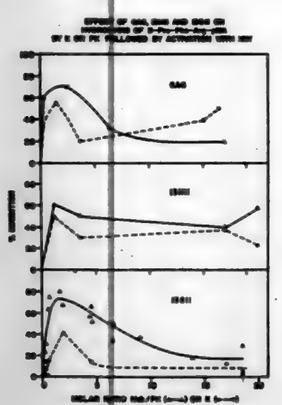
MONOCLONAL ANTIBODIES TO HUMAN PLASMA PREKALLIKREIN

Dulce C. Veloso, Philadelphia, and Robert W. Colman, Moylan, both of Pa., assignors to Temple University-of The Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 179,706, Apr. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 883,218, Jul. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 754,800, Jul. 12, 1985, abandoned. This application Feb. 19, 1993, Ser. No. 19,953

Int. Cl.[6] C07K *16/40*

U.S. Cl. 435—240.27 24 Claims



1. A monoclonal antibody produced by a hybridoma formed by fusion of cells from a myeloma line and spleen cells from a non-human vertebrate donor previously immunized with human plasma prekallikrein, which antibody specifically binds to an antigenic determinant of human plasma prekallikrein, which antigenic determinant is also present in kallikrein, and kallikrein-C1-inhibitor complex,

said monoclonal antibody having the ability to inhibit the procoagulant activity of prekallikrein.

5,444,157

CHONDROMODULIN-I PROTEIN

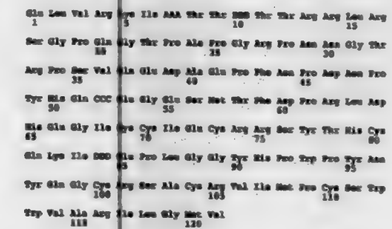
Fujio Suzaki, Toyonaka; Yuji Hiraki, Takatsuki; Hideho Tanaka, Machida; Akihito Kamizono, Machida; Jun Kondo, Machida, and Yutaka Teranishi, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 821,859, Jan. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 745,497, Aug. 15, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 47,033

Claims priority, application Japan, Aug. 23, 1990, 2-222178; Feb. 15, 1991, 3-022377; Jul. 24, 1991, 3-184859

Int. Cl.[6] C07K *14/00*

U.S. Cl. 530—395 2 Claims



1. A purified and isolated protein which consists of the amino acid sequence shown in FIG. 6, wherein AAA is Met or Val, BBB is Glu or Thr, CCC is Gln or deletion, and DDD is Cys or Val, and which has an activity which (A) stimulates the growth of chondrocytes in the presence or absence of fibroblast growth factor, (B) inhibits the growth of tumors, or (C) is a combination of these activities.

5,444,158

MEROSIN, NUCLEIC ACIDS ENCODING, FRAGMENTS AND USES THEREOF

Eva Engvall, Escondido, Calif., and Joshua Sanes, St. Louis, Mo., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif. and Washington University, St. Louis, Mo.

Continuation of Ser. No. 587,689, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,319, Jan. 30, 1990, abandoned. This application Jul. 8, 1993, Ser. No. 87,642

Int. Cl.[6] A61K *38/14, 38/16*; C07K *14/78*

U.S. Cl. 530—395 7 Claims

1. A substantially pure heterotrimeric laminin variant comprising the structure M-X-B2, wherein M is the M polypeptide of merosin; X is selected from the group consisting of the B1 chain of laminin and S-laminin; and B2 is the B2 chain of laminin.

5,444,159

PURIFICATION OF A PERTUSSIS OUTER MEMBRANE PROTEIN

Gail Jackson, Richmond Hill; Rasfat Fahim; Larry Tan, both of Mississauga; Pele Chong, Thornhill; John Vose, Aurora, and Michel Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Filed Nov. 6, 1992, Ser. No. 930,595

Claims priority, application United Kingdom, Apr. 4, 1990, 9007657

Int. Cl.[6] C07K *1/14, 1/16, 1/36*

U.S. Cl. 530—412 17 Claims

1. A method for the production of pertactin, which comprises:

growing cells of Bordetella pertussis in a growth medium to provide a culture broth containing pertactin, pertussis toxin (PT), filamentous haemagglutinin (FHA) and grown cells,

separating said culture broth from said grown cells, providing an impure aqueous solution of pertactin substantially free from said PT and said FHA from said separated culture broth,

purifying pertactin in said aqueous solution by passing said aqueous solution in contact with hydroxyapatite and a matrix composed of an ion-exchange medium to provide unbound pertactin in flow-through and medium-bound impurities and collecting the flow-through from each said contact to provide a purified solution of pertactin, and

recovering said purified solution of pertactin.

5,444,160

ACETYLATED ALGINATES, AND METHOD FOR PRODUCING ACETYLATED ALGINATES

Donal F. Day, and Jin W. Lee, both of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Division of Ser. No. 943,914, Sep. 11, 1992, Pat. No. 5,308,761. This application Apr. 26, 1994, Ser. No. 233,135

Int. Cl.[6] C08B *37/04*

U.S. Cl. 536—3 1 Claim

1. A composition of matter consisting essentially of a copolymer of blocks of homopolymeric mannuronic acid residues and blocks of homopolymeric guluronic acid residues; wherein 5% to 100% of the mannuronic acid residues are acetylated at the O-2 position, at the O-3 position, or at both the O-2 and O-3 positions; and wherein substantially all of the guluronic acid residues are not acetylated.

5,444,161

SUBSTRATES FOR β-GALACTOSIDASE

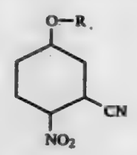
Wayne B. Manning, Antioch; Pyare Khanna, Fremont, and Glenda Choate, Pleasant Hill, all of Calif., assignors to Microgenics Corporation, Concord, Calif.

Filed Aug. 16, 1989, Ser. No. 394,495

Int. Cl.[6] C07G *3/00*; C12Q *1/54*

U.S. Cl. 536—4.1 1 Claim

1. A compound for use as a substrate by enzymes with β-galactosidase activity, said compound having the formula:



wherein R is β-D-galactosidyl.

5,444,162

MIXTURE OF DISACCHARIDE ESTERS OF 3-METHYLPENTANOIC ACID AND ACETIC ACID FOR FLAVOURING

Willem Apeldoorn, Amsterdam; Harrie Renes, Nederhorst den Berg, and Hans J. Wille, Bussum, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Oct. 5, 1992, Ser. No. 956,320

Claims priority, application European Pat. Off., Oct. 5, 1991, 91202599

Int. Cl.[6] A24F *47/00*; A24B *15/00*; A23L *2/26*; C07H *11/00*

U.S. Cl. 336—115 13 Claims

1. Mixture of disaccharide ester molecules of 3-methylpentanoic acid and acetic acid, wherein each disaccharide ester molecule includes one disaccharide moiety and eight acyl moieties, said acyl moieties being on average at least 4 3-methylpentanoyl groups per single disaccharide moiety, with remaining positions on the acyl moieties being occupied by acetyl groups to provide an acetyl/methylpentanoyl group ratio of about 2.3 to 3.2:4.8 to 5.7.

5,444,163

PREPARATION OF REACTIVE PHTHALOCYANINE DYES

Juergen Dornhagen, Limburgerhof, and Manfred Patsch, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 12, 1993, Ser. No. 151,174

Claims priority, application Germany, Nov. 11, 1992, 42 38 047.2

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—133 4 Claims

1. In a process for preparing reactive metal-free or metal-containing phthalocyanine dyes with one or more ethylsulfonyl groups substituted in the β-position by an alkali-detachable radical or vinylsulfonyl groups as the reactive groups by reacting a metal-free or metal-containing phthalocyaninesulfonyl chloride with primary or secondary amines having one or more ethylsulfonyl groups substituted in the β-position by an alkali-detachable radical or vinylsulfonyl groups and with or without further primary or secondary amines of the aliphatic, aromatic or heterocyclic series in the presence of a catalyst, the improvement which comprises carrying out the reaction in the presence of a catalyst comprising a heterocycle selected from the group consisting of 1-(C_1–C_4-alkyl)imidazoles in which the alkyl group may be C_1–C_4-alkoxy-substituted, 1-carboxymethylimidazole, 1,2-dimethylimidazole, 1-methylimidazole-5-carboxylic acid, 1-carboxymethyl-1,3,4-triazole and dimethyltetrazole.

5,444,164

TGF-β INDUCED GENE

Anthony F. Purchio; John E. Skonier, and Michael G. Neubauer, all of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 833,835, Feb. 5, 1992, abandoned. This application May 4, 1992, Ser. No. 878,960

Int. Cl.[6] C07H *15/12*

U.S. Cl. 536—23.5 4 Claims

1. An isolated nucleic acid sequence whose expression is induced by contacting cells which are A549 cells or H2981 cells with a TGFβ protein which is selected from the group consisting of TGFβ-1 and TGFβ-2, said nucleic acid sequence having SEQ ID #1.

5,444,165

UNSATURATED IMIDE COMPOUNDS CONTAINING ALICYCLIC STRUCTURE, PROCESS FOR PRODUCING THE SAME AND INTERMEDIATE THEREFOR

Yasuhiro Hirano; Yasuhiro Ende; Kazuo Takebe; Mitsuhiro Shibata, all of Tsukuba; Shuichi Kusagawa, Tsuchiura; Yutaka Shiomi, Tsukuba; Masatsugu Akiba, Tsukuba, and Shinichiro Kitayama, Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

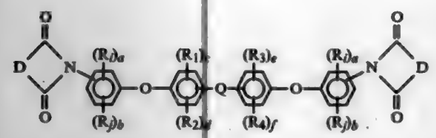
Division of Ser. No. 142,578, Oct. 28, 1993, Pat. No. 5,326,881. This application Feb. 25, 1994, Ser. No. 202,068

Claims priority, application Japan, Oct. 28, 1992, 4-290036; Nov. 13, 1992, 4-303616; Nov. 19, 1992, 4-310247; May 24, 1993, 5-121136; May 27, 1993, 5-125888

Int. Cl.[6] C07D *207/452*

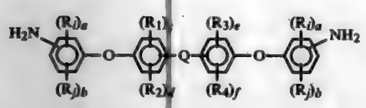
U.S. Cl. 548—521 6 Claims

1. A process for producing an unsaturated imide compound represented by formula (1):



(1)

wherein Q represents an alicyclic structure-containing hydrocarbon having 4 to 20 carbon atoms; each of R_1, R_2, R_3, R_4, R_i and R_j represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1–6 carbon atoms or a halogen-containing hydrocarbon group having 1–6 carbon atoms; and each of a, b, c, d, e and f represents an integer of 0–4 satisfying a+b<4, c+d<4 and e+f<4; and D represents a divalent organic group having 2–24 carbon atoms and having an ethylenically unsaturated double bond, which comprises reacting a diamino compound represented by formula (2):



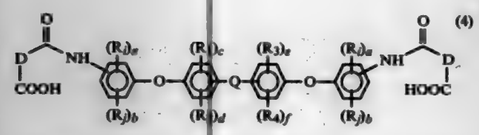
(2)

wherein Q, R_1, R_2, R_3, R_4, R_i and R_j, a, b, c, d, e and f are as defined above, with an unsaturated dicarboxylic acid anhydride represented by formula (3):



(3)

wherein D is a defined as above to obtain an amic acid compound represented by formula (4):



(4)

wherein Q, R_1, R_2, R_3, R_4, R_i and R_j, a, b, c, d, e and f are as defined in as above, and heating the amic acid compound in a non-protonic polar solvent in the presence of an acidic catalyst to cause dehydration-ring closure reaction.

5,444,166

CONSTITUTIVE TRIPLE RESPONSE GENE AND MUTATIONS

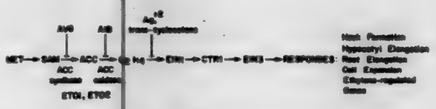
Joseph R. Ecker, Erial, N.J., and Joseph J. Kieber, Philadelphia, Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 928,464, Aug. 10, 1992, Pat. No. 5,367,065. This application Jan. 12, 1993, Ser. No. 3,311

The portion of the term of this patent subsequent to Nov. 22, 2011, has been disclaimed.

Int. Cl.[6] C07H *17/00*; A01H *5/00*

U.S. Cl. 536—23.6 **9 Claims**



1. An isolated nucleic acid sequence comprising the nucleic acid sequence of SEQ ID NO: 1.

5,444,167

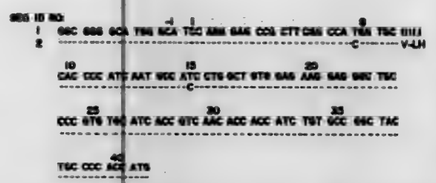
VARIANT LUTEINIZING HORMONE ENCODING DNA

Kim S. I. Pettersson, Turku, Finland, assignor to Wallac Oy, Turku, Finland

Filed Jul. 7, 1993, Ser. No. 86,915

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—23.51 **7 Claims**



1. An isolated DNA molecule consisting of the nucleotide sequence coding for a mammalian luteinizing hormone wherein the codon for the amino acid located at position 8 of the LHβ chain is replaced by a codon for arginine and the codon for isoleucine at position 15 of the LHβ chain is replaced by a codon for threonine.

5,444,168

PROCESS FOR THE PRODUCTION OF SYMMETRICAL ETHERS FROM SECONDARY ALCOHOLS

Stephen H. Brown, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed May 16, 1994, Ser. No. 242,989

Int. Cl.[6] C07C *41/09*

U.S. Cl. 568—664 **9 Claims**

1. A process for the production of C_8+ symmetrical secondary ethers with high selectivity by intermolecular dehydration of C_4+ secondary alkanol comprising:

contacting said alkanol with acidic solid, shape selective aluminosilicate zeolite catalyst particles selected from the group consisting of ZSM-5, zeolite Beta and zeolite Y in an etherification zone under etherification reaction conditions comprising temperature between 75° C. and 175° C. pressure between 15 psi (105 kPa) and 1000psi (7000 Kpa) and weight hourly space velocity (WHSV) between 0.01 and 1.0. whereby a reaction product is produced comprising said symmetrical ether of said alkanol, olefin by-product corresponding to the intramolecular dehydration product of said alkanol, unconverted alkanol and water;

continuously separating said olefin by distillation from said reaction product during said etherification reaction; and recovering said ether having a weight ratio of said ether to said olefin of at least 0.37.

7. A process for the production of di-cyclopentyl ether with high selectivity by intermolecular dehydration of cyclopentanol, comprising:

contacting said cyclopentanol with ZSM-5 zeolite catalyst particles in an etherification zone under etherification reaction conditions comprising temperature between 75° C. and 175° C. whereby a reaction product is produced comprising said di-cyclopentyl ether, olefin by-product corresponding to the intramolecular dehydration product of said alkanol, unconverted alkanol and water; and separating said reaction product to recover said ether having a weight ratio of said ether to said olefin of at least 0.60 and cyclopentanol conversion of at least 80 weight percent.

5,444,169

PROCESS AND APPARATUS FOR THE SYNTHESIS OF BUTYNEDIOL

Frank Wiessner, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Dec. 20, 1993, Ser. No. 169,663

Claims priority, application Germany, Jun. 20, 1991, 41 20 446.8

Int. Cl.[6] C07C *31/18*

U.S. Cl. 568—855 **15 Claims**

1. In a process for the synthesis of butynediol from an aqueous solution containing formaldehyde by reaction of said formaldehyde with acetylene in the presence of a suspended catalyst, wherein the solution is conveyed in a cascade by several reactors, the solution drawn off from the first through the penultimate reactor of the cascade being fed to the next reactor in the cascade, and acetylene being introduced into each of the reactors, and a butynediol-rich solution being drawn off only from the last reactor in the cascade, the improvement which comprises separating the catalyst from the solution in each individual reactor of the cascade above the last reactor so as to prevent the catalyst from cascading with the solution.

5,444,170

HYDROGENATION OF ACETYLENIC COMPOUNDS

Gamini A. Vedage, Bethlehem, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 10, 1994, Ser. No. 179,466

Int. Cl.[6] C07C *31/18*

U.S. Cl. 568—861 **10 Claims**

1. In a process for the hydrogenation of acetylenic compounds prepared by the condensation of ketones or aldehydes with acetylene wherein the acetylenic compounds contain impurities poisonous to palladium and are contacted with hydrogen in the presence of a hydrogenation catalyst under conditions for effecting hydrogenation, the improvement which resides in utilizing a cocatalyst system for hydrogenating the acetylenic compounds to corresponding fully hydrogenated compounds which comprises palladium and platinum.

5,444,171

METHOD FOR PURIFICATION OF 1,1,1,2-TETRAFLUOROETHANE

Hiromoto Ohno; Toshio Ohi; Hidetoshi Nakayama, and Kazuo Muramaki, all of Kawasaki, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,869

Int. Cl.[6] C07C *17/38*

U.S. Cl. 570—177 **6 Claims**

1. A method for the purification of crude 1,1,1,2-tetrafluoroethane produced by reacting trichloroethylene with hydrogen fluoride, comprising bringing low hydrogen chloride content 1,1,1,2-tetrafluoroethane containing unsaturated impurities and having a concentration of hydrogen chloride of not higher than 2 mol %, and hydrogen fluoride in an amount at least equimolar to the unsaturated impurities, into contact with a fluorination catalyst in a vapor phase, so as to decrease the content of the unsaturated impurities, and comprising bringing the low hydrogen chloride content 1,1,1,2-tetrafluoroethane containing hydrogen fluoride into contact with the fluorination catalyst without further addition of hydrogen fluoride.

5,444,172

PROCESS FOR PRODUCING A MONOALKENYL AROMATIC HYDROCARBON COMPOUND

Makoto Takagawa; Kenji Inamasu; Norio Fushimi; Akio Hashimoto, and Takayo Sasaki, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 170,493

Claims priority, application Japan, Feb. 22, 1993, 5-031843; Sep. 1, 1993, 5-217437

Int. Cl.[6] C07C *2/72*

U.S. Cl. 585—452 **18 Claims**

1. A process for producing a monoalkenyl aromatic hydrocarbon compound comprising alkenylating a side chain of an aromatic hydrocarbon compound having at least one hydrogen atom bonded to an α-position of the side chain with a conjugated diene having 4 to 5 carbon atoms in the presence of a catalyst composition produced by calcining a mixture of a basic potassium compound and alumina at 550° to 650° C. to form a calcined mixture and heat treating the calcined mixture with metallic sodium at 100° to 300° C. in an inert gas atmosphere.

5,444,173

CATALYTIC BIMETALLIC OXYNITRIDES AND NITRIDES

Shigeo T. Oyama; Chunzhe C. Yu, both of Blacksburg, Va., and Fawzy G. Sherif, Stony Point, N.Y., assignors to Akzo Nobel N.V., Arnhem, Netherlands and Clarkson University, Potsdam, N.Y.

Filed Nov. 19, 1993, Ser. No. 155,420

Int. Cl.[6] B01J *27/24*; C07C *5/22*

U.S. Cl. 585—671 **25 Claims**

1. An oxynitride comprising two differing transition metals.

5,444,174

16-MEMBERED MACROLIDE DERIVATIVE HAVING SUSTAINED ANTIBACTERIAL ACTIVITY IN PLASMA, SYNTHESIS INTERMEDIATE THEREOF AND PROCESS FOR PRODUCING THE SAME

Keiichi Ajito; Kenichi Kurihara; Tsuneo Ishizuka; Tetsuro Hara; Takayuki Usui, and Seiji Shibahara, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

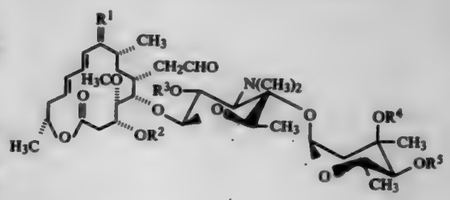
Filed Feb. 25, 1993, Ser. No. 22,165

Claims priority, application Japan, Feb. 26, 1992, 4-039013; Jan. 13, 1993, 5-004389

Int. Cl.[6] C07H *17/08*; C07D *313/06*

U.S. Cl. 536—7.1 **13 Claims**

1. A compound represented by the formula (I):



(I)

wherein R^1 represents an oxygen atom, a hydroxyl group and a hydrogen atom or a group of the formula $OCOR^6$, wherein

R^6 represents a straight chain alkyl group having 1 to 3 carbon atoms, and a hydrogen atom, R^2 represents a hydrogen atom or a group of the formula COR^6, wherein R^6 is as defined above, R^3 represents a hydrogen atom or a group of COR^6, wherein R^6 is as defined above, R^4 represents a straight chain alkyl group having 1 to 4 carbon atoms, and R^5 represents a substituted or unsubstituted straight chain or branched alkyl or aralkyl group having 1 to 10 carbon atoms, or a pharmaceutically acceptable salt thereof.

5,444,175

PROCESS FOR THE ALKYLATION OF PARAFFINS

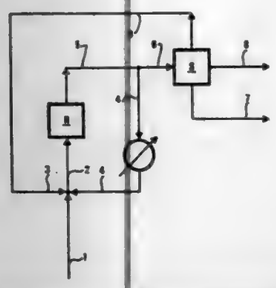
Jean-Francois Joly, Paris; Eric Benazzi, Montesson; Christian Marcilly, Houilles; Renaud Pontier, Vienne, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Aug. 20, 1993, Ser. No. 109,566

Claims priority, application France, Aug. 20, 1992, 92 10222; May 26, 1993, 93 06397

Int. Cl.[6] C07C 2/58, 2/60, 2/62

U.S. Cl. 585—714 20 Claims



1. An alkylation process wherein a charge containing at least one isoparaffin and at least one olefin containing 2 to 6 carbon atoms per molecule, is treated in the presence of a solid alkylation catalyst, said process comprising:

a) introducing and contacting with catalyst present in a reaction zone:

(i) said charge,

(ii) recycled liquid effluent described in b), introduced at least at the intake of said reaction zone, and

(iii) recycled liquid fraction described in d);

b) recycling part of liquid effluent discharged from said reaction zone to the intake of reaction zone;

c) introducing another part of said liquid effluent discharged from said reaction zone into an isobutane/n-butane/alkylate separation zone;

d) recycling a part of an isobutane-rich liquid fraction from said separation zone to said reaction zone;

e) recovering a product alkylate fraction from said separation zone; and

f) recovering a n-butane fraction, as purge, from said separation zone;

wherein said catalyst in said reaction zone is:

a catalyst incorporating at least sulfuric acid impregnated on an organic or mineral porous support; or

a catalyst incorporating a mixture containing at least one halide of a compound of aluminum or boron and at least one quaternary ammonium halide or an amine halohydrate, said mixture being impregnated on an organic or mineral porous support.

5,444,176

PROCESS FOR RECOVERING OLEFINS FROM CAT-CRACKED GAS WITHOUT ACCUMULATING UNDESIRABLE OXIDES OF NITROGEN

Dane C. Grenoble, Nassau Bay; Roy T. Halle, League City, both of Tex., and William D. Thomson, Southampton, England, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Oct. 28, 1992, Ser. No. 967,835

Int. Cl.[6] C07C 7/00; F25J 3/00

U.S. Cl. 585—809 20 Claims

1. A process for preventing the accumulation of undesirable oxides of nitrogen during the recovery of one or more desired hydrocarbons from cat-cracked gas which contains oxides of nitrogen comprising:

a. removing acid gases from said gas;

b. separating said gas into a first portion primarily comprising methane, hydrogen, nitric oxide and hydrocarbons having no more than three carbon atoms and a second portion primarily comprising nitric dioxide and hydrocarbons having at least four carbon atoms;

c. separating said first portion using absorption with a C3 absorber oil at a temperature above about −45.56° C. (−50° F.) into a third portion primarily comprising compounds selected from the group consisting of methane, hydrogen, nitric oxide, and a small proportion of hydrocarbons having two and three carbon atoms, and a fourth portion primarily comprising hydrocarbons having at least two carbon atoms; and recovering the nitric oxide and at least one desired hydrocarbon from said third portion at temperatures above about −106.67° C. (−160° F.).

5,444,177

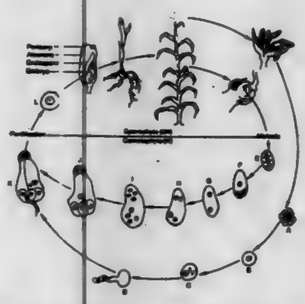
HYBRID GENETIC COMPLEMENT AND CORN PLANT DK671

John H. Pfund, Sycamore, Ill., assignor to Dekalb Plant Genetics, Dekalb, Ill.

Filed Feb. 21, 1991, Ser. No. 659,942

Int. Cl.[6] A01H 5/00; H01H 4/00; C12N 5/04

U.S. Cl. 800—200 4 Claims



1. A hybrid corn plant designated DK671 formed by the crossing of inbred corn plants B73HT and MBUB.

5,444,178

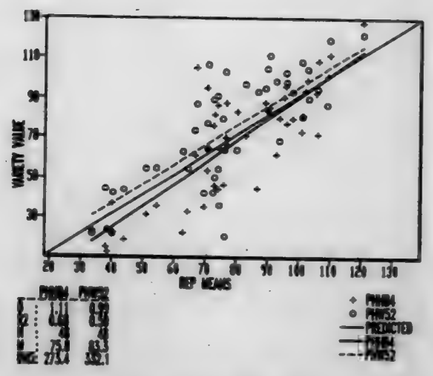
INBRED CORN LINE PHHB4

Stephen W. Noble, Jr., Polk County, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 24, 1994, Ser. No. 189,004

Int. Cl.[6] A01H 5/00, 4/00, 1/00; C12N 5/04

U.S. Cl. 800—200 8 Claims



1. Inbred corn seed designated PHHB4 and having ATCC Accession No. 97048.

5,444,179

INFRA SHORT-DAY STRAWBERRY TYPES

Shamay Izhar, and Eva Izsak, both of Rehovot, Israel 76251, assignors to State of Israel, Ministry of Agriculture, Bet Dagan, Israel

Continuation of Ser. No. 735,969, Jul. 25, 1991, Pat. No. Plant 7,881, and a continuation of Ser. No. 735,968, Jul. 25, 1991, Pat. No. Plant 7,869, and a continuation of Ser. No. 735,970, Jul. 25, 1991, Pat. No. Plant 7,870, and a continuation of Ser. No. 735,967, Jul. 25, 1991, Pat. No. Plant 7,865, and a continuation of Ser. No. 735,695, Jul. 25, 1991, Pat. No. Plant 7,876, and a continuation of Ser. No. 823,638, Jan. 22, 1992, Pat. No. Plant 8,746, and a continuation of Ser. No. 823,802, Jan. 22, 1992, Pat. No. Plant 8,748, and a continuation of Ser. No. 823,721, Jan. 22, 1992, Pat. No. Plant 8,747, said Ser. No. 735,969, is a continuation of Ser. No. 490,103, Mar. 6, 1990, abandoned, said Ser. No. 735,968, is a continuation of Ser. No. 489,440, Mar. 6, 1990, abandoned, said Ser. No. 735,970, is a continuation of Ser. No. 491,758, Mar. 6, 1990, abandoned, said Ser. No. 735,967, is a continuation of Ser. No. 490,102, Mar. 6, 1990, abandoned, said Ser. No. 735,695, is a continuation of Ser. No. 489,407, Mar. 6, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 876,838

Claims priority, application Israel, Mar. 17, 1989, 1430/89; Mar. 17, 1989, 1431/89; Mar. 17, 1989, 1432/89; Mar. 8, 1991, 1671/91; Apr. 10, 1991, 1679/91; Apr. 10, 1991, 1680/91

Int. Cl.[6] A01H 1/04, 5/00, 5/08

U.S. Cl. 800—200 7 Claims

1. An isolated strawberry plant which initiates floral buds with no chilling requirement in response to approximately ten cycles of 24 hours each with a day length of approximately 13.5 to 14 hours accompanied by night temperatures of about 26° C. with flowering and fruiting proceeding within about six to eight weeks subsequent to the initiation of floral buds, wherein said isolated strawberry plant is derived from at least one parent tracing its origin to the strawberry cultivar Rachel, ATCC accession number 75861, or the strawberry cultivar Nurit, ATCC accession number 75862.

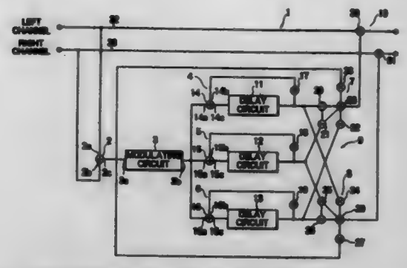
5,444,180

SOUND EFFECT-CREATING DEVICE

Kazuaki Shioda, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Jun. 25, 1993, Ser. No. 81,937
Claims priority, application Japan, Jun. 25, 1992, 4-191537; Jun. 25, 1992, 4-191549
Int. Cl.[6] G10H *5/00, 1/08*
U.S. Cl. 84—660

18 Claims



1. A sound effect-creating device comprising:

signal-modulating means for amplitude-modulating a sound signal representative of a sound, to form a modulation signal;

a plurality of signal-delaying means for each separately delaying said modulation signal from said signal-modulating means, by respective delay amounts different from each other, to form timewise delayed modulation signals; and

a plurality of signal-mixing means for each adding any desired ones of said delayed modulation signals to each other to output a mixed signal.

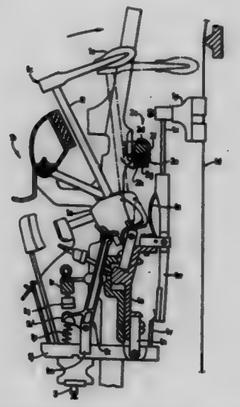
5,444,181

KEYBOARD INSTRUMENT SELECTIVELY ENTERING INTO AN ACOUSTIC SOUND MODE AND AN ELECTRONIC SOUND MODE THROUGH A ROTATION OF A STOPPER WITH A CUSHION SHEET AGAINST DAMPER WIRES

Masahiro Wada, and Tatsuya Makino, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 22, 1994, Ser. No. 215,913
Claims priority, application Japan, Mar. 24, 1993, 5-090830
Int. Cl.[6] G10C *5/00;* G10D *15/00;* G10H *1/34*
U.S. Cl. 84—719

8 Claims



1. A keyboard instrument having at least an acoustic sound mode for producing acoustic sounds and an electronic sound mode for producing synthetic sounds, comprising:

a) an acoustic piano having

a-1) a keyboard implemented by a plurality of swingable keys depressed by a player in both acoustic sound and electronic sound modes, notes of a scale being assigned to said plurality of swingable keys,

a-2) a plurality of key action mechanisms respectively linked with said plurality of swingable keys, and selectively actuated by depressed keys of said keyboard in both acoustic sound and electronic sound modes,

a-3) a plurality of hammer assemblies respectively associated with said plurality of key action mechanisms, and selectively driven for rotation by actuated key action mechanisms linked with said depressed keys in both acoustic sound and electronic sound modes, said actuated key action mechanisms and the associated hammer assemblies producing a piano key-touch in both acoustic sound and electronic sound modes,

a-4) a plurality of string means respectively associated with said plurality of hammer assemblies, and selectively struck by hammer assemblies driven by said actuated key action mechanisms in said acoustic sound mode for producing said acoustic sounds, and

a-5) a plurality of damper mechanisms respectively associated with said plurality of string means for damping vibrations thereon, and driven by said depressed keys for leaving from the associated string means, thereby allowing the associated string means to vibrate;

b) an electronic sound generating system enabled in said electronic sound mode for producing said synthetic sounds having notes identified by said depressed keys; and

c) a mode controlling system having

c-1) a rotatable stopper means provided between said plurality of key action mechanisms and said plurality of string means, and angularly movable between a blocking position and a free position,

c-2) a driving means associated with said rotatable stopper means for changing said stopper means between said free position and said blocking position, said hammer assemblies striking said string means without an interruption of said stopper means in said free position, said hammer assemblies being brought into contact with said stopper means in said blocking position without a strike against said string means, and

c-3) a cushion means provided on said rotatable stopper means, and opposite to said plurality of damper mechanisms in both acoustic and electronic sound modes, thereby decreasing impact of damper mechanisms associated with said depressed keys against said rotatable stopper means.

5,444,182

WIRE HARNESS CONNECTOR COVER

Kazuhiro Hoshino, Iwate, Japan, assignor to Sumitomo Wiring Systems, Mie, Japan

Division of Ser. No. 795,545, Nov. 21, 1991, Pat. No. 5,315,062.
This application Dec. 13, 1993, Ser. No. 165,659
Claims priority, application Japan, Nov. 21, 1990, 2-122554 U
Int. Cl.[6] H02G *3/08;* H01R *13/62*
U.S. Cl. 174—52.1

2 Claims

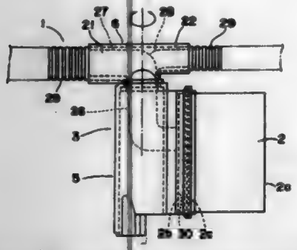
1. A connector cover for covering a portion of an electrical connector and a portion of a wire harness connected to said electrical connector, said connector cover comprising:

holding means for receiving at least a portion of said connector and holding said connector in a fixed position relative thereto;

covering means for covering at least a portion of said wire harness said covering means having a passage defined therethrough for allowing a main portion of the wiring harness to pass through said covering means, said covering means also having a branch exit aperture formed therein for allowing a branch portion of the wiring har-

ness which is branched for the main portion, to extend out of said covering means;

rotational connection means formed on said holding means and said covering means for connecting said holding means to said covering means and allowing said holding means to rotate relative to said covering means, said rotational connection means being disposed around said exit aperture.

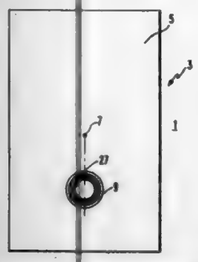


5,444,183

POLYMERIC ELECTRICAL ENCLOSURE WITH IMPROVED KNOCKOUT

Donald F. Gehrs, Brandon, and Percy A. White, Clinton, both of Miss., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 29, 1993, Ser. No. 158,878
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—65 R 15 Claims



1. A polymeric enclosure for electrical apparatus comprising:

a molded electrically insulative housing having walls of a predetermined thickness; and

an electrical access knockout integrally formed in a wall of said housing and having concentric outer, middle and inner grooves and three angularly displaced flow leaders each bridging at least said outer groove and at least one flow leader bridging said middle and inner grooves also.

5,444,184

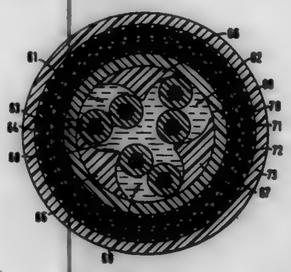
METHOD AND CABLE FOR TRANSMITTING COMMUNICATION SIGNALS AND ELECTRICAL POWER BETWEEN TWO SPACED-APART LOCATIONS

ARild Hassel, Drammen, Norway, assignor to Alcatel Kabel Norge AS, Oslo, Norway

Filed Feb. 10, 1993, Ser. No. 16,065
Claims priority, application Norway, Feb. 12, 1992, 920544
Int. Cl.[6] H01B *7/00*
U.S. Cl. 174—113 R 12 Claims

1. Apparatus for transmitting communication signals and electrical power signals between two remote locations, comprising:

at least two twisted pairs having at least one twisted pair for transmitting the communication signals, and having conductors connected in parallel for transmitting electrical power signals; and



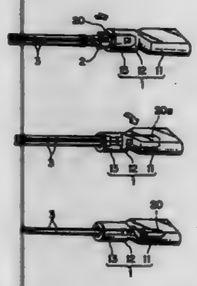
transformer means being connected to said at least two twisted pairs for separating the transmission of the communication signals and the electrical power signals.

5,444,185

SLEEVE FOR INSULATING ELECTRIC TERMINAL

Shinzo Tanaka, Tokyo, Japan, assignor to Tokyo Dipp Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 121,770
Claims priority, application Japan, Sep. 28, 1992, 4-077137 U
Int. Cl.[6] H01B *17/58*
U.S. Cl. 174—138 F 7 Claims



1. An insulating sleeve of elastic plastic for encasing an electric terminal which can be inserted through a rear part of the sleeve, said terminal having a plug end of a non-circular cross-section with a width, a height and a widest part, with the width being greater than the height thereof, said sleeve comprising:

a front part having an open area therein of a non-circular cross-section to accommodate the plug end of the terminal, the open area having a width and a height, with the width of the open area of the front part being greater than the height of the open area of the front part,

a rear part having an open area therein of a non-circular cross-section, with a height large enough to accommodate the widest part of the terminal and a width large enough to pass the height of the terminal but not large enough to pass the widest part of the terminal, and

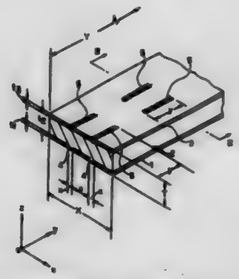
a circular intermediate part having an open area therein with dimensions large enough to permit relative rotation of the plug end of the terminal and the sleeve about a longitudinal axis thereof.

5,444,186

MULTILAYER CONDUCTIVE WIRE FOR SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

Koji Eguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,633
Claims priority, application Japan, Oct. 22, 1991, 3-273935; Jun. 11, 1992, 4-152044
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—250 39 Claims



1. A multilayer conductive wire subjected to a stress which has a predetermined magnitude distribution in a first direction and is applied in a second direction, comprising:

stacked layers including at least a first conductive layer and a second conductive layer joined with each other at an interface, said stacked layers being oriented relative to said second direction in such a manner as to experience a tendency to slide apart along the interface in response to said stress; and

a plurality of elongate grooves of prescribed shape formed in said first conductive layer to extend from the interface of said first conductive layer and said second conductive layer to a prescribed depth into said first conductive layer, and a corresponding plurality of elongate protrusions provided to said second conductive layer with each protrusion extending into and engaging with a respective one of said grooves,

wherein said plurality of engaged grooves and corresponding protrusions are disposed with respective portions thereof oriented substantially perpendicular to said second direction to resist the stress and are distributed in a correspondence with said predetermined magnitude distribution of said stress such that more of the engaged grooves and corresponding protrusions are provided where the stress magnitude is relatively high than are provided where the stress magnitude is relatively low.

5,444,187

METHOD OF SURFACE MOUNTING RADIO FREQUENCY COMPONENTS AND THE COMPONENTS

Daniel R. Bree, Oceanside, Calif., and Rafael Lem, Tijuana, Mexico, assignors to Baier & Baier, Inc., Dana Point, Calif.

Filed Oct. 26, 1994, Ser. No. 329,222
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—260 13 Claims

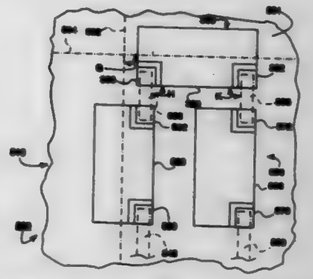
1. A method of surface mounting radio frequency components to a circuit board, comprising:

using at least one rectangular surface mounting component having a pair of input/output connection members disposed at a pair of adjacent corner surfaces on the underside of said component, each of said input/output connection members abuts adjoining edges of said corner surfaces, wherein said input/output connection members abut a common edge;

using a circuit board having a plurality of traces disposed thereon;

positioning said component relative to a first trace and a second trace to align said input/output connection members with said first trace and said second trace; and

mounting said component to said circuit board, wherein said input/output connection members are connected electrically to said first trace and said second trace, each one of said traces intersects said common edge at an angle between about 90° and about 180°.

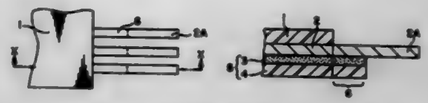


5,444,188

FLEXIBLE CIRCUIT WIRING BOARD AND METHOD OF PRODUCING THE SAME

Takeshi Iwayama; Atsushi Miyagawa, and Masaichi Inaba, all of Ushiku, Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan

PCT No. PCT/JP93/00028, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO93/14516, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 12, 1993, Ser. No. 117,010
Claims priority, application Japan, Jan. 14, 1992, 4-024469
Int. Cl.[6] H05K *3/00*
U.S. Cl. 174—261 7 Claims



1. A method of producing flexible circuit wiring boards comprising the steps of:

forming a circuit wiring pattern consisting of plural conductors on one surface of an insulating base member;

adhering a surface protection layer to the exposed surface of said circuit wiring pattern, the surface protection layer defining at least a first cutaway portion at a location where conductors of said wiring pattern are to be terminated as projecting finger-like leads; and

removing the insulating base member from areas where the leads are to be formed by projecting the beam of an excimer laser onto said base member.

5,444,189

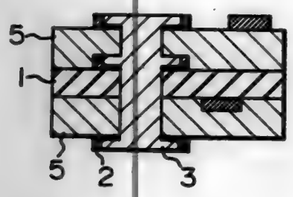
PRINTED WIRING BOARD AND PRODUCTION THEREOF

Akishi Nakaso, Oyama; Kouichi Tsuyama, Shimodate; Akinari Kida, Tochigi; Shuichi Hatakeyama, and Naoyuki Urasaki, both of Shimodate, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,722
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—262 9 Claims

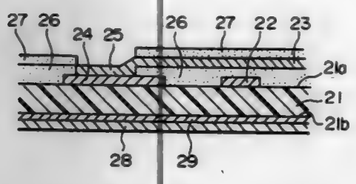
1. A wiring board for inner layer circuit comprising an insulating layer and metal foil layers formed on both sides of

the insulating layer, said metal foil layers each having one or more hollow portions formed therein, said hollow portions



being filled with an electroconductive substance, wherein a hole is to be drilled in each hollow portion so that a part of the hollow portion remains around an end of the hole.

5,444,190
SENSING UNIT FOR A POSITION DETECTING APPARATUS AND ITS MANUFACTURING METHOD
Tsuguya Yamanami, and Toshihide Chikami, both of Saitama, Japan, assignors to Kabushikikaisha Wacom, Saitama, Japan
Filed Jun. 17, 1992, Ser. No. 899,782
Claims priority, application Japan, Dec. 5, 1991, 3-321784
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **9 Claims**

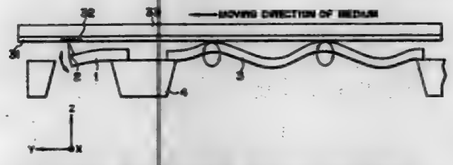


1. A sensing unit for a position detecting apparatus having a plurality of sense wires formed of at least two layers of conductor patterns,

said two layers of conductor patterns being successively laminated on one side of an insulating substrate such that a top one of the two layers is free of an opposed substrate, and a magnetic shield mounted on another side of said insulating substrate so as to reduce the influence of external electromagnetic waves and reduce external leakage of an electromagnetic wave coupled between the position detecting apparatus and the two layers of conductor patterns,

the two layers of conductor patterns having respective upper and lower land patterns which abut each other for electrical connection, the upper land pattern extending through an electrical insulating layer and having a bottom face electrically and mechanically connected to an upper face of the lower land as a result of the abutting relation of the upper and lower lands.

5,444,191
INFORMATION PROCESSING APPARATUS AND DEVICE FOR USE IN SAME
Keisuke Yamamoto, Yamato; Takehiko Kawasaki; Yoshio Suzuki, both of Atsugi, and Haruki Kawada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1993, Ser. No. 40,277
Claims priority, application Japan, Apr. 1, 1992, 4-105271; Mar. 12, 1993, 5-77418
Int. Cl.[6] G08C *21/00*; G11B *9/00*; G11C *11/00, 13/00*
U.S. Cl. 178—18 **10 Claims**



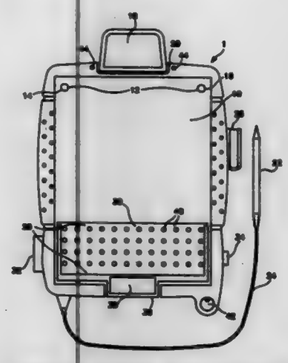
1. An information processing apparatus, comprising:

a probe for reading information from and writing information onto a medium;

means for applying a voltage between said probe and the medium; and

means for generating a progressive wave in a planar direction of the medium to displace the medium relative to said probe.

5,444,192
INTERACTIVE DATA ENTRY APPARATUS
Mohan S. Shetye, E. Amherst, and Paul E. Boden, Blasdell, both of N.Y., assignors to Integral Information Systems, Amherst, N.Y.
Filed Jul. 1, 1993, Ser. No. 84,472
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **44 Claims**



1. A data collection, analysis, and recording apparatus for simultaneously producing a written and a computer data record comprising:

a data entry form having data entry spaces;

a processor for receiving and recording a description of said form and commands for manipulating data collection, analysis, and recording;

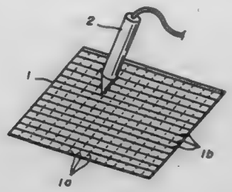
a digitizer for retrieving said description of said form, for generating a data entry area having data entry locations corresponding to said data entry spaces and command selection locations, and for receiving and recording in said processor, entries made at said data entry locations;

a clip attached to said digitizer, such that said clip can to hold said form against said data entry area, whereby said data entry spaces are aligned with said data entry locations, and comprising an overlay having holes therethrough, such that when said clip holds said form against said data entry area, said holes are aligned with said command selection locations;

a template, mounted on said clip, for identifying said command selection locations; and

a stylus for selecting said commands by inserting said stylus in said holes and for simultaneously entering data in said spaces and at said data entry locations.

5,444,193
PEN INPUT DEVICE
Yasuhiro Satoh; Yoshiyuki Kiyosawa, and Yuichi Kimura, all of Natori, Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan
Filed Sep. 20, 1993, Ser. No. 123,229
Claims priority, application Japan, Sep. 21, 1992, 4-251603
Int. Cl.[6] G08C *21/00*; G09G *3/02*
U.S. Cl. 178—18 **11 Claims**



1. A pen input device comprising:

a) a tablet having a top surface, and a plurality of reference lines provided at a constant pitch on the top surface in mutually perpendicular directions; and

b) a pointing device having:

1) a tip end,

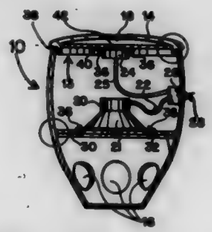
2) first means for radiating light on said tablet via the tip end, and

3) second means including a single sensor for detecting both A) and B) based on scattered light received from said tablet;

A) a moving direction and a quantity of moving distance of the tip end of said pointing device on said tablet; and

B) a distance between the tip end of said pointing device and the top surface of said tablet.

5,444,194
DECORATIVE SPEAKER ENCLOSURE
Raymond E. Reinke, Boise, Id., assignor to Rayad of Boise, Inc., Boise, Id.
Filed Aug. 12, 1994, Ser. No. 289,914
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—150 **9 Claims**



1. A high compliance audio speaker apparatus comprising;

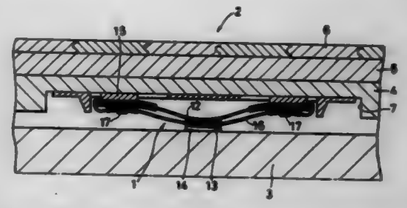
a hollow housing in the shape of a decorative vase having a generally circular body and a top and a bottom and having at least one opening of a area formed in the circular body thereof, said opening proximate the bottom of the housing;

a mounting ring of a composite medium density fiber mounted to the inside of the housing at a point between the opening and the top of the housing by the use of a flexible adhesive;

at least a first audio speaker having an output and a cone with a predetermined surface area mounted on the ring opposite the housing opening and with the speaker output directed through the opening in the ring toward the opening in the housing; and

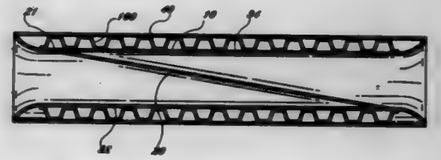
wherein the area of the opening in the housing is at least 36% of the area of the surface of the speaker cone.

5,444,195
SOUND INSULATING DEVICE
Yoshiharu Dojo, 50-16, Miyama 5-chome, Funabashi-shi, Chiba, Japan
Filed Nov. 16, 1993, Ser. No. 152,124
Claims priority, application Japan, Nov. 24, 1992, 4-334898
Int. Cl.[6] F16F *15/00*
U.S. Cl. 181—208 **9 Claims**



1. A sound insulating device having a shock absorbing mechanism disposed between an upper material and a lower material for absorbing vibrational impact sounds caused by an impact load applied from said upper material to said lower material, wherein the shock absorbing mechanism comprises a resilient mechanism affixed to one of said upper material and lower material and adapted to deform elastically when subjected to said impact load thereby absorbing said vibrational impact sounds, and a shock absorber disposed on the resilient mechanism at a position between the resilient mechanism and one of the upper material and the lower material, said shock absorber having an elastically deformable portion which deforms elastically more easily than said resilient mechanism when subjected to said impact load.

5,444,196
IN LINE INSERTION MUFFLER FOR MARINE ENGINES
Woodrow Woods, 3640 Fiscal Ct., Riviera Beach, Fla. 33404
Continuation of Ser. No. 105,511, Aug. 11, 1993, abandoned, Continuation-in-part of Ser. No. 785,687, Oct. 31, 1991, Pat. No. 5,262,600. This application Oct. 5, 1994, Ser. No. 318,525
Int. Cl.[6] F01N *7/08, 7/12*
U.S. Cl. 181—227 **4 Claims**



1. An in-line muffler for a marine engine, comprising:

a first elongated tubular housing comprising an outer peripheral surface and an inner peripheral surface;

a second elongated tubular housing defining an interior and comprising an outer peripheral surface, an inner peripheral surface and a first, upstream, end terminating in a first flared peripheral lip, and a second, downstream, end terminating in a second flared peripheral lip; said second housing disposed within said first housing and wherein said first and second flared lips are sealingly connected to said inner peripheral surface of said first housing thereby defining an annular space between said first and second housings extending longitudinally between said flared lips; said second housing further defining an aperture means for fluidly communicating said annular space with the interior of said second housing;

a baffle angularly disposed within said second housing and having a first, upstream, end, and a second, downstream end, said baffle dividing the interior of said second housing into an inlet chamber and an outlet chamber;

a corrugated sleeve positioned within said annular space between said first and second housings and extending longitudinally between said flanges;

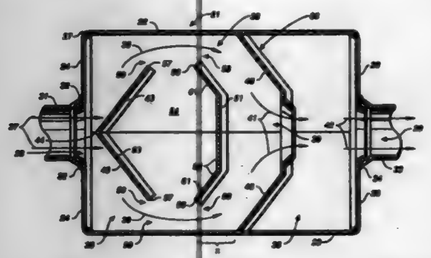
said corrugated sleeve defining a series of parallel coaxial annular chambers circumferentially surrounding said second housing, each said annular chamber lying in a plane which is perpendicular to the elongate axis of said second housing.

5,444,197

MUFFLER WITH INTERMEDIATE SOUND-ATTENUATING PARTITION AND METHOD

Ray T. Flugger, 2975 Dutton Ave., Unit 3, Santa Rosa, Calif. 95407

Filed Aug. 9, 1993, Ser. No. 104,358
Int. Cl.[6] F01N *1/08*
U.S. Cl. 181—264 **27 Claims**



1. In a muffler including a casing having an inlet opening and an outlet opening, a first partition secured in said casing and formed and positioned to divide incoming exhaust gases for flow in said casing past said first partition, and a second partition secured in said casing downstream of said first partition, said second partition forming in part a second partition opening and said second partition being formed to direct the divided exhaust gases toward each other for flow of substantially all of said exhaust gases through said second partition opening, the improvement in said muffler comprising:

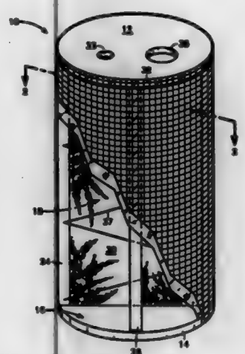
a separate intermediate partition secured in said casing a spaced distance from each of and at a position between said first partition and said second partition, said intermediate partition being formed to permit flow of said divided exhaust gases past said intermediate partition, and said intermediate partition having a surface cupped in a direction facing toward said first partition, said surface being formed to direct sound components in a direction away from said second partition opening.

5,444,198

TRAP FOR CONTROLLING STANDING WAVES IN ROOMS

John M. Gallas, P.O. Box 8550, Universal City, Calif. 91608

Filed Jan. 4, 1994, Ser. No. 177,236
Int. Cl.[6] E04B *1/82*
U.S. Cl. 181—295 **9 Claims**



1. A sound trap for use in a room with loudspeakers for controlling standing acoustic waves affecting the room's listening environment, comprising

first means defining a first volume,

a sound absorbent wool filling said volume,

said first volume being constructed to be open to and in sound communication with said room,

second means defining together with said first means a second volume having a common surface in sound communication therewith, said first and second means including walls to enclose the same with respect to the room,

said first and second means together forming an upright, generally cylindrical structure,

said second volume being empty,

port means formed through said second means for accessing said second volume,

said second means including a curved outer wall having a first portion thereof secured to said structure and other portions supported by said first, secured portion,

said curved wall having an outer convex surface facing the room for diffusing externally arriving sound waves therefrom and further having an inner concave surface for directing internally arriving sound waves into said first volume for absorption.

5,444,199

SWITCH FOR OPERATING AN ELECTRIC DEVICE, IN PARTICULAR A RADIO REMOTE CONTROL DEVICE

Thomas Burchard, Pforzheim, and Wolfgang Bredow, Birkenfeld, both of Germany, assignors to NBB Nachrichtentechnik GmbH & Co. KG, Olbronn-Durrn, Germany

Filed Dec. 21, 1993, Ser. No. 170,836
Claims priority, application Germany, Dec. 28, 1992, 92 17 730.1 U
Int. Cl.[6] H01H *27/00*
U.S. Cl. 200—43.04 **7 Claims**

1. A switch for operating an electric device, said switch having a released position in which the device can be switched on or off, and a locked position in which switching on of the device is prevented, said switch being manually operable, only when in the released position, for switching the device on or off, in combination with a removable key element including a key insertable into said switch and rotatable for placing said switch in a selected one of the released and locked positions, wherein said switch comprises a function element adapted to

be fixedly disposed within the electric device, and an actuating element for switching the electric device on and off, seated on the outside of the device and in operative connection with said



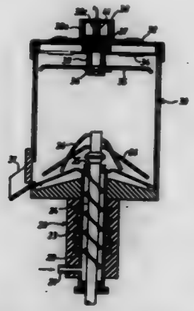
function element, and further wherein said key element comprises a cap-like slip-on element to which said key is permanently fastened and which is configured to be securely and removably mounted on said actuating element.

5,444,200

ICE DETECTION DEVICE

Hideyuki Ikari, Kariya, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Sep. 13, 1993, Ser. No. 119,580
Claims priority, application Japan, Sep. 14, 1992, 4-064114 U
Int. Cl.[6] H01H *35/00*
U.S. Cl. 200—61.2 **6 Claims**



1. An ice detection device for detecting ice pieces supplied into and stored in an ice storage bin, comprising:

a removable lid formed with a cylindrical guide portion and coupled over an upper opening end of said storage bin;

a hollow piston mounted for vertical movement within the guide portion of said lid;

a float plate fixed to a lower end of said hollow piston to cover the ice pieces stored in said storage bin;

a removable cap coupled over said lid, said cap being formed to close an upper opening of the guide portion of said lid and formed at its center with a cylindrical projection extending therefrom into an axial bore of said hollow piston;

a permanent magnet mounted on an upper portion of said hollow piston; and

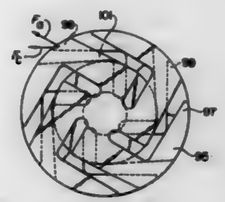
a magnetically operated switch mounted within the cylindrical projection of said cap to cooperate with said permanent magnet.

5,444,201

MULTIPLE ELECTRODE STRUCTURE FOR A VACUUM INTERRUPTER

Michael B. Schulman, Pittsburgh, and Paul G. Slade, Wilkinsburg, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 22, 1993, Ser. No. 155,376
Int. Cl.[6] H01K *33/66*
U.S. Cl. 218—118 **6 Claims**



1. A vacuum interrupter, comprising:

a vacuum envelope;

first and second coaxially aligned contact means relatively movable between a closed circuit position and an open circuit position, each including:

a substantially disk-shaped contact within the envelope, characterized by spaced apart first and second sides, a peripheral edge, a contacting face on the first side confronting the other contact and engageable with the other contact in the closed circuit position, and a plurability of circumferentially spaced, substantially spiral-shaped arms defining L-shaped slots therebetween, each slot having inner and outer edges extending axially between the first and second sides and extending from an opening at the peripheral edge to an inner position, each slot being characterized by a first portion having a width that decreases from the opening to a medial position radially outside the inner position;

terminal means connected to the second side of the contact and extending outside the envelope for carrying an electrical current when the contacts are in the closed circuit position;

wherein each of the arms comprise:

a petal portion defined by the peripheral edge of the contact and the outer edge of one of the slots;

a linear portion being that portion of the arm not including the petal portion, wherein the boundary between the petal portion and the linear portion is a line extending generally radially from about the medial position to the peripheral edge and wherein the contacts are relatively rotated by a rotation angle that is greater than about 55° and less than about 65° such that a peripheral tip of the petal portion of each of the arms of one of the contacts confronts the linear portion of an arm of the other contact.

5,444,202

ACTUATOR FOR ELECTRICAL SWITCHES

Ernst Zarcher, Oberentfelden, Switzerland, assignor to GEC Alsthom T&D AG, Oberentfelden, Switzerland

Filed Sep. 10, 1993, Ser. No. 118,840
Claims priority, application European Pat. Off., Sep. 10, 1992, 92115463
Int. Cl.[6] H01H *5/00*
U.S. Cl. 200—400 **10 Claims**

1. An actuator for rapid connection and disconnection of at least one of an electrical switch, an on-load switch, an isolating switch and a ground-switch for medium and high voltages, comprising:

a primary shaft having a tension lever, said primary shaft being rotatable between a first end setting and a second end setting;

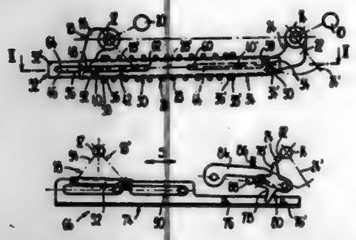
a delivery shaft parallel to said primary shaft and having a

drive lever, said delivery shaft being rotatable between a disconnect setting and a connect setting;

first driver elements interacting with the tension lever;

second driver elements interacting with the drive lever;

means for providing a spring load and including at least one helical spring, having spring ends movable relative to each other in an axial direction of the at least one helical spring, interacting with the tension lever and the drive lever, one of said spring ends being connected to one of said first driver elements and to one of said second driver elements, another one of said spring ends being connected to another one of said first driver elements and to another one of said second driver elements, the at least one helical



spring being held, pre-tensioned, between the first driver elements and the second driver elements; and

a locking device for detachably supporting the delivery shaft in the disconnect setting and the connect setting against the spring load provided by the means for providing a spring load;

wherein said means for providing a spring load is tensioned, upon rotation of the primary shaft from one of the first and second end settings in a direction of the other of the first and second end settings, until a corresponding unlatching setting of the primary shaft, preceding the other end setting, is reached, and the locking device detaches its support of the delivery shaft when the primary shaft is in said corresponding unlatching setting.

5,444,203

SAFETY SWITCH FOR AN INDUSTRIAL MACHINE

Sven-Eric Gunnarsson, Västeras, Sweden, assignor to Asea Brown Boveri AB, Västeras, Sweden

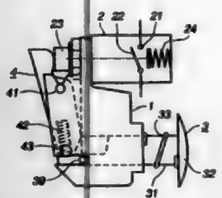
PCT No. PCT/SE92/00720, § 371 Date Apr. 20, 1994, § 102(e) Date Apr. 20, 1994, PCT Pub. No. WO93/09377, PCT Pub. Date May 13, 1993

PCT Filed Oct. 14, 1992, Ser. No. 211,866

Claims priority, application Sweden, Nov. 1, 1991, 9103211

Int. Cl.[6] H01H *13/50*

U.S. Cl. 200—510 5 Claims



1. A safety switch for an industrial machine, said switch comprising

a housing,

a contact device mounted in said housing and being switchable between an open position and a closed position, said contact device comprising a spring for biasing the contact device in a direction toward said open position,

a hand-operated device for switching said contact device between said open position and said closed position, said hand-operated device comprising a pressure operating member and a lever arm for transmitting operating force from the pressure operating member to the contact device, said lever arm being rotatably journalled in said housing and making contact at one of its end portions with the pressure operating member through resilient means and at its other end portion with an actuating member associated with the contact device, said resilient means comprising a ball and a compression spring for pressing the ball against a side surface of the pressure operating member, said pressure operating member being displaceable against the action of a return spring from a first end position via a mid-position to a second end position, the pressure operating member being connected to the contact device through said lever arm in such a way that the contact device assumes the open position when the operating member is in its end positions and the closed position when the operating member is in its mid-position, and that the contact device is not influenced by the operating member when the, operating member returns from its second to its first end position.

5,444,204

METHOD OF AND APPARATUS FOR ELECTRO-EROSIVE MACHINING

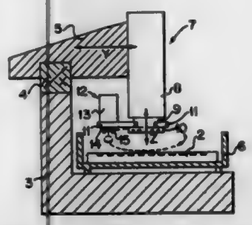
René Derighetti, Losone, and Nikolaus Lauber, Verscio, both of Switzerland, assignors to Agie A.G. Fur Industrielle Elektronik, Losone, Switzerland

Filed May 14, 1992, Ser. No. 883,021

Claims priority, application Germany, May 15, 1991, 41 15 896.2

Int. Cl.[6] B23H *7/26*

U.S. Cl. 219—69.11 18 Claims



1. An apparatus for electro-erosive machining of a workpiece, comprising

a machine table for the placing thereon of a workpiece;

a first main machining head having a perpendicular axis, the apparatus having at least two degrees of freedom of movement in and/or parallel to a principal working plane of the workpiece, and at least one additional degree of freedom of movement perpendicular to the principal working plane; and

at least one additional machining head

which is fastened to the first machining head so as to be movably supported on the first machining head and swingable around the perpendicular axis of the first machining head; and

wherein the at least one additional machining head is independently vertically displaceable.

5,444,205

METHOD OF AND APPARATUS FOR ELECTRO-EROSIVE MACHINING

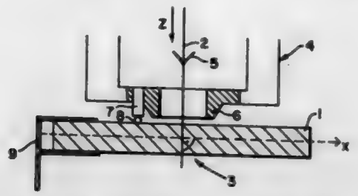
Attilio Lodetti, Losone, Switzerland, assignor to AG Fur Industrielle Elektronik, Losone, Switzerland

Filed Dec. 8, 1993, Ser. No. 164,673

Claims priority, application Germany, Dec. 21, 1992, 42 43 392.4

Int. Cl.[6] B23H *7/06, 7/20*

U.S. Cl. 219—69.12 13 Claims



1. A method of electro-erosive machining comprising the steps of

a. guiding a wire electrode along one guiding head,

b. orienting initially a workpiece or the wire electrode within a three-dimensional coordinate system,

c. determining with a sensor the positioning of at least one surface of the work piece in the coordinate system,

d. calculating the position of at least one area of at least one surface of the workpiece within the coordinate system from at least three detected positions,

e. storing the calculation into an electronic memory, and

f. carrying out movements of the wire guiding head during electro-erosive machining to compensate for the actual position of the area of the surface of the workpiece according to the calculation stored into the memory.

5,444,206

STRUCTURE OF METAL CONTAINER HAVING TRUNK PIPE AND BRANCH PIPE, AND MANUFACTURING METHOD AND APPARATUS THEREFOR

Osamu Isshiki; Masaki Murashita, both of Hitachi; Osamu Matsushima, Hitachioota; Sadao Nakagawa, Hitachi; Seizo Nakano, Mito; Koji Goto, Hitachi; Masayoshi Hashiura, Hitachi; Yutaka Kobayashi, Hitachi; Takashi Satoh, Hitachi; Katsuro Ota, Hitachi; Hideaki Kikuchi, Hitachi; Takashi Sato, Kitaibaraki, and Shinji Fukuda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 760,890

Claims priority, application Japan, Sep. 17, 1990, 2-243995; Sep. 17, 1990, 2-243996; Sep. 19, 1990, 2-246987; Sep. 19, 1990, 2-247010; Sep. 19, 1990, 2-247509; Oct. 26, 1990, 2-290168; Oct. 26, 1990, 2-290169; Nov. 30, 1990, 2-329013

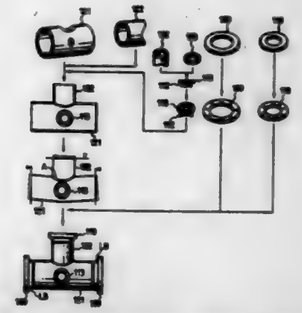
Int. Cl.[6] B23K *26/00, 9/02*

U.S. Cl. 219—121.63 3 Claims

1. Method for manufacturing a welded metal container, the method comprising the steps of:

arc welding an end portion of a branch pipe to the outer peripheral wall of a trunk metal pipe having an end portion so as to extend said branch pipe from said trunk pipe in a substantially perpendicular direction to said trunk pipe, said trunk pipe and said branch pipe being of sufficient size that said pipes are thermally deformed by said arc welding;

cutting each end surface portion of said arc welded trunk metal pipe and branch pipe by mechanically cutting or laser cutting the end surfaces of said pipes to which flanges for the trunk metal pipe and the branch pipe are to be welded so that said end of the trunk pipe is perpendicular to said end of said branch pipe for countering the effect of said thermal deformation by said arc welding; and



laser welding said flang cut end surfaces of said trunk pipe and said branch pipe.

5,444,207

PLASMA GENERATING DEVICE AND SURFACE PROCESSING DEVICE AND METHOD FOR PROCESSING WAFERS IN A UNIFORM MAGNETIC FIELD

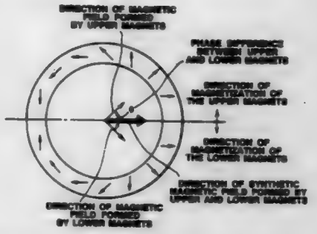
Makoto Sekine; Keiji Horioka, both of Yokohama; Haruo Okano, Tokyo; Katsuya Okumura, Yokohama; Isahiro Hasegawa, Zushi, and Masaki Narita, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1993, Ser. No. 37,169

Claims priority, application Japan, Mar. 26, 1992, 4-068879; Jul. 17, 1992, 4-191179; Mar. 11, 1993, 5-051117

Int. Cl.[6] B23K *10/00;* H05H *1/18;* H01L *21/00*

U.S. Cl. 219—121.43 24 Claims



1. A plasma generating apparatus comprising:

a vacuum container provided with a first electrode and a second electrode disposed opposite to said first electrode;

gas feeding means for feeding a predetermined gas into said vacuum container;

evacuating means for maintaining the inside of said container at a reduced pressure;

electric field generating means for supplying electric power between said first and second electrodes to generate an electric field in a region between said first and second electrodes; and

magnetic field generating means for generating a magnetic field in said vacuum container,

said magnetic field generating means comprising a plurality of magnetic elements arranged in a circle around said container so as to form a ring, each of said magnetic elements having an axis directed to a center of said circle and a magnetization direction,

wherein one of said magnetic elements is so disposed that the magnetization direction thereof coincides with the axis thereof, and each of said magnetic elements other than

said one magnetic element is so disposed that an angle of the magnetization direction thereof relative to the magnetization direction of said one magnetic element is substantially twice an angle of the axis thereof relative to the axis of said one magnetic element.

5,444,208

MULTIPLE SOURCE PLASMA GENERATION AND INJECTION DEVICE

Robert V. Mortensen, Andover, Minn., assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 29, 1993, Ser. No. 38,309
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.48 **21 Claims**



1. A multiple source plasma generation and injection device integrated with a cartridge for a projectile containing a combustible mass and further having a power connection to supply sufficient power to the cartridge in order to accelerate the projectile comprising:

a structure to incubate plasma including a capillary formed from a wall of layers of metallic and dielectric substances having first and second ends and further having an internal volume defined by a central bore therein;

at least one intermediate electrode disposed in said bore to form a region of one of said multiple source for plasma between one of an anode and a cathode electrodes disposed at said first and second ends;

means to confine plasma discharge defined by a space within said capillary and said region; and

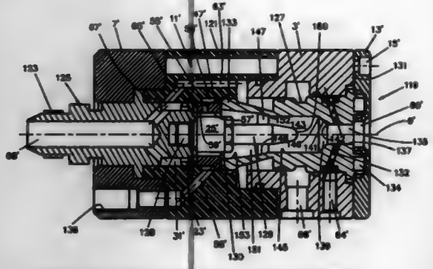
means for guiding said plasma from said region to flow to selectively located positions to initiate ignition and combustion in discrete zones of the combustible mass.

5,444,209

DIMENSIONALLY STABLE SUBSONIC PLASMA ARC SPRAY GUN WITH LONG WEARING ELECTRODES

Daryl E. Crawmer, Appleton, Wis., and Ray W. Selby, Irving, Tex., assignors to Miller Thermal, Inc., Appleton, Wis.

Filed Aug. 11, 1993, Ser. No. 105,843
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.52 **22 Claims**



1. A subsonic plasma arc spray gun comprising:

a. a generally tubular anode having a longitudinal axis, an exterior surface, an interior, and front and back ends, the anode interior being formed with a front section adjacent the anode front end, a second section adjacent the front section, a middle section adjacent the second section, a fourth section adjacent the middle section, and a back section adjacent the anode back end, the front and middle interior sections having respective cylindrical inner surfaces coaxial with the longitudinal axis and the second, fourth, and back interior sections having respective frustoconical inner surfaces coaxial with the longitudinal axis;

b. a cathode holder having a longitudinal axis coaxial with the anode longitudinal axis;

c. a cathode assembly held in the cathode holder, the cathode assembly including a tip having an end located within the anode middle interior section;

d. injector means interposed between the cathode holder and the back end of the anode for introducing a primary gas to flow into the anode interior from the back end thereof and out the anode front end;

e. housing means for retaining the anode, cathode holder, and injector means as an assembly;

f. first passage means for supplying the primary gas through the housing means to the injector means;

g. first fitting means for supplying electrical power to the anode and the cathode assembly to create an arc therebetween in the anode interior to heat the primary gas flowing in the anode interior into a plasma stream;

h. second passage means for supplying a coating powder to the anode interior whereat the coating powder is entrained in the plasma stream and accelerated thereby out the anode front end; and

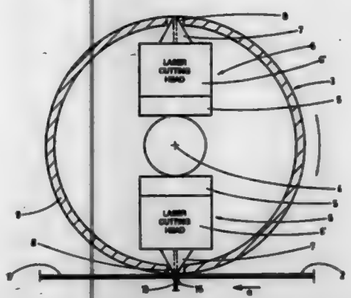
i. cooling means for supplying cooling fluid to the cathode holder, anode, and housing means.

5,444,210

APPARATUS FOR FLYING-SHEAR CUTTING OF THIN-LAYER MATERIAL BY LASER RADIATION

F. Dieter Bingener, Dornseifer Str. 30, 57223 Kreuztal; Kai-Uwe Preissig, Moreller Weg 62, 52074 Aachen; Arnold Gillner, An der Hohe 33, 5276 Aachen, all of Germany, and Dirk Petring, Feldbiss 125, NL-6462 HE Kerkrade, Netherlands

Filed Oct. 26, 1993, Ser. No. 141,062
Claims priority, application Germany, Oct. 26, 1992, 42 35 863.9
Int. Cl.[6] B23K *26/00, 26/02*
U.S. Cl. 219—121.67 **9 Claims**



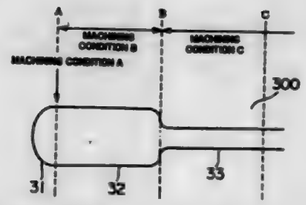
1. Apparatus for the flying-shear cutting of thin-layer material, reeled off from a coil, by means of laser radiation, especially metal strips, fabrics, synthetic resins, paper, cardboard, and composite materials, comprising a traverse (3) arranged at an angle to the travel direction (a) of the strip (2), this traverse being supported and driven to be rotatable about its longitudinal axis of symmetry (4), wherein separate guide means (5) for a plurality of separately operable laser cutting heads (6) with nozzles (7) are mounted in parallel to a longitudinal axis of symmetry (4) of the traverse (3), these laser cutting heads being arranged at the periphery of the guide means (5), wherein the laser cutting heads (6) are in each case movable separately and/or individually by way of the guide means (5), the nozzles (7) of the two laser cutting heads (6) being arranged to face radially outwardly of said axis in different directions and projecting through longitudinally extending slots (8) in an outer housing (9) of the traverse (3).

5,444,211

LASER BEAM MACHINE FOR CUTTING A WORKPIECE USING MULTIPLE MACHINE CONDITIONS

Yoshinori Nakata, and Atsushi Mori, both of Minamitsuru, Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00848, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO94/00271, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 22, 1993, Ser. No. 190,127
Claims priority, application Japan, Jun. 24, 1992, 4-165672
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.67 **6 Claims**



1. A laser beam machine executing a cutting operation by irradiating a laser beam onto a workpiece, said laser beam machine compriaing:

piercing command means for executing a piercing operation at a machining start point of said cutting operation according to a first machining condition;

enlargement processing command means for executing enlargement processing for enlarging a depth of a cutting groove directly after said piercing operation is completed, according to a second machining condition; and

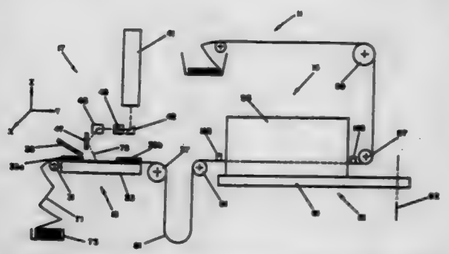
cutting command means for executing a cutting operation after said enlargement processing of said depth of the cutting groove is completed, according to a third machining condition.

5,444,212

APPARATUS AND METHOD FOR PRODUCING A PRINTING SCREEN

George MacNaughton, Andover; Steven Forti, Norwell; Douglas Whittington, Malden, all of Mass., and Kevin Ackley, New Boston, N.H., assignors to Wear Guard Corp., Norwell, Mass.

Division of Ser. No. 822,363, Jan. 15, 1992, Pat. No. 5,334,815. This application Feb. 4, 1994, Ser. No. 191,482
Int. Cl.[6] B23K *26/06, 26/08*
U.S. Cl. 219—121.7 **20 Claims**



5. An apparatus for inking the surface of an item, which comprises:

a. means for supporting a web of screen material;

b. device for producing a pattern of holes in the web of screen material;

c. means for moving the hole pattern from the pattern producing apparatus to an inking station;

d. means for supporting at least one item, moving the item to the inking station and positioning the surface in close proximity to the hole pattern when the hole pattern is held by the inking station;

e. means for inking the hole pattern onto the surface;

f. means for drying the inked surface; and

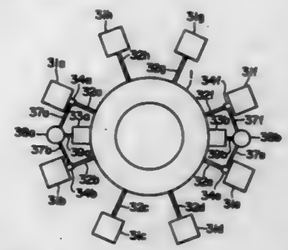
wherein the apparatus for producing the holes includes means for positioning and holding the web of screen material, a laser, means for moving the beam of the laser relative to the screen in the x-direction of the web of screen material, means for moving the beam relative to the web of screen in the y direction of the web of screen material, and means for focusing the beam onto the surface of the web of screen material.

5,444,213

REMOTE MAINTENANCE METHOD AND SYSTEM FOR A FUSION REACTOR

Keizoh Honda, Ebina; Yoshinobu Makino, Yokohama; Seiichiro Kimura, Inagi; Tsutomu Honda, Tokyo, and Nobuo Tachikawa, Iberaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1993, Ser. No. 51,883
Claims priority, application Japan, Apr. 27, 1992, 4-107826
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.76 **12 Claims**



2. A remote maintenance system for a fusion reactor comprising:

at least two laser beam generators, each being used periodically, and performing connection and cutting work at a prescribed location of a structural member of said fusion reactor, and having a predetermined output power;

an optical path switcher which switches an optical path of each of said laser beams generated from said laser beam generators;

at least two maintenance ports provided on an outer periphery of said fusion reactor; and

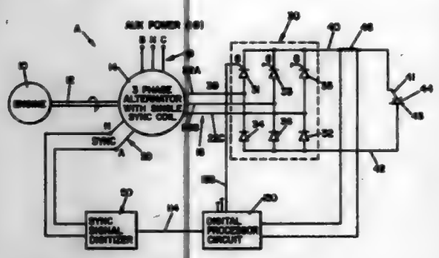
a laser beam combiner which is provided adjacent to said maintenance ports and reflects said laser beams that have been polarized by the corresponding optical path switcher oriented into the same direction, and combines said plurality of laser beams oriented into a parallel laser beam bundle having a predetermined output power which is directed to said prescribed location.

5,444,214

APPARATUS AND METHOD FOR SYNCHRONIZING A FIRING CIRCUIT FOR A BRUSHLESS ALTERNATOR RECTIFIED D. C. WELDER

Edward M. Crouse, Euclid, and Denis M. Osowski, Parma, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Dec. 6, 1993, Ser. No. 161,595
Int. Cl.[6] B23K 9/10
U.S. Cl. 219—133 48 Claims



1. A welding power supply comprising:
a driven shaft;
a multiphase alternator connected to said shaft, said alternator adapted to create a rotating magnetic field and an alternating multiphase output current;
a plurality of thyristors connected to receive said alternator output current, having control gate inputs and adapted to create a direct current output;
a single electrically conductive synchronizing winding within said alternator adapted to sense said rotating magnetic field, said winding adapted to create an output signal dependent on said magnetic field, said output signal being cyclical and having repeating cycles corresponding to a complete revolution of said rotating magnetic field;
a rectifier connected to said synchronizing winding, said rectifier adapted to receive said output signal, said rectifier adapted to create a unipolar, cyclical rectified signal;
an expander means adapted to receive said rectified signal and create a unipolar cyclical expanded signal;
a switch means connected to said expander means, said switch means adapted to receive said expanded signal and create a unipolar cyclical switch signal having a distinct transition point during substantially each said cycle, said transition point having a generally fixed temporal relationship to the cycle of said output signal; and,
a digital processor adapted to receive said switch signal and create a multiplicity of temporally spaced thyristor gating signals adapted to be applied to said thyristor gates whereby said welding current is controllable.

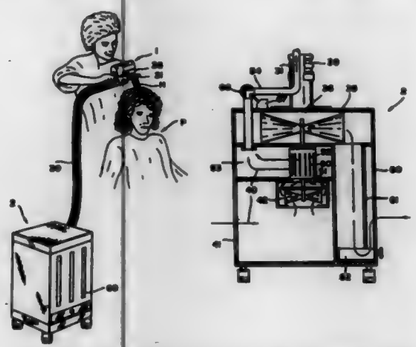
5,444,215

HAIRDRESSING DEVICE WITH FIRST AND SECOND BLOWERS

Rudolf Bauer, Konigstrasse 17, D-7000 Stuttgart 17, Germany

Continuation of Ser. No. 752,486, filed as PCT/EP90/00355, Mar. 3, 1990, published as WO90/10399, Sep. 20, 1990, abandoned. This application Jul. 23, 1993, Ser. No. 95,250
Claims priority, application Germany, Mar. 3, 1989, 39 07 418.8
Int. Cl.[6] A45D 2/36, 20/00
U.S. Cl. 219—222 18 Claims

1. A hairdressing device, comprising:
a hand held unit having an elongated hair roller, said elongated hair roller defining an elongated axis of rotation and having a plurality of suction air intake openings situated about said elongated axis of rotation and a suction outlet, means defining a nozzle through which heated air is ejected in a direction toward said elongated hair roller, and a motor connected to said elongated hair roller for rotating said elongated hair roller about said elongated axis of rotation;
a blower assembly including a blower housing, having a first opening and a second opening, and having mounted therein a first blower and a second blower, first means connecting said first blower to said suction outlet and providing a suction pressure at said plurality of suction intake openings which thereby generates an air flow from the air surrounding said hand held unit, which flows from said plurality of suction intake openings to said housing and outwardly from said first opening, and second means connecting said second blower to said nozzle and generating an air flow inwardly from the air outside of said second opening of said blower housing, which flows from said second opening of said blower housing to said nozzle



of said hand held unit, and means for maintaining the air flow generated by said first blower separate from the air flow generated by said second blower;
said first connecting means comprising a hose connecting the hand held unit to said blower housing;
said second connecting means comprising a warm air line connecting the hand held unit to said blower housing; and
valve means situated in said warm air line,
wherein the air flow generated by said second blower is heated by heat produced incidental to operation of said first and second blowers in said blower housing, said heated air being delivered through said warm air line to said nozzle of said hand held unit, and
said valve means is connected such that atmospheric air is supplied to said nozzle and said warm air line is disconnected from said blower housing.

5,444,216

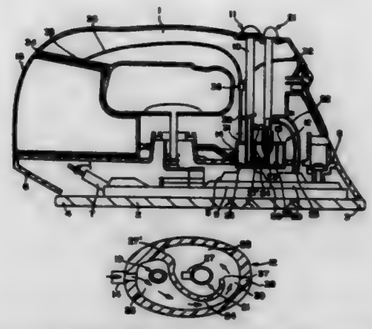
DISTRIBUTION CHAMBER FOR AN ELECTRIC STEAM IRON WITH TWO COMPARTMENTS SEPARATED BY A PARTITION

Jean-Paul A. A. Boileau, Champfleur, and Gerard L. H. Guillot, Radon, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Apr. 22, 1994, Ser. No. 231,300
Claims priority, application France, Apr. 23, 1993, 93 04852
Int. Cl.[6] D06F 75/16
U.S. Cl. 219—245 8 Claims

1. In an electric steam iron comprising a casing (1) and a sole (2) extending longitudinally from a point (3) toward a heel (4) of the iron and separated from the casing (1) by a thermal shield (6), the sole (2) comprising a heating element (7) and two vaporization chambers closed by a cap (5) and separated by a partition (50), a first of said chambers comprising a principal vaporization chamber (9) which is supplied with water through a first opening (17) in the cap (9) by means of a valve (10) of a first water injection device (11) actuable by a user, said valve (10) being mounted in a distribution chamber (12)

closed by a cover (13) and having an inlet opening (14) connected to a principal water reservoir (15), and which is in communication with steam outlet openings (19) provided in the sole (2), a second of said two chambers comprising a chamber (20) which is supplied with water by a second water injection device (21) actuable by a user, said second chamber having, on the one hand, an opening (27) connected to the principal water reservoir (15) and, on the other hand, a water supply tube (22) emerging from the second water injection device (21) and opening into the second vaporization chamber (20) through a second opening (23) provided in the cap (5); the



improvement wherein the distribution chamber (12) comprises two compartments (26, 28) separated in part by a partition (24) whose upper edge (20) is in sealed contact with the cover (13), a first of said compartments (26) being connected to the inlet opening (14) of the reservoir (15) and through which passes the valve (10) of the first water injection device (11), and a second of said compartments (28) communicating with the first compartment (26) by means of throat (30) and being adapted to constitute a water reservoir when the iron is used with the said sole in a vertical plane, and into which is immersed, through the cover (13), the opening (27) of the second water injection device (21).

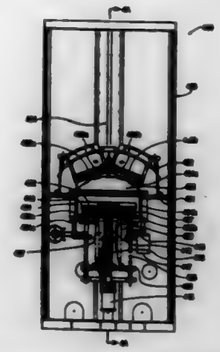
5,444,217

RAPID THERMAL PROCESSING APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS

Gary M. Moore, and Katsuhito Nishikawa, both of San Jose, Calif., assignors to Moore Epitaxial Inc., San Jose, Calif.

Filed Jan. 21, 1993, Ser. No. 7,981
Int. Cl.[6] F27D 11/02
U.S. Cl. 219—405 73 Claims
MICROFICHE APPENDIX INCLUDED
(3 Microfiche, 228 Pages)

1. A semiconductor processing structure, comprising:
a reaction chamber;
a rotatable susceptor mounted within the reaction chamber, the rotatable susceptor having a first surface and a second surface opposite thereto, the first surface adapted for mounting one of (i) a single substrate and (ii) a plurality of substrates thereon;
a resistance heater mounted in said reaction chamber in proximity to said second surface of said rotatable susceptor;
an insulated electrical supply line connected to said resistance heater wherein insulation on said insulated electrical supply line has a temperature rating that is less than a reaction chamber operating temperature; and
a radiant heat source mounted outside said reaction chamber so that radiant heat from said radiant heat source directly heats said one of (i) said single substrate and (ii) said plurality of substrates, wherein said radiant heat source raises the temperature of said one of (i) said single substrate and (ii) said plurality of substrates to a substantially uniform processing temperature in a time period such that the



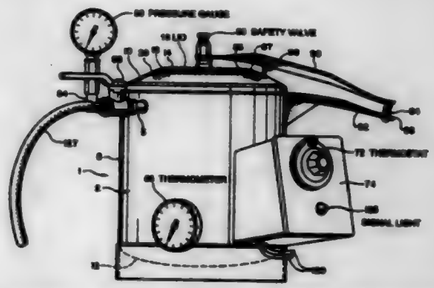
semiconductor processing structure is characterized as a rapid thermal process reactor.

5,444,218

ELECTRICALLY HEATED PRESSURE PROCESSOR APPARATUS FOR PRODUCTION OF DENTAL PROSTHESES

Lilian Z. Zelniker, and Alberto Sternberg, both of AV. Garibaldi 1969/603, Montevideo, CP 11800, Uruguay

Filed Oct. 14, 1992, Ser. No. 960,860
Claims priority, application Uruguay, Oct. 23, 1991, U-2974 U; Oct. 23, 1991, 23305
Int. Cl.[6] F27D 7/02
U.S. Cl. 219—440 16 Claims



1. Apparatus heat curing an acrylic dental prosthesis while the prosthesis is in a plaster chamber without a dental flask comprising:
a) a vessel for boiling or heating water, said vessel having an open top, a lid for sealing the top, an inlet for injection of compressed air into the vessel, an outlet for exhausting of compressed air, and valve means for closing and opening said inlet and said outlet,
b) means for supplying compressed air through said inlet to said vessel,
c) heating means for heating water held in said vessel,
d) a curing container holding water and holding an acrylic dental prosthesis while the prosthesis is in a plaster chamber without a dental flask during heat curing of the prosthesis, said curing container having an open top, the container being removable from said pressure vessel and being capable of holding water at a level which covers

said plaster chamber prior to submerging the curing container in the vessel, and

e) a table supporting the curing container in said vessel so that the top edge of the curing container is above the level of said water held by said vessel.

5,444,219

TEMPERATURE SENSING DEVICE AND A TEMPERATURE SENSING CIRCUIT USING SUCH A DEVICE

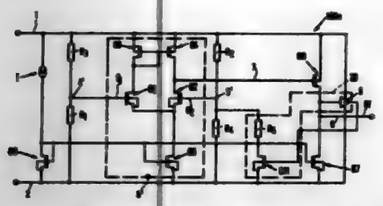
Brendan P. Kelly, Stockport, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 183,587, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 916,574, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,560, Sep. 16, 1991. This application Sep. 20, 1994, Ser. No. 309,514

Claims priority, application United Kingdom, Sep. 24, 1990, 9020731; Jul. 19, 1991, 9115694

Int. Cl.[6] H05B *1/02*; H03K *3/295*

U.S. Cl. 219—505 **22 Claims**



1. A temperature sensing device including a semiconductor body having a first region of one conductivity type adjacent one major surface within which is formed a semiconductor device having a resistance which varies with temperature, wherein the improvement comprises: the semiconductor device including (i) a second region of the opposite conductivity type having an impurity concentration formed within the first region, (ii) a third region of the one conductivity type having an impurity concentration formed within the second region, (iii) first and second electrodes spaced-apart on the third region so that a resistive path is provided by the third region between the first and second electrodes, and (iv) a reference electrode for connecting the second region to a reference potential, the impurity concentrations within the second and third regions being such that the temperature coefficient of resistance changes with absolute temperature so that the temperature coefficient of resistance relative to the sensed temperature is substantially constant.

5,444,220

ASYMMETRIC INDUCTION WORK COIL FOR THERMOPLASTIC WELDING

Karl A. Hansen, Seattle, and Edward C. Weisberg, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 314,027, Sep. 28, 1994, which is a continuation-in-part of Ser. No. 286,360, Aug. 5, 1994, which is a continuation-in-part of Ser. No. 68,520, May 27, 1993, abandoned, which is a continuation of Ser. No. 777,889, Oct. 18, 1991, abandoned. This application Dec. 5, 1994, Ser. No. 349,647

Int. Cl.[6] H05B *6/40, 6/10*

U.S. Cl. 219—633 **10 Claims**

1. An asymmetric induction work coil, comprising:

(a) a "C" core of high magnetic permeability material defining an "A" pole and a "B" pole spaced apart by a central channel;

(b) a first winding in a first helical sense wrapped on the "A" pole;

(c) a second winding in a helical sense opposite that of the first winding wrapped on the "B" pole;

(d) means for selectively activating the first or second winding; and



(e) means for actively cooling the core when either winding is activated.

5,444,221

HIGH-FREQUENCY INDUCTION HEATING APPARATUS FOR ROCKER ARMS

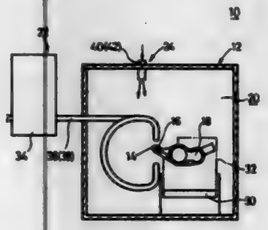
Ryoei Shiratani; Yoshihide Fuziwara; Shozo Kawase; Haruo Tanaka, all of Wako, and Daiji Ito, Hiratsuka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1994, Ser. No. 176,230

Claims priority, application Japan, Mar. 31, 1993, 5-074192

Int. Cl.[6] H05B *6/14*

U.S. Cl. 219—635 **6 Claims**



1. A high frequency induction heating apparatus for rocker arms, comprising:

a chamber for introducing therein a plurality of rocker arms, each of said rocker arms having a chip and brazing filler attached to a designated part thereof;

means for transferring said rocker arms into said chamber for processing thereof;

a high-frequency brazing coil provided in an upperstream location within said chamber for high-frequency heating each of said rocker arms at said designated part thereof to braze said chip thereto with said brazing filler;

a high-frequency temperature-holding coil for holding the temperature of said designated part after high-frequency heating;

a first means for supplying gas for preventing said rocker arm from oxidizing, provided at a location corresponding to said high-frequency brazing coil;

a second means for supplying gas for cooling said rocker arms, provided in a downstream location within said chamber; and

jig means provided on said transfer means for holding said rocker arms in a given attitude with respect to said high-frequency brazing coil.

5,444,222

NON-CONTACT IC CARD, TERMINAL FOR USE WITH THE NON-CONTACT IC CARD AND NON-CONTACT IC CARD SYSTEM HAVING THE NON-CONTACT IC CARD AND THE TERMINAL

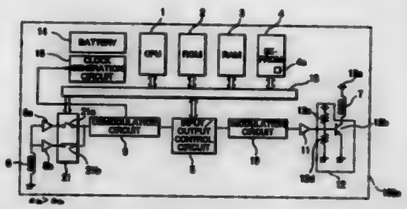
Takeshi Inoue, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 169,401

Claims priority, application Japan, Dec. 28, 1992, 4-349171

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **17 Claims**



1. A non-contact IC card comprising:

receiving means including first and second receiving sections wherein the first receiving section has a first detection threshold for detecting a received signal having a strength exceeding the first detection threshold, the second receiving section has a second detection threshold for detecting a received signal having a strength exceeding the second detection threshold, and the first detection threshold is higher than the second detection threshold;

a demodulation circuit connected to the receiving means for demodulating a received signal detected by one of the first and second receiving sections and producing demodulated signals;

selection means for selectively connecting the first and second receiving sections to the demodulation circuit; and

control means for controlling data processing by the non-contact IC card and for controlling the selection means, the control means receiving the demodulated signals from the demodulation circuit and controlling the selection means to connect the first receiving section to the demodulation circuit and, upon detection of a trigger signal by the first receiving section, disconnecting the first receiving section and connecting the second receiving section for detecting a data signal including data for processing by the control means.

5,444,223

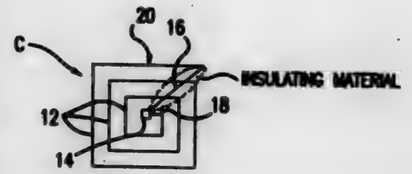
RADIO FREQUENCY IDENTIFICATION TAG AND METHOD

Michael J. Blama, 131 Marine Oaks Dr., Baltimore, Md. 21221

Filed Jan. 11, 1994, Ser. No. 179,664

Int. Cl.[6] G06K *7/00*

U.S. Cl. 235—435 **19 Claims**



1. A tag which uses radio frequency waves transmitted from a scanning device in order to identify an item to which said tag is attached or with which said tag is associated comprising:

an insulating layer having a top surface, a bottom surface, and side surfaces;

thin conductive metallic means adjacent either said top surface or said bottom surface of said tag for forming a plurality of circuits, wherein each circuit of said plurality of circuits has a unique resonant frequency formed by one-to-one correspondence of a capacitance made up of a single capacitor and an inductance made up of a single inductor coil having two conductive ends with a first conductive end being connected to said single capacitor in order for said inductor coil to wind around said capacitor to end in a second conductive end which crosses said single inductor coil in a layer above said inductor coil so that said second conductive end is above said inductor coil and separated from said inductor coil by an insulated layer in order for said second conductive end to connect to said capacitor to close each said circuit without shorting out the circuit; and

wherein said tag is associated with a binary number established by a pattern of ones and zeros depending on each circuits' resonance or nonresonance, respectively, and each circuits' position on said tag with respect to a binary table.

5,444,224

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

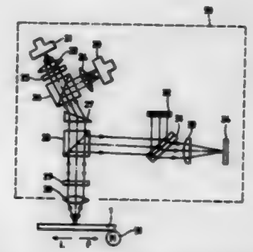
Moritoshi Miyamoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1993, Ser. No. 121,545

Claims priority, application Japan, Sep. 24, 1992, 4-277652

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—454 **14 Claims**



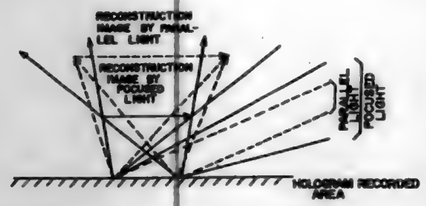
1. An optical information recording/reproducing apparatus comprising: first spot forming means for forming a first recording light spot and a second recording light spot for recording information on an information recording medium;

second spot forming means for forming a first reproducing light spot and a second reproducing light spot for reproducing information on the information recording medium; and

moving means for effecting a relative reciprocating motion between said first and second spot forming means and the information recording medium,

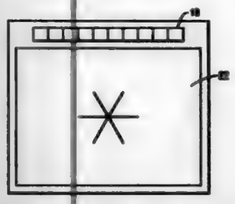
wherein said first spot forming means forms the first recording light spot and the second recording light spot and said second spot forming means forms the first reproducing light spot and the second reproducing light spot such that a line linking the first and second recording light spots intersects a line linking the first and second reproducing light spots.

5,444,225
SYSTEM AND PROCESS FOR READING HOLOGRAM CODE, HOLOGRAM AND CARD CONTAINING HOLOGRAM
Norio Takahashi, and Takaaki Fujiyoshi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan
Filed Mar. 31, 1993, Ser. No. 40,970
Claims priority, application Japan, Mar. 31, 1992, 4-105383; Jun. 5, 1992, 4-171760; Jun. 5, 1992, 4-171761; Jun. 5, 1992, 4-171762; Jun. 5, 1992, 4-171763
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—457 28 Claims



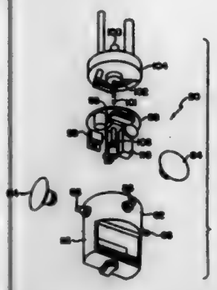
1. A hologram code reading system comprising:
a light source, illuminating with reconstruction light a hologram recorded area wherein codified data is recorded as image data, said light source including a focusing element positioned to focus the reconstruction light to a reconstruction position such that the reconstruction light converges toward the reconstruction position,
a code reading sensor arranged at the reconstruction position of the hologram reconstruction image played back by the reconstruction light of said light source, and
control means for obtaining the codified data from said hologram reconstruction image.

5,444,226
REAL-TIME BARCODE SCANNING PERFORMANCE FEEDBACK SYSTEM
Donald A. Collins, Jr., Duluth, Ga., assignor to AT&T Global Information Solutions Company, Dayton, Ohio
Filed May 13, 1993, Ser. No. 60,664
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 17 Claims



1. An optical scanner comprising:
a scanner module which produces scanning light beams and which collects light reflected from a barcode;
a controller coupled to the scanner module for processing barcode information from the scanner module and for determining a speed of an operator defined as a number of bar code labels on articles held by the operator which are successfully scanned by the scanner module per unit time; and
a scanning performance feedback system coupled to the controller which indicates the speed to the operator during scanning.

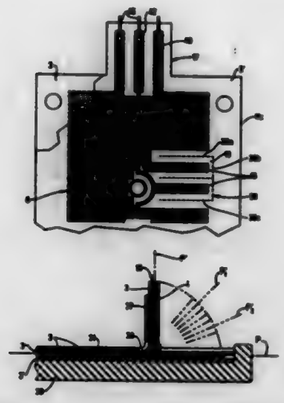
5,444,227
HEATER APPARATUS FOR USE IN A LIQUID ENVIRONMENT
M. Gaines Chestnut, Golden, Colo., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 2, 1992, Ser. No. 893,095
Int. Cl.[6] H05B 1/02
U.S. Cl. 219—506 43 Claims



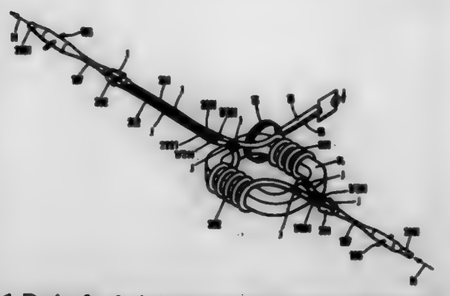
1. A heater and control apparatus for use in regulating the temperature of a liquid, comprising:
a heater element adapted for submersion in the liquid; and
a controller, operatively associated with said heater element, wherein said controller includes a housing with a first housing portion that is substantially impervious to said liquid, support means for supporting said housing such that said first housing portion is located within the liquid and display means for providing temperature related information, said display means including:
a substantially stationary light source;
transmission means, associated with said light source, for providing a transmitted beam of light from said light source, said transmitted beam having a width;
a plurality of indicators each separated from one another by a distance greater than said width of said transmitted beam; and
means for selectively directing said transmitted beam from said substantially stationary light source to one of said indicators providing temperature related information.

5,444,228
FLAT, FLEXIBLE HEATING ELEMENT WITH INTEGRATED CONNECTOR
Dominique Gelus, Eyzin-Pinet, France, assignor to SEB S.A., Selongey, France
Continuation-in-part of Ser. No. 8,101, Jan. 25, 1993. This application May 27, 1993, Ser. No. 67,835
Claims priority, application France, May 27, 1992, 92 06679
Int. Cl.[6] H05B 3/34
U.S. Cl. 219—549 22 Claims

1. A flexible heating element comprising:
at least one resistive conductor circuit having a first pair of ends;
two sheets of electrically insulating material enclosing said conductor circuit;
and means for connecting said conductor circuit to at least one exterior electric unit, wherein said means for connecting are constituted by
at least one flexible connection tongue forming a projecting portion of said heating element, and
two connection strips disposed in said flexible connection tongue for connection to the electric unit, and wherein said connection strips are each conductively connected to a respective end of said first pair of ends and are dimensioned to have a resistance appropriate to their connection function.

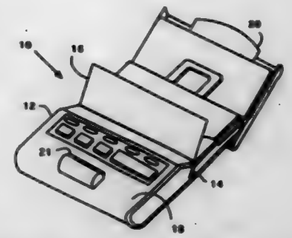


5,444,229
DEVICE FOR THE INDUCTIVE FLOW-HEATING OF AN ELECTRICALLY CONDUCTIVE, PUMPABLE MEDIUM
Manfred Rudolph, TUM, Lehrstuhl für Energiewirtsch, D-80290 München, and Georg Stock, Munich, both of Germany, assignors to Manfred Rudolph and Forschungsstelle für Energiewirtschaft der Gesellschaft für praktische Energiekunde E.V., both of Munich, Germany
Filed Aug. 1, 1994, Ser. No. 283,257
Claims priority, application Germany, May 2, 1994, 44 15 389.9
Int. Cl.[6] H04B 6/10
U.S. Cl. 219—630 20 Claims



1. Device for the inductive heating of a pumpable medium flowing through the device, the medium having an electrical conductivity in the order of electrolytic conductivity,
comprising an energy-supply apparatus having a magnetic yoke (14, 114, 214) with at least one ferromagnetic core and with at least one magnetic field coil (15) arranged on this magnetic yoke with electric current connections for the connection of an alternating current source as primary source of an inductive energy transfer,
two pipelines, each having a first and a second end, which are each arranged on the magnetic yoke in a helix-form as a pipeline winding (221, 222) and filled with the medium, effective as a secondary winding of the inductive energy transfer,
a delivery arrangement (2311) and a discharge arrangement (2321) for the medium which flows through the device,
a supply distribution piece (231), for dividing the flow of the medium, which is arranged between the delivery arrangement and the first ends of the pipeline windings, said supply distribution piece joining said delivery arrangement and said first ends of the pipeline windings to facilitate flow of said medium therethrough,
a mixer piece (232) provided for recombining the part flows of the pipeline windings, which piece is inserted between the second ends of the pipeline windings and the discharge device, joining these three parts in terms of flow,
whereby the direction in the winding of the respective pipeline windings, with reference to a momentary magnetic field direction in the magnetic yoke within the region of each respective pipeline winding, is selected in correlation with each other such that in a closed path, formed of a series provided by the supply distribution piece, the first pipeline winding, the mixer piece, the second pipeline winding and thereafter the supply distribution piece, the induced electrical potentials in these pipeline windings are amplifyingly added.

5,444,230
SOLID STATE OPTICAL READER WITH BI-DIRECTIONAL PROTOCOL
Dwight G. Baldwin, Austin; James K. Kennedy, Round Rock, and Steven G. Saxe, Round Rock, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 30, 1993, Ser. No. 159,734
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 20 Claims



1. An apparatus for scanning an optical code on a transparent portion of a substrate, comprising:
a linear array of light sources grouped into a plurality of banks, a given bank having light sources which are non-adjacent;
means for housing said array of light sources;
optical sensor means mounted in said housing means, proximate said array of light sources, for generating electrical signals;
means for removably retaining the substrate in said housing means with the transparent portion thereof located in an optical path between said array of light sources and said optical sensor means; and
means for processing said electrical signals from said optical sensor means to produce an output signal corresponding to the optical code, said processing means including means for sequentially energizing said banks such that, when a particular light source is energized, any light source adjacent to said particular light source is de-energized.

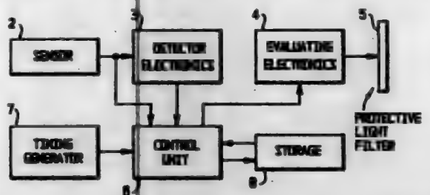
5,444,231
BAR CODE SCAN STITCHING
Stephen J. Shellhammer, Bayport, and Emanuel Marom, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Continuation of Ser. No. 912,558, Jul. 13, 1992, abandoned. This application Jan. 18, 1995, Ser. No. 375,182
Int. Cl.[6] G06F *7/10*
U.S. Cl. 235—462 23 Claims



1. A method for combining scan fragments of a bar code symbol composed of a plurality of bar code elements, said scan fragments comprising a series of digitized values each representing the width of one element of the bar code symbol, said method comprising the steps of:
receiving a first series of values for a first fragment;
receiving a second series of values for a second fragment;
selecting an alignment between the first and second series of values at which at least portions of the first and second series of values correspond to the same bar code elements, said selecting an alignment comprising the steps of
shifting the alignment between the first and second series of values over a predetermined range of shifted positions,
performing a comparison of at least a portion of the values of said first series to aligned values of said second series at each of said shifted positions in said predetermined range of shifted positions,
determining for each of said shifted positions in said predetermined range of shifted positions an index of the overall degree of similarity between the values of said first and second series, and
choosing as said alignment a shifted position from said predetermined range of shifted positions for which said index is relatively larger than for other shifted positions; and
combining said first fragment and said second fragment using said alignment, thereby forming a combined fragment.

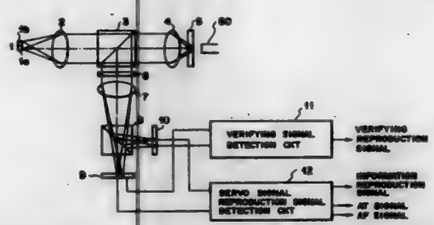
5,444,232
ANTIGLARE DEVICE TO PROTECT EYES DURING WELDING AND IMMEDIATELY THEREAFTER FOR A TIME BASED ON THE INTENSITY AND DURATION OF THE WELDING LIGHT
Stefan Gunz, Widnauwil; Livio Ghisleni, Wilen, and Manfred Castelberg, Widnauwil, all of Switzerland, assignors to Xelux AG, Switzerland
Filed Apr. 6, 1994, Ser. No. 223,754
Claims priority, application Switzerland, May 14, 1993, 1458/93
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.1 15 Claims

1. Antiglare device suitable for glasses, helmets and masks, as used in the welding and cutting torch technology, comprising a protective light filter, a photosensor detector electronics adapted to produce a dimming signal, evaluating electronics which control an electro-optical protective light filter, a controller to control the brightening time of the protective light filter, said controller detecting at least the intensity of the light impinging on the sensor; said controller being objectively



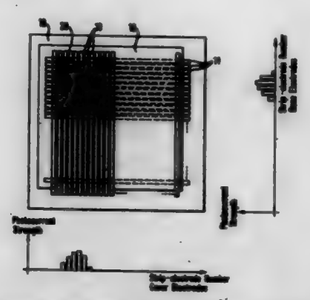
connected to a timing generator to detect at least the duration of the dimming signal produced by the detector electronics; and said controller including means to interlink the acquired data with respect to logic and/or time.

5,444,233
OPTICAL OR MAGNETOOPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS AND A FOCUSING PULL-IN METHOD FOR SUCH APPARATUS GENERATING A LIGHT BEAM FOR FOCUSING ERROR SIGNAL DETECTION
Kenichi Sasaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 24, 1993, Ser. No. 111,564
Claims priority, application Japan, Sep. 2, 1992, 4-257613
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.5 17 Claims



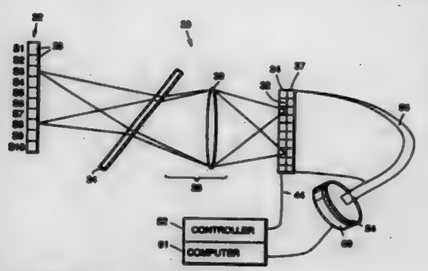
1. An optical information recording/reproducing apparatus comprising:
a semiconductor laser having plural light emitting parts within a chip, said semiconductor laser generating a plurality of light beams for performing at least one of recording of information, reproduction of information, and detection of a focusing error signal to perform a focusing pull-in operation; and
optical means arranged between said semiconductor laser and an information recording medium,
wherein said semiconductor laser turns off the light emitting parts for generating the light beams other than the light beam for focusing error signal detection until the focusing pull-in operation is completed.

5,444,234
POSITION TRANSMITTER FOR ACQUIRING THE POSITION OF A LIGHT BEAM
Wolfgang Hennerici, Ingelheim; Gerhard Brunst, and Enno Holzenkampfer, both of Taunusstein, all of Germany, assignors to Heimann Optoelectronics GmbH, Wiesbaden, Germany
Filed Sep. 26, 1994, Ser. No. 312,683
Claims priority, application Germany, Sep. 27, 1993, 43 32 859.8
Int. Cl.[6] G05D *3/12*; H01L *27/14*
U.S. Cl. 250—206.2 16 Claims



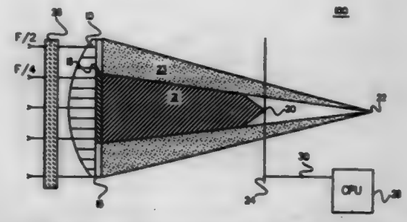
1. A position transmitter for acquiring the position of an electromagnetic beam comprising:
two groups of electrodes each composed of a plurality of strip-shaped photodiodes, the strip-shaped photodiodes in each group being parallel to the other strip-shaped photodiodes in that group, and the strip-shaped photodiodes in the two groups being perpendicular to each other, the strip-shaped photodiodes in each group being oriented so that at least two of the strip-shaped photodiodes in a group are at least partially covered by said beam, each strip-shaped photodiode generating a photocurrent corresponding to coverage of that strip-shaped photodiode by said beam; and
evaluation means for measuring the respective photocurrents and for identifying a position of said beam with reference to the distribution of the strengths of said photocurrents relative to the positions of the strip-shaped photodiodes in the groups.

5,444,235
SCANNING LIGHT VALVE SENSOR SYSTEM EMPLOYING FEBER OPTICS
Gary R. Redford, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 2, 1993, Ser. No. 160,130
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—208.1 19 Claims



1. A sensor system, comprising:
sensor means for producing an output responsive to an energy input;
means for dividing a scene into at least two scene segments, each scene segment comprising a portion of the scene; and
means for controllably directing one scene segment at a time from the means for dividing to the sensor means the means for controllably directing including at least two optical fiber cables, one optical fiber cable extending from each scene segment to the sensor means, and wherein each optical fiber cable includes at least one optical fiber.

5,444,236
MULTICOLOR RADIATION DETECTOR METHOD AND APPARATUS
David Ludington, Amherst, N.H., and John Merchant, Needham, Mass., assignors to Loral Infrared & Imaging Systems, Inc., Lexington, Mass.
Filed Mar. 9, 1994, Ser. No. 208,640
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 22 Claims



1. A multicolor radiation detecting apparatus comprising:
(a) a base having a lens mount and a radiation sensor mount;
(b) a dispersive lens means for focusing radiation of a first selected band at a first focus and focusing radiation of a second selected band at a second focus, wherein the dispersive lens means is attached to the lens mount, wherein the dispersive lens means further has a central obscuration of a predetermined size, and wherein the central obscuration passes radiation of the first selected band;
(c) a radiation sensor means for detecting an image attached to the radiation sensor mount at a predetermined distance from the dispersive lens means disposed to receive radiation of the first selected band and the second selected band, wherein the radiation sensor means further has an image output; and
(d) spatial filter processing means for spatially filtering the image connected to the image output.

5,444,237
APPARATUS FOR INSPECTING A BOTTOM BORDER PORTION OF TRANSPARENT GLASS VESSEL FOR A FOREIGN ARTICLE
Tsutomu Takizawa, Tokyo, Japan, assignor to Toyo Glass Company Limited, Tokyo, Japan
Filed Apr. 12, 1994, Ser. No. 226,315
Claims priority, application Japan, Apr. 12, 1993, 5-107232
Int. Cl.[6] G01N *9/04*
U.S. Cl. 250—223 B 3 Claims

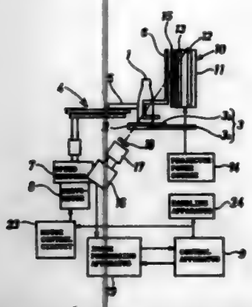
1. An apparatus for inspecting a bottom border portion of a transparent glass vessel for a foreign article, comprising:
rotation means for rotating a transparent glass vessel around a vertical axis at an inspection position;
a diffusion light source;
a first polarization filter arranged in front of said diffusion light source and having a vertical optical axis for polarizing light from said diffusion light source and projecting the polarized light upon the transparent glass vessel;
a solid state image pickup element camera disposed with an angle of depression with respect to the axis of the transparent glass vessel for imaging a bottom border portion of the transparent glass vessel obliquely from below on the

opposite side to said first polarization filter with respect to the transparent glass vessel;

a second polarization filter having a polarization axis perpendicular to that of said first polarization filter and arranged for introducing the light polarized by and transmitted through the transparent glass vessel into said solid state image pickup element camera;

image fetching means for fetching outputs of solid state image pickup elements of said solid state image pickup element camera at a period conforming to a speed of rotation of the transparent glass vessel by said rotation means;

storage means for storing the outputs thus fetched as digital values for at least one rotation of the transparent glass vessel;



abnormal value detection means for comparing the digital values upon fetching in magnitude with threshold values set for the individual solid state image pickup elements in accordance with their positions and determining the numbers of times by which the threshold values are exceeded as abnormality values;

correction means for multiplying the abnormality values by correction coefficients determined in accordance with the positions of the solid state image pickup elements; and

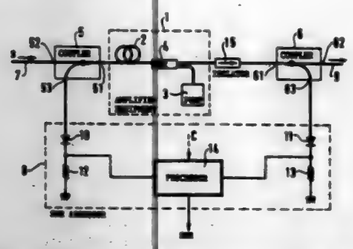
foreign article presence/absence determination means for determining presence or absence of a foreign article in the transparent glass vessel from the abnormality values after corrected.

5,444,238

DEVICE FOR ASSESSING THE TRANSMISSION QUALITY OF AN OPTICAL AMPLIFIER EQUIPMENT

Bernard Gherardi, Lisses; Gérard Bourret, La Ville Du Bois, and Jean-Bernard Leroy, Bu, all of France, assignors to Alcatel CIT, Paris, France

Filed Mar. 24, 1994, Ser. No. 217,057
Claims priority, application France, Mar. 30, 1993, 93 03674
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.11 **4 Claims**



1. Device for assessing the transmission quality of an optical amplifier equipment, comprising:

first means for sampling, on the upstream side of said amplifier equipment relative to the direction of propagation of the optical signal to be amplified by said amplifier equipment, part of the power of an optical noise signal, said part, propagating in the direction opposite to said propagation direction and corresponding to that part of the noise generated by said amplifier equipment transmitted in the direction opposite to the propagation direction of the optical signal to be amplified;

second means for sampling, on the downstream side of said amplifier equipment, part of the power of an optical signal comprising an amplified signal and a noise signal propagating in the propagation direction of the optical signal to be amplified, and corresponding to the optical signal after amplification by said amplifier equipment, superimposed on a part of the noise generated by said amplifier equipment, and

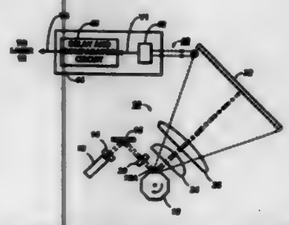
means for assessing the signal-to-noise ratio of said amplifier equipment from the optical powers sampled as above.

5,444,239

FIBER OPTIC SCANNING BEAM DETECTOR

Aron Nacman, Penfield; James J. Appel, Rochester, both of N.Y., and Andrew M. Strauch, Yokohama, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1994, Ser. No. 217,822
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—235 **3 Claims**



1. A fiber optic scanning beam detector comprising:

fiber optic means positioned in the path of a periodically sweeping beam of light, said fiber optic means transmitting energy from said intercepted light onto a photosensor thereby causing said photo sensor to generate an electrical signal V1 corresponding to the intensity of said detected light,

circuit means for dividing said electrical signal to form a second electrical signal, V2, said formation of said second electrical signal delayed in time from formation of said first electrical signal, and

comparator means for comparing said first and second electrical signals and for generating a third electrical signal, V3, upon a detection of a crossover point between said first and second signal.

5,444,240

POSITION DETECTING APPARATUS EMPLOYING AN ESTIMATING FUNCTION

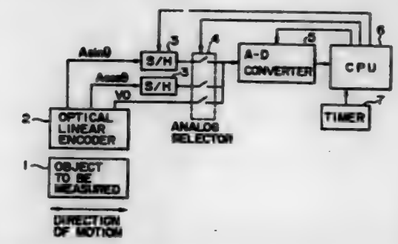
Akihito Nakayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 90,930
Claims priority, application Japan, Jul. 14, 1992, 4-208619
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—237 G **19 Claims**

1. A position detecting apparatus comprising:

periodic waveform generating means for generating repetitive periodic waveforms in relation to a moving object having a position to be measured; and

processing means for sampling an output of said waveform generating means and, after digitizing the output to produce the digital data, processing the digital data to detect the position of said object;



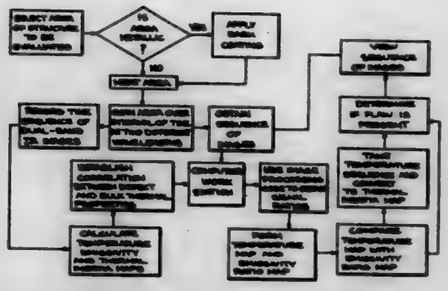
wherein said processing means first estimates a current position from digital data obtained in a preceding detection and then determines the current position on the basis of the estimated position.

5,444,241

EMISSIVITY CORRECTED INFRARED METHOD FOR IMAGING ANOMALOUS STRUCTURAL HEAT FLOWS

Nancy K. Del Grande, San Leandro; Philip F. Durbin, Livermore; Kenneth W. Dolan, Livermore, and Dwight E. Perkins, Livermore, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 1, 1993, Ser. No. 130,486
Int. Cl.[6] G01N *21/71*
U.S. Cl. 250—253 **27 Claims**



1. A method for detecting a flow in a man-made structure, comprising the steps of:

a) heating said structure with a heat source;

b) scanning an area of said structure with at least two different wavelengths of radiation, wherein said scanning produces signals corresponding to surface temperature data and surface emissivity data of said structure at a plurality of points in time;

c) obtaining a sequence of images from said scanning, wherein noise generated from clutter is eliminated from said sequence of images to form a corrected sequence of images; and

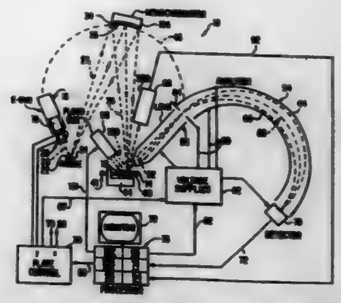
d) determining from said sequence of corrected images whether a flaw exists in said structure.

5,444,242

SCANNING AND HIGH RESOLUTION ELECTRON SPECTROSCOPY AND IMAGING

Paul E. Larson, Bloomington, and Paul W. Palmberg, Edina, both of Minn., assignors to Physical Electronics Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 953,429, Sep. 29, 1992, Pat. No. 5,315,113. This application Feb. 25, 1994, Ser. No. 201,912
Int. Cl.[6] H01J *49/48*
U.S. Cl. 250—305 **24 Claims**



1. An instrument for analysis of a specimen surface, comprising:

an electron gun for producing a focused electron beam;

an anode with an anode surface disposed to receive the focused electron beam so as to generate x-rays from an anode spot on the anode surface;

rastering means for rastering the focused electron beam over the anode surface, thereby scanning the anode spot over the anode surface;

focusing means receptive of at least a portion of the x-rays from the scanning anode spot for focusing an energy band of x-rays of predetermined energy as an x-ray spot on a pixel area scanning correspondingly over the specimen surface, such that photoelectrons are emitted from the scanning pixel area with electron energies characteristic of chemical species at the pixel area, wherein the x-rays and thereby the photoelectrons have a natural energy shift across the specimen surface;

analyzer means receptive of at least a portion of the photoelectrons from the scanning pixel area for analyzing the electron energies;

compensating means associated with the analyzer means for compensating for the shift; and

processing means cooperative with the rastering means and the analyzer means for generating specimen information representative of the electron energies and thereby chemical species of the specimen surface.

5,444,243

WIEN FILTER APPARATUS WITH HYPERBOLIC SURFACES

Teruo Kohashi, and Hideo Matsuyama, both of Hatoyama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

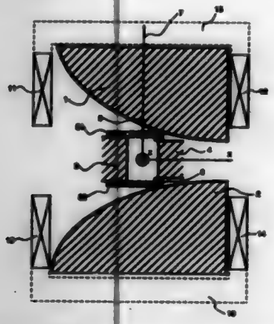
Filed Aug. 15, 1994, Ser. No. 291,048
Claims priority, application Japan, Sep. 1, 1993, 5-217204
Int. Cl.[6] H01J *37/26, 49/48*
U.S. Cl. 250—305 **23 Claims**

1. A Wien filter apparatus, comprising:

a Wien filter receiving an electron beam that passes through the filter along a longitudinal axis of the filter, including:

means generating an electric field including electrodes having respective faces, and means generating a magnetic field crossing said electric field in said area perpendicular to said longitudinal axis, wherein said magnetic field gen-

erating means includes opposed pole pieces having respective pole faces, and wherein said faces of one of (i) said



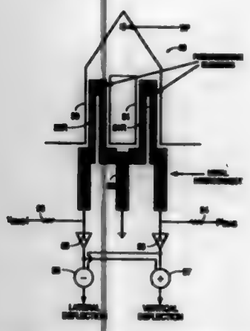
electrodes and (ii) said pole pieces have a shape approximating a curve of a portion of a hyperbola.

5,444,244

PIEZORESISTIVE CANTILEVER WITH INTEGRAL TIP FOR SCANNING PROBE MICROSCOPE

Michael D. Kirk, San Jose; Ian R. Smith, Los Gatos; Marco Tortonese, Standford; Sean S. Cahill, Cupertino, and Timothy G. Slater, San Francisco, all of Calif., assignors to Park Scientific Instruments Corporation, Sunnyvale, Calif.

Filed Jun. 3, 1993, Ser. No. 73,201
Int. Cl.[6] H01J *37/00*
U.S. Cl. 250—306 19 Claims



10. A cantilever for use with a lateral force microscope, said cantilever comprising:

a fixed end and a free end, said fixed end being attached to a base member;

a tip located near the free end of the cantilever;

first and second piezoresistors positioned in the cantilever such that a lateral force on the tip produces a decrease in the resistance of the first piezoresistor and an increase in the resistance of the second piezoresistor and a perpendicular force on the tip produces a change in the same sense in the respective resistances of the first and second piezoresistors; and

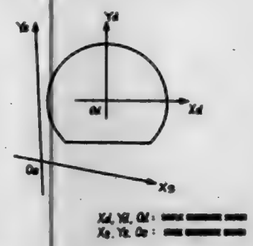
output circuitry connected to the first and second piezoresistors, the output circuitry being for delivering a first output signal responsive to a torsional movement of the cantilever and thereby representative of a magnitude of the lateral force on the tip, and a second output signal responsive to a bending of the cantilever and thereby representative of the magnitude of the perpendicular force on the tip.

5,444,245

METHOD OF AUTOMATICALLY SETTING COORDINATE CONVERSION FACTOR

Tadashi Kitamura, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 158,739
Claims priority, application Japan, Dec. 1, 1992, 4-322027
Int. Cl.[6] H01J *37/26*
U.S. Cl. 250—307 3 Claims



1. A method of automatically setting a coordinate conversion factor between a first coordinate system which is fixed with respect to an edge contour of a sample and a second coordinate system which is fixed with respect to an observing unit, the observing unit being operative to produce an image of sample edge contour, the sample being mounted on a holding stage which is movable relative to the observing unit, the sample edge contour having a circular portion and the sample size and contour being known, the method comprising the steps of:

a) placing the sample on the holding stage;

b) moving the stage to bring a portion of the sample which includes at least a part of the contour circular portion to a position for observation by the observing unit and obtaining an image of the part of the contour circular portion;

c) deriving data representing the location of points on the circular contour portion with respect to the second coordinate system;

d) deriving data representing a straight line approximating the circular contour portion and data representing a selected point on the straight line which corresponds to a point at the center of the circular contour portion;

e) deriving data representing a point on the circular contour portion which corresponds to the selected point on the straight line;

f) repeating steps b)–e) for successive positions for observation to derive data representing points associated with different parts of the circular contour portion;

g) determining the radius and center of curvature of the contour circular portion on the basis of the data representing points on the circular contour portion derived in steps e) and f); and

h) obtaining a coefficient for a conversion factor between the first and second coordinate systems on the basis of the determination made in step g).

5,444,246

DETERMINING CARBON CONCENTRATION IN SILICON SINGLE CRYSTAL BY FT-IR

Yutaka Kitagawara; Hiroshi Kubota, and Masaro Tamatsuka, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

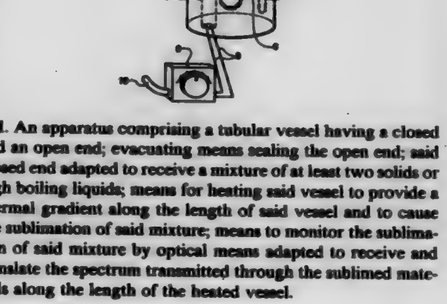
Filed Sep. 28, 1993, Ser. No. 127,522
Claims priority, application Japan, Sep. 30, 1992, 4-285113
Int. Cl.[6] G01N *21/35*
U.S. Cl. 250—339.08 26 Claims

1. A method of determining the substitutional carbon concentration in a silicon single crystal by Fourier transform infrared spectroscopy (FT-IR), comprising the steps of:

measuring by FT-IR the infrared absorbance spectrum of a sample of a silicon single crystal, a carbon concentration of which is to be determined;

measuring by FT-IR the infrared absorbance spectrum of a reference of a substantially carbon-free silicon single crystal with substantially the same degree of free carrier absorption as the sample, the reference being produced by the same process as the sample;

computing a subtraction factor from the infrared absorbance spectra of the sample and the reference;



computing a subtraction spectrum between the infrared absorbance spectra of the sample and the reference using the computed subtraction factor; and

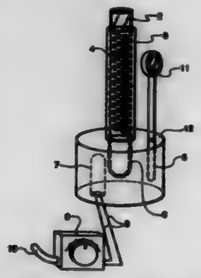
determining the substitutional carbon concentration in the sample from a distance of the absorption peak of the subtraction spectrum of the localized vibration of the substitutional carbon in the sample from a base line of the subtraction spectrum.

5,444,247

SUBLIMATION APPARATUS AND PROCESS

William L. Trucet, Box 25, Rte. 35, Townshend, Vt. 05353-7702

Filed Jan. 8, 1993, Ser. No. 73,938
Int. Cl.[6] G01N *21/35*
U.S. Cl. 250—339.12 5 Claims



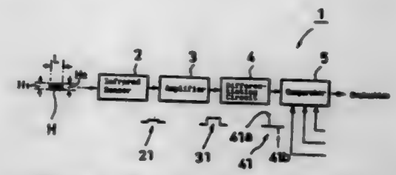
1. An apparatus comprising a tubular vessel having a closed and an open end; evacuating means sealing the open end; said closed end adapted to receive a mixture of at least two solids or high boiling liquids; means for heating said vessel to provide a thermal gradient along the length of said vessel and to cause the sublimation of said mixture; means to monitor the sublimation of said mixture by optical means adapted to receive and translate the spectrum transmitted through the sublimed materials along the length of the heated vessel.

5,444,248

METHOD AND APPARATUS FOR CHECKING THE CONDITION OF ADHESIVE APPLICATION IN PACKAGES

Kenji Ichien, Shiga, Japan, assignor to Optex Co., Ltd., Shiga, Japan

Filed Mar. 3, 1994, Ser. No. 205,970
Claims priority, application Japan, Mar. 4, 1993, 5-043431
Int. Cl.[6] G01J *5/10*; G01N *25/72*
U.S. Cl. 250—342 6 Claims



1. A method for checking the condition of beads on packages, the method comprising the steps of:

causing each package to pass through a light reception area of an infrared sensor so as to receive infrared energy radiating from the beads on the package;

detecting a signal output by the sensor in response to the received energy so as to measure at least one of a peak value corresponding to the rise of the received energy, a peak value corresponding to the fall thereof, and a period of time from the rise to the fall;

differentiating the signal into a differential waveform signal; and

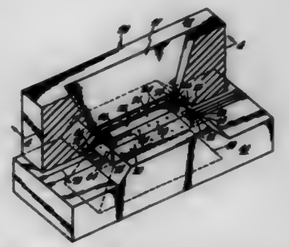
comparing at least one value obtained from the differential waveform signal with a corresponding reference value so as to determine the condition of the beads.

5,444,249

NDIR GAS SENSOR

Jacob Y. Wong, Santa Barbara, Calif., assignor to Telaire Systems, Inc., Goleta, Calif.

Continuation of Ser. No. 195,523, Feb. 14, 1994, abandoned.
This application Aug. 2, 1994, Ser. No. 284,914
Int. Cl.[6] G01N *21/61*
U.S. Cl. 250—343 16 Claims



1. An improved NDIR gas sensor, comprising:

a. a first semiconductor material substrate;

b. a second semiconductor material substrate attached to the first substrate;

c. an optical waveguide formed between the first and second substrates;

d. a light source integrally formed on one of the substrates and positioned at one end of the optical waveguide;

e. a light detector integrally formed on one of the substrates and positioned at the end of the optical waveguide opposite the light source;

f. a bandpass filter interposed in the optical path between the light source and light detector;

g. a pair of semiconductor material windows interposed in

the optical path between the light source and light detector so as to define therebetween a sample chamber within the waveguide and thermally isolate the light source and light detector; and

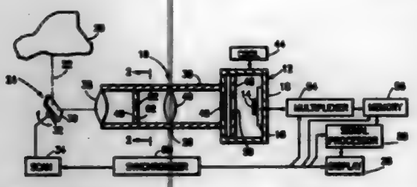
h. means for permitting diffusion of gas into and out of the sample chamber.

5,444,250

OPTICAL WARM STOP WITH FRESNEL TYPE REFLECTIVE SURFACE

Dietmar Hanke, Mission Viejo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 15, 1994, Ser. No. 290,314
Int. Cl.[6] G01J 5/08
U.S. Cl. 250—351 12 Claims



10. An infrared imaging system comprising

a detector assembly positioned for viewing infrared radiation from a subject, a housing enclosing said detector assembly for maintaining said detector assembly at a temperature lower than a temperature of an environment outside said housing, said housing having a window for transmission of radiation from said subject to said detector assembly;

a first stop having a relatively large aperture located within said housing for transmitting radiation from said subject to said detector assembly;

a second stop located outside said housing and having an aperture for transmitting radiation from said subject to said detector assembly, the aperture of said second stop being smaller than or equal in size to the aperture of said first stop;

wherein said second stop has a planar retroreflective surface for reflecting rays from the detector assembly back to the detector assembly, and said retroreflective surface is profiled with grooves arranged in a configuration for directing the rays of radiation back to said detector assembly, said configuration of grooves being a Fresnel configuration or a kinoform configuration a binary configuration.

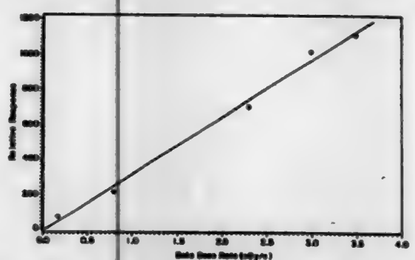
5,444,251

DIAMOND RADIATION DETECTOR ELEMENT

Tom L. Nam, 114-6th Avenue, Bez Valley, Johannesburg, Transvaal; Shawn Arulkum, 55 Hugo Road, Sydenham, Durban, Natal, and Rex J. Keddy, 3 Bevan Road, Rivonia, Sandton, Transvaal, all of South Africa

Filed Mar. 2, 1994, Ser. No. 204,985
Claims priority, application South Africa, Mar. 2, 1993, 93/1478
Int. Cl.[6] G01T 1/202
U.S. Cl. 250—361 R 19 Claims

1. A method of detecting and monitoring ionizing radiation comprising providing a diamond radiation sensor element having a paramagnetic nitrogen concentration not exceeding 20 ppm and which is optimised for phosphorescent response, exposing the sensor element to ionizing radiation, and monitoring the phosphorescent response of the sensor element due to the ionizing radiation.

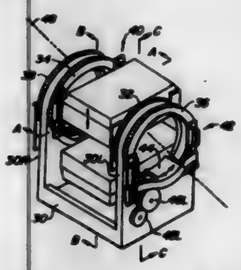


5,444,252

ADJUSTABLE DUAL-DETECTOR IMAGE DATA ACQUISITION SYSTEM

Paul Hug, Saratoga; Horace Hines, and Mark L. Lamp, both of San Jose, all of Calif., assignors to Adac Laboratories, Milpitas, Calif.

Continuation-in-part of Ser. No. 704,759, May 23, 1991. This application Nov. 18, 1993, Ser. No. 154,239
Int. Cl.[6] G01T 1/164, 1/166
U.S. Cl. 250—363.09 9 Claims



1. An imaging system for acquiring imaging data generated by an object positioned about a lateral axis to form a SPECT image, said system comprising:

first and second gamma ray detectors;

a first pair of rings, oriented substantially perpendicular to and approximately centered on the lateral axis;

means for coupling said first detector to said first pair of rings, with the first detector pointed toward the lateral axis and disposed between said rings;

an arc shaped groove in each of said first pair of rings being substantially parallel to a circumference of the rings;

means for coupling said second detector to said arc shaped groove; and

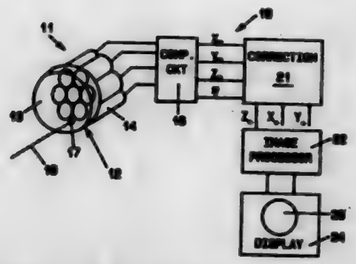
means for moving said second detector along said arc shaped groove to vary the angular displacement, relative to the lateral axis, between said first and second detectors to predetermined magnitude.

5,444,253

GAMMA CAMERA EVENT LOCATION SYSTEM

Gideon Berlad, Haifa, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Jan. 4, 1994, Ser. No. 177,337
Int. Cl.[6] G01T 1/164
U.S. Cl. 250—369 18 Claims



1. A gamma camera comprising:

a scintillation crystal that provides an event in the form of a scintillation responsive to impingement on the crystal of radiation,

a plurality of photomultiplier (PM's) tubes having approximately radially-symmetrical PM-curves mounted on said crystal and operated responsive to said scintillation for generating electrical signals

a distance computer for computing coordinate and the hypotenuse distances of each of the PM's from each of said scintillations where the coordinates X, Y or the scintillations are estimated and the coordinates of the PM's X_i, Y_i are known.

an energy expectation source providing an energy expectation value (a_i) for each PM based on hypotenuse distance of the PM from the event as determined by the distance computer,

a weight computer to determine a factor to be applied to the summation of the coordinates of the PM's X_i, Y_i for providing corrected X, Y coordinate locations of the scintillations, and

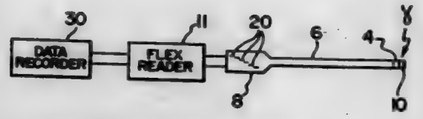
iterative circuitry for repeating using the last corrected X, Y coordinate locations of the scintillations in the distance computer for determining factors that provide X, Y coordinates for the location of the scintillation that are more correct than the last corrected X, Y coordinate location.

5,444,254

FLEXIBLE RADIATION PROBE

Ian Thomson, Ottawa, Canada, assignor to Thomson and Nielsen Electronics Ltd., Canada

Continuation-in-part of Ser. No. 898,874, Jun. 12, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,710
Int. Cl.[6] G01T 1/24
U.S. Cl. 250—370.07 37 Claims



1. A flexible radiation probe comprising:

a semiconductor substrate with a pair of insulated gate field effect transistors integrated into said semiconductor substrate, each having a gate, source and drain; and

an elongated flexible member having:

a first end for supporting said semiconductor substrate,

a second end remote to said first end, said second end being provided with connecting means for electrical connection to external circuitry, and

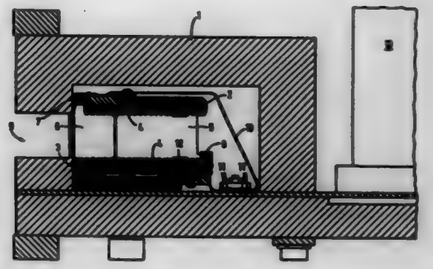
conductor means provided in said flexible member for connecting said gate, source and drains of each of said transistors to said connecting means.

5,444,255

GAS DETECTOR FOR X-RADIATION

Martin Schmidt, Emskirchen, and Claus Pohan, Baiersdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 9, 1994, Ser. No. 303,641
Claims priority, application Germany, Dec. 15, 1993, 43 42 779.0
Int. Cl.[6] G01T 1/185, 1/29
U.S. Cl. 250—385.1 1 Claim



1. A detector for x-rays comprising:

a gas-tight chamber containing a gas;

a plurality of electrode plates disposed in said chamber for detecting ionization events arising due to interaction of x-rays with said gas, said electrode plates forming a plurality of detector cells, with each detector cell having two electrode plates disposed in a plane in succession in a propagation direction of said x-rays, each electrode plate generating a detector signal from which different spectral ranges of said x-rays are identified;

a plurality of spring contacts disposed in said chamber respectively electrically connected to said electrode plates for tapping said detector signals therefrom;

a conductor foil to which said spring contacts are electrically connected group-by-group, with a common conductor foil connecting each of the two electrode plates in each detector cell, said conductor foil having a plurality of conductor runs thereon, each conductor run having an electrically conductive projection; and

a printed circuit board, carrying electrical components thereon for processing said detector signals, in electrical contact with said conductive projections of said conductor foil.

5,444,256

ELECTROSTATIC LENS AND METHOD FOR PRODUCING THE SAME

Takamitsu Nagai; Yuichiro Yamazaki, and Motosuke Miyoshi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 17, 1993, Ser. No. 168,160
Claims priority, application Japan, Dec. 17, 1992, 4-337408
Int. Cl.[6] H01J 37/12
U.S. Cl. 250—396 R 10 Claims

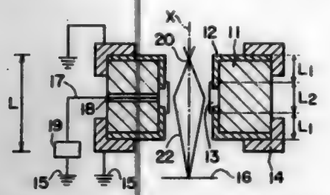
1. An electrostatic lens comprising:

an insulating cylinder;

a metal layer deposited at a predetermined position on an inner surface of the insulating cylinder; and

a high-resistance layer deposited on a portion other than said

predetermined position on the inner surface of the insulating cylinder;



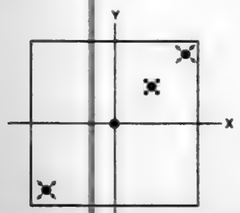
wherein a voltage is applied from an external power source to said metal layer and wherein said high-resistance layer is grounded.

5,444,257

ELECTRON-BEAM EXPOSURE SYSTEM FOR REDUCED DISTORTION OF ELECTRON BEAM SPOT

Takamasa Satoh; Hiroshi Yamada; Akio Yamada; Junichi Kai; Yoshihisa Ooe, all of Kawasaki; Keiji Yamada, Kasugai, and Toru Ushiku, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Oct. 6, 1994, Ser. No. 319,022
Claims priority, application Japan, Dec. 28, 1993, 5-337223
Int. Cl.[6] H01J *37/00*
U.S. Cl. 250—398 5 Claims



1. An electron-beam exposure system for exposing a pattern on an object, comprising:

a stage for holding the object to be exposed;

an electron-beam source for producing an electron-beam, said electron-beam source emitting said electron-beam toward said object held on said stage along an optical axis;

an electron optical system for focusing said electron-beam upon said object with demagnification; and

a deflection fixture for deflecting said electron-beam such that said electron-beam moves over said object;

said deflection fixture comprising: a main deflector for deflecting said electron-beam in a main deflection region defined on said object, a first drive circuit supplied with main deflection data indicative of a position of said electron-beam on said main deflection region, for driving said main deflector; an electrostatic sub-deflector for deflecting said electron-beam in a sub-deflection region included in said main deflection region and having an area substantially smaller than an area of said main-deflection region; and a second drive circuit supplied with sub-deflection data indicative of a position of said electron-beam in said sub-deflection region for driving said sub-deflector;

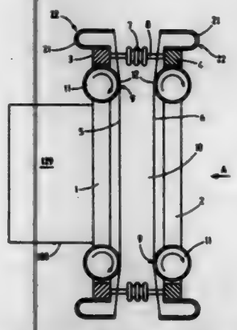
said second drive circuit including an astigmatic compensation circuit supplied with astigmatic compensation data determined by said main deflection data, said compensation circuit shifting the level of a first voltage signal applied across a first pair of mutually opposing electrode plates forming said electrostatic deflector in an upward direction by a first correction voltage which is determined by said main deflection data, said astigmatic compensation circuit shifting simultaneously the level of a second voltage signal applied across a second pair of mutually opposing electrodes that also form said electrostatic deflector in a downward direction, by a second correction voltage having a magnitude identical with a magnitude of said first correction voltage.

5,444,258

ION-OPTICS SYSTEM FOR A SOURCE OF IONS TO BE DISCHARGED INTO A GAS

Vladimir G. Grigoryan; Valeriy I. Minakov; Vladimir A. Obukhov, and Petr P. Ogadjanov, all of Moscow, Russian Federation, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Apr. 12, 1994, Ser. No. 211,676
Int. Cl.[6] H01J *27/02*
U.S. Cl. 250—423 R 12 Claims



1. An ion-optics system for a source of ions for discharge into gases, the system comprising a screen grid (1) and an accelerator grid (2) constituted by respective frames (3 and 4) and respective systems of parallel wires (5 and 6) fixed to the frames (3 and 4) by means of springs (21), the frames (3 and 4) of the grids (1 and 2) being assembled to each other via insulators (7) to which they are fixed, the system being characterized in that it is provided with a displacement device (9) for adjusting the wires in each of the grids (1 and 2), which device comprising rolls (11) disposed transversely relative to the wires (5 and 6) in each grid (1 and 2) and offering guide elements (12) in which the wires (5 and 6) are placed, the rolls (11) being installed on the frames (3 and 4) of the grids (1 and 2) with the facility of rotating about their own axes and of changing position in three dimensions together with the wires (5 and 6).

5,444,259

PLASMA PROCESSING APPARATUS

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku Sendai-shi, 980 JPX

PCT No. PCT/JP92/01001, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO93/03590, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 5, 1992, Ser. No. 193,083
Claims priority, application Japan, Aug. 5, 1991, 3-219229
Int. Cl.[6] H01J *37/317*
U.S. Cl. 250—452.21 6 Claims

1. A plasma processing apparatus possessing at least 1 electrode to which RF power is applied, and a holder for supporting a substrate body comprising an object of the plasma processing, wherein at least the following are provided:

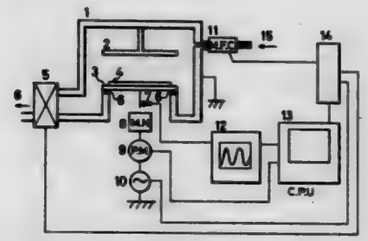
a means for the measurement of RF power and an RF power waveform inputted into said electrode;

a calculating means for calculating energy and density of ions injected into said base material, based on measured values of said measured RF power waveform;

a memory means for storing process parameters determined in conjunction with a state of a plasma as a function of said energy and said density of said ions;

a display means for displaying memory contents by means of output from said memory means;

a setting means for setting predetermined values of energy and density of ions;



an input means for inputting energy values and density values of ions into said setting means; and

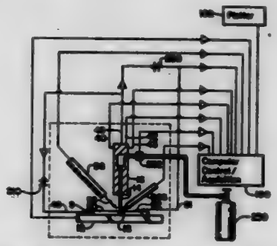
a control means for controlling energy and density of ions within said apparatus at set values, in accordance with values set in said setting means.

5,444,260

ATOMIC-LEVEL IMAGING, PROCESSING AND CHARACTERIZATION OF SEMICONDUCTOR SURFACES

Lawrence L. Kazmerski, Lakewood, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Jul. 1, 1993, Ser. No. 87,630
Int. Cl.[6] H01J *37/30*
U.S. Cl. 250—492.3 8 Claims



1. A nanoscale method for manipulating an atomic structure of a solid material comprising the steps of:

positioning a fine-pointed electrode probe adjacent an atom in a surface of a sample of the material in close enough proximity to said surface such that a wave function of said atom overlaps with wave functions of atoms in said probe;

applying a photon bias on a portion of said surface that includes said atom with said photon bias comprising electromagnetic radiation of a wavelength that matches the wave function of the atom to produce resonance vibration of the atom; and

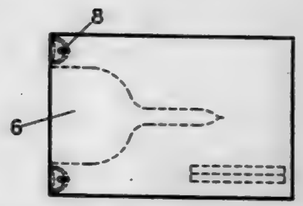
applying an electric field between said probe and said surface of a polarity that attracts said atom to the point of said probe.

5,444,261

FAR INFRARED EMITTING IMAGE DISPLAY DEVICE

Heon-soo Kim, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 7, 1993, Ser. No. 2,162
Claims priority, application Rep. of Korea, Jan. 9, 1992, 92-9990; Jan. 9, 1992, 92-9991; Jan. 9, 1992, 92-9995
Int. Cl.[6] G21G *4/00*
U.S. Cl. 250—493.1 19 Claims



4. An image display device comprising an electronic information display and a far infrared lamp at the front-side of a cabinet containing said electronic information display.

5,444,262

THERMOELECTRIC DEVICE FOR VEHICLE IDENTIFICATION

Carl J. Campagnuolo, Potomac; Phil Emmerman, Bethesda, and Stephen Kreider, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1993, Ser. No. 170,961
Int. Cl.[6] H01J *1/00*
U.S. Cl. 250—495.1 9 Claims



1. A beacon mounted on a vehicle to provide identification to an infra-red viewer, comprising:

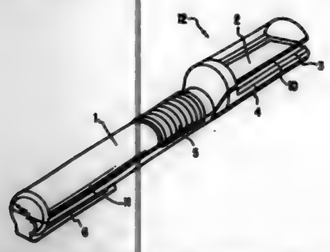
a rotatable support secured to said vehicle;

at least one thermoelectric module integrated to at least one temperature conductive panel coupled to said support;

a power source for supplying power to said module to cause said module to effect a temperature differential between a front and a back surface of said panel;

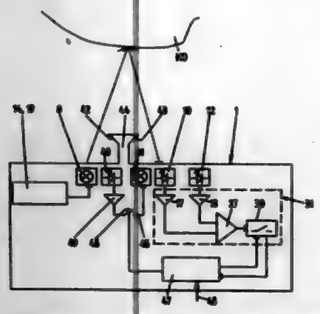
wherein when identification of said vehicle is desired, said support is rotated to thereby rotate said panel to provide to said infra-red viewer an infra-red signature resulting from the rotating display of said front and back surfaces having different temperatures.

5,444,263
INSTRUMENT FOR THE VISUAL RECOGNITION OF AUTHENTICITY FEATURES IN BANKNOTES AND SECURITY DOCUMENTS
Wolfgang R. Mastnak, Ligusterweg, Germany, assignor to Systec Ausbausysteme GmbH, Eichenau, Germany
Filed Jun. 9, 1994, Ser. No. 257,138
Claims priority, application Germany, Jun. 14, 1993, 9308828 U; Mar. 18, 1994, 9404643 U
Int. Cl.[6] G06K 5/00
U.S. Cl. 250—504 H 18 Claims



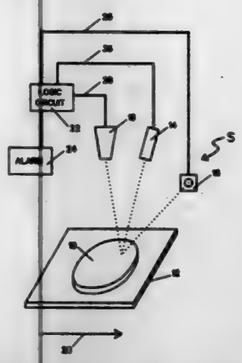
1. An instrument for the visual detection of authenticity features in banknotes and security documents, the instrument comprising:
frontal and rear sections forming an elongated rod-shape;
said frontal section having:
a finger-shaped lower part;
a diffusion screen connected to said lower part, said diffusion screen extending to said rear section;
an illumination device for illuminating said diffusion screen and a test object; and
a finger-shaped forward projecting upper part including an optical element, said optical element extending to said rear section, said upper and lower parts of said frontal section having a slit therebetween for holding a test object.

5,444,264
METHOD FOR CHECKING THE WORKING CONDITION OF AN OPTICALLY OPERATED PROXIMITY SWITCH
Ilkka Heinonen, Tampere; Markku Hellsten, Forssa, and Timo Maisu, Tampere, all of Finland, assignors to Mitron OY, Forssa, Finland
PCT No. PCT/FI92/00262, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/07510, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 30, 1992, Ser. No. 211,302
Claims priority, application Finland, Sep. 30, 1991, 914599
Int. Cl.[5] G01N 21/86
U.S. Cl. 250—559.29 8 Claims



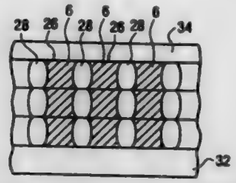
1. Method in an optically operated proximity switch, using:
at least one transmitter means transmitting a beam to the environment in a first direction,
at least one receiver means whose receiving direction is so directed that it encounters the beam of the transmitter means in the detection zone of the proximity switch, and
a processing circuit for processing the output signal of said at least one receiver means for monitoring the situation in the detection zone,
wherein the following steps are taken for checking the working order of the proximity switch:
at least one reflecting means is placed in range of the beam of the said at least one transmitter means,
at least one controlling receiver means is placed in the range of the beam reflected from said reflecting means,
the proximity switch is fitted with at least one controlling transmitter means,
at least one reflecting means is placed in the range of the beam of said at least one controlling transmitter means, and
said at least one controlling transmitter means and said at least one reflecting means are placed in a way that said at least one receiver means is placed in the range of the emission reflected from the reflecting means,
wherein
said at least one controlling receiver means and said at least one controlling transmitter means are used only for checking the working order of the proximity switch,
at least one control circuit, separate from the processing circuit and comprising said at least one controlling receiver means and/or said at least one controlling transmitter means, is switched on at certain intervals for checking up the working condition of said at least one transmitter means and at least one receiver means simultaneously, whereby processing circuit of the proximity switch is controlled on basis of the output signal of said at least one controlling receiver means and/or the output signal of the said at least one receiver means.

5,444,265
METHOD AND APPARATUS FOR DETECTING DEFECTIVE SEMICONDUCTOR WAFERS DURING FABRICATION THEREOF
Jeffrey L. Hamilton, Livermore, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Feb. 23, 1993, Ser. No. 21,426
Int. Cl.[6] G01N 21/88
U.S. Cl. 250—559.42 16 Claims



1. A method for determining when a coating on the surface of a semiconductor integrated circuit wafer is burnt during fabrication thereof, comprising the steps of:
detecting the presence of the semiconductor integrated circuit wafer;
illuminating the coated surface of the semiconductor integrated circuit wafer with light;
measuring the light reflected off the coated semiconductor integrated circuit wafer;
determining whether the coating is burnt by the amount of light reflected from the surface of the coated semiconductor integrated circuit wafer; and
alarming when burnt coating is so determined.

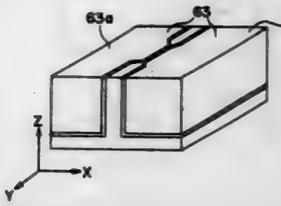
5,444,266
PHOTOSTIMULABLE PHOSPHOR PLATE AND PHOTOSTIMULABLE PHOSPHOR READER
Shiro Takeda, Sagamihara; Fumihiro Namiki, Machida; Yuuichi Sugiyama, Chigasaki; Nobuhiro Iwase; Shinji Taiiki, both of Atsugi, and Nagaaki Koshiba, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 613,738, Nov. 21, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 79,951
Claims priority, application Japan, Apr. 3, 1989, 1-84253; May 24, 1989, 1-130739; May 29, 1989, 1-135573; Jun. 7, 1989, 1-144349
Int. Cl.[6] G01N 23/04
U.S. Cl. 250—586 6 Claims



1. A digital X-ray apparatus which forms a latent image of an object on a photostimulable phosphor plate as an energy distribution pattern using X-ray energy and reads the latent image using an excitation light beam, comprising:
a plate having holes formed therein to define hole forming portions, said plate formed of a material that does not transmit the excitation light beam;
photostimulable phosphor positioned in the holes;
means for scanning said photostimulable phosphor plate;
emitted fluorescent light gathering means for gathering an emitted fluorescent light beam emitted from said photostimulable phosphor when the excitation light beam irradiates the photostimulable phosphor in the holes and for providing a signal responsive to the gathering of the fluorescent light beam;
reflected excitation light beam gathering means for gathering the excitation light beam reflected from said photostimulable phosphor plate and for providing a signal responsive to the gathering of the excitation light beam; and
means for sampling, using the signal provided by said reflected excitation light beam gathering means and the signal provided by said emitted fluorescent light gathering means, the emitted fluorescent light in synchronization with the reflected excitation light beam.

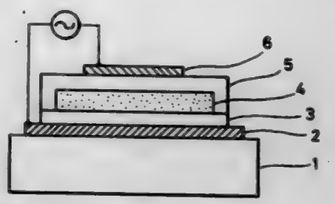
5. A method of manufacturing a photostimulable phosphor plate, comprising the steps of:
(a) forming one or more through holes in a common pattern in each of plural sheets, a first sheet of the plural sheets having a first main surface;
(b) stacking and bonding the plural sheets with the respective, one or more through holes of the common patterns thereof in aligned relationship, a first main surface of the first sheet defining a first main surface of the stacked and bonded plural sheets and the stacked and bonded plural sheets having a second main surface opposed to the first main surface thereof;
(c) placing a photostimulable phosphor in each of the aligned, one or more through holes; and
(d) forming a transparent protection film on the second main surface of said stacked and bonded plural metal sheets.

5,444,267
QUANTUM DEVICE UTILIZING THE QUANTUM EFFECT
Kenji Okada; Kiyoshi Morimoto, both of Osaka; Masaharu Udagawa, Tokyo; Koichiro Yuki, Neyagawa; Masaaki Niwa, Hirakata; Yoshihiko Hirai, Osaka, and Juro Yasui, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 86,246, Jul. 1, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,270
Claims priority, application Japan, Jul. 3, 1992, 4-176897
Int. Cl.[6] H01L 29/161
U.S. Cl. 257—14 8 Claims



1. A quantum device comprising:
a conductor substrate having a main face;
a plate-like conductor part formed on said main face of said conductor substrate as a portion of said conductor substrate, said plate-like conductor part having two side faces which are perpendicular to said main face of said conductor substrate, said side faces being parallel to each other, wherein said plate-like conductor part includes a necking portion having a width smaller than a distance between two side faces;
a pair of tunnel insulation films formed at least on side faces of said necking portion; and
a pair of conductive members which sandwich said necking portion via said pair of tunnel insulation films,
wherein said width of said necking portion is sufficiently thin to attain the quantization of energy states of electrons in said necking portion in a direction perpendicular to said two side faces.

5,444,268
THIN FILM EL DEVICE
Atsushi Miyakoshi, and Akira Matsuno, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
PCT No. PCT/JP90/01426, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO92/08333, PCT Pub. Date May 14, 1992
PCT Filed Nov. 2, 1990, Ser. No. 50,040
Int. Cl.[6] H01L 31/0296; H05B 33/14
U.S. Cl. 257—79 19 Claims



1. A thin film EL device, comprising:

a pair of opposed electrodes; and

a laminate composed of a light emission layer and first and second insulation layers with said light emission layer being positioned between said first and second insulation layers, said laminate being positioned between said electrodes with each one of said first and second insulation layers separating a respective one of said electrodes from said light emission layer;

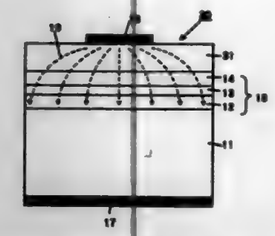
wherein said light emission layer is composed of SrS as a light emission substance, Ce as a light emission substance, and Pb as a coactivator, wherein the amount of Pb coactivator does not exceed 1 atomic %.

5,444,269

ALGAINP LIGHT EMITTING DEVICE

Keizo Adomi; Nobuhiko Noto, and Takao Takenaka, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,370
Claims priority, application Japan, May 31, 1993, 5-154169
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—094 4 Claims



1. An AlGaInP light emitting device comprising a light emitting layer portion made of AlGaInP heterojunction structure formed on a first conductivity-type GaAs substrate, wherein said AlGaInP heterojunction structure is selected from the group consisting of an AlGaInP double heterojunction structure and an AlGaInP single heterojunction structure, characterized by the fact that a second conductivity-type $Al_mGa_{1-m}As_{1-n}P_n$ current spreading layer which has the bandgap energy larger than the energy of the photon emitted from the active layer of said light emitting layer portion is provided on top of said light emitting layer portion.

5,444,270

SURFACE-NORMAL SEMICONDUCTOR OPTICAL CAVITY DEVICES WITH ANTIREFLECTIVE LAYERS

John E. Cunningham, Lincroft, and Keith W. Goossen, Aberdeen, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 4, 1994, Ser. No. 334,821
Int. Cl.[6] H01L *33/00*
U.S. Cl. 257—98 13 Claims

1. A semiconductor device designed to have a prescribed resonant optical wavelength, comprising

a substrate;

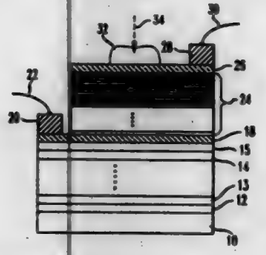
an optical cavity, including;

a mirror structure deposited on top of said substrate;

a multi-layer region deposited over said mirror structure;

a partial antireflective coating deposited over said multi-layer region;

said mirror structure and said multilayer region having a thickness variation sufficient to yield a resonant optical wavelength that deviates from the prescribed resonant wavelength, said partial antireflective coating having a non-uniform thickness variation, said non-uniform thickness variation causing the resonant optical wavelength to



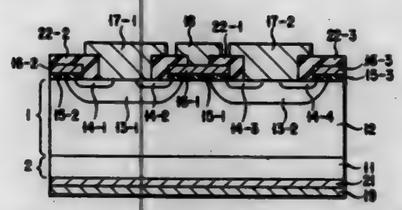
shift substantially toward the prescribed resonant optical wavelength.

5,444,271

CONDUCTIVITY-MODULATED SEMICONDUCTOR DEVICE WITH HIGH BREAKDOWN VOLTAGE

Masashi Kawahara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1993, Ser. No. 105,630
Claims priority, application Japan, Aug. 15, 1992, 4-238931
Int. Cl.[5] H01L *21/223, 29/74, 27/02*
U.S. Cl. 257—136 9 Claims



1. A conductivity-modulated semiconductor device comprising:

a semiconductor substrate of a first conductivity type having first and second major surfaces and functioning as a drain region;

a plurality of base regions of a second conductivity type, formed within said first major surface of said semiconductor substrate and spaced apart from one another;

a plurality of source regions of said first conductivity type, formed in each of said plurality of base regions and spaced apart from one another;

a plurality of gate insulating films, each of said plurality of gate insulating films being formed on a portion of said drain region which is located between successive base regions;

a plurality of gates, each one of said plurality of gates being formed on each of said plurality of gate insulating films;

a plurality of source electrodes, each one of said plurality of source electrodes short-circuiting one of said plurality of base regions to said plurality of source regions formed therein;

a first anode region of said second conductivity type which contacts said second major surface of said semiconductor substrate;

a second anode region of said second conductivity type formed on said first anode region and comprised of polycrystalline silicon of said second conductivity type, said second anode region having an impurity concentration higher than that of said first anode region; and

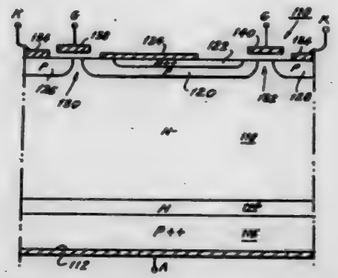
an anode electrode formed on said second anode region.

5,444,272

THREE-TERMINAL THYRISTOR WITH SINGLE MOS-GATE CONTROLLED CHARACTERISTICS

Jayadhanas S. Ajit, Redondo Beach, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jul. 28, 1994, Ser. No. 281,917
Int. Cl.[6] H01L *29/74*
U.S. Cl. 257—137 9 Claims



1. A MOS-controlled thyristor, comprising:

a wafer of semiconductor material having first and second spaced, parallel planar surfaces, at least a portion of the thickness of the wafer which extends from said first semiconductor surface comprising a relatively lightly doped N-type layer for receiving junctions, at least a portion of the thickness of said wafer which extends from said second semiconductor surface comprising a relatively highly doped P-type layer;

a P-type base formed in said relatively lightly doped N-type layer and extending from said first semiconductor surface to a first depth beneath said first semiconductor surface;

an N-type emitter region formed in said P-type base and extending from said first semiconductor surface to a second depth beneath said semiconductor surface which is shallower than said first depth to create an N-type emitter/P-type base junction, said N-type emitter region being radially inwardly spaced along said first semiconductor surface along edges of said P-type base, such that said edges of said P-type base extend to said first semiconductor surface, thereby defining a first channel region along a first of said edges, a metal strap being disposed on said first semiconductor surface and connecting said emitter region to said P-type base along a second of said edges;

first and second P-type regions formed in said relatively lightly doped N-type layer and extending from said first surface of said wafer, said first and second P-type regions being laterally spaced from said second and first edges of said P-type base, respectively, to form second and third channel regions in said relatively lightly doped N-type layer;

first gate insulation layer means on said first 35 semiconductor surface disposed at least on said second channel region;

first gate means on said first gate insulation layer means and overlying said second channel region;

second gate insulation layer means on said first semiconductor surface disposed at least on said first and third channel regions;

second gate means on said second gate insulation layer means and overlying said first and third channel regions;

anode electrode means connected to said P-type layer disposed on said second semiconductor surface;

cathode electrode means connected to said first and second P-type regions on said first semiconductor surface, and to said first gate; and

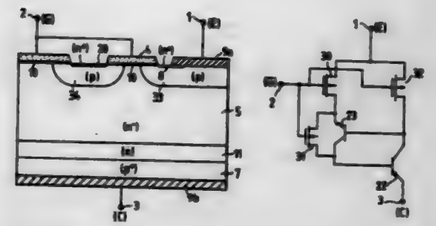
gate electrode means connected to said second gate.

5,444,273

MOSFET CONTROLLED THYRISTOR

Katsunori Ueno, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 967,023, Oct. 27, 1992, abandoned, which is a division of Ser. No. 740,896, Aug. 6, 1991, Pat. No. 5,194,927. This application Jul. 1, 1994, Ser. No. 269,621
Claims priority, application Japan, Aug. 16, 1990, 2-216407; Nov. 30, 1990, 2-339249
Int. Cl.[6] H01L *29/745, 29/749*
U.S. Cl. 257—138 1 Claim



1. A semiconductor device comprising:

a substrate of a silicon thin plate having a first conductivity type collector region and a second conductivity type base region formed on said first conductivity type collector region;

respective gate polysilicon layers formed on said substrate through respective gate insulating films;

first and second gate openings respectively disposed adjacent said gate polysilicon layers;

first and second base regions of first conductivity type respectively formed in the substrate under said first and second gate openings;

only one second conductivity type region operating as a source formed under said first gate opening so as to be shallower than said first base region; and

only one second conductivity type region operating as a drain formed under said second gate opening so as to be shallower than said second base region;

wherein said first and second base regions of the first conductivity type are formed so as not to contact each other, and wherein an upper surface of said second base region is covered in part by the gate insulating films and in remainder by said second conductivity type region operating as a drain free of direct electrode contact.

5,444,274

PHOTODETECTOR AND OPTO-ELECTRONIC INTEGRATED CIRCUIT

Goro Sasaki, Yokohama, Japan, assignor to Sumitomo Electric Industries Ltd., Osaka, Japan

Continuation of Ser. No. 89,378, Jul. 12, 1993, Pat. No. 5,365,087. This application Jul. 6, 1994, Ser. No. 268,548
Claims priority, application Japan, Jul. 15, 1992, 4-188158; Jul. 15, 1992, 4-188159
The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.
Int. Cl.[6] H01L *27/14, 31/00*
U.S. Cl. 257—184 5 Claims

1. An opto-electronic integrated circuit, comprising

a photodetector and

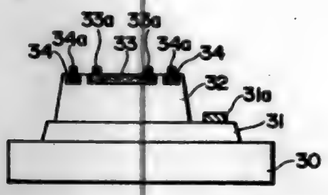
an electronic device including a transistor,

said photodetector and said transistor being formed over a surface of a common semiconductor substrate and wired to each other,

said photodetector being a mesa type photodetector formed over the semiconductor substrate and including:

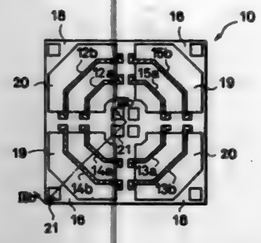
a first semiconductor region formed over a surface of said

semiconductor substrate and having a first conduction type as a result of activation of an added impurity therein;
a high-resistivity region formed over an upper portion of said first semiconductor region;
a second semiconductor region formed in said high-resistivity region and having a second conduction type as a result of activation of an added impurity therein, a part of said second semiconductor region being exposed to outside of said high-resistivity region;
a guard ring region formed in an upper portion of said high-resistivity region at a certain clearance from an outer



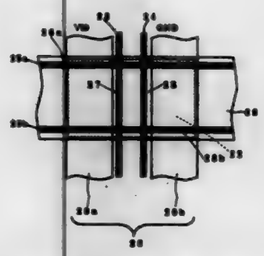
periphery of second semiconductor region, and having the second conduction type as a result of activation of an added impurity therein, a part of said guard ring region being exposed to outside of said high-resistivity region;
a first electrode formed on the surface of said first semiconductor region;
a second electrode formed on said exposed part of said second semiconductor region; and
a third electrode formed on said exposed part of said guard ring region,
said high-resistivity region having a higher resistance than the first and second semiconductor regions.

5,444,275
RADIAL GATE ARRAY CELL
Masahiro Kugishima; Hiroyuki Sato; Masaki Narihiki, all of Chiba; Noboru Yamakawa, Utsunomiya, and Takahiro Yamamoto, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Continuation of Ser. No. 726,968, Jul. 8, 1991, abandoned. This application May 10, 1993, Ser. No. 58,665
Claims priority, application Japan, Jul. 10, 1990, 2-182457
Int. Cl.[6] H01L *27/118*
U.S. Cl. 257—206 12 Claims



1. An integrated circuit comprising a plurality of basic cells arranged in a matrix over a semiconductor substrate, each of the basic cells comprising:
a cell region having a center;
four subcells arranged radially around said center, each subcell comprising at least two MOSFET transistors, with the MOSFET transistors of subcells on first diagonally opposite sides of said center being N-channel type and the MOSFET transistors of subcells on second diagonally opposite sides of said center being P-channel type;
each N-channel MOSFET comprising a source region and a drain region of N-conductivity type, with a portion of the semiconductor substrate between the source region and the drain region overlaid by a gate insulator layer and the gate insulator layer overlaid by a gate electrode;
each P-channel MOSFET comprising a source region and a drain region of P-conductivity type, with a portion of the semiconductor substrate between the source region and the drain region overlaid by a gate insulator layer and the gate insulator layer overlaid by a gate electrode; and
the gate electrodes of the MOSFET transistors in a cell being generally perpendicular to a radial line from the center of the cell to the gate electrode.

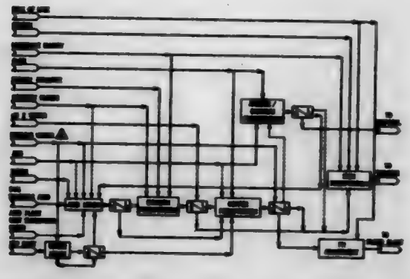
5,444,276
SEMICONDUCTOR INTEGRATED CIRCUIT MACRO CELLS WITH WIDE LINES
Miho Yokota, and Masatomi Okabe, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 14, 1993, Ser. No. 165,944
Claims priority, application Japan, Dec. 18, 1992, 4-338615; Aug. 30, 1993, 5-214122
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—207 22 Claims



1. A semiconductor integrated circuit device comprising:
a plurality of transistors being regularly arranged on a semiconductor substrate;
at least a set of first and second source lines being provided in a first wiring layer for supplying said plurality of transistors with voltages for driving said transistors, said at least a set of first and second source lines arranged along a line of a gate array of the semiconductor integrated circuit device;
third and fourth source lines, arranged in parallel, along different lines, along side of each other, being larger in width than said first and second source lines, being arranged in a second wiring layer which is different from said first wiring layer, in alignment with each other to intersect with said first and second source lines in a grade separation manner, said third and fourth source lines arranged in a line across a plurality of cell columns of the semiconductor integrated circuit device, and the third and fourth source lines intersect each cell column in three-dimensional space but are separated from the cell columns; and
at least one macro cell utilizing those of said transistors being located under at least one of a region being held between said third and fourth source lines, and both of said third and fourth source lines.

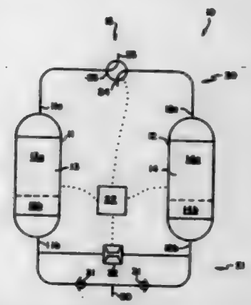
c. separating said precious metal containing carbonaceous component from the ore;
d. recovering precious metal from the precious metal containing carbonaceous component;
e. further treating said remaining ore in a carbon in leach process, wherein the temperature of the leach solution of said carbon in leach process is between 0° C. and 83° C.;
f. separating the activated carbon used in said carbon in leach process from the ore; and
g. recovering gold from the activated carbon.

5,443,622
HYDROMETALLURGICAL PROCESSING OF IMPURITY STREAMS GENERATED DURING THE PYROMETALLURGY OF COPPER
Philip J. Gabb, Salt Lake City; Keaton E. Sutliff, Holliday; Barry A. Wells, Centerville, all of Utah, and J. Philip Evans, Georgetown, Canada, assignors to Kennecott Corporation, Salt Lake City, Utah
Filed Feb. 28, 1994, Ser. No. 202,819
Int. Cl.[6] C22B *3/08*
U.S. Cl. 75—743 33 Claims



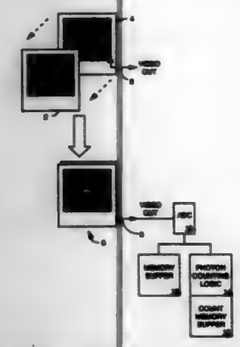
1. A hydrometallurgical process for the recovery of primary metal values and the capture and conversion of metal impurities to states that are acceptable for disposal to the environment, the primary metal values recovered from impurity streams generated during the pyrometallurgy of copper, the process comprising the steps of:
A. Pulping and leaching dust from a smelter source, the dust containing copper, at least one precious metal, bismuth, arsenic, iron and cadmium values, with water in a water-leach stage to form a water leach pulp in which at least part of the copper values are solubilized;
B. Be Separating the water leach pulp into a liquid fraction and a solids faction;
C. Transferring the solids fraction of (B) to an acid leach stage, and recycling the liquid fraction of (B) to the water leach stage;
D. Pulping and leaching the solids faction of the water leach stage with acid in the acid leach stage to form an acid leach pulp such that the bismuth values are solubilized;
E. Separating the acid leach pulp into a solids fraction and a liquid fraction;
F. Transferring the liquid fraction of the acid leach stage to a bismuth precipitation stage, and the solids fraction of the acid leach stage to a copper precipitation stage;
G. Precipitating at least part of the bismuth values in the bismuth precipitation stage with a neutralizing agent;
H. Separating the bismuth precipitate from the liquid of the acid leach stage and transferring the precipitate to a final neutralization/precipitation stage, and transferring the remaining liquid fraction to the copper precipitation stage;
I. Precipitating at least part of the copper values from the liquid fraction of (H) in the copper precipitation stage;
J. Separating the precipitate of (I) from the remaining liquid fraction of (H) and transferring the precipitate to the smelter source, and transferring the remaining liquid fraction to an arsenic/cadmium precipitation stage;
K. Precipitating at least part of the arsenic and cadmium values with a sulfiding agent in the arsenic/cadmium precipitation stage;
L. Separating the arsenic/cadmium precipitate from the remaining liquid fraction of (K) and transferring the precipitate to a disposal site, and recycling the liquid fraction of (K) to the acid leach stage;
M. Neutralizing the solids fraction of the bismuth precipitation stage and precipitating and neutralizing at least part of the iron and other remaining metal values in the liquid fraction of the copper precipitation stage in the final neutralization/precipitation stage; and
N. Removing the precipitate of the final neutralization/-precipitation stage to a disposal site.

5,443,623
SORBING APPARATUS WITH GUARD BED
Leonard A. Jones, Baltimore, Md., and Donald H. White, Jr., Homer, N.Y., assignors to Pall Corporation, East Hills, N.Y.
Continuation of Ser. No. 246,466, May 18, 1994, abandoned, which is a continuation of Ser. No. 83,319, Jun. 29, 1993, abandoned, which is a continuation of Ser. No. 854,750, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 769,901, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 427,562, Oct. 27, 1989, abandoned. This application Nov. 9, 1994, Ser. No. 338,126
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—101 24 Claims



1. A method for removing one or more components from an influent gas, the method comprising:
cyclically (1) directing the influent gas in a first direction through a first sorbing chamber containing both a sorbing region having a first sorbent material and a guard region having a second sorbent material different from the first sorbent material and sorbing the components from the influent gas in the sorbing region of the first sorbing chamber, and directing a purge gas in a second direction through a second sorbing chamber containing both a sorbing region having a first sorbent material and a guard region having a second sorbent material different from the first sorbent material and regenerating the sorbing region of the second sorbing chamber and (2) directing the influent gas in a first direction through the second sorbing chamber and sorbing the components from the influent gas in the sorbing region of the second sorbing chamber and directing a purge gas in a second direction through the first sorbing chamber and regenerating the sorbing region of the first sorbing chamber; and
cycling the influent gas during normal operations between the first and second sorbing chambers so as to sorb the components substantially entirely in the sorbing region of each sorbing chamber and to sorb little or none of the components in the components in the guard region of the

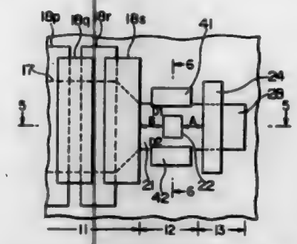
5,444,280
PHOTODETECTOR COMPRISING AVALANCHE PHOTOSENSING LAYER AND INTERLINE CCD READOUT LAYER
Morley M. Blouke, Portland, and Geoffrey B. Rhoads, West Linn, both of Oreg., assignors to Scientific Imaging Technologies, Inc., Beaverton and Pinacone Imaging Corporation, West Linn, both of Oreg.
Filed Dec. 20, 1993, Ser. No. 171,562
Int. Cl.[6] H01L 29/78, 27/14, 31/00
U.S. Cl. 257—226 12 Claims



1. A photodetector comprising:
a photosensing layer having a front surface and a back surface and comprising a plurality of diode regions at its back surface and a means for applying a predetermined potential difference between the back surface and the front surface, whereby a photoelectron produced in the photosensing layer in response to a photon incident on the front surface thereof is accelerated toward the back surface and generates multiple electrons due to avalanche multiplication,
an electron readout layer having a front surface and a back surface and comprising a plurality of diode regions at its front surface and a means for reading out charge from the diode regions, and
a coupling layer between the photosensing layer and the electron readout layer, whereby the photosensing layer is physically bonded to the electron readout layer with the back surface of the photosensing layer confronting the front surface of the electron readout layer and the diode regions of the photosensing layer are electrically connected to respective diode regions of the electron readout layer.

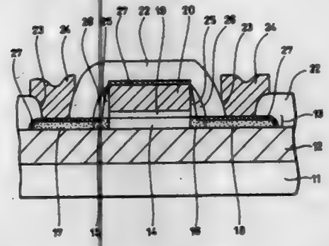
5,444,281
CHARGE TRANSFER DEVICE CAPABLE OF SUPPRESSING RESET NOISE
Shiro Tsuzi, Tokyo, Japan, assignor to NEC Corporation
Filed May 20, 1993, Ser. No. 63,750
Claims priority, application Japan, May 20, 1992, 4-127006
Int. Cl.[6] H01L 29/796; G11C 19/28
U.S. Cl. 257—239 11 Claims

1. A charge transfer device comprising: (a) a charge-coupled device comprising a transfer channel region isolated by a channel stopping region of a first conductivity type and diffused with a second conductivity type into a well region formed with said first conductivity type on a surface of a semiconductor substrate of said second conductivity type and an output gate electrode on a first insulation film formed on a surface of said transfer channel region, (b) a junction type field-effect transistor comprising a junction gate region formed with said second conductivity type in contact with said transfer channel region at an output end of said charge-coupled device to cover a current channel in said well region, a source region reaching with said first conductivity type to said well region in contact with said junction gate region, and a drain region of said first conductivity type in contact with said channel stopping region and with said junction gate region, and (c) a reset transistor comprising reset channel and a reset gate electrode which is located over said reset channel and which is adjacent to said



junction gate region with a second insulation film interposed between said reset gate electrode and both of said junction gate region and the reset channel, wherein:
a first distance between said source region and each of said output gate electrode and said reset gate electrode is longer than a second distance between said source region and said drain region.

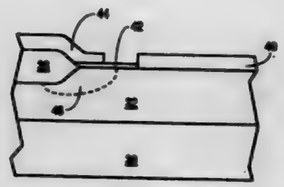
5,444,282
SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THEREOF
Yasuo Yamaguchi; Natsuo Ajika, and Tsuyoshi Yamano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 770,041, Oct. 3, 1991, Pat. No. 5,341,028. This application Jun. 30, 1994, Ser. No. 268,877
Claims priority, application Japan, Oct. 9, 1990, 2-271727
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] H01L 27/01, 29/10, 27/02, 23/48
U.S. Cl. 257—344 4 Claims



1. A semiconductor device comprising:
a semiconductor layer formed on an insulator layer,
a channel region of a first conductivity type formed in said semiconductor layer,
first source/drain regions of a second conductivity type formed in said semiconductor layer adjacent to the left and right sides of said channel region,
a gate electrode formed above said channel region with a dielectric thin film therebetween,
first sidewall spacers provided on the left and right sidewalls of said gate electrode,
a metal layer having etching-resistance formed at the surface of said semiconductor layer in a region outside the region where said first sidewall spacers are formed and adjacent to said first sidewall spacers,

second sidewall spacers provided to cover the outer surface of said first sidewall spacers,
second source/drain regions having a concentration higher than that of said first source/drain regions, and formed in said semiconductor layer in a region outside the region where said second sidewall spacers are formed, and
an interconnection layer connected to a surface of said metal layer, wherein said metal layer comprises cobalt silicide.

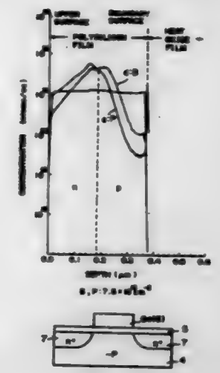
5,444,283
DOPANT-DIFFUSION BUFFERED BURIED CONTACT MODULE FOR INTEGRATED CIRCUITS
Mong-Song Liang, Cupertino; Cheng C. Hu, San Jose, and Ting-Wah Wong, Cupertino, all of Calif., assignors to Mosel Vitelic Corporation, San Jose, Calif.
Continuation of Ser. No. 809,773, Dec. 17, 1991, abandoned.
This application May 25, 1993, Ser. No. 67,409
Int. Cl.[6] H01L 29/80, 29/06
U.S. Cl. 257—361 10 Claims



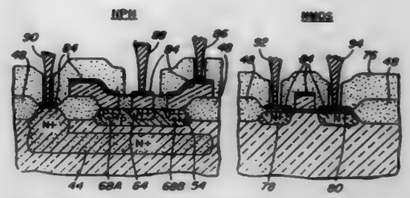
10. A buried contact module for an integrated circuit, comprising:
a well region formed in a semiconductor substrate;
a polysilicon layer overlying the substrate;
an active doped area formed within said well region and being defined by an area of ions distributed in said well region such that a contact junction is provided from any portion of said active doped area to said polysilicon layer; and
an electrically conductive dopant-diffusion buffer layer between 30 and 100 Å thick formed between said active area and said polysilicon layer, wherein said dopant-diffusion buffer layer is a part of said buried contact module for electrically connecting said active doped area to said polysilicon layer;
wherein a current is conductible through said dopant-diffusion buffer layer to said active area, without rupturing said dopant-diffusion buffer layer.

5,444,284
SEMICONDUCTOR DEVICE INCLUDING POLYSILICON SEMICONDUCTOR ELEMENT AND MOS-FET AS THE ELEMENT THEREOF
Masaki Funaki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Continuation of Ser. No. 950,223, Sep. 24, 1992, Pat. No. 5,367,190. This application May 23, 1994, Ser. No. 247,279
Claims priority, application Japan, Sep. 24, 1991, 3-271983
Int. Cl.[6] H01L 27/01, 27/00, 29/78
U.S. Cl. 257—364 4 Claims

3. A MOS-type FET comprising channel regions and a gate electrode including polysilicon and, the gate electrode being separated from the channel regions by insulating material, said gate electrode to which donors and acceptors have been introduced in substantially the same amounts, and wherein a threshold value is controlled by changing concentrations of said donors and acceptors introduced into said gate electrode.



5,444,285
COMPLEMENTARY BIPOLAR POLYSILICON EMITTER DEVICES
Derek W. Robinson, Andover; William A. Krieger, North Andover, both of Mass.; Andre M. Martinez, Derry, N.H., and Marion R. McDevitt, Somerville, Mass., assignors to Analog Devices, Inc., Norwood, Mass.
Continuation of Ser. No. 120,137, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 991,217, Dec. 15, 1992, abandoned, which is a division of Ser. No. 828,745, Jan. 31, 1992, abandoned. This application Nov. 9, 1994, Ser. No. 337,148
Int. Cl.[6] H01L 29/04, 21/44
U.S. Cl. 257—378 17 Claims



1. An integrated circuit structure including complementary PNP and NPN bipolar transistors of similar profile and approximately matched performance and at least one field effect (MOS) transistor adjacent the bipolar transistors on a common substrate produced by the steps of:
defining at least one buried layer within said substrate;
for each bipolar transistor, forming a bipolar transistor intrinsic base region as a buried layer within said substrate having a doping concentration different from that of the substrate;
depositing only a single layer of polysilicon on said substrate;
for each bipolar transistor, forming an insulating isolation ring within said polysilicon layer around a region where a bipolar transistor emitter is to be formed, the ring having an inside region and an outside region of polysilicon;
for each bipolar transistor, selectively forming a self-aligned bipolar transistor emitter within said substrate below the inside regions of polysilicon;
for each bipolar transistor, selectively forming an extrinsic

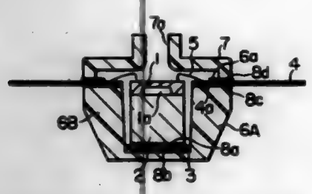
base within said substrate below the outside region of polysilicon;
wherein the emitters and extrinsic bases of the NPN and PNP transistors are formed in two drive-in steps;
wherein an N-type emitter of the NPN transistor is formed simultaneously with an N-type extrinsic base of the PNP transistor; and
wherein a P-type emitter of the PNP transistor is formed simultaneously with a P-type extrinsic base of the NPN transistor;
for each MOS transistor, forming a MOS transistor gate within the single layer of polysilicon;
for each MOS transistor, forming MOS transistor source and drain regions within the substrate; and
providing surface contacts to the bipolar transistor emitters and base contacting regions and to the NOS transistor gate, source and drain regions.

5,444,286

PACKAGED SEMICONDUCTOR PRESSURE SENSOR INCLUDING LEAD SUPPORTS WITHIN THE PACKAGE

Motomi Ichihashi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 190,894
Claims priority, application Japan, Feb. 4, 1993, 5-017425
Int. Cl.[6] H01L 23/12
U.S. Cl. 257—420 2 Claims



1. A semiconductor pressure sensor comprising:
a semiconductor pressure sensor chip mounted on a die pad;
a package base supporting said semiconductor pressure sensor chip and said die pad;
a package cap combined with said package base to form a package containing said semiconductor pressure sensor chip;
outer leads held between said package base and said package cap and having inner portions within said package and outer portions outside said package;
an adhesive disposed between said package base, said package cap, and said outer leads bonding and hermetically sealing said package base, package cap, and outer leads; and
electrical connection means electrically connecting said inner portions of said outer leads to said semiconductor pressure sensor chip, wherein said package base has an adhesive supporting portion supporting nearly all of each of said inner portions of said outer leads and including adhesive positioning projections for limiting flow of said adhesive.

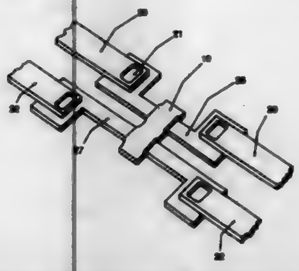
5,444,287

THERMALLY ACTIVATED NOISE IMMUNE FUSE

Raschid J. Bezama, Mahopac; Daniele J. Schepis, Wappingers Falls, both of N.Y., and Krishna Seshan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1994, Ser. No. 292,901
Int. Cl.[6] H01L 29/167, 23/48, 29/207
U.S. Cl. 257—467 19 Claims

1. In an integrated circuit having a substrate insulated by an insulating layer, a programmable fuse structure comprising:
a pair of current carrying fuse links on said insulating layer, said fuse links in close proximity of each other;
a layer of thermally conductive material, said layer thermally coupling and extending only over a fraction of said pair of fuse links; and



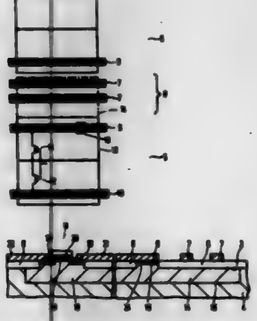
means of programming the first link of said pair of fuse links by activating the second link of said pair of fuse links to transfer energy from said second link of said pair to said first link via said layer of thermally conductive material.

5,444,288

CMOS INTEGRATED CIRCUIT HAVING IMPROVED POWER-SUPPLY FILTERING

Elno Jacobs, Palo Alto, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 26,137, Feb. 25, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 270,091
Claims priority, application European Pat. Off., Feb. 27, 1992, 92200565
Int. Cl.[6] H01L 27/04, 23/48, 29/46
U.S. Cl. 257—503 5 Claims



1. A CMOS integrated circuit comprising a semiconductor body with a layer-shaped region of a first conductivity type adjoining a surface, in which region an electrical circuit is provided having at least two adjacent circuit blocks separated from one another by an intermediate region and formed by rows of standard cells, which circuit blocks are built up from MOS transistors having a channel of the second conductivity type and provided in the layer-shaped region of the first conductivity type and from MOS transistors having a channel of the first conductivity type and provided in first surface regions of the second conductivity type, the surface being covered with an electrically insulating layer on which a wiring pattern is provided comprising a supply line and at least one signal line provided above the intermediate region, and means for increasing a capacitance of said supply line without increasing an area of the integrated circuit, said means comprising the layer-shaped region of the first conductivity type being provided

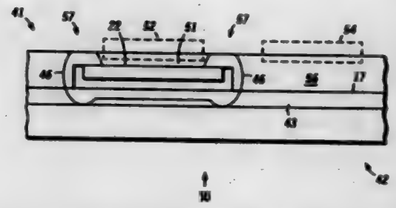
with at least one additional surface region of the second conductivity type at the area of the intermediate region below the at least one signal line, which at least one additional surface region is electrically connected to the supply line.

5,444,229

VERTICAL AND LATERAL ISOLATION FOR A SEMICONDUCTOR DEVICE

Bertrand F. Cambou, and Donald L. Hughes, both of Mesa, Ariz., assignors to Motorola, Schaumburg, Ill.

Division of Ser. No. 845,409, Mar. 3, 1992, Pat. No. 5,389,569.
This application Jul. 6, 1994, Ser. No. 271,315
Int. Cl.[6] H01L 27/04, 27/12
U.S. Cl. 257—510 6 Claims



1. A power device and a small signal device with vertical and lateral isolation on a bonded silicon substrate comprising:
a first silicon substrate with a first surface and a second surface, the first surface of the first silicon substrate having a cavity with a depth;
a dielectric layer having a thickness of less than or equal to the depth of the cavity disposed in the cavity of the first surface of the first silicon substrate, the dielectric layer forms an island that remains in the cavity;
a region of different conductivity located along a perimeter of the island of the dielectric layer;
a second silicon substrate with a first and a second surface, the first surface of the first substrate bonded to the first surface of the second substrate and the second surface of the first silicon substrate and a bottom of the cavity of the bonded silicon substrate define a distance ranging from 5.0 microns to 10.0 micron above the island of dielectric, the first surface of the first substrate having portions of the different conductivity region being exposed; and
a small signal device and the power device, wherein the small signal device is made over the island of dielectric material and the power device is made over an active substrate area adjacent to the island of dielectric material, thereby isolating the small signal device from the power device both vertically and laterally.

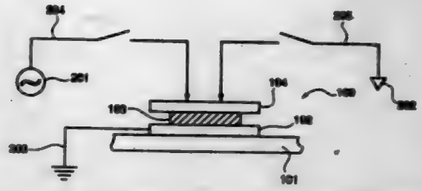
5,444,290

METHOD AND APPARATUS FOR PROGRAMMING ANTIFUSE ELEMENTS USING COMBINED AC AND DC ELECTRIC FIELDS

Carlos A. Paz De Araujo; Larry D. McMillan, and Joseph D. Cuchiaro, all of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo.

Filed May 26, 1994, Ser. No. 249,524
Int. Cl.[6] H01L 27/02
U.S. Cl. 257—530 19 Claims

1. A method for programming an antifuse element, said antifuse element comprising two electrodes separated by a dielectric material layer, said method comprising the steps of:
applying an AC electric field of predetermined AC amplitude across said two electrodes for a first period of time; and
applying a DC electric field of predetermined DC amplitude across said two electrodes to alter said dielectric material layer to electrically connect said two electrodes for a second period of time, wherein at least a portion of said first period of time is simultaneous with said second period



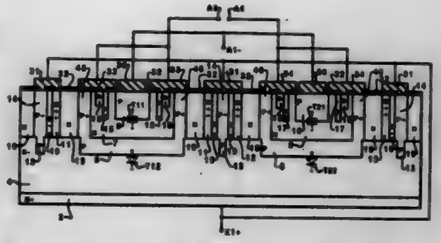
of time whereby the application of said AC electric field is coincident with the application of said DC electric field.

5,444,291

INTEGRATED BRIDGE DEVICE FOR OPTIMIZING CONDUCTION POWER LOSSES

Mario Paparo, San Giovanni la Punta, and Natale Aiello, Catania, both of Italy, assignors to Consorzio per la Ricerca Sulla Microelettronica Nel Mezzogiorno, Catania, Italy

Filed Nov. 20, 1992, Ser. No. 979,177
Claims priority, application European Pat. Off., Nov. 25, 1991, 91830513
Int. Cl.[6] H01L 25/07, 29/70
U.S. Cl. 257—552 9 Claims



1. An integrated bridge device having at least first and second arms, each formed of first and second diode-connected bipolar transistors, in series, comprising an N+ type substrate forming a positive potential output terminal, an N− type epitaxial layer on the N+ substrate, a further N type epitaxial layer formed on the N− epitaxial layer and, for each of the aforesaid arms, a first P type region formed in the N− epitaxial layer and a first P+ type region formed in the N type epitaxial layer, wherein the first P and P+ regions contain within them an N type region, which in turn contains an interior P type region forming a negative potential output terminal, and further including first N++ type regions within the N type epitaxial layer for minimizing the current gain of parasitic transistors formed surrounding the first P type and P+ type regions belonging to the first and second arms.

5,444,292

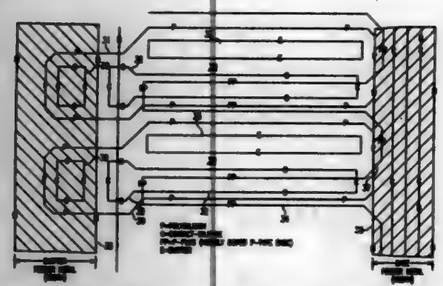
INTEGRATED THIN FILM APPROACH TO ACHIEVE HIGH BALLAST LEVELS FOR OVERLAY STRUCTURES

William P. Imhauser, Ambler, Pa., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 958,571, Oct. 8, 1992, abandoned. This application Apr. 4, 1994, Ser. No. 222,565
Int. Cl.[6] H01L 29/72
U.S. Cl. 257—580 8 Claims

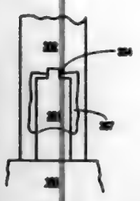
1. A semiconductor device, comprising:
a substrate;
a collector layer formed above said substrate;

a base layer formed above said collector layer;
a first contact region;
a second contact region;
a resistive medium connected between said first contact region and said second contact region;
a plurality of emitter regions formed in said base layer in a non-interdigitated configuration; and



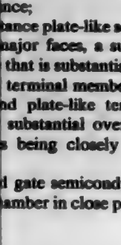
a further resistive medium located above one of said plurality of emitter regions, said further resistive medium connected between said second contact region and said one of said plurality of emitter regions,
wherein said section contact region is laterally offset relative to said one of said plurality of emitter region so that said further resistive medium creates a lateral ballasting effect.

5,444,293
STRUCTURE AND METHOD FOR PROVIDING A LEAD FRAME WITH ENHANCED SOLDER WETTING LEADS
Tung L. Li, Hong Kong, Hong Kong, assignor to OPL Limited, Tuen Wan, Hong Kong
Filed Sep. 22, 1993, Ser. No. 125,638
Int. Cl.[6] H01L *27/48, 29/46, 29/44, 29/52*
U.S. Cl. 257—666 3 Claims



1. In a lead frame of an integrated circuit package having a plurality of leads for contact with metal traces on a printed circuit board, a lead comprising:
an elongated base metal core having a first portion of a first cross sectional area along substantially the entire length of said elongated base metal core, and having a second portion of a second cross sectional area at one end of said elongated base metal core, said first cross sectional area being substantially greater than said second cross section area, wherein each of said first and second portions also including a first surface along said length of said elongated base metal core, such that when said first surface of said first portion is placed in contact with one of said metal traces on said printed circuit board, said first surface of said second portion is positioned a predetermined distance from said metal trace; and
a coat of solder material covering the surface of said elongated base metal core except at a second surface at said second portion of said elongated base metal core, said second surface being a surface of said second cross sectional area exposed by a cross section of said elongated base metal core.

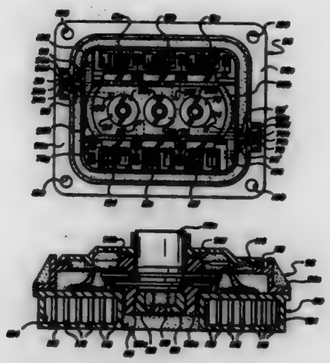
5,444,294
SEMICONDUCTOR DEVICE OF VERTICAL SURFACE-MOUNTING TYPE
Yasuhiro Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 2, 1994, Ser. No. 253,070
Claims priority, application Japan, Jun. 4, 1993, 5-133760
Int. Cl.[6] H01L *25/04*
U.S. Cl. 257—666 5 Claims



1. A semiconductor device of vertical surface-mounting type, comprising:
a semiconductor die having pads thereon;
a heat radiator to which said semiconductor die is secured;
a pair of support leads integral with and supporting said heat radiator, said support leads being electrically connected to a lead of one of a power source lead and a ground potential lead;
and insulating tape provided on said heat radiator at a side of said pair of support leads;
inner leads secured to said heat radiator with said insulating tape intervening therebetween;
outer leads integral with said inner leads;
bonding wires respectively connecting said inner leads to said pads on the semiconductor die; and
a molded resin for sealing the semiconductor die, said heat radiator, said inner leads and said bonding wires with said outer leads and parts of said pair of support leads extending in a row form from said molded resin.

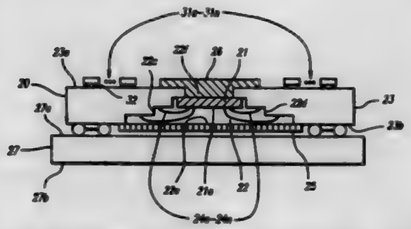
5,444,295
LINEAR DUAL SWITCH MODULE
Donald E. Lake, deceased, late of Rochester by Jusalta Lake, executrix; Aiman I. Alhoussami, Indianapolis, and Charles T. Eytcheson, Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.
Filed Sep. 7, 1993, Ser. No. 118,112
Int. Cl.[6] H01L *25/07*
U.S. Cl. 257—678 37 Claims

1. A semiconductor switching device module of reduced inductance comprising:
a housing having a baseplate and defining a chamber;
a low electrical resistance plate-like first terminal member having opposed major faces, a substantially linear edge, and a first impedance;
a low electrical resistance plate-like second terminal member having opposed major faces, a substantially linear edge and an impedance that is substantially similar to the impedance of said first terminal member;
said first and second plate-like terminal members being closely spaced in substantial overlap, and said substantially linear edges being closely spaced and generally parallel;
at least one insulated gate semiconductor switching device disposed in said chamber in close proximity to both of said substantially linear edges of said first and second plate-like terminal members;
means for interconnecting said substantially linear edge of said first plate-like terminal member to an input of said semiconductor switching device, whereby input current to said semiconductor switching device can pass through said first plate-like terminal member at a first inductance; and
means for interconnecting said substantially linear edge of



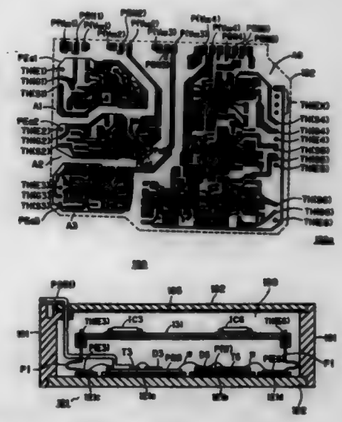
said second plate-like terminal member to an output of said semiconductor switching device, whereby output current from said semiconductor switching device can pass through said second plate-like terminal member at a magnitude substantially equal to that of said input current and at an inductance generally similar to said first inductance;
effective to form a first switch in which respective current flow inductance in said plate-like terminal members substantially negate one another.

5,444,296
BALL GRID ARRAY PACKAGES FOR HIGH SPEED APPLICATIONS
Smail Kasi, Fremont, and Douglas A. Laird, Los Gatos, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Nov. 22, 1993, Ser. No. 156,576
Int. Cl.[6] H05K *7/00*
U.S. Cl. 257—686 14 Claims



1. An apparatus for reducing propagation delay resulting from information being transferred between a first integrated circuit and a second integrated circuit by placing the second integrated circuit in closer proximity to the first integrated circuit, said apparatus comprising:
a main integrated circuit package encapsulating the first integrated circuit, said main integrated circuit package having a top surface with a predetermined area;
a second integrated circuit package encapsulating the second integrated circuit, the second integrated circuit package having a bottom surface with an area less than the predetermined area, being mounted on the main integrated circuit package; and
a plurality of electrical connections between the main integrated circuit package and the second integrated circuit package in order to enable information to be transferred between the first integrated circuit and the second integrated circuit, said plurality of electrical connections include a plurality of solder balls coupled to a corresponding plurality of conductive signal lines, wherein at least one conductive signal line has a length less than four millimeters.

5,444,297
NOISE RESISTANT SEMICONDUCTOR POWER MODULE
Seiichi Oshima; Fumitaka Tanotani; Jun Yamagata, and Ken Takamaki, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 11, 1993, Ser. No. 75,316
Claims priority, application Japan, Jun. 17, 1992, 4-157908
Int. Cl.[6] H01L *23/12, 23/52, 25/065*
U.S. Cl. 257—691 7 Claims



5. A semiconductor power module comprising:
a main circuit board with a plurality of power control semiconductor elements disposed on a first major surface thereof;
a control circuit board having second and third major surfaces which face each other, said second major surface of said control circuit board facing said first major surface of said main circuit board;
a plurality of first wiring patterns formed adjacent to each other on said third major surface of said control circuit board, a plurality of control semiconductor elements being formed in said first wiring patterns in such a manner that at least one of said plurality of said control semiconductor elements is disposed in each one of said first wiring patterns, said control semiconductor elements controlling said power control semiconductor elements and being commonly connected to high-level and low-level power source terminals;
a plurality of first shield patterns formed of a conductive material and disposed in an insulating layer of said control circuit board so as to face and substantially overlap each one of said first wiring patterns through said insulating layer, said first shield patterns being connected to a potential of said high-level or said low-level power source terminals of said control semiconductor elements;

a plurality of second shield patterns formed of a conductive material and disposed on said second major surface of said control circuit board so as to approximately correspond to said first shield patterns, said second shield patterns each being connected to said potential of said high-level or said low-level power source terminals of said control semiconductor elements; and

a plurality of third; shield patterns formed in portions of said insulating layer of said control circuit board connected to input terminals of said control semiconductor elements, through said insulating layer and said input terminals being respectively formed in said first wiring patterns, said portions facing said first and said second shield patterns.

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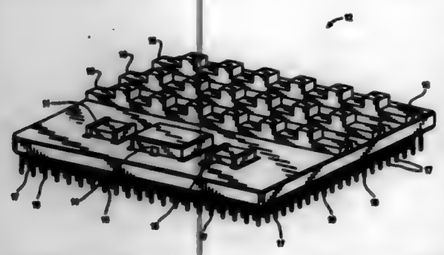
VOLTAGE CONVERTING INTEGRATED CIRCUIT PACKAGE

Joseph D. Schutz, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 13,576, Feb. 4, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 307,021

Int. Cl.[6] H01L *23/16*

U.S. Cl. 257—691 **20 Claims**



1. An improved integrated circuit package of the type which interconnects an integrated circuit to a system wherein the package comprises:

a power supply lead;

a power return lead;

a signal lead; and

a voltage converter having an input coupled to said power supply lead and an output said voltage converter for converting a first operating voltage supplied by said power suppy lead into a second operating voltage which is utilized to power said integrated circuit coupled to said output of said voltage converter, wherein said first operating voltage is a different voltage than said second operating voltage.

5,444,299

ELECTRONIC PACKAGE WITH LEAD WIRE CONNECTIONS

Yutaka Tsukada; Yasukazu Kobayakawa; Yoji Maeda, all of Shiga, and Shohei Tauchita, Kusatsu, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1994, Ser. No. 186,737

Claims priority, application Japan, Mar. 17, 1993, 5-057237

Int. Cl.[6] H01L *23/02, 23/12, 23/48*

U.S. Cl. 257—693 **9 Claims**

1. An electronic package comprising:

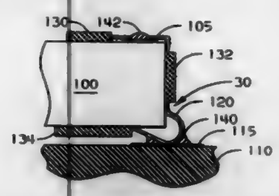
a first substrate including a plurality of electrical conductors thereon;

a semiconductor device positioned on said first substrate and electrically connected to said conductors on said first substrate;

a second substrate including a plurality of electrical conductors thereon;

a plurality of lead wires, each for electrically connecting one of said electrical conductors on said first substrate to a respective one of said conductors on said second substrate; and

at least two individual, separate longitudinal tape members each secured to a respective one of two separate surfaces of said first substrate, selected ones of said Lead wires each being electrically coupled to a respective one of said electrical conductors on said first substrate and adapted



for being electrically connected to a respective conductor on said second substrate, said selected ones of said lead wires each being secured to both of said separate longitudinal tape members and thereby attached to said two separate surfaces of said first substrate having said tape members secured thereto, said selected ones of said lead wires further being attached to a third, separate surface of said first substrate.

5,444,300

SEMICONDUCTOR APPARATUS WITH HEAT SINK

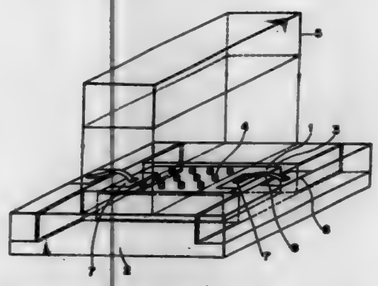
Hiroya Sato, and Mitsuto Miyauchi, both of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1992, Ser. No. 925,785

Claims priority, application Japan, Aug. 9, 1991, 3-200184

Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—737 **5 Claims**



1. A semiconductor apparatus comprising:

a semiconductor chip having a plurality of electrodes including a first type of terminal electrodes and a second type of terminal electrodes;

a heat sink formed with a recess portion for disposing said semiconductor chip within said recess portion, wherein said plurality of terminal electrodes of said semiconductor chip are provided on a top plane thereof which is opposite to a bottom surface of said recess portion;

at least one bump provided on said top plane of said semiconductor chip contacting with said first type of terminal electrodes; and

a connecting member having a heat conductivity for radiating heat generated in said semiconductor chip to an outside region of said semiconductor chip, where said connecting member is so positioned as to contact with said at least one bump directly and connected to said semiconductor chip via said at least one bump, while said second type of terminal electrodes are uncovered by said connecting member, wherein said connecting member is connected with said heat sink.

5,444,301

SEMICONDUCTOR PACKAGE AND METHOD FOR MANUFACTURING THE SAME

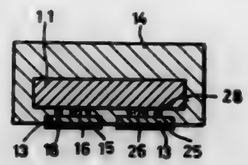
Chi J. Song, Daejon, and Gi B. Cha, Choongchungbook-Do, both of Rep. of Korea, assignors to Goldstar Electron Co. Ltd., Choongchungbook-Do, Rep. of Korea

Filed Jan. 16, 1994, Ser. No. 260,571

Claims priority, application Rep. of Korea, Jan. 23, 1993, 11506/1993

Int. Cl.[6] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—737 **8 Claims**



1. A plastic semiconductor package free of metal wires for electrically connecting a semiconductor chip to inner leads comprising:

a plurality of chip signal transmitting leads attaching from the semiconductor chip and functioning as electrical passage;

a detachable polyimide tape attached to a lower surface of each lead and having the same width as that of the lead;

an insulating double-sided adhesive tape each attached to an upper surface of each lead attaching the lead to the semiconductor chip;

a bump disposed on said upper surface of each lead electrically connecting the lead to the semiconductor chip; and

mold resin enveloping a predetermined area including the semiconductor chip and the leads but not said detachable polyimide tapes.

5,444,302

SEMICONDUCTOR DEVICE INCLUDING MULTI-LAYER CONDUCTIVE THIN FILM OF POLYCRYSTALLINE MATERIAL

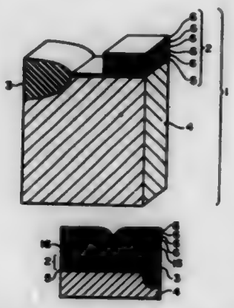
Takashi Nakajima, Ibaraki; Hideo Miura, Kashigaya; Hiroyaki Ohta, and Noriaki Okamoto, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 168,506

Claims priority, application Japan, Dec. 25, 1992, 4-358065

Int. Cl.[6] H01L *23/48, 29/46*

U.S. Cl. 257—755 **32 Claims**



1. A semiconductor device having a conductive thin film characterized in that at least a part of said thin film has a plurality of conductive layers stacked in a film thickness direction to form a laminated structure, and that each of said plurality of conductive layers is formed of a same element, a thickness of each of the plurality of conductive layers being sufficiently small such that a fail event in the semiconductor device is prevented.

5,444,303

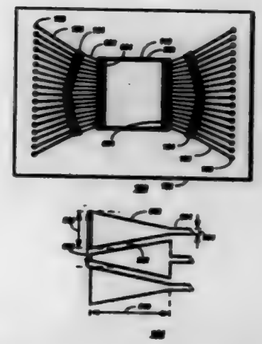
WIRE BOND PAD ARRANGEMENT HAVING IMPROVED PAD DENSITY

Jonathon Greenwood, Boynton Beach; Douglas W. Hendricks, Boca Ratos, and Frank Juskey, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1994, Ser. No. 288,304

Int. Cl.[6] H01L *29/44, 23/48, 29/60*

U.S. Cl. 257—786 **9 Claims**



1. A wire bond pad arrangement having an improved pad density for providing a plurality of wire bond terminations for interconnection with corresponding terminations of an integrated circuit (IC) chip, the wire bond pad arrangement comprising:

a substrate; and

a plurality of pads disposed on the substrate adjacent to one another to form a row of pads, wherein each of the pads is formed in a trapezoidal shape having short and long sides parallel to one another and substantially perpendicular to a line from a central point of the pad to a central point of the corresponding termination of the IC chip, and wherein the long sides of adjacent pads are positioned alternately towards and away from the corresponding terminations of the IC chip, and wherein the plurality of pads are positioned such that the row of pads formed thereby is arcuate in shape.

5,444,304

SEMICONDUCTOR DEVICE HAVING A RADIATING PART

Kouji Hara, and Jun Tanabe, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 111,308

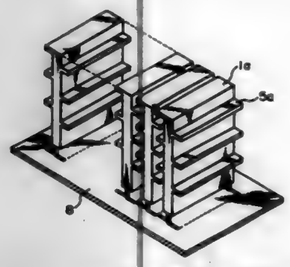
Claims priority, application Japan, Aug. 24, 1992, 4-223925

Int. Cl.[6] H01L *23/36*

U.S. Cl. 257—796 **5 Claims**

1. A semiconductor device (Vertical Surface Mount Package) having a semiconductor chip encapsulated with a plastic package, external connection terminals through which signals are transmitted between said semiconductor chip and peripheral circuits, said plastic package having a substantially rectangular parallelopiped shape defined by a length, a width and a height, said external connection terminals being extracted to the outside of said plastic package, and supporting terminals

for mounting said plastic package on a substrate so as for first and second surfaces of said plastic package defined by both the length and the height to be substantially perpendicular to said substrate, said semiconductor device having a radiating part being characterized in that said first surface of said plastic package has radiating fins having an irregular configuration, said second surface of said plastic package has radiating fins having an irregular configuration, and each of said radiating



fins is formed so as to extend in a direction of the length of said plastic package, and

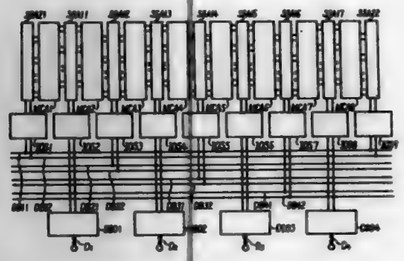
that said radiating fins of said second surface are present in positions on said second surface which are different from positions on said second surface which confront with the positions on said first surface, in which said radiating fins of said first surface are present, through said plastic package.

5,444,305

SEMICONDUCTOR MEMORY CIRCUIT

Yoshinori Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 84,017
Claims priority, application Japan, Jun. 30, 1992, 4-172229
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—207 **3 Claims**



2. A semiconductor memory device comprising:

a plurality of memory cell blocks each including a first and a second group of memory cells, said memory cell blocks being arranged in a first direction;

a first amplifier block provided adjacently to one end of an arrangement of said memory cell blocks, coupled to one of said first and second groups in one of said memory cell blocks on said one end, and selectively transferring a data of one of said memory cells in said one of said first and second groups via a first internal data line extending in a second direction different from said first direction;

a second amplifier block provided adjacently to another end of said arrangement, coupled to one of said first and second groups in one of said memory cell blocks on said another end, and selectively transferring a data of one of said memory cells in said one of first and second groups via a second internal data line thereof extending in said second direction;

at least one third amplifier block arranged between said memory cell blocks, coupled to one of said first and second groups in one of said memory cell blocks adjacent to one side thereof, and to one of said first and second groups in one of said memory cell blocks adjacent to another side thereof, and selectively transferring a data of one of said groups coupled thereto via a third internal data line thereof extending along said second direction;

a first data line extending along said first direction and coupled commonly to said first and second internal data lines in said first and second amplifier blocks while being isolated from said third internal data line in said third amplifier block, said first and second amplifier blocks thereby being coupled to a common first input-output circuit via said first data line independently from said third amplifier block;

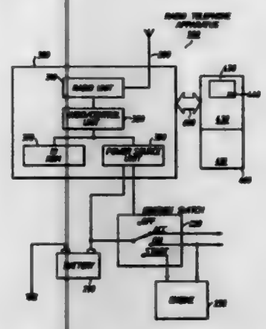
a second data line extending along said first direction and coupled to said third internal data lines in said third amplifier block and thereby coupling said third amplifier block to a second input-output circuit independently from said first and second amplifier blocks.

5,444,306

MOBILE RADIO TELEPHONE APPARATUS

Buntaro Sawa, Kanagawa, and Makoto Hoshino, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 1, 1993, Ser. No. 24,297
Claims priority, application Japan, Mar. 2, 1992, 4-044819
Int. Cl.[6] H02J *9/00*
U.S. Cl. 307—9.1 **5 Claims**



1. A radio telephone apparatus mounted on a car supplied power from a car battery, the car including an ignition switch having an "ON" position and an "OFF" position, the radio telephone apparatus comprising:

a power switch;

first detecting means for detecting an actuation of the power switch;

storing means coupled to the first detecting means for storing an operational state of the apparatus in response to a detection of the power switch actuation by the first detecting means;

second detecting means for detecting a functional position of the ignition switch;

power supply means for supplying the apparatus with electric power from the car battery; and

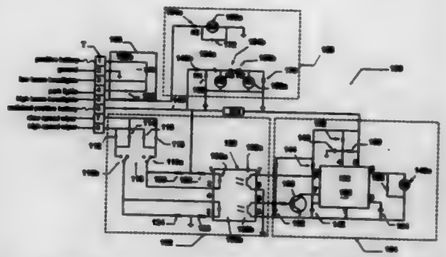
control means coupled to the storing means and the second detecting means for directing the electric power from the power supply means to selected sections of the apparatus if the operational state in the storing means indicates that the apparatus is in an operative state when the second detecting means detects that the ignition switch is switched from an "OFF" position to an "ON" position, and for not directing the electric power to the selected sections of the apparatus if the operational state in the storing means indicates that the apparatus is in a non-operative state when the second detecting means detects that the ignition switch is switched from the "OFF" position to the "ON" position.

5,444,307

WIPER-ACTIVATED HEADLIGHT CIRCUIT

Allen R. Sheets, and Donald Parks, both of Danville, Va., assignors to Sheets Electronics, Inc., Danville, Va.

Filed Jul. 9, 1993, Ser. No. 87,449
Int. Cl.[6] H01H *47/24*; B60Q *1/02*; B60L *1/14*
U.S. Cl. 307—10.8 **10 Claims**



1. A circuit for automatically actuating the headlights of a motor vehicle upon actuation of the vehicle's windshield wiper comprising:

(a) a headlight circuit operatively connecting the headlights to a power source, the headlight circuit including a headlight switch for turning the headlights on and off, and a dimmer switch for selectively activating the high-beam lamps and low-beam lamps;

(b) a wiper circuit operatively connecting the vehicle's wipers to a power source for powering the vehicle's windshield wipers, said windshield wiper circuit including a wiper switch for turning on said windshield wipers;

(c) a relay circuit operatively connecting said headlight circuit and said windshield wiper circuit for actuating the low beam lamps when the windshield wipers are activated, said relay circuit including interlocking means for deactivating said low-beam lamps upon manual actuation of the high-beam lamps.

5,444,308

NANOSECOND TRANSMISSION LINE CHARGING APPARATUS

James P. O'Loughlin, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 72,621
Int. Cl.[6] H03K *3/00*
U.S. Cl. 307—106 **20 Claims**

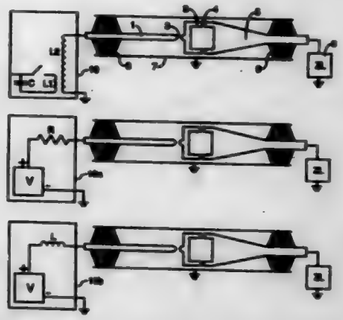
1. A system for charging a pulse forming transmission line with an electrical pulse, said pulse forming transmission line having a predetermined impedance, said system comprising:

a source transmission line which is charged with an electrical pulse which ranges up to include several hundred kilovolts, and which has a lower electrical impedance than the pulse forming transmission line;

a first high pressure gas switch, which connects the pulse forming transmission line to the pulse forming transmission line, and which switches in times that can typically range between about 10.0 nanoseconds and 100 picoseconds and closes to allow the electrical charge to flow to and charge the pulse forming transmission line in times that can range down to about the order of nanoseconds;

an output transmission line which has an electrical impedance that matches the predetermined impedance of the pulse forming transmission line said output transmission line being electrically connected with said pulse forming transmission line to deliver said electrical pulse thereto;

a second high pressure gas switch which electrically connects the pulse forming transmission line to the output



transmission line and which closes automatically when the pulse forming transmission line is charged with said electrical charge, said second high pressure gas switch thereby causing the pulse forming transmission line to output said electrical pulse; and

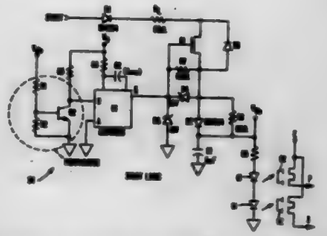
a means for charging the source transmission line.

5,444,309

REDUCED WATTAGE PLC INTERFACE

Mark E. Ianes, Asheville, and Rick A. Hurley, Fletcher, both of N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1993, Ser. No. 62,522
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 307—125 **15 Claims**



1. An interface device for coupling between an output of a controlling device, the output carrying a Start command signal, and an input of a controlled device responsive to the Start command signal, comprising:

a load resistor and a capacitor in series with one another to define a charging circuit in parallel with the output carrying the Start command signal;

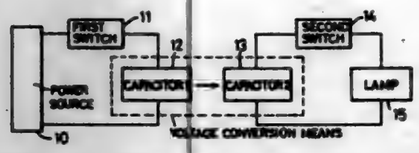
a switching circuit coupled in series with the charging circuit, the switching circuit having a switching transistor operable to charge the capacitor from the Start command signal when the Start command signal is present and the switching transistor is conducting;

a comparator coupled to the switching transistor and to the capacitor, the comparator being operable to switch the switching transistor off when the capacitor charges to a predetermined voltage and thereby to decouple the capacitor from further charging by the charging circuit; and,

an output circuit coupled in parallel with the capacitor, the output circuit being operable to activate the controlled

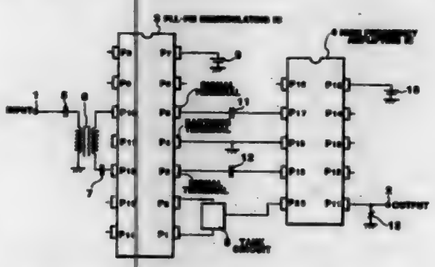
device from a voltage on the capacitor, for a period following switching off of the switching circuit;
whereby loading of the output of the controlling device is minimized.

5,444,310
APPARATUS FOR OPERATING DISCHARGE LAMPS
Shozo Katsuka, Hirakata, and Masahito Ohnishi, Amagasaki, both of Japan; assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Continuation of Ser. No. 881,293, May 11, 1992, abandoned.
This application Jul. 11, 1994, Ser. No. 272,614
Claims priority, application Japan, May 15, 1991, 3-109474; May 15, 1991, 3-110625
Int. Cl.[6] H05B *37/00, 39/00*
U.S. Cl. 307—125 17 Claims



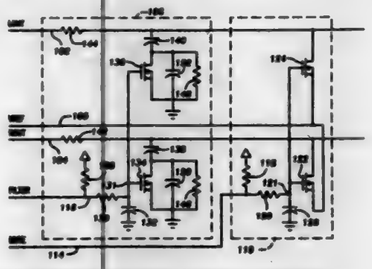
1. An apparatus for stably lighting discharge lamps comprising:
input power source having first and second ends;
capacitor means having first and second ends respectively coupled to said first and second ends of said input power source, establishing a first closed loop;
capacitor charging means including a first switch means repeatedly turned ON and OFF at a first frequency and coupled to said first closed loop between one of said first and second ends of said input power source and one of said first and second ends of said capacitor means;
a discharge lamp directly connected across said first and second ends of said capacitor means establishing a second closed loop;
capacitor discharging means including a second switch means and coupled to said second closed loop between one of said first and second ends of said capacitor means and said discharge lamp, said second switch means being repeatedly turned ON and OFF at a second frequency; and
control means connected to said first and second switch means for controlling ON/OFF operation of said first and second switch means so that said first and second switch means are not simultaneously turned ON, said control means controlling said first and second switch means for storing charge within said capacitor means when said first switch means is turned ON and said second switch means is turned OFF and for controlling said first and second switch means for discharging stored charge from said capacitor means through said discharge lamp by keeping said second switch means turned ON and said first switch means turned OFF until substantial termination of a lamp current flowing through said discharge lamp, thereby limiting an over lamp current and cyclically supplying a pulsed lamp current to said discharge lamp for flickerless operation wherein the second frequency exceeds a critical fusion frequency for eliminating flicker.

5,444,311
INTEGRATED CIRCUIT AND ITS CONNECTING CIRCUIT
Tadashi Imai, and Hideki Oto, both of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 30, 1990, Ser. No. 574,781
Claims priority, application Japan, Aug. 31, 1989, 1-225194
Int. Cl.[6] H03K *3/26*
U.S. Cl. 327—565 4 Claims



1. An integrated circuit configuration comprising:
a first integrated circuit, comprising:
a first integrated circuit chip;
a first terminal, formed in said first integrated circuit chip, for grounding said first integrated circuit chip;
first and second output terminals, formed in said first integrated circuit chip and disposed adjacent to said first terminal on opposite sides of said first terminal, for outputting balanced signals having equal amplitudes and being opposite in phase; and
a second integrated circuit, comprising:
a second integrated circuit chip;
a second terminal, formed in said second integrated circuit chip, for grounding said second integrated circuit chip, said second terminal being coupled to said first terminal; and
first and second input terminals, formed in said second integrated circuit chip and disposed adjacent to said second terminal on opposite sides of said second terminal and coupled to said first and second output terminals, respectively, for inputting said balanced signals from said first and second output terminals of said first integrated circuit.

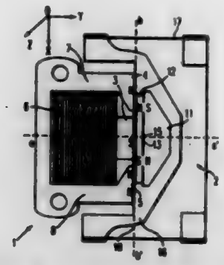
5,444,312
SOFT SWITCHING CIRCUIT FOR AUDIO MUTING OR FILTER ACTIVATION
Ronald D. Noblett, Sugarland, and Kurtis J. Bowman, Cypress, both of Tex., assignors to Compaq Computer Corp., Houston, Tex.
Filed May 4, 1992, Ser. No. 878,443
Int. Cl.[6] H04B *15/00*
U.S. Cl. 327—552 11 Claims



1. An audio signal switching circuit, comprising:

a reference voltage;
an audio signal having a direct current offset relative to said reference voltage; and
means connected to said reference voltage and said audio signal for gradually providing a substantially short circuit connection between said reference voltage and said audio signal wherein said short circuit means progressively changes a resistance between said audio signal and said reference voltage.

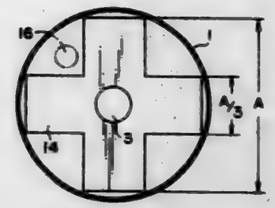
5,444,313
ELECTROMAGNETIC ACTUATOR HAVING TWO OPPOSITE PHASE MOVABLE PARTS
Claude Oudet, Besancon, France, assignor to Moving Magnet Technologies S.A., Besancon, France
PCT No. PCT/FR93/00429, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO93/22821, PCT Pub. Date Nov. 11, 1993
PCT Filed May 4, 1993, Ser. No. 170,264
Claims priority, application France, May 4, 1992, 92 05465
Int. Cl.[6] H02K *33/06*
U.S. Cl. 310—17 10 Claims



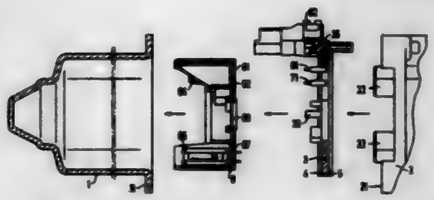
1. Electromagnetic actuator comprising a fixed stator (1) comprising at least one exciter coil (6), the actuator further comprising a moving part (2) fitted with thin permanent magnets magnetized in the direction of the air gap, wherein the stator incorporates at least one W-shaped part, said stator comprising a central pole (3) having length X_C and two lateral poles (4, having length X_L the coil enclosing the central limb, and wherein said mobile device (2) consists of at least two independent components (10, 20) each moving in directions parallel to the intersection of the plane of the air gap and of the median plane the fixed stator (1) and in opposite directions, each of said moving parts (10, 20) incorporating a pair of thin magnets (12, 13; 22, 23) magnetized in alternating directions and fastened to a yoke (11, 21) made of a soft material, the thin magnets (22, 23) of one of said moving parts (20) being magnetized in the direction opposite to the corresponding thin magnets (12, 13) belonging to the adjacent moving part (10), the yokes (11, 21) and the stator delineating the air gap E.

5,444,314
MINIATURE MOTOR
Kazuo Okada, Chiba, Japan, assignor to Mabuchi Motor Co., Ltd., Matsudo, Japan
Filed Dec. 16, 1993, Ser. No. 169,997
Claims priority, application Japan, Dec. 24, 1992, 4-088346 U
Int. Cl.[6] H02K *5/24*
U.S. Cl. 310—40 MM 3 Claims

1. A miniature motor comprising a case made of a metallic material, formed into a bottomed hollow tubular shape and having a permanent magnet fixedly fitted to the inner circumferential surface thereof, a rotor consisting of an armature and a commutator, and a case cover engaged with an open end of said case and having brushes making sliding contact with said commutator and input terminals electrically connected to said brushes; said rotor being rotatably supported by bearings provided on the bottom of said case and said case cover, and a printed circuit board having a control element and a soundproofing plate made of a soundproofing material being provided outside said case cover, characterized in that said soundproofing plate is formed into a cross shape when projected on a plane orthogonally intersecting the axial line of said rotor.



5,444,315
BUSHING ISOLATOR FOR LEAD-THROUGH OF ELECTRICAL LINES PROVIDING MOISTURE SEALING BETWEEN TWO HOUSINGS
Peter Adam, Höchberg, and Peter Michel, Kleinrinderfeld, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany
Filed Dec. 18, 1992, Ser. No. 993,160
Int. Cl.[6] H02K *15/00*
U.S. Cl. 310—42 19 Claims



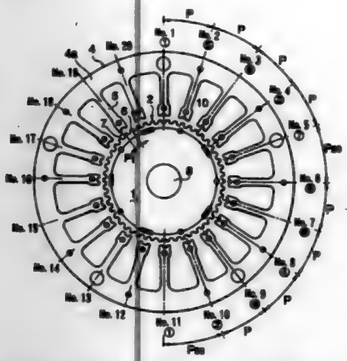
1. A bushing isolator for lead-through of electrical lines between two housing parts, comprising:
an inelastic carrier;
electrical lines completely injection-molded into the inelastic carrier and covered by both faces of the inelastic carrier; and
an elastic seal injection-molded onto the inelastic carrier at both faces thereof such that the elastic seal is pressed evenly and uniformly only against a smooth and uniformly stable surface of the inelastic carrier, said elastic seal having equal elasticity over an entire surface of contact with the inelastic carrier, said elastic seal providing a complete and uniform moisture sealing between the housing parts.

5,444,316

HYBRID STEPPING MOTOR, DRIVING METHOD FOR THE SAME AND COIL WINDING METHOD FOR THE SAME

Hiroo Okya, Iruma; Toshiaki Sato, Tokyo; Toshio Takahashi, Tokyo; Makoto Wakakuwa, Higashi-Yamato; Mizukami Masao, Tokyo; Masaru Fujita, Shiki; Sadao Miyazawa, Nagano, and Noriaki Aruga, Ina, all of Japan, assignors to Ishikawajima Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,796
Claims priority, application Japan, Jul. 31, 1992, 4-205669; Jul. 20, 1993, 5-179298
Int. Cl.[6] H02K 37/00
U.S. Cl. 310—49 R 29 Claims



1. A ten-phase hybrid stepping motor comprising:

a rotor having rotor teeth, the rotor having an axial direction, a circumferential direction and a radial direction perpendicular to the axial direction, the rotor teeth including N pole teeth and S pole teeth alternatively arranged in the circumferential direction of the rotor at constant intervals, the rotor teeth having a rotor tooth pitch, the rotor tooth pitch being equal to a pitch between two adjacent N or S pole teeth;

a stator having Nos. 1-20 main poles, the main poles surrounding the rotor in circumferential direction of the rotor, each main pole extending toward the rotor in the radial direction of the rotor, each main pole having a free end and a center line in its extending direction, a stator tooth being formed at the free end of each main pole, the stator teeth facing the rotor teeth; and

a coil around each main pole for excitation of the main pole, whereby stepping motion of the rotor is realized upon excitation of the main poles, the magnitude of stepping pitch being obtained by dividing the rotor tooth pitch by ten,

Nos. 1–10 main poles and Nos. 11–20 main poles facing each other in radial direction of the rotor respectively, an arbitrary main pole and a fifth next main pole having a 90-degree relation, and

the teeth on Nos. 1–10 main poles and those on Nos. 11–20 main poles respectively having positions determined by the following expression;

$$Pt \times k + m \times \Theta$$

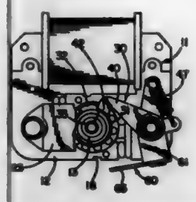
where Pt represents the rotor tooth pitch, Θ represents the magnitude of the stepping pitch, m represents an integer between 0 and 9 but different from k; k represents an arbitrary integer between 0 and K—1 and K represents a number of N pole teeth.

5,444,317

BRAKING MECHANISM FOR A SHADED-POLE MOTOR

Leon J. Anderson, Poplar Grove; Scott R. Larkin, Rockton; Jeffrey D. Reinetter, Machesney Park, and Dennis H. Walters, Rockford, all of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed Nov. 15, 1993, Ser. No. 151,928
Int. Cl.[6] H02K 7/102, 49/00
U.S. Cl. 310—77 11 Claims



1. A shaded-pole electric motor comprising a stator having a laminated core, a field coil and a shading coil and further comprising a rotor, said field coil being operable when energized to produce magnetic flux in said core and effect rotation of said rotor, and a brake freeing said rotor for rotation when said field coil is energized and acting to automatically stop said rotor when said field coil is de-energized, said brake comprising a member rotatable with said rotor and having a radially projecting lug with a circumferentially facing stop surface, a pawl having a tooth with a stop surface, a tubular mounting hub integral with said pawl and pivotally supporting said pawl on said stator to swing between a braking position in which said stop surface of said tooth engages the stop surface of said lug to stop said rotor and a released position in which said tooth clears said lug to permit rotation of said rotor, a spring connected between said pawl and said stator and urging said pawl toward said braking position, an arm integral with and projecting generally radially from said hub and spaced circumferentially from said pawl, a pole piece connected rigidly to and swingable in unison with said arm and spaced from said core when said pawl is in said braking position, said pole piece being magnetically attracted to said core when said field coil is energized and acting to overcome the force exerted by said spring on said pawl and cause said pawl to swing to said released position, said pawl, said arm and said hub constituting a single piece unit which is substantially symmetrical with respect to a radial plane extending through said hub midway between the ends thereof whereby said unit may be pivotally mounted on said stator in a left hand orientation adjacent one side of said rotor when said rotor is rotated in one direction and may be turned end-for-end through 180 degrees and pivotally mounted on said stator in a right hand orientation adjacent the opposite side of said rotor when said rotor is rotated in the opposite direction.

5,444,318

MOTOR WITH PERMANENT MAGNET ACTUATED BRAKE

William R. Stumpf, Kingsville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 22, 1994, Ser. No. 200,111
Int. Cl.[6] H02K 7/10, 49/00, 21/26, 49/10
U.S. Cl. 310—77 22 Claims

1. A motor comprising:

a housing;

a stator having inner and outer walls;

the stator comprising first and second opposed poles (a) formed on opposed locations of the inner wall, (b) having cylindrical inner surfaces defining a longitudinal axis, and (c) extending axially of the inner wall;

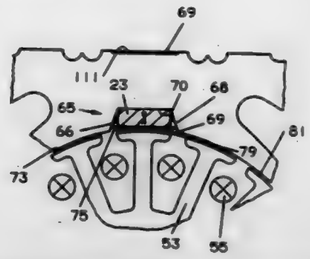
the stator comprising first and second stator windings wound, respectively, around the first and second poles;

an armature rotatably supported in the housing and extending along and rotatable about the longitudinal axis of the stator;

the armature comprising a rotor and an armature winding wound on the rotor;

a switch having a first position for supplying power to the stator and armature windings for operation of the motor and having a second position for short circuiting the armature windings;

a first and second opposed, axially extending slots formed in the first and second poles;



first and second permanent magnets located respectively in the first and second slots;

first and second straps, respectively, extending along the first and second slots, extending around and retaining the first and second magnets in the first and second slots and having a width approximately equal to the width of first and second slots to thereby substantially fully encloee the first and second magnets within the first and second slots; and

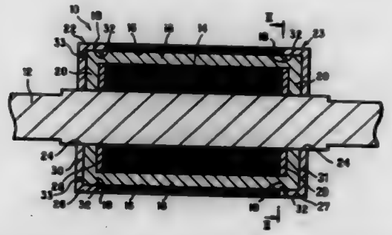
first and second means for retaining, respectively, the first and second straps in tight engagement with the first and second magnets.

5,444,319

SQUIRREL-CAGE ROTOR FOR HIGH-SPEED INDUCTION MOTOR

Kosei Nakamura, Minamitsuru; Yoshiyuki Hayashi, Sunto; Masami Kimijima, and Yohei Arimatsu, both of Minamitsuru, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed May 16, 1994, Ser. No. 232,159
Claims priority, application Japan, Sep. 17, 1992, 4-247906
Int. Cl.[6] H02K 17/16
U.S. Cl. 310—211 4 Claims



1. A squirrel-cage rotor for a high-speed induction motor, comprising:

a rotor shaft

a laminated core composed of stacked magnetic laminations and provided with a plurality of through holes spaced peripherally and extending axially between axial ends of said stacked magnetic laminations, said core being fixed to said rotor shaft;

a pair of reinforcing members each formed as a unitary annular element of generally U-shaped axial cross-section at a circumferential region, said members each having an open inner portion in a radially inward direction formed by an outer cylindrical wall having an outer diameter generally the same as that of said laminated core, an annular end wall which extends in a radially inward direction from an axial outer edge of said outer cylindrical wall, and an annular inner wall radially extending from an axially inner edge and provided with a plurality of axially extending apertures positioned radially inward of said outer cylindrical wall and spaced peripherally corresponding to respective ones of said laminated core plurality of axial through holes, each of said reinforcing members being positioned in contact with an end of said laminated core with said apertures positioned to communicate respectively with said through holes; and

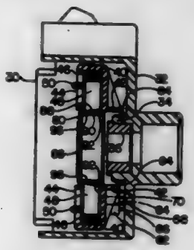
a conductor section integrally formed in said laminated core and reinforcing members, including, a plurality of secondary conductors extending through said laminated core plurality of through holes and through said reinforcing members corresponding plurality of apertures, and an end ring connecting said secondary conductors formed in said open inner portion of each of said reinforcing members such that said conductor section integrally connects said laminated core and reinforcing members together, said reinforcing members preventing said end rings from being deformed due to centrifugal force.

5,444,320

ELECTRIC MOTOR WITH BRUSH RETAINER

Michael T. Clarke, Lake Odessa, and Dennis G. Reid, Lansing, both of Mich., assignors to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Oct. 29, 1993, Ser. No. 145,255
Int. Cl.[6] H02K 5/14, 13/00
U.S. Cl. 310—239 11 Claims



1. An electric motor comprising:

a drive shaft,

an armature and commutator assembly fixed on said drive shaft,

a housing disposed around said assembly,

a magnet disposed between said assembly and said housing,

an endframe fixed to said housing, said endframe having therein

a journal,

a bearing mounted in said journal and supporting said drive shaft,

a brush in contact with a commutator portion of said assembly,

brush tubes for slidably retaining said brush, and for retaining a spring urging said brush into engagement with said commutator portion, and

a brush retainer mounted on said journal and having a face portion overlying a face portion of said bearing,

said journal having ribs on an exterior wall thereof and extending axially thereof,

said retainer being of plastic,

said journal ribs and said plastic retainer being configured

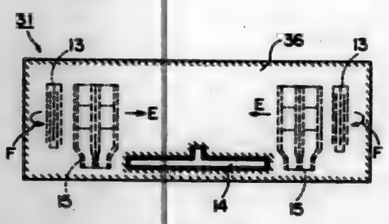
such that said retainer is held on said journal by said ribs in non-rotative fashion,
said retainer face portion abutting an end of said commutator portion.

5,444,321
INDUCTION ALTERNATING CURRENT GENERATOR AND A GENERATION METHOD
Yoshiaki Honda, Katsuta; Hitoshi Minorikawa, Mito, and Hideaki Kamohara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 1, 1993, Ser. No. 114,247
Claims priority, application Japan, Sep. 3, 1992, 4-235611
Int. Cl.[6] H02K *01/22, 01/32*
U.S. Cl. 310—263 12 Claims



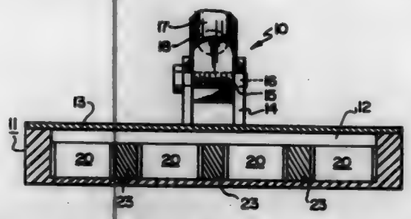
1. An induction alternating current generator, comprising:
a pair of rotor cores forming an interior space, each one of said pair of rotor cores having a plurality of claw poles which engage one another forming gaps therebetween;
first means for generating electromagnetic excitation operatively arranged in the interior space for exiting said plurality of claw poles; and
second means for generating electromagnetic excitation independently of said first means, said second means being operatively arranged in said gaps.

5,444,322
ELASTIC CONVOLVER
Kunio Minami, and Michio Kadota, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed Mar. 1, 1994, Ser. No. 204,591
Claims priority, application Japan, Mar. 2, 1993, 5-041443; Oct. 21, 1993, 5-263770
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—313 D 13 Claims



1. An elastic convolver comprising:
a piezoelectric substrate composed of an $LiNbO_3$ single crystal;
a set of input interdigital transducers disposed spaced apart from each other by a predetermined distance on said piezoelectric substrate;
a waveguide path disposed between said input interdigital transducers;
multistrip couplers respectively formed between said waveguide path and the input interdigital transducers; and
piezoelectric thin films formed on said piezoelectric substrate at at least areas where said input interdigital transducers are disposed, said piezoelectric thin films not being formed on said waveguide path.

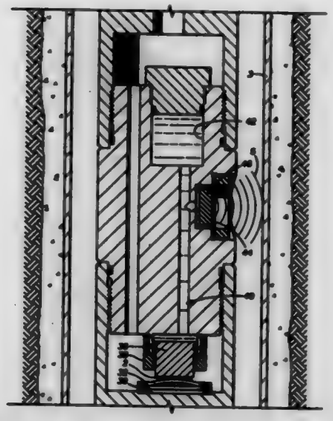
5,444,323
ACOUSTIC BROOM
Harry Brazil, Main Highway, P.O. Box 463, Bay Roberts, Newfoundland A0A 1G0, Canada
Filed Sep. 2, 1993, Ser. No. 114,933
Claims priority, application Canada, Oct. 27, 1992, 2081485
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—328 15 Claims



1. An acoustic broom comprising:
(a) an enclosed housing formed of a material which is transparent to high-frequency wave energy;
(b) a plurality of ceramic, plate-like generators of said wave energy within said housing, each said ceramic plate-like generator comprising a cylindrical sub-housing formed of a material which is transparent to said wave energy, each said ceramic, plate-like generator of said wave energy being secured within said cylindrical sub-housing, and means sealing the circular ends of said cylindrical sub-housing;
and (c) operator means to act upon said ceramic, plate-like generators to generate and propagate said high-frequency wave energy.

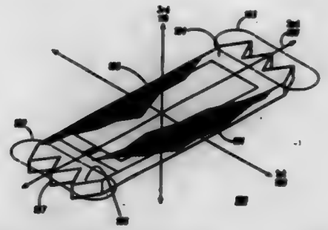
5,444,324
MECHANICALLY AMPLIFIED PIEZOELECTRIC ACOUSTIC TRANSDUCER
John F. Priest, Tomball, and Mathew G. Schmidt, Houston, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Jul. 25, 1994, Ser. No. 279,944
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—334 10 Claims

1. An apparatus for increasing the signal amplitude of a piezoelectric acoustic transducer comprising:
a piezoelectric actuator;
an arched spring affixed at one end to one end of said actuator and affixed at the other end to the other end of said actuator substantially perpendicularly to the thinnest dimension of said actuator;
a rigid surface, cooperatively coupled to said arched spring so that application of an electrical voltage to said actuator for changing the thickness of said actuator also changes the length of said actuator and the arched height of said arched spring, whereby said rigid surface is moved a substantially greater distance than the change in length of said actuator; and
an hydraulic transmission interposed between said rigid surface and a material to be acoustically energized, whereby the movement of the rigid surface is transferred



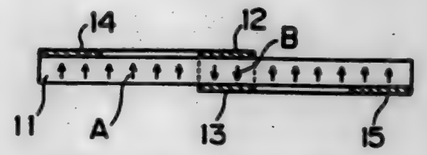
through the transmission to acoustically energize the material.

5,444,325
SURFACE-MOUNTABLE CRYSTAL RESONATOR
Kevin L. Haas, Hoffman Estates; Ken A. Haas, Hanover Park, and Kimber J. Vought, Wauconda, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 109,192, Aug. 19, 1993, abandoned.
This application Feb. 14, 1995, Ser. No. 388,236
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—368 4 Claims



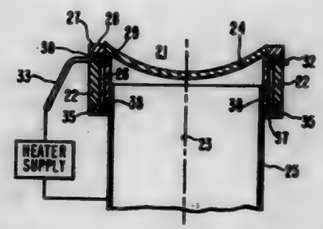
1. A surface-mountable crystal resonator comprising:
a piezoelectric crystal substrate having a first major surface, a second major surface, and a first attachment area, wherein the first major surface and second major surface are substantially co-planar separated by thickness of the crystal substrate and are parallel to a first major axis and a second major axis and perpendicular to a third major axis, wherein the first major axis, the second major axis, and the third major axis are substantially perpendicular to each other, and wherein the first attachment area is substantially parallel to the first major axis and includes at least two extensions, each of the at least two extensions comprising:
a first extension surface, wherein the first extension surface is planar and substantially at 45 degree angles with respect to the first major axis and the second major axis and substantially parallel with respect to the third major axis; and
a second extension surface, wherein the second extension surface is planar and substantially at 45 degree angles with respect to the first major axis and the second major axis and substantially parallel with respect to the third major axis, and wherein the first extension surface and the second extension surface are substantially perpendicular;
a first predetermined electrode pattern deposited on the first major surface;
a second predetermined electrode pattern deposited on the second major surface, wherein the first predetermined electrode pattern and the second predetermined electrode pattern form an active area of resonance; and
a first predetermined attachment electrode pattern deposited on the first attachment area, wherein the first predetermined attachment electrode pattern is electrically coupled to the second predetermined electrode pattern.

5,444,326
PIEZOELECTRIC-RESONANCE DEVICE
Ryuhei Yoshida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed Feb. 24, 1994, Ser. No. 201,923
Claims priority, application Japan, Feb. 25, 1993, 5-037834
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—359 10 Claims



1. A piezoelectric-resonance device comprising:
a piezoelectric ceramic body;
a pair of excitation electrodes provided on opposite surfaces of said piezoelectric ceramic body; and
conductive portions connecting said excitation electrodes and side edges of said piezoelectric ceramic body,
the portion of said piezoelectric ceramic body between said opposed excitation electrodes being uniformly polarized in one direction, and the remaining portion of said body being polarized in the opposite direction.

5,444,327
ANISOTROPIC PYROLYTIC GRAPHITE HEATER
Robert C. Treseder, Salt Lake City, Utah, and Thomas J. Grant, Cupertino, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed Jun. 30, 1993, Ser. No. 86,271
Int. Cl.[6] H01J *1/22*
U.S. Cl. 313—337 12 Claims



1. An indirectly heated cathode for an electron tube comprising: an electron emitter, a heater connected to said emitter for heating said emitter by radiation and conduction, said heater including an anisotropic pyrolytic graphic structure, said heater structure comprising a pair of opposite end edges,

electric conductor means connected to said end edges for supplying current from a heater power supply to said heater structure end edges so current flows through said heater structure between said end edges in a direction at right angles to basal planes of said heater structure, and a metal support member electrically and mechanically connected to said emitter and one of said edges for supplying current from one terminal of said supply to said emitter and said one edge.

5,444,328
ELECTRON TUBE COMPRISING A SEMICONDUCTOR CATHODE

Tom Van Zuijlen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 152,563
Claims priority, application European Pat. Off., Nov. 12, 1992, 92203475
Int. Cl.[5] H01J 29/04
U.S. Cl. 313—446 14 Claims



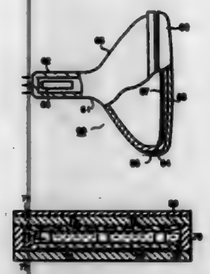
10. An electron tube comprising a first semiconductor device for generating electrons, which device has a semiconductor body with at least one pn junction between an n-type region and a p-type region adjacent to a main surface of said semiconductor body in which electrons emitted from the semiconductor body are generated by avalanche multiplication by applying a voltage in the reverse direction across the pn junction in the semiconductor body, the pn junction at a location of an emissive surface region extends substantially parallel to the main surface and locally has a lower breakdown voltage than part of the pn junction away from said location, said part having the lower breakdown voltage being separated form the surface by an n-type layer having such a thickness and doping that a depletion zone does not extend as far as the surface at a breakdown voltage but remains separated from said surface by a surface layer which is sufficiently thin to pass the generated electrons, characterized in that for influencing said electrons the main surface of the semiconductor body comprises at least a second structure having a first surface region of a first conductivity type which is at least partly surrounded by a second surface region, said second surface region being substantially intrinsic or of a second conductivity type opposite to said first conductivity type.

5,444,329
ANTIREFLECTION FILM AND DISPLAY APPARATUS COMPRISING THE SAME

Hideni Matsuda, Fukaya; Takeo Itou, Kumagaya; Hisashi Chigusa, Fukaya, and Michiye Abe, Tomioka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 5, 1993, Ser. No. 145,849
Claims priority, application Japan, Nov. 6, 1992, 4-296731
Int. Cl.[5] H01J 29/88
U.S. Cl. 313—479 18 Claims

1. An antireflection film arrangement having a multilayer structure, comprising:
a substrate; and
an antireflection multi-layer film including at least two thin films formed on said substrate, a first of said at least two films being an outermost thin film and being an odd-numbered film;
wherein a second of said at least two thin films contains a coloring material, said second film being an even numbered film counting from said first outermost film,
wherein odd-numbered films are free of said coloring material,
wherein said antireflection multi-layer film absorbs at least



5% of light in an entire range of wavelength of 400–700 nm, and
wherein a reflectance of said antireflection multi-layer film with regard to said range of wavelength, light of which said antireflection multi-layer film can absorb, is smaller than a reflectance of said substrate.

5,444,330
ELECTROCHROMIC, ELECTROLUMINESCENT AND ELECTROCHEMILUMINESCENT DISPLAYS

Nicholas Leventis, Sommerville, and Mark S. Wrighton, Winchester, both of Mass., assignors to Molecular Displays, Inc., Gaithersburg, Md.

Division of Ser. No. 485,379, Feb. 26, 1990, Pat. No. 5,189,549.
This application Feb. 18, 1993, Ser. No. 19,242
Int. Cl.[6] H01J 1/62
U.S. Cl. 313—506 27 Claims



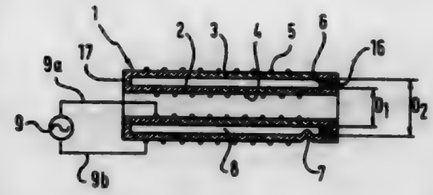
1. An electrochemiluminescent display pixel comprising a substrate, a pair of electrodes mounted face up and side by side on one side of said substrate and in close proximity to each other, and an ionically conductive electrolyte layer over said pair of electrodes, said electrolyte including an electrochemiluminescent chemical substance so that when a bias is imposed between the electrodes of said pair, said electrochemiluminescent chemical substance emits light.

5,444,331
DIELECTRIC BARRIER DISCHARGE LAMP

Hiromitsu Matsuno; Tatsuki Igarashi, both of Hyogoken; Tatsumi Hiramoto, Tokyo, and Yasuo Ooniaki, Hyogoken, all of Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 184,143
Claims priority, application Japan, Jan. 20, 1993, 5-023536; Jan. 29, 1993, 5-032827; May 27, 1993, 5-146690
Int. Cl.[6] H01J 65/04, 61/26
U.S. Cl. 313—553 15 Claims

1. In a dielectric barrier discharge lamp wherein the discharge container is filled with a discharge gas in which excimer molecules are formed by means of a dielectric discharge and which has a window for transmitting a light generated



from the excimers, the improvement comprising a getter positioned in the discharge container exposed to the discharge gas.

5,444,332
HOLLOW - CATHODE ELECTRODE FOR HIGH-POWER, HIGH-PRESSURE DISCHARGE DEVICES

Jim J. Chang, 7644 Ashford Way, Dublin, Calif. 94568, and Terry W. Alger, 901 Renown Dr., Tracy, Calif. 95376

Filed Oct. 8, 1993, Ser. No. 133,400
Int. Cl.[6] H01J 1/30
U.S. Cl. 313—618 19 Claims

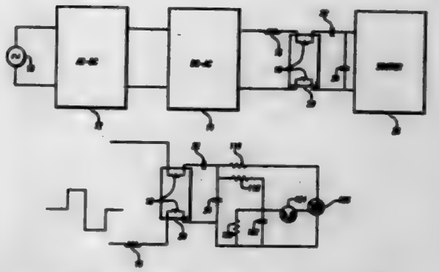


1. A gas discharge device comprising:
a gas chamber;
an anode within said gas chamber; and
an angularly shaped cold cathode within said gas chamber spaced apart from said anode, said cold cathode having a height, h_1, along a central axis therethrough defined by said annular shape forming an inner surface and an outer surface, said inner surface having a minimum inner diameter of d_{1min} at one end of h_1, a maximum inner diameter of d_{1max} at the other end of h_1 and said outer surface having an outer diameter of d_2, each defined relative to said central axis wherein $d_2 > d_{1max} > d_{1min}$, said cathode being oriented with said minimum inner diameter end farthest from said anode and said maximum inner diameter end closest to said anode, formed in said inner surface are a plurality of annular grooves each of a selected depth and width defining two sides thereof with said sides being perpendicular to said central axis, said plurality of annular grooves divide said inner surface into a plurality of N annular regions each having an inner diameter of d_{1n} where N is at least 2 with $d_{11}=d_{1min}$ and $d_{1N}=d_{1max}$.

5,444,333
ELECTRONIC BALLAST CIRCUIT FOR A FLUORESCENT LIGHT

Lake Lau, Walnut, Calif., assignor to Lights Of America, Inc., Walnut, Calif.

Filed May 26, 1993, Ser. No. 66,564
Int. Cl.[6] H05B 39/00
U.S. Cl. 315—94 7 Claims



1. An electronic ballast circuit for a fluorescent light comprising:
circuit means for converting power from low frequency alternating current to high frequency alternating current to apply across a fluorescent light tube including at least one filament;
starter means responsive to the high frequency alternating current for preheating the at least one filament for a first time period and for eliminating current through the starter means after the first time period, wherein the starter means includes switch means having an open state and a closed state, the switch means being responsive to an initial supply of high frequency alternating current from the circuit means to automatically switch from the open state to the closed state, wherein the starter means preheats the at least one filament by circulating current through the switch means and the at least one filament when the switch means is in the closed state, the switch means further including current reducing means for reducing the current through the switch means over time and wherein the switch means automatically switches from the closed state to the open state when the current reducing means reduces the current through the switch means to a predetermined level; and
switch protection means for preventing the switch means from switching from the open state to the closed state after the switch means has automatically switched from the closed state to the open state.

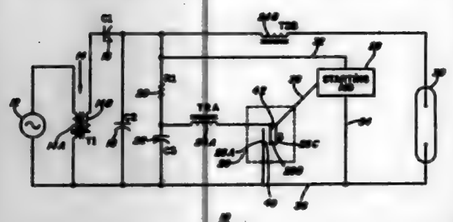
5,444,334
SYSTEM FOR STARTING A HIGH INTENSITY DISCHARGE LAMP

Lawrence W. Speaker, and George E. Kiefer, both of Hendersonville, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 15, 1994, Ser. No. 306,342
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—209 CD 11 Claims

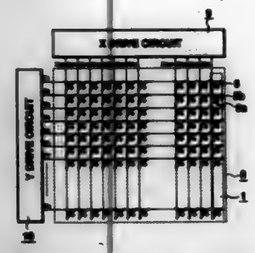
1. A ballast circuit arrangement for a discharge lamp, said ballast circuit arrangement having a hot restrike characteristic and comprising:
an input transformer receptive of an input signal, said input transformer having a first and a second winding associated therewith;
a first capacitor coupled to said second winding of said first transformer so as to develop a voltage charge therefrom;

a resistor and a second capacitor member connected in series and coupled across said first capacitor;
a starting aid device coupled across said second winding of said input transformer, said starting aid device being operated so as to output a voltage pulse of a predetermined magnitude as a function of the output of said input transformer;
a spark gap device having a first, second and third electrode member, said first electrode member being coupled to said starting aid device so that, upon the output of said voltage pulse, a first spark gap between said first electrode and said second electrode is fired, and whereby, upon firing of



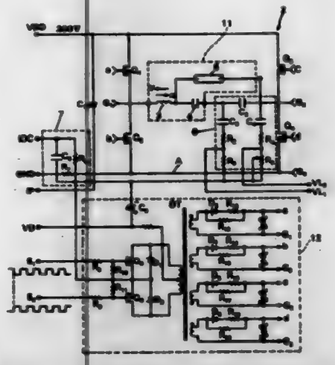
said first spark gap, a second spark gap between said second electrode and said third electrode is fired; and,
a pulse transformer having a primary winding connected to said second capacitor, and a secondary winding coupled to said discharge lamp and wherein, upon the firing of said second spark gap, said second capacitor is discharged through said primary winding of said pulse transformer thereby producing a starting pulse through said secondary winding of said pulse transformer, said starting pulse being effective for starting said discharge lamp under predetermined conditions including a condition where it is desired to restart said discharge lamp immediately following said discharge lamp being extinguished.

5,444,335
METHOD AND APPARATUS FOR CONTROLLING AN IMAGE DISPLAY HAVING GAS DISCHARGE LAMPS
Sadayuki Matsumoto; Takao Seikatsu; Takehiko Sekurai, and Junichiro Hoshizaki, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1993, Ser. No. 172,540
Claims priority, application Japan, Dec. 28, 1992, 4-348782; Oct. 8, 1993, 5-253290
Int. Cl.[6] H05B 41/16
U.S. Cl. 315—246 27 Claims



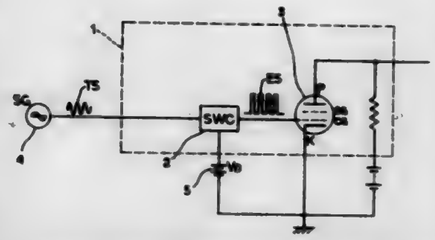
1. A gas discharge image display, comprising:
a plurality of discharge lamps which emit light beams of different colors, each discharge lamp including:
a container within which a rare gas is sealed at a pressure of at least 60 Torr;
at least one pair of electrodes for causing a discharge to occur in said container; and
voltage control means for performing three voltage operations to control an AC pulse voltage applied to each of said at least one pair of electrodes, said three voltage control operations including:
a first voltage control operation including a pulse which has a first polarity and a voltage higher than a discharge start voltage so as to start a discharge which starts light emission;
a second voltage control operation including a first AC pulse having a first polarity and a voltage between said discharge start voltage and a minimum voltage required to maintain light emission and a second AC pulse having a second polarity and a voltage between said discharge start voltage and the minimum voltage required to maintain light emission, wherein said first AC pulse and said second AC pulse maintain said discharge; and
a third voltage control operation including a discharge stopping pulse for reducing the voltage of one of said first AC pulse and said second AC pulse so as to stop said discharge.

5,444,336
AN INVERTER DRIVEN LAMP ARRANGEMENT HAVING A CURRENT DETECTION CIRCUITRY COUPLED TO A RESONANT OUTPUT CIRCUIT
Masataka Ozawa, Takarazuka; Shigeru Horii, Takatsuki; Koji Miyazaki, Yawata; Atsuo Waki; Takayuki Kasuitsui, both of Osaka; Nobuhisa Yoshikawa, Sakai; Kazuhiko Ito, Hirakata; Masayoshi Gyotea, Takatsuki, and Takaaki Saito, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 884,629, May 15, 1992, abandoned, which is a continuation of Ser. No. 698,757, May 10, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,882
Claims priority, application Japan, May 10, 1990, 2-120951; May 10, 1990, 2-120952; Mar. 29, 1991, 3-065816
Int. Cl.[6] H05B 41/36
U.S. Cl. 315—307 19 Claims



1. An apparatus for operating a discharge lamp comprising
a d.c. power source,
an inverter driven by the d.c. power source, for generating a signal having a predetermined frequency,
a resonance circuit connected to the inverter, for generating a resonance voltage to superimpose on the signal having the predetermined frequency,
a discharge lamp connected to the resonance circuit,
a lamp voltage detection means, connected to the discharge lamp, for detecting a lamp voltage applied to the discharge lamp and generating a first output signal in accordance with the lamp voltage,
a lamp start control means for receiving the first output signal and generating a control signal to the inverter so as to regulate an oscillation of the inverter during a period of time extending from the start of the discharge lamp until a stable lighting of the discharge lamp is obtained, the oscillation of the inverter being regulated so that a heavy current flows through the discharge lamp when a low voltage is applied to the discharge lamp, and a small current flows through the discharge lamp when a high voltage is applied to the discharge lamp.
the apparatus for operating a discharge lamp further comprising a lamp current detecting means, connected to the resonance circuit, for detecting a lamp current which flows through the discharge lamp and generating a second output signal in accordance with the lamp current to the lamp start control means,
the lamp start control means for further receiving the second output signal.

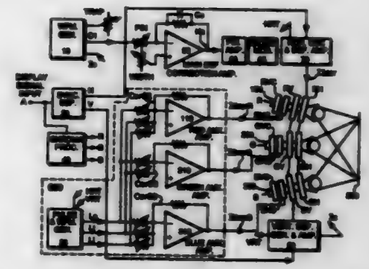
5,444,337
RADIO FREQUENCY AMPLIFYING APPARATUS
Yoshiro Ogawa, Yokohama; Haiji Okutsu, Tokyo, and Noriyuki Kobayashi, Ichikawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 4, 1993, Ser. No. 70,953
Claims priority, application Japan, Jun. 4, 1992, 4-144551
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—340 16 Claims



1. A radio frequency amplifying apparatus including a radio frequency amplifying circuit operative in response to a signal of radio frequency wave generated from a source generator, comprising:
a switching circuit means operatively connected to the source generator and generating an excitation signal in response to the signal from the source generator, said switching circuit means comprising a semiconductor element; and
a vacuum tube provided with an excitation input portion to which the excitation signal from the switching circuit means is inputted, said excitation input portion including a control grid of the vacuum tube to which said switching circuit means is directly connected.

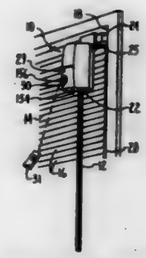
5,444,338
LEFT AND RIGHT RASTER CORRECTION
John B. George, Carmel, and Kevin M. Williams, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed May 11, 1994, Ser. No. 241,022
Int. Cl.[6] H01J 29/56
U.S. Cl. 315—371 21 Claims

1. A video display having display deflection correction comprising:
a main deflection coil mounted on said cathode ray tube for raster generation;
an auxiliary coil mounted on said cathode ray tube for raster correction;
means for generating a first corrective signal coupled to said main deflection coil for generating a given correction at a first display edge; and



means for generating a second corrective signal coupled to said auxiliary coil for generating said given correction at an edge opposite said first display edge.

5,444,339
MINI-BLIND ACTUATOR
Douglas R. Dowd, Chatsworth, and Winston G. Walker, Irvine, both of Calif., assignors to Harmonic Design, Inc., Chatsworth, Calif.
Filed Jun. 11, 1993, Ser. No. 76,556
Int. Cl.[6] H02K 7/14
U.S. Cl. 318—17 18 Claims



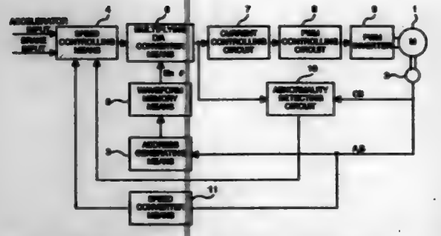
1. An actuator for rotating an actuating baton of a blind having a plurality of slats, comprising:
a gear assembly including a hollow coupling having a channel configured for closely receiving the baton therein;
an electric motor, wherein a rotor of the motor is connected to the gear assembly for rotating the baton in either direction;
a housing for holding the motor;
a fastening element attached to the housing and connectable to a surface adjacent the baton to prevent relative motion between the surface and the housing;
at least one direct current (dc) battery mounted in the housing and electrically connected to the motor for selectively energizing the motor to rotate the baton and thereby cause the slats to rotate; and
an electronic circuit having an open configuration, wherein the electrical circuit from the battery to the motor is incomplete, and a closed configuration, wherein the electrical circuit from the battery to the motor is complete, wherein the power switch is moved between the open and closed configurations by a control signal.

5,444,340

CONTROLLING APPARATUS OF MOTOR

Satoshi Tawaki, Hirakata; Yasufumi Ikkai, Kobe, and Yasuhiro Kondo, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 307,065
Claims priority, application Japan, Sep. 17, 1993, 5-232081
Int. Cl.[6] H02H 7/08; B60L 3/00
U.S. Cl. 318—139 2 Claims



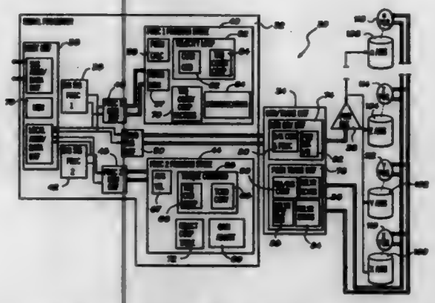
1. A controlling apparatus of a motor, comprising:
an encoder which is installed in the motor and outputs Z-phase, A-phase, B-phase, and CS signals;
an address generating means for generating digital address signals corresponding to a position of a rotor of the motor on the basis of the Z-phase, A-phase, and B-phase signals outputted from the encoder;
a speed controlling means for outputting speed controlling/-command signals corresponding to a difference between a speed command input and a rotating speed of the motor obtained from the A-phase or B-phase signal outputted from the encoder;
a waveform memory means for storing one cycle of waveform data for driving the motor and reading out the waveform data corresponding to the position of the rotor of the motor while the digital address signal outputted from the address generating means is used as an address input;
a multiplying D/A converter means for adding the speed controlling/command signal outputted from the speed controlling means to the waveform data outputted from the waveform memory means and performing a D/A conversion to the adding result;
a current controlling circuit which outputs an error signal between an output signal of the multiplying D/A converter means and a detecting signal of a load current flowing in the motor;
a PWM controlling circuit which generates a pulse width modulation signal in accordance with an output signal of the current controlling circuit;
a PWM inverter for driving the motor in accordance with an output signal of the PWM controlling circuit;
an agreement/disagreement detecting means for detecting agreement/disagreement of a timing level of an output signal of the waveform memory means which is binarized with using zero as a threshold and shifted a predetermined amount from a leading edge or trailing edge thereof and a level of the CS signal; and
a motor stopping means for stopping the motor in response to a disagreement detecting signal of the agreement/disagreement detecting means.

5,444,341

METHOD AND APPARATUS FOR TORQUE RIPPLE COMPENSATION

R. William Kneifel, II; Stephen T. Walsh, both of Cincinnati; Thomas W. Minnick, Franklin, all of Ohio; Robert M. Crevella, Rockford, Ill., and A. Harold Morser, Oxon, England, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 4, 1993, Ser. No. 145,557
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—432 20 Claims



1. A method for controlling a brushless DC motor in response to a current command value defining a desired torque according to a predetermined motor torque constant, the motor including a rotor moveable relative to a stator and stator windings electrically energizable to produce torque acting relatively on the rotor and stator, the method comprising the steps of:
a. producing position signals representing the position of the motor rotor relative to the motor stator;
b. producing in response to the position signals a torque compensation factor correlated to a ratio of actual torque to ideal torque produced by constant motor current at the relative position of rotor and stator represented by the position signals, said ideal torque being constant over a range of rotor position;
c. producing a compensated current command value in response to the current command value and the torque compensation factor, the compensated current command value defining a magnitude of motor current to produce the desired torque at the relative position of rotor and stator represented by the position signal; and
d. controlling a magnitude of current through the stator windings in response to the compensated current command value.

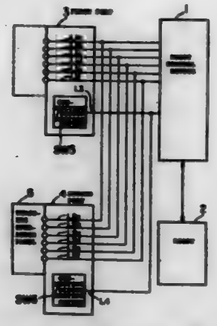
5,444,342

EMERGENCY STOP CIRCUIT OF TEACHING OPERATION PANEL

Yasuhiro Matsuo, Minamitsuru, and Yoshiki Hashimoto, Hadano, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00940, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO93/04413, PCT Pub. Date Mar. 4, 1993
PCT Filed Jul. 23, 1992, Ser. No. 30,275
Claims priority, application Japan, Aug. 15, 1991, 3-205110
Int. Cl.[6] G05B 9/02; B25J 9/22
U.S. Cl. 318—563 6 Claims

1. An emergency stop circuit of a teaching operation panel connected, through a plurality of ports, to a robot control device for teaching operation to a robot and having a function for urgently stopping the operation of the robot, said emergency stop circuit comprising:
stop means for urgently stopping said robot when said teaching operation panel is disconnected from one of said plurality of ports;
manually actuated connecting/disconnecting switches respectively arranged in each port; and
prohibiting means for prohibiting the operation of said stop



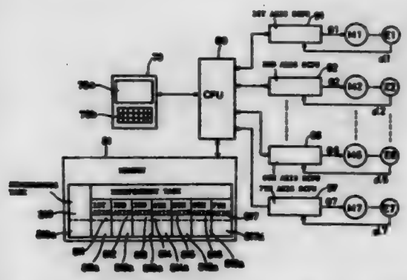
means when said teaching operation panel is disconnected from said one of said plurality of ports and connected to a second one of said plurality of ports while said connecting/disconnecting switches respectively arranged in said one and second one of said plurality of ports are turned ON.

5,444,343

METHOD AND APPARATUS FOR NUMERICALLY CONTROLLING INDUSTRIAL MACHINE

Minoru Enomoto, Obu; Toshio Aono, Kariya; Fumihiko Komuro, Aichi; Tsuyoshi Yamamoto; Katsuhisa Tanaka, both of Toyota, and Tomoyuki Ohtake, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Mar. 23, 1994, Ser. No. 216,441
Claims priority, application Japan, Mar. 24, 1993, 5-065708; Nov. 2, 1993, 5-274495
Int. Cl.[6] B25J 9/18
U.S. Cl. 318—568.11 10 Claims



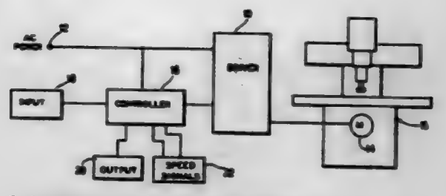
1. An apparatus for numerically controlling an industrial machine having at least three movable portions which are controlled in a synchronized manner, said apparatus comprising:
designation means for selectively designating a variable number of said movable portions;
independent control means for moving the designated movable portions in a predetermined manner independently from each other and from other movable portions which are not designated by said designation means; and
synchronous control means for moving said other movable portions in a synchronized manner.

5,444,344

SYSTEM FOR CONTROLLING VARIABLE FREQUENCY DRIVER FOR AC MOTOR INCLUDING SELECTABLE SPEED SIGNALS

Irwin Vincent, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Sep. 1, 1993, Ser. No. 116,084
Int. Cl.[6] H02P 5/40
U.S. Cl. 318—599 15 Claims



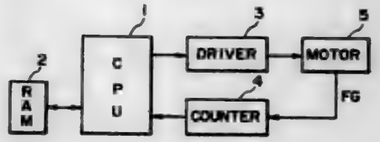
1. A motor control system comprising:
an adjustable frequency driver coupled between a motor and power supply, the adjustable frequency driver controlling speed of the motor in response to speed signals supplied to the adjustable frequency driver, the adjustable frequency driver controlling the motor by controlling application of a square wave signal to the motor;
a programmable controller coupled to the driver and operative to control the driver by supplying the speed signals thereto;
a set of control signals coupled to the programmable controller, the programmable controller being programmed to be responsive to the control signal; and
the programmable controller being programmed to select, in response to the control signals, one of the speed signals and causing the same to be transmitted to the driver for controlling the speed of the motor.

5,444,345

SPEED CONTROL APPARATUS FOR A MOTOR

Shigeru Jinnai, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 37,518, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 758,716, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 594,675, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 324,047, Mar. 16, 1989, abandoned. This application Sep. 27, 1993, Ser. No. 126,758
Claims priority, application Japan, Mar. 17, 1988, 63-62023; Mar. 31, 1988, 63-76361; Feb. 28, 1989, 1-47403; Feb. 28, 1989, 1-47404
Int. Cl.[6] H02P 5/00; G05B 11/28
U.S. Cl. 318—603 20 Claims



1. A speed control apparatus for a motor, comprising:
driving means for driving the motor;
detecting means for detecting the rotational speed of the motor and outputting detection pulse signals representing the rotational speed;
counter means for counting a number of clock pulses in each interval of said detection pulse signals from said detecting means and outputting a signal representing counts by said counter means;

data-producing means for producing error data of timings of said detection pulse signals by comparing the intervals of the detection pulses output from said detecting means with a reference value and producing correcting data for correcting the error of timings of said detection pulse signals after the motor reaches a constant speed, based on the signal from said counter means; and

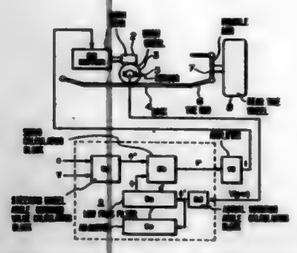
correcting means for supplying correction information to said driving means on the basis of the data from said data-producing means.

5,444,346

CONTROL SYSTEM FOR ACTUATOR APPLICABLE TO SERVO SYSTEM HAVING LOW RESOLUTION SENSOR AND IN FEEDBACK CONTROL MODE

Hideki Sudo, and Yoshinori Yamamura, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1992, Ser. No. 998,914
Claims priority, application Japan, Jan. 9, 1992, 4-001884
Int. Cl.[6] G05B 5/01
U.S. Cl. 318—616 10 Claims



1. A control system for an actuator, the actuator being operated in response to an operation signal input thereto, comprising:

a) first means for detecting an operating state of the actuator;

b) second means for calculating the operation signal on the basis of a detection signal derived from said first means;

c) third means for calculating a condition signal on the basis of an operation speed of the actuator; and

d) fourth means for eliminating noise components from the detection signal derived from said first means and for supplying a noise eliminated detection signal to said second means, said fourth means having a variable noise eliminating characteristic which is varied on the basis of the condition signal derived from said third means.

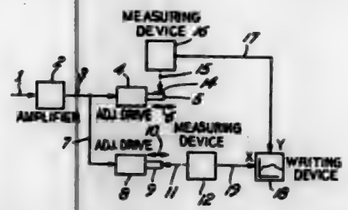
5,444,347

SWITCHING APPARATUS WITH AN ELECTOMECHANICAL ADJUSTING DRIVE

Raimund Volk, Tuningen, Germany, assignor to Hommelwerke GmbH, Hanover, Germany

Filed Feb. 1, 1994, Ser. No. 189,933
Claims priority, application Germany, Feb. 4, 1993, 43 03 125.0
Int. Cl.[6] H02N 2/06
U.S. Cl. 318—632 6 Claims

1. A switching apparatus with an electromechanical adjusting drive including means for linearization of adjusting movement of an adjusting element of a first adjusting drive, in relation to an electrical voltage; and a supply voltage producing device which has a control inlet and an outlet for a supply voltage, which is connected with the first adjusting drive; characterized in that: the means for the linearization have a second adjusting drive (8), which is connected with the outlet of the supply voltage producing device; and a first length measuring device (12) is provided which scans the adjusting movement of an adjusting element (9) of the second adjusting drive (8), and produces an output signal which is connected in



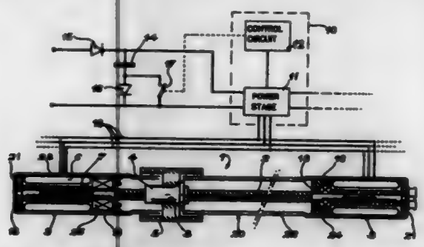
a linear manner with the adjusting movement of the adjusting element (5) of the first adjusting drive (4).

5,444,348

ELECTRIC JACK HAVING A ROTATION-TRANSLATION MOVEMENT CONVERSION SYSTEM AND WITH ENERGY RECOVERY

Philippe Garrec, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR92/00633, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO93/01652, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 3, 1992, Ser. No. 162,064
Claims priority, application France, Jul. 3, 1991, 91 08310
Int. Cl.[6] B66F 3/22
U.S. Cl. 318—640 17 Claims



1. An electric jack comprising:

a rotation-translation movement transformation system, at least one electric motor (9) for rotating a rotation part in said movement transformation system, means (10) for the control of the electric motor (9) for driving the movement transformation system with acceleration and deceleration phases, energy recovery means for recovering electrical energy generated by the electric motor (9) during the deceleration phases, and wherein;

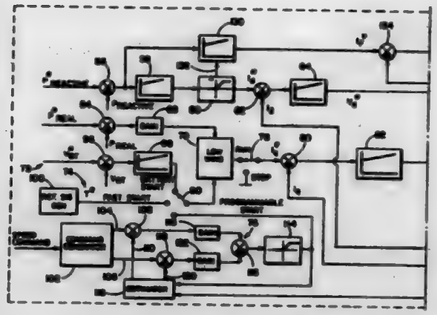
said movement transformation system comprises a translation part (4, 27, 44) and said rotation part (2) and wherein the movement transformation system is mechanically reversible in that during the deceleration phase, the translation part is capable of rotating the rotation part and the motor (9), which substantially converts the kinetic energy accumulated in the translation part during the translation phase into electrical energy, which is recovered by the energy recovery means.

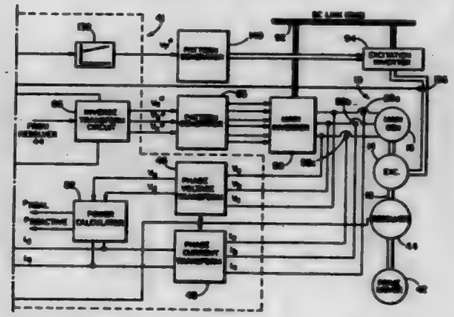
5,444,349

STARTING CONTROL FOR AN ELECTROMAGNETIC MACHINE

Gregory I. Rozman, Rockford; Michael J. Hanson, Loves Park, and Albert L. Markunas, Roscoe, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 12, 1993, Ser. No. 60,960
Int. Cl.[6] H02P 1/46
U.S. Cl. 318—716 22 Claims





1. A control for operating an electromagnetic machine in a starting mode of operation wherein the electromagnetic machine has an armature winding and a rotor wherein the armature winding is capable of receiving electrical power from a controllable power source during the starting mode of operation, comprising:

means for detecting a magnitude of a parameter of power applied to the armature winding relative to a stationary frame of reference;

a converter responsive to the detecting means for converting the detected parameter magnitude into field and torque producing components relative to a rotating frame of reference; and

means coupled between the converter and the power source and responsive to the field and torque producing components for controlling the power source during operation in the starting mode such that the rotor is rotated, said controlling means including:

a first summer which sums the field producing component with a field command to derive a first error signal,

a second summer which sums the torque producing component with a torque command to derive a second error signal and

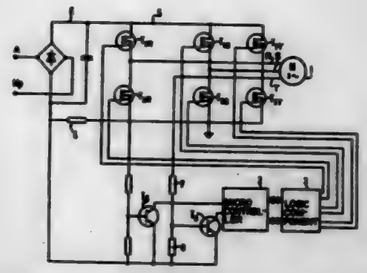
means coupled to the first and second summers for obtaining voltage commands for the power source from the first and second error signals.

5,444,350

PROCESS FOR DETERMINING THE LOAD OF AN ASYNCHRONOUS MOTOR FED VIA A FREQUENCY CONVERTER AND A DEVICE FOR CARRYING OUT THE PROCESS

Paulo Werle, and Victor M. F. B. Gottschald, both of Sao Paulo, Brazil, assignors to Icotron S.A. Industria de Componentes Electronicos, Sao Paulo, Brazil

Continuation of Ser. No. 64,147, May 17, 1993, abandoned. This application May 11, 1994, Ser. No. 241,454
Claims priority, application Brazil, Oct. 10, 1990, 9005174
Int. Cl.[6] H02P 1/24
U.S. Cl. 318—727 12 Claims



1. A method of driving an asynchronous motor which has at least one motor winding path capable of storing magnetic energy, said method including the following steps:

using a frequency converter to supply clock pulses spaced therebetween by clock pauses, said clock pulses energizing the motor winding path of said motor;

during a clock pause, generating a free-wheeling current from the magnetic energy previously stored in said motor winding path;

measuring the current decay time of the free-wheeling current during a clock pause;

comparing said current decay time to a predetermined reference value to obtain a comparison value; and,

controlling the operating voltage of said motor as a function of said comparison value.

5,444,351

SYSTEM AND METHOD FOR CONTROLLING INDUCTION MOTOR APPLICABLE TO ELECTRIC MOTOR-DRIVEN VEHICLE

Yoshinori Yamamura, Yokohama; Yasuki Ishikawa, Sagamihara; Yasuhiko Kitajima; Kazuma Okura, both of Yokosuka, and Hidetoshi Nojiri, Ebina, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 6, 1994, Ser. No. 267,930
Claims priority, application Japan, Jul. 6, 1993, 5-166990; Jul. 6, 1993, 5-167002; Aug. 3, 1993, 5-192344; Aug. 20, 1993, 5-206171; Aug. 23, 1993, 5-207418
Int. Cl.[6] H02P 5/28
U.S. Cl. 318—811 40 Claims

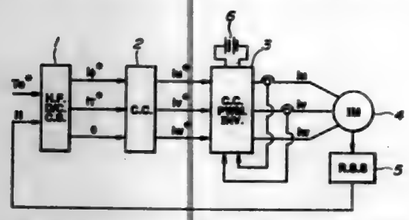
1. A system for controlling an induction motor, comprising:

a) steady-state loss minimization magnetic flux calculating means for calculating a rotor magnetic flux which minimizes a steady-state loss of the induction motor in response to a torque instruction value;

b) target magnetic flux calculating means for receiving the steady-state loss minimization magnetic flux and for calculating a target magnetic flux and a first-order differentiated value of the target magnetic flux on the basis of a transfer function having a low pass filter characteristic;

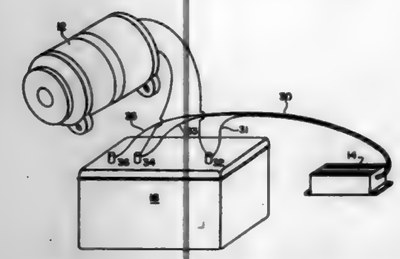
c) target torque calculating means for calculating a target torque value of the induction motor on the basis of a predetermined transfer function in response to the torque instruction value;

d) means for detecting a revolution speed of the induction motor;
e) vector control calculating means for calculating a current instruction value on the basis of predetermined circuit constants of an equivalent circuit of the induction motor and according to the calculated target magnetic flux, the first-order differentiated value of the target magnetic flux,



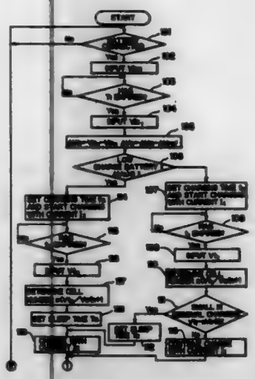
the calculated target torque value, and revolution speed of the motor; and
f) motor drive means for driving the induction motor, so that a current actually passing through the induction motor approaches the current instruction value, and so that an output torque of the induction motor has a value corresponding to the target torque.

5,444,352
MULTI-LEVEL AUTOMOTIVE BATTERY CHARGING SYSTEM
Philip P. Hutchings, Calne, England, assignor to New Castle Battery Manufacturing Company, New Castle, Pa.
Filed Aug. 2, 1993, Ser. No. 101,551
Int. Cl.[6] H01M *10/44, 10/46*; H02J *7/00*
U.S. Cl. 320—15 **6 Claims**



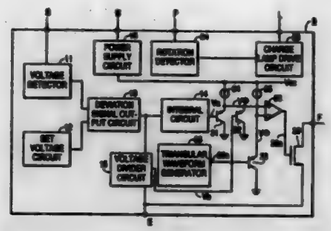
1. A multi-voltage automobile electrical system comprising:
an electric storage battery having a ground terminal and at least a first low level voltage terminal and a second high level voltage terminal;
an alternator coupled to said ground and first battery terminals for charging the low voltage level of said electric storage battery; and
a charging control unit for controlled charging of the high voltage level of said electric storage battery including:
DC to DC converter means having a low voltage input conductor coupled to said low voltage battery terminal and a high voltage output conductor coupled to said high voltage battery terminal for converting the voltage supplied at said low voltage battery terminal to a higher voltage for charging the high voltage level of the battery;
means for activating said DC to DC converter means when at least a predetermined voltage level is being supplied to said input conductor of said DC to DC converter means, said activating means gradually increases the power through said DC to DC converter to a fully activated state as the voltage level rises above said predetermined voltage level, and
means for overriding the activation of said DC to DC converter means responsive to the voltage differential between said input and output conductors of said DC to DC converter means, said override means gradually decreases the power through said DC to DC converter as the voltage differential between said input and output conductors increases.

5,444,353
BATTERY CHARGER
Shigeru Shinohara, and Nobuhiro Takano, both of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1993, Ser. No. 77,051
Claims priority, application Japan, Jun. 16, 1992, 4-156676; Apr. 20, 1993, 5-093481
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—39 **24 Claims**



1. A battery charger for charging a rechargeable battery having a plurality of cells, comprising:
charge current supplying means for supplying a charge current to the battery;
voltage detecting means for detecting a voltage across the battery and for outputting a battery voltage signal indicative of the voltage across the battery;
battery status detecting means for detecting a status of the battery as to whether the battery is at low charge or at high charge, said battery status detecting means detecting the status of the battery based on a reference voltage and a first battery voltage signal indicative of the voltage across the battery at a time after expiration of a predetermined period of time from start of charge; and
control means for controlling the charge of the battery base on the status of the battery detected by said battery status detecting means, said control means having full charge detection means for detecting that the battery has reached a full charge condition based on the voltage indicated by the battery voltage signal, wherein said control means stops charging when the full charge condition is detected by said full charge detection means;
wherein the reference voltage is a voltage across the battery detected by said voltage detecting means at the start of charge, and wherein said battery status detecting means computes a change in the voltage across the battery over the predetermined period of time and determines that the battery is at low charge when the change in the voltage across the battery is equal to or smaller than a predetermined value and that the battery is at high charge when the change in the voltage across the battery is larger than the predetermined value.

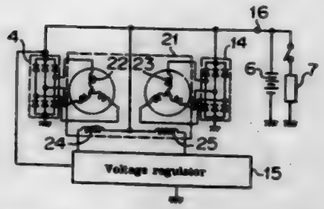
5,444,354
CHARGING GENERATOR CONTROL FOR VEHICLES
Naoyuki Takahashi, Katsuta; Yuuji Maeda; Shouju Masumoto, both of Hitachioota, and Atsushi Kanke, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., Japan
Filed Mar. 2, 1993, Ser. No. 25,394
Claims priority, application Japan, Mar. 2, 1992, 4-044378
Int. Cl.[6] H02P *9/10*; H02J *7/22*
U.S. Cl. 322—28 **26 Claims**



22. A charging controller for vehicles comprising:
a field coil for generation a rotating magnetic field, said field coil being driven in accordance with rotation of an engine;
an armature having an armature coil for generating a current in response to said rotating magnetic field, and for charging a battery through a rectifier;
a voltage detection circuit for detecting one of voltage of said battery and voltage of said rectifier;
a set voltage circuit for generating a reference voltage;
a differential signal output circuit for outputting a signal indicative of a difference between an output voltage of said voltage detection circuit and said reference voltage;
a sawtooth signal generator circuit for outputting a sawtooth signal at preset cycles within a fixed voltage range;
an integrating circuit coupled to receive an output voltage of said differential signal output circuit, said integrating circuit having a time constant longer than a time constant of a rotor of said armature;
a voltage divider circuit for dividing an output voltage of said differential signal output circuit;
a first comparator coupled to receive an output voltage of said integrating circuit and said sawtooth signal;
a second comparator coupled to receive an output voltage of said voltage divider circuit and said sawtooth signal;
a minimum current flow rate passage circuit for outputting a reduced current flow rate in response to comparing the output of said first comparator with the output of said second comparator; and
a current control circuit for controlling the current to be supplied to said field coil in response to the output of said minimum current flow rate passage circuit.

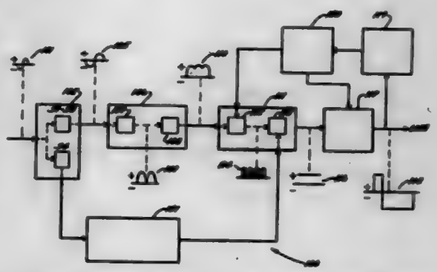
5,444,355
CHARGING GENERATOR FOR A VEHICLE
Kazutoshi Kaneyuki, and Shinji Nishimura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1992, Ser. No. 934,274
Claims priority, application Japan, Sep. 26, 1991, 3-276616
Int. Cl.[6] H02K *11/00*
U.S. Cl. 322—58 **1 Claim**

1. In a charging generator for a vehicle comprising a three-phase a.c. generator in which a rotor having a magnetic field is rotated according to the revolution of an engine of the vehicle to thereby produce a three-phase a.c. voltage in an armature winding, and the three-phase a.c. voltage is rectified into a d.c. voltage to be supplied to a load, said charging generator being characterized in that the three-phase a.c. generator comprises two sets of armature iron cores and rotor fields;
a first three-phase armature winding is wound around a first of the armature iron cores;
a second three-phase armature winding is wound around a second of the armature iron cores;
the position in the circumferential direction of the set of the first armature winding and a first of the rotor fields is shifted by an electrical angle of 30° with respect to the



position in the circumferential direction of the set of the second armature winding and a second of the rotor fields;
the first and second armature windings are respectively connected to first and second rectifiers, and the output sides of both of the first and second rectifiers are connected in parallel to each other so that an output d.c. voltage of the first and second rectifiers is applied to the load and ripple effects in the output voltage are minimized.

5,444,356
BUCK CONVERTER HAVING A VARIABLE OUTPUT AND METHOD FOR BUCK CONVERTING POWER WITH A VARIABLE OUTPUT
Jon O. Reynolds, and Michael D. Madsen, both of Appleton, Wis., assignors to Miller Electric Mfg. Co., Appleton, Wis.
Filed Mar. 3, 1994, Ser. No. 206,057
Int. Cl.[6] G05F *1/40*
U.S. Cl. 323—282 **11 Claims**



1. A buck converter comprising for providing a current output of adjustable magnitude:
a source of dc voltage provided between first and second buses;
at least one switch having a control input, wherein the switch is connected to the first bus;
a current gate connected between the switch and the second bus; and
at least one inductor having a first and second end, wherein the first end is connected to a node common to the switch and the current gate, wherein the output of the converter is across the second bus and the second end of the inductor;
and a variable frequency saw tooth wave generator connected to the control input, wherein the switch is turned

on at the frequency of the saw tooth wave, and further wherein the frequency is inversely related to the current output magnitude.

6. A method of controlling the output of a pulse width modulated buck converter comprising the steps of;

providing a source of dc voltage to the buck converter;

monitoring a magnitude of the output;

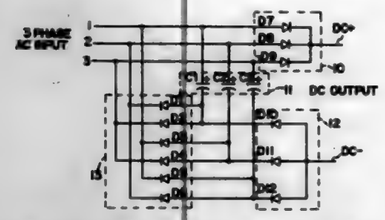
pulse width modulating the dc voltage with the buck converter at a controllable variable frequency in response to the magnitude of the output, wherein the frequency is inversely related to the current output magnitude.

5,444,357

METHOD AND APPARATUS FOR THREE-PHASE VOLTAGE DOUBLING

Lewis Illingworth, Kensington, N.H., assignor to Avionic Instruments, Inc., Avenel, N.J.

Filed Feb. 26, 1993, Ser. No. 22,990
Int. Cl.[6] H02M *7/19*
U.S. Cl. 363—87 18 Claims



1. A three-phase voltage doubler circuit compriaing:

(a) first, second and third input leads, each receiving a different phase of a three-phase input signal;

(b) first, second and third charge storage means, each having a positive and a negative terminal, said positive terminals of said first, second and third charge storage means being coupled to said first, second and third input leads, respectively, wherein said charge storage means store charges indicative of maximum voltage differences generated across said first, second and third input means;

(c) positive and negative output leads providing an output signal therebetween;

(d) first rectifying means, coupled to said positive output lead, for providing at said positive output lead a signal representative of the most positive of the voltages on said first, second and third input leads;

(e) second rectifying means, coupled to said negative output lead, for providing at said negative output lead a signal representative of the most negative of the voltages on said first, second and third input leads minus the voltages stored on said first, second and third charge storage means, respectively; and,

(f) third rectifying means, coupled between said negative terminals of said first, second and third charge storage means and said first, second and third input leads, for charging said first, second and third charge storage means such that the voltages between said positive and negative terminals thereof corresponds to said maximum voltage differences generated by the signals received at said input leads, and

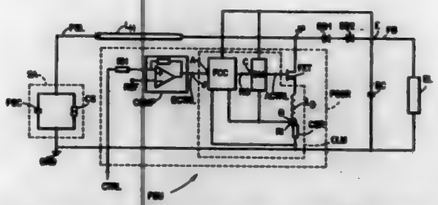
(g) wherein a terminal of said second rectifying means is connected to said negative terminals of said first, second and third charge storage means, and wherein said terminal is further connected to said third rectifying means associated with said first, second and third input leads.

5,444,358

POWER SUPPLY SHUNT REGULATOR WITH CURRENT LIMITATION CIRCUIT THEREIN

Christophe Delepaut, Dilbeek, Belgium, assignor to Alcatel Bell-SDT, S.A., Charleroi, Belgium

Filed Mar. 4, 1994, Ser. No. 206,061
Claims priority, application European Pat. Off., Mar. 4, 1993, 93103448
Int. Cl.[6] G05F *1/10*
U.S. Cl. 323—222 10 Claims



1. A power supply shunt regulator (PSSR) including a branch (FET, L_D, CSR) which includes a series connection of at least a shunt switch (FET) and an inductive means (L_D), said branch being coupled in parallel with a load (EL) as well as in parallel with at least one power supply (SA), said regulator further including current limitation means (CLM) for generating an analog control signal (ACTRL) that is applied to a control electrode of said shunt switch so as to limit an amount of current flowing through said shunt switch, wherein said shunt regulator comprises:

a field effect transistor which functions as said shunt switch;

a negative feedback branch (FCC, DM, L_D) in said current limitation means (CLM);

said negative feedback branch being coupled between a current sensing resistor (CSR) that is included in said series connection (FET, L_D) and said control electrode of said field effect transistor shunt switch to regulate said analog control signal (ACTRL) in such a way that a voltage drop across said current sensing resistor (CSR) is lower than a maximum voltage drop which said field effect transistor shunt switch is designed to withstand; and

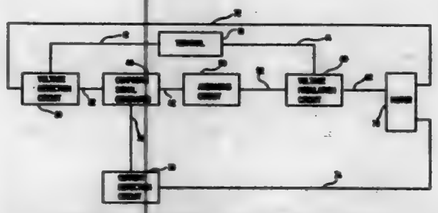
said inductive means (L_D) being coupled to a source electrode of said field effect transistor shunt switch.

5,444,359

LOAD SENSITIVE VARIABLE VOLTAGE MOTOR CONTROLLER

Chris A. Riggio, Boulder, Colo., assignor to Green Technologies, Inc., Boulder, Colo.

Filed Jun. 26, 1992, Ser. No. 905,281
Int. Cl.[6] G05F *1/455*
U.S. Cl. 323—237 10 Claims



1. A method for controlling the voltage applied to a load, comprising the steps of:

receiving an AC line voltage;

generating an operating AC voltage from the AC line voltage;

applying said operating AC voltage across the load;

generating a first signal which is a function of the magnitude of said operating AC voltage;

generating a second signal representative of the magnitude of the AC current through the load;

generating a composite signal representative of a combination of said first and said second signals;

generating an average signal representative of the average value of said composite signal;

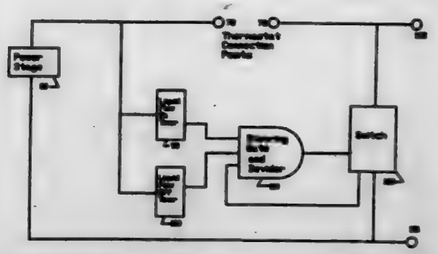
modifying said operating AC voltage in response to changes in said average signal.

5,444,360

MAINTENANCE REDUCTION APPARATUS

Don L. Drinkwater, 235 Fiske St., Carlisle, Mass. 01741

Continuation of Ser. No. 73,323, Jun. 7, 1993, abandoned, which is a division of Ser. No. 797,119, Nov. 22, 1991. This application Nov. 4, 1994, Ser. No. 334,440
Int. Cl.[6] G05F *1/40*; F04B *49/00*
U.S. Cl. 323—265 4 Claims



1. A method to minimize the maintenance of heating equipment and cooling equipment, due to seasonal periods of non use, comprising the steps of:

(a) connecting to said equipment a timing device with a capability to turn said equipment on for an on time interval and off for an off time interval;

(b) programming said timing device for said on and off time intervals, such that said on time interval is very small compared to said off time interval; and,

(c) turning said equipment on and off in sequence according to said programmed time intervals; comprising the steps of:

(i) directing a first pulse stream to an electronic divider through a gate means during said off time interval;

(ii) directing a second pulse stream to said electronic divider through a gate means during said on time interval; and,

(iii) connecting the output of said electronic divider to an electronic circuit that can turn said equipment on and turn said equipment off.

5,444,361

WIDEBAND LINEAR AND LOGARITHMIC SIGNAL CONVERSION CIRCUITS

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 31,647, Mar. 15, 1993, which is a continuation-in-part of Ser. No. 950,091, Sep. 23, 1992. This application Jan. 1, 1993, Ser. No. 70,274
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—312 65 Claims

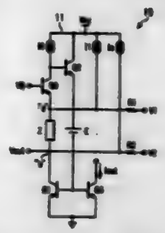
1. A cascode mirror circuit comprising:

first and second transistors;

a first reference current source having a connection at one side to a supply voltage and at another side to said first transistor;

said first and second transistors having conduction paths connected in series between the first reference current source and a first reference voltage, said first transistor having a current control element connected to a second reference voltage;

a current compensating transistor having a conduction path connected between the supply voltage and a current control element of the second transistor, and having a current



control element connected at a node between the first reference current source and said first transistor;

an input signal receiving node being provided between said first and second transistors; and

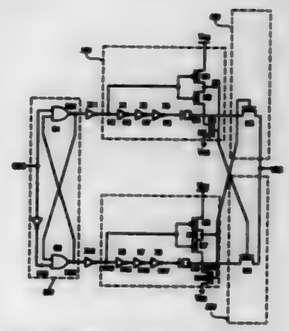
an output circuit arranged to provide an output signal proportional to a current conducted by the conduction path of said second transistor.

5,444,362

DUAL BACK-BIAS VOLTAGE GENERATING CIRCUIT WITH SWITCHED OUTPUTS

Jin Y. Chung, and Deog Y. Kwak, both of Seoul, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 995,865
Claims priority, application Rep. of Korea, Dec. 24, 1991, 91-23693
Int. Cl.[6] G05F *3/16*; H03K *3/01*
U.S. Cl. 323—313 15 Claims



8. A back-bias voltage generating circuit of a semiconductor device for applying a back-bias voltage to a back-bias terminal, comprising:

a driving signal generating circuit receiving oscillating signals from an oscillator, the driving signal generating circuit generating first and second input driving signals of alternating low and high levels;

a first pumping circuit coupled to receive the first input driving signal and having a first pumping capacitor, the first pumping circuit Charging a first electrode of the first pumping capacitor, wherein a second electrode of the first pumping capacitor is charged to a voltage lower than the voltage of the back-bias terminal, the first pumping circuit also generating a second switch means control signal;

a second pumping circuit coupled to receive the second input driving signal and having a second pumping capacitor, the second pumping circuit charging a first electrode of the second pumping capacitor, wherein a second electrode of the second pumping capacitor is charged to a voltage lower than the voltage of the back-bias terminal, the second pumping circuit also generating a first switch means control signal;

a first switching means responsive to the first switch means control signal generated by the second pumping circuit for coupling the second electrode of the first pumping capacitor to the back-bias terminal during a time when the voltage on the second electrode of the first pumping capacitor is lower than the voltage of the back-bias terminal and for decoupling the second electrode of the first pumping capacitor from the back-bias terminal; and

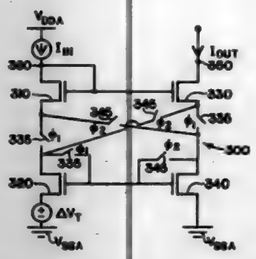
a second switching means responsive to the second switch means control signal generated by the first pumping circuit for coupling the second electrode of the second pumping capacitor to the back-bias terminal during a time when the voltage on the second electrode of the second pumping capacitor is lower than the voltage of the back-bias terminal and for decoupling the second electrode of the second pumping capacitor from the back-bias terminal.

5,444,363

LOW NOISE APPARATUS FOR RECEIVING AN INPUT CURRENT AND PRODUCING AN OUTPUT CURRENT WHICH MIRRORS THE INPUT CURRENT

Carlin D. Cabler, Austin, Tex., assignor to Advanced Micro Devices Inc., Sunnyvale, Calif.

Filed Dec. 16, 1993, Ser. No. 168,628
Int. Cl.[6] G05F 3/16
U.S. Cl. 323—315 8 Claims



1. An apparatus for receiving an input current and producing an output current which mirrors the input current, comprising:

a first cascode current mirror having an input for receiving the input current and having an output;

a second cascode current mirror having an input for receiving the input current and having an output, said output connected to said output of said first current mirror; and

means for alternately activating said first and second cascode current mirrors to produce a current on their common output which mirrors the input current;

wherein said alternately activating means comprises:

means for generating a signal having a first state and a second state; and

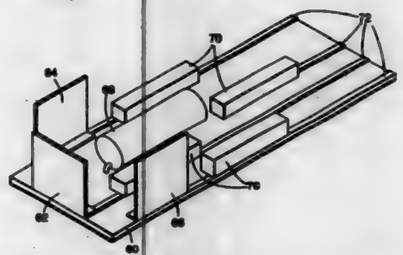
a switching network for activating said first cascode current mirror during the first state of said signal and for activating said second cascode mirror during the second state of said signal.

5,444,364

CIRCUIT TRACER HAVING AN ELECTRIC FIELD SENSOR, A DIFFERENTIAL ELECTRIC FIELD SENSOR AND AN INDUCTIVE SENSOR

James R. Satterwhite, Foxboro, N.C.; Sandra J. Horning, Austin; Gerald A. Wyatt, Round Rock, and Daniel E. Reisen, Austin, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 956,157, Sep. 29, 1992, Pat. No. 5,365,163. This application Jun. 28, 1994, Ser. No. 267,422
Int. Cl.[6] G01R 19/00; G01V 3/08, 3/10
U.S. Cl. 324—67 4 Claims



1. A device for indicating the direction to an electrical conductor which is connected to an alternating voltage source, comprising:

a housing;

electric field sensor means located in said housing, and having a front face, for generating a first signal based upon the angular location, relative to said front face, of any electric field emanating from the conductor;

differential electric field sensor means, located in said housing and having first and second generally parallel surfaces, for generating a second signal from a first location based upon the electric field potential emanating from the conductor, and a third signal from a second location based upon the electric field potential emanating from the conductor;

inductive sensor means, located in said housing, for generating a fourth signal based upon a magnetic field generated by any current in the conductor;

switch means, located in said housing, connected to said electric field, differential electric field and inductive sensor means, and having three settings corresponding to said electric field, differential electric field and inductive sensor means, respectively, for selectively outputting an output signal comprising either (i) said first signal, (ii) a fifth signal approximately equal to the difference of said second and third signals, or (iii) said fourth signal;

processing means for receiving said output signal from said switch means and for calculating a signal value based thereon; and

means, connected to said processing means, for displaying said signal value.

5,444,365

VOLTAGE MEASURING APPARATUS HAVING AN ELECTRO-OPTIC MEMBER

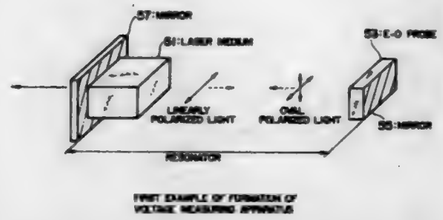
Hironori Takahashi; Tsuneyuki Urakami; Shinichiro Aoshima, and Isuke Hirano, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Aug. 30, 1993, Ser. No. 113,239
Claims priority, application Japan, Aug. 31, 1992, 4-231822
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—96 9 Claims

1. A voltage measuring apparatus, comprising:

an electro-optic member having an index of refraction that varies depending on an electrical field applied to said electro-optic member;

a laser medium for providing light to said electro-optic member; and



FIRST EXAMPLE OF FORMATION OF VOLTAGE MEASURING APPARATUS

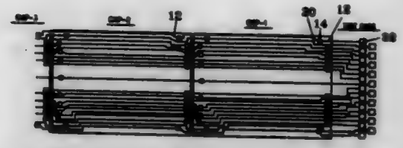
a resonator structure including said laser medium and said electro-optic member disposed therein, said resonator structure resonating said light emitted from said laser medium and passed through said electro-optic member.

5,444,366

WAFER BURN-IN AND TEST SYSTEM

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 954,952, Sep. 30, 1992, Pat. No. 5,307,010, which is a continuation of Ser. No. 640,198, Jan. 11, 1991, abandoned. This application Feb. 4, 1994, Ser. No. 191,847
Int. Cl.[6] G01R 31/28, 31/02
U.S. Cl. 324—158.1 3 Claims



1. An interconnection system for burn-in and testing of semiconductor devices prior to separation from a semiconductor wafer, comprising:

a semiconductor wafer having a plurality of semiconductor devices thereon arranged in rows, each semiconductor device having a plurality of bond pads and first and second edges extending in a row direction;

a plurality of conductors on the wafer overlaying and insulated from the semiconductor devices, each of the plurality of conductors overlaying the semiconductor devices in a row without extending over the first and second edges of the semiconductor devices in the row;

an electrical connection between each of said plurality of conductors and a corresponding bond pad on each of said semiconductor devices in a row; and

a plurality of test points on said wafer, each of said plurality of conductors connected to one of said test points.

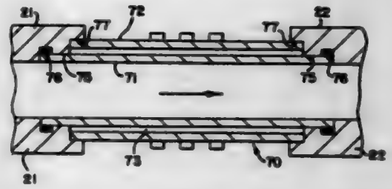
5,444,367

METHOD AND APPARATUS FOR DETECTING PARTICLES IN A FLUID HAVING COILS ISOLATED FROM EXTERNAL VIBRATIONS

Robert W. Kempster, Ottawa, and Douglas B. George, Kanata, both of Canada, assignors to Minister of National Defence, Ottawa, Canada

Continuation-in-part of Ser. No. 866,885, Apr. 6, 1992, Pat. No. 5,315,243. This application Nov. 1, 1993, Ser. No. 143,661
Int. Cl.[6] G01N 27/74; G01R 33/12; G08B 17/10
U.S. Cl. 324—204 12 Claims

1. Apparatus for detecting the presence of solid ferromagnetic particles or solid non-ferromagnetic conductive particles entrained in a stream of fluid compriaing at least one sense and at least one field coil supported coaxially on a tubular non-metallic former through which the stream of fluid passes, the former having an inner tubular wall and an outer tubular wall separated from the inner tubular wall by an air gap whereby fluctuations in the pressure of the stream of fluid do not cause movement of the outer tubular wall, means for energizing the field coil to generate an A.C. magnetic field and establish an A.C. magnetic field at the sense coil, means connected to the sense coil to detect a disturbance of the A.C. magnetic field present at the sense coil when a particle moves through the



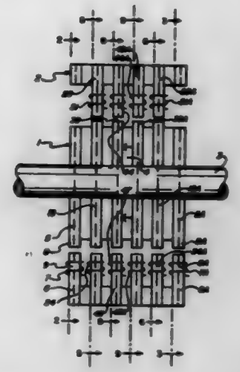
coils, and a protective housing enclosing the former and coils and means isolating the outer tube from movement of the housing, wherein the isolating means comprises an inner shield located inside the housing, spaced therefrom and enclosing the outer tube and coils, the inner shield being supported on the housing at pin joints which do not transmit movement from the housing to the inner shield, the coils being carried at a bore of a coil support sleeve the bore of which registers with and engages the outer tube and an outer circumferential surface of which engages the inner shield.

5,444,368

DIFFERENTIAL REACTANCE PERMANENT MAGNET POSITION TRANSDUCER

Ralph W. Horber, Marshfield, Mass., assignor to H. Magnetic Corp., Marshfield, Mass.

Filed Jan. 10, 1994, Ser. No. 180,324
Int. Cl.[6] G01B 7/30; G01D 5/20; H02K 1/27
U.S. Cl. 324—207.16 16 Claims



1. A differential reactance permanent magnet transducer comprising a stator and an armature, said stator having a first section with at least two pole elements thereon of ferromagnetic material, each stator pole element having an electrically conductive coil wound thereabout, and said armature having a first magnet section with at least one permanent magnet pole element thereon, said pole elements being so disposed as to cause said magnet pole element to register sequentially with said pole elements of said first section of said stator as said armature moves relative to said stator, and being so disposed

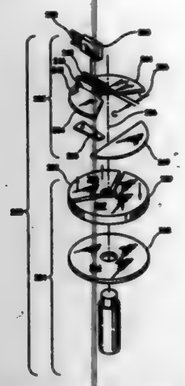
that the flux density variation produced in one of said stator pole elements by movement of said magnet pole element relative thereto varies in an out-of-phase relationship to the flux density variation produced in the other of said stator pole elements by such magnet pole element movement, said coils being comprised of effectively equal numbers of turns and being connected in series to provide at least one circuit having terminals to enable the application of voltages thereacross and to enable measurement of voltage values at a junction between said coils thereof, each coil comprising a leg of said one circuit, whereby said first stator section, said first magnet section, and said coils provide a first sensor section, and whereby the values of voltages applied across said circuit will be so modulated by such relative movement of said armature as to enable the generation of signals from said first sensor section that vary sinusoidally as a function of armature position and reactance variation in said coils, the electrical and mechanical features of said transducer being such that no net back-EMF value is inductively generated from said coils as a result of such relative movement.

5,444,369

MAGNETIC ROTATIONAL POSITION SENSOR WITH IMPROVED OUTPUT LINEARITY

Robert H. Lastnow, Huntington, Ind., assignor to Kearney-National, Inc., White Plains, N.Y.

Filed Feb. 18, 1993, Ser. No. 19,231
Int. Cl.[6] G01B 7/30, 7/14; F02D 9/00
U.S. Cl. 324—207.20 24 Claims



1. A magnetic rotational position sensor for sensing angular position of an object about a rotational axis, comprising:

a magnetic flux sensor operative to produce an output signal corresponding to a sensed level of magnetic flux;

magnetic means for producing magnetic flux;

means for conducting magnetic flux between said magnetic means and said magnetic flux sensor including stationary means for conducting said magnetic flux across a stationary surface perpendicular to said axis of rotation and rotating means for conducting magnetic flux across a rotating surface perpendicular to said axis of rotation, said stationary surface being spaced a predetermined distance from said rotating surface to define an air gap therebetween;

said magnetic means producing said magnetic flux parallel to said axis of rotation and perpendicular to said stationary surface and said rotating surface; and

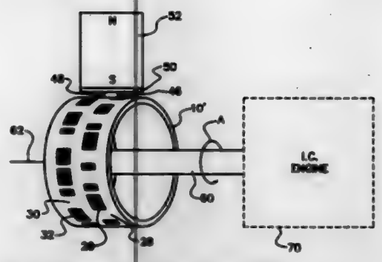
wherein said rotating means rotates relative to said stationary means to align a portion of said rotating surface with a portion of said stationary surface to conduct a level of magnetic flux proportional to the amount of surface area alignment of said portion of said stationary surface and said portion of said rotating surface, said level of magnetic flux being conducted between said magnetic means and said magnetic flux sensor and across said predetermined air gap to complete a magnetic circuit.

5,444,370

MAGNETIC ANGULAR POSITON SENSOR WITH TWO MAGNETICALLY SENSITIVE COMPNENTS ARRANGED PROXIMATE TWO TARGET TRACKS HAVING COMPLIMENTARY MAGNETIC AND NONMAGNETIC SEGMENTS

Mien T. Wu, Dane County, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 18, 1993, Ser. No. 32,883
Int. Cl.[6] G01B 7/30, 7/14; G01P 3/44; F02P 17/00
U.S. Cl. 324—207.2 16 Claims



1. An angular position sensor, comprising:

a moveable object having first and second target tracks disposed thereon, said first and second target tracks each comprising a plurality of ferromagnetic and nonferromagnetic segments alternately disposed with each other, said first and second target tracks being arranged in parallel association with each other, each ferromagnetic segment of said first target track being disposed alongside a nonferromagnetic segment of said second target track, each nonferromagnetic segment of said first target track being disposed alongside a ferromagnetic segment of said second target track, said first and second target tracks being disposed in parallel association with the direction of travel of said movable object;

a first magnetically sensitive component disposed proximate said first target track, said first magnetically sensitive component having a first output signal representative of the magnetic field strength perpendicular to said first magnetically sensitive component;

a second magnetically sensitive component disposed proximate said second target track, said first and second magnetically sensitive components being disposed in noncontact relation with said moveable object, said second magnetically sensitive component having a second output signal representative of the magnetic field strength perpendicular to said second magnetically sensitive component, said first and second magnetically sensitive components being positioned relative to said first and second target tracks to dispose said first and second magnetically sensitive components proximate segments of opposite magnetic characteristics for all positions of said movable object;

a stationary magnet disposed proximate said first and second magnetically sensitive components, said first and second magnetically sensitive components being disposed between said stationary magnet and said moveable object; and

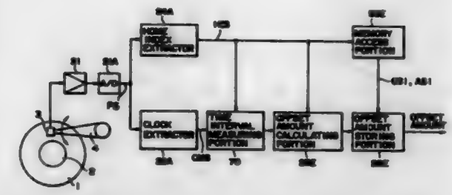
means for providing a third output signal, said third output signal being a function of said first and second output signals.

5,444,371

MAGNETIC DISK OFFSET AMOUNT MEASURING APPARATUS

Itaru Tomiaki, Kanagawa, and Toru Takeda, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 28, 1994, Ser. No. 202,494
Claims priority, application Japan, Mar. 2, 1993, 5-066248
Int. Cl.[6] G11B 20/14; G01R 33/12
U.S. Cl. 324—212 9 Claims



1. An offset amount measuring apparatus for measuring an offset amount having a dimension of time resulting from an offset produced when a disk having a plurality of circular tracks is mounted on a disk apparatus by chucking, said disk being provided with N (where N is an integer larger than 1) clock mark signals recorded around each of said plurality of circular data tracks and spaced apart at physically regular intervals, and said disk apparatus reading said clock mark signals from said circular data track with a head, the measuring apparatus comprising:

time interval measurement means for measuring the time interval resulting from said physically regular intervals between clock mark signals read from said data tracks by said head while said head is positioned at a predetermined radial distance from the center of rotation of said disk;

offset amount calculation means for obtaining a distance between a locus of said head traced on said disk when said disk is rotated and said circular data track by using the time interval between the reproduced clock mark signals measured by said time interval measurement means; and

offset amount storage means for storing the distance obtained by said offset amount calculation means as the offset amount in relation to a respective angle of rotation of said disk.

5,444,372

MAGNETOMETER AND METHOD OF MEASURING A MAGNETIC FIELD

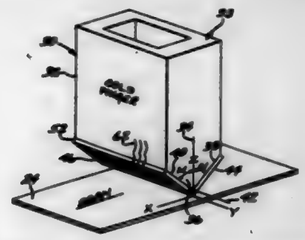
John P. Wikswo, Jr., Brentwood, Tenn.; William C. Black, Jr., Del Mar, Calif.; Eugene C. Hirschkoff, Leucadia, Calif.; James R. Maruden, San Diego, Calif., and Douglas N. Pattison, Del Mar, Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jul. 22, 1992, Ser. No. 919,599
Int. Cl.[6] G01R 33/035
U.S. Cl. 324—248 19 Claims

1. A magnetometer, comprising:

a support having thereon two support surfaces that are perpendicular to each other and intersect each other along an intersection line, the support further having a reference axis that is perpendicular to the intersection line; and

two planar sensor/detector arrays, one array mounted on each support surface, each array including at least two magnetic field sensors and associated detectors arranged such that the magnetic field sensors lie on a line that is parallel to the intersection line of the two support surfaces, wherein the detectors are superconducting quantum interference devices.



5,444,373

BIOMAGNETOMETER WITH SELECTABLE PICKUP COIL ARRAY

Richard T. Johnson, and Laurence Warden, both of San Diego, Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Continuation of Ser. No. 831,902, Feb. 6, 1992, abandoned. This application May 23, 1994, Ser. No. 248,533
Int. Cl.[6] G01R 33/035; A61B 5/05; G08C 15/06; H04J 3/00
U.S. Cl. 324—248 15 Claims

1. A biomagnetometer, comprising:

an array of biomagnetic sensors, the array comprising

a first plurality of magnetic field pickup coils, and

a second plurality of detectors, each of which is functional to detect a pickup coil output, the second plurality of detectors being fewer in number than the first plurality of pickup coils;

a third plurality of signal processors equal in number to the second plurality of detectors, each of which signal processors is functional to process an output of a single one of the second plurality of detectors; and

means for controllably selecting a first selected subset of pickup coils, equal in number to the third plurality of signal processors, from the first plurality of pickup coils for signal processing by the signal processors, and thereafter for controllably selecting a second selected subset of pickup coils from the first plurality of pickup coils for signal processing by the signal processors, equal in number to the third plurality of signal processors, for signal processing by the signal processors, the second subset of pickup coils being different from the first subset of pickup coils, the means for controllably selecting in each case being operable to accomplish a connection of each one of the selected subset of pickup coils to a respective one of the detectors, the means for controllably selecting being operable to controllably connect any of the pickup coils to any of the detectors.

5,444,374

METHOD AND APPARATUS FOR SIMULTANEOUSLY COLLECTING SPATIALLY AND TEMPORALLY VARYING MAGNETIC SURVEY DATA

John Stanley; Malcolm K. Cattach, and Stephen J. Lee, all of Armidale, Australia, assignors to University of New England, Armidale, Australia

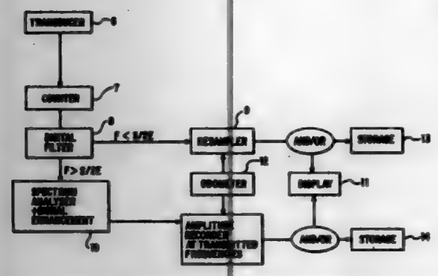
PCT No. PCT/AU91/00238, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO91/19210, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 3, 1991, Ser. No. 955,875

Claims priority, application Australia, Jun. 6, 1990, PK0516

Int. Cl.[6] G01V *3/08, 3/02*

U.S. Cl. 324—334 23 Claims



9. A method of processing survey data collected for subterranean investigation the survey data representing spatially varying magnetic and temporally varying electromagnetic fields which have been simultaneously recorded by traversing a survey area with a roving magnetic detector at a predetermined approximately constant detector height at traversing speeds not exceeding a predetermined maximum speed, thereby defining a cut off frequency for signals representing said spatially varying magnetic field, the processing method comprising the steps of:

providing supplementary data measured by a stationary magnetic sensor indicating temporal changes in said fields having frequencies below said cut off frequency;

subtracting the supplementary data from the signal representing the survey data so as to significantly reduce or remove from the signal representing the spatially varying magnetic field the effects of any temporal field changes that occur during the investigation;

separating a signal representing the survey data into two frequency components, a first component comprising frequencies less than or equal to a cut off frequency determined by the traversing speed and detector height and representing said spatially varying magnetic field and the second component comprising frequencies greater than said cut off frequency and representing the temporally varying electromagnetic field; and

separately processing each of the frequency components to determine the subterranean characteristics of the survey area.

5,444,375

IONIZATION CURRENT DETECTOR FOR DETECTING THE IONIZATION CURRENT GENERATED IN A PLURALITY OF IGNITION COILS OF AN INTERNAL COMBUSTION ENGINE

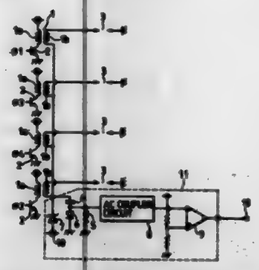
Tsukio Ohsawa, and Shigeaki Murata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1992, Ser. No. 978,719

Claims priority, application Japan, Nov. 26, 1991, 3-310715

Int. Cl.[6] F02P *17/12*

U.S. Cl. 324—380 2 Claims



1. An ionization current detector for an internal combustion engine, comprising:

ignition coils for generating a high ignition voltage;

ignition plugs respectively provided on a plurality of cylinders for firing mixed gas by a spark upon application of said high ignition voltage, wherein ionization currents are generated when said ignition plugs are fired, respectively; and

a single ionization current detecting means, coupled to said ignition coils, for detecting said ionization currents flowing through said ignition coils during combustion of said mixed gas; wherein

said single ionization current detecting means detects said ionization currents by synthesizing said ionization currents flowing through said ignition coils.

5,444,376

SIGNAL-ACQUISITION DEVICE FOR DETECTING A HIGH VOLTAGE SIGNAL AT THE COILS

Karl-Heinz Dittmann, Ditzingen, and Werner Bumen, Kirchheim-Oetlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00914, § 371 Date May 20, 1993, § 102(e) Date May 20, 1993, PCT Pub. No. WO92/10674, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 21, 1991, Ser. No. 64,020

Claims priority, application Germany, Dec. 15, 1990, 40 40 236.3

Int. Cl.[6] F02P *17/00*

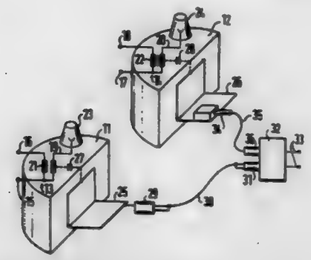
U.S. Cl. 324—402 4 Claims

1. A device for detecting high-voltage characteristics in an ignition system having at least two ignition coils, comprising:

a plurality of first capacitive signal coupling means each being disposed on a respective one of the ignition coils for capacitively extracting a voltage signal from the ignition coil;

a circuit arrangement connected to said plurality of first capacitive signal coupling means and including an output, and means for combining the voltage signals extracted from the ignition coils and producing a combined voltage signal at the output; and

a plurality of second capacitive signal coupling means each connected between said means for combining and a respective one of the first capacitive signal coupling means for potential isolation between the plurality of first capacitive signal coupling means and a further portion of said circuit arrangement.



5,444,377

ELECTRONIC TRIP DEVICE COMPRISING A TEST DEVICE

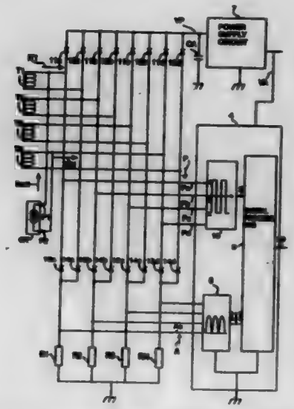
Alain Del Vecchio, Echirolles, and Marc Ferrazzi, Fontaine, both of France, assignors to Merlin Gerin, France

Filed Dec. 15, 1993, Ser. No. 167,355

Claims priority, application France, Dec. 28, 1992, 92 15880

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—424 9 Claims



1. An electronic trip device for a multipole electrical circuit breaker protecting an electrical power system comprising:

a current sensor per pole supplying a secondary current representative of a current flowing in an associated conductor of the power system protected by the circuit breaker,

test current input means,

a detection and rectifying circuit, to which the secondary currents and test current are applied, supplying signals representative of the currents flowing in the conductors to be protected and of the test current,

an electronic processing unit receiving the signals supplied by the detection and rectifying circuit and delivering a tripping order when at least one of the currents flowing in the conductors to be protected, an earth fault current and a test current exceed preset thresholds, and

an electronic trip device wherein the electronic processing unit comprises means for detecting a test current of a period greater than that of the electrical power system to be protected.

5,444,378

BATTERY STATE OF CHARGE MONITOR

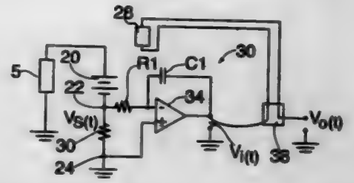
Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development Inc., Grosse Pointe Park, Mich.

Continuation-in-part of Ser. No. 607,237, Oct. 31, 1990, Pat. No. 5,179,340, which is a continuation-in-part of Ser. No. 218,539, Jul. 13, 1988, Pat. No. 4,968,941. This application Jul. 23, 1992, Ser. No. 919,011

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—428 63 Claims



1. An apparatus for monitoring the state of an electrical energy source comprising:

a current sensor for producing a first signal related to the magnitude and direction of the current flowing to or from said energy source; and

a low power operational amplifier having a capacitive element in the feedback path for integrating the first signal on a continuous basis as the current flows to and from said energy source, and thereby charging the capacitive element at a rate proportional to the magnitude of the sensed current when the current flow is in one direction and discharging the capacitive element at a rate proportional to the magnitude of the sensed current when the current flow is in the opposite direction, the amplifier having a supply voltage input operatively connected to the energy source for energizing the amplifier and a minimum drain current that is less than 1.05 mA, the capacitive element having a capacitance greater than 0.01 farad.

5,444,379

ELECTRIC CONDUCTIVITY MEASURING CELL

Tadahiro Ohmi, 2-1-17-301, Komegafukuro, Aoba-ku, Sendai-city, Miyagi-prefecture; Yoshio Ishihara, Tsuchiura, and Ryosuke Fukushima, Kyoto, all of Japan, assignors to Horiba, Ltd., Kyoto; Nippon Sanso Corporation, Tokyo and Tadahiro Ohmi, Miyagi, all of Japan

Filed Jun. 3, 1992, Ser. No. 893,244

Claims priority, application Japan, Jun. 6, 1991, 3-051481 U

Int. Cl.[6] G01N *27/02*

U.S. Cl. 324—450 26 Claims

1. In an electrical conductivity measuring cell for measuring the conductivity of a fluid, the improvement comprising:

an inner electrode member;

a hollow conductive pressure container, all of which serves as an outer electrode, having inlet and outlet ports for fluidic connections and an opening for supporting the inner electrode member for fluidic contact;

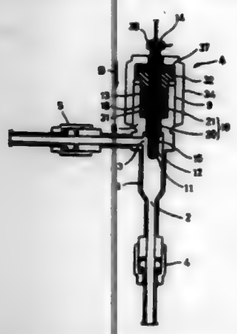
a first support member extending into the opening and the hollow pressure container and surrounding the inner electrode member sufficiently to provide a predetermined cell constant;

a second support member extending about the first support member in the opening;

sealing means for sealing the first support member, and

means for exerting a force to hold the respective inner elec-

trode member and first and second support members sealingly connected to the hollow pressure container to



provide a leakage rate of helium in the approximate range of 1.5×10^{-10} Torr-l/s.

5,444,380

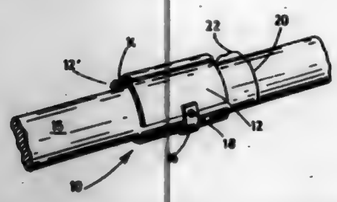
CURRENT SURGE INDICATOR

Jean-Marc Bourgeois, Longueuil; Gilles Missout, Saint-Bruno; Francois Lalonde, Varennes, and Jacques Belanger, Saint-Basile, all of Canada, assignors to Hydro-Quebec, Quebec, Canada

Continuation-in-part of Ser. No. 5,456, Jan. 19, 1993, abandoned. This application Apr. 7, 1994, Ser. No. 224,500

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—529 17 Claims



1. An electrical current surge for a conductor, the indicator comprising:

at least one ferromagnetic member having two ends;

holding means for holding said at least one member around said conductor with said ends in proximity, facing each other in a direction transverse to a direction of current flow in said conductor and having a gap therebetween, a magnetic circuit being created in said member and forming a magnetic field being formed in said gap as current passes through said conductor; and

signalling means for providing a signal when a magnetic field in said gap exceeds a predetermined threshold;

wherein:

said two ends are mobile and move towards one another when said magnetic field exceeds said predetermined threshold, and

said signalling means comprise a spring for keeping said ends biased apart, and detent means for preventing said ends from moving apart under the action of said spring, said detent means being released when said magnetic field exceeds said threshold,

whereby a current surge in said conductor will increase said field above said threshold, and cause said ends to move towards each other and thus to release said detent means, thereby causing said at least one member to fall away from said conductor when said detent means have been released, and thus to give said signal which aids in locating where the current surge took place.

5,444,381

MEASURING CIRCUIT FOR IMPEDANCE VALUES PARTICULARLY FOR USE WITH INDUCTIVE DISPLACEMENT TRANSMITTERS

Johannes Locher, Stuttgart; Werner Fischer, Heimsheim, and Joerg Barth, Muehlacker-Lienzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE90/00389, § 371 Date Apr. 17, 1991, § 102(e) Date Apr. 17, 1991, PCT Pub. No. WO91/02985, PCT Pub. Date May 7, 1991

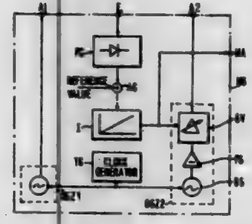
PCT Filed May 26, 1990, Ser. No. 684,885

Claims priority, application Germany, Aug. 23, 1989, 39 27 833.6

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[6] G01R *27/02*

U.S. Cl. 324—657 9 Claims



1. Measuring circuit for measuring an impedance value, comprising:

a first output connection (A1),

a first oscillator means (OSZ1) connected to the first output connection (A1), said first oscillator means including means for applying a first alternating voltage having a constant amplitude and a constant predetermined frequency to the first output connection (A1),

a second output connection (A2),

an amplitude adjusting means (SV),

a second oscillator means (OSZ2) connected to the second output connection (A2) and the amplitude adjusting means (SV), said second oscillator means and said amplitude adjusting means (SV) including means for feeding a second alternating voltage having an adjustable amplitude and a frequency equal to the constant predetermined frequency of the first alternating voltage to the second output connection (A2), the adjustable amplitude thereof being adjustable by the amplitude adjusting means (SV);

means for phase shifting said second alternating voltage relative to the first alternating voltage by 180°;

an input connection (E) for an input signal,

a phase-controlled rectifier (PG) connected to the input connection (E) and including means for rectifying an alternating voltage component of the input signal to form a rectified signal,

a comparison device (AG) connected to the rectifier to receive the rectified signal from the rectifier and having means for comparing the rectified signal with a reference value signal to form an actuating signal, and

an integrator (I) connected to the comparison device (AG) to receive the actuating signal therefrom and including means for integrating the actuating signal to form an integrated signal and means for feeding the integrated signal to the amplitude adjusting means (SV) of the second oscillator means as an amplitude control signal for controlling said adjustable amplitude of said second alternating voltage, so that said adjustable amplitude depends on an impedance value of an impedance network connectable

to said first output connection, said second output connection and to said input connection.

5,444,382

POSITION AND ORIENTATION LOCATOR/MONITOR

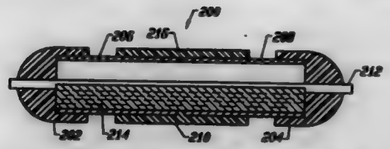
John E. Mercer, Kent, Wash., assignor to Digital Control Incorporated, Renton, Wash.

Continuation of Ser. No. 958,941, Oct. 9, 1992, Pat. No. 5,337,002, which is a continuation-in-part of Ser. No. 662,939, Mar. 1, 1991, Pat. No. 5,155,442. This application Jun. 14, 1994, Ser. No. 259,441

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—690 6 Claims



1. A pitch sensor capable of generating an output voltage indicative of fluid displacement within the pitch sensor, comprising:

a first outer electrically conductive ring;

a second outer electrically conductive ring electrically insulated from said first outer ring;

an inner electrically conductive member exhibiting equal electrical properties with respect to the outer rings when in a baseline, zero pitch orientation and exhibiting unequal electrical properties with respect to the outer rings when in a non-baseline orientation; and

a flowable material through which electrical connections between the outer rings and the inner member are made, such that a ratio between an electrical property of the first outer ring and the inner member to the electrical property of the second outer ring and the inner member is indicative of fluid displacement, wherein the pitch sensor is capable of generating an output voltage indicative of fluid displacement regardless of the circumferential rotation of the pitch sensor about its baseline.

5,444,383

DEVICE, SYSTEM AND METHOD FOR MEASURING AN INTERFACE BETWEEN TWO FLUIDS

Joram Agar, Grand Cayman, Cayman Islands; Itzack Tavori; Jacob Inbar, both of Herzliya, Israel, assignors to Agar Technologies Process & Environmental Limited Control Limited, Houston, Tex.

PCT No. PCT/US92/01142, §371 Date Nov. 24, 1993, §102(e) Date Nov. 24, 1993, PCT Pub. No. , PCT Pub. Date Nov. 24, 1993.

PCT Filed Feb. 10, 1992, Ser. No. 98,305.

Claims priority, application Israel, Feb. 8, 1991, 97193

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—697 35 Claims



1. A device for measuring an interface between two fluids, the device having an electrical circuit transmitting means, a detector, a first antenna and a second electrically grounded antenna;

the transmitting means being arranged to transmit electrical impulses between the first and second antennas through one of the two fluids so as to be absorbed thereby, and

the detector being arranged to detect a change either an impedance of a rate of absorption of energy which occurs at the interface;

wherein:

the device includes a housing for placing in the fluids, the housing being so dimensioned that, in use, the device floats in a volume of fluid,

the first and second antennas project from the housing through the interface, and

the electrical circuit includes a coupling means for coupling thereto a remote monitoring means whereby the interface may be measured remotely.

5,444,384

METHOD AND DEVICE OF CONTACTLESS MEASUREMENT OF ELECTRIC VOLTAGES IN A UNIT UNDER MEASUREMENT WITH AN INSULATING SURFACE

Rainer Lackmann, Düsseldorf, and Gerhard Weichert, Dortmund, both of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Germany

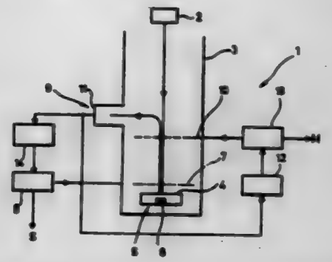
PCT No. PCT/DE92/00014, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993, PCT Pub. No. WO92/14162, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 10, 1992, Ser. No. 104,060

Claims priority, application Germany, Feb. 5, 1991, 41 03 410.4

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—751 20 Claims



1. A method for contactless measurement of electric potential in a unit under measurement including an insulating surface and at least one conducting zone lying below said insulating surface, comprising the steps of:

directing a primary electron beam in an evacuated measuring chamber onto the insulating surface above the conducting zone of the unit under measurement;

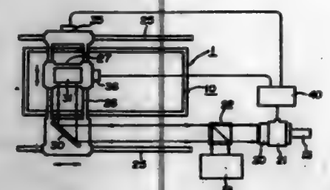
generating a secondary electron flow at the insulating surface of said unit, wherein said secondary electron flow is generated by the incidence of said primary electron beam on said insulating surface;

generating an electric extraction field above the unit under measurement, wherein the electric extraction field is an alternating field which alternates between a positive voltage and a negative voltage, wherein the value of the positive voltage is high when compared to the value of the negative voltage; and

determining the potential of the conducting zone by measuring the energy of the electrons of the secondary electron flow, wherein the measurement of the energy of the electrons of the secondary electron flow is carried out in

synchronism with that partial period of the alternating field during which the high positive voltage is applied.

5,444,385
TESTING APPARATUS FOR LIQUID CRYSTAL DISPLAY SUBSTRATES
Francois J. Henley, Los Gatos, Calif., assignor to Photon Dynamics, Inc., Milpitas, Calif.
Filed Sep. 10, 1991, Ser. No. 757,452
Int. Cl.[6] G01R *19/00*
U.S. Cl. 324—752 **11 Claims**



1. In a panel testing apparatus for observing large areas of a test panel comprising an electro-optical element having optical properties that change to form images when an electric field is impressed thereon, said electro-optical element further comprising a first surface facing a test panel that forms said electric field and said first surface and said test panel having a gap therebetween, and a light receptor for receiving desired portions of said images from said electro-optical element and in particular a second surface, said panel testing apparatus comprising:

a movable stage means;

a movable mirror means coupled to said movable stage means, said movable mirror means being adjustable to direct portions of images onto said light receptor from desired positions of said electro-optical element; and

wherein said movable stage means allows said movable mirror means to be positioned over said desired portions of Said electro-optical element to receive said images portions therefrom, and

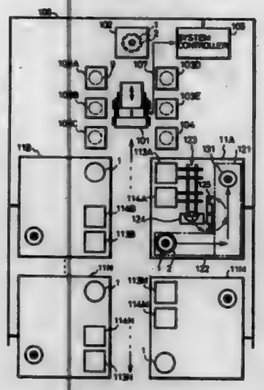
wherein said movable mirror means comprises a first mirror and a second mirror, said first mirror directs said images portions from said electro-optical element to said second mirror, and said second mirror directs said images portions from said first mirror to said light receptor.

5,444,386
PROBING APPARATUS HAVING AN AUTOMATIC PROBE CARD INSTALL MECHANISM AND A SEMICONDUCTOR WAFER TESTING SYSTEM INCLUDING THE SAME
Tsutomu Mizunuma, Mitaka, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan
Filed Jan. 15, 1993, Ser. No. 5,330
Claims priority, application Japan, Jan. 17, 1992, 4-001302 U
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—754 **4 Claims**

1. A probing apparatus arrangement comprising a plurality of probing apparatuses (11A-11N) for measuring electrical characteristics of a plurality of semiconductor wafers (9) by bringing probes of a probe card (1) suitable for each semiconductor wafer into contact with electrode pads of the respective wafer to be tested, wherein each probing apparatus comprises moving means (41–45) for receiving a probe card (1), for carrying said probe card to a position just below a pin socket (3) to which the probe card is to be attached, and for lifting said probe card, and attaching means (3) for attaching the lifted probe card to said pin socket, said apparatus arrangement further comprising:

a probe card storing means (102) for storing a plurality of probe cards (1), each in a probe card holder (2), to be commonly used in said plurality of probing apparatuses;

an automated probe card transporting means (101) for picking out one of said probe cards stored in said probe card storing means (102) and transporting the same to a respective probing apparatus (11A); and



a control means (105) for controlling said automated probe card transporting means (101) to pick out from said probe card storing means (102) one of said probe cards corresponding to a kind of semiconductor wafer to be tested in said respective probing apparatus (11A) and to transfer the same to the moving means (41–45) of said respective probing apparatus (11A).

5,444,387
TEST MODULE HANGER FOR TEST FIXTURES
David R. Van Loan, Diamond Bar; Charles J. Johnston, Walnut, and Mark A. Swart, Upland, all of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.
Division of Ser. No. 998,554, Dec. 30, 1992, Pat. No. 5,289,117, which is a division of Ser. No. 757,006, Sep. 9, 1991, Pat. No. 5,180,976, which is a division of Ser. No. 698,724, May 10, 1991, Pat. No. 5,247,246, which is a division of Ser. No. 427,932, Oct. 25, 1989, Pat. No. 5,049,813, which is a continuation of Ser. No. 214,365, Jul. 1, 1988, abandoned, Continuation-in-part of Ser. No. 142,990, Jan. 12, 1988, abandoned, Continuation-in-part of Ser. No. 91,536, Aug. 31, 1987, abandoned, Continuation-in-part of Ser. No. 39,876, Apr. 17, 1987, abandoned. This application Feb. 10, 1994, Ser. No. 196,588
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—754 **8 Claims**

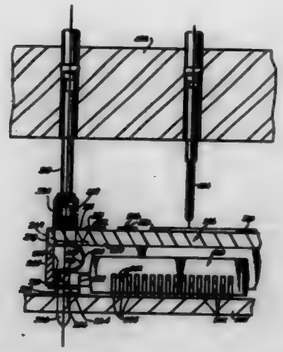
1. Apparatus for testing electrical circuits associated with an integrated circuit package connected to electrical leads on a printed circuit board under test, the apparatus comprising:

a test fixture mounting the printed circuit board in a position for testing, the test fixture including support means for a circuit test device adapted for movement relative to the board under test;

a test module having a housing that carries the circuit test device, the circuit test device conducting electrical test signals for a functional test of the integrated circuit package;

a hanger suspending the test module from the support means above the integrated circuit package, the housing including a plurality of spaced apart hanger probes carried by the support, the hanger probes connected to individual compression spring means between the hanger probes and their connections to the module housing, the hanger probes and their corresponding compression springs being independent of the electrical test signals conducted by the circuit test device, said relative movement of the support means and the board under test causing the hanger to position the circuit test device in a testing position aligned for contact with the integrated circuit package or its connections to the leads on the printed circuit board;

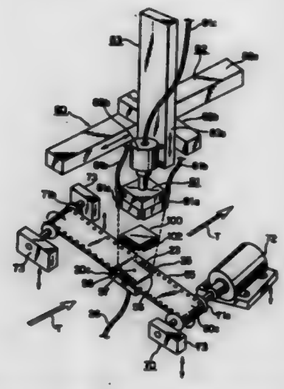
the compression springs providing a means of compliancy between the support means on the fixture and the printed



circuit board as the test module is moved into alignment in said testing position; and

contact means within the fixture for providing electrical test signals passing between the circuit test device on the housing and the electrical leads on the printed circuit board.

5,444,388
APPARATUS FOR TESTING SEMICONDUCTOR DEVICES USING A CONDUCTIVE SHEET
Yasushi Ideta; Tsuneseri Umezu, and Akihiro Washitsui, all of Kikuchi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1994, Ser. No. 223,538
Claims priority, application Japan, Apr. 5, 1992, 5-078224; Jul. 30, 1993, 5-189787
Int. Cl.[6] G01R *31/00, 31/02*
U.S. Cl. 324—755 **14 Claims**



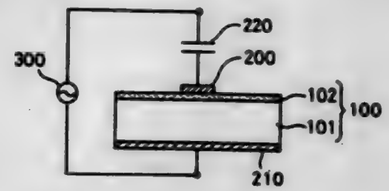
1. An apparatus for testing semiconductor devices comprising:

a socket frame on which a semiconductor devices is individually supported during testing and including an array of contact terminals corresponding to an array of external leads of a semiconductor device and connected to a test measurement circuit

a movable pressing device for pressing the external leads of a semiconductor device supported on said socket frame toward the contact terminals during testing; and

a changeable sheet having a plurality of conductor patterns for electrically connecting the external leads of the semiconductor device and the contact terminals of said socket frame, said sheet being interposed between the contact terminals and the external leads during inspection of a semiconductor devices during testing for preventing solder on the external leads from attaching to and depositing on the contact terminals.

5,444,389
METHOD AND APPARATUS FOR MEASURING LIFETIME OF MINORITY CARRIERS IN SEMICONDUCTOR
Sadao Hirae; Motohiro Kouno, and Takanaga Sakai, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Sep. 17, 1993, Ser. No. 123,443
Claims priority, application Japan, Sep. 25, 1992, 4-280832
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—765 **14 Claims**



1. A method of measuring the minority carrier lifetime in a semiconductor, comprising the steps of:

(a) preparing a semiconductor wafer having a substrate and an insulating film formed on said substrate;

(b) forming a series combination of said semiconductor wafer and a capacitor;

(c) applying a high-frequency voltage with a bias to said series combination of said semiconductor wafer and said capacitor;

(d) changing said bias stepwise while measuring a time-dependent change, responsive to said stepwise change of said bias, of a total capacitance of said series combination; and

(e) calculating a minority carrier lifetime in said substrate by the analysis of said time-dependent change of said total capacitance.

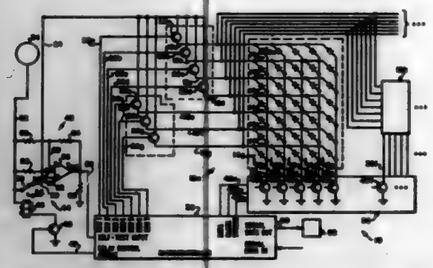
5,444,390
MEANS AND METHOD FOR SEQUENTIALLY TESTING ELECTRICAL COMPONENTS
Charles E. Bartlett, Buffalo Grove, Ill.; Robert Bower, Jr., Bryan, Tex.; Brady L. Cleaver, Bryan, Tex., and George C. Smith, Bryan, Tex., assignors to Texas Digital Systems, Inc., College Station, Tex.
Filed Feb. 2, 1994, Ser. No. 190,312
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—770 **22 Claims**

1. Apparatus for testing respective electrical components in a circuit comprising a plurality of the electrical components, a power bus being provided for conducting power to operate the electrical components, the apparatus comprising:

means for applying a test current through the power bus to a respective electrical component within the circuit;

comparator means having a first input terminal connected to the power bus, and a second input terminal connected to

a source of a reference voltage, the comparator means comprising means for comparing the potential on the power bus during application of a test current to an electrical component with the reference voltage and producing an output signal, in response to a predetermined level of potential on the power bus relative to the reference voltage; and



processor means, connected to the comparator means and the means for applying a test current and operable to actuate the means for applying a test current to apply test current to selected ones of said electrical components sequentially, the processor means further being operable for detecting the occurrence of an output signal from the comparator means during the application of a test current to a selected electrical component to determine if the selected electrical component is electrically conductive.

5,444,391

TIE-UP AND TIE-DOWN CIRCUITS WITH A PRIMARY INPUT FOR TESTABILITY IMPROVEMENT OF LOGIC NETWORKS

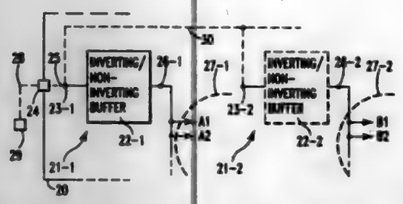
Richard Maitin, Fleury-En-Biere; Jean-Marie Rolland, Corbeil Essonnes, and Jacques Renard, Pontierry, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1994, Ser. No. 195,227

Claims priority, application European Pat. Off., Apr. 29, 1993, 93480049

Int. Cl.[6] G06F 7/38; H03K 19/173

U.S. Cl. 326—16 **4 Claims**



1. A semiconductor product logic chip (20) including a tie-up circuit (21-1) adapted to feed a logic network (27-1) having two standard operating modes, said modes being a SYSTEM and a TEST mode, said semiconductor product logic chip comprising:

an non-inverting buffer book (22-1) consisting of two serially connected CMOS inverters (31,32) and provided with an input terminal (23-1) and an output terminal (26-1);

a chip primary input terminal (24) connected to a primary input supply means (29) adapted to supply a VDD supply voltage, i.e. logic level "1138 , during the SYSTEM mode and to selectively switch between the VDD supply voltage and a GND supply voltage, i.e. between the "1" and "0" logic levels, whenever desired in the TEST mode;

a connection (25) between said input terminal and said primary input terminal; and,

at least one logic network (27-1) connected to said output terminal.

5,444,392

CMOS INPUT STAGE

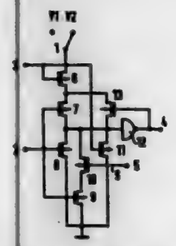
Diether Sommer, München, and Dominique Savignac, Ismaning, both of Germany, assignors to Siemens AG, Munich, Germany

Filed Sep. 29, 1993, Ser. No. 128,529

Claims priority, application European Pat. Off., Sep. 29, 1992, 92116654

Int. Cl.[6] H03K 17/16, 19/0175

U.S. Cl. 326—31 **5 Claims**



1. A CMOS input stage for operation with a supply voltage selectively having a first value or a second higher value, comprising:

a supply voltage terminal selectively receiving a first value or a second value of a supply voltage during operation, a reference potential terminal, and an input terminal;

a first field effect transistor of a first conduction type having a load path and a gate teminal, and a second field effect transistor of a second conduction type having a load path and a gate terminal;

the load paths of said field effect transistors being connected in series between said supply voltage terminal and said reference potential terminal;

an output terminal of the CMOS input stage formed between said first and second field effect transistors;

the gate terminals of said field effect transistors being connected to said input terminal;

control means for adjusting a resistance of the load path of at least one of said field effect transistors as a function of a particular value selected for the supply voltage;

a connection terminal for a threshold reversal signal;

said control means having two further field effect transistors of the second conduction type with load paths and gate terminals;

the load paths of said further field effect transistors being connected in a series circuit, said series circuit being parallel to the load path of said second field effect transistor; and

the gate terminal of one of said further field effect transistors being connected to said input terminal, and the gate terminal of the other of said further field effect transistors being connected to said connection terminal for the threshold reversal signal.

5,444,393

SEMICONDUCTOR INTEGRATED CIRCUIT FOR SELECTIVELY PERFORMING A REWIRING OR A LOGICAL OPERATION

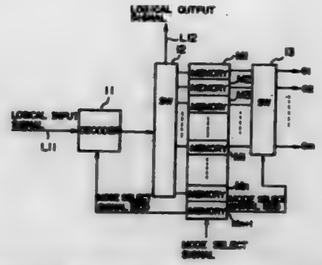
Takaaki Yoshimori, and Toshiaki Mori, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1992, Ser. No. 992,762

Claims priority, application Japan, Dec. 19, 1991, 3-337089; Nov. 12, 1992, 4-302517

Int. Cl.[6] H03K 19/173

U.S. Cl. 326—38 **2 Claims**



1. A semiconductor integrated circuit having a plurality of fundamental sections connected to a plurality of signal lines,

wherein said fundamental sections are permitted to carry out both a first operation in a logical operation mode for performing sequential logical operations by using signals delivered from said signal lines and a second operation in a wire formation mode for the setting of connections between the respective signal lines, each of said fundamental sections being selectively operable in either operation mode;

wherein each said fundamental section comprises:

a mode designator adapted to output a mode signal for designating either of said logical operation mode and said wiring formation mode;

a memory section including a plurality of memories for storing data;

a decoder adapted to be brought into an operative state when the mode signal outputted from said mode designator corresponds to said logical operation mode to decode a logical input signal given thereto and to output a switching signal;

a first switching circuit including a plurality of first switching elements connected to said memories of said memory section, said first switching circuit being responsive to the switching signal given thereto to switch ON/OFF states of said first switching elements, to allow the memory or memories connected to any of the first switching elements which have been turned ON to output data stored therein as a logical output signal;

a second switching circuit including a plurality of second switching elements connected to said memories of said memory section, said second switching circuit being operative to allow said second switching elements to be turned ON when the mode signal outputted from said mode designator corresponds to said wiring formation mode to allow the memory or memories connected to the second switching elements which have been turned ON to output data stored therein as a wiring formation signal; and

a third switching circuit including a plurality of third switching elements connected between said signal lines, said third switching circuit being responsive to the wiring formation signal outputted from said second switching circuit, switching the ON/OFF states of said third switching elements in response to the wiring formation signal.

5,444,394

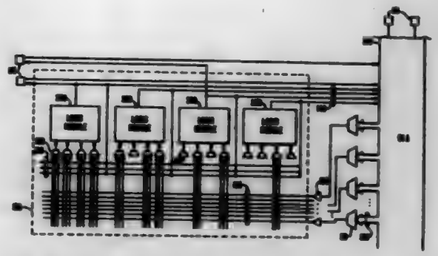
PLD WITH SELECTIVE INPUTS FROM LOCAL AND GLOBAL CONDUCTORS

James A. Watson, Santa Clara; Cameron R. McClintock, Mountain View; Hiten S. Randhawa; Ken M. Li, both of Santa Clara, and Bahram Ahouie, Cupertino, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Jul. 8, 1993, Ser. No. 88,973

Int. Cl.[6] H03K 19/177

U.S. Cl. 326—45 **7 Claims**



1. A programmable logic device comprising:

a plurality of complementary metal-oxide-semiconductor (CMOS) logic modules having zero standby current, each having a plurality of inputs and at least one output each one of said plurality of CMOS logic modules providing a logical combination of said plurality of inputs at said at least one output, said plurality of CMOS logic modules being grouped in a plurality of logic array blocks, said logic array blocks being disposed in linear stacks;

a plurality of global conductors extending in one direction and interposed between said stacks of logic array blocks, with a subset of said global conductors coupled to a plurality of said at least one output of said plurality of CMOS logic modules; and

a first plurality of multiplexers, each having a plurality of inputs coupled to a corresponding subset of said plurality of global conductors, at least one control input, and an output coupled to an input of said plurality of logic array blocks, said first plurality of multiplexers for programmably coupling a global conductor to a logic array block input in response to programming signals on said at least one control input;

a second plurality of multiplexers each one having an output coupled to one of said plurality of logic module inputs, at least one control input, and a plurality of inputs coupled to a plurality of logic array block inputs, said second plurality of multiplexers for programmably coupling a plurality of logic array block inputs to said plurality of logic module inputs in response to programming signals on said at least one control input,

wherein, a logic array block can communicate with another logic array block only via said plurality of global conductors and said first plurality of multiplexers.

5,444,395

NON-SATURATING BIPOLAR TRANSISTOR CIRCUIT

Dwight D. Eager, Mesa; Ray D. Sundstrom, and Phuc C. Pham, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 6, 1993, Ser. No. 161,539

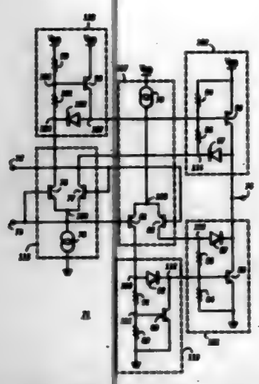
Int. Cl.[6] H03K 19/0175, 17/04

U.S. Cl. 326—73 **15 Claims**

10. A translator circuit for translating an emitter coupled logic signal to a CMOS (complementary metal oxide semiconductor) signal including a first input, a second input, and an output, the translator circuit comprising:

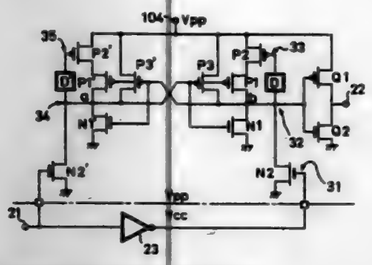
a first input stage having a first input and a second input

coupled respectively to the first and second inputs of the translator circuit, a first output, and a second output;
a second input stage having a first input and a second input coupled respectively to the first and second inputs of the translator circuit, a first output, and a second output;
a first non-saturating transistor circuit having a control terminal coupled to the first output of the first input stage, a first terminal coupled to the output of the translator circuit and a second terminal coupled for receiving a first supply voltage;



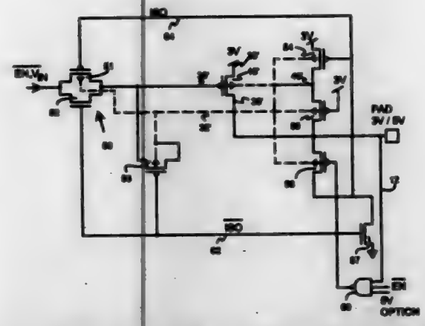
a second non-saturating transistor circuit having a control terminal coupled to said first output of said second input stage, a first terminal coupled to the output of the translator circuit, and a second terminal coupled for receiving a second supply voltage;
a third non-saturating transistor circuit for disabling said first non-saturating transistor circuit including a control terminal coupled to said second output of said first input stage, a first terminal coupled to said first non-saturating transistor circuit, and a second terminal coupled for receiving said first supply voltage.

5,444,396
LEVEL SHIFTING CIRCUIT
Mitsuo Soneda, Kanagawa, Japan, assignor to Sony Corporation, Japan
Filed Sep. 21, 1994, Ser. No. 309,632
Claims priority, application Japan, Sep. 29, 1993, 5-242955
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—81 3 Claims



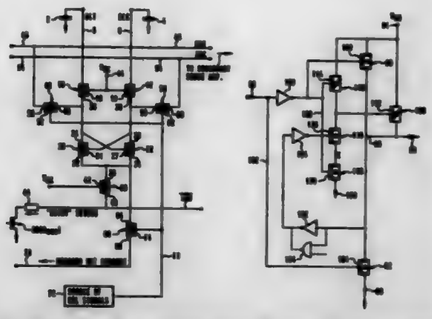
1. A level shifting circuit comprising:
a power supply;
a first P-type transistor and a first N-type transistor connected in series between said power supply and ground;
a second P-type transistor and a second N-type transistor connected in series between said power supply and ground;
a connecting line connecting a first junction between said first P-type transistor and said first N-type transistor to a gate of said second P-type transistor and a gate of said second N-type transistor;;
a connecting line connecting a second junction between said second P-type transistor and said second N-type transistor to a gate of said first P-type transistor and a gate of said first N-type transistor;;
an input terminal;
a third transistor connected between said first junction and ground and having a gate connected to said input terminal;
an inverter connected to said input terminal;
a fourth transistor connected between said second junction and ground and having a gate connected to an output terminal of said inverter;
an output terminal connected to said second junction;
fifth and sixth transistors connected in series with said first and second P-type transistors, respectively, for preventing a relatively large through current from flowing therethrough when the level of an input signal varies; and
seventh and eighth transistors which are connected in parallel respectively to a series-connected circuit of said first P-type transistor and said fifth transistor and a series-connected circuit of said second P-type transistor and said sixth transistor.

5,444,397
ALL-CMOS HIGH-IMPEDANCE OUTPUT BUFFER FOR A BUS DRIVEN BY MULTIPLE POWER-SUPPLY VOLTAGES
Anthony Y. Wong, Saratoga; David Kwong, Fremont; Lee Yang, Cupertino, and Charles Haiss, Fremont, all of Calif., assignors to Pericom Semiconductor Corp., San Jose, Calif.
Filed Oct. 5, 1994, Ser. No. 318,238
Int. Cl.[6] H03K *19/0175, 19/02*
U.S. Cl. 326—81 16 Claims



1. An output buffer having a high-impedance state, the output buffer coupled to a first power supply producing a first power supply voltage, the output buffer comprising:
an output coupled to a bus, the bus having a low logic state and a high logic state, the high logic state corresponding to a voltage substantially at the first power supply voltage when the output buffer is driving the bus, the high logic state corresponding to a voltage substantially at a second power supply voltage higher than the first power supply voltage when the output buffer is not driving the bus and the output buffer is in the high-impedance state;
a p-channel driver transistor, having a source coupled to the first power supply and a drain coupled to the output, the p-channel driver transistor for pulling the output high to the first power supply voltage, the p-channel driver transistor being in an N-well;
a bias circuit comprising
well bias means, coupled to the first power supply and coupled to the output, for biasing the N-well, the well bias means coupling the N-well to the first power supply when the output buffer is driving the bus, the well bias means coupling the output to the N-well when the output buffer is not driving the bus and the bus is substantially at the second power supply voltage higher than the first power supply voltage; and
isolation engaging means, coupled to the well bias means, for signaling when the N-well is to be isolated from the first power supply and coupled to the output, the isolation engaging means coupled to the output, the isolation engaging means signaling that the N-well is to be isolated from the first power supply when the bus is substantially at the second power supply voltage;
wherein the isolation engaging means comprises:
isolation detect means, receiving an indication that the output buffer is not driving the bus, the isolation detect means also receiving an indication that the bus is in the high logic state, for indicating when the N-well is to be isolated from the first power supply; and
signal inversion means, coupled to the isolation detect means, for signaling that the N-well is to be isolated from the first power supply,
whereby the N-well containing the p-channel driver transistor is biased to substantially the second power supply voltage when the bus is substantially at the second power supply voltage.

5,444,398
DECODED-SOURCE SENSE AMPLIFIER WITH SPECIAL COLUMN SELECT DRIVER VOLTAGE
Oliver Kiehl, Munich, Germany; Fergal Bonner, Dublin, Ireland; Michael Killian, Burlington, and Klaus J. Lau, Essex Junction, both of Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 17, 1992, Ser. No. 995,639
Int. Cl.[6] H03K *3/45*
U.S. Cl. 327—55 5 Claims



1. Apparatus for reading or sensing voltages applied to BLT and BLC complementary bit lines via the sensing of these voltages on external DQT and DQC bit line conductors, respectively, whereby prior to sensing said BLT and BLC bit lines are precharged to a first dc voltage level, and said DQT and DQC bit lines are precharged to a second dc voltage level greater than said first dc voltage level said apparatus comprising:
a sensing amplifier having a cross-coupled pair of transistors, said transistors each having first and second output electrodes between which a main current path is formed, said second output electrodes being connected together;
means for respectively coupling said first output electrodes to said bit lines;
a pair of external DQT and DQC bit line conductors;
first and second bit line select transistors respectively connected between each of said first output electrodes and said DQT and DQC bit line conductors, each of said first and second bit line select transistors having a control electrode;
a sense amplifier driving node;
a source of reference potential;
means for coupling said sense amplifier driving node to said source of reference potential;
an impedance connected between said second output electrodes and said sense amplifier driving node;
a source of decoded ground potential;
a column decoding transistor including a main current path coupled between said second output electrodes and said source of decoded ground potential, said column decoding transistor having a control electrode; and
means for supplying a column select signal (CSL) to said control electrodes of said column decoding transistor and said bit line select transistors, said CSL signal having a plateau in its midsection such that said column decoding transistor is rendered conductive on one side of said plateau, overcoming said first precharge voltage said BLT and BLC bit lines, and said bit line select transistors are rendered conductive on the other side of said plateau, overcoming said second precharge voltage on said DQT and DQC bit lines, while maintaining conduction of said column decoding transistor;
wherein said means for supplying a column select signal to said control electrodes includes:
an input terminal for receiving a select signal;
an output terminal;
a source of operating potential;
a source of reference potential;
first and second transistors of a first conductivity type each having respective main current paths connected in series between said sources of operating and reference potential, with a common connection between their respective main current paths being connected to said output terminal, said transistors each having a control electrode;
a first transistor of a second conductivity type having a main current path connected between said source of operating potential and said output terminal, said transistor of a second conductivity type having a control electrode;
a second transistor of said second conductivity type, and third and fourth transistors of said first conductivity type each having respective main current paths connected in series in the order named between said source of operating potential and said source of reference potential, said second transistor of said second conductivity type, and said third and fourth transistors of said first conductivity type each having a control electrode;
a first inverter having an input terminal connected to said input terminal for receiving said select signal, and an output terminal connected to said control electrodes of said first transistor of said first conductivity type, said second transistor of said second conductivity type and said fourth transistor of said first conductivity type;
a connection between said input terminal and said control electrode of said second transistor of said first conductivity type;
delay means connected between said output terminal and said control electrode of said third transistor of first conductivity type; and
the main current paths of said second transistor of said second conductivity type, and said third transistor of said first conductivity type, being connected in common to said control electrode of said first transistor of said second conductivity type, whereby said first transistor of said first conductivity type pulls said output terminal up to a frac-

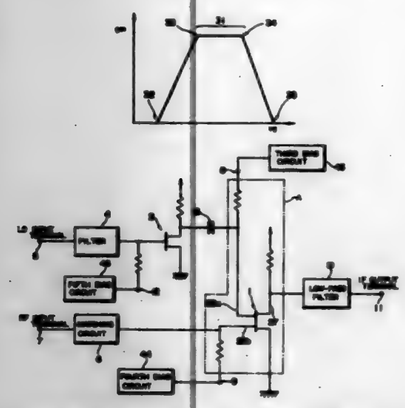
tion of said operating potential when said select signal at a low value of voltage is applied to said input terminal, and said first transistor of said second conductivity type turns on to pull said output terminal to said operating potential after the delay introduced by said delay means.

5,444,399

MIXER CIRCUIT

Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 20, 1993, Ser. No. 109,538
Claims priority, application Japan, Sep. 11, 1992, 4-243229
Int. Cl.[6] H03K *3/353*; H03B *19/00*
U.S. Cl. 327—105 21 Claims



1. A mixer circuit for mixing a radio frequency signal and a local oscillation signal to output an intermediate frequency signal comprising:

a radio frequency signal input terminal to be supplied with the radio frequency signal,

a local oscillation signal input terminal to be supplied with the local oscillation signal,

an intermediate frequency signal output terminal for outputting the intermediate frequency signal,

a first field effect transistor with a pulse-doped structure, for mixing the radio frequency signal and the local oscillation signal from said input terminals to output the intermediate frequency signal,

said first field effect transistor being a dual gate field effect transistor and having

a first gate,

a second gate connected to said radio frequency input terminal,

a drain connected to said intermediate frequency signal output terminal, and

a source connected to a voltage potential, and

second field effect transistor with pulse-doped structure, said second field effect transistor being a single gate field effect transistor and having

a gate connected to said local oscillation signal input terminal, said gate of said second field effect transistor having a shorter gate width than said first gate of said first field effect transistor,

a drain connected to said first gate of said first field effect transistor, and

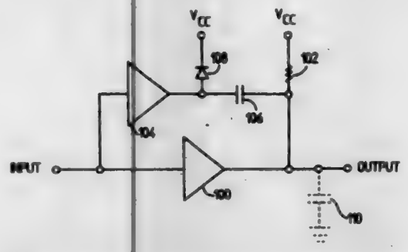
a source connected to said voltage potential.

5,444,400

LOGIC OUTPUT CIRCUIT WITH HIGH TRANSIENT PULL-UP CURRENT

Steven G. Hall; Lawrence N. Tauber; Kerry J. Monroe, all of Fort Collins; Christian J. Warling; Thomas L. Bloom, both of Loveland; William P. Repasky, Fort Collins, and Erik R. Habbinga, Longmont, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 2, 1993, Ser. No. 146,254
Int. Cl.[6] H03K *17/04*
U.S. Cl. 327—108 2 Claims



1. A binary line driver circuit having a power supply connection, the binary line driver circuit comprising:

a first driver circuit having a first driver input and a first driver output, the first driver output having active pull-down;

a resistor connected between the power supply connection and the first driver output;

a second driver circuit having a second driver input connected to the first driver input and a second driver output, the second driver output having active pull-up; and

a capacitor connected between the second driver output and the first driver output, the capacitor thereby capacitively coupling the second driver output to the first driver output and the resistor limiting steady state current from the power supply connection to the first driver output.

5,444,401

CURRENT LIMITED OUTPUT DRIVER FOR A GATE ARRAY CIRCUIT

Harold S. Crafts, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio and Hyundai Electronics America, Milpitas, Calif.

Continuation of Ser. No. 996,994, Dec. 28, 1992, abandoned.
This application Feb. 17, 1994, Ser. No. 198,656
Int. Cl.[6] H03K *3/00*; G05F *1/10*
U.S. Cl. 327—108 6 Claims

1. An output driver circuit, comprising:

an output pad;

a current limited output driver connected between a positive supply voltage and a ground voltage, said output driver having a binary input, and also an output;

said output of said output driver is connected to said output pad; and

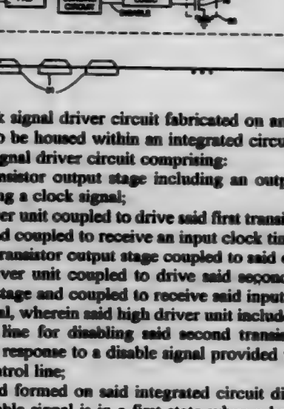
a pull down circuit connected to said output pad, and responsive to said output, to conduct additional current from said output pad to the ground voltage to attain a logic LOW level, wherein said output driver includes:

an N-FET having its drain connected to said output pad, its source connected to said ground voltage and a gate;

logic switching means for driving said N-FET into a conducting state if said output pad is being driven to a logic LOW level, wherein said logic switching means includes

a binary inverter having an input connected to said output pad and an output;

a two-input binary AND gate, having a first input connected to said binary inverter output, a second input connected to said binary input of said output driver; and



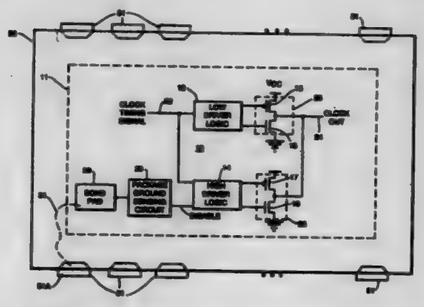
an output of said two-input AND gate being connected to said gate of said N-FET.

5,444,402

VARIABLE STRENGTH CLOCK SIGNAL DRIVER AND METHOD OF MANUFACTURING THE SAME

Scott H. R. McMahon; James M. Buchanan, and Stephen C. Horne, all of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Jan. 29, 1993, Ser. No. 10,930
Int. Cl.[6] H03K *5/12, 17/16*
U.S. Cl. 327—170 10 Claims



1. A clock signal driver circuit fabricated on an integrated circuit die to be housed within an integrated circuit package, said clock signal driver circuit comprising:

a first transistor output stage including an output line for providing a clock signal;

a low driver unit coupled to drive said first transistor output stage and coupled to receive an input clock timing signal;

a second transistor output stage coupled to said output line;

a high driver unit coupled to drive said second transistor output stage and coupled to receive said input clock timing signal, wherein said high driver unit includes a disable control line for disabling said second transistor output stage in response to a disable signal provided to said disable control line;

a bond pad formed on said integrated circuit die, wherein said disable signal is in a first state when a bond wire is electrically connected from a connecting pin of said integrated circuit package to said bond pad and wherein said disable signal is in a second state when said bond pad is electrically disconnected from said connecting pin; and

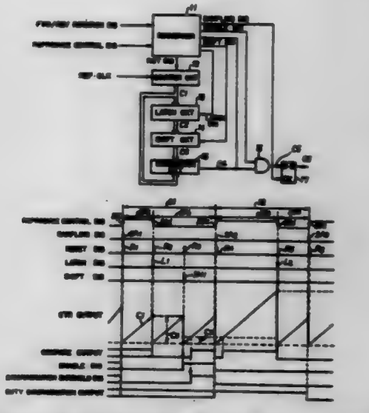
a package ground sensing circuit coupled to said bond pad, wherein said package ground sensing circuit senses an electrical potential at said bond pad and generates said disable signal dependent upon said electrical potential, said package ground sensing circuit including a first pull up transistor coupled between said bond pad and a first power supply terminal for driving said disable signal high when said bond pad is electrically disconnected from said connecting pin.

5,444,403

DUTY DISCRIMINATING CIRCUIT

Makoto Nagasawa, Ageo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1993, Ser. No. 171,634
Claims priority, application Japan, Dec. 22, 1992, 4-342809
Int. Cl.[6] H03K *5/26*
U.S. Cl. 327—172 6 Claims



1. A duty ratio discriminating circuit for discriminating a ratio of a high-level precedent portion to one period of an information signal whose level varies periodically, on the basis of threshold values, which comprises:

a sequencer for outputting a shift signal to obtain a first threshold level, by detecting the precedent portion of the information signal to output a sampling signal, detecting a subsequent portion of the information signal to output a latch signal, and detecting both the precedent and subsequent portions of the information signal to output a reset signal;

a counter circuit, having its count data reset in response to said reset signal for detecting a time period of the precedent portion of the information signal by counting a number of reference clock signals to obtain count data;

a shift circuit for shifting the count data;

a discriminating circuit for obtaining a discriminate point by comparing a time period of the subsequent portion of the information signal with a second threshold value corresponding to the count data shifted by said shift circuit; and

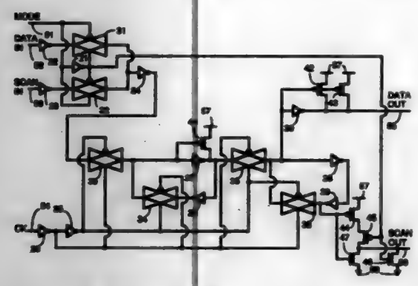
an output circuit for outputting a duty ratio discriminate signal on the basis of a relationship between the discriminate point outputted by said discriminating circuit and the subsequent portion time data.

5,444,404

SCAN FLIP-FLOP WITH POWER SAVING FEATURE

Thomas J. Ebner, Andover, Mass., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 3, 1994, Ser. No. 205,921
Int. Cl.[6] H03K *3/02*
U.S. Cl. 327—185 24 Claims



1. A scan flip-flop comprising:
- a system input for receiving input when the scan flip-flop is in a normal operating mode;
- a scan input for receiving input when the scan flip-flop is in a scan mode;
- a mode selection input, the scan flip-flop being in the normal operating mode in response to a first signal value being placed on the mode selection input and the scan flip-flop being in the scan mode in response to a second signal value being placed on the mode selection input;
- a system output on which output for the scan flip-flop is placed;
- a scan output; and,
- an output generating means, coupled to the system input, the scan input, the mode selection means, the system output and the scan output, for generating a system output signal on the system output and a scan output signal on the scan output, wherein when the scan flip-flop is in the normal operating mode, the scan output signal is held at a logic 1 and when the scan flip-flop is in scan mode, the scan output signal transitions between logic 1 and logic 0 synchronous with transitions of the system output signal on the system output.

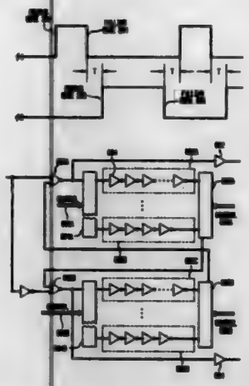
5,444,405

CLOCK GENERATOR WITH PROGRAMMABLE NON-OVERLAPPING CLOCK EDGE CAPABILITY

Ho D. Truong, San Jose, and Chong M. Lin, Sunnyvale, both of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 967,614, Oct. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 844,066, Mar. 2, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,910
Int. Cl.[6] H03K *3/037*
U.S. Cl. 327—239 2 Claims

1. A programmable clock generator for generating two non-overlapping clock signals, comprising:
- a first logic gate having first and second inputs and a first output, wherein said first input receives an input clock signal and said first output outputs a first non-overlapping clock signal;
- a second logic gate having third and fourth inputs and a second output, wherein said third input receives an inverted input clock signal and said second output outputs a second non-overlapping clock signal;
- a first delay element having a fifth input coupled to said first output of said first logic gate and having a third output coupled to said fourth input of said second logic gate; and
- a second delay element having a sixth input coupled to said second output of said second logic gate and having a fourth output coupled to said second input of said first logic gate, comprising
- a plurality of delay lines, each having a different delay time, and
- a demultiplexer that receives said second non-overlapping



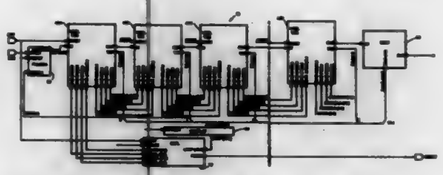
clock signal and transmits said second non-overlapping clock signal through a selected one of said plurality of delay lines;
- wherein an amount of delay introduced by said second delay element is changed by changing which of said plurality of delay lines is selected by said demultiplexer.

5,444,406

SELF-ADJUSTING VARIABLE DRIVE STRENGTH BUFFER CIRCUIT AND METHOD FOR CONTROLLING THE DRIVE STRENGTH OF A BUFFER CIRCUIT

Stephen C. Horne, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 8, 1993, Ser. No. 14,955
Int. Cl.[6] H03K *5/13*
U.S. Cl. 327—277 6 Claims



1. A self-adjusting buffer circuit comprising:
- a delay chain including an input node and an output node wherein a propagation delay between the input node and the output node is variable and is dependent upon a delay select signal;
- a control unit for generating the delay select signal and coupled to said delay chain, wherein the delay select signal controls the propagation delay of said delay chain such that a period of a timing signal provided to the input node of said delay chain substantially equals the propagation delay of said delay chain;
- a buffer unit including an input terminal, an output terminal, and a control terminal, wherein a control signal indicative of the delay select signal is provided to said control terminal and wherein a drive strength of said buffer unit varies in response to the control signal; and
- a lock window unit coupled to the output node of said delay chain, wherein said lock window unit includes a plurality of delay elements coupled in series, and wherein said

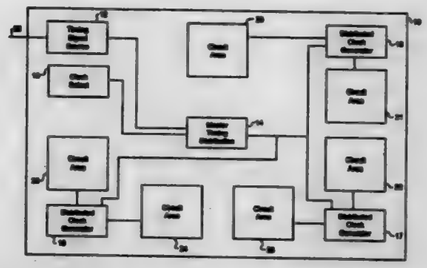
control unit is coupled to receive a plurality of signal levels at a plurality of nodes that connect said plurality of delay elements.

5,444,407

MICROPROCESSOR WITH DISTRIBUTED CLOCK GENERATORS

Gopi Ganapathy, and Stephen C. Horne, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 28, 1992, Ser. No. 997,991
Int. Cl.[6] G06F *1/04*; H03K *3/013*
U.S. Cl. 327—295 13 Claims



1. A microprocessor circuit fabricated on a semiconductor die comprising:
- plurality of distributed circuit segments having substantially equal drive strength requirements, each segment further comprising:
  - a circuit area including circuitry driven by a clock signal, and
  - a distributed clock generator circuit fabricated at a distributed location on the semiconductor die and coupled to the circuitry within the circuit area to supply the clock signal thereto;
- a master timing distribution circuit coupled to the distributed clock generator circuits for supplying a master timing signal having a selectively variable frequency to each distributed clock generator circuit;
- means for supplying a drive control signal to each distributed clock generator circuit of the plurality of distributed circuit segments for setting the drive strength of each distributed clock generator circuit; and
- a timing signal source having an output coupled to the master timing distribution circuit and an input for receiving an external clock signal, wherein the timing signal source includes a frequency division circuit coupled to the master timing distribution circuit, and wherein said frequency division circuit generates a first timing signal having a frequency substantially half that of the external clock signal and a second timing signal having a frequency substantially equal to the external clock signal.

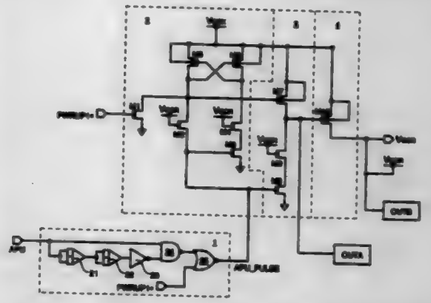
5,444,408

ACTIVE PULL-UP VOLTAGE SPIKE REDUCER

Todd A. Merritt, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 13, 1993, Ser. No. 167,262
Int. Cl.[6] H03L *5/00*; H03K *3/00, 19/0175*; G05F *1/10*
U.S. Cl. 327—306 16 Claims

1. An active pull-up voltage spike reducing circuit comprising:
- first, second and third potentials for powering said active pull-up voltage spike reducing circuit;
- a pulse generator producing a pulse generator output pulse that is responsive to a pulse generator input signal and an enabling signal said pulse generator stage comprises an inverting, signal delay means for delaying the pulse generator input signal and means for combining the pulse generator input signal with the delayed, inverted input signal thereby generating said pulse generator output pulse;
- a level translator stage connected between said first and second potentials, said level translator stage producing a level translator output that is responsive to said pulse generator output pulse and to said enabling signal;
- a translated driver stage connected between said first and second potentials, said translated driver stage producing a



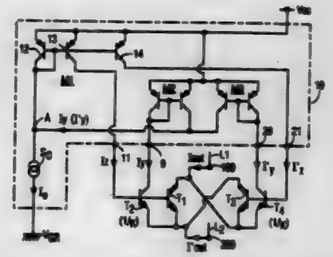
translator driver output that is responsive to said level translator output signal and said pulse generator output pulse; and
- a current driver stage connected to said first potential, said current driver stage producing a current driver output that is responsive to said translated driver output said current driver output provides additional current to said third potential.

5,444,409

INTERFACE CIRCUIT FOR LINKING MICROPROCESSORS

Jean-Claude Perraud, St. aubin S/Mer, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1993, Ser. No. 74,088
Claims priority, application France, Jun. 10, 1992, 92 06985
Int. Cl.[6] H03K *5/08*
U.S. Cl. 327—315 6 Claims



1. An interface circuit for linking microprocessors by a link, which circuit ensures that the current of the link does not exceed a limit value by inserting in said link the emitter-collector path of a first transistor, characterized in that it comprises a second transistor of the same polarity and having a geometry which is k times smaller than that of the first transistor, its emitter and base being connected to an emitter and a base, respectively, of the first transistor, and also comprises a base current generator, an input of which receives a collector current Iy of the second transistor and an output of which supplies a current Iz which feeds the bases of the first and the second transistor, said current Iz being equal to a reference current from which there is subtracted a current deduced from the

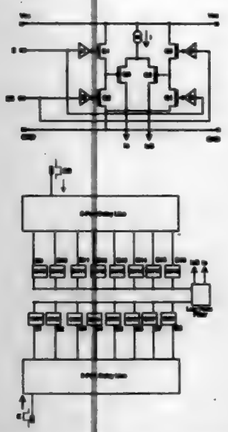
current Iy such that beyond the limit value of the current in the link, the first transistor leaves a saturated state which it normally has, thus imposing a voltage drop in the link further characterized in that the base current generator comprises a current source which serves to generate the reference current, a first current mirror, an output of which forms the output of the generator supplying the current I_g, and a second current mirror, an input of which constitutes the input of the generator, receiving the current Iy, and an output of which supplies a current which is subtracted from the reference current, said current difference being applied to the input of the first current mirror, the first and the second current mirror have multiplying factors m and n, respectively, for their output current with respect to their input current and the first current mirror comprises a supplementary output which supplies a current which is multiplied by a multiplying factor p with respect to its input current, and in the said supplementary output is connected to the input of the second current mirror so that the second current mirror outputs a current only for as long as the collector current Iy of the second transistor remains smaller than the current I_0 supplied by the supplementary output of the first current mirror.

5,444,410

CONTROLLED-TRANSITIONI-TIME LINE DRIVER

Gary D. Polhemus, Limerick, Me., assignor to National Semiconductor Corporation, Sant Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,583
Int. Cl.[6] H03K *5/08, 17/687;* **H03M** *11/00*
U.S. Cl. 327—317 **9 Claims**



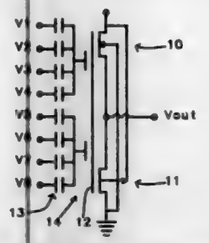
1. Switch/driver apparatus for outputting a ground-referenced current and a ground-referenced current complement, said switch/driver comprising
(a) a MOS output-transistor coupled between a constant current source and a current output node,
(b) a MOS output-complement-transistor coupled between said constant current source and a current complement output node,
(c) a voltage input node coupled to said output-transistor and to said output-complement-transistor,
(d) a voltage complement input node coupled to said output-transistor and to said output-complement-transistor,
(e) circuit control means for causing said output-transistor to deliver to said current output node an output current proportional to an input voltage signal applied to said voltage input node, wherein said circuit control means compensates for on/off switching asymmetries inherent in MOS transistors.

5,444,411

FUNCTIONAL MOS TRANSISTOR WITH GATE-LEVEL WEIGHTED SUM AND THRESHOLD OPERATIONS

Ming T. Yang, Hsin Chu, and Cheng-Cheng Wu, I-Lan, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 24, 1994, Ser. No. 248,350
Int. Cl.[6] G06G *7/42;* **H03K** *17/62*
U.S. Cl. 327—361 **10 Claims**



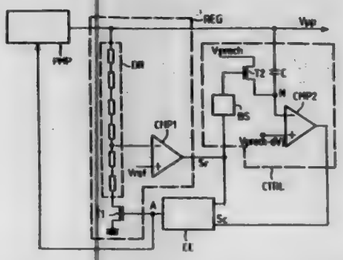
1. A circuit device for producing an output according to a sum of its input signals comprising,
an FET circuit having a gate electrode,
and a multi-stage capacitor structure for summing the inputs at the gate of the FET, comprising
an input stage having multiple sets (V1 to V4, V5 to V8) of input electrodes for receiving the input signals, and a larger electrode (33 or 34) for each set and electrostatically coupled to the input electrodes of the corresponding set for summing input signals at each larger electrode,
a last capacitor stage comprising a pair of electrodes (36, 37), and electrodes (39, 40) formed as a unitary structure coupled to the pair of electrodes for summing their signal voltage, and
means coupling the pair of electrodes of the last stage to the larger electrodes of the input stage.

5,444,412

PROGRAMMING VOLTAGE REGULATION CIRCUIT FOR PROGRAMMABLE MEMORIES

Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

PCT No. PCT/FR92/00833, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/05513, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 31, 1992, Ser. No. 196,160
Claims priority, application France, Sep. 5, 1991, 91 11008
Int. Cl.[6] H03L *5/00*
U.S. Cl. 327—541 **6 Claims**



1. A circuit for the production of a regulated voltage Vpp comprising a load pump (PMP) having an output, a regulator circuit (REG), connected to said output of said load pump, to interrupt said. load pump when said voltage Vpp exceeds a predetermined value, means (T1) operatively connected to said

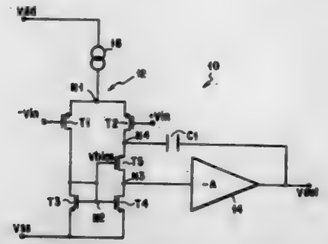
regulator circuit to interrupt the current consumption of said regulator circuit when said voltage Vpp exceeds said predetermined value, and a control circuit (CTRL) operatively connected to said load pump and said regulator circuit, said control circuit detecting a drop by a determined value (dV) in said voltage Vpp and generating a signal (SC) for restarting said load pump and said current consumption of said regulator circuit.

5,444,413

OPERATIONAL AMPLIFIER CIRCUIT WITH VARIABLE BIAS DRIVEN FEEDBACK VOLTAGE CONTROLLER

Tomohisa Kimura, Funabashi, and Tetsuro Itakura, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1992, Ser. No. 943,493
Claims priority, application Japan, Sep. 12, 1991, 3-232692
Int. Cl.[6] H03K *5/24, 17/04*
U.S. Cl. 327—562 **29 Claims**



1. An analog integrated circuit comprising:
a differential amplifier having an inverting input, a non-inverting input, and first and second outputs, said differential amplifier being adapted to be coupled to a power supply voltage;
an active load circuit coupled to the first and second outputs of said differential amplifier and to a ground potential;
a transistor having a first current-carrying electrode coupled to the first output of said differential amplifier, a second current-carrying electrode coupled to said active load circuit, and a control electrode coupled to said active load circuit and the second output of said differential amplifier;
an inversion amplifier having an input coupled to said second current-carrying electrode of said transistor, and an output; and
a capacitive element coupled between the output of said inversion amplifier and said first output of said differential amplifier.

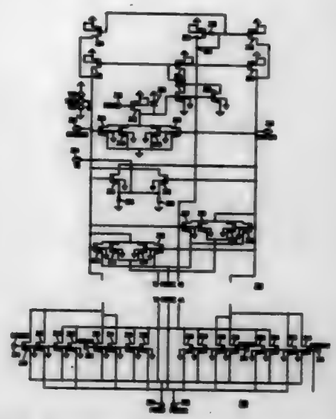
5,444,414

LOW VOLTAGE FILTER TRANSCONDUCTANCE CELL

Cary L. Delano, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 28, 1993, Ser. No. 68,559
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—563 **14 Claims**

1. A low voltage filter transconductance cell having a high differential output impedance, comprising:
a differential amplifier stage having at least one non-inverting input, at least one inverting input, a non-inverting output and an inverting output;
negative impedance converter means having a first input coupled to the non-inverting output of the differential amplifier stage, a second input coupled to the inverting output of the differential amplifier stage, a first output coupled to the non-inverting output of the differential amplifier stage and a second output coupled to the inverting output of the differential amplifier stage, the negative impedance converter means operative to generate a high differential output impedance at the non-inverting and inverting outputs of the differential amplifier stage;
means for sensing a common-mode signal at each input of the differential amplifier stage; and



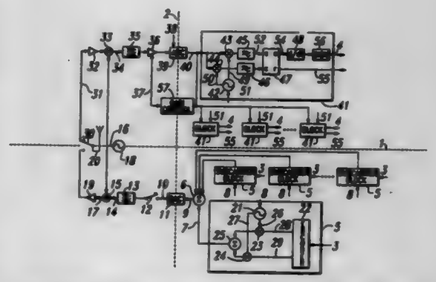
means for generating, in response to the common-mode signal sensed at each input of the differential amplifier stage, a first current which is added at the non-inverting output of the differential amplifier stage and a second current which is added at the inverting output of the differential amplifier stage.

5,444,415

MODULATION AND DEMODULATION OF PLURAL CHANNELS USING ANALOG AND DIGITAL COMPONENTS

Peter Dent, and Martin Greenwood, both of Bedford, Great Britain, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1994, Ser. No. 203,963
Claims priority, application United Kingdom, Mar. 1, 1993, 9304074
Int. Cl.[6] H03B *1/00;* **H04L** *27/12, 27/14*
U.S. Cl. 329—302 **25 Claims**



1. Apparatus for demodulating a carrier signal having a plurality of channels, occupying separate frequency bands, the apparatus including a constant frequency analogue oscillator for producing an oscillation, analogue combining means for combining the oscillation with the carrier signal to produce an intermediate frequency signal carrying the channels in separate frequency bands of lower frequencies than in the carrier signal, analogue to digital conversion means for converting the inter-

mediate frequency signal into a first digital signal, and a channel processing unit comprising

a digital oscillator, responsive to a channel select signal, for producing samples of a substantially periodic signal of the frequency of the selected channel in the first digital signal or a sub-multiple of that frequency,

and digital combining means for combining samples of the substantially periodic signal with samples of the first digital signal so as to produce a demodulated signal.

5,444,416

DIGITAL FM DEMODULATION APPARATUS DEMODULATING SAMPLED DIGITAL FM MODULATED WAVE

Yutaka Ishikawa, Nara, and Shingo Nomura, Mie, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1994, Ser. No. 177,405
Claims priority, application Japan, Jan. 13, 1993, 5-004112
Int. Cl.[6] H03D *1/00*
U.S. Cl. 329—341 **29 Claims**



24. A method of demodulating an FM modulated wave, comprising:

a) sampling said FM modulated wave at prescribed intervals;

b) specifying a demodulated value based on a plurality of sample values obtained in step a); and

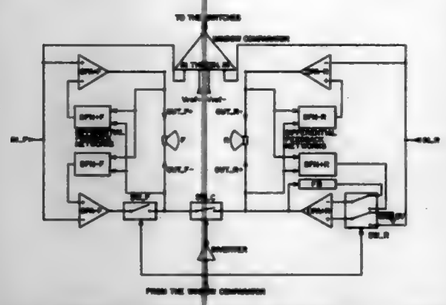
c) correcting said sample values, when said sample values obtained in step a) do not satisfy a prescribed condition.

5,444,417

SELF-CONFIGURABLE, DUAL BRIDGE, POWER AMPLIFIER

Edoardo Botti, Vigevano, and Guido Bracca, Varese, both of Italy, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Continuation of Ser. No. 192,858, Feb. 7, 1994, Pat. No. 5,365,188. This application Aug. 5, 1994, Ser. No. 286,706
Claims priority, application European Pat. Off., Feb. 24, 1993, 93830070
The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.
Int. Cl.[6] H03F *3/68*
U.S. Cl. 330—51 **33 Claims**



8. A method of reducing power dissipation in a double bridge amplifier comprising the steps of:

generating a configuring signal in response to a plurality of instantaneous values of signals fed to the amplifier;

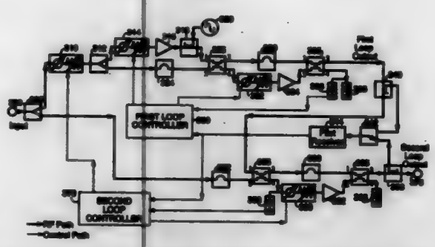
driving by said generated signal a plurality of configuring means that configure the amplifier as a single bridge amplifier that drives a plurality of loads when the instantaneous value of the input signals are within a window defined reference voltages, and as two distinct bridge amplifiers, each driving one of the loads of the plurality of loads, when the instantaneous value of at least one of the input signals is outside the window defined by said reference voltages.

5,444,418

METHOD AND APPARATUS FOR FEEDFORWARD POWER AMPLIFYING

James E. Mitzlaff, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1994, Ser. No. 282,298
Int. Cl.[6] H03F *1/32*
U.S. Cl. 330—52 **29 Claims**



16. A method of minimizing distortion produced by a power amplifier having a first loop, the first loop having first and second signal paths each having an amplifier and an output combiner coupling the first and second signal paths, the output combiner having an output signal path and an output dump load path, the method comprising the steps of:

(a) providing a signal detector on the dump load path and detecting a dump load signal; and

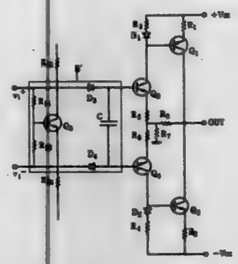
(b) adjusting gain and phase of a first signal on at least one of the first and second signal paths in response to the detected dump load signal.

5,444,419

POWER AMPLIFIER HAVING A TEMPERATURE COMPENSATION CIRCUIT

Jun Honda, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,256
Claims priority, application Japan, Mar. 5, 1993, 5-045570
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—266 **1 Claim**



1. A power amplifier comprising:

a first power transistor and a second power transistor, collectors of both transistors being connected with other;

first and second driver transistors connected to bases of the first and second power transistors, respectively;

a capacitor connected between bases of the first and second driver transistors;

a bias setting transistor applied with a supply voltage;

a first diode connected to the base of the first driver transistor at a cathode thereof and connected to a collector of the bias setting transistor at an anode thereof;

a second diode connected to the base of the second driver transistor at an anode thereof and connected to an emitter of the bias setting transistor at a cathode thereof; and

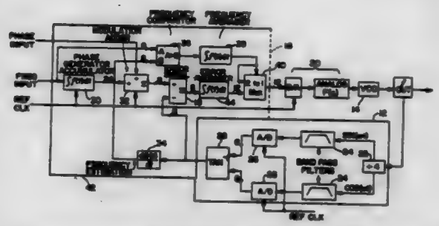
a pair of resistors connected with each other in series and connected to the collector and emitter of the bias setting transistor at both ends thereof and connected to a base of the bias setting transistor at a junction between the resistors.

5,444,420

NUMERICALLY CONTROLLED PHASE LOCK LOOP SYNTHESIZER/MODULATOR AND METHOD

James V. Wernlund, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 29, 1994, Ser. No. 313,606
Int. Cl.[6] H03D *3/00*; H03C *3/00*; H03L *7/00, 7/091*
U.S. Cl. 331—1 R **16 Claims**



1. A phase lock loop circuit for locking on a predetermined frequency and phase, the phase having a value from 0 to 2π that need not be constant, the circuit comprising:

means for providing a phase of a signal from an oscillator at first periodic intervals; and

means for providing corrective signals to said oscillator at said first intervals by comparing the predetermined phase to the oscillator signal phase, said corrective signals adjusting the frequency and the phase of the signal from said oscillator to the predetermined frequency and phase.

5,444,421

LOW POWER CONSUMPTION OSCILLATOR USING MULTIPLE TRANSCONDUCTANCE AMPLIFIERS

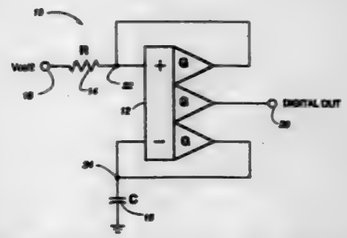
Gary T. Carroll, Boulder, and J. Donald Pauley, Estes Park, both of Colo., assignors to Racom Systems, Inc., Englewood, Colo.

Filed Feb. 10, 1994, Ser. No. 195,162
Int. Cl.[6] H03K *3/0231*
U.S. Cl. 331—111 **17 Claims**

1. An oscillator circuit comprising:

a transconductance amplifier having a positive input, a negative input, a first current output coupled to the positive input, a second current output coupled to the negative input, and a third current output for providing an oscillator output signal;

a resistor network coupled to the positive input of the transconductance amplifier; and



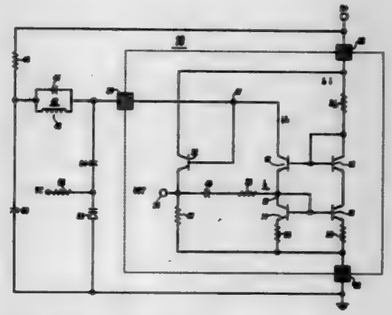
a capacitor coupled to the negative input of the transconductance amplifier.

5,444,422

LOW PHASE NOISE HIGH FREQUENCY INTEGRATED OSCILLATOR WITH MINIMUM PINS

Victor G. Mycynek, Des Plaines, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Sep. 20, 1994, Ser. No. 309,991
Int. Cl.[6] H03B *5/12, 5/36*
U.S. Cl. 331—116 R **7 Claims**



1. An oscillator comprising:

a current mirror having a voltage node and a current node;

an output terminal;

low impedance means coupling said output terminal with said voltage node;

a feedback circuit coupling said output terminal to said current node; and

a tuned circuit coupled to said voltage node.

5,444,423

LATCH MECHANISM FOR A CIRCUIT BREAKER

Donald R. Venzke, Cedar Rapids; Teresa I. Hood, Coralville, and Joel L. Miller, Cedar Rapids, all of Iowa, assignors to Square D, Palatine, Ill.

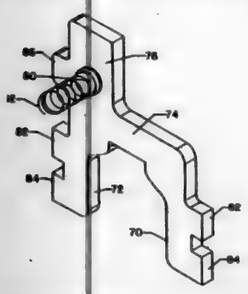
Filed Feb. 14, 1994, Ser. No. 196,345
Int. Cl.[6] H01H *9/20*
U.S. Cl. 335—167 **10 Claims**

1. A latch mechanism for a circuit breaker, comprising:

a pair of longitudinal legs;

a lateral section bridging said pair of longitudinal legs, said lateral section including a lower beating surface for releasably engaging a cradle of the circuit breaker, said lower bearing surface being curved to facilitate engagement and disengagement of the cradle from said beating surface; and

a longitudinal section extending from said lateral section in an opposite direction relative to said pair of legs, said



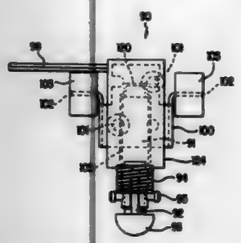
longitudinal section including an extrusion for supporting a latch spring.

5,444,424

CIRCUIT BREAKER TRIP SOLENOID HAVING OVER-TRAVEL MECHANISM

Tak M. Wong, Cedar Rapids, and Thomas M. Henson, Marion, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Oct. 27, 1993, Ser. No. 143,814
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—172 25 Claims



1. A trip assembly for a circuit breaker having an electronic trip system, said trip assembly comprising:
a solenoid having a metal sleeve therein;
a plunger that moves reciprocatingly within said metal sleeve and includes an end projecting outwardly therefrom;
a cap disposed at said projecting end of said plunger, said cap including a tab extending therefrom and having a tab aperture therein;
said plunger having a slot defined by a pair of prongs for receiving said tab, said pair of prongs each have a plunger aperture therein;
a retaining pin located within said tab aperture and said plunger apertures for retaining said cap on said plunger while permitting relational movement between said cap and said plunger; and
a compression spring, positioned between said solenoid and said retaining pin, for biasing said plunger in a direction away from said solenoid so that when said solenoid is energized said plunger will move in a direction away from said solenoid.

5,444,425

FLUX-TRAPPED SUPERCONDUCTING MAGNETS AND METHOD OF MANUFACTURE

Allen M. Hermann, Jefferson County; Gol A. Naziripour, Boulder County, both of Colo., and Timir Datta, Richland County, S.C., assignors to The Regents of the University of Colorado, Boulder, Colo.

Filed Feb. 28, 1994, Ser. No. 202,913
Int. Cl.[6] H01F *7/22*
U.S. Cl. 335—216 20 Claims

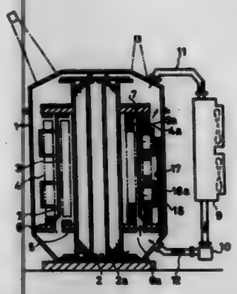
1. A superconducting magnet comprising a mixture of:
elements forming a high transition temperature superconductor compound, and
a magnetic material having a Curie temperature below the transition temperature cooled below the Curie temperature while a magnetic field is applied to the body.

5,444,426

STATIONARY INDUCTION APPARATUS

Katsuji Sokai, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 213,063, Mar. 15, 1994. This application Oct. 31, 1994, Ser. No. 332,392
Claims priority, application Japan, Mar. 19, 1993, 5-060115
Int. Cl.[6] H01F *27/08*
U.S. Cl. 336—57 3 Claims



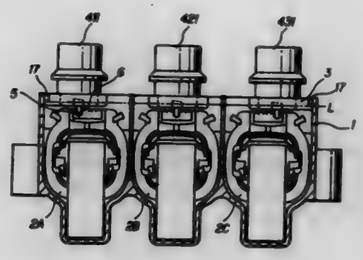
1. A stationary induction apparatus in which coil groups formed by stacking up in multiple layers a plurality of plate coils arranged around a leg part of a core with inter-layer clearances formed therebetween which a refrigerant can pass through are stored in a tank having a refrigerant chamber filled with said refrigerant, a cooler for cooling said refrigerant is provided outside said tank, and said cooler is connected to said refrigerant chamber by an ejection pipe and a suction pipe so that said refrigerant is circulated in said tank through the ejection and suction pipes by the operation of said cooler to cool said coil groups, core and tank, wherein
said coil groups consist of an internal coil group arranged around the leg part of said core and an external coil group arranged around said internal coil group, said internal and external coil groups are arranged concentrically with a ring-shaped clearance formed between the external surface of said internal coil group and the internal surface of said external coil group, a cylindrical insulation barrier is provided in this ring-shaped clearance, apart from the external surface of said internal coil group and the internal surface of said external coil group, a vertical flow passage is formed between said insulation barrier and said internal coil group to allow said refrigerant to flow in a stacking-up direction of said internal coil group, said external coil group is divided into a plurality of coil sub-groups each of which includes a certain number of plate coils in a stacking-up direction and refrigerant guides are provided in said tank to generate refrigerant flows for each coil sub-group in inter-layer clearances between plate coils of each coil sub-group, and
each of said refrigerant guides is ring-shaped so that it can surround one of said plurality of coil sub-groups, some, but not all, of said plurality of coil sub-groups are surrounded by said refrigerant guides, said refrigerant guides are respectively provided with an opening on their internal periphery and a plurality of refrigerant flow ports on their external periphery, and said refrigerant flow ports are connected to internal pipes which extend to a refrigerant ejection region of said refrigerant chamber.

5,444,427

IGNITION COIL DEVICE FOR ENGINE

Yasuhiko Ida, and Makoto Sakamaki, both of Saitama, Japan, assignors to Toyo Denso Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1993, Ser. No. 124,262
Claims priority, application Japan, Sep. 24, 1992, 4-305797; Sep. 24, 1992, 4-305798; Sep. 24, 1992, 4-305800
Int. Cl.[6] H01F *27/26*
U.S. Cl. 336—198 6 Claims



1. An engine igniting coil device comprising:
a plurality of coil units, each coil unit consisting of a core with a primary coil and a secondary coil provided on said core, a coil case wherein said coil units are integrally potted with insulating resin, a coil cover fitable in the coil case, and a high-voltage terminal socket connected to each said coil unit, characterized in that the coil cover has a plurality of holes made at predetermined locations corresponding to respective said coil units in said coil case for mounting the high-voltage terminal sockets in said holes and each of said holes has a stepped notch with which a lug on the high-voltage terminal socket is engaged to temporarily lock the high-voltage terminal socket to the coil cover.

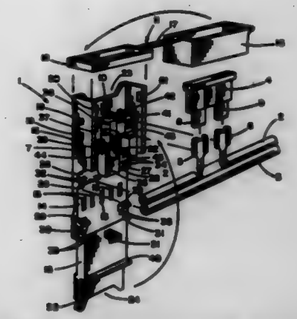
5,444,428

FUSEHOLDER

Francis L. Carr, Downers Grove, and George P. Cassell, Schaumburg, both of Ill., assignors to SAFCO Corporation, Chicago, Ill.

Filed May 19, 1994, Ser. No. 246,282
Int. Cl.[6] H01H *85/02*; H01R *13/68*, *33/95*
U.S. Cl. 337—188 3 Claims

1. A fuseholder for receiving a flat insert fuse and a pair of closely-disposed parallel twin conductors both of which conductors enter and exit the fuseholder and in which the fuse completes a series electrical connection with one the electrical conductors which is severed to form a pair of severed conductor ends to which terminals are applied with the conductor ends being located within the fuseholder for connection to the fuse and the non-severed conductor being a through conductor, comprising a foldable clam-shell housing having a pair of foldable cover sections joined by a centrally disposed hinge section which defines a fold line, a pair of generally parallel and one-half cylindrical conductor passage sections formed within the interior of each of the cover sections adjacent to and parallel to the hinge-section fold line and forming twin generally cylindrical passage sections having entry and exit openings for receiving and retaining the pair of twin conductors when the clam-shell fuseholder housing is folded into a closed position, a pair of separated terminal compartments formed within the interior of one of the cover sections each of which compartment is to receive a different severed conductor end and to which an electrical terminal is applied for establishing a electrical connection to any fuse inserted within the fuseholder, a pair of divided terminal access passage sections formed within the interior of the cover section containing the terminal compartments with each access passage section extending from a different one of the terminal compartments to communicate with the generally cylindrical conductor passage section farthest removed from the hinge section fold line which to receive the severed conductor, and a fuse insert cavity formed within the interior of housing sections adjacent the terminal compartments for receiving an insert fuse which establishes a series electrical connection with the terminals of any severed conductor ends located within the terminal compartments to thereby fuse the severed conductor of any twin conductor pair entering and exiting the fuseholder.

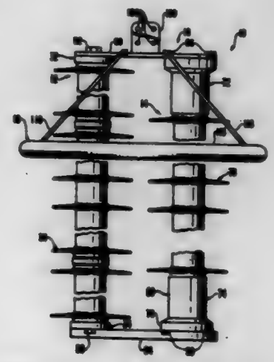


5,444,429

ELECTRICAL ASSEMBLY WITH SURGE ARRESTER AND INSULATOR

John D. Sakich, Wadsworth, and Michael G. Comber, Medina, both of Ohio, assignors to Hubbell Incorporated, Orange, Conn.

Filed Nov. 15, 1993, Ser. No. 151,979
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—21 28 Claims



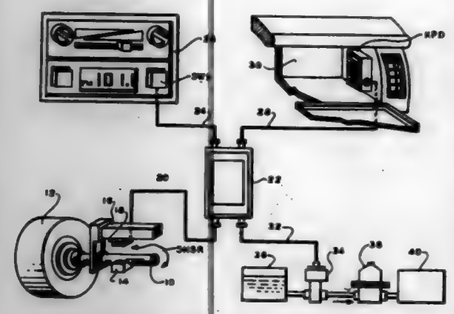
1. An electrical assembly, the combination comprising:
a first surge arrester having a core member, a weathershed

housing surrounding said core member, a first end fitting coupled to one end of said core member, a second end fitting coupled to the other end of said core member, and a first longitudinal axis extending between said first and second end fittings;

a first electrical insulator having an insulated core member, a weathershed housing surrounding said core member of said insulator, a first end fitting coupled to one end of said core member of said insulator, a second end fitting coupled to the other end of said core member of said insulator, and a second longitudinal axis extending between said first and second end fittings of said insulator; and

coupling means, coupled to said arrester and said insulator, for mounting said insulator substantially adjacent to said arrester with said first longitudinal axis of said arrester being arranged substantially parallel to and spaced from said second longitudinal axis of said insulator so that said core members of said arrester and said insulator are spaced apart.

5,444,430
MOTOR VEHICLE SECURITY SYSTEM
Richard McShane, Mountain Ave., Llewellyn Park, N.J. 07052
Filed Jan. 4, 1993, Ser. No. 292
Int. Cl.[6] B60K *25/10*
U.S. Cl. 340—426 **42 Claims**



1. A security system for a motor vehicle having an engine and drive train, comprising:

sensor means for detecting motion of said motor vehicle to provide a motion signal, said motion signal of said sensor means being arranged to signify distance travelled by said motor vehicle;

sequencing means coupled to said sensor means and responsive to said motion signal for providing a disable signal after production of said motion signal, said sequencing means being operable to provide said disable signal in response to said motion signal signifying motion extending beyond a predetermined distance; and

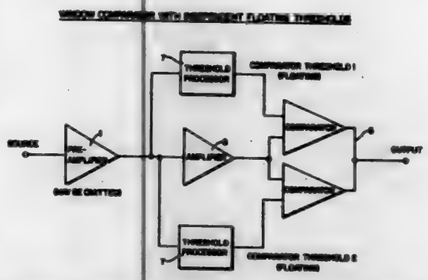
interrupt means coupled to said sequencing means for receiving said disable signal, said interrupt means being coupled to said engine for disabling said engine in response to said disable signal, whereby said motor vehicle is disabled only after motion of said vehicle is detected.

5,444,431
INTRUSION MONITORING DEVICE
Paul M. Kenny, Lodge Farm House, 48 Main Street, North Anston, United Kingdom S31 7BD
Filed Nov. 19, 1992, Ser. No. 978,718
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—541 **33 Claims**

1. A voltage level detector circuit for an intrusion monitoring device wherein said voltage level detector circuit comprises

an amplifier means for amplifying an electrical output signal from a detection device connected to the voltage level detector circuit and adapted to detect incident radiation thereon from an intruder and to convert said incident radiation into said electrical output signal,

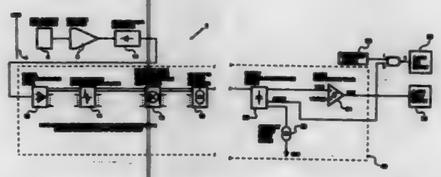
a comparator means for comparing the amplified electrical output signal with at least one threshold signal wherein said comparator means has an output state and is adapted to change said output state when the amplified electrical output signal traverses a selected one of said at least one threshold signals, and



threshold processor means for providing said at least one threshold signal

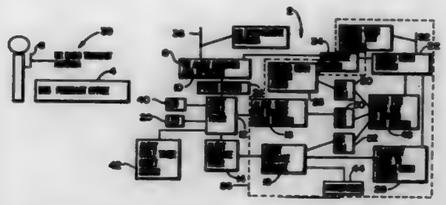
the threshold processor means being such that in operation under conditions in which a noise or interference component is present in said amplified electrical output signal, said at least one threshold signal has superimposed thereon the same noise or interference component as is present in the amplified electrical output signal.

5,444,432
DETECTION SIGNAL EVALUATION AT VARYING SIGNAL LEVELS
Reinhart K. Pildner, Brampton, and Dennis Cecic, Scarborough, both of Canada, assignors to Digital Security Controls Ltd., Downsview, Canada
Filed Jul. 20, 1992, Ser. No. 915,178
Int. Cl.[6] G08B *13/18*
U.S. Cl. 340—567 **18 Claims**



1. A method for processing an output signal from a passive infrared detector of an intrusion detection system, which output signal corresponds to the changes in infrared energy in the area being monitored, said method comprising the steps of processing the output signal to produce at least first and second sets of pulses, each pulse of said first set of pulses being produced when the output signal amplitude exceeds a first predetermined level and being of a duration corresponding to the duration the output signal is maintained above the first predetermined level, each pulse of the second set of pulses being produced only when a pulse of said first set of pulses is present and the output signal exceeds a second predetermined level which is higher than the first predetermined level, said second set of pulses each being of a duration corresponding to the duration the output signal is maintained above the second predetermined level, and analyzing said sets of pulses for a combined minimum energy level indicative of an alarm condition and producing an alarm when the analysis indicates the combined minimum energy level is exceeded.

5,444,433
MODULAR EMERGENCY OR WEATHER ALERT INTERFACE SYSTEM
Daniel R. Gropper, 9908 Dale Ridge Ct., Vienna, Va. 22181
Filed Mar. 7, 1994, Ser. No. 207,537
Int. Cl.[6] G01W *1/00*
U.S. Cl. 340—601 **20 Claims**



1. A weather or emergency alert interface system comprising:

a. a first communication system;

b. a signaling tone transmitted on said first communication system;

c. a receiver, tuned to said first communication system, further comprising a detector to detect said signaling tone, wherein said detector generates a changed logic level output in response to detecting said signaling tone;

d. an alert cycle timer, having a controlled logic level output, wherein said alert cycle timer is activated by said changed logic level output from said detector, and wherein said logic level output of said alert cycle timer changes for a set period after said alert cycle timer has been activated by said changed logic level output from said detector;

e. an alert message timer, having a controlled logic level output, wherein said alert message timer is activated by said changed logic level output from said alert cycle timer, and wherein said logic level output of said alert message timer periodically pulses at preset intervals during the period when said alert cycle timer has been activated;

f. an audible prerecorded alert message, having an adjustable outgoing audio level, wherein said audible prerecorded alert message plays a complete message cycle in response to each logic pulse from said alert message timer;

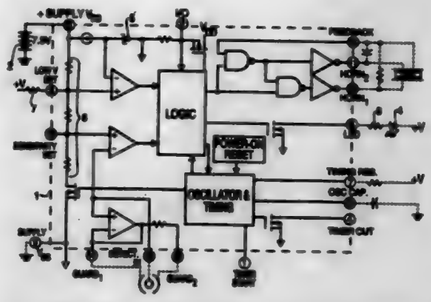
g. a second communication system for transmitting an outgoing message, further comprising means for adjusting the audio level of said outgoing message;

h. means for mixing said adjustable outgoing audio levels of said audible prerecorded alert message and said outgoing message on said second communication system in such a manner as to enable listeners to said second communication system to simultaneously hear both audio messages;

i. means, electronically initiated by the activation of said alert message timer, for automatically keying the transmitter of said second communication system during the period when said audible prerecorded alert message is playing; and,

j. means for transmission of said audible prerecorded alert message, mixed with said second communication system audio, on said second communication system, when said second communication system is keyed, for the duration of the activation of said alert cycle timer in time periods determined by said alert message timer.

5,444,434
EXTENDED LIFE SMOKE DETECTOR
Victor M. Serby, 255 Hewlett Neck Rd., Woodmere, N.Y. 11232
Filed Jan. 15, 1992, Ser. No. 899,622
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—628 **10 Claims**

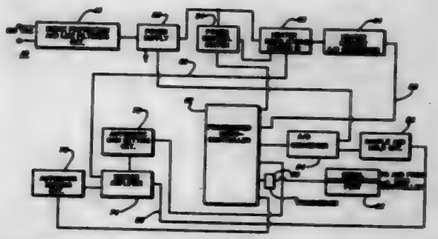


1. A smoke detector of the type powered by a battery, said smoke detector having means for triggering an alarm in response to a concentration of smoke above a threshold value, said smoke detector having means for triggering an alarm when the battery voltage falls below a threshold voltage, said battery having a service life within said smoke detector of at least one year, wherein the improvement comprises:

a) a lithium anode primary battery powering said smoke detector; and

b) means for providing a periodic pulse current to said battery, the magnitude of said pulse current falling within the range of zero to about 11 mA.

5,444,435
HALOGEN MONITORING APPARATUS
William J. Williams, II, 934 San Carlos Dr., Ft. Myers Beach, Fla. 33931, and Daniel M. Thorson, 2729 Brattle La., Clearwater, Fla. 34621
Continuation of Ser. No. 495,822, Mar. 19, 1990, Pat. No. 5,198,774. This application Mar. 29, 1993, Ser. No. 38,296
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—632 **4 Claims**



1. Apparatus for detecting the presence within a gaseous atmosphere of a gas of a concentration above a preset level, said detecting apparatus comprising:

a) a sensor responsive to the presence of the gas to provide a signal of an amplitude proportional to the concentration of the gas;

b) actuable alarm means to provide an indication of the presence of the gas above the preset level; and

c) control means for operating said apparatus in a selected one of a monitoring mode wherein said control means

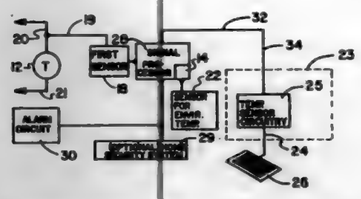
detects and compares said signal with said preset level, a leak wait mode during which detection of said gas of a concentration above said present level is suspended for a period of time and an alarm mode wherein said control means actuates said alarm means, said control means operating said apparatus in said monitoring mode and if said signal is above said present level, for operating said apparatus in said leak wait mode to suspend detection of said gas of a concentration above a present level for said period of time, before again detecting and comparing said signal with said preset level and, if above said preset level, for operating said apparatus in said alarm mode and, if below said present level, for operating said apparatus in said monitoring mode.

5,444,436

FURNACE AND AIR CONDITIONER FAILURE ALARM APPARATUS

Ricky R. Keanison, 4728 N. Bristol, Kansas City, Mo. 64117

Filed Dec. 29, 1993, Ser. No. 175,234
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—635 **7 Claims**



1. A new and improved failure alarm apparatus for a furnace and an air conditioner which selectively, alternately share a common thermostat, comprising:

a battery power supply for powering electrical circuits,

a sensor circuit assembly powered by said battery power supply, said sensor circuit assembly including a first sensor assembly for monitoring the thermostat, wherein said first sensor assembly is connected to a wire which is connected to the thermostat, said sensor circuit assembly including a second sensor assembly which includes a temperature sensor and temperature sensor circuitry, said temperature sensor placed adjacent to an air duct outlet wherein said air duct outlet is a register in a room,

a signal processing assembly for receiving signals from said sensor circuit assembly and for processing said signals, and

an alarm circuit assembly connected to said signal processing assembly for providing an alarm when said signal processing assembly indicates an alarm condition based upon direct electrical monitoring of thermostat status from said sensors and processed signals from said direct monitoring which indicate improper thermostat operation.

5,444,437

SIGNALING DEVICE

Francis W. Layher, 3433 W. Camino Christy, Tucson, Ariz. 85741

Filed Nov. 12, 1993, Ser. No. 152,451
Int. Cl.[6] H01H *35/02*; G01N *1/00*
U.S. Cl. 340—815.4 **15 Claims**

11. An apparatus for generating a signal for indicating consent between two parties, comprising:

a ball member;

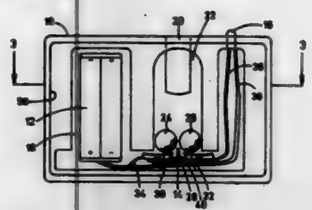
a generally box-like housing having a cavity;

an opening in a top of said housing communicating with said cavity;

an indicator light on an exterior portion of said housing;

a source of electrical power including a battery in said housing;

circuit means including a switch for selectively connecting said source of electrical power to said indicator light, said switch being disposed in said cavity and responsive to a minimum of at least two actuator members for activating said switch; and



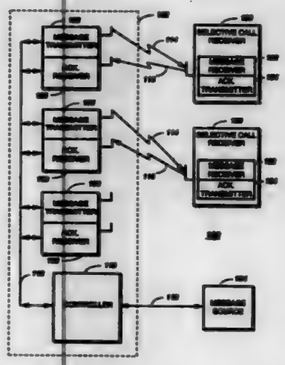
whereby said actuator members are positionable via said opening into said cavity for engaging and closing said switch for closing said circuit means and activating said indicator light in response to displacement of ball member within said cavity.

5,444,438

METHOD AND APPARATUS FOR REMOTE MEMORY MANAGEMENT IN AN ACKNOWLEDGE-BACK SELECTIVE CALL COMMUNICATION SYSTEM

Steven J. Goldberg, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 22, 1994, Ser. No. 231,593
Int. Cl.[6] G08B *5/22*
U.S. Cl. 340—825.44 **24 Claims**



13. An acknowledge-back selective call communication system that performs remote memory management, the system comprising:

an infrastructure that transmits a plurality of messages having a length that is variable; and

a selective call receiver coupled to the infrastructure for receiving and storing selected ones of the plurality of messages,

wherein the infrastructure comprises:

a controller for controlling the infrastructure to process a pending message originated by a source, the controller comprising an input element coupled to the source for receiving the pending message; and

a message transmitter coupled to the controller for transmitting to the selective call receiver a notification of the pending message, and

wherein the selective call receiver comprises:

a message receiver coupled to the message transmitter for receiving the notification and the selected ones of the plurality of messages;

a memory coupled to the message receiver for storing the selected ones of the plurality of messages;

a processor coupled to the memory for controlling the selective call receiver;

a selective call address element coupled to the processor for selecting messages intended for the selective call receiver; and

an acknowledge transmitter coupled to the processor for transmitting to the infrastructure in response to the notification a memory value specifying an amount of space available in the memory for storing the pending message, and

wherein the infrastructure further comprises an acknowledge receiver coupled to the acknowledge transmitter for receiving the memory value, and

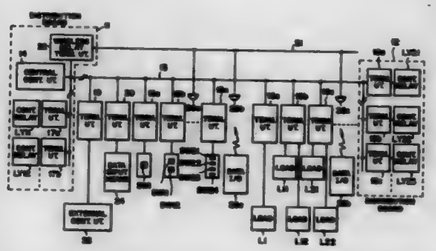
wherein the controller comprises a comparator element coupled to the acknowledge receiver for comparing the memory value with the length of the pending message to make a determination of whether sufficient memory space is available to store the pending message in the selective call receiver, and for controlling the processing of the pending message in accordance with the determination made.

5,444,439

DATA SETTING SYSTEM FOR TERMINAL UNITS IN REMOTE SUPERVISORY AND CONTROLLING SYSTEM EMPLOYING DATA TRANSMISSION

Mitsunobu Kuroda; Susumu Nakano; Osamu Yamada; Osamu Iijima, and Motoharu Terada, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 933,102, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 729,799, Jul. 10, 1991, abandoned, which is a continuation of Ser. No. 407,289, Sep. 14, 1989, abandoned. This application Jul. 8, 1994, Ser. No. 272,299
Claims priority, application Japan, Sep. 27, 1988, 63-241734; Sep. 27, 1988, 63-241735; Sep. 27, 1988, 63-241736; Sep. 27, 1988, 63-241737; Oct. 26, 1988, 63-270128; Oct. 26, 1988, 63-270129; Nov. 25, 1988, 63-299003; Jun. 27, 1989, 1-164412
Int. Cl.[6] G05B *23/02*
U.S. Cl. 340—825.07 **19 Claims**



1. A data setting system for terminal units in a remote supervisory and controlling system, comprising:

a central control unit;

a plurality of said terminal units connected to said central control unit through a two-wire signal line, each of said terminal units having a set address, a plurality of operational modes, and a plurality of functions operating according to function data values;

means for carrying out a time-divisional multiplex data transmission between said central control unit and said terminal units, or between the respective terminal units with transmissions transmitted from the central control unit to the respective terminal units or from one of the terminal units to the central control unit or other terminal units, said central control unit supplying through said two-wire signal line, a source of power to the respective terminal units, and said transmissions including at least an address data signal from one of the control and terminal units for calling another of the units, a control data signal from said one unit to said another unit called and a supervisory data signal from said another unit called to said one unit; and

operating means provided separately from said terminal units for preparing an optical wireless signal for transmission to said terminal units, said optical wireless signal comprising said function data values, data representing one of said operational modes, and setting mode data, said setting mode data representing one of a data setting mode and a confirmation only mode;

each of said terminal units comprising:

a memory for storing said function data values;

light receiving means for receiving said optical wireless signal from said operating means;

means for sending to said operating means said function data values stored in said memory in response to said received optical wireless signal via a return optical wireless signal; and

signal processing means which processes said received optical wireless signal for switching an operational mode of the terminal unit on the basis of said function data values stored in said memory and said data representing said one of said operational modes from said received optical wireless signal, said signal processing means being operable in said data setting mode to write said function data values in said memory responsive to said setting mode data in said optical wireless signal indicating said data setting mode and operable in said confirmation only mode to read out function data stored in said memory and send it to said operating means via said return optical wireless signal responsive to said setting mode data indicating said confirmation only mode;

wherein said central control unit stores a reference code specific to said data setting system, and said optical wireless signal further comprises collating code data set in accordance with specific uses of each of the terminal units and a code specific to the data setting system which corresponds to the reference specific code stored in said central control unit for judgment at the central control unit of coincidence of said optical wireless signal received with said specific code stored in said central control unit, and

wherein said system comprises means for preventing operation in said data setting mode when said specific code in said optical wireless signal does not coincide with said reference specific code stored in said central control unit, and means for determining whether said collating code in said received optical wireless, signal coincides with said collating code data in said memory of said terminal units and for preventing operation of said data setting mode if said collating code does not coincide with said collating code data.

5,444,440

OPERATING CIRCUITS FOR LOCKING DEVICE

Mark S. Heydendahl, 3049 W. Coolidge, No. 3, Anaheim, Calif. 92801

Continuation of Ser. No. 878,821, May 5, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,196
Int. Cl.[6] G06F *7/04*; G08B *13/08*
U.S. Cl. 340—825.32 **8 Claims**

1. An alarm system for a garage door, including

an automatic garage door opener which upon being activated opens the garage door and is thereafter deactivated, and which upon being again activated closes the garage door and is thereafter deactivated,

a sensor which is positioned near the garage door to detect movement of the garage door and which changes states from a first state to a second state upon detecting the

garage door moving from a closed position and changes from said second state to said first state upon detecting the garage door moving from an open position to the closed position, and

a control circuit for energizing an alarm including

an electrical device which is energized when the automatic garage door opener is activated to open or close the garage door to change from a first state to a second state, and when the automatic garage door opener is deactivated, is de-energized to change from the second state to the first state,

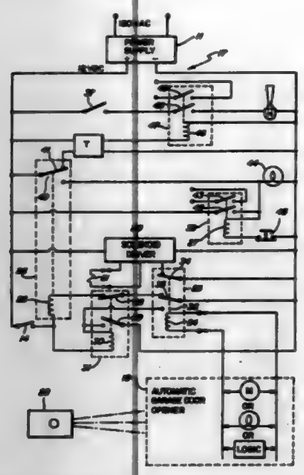
a logic circuit that is armed and disarmed,

said logic circuit being armed when the following sequence of events occur

(1) with the garage door open, the electrical device is energized,

(2) while the electrical device is energized, the sensor changes states from the second state to the first state by detecting the garage door moving from the open position to the closed position, and

(3) the automatic garage door opener is deactivated to change the state of the electrical device from the second state to the first state, and



said logic circuit being disarmed when the following sequence of events occur

(1) with the door closed, the automatic garage door opener is activated energizing the electrical device, and

(2) the sensor detects the garage door moving from the closed position and changes states from said first state to said second state, and

(3) the automatic garage door opener is deactivated, de-energizing the electrical device to change from the second state to the first state,

said logic circuit in the armed condition energizing the alarm when the closed garage door is moved, causing said sensor to change states from the first state to the second state prior to the electrical device being energized to change from the first state to the second state, and

said logic circuit in the armed condition not energizing the alarm when the closed garage door is moved by the automatic garage door opener, simultaneously activating the electrical device prior to said sensor changing from said first state to said second state.

5,444,441

ELECTRO-OPTICAL DETECTION SYSTEM FOR REFLECTION FREE UNDERWATER IMAGES FROM AIRCRAFT

Philip Sutton, Hampshire, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Bristin and Northern Ireland, London, England

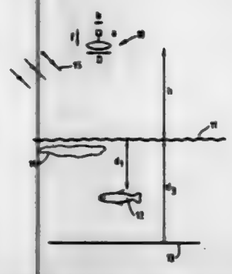
PCT No. PCT/GB92/01242, § 371 Date May 18, 1994, § 102(e) Date May 18, 1994, PCT Pub. No. WO93/02367, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 9, 1992, Ser. No. 182,044

Claims priority, application United Kingdom, Jul. 18, 1991, 9115537

Int. Cl.[6] H04B *13/02*; G01S *13/00*; G01J *3/00*

U.S. Cl. 340—850 **10 Claims**



1. An electro-optical detection system for detecting objects (12) embedded within a partially transmitting medium comprising:

a. means (20) to receive electro-magnetic radiation;

b. means to separate the received radiation into at least two spectral channels;

c. detectors responsive to electro-magnetic radiation and located to receive radiation in the respective channels; characterised in that:

there is provided a signal processor (211, 218) connected to the output of each detector, the processor comprising:

(1) a signal channel (212) wherein the wavelength and bandwidth of the signal channel are optimized to correspond to the peak of transmission of the medium;

(2) a reference channel (28) wherein the wavelength and bandwidth are selected to correspond to a spectral region where attenuation in the medium is high but which is close to the signal wavelengths thereby ensuring that reflected radiation at both signal and reference wavelengths are of similar intensity and geometric distribution; and

(3) a subtractor (213) wherein the signal and reference channels are subtracted so as to remove the effect of radiation reflected from the surface of the medium.

5,444,442

METHOD FOR PREDICTING TRAFFIC SPACE MEAN SPEED AND TRAFFIC FLOW RATE, AND METHOD AND APPARATUS FOR CONTROLLING ISOLATED TRAFFIC LIGHT SIGNALING SYSTEM THROUGH PREDICTED TRAFFIC FLOW RATE

Marco Sadakata, Yokohama; Yoichiro Iwasaki, Kumamoto; Yoshiharu Yano, Yokohama, and Masakazu Toyama, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Tokai University Educational System, Tokyo, both of Japan

Filed Oct. 29, 1993, Ser. No. 143,119

Claims priority, application Japan, Nov. 5, 1992, 4-295939

Int. Cl.[6] G08G *1/07*

U.S. Cl. 340—916 **9 Claims**

3. A traffic light controlling apparatus for controlling a traffic light signaling system provided on an intersection, comprising:

a video camera for imaging a traffic condition in a vehicle stream approaching said intersection to sequentially produce a first analog video signal related to a first screen and a second analog video signal related to a second screen after a predetermined time interval;

an A/D converter for converting said first analog video signal and said second analog video signal into a first digital image signal and a second digital image signal;

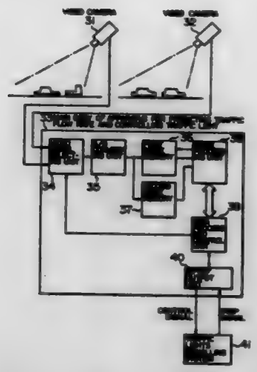
a first image memory for storing therein said first digital image signal;

a second image memory for storing therein said second digital image signal;

image processing means for image-processing said first digital image signal inputted from said first image memory and said second digital image signal inputted from said second image memory to extract at least one traveling vehicle within a measurement section in the image and for producing a third digital image signal representative of said at least one traveling vehicle;

input/output means coupled to said traffic light signaling system, for receiving data of a traffic light condition of said traffic light signaling system; and

data process/control means for receiving said data of said traffic light condition from said input/output means and said third digital image signal from said image processing



means, for calculating a total number of traveling vehicles within said measurement section and intervals between front ends of adjacent ones of said vehicles in accordance with said data of said traffic light condition and said third digital image signal, for calculating a correction coefficient and a traffic density based upon said total number and said intervals, thereby deriving a predicted traffic flow rate, and for producing a control signal used to control said traffic light signaling system based on said total number of traveling vehicles and said predicted traffic flow rate, said input/output means transferring said control signal to said traffic light signaling system, wherein said correction coefficient is equal to a value obtained by dividing a first difference between a current entropy and a minimum possible entropy by a second difference between said minimum possible entropy and a maximum possible entropy, said current entropy being calculated based on said intervals, said minimum possible entropy being a function of said total number of traveling vehicles and being based on an assumption that said total number of traveling vehicles are evenly distributed within the measurement section, and said maximum possible entropy being a function of said total number of traveling vehicles and being calculated on an assumption that said total number of traveling vehicles are located within a single jammed group within the measurement section.

5,444,443

SOUND SOURCE DETERMINING SYSTEM

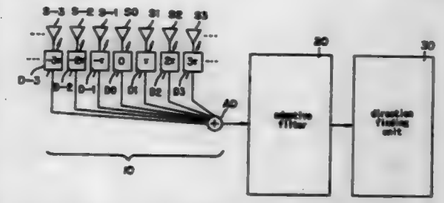
Mineo Umeda, Yokohama, and Keiichi Ishikawa, Tochigi, both of Japan, assignors to Ishikawa Manufacturing Co., Ltd., Chigi, Japan

Filed Dec. 20, 1993, Ser. No. 169,650

Claims priority, application Japan, Sep. 8, 1993, 5-223671

Int. Cl.[6] G08G *1/01*

U.S. Cl. 340—933 **10 Claims**



1. A sound source determining system, comprising:

a plurality of acoustic sensors arranged in an array at a prescribed interval for detecting an acoustic signal produced from a sound source;

a plurality of variable delay circuits connected to outputs of said acoustic sensors and having delay times which are different from one to a next by a unit time period, each of said variable delay circuits being adapted to scan said unit time period;

an adder circuit for adding up outputs of said variable delay circuits;

an adaptive filter which removes influences of a specific spectral component selected from a plurality of spectral components produced from said adder circuit in association with said scanning of said unit time period by said variable delay circuits, by adaptively adding said specific spectral component to said other spectral components; and

direction determining means for determining said direction of said sound source according to an output of said adaptive filter.

5,444,444

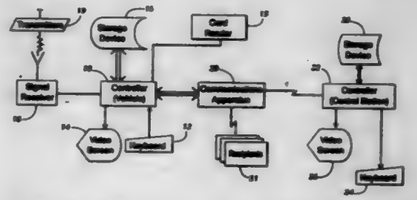
APPARATUS AND METHOD OF NOTIFYING A RECIPIENT OF AN UNSCHEDULED DELIVERY

John Ross, Marietta, Ga., assignor to Worldwide Notification Systems, Inc., Marietta, Ga.

Continuation of Ser. No. 62,405, May 14, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,032

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—994 **23 Claims**



1. An apparatus located on a motor vehicle for providing advance notice to a party of arrival of the motor vehicle to a delivery/pickup point for the delivery/pickup of a passenger, said apparatus comprising:

a satellite receiver for receiving positioning signals from a plurality of satellites;

a storage device for storing the location of the party and other information;

a controller electrically connected to said storage device and

said satellite receiver, said controller programmed to perform the steps of:

a) determining a current location of the motor vehicle based upon the received positioning signals; and

b) comparing the current location of the motor vehicle to the location of said delivery/pickup point;

a card reader electrically connected to said controller for allowing the controller and the storage device to store and maintain information on the motor vehicle passengers, each of said passengers of the motor vehicle being issued an identification card which allows the controller to maintain ridership information on the motor vehicle passengers; and

a communicator operatively connected to the controller for conditionally communicating, based upon said step of comparing, a signal via a cellular communications network from the mobile vehicle to the party to notify the party of the pending delivery/pickup of the passenger at the delivery/pickup point.

5,444,445

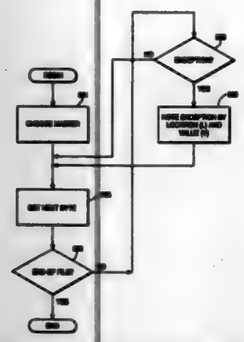
MASTER + EXCEPTION LIST METHOD AND APPARATUS FOR EFFICIENT COMPRESSION OF DATA HAVING REDUNDANT CHARACTERISTICS

Ko-Chiang Chu, Saratoga, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 13, 1993, Ser. No. 62,973

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—87 **7 Claims**



1. A method for compressing a data file into a compressed data file, said method comprising:

a) choosing one byte of the data file as a master byte;

b) noting the master byte in the compressed data file; and,

c) noting in the compressed data file each exception to the master byte which occurs in the data file by location (l) and value (v) of the exception in the data file.

5,444,446

APPARATUS AND METHOD FOR DUPLICATING CURRENTS

Venugopal Gopinathan, Dallas, Tex., and Seema Varma, New York, N.Y., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 1, 1993, Ser. No. 87,822

Int. Cl.[6] H03M *1/10*

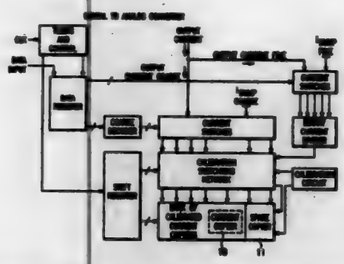
U.S. Cl. 341—135 **20 Claims**

12. A digital-to-analog converter comprising:

a bank of current duplicators, each for providing an output current during a supply period, for providing a total output current to a load in response to a digital input signal;

a spare duplicator for supplying an output current in place of a current duplicator during a calibration period of said current duplicator, each current duplicator and said spare duplicator comprising,

a transconductor having a differentially coupled input with a parasitic capacitance for storing a voltage during a supply period and for converting a difference current into said voltage during a feedback period, said difference current equal to the difference between the output current and said calibration current, said transconductor for converting said voltage into the output current and providing the output current at an output,



a first switch set for coupling the output current to the load during said supply period, the output current remaining within a predetermined amount from said calibration current during said supply period and

a second switch set for feeding back said difference current to said input during said feedback period at least until the output current becomes substantially equal to a calibration current.

5,444,447

ANALOG-DIGITAL CONVERTER WITH DISTRIBUTED SAMPLE-AND-HOLD CIRCUIT

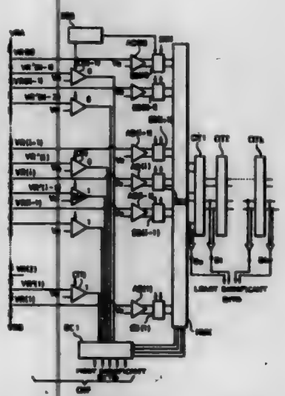
Marc Wingender, Grenoble, France, assignor to Thomson-CSF Semiconducteurs Specifiques, Paris, France

Filed Dec. 28, 1993, Ser. No. 174,419

Claims priority, application France, Dec. 30, 1992, 92 15906

Int. Cl.[6] H03M *1/14*

U.S. Cl. 341—156 **9 Claims**



1. An analog-digital converter comprising a coarse converter and a fine converter, one of the converters comprising several differential amplifiers each receiving, firstly, an analog voltage to be converted (Ve) and, secondly, a reference voltage, wherein a sample-and-hold circuit is placed downline with respect to each of the differential amplifiers.

5,444,448

ARRANGEMENT INTERROGATION UNIT FOR TRANSPONDER

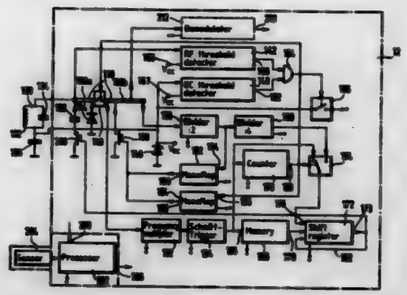
Josef H. Schnurmann, Oberhummel; Guenter Heinecke, Langenbach, and Rudolf Kremer, Wartenberg, all of Germany, assignors to Texas Instruments Deutschland GmbH, Germany

Division of Ser. No. 964,574, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 742,134, Aug. 8, 1991, abandoned, which is a division of Ser. No. 655,182, Feb. 13, 1991, Pat. No. 5,053,774, which is a continuation of Ser. No. 216,756, Jul. 8, 1988, abandoned. This application Jan. 19, 1993, Ser. No. 6,354

Claims priority, application Germany, Jul. 31, 1987, 871 11 110.0

Int. Cl.[6] G01S *13/75*

U.S. Cl. 342—42 **10 Claims**



1. An interrogation unit for communication with at least one responder unit in spaced relation with respect to said interrogation unit, said interrogation unit comprising:

a) a microprocessor,

b) an RF oscillator;

c) an antenna circuit, operably controlled by said microprocessor to transmit RF interrogation signals of a first frequency to said at least one responder unit and to receive RF responses of a second frequency from said at least one responder unit;

d) a transmitter which receives the output of said RF oscillator and transmits at least one RF interrogation signal of said first frequency for interrogating said responder unit via said antenna circuit thereby causing said responder unit to return read data stored therein in the form of a RF response of said second frequency;

e) a switch connected to said microprocessor, said switch operable under control of said microprocessor for disabling the output of said transmitter and enabling reception of said RF response upon termination of said RF interrogation signal;

f) a receiver for receiving said RF response of said second frequency via said antenna upon termination of said RF interrogation pulse; and

g) a demodulator for demodulation of said read data from said RF response.

5,444,449

SYSTEM AND METHOD FOR REDUCING INTERFERENCE BETWEEN SATELLITES

Peter Puskett, Bucks; Dennis Mullins, London; Shinichi Nomoto, Middlesex, all of England, and Stephane Gonsella, Leanlos, France, assignors to International Mobile Satellite Organization, London, England

Filed Dec. 15, 1993, Ser. No. 168,875

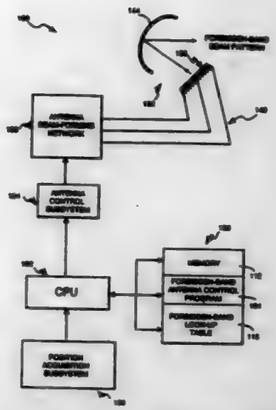
Int. Cl.[6] H04B *7/185*; G01S *5/02*

U.S. Cl. 342—354 **19 Claims**

1. A method of operation of a satellite system having a geostationary orbital band occupied by at least one geostationary satellite and a non-geostationary satellite in an orbit at a lower altitude than that of said at least one geostationary satellite, comprising the steps of:

determining position of said non-geostationary satellite relative to the surface of the earth;

calculating a minimum discrimination angle between said geostationary band and non-geostationary satellite at its determined position relative to a ground station on earth, wherein said minimum discrimination angle corresponds to a predefined threshold of interference between signals received by said ground station from said non-geostationary satellite and geostationary satellites in said geostationary orbital band;



defining a forbidden band of locations on the surface of the earth from which said geostationary orbital band and said non-geostationary satellite, at its determined position, are separated by less than said minimum discrimination angle; and

controlling transmission of signal energy from said non-geostationary satellite in accordance with said position thereof so as to prevent transmission of signal energy from said non-geostationary satellite to said locations within said forbidden band.

5,444,450

RADIO TELECOMMUNICATIONS SYSTEM AND METHOD WITH ADAPTIVE LOCATION DETERMINATION CONVERGENCE

Keith A. Olds, Mesa, and Kristine P. Maine, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 11, 1993, Ser. No. 105,219

Int. Cl.[6] G02S *5/02*; H04B *1/00*; H04M *11/00*

U.S. Cl. 342—357 **21 Claims**

1. A method of operating a radio telecommunications system having at least one communication node and having at least one subscriber unit placed to communicate with said node, said method comprising the steps of:

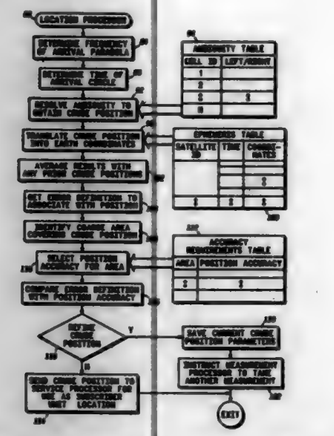
communicating between said node and said subscriber unit to obtain a set of location parameters;

obtaining a crude position for said subscriber unit in response to said set of location parameters, said crude position having an error associated therewith;

determining a position accuracy for said crude position;

deciding, in response to said position accuracy and said error, whether to refine said crude position by repeating said communicating, obtaining, and determining steps, said crude position serving as a subscriber unit location

when said deciding step decides not to refine said crude position; and



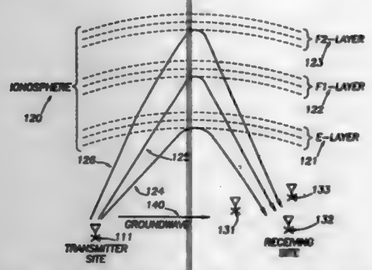
qualifying communication services provided for said subscriber unit in response to said subscriber unit location.

5,444,451

PASSIVE MEANS FOR SINGLE SITE RADIO LOCATION

Richard L. Johnson; Q. Robert Black, both of San Antonio, Tex., and Allan G. Sonsteby, State College, Pa., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 906,528, Jun. 29, 1992, abandoned. This application May 13, 1994, Ser. No. 242,699
Int. Cl.[6] G01S *3/02, 3/16*
U.S. Cl. 342—453 10 Claims



1. A method of measuring the geographical location of a remote transmitter from a single receiver-site comprising the following steps:

(a) providing an array of signal sensors wherein the sensors are spatially separated to obtain a finite intersensor propagation delay time for transmitted signals incident upon the array and transmitted from a remote transmitter;

(b) obtaining sampled signals from substantially simultaneous measurements of transmitted signals received at the sensory array;

(c) determining the discrete Fourier transform (DFT) for the sampled signal at each sensor;

(d) considering the sensors in pairs and computing a normalized cross power spectrum using DFT for the sample signal acquired at each individual sensor;

(e) identifying the frequency bins of the normalized cross power spectrum which have magnitudes near unity;

(f) using the frequency bins of the normalized cross power spectrum which have magnitudes near unity to compute a spectral cross correlation matrix;

(g) determining by matrix evaluation the rank of said spectrum cross correlation matrix, eliminating a number of columns from the leftmost portion of the matrix equal to the rank of the spectral cross correlation matrix with the remaining matrix being a matrix representative of nullspace;

(h) forming the eigen spectrum using the nullspace matrix and a sensor array steering vector;

(i) searching for the maximum of said eigen spectrum which will result in an estimate of the intersensor and interpath delay times; and

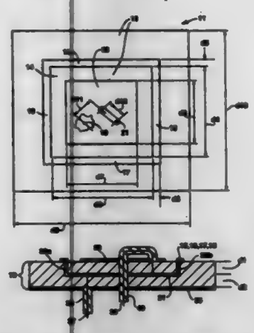
(j) computing the geographic location of the remote transmitter using the intersensor and interpath delay time.

5,444,452

DUAL FREQUENCY ANTENNA

Munehiko Itoh, Osaka, Japan; Masao Arakawa, Cupertino, Calif., and Raj Mittra, Champaign, Ill., assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 912,532, Jul. 13, 1992, Pat. No. 5,323,168. This application Feb. 4, 1994, Ser. No. 191,937
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS 32 Claims



1. An apparatus for receiving microwave signals having first and second distinct frequencies, the apparatus comprising:

a substrate of dielectric material having a selected substrate thickness and having opposed first and second surfaces;

a first grounded layer of electrically conducting material, positioned on the first surface of the substrate;

a first conducting layer of electrically conducting material, positioned on the first surface of the substrate and formed as an annular strip that surrounds and is spaced apart from the first grounded layer;

a second conducting layer of electrically conducting material, positioned in the interior of the substrate, facing and spaced apart from the first grounded layer, and electrically connected to the first conducting layer, said second conducting layer forming a closed, substantially planar geometrical figure having solid, contiguous material between sides of said figure; and

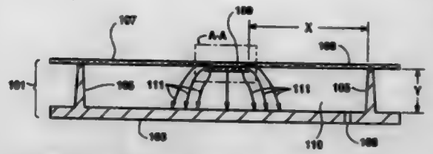
a second grounded layer of electrically conducting material, positioned on the second surface of the substrate so that the second conducting layer is positioned between and spaced apart from the first grounded layer and the second grounded layer.

5,444,453

MICROSTRIP ANTENNA STRUCTURE HAVING AN AIR GAP AND METHOD OF CONSTRUCTING SAME

Farzin Lalezari, Louisville, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 12,301, Feb. 2, 1993, abandoned. This application Jun. 28, 1994, Ser. No. 267,173
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS 30 Claims



1. A microstrip antenna comprising:

a substantially rigid radiator layer that includes a substrate layer and a radiator patch disposed on one of a lower surface and an upper surface of said substrate layer;

a ground plane that is located adjacent to only said lower surface of said substrate layer, wherein said upper surface of said substrate layer is substantially free of any portion of said ground plane positioned adjacent thereto; and

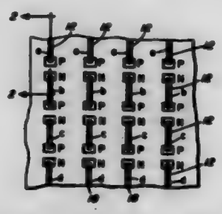
a plurality of support means, each made from the same piece of material as at least one of said ground plane and said radiator layer, for maintaining a dielectric space between said radiator patch and said ground plane that includes an air gap, wherein each of said plurality of support means maintains a predetermined distance between said radiator patch and said ground plane, wherein each of said plurality of support means has a dimple shape that, if a cross-section is taken which is substantially between and substantially parallel to said radiator layer and said ground plane, has a closed surface, wherein each of said plurality of support means has a base that is surrounded by said ground plane or said radiator layer, and wherein each of said plurality of support means has substantially the same dimple shape.

5,444,454

MONOLITHIC MILLIMETER-WAVE PHASED ARRAY

Joseph F. White, Boston, Mass., assignor to M/A-COM, Inc., Lowell, Mass.

Continuation of Ser. No. 503,430, Jun. 13, 1983, abandoned. This application Jun. 3, 1986, Ser. No. 870,240
Int. Cl.[6] H01Q *19/06*
U.S. Cl. 343—754 14 Claims



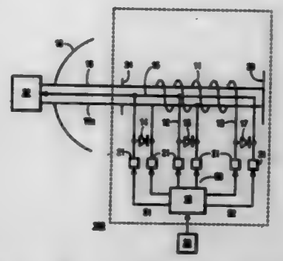
1. Microwave apparatus for altering the phase front of a wave of microwave energy propagating in a path comprising a panel of semiconductor dielectric material intended to be located in said path so as to intercept said phase front, said panel having a thickness in the direction of the microwave energy propagating path that is small in comparison in the panel cross-section, said panel including a plurality of electrically-conductive leads extending substantially parallel to the electric vector of said wave when said panel is so located, each of said plurality of electrically-conductive leads being separated into a plurality of lead sections with adjacent lead sections spaced from each other and having confronting ends, said lead sections being carried on a surface of said semiconductor material that extends orthogonal to the microwave energy propagating path, a semiconductor junction formed in said semiconductor material bridging between confronting ends of adjacent lead sections each pair of confronting ends of each lead section together with the semiconductor material between them constituting effectively a surface-oriented semiconductor diode switch, said semiconductor junction being a localized junction, each said semiconductor junction include a P-type semiconductor material and an N-type semiconductor material, said lead sections each having one end coupled to said P-type semiconductor material and the other end coupled to said N-type semiconductor material and means to apply switching voltage to each of said leads so as to render at least some of the diodes in each of said leads simultaneously either conductive or non-conductive, thereby allowing each of said leads to be electrically either divided into said sections or continuous throughout at least a portion of its length.

5,444,455

HELICAL ANTENNA FEED ELEMENT WITH SWITCHES TO SELECT END FIRE AND BACKFIRE MODES AND CIRCULAR POLARIZATION DIRECTION

Ali Louzir, Strasbourg, France, and Masahiro Fujimoto, Kawasaki, Japan, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Dec. 20, 1993, Ser. No. 169,892
Claims priority, application European Pat. Off., Dec. 22, 1992, 92403535.5
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 4 Claims



1. An antenna system for receiving electromagnetic radiation from at least one direction and having at least one of right circular polarization, left circular polarizations, vertical linear polarization, and horizontal linear polarization, comprising:

means for concentrating energy at at least one focal point;

a helical antenna including at least one helical feeder, each feeder having first and second ends arranged in the proximity of said focal point;

a first switch for switching said first end to a feeder line;

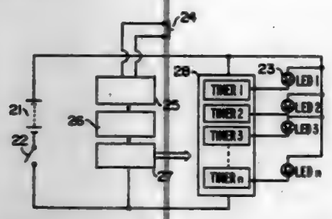
a second switch for switching said second end to said feeder line; and

control means for controlling said first and second switches in one of a first and second mode so that

in the first mode said first switch switches said first end to said feeder line whereby said helical antenna works in an axial backfire mode and receives radiation with a first circular polarization, and

in the second mode said second switch switches said second end to said feeder line whereby said helical antenna works in the axial endfire mode and receives radiation with a second circular polarization.

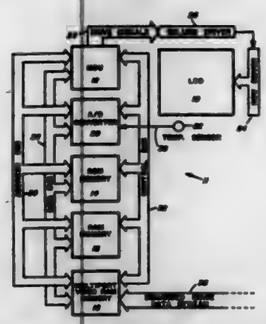
5,444,456
LED DISPLAY APPARATUS
Masao Ohta, and Yukinobu Saito, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 889,063, May 26, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,623
Claims priority, application Japan, May 23, 1991, 3-036707 U; Jun. 13, 1991, 3-141626; Dec. 17, 1991, 3-103882 U
Int. Cl.[6] G09G 3/20
U.S. Cl. 345—39 11 Claims



1. A hand held LED display apparatus comprising:
a body including a front and a back;
an array of LEDs arranged in line and coupled to the body;
inertial sensor means, situated in said body at one end of the LED array, consisting of a pair of fixed contacts and a moveable contact for generating at least one signal indicating a change in inertia of said apparatus responsive to an inertial force produced when said apparatus is reciprocated from a first direction to a second direction;
memory means for receiving and storing data representing timing for turning on and off each individual LED; and
control means coupled to said memory means, said inertial sensor means and said LEDs for receiving said timing data from said memory means, for receiving said at least one signal from said inertial sensor means and for providing signals to turn on and turn off the LEDs according to the timing data and said at least one signal so that light is displayed and afterimages are caused which are perceived to form an image when said apparatus is moved within a range with reciprocating motion.

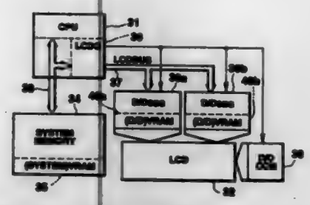
5,444,457
DC INTEGRATING DISPLAY DRIVER EMPLOYING PIXEL STATUS MEMORIES
Robert Hotto, 3109 Evening Way, La Jolla, Calif. 92037, assignor to Robert Hotto, La Jolla, Calif.
Continuation of Ser. No. 705,190, May 24, 1991, Pat. No. 5,280,280. This application Jul. 7, 1993, Ser. No. 88,256
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—94 65 Claims

1. In combination,
display means formed from a plurality of elements each constructed to provide for the display of an image in accordance with the introduction of signals to such element,
the elements being arranged in rows and columns,
first means for selecting the elements in a plurality of rows for simultaneous processing,
second means for providing signals to obtain the display of the images in the elements in the selected rows, and



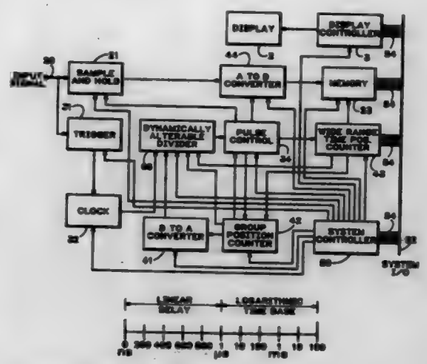
third means for processing the signals provided for the elements in the selected rows in a priority dependent upon the characteristics of such signals.

5,444,458
DISPLAY DATA WRITE CONTROL DEVICE
Ryo Ishikawa, Akigawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Feb. 18, 1994, Ser. No. 198,610
Claims priority, application Japan, Feb. 22, 1993, 5-031949
Int. Cl.[6] G09G 3/36, 5/14
U.S. Cl. 345—98 18 Claims



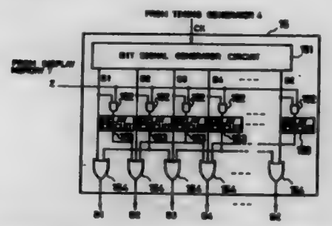
1. An electronic device comprising:
a dot matrix type display screen for displaying data;
a display driving circuit for driving said display screen;
a system memory containing a display memory area for storing data to be displayed on said display screen;
a process unit for controlling operation of said electronic device, said process unit including writing means for supplying said system memory with data together with address data to write said data at an address of said system memory designated by said address data; and
a display data write control circuit for judging whether the writing means of said process unit writes data into said display memory area of said system memory, and for sending to said display driving circuit the same data as being written into said display memory area by said writing means to display said same data on said display screen, when it is determined that said writing means writes data into said display memory area of said system memory.

5,444,459
SIGNAL ACQUISITION SYSTEM UTILIZING ULTRA-WIDE TIME RANGE TIME BASE
Hiro Moriyasu, Portland, Oreg., assignor to Zeelan Technology, Inc., Beaverton, Oreg.
Division of Ser. No. 621,630, Dec. 3, 1990, Pat. No. 5,243,343.
This application Jun. 22, 1993, Ser. No. 81,781
Int. Cl.[6] G09G 1/14
U.S. Cl. 345—133 8 Claims



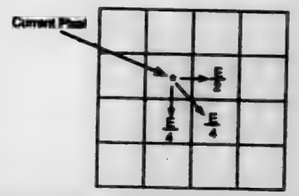
1. A display method for a signal acquisition system using an ultra-wide time range digitizer comprising the steps of:
obtaining first data representative of a signal across a non-linear portion of an ultra-wide time range of said digitizer;
obtaining second data representative of said signal across a linear portion of the ultra-wide time range;
displaying said first data in a non-linearly scaled fashion in a first region of a display; and
displaying said second data in a linearly scaled fashion in a second region of the display,
wherein said first and second regions are contiguously related within the display in accordance with the associated relative relationship between said linear and non-linear portions of the ultra-wide time range.

5,444,460
APPARATUS FOR DISPLAYING OUTLINED CHARACTERS IN A VIDEO DISPLAY SYSTEM
Shigeaki Fujitaka, and Akio Kiji, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1993, Ser. No. 138,152
Claims priority, application Japan, Oct. 21, 1992, 4-307562
Int. Cl.[6] G09G 1/06
U.S. Cl. 345—144 3 Claims



1. A screen display device for displaying an outlined character on a display screen in a computer system, wherein the outlined character includes a plurality of horizontal scan lines, wherein each scan line is displayed for a single-character display time period, the screen display device comprising:
a display memory for storing character codes for displaying characters and patterns on a screen;
a character ROM for prestoring character data for the characters and patterns, wherein the character data prestored in the character ROM describes a character in terms of one or more vertical columns of data;
read control means for accessing said character ROM twice during a single-character display time period for a given scan line, wherein one access is for reading data at the time of displaying the given scan line and the other access is for reading data corresponding to scan lines before and after the given scan line to achieve vertical-direction outlining;
wherein the character ROM comprises:
a plurality of memory cells corresponding to each vertical column of character data, wherein the plurality of memory cells are arranged in parallel with their outputs coupled together so that the data in the plurality of memory cells is ORed together when the plurality of memory cells are read simultaneously;
a first signal generator, coupled to the read control means, for generating a first precharge signal once at the beginning of the single-character display time period and inputing the signal into said character ROM; and
a second signal generator, coupled to the read control means and responsive to an outlining instruction signal from the display memory, for generating a second precharge signal twice within the single-character display time period and inputing the signal into a ROM data output control circuit.

5,444,461
BI-DIMENSIONAL VISUAL MODEL
Ran Oz, Herzliya; Yehuda Elmaliah, Petah Tikva, and Doron Herzlich, Ramat Hasharon, all of Israel, assignors to Optibase Advanced Systems (1990) Ltd., Herzliya, Israel
Filed Mar. 19, 1992, Ser. No. 853,951
Int. Cl.[6] G09G 1/28
U.S. Cl. 345—154 5 Claims



1. A system for displaying on a video display a pseudo color image formed from a true color image made of plurality of pixels using a 256 color palette comprising:
a) means for converting the true color image to the pseudo color image pixel by pixel, using said 256 color palette;
b) means for determining an error value for each color component of a current pixel between its true color value and the pseudo color value;
c) means for adding predetermined portions of said error value to the pseudo color values of predetermined pixels adjacent to said current pixel to produce a modified pseudo color image;
d) means for displaying said pseudo color image as modified by said added predetermined portions of said error value
wherein said 256 color palette is formed from a color space designated Y.I.P. which is determined according to the following matrix operation:

$$\begin{bmatrix} Y \\ I \\ P \end{bmatrix} = \begin{bmatrix} 0.299 & 0.587 & 0.114 \\ 0.596 & -0.274 & -0.322 \\ 0.211 & -0.253 & 0.312 \end{bmatrix} \cdot \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

wherein said R, G and B represent a red, blue, green color space.

5,444,462

COMPUTER MOUSE GLOVE WITH REMOTE COMMUNICATION

Mark L. Wambach, 180 Raeburn Ave., Rochester, N.Y. 14619

Filed Dec. 16, 1991, Ser. No. 807,197
Int. Cl.[6] G09G 3/02
U.S. Cl. 345—158 12 Claims



1. Apparatus for providing a computer mouse function on the hand of a computer operator relative to a computer controlling a video display capable of displaying graphics and having a cursor moveable in said video display in at least opposing UP and DOWN directions in said video display, said apparatus comprising:

a glove-like body to be worn on the hand of the computer operator;

first direction sensing means for sensing the direction of movement of an index finger of said hand relative to said hand mounted on said glove-like body near a joint of said index finger, said first direction sensing means consisting of UP and DOWN microswitches near opposite sides of said joint, each one of said UP and DOWN microswitches having and ON state and an OFF state and being confined on a surface of said glove to a respective area generally centered about said joint of said index finger, leaving said index finger freely movable;

means mounted on said glove-like body for converting outputs of said UP and DOWN microswitches to a plurality of sequential chronologically independent respective UP and DOWN move commands to move said cursor in respective ones of said UP and DOWN directions in said video display for as long as a respective one of said UP and DOWN microswitches is in said ON state; and

means for conveying said commands to said computer, whereby movement of said cursor on said video display reflects bending of said index finger about said joint.

5,444,463

COLOR XEROGRAPHIC PRINTING SYSTEM WITH DUAL WAVELENGTH, SINGLE OPTICAL SYSTEM ROS AND DUAL LAYER PHOTORECEPTOR

Gregory J. Kovacs, Sunnyvale, and G. A. Neville Connell, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

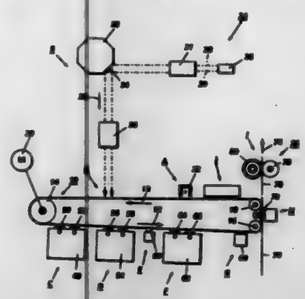
Filed Dec. 9, 1992, Ser. No. 987,886
Int. Cl.[6] G01D 15/06, 15/14
U.S. Cl. 347—118 18 Claims

1. A xerographic printing system comprising:

a raster output scanner optical system for generating at least one first modulated beam at a first wavelength and at least one second modulated beam at a second wavelength, said second wavelength being different from said first wavelength,

a photoreceptor means having a first layer upon a second layer, said second layer being upon a flexible substrate, said first layer being sensitive only to said first wavelength and said second layer being sensitive and accessible only to said second wavelength, and

xerographic means, said xerographic means comprising a charging station for charging said photoreceptor means, at least one exposure station for then exposing areas of said photoreceptor means to one of the following neither said



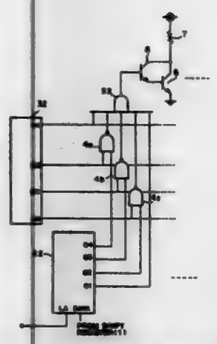
first modulated beam and said second modulated beam, said first modulated beam, said second modulated beam, and both said first modulated beam and said second modulated beam, and, after exposure, a plurality of development stations for depositing three different toners on said photoreceptor means in response to exposure of said areas of said layers to said modulated beams.

5,444,464

THERMAL PRINTER HEAD DRIVING CIRCUIT WITH THERMAL HISTORY BASED CONTROL

Takafumi Endo, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,220
Claims priority, application Japan, Jan. 20, 1992, 4-027480; Mar. 23, 1992, 4-094942; Apr. 16, 1992, 4-096221; Oct. 8, 1992, 4-296332
Int. Cl.[6] B41J 2/365, 2/36
U.S. Cl. 347—195 11 Claims



1. A thermal head driving circuit for energizing a plurality of thermal resistors corresponding to a plurality of dots to thereby control a thermal head for printing data on a heat-sensitive paper, comprising:

a plurality of latch circuits each of which retains therein recorded thermal resistor energization information for respective dots on a present line of a plurality of dots and previously recorded thermal resistor energization information for said respective dots for previous lines of said respective dots and which outputs a plurality of signal

patterns indicative of said recorded thermal resistor energization information for said present line and said previous lines of said respective dots on a time-series basis;

a pulse signal generator for generating a plurality of pulse signals for controlling the states of energization of said thermal resistors according to said signal patterns and for outputting pulse signals falling within selected different level ranges for energizing said thermal resistors, at least some of said different level ranges including different reference levels of increase in temperature for said thermal resistors, which reference levels of increase in temperature are the same in at least some of said different level ranges;

said pulse signal generator including means for increasing the number of pulses with respect to patterns falling under a higher level range when the selected reference levels of increase in temperatures of said thermal resistors under different level ranges are the same; and

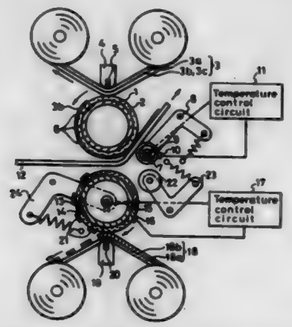
a plurality of driving elements for energizing said thermal resistors based on the pulse signals outputted from said pulse signal generator.

5,444,465

THERMAL TRANSFER RECORDING APPARATUS

Kouji Ikeda, Katano; Atsushi Sogami, Sanda; Masanori Yoshikawa; Yoshihisa Fujimori, both of Neyagawa, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 24, 1994, Ser. No. 247,997
Claims priority, application Japan, May 25, 1993, 5-122754
Int. Cl.[6] B41J 2/325
U.S. Cl. 347—213 19 Claims



1. A thermal transfer recording apparatus comprising,

a first intermediate transfer medium;

a dyeable layer-carrying sheet having a dyeable layer;

a sublimable dyestuff-carrying sheet, having a plurality of sublimable dyestuff layer-carrying sections, each containing a sublimable dyestuff layer;

a dyeable layer-forming means for transferring said dyeable layer on said dyeable layer-carrying sheet, to said first intermediate transfer medium;

a first recording means for forming a sublimable dyestuff image on said dyeable layer on said first intermediate transfer medium, by selectively heating the sublimable dyestuffs contained in said sublimable dyestuff-carrying sheet;

a first transferring means for thermally transferring said dyeable layer formed on said first intermediate transfer medium to a recording paper;

a second intermediate transfer medium;

a thermoplastic ink-carrying sheet having a layer of the thermoplastic ink;

a second recording means for forming a thermoplastic ink image on said second intermediate transfer medium, by selectively heating the thermoplastic ink contained in said thermoplastic ink-carrying sheet;

a second transferring means for thermally transferring said thermoplastic ink image formed on said second intermediate transfer medium to a recording paper; and

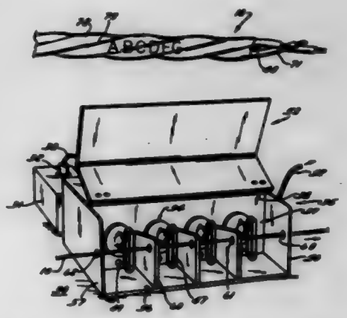
a third transferring means for thermally transferring said thermoplastic ink image formed on said second intermediate transfer medium to said dyeable layer formed on said first intermediate transfer medium.

5,444,466

WIRE MARKING SYSTEM AND METHOD

Paul J. Smycznik; Youssef Azmani, both of Hales Corners, and Jerry R. Harrison, Oak Creek, all of Wis., assignors to Electronic Cable Specialists, Inc., Franklin, Wis.

Continuation-in-part of Ser. No. 667,475, Mar. 11, 1991, abandoned. This application Jan. 14, 1992, Ser. No. 823,069
Int. Cl.[6] B41F 17/00
U.S. Cl. 347—4 23 Claims



1. Apparatus for printing on the surface of a fluorocarbon insulating material surrounding at least one elongated electrical conductor, comprising:

a drawing device for drawing said conductor from a source under tension along a predetermined path, said device being spaced from said source,

at least one electrode arranged along said path between said source and drawing device and means for applying an electrical potential of at least 25,000 volts to said electrode for electrical corona to be radiated from said electrode through which corona said conductor passes for exposing the surface of the fluorocarbon to corona, and

an ink jet printer arranged along said path in a position for printing on said surface of said fluorocarbon insulating material after said conductor is exposed to the corona.

5,444,467

DIFFERENTIAL DRIVE SYSTEM FOR AN INK JET PRINTHEAD

James L. Stortz, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

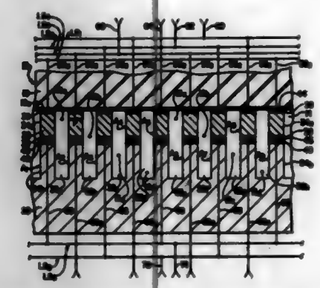
Filed May 10, 1993, Ser. No. 60,296
Int. Cl.[6] B41J 2/045
U.S. Cl. 347—12 15 Claims

10. A method of actuating an ink jet printhead having a body with a spaced, parallel series of internal, piezoelectrically deflectable sidewall sections having first and second areas and extending rearwardly through said body, said sidewall sections interdigitated with a spaced series of internal ink receiving channels opening outwardly through a spaced series of ink discharge orifices, said first areas of said sidewall sections arranged into one or more separate groups of first areas, a portion of said second areas of said sidewall sections arranged into one or more separate groups of second areas and a remaining portion of said second areas of said sidewall sections ar-

ranged as one or more individual second areas, said method comprising the steps of:

commonly and selectively imposing a driving voltage of a predetermined polarity on, or connecting to ground, selected ones of said one or more separate groups of first areas,

commonly and selectively imposing a driving voltage of said



predetermined polarity on, or connecting to ground, selected ones of said one or more separate groups of second areas, and

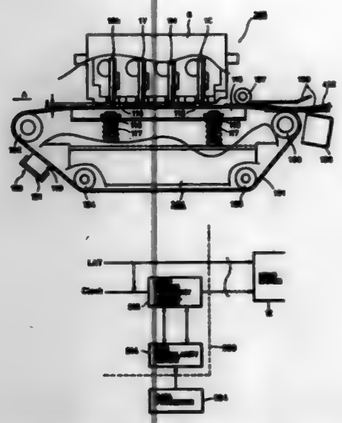
individually and selectively imposing a driving voltage of said predetermined polarity on, or connecting to ground, selected ones of said one or more individual second areas of said sidewall sections, said second areas on said sidewall sections being spaced apart from said first areas thereon.

5,444,468

IMAGE FORMING APPARATUS WITH MEANS FOR CORRECTING IMAGE DENSITY UNEVENNESS

Hiroshi Fukushima; Haruhiko Moriguchi, and Nobuhiko Takahashi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,157
Claims priority, application Japan, Nov. 29, 1990, 2-326018
Int. Cl.[6] B41J 2/01, 2/44
U.S. Cl. 347—14 42 Claims



1. An image forming apparatus including recording means for recording images on a recording medium in accordance with image signals, said apparatus comprising:

relative movement means for causing, after recording in a main scan direction by said recording means, relative movement between said recording means and the recording medium in a sub-scan direction which is different from the main scan direction; and

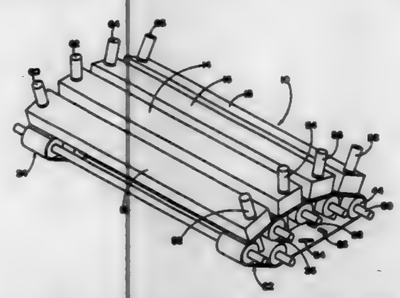
control means for effecting a correction of recording density unevenness caused by a variation in a speed of said relative movement means, by controlling said recording means in accordance with the variation in the speed of said relative movement means, wherein said control means includes memory means for storing data concerning a deviation of a recording position of said recording means relative to a relative position of the recording medium, and reads out, during the relative movement, the stored data from said memory means in accordance with the relative movement between the recording medium and said recording means, to control said recording means in accordance with the stored data.

5,444,469

PRINTING METHOD AND APPARATUS FOR REGISTERING DOTS

Bruce Cowger, Corvallis, Oreg., assignor to Hewlett Packard Corporation, Palo Alto, Calif.

Filed Sep. 2, 1992, Ser. No. 939,906
Int. Cl.[6] G01D 9/30
U.S. Cl. 347—14 12 Claims



1. A method for registering printer dots on print media in a printer having separate dot-generating elements which create dots on the print media moving beneath the dot-generating elements, said method comprising the steps of:

approximating an expected distance between a first dot-generating element and a second dot-generating element;

measuring an actual distance between said first dot-generating element and said second dot-generating element by detecting a machine readable mark on a surface moving beneath said first dot-generating element and said second dot-generating element;

calculating a difference between the measured actual distance and the expected distance;

positioning print media on the print media carder;

moving the print media carder so that the print media moves along a print media axis past the first dot-generating element;

printing a first dot on the print media with the first dot-generating element;

moving the print media carrier so that the print media moves the expected distance along the print media axis; and

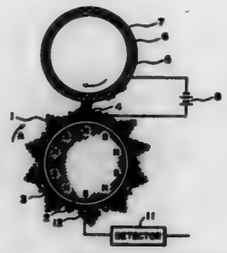
printing a second dot on the print media with the second dot-generating element using the difference to delay or advance printing of the second dot to account for misalignment of the dot-generating elements so that the printed second dot is registered with the printed first dot.

5,444,470

IMAGE FORMING APPARATUS INCLUDING ROTATABLE MAGNETIC FIELD GENERATING MEANS AND CONTROL MEANS FOR CONTROLLING IMAGE TONE

Hakaru Muto, Yokohama, and Hiroui Kubota, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 841,325, Feb. 25, 1992, abandoned.
This application Oct. 3, 1994, Ser. No. 316,827
Claims priority, application Japan, Feb. 28, 1991, 3-055482; Jun. 25, 1991, 3-153146
Int. Cl.[6] G01D 15/16
U.S. Cl. 347—15 11 Claims



1. An image forming apparatus for forming a tone image, comprising:

an image bearing member;

a plurality of electrically independent recording electrodes;

rotatable magnetic field generating means having a plurality of magnetic poles for supplying magnetic toner particles to a region between said image bearing member and said recording electrodes, such that the magnetic particles form a brush in which an amount of the toner particles passing on the recording electrodes repeatedly increases and decreases in accordance with a position of the magnetic poles;

means for rotating said magnetic field generating means;

a detector for detecting a position of the magnetic poles of said magnetic field generating means while said rotating means is rotating said magnetic field generating means;

means for applying a voltage to said recording electrodes at a timing on a basis of an output of said detector, to deposit the toner particles on said image bearing member to form an image thereon; and

control means for changing the timing to control an amount of the toner deposited on said image bearing member, thereby to control an image density so as to form a half tone image on said image bearing member, wherein the timing is changed in accordance with the increase and decrease of the amount of toner particles passing on the recording electrodes.

5,444,471

DROP-ON-DEMAND INK-JET PRINTING HEAD

Minoru Usui; Haruhiko Koto; Haruo Nakamura; Yozo Shimoda, and Tomoaki Abe, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 657,910, Feb. 20, 1991, abandoned.
This application Oct. 14, 1993, Ser. No. 136,049
Claims priority, application Japan, Feb. 23, 1990, 2-43787; Nov. 30, 1990, 2-337278
Int. Cl.[6] B41J 2/045
U.S. Cl. 347—72 13 Claims

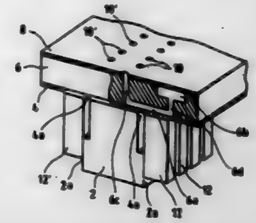
1. A drop-on-demand ink-let printing head comprising:

a nozzle plate having an array of a plurality of nozzle apertures;

an array of a plurality of piezoelectric elements arranged at regular intervals and each fixed on one end thereof to a base, another end of each of said piezoelectric elements being a free end which is in opposition to a respective one of the nozzle apertures; and

ink reservoir portions formed between said nozzle apertures and said free ends,

wherein said plurality of piezoelectric elements comprises lamination of multiple piezoelectric material layers and multiple conductive layers alternately stacked, the lamination being fired to provide a piezoelectric plate, and the plate being cut at predetermined widths to provide said plurality of piezoelectric elements,



wherein conductive members are disposed at each of the ends of said piezoelectric elements such that application of an electric signal between predetermined conductive members produces an axial expansion in the piezoelectric element disposed between the predetermined conductive members; and

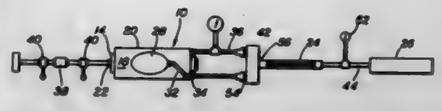
wherein said ink reservoir portions are formed by providing recess portions in a spacer interposed between said nozzle plate and a vibration plate said vibration plate connected to said spacer.

5,444,472

METHOD OF AND AN APPARATUS FOR USING AN INK CONCENTRATE IN AN INK JET PRINTING ARRANGEMENT

George B. Dué; John W. Standard, both of Pittsburgh; Anthony P. Piso, Butler; Michael E. OBrien, Greensburg, and Thomas S. Pope, Monroeville, all of Pa., assignors to Matthews International Corporation, Pittsburgh, Pa.

Filed Sep. 7, 1993, Ser. No. 117,436
Int. Cl.[6] B41J 2/175
U.S. Cl. 347—85 20 Claims



1. An apparatus which provides a capability for ink, used in a print head disposed in an ink jet printing arrangement, to be produced, in situ, from an ink concentrate and a diluting agent, said apparatus comprising:

(a) a hollow fluid-tight housing member for containing a pressure exerted outwardly thereon;

(b) a collapsible ink concentrate container means for containing a volume of an ink concentrate therein disposed in an interior portion of said housing member;

(c) a means disposed on and in fluid communicstion with said interior portion of said housing member for connecting said housing member to a source of fluid pressure;

(d) an ink concentrate fluid communication passageway connected to said ink concentrate container means for communicating a volume of said ink concentrate to a mixing apparatus; and

(e) a diluting agent communication means for communicat-

ing said diluting agent from said interior portion of said housing member to said mixing apparatus.

5,444,473

INK JET RECORDING APPARATUS

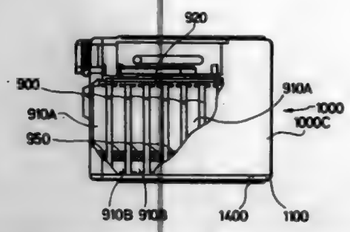
Yoshifumi Hattori, Yamato; Masashi Kitani; Etsuro Suzuki, Yokohama; Hideo Saikawa, Kawasaki; Mazumi Kojima; Kenji Kawano, both of Tokyo; Koichi Tanno, and Kenji Aono, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,122

Claims priority, application Japan, Nov. 15, 1990, 2-307061; Nov. 15, 1990, 2-307063

Int. Cl.[6] B41J 2/175

U.S. Cl. 347—87 8 Claims



1. An ink storage unit used in an ink jet recording apparatus for recording by ejecting an ink, comprising:

a plurality of ink storage chambers for storing the ink;

a plurality of movable walls, each of said movable walls being provided in one of said ink storage chambers so as to seal the ink stored therein against air, wherein each of said movable walls can move according to a change in an amount of the stored ink; and

a movable wall holding means for exerting on each of said movable walls an opposing force to oppose a force exerted thereon resulting from said change in the amount of the stored ink, so as to make a pressure in each of said ink storage chambers a negative pressure, said movable wall holding means having a configuration in which a corresponding one of said movable walls contacts a wall of a corresponding one of said chambers, wherein said opposing force includes a friction force caused by said contact, said friction force being equal to at least a sum of a weight of said corresponding one of said movable walls and a weight of the ink which is exerted on said corresponding one of said movable walls.

5,444,474

INK-JET CARTRIDGE FOR INK-JET PRINTERS AND INK-JET PRINTER USING THE SAME

Kazumi Ohtsubo, Kurume; Mitsuhide Matsuda, Fukuoka; Yutaka Miyazono, Kasuga, and Hideaki Horio, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1993, Ser. No. 34,857

Claims priority, application Japan, Mar. 23, 1992, 4-064501; Mar. 23, 1992, 4-064515

Int. Cl.[6] B41J 2/175, 2/165

U.S. Cl. 347—87 5 Claims

1. An ink-jet cartridge comprising:

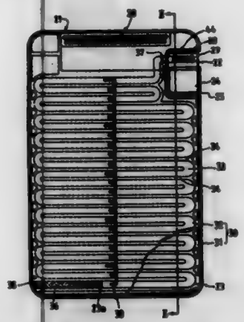
(a) a case containing therein an ink and having a surface;

(b) a plurality of nozzles formed in said case for ejecting said ink held within said case, each of said nozzles having a discharge end opening at said surface of said case;

(c) an ink-absorbing member made of a porous material disposed in said case, said ink-absorbing member having a surface projecting slightly from, said surface of said case;

(d) a shutter slidably mounted on said case and reciprocally movable along said surface of said case to open and close said discharge end of each of said nozzles; and

(e) wiper means, mounted on and movable with said shutter, for wiping said surface of said case to clean said discharge end of each of said nozzles, said wiper means being movable across said discharge end of each of said nozzles and



engageable with said surface of said ink-absorbing member while said shutter reciprocates along said surface of said case;

wherein said surface of said ink-absorbing member is a convex surface slightly projecting from said surface of said case.

5,444,475

THERMAL RECORDING HEAD

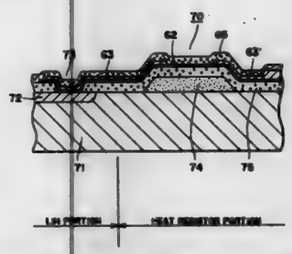
Masao Mitani, Katsuta, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 85,880

Claims priority, application Japan, Jul. 3, 1992, 4-176732; Jul. 17, 1992, 4-190754; Dec. 25, 1992, 4-347154; Mar. 26, 1993, 5-068258

Int. Cl.[6] B41J 2/335, 2/345

U.S. Cl. 347—200 2 Claims



1. A thermal recording head for a printer for thermally recording characters on a heat-sensitive recording medium, comprising:

a heatsink with a connector attached thereto, the connector containing a plurality of signal lines;

a substrate provided on the heatsink;

driving means provided on the substrate, the driving means being connected to the connector by one connection for each of the plurality of signal lines, the driving means generating a pulsed electric current and outputting the pulsed electric current at a collector electrode;

a heat-resistant resin layer provided on the substrate a distance from the collector electrode, the heat-resistant resin layer having a surface facing opposite the substrate defining an elevated area:

an inorganic thermal insulation layer made from a material with a linear thermal expansion coefficient of less than 5×10^{-6}/C. from 20° to 300 ° C., the inorganic thermal insulation layer covering at least the elevated area of the heat-resistant resin layer and the distance to the collector electrode, a combined thickness of the heat-resistant resin layer and the inorganic thermal insulation layer being thicker at the elevated area than at the collector electrode;

a thin-film resistor layer provided to the inorganic insulation layer, the thin-film resistor layer being a thin-film layer that is 500 to 1,000 Å thick and made from a material selected from a group consisting of a Cr—Si—SiO alloy and a Ta—Si—SiO alloy, the thin-film resistor layer having a heating portion substantially at the elevated area, the thin-film resistor layer being in direct contact with the collector electrode, the thin-film resistor layer being energized by the pulsed electric current, the heating portion heating in pulses according to the pulsed electric current;

a first conductor layer provided to the thin-film resistor layer except at the heating portion, the first conductor layer serving as a conductor for supplying the pulsed electric current to the thin-film resistor layer; and

an anti-abrasion layer provided 1 μm or less thick to the heating portion for forming direct abutment contact with the heat-sensitive recording medium and transmitting the pulsed heat from the heating portion thereto for forming an image thereon.

5,444,476

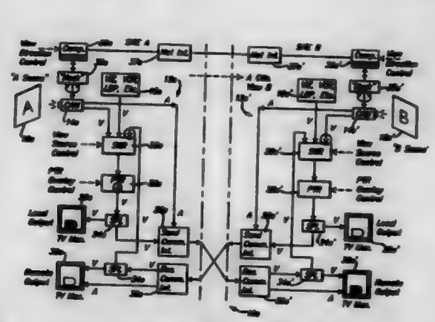
SYSTEM AND METHOD FOR TELEINTERACTION

Lynn Conway, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 11, 1992, Ser. No. 989,126

Int. Cl.[6] H04N 7/15

U.S. Cl. 348—15 58 Claims



35. In a N-site teleconference system in which images originating at one of said N teleconference sites are displayed at each of said N teleconference sites and images originating at each of said N teleconference sites are displayed at a particular teleconference site, a system for teleinteractively pointing within an image displayed at a site local to a conferee that originated at a site remote to said conferee, comprising:

imaging means at each of said N teleconference sites to capture images within a target space;

at least one display means at each of said N teleconference sites to display images captured by said imaging means; and

selectively activated pointer means at each of said N teleconference sites where said pointer means is directed by a local conferee to selectively point within a selected one of said images to define a pointer-overlaid image, and said pointer-overlaid image is displayable on each of said display means.

5,444,477

VIDEO TELEPHONE SYSTEM

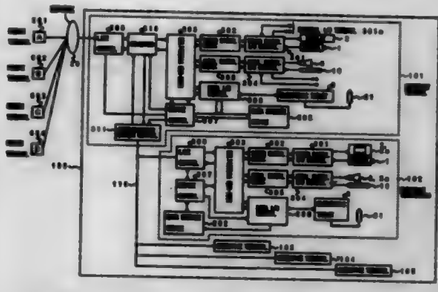
Hitoshi Yamadera; Takafumi Kawasaki, both of Kokubunji; Takashi Matsubara, Kodaira; Hiroshi Takatsuki, Tokyo; Atsuo Yoshida, Kokubunji; Yoji Shibata, Yokosuka; Masumi Fukase, Fujisawa; Kiyoshi Ishida, Yokohama, and Iwao Ishisabe, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,745

Claims priority, application Japan, Oct. 23, 1992, 4-286464

Int. Cl.[6] H04N 7/14; H04M 3/42

U.S. Cl. 348—15 5 Claims



1. A video telephone system comprising:

a master video telephone terminal connected to a communication network; and

a plurality of slave video telephone terminals connected to said master video telephone terminal;

(I) wherein said master video telephone terminal comprising:

video generating means for generating a video signal,

means for coding the video signal generated by said video generating means,

speech generating means for generating an aural signal;

means for coding the aural signal generated by said speech generating means,

a multiplexing-demultiplexing section which multiplexes the coded aural signal and the coded video signal for transmission and separates out a coded aural signal and coded video signal from a received signal,

a line control section which controls calls on the communication network and transfer of the multiplexed coded aural and video signals through the communication network,

means for decoding the separated-out coded video signal,

means for decoding the separated-out coded aural signal,

means for outputting speech represented by the decoded aural signal,

means for displaying an image represented by the decoded video signal,

input means for accepting an instruction of a user of said master video telephone terminal,

a communication branch control section which controls calls between said master video telephone terminal and said plurality of slave video telephone terminals and transfer between said line control section or said multiplexing-demultiplexing section and said plurality of slave video telephone terminals, and

device control means being responsive to the instruction entered through said input means for specifying operation of said communication branch control section;

(II) wherein each of said plurality of slave video telephone terminals comprises:

video generating means for generating a video signal,

means for coding the video signal output by said video generating means,

speech generating means for generating an aural signal,

means for coding the aural signal output by said speech generating means,
a multiplexing-demultiplexing section which multiplexes the coded aural signal and the coded video signal for transmission and separates out a coded aural signal and coded video signal from a received signal,
a line control section which controls calls between said master and slave video telephone terminals and transfer of the multiplexed coded aural and video signals between said master and slave video telephone terminals,
means for decoding the separated-out coded video signal,
means for decoding the separated-out coded aural signal,
means for outputting a speech represented by the decoded aural signal,
means for displaying an image represented by the decoded video signal,
input means for accepting an instruction of a user and
device control means responsive to the instruction entered through said input means, for specifying operation of said line control section.

5,444,478

IMAGE PROCESSING METHOD AND DEVICE FOR CONSTRUCTING AN IMAGE FROM ADJACENT IMAGES

Pierre Lelong, Nogent/Sar/Marne, France; Govert Dalm, Veldhoven, and Jan Klijn, Breda, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,091
Claims priority, application France, Dec. 29, 1992, 92 15836
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—39 **17 Claims**



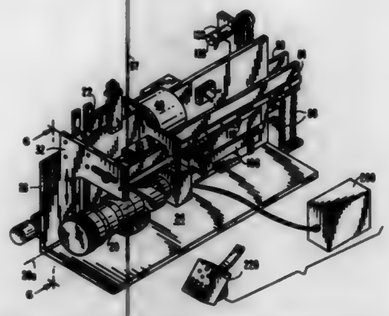
6. An image processing device comprising: 2
a system of n fixed real cameras (C1, . . . , Ci, Cj, . . . , Cn) arranged in such a way that their individual fields of view merge so as to form a single wide-angle field of view for observation of a panoramic scene, said real cameras providing adjacent images referred to as source images;
an image construction system simulating a mobile, virtual camera (Co) continuously scanning the panoramic scene so as to form a sub-image referred to as target image (Io) corresponding to a selected section of the wide-angle field of view and constructed from said source images (I1, . . . , Ii, Ij, . . . , In) furnished by the n real cameras, characterized in that said image processing device comprises:
means for digitizing said source and target images;
calibration means for determining a substantially common view point (P) to said images, and a fixed orthonormal landmark (Px, Py, Pz) originated at said common view point;
an address generator for generating, pixel by pixel, respective addresses for the pixels of said target image (Io) so as to cover the entire target image (Io);
an address computer for calculating, on the basis of an address (Ao) of a current pixel referred to as initial pixel (m') in the target image (Io), an orientation, in said fixed landmark, of a straight light ray (PM) passing through said initial pixel (m') and through said common view point (P), selecting a source image (Ij) traversed by said straight light ray (PM), calculating, from said orientation of said straight light ray (PM), an address (Aq) of a distortion corrected point (m), in said selected source image (Ij), said distortion corrected point (m) corresponding to said initial point (m'); and
means for determining a luminance value (F) at said distortion corrected point (m), and assigning said luminance value to said initial point (m').

5,444,479

SINGLE CAMERA AUTOSTEREOSCOPIC IMAGING APPARATUS

Leo M. Fernekes, New York, and Stefan J. Rublowsky, Brooklyn, both of N.Y., assignors to Vision III Imaging, Inc., Herndon, Va.

Filed Sep. 2, 1993, Ser. No. 115,101
Int. Cl.[6] H04N *13/00, 5/30*
U.S. Cl. 348—42 **29 Claims**



1. An optical element support assembly, comprising
a. a base;
b. a support frame to which an optical element may be mounted, said support frame movably coupled with respect to said base;
c. a counterweight frame movably coupled with respect to said base;
d. a motor coupled to oscillate said support frame and counterweight frame in opposite directions approximately 180° apart; and
e. an elastic linkage, acting between said support frame and said counterweight frame and having an adjustment which alters the resonant frequency of said support assembly during operation of the support assembly.

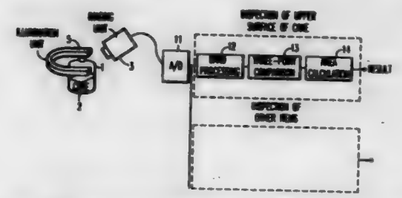
5,444,480

METHOD OF INSPECTING SOLID BODY FOR FOREIGN MATTER

Masahiko Sumita, Yokohama, Japan, assignor to Kirin Techno-System Corporation, Yokohama, Japan

Filed Oct. 22, 1993, Ser. No. 139,801
Claims priority, application Japan, Oct. 26, 1992, 4-310998
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—127 **8 Claims**

1. A method of inspecting a solid body for foreign matter thereon, comprising the steps of:
(a) producing an image signal representing an image of a solid body;
(b) setting a level of an image signal which is higher than a predetermined upper limit to an upper limit and another level of an image signal which is lower than a predetermined lower limit to a lower limit; and
(c) comparing at least three pixel points, which include a point of interest and surrounding points one on each side of the point of interest, in an inspected region of the image, and judging said point of interest as being an abnormal



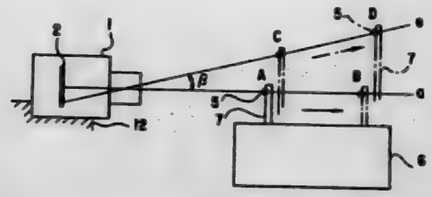
point if the point of interest is brighter or darker than said surrounding points.

5,444,481

METHOD OF CALIBRATING A CCD CAMERA

Masatoshi Ohshima, Aichi, and Yoshihide Aoki, Nagoya, both of Japan, assignors to Sanyo Machine Works, Ltd., Aichi, Japan

Continuation of Ser. No. 5,218, Jan. 15, 1993, abandoned. This application Dec. 6, 1994, Ser. No. 354,054
Int. Cl.[6] H04N *17/00, 5/232*
U.S. Cl. 348—187 **1 Claim**



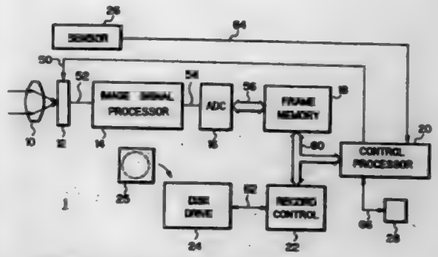
1. A method of calibrating a CCD camera comprising the steps of:
placing a spot light source, held by a positioning device, in front of a fixed CCD camera, at a first point on an optical axis of the CCD camera so that a light beam from said light source is incident upon one of a plurality of picture elements in a center of a solid sensor built in said CCD camera;
shifting said spot light source a predetermined distance along said optical axis to a second point remote from said first point while insuring that the light beam from said spot light source is incident upon said one of said plurality of picture elements;
shifting said spot light source in front of said fixed CCD camera by first, shifting to a third point which is apart from said optical axis so that the light beam from said light source is incident upon another one of said plurality of picture elements of said solid sensor, and second, shifting said spot light source to a fourth point while insuring that the light beam from said spot light source is incident upon said another one of said plurality of picture elements;
computing angles between a plurality of light beam lines, generated by shifting said spot light source in a plurality of directions from said optical axis of said CCD camera based on position data related to said positioning device; and
calibrating a corresponding relationship between each angle of the light beams incident upon said CCD camera and said plurality of picture elements built in said solid sensor.

5,444,482

DIGITAL ELECTRONIC CAMERA FOR SELECTIVELY RECORDING A FRAME OF STILL IMAGE AND MOVIE FIELDS OF IMAGE IN A RECORDING MEDIUM

Takeshi Misawa, and Takeshi Ohta, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1994, Ser. No. 233,957
Claims priority, application Japan, Apr. 28, 1993, 5-102146
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—220 **10 Claims**

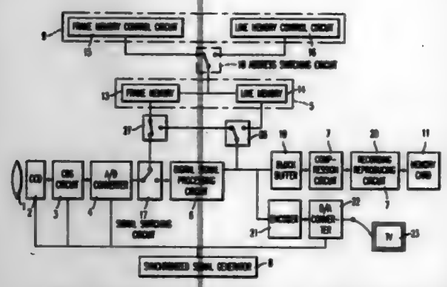


1. A digital electronic camera comprising:
imaging means for capturing an image of an object to be photographed and generating a corresponding electric signal;
signal converter means for converting the electric signal into corresponding, digital image data;
storing means for storing therein the image data:
processor means for processing the image data stored in said storing means;
recording means for recording the processed image data in a data recording medium; and
input means for informing said processor means of either a first condition or a second condition when operated, the first condition defining a first operative mode, in which a still image of an object is to be recorded in the data recording medium, the second condition defining a second operative mode, in which movie images of the object are to be recorded in the data recording medium;
said processor means comprising:
condition detector means for determining which of the first condition or the second condition is informed by said input means;
read-out means operative in response to said condition detector means for reading out the image data from said storing means;
data compressing means for compressing the image data read out from said storing means;
write-in means for providing said recording means with the compressed image data;
mode selector means operative in response to said condition detector means for selecting either the first operative mode or the second operative mode; and
drive means operative in response to said mode selector means for determining how to drive said imaging means;
said data compressing means comprising;
first compressing means operative in response to the first operative mode for compressing a frame of image data representing a still image of the object; and
second compressing means operative in response to the second operative mode for compressing at least part of a consecutive plurality of fields or at least part of a consecutive plurality of frames of image data corresponding to movie images of the object.

5,444,483
DIGITAL ELECTRONIC CAMERA APPARATUS FOR RECORDING STILL VIDEO IMAGES AND MOTION VIDEO IMAGES

Eiichi Maeda, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 202,235
Claims priority, application Japan, Feb. 25, 1993, 5-036782
Int. Cl.[6] H04N 5/76
U.S. Cl. 348—231 13 Claims



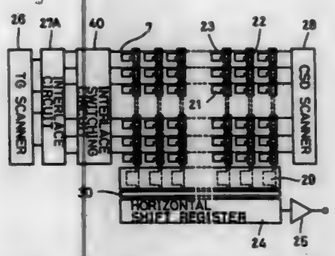
1. A digital electronic camera apparatus which records a still video and a motion video, comprising:
- image pickup means for picking up an image optically and converting the picked up optical image to a first analog signal;
- analog/digital converting means for converting the first analog signal to an output digital signal;
- digital processing means for converting the output digital signal to a luminance signal and color difference signals;
- first memory means for storing a frame of the luminance signal and the color difference signals from the digital processing means, or a frame of the digital signal output from the analog/digital converting means;
- second memory means for storing n, where n is an integer, lines of the luminance signal and the color difference signals;
- third memory means for storing a block n×n signal from the luminance signal and the color difference signals which are stored in the second memory means, or which are output from the digital processing means;
- compressing means for compressing the block n×n signal from the third memory means to generate a compressed signal; and
- recording means for recording the compressed signal from the compressing means in a recording media to generate a recorded signal.

5,444,484
SOLID-STATE IMAGING DEVICE

Naoki Yutani, and Masafumi Kimata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 979,912
Claims priority, application Japan, Apr. 13, 1992, 4-92744
Int. Cl.[6] H04N 5/335, 3/14
U.S. Cl. 348—305 4 Claims

1. A solid-state imaging charge sweep device (CSD) comprising:
- a two-dimensional array of photodetectors for generating and storing signal charges in response to incident light, said photodetectors in said array being arranged along a plurality of horizontal directions and vertical directions the horizontal directions being orthogonal to the vertical directions, each of said photodetectors including a gate for controlling transfer of signal charges from the respective photodetectors and including a plurality of vertical scanning lines, each vertical scanning line being connected to each of said gates of said photodetectors lying on one of the horizontal directions;
- a transfer gate scanner for sequentially outputting selection pulses applied to respective vertical scanning lines for reading out stored signal charges from said photodetectors connected to the respective vertical scanning line;
- a field storage mode interlace circuit receiving the selection pulses from said transfer gate scanner for converting the selection pulses to field storage mode selection pulses for operating said CSD in a field storage mode in which

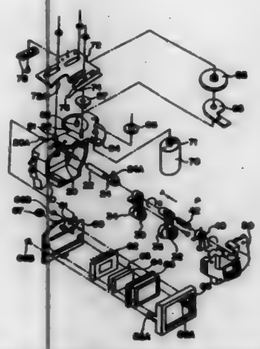


adjacent pairs of vertical scanning lines simultaneously receive selection pulses and for outputting the field storage mode pulses; and
- an interlace switching circuit receiving the field storage mode pulses from said field storage mode interlace circuit and connected to said vertical scanning lines for switching operation of said CSD between the field storage mode and a frame storage mode in which alternating pairs of said vertical scanning lines simultaneously receive selection pulses in response to a mode control signal applied to said interlace switching circuit.

5,444,485
CAMERA WITH TURRET LENS AND SOLID STATE IMAGE SENSOR

Keizo Uchioke; Katuo Asami; Takeshi Fujishiro, and Naoki Takatori, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 707,551, May 30, 1991, abandoned.
This application Feb. 11, 1993, Ser. No. 16,200
Claims priority, application Japan, Jun. 4, 1990, 2-145970; Jun. 12, 1990, 2-153001; Jun. 12, 1990, 2-153002; May 7, 1991, 3-101481
Int. Cl.[6] H04N 5/232
U.S. Cl. 348—335 5 Claims

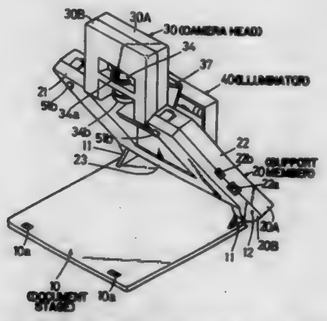


1. A camera in which lens holders respectively having a tele lens and a wide lens mounted thereto are disposed rotatably on a lens support shaft provided in a base member and the lens holders can be rotated between a tele lens using position and a wide lens using position, characterized in that a reference plate, on which a solid state image sensor is mounted, is inserted over said lens support shaft and is mounted to said base member, so that the light receiving surface of said solid state image sensor perpendicularly intersects said lens support shaft and can be positioned at the image forming positions of said tele and wide lenses, wherein respective optical axes of said tele and wide lenses are parallel to said lens support shaft, and wherein said tele and wide lenses can be positioned separately and independently from said solid state image sensor.

5,444,486
PORTABLE IMAGE INPUT EQUIPMENT

Takayoshi Mizuno, Nagoya, and Motohiko Yamamori, Kasugai, both of Japan, assignors to Elmo Co., Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 939,002, Sep. 2, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,297
Claims priority, application Japan, Mar. 30, 1992, 4-105440; Apr. 30, 1992, 4-139717
Int. Cl.[6] H04N 5/225
U.S. Cl. 348—376 8 Claims

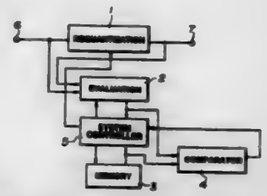


1. A portable image input equipment for sending a video signal of an object to a monitor television comprising:
- a document stage on which an object is to be put,
- a U-shaped support member which consists of a pair of arms and a base frame, said arms and said base comparting a space, said U-shaped support member pivotally mounted on the document stage in such a manner as to be movable between a folding position where the U-shaped support member is folded down to the document stage and a standing position where the U-shaped support member is raised from the document stage,
- a camera head having an optical system forming an optical image of the object and an image pickup means converting the optical image to a television video signal, said camera head pivotally mounted on the arms in such a manner as to be movable between a folding position where the camera head is folded down into the space and a standing position where the camera head is raised from the space, said camera head whose upper surface is substantially flush with that of the U-shaped support member when the camera head is folded down into the space,
- an illuminator pivotally mounted on the U-shaped support member in such a manner as to be movable between a folding position where the illuminator is folded down into the space and a standing position where the illuminator is raised from the space, said illuminator whose upper surface is substantially flush with that of the U-shaped support member when the illuminator is folded down into the space,
- locking means for locking the U-shaped support member in the folding position and in the standing position, said locking means comprising:
- locking levers pivotally mounted on ends of the arms, respectively, each of which levers having a hook at a lower end which can engage with or disengage from the document stage, said locking levers whose upper ends can be pushed to make the hooks disengage from the document stage,
- biss springs which press the locking levers in such a manner that the hooks engage with the document stage,
- a pair of link mechanisms each of which consists of a first link lever and a second link lever, said first link lever pivotally mounted to the document stage, said second link lever pivotally mounted to the arms and pivotally coupled to the first link lever, said link mechanisms each of which is folded down when the U-shaped support member is in the folding position and is unfolded when the U-shaped support member is in the standing position,
- a pair of stopper means for limiting pivotal movement of the first link lever and the second link lever to hold the link mechanisms in the unfolding state in which each of the couplings of the first lever and the second lever shifts backward beyond a straight line connecting a pivot of the first link lever and that of the second link lever, and
- a pair of rods interconnecting the link levers with the link mechanisms in such a manner that in the unfolded state of the link mechanism, the couplings of the first link lever and the second link lever shift forward beyond the straight line when the locking levers are pushed,
- whereby the document stage is covered by the U-shaped support member, the camera head and illuminator when the camera head and the illuminator are folded down into the space and the U-shaped support member is folded down to the document stage.

5,444,487
ADAPTIVE DYNAMIC RANGE ENCODING METHOD AND APPARATUS

Tetsujiro Kondo, and Kunio Kawaguchi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,273
Claims priority, application Japan, Dec. 10, 1992, 4-330593
Int. Cl.[6] H04N 7/40
U.S. Cl. 348—405 4 Claims



1. An adaptive dynamic range encoding device for quantized picture information comprising:
- re-quantization means, for re-quantizing the quantized picture information supplied thereto on the basis of blocks each consisting of a pre-set number of pixels for forming re-quantized output picture information;
- evaluation means for detecting changes in a spatial direction of a picture based on the quantized picture information supplied thereto and the re-quantized output picture information from said re-quantization means and outputting detected changes as evaluation information;
- memory means for storing the evaluation information from said evaluation means;
- comparator means for comparing new evaluation information from said evaluation means and temporally previous evaluation information read from said memory means to form output comparison information; and

control means for controlling said memory means for storing therein a smaller value between the output comparison information supplied from said comparator means and the temporally previous evaluation information read from said memory means, said control means also controlling said re-quantization means to perform re-quantization of the quantized picture information for each block being re-quantized based on the evaluation information stored in said memory means when an arithmetic and logical operation of evaluation for each block is completed in said evaluation means.

5,444,488

METHOD AND APPARATUS FOR CODING DIGITAL DATA USING VECTOR QUANTIZING TECHNIQUES

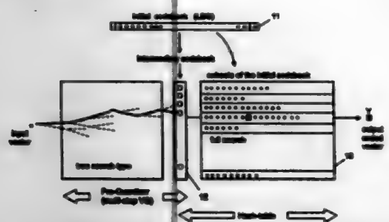
Eric Goubault, Paris; Emmanuel Lancon, Nice; Jean Menez, Cagnes-Sur-Mer, and Catherine Raimondo, Villeneuve Loubet, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1993, Ser. No. 77,009

Claims priority, application European Pat. Off., Jun. 30, 1992, 92480097

Int. Cl.[6] H04N 7/28

U.S. Cl. 348—414 **9 Claims**



1. A computer implemented method for encoding digital signals using vector quantization wherein the input digital signals are grouped into input vectors of N digital signal components that are compared to a limited number of vectors of an initial codebook, representative of the digital signal to be coded, the vector quantization comprising the following steps:

prequantizing said input digital signals via execution of a computer program for multi-step vector quantization (VQ) of the digital signal input vectors to generate an index pointer in a computer memory stored Hash-table which points to a subset of vectors of said initial codebook;

full searching with said subset of vectors of said initial codebook to obtain a final coded vector that most closely matches said input vector.

5,444,489

VECTOR QUANTIZATION VIDEO ENCODER USING HIERARCHICAL CACHE MEMORY SCHEME

Kwan K. Truong, Norcross, and Russell M. Mersereau, Atlanta, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Feb. 11, 1993, Ser. No. 16,813

Int. Cl.[6] H04N 7/30, 7/32

U.S. Cl. 348—422 **46 Claims**

1. A method for efficiently compressing source image blocks from a source image, comprising the steps of:

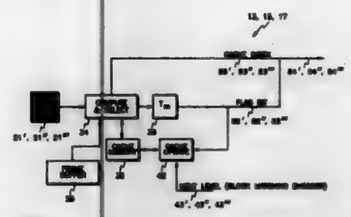
(a) storing cache image blocks as cache code vectors in a cache memory;

(b) performing a comparison between a source image block and a cache code vector;

(c) if said source image block matches said code vector, identifying a cache index which corresponds to said matched code vector and which is smaller in data size than said matched source image block;

(d) using said cache index to encode said code vector by communicating said cache index as a representation of said code vector so that said source image block is effectively compressed to said cache index; and

(e) updating said cache memory based upon a cache stack replacement algorithm and said comparison by the following steps:



(1) when said source image block matches said code vector, reordering said cache code vectors; and

(2) when said source image block fails to match said code vector, generating a new code vector corresponding to said source image block and adding said new code vector to said cache memory.

5,444,490

TELEVISION SYSTEM FOR TRANSMITTING PICTURES IN A DIGITAL FORM

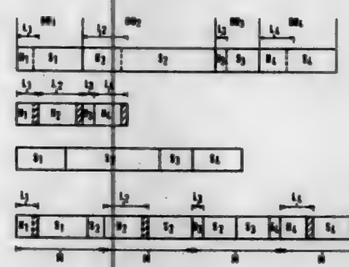
Peter H. N. de With, Stephanus J. J. Nijssen; Robert A. Broudijk, and Wilhelmus H. A. Bruls, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1993, Ser. No. 84,834

Claims priority, application European Pat. Off., Jul. 7, 1992, 92202057

Int. Cl.[6] H04N 7/52

U.S. Cl. 348—423 **10 Claims**



1. A coding station for coding a picture signal as a digital data stream comprising a series of data blocks with code words of variable length, and for transmitting the digital data stream, the coding station comprising:

means for dividing each data block into a main block of a variable length comprising selected code words and a sub-block comprising other code words;

means for transmitting a series of one or more main blocks at first bit positions of the digital data stream, and for transmitting, at second bit positions of the digital data stream, a length code which is indicative of the length of each main block;

means for distributing the sub-blocks over third bit positions of the digital data stream.

5,444,491

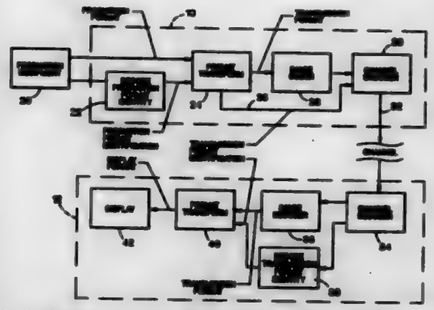
TELEVISION SYSTEM WITH MULTIPLE TRANSMISSION FORMATS

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 23,802, Feb. 26, 1993, abandoned. This application Dec. 6, 1994, Ser. No. 350,495

Int. Cl.[6] H04N 7/01

U.S. Cl. 348—441 **93 Claims**



1. A television receiver for receiving and decoding a transmitted television signal, wherein the television signal comprises a succession of encoded image frames encoded in a plurality of different transmission formats selected from a set of transmission formats, the set comprising at least two transmission formats that differ from each other in at least two non-program-content characteristics;

wherein the receiver comprises:

means for receiving format identification information transmitted with the encoded image frames identifying the transmission format of the received frames;

means for decoding the identification information to determine the transmission format of the encoded image frames being received, wherein the identification information and transmission formats can change during receipt of the television signal; and

means for using the identification information to decode the encoded image frames for at least some of the transmission formats.

5,444,492

PROCESSING CIRCUIT FOR VIDEO SIGNALS OF TWO DIFFERENT ASPECT RATIOS

Taku Kihara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 21,678, Feb. 24, 1993. This application Aug. 5, 1994, Ser. No. 286,809

Claims priority, application Japan, Mar. 6, 1992, 4-049721; Mar. 6, 1992, 4-049722; Mar. 6, 1992, 4-049723

Int. Cl.[6] H04N 5/45, 5/265

U.S. Cl. 348—445 **12 Claims**

1. Video camera apparatus for selectively outputting a video signal of a first aspect ratio and a video signal of a second aspect ratio, comprising;

imaging means for producing a video signal of said first aspect ratio;

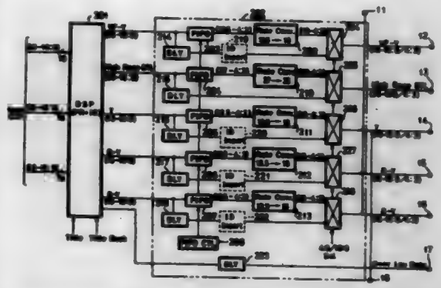
converting means for converting the first aspect ratio video signal from said imaging means into a video signal of said second aspect ratio;

identifier adding means for adding an aspect ratio identification signal, indicative of the aspect ratio, to one of the video signals;

mark adding means for adding to one of the video signals a mark signal indicative of a range in which the second aspect ratio video signal is displayed relative to the first aspect ratio video signal;

a display for displaying the one of the video signals with the added mark signal; and

output means for selectively outputting said first and second aspect ratio video signals, wherein said output means includes time-sharing multiplexing means receiving said



video signals of said first and second aspect ratios and producing respective first and second multiplexed signals simultaneously therefrom fed to a switching circuit that selectively outputs one of said first and second multiplexed signals of said respective first and second aspect ratios to said display.

5,444,493

METHOD AND APPARATUS FOR PROVIDING INTRA-FIELD INTERPOLATION OF VIDEO SIGNALS WITH ADAPTIVE WEIGHTING BASED ON GRADIENTS OF TEMPORALLY ADJACENT FIELDS

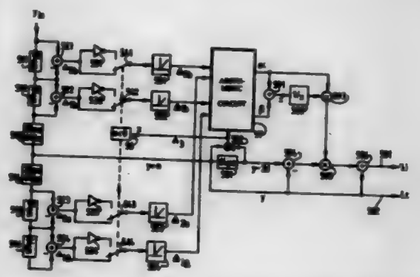
Werner Bois, Strasbourg, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Jun. 22, 1993, Ser. No. 81,414

Claims priority, application European Pat. Off., Jun. 22, 1992, 92401745

Int. Cl.[6] H04N 7/01

U.S. Cl. 348—448 **7 Claims**



1. A method for adaptive interpolation of intermediate lines in a current field, comprising:

calculating a current pixel value of a current intermediate video line to be interpolated from respective values of only the vertically adjacent pixels on either side of the adjacent lines of the current field; and

adaptively weighting the values of said vertically adjacent pixels according to at least two gradients of horizontally respectively located pixel values of at least the temporally preceeding adjacent field for calculating said current pixel value;

calculating the lower of said two gradients from the difference between the value of the pixel having the vertical

position of said current pixel and the value of the vertically lower adjacent original pixel; and

calculating the upper of said two gradients from the difference between the value of the vertically upper adjacent original pixel and the value of the pixel having the vertical position of said current pixel.

5,444,494

VIDEO SIGNAL SYSTEM CONVERTING CIRCUIT FOR PROCESSING VIDEO SIGNAL HAVING INTERLACED SCANNING LINES TO PRODUCE VIDEO SIGNAL HAVING SEQUENTIAL SCANNING LINES

Yukinori Yamamoto; Masahiro Araya; Hiroshi Iwamura, and Takehiko Shioda, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

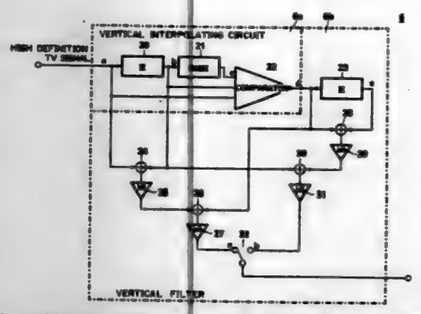
Division of Ser. No. 721,867, Jun. 26, 1991, Pat. No. 5,305,112. This application Dec. 27, 1993, Ser. No. 173,887

Claims priority, application Japan, Jun. 29, 1990, 2-169841; Jul. 9, 1990, 2-179581; Jul. 16, 1990, 2-185349; Jul. 16, 1990, 2-185350

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—448 **2 Claims**



1. A video signal system converting circuit, comprising:

a vertical interpolating circuit for interpolating picture elements between adjacent scanning lines of a current field of an interlaced scanning video signal by the use of a median filter, said median filter producing an interpolated picture element having a median value of color density of a first picture element in a line of said current field, a second picture element in a preceding line corresponding to said first picture element of said current field, and a third picture element in a scanning line of a preceding field positioned between said current and preceding lines; and

a vertical filter circuit for producing a weighted sum of said interpolated picture element and picture elements in said adjacent scanning lines, said vertical filter circuit outputting said weighted sum as a new picture element of a sequential scanning video signal.

5,444,495

MUSE-NTSC CONVERTER HAVING TWO OSCILLATORS

Akiko Takahama; Masahiko Nakamura, both of Itami; Hiroyuki Nakayama, Nagaokakyo; Eiji Arita, Nagaokakyo, and Yoichi Azamoto, Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,401

Claims priority, application Japan, Aug. 23, 1993, 5-207790

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—458 **15 Claims**

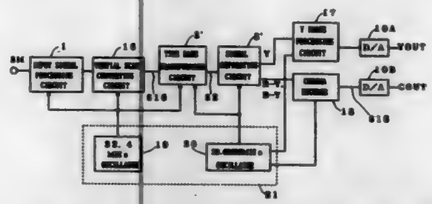
1. A MUSE-NTSC converter comprising:

first oscillating means for producing a first oscillation signal of a first frequency working as a system clock for a MUSE mode signal;

second oscillating means for producing a second oscillation signal of a second frequency working as a system clock for an NTSC mode signal, said second frequency being se. to an integral multiple of a frequency of a subcarrier of said NTSC mode signal;

time-base transforming means receiving said MUSE mode signal and said first and second oscillation signals for transforming said MUSE mode signal on a time-base from said first frequency to said second frequency based upon said first and second oscillation signals to output said NTSC mode signal;

signal separating means receiving said second oscillation signal and said NTSC mode signal for signal separation



processing depending upon features of said NTSC mode and separating said NTSC mode signal into a luminance signal and a color difference signal;

luminance signal processing means receiving said second oscillation signal and said luminance signal for processing said luminance signal based upon said second oscillation signal;

chroma encoding means receiving said second oscillation signal and said color difference signal for processing said color difference signal based upon said second oscillation signal, producing said subcarrier from said second oscillation signal, and using said subcarrier to modulate said color difference signal; and

a PLL circuit for synchronizing said first and second oscillation signals in phase.

5,444,496

METHOD OF SEPARATING A FOREGROUND PICTURE SIGNAL FROM A MIXED PICTURE SIGNAL, AND ARRANGEMENT FOR PREFORMING SAID METHOD

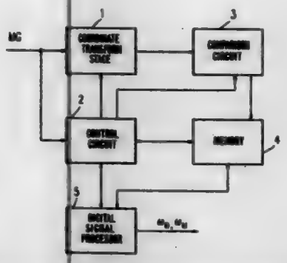
Rainer Gehrmann, Aisbach-Hähnlein, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1994, Ser. No. 190,429

Claims priority, application Germany, Feb. 5, 1993, 43 03 348.2

Int. Cl.[6] H04N *9/75*

U.S. Cl. 348—587 **5 Claims**



1. A method of separating a foreground picture signal FG from a mixed picture signal MG which has a key color KC as

well as transition colors to the key color in key regions, the foreground picture signal being removed from the key color and the transition colors in accordance with the equation

$$FG = MG - k * KC$$

in which k is a control signal which has a value of about 1 in the region of the key color KC and a value of about 0 at transition boundaries, the transition boundaries in a C_b/C_r color plane being constituted by two straight lines through the origin of the C_b/C_r color plane which, relative to a vector D_{KC} of the key color extending from the origin of the C_b/C_r color plane to the color location of the key color KC, are arranged at angles ω_o and ω_u, respectively, characterized in that said method comprises the steps:

filtering, from the mixed picture signal, pixels having color locations in the C_b/C_r color plane which are spaced apart by a distance which is smaller than a predetermined distance from color locations of one or more pixels adjoining one another with respect to time or location and having color locations in the C_b/C_r color plane which are arranged outside a predetermined angular range around the vector D_{KC};

determining accumulations of the filtered pixels; and

choosing the angles ω_o and ω_u of the two straight lines through the origin of the C_b/C_r color plane such that the accumulations closest to the key color KC in the C_b/C_r color plane are not located in the region between the key color KC and the transition boundaries constituted by the straight lines through the origin of the C_b/C_r color plane.

5,444,497

APPARATUS AND METHOD OF TRANSFERRING VIDEO DATA OF A MOVING PICTURE

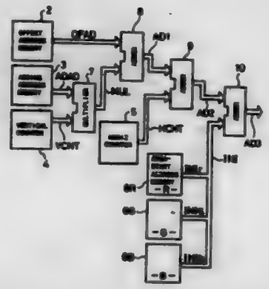
Kazutoshi Takeuchi, Tokyo-to, Japan, assignor to Seiko Epson Corporation, Tokyo-to, Japan

Filed Jan. 24, 1993, Ser. No. 80,501

Claims priority, application Japan, Jan. 24, 1992, 4-166031; Mar. 25, 1993, 5-066833; Jan. 14, 1993, 5-168744

Int. Cl.[6] G06F *13/28*

U.S. Cl. 348—719 **16 Claims**



1. An apparatus, for use in a computer system having a processor for performing a logical operation and a video memory controlled by said processor for storing video data, and for transferring moving-picture video data representing a moving picture to a desirable memory area in said video memory, comprising:

a first memory for storing an offset address indicating a start position of said desirable memory area in said video memory;

a second memory for storing an adding address indicating a number of bytes of one scanning line in said video memory;

first operation means for calculating a vertical address as a function of vertical and horizontal synchronizing signals synchronous with said moving-picture video data, said vertical address being equal to a value of said adding address multiplied by a scanning line number indicating an ordinal number of a scanning line in said moving picture, said scanning line number being specified by a number of pulses of said horizontal synchronizing signal given to said first operation means;

a horizontal counter for generating a horizontal address indicating a difference of an address between an initial position of each scanning line in said moving picture and each pixel on said each scanning line;

second operation means for adding said vertical address, said horizontal address, and said offset address to obtain a transfer address indicating an address in said video memory corresponding to a position of said each pixel on said each scanning line in said moving picture, and outputting said transfer address onto an address bus connected to said video memory; and

data output means for outputting said moving picture video data to be transferred to said video memory according to said transfer address, onto a data bus connected with said video memory.

5,444,498

APPARATUS AND METHOD FOR EXTENDING PULLING RANGE OF AUTOMATIC FINE TUNING OF TELEVISION RECEIVER

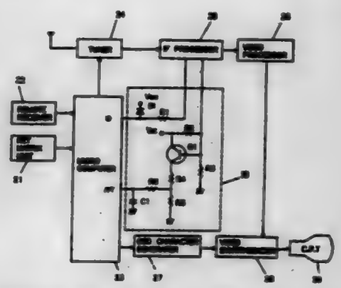
Gyoung S. Choo, and Deuk C. Kang, both of Kyungsangbook, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 7, 1994, Ser. No. 254,965

Claims priority, application Rep. of Korea, Jun. 8, 1993, 10353

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—733 **18 Claims**



1. An apparatus for extending a pulling range of automatic fine tuning of a television receiver, comprising:

tuning means for tuning a television broadcasting signal received through an antenna to a specified channel corresponding to an external tuning voltage when a channel switching operation is perforated or the television receiver is powered on and outputting an intermediate frequency signal of the tuned television broadcasting signal;

intermediate frequency processing means for processing the intermediate frequency signal of the tuned television broadcasting signal from said tuning means to output an automatic fine tuning voltage and a synchronous signal;

buffering means for buffering the automatic fine tuning voltage and the synchronous signal from said intermediate frequency processing means; and

control means for decreasing the tuning voltage to said tuning means until the automatic fine tuning voltage buffered by said buffering means becomes higher than a first predetermined reference voltage and controlling the tuning voltage to said tuning means if the automatic tine tuning voltage buffered by said buffering means becomes higher than the first predetermined reference voltage, to maintain the automatic fine tuning voltage buffered by

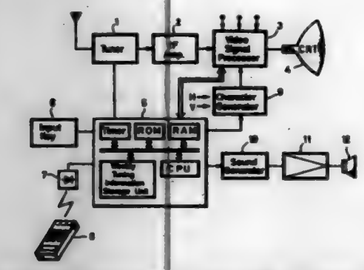
said buffering means within a desired range between second and third predetermined reference voltages.

5,444,499

AUDIO VIDEO APPARATUS WITH INTELLIGENCE FOR LEARNING A HISTORY OF USER CONTROL

Mitsunaga Saitoh, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,799
Claims priority, application Japan, Jan. 8, 1993, 5-017940
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—734 **13 Claims**



1. An audio video apparatus with intelligence for learning a history of user control of the audio video apparatus, comprising:

a user control unit actuated by a user for producing signals representing user-selected display functions including video channel selection and audio volume for the apparatus;

control means for receiving the signals produced by the user control unit and for controlling the display functions of the apparatus;

memory means for successively memorizing the user-selected display functions represented in the signals received by the control means each time the user control unit is actuated;

a timer for timing a predetermined unit of time;

calculating means receiving memorized data from the memory means and connected to said timer for compiling the data to form history data of user-selected display functions over said predetermined unit of time, said history data being fed to said control means for generating a control signal therefrom; and

signal generating means for generating an advisory signal for getting the attention of the user in response to said control signal from the control means.

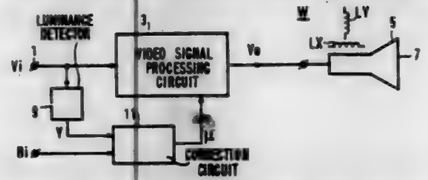
5,444,500

DISPLAY DEVICE INCLUDING A CORRECTION CIRCUIT, AND CORRECTION CIRCUIT FOR USE IN A DISPLAY DEVICE

Hendrik Ten Pierick, Eindhoven, and Jan G. Prummel, Zierikzee, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1993, Ser. No. 153,383
Claims priority, application European Pat. Off., Nov. 17, 1992, 92203512
Int. Cl.[6] H04N *3/32, 5/59*
U.S. Cl. 348—807 **9 Claims**

1. A display device having an input for receiving an input video signal, a video signal processing circuit for processing the input video signal to an output video signal, said video signal processing circuit having an output for applying the output video signal to a display tube of the display device, a deflection unit for deflecting at least one video signal-dependent beam current generated in the display tube, and a correction circuit for correcting the video signal to be displayed, characterized in that the correction circuit has a first input for receiving a signal conveying display tube characteristic data, and a second input for receiving a signal dependent on the input video signal, said correction circuit generating, with



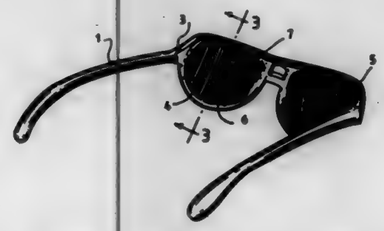
reference to the signals received at said first and second inputs, a correction signal to be supplied from an output of the correction circuit which is coupled to a correction input of the video signal processing circuit.

5,444,501

GOLF STABILIZER FOR LESS DOMINANT EYE

Joanne Aloi, and Joseph Aloi, both of 7 Mangin Rd., Commack, N.Y. 11725

Continuation of Ser. No. 988,100, Dec. 9, 1992, abandoned. This application Apr. 1, 1994, Ser. No. 222,175
Int. Cl.[6] G02C *7/10, 7/16, 9/00*
U.S. Cl. 351—44 **15 Claims**



1. A golf sighting device to be worn by a golfer to aid in sighting a golf ball during a swing, comprising:

a spectacle including a pair of tinted lenses, wherein said pair of tinted lenses includes a right lens and a left lens, said sighting device consisting of only one circular aperture located in one of said lenses, positioned to the side and below the optical center of one of said pair of lenses, and the other of said pair of lenses being substantially tinted to substantially obscure the vision of the golfer's dominant eye.

5,444,502

EYEGLASS FRAME HAVING ADJUSTABLE RIM RETENTION STRUCTURE

Isao Hyoi, Fukui, Japan, assignor to Murai Co., Ltd., Fukui, Japan

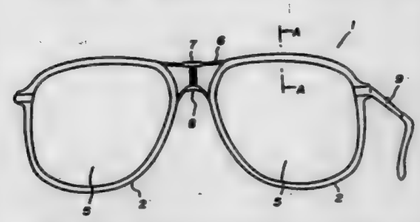
PCT Filed Nov. 18, 1988, Ser. No. 663,827
PCT No. PCT/JP88/01174, § 371 Date Jul. 17, 1990, § 102(e) Date Jul. 17, 1990, PCT Pub. No. WO90/05932, PCT Pub. Date May 31, 1990
Filed Jul. 17, 1990, Ser. No. 663,827
Int. Cl.[6] G02C *1/04*
U.S. Cl. 351—107 **3 Claims**

1. An eyeglass frame comprising:

a pair of oppositely spaced rim portions each adapted to receive an eyeglass lens;

a pair of mutually spaced, opposed wire portions extending between and interconnecting said rim portions; and

a tightening portion interconnecting said opposed wire portions, said tightening portion comprising a pair of engagement members each disposed in the middle of one of said opposed wires, threaded portions arranged to extend



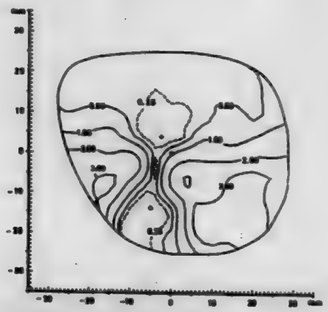
toward each other from said respective engagement members and an adjustable nut securing said threaded portions.

5,444,503

SPECTACLE LENS

Gerhard Kelch, Aalen; Hans Lahres, and Helmut Wietschorke, both of Aalen-Wasseralfingen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Mar. 25, 1993, Ser. No. 36,821
Int. Cl.[6] G02C *7/06*
U.S. Cl. 351—169 **20 Claims**



1. A spectacle lens subject to use conditions particular to an individual for whom the spectacle lens is intended, said use conditions including dioptric power and said spectacle lens comprising:

a lens body having first and second surfaces;

said first surface being a multifocal surface and said second surface being a nonsymmetrical prescription surface;

said lens body having a far reference point and a near reference point and having pregiven dioptric powers achieved in said far and near reference points, respectively;

said nonsymmetrical prescription surface being a generally aspheric surface without point and axis symmetry; and,

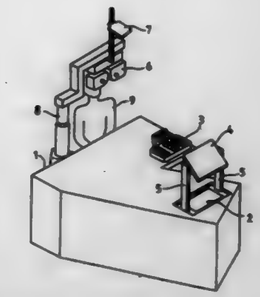
said nonsymmetrical prescription surface having a geometry determined by considering from said individual use conditions at least the dioptric power in a plurality of specific elemental areas of said nonsymmetrical prescription surface in addition to said reference points to correct imaging errors of said lens particular to said individual.

5,444,504

OPTOMETRIC APPARATUS

Toshiro Kobayashi, Anjo; Kazuhiro Yoshimura, Toyohashi; Akihiro Hayashi, Toyokawa; Yoshinobu Hozoi, Gamagori, and Nobuyuki Yano, Okazaki, all of Japan, assignors to Nidek Co., Ltd., Japan

Filed Feb. 16, 1993, Ser. No. 18,033
Claims priority, application Japan, Feb. 21, 1992, 4-072313; Sep. 30, 1992, 4-287002
Int. Cl.[6] A61B *3/02*
U.S. Cl. 351—237 **14 Claims**



1. An optometric apparatus comprising:

an operating table including a first table extending in right and left directions with respect to an examinee and a second table intersecting the first table at an angle, the intersecting angle between the first and second tables being an acute angle;

a vision test chart displaying device provided internally within said operating table;

an optical group, including a plurality of reflection-type optical elements, disposed within said operating table, wherein the optical group repeatedly reflects an optical image of the vision test chart provided from said vision test chart displaying device within said operating table, and wherein an optical path of the optical group is retained within the second table in a longitudinal direction thereof, along which the optical image is delivered;

a first deflecting optical element for reflecting the optical image of the vision test chart reflected by said reflection-type optical elements of the optical group outside said operating table in a first direction;

a second deflecting optical element for reflecting the optical image of the vision test chart reflected by said first deflecting optical element in a second direction toward the examinee's eyes;

whereby a line of vision of the examinee in looking at the optical image reflected by the second deflecting optical element obliquely intersects a plane passing through the optical path defined by the optical group; and

wherein said second deflecting optical element is disposed in a position not less than 70 cm from the examinee's eyes.

5,444,505

METHOD FOR CONTROLLING PROJECTION OF OPTICAL LAYUP TEMPLATE

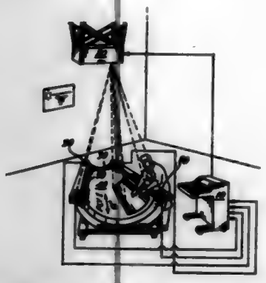
John W. Dorsey-Palmateer, Gig Harbor, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 951,603, Sep. 28, 1992, Pat. No. 5,341,183. This application Mar. 18, 1994, Ser. No. 210,859
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—28 **2 Claims**

1. A method of positioning a plurality of reference sensors on a target object for providing positional data, each of said reference sensors being capable of detecting the centroid of

impinging projector light; said method comprising in combination the steps of:

sequentially pointing a laser projector to each of the aforementioned reference sensor positions and recording the horizontal and vertical angles for each of the aforementioned reference sensors;



calculating the position and orientation of the projector relative to said plurality of reference sensors utilizing said horizontal and vertical angles;

calculating the horizontal and vertical angles for each point of a three-dimensional data set having the same coordinate system as the plurality of reference sensors; and, then

sequentially pointing the projector to each of the calculated positions for the reference data set.

5,444,506

PROJECTION ORIGINAL FILM FEEDING APPARATUS

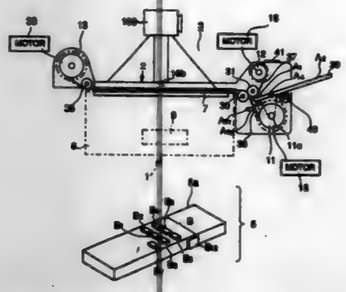
Noriaki Nakazawa; Hideaki Furukawa, both of Yokohama; Kenji Kobayashi, Tokyo, and Hiromichi Tsujino, Yokohama, all of Japan, assignors to Canon Aptex Inc., Ibaraki and Canon Kabushiki Kaisha, Tokyo, both of Japan

Filed Apr. 19, 1993, Ser. No. 47,489

Claims priority, application Japan, Apr. 20, 1992, 4-128212; Apr. 20, 1992, 4-128213; Apr. 20, 1992, 4-128214; Apr. 20, 1992, 4-128215; Apr. 20, 1992, 4-128216; Apr. 20, 1992, 4-128217

Int. Cl.[6] G03B *23/00*

U.S. Cl. 353—104 **24 Claims**



5. A projection original film feeding apparatus, comprising:

feeding means for feeding an original film to a projecting position, said feeding means having a belt-like member for conveying the original film and said belt-like member having marks formed at predetermined intervals in a feeding direction, the marks being detected to determine the feeding amount of the original film;

size means for outputting the size information of the original film;

supply means for supplying the original film to said moving belt-like member; and

control means for varying an operation timing of said supply means to conform with the size information from said size means,

wherein the original film is set at a proper location with respect to the marks for each size irrespective of the size of the original film.

5,444,507

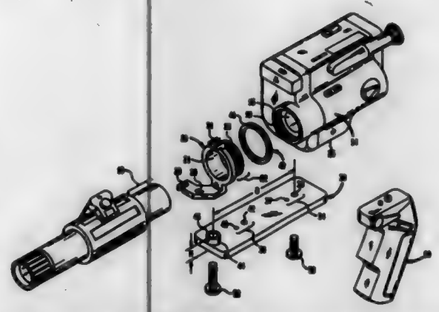
DEVICE FOR COUPLING NIGHT VISION ASSEMBLY TO A VIDEO CAMCORDER

Gary L. Palmer, Bellevue, Wash., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 22, 1994, Ser. No. 216,134

Int. Cl.[6] G03B *11/00, 29/00*

U.S. Cl. 354—82 **21 Claims**



1. An apparatus for joining a night vision device to a camera device wherein the night vision device has an ocular lens assembly and the camera device has an objective lens assembly, comprising:

a mounting plate;

first attachment means for attaching the camera device to said mounting plate, wherein said mounting plate supports the camera device in a first predetermined position;

second attachment means for attaching the night vision device to said mounting plate, wherein said mounting plate supports the night vision device at a second predetermined position whereby the ocular lens assembly of the night vision device is optically aligned with the objective lens assembly of the camera device; and

coupling means extending from said mounting plate for directly coupling the night vision device proximate the ocular lens assembly to the camera device proximate the objective lens assembly.

5,444,508

LENS-FITTED PHOTOGRAPHIC FILM UNIT FOR TAKING PLURAL SIMULTANEOUS EXPOSURES

Kazuo Okuyama, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 194,386, Feb. 10, 1994, Pat. No. 5,400,097. This application Dec. 9, 1994, Ser. No. 354,894

Claims priority, application Japan, Feb. 10, 1993, 5-22884; Mar. 1, 1993, 5-40197

Int. Cl.[6] G03B *9/38*

U.S. Cl. 354—120 **12 Claims**

1. A lens-fitted photographic film unit pre-loaded with photographic film, provided with first and second exposure chambers, and adapted to create first and second imaging frames simultaneously on said film, said film unit comprising:

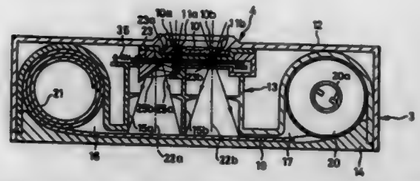
first and second stationary openings formed respectively in front of said first and second exposure chambers for introducing light into said first and second exposure chambers;

a first taking lens associated with said first stationary opening and having a first focal length;

a second taking lens associated with said second stationary opening and having a second focal length longer than said first focal length;

externally operable shutter release means;

a single shutter plate disposed to be moved in response to operation of said release means; and



first and second movable openings formed in said shutter plate for registry with said first and second stationary openings, and adapted, when said shutter plate is moved, to open or close said stationary openings so as to expose said film, said second movable opening being larger than said first movable opening.

5,444,509

CAMERA SHAKE COMPENSATING CAMERA

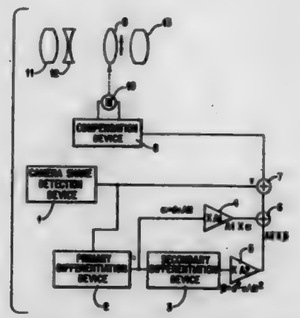
Sueyuki Ohishi, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 234,005

Claims priority, application Japan, May 6, 1993, 5-105734

Int. Cl.[6] G03B *17/00, 7/08*

U.S. Cl. 354—202 **31 Claims**



1. A camera shake compensating camera comprising:

a camera shake detection mechanism that detects an amount of camera shake at a first time, which is when the camera shake occurs, and outputs a camera shake amount at a second time wherein the difference between the first time and the second time defines a delay time between when the camera shake occurs and when the detected camera shake is output;

a differentiation mechanism that time-differentiates the detected amount of camera shake and outputs an adjusted amount of camera shake, wherein the differentiation mechanism comprises a primary differentiator that time-differentiates the amount of camera shake output from the camera shake detection mechanism and outputs a first differentiated amount, and a secondary differentiation mechanism that time-differentiates the output of the primary differentiation mechanism and outputs a second differentiated amount;

a compensation determining mechanism that determines a compensation amount for the detected camera shake amount based on the adjusted amount of camera shake and the time delay; and

a compensation mechanism that compensates for the amount of camera shake based upon on the determined compensation amount that accommodates the delay time.

5,444,510

AUTOMATIC FOCUSING CAMERA WITH CONTROL OF FOCUSING OPTICAL SYSTEM POSITION AND DRIVING POWER SOURCE VELOCITY

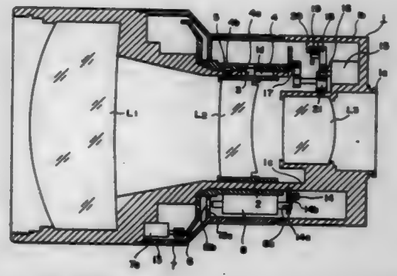
Hiroshi Okano, Tokyo; Yoshiharu Shiokawa, Chiba; Hiroshi Tanioka, Kashiwa, and Shozo Yamano, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 98,361, May 10, 1993, abandoned, which is a division of Ser. No. 782,297, Oct. 24, 1991, Pat. No. 5,250,976. This application Jul. 7, 1994, Ser. No. 271,245

Claims priority, application Japan, Oct. 30, 1990, 2-290904; Dec. 25, 1990, 2-414275

Int. Cl.[6] G03B *13/36*

U.S. Cl. 354—400 **10 Claims**



1. An automatic focusing camera system provided with a lens barrel in which a focusing optical system is incorporated, and a camera body, comprising:

focus detecting means incorporated in said camera body, said focus detecting means detecting the focusing condition of an objective image to output a focus detecting signal;

driving means incorporated in said camera body, said driving means having a driving power source and a first transmission member for transmitting the driving power of said driving power source to said focusing optical system;

first signal generating means incorporated in said lens barrel, said first signal generating means being provided at the final stage of a second transmission member coupled to said transmission member to generate a first driving signal in response to the driving of said focusing optical system;

first terminal means provided in said lens barrel, said first terminal means transmitting said first driving signal to said camera body on real time;

second terminal means provided in said camera body, said second terminal means receiving said first driving signal on real time;

calculating means incorporated in said camera body, said calculating means calculating the driving information of said focusing optical system on the basis of said focus detecting signal and said first driving signal; second signal generating means incorporated in said camera body, said second signal generating means being provided at the initial stage of said first transmission member to generate a second driving signal in response to the driving of said driving power source; and

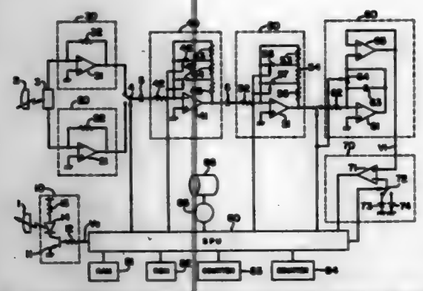
driving control means incorporated in said camera body, said driving control means controlling the position of said focusing optical system on the basis of said first driving signal and said driving information and controlling the velocity of said driving power source on the basis of said second driving signal.

5,444,511

DISTANCE MEASURING DEVICE FOR CAMERA

Yoichi Seki; Hiroyuki Saito; Akira Ito; Isamu Ishii, and Yoshiyuki Iwamatsu, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Oct. 29, 1993, Ser. No. 144,827
Claims priority, application Japan, Oct. 29, 1992, 4-291342; Dec. 28, 1992, 4-348385; Feb. 1, 1993, 5-014646; Oct. 8, 1993, 5-253166
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—403 14 Claims



1. A distance measuring device comprising: light projecting means for projecting light toward an object; light receiving means for receiving light projected from the light projecting means and reflected from the object and for converting the reflected light into two output currents; a first current-voltage converting circuit for converting one of the output currents of the light receiving means into a first output voltage; a second current-voltage converting circuit for converting the other of the output currents of the light receiving means into a second output voltage; a selecting circuit for selecting one of the first and second output voltages from the current-voltage converting circuits and for outputting the selected output voltage; a variable-gain amplifying circuit for amplifying the selected output voltage and for producing a corresponding amplified output voltage; an integrating circuit for integrating the amplified output voltage and for producing an integrated output voltage; reference voltage generating means for generating first and second reference voltages having different levels; comparing means for comparing the integrated output voltage with one of the first and second reference voltages generated by the reference voltage generating means and for producing a corresponding comparison output signal; gain selecting means for selecting a gain of the variable-gain amplifying circuit in accordance with the comparison output signal of the comparing means; and calculating means for calculating a distance to the object in accordance with the duration of time integration is performed by the integrating circuit until the integrated output voltage exceeds one of the reference voltages generated by the reference voltage generating means.

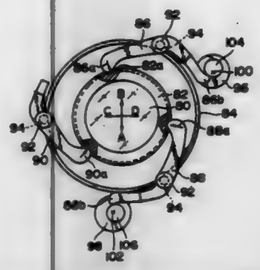
5,444,512

CAMERA VIBRATION CORRECTION APPARATUS

Masaaki Morizumi, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 27,761, Mar. 8, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,452
Claims priority, application Japan, Mar. 16, 1992, 4-058322
Int. Cl.[6] G03B *7/08*
U.S. Cl. 354—430 8 Claims

1. A camera vibration correction apparatus, comprising:
at least one photographic lens for focusing an image on an image-formation surface;
at least one correcting lens for correcting blurring of the image;
a camera vibration detector;
a lens frame member holding said at least one correcting lens, said frame member being formed in a circumferential direction of an outer peripheral surface of said lens frame member with a groove;
first, second and third driving members pivotably secured to a main body of the camera and having forward end portions thereof urged and abutted against the groove of said lens frame member and equidistantly spaced around the outer peripheral surface to hold said lens frame member; and



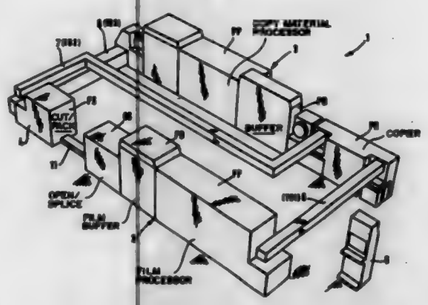
first and second driving means connected to said first and second driving members for pivoting said first and second driving members on the basis of information from said camera vibration detector to move said lens frame member, so that said at least one correcting lens is moved by a value negating a movement of the image caused by the camera vibration.

5,444,513

PROCESS FOR OPERATING A PHOTOGRAPHIC PROCESSING APPARATUS AND AN APPARATUS FOR PHOTOGRAPHIC PROCESSING

Willi Stiheli, Unterseggenthal, and Rudolf Tschannen, Regensdorf, both of Switzerland, assignors to Gretag Imaging AG, Regensdorf, Switzerland

Continuation of Ser. No. 81,201, Jun. 25, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 364,399
Claims priority, application Switzerland, Jun. 26, 1992, 2023/92
Int. Cl.[6] G03D *3/13*
U.S. Cl. 355—27 28 Claims



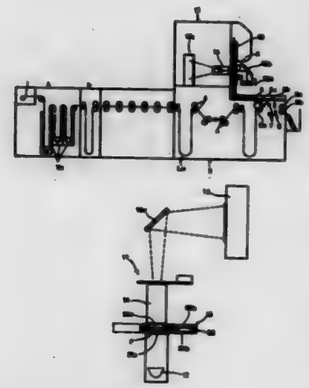
1. A process for operating a photographic processing apparatus having individual processing modules connected with one another for processing exposed photographic film material and/or photographic copy material, each of said modules comprising at least one processing station through which exposed film material and/or photographic copy material passes in succession, comprising the steps of:
controlling throughput and processing speed of the film material and/or the copy material hierarchically using two levels, said step of controlling further including the steps of:
locally controlling the processing speed of the film material or the copy material in a given preceding processing station with a local control, the speed being determined by a processing station through which film material or copy material must pass at a predetermined constant speed, and
performing central control functions and monitoring the functioning of the individual processing modules to optimize the throughput of film material and/or copy material through the photographic processing apparatus, the processing modules being connected by signal lines to a central control unit.

5,444,514

PHOTOGRAPHIC PROCESSING APPARATUS

Hisashi Negore; Tsukasa Nakano, and Yoshiyuki Minakata, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 6, 1994, Ser. No. 301,010
Claims priority, application Japan, Sep. 8, 1993, 5-223483
Int. Cl.[6] G03B *27/58*
U.S. Cl. 355—74 1 Claim



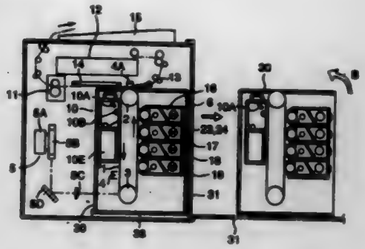
1. A photographic processing apparatus having a film developing unit, a drying unit, an exposure unit to which a film developed and dried is fed, and a photographic paper developing unit, said exposure unit having a negative mask having a film guide path, said film being fed along said film guide path and illuminated by the light to print images on said film to photographic paper, which is fed to said photographic paper developing unit for development, characterized in that a plurality of said film guide paths are provided in parallel to one another in said negative mask for different widths of films, that a transfer means for transferring said negative mask is provided to bring one of said film guide paths into alignment with an exposure axis, that a plurality of sensors are provided along a film feed path toward said negative mask to detect the width of the film, so that said film guide path selected based on the signal from said sensors for the film having a detected width will be aligned with said exposure axis.

5,444,515

COLOR IMAGE FORMING APPARATUS WITH MOUNTABLE CARTRIDGE THEREIN

Satoshi Hasada; Shizuo Morita; Masakazu Fukuchi, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 200,103
Claims priority, application Japan, Feb. 23, 1993, 5-033487; Mar. 18, 1993, 5-058871
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—200 11 Claims



1. A color image forming apparatus, comprising:
a housing; and
a cartridge which is attachable to and detachable from the housing in a horizontal direction, the cartridge including:
a photoreceptor on which a latent image is formed;
a cleaning device disposed at one side of the photoreceptor so as to clean the photoreceptor; and
a plurality of developing devices disposed at another side of the photoreceptor positioned to be opposite to the cleaning device;
each developing device having a developing portion facing toward the photoreceptor, a toner-receiving portion positioned to be opposite to the developing portion, a top portion, and a bottom portion, the plurality of developing devices being vertically stacked in a stack so that the bottom portion of one of the developing devices is mounted on the top portion of another one of the developing devices and the developing portion of each developing device is located at a same side of the stack facing toward the photoreceptor; and
each developing device having an opening therein to receive toner at the toner-receiving portion thereof and a cover for opening and closing the opening so that when the cartridge is detached from the housing in the horizontal direction and the cartridge is rotated to a laid down position thereof, whereby in the rotated laid down position of the cartridge the photoreceptor is positioned on the cleaning device and further the plurality of developing devices are positioned on the photoreceptor so that the toner-receiving portions of the plurality of developing devices are all positioned vertically relative to the horizontal direction, and the toner-receiving portions of the plurality of developing devices are positioned in a top portion of the rotated cartridge and toner can be supplied into the plurality of developing devices through the openings in the top portions of the developing devices of the rotated cartridge.

5,444,516

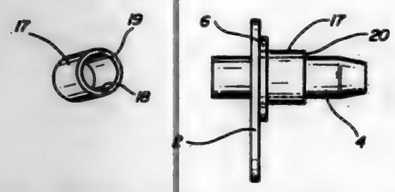
PHOTORECEPTOR DRUM AXLE IMPROVEMENT

Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322, and Dick D. Irwin, Grand Rapids, Mich., assignors to Steven Bruce Michlin, West Bloomfield, Mich.

Filed Apr. 28, 1994, Ser. No. 234,236
Int. Cl.[6] G03G *21/00, 21/16*
U.S. Cl. 355—200 15 Claims

1. An improvement for a plastic drum axle used to support a

photoreceptor drum in a toner cartridge for printing, copy and facsimile machines, said drum axle including an attach section for securing said drum axle to said toner cartridge, a fitting section adjacent said attach section for fitting said drum axle into said toner cartridge, and a shaft section, said shaft section having a length with only a portion of said length used for



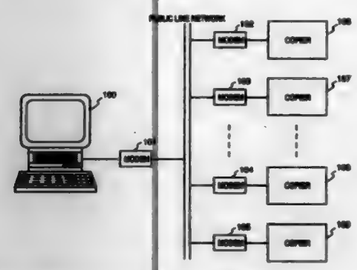
rotatively supporting said drum, said improvement comprising a sleeve placed around said shaft section such that said sleeve extends into said fitting section and abuts against said attach section, whereby said sleeve may be precisely located on said shaft section and enables nearly the entire length of said shaft section to rotatively support said drum.

5,444,517

MANAGEMENT SYSTEM FOR CONTROLLING OPERATION OF AN IMAGE PROCESSING APPARATUS

Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 113,255
Claims priority, application Japan, Sep. 1, 1992, 4-233297
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—201 **19 Claims**



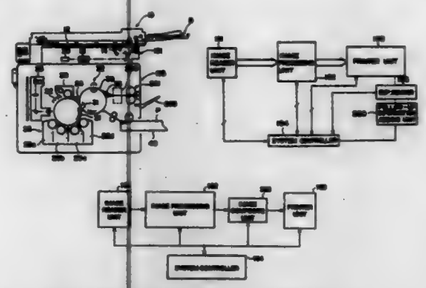
1. An image processing apparatus comprising:
transmitting means for transmitting line information of the image processing apparatus to an external device;
receiving means for receiving a response from the external device, which is initiated by the external device based upon the transmitted line information; and
restricting means for restricting use of at least some functions of said image processing apparatus until the response is received by said receiving means.

5,444,518

IMAGE FORMING APPARATUS WHICH ADDS IDENTIFICATION INFORMATION TO RECORDED IMAGES TO PREVENT FORGERY

Tadato Hashiguchi; Michiyoshi Tachikawa; Takashi Ukai, all of Yokohama; Yoshio Kaneko, Tokyo; Hiroshi Takahashi, Kawasaki; Takashi Saitoh, Yokohama; Kazuo Murai, Tokyo; Yukio Sakano, Fuchu; Midori Aida, Yokohama; Shinji Yamakawa, Kawasaki, and Toshiya Hikita, Machida, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

PCT No. PCT/JP93/01094, § 371 Date Apr. 5, 1994, § 102(e) Date Apr. 5, 1994, PCT Pub. No. WO94/03996, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 4, 1993, Ser. No. 211,320
Claims priority, application Japan, Aug. 5, 1992, 4-229355; Aug. 15, 1992, 4-238942; Aug. 16, 1992, 4-239055
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—201 **9 Claims**



1. An image forming apparatus comprising:
image reading means for reading an original and for outputting image data corresponding to the original;
image processing means, coupled to said image reading means, for processing the image data supplied from said image reading means in accordance with a predetermined method and for outputting printing image data;
printing means, coupled to said image processing means, for printing an image, corresponding to the printing image data supplied from said image processing means, on a recording sheet;
image adding means, coupled to printing means, for adding an identification information to the recording sheet on which the image is formed by said printing means, said identification information identifying said image forming apparatus;
detecting means for detecting whether or not said image adding means has been removed from said image forming apparatus; and
control means for prohibiting the image from being formed on the recording sheet when said detecting means detects that said image adding means has been removed from said image forming apparatus.

5,444,519

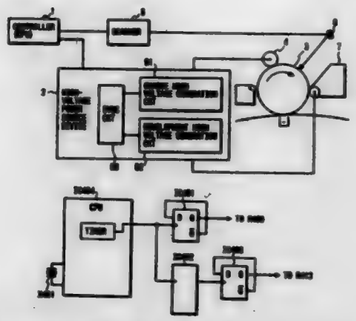
ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS AND ITS HIGH VOLTAGE POWER SOURCE DEVICE

Hajime Motoyama, Kawasaki; Junichi Kimizuka, Yokohama; Takeji Gima, Tokyo, and Akihiro Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 107,593, Aug. 18, 1993. This application Apr. 22, 1994, Ser. No. 231,182
Claims priority, application Japan, Aug. 20, 1992, 4-221172; Oct. 29, 1992, 4-291198
Int. Cl.[6] G03G *15/00, 15/02*
U.S. Cl. 355—219 **14 Claims**

1. An image forming apparatus comprising:
a body to be charged;

a central processing unit for processing based on oscillation clock pulses from a crystal oscillator, and including a timer for generating a pulse signal having a predetermined period based on the oscillation clock pulses;
a charging member for performing a charging operation on said body to be charged; and



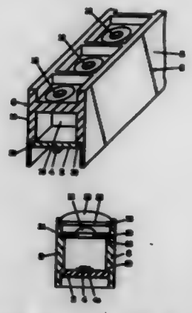
first applying means for applying a first AC voltage to said charging member, wherein said first applying means generates the first AC voltage based on a pulse signal from the timer in said central processing unit.

5,444,520

IMAGE DEVICES

Shunji Murano, Aira, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed May 17, 1994, Ser. No. 243,948
Claims priority, application Japan, May 17, 1993, 5-114321; Jun. 8, 1993, 5-137177; Jun. 8, 1993, 5-137181; Jun. 25, 1993, 5-180616; Jun. 28, 1993, 5-185609; Jul. 26, 1993, 5-204650; Jul. 28, 1993, 5-186199; Aug. 31, 1993, 5-240523
Int. Cl.[6] G03G *15/04*
U.S. Cl. 355—229 **23 Claims**



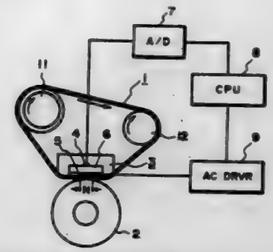
1. An image device for making rays from image arrays to form an image on an image formation plane, or for making incident rays to form an image on image arrays,
said image device comprising;
plural image arrays each of which including plural image elements linearly arranged,
at least one oblong base plate mounting said plural image arrays in a linear arrangement,
at least one oblong lens plate mounting a plurality of single lenses in a linear arrangement, and
an oblong spacer for keeping a constant distance between said base plate and said lens plate, and
wherein the coefficients of thermal expansion of said base plate and of said lens plate are made virtually identical to each other.

5,444,521

IMAGE FIXING DEVICE CAPABLE OF CONTROLLING HEATING OVERSHOOT

Yokji Tomoyuki, Ichikawa; Shunji Nakamura, Yokohama; Yasumasa Obtsuka, Yokohama; Koniehi Okada, Yokohama; Eihiro Sakaki, Chofu; Akira Hayakawa, Machida, and Daizo Fukuzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,722
Claims priority, application Japan, Jul. 15, 1991, 3-173952; Oct. 31, 1991, 3-286440
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—285 **11 Claims**



1. An image heating device which comprises:
heater controlled to keep a predetermined temperature;
temperature detecting element to detect a temperature of said heater;
arithmetic means for computing the length of time it takes for the temperature of said heater to reach said predetermined temperature since the beginning of the power supply, based on the temperature gradient of said heater; and
control means for halting the power supply to said heater after an elapse of the length of time computed by said arithmetic means, and then, controlling the power supply to said heater, so that the temperature of said heater is maintained at the predetermined temperature.

5,444,522

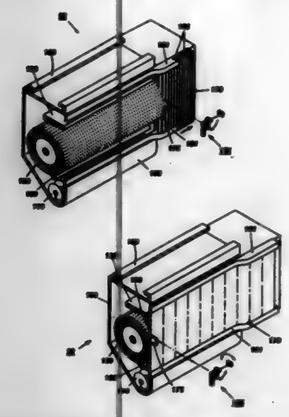
REPLACEABLE CLEANER SUBSYSTEM THAT PREVENTS PARTICLE SPILLAGE

Alvin J. Owens, Jr., Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 18, 1994, Ser. No. 229,942
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—296 **26 Claims**

1. A printing apparatus having a cleaner subsystem for removing particles from a surface, comprising:
means for cleaning the particles from the surface;
a housing defining an open ended chamber, said cleaning means being mounted in the chamber of said housing with a portion thereof being adapted to extend from the open ended chamber into contact with the surface; and
a cover mounted movably on said housing and being

adapted to move between a position closing the open ended chamber to a position opening the open ended



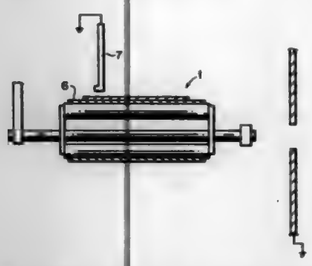
chamber in response to the cleaner subsystem being inserted into the printing apparatus.

5,444,523

IMAGE FORMING DEVICE INCLUDING TRANSFER MATERIAL CARRIER DEVICE WITH GROUNDING MEMBER

Junichiroa Sameshima; Norio Hokari, and Satoshi Honobe, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1994, Ser. No. 205,481
Claims priority, application Japan, Mar. 5, 1993, 5-044777
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—309 **5 Claims**



1. An image forming device including transfer material carrier means for absorbing a transfer material onto a transfer material carrier by use of an electrostatic force and carrying the transfer material, said device comprising:
- means for connecting said transfer material carrier means within a main body of said image forming device;
- means for drawing out said transfer material carrier means from said image forming device main body by releasing connection of said connecting mean; and
- a conductive grounding member, disposed in said image forming device main body, is parallel to said transfer material and there is a space between said conductive grounding member and said transfer material when said transfer material carrier means is drawn out; wherein

said image forming device main body is grounded,
- a path is formed for discharging electric charges from said means for drawing out said transfer material carrier means through said transfer material carrier means and said connecting means in a connected condition, and

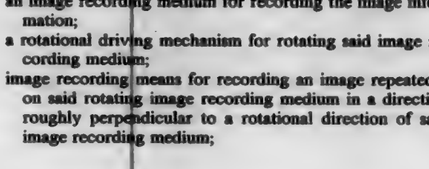
electricity is removed by said conductive grounding member in a connection released condition.

5,444,524

METHOD AND APPARATUS FOR CONTROLLING A PRINT ENGINE OF A PAGE PRINTING DEVICE

Bong-Gi Lee, Hyungki-do, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 28, 1993, Ser. No. 82,917
Claims priority, application Rep. of Korea, Jun. 26, 1992, 11243
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—316 **12 Claims**



1. A method for invoking an error process in a page printing device, said page printing device comprising: a pickup roller for drawing a sheet of paper from a paper cassette into said page printing device, a register roller for arranging said sheet of paper, a first paper sensor positioned between said register roller and said pickup roller for detecting passage of said sheet of paper, a photosensitive drum for receiving said sheet of paper from said register roller and for transferring toner onto said sheet of paper, means for fusing said toner on said sheet of paper, and a second paper sensor positioned downstream of said fusing means for detecting passage of said sheet of paper, said method comprising:
- enabling a printing process including transferring toner from said photosensitive drum onto said sheet of paper;
- determining whether said sheet of paper has completely passed said first sensor and determining whether said sheet of paper has reached said second sensor;
- invoking said error process if said sheet of paper has not completely passed said first sensor; and
- performing a printing release process for terminating said printing process if said sheet of paper has reached said second sensor.

5,444,525

IMAGE FORMING APPARATUS WITH IMAGE RECORDING TIMING CONTROL

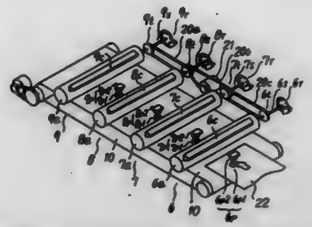
Masaki Takahashi; Teruo Kurihara, both of Yokohama; Nakaba Komiyama, Chigasaki, and Manabu Mikami, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1994, Ser. No. 212,883
Claims priority, application Japan, Mar. 15, 1993, 5-054123; Nov. 16, 1993, 5-285866
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—327 **20 Claims**

1. An image forming apparatus for forming an image by recording image information and transcribing the recorded image information on an image transcribing medium, which comprises:
- an image recording medium for recording the image information;
- a rotational driving mechanism for rotating said image recording medium;
- image recording means for recording an image repeatedly on said rotating image recording medium in a direction roughly perpendicular to a rotational direction of said image recording medium;

- rotation detecting means for detecting angular travel rates of said image recording medium; and
- recording timing control means for controlling recording timing at which the image is started to be recorded in the direction perpendicular to the rotational direction of said image recording medium, on the basis of the angular travel rates detected by said rotation detecting means, wherein

said image recording means includes optical beam scanning



and recording means for rotating a rotary polygonal mirror to scan an optical beam in the direction roughly perpendicular to the rotational direction of said image recording medium and for recording an image on said image recording medium by turning on and off the optical beam; and

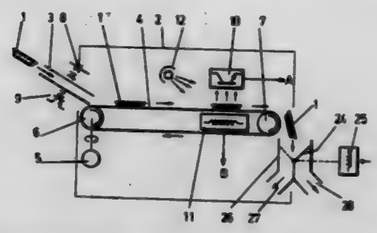
said recording timing control means includes scanning speed control means for controlling a scanning speed of the optical beam on the basis of the angular travel rates detected by said rotation detecting means.

5,444,526

SYSTEM FOR IDENTIFYING OR VALIDATING TOP CROWNS TO BE USED AS A MEANS FOR ACTIVATING A CIRCUIT

Jesus Echapare Iharrola, and Jose Louis Pina Insausti, both of Peralta, Spain, assignors to Axkoyen Industrial, S.A., Peralta, Spain

Filed Feb. 24, 1994, Ser. No. 200,970
Claims priority, application Spain, Mar. 10, 1993, 9300473
Int. Cl.[6] G07F *3/02*
U.S. Cl. 356—71 **9 Claims**



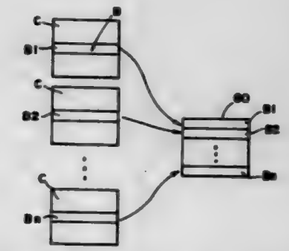
1. A system for identifying or validating a cap comprising:
- a casing defining a protective chamber;
- light emitter and receiver devices for detecting passage of said cap into said chamber;
- an induct, arranged at an angle causing said cap to drop into said chamber, to which said light emitter and receiver devices are fitted;
- a conveyor in said chamber to which said induct leads;
- means for driving said conveyor, when the light emitter and receiver devices detect passage of said cap, so as to carry the cap along a path;
- a generator in said chamber for generating a ray of light;
- an optical sensor in said chamber for receiving said ray of light and generating a first response signal representative of a first characteristic of said cap;
- inductive means in said chamber for measuring features relating to a second characteristic of said cap and generating a second response signal representative of said second characteristic of said cap;
- means for processing said first response signal and said second response signal and generating an output;
- means for defining a collection duct, a rejection duct and an admission duct at an end of the path, said cap being deposited into said collection duct by said conveyor; and
- means, responsive to said output, for deflecting said cap into one of said rejection duct and said admission duct.

5,444,527

IMAGING FLOW CYTOMETER FOR IMAGING AND ANALYZING PARTICLE COMPONENTS IN A LIQUID SAMPLE

Tokihiro Kosaka, Kakogawashi, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Jan. 2, 1993, Ser. No. 78,201
Claims priority, application Japan, Jun. 12, 1992, 4-179286
Int. Cl.[6] G01N *33/48, 21/00*
U.S. Cl. 356—73 **7 Claims**



1. An imaging flow cytometer for passing a sheath blow having a sheath liquid around a sample flow containing particles to be detected, irradiating a sample fine flow with light, and detecting light signals from the particles, comprising:
- an irradiation light source for illuminating particles in the sample fine flow,
- imaging means for imaging particles by receiving particle light images in a sample flow region of the sheath flow, and
- an image processor for processing the images taken by said imaging means, wherein:

said imaging means is of the split scanning type capable of repetitively scanning a band-shaped scanning region of an imaging area limited to a certain range of the imaging area within one field period, and

said sample flow region is defined within the band-shaped scanning region of the imaging area.

5,444,528

TUNABLE SPECTROMETER WITH ACOUSTO-OPTICAL TUNABLE FILTER

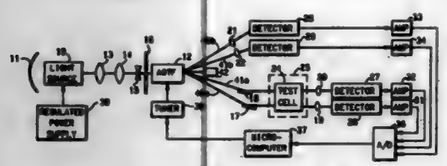
Jeffrey J. Puschell, Albuquerque, N. Mex., assignor to The Titan Corporation, San Diego, Calif.

Filed Jul. 27, 1994, Ser. No. 281,411
Int. Cl.[6] G01J *3/12, 3/42, 3/44*
U.S. Cl. 356—73 **15 Claims**

1. A tunable spectrometer, comprising
- a discrete light source;
- an optical system disposed in relation to the light source for directing light from the light source through a spatial region of interest and for focusing the directed light;
- an acousto-optical tunable filter disposed for filtering light from the light source, wherein the light emerges from the

filter in a simultaneous plurality of distinct beams having different orders of diffraction, with different diffraction orders having different wavelength ranges and with complementary pairs of said distinct beams having the same diffraction order respectively having substantially the same wavelength ranges;

means coupled to the filter for tuning the filter to diffract light in a simultaneous plurality of distinct beams having different predetermined diffraction orders that have different wavelength ranges that include wavelengths that are characteristic of a spectrum for a given substance or of



the spectra for a plurality of different given substances; and

a set of a given plural number of detectors disposed in relation to the optical system and the filter for respectively detecting the focused and filtered light diffracted by the filter in a set of said given number of said distinct beams of said different predetermined diffraction orders to thereby simultaneously provide said given number of test signals indicative of a spectrum within the spatial region of interest at wavelengths that are characteristic of said spectrum for said given substance or of the spectra for the plurality of different said given substances.

5,444,529

METHOD OF INSPECTING PARTICLES ON SEMICONDUCTOR DEVICES

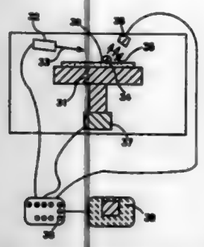
Kenji Tateiwa, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 36,199, Mar. 23, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,801

Claims priority, application Japan, Jun. 8, 1992, 4-147167

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—337 **12 Claims**



9. A method of inspecting a plurality of particles on a surface of a substrate comprising:

exposing said substrate to vapors of an alcohol;

cooling said substrate to a temperature at which said alcohol vapor will condense on said substrate;

condensing said alcohol vapor to form a drop of alcohol around said plurality of particles, said particles occupying only a portion of said surface of said substrate; and

automatically detecting and determining size of said particles attached to a portion of said substrate surface by analyzing a plurality of diffuse light patterns scattered from the condensed alcohol vapor when laser beams are irradiated onto the substrate.

5,444,530

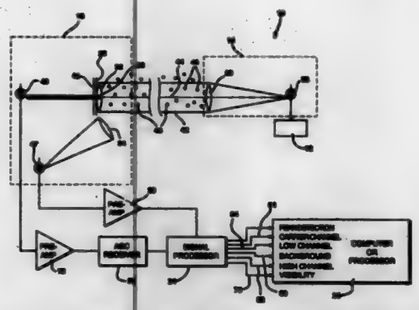
WEATHER IDENTIFIER AND VISIBILITY SENSOR

Ting-I Wang, Gaithersburg, Md., assignor to Scientific Technology, Inc., Gaithersburg, Md.

Filed Jan. 7, 1993, Ser. No. 72,385

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—338 **5 Claims**



1. In a weather identification system having a light beam source that transmits a partially coherent beam of light along a prescribed path, a first receiver positioned directly in said light beam path to produce signals in response to scintillations occurring in said beam of light, and signal processing means for producing a signal from said first receiver characteristic of rain and another signal from said first receiver characteristic of snow, the improvement comprising a second receiver obliquely positioned relative to said prescribed path to produce output signals responsive to forward scattering of light from scintillations occurring in said beam of light and wherein said signal processing means has means for detecting a signal indicative of intensity of light received from said light beam by said first detector, means for detecting a signal indicative of light intensity of said forward scattering of light from said second receiver, and means for synchronizing said signal indicative of light intensity of said forward scattering of light and said signal indicative of intensity of light from said light beam to produce said signal characteristic of visibility, said signal processing means is responsive to output signals from both said first and said second receivers to produce a signal characteristic of visibility that is independent of intensity of said light source.

5,444,531

SENSOR WITH LED CURRENT CONTROL FOR USE IN MACHINES FOR WASHING ARTICLES

Donald S. Foreman, Fridley, and David Kubisiak, Chanhassen, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 20, 1994, Ser. No. 246,895

Int. Cl.[6] G01N *21/53*

U.S. Cl. 356—341 **10 Claims**

1. A sensor, comprising:

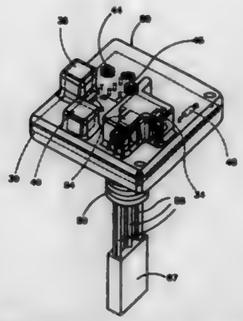
a light source disposed to transmit a beam of light in a direction along a first line through a detection zone;

a first light sensor disposed to receive light transmitted along said first line from said light source, said first light sensor providing a first signal representative of the intensity of light impinging on said first light sensor;

a second light sensor disposed to receive light from said light source which is scattered along a second line, said second light sensor providing a second signal representative of the intensity of light impinging on said second light sensor, said second line extending at a first angle from said first line;

means for selecting the highest one of said first and second signals; and

a regulator for controlling the intensity of light emanating from said light source as a function of said highest one of said first and second signals, said regulator comprising an amplifier, said highest one of said first and second signals being connected in signal communication with an input of



said amplifier, another input of said amplifier being connected in signal communication with a reference voltage, said reference voltage being selected to represent a maximum allowable level of said highest one of said first and second signals.

5,444,532

INTERFEROMETER APPARATUS FOR DETECTING RELATIVE MOVEMENT BETWEEN REFLECTING MEMBERS

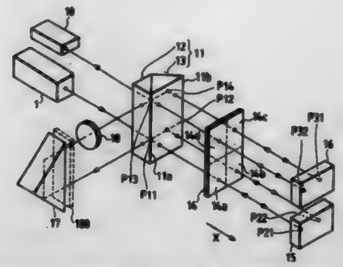
Masafumi Sueyoshi, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 16,852, Feb. 12, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 359,853

Claims priority, application Japan, Feb. 25, 1992, 4-073489; Mar. 4, 1992, 4-082737

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—349 **27 Claims**



1. An interferometer apparatus for detecting a displacement amount of an object to be measured, comprising:

light source means for supplying light;

measurement reflecting means arranged to be movable with the object in a measurement direction;

reference reflecting means fixed to be parallel to said measurement reflecting means;

optical means for splitting the light from said light source means into a first light component and a second light component, and forming a measurement optical path extending to said measurement reflecting means through a gas by using the first light component, while forming a reference optical path extending, parallel to said measurement optical path, to said reference reflecting means through a gas by using the second light component; and

detecting means for receiving the first light component having passed through the measurement optical path and the second light component having passed through the reference optical path, and detecting a displacement amount of the object,

wherein said optical means includes a first rectangular prism having a light splitting surface for transmitting said first light component, which is a part of the light supplied by said light source means, and reflecting said second light component, which is a remainder of the light supplied by said light source means, and a reflecting surface formed to be perpendicular to the light splitting surface,

a second rectangular prism joined to said light splitting surface and having first and second transmitting surfaces which are perpendicular to each other, and

a deflecting member for deflecting a light component, reflected by said light splitting surface and coming out from said first transmitting surface, so as to guide the deflected light component to said light splitting surface through said first transmitting surface, and wherein

the first light component which is emitted from said light source means and transmitted through the light splitting surface, forms said measurement optical path which goes by way of said measurement reflecting means and comes out of said second transmitting surface to reach said detecting means, in cooperation with said light splitting surface, said reflecting surface, said first transmitting surface, said measurement reflecting means and said deflecting member,

the second light component which is emitted from said light source means and reflected by said light splitting surface, forms said reference optical path which goes by way of said reference reflecting means and comes out of said second transmitting surface to reach said detecting means, in cooperation with said light splitting surface, said reflecting surface, said first transmitting surface, said reference reflecting means and said deflecting member,

said measurement optical path from the second transmitting surface to the detecting means coincides with said reference optical path from the second transmitting surface to the deflecting member,

the optical path length of said measurement optical path through said first rectangular prism is equal to the optical path length of said reference optical path through said first rectangular prism, and

the optical path length of said measurement optical path through said second rectangular prism is equal to the optical path length of said reference optical path through said second rectangular prism.

5,444,533

FIBER-OPTIC GYROSCOPE OBTAINING A SIGNAL FROM A PERTURBED LIGHT SOURCE

Yozo Nishiura; Takaki Iwashita, and Akihiro Ooka, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 31, 1993, Ser. No. 114,095

Claims priority, application Japan, Sep. 2, 1992, 4-260662; Feb. 22, 1993, 5-057756

Int. Cl.[6] G01C *19/72*

U.S. Cl. 356—350 **29 Claims**

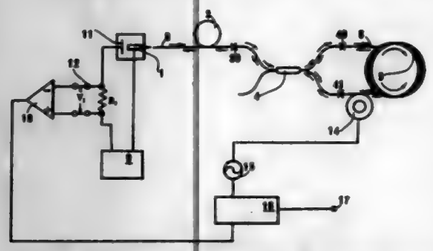
1. A fiber-optic gyroscope obtaining signals from a light source for measuring an angular velocity from a phase difference between clockwise-spreading beams and counterclockwise-spreading beams in a fiber coil, the fiber-optic gyroscope comprising:

a light source for emitting monochromatic or quasi-monochromatic light beams;

a monitoring photodiode for monitoring a light power emitted from the light source;

a beam dividing-and-combining device for dividing the beams from the light source and for integrating the beams returning to the light source; and

a fiber coil for propagating beams from the beam dividing-and-combining device clockwise and counterclockwise, wherein the beam dividing-and-combining device directs the beams returning from the fiber coil to the light source so



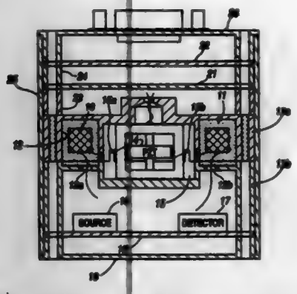
that the light source is perturbed by the returning beams causing emission performance of the light source to be changed by the returning beams so that an angular velocity is obtained based on the change of emission performance of the light source.

5,444,534

COIL MOUNTING ARRANGEMENT FOR FIBER OPTIC GYROSCOPE

Richard B. Dyott, Oak Lawn, Ill.; Eric L. Brooker, Marietta, Ga.; Sidney M. Bennett, Chicago, and John D. Myhre, Western Springs, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Dec. 27, 1993, Ser. No. 174,184
Int. Cl.[6] G01C *19/64*
U.S. Cl. 356—350 **18 Claims**



1. In a fiber optic gyroscope, the improvement comprising a sensing coil of optical fiber submerged in a gel that surrounds and supports the sensing coil and a rigid housing containing the gel with the coil submerged therein, the walls of the housing being spaced away from the coil with the intervening space between the coil and the innermost housing walls being filled with the gel.

5,444,535

HIGH SIGNAL-TO-NOISE OPTICAL APPARATUS AND METHOD FOR GLASS BOTTLE THREAD DAMAGE DETECTION

Norman N. Axelrod, New York, N.Y., assignor to Labatt Brewing Company Limited, London, Canada

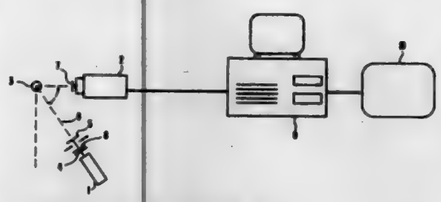
Filed Aug. 9, 1993, Ser. No. 103,652
Int. Cl.[6] G01J *4/00*
U.S. Cl. 356—369 **32 Claims**

1. An optical detection apparatus for use in glass surface defect photodetection, comprising:

a source for emitting light;

an optical transmission filter selected to transmit incident light at wavelengths substantially overlapping a target-glass-absorbed bandwidth, and arranged to pass a resultant, incident beam against a first optical polarizer, said first optical polarizer being used to polarize light emitted from said optical transmission filter and arranged to pass a resultant polarized incident beam against a target glass surface;

a detector comprising:



an at least one photodetector; and,

a second optical polarizer arranged in cross-polarized relation to said first optical polarizer;

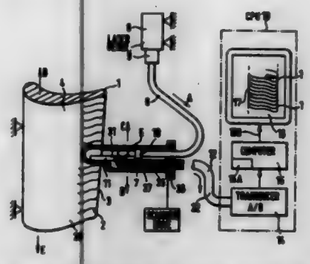
said detector being aligned in defect-scattered light beam detecting relation at an angle in the Brewster range, and being operable to generate a detected signal in response to light scattered from defects in said target surface.

5,444,536

APPARATUS FOR MEASURING THE CURVATURE OF A PROFILE, SUCH AS AN EDGE OF A TURBINE BLADE

Wilhelm Satzger, Munich, and Edmund Maagold, Olstadt, both of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Apr. 26, 1993, Ser. No. 53,020
Claims priority, application Germany, Apr. 28, 1992, 42 13 909.0
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 **34 Claims**



1. An apparatus for measuring a curvature profile of an edge, comprising a laser generator for producing a laser beam for illuminating said edge, a radiation intensity matrix arranged in the path of said laser beam between said edge and said laser generator for varying the laser beam intensity over the cross-section of said laser beam, wherein said radiation intensity matrix extends at an angle relative to a laser beam axis and the position of said radiation intensity matrix is adjustable, said apparatus further comprising receiver elements arranged and adapted to receive reflection values of reflected laser beams reflected from said edge, said receiver elements being arranged in rows or arrays along said edge, a central processing unit for calculating said curvature profile from said reflection values, signal conductor means operatively connecting said receiver elements to said central processing unit, a scanning head for physically receiving and at least partially surrounding said edge, wherein said scanning head comprises an edge locating member for physically locating said edge, said receiver elements are arranged as arrays or rows in said scanning head,

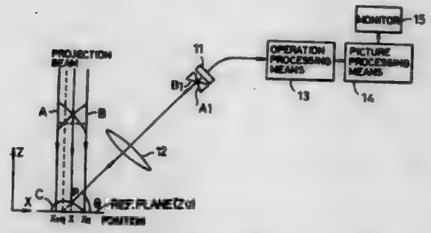
said receiver elements have a defined spacing from said edge locating member, and said scanning head together with its edge locating member is displaceable parallel to said edge.

5,444,537

METHOD FOR SHAPE DETECTION AND APPARATUS THEREFOR

Kazunari Yoshimura, and Kuninori Nakamura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 20, 1993, Ser. No. 138,191
Claims priority, application Japan, Oct. 27, 1992, 4-289153
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 **19 Claims**



1. A method for stereoshape detection of an object by projecting light beam thereon to form a beam spot on the object, and receiving reflected beams from the projected beam spot from the object in a direction different from that of the projection, wherein a plurality of said beams which are respectively modified to be of mutually different patterns are projected onto an identical spot on said object substantially in an identical direction, an image provided by each of reflected beams from said projected beam spot on the object is formed on a position detecting means, a ratio of intensity of light of said reflected beams at a point in the projected beam spot is obtained on the basis of outputs from said position detecting means, a position of the point in the projected beam spot on the object is detected on the basis of variation components in said ratio of intensity of light with respect to a reference plane for detecting the position of the point on the object, and a height displacement of the point in the projected beam spot with respect to said reference plane is obtained on the basis of the detected position and of an incident angle of the reflected beams in said position detecting means with respect to the reference plane.

5,444,538

SYSTEM AND METHOD FOR OPTIMIZING THE GRID AND INTRAFIELD REGISTRATION OF WAFER PATTERNS

Joseph C. Pellegrini, Watertown, Mass., assignor to New Vision Systems, Inc., Watertown, Mass.

Filed Mar. 10, 1994, Ser. No. 209,862
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—401 **16 Claims**

1. An overlay optimization system for registering field patterns on wafers comprising:

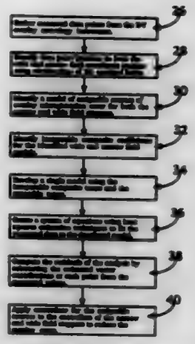
a first field stepper for registering a first field pattern;

a second field stepper for registering a second field pattern overlaying said first field pattern;

an overlay measuring instrument for measuring pattern misregistration data of said first and second field patterns;

means for generating an overlay coefficient associated with an assignable source of overlay error from said pattern misregistration data;

means for calculating the overlay error associated with said assignable source using said overlay coefficient; and



means for adjusting said first and second field steppers for reducing said overlay error.

5,444,539

METHOD OF OBSERVING LIQUID FOR IMPURITIES USING A TRANSPARENT CONTAINER WITH CONTRASTING COLORS

Johannes F. J. van der Grift, Rembrandtlaan 11, NL-1741 KG Schagen, Netherlands

Division of Ser. No. 729,967, Jul. 15, 1991, Pat. No. 5,261,546, which is a continuation of Ser. No. 459,802, May 1, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 54,326
Int. Cl.[6] G01N *21/90*
U.S. Cl. 356—427 **1 Claim**



1. A method of examining a pharmaceutical liquid in a transparent container having areas of contrasting colors for detecting multicolored impurities consisting of: positioning said transparent container to align said areas of contrasting colors opposite a means of human visual detection, putting said liquid within said container into motion and illuminating said container by an illuminating means substantially perpendicular to said means of human visual detection to create scattering of light beams by said impurities while avoiding reflections of said light beams.

5,444,540

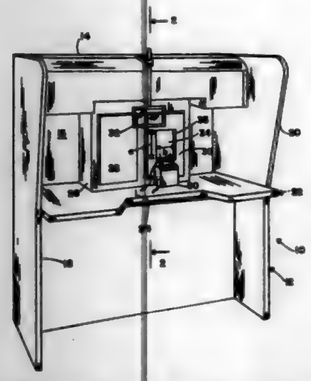
BLACK BACKGROUND INSPECTION APPARATUS

Peter J. Dragotta, Wayne, N.J., assignor to M. W. Technologies, Inc., Elmwood Park, N.J.

Filed Apr. 18, 1994, Ser. No. 229,159
Int. Cl.[6] G01N *21/90*
U.S. Cl. 356—427 **19 Claims**

1. A black background inspection apparatus comprising: an inspection station for positioning an article to be inspected; an observation station spaced from said inspection station for optically observing the article to be inspected, said an inspection panel having a black front surface, an opposed rear surface and an aperture extending through said inspection panel from

said front surface to said rear surface, said inspection panel being disposed such that said black front surface of said inspection panel faces said inspection station and such that said inspection station is intermediate said observation station and said inspection panel, an enclosure disposed in light-tight engagement adjacent said rear surface and surrounding said



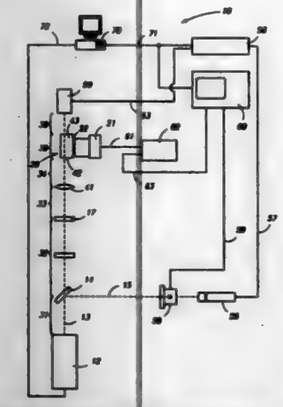
aperture, said enclosure having black interior surfaces for substantially preventing light reflection in said enclosure, whereby objects to be inspected can be placed at said inspection station and in proximity to said aperture and observed from said observation station against the black interior surfaces of said enclosure.

5,444,541

METHODS FOR PHOTOACOUSTICALLY ANALYZING CHEMICALS AND CHEMICAL REACTIONS USING PHOTOACTIVE PARTICLE-EMITTING COMPOUNDS

Jeanne R. Small, and Enoch W. Small, both of Cheney, Wash., assignors to Eastern Washington University, Cheney, Wash.

Filed Feb. 16, 1994, Ser. No. 197,689
Int. Cl.[6] G01N *21/75*
U.S. Cl. 356—432 **12 Claims**



1. A method for analyzing chemical reactions, comprising:
preparing a liquid sample having:
a protic liquid solvent;
at least one primary reactant; and,
a photoactive particle-emitting compound different from said at least one primary reactant; said photoactive particle-emitting compound being a molecular or ionic species having at least a chromophoric group and a charged-particle group; said chromophoric group having atoms and associated bonds such that said chromophoric group absorbs a stimulating electromagnetic beam pulse to release at least one active charged particle; said charged-particle group upon division from the chromophoric group forming a charged particle which acts as a secondary reactant which reacts with the primary reactant; said charged-particle group being substantially non-reactive with said at least one primary reactant until divided from the chromophoric group by a stimulating electromagnetic beam pulse;
beaming a stimulating electromagnetic beam pulse onto the liquid sample during a stimulation pulse period of time; said stimulation pulse period having a duration in the range of approximately 10^{-10} to approximately 10^{-7} seconds; said beaming being accomplished using a thin substantially planar beam shape having beam sidewall faces;
generating charged particles from said particle-emitting compound contained within said sample;
reacting the released charged particles with the primary reactant during a period from approximately 1 nanosecond to 10 microseconds after said stimulation pulse period of time;
measuring the stimulating electromagnetic beam pulse to the sample to provide a beam pulse input energy measure indicative of the energy of the stimulating electromagnetic beam pulse beamed into the liquid sample;
measuring any stimulating electromagnetic beam pulse which passes through the sample to provide a beam pulse output energy measure indicative of the energy of the stimulating electromagnetic beam pulse which passes through the liquid sample;
sensing acoustic output from the sample during an acoustic measuring period which follows said stimulation pulse period; said acoustic measuring period being from approximately 1 nanosecond to 10 microseconds after said stimulation pulse period of time; said sensing being accomplished with a transducer oriented to face the beam sidewall faces;
storing data indicative of the beam pulse input energy measure, beam pulse output energy measure, and acoustic output during the acoustic measuring period.

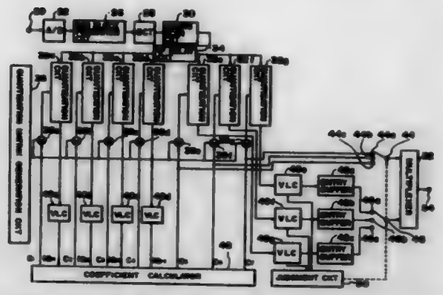
5,444,542

IMAGE PROCESSING APPARATUS AND METHOD

Nobuhiro Hoshi, Yokohama, and Kenichi Nagaswa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 872,144, Apr. 22, 1992, Pat. No. 5,301,040. This application Jan. 7, 1994, Ser. No. 178,842
Claims priority, application Japan, Apr. 23, 1991, 3-092301
Int. Cl.[6] H04N *7/12, 1/419, 1/415, 1/00*
U.S. Cl. 358—261.1 **11 Claims**

1. An image processing apparatus comprising:
supply means for supplying image data;
matrix providing means for providing a quantization matrix;
first quantization means for quantizing the image data by using a first quantizing parameter, and based on the quantization matrix, thereby generating first quantized image data;
second quantization means for quantizing the image data by using a second quantizing parameter, different from the first quantizing parameter, and based on the quantization matrix, thereby generating second quantized image data;
first generation means for generating a first amount of encoded data which is obtained by encoding the first quantized image data;
second generation means which is arranged independently from said first generation means for generating, in parallel with said first generation means, a second amount of encoded data which is obtained by encoding the second quantized image data; and



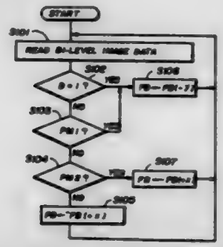
evaluation means for evaluating the first and second quantizing parameters by using the first and second amounts of encoded data.

5,444,543

METHOD AND APPARATUS FOR DETECTING A CLOSED-LOOP AREA OF AN IMAGE

Yukio Sakano, Fuchu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,110
Claims priority, application Japan, May 27, 1992, 4-160200
Int. Cl.[6] H04N *1/21*
U.S. Cl. 358—296 **16 Claims**



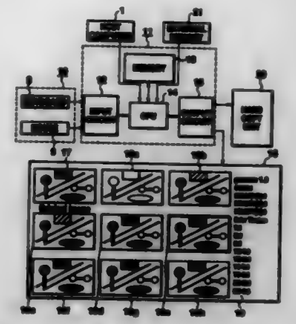
1. A method for detecting a closed-loop area on a document from bi-level image data read from the document, said bi-level image data made up of a set of two-dimensionally arranged black and white dots, said method comprising steps of:
reading a dot matrix from bi-level image data sequentially for dots on a line in the image data in a first direction opposite to a reading direction, said dot matrix arranged in a first formation and comprising a target dot and two or more contiguous dots contiguous to the target dot;
performing a first pattern matching to detect whether the dot matrix arranged in the first formation coincides with one of a plurality of first patterns, said first pattern matching being performed sequentially for the dots on the line in the first direction;
setting a first flag for the target dot to a first value or a second value based on the result of said first pattern matching so that the first flag for each of the dots on the line is set;
reading a dot matrix from the bi-level image data sequentially for the dots on the line in the reading direction opposite the first direction, said dot matrix arranged in a second formation and comprising a target dot and two or more contiguous dots contiguous to the target dot;
performing a second pattern matching to detect whether said dot matrix arranged in the second formation coincides with one of a plurality of second patterns, said second pattern matching being performed sequentially for the dots on the line in the reading direction;
setting a second flag for the target dot to the first value or the second value based on the result of said second pattern matching and based on the values of the first flags set in said first flag setting step, so that the second flag for each of the dots on the line is set;
repeating the first flag setting step and the second flag setting step so that the second flags for all the dots of the bi-level image data are set; and
detecting a dot as lying in the inside of the closed-loop area when the second flag is set to the first value, and detecting a dot lies on the outside of the closed-loop area when the second flag is set to the second value,
wherein the second flag for the target dot is set in accordance with the value of the second flag previously set for one of the contiguous dots and in accordance with the image data for the target dot.

5,444,544

METHOD OF SIMULATING COLOR IMAGES

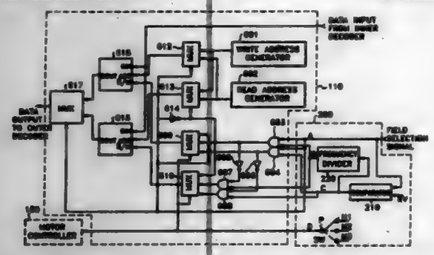
Kenichiro Oka, and Masaru Onishi, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 929,344, Aug. 12, 1992, Pat. No. 5,377,013. This application Apr. 14, 1994, Ser. No. 227,610
Claims priority, application Japan, Aug. 16, 1991, 3-205904
Int. Cl.[6] H04N *9/79*; G03F *3/08*
U.S. Cl. 358—332 **7 Claims**



1. A color printing apparatus comprising:
printing means for printing image data without any color conversion;
converting means for converting said image data according to a plurality of color conversion parameters having different values to produce a plurality of processed images having different colors from one another;
display means for displaying said plurality of processed images; and
printing means for performing a color conversion on said image data which is inverse to the color conversion of one of said processed images to produce inverted image data and for printing an image from said inverted image data.

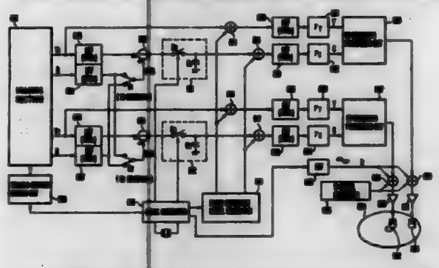
5,444,545
PICTURE SEARCH CONTROL APPARATUS IN A DIGITAL VIDEO TAPE RECORDER
Hyung-heui Lee, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Mar. 1, 1993, Ser. No. 24,016
Claims priority, application Rep. of Korea, Feb. 29, 1992, 92-3353
Int. Cl.[6] H04N *5/783*
U.S. Cl. 358—335 18 Claims



1. A picture search control apparatus for use in a digital video tape recorder having a capstan motor for running a tape, a motor controller for controlling the capstan motor, and a reproducer including a demodulator for demodulating compressed data signals read out from the tape via at least one head, an inner decoder for decoding the data signals supplied from the demodulator and checking whether errors are generated, to correct the errors within a correction capability and to add an error flag in case of the existence of errors beyond the correction capability, an outer decoder for correcting errors in the data signals supplied from the inner decoder with respect to an outer code block according to the error flag, a data reconstruction portion for reconstructing the compressed data signal supplied from the outer decoder into an original state, and a digital-to-analog converter for converting the digital picture data signal supplied from the data reconstruction portion into an analog picture signal, said picture search control apparatus comprising:
a mode selector receiving a field selection signal for selecting a reproduction mode, controlling the motor controller in response to the selected reproduction mode, and for producing a plurality of primary control signals necessary for delaying the data signals; and
a data processor logically combining said primary control signals supplied from said mode selector to produce a plurality of control signals controlling timing of an output of the data signals supplied from the inner decoder so as to provide a still picture in correspondence to the selected reproduction mode and supplying the delayed data signals to the outer decoder to permit subsequent generation of said still picture.

5,444,546
IMAGE SIGNAL PROCESSING APPARATUS HAVING MULTIPLEXING CAPABILITY
Ryo Fujimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 32,419, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 609,812, Nov. 6, 1990, abandoned. This application Oct. 19, 1994, Ser. No. 326,061
Claims priority, application Japan, Nov. 10, 1989, 1-291295; Nov. 10, 1989, 1-291296; Nov. 10, 1989, 1-291297
Int. Cl.[6] H04N *5/76, 5/91*
U.S. Cl. 358—335 15 Claims

6. An image signal processing apparatus for processing an image signal, comprising:
(A) clock signal generating means for generating a clock signal having a frequency f_{so};
(B) image signal generating means arranged to operate in accordance with the clock signal generated by said clock signal generating means to generate an image signal having a horizontal scanning frequency fr;
(C) pilot signal generating means for generating a pilot signal having a frequency fr;
(D) numerical data generating means for generating numerical data indicative of the frequency f_{so} of the clock signal output from the clock signal generating means or numerical data obtained by multiplying the frequency f_{so} of the

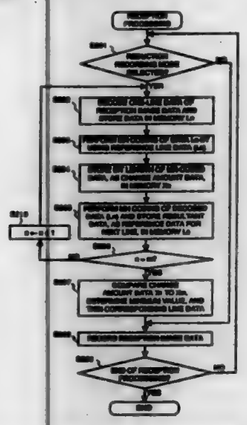


clock signal by the horizontal scanning frequency fh of the image signal; and
(E) recording means for forming a recording signal by multiplexing the pilot signal generated by said pilot signal generating means and the numerical data generated by said numerical data generating means with the image signal generated by said image signal generating means and for recording the formed recording signal on a recording medium.

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Patent Not Issued For This Number

5,444,548
Patent Not Issued For This Number

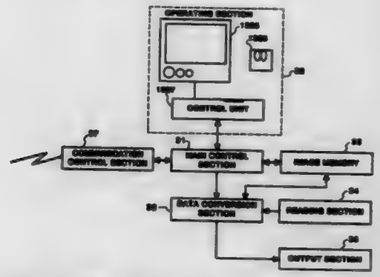
5,444,549
IMAGE REDUCTION WITH CONTROLLED IMAGE THINNING
Masaya Koado, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 14, 1992, Ser. No. 960,703
Claims priority, application Japan, Oct. 17, 1991, 3-269266
Int. Cl.[6] G06F *15/62*
U.S. Cl. 358—444 28 Claims



1. An image processing apparatus comprising:

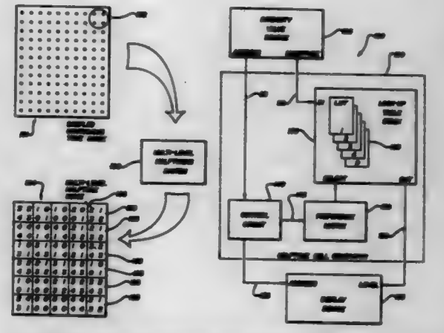
means for inputting a reduction ratio of an image;
count means for counting the number of lines constituting the image in accordance with the reduction ratio of the image;
means for obtaining change amounts of image data corresponding to the lines on the basis of the count value; and
means for thinning image data corresponding to a minimum value of the change amounts from the image data for which counting is performed by said count means,
wherein the image is reduced in a sub-scanning direction by the thinning operation.

5,444,550
IMAGE PROCESSING APPARATUS
Miyuki Enokida, Yokohama; Yoshinobu Mita, Kawasaki, and Junichi Shishizaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 513,982, Apr. 4, 1990. This application Nov. 25, 1992, Ser. No. 982,116
Claims priority, application Japan, Apr. 28, 1989, 1-109504; Apr. 28, 1989, 1-109506; Apr. 28, 1989, 1-109508; Apr. 28, 1989, 1-109509; Apr. 28, 1989, 1-109510; Apr. 28, 1989, 1-109518; Apr. 28, 1989, 1-109519; Apr. 28, 1989, 1-109523; Apr. 28, 1989, 1-109524
Int. Cl.[6] H04N *1/387*
U.S. Cl. 358—453 17 Claims



1. An image processing system for inputting an image and transmitting the image to a destination system, said image processing system comprising:
reading means for reading color image information;
memory means for storing the image information read by said reading means;
display means for displaying the image information stored in said memory means;
pointing means for pointing to an arbitrary position on said display means;
cut out means for cutting out a region to be transmitted from the image displayed on said display means, by demarcating the region with said pointing means;
designation means for designating an output position of the region cut out by said cut out means for an output medium at the destination system by pointing with said pointing means to a position corresponding to the output position on said display means irrespective of the position of the region in the image displayed on said display means;
transmission means for transmitting information; and
control means for controlling said image processing system to transmit an image within the region cut out by said cut out means and attribute information, which includes the output position designated by said designation means, a size of the cut out region and a color mode of the image, to the destination system by using said transmission means.

5,444,551
PROCESS FOR SPECIFYING MEAN-PRESERVING MUTLI-LEVEL HALFTONE MATRICES WITH VARYING AMOUNTS OF MODULATION
Rodney L. Miller, Fairport, and Craig M. Smith, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 22, 1992, Ser. No. 918,291
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 22 Claims

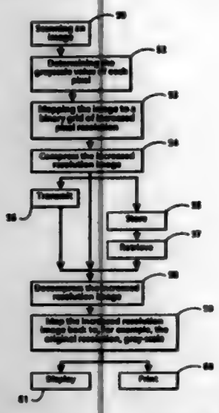


1. In a multi-level halftoning system, apparatus for generating a multi-level pixel value for a halftone cell from a magnitude of an intensity value, said apparatus comprising:
means, responsive to the magnitude of said intensity value, for producing a modulation level as said multi-level pixel value, wherein said producing means comprises a plurality of look-up tables each having values representing a predefined transfer function, wherein said pre-defined transfer functions are generated by apparatus comprising:
means for automatically producing said transfer functions using a mean-preserving process such that a sum of the derivative of said transfer functions equals the number of pixel values in said halftone cell;
preference matrix means connected to said producing means, for selecting one of said plurality of look-up tables; and
means, connected to said selecting means, for controlling said selection such that one look-up table is selected in a pre-defined manner to produce a modulation level as said multi-level pixel value.

5,444,552
METHOD FOR COMPRESSING, PROCESSING, AND STORING GRAYSCALE BITMAPS
Z. Erol Smith, III, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 28, 1992, Ser. No. 951,961
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—465 20 Claims

1. A method for image processing a grayscale image, comprising:
scanning an image and mapping the image within a first grid of pixels at a predetermined resolution;
determining a grayscale value for each pixel scanned in said first grid of pixels; and
mapping the scanned image onto a binary second grid of pixels of increased resolution, wherein for each pixel

within said first mapped grid of pixels, a number of pixels of said second grid of pixels are activated corresponding



to said grayscale value determined forming a one-bit bitmap that can be efficiently compressed.

5,444,553

IMAGE PROCESSING APPARATUS INCLUDING BINARY DATA PRODUCING UNIT

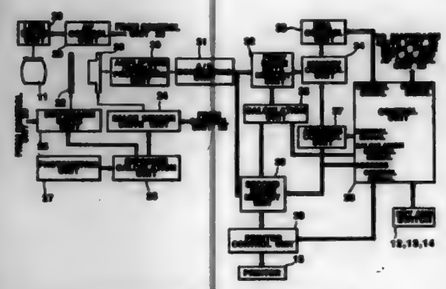
Takashi Sato, Higashiyamato, and Teruo Sano, Kawasaki, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 896,337, Jun. 10, 1992, which is a continuation of Ser. No. 513,566, Apr. 24, 1990, abandoned. This application Jul. 21, 1994, Ser. No. 278,571

Claims priority, application Japan, Apr. 27, 1989, 1-108795; Jun. 12, 1989, 1-149194

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—465 3 Claims



1. An image processing apparatus comprising:

image sensing means having a plurality of photoelectric converting elements for outputting electric signals of an optical image converted by said photoelectric converting elements;

difference-data producing means for producing difference-data according to a difference between amounts of at least two electric signals produced by said photoelectric converting elements arranged adjacent to each other;

binary data producing means for producing binary data in response to said difference-data produced by said difference-data producing means and a threshold value;

selecting means for selecting a predetermined number of said difference-data produced by said difference-data producing means; and

arithmetic means for producing an average value of said difference-data selected by said selecting means;

wherein said binary data producing means includes means for producing said binary data in response to at least one of said difference-data selected by said selecting means with the threshold value being determined by said average value.

5,444,554

IMAGE READING APPARATUS AND METHOD FOR READING IMAGES OF DIFFERENT SIZES OF ORIGINALS

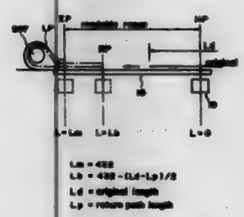
Hideo Muramatsu, Shinshiro; Masahiro Nakatani, Toyonashi, and Akio Nakajima, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 979,077

Claims priority, application Japan, Dec. 27, 1991, 3-345947; Apr. 24, 1992, 4-106226

Int. Cl.[6] H04N *1/46*; G03F *3/08*

U.S. Cl. 358—494 20 Claims



1. An image reading apparatus comprising:

an exposure platen;

reading means for reading an image of original being moved on the exposure platen, said reading means including a movable element which is movable along the exposure platen but is kept stationary at a reading position while the image reading means reads the image of the original; and

means for changing the reading position in accordance with a size of the original.

5,444,555

IMAGE READING APPARATUS AND METHOD FOR READING A DOCUMENT DURING ACCELERATION OR DECELERATION OF A STEPPING MOTOR

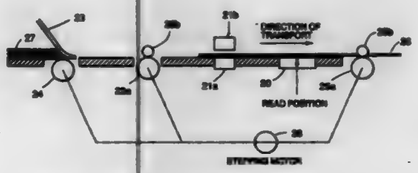
Takashi Ono, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1993, Ser. No. 64,891

Claims priority, application Japan, May 27, 1992, 4-135048

Int. Cl.[6] H04N *1/04*, *1/047*, *1/10*, *1/12*

U.S. Cl. 358—494 103 Claims



1. An image reading apparatus, comprising:

reading means for reading a document to generate image data, and for outputting the image data at a predetermined cycle;

reading control means for receiving the image data output by said reading means;

moving means for moving the document and said reading means relative to each other;

driving means for driving said moving means by continuously outputting pulses;

timing control means for controlling (i) the output of the pulses by said driving means, and (ii) a timing at which the image data output from said reading means is received by said reading control means to select desired one of the image data output cyclically by said reading means,

wherein said timing control means controls the output of the pulses and the receiving timing such that a moving speed of said moving means is continuously accelerated, and said timing control means controls the receiving timing such that the distortion of the image data received by said reading control means is reduced.

5,444,556

IMAGE FORMING APPARATUS FOR FORMING A PATTERN IMAGE CORRESPONDING TO A COLOR OF AN IMPUT IMAGE

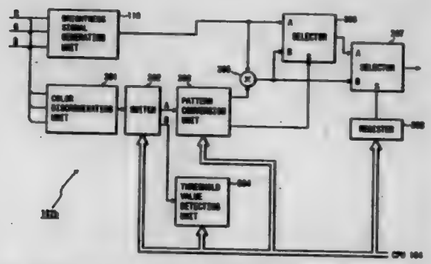
Akio Ito, Machida; Hiroyuki Ichikawa, Kawasaki, and Yoshinori Abe, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 25,748, Mar. 3, 1993, abandoned. This application Oct. 21, 1994, Ser. No. 328,345

Claims priority, application Japan, Mar. 5, 1992, 4-083496

Int. Cl.[6] H04N *1/50*, *1/56*

U.S. Cl. 358—501 21 Claims



13. An image forming apparatus comprising:

input means for inputting an image having a plurality of colors;

discriminating means for discriminating each of the plurality of colors of the image input from said input means;

pattern generating means for generating a pattern image corresponding to the colors discriminated by said discriminating means; and

image forming means for forming the pattern image, generated by said pattern generating means on a recording medium in a plurality of colors.

5,444,557

SINGLE CRYSTAL SILICON ARRAYED DEVICES FOR PROJECTION DISPLAYS

Mark B. Spitzer, Sharon; Jack P. Salerno, Wabun, both of Mass., and Jeffrey Jacobsen, Hollister, Calif., assignors to Kopin Corporation, Taunton, Mass.

Continuation-in-part of Ser. No. 823,858, Jan. 22, 1992, and a continuation-in-part of Ser. No. 872,297, Apr. 22, 1992, Pat. No. 5,317,436, which is a continuation-in-part of Ser. No. 839,241, Feb. 20, 1992, which is a continuation-in-part of Ser. No. 636,602, Dec. 31, 1990, Pat. No. 5,206,749. This application Sep. 11, 1992, Ser. No. 944,207

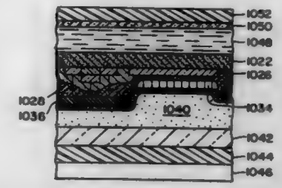
Int. Cl.[6] G02F *1/1343*, *1/1335*

U.S. Cl. 359—59 43 Claims

1. A liquid crystal transmission color display comprising:

an optically transmissive substrate positioned to receive light incident from a light source;

an active matrix circuit panel bonded to the optically transmissive substrate with an adhesive layer such that the substrate is positioned between the circuit panel and the light source, the circuit panel comprising a thin film of essentially single crystal semiconductor material with which an array of transistors is formed, an array of pixel electrodes where each pixel electrode is electrically connected to one of the transistors, each transistor actuating a pixel electrode; and



an array of color filter elements located between the pixel electrodes and the adhesive layer such that light transmitted through each pixel electrode is directed into a liquid crystal material and has a color defined by one of the color filter elements, the liquid crystal material positioned adjacent to the pixel electrodes such that an electric field generated by each pixel electrode alters a light transmitting property of the liquid crystal material.

5,444,558

SPATIAL LIGHT MODULATOR WITH PHOTOCONDUCTOR OF HYDROGENATED AMORPHOUS SILICON WITH 0.1-1.0 PPM BORON

Dai Imanishi; Nozomu Ohkouchi, both of Yokosuka; Kazushige Ohtawara, Kyoto; Hiroyuki Natsuhori, Kamakura; Shigeo Shimizu, Yokohama; Toshio Kouno, Hoya; Masanobu Shigeta, Yokosuka; Hiromitsu Takenaka, Yokosuka, and Tadayuki Shimada, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

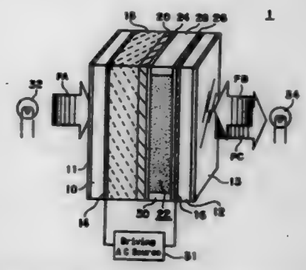
Continuation-in-part of Ser. No. 977,613, Nov. 17, 1992, Pat. No. 5,353,139. This application Jun. 15, 1993, Ser. No. 77,559

Claims priority, application Japan, Jun. 16, 1992, 4-181836

The portion of the term of this patent subsequent to Oct. 4, 2011, has been disclaimed.

Int. Cl.[6] G02F *1/135*

U.S. Cl. 359—72 1 Claim



1. A spatial light modulator having a pair of transparent electrodes for generating a driving electric field therebetween and at least a photoconductive member and a photo modulation member laminated and interposed between said pair of transparent electrodes, and information being written in said spatial light modulator by irradiating said photoconductive member with a writing light carrying said information, said photoconductive member being made of hydrogenated amorphous silicon doped with boron such that an amount of boron with respect to silicon in said hydrogenated amorphous silicon in atomic percent is above 0.1 ppm and less than 1.0 ppm, said

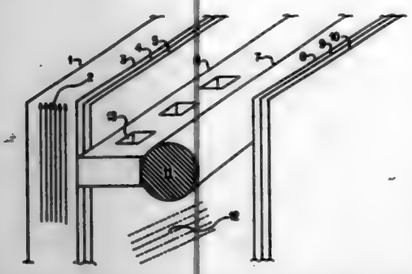
information being read out of said spatial light modulator by irradiating said photo modulation member with a reading light, wherein a thickness of said photoconductive member is selected to have light absorptance ranged 70% to 95% at a wavelength of said writing light.

5,444,559

METHOD AND APPARATUS FOR CONTROLLING OPTICAL CHARACTERISTICS OF A PROGRAMMABLE SURFACE MEDIUM

Robert B. J. Warner, 11305 Waconser Dr., Germantown, Md. 20876, and Gerald S. Lang, 812 Downs Dr., Silver Spring, Md. 20904

Filed Mar. 26, 1993, Ser. No. 37,445
Int. Cl.[6] G02F *1/13*
U.S. Cl. 359—85 9 Claims



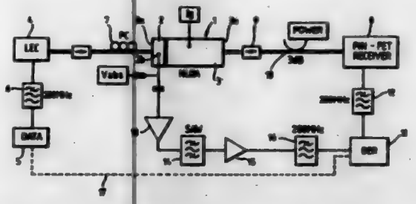
1. An electromagnetic radiation control device comprising:
a front transparent planar capsule provided with a plurality of planar surfaces;
a rear transparent planar capsule sealingly engaged to said front planar capsule to provide an enclosed volume therebetween said rear capsule provided with a plurality of planar surfaces;
a transparent electro-optical agent provided within said enclosed volume;
a transparent energy collection device provided on at least one of said planar surfaces of said front and rear capsules;
a transparent sensor device provided on at least one of said planar surfaces of said front and rear capsules for receiving electro-optical information from an external object;
at least one transparent re-programmable solid state memory and control device provided on at least one of said transparent planar surfaces of said front and rear capsules for receiving information from said transparent sensor device and for the control of the characteristics of said transparent electro-optical agent based upon said information from said sensor device and material provided within said transparent memory, said transparent memory and transparent control device powered by said energy collection device said transparent memory and control device projecting images onto one of said planar surfaces based upon information included in said transparent memory and control device as well as information provided to said transparent memory and control device from said transparent sensor device, said transparent memory and control device and said transparent sensor device scanning, detecting, measuring, storing, computing and printing information based upon information provided in said transparent memory and control device and sensed by said transparent sensor device; and
a transparent electrode matrix provided on at least one of said planar surfaces of said front and rear capsules for connecting said transparent energy collection device and said transparent sensor device to said transparent memory and transparent control devices and for connecting said transparent memory to said transparent electro-optical agent to control the characteristics thereof.

5,444,560

OPTICAL CLOCK RECOVERY

Peter E. Barnsley, Ipswich, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB91/02030, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO92/09159, PCT Pub. Date May 29, 1992
PCT Filed Nov. 18, 1991, Ser. No. 64,150
Claims priority, application United Kingdom, Nov. 16, 1990, 9025014; May 7, 1991, 9109762
Int. Cl.[5] H04J *14/08*; H04B *10/00*
U.S. Cl. 359—138 21 Claims



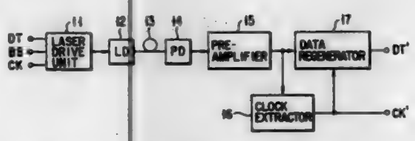
9. Apparatus for generating a clock signal, the apparatus comprising a non-linear optical element, means connected to the non-linear optical element for inputting a digital optical signal, said digital optical signal containing no significant frequency spectrum clock component at the signal clock frequency, the non-linear optical element detecting non-linear variation of the digital optical signal and generating a further signal as a result of said detection, and means responsive to said further signal for extracting a clock frequency component for the digital optical signal from said further signal.

5,444,561

OPTICAL TRANSMISSION APPARATUS

Katsuji Kaminishi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 8, 1993, Ser. No. 14,686
Claims priority, application Japan, Feb. 26, 1992, 4-039007
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—158 25 Claims



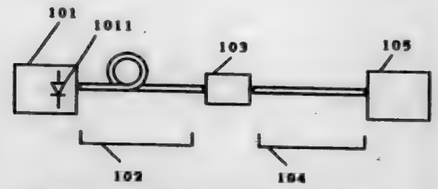
1. An optical transmission apparatus comprising:
output means for outputting a laser light from a transmission side, said laser light being derived by superposing a D.C. bias and a clock signal on an NRZ modulation signal, said D.C. bias being greater than a threshold current of a semiconductor laser, and said clock signal being a continuous wave which has an amplitude smaller than a difference between the D.C. bias and the threshold current and which is synchronous with the NRZ modulation signal;
an optical fiber for transmitting the laser beam output from said outputting means to a reception side;
photodetector means for detecting the laser light transmitted through the optical fiber on the reception side and for converting the detected laser light to an electrical signal;
clock extracting means for extracting the clock signal, which is the continuous wave, from the electrical signal obtained by the photodetector means; and
data regenerating means for deriving the NRZ modulation signal from the electrical signal obtained by the photodetector means, in accordance with the clock signal extracted by the clock extracting means.

5,444,562

APPARATUS FOR TRANSMITTING AN INTENSITY-MODULATED LIGHT SIGNAL

Masaru Fuse, Toyonaka, Japan, assignor to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed Mar. 1, 1994, Ser. No. 203,313
Claims priority, application Japan, Mar. 2, 1993, 5-041014
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—161 16 Claims



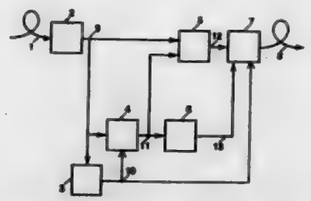
1. An optical transmission apparatus comprising:
an electro-optic converter means for converting an electrical signal into a light signal;
a first optical fiber transmission path for conveying said light signal;
opto-electronic converter means for reconverting an incoming light signal into an electrical signal;
a second optical fiber transmission path which is connected between said first optical fiber transmission path and said opto-electronic converter means and in which a waveform of said light signal is distorted more strongly due to generation of reflected waves and interference with the reflected waves than in the first optical fiber transmission path; and
an optical property changing means located close to a junction of said first and second optical fiber transmission paths and acting to change an optical property of said transmitted light signal, for reducing waveform distortion in said second optical fiber transmission path.

5,444,563

METHOD AND ARRANGEMENT TO CONVERT AN OPTICAL DATA SIGNAL FROM A MULTI MODE FIBRE TO A CORRESPONDING SIGNAL INTO A SIGNAL MODE FIBRE

Gunnar S. Forsberg, Stockholm, Sweden, assignor to Fogim HB, Stockholm, Sweden

PCT No. PCT/SE92/00285, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/20172, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 29, 1992, Ser. No. 137,162
Claims priority, application Sweden, May 8, 1991, 9101397
Int. Cl.[6] H04B *10/02*
U.S. Cl. 359—179 7 Claims



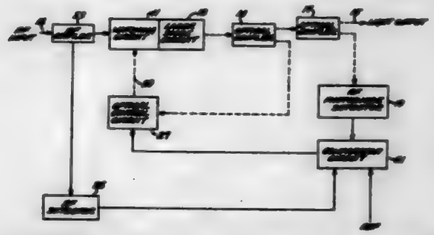
1. A device for conversion of an incoherent optical data signal transmitted from a multimode fiber to a corresponding signal which is transmitted to a single mode fiber by a laser transmitter,comprising:
means connected to a multimode fiber for transforming an optical input signal received from said multimode fiber into an electric signal, said transforming means comprising a DC-coupled optical receiver having a receiver input connected to said multimode fiber and a receiver output;
a laser transmitter having a first transmitter input, a second transmitter input, a third transmitter input and a transmitter output, said transmitter output being connected to a single mode fiber and comprising a control loop and a memory device connected thereto;
an AGC circuit having an AGC input, and an AGC output connected to said first transmitter input;
a low pass filter having a first filter input connected to said receiver output, a second filter input, and a filter output connected to said AGC input;
comparator means for receiving said electric signal from said transforming means and for transmitting a signal to said laser transmitter to modulate said laser transmitter, said comparator means comprising a comparator having decision circuitry and a first comparator input connected to said receiver output, a second comparator input connected to said filter output and a comparator output connected to said second transmitter input; and
interruption detector means connected to said transforming means, said low pass filter and said laser transmitter (a) for detecting optical interruption of said incoherent optical data signal and in response simultaneously (1) diverting laser current to interrupt optical output power emitted into said single mode fiber and (2) storing an analogue value of said control loop in said memory device, and (b) for detecting when said optical interruption ceases and in response simultaneously (1) discontinuing diverting laser current to thereby resume said optical output power emitted into said single mode fiber and (2) operating said laser transmitter on the basis of analogue values previously stored in said memory device, said interruption detection means comprising a detection input connected to said receiver output and a detection output connected to said second filter input and said third transmitter input.

5,444,564

OPTOELECTRONIC CONTROLLED RF MATCHING CIRCUIT

Irwin L. Newberg, Northridge, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

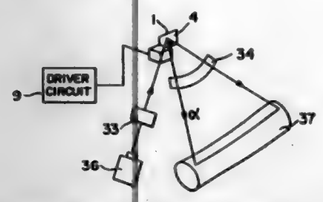
Filed Feb. 9, 1994, Ser. No. 195,662
Int. Cl.[6] H04B *10/04*
U.S. Cl. 359—187 6 Claims



3. An RF photonic impedance matching system for matching an electrical input of an RF optical circuit which provides an RF optical output, comprising:
an RF photonically controlled impedance matching circuit having adjustable impedance and power transfer characteristics responsive to an RF electrical input for providing an RF matching circuit electrical output to the electrical input of the RF optical circuit;

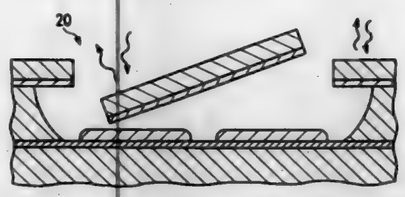
input detecting means for detecting said RF electrical input and providing an input reference signal;
output detecting means for detecting the RF optical output of the RF optical circuit for providing an output reference signal;
optical signal generating means for providing an optical matching circuit control signal to control said RF photonically controlled impedance matching circuit; and
control means responsive to said input reference signal and said output reference signal for controlling said optical signal means such that said impedance matching circuit provides a desired impedance matching and power transfer relative to the RF optical circuit.

5,444,565
OPTICAL SCANNER
Hiroshi Goto, Yamatokoriyama, Japan, assignor to Omron Corporation, Kyoto, Japan
Division of Ser. No. 741,353, Aug. 7, 1991, Pat. No. 5,245,463. This application Jun. 11, 1993, Ser. No. 75,292
Claims priority, application Japan, Aug. 7, 1990, 2-209803; Aug. 7, 1990, 2-209804
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—224 14 Claims



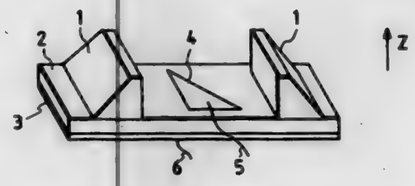
1. An optical device for creating an image on a medium comprising:
an optical light source providing a writing light beam;
a medium for receiving said writing light beam to create an image; and
an optical scanner for causing said writing light beam from said light source to be scanned on said medium, said optical scanner comprising:
a scanning element;
a support element for freely supporting at one end thereof said scanning element, said support element being a flexure element;
a vibrating element provided on another end of said support element; and
a drive source for inducing oscillation in said vibrating element, whereby vibration of said vibrating element produces deformation of said support element and consequent scanning movement of said scanning element,
wherein said support element is a shaft having at least two modes of elastic deformation and said drive source induces oscillations in said vibrating element of a resonant frequency corresponding to each mode of elastic deformation of said shaft, said scanning element being rotated in at least two directions by the elastic vibrations of said shaft, and
wherein said vibrating element, shaft and scanning element are integrally formed as a flat plate-like member.

5,444,566
OPTIMIZED ELECTRONIC OPERATION OF DIGITAL MICROMIRROR DEVICES
Richard O. Gale, Richardson; Randall S. Lawson, Plano; Harlan P. Cleveland, Garland; Henry Chu; Carl W. Davis, both of Plano; Scott D. Holmback, and Claude E. Tew, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 7, 1994, Ser. No. 206,812
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—291 19 Claims



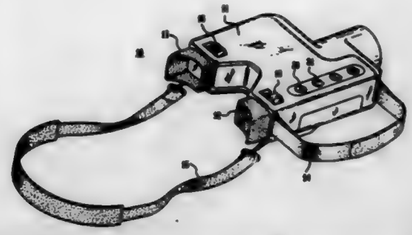
1. A method of resetting a digital micromirror device comprising:
biasing a pair of address electrodes of a digital micromirror device element, wherein a first voltage is applied to a first address electrode and a second voltage is applied to a second address electrode; and
biasing a deflectable structure with a third voltage, wherein said third voltage is less than said first voltage and greater than said second voltage.

5,444,567
LIGHT CONTROL DEVICE
Keiji Katsuoka, Ibaraki, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed Nov. 9, 1992, Ser. No. 973,620
Claims priority, application Japan, Nov. 12, 1991, 3-295936
Int. Cl.[6] G02F *1/29*
U.S. Cl. 359—319 13 Claims



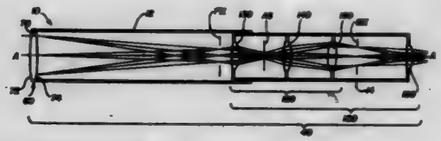
1. A light control element, comprising:
a crystal material having an electro-optical effect;
two electrodes provided on upper and lower surfaces of said crystal material, respectively, at least one of said two electrodes having a circular shape,
a waveguide layer interposed between at least one of said electrodes and said crystal material;
wherein a light incident within said crystal material is controlled by applying a voltage between said two electrodes.

5,444,568
CONSUMER NIGHT VISION VIEWING APPARATUS
George M. Williams, Jr., Troutville, Va.; Gary L. Palmer, Bellevue, Wash., and John D. Popow, Roanoke, Va., assignors to ITT Corporation, New York, N.Y.
Continuation of Ser. No. 954,006, Sep. 30, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,683
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—400 19 Claims



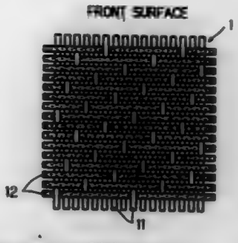
1. Night vision apparatus for providing an intensified image for each of the eyes of a user, with the image provided by a single image intensifier having an output directed through optics and divided to the right and left eye of a user of said night vision apparatus with said optics including a right diopter assembly for right eye viewing and a left diopter assembly for left eye viewing, said night vision apparatus included in a housing containing said image intensifier and said optics, in combination therewith an apparatus for providing diopter and interpupillary distance adjustments to said right diopter assembly and said left diopter assembly, comprising:
a first and second manually movable control means located on said housing with said first control means coupled to said right diopter assembly and with the second control means coupled to said left diopter assembly, wherein the first and second control means enable a user to independently move said right diopter assembly and said left diopter assembly in first directions for diopter focusing of each diopter assembly and in second transverse directions to enable interpupillary adjustment.

5,444,569
COLLAPSIBLE TERRESTRIAL TELESCOPE
Barry G. Broome, Glendora, Calif., assignor to Steven Spence Adkinson, Beverly Hills, Calif.
Filed Mar. 12, 1993, Ser. No. 30,786
Int. Cl.[6] G02B *23/24*; A61B *1/04*
U.S. Cl. 359—435 45 Claims



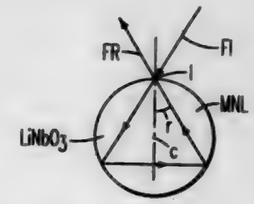
1. A lens system for an erecting telescope for magnifying an image, comprising:
(a) an objective lens having a plurality of lens surfaces, wherein at least one lens surface is aspheric;
(b) an asymmetric erecting lens group including a first, a second, and a third lens element defining a plurality of optical surfaces for erecting an image formed by the objective lens, wherein at least one optical surface in the erecting lens group is aspheric and a ratio of an axial length to a clear aperture diameter of each lens element is less than one; and
(c) an eyepiece lens optically aligned with the objective lens for viewing the erected image, such that the erecting lens group is optically intermediate of the eyepiece lens and the objective lens.

5,444,570
POLARIZING SCREEN
Masao Uetsuki, and Takashi Tsunematsu, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Sep. 23, 1994, Ser. No. 311,187
Claims priority, application Japan, Sep. 24, 1993, 5-238171; Dec. 28, 1993, 5-350201
Int. Cl.[6] G02B *5/30*
U.S. Cl. 359—483 8 Claims



1. A polarizing screen which comprises:
a woven polarizing fabric having front and rear surfaces opposite to each other, said woven polarizing fabric being woven in a satin fashion including warps of one of polarizing and non-polarizing threads and wefts of the other of the polarizing and non-polarizing threads, said front surface of the woven polarizing fabric having a relatively large portion of the polarizing threads being exposed therefrom and said rear surface thereof having a relatively large portion of the non-polarizing threads exposed therefrom;
said polarizing threads of the woven polarizing fabric have their lengthwise direction oriented substantially perpendicular to a horizontal plane.

5,444,571
NON-LINEAR OPTICAL DEVICES
Thierry Debuisschert, Orsay; Jean-Paul Pocholle, Arpajon/La Norville, and Michel Papuchon, Villebon, all of France, assignors to Thomson-CSF, Puteaux, France
Filed Jul. 8, 1992, Ser. No. 910,529
Claims priority, application France, Jul. 9, 1991, 91 08604
Int. Cl.[6] G02F *2/02*; G02B *5/18*
U.S. Cl. 359—566 18 Claims



1. A non-linear optical device comprising:
a non-linear medium made of an optically non-linear material,
means for directing a laser beam at a determined single point of said medium and at a determined angle relative to said medium,
wherein the non-linear medium comprises optical coupling

means enabling said beam both to enter said medium and to exit said medium at said determined single point of the non-linear medium,

wherein said beam is oriented relative to said medium so that the beam gets totally internally reflected in he non-linear medium several times on the walls of the non-linear medium before emerging therefrom,

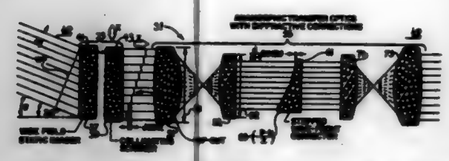
wherein a diffraction grating is etched in the surface of the non-linear medium at said determined single point, said grating for optically coupling said beam to said medium.

5,444,572

WAVEFRONT CORRECTOR FOR SCANNING MICROLENS ARRAYS

George Gal, Palo Alto; William W. Anderson, Half Moon Bay; Bruce J. Herman, Mountain View, and Dean M. Shough, Newark, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 11,323, Jan. 29, 1993, which is a continuation-in-part of Ser. No. 982,514, Nov. 27, 1992, Pat. No. 5,310,623. This application May 20, 1993, Ser. No. 64,947
Int. Cl.[6] G02B *27/09*
U.S. Cl. 359—619 14 Claims



1. Wavefront correction apparatus for correcting a stepped wavefront output produced by certain angles of scan and by certain positions of scan in scanning microlens arrays, said apparatus comprising,

a non-scanning array of microlenses,

a scanning array of microlenses,

the microlenses in each array being aligned in rows and columns and inter-associated between the arrays to form unit cell trains also aligned in said rows and columns, with each unit cell train having an output,

scanning means for moving the scanning array to selected scan positions with respect to the non-scanning array,

said scanning means being limited to movement of the scanning array in one linear direction only, which is the direction of the alignment of the columns of the microlenses in the arrays, so that each unit cell train in a particular row has the same angle of scan as every other unit cell train in that row, at any scan angle,

beam shaping means for forming, at each position of scan of the scanning means, the outputs of all of the unit cell trains of the arrays into a unique, separate, linear image between the beam shaping means and a wavefront corrector means for each position of scan of the scanning array,

said linear image being aligned with the direction of said columns of said microlenses in the arrays,

said wavefront corrector means positioned with respect to said unique, separate, linear image for removing steps in an outgoing wavefront transmitted through the arrays,

said wavefront corrector means comprising a material having an index of refraction different from air,

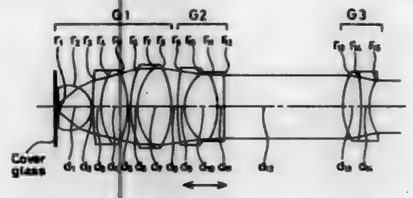
said material having, at each location in the wavefront corrector means corresponding to a location of a particular row of unit cell trains in said arrays, a selected thickness of the material which is effective to vary the time of optical passage through the material thickness in an amount to restore a wavefront to a continuous, unstepped form at an outlet of said material.

5,444,573

MICROSCOPE OBJECTIVE

Yoshiharu Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 163,692
Claims priority, application Japan, Dec. 10, 1992, 4-330372
Int. Cl.[6] G02B *21/02*
U.S. Cl. 359—659 4 Claims



1. A microscope objective compriaing, in order from the object side:

a 1-st lens unit (G_1) of positive refractive power which includes a positive meniscus lens having a concave surface directed toward the object side to convert a bundle of rays from an object into a convergent bundle of rays;

a 2-nd lens unit (G_2) having a negative refractive power; and

a 3-rd lens unit (G_3) having a small refractive power;

said 2-nd lens unit (G_2) being movable relative to said 1-st and 3-rd lens units (G_1 and G_3) along an optical axis in accordance with a change in thickness of a transparent plane-parallel plate disposed between said 1-st lens unit (G_1) and the object, and said microscope objective satisfying the following conditions:

$$0.2<|r_1/f|<1.5 \quad (1)$$

$$5<|f_2/f|<20 \quad (2)$$

$$40<|f_3/f| \quad (3)$$

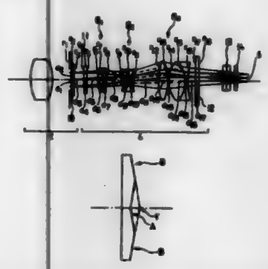
where r_1 is the curvature radius of a lens surface in said 1-st lens unit (G_1) that is the closest to the object side; f_2 and f_3 are the respective focal lengths of said 2-nd and 3-rd lens units (G_2 and G_3); and f is the focal length of the entire system.

5,444,574

ELECTRONIC IMAGE PICKUP APPARATUS EQUIPPED WITH MEANS FOR ELIMINATING MOIRÉ

Katsuya Ono, and Akira Hasegawa, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 948,012, Sep. 18, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 322,371
Claims priority, application Japan, Sep. 19, 1991, 3-266979; Oct. 31, 1991, 3-311440
Int. Cl.[6] G02B *3/02, 3/00*
U.S. Cl. 359—708 4 Claims



1. An electronic image pickup apparatus comprising:

an imaging optical system for forming images of an object; and

an image pickup device having a light receiving surface which samples said images at discontinuously distributed points, said image pickup device outputting signals representing light intensity distributions of said images;

said imaging optical system compriaing a refracting surface having an optical low pass effect, said refracting surface having an inner portion which is nearly conical in a first direction and having an outer portion which is nearly conical in a second direction opposite to said first direction.

5,444,575

METHOD FOR RECORDING DIGITAL DATA USING A SET OF HEADS INCLUDING A PAIR OF CO-LOCATED HEADS TO RECORD DATA AT A RATE LOWER THAN THE FULL RECORDING RATE POSSIBLE USING THE SET OF HEADS

Joseph E. Augenbraun, Princeton; Jill M. Boyce, East Windsor, both of N.J., and Larry A. Pearlstein, Newtown, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Jan. 21, 1994, Ser. No. 184,716
Int. Cl.[6] G11B *15/14, 21/4;* H04N *5/78, 5/76*
U.S. Cl. 360—64 14 Claims



1. A method of operating a digital video tape recorder, capable of recording a full rate bit stream on a tape, to record on the tape a reduced rate bit stream having a data rate of 2/xH the data rate of the full rate bit stream, where x is a positive integer greater than one and H is an even positive integer, the digital video tape recorder including a headwheel having heads of alternating azimuths uniformly distributed around the outer edge of the headwheel, at least one head being located at each one of H locations on the headwheel located (360/H) degrees apart, at least one pair of co-located heads located at at least one of the H locations, the at least one pair of co-located heads including a first head of a first azimuth and a second head of a second azimuth, the one of the H locations located 180 degrees from the at least one pair of co-located heads containing a head of a second azimuth, the digital video tape recorder rotating the headwheel at a preselected rotation rate and moving the tape at a preselected normal play tape speed when recording the full rate bit stream, the method of recording the reduced rate bit stream comprising the steps of:

a) positioning the tape in close proximity to the headwheel;

b) moving the tape around the headwheel at a speed of 2/xH the preselected normal play tape speed;

c) rotating the headwheel at the preselected rotation rate, one of the head locations beginning a pass over the moving tape during each (360/H) degree rotation of the headwheel, each of the H head locations passing over the moving tape on a diagonal relative to the length of the tape once during each complete 360 degree revolution of the headwheel;

d) passing the at least one pair of co-located heads over the tape for a first time by continuing to rotate the headwheel at the preselected rotation rate;

e) controlling the first head of the first azimuth of the at least one pair of co-located heads to commence recording data from the reduced rate bit stream on the tape as the first head begins to pass over the tape and to continue recording the data on the tape until the first head completes passing over the tape;

f) continuing to rotate the headwheel at the preselected rotation rate to rotate the headwheel (360/H)(xH/2−1) degrees from the point recording was last commenced;

g) controlling the record heads to inhibit recording of data by any of the record heads that begin to pass over the tape as the tape rotates the (360/H)(xH/2−1) degrees from the point recording was last commenced;

h) continuing to rotate the headwheel at the preselected rotation rate to begin passing a next one of the head locations, located on the headwheel (360x/2) degrees from the one of the recording locations where the head last used to record data on the tape is located;

i) controlling a next one of the heads located at the next one of the record head locations and having an azimuth differing from the azimuth of the last head used to record data on the tape, to commence recording data from the reduced rate bit stream on the tape using the next one of the heads when the next one of the heads begins to pass over the tape and to continue recording the data on the tape until the next one of the heads completes the pass over the tape;

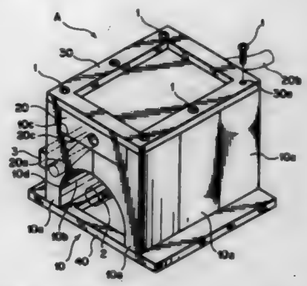
j) repeating steps f through i.

5,444,576

COOLED REFLECTIVE MIRROR APPARATUS

Mizuho Shimada, Kanagawa, Japan, assignor to Equestrian Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 97,184
Int. Cl.[6] G02B *5/10, 7/195*
U.S. Cl. 359—845 5 Claims



1. A cooled reflective mirror apparatus compriaing:

a reflective mirror body having a curved surface portion on an inner side thereof and a flat surface portion on an outer side thereof, the curved surface portion being plated to reflect light;

a cooling tank having a flat surface portion that matches the flat surface portion of the reflective mirror body, the cooling tank being placed in tight surface contact with the reflective mirror body through the matching flat surface portions of the cooling tank and the reflective mirror body; and

an opening opposed from said curved surface through which light reflected from said curved surface passes.

5,444,577

IMPURITY BAND OPTICAL FILTER

Lowell M. Hobrock, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 529,414, May 29, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 821,320
Int. Cl.[6] G02B *5/22;* H01L *31/00*
U.S. Cl. 359—885 5 Claims

1. An LWIR optical filter detector device, comprising:

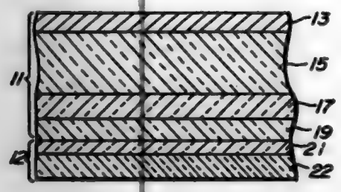
a semiconductor substrate material;

a first impurity layer created in the substrate for absorbing out of band energy and transmitting LWIR energy above

a minimum transmittance level within a passband, the impurity layer being doped with an impurity to a concentration of 10^{17}–10^{18} such that the impurity layer has a separation of states at cryogenic temperatures for transforming the absorbed out of band energy into free carriers;

a second impurity layer created in the substrate;

means for cooling the first and second impurity layers within the substrate to cryogenic temperatures of approximately 15 degrees Kelvin;



a blocking layer within the substrate for isolating free carriers created from the absorbed out of band energy; and

an infrared detector within the substrate, such that the detector senses the transmitted energy, the detector adding a cutoff at a maximum transmittance level of the passband such that a combination of the minimum transmittance level of created by the impurity layer and the maximum transmittance level created by the detector provides a passband filter.

5,444,578

MAGNETIC REPRODUCTION CIRCUIT HAVING VARIABLE AMPLIFICATION FOR CORRECTION

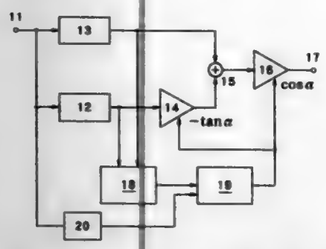
Takeshi Terazawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 166,062

Claims priority, application Japan, Dec. 28, 1992, 4-348436

Int. Cl.[6] G11B *5/035*

U.S. Cl. 360—65 **11 Claims**



1. A magnetic reproduction circuit comprising:

a Hilbert transform filter and a delay element each adapted to receive a signal reproduced from a magnetic recording medium;

a variable amplifier connected to an output terminal of at least one of the Hilbert transform filter and the delay element;

an adder for adding outputs, from the Hilbert transform filter and the delay element wherein the outputs are fed to the adder with or without passing through the variable amplifier for varying their amplitude;

a detector for detecting a magnetic transition point of the magnetic recording medium; and

a magnetization ratio detector for finding a ratio of a magnetization of the magnetic recording medium in the moving direction to a magnetization of the magnetic recording medium in a direction perpendicular to the moving direction,

wherein an amplification factor of the variable amplifier is varied by using the magnetization ratio found by the magnetization detector as a parameter.

5,444,579

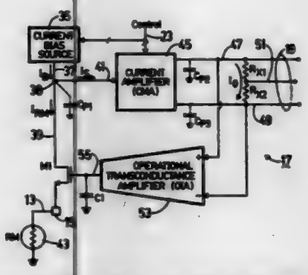
PREAMPLIFIER OF A SIGNAL FROM A VARIABLE RESISTANCE SENSOR, AND A CURRENT SOURCE

Hans W. Klein, and Moises E. Robinson, both of Pleasanton, Calif., assignors to IMP, Inc., San Jose, Calif.

Filed Dec. 17, 1993, Ser. No. 168,435

Int. Cl.[6] G11B *5/02*

U.S. Cl. 360—67 **19 Claims**



user data being transferred between the disk storage surface and a host computing system and for storing at least one sequence of trace values,

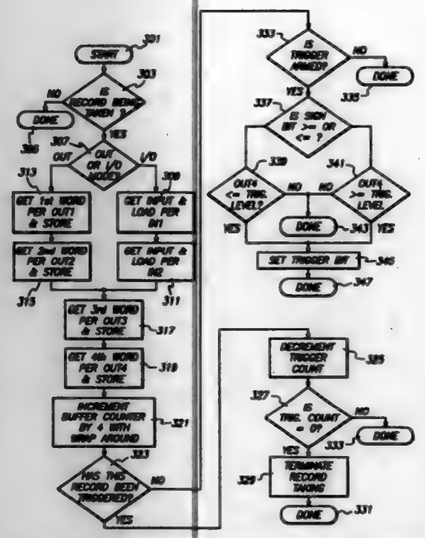
memory controller means for controlling addressing of the data block buffer memory, and

disk drive interface means communicating with the data block buffer memory, with the memory controller means, and with the digital actuator controller means for receiving control values from, and for transfer, storage and retrieval of user data between the disk storage surface and a host computing system,

the digital actuator controller means comprising a programmed digital microprocessor with firmware implementing the digital sampling analyzer and including:

memory buffer configuration means connected to the memory controller means for configuring at least a portion of the data block buffer memory as a circular trace buffer for storing a sequence of trace values,

trace value taking means for transferring the sequence of program selected trace values taken from at least one of



the plurality of addressable internal registers of the digital actuator controller means during a real time increment of a servo loop control interval determined by a predetermined trigger parameter and for recording the sequence of trace values within the circular trace buffer of the data block buffer memory, and

trace processing means for retrieving and processing the sequence of program selected trace values into processed trace information during a background increment of the control interval, the processed trace information being recorded in the memory means,

the digital sampling analyzer further including:

trace value selection register means responsive to the disk drive interface means for receiving and storing at least one trace parameter for selecting said addressable internal register, and

trigger parameter register means responsive to the disk drive interface means for receiving and storing said trigger parameter,

the trace value taking means being responsive to the stored trace parameter and the stored trigger parameter.

5,444,584

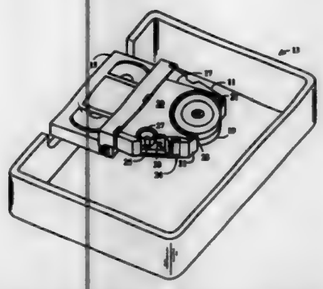
VIDEO CASSETTE TAPE PROTECTION DEVICE CONSISTING OF AN ENCLOSURE HAVING WALLS SUBSTANTIALLY BOUNDING THE TAPE PATH IN A VIDEO CASSETTE PLAYER/RECORDER

David S. Stewart, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 27, 1993, Ser. No. 175,902

Int. Cl.[6] G11B *5/027*

U.S. Cl. 360—85 14 Claims



1. A video cassette protection device comprising:

a box adapted to be fixedly contained in a VCR case and covering a tape path having a known operating level;

the box being separate from and extraneous to the tape drive mechanism and configured to have side walls whose inside surfaces are substantially parallel and proximate to the tape path;

the box further having a top wall having an inside surface abutting the side wall inside surfaces;

the top and side walls forming a barrier to tape runaway and providing a cache for runaway tape substantially in the operating level of the tape path.

5,444,585

VCR TAPE LOADING MECHANISM WITH REDUCE MOTOR CURRENT DRAWING DURING LOADING BY STAGGERING TIME TYPE LOADING ARMS CONTACT THE BASE STOPS

Myung C. Baek, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

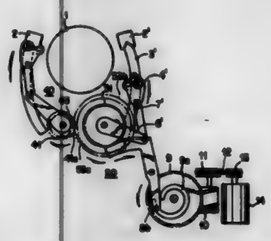
Continuation of Ser. No. 977,952, Nov. 18, 1992, abandoned.

This application Sep. 15, 1994, Ser. No. 306,851

Claims priority, application Rep. of Korea, Nov. 19, 1991, 1991-19789

Int. Cl.[6] G11B *5/027*

U.S. Cl. 360—85 12 Claims



1. A tape loading apparatus of a video cassette recorder, comprising:

members for drawing out tape from a video cassette;

first and second bases for mounting said members, said first base being independently and operatively connected with a first power transmitting gear means and said second base being independently and operatively connected with a second power transmitting gear means;

means for moving said first and second bases to a loading position where said first base engages a first stopper and said second base engages a second stopper, and wherein said first base engages the first stopper before said second base engages the second stopper resulting in a difference in time between when said first and second bases engage the first and second stoppers; and

a power source for driving said moving means, said first and second power transmitting gear means receiving power generated by said power source;

wherein a load electric current of said power source for loading said means is reduced because a load exerted on said means for moving said first and second bases occurs within said difference in time.

5,444,586

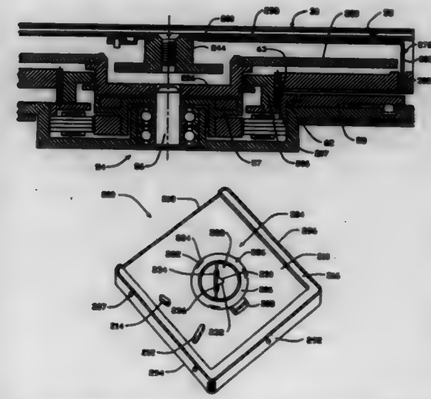
REMOVABLE CARTRIDGE FOR A DISK DRIVE WITH A 1.8 INCH FORM FACTOR

Syed H. Iftikar, Fremont; Herbert E. Thompson, Los Gatos, and Albert J. Guerial, Gilroy, all of Calif., assignors to SyQuest Technology, Inc., Fremont, Calif.

Filed Nov. 13, 1992, Ser. No. 976,379

Int. Cl.[6] G11B *17/03, 5/012*

U.S. Cl. 360—99.12 5 Claims



1. A cartridge for a removable cartridge disk drive comprising:

a housing and a cartridge nut defined by said housing;

a disk;

a hub for mounting said disk;

a cartridge screw selectively engaging said hub, and the cartridge screw being received by said cartridge nut, said cartridge screw to position the hub and the disk relative to the housing; and

wherein the cartridge screw has a tang extending therefrom, the tang being adapted to be engaged by a disk drive to rotate the cartridge screw when the cartridge is installed in a disk drive.

5,444,587

METHOD AND APPARATUS FOR ATTACHING METALLIC AND CERAMIC MATERIALS

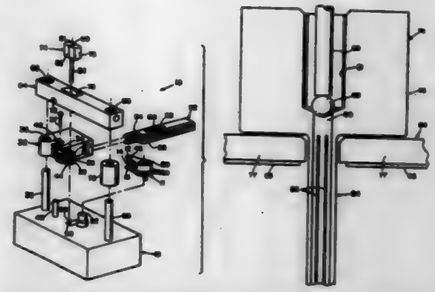
Ernest V. Johnson, Phillipston; Allen R. Creamer, Leominster, and Edward Mills, Clinton, all of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 980,932, May 11, 1992, abandoned.

This application May 10, 1994, Ser. No. 240,545

Int. Cl.[6] G11B *21/16*; B21D *39/00*

U.S. Cl. 360—104 20 Claims



1. A method of mechanically attaching a computer disk drive actuator arm to a read/write head suspension member said suspension member having a first hole at one end thereof and including an integral sleeve-like boss which is substantially coaxial with said first hole, said method comprising the steps of:

aligning the first hole through the suspension member with a second hole through the actuator arm such that during assembly said boss around the hole in the suspension member protrudes into the second hole in the actuator arm, the first and second holes and the boss being substantially coaxial;

inserting an expandable split pin having an axial central hole through the first and second holes and the boss;

inserting a removable expander member of a material harder than the pin into the axial central hole to three the pin to expand radially such that the outside perimeter of the pin contacts and forces the inside perimeter of the boss radially outwards to expand the boss into frictional contact with the perimeter of the second hole in the actuator arm; and

supporting the pin against axial movement such that as the pin expands radially, axial forces on the actuator arm are substantially eliminated.

5,444,588

MAGNETIC ERASING HEAD WITH STRUCTURE FOR RETAIN THE HEAD IN A HOLE OF THE BASE OF A VIDEO CASSETTE RECORDER AND PLUGGING THE HEAD INTO A CIRCUIT BOARD

Jae K. Choi, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 27, 1994, Ser. No. 328,742

Claims priority, application Rep. of Korea, Nov. 29, 1993, 93-25464 U

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 4 Claims

1. A head in a video cassette recorder, said head comprising:

a head portion for recording, erasing and/or reproducing data on a tape;

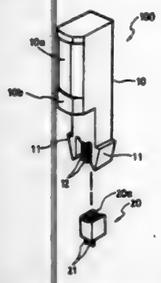
a body for supporting said head portion;

a pair of neck portions separately formed on a lower portion of said body for being necked in a through hole of a base in the video cassette recorder;

a pair of head terminals protrudingly and downwardly

formed on a lower surface of said body, between said neck portions;

a socket having a pair of socket grooves for receiving said head terminals and a pair of socket terminals on a lower surface thereof; and



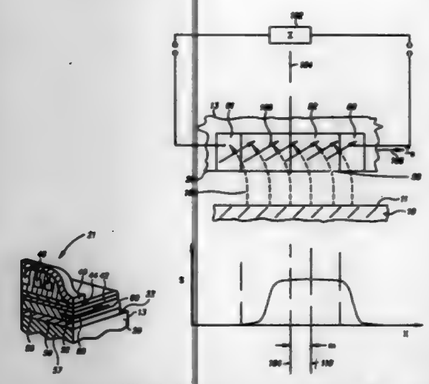
a wafer having a pair of grooves for receiving said socket terminals, said wafer being fixedly mounted on a printed circuit board of said video cassette recorder.

5,444,589

ROTARY ACTUATOR DISK DRIVE WITH IDENTICAL DUAL-ELEMENT READ/WRITE TRANSDUCERS

Hung L. Hu, Los Altos Hills, and Ching H. Tsang, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1993, Ser. No. 162,513
Int. Cl.[6] G11B *5/39, 5/147, 5/55*
U.S. Cl. 360—113 **14 Claims**



1. A data recording disk drive of the type having a write transducer for writing data on the disk and a separate read transducer for reading data from the disk, the disk drive comprising:

at least one data disk;

a motor connected to the disk for rotating the disk;

a first carrier for supporting a write transducer and a read transducer, the first carrier having a disk side and a trailing end;

a second carrier for supporting a write transducer and a read transducer, the second carrier having a disk side and a trailing end;

a rotary actuator connected to the first and second carriers for simultaneously moving the first carrier in a generally arcuate path across one surface of the disk, and the second carrier in a generally arcuate path across the opposite surface of the disk so the transducers may access data on their associated disk surfaces;

a first write transducer attached to the trailing end of the first carrier and having a sensing end oriented toward the disk side of the first carrier;

a first read transducer attached to the trailing end of the first carrier and having a sensing end oriented toward the disk side of the first carrier, the sensing end of the first read transducer being in a fixed position relative to the sensing end of the first write transducer and having its magnetic center shifted in a first direction from its geometric center;

a second write transducer attached to the trailing end of the second carrier and having a sensing end oriented toward the disk side of the second carrier;

a second read transducer attached to the trailing end of the second carrier and having a sensing end oriented toward the disk side of the second carrier, the sensing end of the second read transducer having a fixed position relative to the sensing end of the second write transducer that is substantially identical to the fixed position of the first read transducer sensing end relative to the first write transducer sensing end, the sensing end of the second read transducer having its magnetic center shifted in a second direction from its geometric center that is opposite to said first direction, the amount of the magnetic shift of the first and second read transducer sensing ends from their respective geometric centers being substantially the same; and

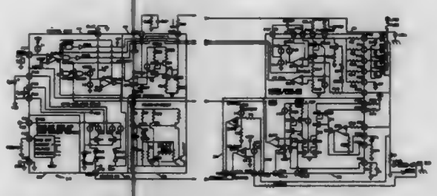
means for supporting the motor and actuator.

5,444,590

SOLID STATE POWER CONTROLLER WITH POWER SWITCH PROTECTION APPARATUS

Norman E. LeComte, West Greenwich, R.I.; Sepideh H. Nott, Fall River, Mass.; Keith W. Kawate, Attleboro Falls, Mass., and Thomas R. Maher, Plainville, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1992, Ser. No. 985,411
Int. Cl.[6] H02H *7/10*
U.S. Cl. 361—18 **16 Claims**



1. Apparatus comprising:

solid state switch means adapted to be connected to a line connected to a load,

a first current path comprising a first resistor connected to the line,

a second current path coupled to the first current path through a first current mirror, the current mirror including a second resistor in the first current path and a third resistor in the second current path,

a third current path coupled to the second path through a second current mirror, the current mirror including a fourth resistor in the second current path and a fifth resistor in the third current path,

a solid state switch means protection RC network, the third current path coupled to the protection RC network to charge the network which is adapted to provide a voltage representative of the temperature rise of the solid state switch means,

voltage responsive means having a threshold level coupled to the RC network for comparing the voltage across the network to a reference voltage to provide a trip signal when the voltage across the network reaches the threshold level, and

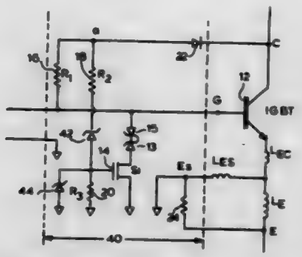
means to turn off the solid state switch means in response to the trip signal.

5,444,591

IGBT FAULT CURRENT LIMITING CIRCUIT

Rahul S. Chokhawala, and Jamie P. Catt, both of Redondo Beach, Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Apr. 1, 1993, Ser. No. 40,212
Int. Cl.[6] H02H *7/10*
U.S. Cl. 361—18 **14 Claims**



1. A fault current limiting circuit, comprising:

(a) an IGBT to be protected, the IGBT having a gate, a collector and an emitter;

(b) a MOS transistor for reducing the voltage applied to the gate of the IGBT during a short circuit condition, thereby lowering the short circuit current passing through the IGBT, the MOS transistor comprising a MOSFET having a gate, a drain and a source; and

(c) means for applying an increased voltage to the gate of the MOSFET to turn the MOSFET on during a short circuit condition, comprising:

(i) a potential divider coupled between the gate of the IGBT and the gate of the MOSFET; and

(iii) a diode coupled between the potential divider and the collector of the IGBT the diode being oriented so as to be rendered non-conductive during a short circuit condition when the voltage at the collector of the IGBT rises, resulting in an increased voltage at the gate of the MOSFET as current is prevented from passing through the diode and is diverted to the potential divider.

5,444,592

PORTABLE POWER UNIT

Motohiro Shimizu, and Masashi Nakamura, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

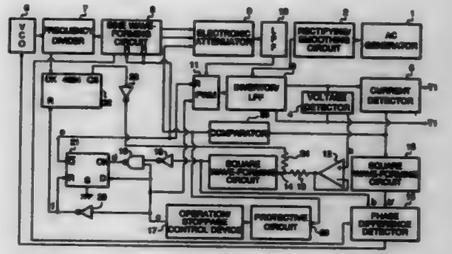
Continuation of Ser. No. 912,158, Jul. 10, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,540
Claims priority, application Japan, Jul. 12, 1991, 3-198401
Int. Cl.[6] H02H *7/122*; H02M *5/458*
U.S. Cl. 361—21 **8 Claims**

1. A portable power unit having an alternating current generator having a primary output winding, a rectifier circuit for rectifying an alternating current generated by said primary output winding into a direct current, a smoothing circuit for smoothing said direct current from said rectifier circuit to produce a smoothed direct current, an invertor circuit responsive to a driving signal, for effecting switching control of said smoothed direct current, electric current-detecting means for detecting an amount of an output current from said invertor circuit, and a protective circuit, said protective circuit comprising:

means for cutting off said output current when said amount of said output current detected by said electric current-detecting means increases to a current value which can be assumed when said power unit is in an overload state;

voltage-reducing means for progressively reducing an output voltage from said power unit as time elapses, within a predetermined voltage range, when said amount of said output current detected by said electric current-detecting means increases to a first threshold value which is smaller than said current value which can be assumed when said power unit is in said overload state; and

canceling means for canceling a voltage reduction operation of said voltage-reducing means, when said amount of said output current decreases to a second threshold value



which is smaller than said first threshold value, while said power unit is in a state in which said output voltage is reduced to a lower limit value of said predetermined voltage range by said voltage-reducing means;

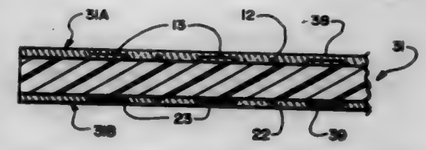
said protective circuit cutting off said output current by stopping said switching operation of said invertor circuit when said amount of said output current increases to said current value which can be assumed when said power unit is in said overload state, while said power unit is in said state in which said output voltage is reduced to said lower limit value of said predetermined voltage range by said voltage-reducing means.

5,444,593

THICK-FILM VARISTORS FOR TVSS

Edward F. Allina, 605 Capri Blvd., Treasure Island, Fla. 33706

Filed Sep. 30, 1993, Ser. No. 129,447
Int. Cl.[6] H01C *1/012*
U.S. Cl. 361—56 **11 Claims**



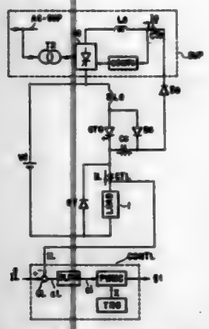
1. Transient voltage surge suppression (TVSS) apparatus, comprising a circuit board having distinct laminar electrical conductors spaced apart on a face thereof, covered with a thick-film varistor, and adapted to be connected respectively to a power line phase lead and ground.

5,444,594

SNUBBER ENERGY RECOVERY CIRCUIT FOR PROTECTING SWITCHING DEVICES FROM VOLTAGE AND CURRENT

Shigeru Tanaka, and William Ofosu-Amaah, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 4, 1993, Ser. No. 13,438
Claims priority, application Japan, Feb. 7, 1992, 4-021509; Feb. 20, 1992, 4-032476
Int. Cl.[5] H02H *7/122*
U.S. Cl. 361—58 **3 Claims**



1. A snubber energy recovery circuit for protecting at least one switching device in a main circuit from excessive current or voltage supplied to the at least one switching device, comprising:

snubber means including a series circuit connected in parallel with said at least one switching device, said series circuit including a snubber diode and a snubber capacitor connected in series;

recovering means, coupled to said snubber capacitor, including a constant-current source for recovering energy stored in the snubber capacitor and outputting said recovered energy to the main circuit via the constant-current source as a constant current, said constant-current source connected to a node of the snubber capacitor so that the snubber diode is supplied with energy output from the snubber capacitor and for supplying the constant current to the main circuit.

5,444,595

LOAD DRIVE APPARATUS INCLUDING POWER TRANSISTOR PROTECTION CIRCUIT FROM OVERCURRENT

Fukuo Ishikawa, Kariya; Shunichi Kouishi, Nagoya; Katsumi Nakamura, Okazaki; Hideyuki Ikemoto, Anjo, and Toshio Ishida, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Anden Co., Ltd., Anjo, both of Japan

Filed Sep. 26, 1994, Ser. No. 311,938
Claims priority, application Japan, Sep. 27, 1993, 5-240036; Oct. 20, 1993, 5-296580; Nov. 26, 1993, 5-296566
Int. Cl.[6] H02H *7/16*
U.S. Cl. 361—86 **17 Claims**

1. A load drive apparatus comprising:

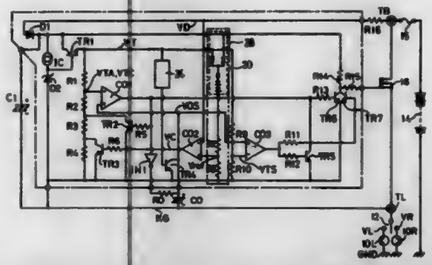
a charging/discharging capacitor;

a charging/discharging circuit for charging/recharging said capacitor at a predetermined time constant in such a manner that a voltage across said capacitor is varied between a preset upper limit voltage and a preset lower limit voltage;

a drive circuit for turning ON a power transistor series-connected to a current path employed to supply a current from a DC power source to a load, thereby driving the load when said charging/discharging circuit causes said capacitor to be charged, or said voltage across said capacitor is higher than, or equal to a predetermined voltage defined between said upper limit voltage and said lower limit voltage;

overcurrent judging means for judging whether or not a voltage across terminals of said power transistor connected to said current path exceeds an overcurrent judging voltage;

upper limit voltage changing means for changing said upper limit voltage at which said charging/discharging circuit stops the charging operation of said capacitor and starts the discharging operation thereof, into a value normally



higher than a drive stopping judgement voltage when said overcurrent judging means judges that said voltage across terminals of said power transistor exceeds said overcurrent judging voltage; and.

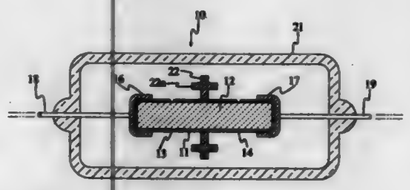
first drive stopping means for compulsorily turning OFF said power transistor and further for holding said charging/discharging circuit to the charging state of said capacitor by judging whether or not said voltage across said capacitor is higher than, or equal to said drive stopping judgement voltage when said voltage across said capacitor becomes higher than, or equal to said drive stopping judgement voltage.

5,444,596

SURGE ABSORBER

Yoshiyuki Tanaka; Masatoshi Abe, and Taka-aki Ito, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,019
Claims priority, application Japan, Mar. 31, 1992, 4-106058
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—120 **12 Claims**



1. A surge absorber comprising:

an insulating tube;

an inert gas sealed within said insulating tube;

a gap-type surge absorbing element in said insulating tube;

said surge absorbing element including means for applying a voltage to opposite ends thereof:

a plurality of gaps in said surge absorbing element;

a discharge relay electrode extending radially outward from a circumferential surface of said surge absorbing element and located between two of said plurality of gaps; and

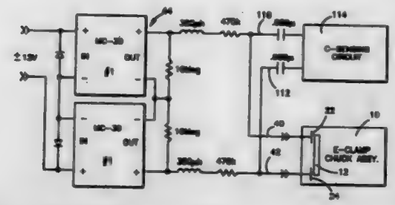
said discharge relay electrode relaying discharge between said first and second ends.

5,444,597

WAFER RELEASE METHOD AND APPARATUS

Julian G. Blake, 211 Hart St., Beverly Farms, Mass. 01915, and Weilin Tu, 6 Oak St., Natick, Mass. 01760

Continuation-in-part of Ser. No. 5,030, Jan. 15, 1993. This application Mar. 10, 1993, Ser. No. 29,154
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **17 Claims**



16. A wafer handling method for use in treatment of a semiconductor wafer comprising the steps of:

a) placing a semiconductor wafer on a wafer support;

b) once the wafer is on the wafer support, securing the wafer to the support by enabling one of two power supply modules resulting in a non-pulsing DC waveform of a first polarity being placed across the electrodes;

c) treating the wafer while maintaining the attraction between the wafer and the wafer support; and

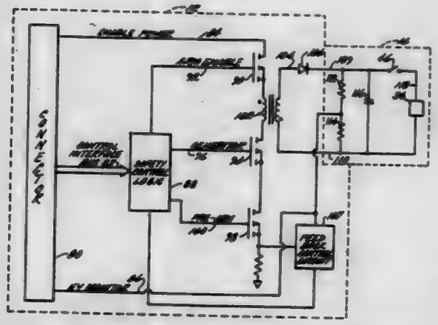
d) removing the wafer from the wafer support by enabling the other of the two power supply modules such that the other module, when activated, places a second polarity across the electrodes that is opposite to the first polarity, and then alternating the first and second polarities at a controlled frequency for a predetermined period of time.

5,444,598

CAPACITOR EXPLODING FOIL INITIATOR DEVICE

Carmelo A. Aresco, Middletown, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Sep. 29, 1993, Ser. No. 129,857
Int. Cl.[6] F23Q *23/00*
U.S. Cl. 361—253 **15 Claims**



1. A capacitor exploding foil initiator device comprising:

a capacitor;

a resistor connected in parallel with said capacitor;

over-voltage gap switch means connected to said capacitor and resistor, said over-voltage gap switch means for providing switch closure when a breakdown voltage of said over-voltage gap switch means is obtained; and

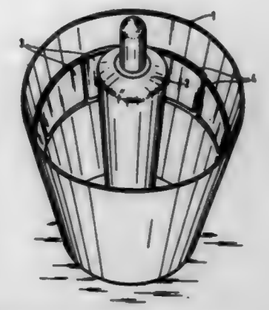
electronic foil initiator means connected to said over-voltage gap switch means and to said capacitor and resistor, said electronic foil initiator means for detonating an explosive.

5,444,599

CAPACITOR HAVING HIGH STABILITY WITH TEMPERATURE

Jean-Pierre Duprez; Jean-Paul Gris, both of Lyons, and Daniel Trenchat, Tignieu Jameyzieu, all of France, assignors to GEC Alsthom T & D SA, Paris, France

Filed May 12, 1994, Ser. No. 241,809
Claims priority, application France, May 13, 1993, 93 05766
Int. Cl.[6] H01G *4/02*
U.S. Cl. 361—274.1 **14 Claims**



1. A capacitor having high stability with temperature, comprising:

a cylindrical metal body having inside and outside wall surfaces and a geometrical axis;

a cylindrical high tension electrode coaxial with the body and placed inside said body;

at least two low tension electrodes constrained to remain in contact against said inside wall surface of the body via an intervening insulated layer,

said low tension electrodes being disposed symmetrically about said geometrical axis of the body,

said low tension electrodes being held in place by retaining means that allow them to expand freely; and

a dielectric medium which extends between the high tension electrode and the low tension electrodes, and which is a gas or a vacuum,

the body being made of a material having an expansion coefficient αc equal to art expansion coefficient αh of a material of the high tension electrode, and the expansion coefficient αc of the body material being related to art expansion coefficient αb of a material of the low tension electrodes by the following inequalities:

$$1.5 < \alpha b/\alpha c < 2.5$$

5,444,600

LEAD FRAME CAPACITOR AND CAPACITIVELY-COUPLED ISOLATOR CIRCUIT USING THE SAME

Robert C. Dobkin, Monte Sereno, and Robert L. Reay, Mountain View, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Filed Dec. 3, 1992, Ser. No. 985,881
Int. Cl.[6] H01G *4/01*
U.S. Cl. 361—303 **8 Claims**

1. A lead frame capacitor comprising:

first and second capacitor electrodes separated by a region therebetween, wherein said first and second electrodes comprise interdigitated and substantially coplanar portions of lead frame material adapted to couple charge therebetween; and

a dielectric molding material disposed in said region, said dielectric molding material substantially encapsulating



said first and second electrodes and providing dielectric insulation between said first and second electrodes.

5,444,601

PERSONAL COMPUTER HAVING AN EXPANSION BOARD CONNECTOR RESTRAINED BY A WALL AND SUPPORTING A CIRCUIT BOARD

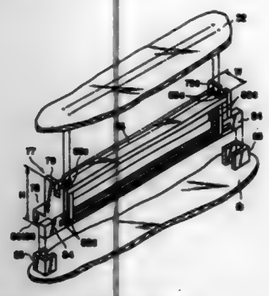
Masami Honda; Masaaki Takada, and Yousuke Miura, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 178,038, Jan. 6, 1994, abandoned, which is a division of Ser. No. 166,289, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 964,039, Oct. 20, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,686

Claims priority, application Japan, Jan. 10, 1992, 4-002935

Int. Cl.[6] G06F *1/16*; H05K *7/02*; H01R *9/09*

U.S. Cl. 361—683 **7 Claims**



5. An electronic device comprising:

a rectangular main body including a first wall and a second wall having an opening;

a circuit board arranged in the main body to oppose the first wall with a predetermined distance, the circuit board and the first wall defining a mounting space therebetween;

an expansion device detachably inserted in the mounting space through the opening;

a connector fixed to and electrically connected to the circuit board and located between the circuit board and the first wall, the connector having a connecting portion opposing the opening and allowing connection of the expansion device thereto, and the connector having an end portion in contact with the first wall and supporting the circuit board; and

restraining means for restraining movement of the connector with respect to the first wall, the restraining means having a first engaging portion formed on the end portion of the connector, and a second engaging portion formed on the first wall and engaged with the first engaging portion.

5,444,602

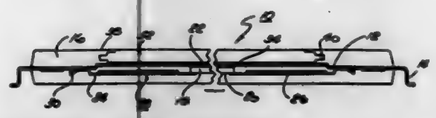
ELECTRONIC PACKAGE THAT HAS A DIE COUPLED TO A LEAD FRAME BY A DIELECTRIC TAPE AND A HEAT SINK THAT PROVIDES BOTH AN ELECTRICAL AND A THERMAL PATH BETWEEN THE DIE AND THE LEAD FRAME

Koushik Banerjee, Chandler; Siva Natarajan, Gilbert; Debendra Mallik, Chandler, and Praveen Jain, Gilbert, all of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 25, 1994, Ser. No. 201,895

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—705 **4 Claims**



1. An electronic package, comprising:

a housing that has a top surface;

a die within said housing, said die having a first surface and a second opposite surface;

a dielectric tape which has a plurality conductive of leads attached to said first surface of said die;

a lead frame that has a plurality of leads that extend from said housing and which are connected to said conductive leads of said dielectric tape;

a thermally conductive metal heat sink mounted to said lead frame, said metal heat sink being adjacent to said second surface of said die and extending to said top surface of said housing;

a conductive adhesive that thermally and electrically couples said die to said heat sink and said lead frame to create an electrical and thermal path from said die to said lead frame through said heat sink.

5,444,603

PUSH-ON FIXER FOR SCREW ENGAGEMENT

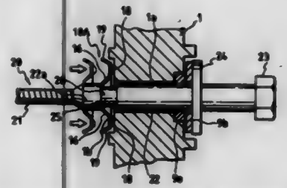
Yasushi Otsuka; Masayoshi Unno, and Hideki Ohashi, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1994, Ser. No. 273,129

Claims priority, application Japan, Jul. 19, 1993, 5-177138; Oct. 5, 1993, 5-053975 U

Int. Cl.[6] B60Q *1/06*; F16B *39/284*

U.S. Cl. 362—66 **10 Claims**



1. A push-on fixer for engagement of an aiming screw with a lamp body, the aiming screw including a bulging straight portion and a constricted portion, the push-on fixer comprising:

a thin discoid body having a circular hole formed at a center portion thereof for insertion of the aiming screw;

at least one elastically deformable first plate spring piece disposed at an inner circumferential edge region of said circular hole of said discoid body, for fixing the aiming screw upon insertion of said aiming screw in said circular hole;

at least one second plate spring piece disposed at an outer circumferential edge region of said discoid body, engaging a surface of said lamp body, for preventing axial backlash of the aiming screw; and

at least one aiming screw engagement release claw formed at the outer circumferential edge region of said discoid body for releasing the aiming screw from engagement with said first plate spring piece.

5,444,604

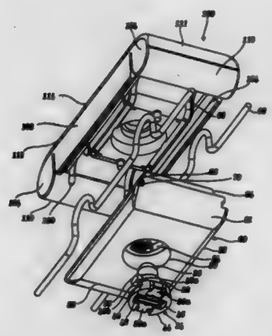
LAMP ASSEMBLY FOR AN EVACUATION SLIDE

Eric M. Hiner, Plantation, and Fernando J. Tages, North Lauderdale, both of Fla., assignors to DME Corporation, Fort Lauderdale, Fla.

Filed Mar. 21, 1994, Ser. No. 215,308

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—226 **31 Claims**



1. A lamp assembly for an evacuation slide of an aircraft, said lamp assembly connected to a power source via a conductive wire harness, said lamp assembly comprising:

a lamp;

a conductive wire harness;

housing means for protecting said lamp and said conductive wire harness;

said housing means including a cover and a base;

means for providing interlocking engagement between said base and said cover;

means for receiving said lamp disposed on a surface of said cover;

said cover having at least two sides and opposite end segments, at least one said cover end segment defining an arcuate depression;

said base having at least two sides and opposite end segments, at least one said base end segment defining a corresponding arcuate protrusion which adaptively mates with said arcuate depression when said cover and said base are engaged such that said conductive wire harness is securely interposed said base arcuate protrusion and said cover arcuate depression;

said cover arcuate depression and said base arcuate protrusion providing strain relief to said conductive wire harness;

said housing further including means for conductively receiving said conductive wire harness; and

said conductive wire harness and said lamp being in electrical contact with one another, providing continuity.

5,444,605

ILLUMINATION DEVICE FOR A PURSE

Eric J. Rivera, 34 Arpage Dr., Shirley, N.Y. 11967

Filed Jun. 2, 1994, Ser. No. 252,833

Int. Cl.[6] A45C *15/06*

U.S. Cl. 362—156 **6 Claims**



1. An illumination device for a purse of the type having a body with side gussets, a frame with a knob closure, a carry handle, a shoulder strap attached to the side gussets by loops and an inner pocket with a slide fastener, said device comprising:

a) a housing removably attached to the purse, so as to hang within the interior of the body, said housing including a bracket for removable attachment to the purse, said bracket being an inverted U-shaped channel member which can in a first instance engage with the frame of the purse and in a second instance engage with the inner pocket when the slide fastener is partly opened, a holder for said power source, means for connecting said holder to said bracket, and a lens assembly for said light source to diffuse the illumination from said light source into the body of the purse;

b) a power source on said housing, said power source being a battery;

c) a light source on said housing connected via an electric circuit to said power source, said light source being a light bulb; and

d) means for opening and closing the electrical circuit to turn said light source on and off, so that when said light source is turned on it will supply a sufficient amount of illumination within the body of the purse to allow a person to find small objects, said opening and closing means being an on/off switch.

5,444,606

PRISMATIC REFLECTOR AND PRISMATIC LENS

Josh T. Barnes, and Paul C. Belding, both of Charlevoix, Mich., assignors to Lexalite International Corporation, Charlevoix, Mich.

Filed Feb. 10, 1994, Ser. No. 195,363

Int. Cl.[6] F21V *5/02*

U.S. Cl. 362—340 **11 Claims**

1. In combination, a prismatic reflector and a prismatic lens comprising:

a reflector body having a predetermined contour and defining an interior cavity;

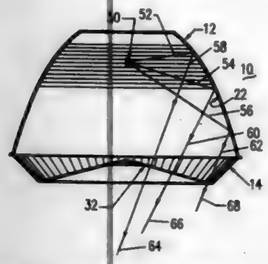
a light source for emitting light disposed within said interior cavity;

said reflector body including a plurality of prism means for receiving, transmitting and reflecting said emitted light and said reflector body having a circular bottom wall;

a lens body having a first upper circular mating surface engaging said circular bottom wall of said reflector body, a downwardly depending sidewall and a second lower conical portion joining a lower peripheral edge of said sidewall and said conical portion sloping inwardly and upwardly toward said upper mating surface; and

said conical portion having an upper surface being generally

perpendicular to received reflected light from said reflector body and including a plurality of first prism means for



receiving and for redirecting reflected light from said reflector body.

5,444,607

DEVICE FOR ILLUMINATING A BALLOON FOR DISPLAY PURPOSES

Raymond Dreyfuss, 3341 N. Hills Dr., Hollywood, Fla. 33021

Filed Apr. 7, 1994, Ser. No. 224,474
Int. Cl.[5] A63H *27/10*
U.S. Cl. 362—352 1 Claim



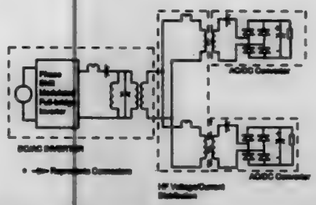
1. An illuminated balloon display, illuminating an inflated balloon with a light bulb, said display being portable, comprising:
- a battery storage box having a top opening;
- a battery removably mounted within said battery storage box;
- a battery storage box cover, having a top side and a central aperture, removably attachable to said top opening in said battery storage box;
- a cylindrically shaped connector having a first end and a second end, said cylindrically shaped connector having an internal passageway disposed therethrough and rigidly attached at said first end to the top side of said cover, said cylindrically shaped connector passageway communicating with said cover central aperture;
- a balloon mount having a funnel shaped wall, said funnel shaped wall having a first end and a second end, said funnel shaped wall having an interior wall surface and an exterior wall surface, said interior wall surface being sized for receiving an inflated balloon, said funnel shaped wall including at least one longitudinally disposed light bulb groove sized to receive a portion of a light bulb, said funnel shaped wall including a cutout and a slot within said wall in spaced relation to each other, said slot originating at said balloon mount funnel shaped wall first end and extending longitudinally toward said funnel shaped wall second end;
- means for connecting said balloon mount at the second end of said funnel shaped wall removably to said cylindrically shaped connector to the top side of said cover connected to the second end of said funnel shaped;
- an inflated balloon, said balloon having an elastic membrane body incorporating a filling stem with a knotted end, said balloon attached to said balloon mount by passing said knotted end through said balloon mount cutout, said balloon stem and knotted end secured by said balloon mount slot against said balloon mount interior surface;
- a pair of electrical conductive wires having a pair of first ends and second ends; and
- a battery connector connected to the second ends of said electrical conductive wires, said battery connector sized for being connected to said battery when said battery is mounted inside said battery box, said light bulb being electrically connected to said battery by said electrical conductors at said first ends, whereby said balloon is illuminated by said light bulb, said light bulb being firmly affixed to the light bulb groove of said balloon mount.

5,444,608

HIGH FREQUENCY POWER DISTRIBUTION SYSTEM

Praveen K. Jain, Kanata; Gary A. Edwards, Carleton Place; Carl Hubbard, Nepean, and Douglas R. Bannard, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 14, 1994, Ser. No. 233,600
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—17 6 Claims



1. A high frequency power distribution system comprising:
- a high frequency AC power supply for supplying a substantially sinusoidal voltage and sinusoidal current at a substantially constant high frequency;
- a high frequency power distribution circuit connected to the AC power supply at one end and having a plurality of parallel first magnetic coupling means at other ends, each of the first magnetic coupling means containing a series inductive element;
- a plurality of AC/DC converters, each having a second magnetic coupling means and a series capacitive element, each of the second magnetic coupling means capable of being magnetically coupled to a corresponding one of the first magnetic coupling means; and
- a plurality of loads, each connected to the respective AC/DC converter.

5,444,609

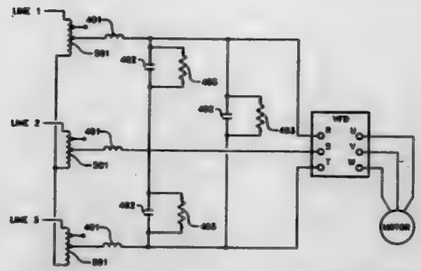
PASSIVE HARMONIC FILTER SYSTEM FOR VARIABLE FREQUENCY DRIVES

Mahesh M. Swamy, Salt Lake City; Gerald R. Bisel, Sandy, and Steven L. Rossiter, Salt Lake City, all of Utah, assignors to Energy Management Corporation, Salt Lake City, Utah

Filed Mar. 25, 1993, Ser. No. 36,558
Int. Cl.[6] H02M *1/12, 1/14*
U.S. Cl. 363—47 14 Claims

1. A variable frequency drive system comprising:
A. a variable frequency drive;

B. a source of AC power for said variable frequency drive; and
C. a passive L-C low-pass filter having its input connected to said source of AC power and its output connected to said variable frequency drive, comprising:



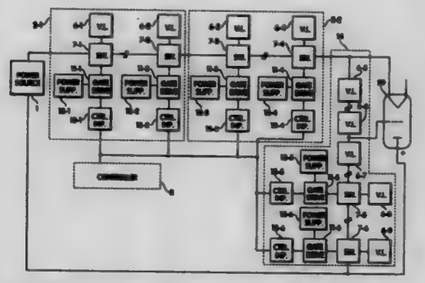
a. an inductor interposed in each power supply line between said variable frequency drive and said source of AC power;
b. a capacitor across each pair of outputs of said passive L-C low-pass filter; and
c. passive means for reducing overvoltage at said variable frequency drive's input terminals.

5,444,610

HIGH-POWER MODULATOR

Marcel P. J. Gaudreau, Lexington, Mass., and Jean-Paul Dionne, Lapocatiere, Canada, assignors to Diversified Technologies, Inc., Bedford, Mass.

Filed Oct. 22, 1993, Ser. No. 141,485
Int. Cl.[6] H02H *7/10*; G05F *1/56*
U.S. Cl. 363—54 37 Claims



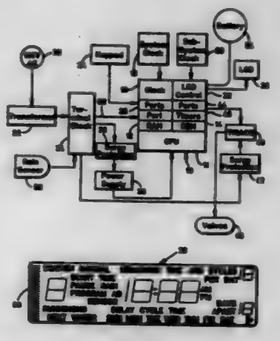
25. A high-power modulator, comprising:
a plurality of means for limiting voltage wherein at least one of the plurality of voltage limiting means comprises:
a parallel network including
a dissipating resistor,
a switch connected in series with the dissipating resistor,
a capacitor connected in parallel with the series connection of the dissipating resistor and the switch, and
an auxiliary power supply connected in parallel with the capacitor of the parallel network for maintaining a charge on the capacitor, a polarity of the auxiliary power supply being dependent on a polarity of current passing to the load; and
means for discharge protection connected in series with the parallel network; and
a plurality of controllable switches, each of the switches connected in parallel with a different one of the voltage limiting means to form a plurality of parallel pairs, each of the parallel pairs connected to each other in a series combination with a first parallel pair in the series combination being connectable to a main power source and a last parallel pair in the series combination being connectable to a load;
each of the switches being switchable from an off or open position to an on or closed position such that, for each of the parallel pairs:
with the switch in the off position,
when voltage applied to the voltage limiting means is above a first predetermined voltage, current is allowed to conduct through the voltage limiting means and a voltage potential drop across the voltage limiting means is substantially independent of the current conducted therethrough, and
when voltage applied to the voltage limiting means is below the first predetermined voltage, current is substantially prevented from passing through the voltage limiting means; and
with the switch in the on position, current is substantially all conducted through the switch and the voltage potential drop across the voltage limiting means is substantially zero;
the series combination having a voltage potential drop thereacross which is varied by operation of the controllable switches wherein:
a ratio of switches in the on position to those in the off position determines the voltage potential drop across the series combination and thus the voltage applied to the load by the main power source,
with each of the switches in the on position, the voltage potential drop across the series combination is substantially zero and substantially all of the voltage of the main power source is applied to the load, and
with each of the switches in the off position, the voltage potential drop across the series combination is greater than the voltage applied by the main power source and substantially no current is conducted to the load.

5,444,611

LAWN AND GARDEN IRRIGATION CONTROLLER

Peter J. Woytowitz, San Diego; Burton L. Manger, IV, San Marcos; Scott W. Randolph, Vista; Larry K. Hopkins, Escondido, and Donald L. Kreisher, Vista, all of Calif., assignors to Hunter Industries, Inc., San Marcos, Calif.

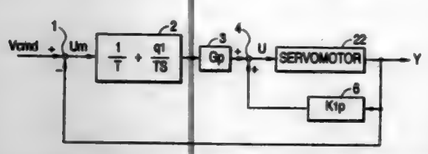
Filed Oct. 28, 1993, Ser. No. 144,580
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—145 10 Claims



1. An irrigation controller for selectively turning ON and OFF each of a plurality of sprinkler valve stations located around a lawn or garden, comprising:
means for permitting manual entry of a plurality of commands for programming a run time, number of cycles per day and frequency of operation of each of the sprinkler

valve stations and for permitting manual entry of at least one start time for the entire set of sprinkler valve stations;
processor means connected to the entry means for receiving the commands and the start time and for sequentially energizing and de-energizing each of the plurality of sprinkler valve stations in accordance with a predetermined schedule that accommodates the commands and start time, said processor means including means for automatically calculating and executing a new schedule when a new start time is programmed for the entire set of the sprinkler valve stations; and
display means connected to the processor means for indicating the start time and commands for each of the sprinkler valve stations with a plurality of alphanumeric signs.

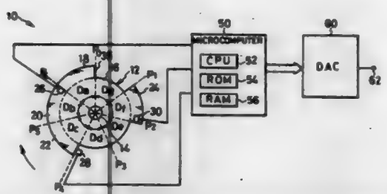
5,444,612
ADAPTIVE PI CONTROL SYSTEM
Nobutoshi Torii, Hachioji; Ryo Nihei, and Tetsuaki Kato, both of Yamanishi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
Continuation of Ser. No. 960,441, Dec. 10, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 368,711
Claims priority, application Japan, Apr. 16, 1991, 3-110989
Int. Cl.[6] G05B *13/04, 11/42*; G06F *19/00*
U.S. Cl. 364—161 **6 Claims**



1. An adaptive PI control system for executing proportional and integral control of a servomotor in feedback speed control loop using a speed feedback signal from the servomotor, comprising:
a pre-compensator device, provided in said feedback speed control loop and based on a reference model and an inverse system of the servomotor, to output torque command to the servomotor and to perform an adaptive control for automatically adjusting a feedback gain of said speed control loop, said precompensator device including:
a first element which adds a proportional gain term and an integral gain term and outputs a first value;
a second element which multiplies said first value by a first estimated plant parameter and outputs a second value;
a third element which multiplies a speed of the servomotor by a second estimated plant parameter and outputs a third value; and
an adder which adds said second and third values to thereby output said torque command to said servomotor.

5,444,613
DEVICE FOR GENERATING A SIGNAL REPRESENTATIVE OF THE POSITION OF AN ANGULARLY OR LINEARLY MOVEABLE MEMBER
Makoto Tani, and Takashi Nishijima, both of Tokyo, Japan, assignors to TEAC Corporation, Tokyo, Japan
Continuation of Ser. No. 737,158, Jul. 29, 1991, abandoned. This application Apr. 7, 1994, Ser. No. 224,395
Claims priority, application Japan, Jul. 30, 1990, 2-201734
Int. Cl.[6] G05B *19/18, 1/06*; H03M *1/22*
U.S. Cl. 364—167.01 **12 Claims**

1. A position signal generator comprising:
(a) a member;
(b) a plurality of detectors each capable of producing binary zero and one outputs;
(c) either the member or the detectors being movable relative to the other along a predetermined path, the detectors being disposed along the predetermined path;
(d) the member being notionally divided into a series of sections extending along the predetermined path, each section having the same dimension in a direction parallel to the predetermined path, the sections including detectable sections which are detectable by the detectors, and undetectable sections which are undetectable by the detectors, the number of the sections including the detectable and the undetectable sections being 2^n-1, n being an integer of more than one, the detectable and the undetectable sections being arranged in a uniquely identifiable pattern in conformity with an arrangement of maximum sequence pseudorandom pulses;
(e) the detectors being disposed with spacing each greater than or equal to the dimension of each section of the



member in a direction parallel to the predetermined path so that with the relative movement of the member and the detectors along the predetermined path, the detectors simultaneously produce a pattern of the binary zero and one outputs in various predetermined unique combinations concurrently representing a series of independently unique relative positions of the stationary member with respect to the detectors, the number of the detectors being from n to 2^n-1; and
(f) position data generator means having stored therein the predetermined unique combinations of position data concurrently representing the series of independently unique relative positions of the member and the detectors, the position data generator means being connected to the detectors for translating each output combination of the detectors into a corresponding one of the predetermined unique combinations of position data.

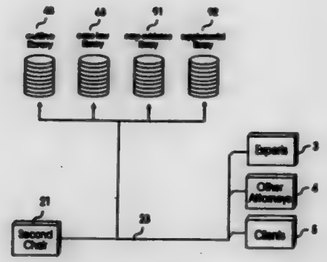
5,444,614
APPARATUS FOR CREATING OPERATION DATA CONCERNING OPERATING DEVICE
Mitsuru Saito, and Toshiaki Nakahara, both of Tokyo, Japan, assignors to Nippon Filcon Co., Ltd., Japan
Filed Apr. 27, 1993, Ser. No. 53,764
Claims priority, application Japan, Apr. 28, 1992, 4-152591
Int. Cl.[6] G06F *15/46*
U.S. Cl. 364—191 **12 Claims**



1. An apparatus for producing working or operation data comprising:
an input unit;
a display unit for displaying at least a CAD drawing, CAD data, an operation command menu, a change command menu and input commands for processing means;

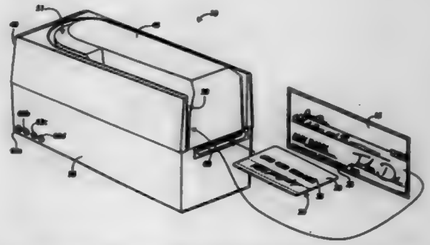
a storage unit including:
(A) a CAD data file of original drawings having a plurality of storage locations for storing CAD data of an original drawing;
(B) a command menu data file for storing data necessary for displaying the operation command menu, the change command menus, the operation data change command menus, and the input commands for processing means;
(C) an operation command CAD data file for storing operation command CAD data;
(D) an operation command data file for storing operation command data;
(E) an operation data file for storing operation data; and
a processing unit having:
(a) a first processing device for performing processes including designing, editing, and displaying a CAD drawing;
(b) a second processing device for creating operation command CAD data and for storing the operation command CAD data in the operation command CAD data file, the operation command CAD data being created by selecting an operation command item from the operation command menu, designating a CAD drawing of an original drawing displayed on the display unit through a first process with the input unit, and inputting data when necessary;
(c) a third processing device for creating operation command data and for storing the operation command data in the operation command data file, the operation command data being created by extracting CAD data necessary for operating common machines of a group from the operation command CAD data as numeric and character data;
(d) a fourth processing device for creating operation data and for storing the operation data in the operation data file, the operation data being created by changing operation command data in the operation command data file to correspond with a format of a specific machine of the common machines of the group; and
(e) a fifth processing device for outputting the operation data.

5,444,615
ATTORNEY TERMINAL HAVING OUTLINE PREPARATION CAPABILITIES FOR MANAGING TRIAL PROCEEDING
James D. Bennett, Chicago, and Lawrence M. Jarvis, Wheaton, both of Ill., assignors to Engate Incorporated, Chicago, Ill.
Continuation of Ser. No. 73,809, Jun. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 36,488, Mar. 24, 1993, Pat. No. 5,369,704. This application Oct. 20, 1994, Ser. No. 326,742
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—401 **6 Claims**



1. A transcription system used to convert words spoken during a transcription proceeding to a textual form for real time display and categorization comprising:
transcription means for producing, in real time, transcript signals representative of spoken words;
outliner means providing for the creation and modification of an outline of categories which relate to the transcription proceeding;
selection means for displaying during the transcription proceeding a selected category from the outline of categories; and
association means for automatically classifying in real time all transcript signals produced by said transcription means as belonging to the category currently selected and displayed.

5,444,616
FINANCIAL TRANSACTION SYSTEMS AND METHODS UTILIZING A MULTI-READER TRANSACTION TERMINAL
Parameswaran B. Nair, Acworth; James F. Price, Alpharetta, and Victor V. Goulding, Lawrenceville, all of Ga., assignors to MicroBilt Corporation, Atlanta, Ga.
Division of Ser. No. 968,967, Oct. 30, 1992, abandoned. This application Jun. 16, 1994, Ser. No. 261,322
Int. Cl.[6] G06F *17/60*
U.S. Cl. 364—405 **42 Claims**



1. A financial transaction processing system for acquiring transaction data associated with a financial transaction, comprising:
a host computer;
at least one electronic cash register operative for acquiring predetermined first transaction information in connection with a financial transaction via a first transaction information obtaining means and for communicating said first transaction information to said host computer;
a first communications link means for connecting said host computer to said electronic cash register;
at least one multi-reader terminal independent of said electronic cash register and for acquiring predetermined second transaction information in connection with said financial transaction via at least one second transaction information obtaining means and for communicating said second transaction information to said host computer; and
a second communications link connecting said multi-reader terminal to said electronic cash register,
said multi-reader terminal being operative to respond to a predetermined set of signals from said host computer on said first communications link, and to pass signals intended for said electronic cash register to said electronic cash register via said second communications link.

5,444,617

METHOD AND APPARATUS FOR ADAPTIVELY GENERATING FIELD OF APPLICATION DEPENDENT LANGUAGE MODELS FOR USE IN INTELLIGENT SYSTEMS

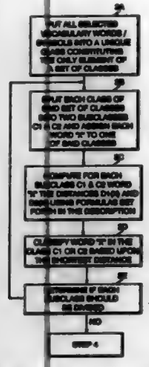
Bernard Merialdo, Valbonne, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1993, Ser. No. 166,777

Claims priority, application European Pat. Off., Dec. 17, 1992, 92480198

Int. Cl.[6] G06F *15/38*

U.S. Cl. 364—419.1 **12 Claims**



1. An improved method for constructing a target field dependent model in the form of a decision tree for an intelligent machine, the operation of said machine is based on statistical approaches for converting input data from a source type of information into a target type of information using said decision tree, said method including:

storing in a data base a set of application field dependent files including words and symbols, thereby constituting a corpus;

performing a vocabulary selection by deriving from said corpus, a list of most frequent words and symbols;

scanning said words and symbols, and deriving therefrom a plurality of frequencies of occurrence of n-grams, which are sequences of a predefined number "n" of words and symbols, and storing said plurality of frequencies into an n-grams table;

constructing said decision tree by:

a) putting all selected vocabulary words and symbols into a first unique class C, said class initially constituting the only element of a set of classes; then,

b) splitting each class of said set of classes into two subclasses C_1 and C_2, and assigning, through an iterative process, each word and symbol to one of said subclasses C_1 and C_2, based on the plurality of frequencies in said n-grams table;

c) computing for each subclass C_1 and C_2 word and symbol "x", a distance d_1 and a distance d_2 relative to each subclass C_1 and C_2, respectively, wherein said distances d_1 and d_2 are derived as follows:

$$d_1(x) = -\sum_{y=0}^{V-1} p(x,y) \Phi [p_1(y)]$$

wherein V is the number of words in the vocabulary, and

$$p(x,y) = \frac{\Sigma\, c(x_1 \ldots x_{n-1}y)}{N_{total}}$$

wherein C is a counter of all n-grams among $x_1, \ldots X_{n-1}$, y and where the summation is taken over all contexts ($x_1 \ldots x_{n-1}$) such that $x_j = x$, and N_{Total} is the size of the class to be partitioned,

$$p_1(y) = p(y/C_1) = \frac{\Sigma\, c(x_1 \ldots x_{n-1}y)}{\Sigma\, c(x_1 \ldots x_{n-1}z)}$$

the summation in the numerator being taken over all contexts ($x_1 \ldots x_{n-1}$), where x_j belongs to C_1; and,

the summation in the denominator being taken over all contexts where x_j belongs to C_1 and over all possible values of z from 0 to V-1,

$$d_2(x) = -\sum_{y=0}^{V-} p(x,y) \Phi [p_2(y)]$$

wherein

$$p(x,y) = \frac{\Sigma\, c(x_1 \ldots x_{n-1}y)}{N_{Total}}$$

$$p_2(y) = p(y/C_2) = \frac{\Sigma\, c(x_1 \ldots x_{n-1}y)}{\Sigma\, c(x_1 \ldots x_{n-1}z)}$$

the summation in the numerator being taken over all contexts ($x_1 \ldots x_{n-1}$), where x_j belongs to C_2; and,

the summation in the denominator being taken over all contexts ($x_1 \ldots x_{n-1}$) where x_j belongs to C_2 and over all possible values of z from 0 to V-1;

$\Phi[p] = \mathrm{Log}_2 p$ if $p > \epsilon$

$\Phi[p] = (p/\epsilon) - 1 + \mathrm{Log}_2(\epsilon)$ if $p < \epsilon$

with $\epsilon = [\min p(x,y)]^2$

where the minimum is taken over all non-zero values of p(x,y), in which case,

$\Phi[0] = 2\ \mathrm{Log}\ [\min p(x,y)] - 1$

d) reclassifying "x" based on the shorter distance of d_1 and d_2; and

e) testing each subclass C_1 and C_2 and deciding based on a predefined criteria, whether each class of the set of classes should be split any further; and, in case of any further split requirement, repeating said steps b) through e) thus increasing the number of elements in said set of classes.

5,444,618

APPARATUS AND METHOD FOR TOPOGRAPHIC PROCESSING

Shinji Seki, Katsuta; Makoto Ibusuki, Hitachi, and Yasuei Nomoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Information Control Systems, Inc., Ibaraki, both of Japan

Filed Jul. 24, 1992, Ser. No. 918,392

Claims priority, application Japan, Jul. 25, 1991, 3-186107

Int. Cl.[6] G06F *17/00*; G06G *7/48*

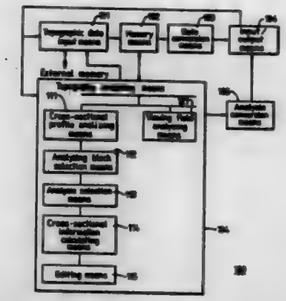
U.S. Cl. 364—420 **15 Claims**

1. A computer apparatus for topographic processing comprising:

storage means for storing a plurality of different topographic map data relating to a same region of a map;

selection means for selecting a first one of said different topographic map data;

analysis means for selecting partial data of said first one of said different topographic map data relating to a part of the same region, analyzing said partial data of said first one of said different topographic map data in order to determine whether a density of said partial data of said first one of said different topographic map data is more than a predetermined density threshold, and generating the partial data of said first one of said different topographic map data when said density is more than said predetermined threshold and generating other partial data of a second one of said different topographic map data when said density is not more than said predetermined threshold; and



display means for displaying a contour of altitude relating to the topographic map data in the same region of the map based on either one of the partial data and the other partial data guarantee by said analysis means.

5,444,619

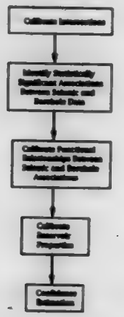
SYSTEM AND METHOD OF PREDICTING RESERVOIR PROPERTIES

Josiah C. Hoskins, Mequon, Wis., and Joshua M. Ronen, West Sussex, United Kingdom, assignors to Schlumberger Technology Corporation, Austin, Tex.

Filed Sep. 27, 1993, Ser. No. 128,069

Int. Cl.[6] G01V *1/00*; G06F *15/336*

U.S. Cl. 364—421 **20 Claims**



1. In a digital computer, a method for predicting oil reservoir properties using one or more types of seismic data for the reservoir and one or more types of wellbore data for one or more oil wells in the reservoir, comprising the steps of:

a) relating the seismic data to the wellbore data for at least one oil well to determine the approximate intersections of the seismic and wellbore data;

b) estimating a significance of a match of one or more types of said seismic data to a type of wellbore data using said intersections to determine nonrandom matches between seismic data and wellbore data;

c) calibrating the relationship between seismic data and wellbore data by training an Artificial Neural Network (ANN) using one or more of said nonrandom matches; and

d) predicting a reservoir property using said trained ANN based on seismic data.

5,444,620

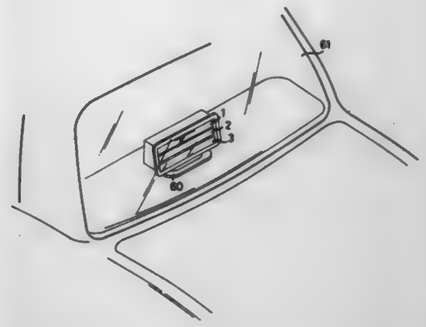
APPARATUS FOR INDICATING DRIVING STATUS OF A VEHICLE

A-Chien Yeh, No. 359-2, Tung Kuang Street, Tung Shih Town, Taichung Hsien, Taiwan

Filed May 25, 1994, Ser. No. 249,243

Int. Cl.[6] F21Q *1/00*

U.S. Cl. 364—424.01 **4 Claims**



1. An apparatus for indicating driving status of a vehicle comprising

a power source including a negative pole and a positive pole;

a first light for emitting a first color when it is electrically connected to the power source;

a second light for emitting a second color when it is electrically connected to the power source;

a third light for emitting a third color when it is electrically connected to the power source;

a first relay and a second relay each of which includes a common contact, a normally-closed contact, and a normally-open contact;

three tubes each of which receives one of the three lights and has a transparent face for light to be emitted therethrough, a flange extending from the periphery of each said tube and defining two holes at two distal ends thereof, three connectors each having two bosses extending therefrom for detachably connecting any two of the three tubes, thus linking the three tubes to be a triangular indicator to warn other drivers when the vehicle has malfunctioned;

whereby each of said first light, said second light and said third light includes a first terminal and a second terminal, said first terminals of said first, second, and third lights being connected to the negative pole of said power source, said first relay having the common contact thereof connected to the positive pole of the power source, the normally-open contact thereof connected to the second terminal of the first light, and the normally-closed contact thereof connected to the common contact of the second relay, the second relay having the normally-closed contact thereof connected to the second terminal of the third light and the normally-open contact thereof connected to the second terminal of the second light, said first relay being energized in response to a stepping on an accelerator pedal of the vehicle, said second relay being energized in response to a stepping on a brake pedal of the vehicle, thus when the accelerator pedal is depressed said first light is turned on, when the brake pedal is depressed said second light is turned on, when neither the accelerator pedal nor the brake pedal is depressed said third light is turned on.

5,444,621

SUSPENSION CONTROL SYSTEM FOR CONTROLLING SUSPENSION OF AUTOMOTIVE VEHICLE BASED ON WHEEL SPEED DATA

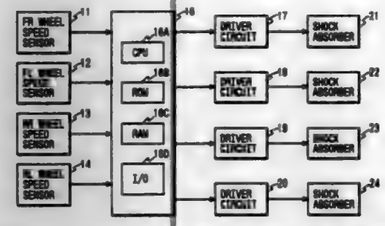
Eiju Matsunaga, Anjo; Akira Fukushima, Kariya; Noriyuki Nakashima; Toshiyuki Mural, both of Nagoya; Shinya Takemoto, Chiryu; Mikio Tanabe, Kariya, and Hisashi Kinoshita, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 10, 1992, Ser. No. 896,930

Claims priority, application Japan, Jun. 10, 1991, 3-138009; Nov. 11, 1991, 3-294658; Mar. 19, 1992, 4-063916

Int. Cl.[6] B60G *17/00, 17/015*

U.S. Cl. 364—424.05 **61 Claims**



1. A suspension control system for controlling a suspension of an automotive vehicle, said suspension control system comprising:

wheel speed detection means for detecting a wheel speed of the vehicle;

extraction means for extracting at least one of a sprung resonance frequency component of the suspension and an unsprung resonance frequency component of the suspension that are contained in a wheel speed signal detected by said wheel speed detection means; and

altering means for altering the stiffness of the suspension on the basis of said at least one resonance frequency component.

5,444,622

METHOD OF CONTROLLING ELECTRIC POWER STEERING APPARATUS

Sadao Takeshima, and Tomoyuki Ishii, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 999,563, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 742,716, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 411,724, Sep. 25, 1989, abandoned. This application Mar. 30, 1994, Ser. No. 220,455

Claims priority, application Japan, Sep. 30, 1988, 63-246191

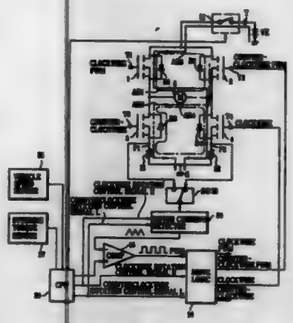
Int. Cl.[6] B62D *5/04*

U.S. Cl. 364—424.05 **2 Claims**

1. A method for controlling an electric power steering apparatus by controlling a drive force of a steering force assisting electric motor when a vehicle speed is lower than a predetermined speed and by controlling a braking force of the electric motor when the vehicle speed exceeds the predetermined speed and when a steering wheel is only in a reverse turning state, said reverse turning state existing when the steering wheel is being turned back to an original state after being initially turned away from said original state, said electric motor being in an H bridge circuit, the H bridge circuit including a pair of first and second transistors and another pair of third and fourth transistors, the electric motor being connected between a connection of the first transistor and the third transistor and a connection of the second transistor with the fourth transistor, said method comprising the steps of:

detecting the reverse turning state of the steering wheel in accordance with a change in only the steering torque; and

controlling the braking force of the electric motor by and through the pulse width modulation so that said braking force is controlled to short-circuit the electric motor when a pulse width modulation signal is inputted into one of said transistor pairs and the remaining paired transistors are off, and so that said pulse width modulation is performed at a predetermined duty ratio only during a substantial portion of the detected reverse turning state of the steering wheel when the vehicle speed exceeds the predetermined speed.



5,444,623

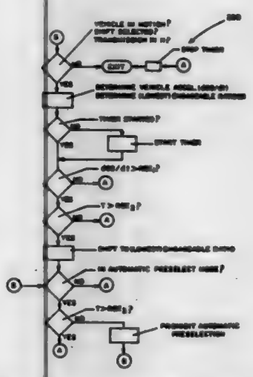
REENGAGEMENT CONTROL/METHOD FOR MECHANICAL TRANSMISSION SYSTEM WITH AUTOMATIC SHIFT IMPLEMENTATION

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 26, 1991, Ser. No. 736,141

Int. Cl.[6] B60K *17/00, 20/00*

U.S. Cl. 364—424.1 **23 Claims**



1. A reengagement control method for a vehicular mechanical change gear transmission system having semi-automatic implementation of selected shifts, said system comprising a fuel throttle controlled engine (E), a multi-speed change gear mechanical transmission (**10**), a manually controlled master friction clutch (C) drivingly interposed between the engine and the transmission, a first sensor (**98**) for providing a first input signal indicative of transmission input shaft (**16**) rotational speed, a second sensor (**100**) for providing a second input signal indicative of the rotational speed of a transmission output shaft (**90**), a nonmanually controllable transmission actuator (**112, 70, 96**) for controlling shifting of the transmission, and a control system including means (**120, 124/132**) for manually selecting an upshift or a downshift from a currently engaged transmission ratio or from neutral to a selected ratio, and providing a third input signal indicative of said selection; and a central processing unit (**106**) for receiving said first, second and third input signals and for processing the same in accordance with predetermined logic rules to issue command output signals, said central processing unit including;

(a) means responsive to selection of a transmission shift from a currently engaged ratio for issuing command output signals to said actuator to cause the transmission to be shifted into neutral; and

(b) means responsive to (i) a selection of a shift from a currently engaged ratio into a selected ratio and (ii) confirmation of a transmission neutral condition for (i) sensing substantial synchronization of the transmission and (ii) thereafter for issuing command output signals to said actuator to cause the transmission to be shifted into the selected ratio, said method characterized by:

(a) determining a value indicative of vehicle acceleration and determining one or more engageable transmission ratios as functions of vehicle velocity;

(b) responding to (i) selection of a shift into a selected ratio and (ii) confirmation of a transmission neutral condition by initiating a timing device, and

(c) thereafter responding to (i) said transmission remaining in neutral condition for greater than a predetermined reference time (REF_2) and (ii) vehicle acceleration exceeding a predetermined acceleration reference value (REF_1) by immediately issuing command output signals to said actuator to cause said transmission to be shifted into one of said engageable ratios.

5,444,624

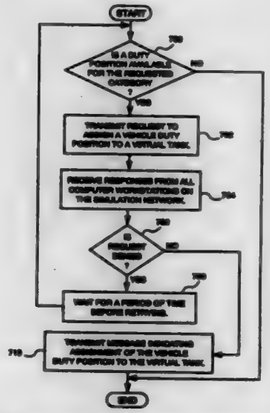
METHOD AND SYSTEM FOR EXCLUSIVELY ASSIGNING A VEHICLE DUTY POSITION IN A COMPUTERIZED VEHICLE SIMULATOR

Robert M. Wilkinson, Romeo; Ann L. Davies; Henry C. Davies, both of Lake Orion, and Barbara A. Osbon, Auburn Hills, all of Mich., assignors to General Dynamics Land Systems Inc., Warren, Mich.

Filed Dec. 29, 1992, Ser. No. 997,874

Int. Cl.[6] G09B *9/048*

U.S. Cl. 364—424.01 **5 Claims**



1. A method for exclusively assigning a vehicle duty position in a computerized vehicle simulator using a computer network having computer work stations, the method comprising:

(a) transmitting a request to assign a vehicle duty position to a virtual vehicle from a requesting computer work station to all other computer work stations of a computer network;

(b) receiving either a request approval or a request denial indication from each of the other computer work stations of the computer network;

(c) if at least one request denial indication is received by the requesting computer work station, waiting for a period of time and proceeding to step (a); and

(d) if no request denial indication is received by the requesting computer work station, transmitting a message from the requesting computer work station to all other computer work stations of the computer network indicating the assignment of the vehicle duty position of the requesting computer to the virtual vehicle.

5,444,625

TARGET SLIPPAGE RATIO SETTING DEVICE

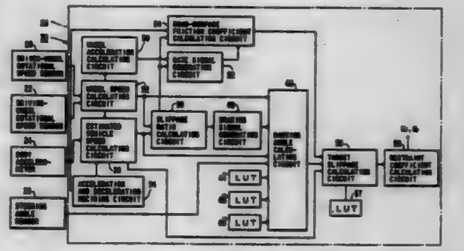
Keishin Tanaka; Toichiro Hikichi, and Chiaki Kumagai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 82,833

Claims priority, application Japan, Jun. 29, 1992, 4-171112

Int. Cl.[6] B60T *8/32*

U.S. Cl. 364—426.03 **12 Claims**



1. A device for setting a target slippage ratio to control a brake system in a vehicle having front and rear wheels, comprising:

wheel velocity detecting means for detecting peripheral velocities of each wheel;

vehicle acceleration detecting means for detecting an acceleration or deceleration of the vehicle;

estimated vehicle velocity calculating means for calculating an estimated velocity of the vehicle based on the peripheral velocities of the front and rear wheels and the acceleration or deceleration of the vehicle;

banking angle calculating means for calculating the banking angle of the vehicle;

friction coefficient calculating means for calculating a coefficient of friction between each wheel and the road surface, based on the slippage ratio of each wheel calculated from the peripheral velocity of each wheel and the estimated velocity of the vehicle, and on the acceleration or deceleration of the vehicle;

storing means for storing (i) the relationship of the optimum slippage ratio and said calculated banking angle, (ii) the relationship of the optimum slippage ratio and said calculated estimated velocity of the vehicle, and (iii) the relationship of the optimum slippage ratio and said calculated coefficient of friction;

target slippage ratio setting means for setting a target slippage ratio for each wheel at which optimal braking force is obtained, based on said stored relationships with said calculated banking angle, said calculated estimated velocity of the vehicle and said calculated coefficient of friction; and

means for controlling said brake system to apply a braking force to at least one of said front and rear wheels while maintaining said target slippage ratio.

5,444,626

CONTROL SYSTEM FOR CALCULATING PARAMETER CONTROL VALUES IN REPETITIVE CONTROL PROCESSES

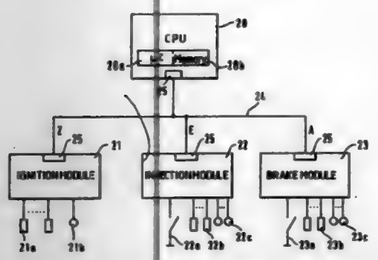
Joachim Schenk, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 30, 1993, Ser. No. 55,206

Claims priority, application Germany, Jun. 16, 1992, 42 19 669.8

Int. Cl.[6] B60K *41/00*; G08C *15/00*

U.S. Cl. 364—431.04 **10 Claims**



1. In a control system for calculating control parameter values for repetitive controlled processes in a motor vehicle, including at least one of ignition, fuel injection, and braking processes,

said control system having

at least one microprocessor,

a plurality of peripheral modules,

a plurality of sensors measuring respective operating parameters of said controlled processes for input to said plurality of peripheral modules,

a serial data bus, interconnecting said at least one microprocessor and said plurality of peripheral modules, and carrying operating parameter values from said modules to said microprocessor, and parameter control values (Z, E, A, D_k) from said microprocessor to said modules, said parameter control values normally being cyclically occurring at periodic intervals,

a method of operating said control system, wherein

said at least one microprocessor (a) tests whether at least one predetermined operating parameter condition is satisfied by determining whether a current calculated control value (D_{k1}) of said predetermined operating parameter exceeds a previous calculated value (D_{k0}) of that parameter by more than a predetermined amount (dD_k), and (b) inhibits transmission, on said serial data bus, of at least one of said cyclically occurring parameter control values when D_{k1} does not exceed D_{k0} by dD_k, thereby reducing loading of said serial data bus.

5,444,627

FUEL DELIVERY TEMPERATURE COMPENSATION SYSTEM AND METHOD OF OPERATING SAME

Thomas R. Sandborg, Washington; Prasad V. Parupalli, Peoria, and Scott G. Sinn, Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 6, 1993, Ser. No. 133,531

Int. Cl.[6] F23N *5/00*

U.S. Cl. 364—431.05 **6 Claims**

1. An engine controller for use with an engine, comprising:

fuel delivery means for delivering fuel to an engine cylinder in response to receiving a fuel delivery command;

an engine speed sensor;

a fuel temperature sensor;

a memory device, said memory device including a standard fuel delivery map;

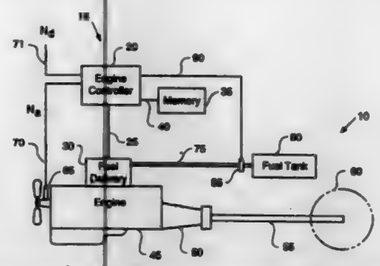
an electronic controller connected to said engine speed sensor, said fuel temperature sensor, and said memory device;

an upper fuel delivery map stored in memory;

an upper compensation temperature limit;

wherein said electronic controller calculates a fuel delivery command in response to the sensed values of said engine speed sensor and said fuel temperature sensor;

wherein said fuel delivery command is delivered to said fuel delivery means;



wherein said electronic controller calculates a compensated fuel delivery map as a function of said standard fuel delivery map and said sensed value of said fuel temperature sensor; and

wherein said compensated fuel delivery map is substantially equal to said upper fuel delivery map in response to a sensed value of said fuel temperature exceeding said upper temperature compensation limit.

5,444,628

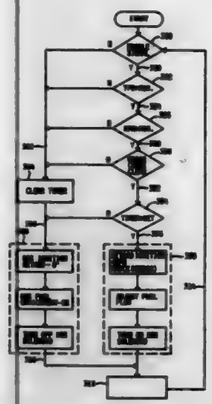
COMPUTER CONTROLLED FLOW OF NITROUS OXIDE INJECTED INTO AN INTERNAL COMBUSTION ENGINE

John D. Meaney, Hartland, and Perry M. Paielli, Milford, both of Mich., assignors to Echlin Inc., Branford, Conn.

Continuation of Ser. No. 661,898, Feb. 27, 1991, Pat. No. 5,287,281. This application Feb. 14, 1994, Ser. No. 195,252

Int. Cl.[6] F02D *19/08*; F02B *13/10*

U.S. Cl. 364—431.05 **26 Claims**



1. An electronically controlled internal combustion engine system including an engine having a plurality of cylinders for burning a combustible mixture wherein the density of the combustible mixture provided to the cylinders is increased by adding nitrous oxide and additional fuel to the combustible mixture, said engine system comprising:

a nitrous oxide container;

a nitrous oxide supply outlet for delivering a quantity of nitrous oxide to the engine;

a nitrous oxide flow regulator interposed between the nitrous oxide container and the supply outlet;

a set of fuel injectors mounted proximate the cylinders for delivering a quantity of fuel to each of the cylinders in accordance with fuel control signals received via at least one fuel injector control line; and

an electronic control unit (ECU) including a fuel control output for transmitting a fuel control signal to the set of fuel injectors via the at least one fuel injector control line, a value of the fuel control signal being adjusted in accordance with the quantity of nitrous oxide supplied to the engine.

5,444,629

VEHICLE-GUIDING DEVICE FOR RECOGNIZING CURVED ROAD AND LEADING VEHICLE ALONG CURVED ROAD AURALLY

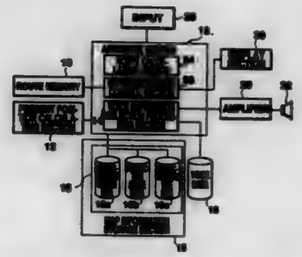
Hiroshi Kishi, Toyota; Toru Ito, Nagoya; Kyomi Morimoto, Nishio; Shoji Yokoyama, Anjo, and Kenji Kuroda, Sabae, all of Japan, assignors to Aisin AW Co., Anjo and Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 19, 1993, Ser. No. 92,815

Claims priority, application Japan, Jul. 20, 1992, 4-192528; Jul. 21, 1992, 4-193572

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449 **12 Claims**



1. A device for leading a vehicle along a route to a destination by issuing voice guidance at junctions of said route, said device comprising:

map information storage means for storing map information including information about structures of said junctions;

judging means for judging, before said vehicle reaches a junction on a current road of said route, whether or not said junction on said route includes a curved road on a basis of said map information, said curved road being connected to said junction at an angle less than a predetermined angle, said angle of said curved road being measured with respect to directions of said current road and said curved road;

voice expression deciding means for deciding, before said vehicle reaches said junction on said route, a guidance voice expression on a basis of said direction of said curved road; and

voice outputting means for outputting a voice in accordance with said guidance voice expression decided by said voice expression deciding means.

5,444,630

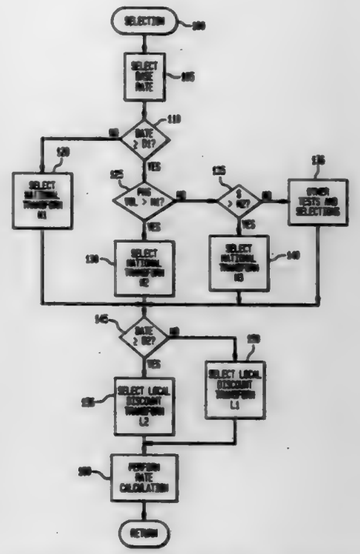
METHOD AND APPARATUS FOR APPLYING CUSTOMIZED RATING ADJUSTMENTS TO TRANSACTION CHARGES

Daniel F. Diugos, Shelton, Conn., assignee to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 29, 1993, Ser. No. 175,012

Int. Cl.[6] G07B *17/02*

U.S. Cl. 364—464.02 **5 Claims**



1. A method of calculating a charge for a selected transaction, the method comprising the steps of:

a) providing an apparatus for calculating the charge, the apparatus having means for storing a first database for determining base rates for transactions, the first database being partitioned into cells in accordance with first parameters characterizing the transactions, and means for storing a second database, said second database including a plurality of sets of transform data for transforming the base rates into a second level rates, each of said sets of transform data being partitioned into cells in accordance with the first characterizing parameters;

b) inputting the first characterizing parameters and second characterizing parameters for the selected transaction to the apparatus;

c) controlling the apparatus to select one of said sets of transform data in accordance with the second characterizing parameters,

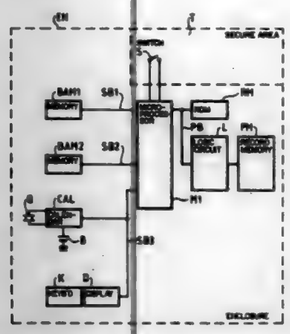
d) controlling the apparatus to select a first cell in the first database and a second cell in the selected set of transform data in accordance with the first characterizing parameters;

e) controlling the apparatus to calculate a base rate for the selected transaction in accordance with data from the first cell.

f) controlling the apparatus to calculate a second level rate for the selected transaction in accordance with the base rate and transform data from the second cell; and

g) controlling the apparatus to calculate the charges for the selected transaction in accordance with a last calculated rate.

5,444,631
FRANKING MACHINE WITH RECORD STORAGE FACILITY
Bernard Vermesse, L'Hay les Roses, France, assignor to Neopost, Bagneux, France
Filed Dec. 30, 1993, Ser. No. 175,538
Claims priority, application France, Dec. 30, 1992, 92 15933
Int. Cl.[6] G06F *17/60*; G07B *17/02*
U.S. Cl. 364—464.02 **3 Claims**



1. In a franking machine having a postage processing means for carrying out franking operations and a non-volatile flash memory operatively connected to said postage processing means, each franking operation having a set of franking characteristics including a postage value monitored by said postage processing means, a method for storing into said memory, in historical sequence, characteristic information of said franking operations carried out by said postage processing means during a long period of time, comprising the steps of:

a) at each current franking operation following an immediately preceding franking operation, comparing the characteristics of said current franking operation with those of said preceding franking operation,

b) if the characteristics of said current franking operation are not different from those of said preceding franking operation, not writing any information into said memory,

c) if at least one of the characteristics of said preceding franking operation differs from that of said current franking operation, writing into said memory characteristic information indicative of each characteristic of said preceding franking operation which has changed along with a number of consecutive franking operations which have occurred prior said current franking operation and have the same characteristics which have changed, said characteristic information being stored in the form of fixed length data blocks stored in sequence at successive locations of said memory, each data block including a code representative of one monitored characteristic.

5,444,632
APPARATUS AND METHOD FOR CONTROLLING AND SCHEDULING PROCESSING MACHINES
Paul J. Kline, Richardson; Michael A. Kilgore, McKinney, both of Tex., and Cynthia C. Martin, Charlotte, N.C., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 28, 1994, Ser. No. 234,072
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468 **18 Claims**

1. A method for generating a schedule for a plurality of lots of a factory;

comprising the steps of:

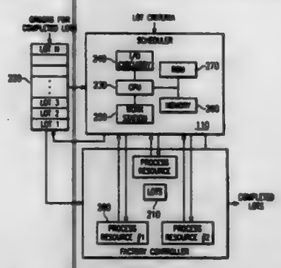
selecting a predetermined period of time for evaluating a plurality of process resources and said plurality of lots to be processed by said plurality of process resources;

selecting, from said plurality of process resources, a plurality of selected process resources available to process said lots during said predetermined period of time;

selecting, from said plurality of lots, a plurality of selected lots available to be processed by said selected process resources during said predetermined period of time;

determining a process resource score for each of combinations of selected process resources and selected lots;

determining a lot score for each of said combinations of said selected process resources and said selected lots;

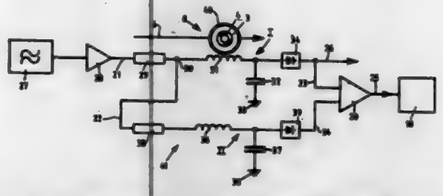


combining said lot score and said process resource score for each of said combinations to determine a combination score for each of said combinations of selected process resources and said selected lots;

determining a winning score by comparing each of combination scores for each of said combination of selected process resources and said selected lots;

controlling the process resources within the factory to process the lots in accordance with the winning score.

5,444,633
METHOD AND APPARATUS FOR DETECTING THE POSITION OF A CARRIER THAT CARRIES A TEXTILE BOBBIN
Norbert Coenen; Ulrich Wirtz, both of Mönchengladbach; Ferdinand-Josef Hermanns, Erkelenz, and Jürgen Breuer, Viersen, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany
Filed Mar. 2, 1994, Ser. No. 204,537
Claims priority, application Germany, Mar. 2, 1993, 43 06 378.0
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—470 **23 Claims**



1. In a method for detecting a position of a cop carrier carrying a textile cop in the vicinity of a work station of an automatic textile machine including a multiplicity of work stations each having its own work station electronics for controlling progress of work done at the work station, the improvement which comprises:

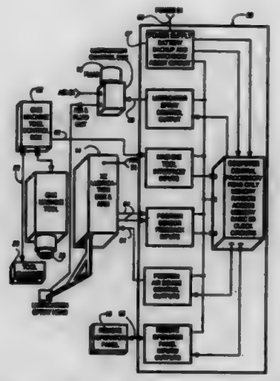
evaluating mistuning of an oscillator circuit as information with damping means disposed on the cop carrier;

detecting the information transmitted by the cop carrier with a sensor device;

carrying the information to the work station electronics; and

processing the information with the work station electronics to initiate further transport and changing operations based on the processed information.

5,444,634
LUBRICANT NOZZLE POSITIONING SYSTEM AND METHOD
Frank M. Goldman, Sugar Hill; Robert V. Chambers, Marietta, both of Ga.; William L. Clippard, III, Cincinnati, Ohio; Steven M. Henn, Alpharetta, and William E. Otto, LaGrange, both of Ga., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Apr. 28, 1994, Ser. No. 234,119
Int. Cl.[6] G05B *19/00*; F16N *17/00*
U.S. Cl. 364—474.11 **10 Claims**



1. A method of automatically positioning a lubricating nozzle for use with a tooling machine, comprising the steps of:

providing a tooling machine having a tooling station; and an automated tool changing assembly, having a plurality of cutting tools secured therein, for transporting a desired one of said plurality of cutting tools between a storage location defined upon said tool changing assembly and said tooling station such that a desired one of said plurality of cutting tools can contact a workpiece to be tooled when said desired one of said plurality of cutting tools is moved to said tooling station;

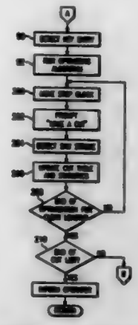
establishing a plurality of programs in conjunction with said automated tool changing assembly for sequentially moving particular tools of said plurality of cutting tools from said storage location to predetermined positions at said tooling station with respect to a workpiece for performing a desired machining operation upon said workpiece;

providing a lubricating assembly having at least one movable nozzle for providing a desired lubricant, and a nozzle positioning system for moving said movable nozzle;

selecting a particular one of said plurality of programs to be run in conjunction with said automated tool changing assembly to sequentially move particular tools of said plurality of tools to said tooling station; and

positioning said movable nozzle, proximate an interface defined between a particular one of said plurality of cutting tools and a particular portion of a workpiece to be tooled, in to provide said lubricant to said interface conjunction with said selected one of said plurality of programs, corresponding respectively to said particular tools of said plurality of cutting tools, and in accordance with the sequential movement of said particular tools of said plurality of cutting tools into position at said tooling station with respect to said workpiece by said automated tool changing assembly in accordance with said particular one of said plurality of programs.

5,444,635
OPTIMIZING TECHNIQUE FOR SAWING LUMBER
George R. Blaine, Lake Stevens, Wash., and Robert T. Zwaard, Grand Prairie, Tex., assignors to Alpine Engineered Products, Inc., Pompano Beach, Fla.
Filed Sep. 8, 1993, Ser. No. 118,796
Int. Cl.[6] G08B *19/18*
U.S. Cl. 364—474.13 **18 Claims**



1. A method of controlling a sawing system, comprising the steps of:

storing a cut list in a computer;

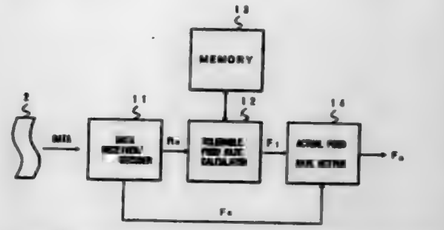
receiving by the computer via a manual input device, an indication of a defect-free length of a material to be cut;

carrying out an optimizing algorithm using the cut list and the defect-free length to determine a manner in which to cut the defect-free length of the material;

moving a stop block under control of the computer to establish a length of material to be cut according to the determination resulting from the optimizing algorithm; and

detecting manual movement of a saw to cut a length of material as determined by the position of the stop block.

5,444,636
METHOD AND APPARATUS FOR CONTROLLING FEED RATE AT ARCUATE PORTIONS
Jun Yoshida; Akira Kawase, and Nobuo Kurisaki, all of Kanagawa, Japan, assignors to Makino Milling Machine Co., Ltd., Tokyo, Japan
Filed Aug. 19, 1992, Ser. No. 931,981
Claims priority, application Japan, Aug. 30, 1991, 3-244211; Aug. 30, 1991, 3-244212; Aug. 30, 1991, 3-244213
Int. Cl.[6] G05B *19/19, 19/41*; G06F *19/00*
U.S. Cl. 364—474.3 **22 Claims**



1. A feed control method for a numerical control system, including the steps of:

calculating a tolerable feed rate for a tool which is machining an arcuate portion of a workpiece, the tolerable feed rate being based on the radius of movement of said tool and a predetermined tolerable acceleration or deceleration of said tool; and

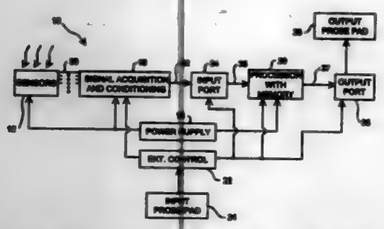
setting the actual feed rate for the arcuate portion based on the calculated tolerable feed rate.

5,444,637

PROGRAMMABLE SEMICONDUCTOR WAFER FOR SENSING, RECORDING AND RETRIEVING FABRICATION PROCESS CONDITIONS TO WHICH THE WAFER IS EXPOSED

Greg A. Sweeny, Austin, and Michael R. Conboy, Buda, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 28, 1993, Ser. No. 127,941
Int. Cl.[6] H01L *21/70*
U.S. Cl. 364—556 **20 Claims**



1. A semiconductor wafer for sensing and recording processing conditions to which the wafer is exposed, comprising:

a semiconductor substrate having a plurality of regions spaced upon one surface of said substrate;

at least one sensor lithography formed within each of said regions for producing during use an analog signal responsive to a processing condition;

a signal acquisition/conditioning circuit coupled to an output of said sensor and lithography formed upon said substrate for converting said analog signals to digital signals;

a microprocessor system lithography formed upon said substrate having a stored instruction set, said system comprises:

an input port coupled to an output of said acquisition/conditioning circuit for receiving said digital signals; and

a random access memory having an addressable data bus connected to said input port for recording said digital signal during times in which a select said stored instruction set is executed.

5,444,638

AMBULATORY MONITOR ECG PULSE CALIBRATION METHOD

Manlik Kwong, Beaverton; Edward L. Feldhousen, Tualatin, and Dennis E. Ochs, McMinnville, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Division of Ser. No. 137,441, Oct. 15, 1993, Pat. No. 5,381,351. This application Sep. 7, 1994, Ser. No. 301,940
Int. Cl.[6] G01C *25/00*
U.S. Cl. 364—571.04 **3 Claims**

1. A method of calibrating an ECG ambulatory monitor from calibration pulses recorded on a plurality of tape channels having ECG waveform data, the method comprising:

loading the calibration pulses;

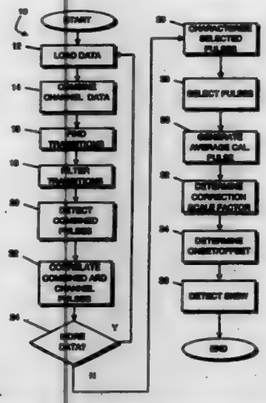
combining the calibration pulses to form combined calibration pulses;

correlating the combined calibration pulses to the corresponding calibration pulses;

selecting calibration pulses for each channel having at least a predetermined correlation to the corresponding combined calibration pulses;

determining an onset and an offset for each selected calibration pulse;

comparing the onsets and offsets of different channels; and



determining an interchannel skew based on the comparison;

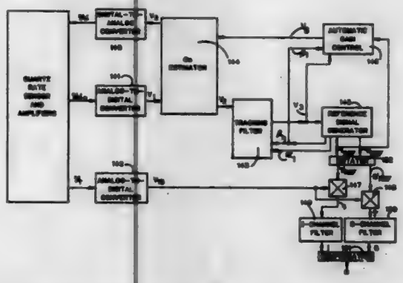
calibrating each channel of the ECG monitor according to the interchannel skew.

5,444,639

ANGULAR RATE SENSING SYSTEM AND METHOD, WITH DIGITAL SYNTHESIZER AND VARIABLE-FREQUENCY OSCILLATOR

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 7, 1993, Ser. No. 117,461
Int. Cl.[6] H03H *17/08*
U.S. Cl. 364—572 **13 Claims**



1. An angular-rate sensing system comprising, in combination:

(a) an angular rate sensor having a drive signal input, a drive signal output, and a rate signal output;

(1) said angular rate sensor producing at said rate signal output an angular rate signal modulated on a carrier frequency when said drive signal input is excited at said carrier frequency;

(2) said angular rate sensor having a resonant frequency at which there is approximately zero phase shift from said drive signal input to said drive signal output;

(b) a drive circuit connected to said drive signal input and said drive signal output for exciting said drive signal input at approximately said resonant frequency;

(c) a demodulator circuit connected to said rate signal output and said drive circuit for demodulating said angular rate signal;

(d) wherein said drive circuit includes a phase-locked sinusoid generator connected to said drive signal output and said drive signal input for producing a sinusoidal signal at said drive signal input;

(1) said phase-locked sinusoid generator including a variable-frequency oscillator generating said sinusoidal signal and having a frequency control input and an oscillator output, said oscillator output being connected to said drive signal input for driving said drive signal input with said sinusoidal signal; and

(2) said phase-locked sinusoid generator further including a phase detector having a first phase input connected to said drive signal output, a second phase input connected to said variable-frequency oscillator output, and a phase error output connected to said frequency control input for adjusting a frequency of said sinusoidal signal to be approximately equal to said resonant frequency; and

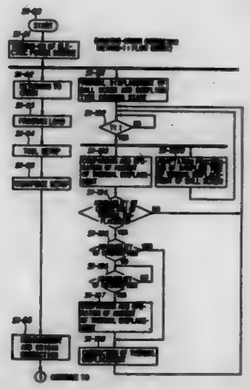
(e) a frequency-controlled filter connected between said drive signal output and said first phase input, said frequency-controlled filter having a center-frequency control input, and said phase-locked sinusoid generator having a center-frequency control output connected to said center-frequency control input for adjusting said frequency-controlled filter for a center frequency approximately equal to said frequency of said sinusoidal signal.

5,444,640

NUMERICAL CONTROL METHOD FOR CONTROLLING VARIOUS KINDS OF MACHINE TOOLS BY CORRECTING FOR THERMAL DISPLACEMENT

Hayao Hirai, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 4,057
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—474.35 **29 Claims**



1. A numerical control method for controlling a numerical control (NC) machine having an electrical power source for providing power to operate said numerical control machine, a tool means comprising a machine tool and a drive means for effecting the machining of a workpiece, a measuring means for measuring machine tool position, a memory means for storing data including at least previous-time thermal displacement data and this-time thermal displacement data, and a processing means, said processing means being operative by periodic processing to execute a processing program, comprising the steps of:

turning on said electrical power source;

storing a thermal-displacement sampling time (Tt) and a processing cycle time (Tc), in said memory means;

selecting a measurement reference position to serve as a machine origin;

storing data identifying said machine origin with said memory means;

measuring the shift of an absolute position of said machine origin as a measurement reference position before every processing, so that said shift of said absolute position serves as an initial value;

collecting data of an amount of heat generated thermal displacement of said drive means for a duration of said stored thermal-displacement sampling time and storing said displacement data in said memory means as this-time data;

upon reaching said stored thermal displacement sampling time, concurrently (i) executing adaptation processing which changes the sampling time of the thermal displacement of said drive means, depending upon whether or not the thermal displacement of said drive means is within a range of an allowable error within said processing cycle time, and (ii) comparison computation processing of the amount of thermal displacement;

comparing said thermal displacement of said drive means and a minimum movement setting unit with each other to determine whether or not said thermal displacement is within a first allowable error;

executing a correction of said thermal displacement if said displacement is not within said first allowable error;

rewriting said previous-time thermal-displacement data as this-time data after correction of the thermal displacement; and

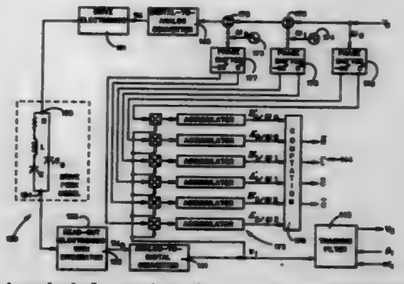
executing thermal-displacement correction for said drive means.

5,444,641

ADMITTANCE-PARAMETER ESTIMATOR FOR A PIEZOELECTRIC RESONATOR IN AN OSCILLATOR CIRCUIT

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 24, 1993, Ser. No. 125,890
Int. Cl.[6] G01R *23/16, 27/00*
U.S. Cl. 364—484 **5 Claims**



1. A method of measuring a shunt capacitance of a piezoelectric resonator, comprising the steps of:

(a) exciting said piezoelectric resonator at a plurality of frequencies, one of which is approximately a resonant frequency of said piezoelectric resonator;

(b) measuring responses of said piezoelectric resonator at said frequencies, one of which said measurings is of an amplitude of resonance of said piezoelectric resonator at approximately said resonant frequency of said piezoelectric resonator; and

(c) determining a value of said shunt capacitance from said responses at said frequencies;

wherein at least one of said responses is a complex response, and wherein said amplitude of resonance is measured by exciting said piezoelectric resonator at a level of excitation adjusted by gain of an automatic gain control to obtain a response having an amplitude approximately equal to a reference level,

whereby said amplitude of resonance is indicated by said gain of said automatic gain control and wherein said complex response is measured by complex demodulation of a signal from said piezoelectric resonator, each said complex demodulation being accomplished by modulating said signal from said piezoelectric resonator by a first demodulationreference signal to produce an in-phase demodulated component and by modulating said signal from said piezoelectric resonator by a second demodulation-reference signal to produce a quadrature-phase demodulated component, the second demodulation reference signal being the first demodulation-reference signal phase shifted by ninety degrees.

5,444,642

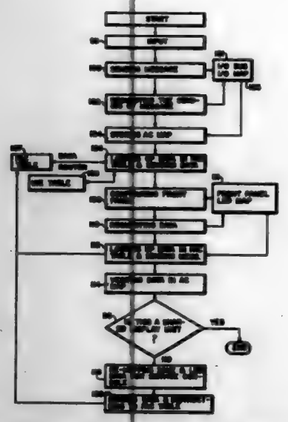
COMPUTER SYSTEM FOR MONITORING EVENTS AND WHICH IS CAPABLE OF AUTOMATICALLY CONFIGURING ITSELF RESPONSIVE TO CHANGES IN SYSTEM HARDWARE

Peter Montgomery, Owen Sound; Don Becker, Tara; Cathy Robins, Owen Sound; Mike Slack, Owen Sound; Tim Lee, Owen Sound, and Bill Oliver, Tara, all of Canada, assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 696,496, May 7, 1991, abandoned. This application May 7, 1991, Ser. No. 199,977

Int. Cl.[6] G05F *13/00, 7/02*

U.S. Cl. 364—550 2 Claims



1. A system, having a program menu, for monitoring fire alarm events and automatically configuring itself responsive to changes in system hardware comprising:

a plurality of I/O modules for monitoring said fire alarm events, including a plurality of input circuits for detecting and responding to said fire alarm events, and a plurality of output circuits for indicating the presence of said fire alarm events;

an I/O bus and a microcontroller, including an I/O bus driver, connected to said I/O modules;

a computer means for responding to said fire alarm events, including means for storing an internal program, said microcontroller being connected to said computer means, and to said input circuits for two-way communication with said input circuits, and further connected to said output circuits;

a front panel connected in said system, and means at said front panel for further indicating said fire alarm events for at least one-way communication with said output circuits; and

means, within said computer means, for automatically configuring the system responsive to changes in the quantity of said I/O modules connected to the system hardware throughout the operation of the system, including means for selecting the automatically configuring function from the system program menu after said changes have been made, and means, responsive to said means for automatically configuring, for updating said internal program to take into account the changes made in system hardware, said means for updating comprising:

means for receiving inputs relating to the number of said I/O modules in the system;

means for sending messages to said I/O bus instructing said I/O bus driver to compare the actual number of said I/O modules against said received inputs;

means, including the I/O bus, for receiving said messages and for developing an I/O map identifying module locations and module types of said I/O modules on said I/O bus;

means for storing said module locations and said module types of said I/O map within an autoconfiguring map, said autoconfiguring map containing autoconfiguring information;

means for looking up data from tables containing information relating to said modules types and updating said autoconfiguring information of said autoconfiguring map based on said data; and

means for relaying said autoconfiguring information to said internal program.

5,444,643

METHOD FOR PROGRAMMING A BUS-COMPATIBLE ELECTRONIC MOTOR VEHICLE CONTROLLER

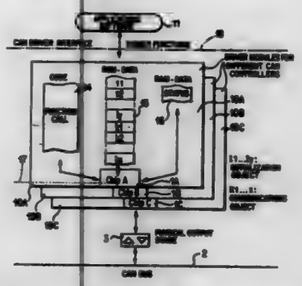
Bernd Hässler, Ostfildern; Thomas Thurner, Kirchheim, and Karlheinz Müller, Friedrichshafen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Sep. 8, 1993, Ser. No. 117,838

Claims priority, application Germany, Sep. 8, 1992, 42 29 931.4

Int. Cl.[6] G06F *9/00, 13/00*

U.S. Cl. 364—579 5 Claims



1. Method for programming a bus-compatible electronic motor vehicle controller that is equipped with at least one microcomputer to implement its control function and with ROM and RAM in order to accommodate and handle applications software required for the control function, and is also equipped with at least one bus protocol chip, and the ROM being programmed such that the applications software communicates with a bus via the at least one bus protocol chip and via a specific instruction and communications interface forming a first interface of said at least one bus protocol chip, comprising:

providing a second interface, which is independent of the at least one bus protocol chip, and defining the second interface as a standard instruction and communications interface;

coupling said first and second interfaces with a driver module that is independent of the applications software and adapted to the at least one bus protocol chip and has the properties of an adapter;

matching and aligning the applications software exclusively to the second interface with respect to the bus communication and producing the applications software independently of the at least one bus protocol chip;

linking the applications software and the driver module to one another by a link process;

obtaining program code as a result of the link process; and

storing the program code such that the program code is resident in said ROM;

wherein the driver module performs at least the following functions after linking to the applications software;

initializing at least one of bus protocol chip communications paths and the at least one bus protocol chip before start of a communication;

retrieving transmission data from at least one RAM address, loading the transmission data into a transmission register of the at least one bus protocol chip and causing the transmission data to be read out onto the bus; and

retrieving received data from a reception register of the at least one bus protocol chip and loading the received data into at least one predetermined memory location in the RAM of the microcomputer.

5,444,644

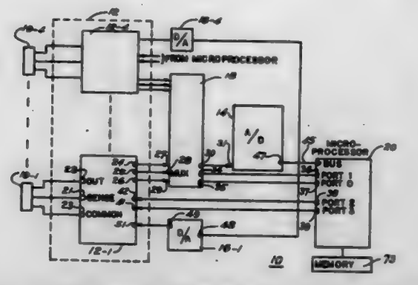
AUTO-CONFIGURED INSTRUMENTATION INTERFACE

August A. Divjak, Waukesha, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 27, 1994, Ser. No. 187,922

Int. Cl.[6] G05B *23/02*

U.S. Cl. 364—550 21 Claims



1. In a data acquisition system including a plurality of input devices and a plurality of output devices, signal processing means operable in a data acquisition mode for monitoring the input devices and controlling the output devices, and a plurality of interface circuits interposed between said input and output devices and said signal processing means for interfacing said devices with said signal processing means, each of said interface circuits comprising:

conditioning circuit means having an input circuit with at least one of said devices being connected to said input circuit,

said conditioning circuit means including drive circuit means coupled to said input circuit for providing a drive signal for said connected device, current monitoring means coupled to said input circuit for providing a signal indicative of the current flowing through said connected device, and voltage monitoring means for providing a signal indicative of the voltage across said connected device,

said signal processing means being programmed to be operable in a configuring mode to control said drive circuit means to vary the drive signal to thereby vary at least one of the current flowing through said connected device and the voltage across said connected device, and said signal processing means processing the signals provided by said current monitoring means and said voltage monitoring means as the current through and the voltage across said connected device and are varied to determine whether said connected device is an input or an output type device and to configure said conditioning circuit means as a function of the type of device connected thereto, said signal processing means identifying said connected device as an input type device when, in the absence of a drive signal, said voltage monitoring means provides a signal and as an output type device when said voltage monitoring means fails to provide a signal, and said signal processing means configuring said conditioning circuit means to enable a connected device that is identified as an input type device to be monitored while said signal processing means is operating in said data acquisition mode, and to enable a connected device that is identified as an output type to be controlled by drive signals provided by said drive circuit means while said signal processing means is operating in said data acquisition mode.

5,444,645

MULTI-CHANNEL PSEUDO RANDOM PATTERN GENERATING DEVICE

Tomio Yoshida, Sendai, and Kazuhiro Shimawaki, Gyoda, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

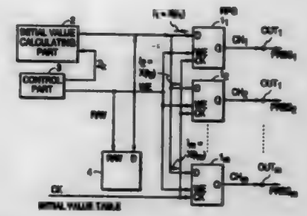
PCT No. PCT/JP93/00174, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993, PCT Pub. No. WO93/16432, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 137,010

Claims priority, application Japan, Feb. 14, 1992, 4-027655

Int. Cl.[6] G06F *1/02*

U.S. Cl. 364—717 6 Claims



1. A multi-channel pseudo random pattern generating device including a clock signal having clock pulses and a clock period, said multi-channel pseudo random pattern generating device comprising:

pseudo random pattern generators comprising first to m-th channels, each channel comprising an exclusive OR circuit and an n-stage shift register to have a common generator polynomial and initialized and driven by the clock signal to shift from one stage to another stage and generating a pseudo random pattern based on the common generator polynomial, said m being an integer equal to or greater than 2;

initial value generating means for generating first to p-th sets of initial values $\{I_1, I_2, \ldots, I_m\}$, $\{I_{m+1}, I_{m+2}, \ldots, I_{m+m}\}$, . . . , and $\{I_{(p-1)m+1}, I_{(p-1)m+2}, \ldots, I_{(p-1)m+m}\}$ identical to initial values obtained by repeatedly generating m times, for each set, data of n bits from n shift stages of one of said pseudo random pattern generators at time intervals z_4 defined by a number of the clock pulses;

memory means for storing said first to p-th sets of the initial values in a table; and

control means for reading m initial values of a selected set from said memory means, setting the initial values into said pseudo random pattern generators of said m channels and controlling said pseudo random pattern generators to start and stop their respective operations,

wherein said time interval z_4 is longer than an actual pattern generating time and, representing the clock period of said clock signal by Tc, a number n of said shift stages of said

pseudo random pattern generator of each channel satisfying

$$n > \log_2(\{\Sigma z_k/Tc\}+1),$$

where k=1 through mp-1.

5,444,646

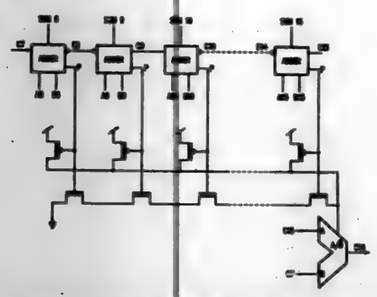
FULLY STATIC 32 BIT ALU WITH TWO STAGE CARRY BYPASS

D. Kevin Covey, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 20,064, Feb. 19, 1993, abandoned, which is a division of Ser. No. 712,208, Jun. 7, 1991, Pat. No. 5,218,564. This application Mar. 1, 1994, Ser. No. 204,750

Int. Cl.[6] G06F *7/00, 7/50*

U.S. Cl. 364—750.5 **4 Claims**



1. A multiply/accumulate unit for multiplying and accumulating binary data, the multiply/accumulate unit being physically formed as part of a monolithic integrated circuit die, the multiply/accumulate unit including a multiplier register for storing a 16-bit binary multiplier value, a multiplicand input register for storing 16 bits of a 32-bit binary multiplicand value, a multiplicand register connected to the multiplicand input register for storing a 32-bit binary multiplicand value received by the multiplicand register via the multiplicand input register, an arithmetic unit connected to the multiplier register and to the multiplicand register for multiplying the binary multiplier value received from the multiplier register and the binary multiplicand value received from the multiplicand register to provide a 32-bit product, and a 32-bit accumulator register connected to the arithmetic unit for storing the product received from the arithmetic unit, wherein the multiplicand register is physically arranged in four rows of 8 bits each, the top row containing the even bits for the low word, the second row containing the even bits for the high word, the third row containing the odd bits for the low word, and the fourth row containing the odd bits for the high word, and whereby the arrangement of the multiplicand register allows left shift by two directly across with a single loop around between bits 14–16 and 15–17 and whereby the 16-bit input register fits exactly across the top of a multiplicand stack, wherein in the improvement, the arithmetic unit comprises a fully static 32-bit arithmetic logic unit with two stage carry by-pass.

5,444,647

MULTIPLIER CIRCUIT AND DIVISION CIRCUIT WITH A ROUND-OFF FUNCTION

Michio Komoda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 212,926

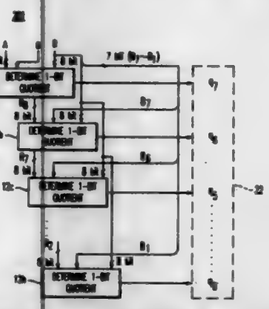
Claims priority, application Japan, Mar. 22, 1993, 5-061832

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—761 **15 Claims**

1. A division circuit for dividing a dividend A ($=A_{(M-1)}\ldots A_1 A_0$) which is expressed in M digits in a D-ary by a divisor B ($=B_{(N-1)}\ldots B_1 B_0$) which is expressed in N digits in the D-ary and which is larger than the dividend A and for calculating a quotient which is rounded off at the (K+1)-th digit down from a radix point and therefore which includes K digits, said division circuit comprising:

(x-1) adder means for adding up said dividend A and at least (2N−M−1) most significant digits while aligning the



most significant digit of said divisor B to a digit of $D^{(N-K-2)}$ and the least significant digit of said dividend A to a digit of D^0, thereby obtaining a dividend C; and

(x-2) a division processing part for dividing said dividend C by said divisor B to thereby calculate a quotient which includes K digits down from the radix point.

5,444,648

ANALOG MULTIPLIER USING QUADRITAIL CIRCUITS

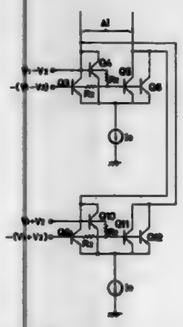
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,462

Claims priority, application Japan, Oct. 30, 1992, 4-316120; Jun. 23, 1993, 5-176025

Int. Cl.[6] G06G *7/16*

U.S. Cl. 364—841 **18 Claims**



1. A multiplier comprising:

a first quadritail circuit containing a first pair of first and second transistors whose capacities are the same and whose output ends are connected in common, a second pair of third and fourth transistors whose capacities are the same and whose output ends are connected in common, and a first constant current source for driving said first pair and said second pair; and

a second quadritail circuit containing a third pair of fifth and sixth transistors whose capacities are the same and whose output ends are connected in common, a fourth pair of seventh and eighth transistors whose capacities are the same and whose output ends are connected in common, and a second constant current source for driving said third pair and said fourth pair; wherein

in said first quadritail circuit, input ends of said first pair are respectively applied with voltages which are opposite in phase to each other and equal in absolute value to sum of a first input voltage and a second input voltage;

input ends of said second pair are connected in common to be applied with a voltage at a middle point of a voltage applied between said input ends of said first pair;

in said second quadritail circuit, input ends of said third pair are respectively applied with voltages which are opposite in phase to each other and equal in absolute value to difference of said first input voltage and said second input voltage;

input ends of said fourth pair are connected in common to be applied with a voltage at a middle point of a voltage applied between said input ends of said third pair; and

said common-connected output ends of said first pair and said common-connected output ends of said fourth pair are connected in common to form one of differential output ends, and said common-connected output ends of said second pair and said common-connected output end of said third pair are connected in common to form the other of said differential output ends.

5,444,649

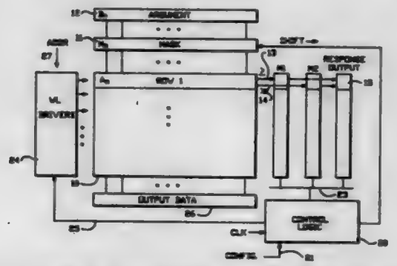
ASSOCIATIVE MEMORY SYSTEM HAVING CONFIGURABLE MEANS FOR COMPARING FIELDS IN AN ARRAY OF STORED DATA WORDS WITH CORRESPONDING ONE OR MORE FIELDS IN A SUPPLIED ARGUMENT WORD

Mario D. Nemirovsky, San Jose, Calif., assignor to Apple Computer, Inc., San Jose, Calif.

Filed Jun. 10, 1993, Ser. No. 74,794

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **22 Claims**



1. A configurable relationship discovery system for discovering the truth or falsity of a configuration-defined one of plural relationships between a configuration-defined argument field of a supplied argument signal and a plurality of J configuration-defined data fields within a corresponding plurality of J data words, where the supplied argument signal has a plurality of N argument bits and each data word in the plurality of J data words has a corresponding plurality of N data bits, said system comprising:

(a) memory means for storing the plurality of J data words, said stored plurality of a data words defining a J-by-N array of data bits;

(b) a J-by-N array of plural logic means arranged at least conceptually as J rows and N columns, said J-by-N array of plural logic means being operatively coupled to the memory means and responsive to the supplied argument signal, each of the logic means being for outputting a respective first plurality of indicator signals indicating a true or false state for at least two unique relationships that may exist between a corresponding one of the N argument bits and a corresponding one of the J-by-N data bits; and

(c) a configurable plurality of J output means, operatively coupled to the J-by-N array of plural logic means and responsive to supplied configuration data, each configurable output means being for collecting sequentially over time the respective first plurality of indicator signals from a corresponding row of logic means and deriving from said collection a respective second plurality of indicator signals, where the respective second plurality of indicator signals indicates in accordance with the supplied configuration data, true or false states for a corresponding plurality of configuration-defined relationships between a configuration-defined field of the supplied argument signal and a corresponding, configuration-defined field of the respective data word.

5,444,650

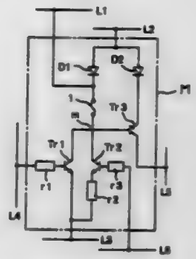
SEMICONDUCTOR PROGRAMMABLE READ ONLY MEMORY DEVICE

Hirofumi Abe, Okazaki, and Tadashi Shibata, Toyokawa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 25, 1994, Ser. No. 188,335

Int. Cl.[6] G11C *17/16*

U.S. Cl. 365—96 **16 Claims**



14. A semiconductor memory device comprising:

a high-level line;

a low-level line;

a fuse having a high-level lead connected to said high-level line;

a load element connected between a low-level lead of said fuse and said low-level line;

a selector transistor connected between said low-level lead of said fuse and said low-level line, and having a base connected to a selector line;

an output transistor having a base connected to said low-level lead of said fuse and having a collector connected to an output line; and

a diode connected between an emitter of said output transistor and said high-level line.

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NON-VOLATILE MEMORY DEVICE

Yoshitaka Yamamoto, Yamatokoriyama, and Yutaka Ishii, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,947

Claims priority, application Japan, Oct. 30, 1991, 3-285135; Oct. 30, 1991, 3-285136; Nov. 1, 1991, 3-287672

Int. Cl.[6] B32B *3/00*; G02F *1/133*

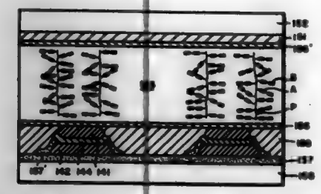
U.S. Cl. 365—108 **50 Claims**

1. A non-volatile memory device, comprising:

a memory medium which is formed of a material selected from the group consisting of a liquid crystal composite and a composite including a liquid crystal component in a molecule;

heating means including a pair of electrode layers and a heat generating layer interposed between the electrode layers, the heating means being provided for writing data into the memory medium by heating the memory medium through

the heat generating layer and thus permitting an electrical property of the memory medium to be changed; and



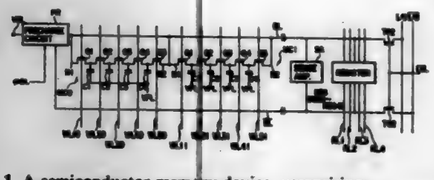
reading means for reading the data written into the memory medium by electrically detecting said electrical property of the memory medium.

5,444,652

SEMICONDUCTOR MEMORY DEVICE HAVING A MEMORY CELL UNIT INCLUDING A PLURALITY OF TRANSISTORS CONNECTED IN SERIES

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 833,124, Feb. 10, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,301
Claims priority, application Japan, Feb. 13, 1991, 3-041315
Int. Cl.[6] G11C *11/24*
U.S. Cl. 365—149 **6 Claims**



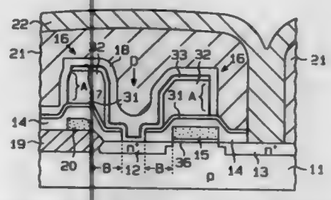
1. A semiconductor memory device, comprising:
a memory cell array having a plurality of memory cell units arranged in rows and columns, each memory cell unit comprising:
a first dam node;
a first MOS transistor having first and second terminals, the first terminal of said first MOS transistor being connected to said first dam node,
a second MOS transistor having first and second terminals, the first terminal of said second MOS transistor being connected to the second terminal of said first MOS transistor, and
first and second data storage capacitors respectively connected to the second terminals of said first and second MOS transistors;
word lines respectively connected to gates of the first and second MOS transistors of said memory cell units for supplying signals to control ON/OFF switching of the first and second MOS transistors of said dynamic memory cell units;
bit lines each connected to the first data nodes of the memory cell units in a respective corresponding column of said memory cell array;
storing circuits, each respective storing circuit having an input terminal coupled to at least two corresponding ones of said bit lines and including first and second single end type sense amplifiers for storing data time-sequentially supplied to said input terminal from the dynamic memory cell units connected to the at least two corresponding bit lines; and
controlling means for controlling said storing circuits to be accessed independently of said memory cell array, said controlling means including first transfer gates respectively connected between said bit lines and the input terminals of said storing circuits, said first transfer gates responsive to first control signals for selectively connecting said respective storing circuits to only one of the at least two corresponding bit lines at a time.

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SEMICONDUCTOR MEMORY DEVICE WITH STACK TYPE MEMORY CELL

Hideharu Nagasawa; Kazunari Hoshi; Yasuhiro Takeda, and Kiyoshi Yoneda, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 13, 1994, Ser. No. 227,509
Claims priority, application Japan, Apr. 26, 1993, 5-99777
Int. Cl.[6] H01L *29/68*
U.S. Cl. 365—149 **19 Claims**



1. A semiconductor memory device having stack type memory cells, each of said cells comprising a MIS transistor and a MIS capacitor, said semiconductor memory device comprising:
a first conductive film with a predetermined thickness and defining a center hole that overlies a memory node contact of a memory cell corresponding to one of a source and a drain region of said MIS transistor; and
a second conductive film, formed on a surface of the first conductive film, having a predetermined thickness and contacting the memory node contact of a memory cell corresponding to one of a source and drain region of said MIS transistor through a memory node contact hole formed within said center hole, said first and second conductive films forming a capacitor electrode of said MIS capacitor wherein said second conductive film has a substantially staircase shape comprised of at least three substantially horizontal portions that are separated from one another by two substantially vertical positions.

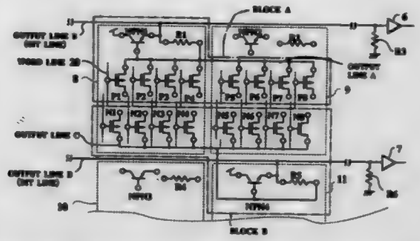
5,444,654

ROM WITH BI-CMOS GATE ARRAYS

Hiroyuki Hara, Fujisawa, and Yoshinori Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 660,053, Feb. 25, 1991, abandoned. This application Feb. 24, 1994, Ser. No. 201,091
Claims priority, application Japan, Feb. 26, 1990, 2-042619
Int. Cl.[6] G11C *11/34, 8/00*
U.S. Cl. 365—177 **5 Claims**

1. A semiconductor integrated circuit of the gate array type, comprising:
a plurality of basic cells arranged in a matrix, each of the basic cells comprising a plurality of MOS transistors as memory cells, a bipolar transistor, and a resistance, said bipolar transistor having a base, emitter and collector;
a plurality of bit lines for reading out data from the memory cells in a row; and
a plurality of word lines for selecting the memory cells in a column,
wherein a predetermined number of the basic cells are grouped into one memory block,
each memory block containing a plurality of MOS transistors of the same conductivity type, and not containing any MOS transistors of any other conductivity type, the bipolar transistor and the resistance in each basic cell is used for each memory block as a driver for reading out data from the memory cells in the same memory block,
the memory cells in the same memory block are connected to the base of the bipolar transistor and one side of the resistance, and



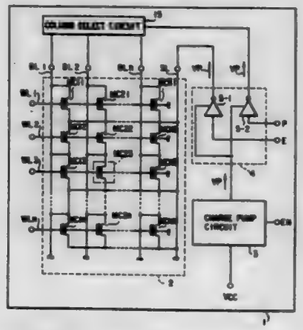
the emitter of the bipolar transistor is connected to the other side of the resistance and the bit line through which data from the memory cells is transferred to outside of the semiconductor integrated circuit.

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NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH A SMALL DISTRIBUTION WIDTH OF CELL TRANSISTOR THRESHOLD VOLTAGE AFTER ERASING DATA

Kuniyoshi Yoshikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 17, 1994, Ser. No. 243,901
Claims priority, application Japan, May 19, 1993, 5-117098
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185 **11 Claims**



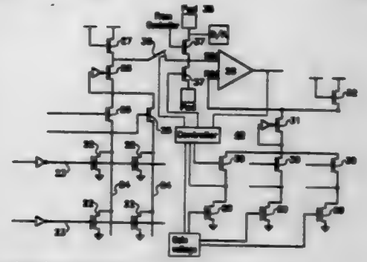
1. A semiconductor memory device comprising:
a semiconductor chip;
a memory cell transistor provided in the chip and having a gate insulating film which includes a charge store layer for controlling a threshold value;
generation means provided in the semiconductor chip, for boosting a source potential to generate a boosted potential; and
switching means for switching destination portions to which a boosted potential is applied, depending on whether data is written or erased, such that the boosted potential is applied to a drain of the memory cell transistor from the generation means while data is written, and the boosted potential is supplied to a source of the memory cell transistor from the generation means while data is erased.

5,444,656

APPARATUS FOR FAST INTERNAL REFERENCE CELL TRIMMING

Mark Bauer, Cameron Park, and Johnny Javanifard, Sacramento, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 2, 1994, Ser. No. 252,908
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—189.01 **19 Claims**



1. A circuit comprising:
a plurality of memory devices arranged in at least one column for storing a plurality of memory states;
at least one first load device arranged in each column and having a particular voltage-current characteristic for generating a read voltage during a read operation to a memory device in a corresponding column;
at least one reference device for storing a reference level corresponding to a reference current to determine a state stored in a selected memory device;
at least one second load device coupled in series to each reference device to generate a reference voltage based on said reference current; and
a programming circuit for generating a comparison voltage substantially equal to a voltage derived from said voltage-current characteristic of said first load device at said reference current, and for programming said reference device until said reference voltage at said second load device equals said comparison voltage, wherein said programming circuit accounts for variations in said first load device when programming said reference device.

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Patent Not Issued For This Number

5,444,658

ELASTIC STORE MEMORY CIRCUIT

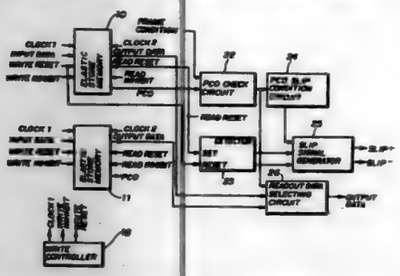
Naoyuki Izawa, Mitaka; Yasuhiro Aso, Tokyo; Yoshihiro Uchida, and Satoshi Kakuma, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 959,459, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 553,556, Jul. 18, 1990, abandoned. This application Mar. 7, 1994, Ser. No. 206,221
Claims priority, application Japan, Jul. 18, 1989, 1-184991
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.07 **12 Claims**

1. An elastic store memory circuit supplied with input data, comprising:
a first elastic store memory;
a second elastic store memory, the input data being alternately written into said first and second elastic store memories, the input data being read out from said first and second elastic store memories at the same time, one of said first and second elastic memories generating a phase comparison signal when a phase difference between a write timing and a read timing is within a predetermined phase range, the input data being written into and read out from said first and second elastic store memories at said write timing and said read timing, respectively;

selecting means including a selector coupled to data outputs of said first and second elastic store memories, for selecting one of the input data read out from said first elastic store memory and the input data read out from said second elastic store memory; and

slip signal generating means, coupled to said one of said first and second elastic store memories, for generating a slip signal based on a write reset timing at which a write address of said one of said first and second elastic store memories is reset, a read reset timing at which a read



address for both of said first and second elastic store memories is reset, and said phase comparison signal,

said slip signal indicating which one of said write reset timing and said read reset timing precedes the other one,

said slip signal including a first slip signal which indicates that identical input data is output from said selecting means twice, and a second slip signal which indicates that a portion of the input data is lost.

5,444,659

SEMICONDUCTOR MEMORY DEVICE HAVING MEANS FOR MONITORING BIAS VOLTAGE

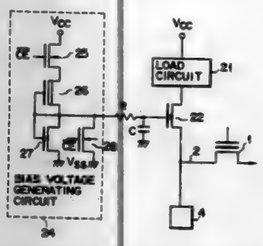
Seiichiro Yokokura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 755,789, Sep. 6, 1991, abandoned. This application Aug. 9, 1994, Ser. No. 288,221

Claims priority, application Japan, Sep. 11, 1990, 2-238884

Int. Cl.[6] G11C *11/40, 7/00*

U.S. Cl. 365—189.09 **10 Claims**



1. A semiconductor memory device comprising:

a power supply terminal;

a circuit ground;

a plurality of memory cells for storing data;

means connected between the power supply terminal and the circuit ground and having a depletion-type FET and an intrinsic-type FET for generating a bias voltage to be applied to the memory cells; and

connecting/applying means for connecting the generating means to an external measuring device and for applying the bias voltage to the external measuring device.

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SEQUENTIAL ACCESS MEMORY AND ITS OPERATION METHOD

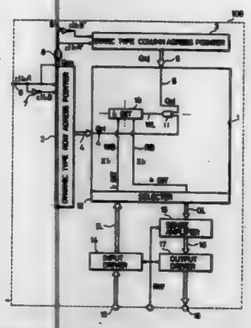
Kazuya Yamanaka, and Masatoshi Kimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 834,049

Claims priority, application Japan, Apr. 2, 1991, 3-070149

Int. Cl.[6] G11C *7/00, 8/00, 19/00*

U.S. Cl. 365—189.12 **20 Claims**



1. A sequential access memory, comprising:

a memory cell array including a plurality of memory means arranged in rows and columns;

first selection means for repeating an operation of sequentially selecting said rows of said memory cell array in synchronization with a first clock signal having a first period,

said first selection means including a plurality of first holding means for dynamically holding a first signal; and

second selection means for repeating an operation of sequentially selecting said columns of said memory cell array in synchronization with a second clock signal having a second period greater than said first period,

said second selection means including a plurality of second holding means for statically holding a signal.

5,444,661

SEMICONDUCTOR MEMORY DEVICE HAVING TEST CIRCUIT

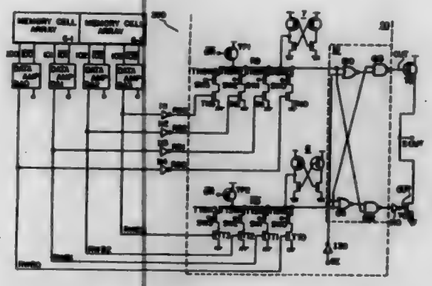
Yoshinori Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 25, 1994, Ser. No. 186,142

Claims priority, application Japan, Jan. 25, 1993, 5-009632

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **4 Claims**



1. A semiconductor memory device comprising a memory cell array including a plurality of memory cells arranged in

rows and columns, first and second data bus lines, means for coupling in a normal mode one of said first and second data bus lines to said memory cell array and in a test mode said first and second data bus lines to said memory cell array, an output terminal, and an output circuit coupled to said first and second data bus lines and said output terminal, said output circuit including first and second circuit nodes, first and second transistors connected in series between said first node and a first potential line, third and fourth transistors connected in series between said first node and said first potential line, fifth and sixth transistors connected in series between said second node and said first potential line, seventh and eighth transistors connected in series between said second node and said first potential line, means for driving said first and third transistors in response to signal levels on said first and second bus lines, respectively, means for driving said fifth and seventh transistors in response to inverted signal levels of said signal levels, respectively, means for turning in said normal mode one of said second and fourth-transistors and one of said sixth and eighth transistors ON and in said test mode all of said second, fourth, sixth and eighth transistors ON, and output means coupled to said first and second nodes and said output terminal for driving said output terminal to one of first and second logic levels when said first and second nodes takes logic levels different from each other and to a high impedance state when said first and second nodes takes logic levels equal to each other.

5,444,662

DYNAMIC RANDOM ACCESS MEMORY WITH BIT LINE EQUALIZING MEANS

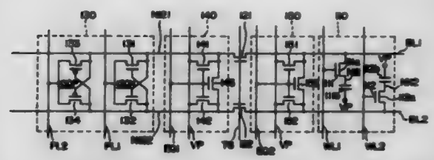
Takayuki Tanaka; Yoshimasa Sekino; Yoshihiro Murashima; Yasuhiro Toknaga; Joji Ueno, and Takeru Yonaga, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 985,192, Dec. 3, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 257,450

Claims priority, application Japan, Dec. 4, 1991, 3-320539

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **10 Claims**



1. A dynamic random access memory with bit line equalizing circuit, comprising:

a plurality of pairs of dynamic memory cells, including a first memory cell pair having first and second dynamic memory cells;

a plurality of word lines, including a first word line pair having first and second word lines for respectively selecting the first memory cell and the second memory cell;

a plurality of pairs of bit lines, including a first bit line pair having first and second complementary bit lines which cross said first and second word lines, said first memory cell being connected to cross-over portions of said first bit line and said first word line;

a sense amplifier circuit having first and second nodes;

a plurality of pairs of transfer gates, including a first transfer gate pair having first and second transfer gates for respectively connecting the first bit line to the first node and the second bit line to the second node;

a node equalizing circuit means for setting the potentials on the first and second nodes equal to each other, the node equalizing circuit means including first, second, and third transistors, each of the first, second, and third transistors having first, second, and gate electrodes, the first electrodes of the first and second transistors being connected to a potential of one-half of a source voltage level, the second electrode of the first transistor being connected to the first electrode of the third transistor, the second electrode of the second transistor being connected to the second electrode of the third transistor, the first electrode of the third transistor being connected to the first node, the second electrode of the third transistor being connected to the second node, and the gate electrodes of the first, second, and third transistors receiving a first equalizing signal; and

said bit line equalizing circuit comprising bit line equalizing circuit means for setting the potentials on the first and second bit lines equal to each other, the bit line equalizing circuit means including fourth, fifth, and sixth transistors, each of the fourth, fifth, and sixth transistors having first, second, and gate electrodes, the first electrodes of the fourth and fifth transistors being connected to potential of one-half of the source voltage level, the second electrode of the fourth transistor being connected to the first electrode of the sixth transistor, the second electrode of the fifth transistor being connected to the second electrode of the sixth transistor, the first electrode of the sixth transistor being connected to the first bit line, the second electrode of the sixth transistor being connected to the second bit line, and the gate electrodes of the fourth, fifth, and sixth transistors receiving a second equalizing signal.

5,444,663

SEMICONDUCTOR INTEGRATED CIRCUIT OPERABLE AND PROGRAMMABLE AT MULTIPLE VOLTAGE LEVELS

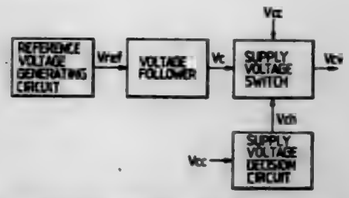
Takeshi Furuno; Yasuhiro Nakamura, both of Gakuennishi, and Akinori Matsuo, Higashiyamato, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 893,802

Claims priority, application Japan, Jul. 2, 1991, 3-188109

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—226 **24 Claims**



1. A semiconductor integrated circuit comprising:

an external terminal for receiving supply voltage,

voltage decision means for deciding whether or not the value of the supply voltage supplied via said external terminal achieves a predetermined first value, the voltage decisioe means including means for generating a decision output signal when the supply voltage achieves the predetermined first value,

voltage forming means for forming a predetermined voltage on receiving said supply voltage,

an internal circuit, and

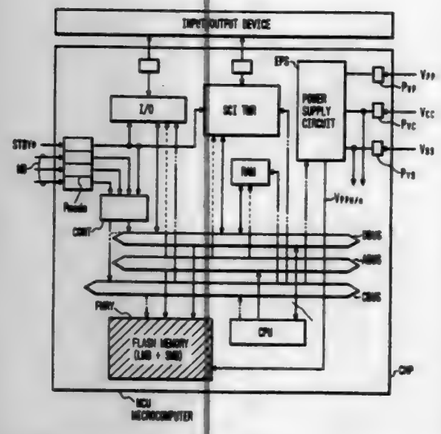
switching means for selectively supplying one of the voltage formed by said voltage forming means and the supply voltage supplied via said external terminal as an operating voltage of said internal circuit in response to the decision output signal from said voltage decision means.

5,444,664

FLASH MEMORY AND A MICROCOMPUTER

Kenichi Kuroda, Tachikawa, and Kiyoshi Matsubara, Higashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1994, Ser. No. 274,279
Claims priority, application Japan, Jul. 13, 1993, 5-171942
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—226 7 Claims



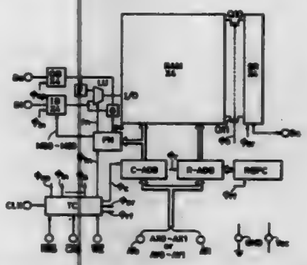
1. A microcomputer comprising:
a first power supply terminal for receiving a circuit reference voltage;
a second power supply terminal for receiving a first voltage having a first potential difference with respect to the circuit reference voltage;
a third power supply terminal for receiving a second voltage having a second potential difference with respect to the circuit reference voltage, the second potential difference being larger than the first potential difference;
a central processing unit which receives the circuit reference voltage and the first voltage and operates in response to these voltages;
a flash memory having a plurality of memory cells, wherein each of the memory cells includes a source region and a drain region in a semiconductor substrate, a floating gate formed over the source and drain regions with a first oxide film interposed, and a control gate formed over the floating gate with the first oxide film interposed; and
a power supply circuit, which includes: a first level detection circuit to decide whether the first voltage supplied to the second power supply terminal is higher than a specified level; a second level detection circuit to decide whether the second voltage supplied to the third power supply terminal is higher than a specified level; a boost circuit to boost the first voltage supplied to the second power supply terminal; and a voltage selection circuit to select either the second voltage supplied to the third power supply terminal or a boost voltage from the first voltage by the boost circuit and to supply the selected voltage to the flash memory.

5,444,665

SEMICONDUCTOR MEMORY DEVICE

Yasunori Yamaguchi, Tachikawa, and Jun Miyake, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 29,060, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 729,337, Jul. 19, 1991, Pat. No. 5,206,832, which is a continuation of Ser. No. 570,525, Aug. 21, 1990, Pat. No. 5,068,829, which is a continuation of Ser. No. 224,375, Jul. 26, 1988, Pat. No. 4,951,251, which is a division of Ser. No. 874,106, Jun. 13, 1986, Pat. No. 4,766,570. This application Jun. 6, 1994, Ser. No. 254,416
Claims priority, application Japan, Jun. 17, 1985, 60-129829
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.02 16 Claims



1. In an address multiplex dynamic RAM having a plurality of memory cells and a plurality of operational modes, a circuit arrangement comprising:
a first external terminal for receiving a row address strobe signal;
a second external terminal for receiving a column address strobe signal;
a third external terminal for receiving a write enable signal;
a fourth external terminal for receiving a designating signal designating one of said operational modes;
first means, coupled to said first, second and third external terminals, for detecting levels of said row address strobe signal, said column address strobe signal and said write enable signal; and
second means, coupled to said first means and to said fourth external terminal, for setting said one of said operational modes in response to said designating signal and in response to said column address strobe signal being at a logic "low" level, said write enable signal being at a logic "low" level and said row address strobe signal being at a logic "low" level.

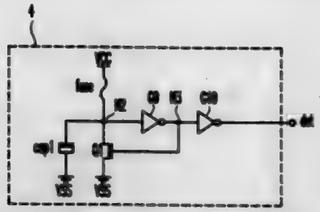
5,444,666

DATA OUTPUT EQUIPMENT FOR A SEMICONDUCTOR MEMORY DEVICE

Young N. Oh, Kyungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 10, 1994, Ser. No. 339,189
Claims priority, application Rep. of Korea, Nov. 11, 1993, 93-23901
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—230.08 7 Claims

1. A data output equipment for a semiconductor memory device comprises:
a fuse programmable delay controller to generate a detecting signal det depending on a fuse connection;
a data output enable signal generator to generate a data output buffer enable signal OE depending on said detecting signal det and control signals ew, cs, ay, cas and oexm; and



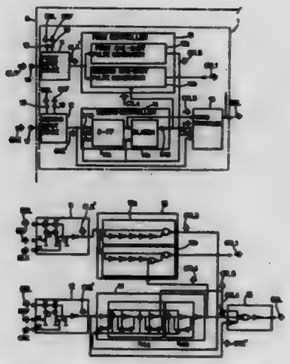
a data output buffer to output reading data from a memory cell depending on said data output enable signal OE.

5,444,667

SEMICONDUCTOR SYNCHRONOUS MEMORY DEVICE HAVING INPUT CIRCUIT FOR PRODUCING CONSTANT MAIN CONTROL SIGNAL OPERATIVE TO ALLOW TIMING GENERATOR TO LATCH COMMAND SIGNALS

Takashi Obara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 31, 1994, Ser. No. 220,881
Claims priority, application Japan, Apr. 20, 1993, 5-077237
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 5 Claims



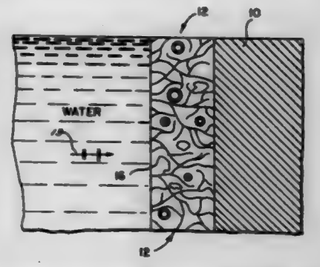
1. A synchronous semiconductor memory device comprising:
a) a memory cell array implemented by a plurality of addressable memory cells;
b) an input and output unit for supplying data bits from and to said memory cell array;
c) an addressing system responsive to external address signals for selectively coupling said input and output unit with said plurality of addressable memory cells;
d) a timing generator responsive to external command signals for controlling said input and output unit and said addressing system; and
e) an input circuit responsive to an external clock signal and an external clock enable signal for producing a main internal control signal, said main internal control signal causing said timing generator to latch said external command signals, said input circuit having
e-1) a first input stage assigned to said external clock signal, and enabled with an enable signal, said first input stage being operative to produce an internal clock signal synchronous with said external clock signal,
e-2) a second input stage assigned to said external clock enable signal, and enabled with said enable signal, said second input stage being operative to produce an internal clock enable signal synchronous with said external clock enable signal,
e-3) a first controller responsive to said internal clock signal for producing a first internal control signal maintained at a first level for a predetermined time period, and
e-4) a second controller responsive to said first internal control signal for introducing a time delay between said internal clock enable signal and a second internal control signal, said second internal control signal allowing said first controller to produce said main internal control signal from said internal clock signal maintained at the first level for said predetermined time period.

5,444,668

ANECHOIC AND DECOUPLING COATING

Maurice M. Sevik, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 35,114
Int. Cl.[6] H04K *3/00*
U.S. Cl. 367—1 23 Claims



1. An absorber for absorbing waterborne sound waves comprising:
an elastomeric matrix having a surface in contact with the water and including a labyrinth running throughout the matrix, the passages of which are open to the surface and adapted to fill with water when submerged;
wherein said matrix includes portions of different acoustic impedance thereby establishing impedance mismatch for enhancing shear deformations in the matrix surrounding the water-filled labyrinth in response to the incident sound waves;
whereby sound waves incident upon the surface cause cyclic deformations within the matrix which imparts motion to the water within the labyrinth thereby converting acoustic energy into heat energy.

5,444,669

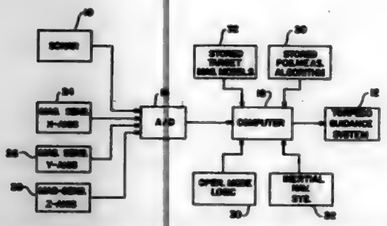
MAGNETIC RELATIVE POSITION MEASURING SYSTEM

Donald G. Polvani, Arnold, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1990, Ser. No. 625,241
Int. Cl.[6] F41F *5/00*
U.S. Cl. 367—96 16 Claims

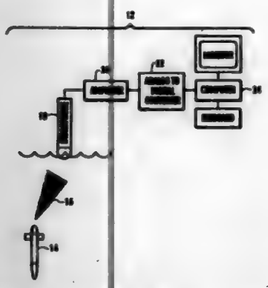
14. Apparatus for guiding a naval ordinance device to a target, comprising:
(a) an active target detection system including means for generating acoustic data signals of said target at relatively long and medium ranges from the target;
(b) means responsive to said acoustic data signals for generating signals of the relative position and orientation of the target;

(c) means for generating first guidance signals in response to said relative position and orientation signals;
(d) means for coupling guidance signals including said first guidance signals to a guidance system of said device;
(e) a passive target detection system including magnetic sensor means for measuring and generating signals of three mutually orthogonal components of the magnetic induction field of the target at said medium and at relatively near ranges from said target;
(f) means for storing a magnetic model of at least one said target;



(g) means for calibrating said stored magnetic model by said signals of the relative position and orientation of said target and said signals of the orthogonal components of the magnetic induction field of the target;
(h) means for generating signals of a new relative position of the target in response to said signals of three orthogonal components of the target's magnetic induction field and said calibrated model of the target; and
(i) means for generating second guidance signals by said passive target detection system in response to said signals of a new relative position,
(j) said second guidance signals being coupled to said means for coupling guidance signals to said guidance system.

5,444,670
METHOD AND APPARATUS FOR DETERMINING SOIL STRENGTH FROM DOPPLER-SHIFTED ACOUSTIC SIGNATURES
Bretton L. Douglas, Santa Barbara, Calif., assignor to Sonatech, Inc., Santa Barbara, Calif.
Filed Sep. 8, 1994, Ser. No. 303,051
Int. Cl.[6] G01V *1/38*; G01N *3/30*
U.S. Cl. 367—90 **16 Claims**



1. A method for determining the compaction and shear strength of sea soil which comprises the steps of:
launching a penetrometer from a vehicle into the sea;
recording reception data of a fixed frequency waveform transmitted from an acoustic sound source mounted on said penetrometer;
locating a frequency shift in said receptions during a penetration event, said penetration event occurring during a time interval measured from a time before said penetrometer impacts the sea floor and a time after said penetrometer comes to rest on the sea floor;
converting said frequency shift into a velocity shift;
smoothing said velocity shift to minimize the effects of extraneous acoustic noise;
fitting said velocity shift with a first algorithm to determine a first time, said first time approximating initiation of said penetration event;
fitting said velocity shift with a second algorithm to determine a second time, said second time approximating termination of said penetration event; and
using said first time, said second time, and said velocity shift to establish penetration depth of said penetrometer for determining the compaction and shear strength of the sea soil.

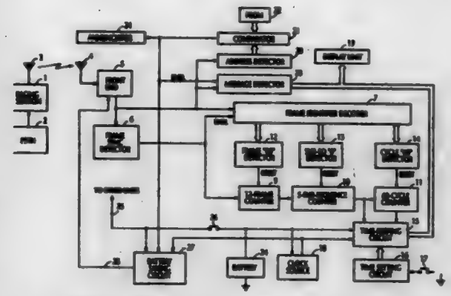
5,444,671
WRISTWATCH WITH MESSAGE TRANSMITTER
Andreas Tschannen, Kappelenstrasse 5, 3250 Lyss, and Henri Conradler, Grubenweg 10, 2563 Ipsach, both of Switzerland
Filed Oct. 5, 1993, Ser. No. 131,614
Claims priority, application Switzerland, Oct. 5, 1992, 3093/92
Int. Cl.[6] G04B *47/00*; G04C *11/02*; H04Q *7/00*
U.S. Cl. 368—10 **4 Claims**



1. A timepiece messaging unit comprising:
a means to display and set time into said unit;
a rotatable ring mounted around said display upon which signs and symbols are placed and wherein an index mark on said unit selects signs and symbols;
actuation means to enter into said unit a message composed of the selected signs and symbols;
means to transmit to all like messaging units, within a given distance, messages composed of the selected signs and symbols;
means to receive all messages from like message units;
memory means to store received messages; means to display messages; and
control means to control the display of received messages.

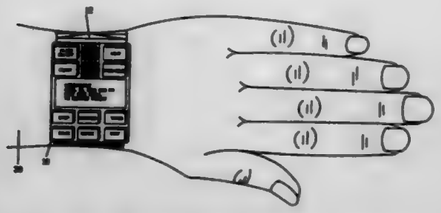
5,444,672
TIME-KEEPING RADIO DISPLAY PAGER PRECISELY CALIBRATED TO LOCAL STANDARD TIME
Masayuki Kushita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 29, 1994, Ser. No. 219,463
Claims priority, application Japan, Mar. 29, 1993, 5-070068
Int. Cl.[6] G04G *7/02*
U.S. Cl. 368—47 **9 Claims**

1. A radio display pager comprising:
receiver means for receiving a paging signal from a paging station, said paging signal comprising a series of frames, each of the frames containing a frame synchronizing signal indicating arrival of the frame and a frame position signal indicating a position of the frame within said series, each of said frames being synchronized with a local standard time of said paging station;
frame sync detector means connected to said receiver means for detecting a frame synchronizing signal from each frame of the received paging signal;
frame position detector means connected to said receiver means for detecting a predetermined frame position signal from the received paging signal;
counter means for incrementing a count value in synchronism with the detection of each frame synchronizing signal by said frame sync detector means and producing



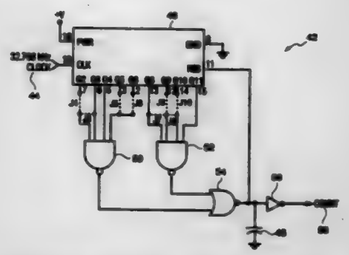
an output signal when said count value reaches a predetermined value, said counter means being reset to an initial value in response to the detection of the predetermined frame position signal by said frame position detector means;
a clock source for continuously generating a local clock pulse;
time-keeping means for counting said local clock pulse and generating therefrom a time-of-day signal, said time-keeping means being calibrated to the local standard time in response to the output signal of said counter means; and
display means for displaying time of day indicated by said time-of-day signal.

5,444,673
AUDIO CONTROLLED AND ACTIVATED WRISTWATCH MEMORY AID DEVICE
Trevor S. Mathurin, 865 Flanders Ave., Uniondale, N.Y. 11553
Filed Jul. 12, 1994, Ser. No. 273,839
Int. Cl.[6] G04B *21/08*
U.S. Cl. 368—63 **9 Claims**



1. An audio wristwatch being adjustably mounted upon a user's wrist in a easily visible place comprising:
a) a watch band circumventing said user's wrist attaching to said audio wristwatch by a watch band retaining means being adjustably and securely fastened by a watch band ring, at least one watch band first attachment means, and at least one watch band second attachment means;
b) at least one display screen prominently positioned upon a watch face functioning to display messages;
c) at least one alarm on/off button mounted upon said watch face functioning to turn an alarm on and off;
d) at least one minutes button mounted on said watch face functioning to program and activate said alarm at a preset number of minutes before a specifically preprogrammed time and date of a task or appointment;
e) at least one reset button mounted on said watch face functioning to reset said audio wrist watch after said appointment and task being completed;
f) at least one next displayed message button mounted on said watch face functioning to display said next appointment and task in a chronological order;
g) at least one previous displayed message button mounted on said watch face functioning to display said previous appointment and task in a chronological order;
h) at least one speaker/microphone mounted on said watch face functioning to receive and transmit audio signals;
i) at least one stop button mounted on said watch face functioning to end said recorded message;
j) at least one time/date adjustment button mounted on said watch face enabling said user to set and reset said proper date and time;
k) at least one save button mounted on said watch face enabling said user to save recorded messages;
l) at least one erase button mounted on said watch face enabling said user to erase recorded messages;
m) at least one edit button mounted on said watch face enabling said user to edit recorded messages;
n) at least one train button mounted on said watch face enabling said user to train said audio wristwatch to distinguish his/her own personal voice commands;
o) a housing; and
p) a powering means.

5,444,674
HAND HELD DECIMAL TIMER WITH IMPROVED FREQUENCY DIVISION
Clifford N. Sellie, 320 Sunset Ct., Northbrook, Ill. 60062-5635
Filed Jun. 8, 1994, Ser. No. 255,468
Int. Cl.[6] H03K *21/08*; G04F *10/04*
U.S. Cl. 368—107 **2 Claims**



1. A hand held decimal timer circuit comprising:
a power supply having a positive voltage output and a ground or common output;
a counter circuit coupled to said power supply;
a frequency divider circuit coupled to said counter circuit and to said power supply;
a clock circuit including an oscillator coupled to said frequency divider circuit;
a display circuit coupled to said counter circuit; a switch circuit coupled to said counter circuit; and, said frequency divider circuit including:
(a) a first input for receiving a clock signal having a frequency of approximately 32.768 kHz from said clock circuit,
(b) a second input and a third input for receiving, respectively, a positive voltage reference and a ground voltage reference from said power supply,

(c) a 12 bit binary counter which counts the clock cycles from said clock circuit and outputs, on a plurality of output pins, a number of clock cycles in binary form,
(d) a pair of NAND gates each having at least three inputs and an output, said inputs being coupled to at least some of said plurality of output pins for receiving, directly and through one or more jumpers between selected ones of said output pins, a number of clock signals,
(e) a NOR gate having an output and inputs which are operably coupled to said outputs of said pair of NAND gates for generating a reset signal at said output thereof for resetting said number of clock signals,
(f) a capacitor coupled between said NOR gate output and ground for coupling said reset signal to the ground reference voltage to insure the 12 bit binary counter is properly reset when power is applied to said second and third inputs of said frequency divider circuit,
(g) an inverter gate having an output and an input operably connected to said output of said NOR gate for generating a count signal at said output of said inverter,
(h) said frequency divider circuit having an output for outputting said count signal, and,
(i) the frequency of said count signal being configured to count in decimal minutes by the connection of jumpers to selected ones of said plurality of output pins, said plurality of output pins including eleven pins and said jumpers being selected and connected in such a manner to the output pins for supplying the second, third, fourth, sixth, eighth, ninth, tenth and eleventh bits of the number of clock cycles counted to the inputs of the pair of NAND gates whereby said hand held decimal timer circuit will count in decimal minutes.

5,444,675

CASSETTE ADAPTER FOR A PLAYBACK DECK OF THE FRONT-LOADING OR THE SIDE-LOADING TYPE

Boele De Bie; Willem L. Van Der Kruk, both of Eindhoven, Netherlands, and George T. H. Woo, Kowloon, Hong Kong, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1994, Ser. No. 218,789
Claims priority, application European Pat. Off., Mar. 31, 1993, 93200915
Int. Cl.[6] H04B *1/20*
U.S. Cl. 369—2 9 Claims



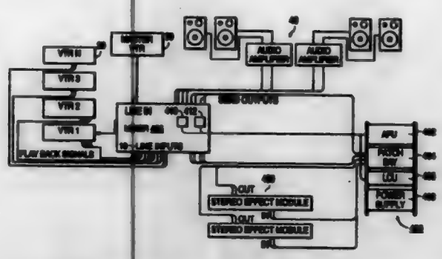
1. An adapter for enabling signals produced by a signal source to be reproduced as audio sounds by a cassette player audio system comprising a cassette audio playback deck of the front-loading type or the side-loading type, wherein a cassette is normally positioned in use substantially completely within the confines of said cassette playback deck, said adapter comprising:
a housing of a configuration of a cassette normally used with said playback deck,
a record head supported in a peripheral front wall of said housing in a position for contacting a playback head of said playback deck,
electrical conducting means located partly within said housing and extending from said housing, the conducting means having one end electrically coupled to said record head for providing audio signals to said record head,
connector means coupled to an other end of the said electrical conducting means, for receiving the audio signals for providing to the record head,
a first opening in a peripheral side wall of said housing, for enabling the conducting means to extend from said adapter from the sidewall thereof, such that the adapter may be used with a playback deck of the side loading type,
means being provided in a peripheral rear wall of said housing opposite said record head for enabling the conducting means to extend from said adapter from the rear wall thereof, such that the adapter may be used with a playback deck of the front-loading type,
characterized in that the electrical conducting means are fixedly positioned in said first opening after final assembly of said adapter for consumer use, the means provided in said peripheral rear wall comprising a preformed second opening and closure means for closing said second opening, the housing comprising two housing parts being assembled by means of releasable assembling means so as to enable a de-assembling of both housing parts, the electrical conducting means being releasably positioned in said first opening in one of said housing parts after de-assembly of said housing parts so as to enable a repositioning of the conducting means from the first opening into the preformed second opening after removing the closure means, that the electrical conducting means are fixedly positioned in said second opening after the subsequent assembly of said adapter for use of said adapter with said playback deck of the front-loading type.

5,444,676

AUDIO MIXER SYSTEM

Nicholas Balsamo, 72 Butterfield Dr., Greenlawn, N.Y. 11740, and Michael H. Brauer, 201 W. 89th St., Apt. 8E, New York, N.Y. 10024

Filed Sep. 28, 1994, Ser. No. 313,814
Int. Cl.[6] H04B *1/20*
U.S. Cl. 369—4 28 Claims



1. An audio processing system comprising:
a plurality of input terminals for receiving audio signals from one or more audio sources, said plurality of input terminals including return terminals for receiving return audio signals from one or more external processing devices;
a plurality of output terminals for providing processed audio signals, said output terminals including send terminals for providing audio signals to one or more external processing devices;
a plurality of audio signal paths each having an input portion coupled to a corresponding number of said input terminals, an insert portion, and an output portion coupled to a corresponding number of said output terminals, wherein each said output portion is selectively coupled to each input portion of said plurality of audio signal paths through a first plurality of logic controlled switches, whereby each of said plurality of audio signal paths are looped back in series with one or more others of said plurality of audio signal paths;

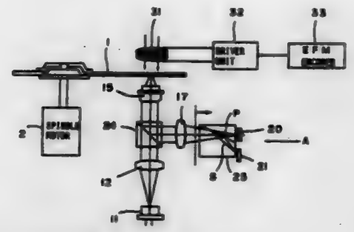
at least one additional audio signal path arranged in parallel with each insert portion of said plurality of audio signal paths, said additional audio path including one of said send terminals and one of said return terminals whereby at least one audio insert point is provided on said at least one additional audio signal path;
a second plurality of logic controlled switches arranged in series with each additional audio signal path and each insert portion of said plurality of audio signal paths; and
logic control means for providing logic signals which selectively open and close each of said first plurality of logic controlled switches and each of said second plurality of logic controlled switches in response to the operation of a corresponding number of switch operating members.

5,444,677

OPTICAL READ/WRITE HEAD LOW ANGLE BEAMSPLITTER AND COPLANAR DETECTORS

Hayami Hosokawa, Yawata; Tatsuo Ohgaki; Kouhei Tomita, both of Nagaokakyo; Hironobu Kiyomoto, Nara; Naru Yasuda, Uji, and Shinya Otsuki, Nagaokakyo, all of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Mar. 3, 1993, Ser. No. 25,687
Claims priority, application Japan, Mar. 3, 1992, 4-081598; Aug. 24, 1992, 4-247408; Sep. 30, 1992, 4-285476; Nov. 5, 1992, 4-295581
Int. Cl.[6] G11B *11/00, 7/00*
U.S. Cl. 369—13 27 Claims



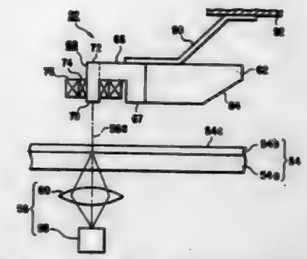
1. An optical read/write head, comprising:
a luminous means for emitting a light;
a first lens means for collimating said emitted light into substantially parallel rays;
a second lens means for focusing said parallel light rays onto an optical recording medium and for collimating a light reflected off said optical recording medium into substantially parallel rays;
a first optical means, arranged at a predetermined location in an optical path between said first and second lens means where said rays are determined parallel, for separating a portion of said reflected light from a main optical axis between said first and said second lens means, said first optical means having a means for reflecting a majority of a first polarization of said reflected light as a separated portion away from said main optical axis, and having a means for transmitting a remainder of said reflected light along said main optical axis;
a second optical means for further separating said separated portion of said reflected light from said main optical axis into two mutually orthogonally polarized components having an included angle of less than 90°, said second optical means having a means for transmitting along a first path a majority of one from said mutually orthogonally polarized components of said separated portion, and means for reflecting onto a second path a majority of one from said mutually orthogonally polarized components of said separated light, said first and second paths being at said included angle;
a photodetector comprising two light receiving means, each having a respective receptive surface, for receiving, respectively, said two mutually orthogonally polarized components, said two light receiving means having their respective receptive surfaces oriented in substantially the same direction.

5,444,678

MAGNETO-OPTIC RECORDING MAGNETIC HEAD HAVING MAGNETIC GAP WHICH HAS DIFFERENT SIZES IN MAGNETIC FIELD MODULATION MODE AND LIGHT MODULATION RECORDING MODE

Takashi Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 116,360
Claims priority, application Japan, Sep. 9, 1992, 4-240891; Oct. 22, 1992, 4-308098
Int. Cl.[6] G11B *11/10, 13/04*
U.S. Cl. 369—13 12 Claims



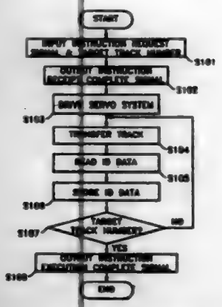
1. A magneto-optic recording magnetic head for applying first and second magnetic fields to a magneto-optic recording medium having a recording film, the first magnetic filed changing in polarity in accordance with a recording signal, and the second magnetic field exhibiting different polarities in an erase mode and a recording mode but undergoing no change in polarity in accordance with a recording signal, the magnetic head comprising:
a first coil for exciting the first magnetic field;
a first yoke, around which the first coil is wound, and which has two ends in a plane which is substantially parallel to the recording film, for applying the first magnetic field excited by the first coil to the recording film through one of the two ends of the first yoke;
a second coil for exciting the second magnetic field; and
a second yoke, around which the second coil is wound, and which has a plurality of ends in the plane substantially parallel to the recording film, for applying the second magnetic field excited by the second coil to the recording film through one of the plurality of ends of the second yoke,
and wherein:
the first and second coils are arranged separated from each other in a direction parallel to the recording film, so that a first coil center line extending perpendicular to a plane surrounded by the first coil and a second coil center line extending perpendicular to a plane surrounded by the second coil are parallel to each other,
the first yoke and the second yoke are magnetically coupled to each other, and
an effective area of the first magnetic field applied from the first yoke to the recording film and an effective area of the second magnetic field applied from the second yoke to the recording film are different from each other.

5,444,679

OPTICAL DISK DRIVER FOR READING DATA FROM A DISK BASED ON ID INFORMATION

Seong-ro Ko, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 8, 1993, Ser. No. 148,941
Claims priority, application Rep. of Korea, Dec. 28, 1992, 92-25764
Int. Cl.[6] G11B 17/22, 7/00
U.S. Cl. 369—32 6 Claims



1. An optical disk driver having pickup means for picking up the ID information and the data information recorded on a disk as a radio frequency signal and demodulation means for demodulating the radio frequency signal which is picked up by said pickup means into a binarization signal, said optical disk driver comprising:

an interface controller for outputting an instruction signal corresponding to a target track number to be searched;

track transfer means for transferring said pickup means to the track that corresponds to said target track number;

an ID reading circuit which reads ID information indicating the track location from output data from said demodulation means; and

control means for outputting a driving signal to said track transfer means so as to transfer said pickup means to the track that corresponds to said target track number, and for determining whether the ID information from said ID reading circuit corresponds to the target track and outputting an operation-completed signal to said interface controller if said ID reading circuit does correspond to the target track,

wherein said ID reading circuit comprises:

an operation driving signal generator which generates a read gate signal which activates said ID reading circuit when the sector mark signal recorded on said disk is detected;

a track number detector which inputs said binarization signal generated from said demodulation means and generates a track number;

a sector number detector which inputs said binarization signal generated from said demodulation means and detects a sector number;

an error correction signal detector which inputs said binarization signal generated from said demodulation means and detects an error correction signal;

a hold signal generator which generates a hold signal so as to hold a track number, sector number, error correction signal when these are detected from said track number detector, sector number detector and error correction signal detector, respectively; and

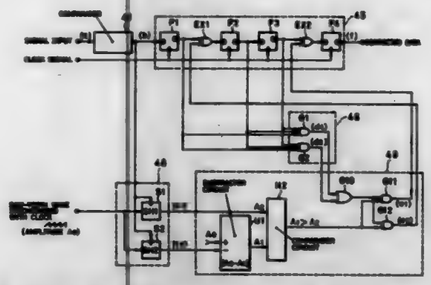
a selecting control signal generator which generates a selecting control signal which controls the outputs of said track number detector, sector number detector and error correction signal detector so as to be serially input to said control means.

5,444,680

DIGITAL SIGNAL PROCESSING APPARATUS WITH A READ ERROR CORRECTION FUNCTION

Masaru Umezawa, and Hiroki Kurihayashi, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,861
Claims priority, application Japan, Feb. 16, 1993, 5-026864
Int. Cl.[6] G11B 17/22; H04N 5/76
U.S. Cl. 369—32 8 Claims



1. A digital signal reproducing apparatus for reproducing a digital signal from a read signal from a recording medium on which run length limited digital signals are recorded, comprising:

digitizing means for converting said read signal into a binary signal based on a predetermined threshold value;

synchronizing means for synchronizing said binary signal at predetermined sampling timings to produce a synchronized binary signal;

detector means for detecting a synchronized short pulse binary signal portion having an inverting interval shorter than a predetermined time from said synchronized binary signal;

determining means for comparing a time difference from a sampling timing existing immediately before said synchronized short pulse binary portion to a front edge timing of said short pulse binary signal portion with a time difference from a rear edge timing of said short pulse binary signal portion to a sampling timing existing immediately after said short pulse binary signal portion in order to determine one of said sampling timings existing immediately before and immediately after said short pulse binary signal portion which is closed to said short pulse binary signal portion than the other; and

correcting means for inverting the value of said synchronized binary signal which has been synchronized at one of said sampling timings conforming to the determination result of said determining means to correct erroneously read data.

5,444,681

METHOD AND APPARATUS FOR RECORDING SIGNALS WITH SUB-SIGNALS INDICATIVE OF OUTLINE OF THE SIGNALS

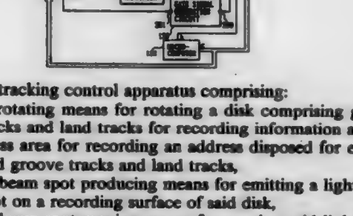
Koji Ishiwata, and Satoru Tobita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 208,133
Claims priority, application Japan, Mar. 9, 1993, 5-076191
Int. Cl.[6] G11B 17/22, 7/00
U.S. Cl. 369—32 10 Claims

1. An apparatus for recording data, comprising:

receiving means for receiving digital audio signal input data, wherein said digital audio signal input data includes a series of digital values which represent the amplitude of an audio signal plotted over time;

detecting means for detecting a maximum value of said digital audio signal input data that is received by said receiving means during a predetermined time period, such that after a plurality of said predetermined time periods have elapsed, said detecting means has detected a plurality of maximum values, wherein each of said plurality of maximum values corresponds to one of said plurality of predetermined time periods;



memory means for temporarily storing said plurality of maximum values; and

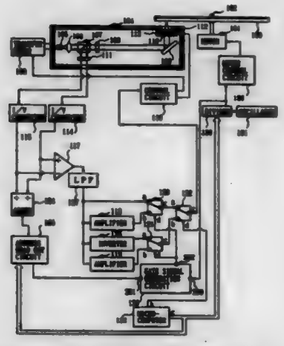
recording means for recording said digital audio signal input data and said plurality of maximum values retrieved from said memory means on a disc recording medium.

5,444,682

TRACKING CONTROL APPARATUS

Shinichi Yamada, Katano; Mitsuru Moriya, Ikoma; Hiroyuki Yamaguchi; Osamu Yamaguchi, both of Hirakata; Yoshihiro Kanda, Osaka, and Yasuki Matsumoto, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 6, 1994, Ser. No. 301,001
Claims priority, application Japan, Sep. 7, 1993, 5-221794; Feb. 10, 1994, 6-016314
Int. Cl.[6] G11B 5/86
U.S. Cl. 369—32 19 Claims



1. A tracking control apparatus comprising:

disk rotating means for rotating a disk comprising groove tracks and land tracks for recording information and address area for recording an address disposed for each of said groove tracks and land tracks,

light beam spot producing means for emitting a light beam spot on a recording surface of said disk,

light beam spot moving means for moving said light beam spot to a direction traversing said groove track and land track,

light detecting means for detecting light reflected by or transmitted through said disk,

control signal deriving means for deriving a control signal corresponding to a positional deviation between said light beam spot and said groove track and between said light beam spot and said land track on the basis of the detected value of said light detecting means,

control means for controlling said light beam spot moving means on the basis of said control signal so that said light beam spot traces a target track,

address period signal generation means for generating an address period signal representing a time period tracing said address area with said light beam spot on the basis of the detected value of said light detecting means, and

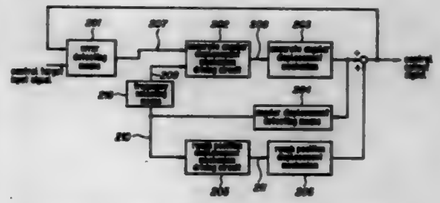
polarity inverting means for inverting a polarity of said control signal in accordance with said address period signal in the case that said light beam spot traces said land track.

5,444,683

OPTICAL REPORTING REPRODUCING DEVICE HAVING FIXED AND MOVABLE OPTICAL SYSTEMS

Hiroyuki Ishikawa; Shinji Habe; Kouichi Ebina; Takashi Takeda; Hirokazu Ito, and Hideya Seki, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 704,150, May 22, 1991, abandoned.
This application Jan. 25, 1994, Ser. No. 186,237
Claims priority, application Japan, May 24, 1990, 2-134651; Jun. 6, 1990, 2-148092; Aug. 24, 1990, 2-223812; Feb. 14, 1991, 3-020886; May 7, 1991, 3-101239
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.28 2 Claims



1. An optical record reproducing device comprising:

a movable optical system, including an objective lens, which is movable along a radial direction of an optical disc; and

a fixed optical system including a light source for irradiating a light beam, reflecting means for reflecting said light beam toward said movable optical system and attendantly onto said disc, an accurate angular displacement mechanism for angularly displacing said reflecting means so as to attendantly control the tracking of said light beam on said disk and angular detecting means for detecting the angular orientation of said reflecting means, wherein said tracking control system further comprises:

an accurate angular displacement mechanism driving circuit for driving said accurate angular displacement mechanism;

an angular displacement detecting means for detecting an angular displacement of said accurate angular displacement mechanism and for producing a displacement signal;

a rough position displacement driving circuit for generating a signal in response to said displacement signal from said angular displacement detecting means;

a rough position displacement mechanism for moving said movable optical system in accordance with said signal from said rough position displacement mechanism driving circuit;

a difference detecting means for detecting a difference between a sum of an output signal from said accurate angular displacement mechanism and an output signal from said rough position displacement mechanism, and an input signal;

wherein a difference between said output signal from said angular displacement detecting means and a difference of a signal from said difference detecting means is input to said accurate angular displacement mechanism driving circuit; and

wherein said output signal from said angular displacement detecting means is input to a frequency selecting means and an output from said frequency selecting means is input to said accurate angular displacement mechanism driving circuit.

5,444,684

SEEK CONTROL SYSTEM OF DUAL PROCESSOR MAGNETO-OPTIC DISK UNIT

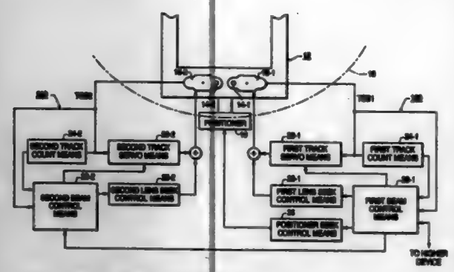
Shigenori Yanagi, Kawasaki; Kazuki Kudo, Tokyo, and Kikuji Katoh, Tokorozawa, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Continuation of Ser. No. 852,191, Jun. 2, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 266,314

Claims priority, application Japan, Oct. 3, 1990, 2-265720; Oct. 3, 1990, 2-265721

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.28 **5 Claims**



1. An optical disk apparatus comprising:

a recording medium having a plurality of tracks thereon;

first and second objective lenses, said first objective lens impinging a first beam onto said recording medium and said second objective lens impinging a second beam onto said recording medium;

a first lens actuator which moves said first objective lens and a second lens actuator which moves said second objective lens;

first and second detectors, said first detector detecting a tracking error for the first beam from a track on said recording medium and said second detector detecting a tracking error for the second beam from a track on said recording medium, said first and second detectors producing first and second tracking error signals, respectively;

first beam position control means, comprising:

first track servo control means for controlling said first lens actuator to follow a track of the recording medium in accordance with the tracking error signal produced by said first detector,

first track count means, responsive to the first tracking error signal, for counting a number of tracks crossed by the first beam,

first lens seek control means for controlling said first lens actuator to seek, from a current track to a specified target track, with the first beam based upon the number of tracks counted by said first track count means,

positioner seek control means for moving both the first and second beams from a current track toward a specified target track based upon the number of tracks counted by said first track count means,

first beam control means for controlling said first track servo control means, said first lens seek control means, and said positioner seek control means, said first beam control means, in accordance with receiving a seek instruction with a specified target track from an external source, disabling said first track servo control means, enabling said positioner seek control means thereby to move both the first and second beams and enabling said first lens seek control means when said first track count means indicates that the first beam has been moved to a position closely adjacent the specified target track, as instructed from the external source, by said positioner seek control means;

means for notifying completion of a seek operation of the first and second beams, based upon a determination of whether a seek operation of the second beam has been completed; and second beam position seek control means comprising:

second track servo control means for controlling said second lens actuator to follow a track of the recording medium in accordance with the tracking error signal produced by said second detector,

second track count means, responsive to the second tracking error signal, for counting a number of tracks crossed by the second beam,

second lens seek control means for controlling said second lens actuator to seek, from a current track to a specified target track, with the second beam based upon the number of tracks counted by said second track count means,

second beam control means for controlling said second track servo control means and said second lens seek control means, said second beam control means, in accordance with the same seek instruction received by said first beam control means, disabling said second track servo control means, enabling said second track count means and enabling said second lens seek control means when said second track count means indicates that the second beam has been moved to a position closely adjacent the specified target track, as instructed from the external source, by said positioner seek control means; and

means for notifying said first beam position control means of a completion of a seek operation of the second beam.

5,444,685

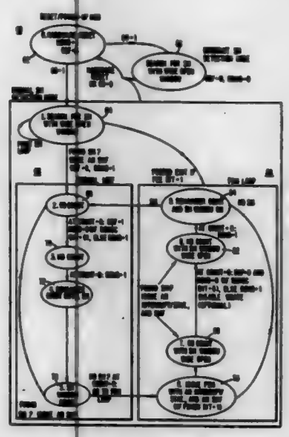
SECTOR MARK PATTERN DETECTION FOR OPTICAL DATA DISK CONTROLLER

Shakeel Masood, Sunnyvale, and Douglas G. Gray, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 75,905, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 810,576, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 807,466, Dec. 16, 1991, abandoned. This application Jun. 1, 1994, Ser. No. 252,377

Int. Cl.[6] G11B *19/28*

U.S. Cl. 369—47 **26 Claims**



17. A method of detecting a sector mark within a sector of a track of an optical data disk, comprising the steps of:

(1) searching bits obtained from said disk for a pattern of bits corresponding to a sector mark;

(2) generating a "sector mark found" signal upon detecting a sector mark in any region of a first sector of said disk, and in response, executing a first routine comprising

(ai) using a search window having a programmably variable width, searching for said pattern of bits in the next sector of said disk within a first predefined width of the search window,

(aii) if a sector mark is found during step (ai), generating a "sector mark found" signal, and

(aiii) if a sector mark is not found during step (ai), executing a second routine comprising

(bi) generating a pseudo sector mark signal, wherein said pseudo sector mark signal is generated when no sector mark is detected in previous sectors of the disk using said search window,

(bii) searching for said pattern of bits within a second predefined width of the search window different from said first width,

(biii) if said pattern is found during step (bii), generating a "sector mark found" signal and re-executing the first routine,

(biv) if said pattern is not found during step (bii), re-executing said second routine; and

(3) reading sector data stored in any desired sector for which a "sector mark found" or "pseudo sector mark" signal has been generated.

5,444,686

METHOD AND APPARATUS FOR CORRECTING DISTORTION IN COMPACT DISC RECORDING AND PLAYBACK SYSTEM

John H. Dunlavy, 2826 Tenderfoot Hill St., Colorado Springs, Colo. 80906

Filed Sep. 28, 1993, Ser. No. 128,349

Int. Cl.[6] G11B *7/00*

U.S. Cl. 359—48 **15 Claims**



1. A method of correcting distortion in the playback of audio signals recorded on a compact disc (CD), said distortion caused by nonlinearities in the amplitude versus frequency and amplitude versus time components of the audio signals before and after recording, the method comprising:

recording audio signals and a first reference signal on a CD;

reading said recorded audio signals and said recorded first reference signal from said CD;

comparing said recorded first reference signal with a second reference signal, said second reference signal being identical to said first reference signal prior to said recording; and

generating a signal indicative of the difference between said compared signals with respect to amplitude versus frequency components and amplitude versus time components of said compared signals;

combining said difference signal with said read audio signals to produce playback audio signals having the same amplitude versus frequency components and amplitude versus time components as said audio signals prior to said recording, thereby correcting said distortion wherein said first reference signal is recorded on an information track of said CD prior to a plurality of audio tracks of said CD, such that said first reference signal is virtually inaudible to a listener during playback of said CD.

5,444,687

METHOD AND DEVICE FOR ACCESSING AN OPTICAL DISC

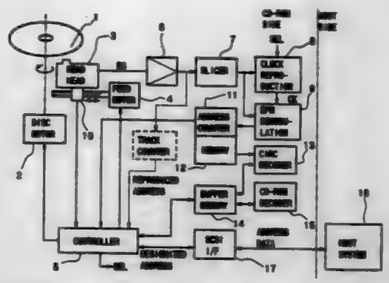
Takatoshi Okumura, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 24, 1993, Ser. No. 36,437

Claims priority, application Japan, Mar. 26, 1992, 4-100679; Feb. 10, 1993, 5-046006

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—50 **17 Claims**



1. A device for accessing an optical disc having plural radial zones, wherein data is recorded onto or reproduced from the disc at least at one constant linear velocity, comprising:

means for rotating the optical disc at more than one constant rotation velocity corresponding to the number of radial zones;

a head for accessing the optical disc for recording or reading out the data;

head moving means for moving the head in the radial direction of the optical disc wherein, when the optical disc is driven by drive means, the head accesses the optical disc at one of the constant rotation velocities;

means for selecting one of the constant rotation velocities in accordance with the radial zone being accessed by the head; and

data processing means for changing a clock in accordance with the position of the head in the radial direction of the optical disc, and processing data which is recorded in or reproduced from the optical disc in response to the clock, wherein the data which is accessed from the radial zone on the optical disc by the head at a constant rotation velocity is recorded or reproduced substantially at a constant linear velocity.

5,444,688

INFORMATION REPRODUCING CIRCUIT

Hiroshi Fuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 920,347, Jul. 27, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,741

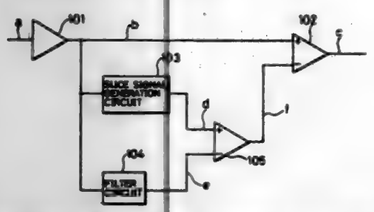
Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **12 Claims**

1. An information reproducing circuit for converting into binary digits a reproduced signal read out from a recording medium whereon information has been recorded as a recording signal by a recording means, and said reproducing circuit having an amplitude jitter eliminating means for receiving said reproduced signal and for eliminating jitter therefrom which is related to amplitude variations in said reproduced signal as compared to said recording signal and for removing low frequency components superimposed upon the readout signal, and phase jitter eliminating means for receiving said reproduced signal and eliminating jitter therefrom, said jitter is

related to phase variations in said reproduced signal as compared to said recording signal,

said reproducing circuit including



a subtracting circuit receiving as inputs an output of said amplitude jitter eliminating means and an output of said phase jitter eliminating means; and

a comparator receiving as inputs said reproduced signal and an output of said subtracting circuit.

5,444,689

DETECTION OF PHASE AND AMPLITUDE MODULATION INFORMATION ON OPTICAL MEDIUM WITH A WAVEGUIDE

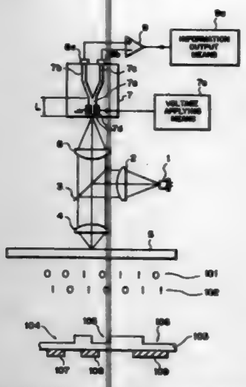
Hiroshi Ohki; Rieko Arimoto; Yutaka Iwasaki, and Jun Iwasaki, all of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 109,904

Claims priority, application Japan, Aug. 28, 1992, 4-229001; Sep. 11, 1992, 4-242487

Int. Cl.[6] G11B *7/00*; G02B *6/10*

U.S. Cl. 369—109 20 Claims



1. A method of performing high-density reproduction of information recorded on an optical recording medium, including:

a step of radiating read light on said optical recording medium in which first information for modulating a phase of the read light and second information for modulating an amplitude of the read light are recorded as physical variations of the optical recording medium;

a step of receiving read light reflected by or transmitted through said optical recording medium;

a detection step of independently detecting phase modulation information and amplitude modulation information of said optical recording medium using the received light; and

a step of reproducing the first information and the second information from the information in the detection step.

5,444,690

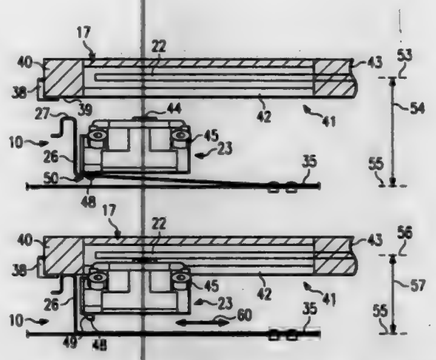
LEAF SPRING LOCK FOR A CARRIAGE IN A MEDIA PLAYER THAT IS ACTUATED BY THE CARRIAGE AND POSITION OF A CARTRIDGE

Edwin R. Childers, III; Michael Henry, both of Tucson, Ariz., and Masaru Nemoto, Hadano, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,237

Int. Cl.[6] G11B *17/04*

U.S. Cl. 369—263 12 Claims



1. A cartridge media playing apparatus having a cartridge receiver movable between a load-unload position and a play position for receiving and yielding a cartridge in said load-unload position and for enabling access to a medium contained in said cartridge in said play position, said cartridge having a medium access opening, each medium in said cartridge having a plurality of spaced apart recording areas that are accessible through said medium access opening, said cartridge and said cartridge receiver, while said cartridge is received in said cartridge receiver, comprising a cartridge composite, the improvement including, in combination:

movable transducer support means disposed for reciprocating motions along a predetermined path across said medium access opening for accessing different ones of said recording areas on the medium;

sub-frame means supporting said movable transducer support means for said reciprocating motions;

resilient means having a contact portion and being stationarily mounted on said sub-frame means for yieldably urging said contact portion in a direction toward said medium access opening, said contact portion being positioned on said resilient means to engage said cartridge composite in said play position so that the contact portion is downwardly biased by the cartridge composite;

latch lock means on said moveable transducer support means and having a latch means;

catch lock means mounted on said resilient means and facing said latch lock means for engaging said latch lock means for retaining said movable transducer support means in a predetermined position aligned with said medium access opening, said catch lock means having an aperture for removably receiving said latch means such that said cartridge composite while in said load-unload position enables said resilient means for locking said movable transducer support means in said predetermined position and while in said play position disengaging said latch and catch lock means for freeing said movable transducer support means for said reciprocating motions.

5,444,691

DISC CARTRIDGE

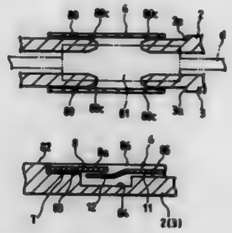
Noboru Akiyama, Kyoto, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,289, Oct. 21, 1992, abandoned, which is a division of Ser. No. 835,065, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 344,580, Apr. 28, 1989, abandoned. This application Jun. 28, 1994, Ser. No. 268,652

Claims priority, application Japan, Apr. 28, 1988, 63-56766; Apr. 28, 1988, 63-56767; Apr. 28, 1988, 63-56768; Apr. 28, 1988, 63-56772; Jun. 29, 1988, 63-85101

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—291 7 Claims



1. A disc cartridge comprising:

a cartridge case for encasing therein a recording medium disc, said cartridge being made of plastic and being provided with a head insertion hole disposed at a center position of the cartridge for reading the recording medium disc and a spindle hole into which a circular spindle for rotating the disc is inserted, said head insertion hole being formed continuously with said spindle hole substantially in a radial direction, said head insertion hole and said spindle hole having chamfered peripheral walls, parts of a connecting portion between said head insertion hole and said circular spindle hole projecting toward an inner side of the head insertion and spindle holes in the lateral direction in confronting relation with each other to form two projections defined by an arcuate side extending along a hub provided at a center of the disc and another side extended from a side edge of said head insertion hole, each projection being bevelled on both its surfaces at its distal end; and a shutter slidably mounted on said cartridge case for opening and closing said head insertion hole and said spindle hole, said shutter including a head portion slidably movable along a front edge of the cartridge, said shutter having opening and closing plate portions extending from said head portion to open and close said head insertion hole and said spindle hole, said shutter being made of metal, each of said projections having substantially a triangular shape defined by said arcuate side extending along the hub and a right angular side extending perpendicular to a side edge of said head insertion hole, said opening and closing plate portions of said shutter being expanded so that a center portion of each opening and closing plate portion is raised from a sliding surface of the cartridge, including the periphery of said head insertion hole, said spindle hole and said projections, wherein said cartridge case includes first and second shell halves, each shell half having a shallow stepped portion for receiving a retainer plate which guides a slide portion at a lower end of each of the opening and closing plate portions, the retainer plate being lower in level from a surface of each shell half, a deep recess being formed along the shallow stepped portion, an extension portion of the retainer plate extending over the deep recess, said lower end of each of said plate portions of the shutter being substantially Z-shaped with the slide portion being received in the deep recess and extending parallel to the retainer plate.

5,444,692

TOKEN STAR BRIDGE

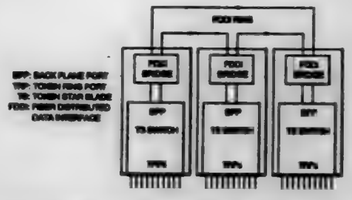
Claude Basso, Nice; Jean Calvignac, La Gaude, and Fabrice Verplanken, Cagnes-Sur-Mer, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 2, 1993, Ser. No. 161,372

Claims priority, application European Pat. Off., Dec. 22, 1992, 92480199

Int. Cl.[6] H04L *12/417*

U.S. Cl. 370—13 6 Claims



1. A bridge having n ports (n being an integer > 1), each port being connected to a different one of a plurality of Token-Ring physical segments, each physical segment having at least one native Token-Ring workstation attached, said bridge being characterized in that it comprises means for emulating to the workstations a single Token-Ring logical segment with a single Active Monitor and a single Ring Number representing all of the physical ring segments, wherein the active monitor detects errors on the physical ring segments and initiates error recovery actions.

5,444,693

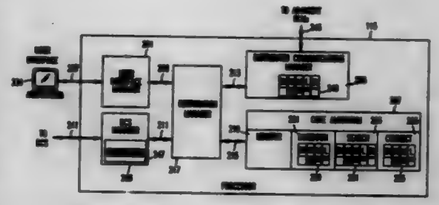
SYSTEM FOR RESTORATION OF COMMUNICATIONS NETWORKS

Ahmet V. Arslan, Plainsboro, N.J.; James D. Bobeck, Leesport, Pa.; Jeffrey A. Gerrish, Newburyport, Mass., and David E. McDonald, Plaistow, N.H., assignors to AT&T Corp., Murray Hill, N.J.

Filed Apr. 27, 1992, Ser. No. 874,773

Int. Cl.[6] H04L *1/22*

U.S. Cl. 370—16 44 Claims

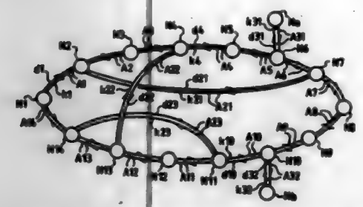


1. A restoration processor associated with at least one digital cross-connect system of a node in a network, said restoration processor being for use in distributed restoration of communications circuits in said network, said restoration processor comprising:

a plurality of manager modules, each of said manager modules for managing a particular aspect of a distributed control restoration process, each of said manager modules not being directly interconnected; and

a restoration manager for coordinating said plurality of manager modules and providing at least communications capabilities between said manager modules.

5,444,694
METHOD FOR THE RECONFIGURATION OF A MESHED NETWORK
Guy Millet, Vanves, and Vincent Gillet, Paris, both of France, assignors to Thomson-CSF, Paris, France
Filed Mar. 15, 1994, Ser. No. 210,295
Claims priority, application France, Mar. 19, 1993, 93 03204
Int. Cl.[6] H04L *12/423*
U.S. Cl. 370—16.1 5 Claims



1. A method for the reconfiguration of a meshed network formed by at least three nodes and four lines, each of the nodes having at most three ports and at least one node being a control node to control the network, n of the nodes and n of the lines, where n is an integer greater than 2, being arranged in a main loop, and m of the lines, where m is an integer at most equal to n/2, forming standby lines, not used during normal operation of the network, formed between nodes of the main loop, the meshed network being designed for the transmission, by the lines, of signals between the nodes under control of the at least one control node, each line connecting a port of one of the nodes to a port of another of the nodes and comprising a primary link and a secondary link, the two links having opposite directions of signal transmission wherein, when any main line is determined to be defective, the method comprising the steps of:

determining at least two sections of nodes constituted by non-defective parts of the main loop, each of the at least two determined sections limited by two of the defective main lines;

determining a group formed by k of the sections of the nodes, where k is an integer greater than 1, which may be connected to one another by means of k-1 of the standby lines; and

creating a reconfigured network by determining, in the group, a single path using the k sections of the group and said k-1 standby lines, this single path passing once and no more than once through each of the primary links and secondary links of each of the k sections of the group and of each of the k-1 standby lines.

5,444,695
TOKEN RING LOCAL AREA NETWORK TESTING APPARATUS PROVIDING STATION HISTORY INFORMATION
Mark Copley, Colorado Springs; David G. Fish; Chris L. Odell, both of Monument, and Charles H. Whiteside, Colorado Springs, all of Colo., assignors to Forte Networks, Inc., Colorado Springs, Colo. and Fluke Corporation, Everett, Wash.
Filed Jan. 11, 1993, Ser. No. 3,244
Int. Cl.[6] H04L *12/433*
U.S. Cl. 370—17 12 Claims

1. A method for providing status information related to stations in a token ring local area network, comprising:

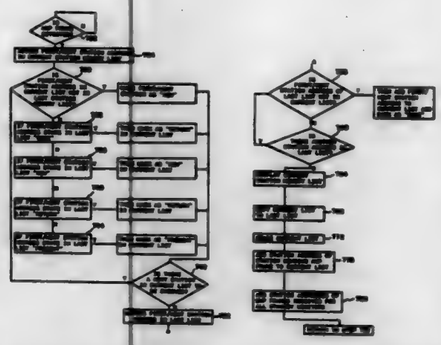
producing a last list related to station information in a token ring at a first time interval;

generating a current list related to station information in the token ring at a second time interval; and

determining station status for stations in the token ring using said last list and said current list wherein said determining step includes at least one of the following:

determining whether a first station in the token ring has been continually present on the token ring since the beginning of a measurement;

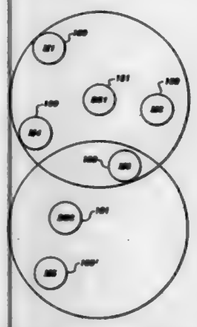
determining whether a first station has entered the token ring at some time after the beginning of a measurement but has been present continuously since beginning of the measurement;



determining whether a first station has been in the token ring for at least one neighbor notification process but is now not in the token ring; and

determining whether a first station had been in the token ring but left the token ring and then returned at least once since the beginning of a measurement and is currently in the token ring.

5,444,696
FRAME STRUCTURE USING CONSECUTIVE SLOT ASSIGNMENTS FOR MOBILE COMMUNICATIONS
James E. Petranovich, Encinitas, Calif., assignor to Pacific Communication Sciences, Inc., San Diego, Calif.
Filed Oct. 29, 1993, Ser. No. 145,745
Int. Cl.[6] H04J *4/00*; H04Q *7/36*
U.S. Cl. 370—17 20 Claims



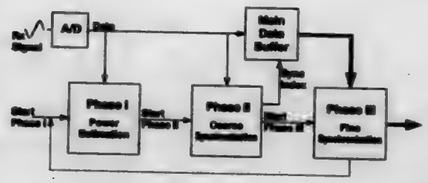
1. A frame structure for use in a multiple frequency wireless communication system having at least one central station and a plurality of peripheral stations in which said stations communicate data using a slotted protocol having a predetermined number of slots in a frame, comprising:

a transit slot in which said at least one central station transmits to one peripheral station; and

a receive slot in which said one peripheral station transmits back to said central station, said receive slot being adjacent in time to said transmit slot;

whereby the number of slots available for monitoring various frequencies exceeds two slots.

5,444,697
METHOD AND APPARATUS FOR FRAME SYNCHRONIZATION IN MOBILE OFDM DATA COMMUNICATION
Cybil S. Leung, Richmond, and William D. Warner, Maple Ridge, both of Canada, assignors to The University of British Columbia, Vancouver, Canada
Filed Aug. 11, 1993, Ser. No. 104,563
Int. Cl.[6] H04J *11/00*
U.S. Cl. 370—19 16 Claims



1. A method for recovering data from a transmitted OFDM signal, said signal comprising a plurality of data sub-carriers, a plurality of synchronization sub-carriers, and phase-encoded digital data associated with said data carrying sub-carders said method comprising the steps of:

a. determining the approximate start of said signal;

b. when said approximate start of said signal is determined, taking samples of said signal at a frequency of at least twice the frequency of any of said sub-carriers for a time period;

c. storing said samples in a data buffer;

d. taking groups of said samples, each of said groups comprising a plurality of consecutive ones of said samples, and, for each of said groups, calculating a correlation between said group and a reference signal;

e. selecting one of said groups for which said correlation is greatest;

f. deriving the phase and amplitude of each of said data-carrying sub-carriers in said signal by calculating the fast fourier transform of said selected one of said groups;

g. deriving adjusted phases for said data-carrying sub-carriers by adding a phase angle $\omega_k\tau^*$ to said phase of each of said data-carrying sub-carriers where ω_k is the frequency of the kth sub-carrier, and τ^* is a time-shift to maximize the correlation of said synchronization sub-carriers with said reference signal; and

h. decoding said data from said adjusted phases and said amplitudes of said data-carrying sub-carriers.

5,444,698
MOBILE RADIO COMMUNICATION SYSTEM CAPABLE OF PREVENTING INTERFERENCE BETWEEN TIME SLOTS WHEN PROPAGATION DELAY EXISTS
Eiji Kito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 19, 1994, Ser. No. 277,014
Claims priority, application Japan, Jul. 21, 1993, 5-180418
Int. Cl.[6] H04B *1/54*
U.S. Cl. 370—29 5 Claims

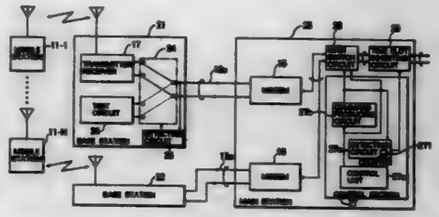
1. A mobile radio communication system comprising a base station having a communication area, first through N-th mobile stations being capable of communicating with said base station through a radio channel carrying a communication signal when said first through N-th mobile stations are located in said communication area, where N represents a positive integer which is greater than one, and a main station connected to said base station through a communication path having a path propagation delay time, said main station communicating with said first through said N-th mobile stations by said communication signal through said base station, wherein:

said communication signal comprises a plurality of transmission frames and a plurality of reception frames, one of said transmission frames being followed by one of said reception frames that is, in turn, followed by an additional one of said transmission frames with a predetermined period interposed between the one of said reception frames and the additional one of said transmission frame, each of said transmission frames having first primary through N-th primary time slots which are arranged in a sequential order, each of said reception frames having first subsidiary through N-th subsidiary time slots which are arranged in a sequential order;

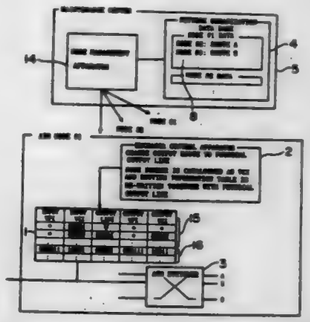
said main station comprising:

detecting means for detecting whether said path propagation delay time is longer than a predetermined delay time to produce a detection signal when said path propagation delay time is longer than said predetermined delay time; and

inhibiting means for inhibiting said first through said N-th mobile stations from using either one of said first primary and said N-th subsidiary time slots in said communication signal in response to said detection signal.



5,444,699
CALL AND CONNECTION SET UP SYSTEM IN TRANSMISSION NETWORK
Yoshihiro Watanabe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 34,123, Mar. 18, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,713
Claims priority, application Japan, Mar. 19, 1992, 4-063778; Mar. 19, 1992, 4-064018
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—54 10 Claims



1. A call set up system for a transmission exchange network which transfers cells including routing information between a plurality of individually numbered nodes, comprising:

a plurality of routing information tables each provided in a

respective node of the plurality of nodes, for cataloguing the routing information for the respective node;

a plurality of exchange control units each provided in a respective node of said plurality of nodes, for managing the associated routing information table of the respective node;

a plurality of switching units each provided in a respective node of said plurality of nodes, for switching a cell between said plurality of nodes, the routing information of the cell being rewritten according to contents of the associated routing information table; and

a maintenance center including a network organization data base in which a transmission node number and an output route number for each of the nodes are catalogued, said maintenance center previously setting up a plurality of direct paths between all of the nodes, which are to be managed by said maintenance center, by giving notification of a receiving node number and an output route number for each of the nodes and by cataloguing the receiving node number, as the routing information, with the output route number in said routing information table, a call set up being made to a receiving node via one of said direct paths, which is regulated by the corresponding routing information table, upon arrival of a call set up request cell at any one of a number of transmission nodes connected to a transmission terminal, one of said transmission nodes analyzing the call set up request cell to determine a receiving node and writing the receiving node number of the determined receiving node in the routing information of the call set up request cell.

5,444,700

SWITCHING ELEMENT AND METHOD FOR CONTROLLING THE SAME

Olli Martikainen, Kanavakatu 34 C 5, SF-00670 Helsinki; Pertti Raatikainen, Koivikkotie 14 A, SF-01620 Vantaa; Marko Suokonautti, Skinnarilankatu 28 B 8, and Juha Zidbeck, Nuijavuori 1 A 5, both of SF-02630 Espoo, all of Finland

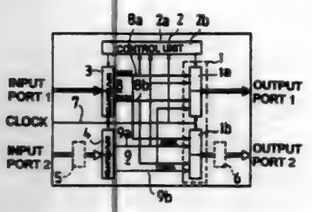
PCT No. PCT/FI91/00192, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/20143, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 19, 1991, Ser. No. 962,202

Claims priority, application Finland, Jun. 21, 1990, 903145

Int. Cl.[6] H04L *12/54*

U.S. Cl. 370—58.1 **1 Claim**



1. A method for controlling a switching element, comprising the steps of:

a) feeding a data element between a plurality of input ports and output ports upon detecting that an address part of the data element corresponds to a predetermined address of the switching element, the input ports having at least a first and a second input ports, the output ports having at least a first and a second output ports, wherein when a data part of the data element fed in through the first input port carries data, and the data part is sent, through a switching unit, to the second output port, the data element fed in through the second input port is sent, through the switching unit, to the first output port, and if the data part of the data element fed in through the second input port is empty, either said empty data part or a corresponding signal is sent to the first output port;

b) feeding the data element between the input ports and output ports detecting that the address part of the data element corresponds to the predetermined address of the switching element, wherein when the data part of the data element fed in through the first input port carries data and is sent, through the switching unit, to the first output port only, the data element fed in through the second input port is sent, through the switching unit, to the second output port, and if the data part of the data element sent in through the second input port is empty, either the empty data part or a corresponding signal is sent to the second output port;

c) feeding the data element between the input ports and output ports detecting that the address part of the data element corresponds to the predetermined address of the switching element, wherein when the data part of the data element fed in through the first input port carries data and is sent, through the switching unit, to both first and second output ports, data feeding through the second input port is prevented;

d) feeding the data element between the input ports and output ports detecting that the address part of the data element corresponds to the predetermined address of the switching element, wherein when the data part of the data element fed in through the first input port is empty, the data element fed in through the second input port is sent, through the switching unit, depending on the predetermined address, either to the first or second output port, or to both first and second output ports, and if the data part of the data element fed in through the second input port is empty, the empty data part is sent to the first output port; and

e) feeding the data element between the input ports and output ports detecting that the address part of the data element corresponds to the predetermined address of the switching element, wherein when the data element fed in through the second input port is going to bath first and second output ports, the data element is sent to the first output port of the switching element only in cases where the first input port sends a data element with an empty data part.

5,444,701

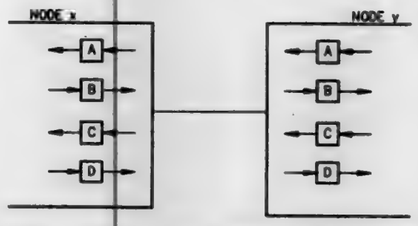
METHOD OF PACKET ROUTING IN TORUS NETWORKS WITH TWO BUFFERS PER EDGE

Robert E. Cypher, Los Gatos, and Luis Gravano, Mountain View, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1992, Ser. No. 969,650

Int. Cl.[6] H04L *12/42*

U.S. Cl. 370—60 **32 Claims**



1. A method for creating a waiting set for a packet in a toroidal interconnection network having a plurality of nodes, each of which contains a plurality of buffers per edge incident to the node, the method comprising the steps of:

(a) defining a set of nodes to which the packet is allowed to move;

(b) defining a candidate set of buffers within the defined set of nodes;

(c) classifying the buffers into a plurality of classes; and

(d) placing into the waiting set those classes of candidate buffers to which the packet can move.

5,444,702

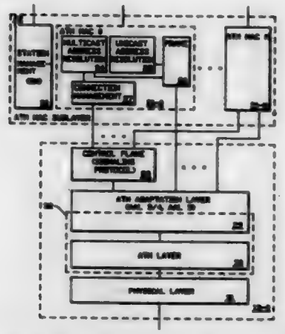
VIRTUAL NETWORK USING ASYNCHRONOUS TRANSFER MODE

John L. Burnett, Cupertino, and Peter Newman, Mountain View, both of Calif., assignors to Network Equipment Technologies, Inc., Redwood City, Calif.

Filed Sep. 14, 1992, Ser. No. 944,682

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—60.1 **32 Claims**



1. A communication system comprising,

an ATM network having a plurality of ports, each port having a unique port address, and said ATM network including one or more ATM switches for connecting sending ports having sending port addresses to receiving ports having receiving port addresses,

a plurality of stations, each station having a unique station address distinguishing the station from other stations, each station connected to the ATM network at one of said ports whereby source stations at said sending ports communicate with destination stations at said receiving ports, each station including,

packet means for providing packets for transferring information, said information including a destination station address for addressing one or a group of said destination stations,

packet converter means connected to said packet means for converting between packets and cells for transfers between stations,

address resolution means connected to the ATM network for determining a particular one or more of said receiving port addresses corresponding to said destination station address, said address resolution means including multicast means for multicasting said destination station address from a particular one of said source stations to a group of said destination stations, said multicast means including,

response means for providing said particular one or more of said receiving port addresses corresponding to said destination station address,

reply means for transmitting said particular one or more of said receiving port addresses to a sending port through said ATM network,

connection management means connected to receive said one or more receiving port addresses from said address resolution means for requesting connections through said ATM network connecting said sending ports to said receiving ports whereby packets are transferred from source stations to destination stations by cell transfers through said ATM network.

5,444,703

ISDN INTERFACING OF PERSONAL COMPUTERS

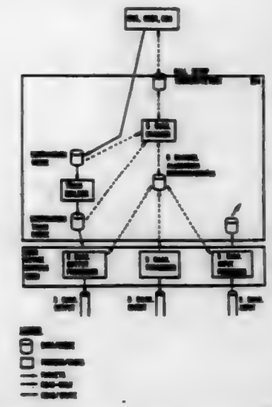
Ugo O. Gagliardi; Meichun Hsu, both of 5 Manor Pkwy., Salem, N.H. 03079; Paul Cummings, 53 Lawndale St., Belmont, Mass. 02178, and Stephen A. Mattia, 5 Manor Pkwy., Salem, N.H. 03079

PCT No. PCT/US91/03612, § 371 Date Jan. 14, 1994, § 102(e) Date Jan. 14, 1994, PCT Pub. No. WO92/21185, PCT Pub. Date Nov. 26, 1992

PCT Filed May 24, 1991, Ser. No. 94,144

Int. Cl.[6] H04J *3/16*; H04L *12/46*

U.S. Cl. 370—60.1 **13 Claims**



1. An ISDN gateway at a customer premises for interfacing a host computer to an ISDN line for communications with another host computer or with a remote local area network, comprising:

at least one circuit module resident with said host for interfacing said host to said ISDN line, said at least one circuit module including

(a) means for performing protocol conversion of data flowing between said host and ISDN line through said gateway;

(b) means for establishing input and output destination queues for said gateway;

(c) means for measuring traffic flow at each said input and output destination queues during a particular time interval; and

(d) means responsive to said traffic flow measuring means for dynamically allocating channel bandwidth on said ISDN line.

5,444,704

DIAL RESTORAL METHOD AND APPARATUS

P. Michael Henderson, Largo, and Edward A. Thoenes, St. Petersburg, both of Fla., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 12, 1991, Ser. No. 743,661

Int. Cl.[6] H04J *3/22*

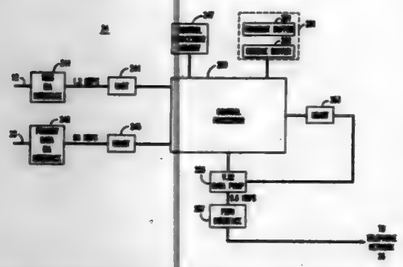
U.S. Cl. 370—84 **29 Claims**

1. A dial restoral modem comprising

means for receiving, at a first data rate, a succession of frames formatted in accordance with a predetermined data communication protocol,

means for storing the received frames in a buffer and for thereafter transmitting the contents of said buffer over a

dial-up telephone connection at a second data rate that is lower than the first data rate, and



means responsive to each received frame that has a poll indication in a set state for clearing said buffer upon the receipt of a subsequent one of said frames.

5,444,705

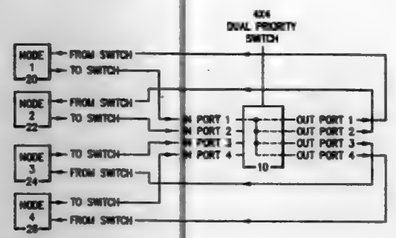
DUAL PRIORITY SWITCHING APPARATUS FOR SIMPLEX NETWORKS

Howard T. Olnowich, Endwell; Thomas N. Barker, Vestal; Peter M. Kogge, and Gilbert C. Vandling, III, both of Endicott, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation-in-part of Ser. No. 659,199, Feb. 22, 1991, abandoned, Ser. No. 677,543, Mar. 29, 1991, abandoned, Ser. No. 748,316, Aug. 21, 1991, Pat. No. 5,404,461, Ser. No. 748,302, Aug. 21, 1991, Ser. No. 748,303, Aug. 21, 1991, Pat. No. 5,365,228, and Ser. No. 748,295, Aug. 21, 1991, Pat. No. 5,250,943. This application Nov. 27, 1991, Ser. No. 800,652

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.6 23 Claims



1. A switching system for a network, the switching system comprising:

a first node having a first priority level transmission;

a second node having a second priority level transmission;

switch means coupled with said first and second nodes for receiving said first and second priority level transmissions unbuffered, for providing the first and second priority level transmissions to an unbuffered single network path, for assigning a different priority level to each of said transmissions, and for allowing each of said transmissions to be transmitted over said single network path,

said switch means including assignment means for assigning guaranteed delivery transmissions a high priority level.

5,444,706

PACKET EXCHANGE NETWORK AND METHOD OF CONTROLLING DISCARD OF PACKETS IN PACKET EXCHANGE NETWORK

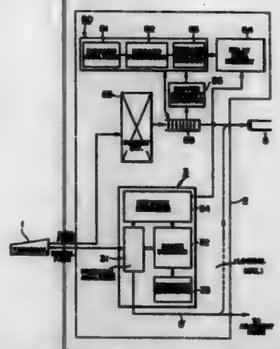
Yoshiro Osaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1990, Ser. No. 633,493

Claims priority, application Japan, Dec. 27, 1989, 1-336328

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—94.1 13 Claims



7. A packet exchange node including a plurality of trunk lines for receiving and transmitting communication data in the form of a packet to another packet exchange node via a communication route, the communication data being transmitted via the same communication route until the communication is completed, the packet exchange node comprising:

packet storage buffer means for storing received communication data for subsequent transmitting, the packet storage buffer means including a relay node number registering section in which a number of packet exchange nodes through which the communication data pass during the communication is to be registered;

buffer stored packet detecting means for detecting the number of received communication data packets stored in the packet storage buffer means; and

packet discard processing means responsive to the buffer stored packet detecting means, for preferentially discarding the communication data packets having a smaller registered relay node number by referencing to the relay node number of each of the communicating data stored in the packet storage buffer means when the detected packet number exceeds a predetermined value.

5,444,707

PACKET SWITCHING COMMUNICATION SYSTEM

Pavel Cerna, Westminster, and Robert E. Hay, Boulder, both of Colo., assignors to Netrix Telcom Systems Corporation, Boulder, Colo.

Continuation of Ser. No. 650,565, Feb. 1, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 90,439

Int. Cl.[6] H04J *3/18*

U.S. Cl. 370—94.1 10 Claims

1. An optimizing communication system comprising:

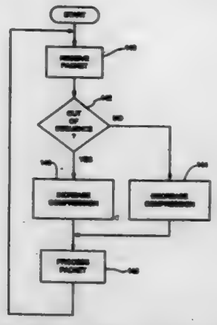
a plurality of nodes including a source node and a desired destination node, said source node comprising means for packetizing voice information, and said desired destination node comprising means for restoring said packetized voice information, wherein said packetized voice information uses at least some bandwidth,

wherein said means for packetizing voice information embeds a sequence number within each packet;

a single switching means operably connected to each of said plurality of nodes for receiving packets from said source

node and switching said packets to said desired destination node;

means for dynamically adjusting said at least some bandwidth used by said packetized voice information during periods of high packet discards by increasing compression



of said packetized voice information when a gap in the sequence number is detected at the destination node; and

means for dynamically adjusting said at least some bandwidth used by said packetized voice information during periods of low traffic by decreasing compression of said packetized voice information.

5,444,708

TIME-DIVISION MULTIPLEX RADIO TRANSMISSION APPARATUS

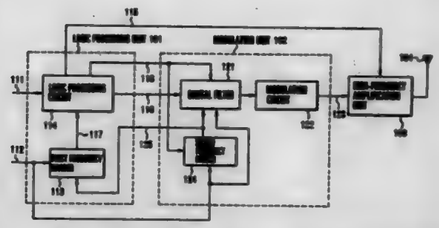
Hiroyuki Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 84,873

Claims priority, application Japan, Jun. 30, 1992, 4-173453

Int. Cl.[6] H04B *7/212*

U.S. Cl. 370—95.3 5 Claims



1. A time-division multiplex radio transmission apparatus for transmitting a time-division multiplexed output signal having a plurality of time slots, the apparatus comprising:

first frequency-division means for frequency-dividing an input clock signal to output a first frequency-divided clock signal;

logic processing means for performing logic processing of an input data signal on the basis of the first frequency-divided clock signal to output an output data signal and for outputting a burst timing signal;

digital filter means, reset in response to the burst timing signal, for converting the output data signal received from said logic processing means into a modulation baseband signal on the basis of the input clock signal which is inputted to said first frequency-division means;

modulation means for modulating the modulation baseband signal received from said digital filter means and for outputting an output signal;

high-frequency amplification means for amplifying the output signal received from said modulation means and performing waveform shaping of an envelope of the output signal received from said modulation means for each time slot for time-division transmission on the basis of the burst timing signal received from said logic processing means to output a high-frequency output signal having smoothly rising and falling edges; and

second frequency-division means for frequency-dividing the input clock signal to output a second frequency-divided clock signal for resetting said first frequency-division means.

5,444,709

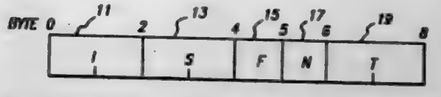
PROTOCOL FOR TRANSPORTING REAL TIME DATA

Guy G. Riddle, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1993, Ser. No. 129,992

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—94.1 29 Claims



1. A method of transmitting over a shared computer network a data stream captured from a real time data signal as capture is proceeding, comprising the steps of:

transmitting from a data source a plurality of data frames each including a frame number N identifying the data frame as an Nth frame transmitted in said data stream;

receiving at least some of said data frames at a data destination;

judging in relation to receipt of other data frames whether each data frame received has been timely received;

forwarding data frames that have been timely received to a higher level process; and

discarding data frames not timely received;

wherein at least some data frames are transmitted only once regardless of whether or not they are received at said data destination.

5,444,710

TELECOMMUNICATIONS SYSTEMS

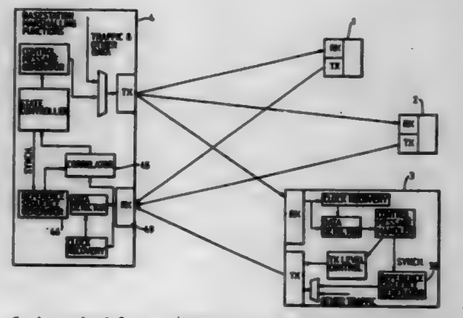
David A. Fisher, and Paul D. Welton, both of Essex, Great Britain, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 12, 1993, Ser. No. 152,281

Claims priority, application United Kingdom, Nov. 12, 1992, 9223750; Jun. 22, 1993, 9312910

Int. Cl.[6] H04B *7/212*

U.S. Cl. 370—95.3 8 Claims



1. A method for marshalling an additional outstation of a

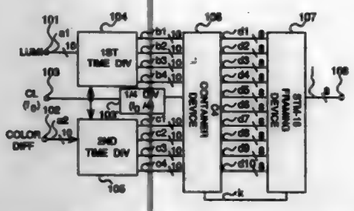
time division multiple access (TDMA) telecommunications system including a basestation and a plurality of outstations, the method being characterised by the steps of transmitting from the base station instructions for any additional outstation to transmit, transmitting from the additional outstation a sequence at a level below the noise sensitivity of a receiver of the basestation, detecting said sequence at the basestation, discriminating the phase of the detected sequence, said detecting and discriminating being carried out by a correlation process, using the discriminated phase to determine the loop delay to the additional outstation and thereby required phase offset instructions and transmitting the phase offset instructions to the additional outstation whereby to cause said additional outstation to align its transmission in a respective transmission window, wherein the sequence is a short length sequence, and wherein the instructions transmitted by the basestation include a frame word from which frame boundaries and a time reference are deducible by the additional outstation.

5,444,711

HDTV SIGNAL TRANSMISSION APPARATUS

Noboru Mizuguchi, Osaka; Kiyoshi Uchimura, Hirakata; Masatoshi Tanaka, Kashiwara, and Seiho Kitaji, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 21, 1993, Ser. No. 172,121
Claims priority, application Japan, Dec. 22, 1992, 4-341927
Int. Cl.[6] H04J *3/00*
U.S. Cl. 370—99 **17 Claims**



1. An HDTV signal transmitting apparatus for transmitting a STM-16 frame signal converted from an N bit parallel HDTV signal, wherein N is a positive integer greater than one, said transmitting apparatus comprising:

time divider means for time dividing said N bit parallel HDTV signal into M separated HDTV signals, wherein M is a positive integer greater than one;

C4 container means for rearranging said M separated HDTV signals to N C4 containers, said C4 container means receives M parallel N-bit-parallel inputs and produces N parallel M-bit-parallel outputs and said C4 container means provides at least one bit from one N-bit-parallel input to one M-bit-parallel output; and

STM-16 framing means for multiplexing the N C4 containers to said STM-16 frame.

5,444,712

COMMUNICATION MODE IDENTIFICATION TECHNIQUE

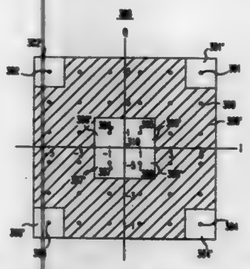
William L. Betts, St. Petersburg, Fla.; Eran Cohen, Ocean, N.J.; Joseph A. Crupi, Safety Harbor; Cletus L. Gardenhour, St. Petersburgh, both of Fla.; Andrew T. Weltzner, Belmar, and Jean-Jacques Werner, Holmdel, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 30, 1993, Ser. No. 113,113
Int. Cl.[6] H04L *27/34*; H04J *3/12*
U.S. Cl. 370—110.1 **18 Claims**

1. Apparatus for use in a communications system utilizing first and second modes wherein in said first mode information represented by symbols in a signal constellation is transmitted and in said second mode said information is not transmitted, said apparatus comprising

means for receiving data; and

means responsive to data received by the means for receiving data and a control signal for generating first symbols representative of said received data, said first symbols



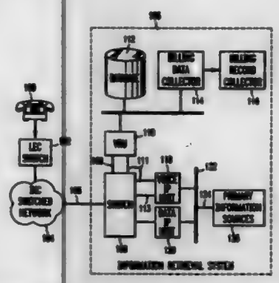
being in a first portion of said signal constellation; and for generating at least one second symbol representative of a selected one of said first and second modes, said second symbol being in a second portion of said signal constellation, and said second symbol not being used to represent said received data.

5,444,713

TELEPHONE INFORMATION SERVICE SYSTEM USING DIGITAL AND OUT-OF-BAND SIGNALING

Marjorie S. Backaus, Morristown, N.J.; Claire D. Barrera, Boulder, Colo.; Esther L. Davenport, Holmdel; Harold Fahrer, Denville, both of N.J.; Barry N. Ostroff, Westminster, Colo.; Robert Petrelli, East Brunswick, N.J., and Susan K. Soake, Superior, Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Sep. 14, 1993, Ser. No. 121,124
Int. Cl.[6] H04J *3/12*; H04Q *11/04*
U.S. Cl. 370—110.1 **14 Claims**



1. A method for use in an information services system which provides information to a subscriber in the form of a data element, the method comprising the steps of:

determining what information is to be provided to the subscriber; and

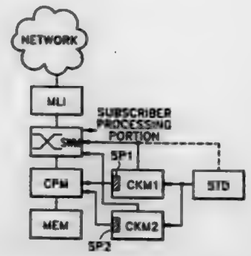
transmitting a data element identifier to an information source to identify the information to be delivered to the subscriber, the data element identifier being transmitted to the information source using an Integrated Services Digital Network (ISDN) signaling channel.

5,444,714

COMMUNICATION AND EXCHANGE PROCESSING SYSTEM

Hee-eun Yun, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 30, 1992, Ser. No. 982,896
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—182.02 **17 Claims**



1. A communication/exchange processing system constituting a network comprising:

multi-line interface means for interfacing with a plurality of data transmission lines;

a plurality of reference communication clock generators operated independent of each other, for generating respective reference communication clocks;

a clock module commonly connected to the plurality of reference communication clock generators, for receiving a reference communication clock at a given time and generating various application communication clocks used in communication, and having status port showing the operation states of said clock module;

a communication processor connected to the status port of the clock module, for checking the state of the active clock module by polling at predetermined intervals to change the reference communication clock received in said clock module if the active clock module is determined to be abnormal, and for performing communication control operations; and

a switching module, one end of which is connected to the multi-line interface means and the other end of which is commonly connected to the communication processor and said clock module, for performing a switching operation via software according to channels.

5,444,715

AC INTERCONNECT TEST OF INTEGRATED CIRCUIT CHIPS

Matthias Gruetzner, Stuttgart, and Cordt W. Starke, Weil der Stadt, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

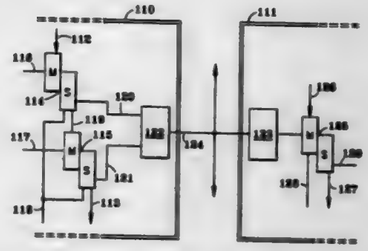
Filed Jun. 1, 1993, Ser. No. 69,466
Claims priority, application European Pat. Off., Jul. 17, 1992, 92112213
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **10 Claims**

1. Integrated circuit chip adapted to provide AC interconnect test capability comprising

driver means (122, 322, 335) for sending test data to a second integrated chip;

first storage means (114, 314, 339) for storing said test data, said first storage means comprising a Master Slave latch, said stored test data being provided from a Slave latch of the Master Slave latch of said first storage means to said driver means responsive to a system clock; and

second storage means (115, 315, 336) for storing control data, said second storage means comprising a Master Slave latch, the Slave latch of said second storage means controlling said driver means responsive to said system clock,



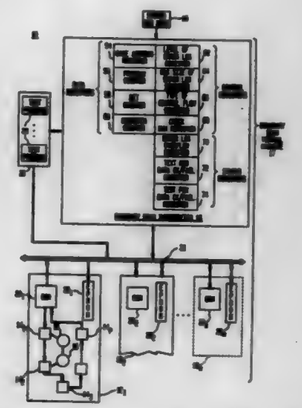
whereby a system clock simultaneously clocks said second storage means and said first storage means during said AC interconnect test.

5,444,716

BOUNDARY-SCAN-BASED SYSTEM AND METHOD FOR TEST AND DIAGNOSIS

Najmi T. Jarwala, Lawrenceville, N.J.; Paul A. Stilling, Naperville; Ean Tammaru, both of Naperville, Ill., and Chi W. Yau, Yardley, Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 30, 1993, Ser. No. 113,460
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **8 Claims**



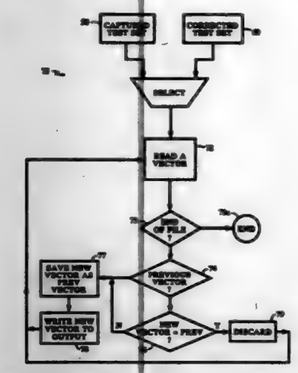
1. A system for testing at least one circuit board containing a plurality of Boundary-Scan-testable electronic components coupled in a serial Boundary-Scan chain, comprising:

a test and diagnostic host processor for generating an initiate test command to initiate Boundary-Scan testing of each board and for receiving test information indicative of its operation;

a Boundary-Scan Master Virtual Machine (BVM) responsive to the initiate test command from the test and diagnostic host processor for communicating to each circuit board a test command to cause said circuit board to execute a test program specific thereto, thereby causing the board to undergo testing and to generate test results, the BVM interpreting the test results and communicating such results to the test and diagnostic host as test information indicative of the operation of the circuit board; and

a communications bus coupling each circuit board to the BVM.

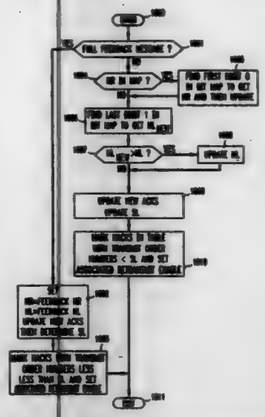
5,444,717
METHOD FOR PROVIDING MINIMAL SIZE TEST VECTOR SETS
Paul S. Rotker, West Newton, and Nicholas A. Warchol, Boxborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Dec. 18, 1992, Ser. No. 993,339
Int. Cl.[6] G01R *31/3183*
U.S. Cl. 371—27 16 Claims



1. A method of testing an integrated circuit having a plurality of pins comprising the steps of:
providing an ordered plurality of test strings each string having a plurality of elements with each element of said test string corresponding to one of said plurality of pins of said integrated circuit;
locating an undesirable pattern in said ordered plurality of test strings; and
modifying the located undesirable pattern in said ordered plurality of test strings to correct said undesirable pattern, said step of modifying including the step of adding a test string to said located undesirable pattern.

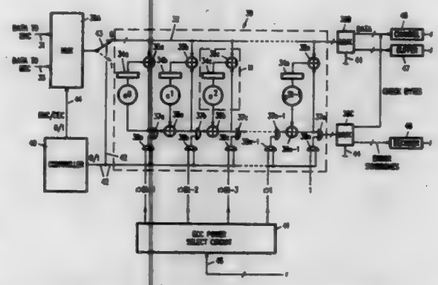
5,444,718
RETRANSMISSION PROTOCOL FOR WIRELESS COMMUNICATIONS
Richard P. Ejzak, Wheaton, Ill., and Sanjiv Nanda, Plainsboro, N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Nov. 30, 1993, Ser. No. 159,871
Int. Cl.[6] H04L *1/16*
U.S. Cl. 371—32 7 Claims

1. A data packet retransmission arrangement for use in a communications system comprising
means for transmitting data packets to a receiver and associating said transmitted data packets with respective transmit order numbers as they are transmitted,
means, responsive to receipt of a status message identifying the transmitted data packets that were received correctly and incorrectly by said receiver, for retransmitting only those of said incorrectly received data packets whose associated transmit order numbers precede a transmit order number associated with a transmitted data packet identified in said message as being the last of the correctly received data packets, and
means, operative whenever a window for transmitting data packets closes, for retransmitting, in turn, data packets that have been received incorrectly by said receiver when said window was open and repeating the retransmission of each such data packet until either said window opens for the transmitting of data packets or receipt of a status



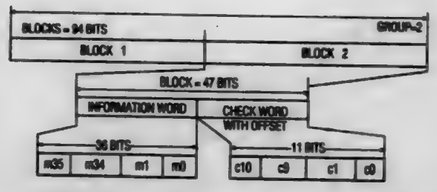
message indicates that the data packet was received correctly.

5,444,719
ADJUSTABLE ERROR-CORRECTION COMPOSITE REED-SOLOMON ENCODER/SYNDROME GENERATOR
Charles E. Cox, San Jose; Gerhard P. Fettweis, Berkeley; Martin A. Hassner, Palo Alto, all of Calif., and Uwe Schwiegelshohn, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 26, 1993, Ser. No. 8,922
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—37.1 9 Claims



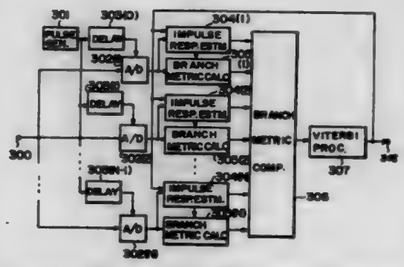
1. An algebraic error correction system, comprising:
a composite encoder/syndrome generating circuit for generating both check symbols and error syndromes, said circuit comprising a single set of multiplier devices that have tap weights with preselected values for computing the check symbols and also computing the error syndromes used to determine error locations and values, the complete set of multiplier devices providing a maximum preselected error correction capability; and
means for selectively adjusting the number of said multiplier devices from the set included in said circuit to provide a desired error correction capability less than said maximum capability without requiring changes in the values of the tap weights.

5,444,720
METHOD FOR THE TRANSMISSION OF ITEMS OF AUXILIARY INFORMATION IN AN AM RADIO BROADCAST SIGNAL
Karl-Heinz Schwalger, Isernsing, Germany, assignor to Telefunken, Fernseh und Rundfunk GmbH, Hanover, Germany
Filed Jun. 11, 1993, Ser. No. 75,976
Claims priority, application Germany, Dec. 12, 1990, 40 39 673.8
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—42 11 Claims



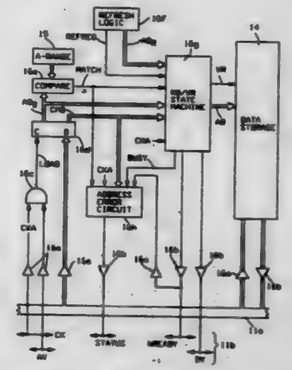
1. A method for forming a digitally encoded auxiliary information signal for the transmission of items of auxiliary information in an AM radio broadcast signal in which an AM radio broadcast signal carrier is phase angle modulated by said digitally coded auxiliary information signal, comprising the steps of:
allocating the items of auxiliary information to a cyclically recurring number of groups each consisting of two equal length information blocks;
providing for each information block an information word and a check word each consisting of a specific number of data bits; and
superimposing different offset words for synchronizing said information blocks on respective ones of said two check words.

5,444,721
MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION APPARATUS
Kazuhiro Okanoue; Akihisa Ushirokawa, and Yukitsuna Furuya, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 981,309
Claims priority, application Japan, Nov. 27, 1991, 3-312244
Int. Cl.[6] H04L *5/22*
U.S. Cl. 371—43 4 Claims



1. A maximum likelihood sequence estimation apparatus to decode a digital data signal, comprising:
(a) a pulse generator for generating a sampling pulse having a constant time interval T;
(b) N (N being an integer larger than 1) delay circuits to delay the sampling pulse by kT/N (k=0, 1, 2, . . . , N−1);
(c) N A-D converters for sampling and digitizing a received signal whenever the sampling pulse from said N delay circuits is applied;
(d) N channel impulse response estimation circuits to receive output from each of said N A-D converters and a decision result for estimating and outputting: a channel impulse response for said received signal and respective estimation path information;
(e) N branch metric calculation circuits to receive output from each of said N channel impulse response estimation circuits and output from each of said N A-D converters for calculating and outputting a branch metric for each input;
(f) a branch metric composite circuit to receive output and the respective estimation path information from each of said N branch metric calculation circuits for composing the branch metrics and outputting a composed branch metric; and
(g) a Viterbi processor to receive the composed branch metric for outputting the decision result.

5,444,722
MEMORY MODULE WITH ADDRESS ERROR DETECTION
Dan T. Tran, Laguna Niguel, Calif., assignor to Unisys Corporation, Blue Bell, Pa.
Filed Feb. 17, 1993, Ser. No. 18,949
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 395—183.18 12 Claims



1. A memory module, for use in multiples on a bus as a memory system; said memory module comprising a plurality of storage cells that are assigned a range of addresses, an input circuit for receiving a read command and a read address from said bus, and a compare circuit which generates a match signal when said read address is within said assigned address range for said storage cells; wherein said module further includes:
a control circuit, coupled to said compare circuit, which responds to said match signal by occasionally executing said read command in a long tame interval on said bus and at all other times executing said read command in a small time interval;
a bus transmit circuit, coupled to said control circuit, for sending a control signal on said bus if said control circuit selects said long time interval; and,
an error circuit, coupled to said control circuit and said bus, for setting an error flag if said control circuit selects said small time interval and, during that small time interval, said control signal is detected on said bus from another memory module which selects said long time interval in said memory system;
whereby an error is detected when two memory modules generate said match signal for a single read command and

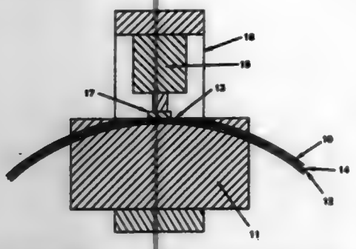
one memory module executes that read command in said small time interval, while the other memory module executes that read command in said long time interval.

5,444,723

OPTICAL SWITCH AND Q-SWITCHED LASER

Alain Chandonnet, Cap-Rouge, and Gilles Larose, Quebec, both of Canada, assignors to Institut National d'Optique, Sainte-Foy, Canada

Filed Aug. 18, 1993, Ser. No. 111,697
Int. Cl.[6] H01S 3/121
U.S. Cl. 372—14 18 Claims



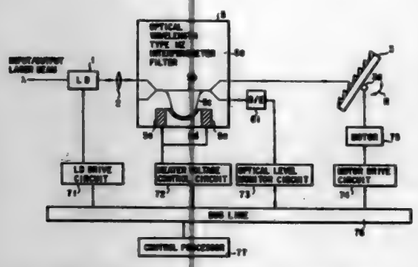
1. An optical switch comprising:
means for holding a length of an optical fiber having a core and a surrounding cladding, with a portion of said length having substantially all of its cladding removed on one side of said portion and being exposed, said means surrounding said length except on said one side;
an index overlay perturbation pad substantially matching with said side of the portion;
means for mounting the pad near and substantially parallel to said portion, said mounting means including means for translating said pad between a first position in which said pad is sufficiently remote from said portion to allow total internal reflection in said portion and a second position in which said pad is sufficiently close to said portion and is lying evenly and parallel on top of said portion to allow light to escape from said core; and
wherein said pad is made of a dielectric having an index of refraction greater than an index of refraction of the core.

5,444,724

TUNABLE WAVELENGTH LIGHT SOURCE INCORPORATED OPTICAL FILTER USING INTERFEROMETER INTO EXTERNAL CAVITY

Hiroshi Goto, Isehara, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 296,358
Claims priority, application Japan, Aug. 26, 1993, 5-232231
Int. Cl.[6] H01S 3/10
U.S. Cl. 372—20 41 Claims



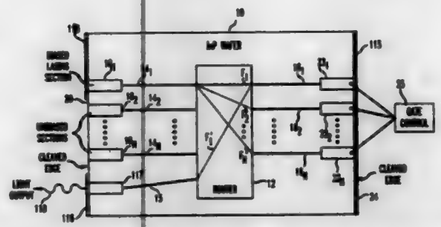
1. A tunable wavelength light source, comprising:
a semiconductor laser having first and second opposing facets each of which emits a laser beam, said first facet being anti-reflection-coated;
a diffraction grating arranged on an optical path of the laser beam emerging from said first facet to spectrally disperse the laser beam emerging from said first facet of said semiconductor laser at a predetermined resolving power, and returning only a light component having a specific wavelength to said first facet, and an external cavity between said second facet of said semiconductor laser and a spectral dispersion surface of said diffraction grating;
an interferometer arranged on an optical path in said external cavity to demultiplex the laser beam emerging from said first facet of said semiconductor laser into first and second optical paths having a predetermined optical path length difference therebetween, multiplex demultiplexed light components, and output an interference light beam having a transmittance maximized at a predetermined wavelength toward said diffraction grating, thereby causing said interferometer to substantially serve as an optical filter for limiting a wavelength band of the laser beam, and said interferometer being arranged such that a resolving power of the optical filter is higher than the predetermined resolving power of said diffraction grating; and
tuning means for tuning the predetermined optical path length difference between the first and second optical paths of said interferometer to tune a wavelength of the laser beam externally emerging from said second facet of said semiconductor laser.

5,444,725

MULTIFREQUENCY LASER

Martin Zirngibl, Middletown, N.J., assignor to AT&T IPM Corp., Coral Gables, Fla.

Filed Sep. 30, 1994, Ser. No. 316,614
Int. Cl.[6] H01S 3/10
U.S. Cl. 372—20 19 Claims



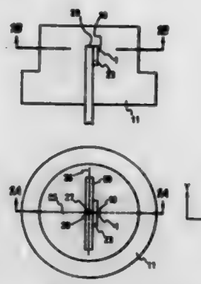
1. A laser tunable to at least one of N separate wavelengths including,
first and second reflective surfaces positioned opposite each other for defining a resonant optical cavity there between
a waveguide grating router disposed within said resonant optical cavity having at least one primary waveguide and one secondary waveguide, both on one side of said router, and N input waveguides on an opposite side of said router, said primary waveguide and said N input waveguides for capturing first order diffraction optical energy from corresponding free space regions in said router, and said secondary waveguide for capturing second order diffraction optical energy at the at least one wavelength, the wavelength of optical energy in said primary and secondary waveguides being substantially identical,
a plurality of selectively controllable optical amplifiers, each amplifier in series with a corresponding waveguide from the group consisting of said N input waveguides and said at least one primary is waveguide, and
control means for pumping at least a pair of said selectively controllable optical amplifiers to create a wavelength selective pathway through the router for laser operation at the at least one wavelength said wavelength selective pathway optically connecting both reflective surfaces.

5,444,726

SEMICONDUCTOR LASER DEVICE

Shoji Kitamura; Yoichi Shindo, and Akira Amano, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 788,601, Nov. 6, 1991, Pat. No. 5,355,385. This application Apr. 6, 1993, Ser. No. 43,682
Claims priority, application Japan, Nov. 7, 1990, 2-302258; Oct. 11, 1991, 3-264067; Apr. 7, 1992, 4-085323; Jan. 22, 1993, 5-008679
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—36 12 Claims



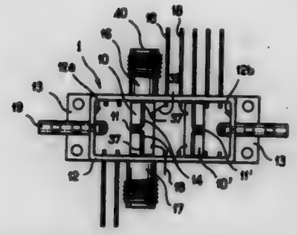
1. In a semiconductor laser device having a lead frame for electrically controlling a laser diode element having at least one end face for emitting a laser beam, said lead frame mechanically supporting the laser diode element on a planar major surface thereof with a support member interposed therebetween, and a sealing resin layer allowing the laser beam to pass therethrough and covering at least the laser diode element on the lead frame in a sealing manner,
the improvement in which, for a cross section of the lead frame perpendicular to the planar major surface of the lead frame and parallel to the light emitting end face,
a center of a sectional plane through the resin layer to at least extremities of the lead frame and parallel to the light emitting end face of the laser diode element coincides with a center of the lead frame cross section.

5,444,727

LASER HEAD

Dean Mathoorasing, Issy Les Moulineaux, France, assignor to France Telecom, Paris, France

Filed Oct. 1, 1993, Ser. No. 131,074
Claims priority, application France, Oct. 5, 1992, 92 11756
Int. Cl.[6] H01S 3/096
U.S. Cl. 372—38 10 Claims



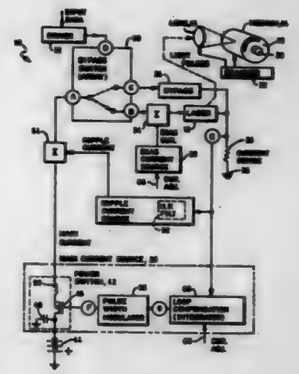
1. A laser head comprising a laser diode for converting a high data rate electrical signal into an optical signal, and a connection device designed to connect the laser diode electrically to an external electrical feed line conveying said electrical signal, wherein said connection device comprises a printed circuit card on which two disjoint conductive tracks are formed, the laser diode being mounted on said card and being electrically connected in series with the conductive tracks, the card being disposed inside a metal box on the outside of which an external electrical feed line connector and an external load connector are mounted, said connectors being electrically connected respectively to one of the conductor tracks, the external electrical feed line connector being adapted to connect the laser head to the external electrical feed line, and the external load connector being adapted to connect to an external load of wide passband and of impedance selected so that the impedance of the laser diode as seen at the inlet to the external electrical feed line connector is substantially equal to the impedance of the external electrical feed line.

5,444,728

LASER DRIVER CIRCUIT

Marc T. Thompson, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1993, Ser. No. 172,834
Int. Cl.[6] H01S 3/00
U.S. Cl. 372—38 20 Claims



1. A laser current drive circuit comprising;
a laser having a first terminal and a second terminal, and a current bypass having a first terminal and a second terminal;
a current sensor having a terminal connecting to the second terminal of said laser and to the second terminal of said bypass to provide a signal indicating the amplitude of current flowing through said laser and said bypass;
a main source of current for energizing said laser to emit light, said main current source further comprising feedback means responsive to the signal of said current sensor to output a main current at a desired amplitude;
a bypass switch connecting an output terminal of said regulator to the first terminal of said laser and to the first terminal of said bypass; and
drive means responsive to pulses of an input data signal for operating said bypass switch to direct the main current alternately to said laser and to said bypass, pulsations of said data signal resulting in pulsations of the main current to said laser with corresponding emission of light pulses from said laser.

5,444,729

HIGH POWER, HIGH PULSE REPETITION FREQUENCY, COMPACT, PULSED LASER DIODE DRIVER

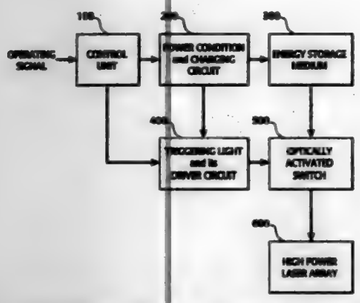
Hyung D. Chung, 1-601 Jam Won Family Apt., Jam Won Dong, Seocho Ku, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 215,288, Mar. 21, 1994, Pat. No. 5,406,572. This application Aug. 2, 1994, Ser. No. 284,821

Claims priority, application Rep. of Korea, Apr. 14, 1994, 94-7835

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—38 3 Claims



1. A semiconductor laser driver which controls an input drive signal to generate a low power laser optical light, and thereby generate a high current impulse, said driver comprising:

control means for controlling the input drive signal;

electric power conditioning and pulse charging means for receiving said drive signal controlled in said control means and thereby generating an electrical energy;

energy storage means:

for receiving said electrical energy from said electric power conditioning and pulse charging means, and

for storing the received electrical energy;

a triggering light source;

drive means for powering the triggering light source and for thereby generating the low power, optical laser light;

optically activated semiconductor switch means for activation by the low power optical laser light and for converting the electrical energy in the energy storage means into the high current impulse; and

a high power laser array for converting said high current impulse received from said optically activated semiconductor switch means into a high power, optical pulse;

wherein said energy storage means comprises an energy storage capacitor with a very low impedance; and

wherein said energy storage capacitor has a non-uniform impedance stripline structure having a concentric strip shape.

5,444,730

SINGLE-WAVELENGTH SEMICONDUCTOR LASER

Natsuhiko Mitzutasi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,464

Claims priority, application Japan, Jun. 28, 1993, 5-181873

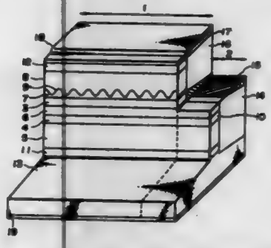
Int. Cl.[6] H01S *3/085*

U.S. Cl. 372—45 20 Claims

1. A single wavelength semiconductor laser comprising:

laser cavity means, said laser cavity means including a waveguide and perturbation means for imparting a periodical perturbation to said waveguide, and said laser cavity means functioning as a mode selecting reflective mirror for coupling two modes, which have different absolute values of propagation constants, to each other, accompanied with a mode conversion, said two coupled modes respectively travelling forward and rearward along said waveguide to constitute two degenerate laser resonance modes; and

mode selector means for selectively outputting a predetermined laser resonance mode as one of the two degenerate



laser resonance modes, said mode selector means being structured so that light returning to said semiconductor laser from outside can be coupled only to the other of the two degenerate laser resonance modes.

5,444,731

SEMICONDUCTOR LASER ARRAY HAVING A PLURALITY OF VERTICAL CAVITIES AND PROVIDING A MONOLOBE EMISSION BEAM

Jean-Claude Pfister, Montbonnot, France, assignor to Commissariat a l'Energie Atomique, Paris Cedex, France

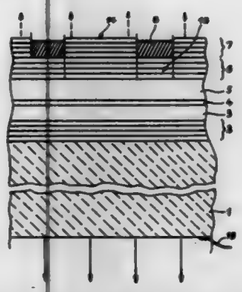
PCT No. PCT/FR92/01097, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO93/11590, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 25, 1992, Ser. No. 244,047

Claims priority, application France, Nov. 26, 1991, 91 14563

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—99 7 Claims



1. Semiconductor laser array comprising a conductive substrate (1) and, on said substrate, in succession a lower mirrors (2), an optically active layer (4) and an upper mirror (6,7,12,14), characterized in that the upper mirror comprises a plurality of high reflectivity areas (14) positioned adjacent to lower reflectivity areas (12) and also comprises metallized areas (8) serving as current leads, said metallized areas (8) being positioned above the lower reflectivity areas (12).

5,444,732

ELECTRODE FOR ELECTROSLAG REMELTING AND PROCESS OF PRODUCING ALLOY USING THE SAME

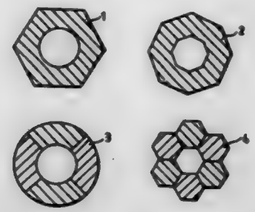
Tomoo Takenouchi; Yoshiaki Ichinomiya; Junji Ishizuka, all of Hokkaido; Junji Itagaki, Tokyo; Shuzo Obhashi, Hokkaido; Tsukasa Azuma, Hokkaido, and Yasuhiko Tanaka, Hokkaido, all of Japan, assignors to The Japan Steel Works, Tokyo, Japan

Division of Ser. No. 73,465, Jun. 9, 1993. This application May 17, 1994, Ser. No. 243,741

Claims priority, application Japan, Jun. 11, 1992, 4-175976; Jul. 31, 1992, 4-223642; Aug. 14, 1992, 4-237687; Oct. 21, 1992, 4-305876; Oct. 22, 1992, 4-308054; Nov. 20, 1992, 4-333753; Jan. 21, 1993, 5-24974

Int. Cl.[6] H05B *3/60*

U.S. Cl. 373—42 8 Claims



4. An electroslag remelting process of producing an alloy comprising the steps of providing an electrode of an alloy having a hole which is formed along an axial direction in a core of said electrode and melting said electrode, wherein said alloy includes a hot-rolling forged-steel working roll material containing C: 1.4 to 2%; Si: 0 to 0.6%; Mn: 0.4 to 1%; Ni: 0 to 0.5%; Cr: 2 to 3%; Mo: 0.7 to 1.2%; V: 4 to 7%; W: 0 to 1% less by weight; Fe and inevitable impurities, and having a chemical composition satisfying the following rational expression:

$$0.7<\{(\%C)+(\%CR)\}/(\%V)<1,$$

where %C represents percentage of C by weight, %Cr represents percentage of Cr by weight and V represents percentage of V by weight.

5,444,733

ELECTRIC ARC FURNACE WITH ALTERNATIVE SOURCES OF ENERGY AND OPERATING METHOD FOR SUCH ELECTRIC FURNACE

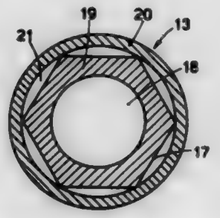
Giovanni Cousin, Pordenone; Corrado De Cecco, Ragogna; Gianni Gensini, S. Stefano di Buia, and Sergio Gerussi, Pagnacco, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed May 4, 1994, Ser. No. 238,060

Claims priority, application Italy, May 17, 1993, 93A000087; Aug. 13, 1993, 93A000166

Int. Cl.[6] F27D *1/00*

U.S. Cl. 373—72 26 Claims



22. Electric arc furnace with alternative sources of energy,

used for melting metals, which functions with direct current or alternating current, comprising:

a hearth and furnace sidewall to contain a bath;

at least one upper electrode to generate an electric arc;

at least one lance provided on the furnace sidewall to inject pure or combined oxygen above an upper level of the bath inside the furnace;

a plurality of tuyeres provided in the hearth, each tuyere comprising a central oxygen delivery pipe having an inner diameter between 8 and 30 mm for delivery of oxidation gas so that a pressure of emission of the oxidation gas is modulated at at least above a minimum pressure according to phases of charging of the furnace, wherein the central oxygen delivery pipe has an outer surface having polygonal shape, and an outer peripheral pipe surrounding the central oxygen delivery pipe, wherein the outer peripheral pipe is a circumferential toric element, thereby forming a passage between each side of the central oxygen delivery pipe and an inner circumference of the outer peripheral pipe for conveying a cooling mixture, the cooling mixture comprising at least one cooling gas having a high cooling power and at least one diluting gas.

5,444,734

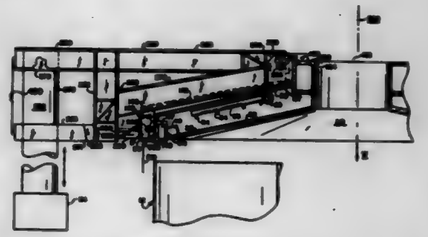
DEVICE FOR LIFTING AND MOVING THE ROOF OF A SPRAY COOLED FURNACE

Mark T. Arthur, Lakewood, and Frank H. Miner, Jr., North Olmsted, both of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Filed Feb. 18, 1993, Ser. No. 19,203

Int. Cl.[6] F27D *1/02*

U.S. Cl. 373—73 11 Claims



1. A furnace roof lifting and moving device comprising, in combination,

a) a horizontally disposed, removable, substantially hollow, internally spray cooled roof member of an electric furnace formed from welded-together steel plate into a sloped, unitary frusto-conical structure, said roof member having (i) a peripheral side portion, (ii) a centrally located vertical opening spaced inwardly from said peripheral side portion for passage therethrough of furnace electrodes, (iii) first roof engagement means affixed to the exterior of said roof member closely adjacent said peripheral side portion, (iv) second roof engagement means affixed to the exterior of said roof member closely adjacent said vertical opening of said roof member, said first and second engagement means being spaced apart and being substantially in-line with said vertical opening;

(b) vertical mast post means for raising and lowering the roof member and being rotatable to laterally displace the roof member when engaged thereto;

(c) a support member cooperatively engaged with said vertical mast post means to be raised, lowered and rotated thereby and being in detachable engagement with said roof member, said support member having (i) a first element extending horizontally from said vertical mast post means above said roof member and above said first roof

engagement means of said roof member to a first element end position above said second roof engagement means of said roof member, said horizontally extending first element being supportably engaged with said vertical mast post means to be raised, lowered and rotated thereby, (ii) a second element affixed to said first element adjacent said first element end position of said first element and extending obliquely downward directly below said first element toward said vertical mast post means to a second element end position intermediate the peripheral side portion of the roof member and the vertical mast post means, (iii) a third element affixed to said first element and said second element and extending vertically between the second element end position and said first element, (iv) first support member engagement means affixed to said support member to be closely adjacent the first roof engagement means, (v) second support member engagement means affixed to said support member to be closely adjacent the second roof engagement means;

(d) a releasable connector element for securing together the second roof engagement means with the second support member engagement means; said support member being in bearing contact with the vertical mast post means at a location oppositely adjacent the end position intermediate said peripheral side portion of said roof member and said vertical mast post means.

5,444,735

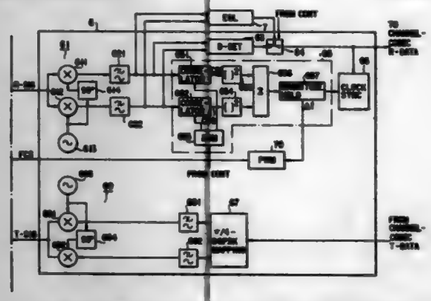
Patent Not Issued For This Number

5,444,736

RADIO COMMUNICATION APPARATUS HAVING AN AUTOMATIC FREQUENCY CONTROL CIRCUIT FOR CONTROLLING A TRANSMISSION FREQUENCY ON THE BASIS OF A RECEPTION FREQUENCY

Kazuhiro Kawashima, Yokohama, and Mutsumu Serizawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1992, Ser. No. 915,674
Claims priority, application Japan, Jul. 22, 1991, 3-181265
Int. Cl.[6] H04B *1/38*; H04L *5/16*
U.S. Cl. 375—219 **12 Claims**



1. A radio communication apparatus used in a cellular radio system in which a communication signal is transmitted through a radio communication channel established between a base station and the radio communication apparatus, comprising:

detecting means for detecting a change of a received frequency of the communication signal transmitted through the radio communication channel during a communication to produce a digital detection signal;

pulse width modulating means for pulse width modulating a pulse signal having a predetermined frequency to vary linearly with the digital detection signal to produce a linear pulse-width modulated signal;

smoothing means for smoothing the linear pulse-width modulated signal thereby generating an analog control signal;

local oscillating means for generating a local oscillating signal whose frequency changes in accordance with the analog control signal; and

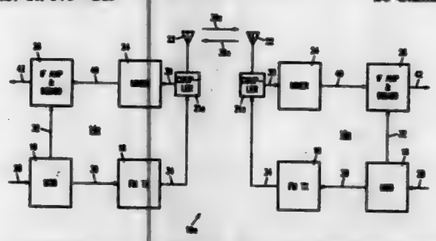
mixing means for mixing the local oscillator signal with a transmission signal to produce a radio transmission signal.

5,444,737

WIRELESS DATA TRANSCEIVER

Peter K. Cripps, Redwood City, and Tomany Szilagyi, Felton, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 57,621, May 5, 1993. This application Nov. 10, 1993, Ser. No. 150,401
Int. Cl.[6] H04B *1/38*; H04L *5/16*
U.S. Cl. 375—219 **28 Claims**



1. A data transceiver for transmitting and receiving modulated radio frequency (RF) signals, comprising:

an antenna for transmitting a first modulated RF signal and receiving a second modulated RF signal;

signal coupler means coupled to said antenna for receiving and coupling thereto a first portion of said first modulated RF signal and for receiving and coupling therefrom said second modulated RF signal;

transmitter means coupled to said signal coupler means for receiving a first modulation signal M1 and generating therefrom a second modulation signal M2, generating a RF signal having a first carrier frequency F1, modulating said RF signal in accordance with said first modulation signal M1, and providing said modulated RF signal to said signal coupler means as said first modulated RF signal; and

receiver means coupled to said signal coupler means and said transmitter means for receiving via said signal coupler means said second modulated RF signal which includes a second carrier frequency F2 modulated by a third modulation signal M3, receiving further via said signal coupler means a second portion of said first modulated RF signal, and mixing said received second portion of said first modulated RF signal and said received second modulated RF signal to produce a modulated intermediate frequency (IF) signal having a modulated center frequency F3 equal to a difference $|F1-F2|$ between said first carrier frequency F1 and said second carrier frequency F2, and further for receiving from said transmitter means said second modulation signal M2 and in accordance therewith demodulating said modulated IF signal.

5,444,738

SIGNAL PROCESSING CIRCUIT FOR SELECTIVE WAVEFORM EQUALIZATION WITHOUT SIGNAL COLLISION AND OMISSION

Hiroshi Ezariko, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

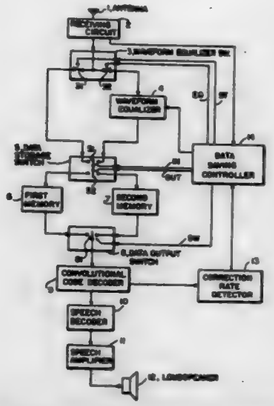
Filed Apr. 18, 1994, Ser. No. 229,343
Claims priority, application Japan, Apr. 16, 1993, 5-113923
Int. Cl.[6] H03H *7/30*
U.S. Cl. 375—229 **11 Claims**

1. A signal processing circuit for selectively equalizing signals comprising:

a waveform equalizer for performing waveform equalization processing on nonequalized signals to produce equalized signals;

a waveform equalizer switch for receiving nonequalized signals and for switching between a first output and a second output, said second output connected to an input of said waveform equalizer;

a plurality of memories;



a data storage switch for receiving nonequalized signals from said first output of said waveform equalizer switch and equalized signals from an output of said waveform equalizer, and selectively supplying said nonequalized and equalized signals to said plurality of memories;

a data output switch for selecting data to be outputted from said plurality of memories; and

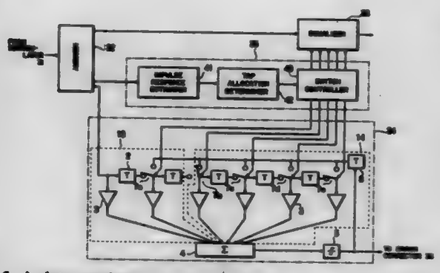
a controller for controlling said waveform equalizer switch, said data storage switch and said data output switch.

5,444,739

EQUALIZER FOR DATA RECEIVER APPARATUS

Mitsuru Uesugi; Kazuhisa Tsubaki, and Kouichi Honma, all of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 937,403
Claims priority, application Japan, Sep. 12, 1991, 3-232839
Int. Cl.[6] H04B *3/06*
U.S. Cl. 375—232 **2 Claims**



1. A data receiver apparatus including:

a memory storing a received signal transmitted through a signal transmission channel and demodulated into its base-band signal by a demodulator;

an equalizer equalizing the received signal to provide an equalized output signal;

an error corrector correcting any error included in the output signal from said equalizer to provide an error corrected output signal; and

a voice decoder decoding voice data of the output signal of said error corrector,

said equalizer comprising:

a plurality of delay elements successively delaying the received signal applied to said equalizer from said memory to provide successively delayed output signals;

a plurality of weighting elements multiplying the received signal from said memory and the successively delayed output signals from said plurality of delay elements by their weight coefficients respectively;

an adder adding output signals from said weighting elements to obtain a result of addition;

a discriminator converting the result of addition by said adder into a predetermined amplitude;

feedback paths including a further delay element for feeding an output of said discriminator back to the respective output terminals of said plurality of delay elements;

a plurality of selector switches; and

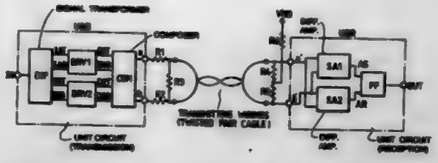
control means for selecting said feedback paths to selectively connect output terminals of said plurality of delay elements to the input terminals of said plurality of weighting elements.

5,444,740

A TERNARY SIGNAL TRANSMISSION CIRCUIT AND METHOD

Masao Mizukami, Yokohama, and Nobuaki Kanazawa, Akishima, both of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Communication Systems, Inc., Kanagawa, both of Japan

Filed Sep. 3, 1993, Ser. No. 116,691
Claims priority, application Japan, Sep. 18, 1992, 4-275115
Int. Cl.[6] H04L *25/34*, *25/49*; H04B *3/00*
U.S. Cl. 375—286 **10 Claims**



3. A digital signal transmitting system comprising a signal transmitting circuit, a signal receiving circuit, first and second transmitting wirings coupled between said signal transmitting circuit and said signal receiving circuit, series resistors coupled between said signal transmitting circuit and said first and second transmitting wirings and terminal resistors coupled to said first and second transmitting wirings,

said signal transmitting circuit includes:

a first signal generating circuit which generates a first pulse and a second pulse inverted in polarity from said first pulse, each of said first and second pulses having a pulse width being shorter than that of input signal and which is synchronized with a rising edge of said input signal, said input signal being supplied to said first signal generating circuit, wherein said input signal represents data to be transmitted from said signal transmitting circuit to said signal receiving circuit;

a second signal generating circuit which generates a third pulse and a fourth pulse inverted in polarity from said third pulse, each of said third and fourth pulses having a pulse width being shorter than that of said input signal and which is synchronized with a falling edge of said input signal, said input signal being supplied to said second signal generating circuit,; and

a driver circuit which produces a first ternary output signal in response to said first pulse and said third pulse and

which produces a second ternary output signal in response to said second pulse and said fourth pulse,

said signal receiving circuit includes:

a first signal discriminating circuit which discriminates said first ternary output signal transmitted through said first transmitting wiring referring to said second ternary output signal transmitted through said second transmitting wiring;

a second signal discriminating circuit which discriminates said second ternary output signal referring to said first ternary output signal; and

a reproducing circuit which restores said input signal in accordance with discriminating signals produced by said first and second signal discriminating circuits.

5,444,741

FILTERING METHOD AND DEVICE FOR REDUCING DIGITAL AUDIO SIGNAL PRE-ECHOES

Yannick Mahieux, Lannion, France, assignor to France Telecom, Paris, France

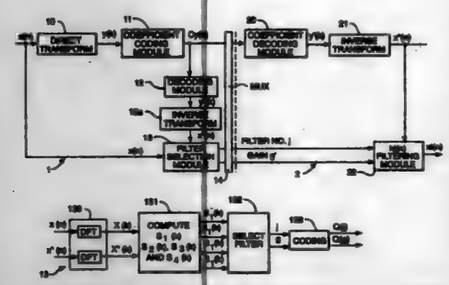
PCT No. PCT/FR93/00165, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO93/17508, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 18, 1993, Ser. No. 133,201

Claims priority, application France, Feb. 25, 1992, 92 02164

Int. Cl.[6] H04B *1/10, 15/00*

U.S. Cl. 375—254 **8 Claims**



4. A system for processing the preechoes of an original digital audio signal which is formed of a sequence of samples x(n) and comprises successive blocks of N samples, said original digital audio signal being transmitted between a coder device and a decoder device and thus being subjected to a preecho-phenomenon, said coder device including a module for processing said samples by frequency transform as coefficients y(k) and a module for coding said coefficients to coded coefficients Cy(k) so as to provide for the transmission of said coded coefficients to said decoder device, said decoder device including a module for decoding said transmitted coded coefficients as transmitted coefficients y(k) and a module for processing said transmitted coefficients by inverse frequency transform, so as to recreate a post-transmission original digital audio signal x'(n), said system further comprising, at the level of said coder device, downstream of said coding module:

a module for decoding said coded coefficients Cy(k) and for delivering estimated coefficients y''(k);

a module for processing said estimated coefficients by inverse frequency transform to recreate from said estimated coefficients a decoded original signal x''(n);

a module for selecting from said decoded original signal x''(n) the optimal filtering parameters and for storing matched filtering parameters, gain g(j) and template of transfer function Hj(f) of said matched filtering from a set of values of gain and filtering templates; and

means for providing time-multiplexing of said coded coefficients and said matched filtering parameters to provide for their simultaneous transmission to said decoder device.

5,444,742

SYSTEM FOR BIDIRECTIONAL DATA TRANSMISSION BETWEEN A PLURALITY OF STATIONARY UNITS AND A VEHICLE

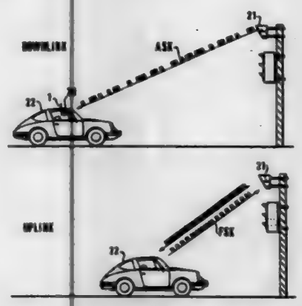
Wilhelm Grabow, Nordstemmen, and Friedrich-Wilhelm Bode, Apelern, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 28, 1993, Ser. No. 54,687

Claims priority, application Germany, Apr. 28, 1992, 42 13 880.9

Int. Cl.[6] H04B *7/02*

U.S. Cl. 375—267 **10 Claims**



1. A system for bidirectional, electromagnetic transmission of data signals between a plurality of stationary units which have respective effective ranges that at least partially overlap, and a corresponding vehicle unit, wherein the stationary units transmit encoded data signals (ASK) to the vehicle unit (downlink mode), and the vehicle unit transmits encoded data signals (FSK) to the station units by a semi-passive transponder mode, characterized in that at least two stationary units are provided, which operate at predetermined frequency spacings and that in the downlink mode synchronously transmit the same data, and that the reception unit of the vehicle unit is adapted to receive the transmission frequencies of the stationary transmitting units.

5,444,743

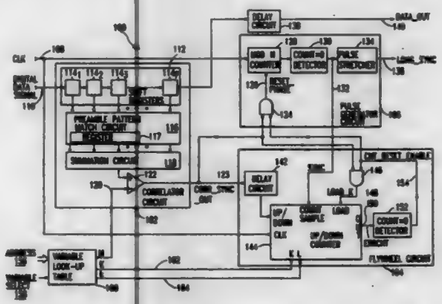
SYNCHRONOUS PULSE GENERATOR

Carl G. Scarpa, Edison, N.J., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Nov. 18, 1993, Ser. No. 154,849

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—368 **38 Claims**



1. Apparatus for generating periodic synchronization pulses from a pre-defined preamble bit pattern contained in a digital data signal, said apparatus comprising:

correlation means for correlating a pre-defined number of bits in said preamble bit pattern within the digital data signal to an expected preamble pattern and for producing a correlation signal when said pre-defined number of bits in said preamble bit pattern matches said expected preamble pattern, said correlation signal being susceptible to false positive or false negative preamble correlations;

pulse generator means, connected to said correlation means, for producing periodic synchronization pulses having a period equivalent to a period of occurrence of said preamble pattern;

flywheel means, connected to said pulse generator means and said correlation means, for synchronizing said periodic synchronization pulses to said correlation signal, wherein said flywheel means further comprises counter means for producing a count that increases when a pulse in said periodic synchronization pulses occurs simultaneously with a pulse in said correlation signal and decreases when a pulse in the periodic synchronization pulses occurs and a pulse in the correlation signal does not occur simultaneously therewith, wherein said flywheel means resets said pulse generator means when a pulse in the correlation signal is produced by said correlation means and the count of the counter has attained a predetermined count value such that, through interaction of the flywheel means and the pulse generator means, the synchronization pulses only occur at the preamble pattern period and are not affected by either said false positive or said false negative preamble correlations.

5,444,744

PHASE LOCKED LOOP FOR SYNCHRONIZING WITH CARRIER WAVE

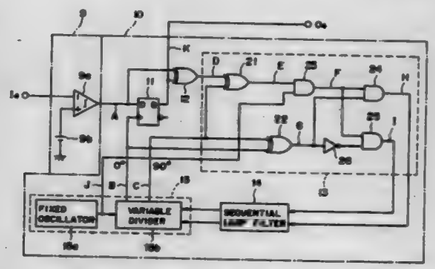
Yuji Yamamoto, and Kiichiro Akiyama, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 3, 1993, Ser. No. 161,890

Claims priority, application Japan, Dec. 14, 1992, 4-333311

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **13 Claims**



1. A phase locked loop circuit for synchronizing with carrier wave comprising:

a fixed oscillator for generating a clock signal including reference clock pulses;

a variable divider for dividing the clock signal and generating a first reference signal and a second reference signal whose frequency is same as the frequency of the first reference signal and whose phase is shifted by 90 degrees with respect to the phase of the first reference signal, said variable divider varying the frequencies of the first reference signal and the second reference signal in accordance with a control signal;

a first multiplier for multiplying an input signal by the first reference signal;

an exclusive OR circuit for operating an exclusive OR of the input signal and an output signal of said first multiplier;

a phase comparator for receiving the clock signal, the first reference signal, the second reference signal and the output signal of said exclusive OR circuit, and detecting a value and a direction of a phase difference between the input signal and the first reference signal to produce phase comparison signal including a series of clock pulses whose number corresponding to the value of the phase difference and indicative of the direction of the phase difference; and

a loop filter for producing the control signal on the basis of the phase comparison signal.

5,444,745

DIVERSITY RECEPTION ARRANGEMENT

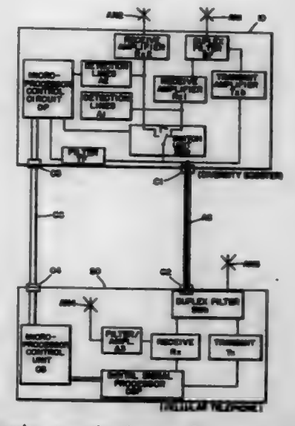
Timo Ali-Vehmas, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Feb. 5, 1993, Ser. No. 14,351

Claims priority, application Finland, Feb. 14, 1992, 920650

Int. Cl.[6] H04L *1/02*

U.S. Cl. 375—347 **5 Claims**



1. A diversity reception booster for a cellular radio telephone, said booster coupled to two antennas and operating in a time division multiple access signal environment, the booster comprising:

an antenna cable for connection to a cellular radio telephone, said cellular radio telephone applying signal frame timing information to said antenna cable;

control circuit means responsive to said signal frame timing information from the cellular radio telephone received from said antenna cable to synchronize operation of said booster with the cellular radio telephone;

means for determining quality of individual signals received by each of said two antennas;

means for selecting a better of said individual signals in response to an output from said means for determining; and

means for transmitting the selected signal to said cellular radio telephone through said antenna cable.

5,444,746

CONTAMINATION INSPECTING DEVICE FOR PORTABLE ARTICLES

Katsuya Okamoto, Osaka; Tomoharu Harada, Yokohama; Takashi Yamamoto, Yokohama, and Singi Nishida, Yokohama, all of Japan, assignors to Kansai Electric Power Co., Ltd., Osaka and JGC Corporation, Tokyo, both of Japan

Continuation-in-part of Ser. No. 826,189, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 658,906, Feb. 22, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 45,879

Int. Cl.[6] G21C *17/00*

U.S. Cl. 376—245 **12 Claims**

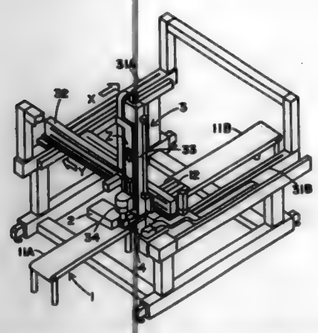
1. A contamination inspecting device for portable articles

from a radiation control area in a nuclear power installation for the purpose of automatically detecting radioactive contamination on the surfaces of the article, the device comprising:

a means for conveying articles to be inspected through an inspection position;

a scintillator means for detecting radiation having a monitor means for displaying detected results after surveying the articles to be inspected, said scintillator means further being for detecting background radiation of an area surrounding the inspection position prior to inspecting the articles to be inspected;

a five-axes gate-type underriding mechanism having a head which can travel and revolve in five axes so as to enable



said scintillator means to three-dimensionally survey plural surfaces of the articles to be inspected, said scintillator means being operatively mounted on the head, said underriding mechanism further including an X-axis rail, a Y-axis rail, a Z-axis rail, vertical revolving means for enabling the head to revolve around a vertical revolving axis, and a horizontal revolving means for enabling the head to revolve around a horizontal revolving axis; and

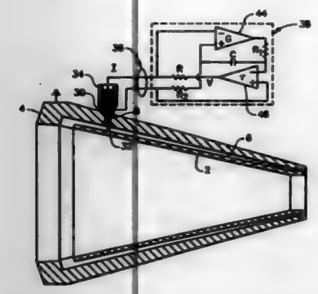
control means operatively connected to said conveying means, said scintillator means and said underriding mechanism, for controlling operation of said conveying means and said underriding mechanism during surveying of the articles to be inspected based on the background radiation detected.

5,444,747

JET PUMP ELECTRO-NOZZLE

James H. Terhune, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1994, Ser. No. 239,773
Int. Cl.[6] G21C *15/00, 19/28*
U.S. Cl. 376—372 **21 Claims**



21. A fluid-conveying device having reduced susceptibility to stress corrosion cracking in a nuclear reactor environment, comprising:

a channel having an inlet, an outlet, an internal surface in contact with fluid flowing therethrough and an external surface, said channel being made of electrically conductive material;

means for electrically minimizing charged-particle deposition on said internal surface; and

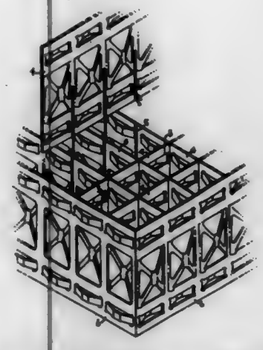
an electrical conductor for connecting said external surface to said means for electrically minimizing charged-particle deposition.

5,444,748

GRID STRUCTURE FOR SUPPORTING FUEL RODS IN A NUCLEAR REACTOR

Peter H. Benchel; Yu C. Lee, and James A. Sparrow, all of Columbia, S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1994, Ser. No. 222,065
Int. Cl.[6] G21C *3/34*
U.S. Cl. 376—438 **4 Claims**



1. A grid structure for a nuclear reactor fuel assembly comprising a plurality of interconnected metal straps forming the walls of a plurality of rectangular open cells adapted to receive and retain a plurality of vertically disposed, elongated fuel rods, two walls of a cell each having a pair of spaced, substantially horizontal spring-like projections projecting into said cell, the other two walls of said cell each having a substantially X-shaped spring-like projection also projecting into said cell vertically intermediate of said spaced, substantially horizontal projections, whereby an elongated fuel rod may be supported and retained in said cell by said projections.

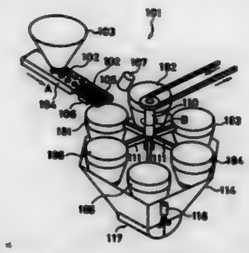
5,444,749

APPARATUS FOR COLLECTING AN ARTICLE

Kunio Nambu, Kyoto, Japan, assignor to Nambu Electric Co., Ltd., Kyoto, Japan

Division of Ser. No. 862,573, Jun. 26, 1992, Pat. No. 5,319,160. This application Mar. 7, 1994, Ser. No. 206,394
Claims priority, application Japan, Dec. 14, 1990, 2-410902; Dec. 20, 1990, 2-413486; Mar. 7, 1991, 3-69253; Apr. 9, 1991, 3-104818; Apr. 10, 1991, 3-106628; Apr. 17, 1991, 3-114060; May 2, 1991, 3-130909; Dec. 4, 1991, 3-348843
Int. Cl.[6] G01G *13/00*; G06M *7/00*; B65H *3/28*; G06F *15/20*
U.S. Cl. 377—6 **5 Claims**

1. An apparatus for counting a small article, which sequentially feeds a set of small articles indefinite in number and smaller in number than target number, conveys the fed set of articles each in units of a set in a recirculating manner, combines at least two sets of articles during recirculating conveyance of the articles after the feeding of the articles to thereby obtain the target number of small articles, said apparatus comprising: feeding means for feeding said set of small articles indefinite in number and smaller in number than the target number; scattering means positioned below a discharge end of said feeding means for hindering a fall of the articles and scat-



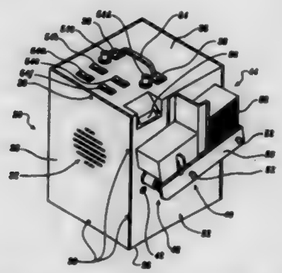
tering the articles in a passageway for the articles falling from the discharge end; and detecting means for detecting the articles which are scattered by said scattering means to thereby count a total number of falling articles.

5,444,750

TALLY PUNCH MACHINE

William L. Stewart, Spring Lake Park; Leonard A. Miller, Ham Lake; Thomas H. Peterman, Farwell; Mario G. Schoenack, and Richard J. Schoenack, both of Garfield, all of Minn., assignors to Bass Gambling Supplies Inc., Spring Lake Place, Minn.

Filed Nov. 9, 1993, Ser. No. 149,318
Int. Cl.[6] G06M *3/02*; G06K *15/00*
U.S. Cl. 377—8 **17 Claims**



1. Apparatus for counting and selectively voiding tickets comprising:

(a) a bin for holding at least one ticket;

(b) an electronic counting device for selectively counting tickets;

(c) a ticket invalidator for optionally canceling each ticket, said ticket invalidator including a reciprocating ticket punch rod;

(d) a conveyor for advancing tickets from the bin past the electronic counting device and ticket invalidator; and

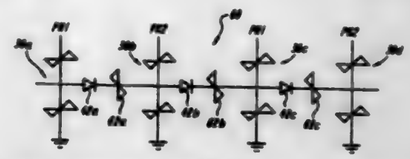
(e) a plurality of selection switches for controlling the electronic counting device, ticket invalidator, and conveyor, said plurality of selection switches including an invalidator control that selectively shifts the reciprocating ticket punch rod to one of two positions, including a first position in which the tickets are voided as they are counted and a second position in which the reciprocating ticket punch rod does not void the tickets as they are counted.

5,444,751

TUNNEL DIODE SHIFT REGISTER UTILIZING TUNNEL DIODE COUPLING

Jay P. Sage, Newton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 24, 1993, Ser. No. 126,550
Int. Cl.[6] G11C *19/00*; H03K *23/80*
U.S. Cl. 377—78 **25 Claims**



1. A shift register comprising:

a first bistable latching circuit operable for switching between a low voltage state and a high voltage state in response to receiving an input current and a first clock voltage pulse;

a second bistable latching circuit operable for switching from said low voltage state to said high voltage state in response to receiving a switching current induced from said first bistable latching circuit and a second clock voltage pulse;

a clock voltage pulse source operable for successively providing clock voltage pulses in phase sequence to said first and second bistable latching circuits; and

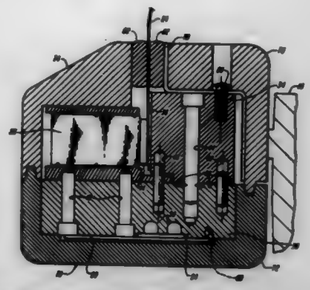
a coupling circuit coupled between and distinct from said first and second bistable latching circuits and having electrical characteristics such that said coupling circuit generates said switching current for a predetermined voltage drop across said coupling circuit in response to said first bistable latching circuit being in said high voltage state, said coupling circuit generating currents of lesser value than said switching current for voltage drops which are lesser or greater than said predetermined voltage drop.

5,444,752

TOMOGRAPHY DETECTOR TEMPERATURE EQUALIZATION

John Dobbs, Hamilton; David Banks, Boxford, and Leonhard Katz, Winchester, all of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Feb. 3, 1994, Ser. No. 191,426
Int. Cl.[6] G01T *1/24*
U.S. Cl. 378—19 **17 Claims**



1. Temperature equalizing apparatus for an array of detectors carried on a rotating gantry disk of computed tomography equipment, said apparatus comprising:

heat sink means including a body having high thermal conductance and a thermal mass that is larger than a thermal mass of said array of detectors, said body being thermally

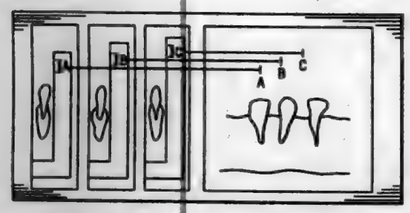
coupled to said array of detectors for closely thermally interconnecting said detectors in said array; and
thermal isolating means for minimizing heat transfer to and from said combination of heat sink means and detectors.

5,444,753
X-RAY LITHOGRAPHY MASK, LIGHT EXPOSURE APPARATUS AND PROCESS THEREFORE
Masami Hayashida, Atsugi, and Yutaka Watanabe, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 850,588, Mar. 13, 1992. This application Mar. 1, 1994, Ser. No. 203,752
Claims priority, application Japan, Mar. 18, 1991, 3-077201
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—35 17 Claims



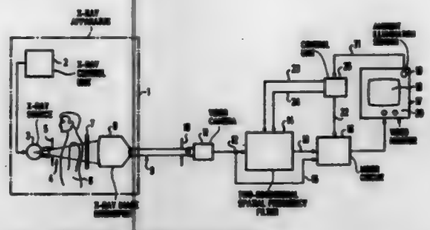
1. An exposure mask for transferring a pattern onto a substrate in a lithography process, said mask comprising:
a base surface having optical non-uniformity along a predetermined direction; and
a transfer pattern having a plurality of pattern lines in a predetermined arrangement, said pattern being depicted on said base surface with the plurality of pattern lines oriented in the predetermined direction.

5,444,754
METHOD FOR LOCALIZING CROSS-SECTIONAL DENTAL X-RAY IMAGES
Markku Wederborn, Nurmijärvi, and Panu Kopsala, Tuusula, both of Finland, assignors to Instrumentarium Corp., Finland
Continuation-in-part of Ser. No. 165,731, Dec. 10, 1993, abandoned. This application May 18, 1994, Ser. No. 245,752
Claims priority, application Finland, Oct. 13, 1993, 934516
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—38 9 Claims



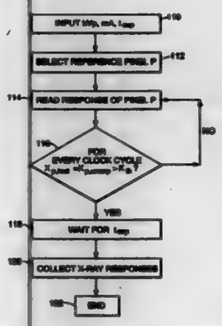
1. A method for localizing cross-sectional images (6) taken from a given part of the maxillary or mandibular arch, said images being obtained with a panoramic X-ray apparatus which is provided with a patient supporting mechanism (1) and software for imaging the maxilla or mandible in a transverse direction, characterized in that said method includes a step of imaging cross-sections of the given part (6) on the same film as a respective longitudinal image (5) of the maxillary or mandibular arch, and that the cross-sectional images (6) are exposed to include section identifications (A, B, C) for the cross-sectional images, said section identifications being also exposed on the longitudinal image (5) in alignment with the cross-sections on which said cross-sectional images are taken.

5,444,755
RADIOLOGICAL SYSTEM WITH CONTROL OF THE MODULATION TRANSFER FUNCTION DEPENDENT ON AMBIENT LIGHT
Joerg Haendle, and Heinz Horbaschek, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Jun. 20, 1994, Ser. No. 262,693
Claims priority, application Germany, Jun. 23, 1993, 43 20 877.0
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98 13 Claims



1. A radiological system comprising:
x-ray examination means for producing an x-ray image of an examination subject;
means for converting said x-ray image into an optical image;
a video chain exhibiting a modulation transfer function and including means for generating a video signal from said optical image, a video monitor, on which said image is displayed, disposed in an environment having ambient illumination, and means employing a two-dimensional spatial frequency filter for modifying said modulation transfer function two-dimensionally dependent on said ambient illumination.

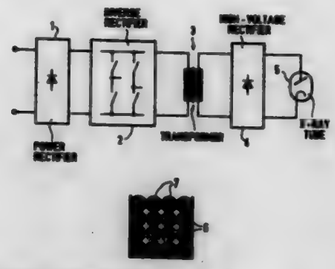
5,444,756
X-RAY MACHINE, SOLID STATE RADIATION DETECTOR AND METHOD FOR READING RADIATION DETECTION INFORMATION
Joseph Y. Pai, Woodbury, Minn., and Choon-Woo Kim, Incheon, Rep. of Korea, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 193,807, Feb. 9, 1994, abandoned. This application Aug. 17, 1994, Ser. No. 291,771
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.8 18 Claims



1. An x-ray machine for producing an x-ray, comprising:

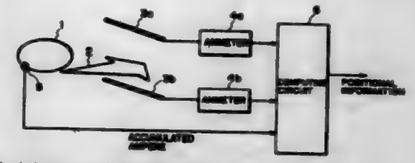
an x-ray tube powered by electrical power and producing x-ray radiation, said x-ray tube having a variable warm-up time period;
a controller for controlling said x-ray tube controlling an exposure time for said x-ray radiation;
a layer of phosphor receiving said x-ray radiation and producing an output based upon the amount of said x-ray radiation received;
a solid state radiation detector having a plurality solid state sensors arranged in an array of sensors consisting of a plurality of rows and a plurality of columns, said detector responsive to said output of said layer of phosphor, each of said plurality of solid state sensors producing an output;
at least one solid state reference sensor;
sensing means coupled to each of said plurality of solid state sensors and to said solid state reference sensor for sensing said output of said solid state sensors;
said sensing means reading said output of said reference sensor at a time t_1;
said controller applying said electrical power to said x-ray tube at said time t_1;
said sensing means continuing to read said output of said reference sensor after time t_1 and determining a time t_2 based upon said output of said reference sensor at time t_2 as compared with said output of said reference sensor at time t_1;
said sensing means reading said output of said plurality of solid state sensors at time t_3 which is equal to said time t_2 plus said exposure time; and
recording means responsive to said sensing means for recording the value of said output of said plurality of solid state sensors at time t_3;
whereby an x-ray image is produced in spite of said x-ray tube having a variable warm-up time period.

5,444,757
X-RAY GENERATOR
Walter Beyerlein, Bubenreuth, and Peter Schweighofer, Nuernberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 16, 1994, Ser. No. 213,512
Claims priority, application Germany, May 4, 1993, 43 14 710.0; Dec. 22, 1993, 43 43 930.6
Int. Cl.[6] H05G *1/32*
U.S. Cl. 378—101 5 Claims



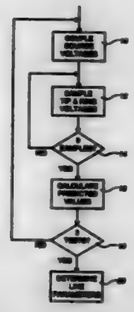
1. An x-ray generator comprising:
a power rectifier connectable to a mains voltage;
a high-frequency inverse rectifier connected following said power rectifier;
an x-ray tube; and
a high-voltage transformer connected between said inverse rectifier and said x-ray tube, said high-voltage transformer having windings and exhibiting a maximum voltage load, said windings having an insulation thereon having a thickness which is greater than a thickness required for insulation against said maximum voltage load.

5,444,758
BEAM POSITION DETECTING DEVICE
Akira Miyake, and Mitsuaki Amamiya, both of Isehara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 9, 1994, Ser. No. 257,532
Claims priority, application Japan, Jan. 14, 1993, 5-142017
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—113 9 Claims



1. A beam position detecting device, comprising:
detecting means for detecting, at plural sites, the intensity of a radiation beam emitted from a synchrotron ring;
measuring means for measuring information related to accumulated electric current of the synchrotron ring; and
determining means for determining the beam position of the radiation beam on the basis of outputs of said detecting means and said measuring means.

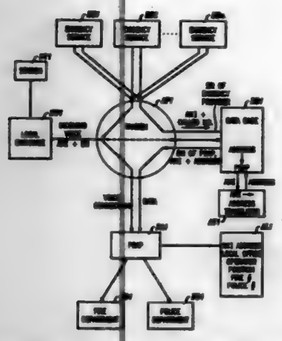
5,444,759
METHOD OF PREDICTING VOLTAGES IN TELEPHONE LINE MEASUREMENT
John V. Vogt, III, Norcross, and Charles E. Summers, Canton, both of Ga., assignors to Northern Telecom Limited, Montreal, Canada
Filed Sep. 20, 1993, Ser. No. 123,085
Int. Cl.[6] H04M *3/08, 3/22, 1/24*
U.S. Cl. 379—30 14 Claims



1. A method of measuring characteristics of a two-wire telephone line a circuit model of which comprises resistive and capacitive elements connected between tip, ring, and ground terminals of the line, comprising the steps of:
coupling source voltages via source resistances to the tip and ring terminals in a plurality of test conditions;
in each test condition, determining a steady state voltage of at least one of the tip and ring terminals; and
deriving characteristics of the resistive elements of the line from the source voltages, source resistances, and determined steady state voltages;
wherein the step of determining each steady state voltage of a terminal comprises the steps of:
sampling the voltage at the terminal with a predetermined sampling period to provide a predetermined set of sampled voltages; and
calculating a predicted voltage value, constituting the determined steady state voltage, from the predetermined set of

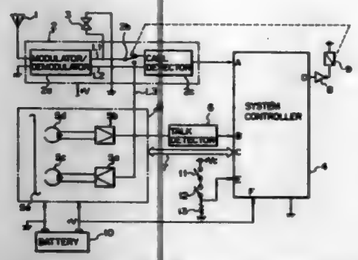
sampled voltages using a closed form second order solution of the circuit model.

5,444,760
ROUTING OF SPECIAL EMERGENCY CALLS
Lila N. Russ, Aurora, Ill., assignor to AT&T Corp., Murray Hill, N.J.
Filed Dec. 28, 1993, Ser. No. 178,724
Int. Cl.[6] H04M *11/04*
U.S. Cl. 379—45 12 Claims



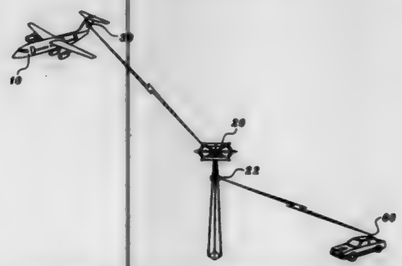
1. A method of routing a call from a calling station, comprising:
directing the call, in response to dialing by the calling station of an assigned emergency number, to an emergency answering service;
diverting predetermined calls from the emergency answering service, said diverting step including:
in response to dialing by the calling station of a predetermined exigency command, accessing from a data base a number and address of a given exigency station associated with the command; and
directing the call from the calling station to the given exigency station.

5,444,761
ON-VEHICLE MOBILE RADIO TELEPHONE WITH AN ANSWERING FUNCTION
Akira Nagashima, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 24, 1992, Ser. No. 825,067
Claims priority, application Japan, Jul. 1, 1991, 3-160649
Int. Cl.[6] H04M *11/00, 1/64;* H04Q *3/02;* H04B *1/06*
U.S. Cl. 379—58 2 Claims



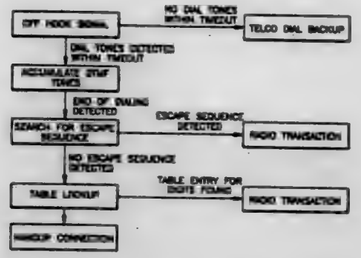
1. An on-vehicle mobile radio telephone with an answering function comprising:
a message recording means;
a handset;
a channel for relaying a call signal to the handset;
a call detecting means for detecting a call through the channel to generate a call detect signal; and
a control means for executing an automatic reception mode to connect the channel to the message recording means according to the call detect signal with an answer mode designated, said control means including an accessory switch (ACC) detecting means for detecting whether an accessory switch of a vehicle is on or off and means for performing said automatic reception mode when a predetermined time period has lapsed from when the accessory switch (ACC) detecting means detects that the accessory switch is off.

5,444,762
METHOD AND APPARATUS FOR REDUCING INTERFERENCE AMONG CELLULAR TELEPHONE SIGNALS
Richard L. Frey, Dannemora; Richard C. Gaus, Jr., Burnt Hills, both of N.Y.; Robert L. George, II, Plano, Tex.; Stephen M. Hladik, Albany, N.Y.; Howard L. Lester, Auplaus, N.Y.; Charles M. Puckette, Scotia, N.Y., and Jimmy C. Ray, Denison, Tex., assignors to AirCell, Inc., Dallas, Tex.
Filed Mar. 8, 1993, Ser. No. 27,333
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 379—58 2 Claims



1. A method of reducing interference among aircraft communication system signals and ground communication system signals, comprising the following steps:
(a) connecting at least one aircraft communication station to at least one aircraft directional antenna, said aircraft directional antenna having a horizontally polarized signal to provide signal separation from ground cellular telephone systems,
(b) connecting at least one ground communication station to at least one ground directional antenna, said ground directional antenna having a horizontally polarized signal, and having a radiation pattern directed above a horizontal plane encompassing said antenna,
(c) combining a directionality of said aircraft antennae and said ground antennae with a horizontally polarized signal, said horizontal polarization being oppositely polarized respective to ground cellular telephone systems, and
(d) transmitting and receiving signals between said aircraft directional antennae and said ground antennae;
(e) connecting at least one mobile cellular telephone station to at least one aircraft directional antenna, said aircraft directional antenna having a toroidal radiation pattern and at least one conical null signal zone, so that said conical null signal zone reduces a signal level of a signal transmitted from said aircraft directional antenna in an area directly below an aircraft,
(f) connecting at least one cellular telephone base station directional antennae to a switched telephone network, said base station directional antennae having a radiation pattern directed above a horizontal plane encompassing said antenna.
(g) transmitting and receiving cellular telephone signals between said aircraft directional antennae and said cellular telephone base station directional antennae.

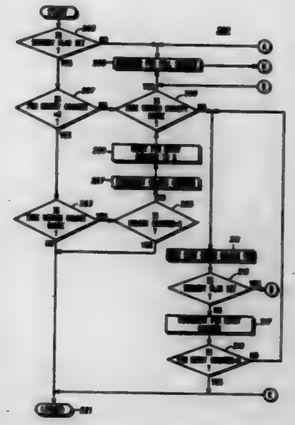
5,444,763
TRANSLATION AND CONNECTION DEVICE FOR RADIO FREQUENCY POINT OF SALE TRANSACTION SYSTEMS
Mihal Lazaridis, and Michael A. Barnetijn, both of Waterloo, Canada, assignors to Research In Motion Limited, Waterloo, Canada
Filed Jun. 27, 1993, Ser. No. 78,418
Int. Cl.[6] H04M *11/00;* G06K *5/00*
U.S. Cl. 379—58 7 Claims



1. A method for dual use of radio communication and telephone communication for evaluating a transaction request that includes the transmission and verification of coded data comprising the steps of:
a) obtaining one or more external encoded data signals containing information from at least one encoded data signal source to evaluate the transaction request;
b) determining from said external encoded data signals whether the transaction request is to be performed through use of a radio frequency data communication network or a telephone communication network; and
c) transmitting the information contained in said external encoded data signals either by radio communication or telephone communication according to the results of said determining step.

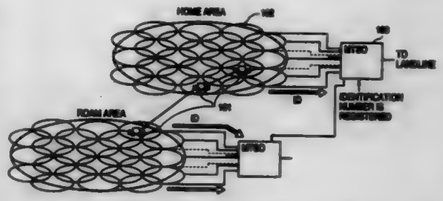
5,444,764
METHOD OF PROVIDING A SUBSCRIPTION LOCK TO A RADIOTELEPHONE SYSTEM
Dawn M. Galecki, Barrington, Ill., assignor to Motorola, Schaumburg, Ill.
Filed Jul. 1, 1993, Ser. No. 86,407
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—58 4 Claims

1. In a radiotelephone system, a radiotelephone having a subscription lock, the subscription lock having a predetermined range of valid international mobile subscriber identifications (IMSIs), a predetermined subsidy flag personal identification number (PIN) and responsive to a subscriber providing a subscriber identification module (SIM) card containing an IMSI, a method of providing the subscription lock comprising the steps of:
comparing the SIM card IMSI to the permanent range of valid IMSIs;
comparing, responsive to failing to provide a SIM card containing an IMSI within the predetermined range of valid IMSIs, a user input subsidy flag PIN to the predetermined subsidy flag PIN;
restricting access to the radiotelephone system responsive to the user input subsidy flag PIN failing to equal the predetermined subsidy flag PIN; and



accessing the radiotelephone system using the SIM card IMSI.

5,444,765
RADIO TELEPHONE APPARATUS HAVING A SERVICE AREA CONFIRMATION
Kuniyoshi Marui, Saitama; Shinya Takahashi, and Kiyoshi Hattori, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 855,781, Mar. 23, 1992, abandoned.
This application Apr. 18, 1994, Ser. No. 229,093
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—59 25 Claims



1. A cellular radio telephone for use in a plurality of cellular radio systems, each having one or more base stations that broadcast radio signals throughout a service area over a paging channel and over an access channel, the radio signals including system identification data identifying the cellular radio system from which the radio signals are broadcast, said cellular radio telephone comprising:
storing means for storing system identification data of one of said cellular radio systems to establish said one cellular radio system as a home cellular radio system and to establish a service area throughout which said home cellular radio system broadcasts as a home service area;
establishing means for establishing a paging channel with a cellular radio system in whose service area said cellular radio telephone is then present in response to power-up of said cellular radio telephone and for establishing an access channel with a cellular radio system in whose service area said cellular radio telephone is then present in response to an input of call placement request by a user;
detecting means coupled to said establishing means for detecting system identification data from the radio signals broadcast over said established paging channel by said

cellular radio telephone system in whose service area said cellular radio telephone is present at power-up of said cellular radio telephone and for detecting system identification data from the radio signals broadcast over said established access channel by said cellular radio telephone system in whose service area said cellular radio telephone is present at the input of the call placement request;

comparing means, coupled to said detecting means and said storing means, for comparing the system identification data detected from the radio signals broadcast over said established paging channel with the stored system identification data and for comparing the system identification data detected from the radio signals broadcast over said established access channel with the stored system identification data; and

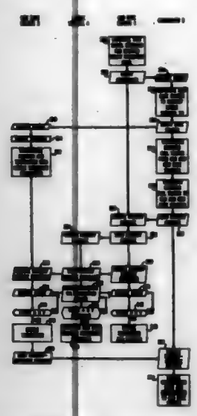
indication means, coupled to the comparing means, for providing an indication of roamer status if the system identification data detected from the radio signals broadcast over said established paging channel does not coincide with the stored system identification data and for providing an indication of roamer status if the system identification detected from the radio signals broadcast over said established access channel does not coincide with the stored system identification data.

5,444,766

MOBILE-SYNCHRONIZED HANDOFF IN A WIRELESS COMMUNICATIONS SYSTEM

Charles Y. Farwell, Denver; Richard D. Miller, Northglenn, and Richard A. Windhausen, Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 1, 1993, Ser. No. 131,041
Int. Cl.[6] H04Q *7/22*; H04M *11/00*
U.S. Cl. 379—60 **16 Claims**



1. In a wireless communications system, a method of coordinating a handoff of a call involving a mobile terminal from a first base station to a second base station, comprising the steps of:

transmitting a handoff coordination signal from the mobile terminal simultaneously to both the first base station which is presently transmitting the call to the mobile terminal and the second base station which is presently not transmitting the call to the mobile terminal;

receiving the handoff coordination signal substantially simultaneously at both the first and the second base stations;

in response to the receipt, the first base station ceasing to transmit the call to the mobile terminal at an instant in time; and

in response to the receipt, the second base station commencing to transmit the call to the mobile terminal at effectively same said instant in time;

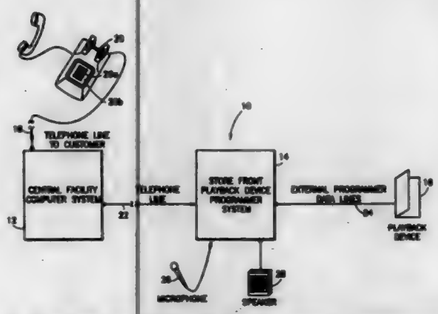
whereby timing of the handoff is coordinated by the mobile terminal and is performed substantially simultaneously by both the first and the second base stations.

5,444,767

SYSTEMS AND METHODS FOR RECORDING AND DELIVERING PERSONALIZED AUDIO MESSAGES

Gregory J. Goetcheus, 2039 N. Kenmore, Apt. 1, Chicago, Ill. 60614; Robert J. Clarke, Collinsville, and Richard H. Russell, Farmington, both of Conn., assignors to Gregory J. Goetcheus, Chicago, Ill.

Filed Mar. 9, 1994, Ser. No. 208,736
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **25 Claims**



1. A system for recording and delivering a personalized audio message of a customer provided by the customer to a central facility via a communication channel and delivered from the central facility via a communication line, comprising:

a) a central facility computer system located at a first location and having a voice digitizer, a processor means, and an outgoing communication line interface means, wherein said processor means is coupled to said voice digitizer, and to said outgoing communication line interface means, wherein an audio message provided by the customer is digitized by said processor means, and said processor means causes data representing said audio message to be provided to said outgoing communication line interface means;

b) a plurality of playback device programmer systems located at a plurality of second locations and each having an incoming communication line interface means, a second processor means coupled to said incoming communication line interface means, and a playback device programmer means coupled to said second processor means, said incoming communication line interface means for receiving said data representing said audio information from said outgoing communication line interface means and for providing said audio information as digital information to said second processor which in turn provides said digital information to said playback device programmer means; and

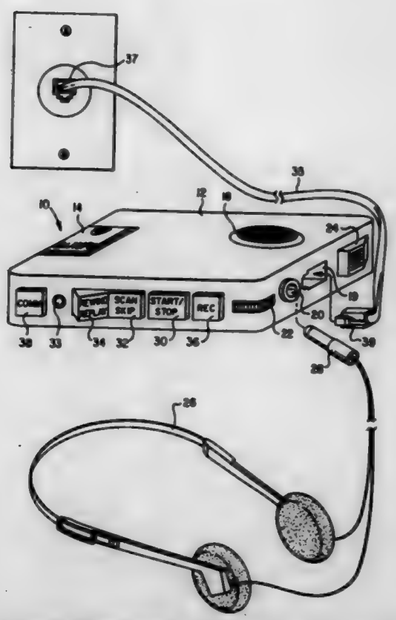
c) a portable playback device having a power switch, a power supply coupled to said power switch, a message memory, and a speaker means coupled to said power supply and to said message memory, wherein said message memory means is programmed by said playback device programmer means to store information representing said audio information, and upon said power switch being activated, said portable playback device is powered by said power supply such that said information stored by said message memory means is provided to said speaker means and causes said speaker means to provide a substantial equivalent of said personalized audio message.

5,444,768

PORTABLE COMPUTER DEVICE FOR AUDIBLE PROCESSING OF REMOTELY STORED MESSAGES

Charles A. Lemaire, Zumbrota, Minn.; Thomas Schick, Raleigh, N.C., and Bryan L. Striemer, Zumbrota, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,664
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—68 **30 Claims**



1. A portable hand-held computer device for processing messages stored at a remote central message facility accessible via telephonic communications, said portable hand-held computer device comprising:

processor means;

memory means coupled to said processor means for storing a plurality of messages;

telephonic interface means coupled to said processor means for selectively and temporarily interconnecting said portable hand-held computer device with a telephonic network;

first switch means coupled to said processor means for automatically establishing communications between said remote central message facility and said portable hand-held computer device in response to an actuation thereof while said portable hand-held computer device is interconnected with said telephonic network;

communications means coupled to said processor means for transferring at least one message in a digital data format from said remote central message facility to said memory means in response to said establishing of communication between said remote central message facility and said portable hand-held computer device; and

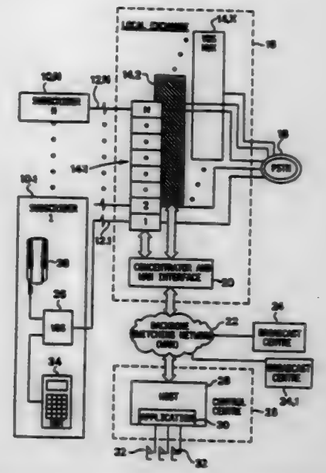
digital data-to-speech conversion means coupled to said memory means for selectively outputting said at least one message from said memory means and for creating speech signals representative of digital data wherein said at least one message may be audibly discerned.

5,444,769

DATA COMMUNICATIONS SYSTEM FOR ESTABLISHING LINKS BETWEEN SUBSCRIBER STATIONS AND BROADCAST STATIONS

Jacobus P. L. Koen, Johannesburg, and Richard Clark, Sandton, both of South Africa, assignors to David Wallace Zietsman, Transvaal, South Africa

Continuation of Ser. No. 992,635, Dec. 18, 1992, abandoned. This application Aug. 16, 1994, Ser. No. 292,321
Claims priority, application South Africa, Dec. 20, 1991, 91/10059
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—94 **5 Claims**



1. An interactive multiple response evaluation system comprising:

a plurality of subscriber stations, each of which has a characteristic identification code associated therewith, an entry terminal for manually entering response data in response to a prompt transmitted on a broadcast signal from a broadcast station, a display means associate with said entry terminal, connection means for connecting the subscriber station to a respective one of a plurality of transmission lines, and switching means for selectively allowing data or voice signals on the transmission line via the entry terminal or via a telephone respectively;

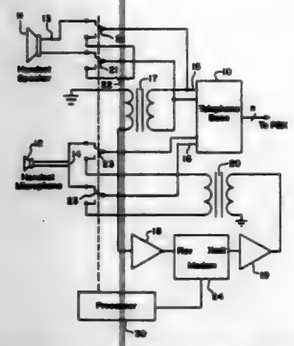
a data switching mechanism associated with a local telephone exchange and interposed into the transmission lines between the subscriber stations and the local telephone exchange, said data switching mechanism comprising, a plurality of voice/data multiplexers each of which is linked to a respective data transmission line and includes at least one voice output line which in use is linked via the local telephone exchange to a public switched telephone network (PSTN), and at least one data output line;

a control device liked to each data output line from the plurality of voice/data multiplexers for controlling data conveyed along said data output lines;

a wide area network connected to the data output lines; and

a host computer for processing data entered from the respective entry terminals, said host computer being linked to the data output lines through the wide area network, the host computer adapted to transmit confirmation signals via the wide area network, the data switching mechanism, and the transmission line to the respective subscriber station.

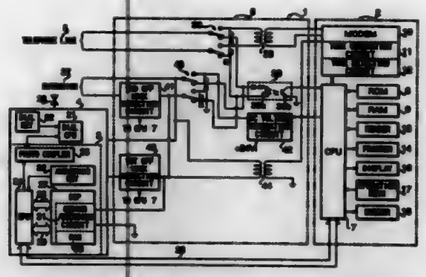
5,444,770
TELEPHONE HANDSET INTERFACE FOR AUTOMATIC SWITCHING BETWEEN VOICE AND DATA COMMUNICATIONS
Richard A. Davis, Boulder; Kenneth L. Frick, Westminster; Gregory Muir, Lyons, and James Nowack, Boulder, all of Colo., assignors to Radish Communications Systems, Inc., Boulder, Colo.
Continuation-in-part of Ser. No. 877,328, May 1, 1992, which is a continuation-in-part of Ser. No. 589,203, Sep. 27, 1990, Pat. No. 5,164,982. This application Nov. 30, 1993, Ser. No. 158,994
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—99 21 Claims



1. A telephone interface system for providing voice and data communications with a remote unit over a telephone line via a telephone set having a handset and a base, with a pair of speaker lines and a pair of microphone lines extending from said handset for communication with said base, and corresponding pairs of base microphone and speaker lines extending from said base for communication with said handset, said interface system comprising:
- a modem for receiving and transmitting data having a receive port coupled to said base speaker lines and a transmit port coupled to said base microphone lines;
- switching means for selectively coupling said handset speaker lines to said base speaker lines; and
- a processor for monitoring data received by said modem and controlling said switching means to automatically switch between a data mode of operation in which said handset speaker lines are decoupled from said base speaker lines when data is being received or transmitted by said modem, and a voice mode of operation in which said handset speaker lines are coupled to said base speaker lines in accordance with a predetermined communications protocol with said remote unit.

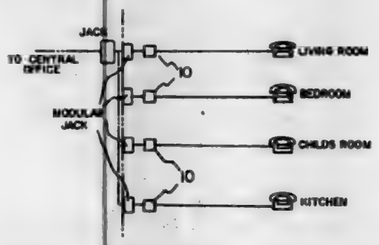
5,444,771
FACSIMILE MACHINE HAVING ANSWERING FUNCTION
Toru Ohnishi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jan. 28, 1994, Ser. No. 188,575
Claims priority, application Japan, Feb. 5, 1993, 5-019053
Int. Cl.[6] H04M *11/00, 1/64*
U.S. Cl. 379—100 6 Claims

1. A facsimile machine having an answering function, comprising:
- means for automatically performing change from a first control mode to a second control mode, the first control mode enabling switching between voice transmission/reception and image data transmission/reception and the second control mode enabling switching between from-a-calling-party voice recording and the image data transmission/reception;
- means for generating a pseudo ringback tone and transmitting the pseudo ringback tone to a calling party upon reception of a calling signal from the calling party;
- a timer which starts counting a prescribed period after the pseudo ringback tone is transmitted a predetermined number of times;
- means for detecting a CNG signal from the calling party;



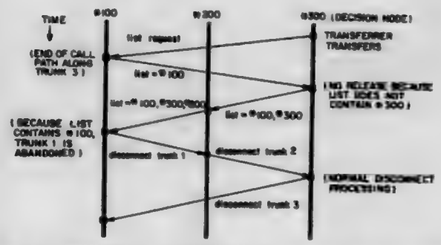
- means for transmitting a DIS signal to the calling party as the timer starts counting the prescribed period, and
- means for detecting a DCS signal from the calling party after the timer starts counting the prescribed period, and wherein the first control mode is changed to the second control mode if the CNG signal is not detected while the pseudo ringback tone is being transmitted the predetermined number of times and the DCS signal is not detected in the prescribed period in the first control mode.

5,444,772
TELEPHONE LINE LOCKOUT DEVICE
Elzie L. Coker, 39051 Zephyr Cir., Hemet, Calif. 92543
Filed May 11, 1994, Ser. No. 241,341
Int. Cl.[6] H04M *1/00, 13/00, 3/00*
U.S. Cl. 379—161 4 Claims



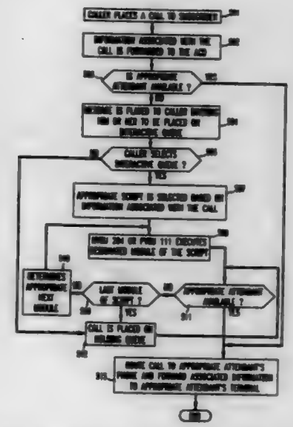
1. A telephone line lockout device comprising, in combination:
- a lock-out circuit adapted for allowing a selected extension telephone of a plurality of extension telephones coupled to and sharing a common telephone line to control and prevent the other extension telephones from accessing this line when its switch hook is raised, the lock-out circuit including an optoisolator photo-coupled Darlington transistor having a conducting section and a photo-activated section and a Zener diode coupled in series with the conducting section of the Darlington transistor and coupled in parallel with the photo-activated section of the Darlington transistor;
- a by-pass circuit adapted for allowing the Darlington transistor to be momentarily de-activated when the extension telephone switch hook is raised and lowered, the by-pass circuit coupled in parallel with the Zener diode and conducting section of the Darlington transistor, the by-pass circuit including an NPN transistor, a resistor coupled to the base of the NPN transistor, a capacitor coupled between the resistor and the collector of the NPN transistor, and a diode coupled between the resistor and emitter of the NPN transistor; and
- a full-wave diode bridge rectifier having a first port, a second port, a third port, and a fourth port with the first port and third port coupled in parallel with the by-pass circuit and lock-out circuit and the second port and fourth port adapted to be coupled to the ring wire of a telephone line for making the lock-out circuit and by-pass circuit insensitive to polarity of the telephone line, thus allowing the telephone extension controller to be coupled to the ring wire without regard to telephone line polarity.

5,444,773
METHOD FOR RELEASING UNNECESSARY TRUCKS FROM A TELEPHONE CALL
Paul Hirsohn, Berkeley; David Dayner, Novato, and Virginia Lacker, Petaluma, all of Calif., assignors to Harris Corporation, Melbourne, Fla.
Filed Jun. 30, 1993, Ser. No. 83,525
Int. Cl.[6] H04M *3/42, 7/00*
U.S. Cl. 379—219 19 Claims



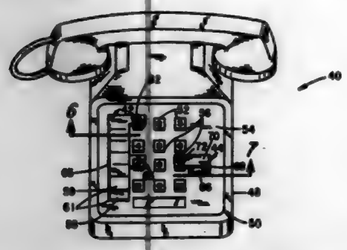
16. A method for recognizing and releasing unnecessary trunk lines in a private branch exchange telephone system including a plurality of switching nodes, wherein each of said switching nodes being assigned a respective unique node identification number and wherein any two of said switching nodes are connected by a plurality of trunk lines carrying voice data between a called party and a calling party and at least one alternative signalling path, said method comprising the steps of:
- (a) generating a list request message each time a predetermined operating state is achieved in one of said switching nodes in a call path;
- (b) transmitting said request message along said signalling path in a first predetermined direction along said call path;
- (c) when said message request arrives at one end of said call path, transmitting a first node identification number and a first trunk call identification number corresponding to a first portion of said call path between adjacent ones of a first node and a second node in a second predetermined direction along said signalling path to thereby generate a call identifier list;
- (d) comparing each of said node identification numbers in said call identifier list with a current node identification number corresponding to a respective one of said switching nodes in said call path receiving said call identifier list;
- (e) when one of said node identification numbers in said call identifier list is said current node identification number, establishing a new call path between said calling party and said called party, said new call path bypassing said unnecessary trunk lines between redundant ones of said node identification numbers and, when said new call path is complete, releasing said unnecessary trunk lines between said redundant ones of said node identification numbers; and
- (f) when no match is established between any of said node identification numbers in said call identifier list and said current node identification number of a current node, repetitively appending a next node identification number and a next trunk call identification number for each subsequent portion of said call path.

5,444,774
INTERACTIVE QUEUING SYTEM FOR CALL CENTERS
Albert Friedes, East Brunswick, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Continuation of Ser. No. 905,056, Jun. 26, 1992, abandoned.
This application Jan. 3, 1995, Ser. No. 367,663
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—266 6 Claims



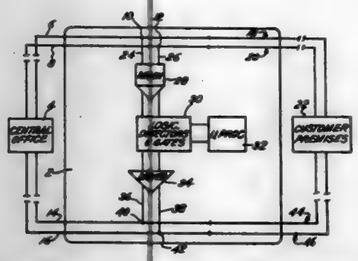
1. A method of completing a call placed by a caller and directed to a call center having attendants to answer incoming calls, said method comprising the steps of:
- determining that no attendant is available to answer said call;
- in response to unavailability of any attendant to answer said call, placing said call in a holding queue;
- collecting information provided by said caller in response to a presentation of a logical sequence of prompting messages to said caller while said call is in said holding queue, said presentation accomplished through execution of at least two modules of a transaction script, wherein each module is associated with specific data to be solicited and collected from said caller;
- retrieving additional information from a database using at least part of said collected information as a search key;
- in response to a signal indicating availability of an attendant to answer said call, completing the collection of said data for the module currently being executed;
- preventing the execution of any other module in said transaction script in order to gracefully terminate said collecting step; and
- forwarding to said available attendant said call, and data associated with at least one element selected from a group of elements comprised of said collected information, and said retrieved information.

5,444,775
TELEPHONE KEY SELECTION AID
John J. Tobiah, 1052 Earl St., St. Paul, Minn. 55106
Filed Nov. 9, 1993, Ser. No. 150,386
Int. Cl.[6] H04M *1/26*
U.S. Cl. 379—368 14 Claims



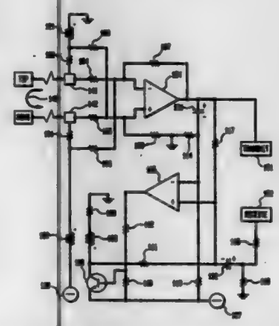
1. A tactile selection aid for a telephone, comprising:
a) a base, a guide strip and a plurality of recesses formed into an elongated body intermediate the base and the guide strip, wherein said body is bent at ones of said recesses to direct said guide strip to project from said base at a selected angular orientation and permit said guide strip to flex; and
b) adhesive means for affixing the base to a stationary body of the telephone and directing the guide strip to align to a selected one of a plurality of moveable actuators of said telephone without interfering with the operation of any of said actuators and such that upon depressing the guide strip by a user's finger, the selected actuator is contacted by the guide strip, where by the actuator can be actuated with further pressure to the guide strip.

5,444,776
BRIDGE FOR A NETWORK INTERFACE UNIT
Laurence L. Sheets, Woodridge, and Daniel C. Peterson, St. Charles, both of Ill., assignors to Teltrend Inc., St. Charles, Ill.
Filed Nov. 12, 1993, Ser. No. 151,505
Int. Cl.[6] H04B *3/46*
U.S. Cl. 379—399 18 Claims



1. A network interface unit, interconnected between a network span and a premises segment, said network interface unit comprising:
an output segment;
first and second customer nodes, interconnected to said premises segment;
first and second output nodes, at least one of said output nodes being interconnected to said output segment;
a first passive impedance between said first output node and said first customer node;
a second passive impedance between said second output node and said second customer node; and
a third passive impedance between said first customer node and said second output node;
said first, second and third passive impedances cooperatively defining balancing means for dividing a reflected signal from said first and second customer nodes between said first and third passive resistances and substantially preventing said reflected signal from being provided to said first and second output nodes.

5,444,777
BATTERY FEED FOR TELEPHONE LINE CARDS
Joseph H. Condon, Summit, and Gabriel L. Miller, Westfield, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 28, 1993, Ser. No. 174,117
Int. Cl.[6] H04M *19/00*
U.S. Cl. 379—413 12 Claims



1. A circuit for coupling an external power supply to a telephone loop and for coupling said telephone loop to the circuit output and the circuit input, said circuit comprising first and second feed resistors, means for coupling said telephone loop in series between said first and second feed resistors, a transformer having first, second and third windings each one of which has a first and second terminal, said first winding having one terminal connected to said first feed resistor and the other terminal connected to receive one polarity of said external power supply, said second winding having one terminal connected to said second feed resistor and the other terminal connected to receive the other polarity of said external power supply, a first amplifier means responsive to voltages developed across said first and second feed resistors for generating an output voltage which is proportional to the total current in said telephone loop, means for connecting the output of said first amplifier means to said circuit output, second amplifier means for coupling the output of said first amplifier means to said third winding of said transformer, and means for coupling said circuit input to said second amplifier means.

5,444,778
APPARATUS INCORPORATING A CELLULAR TELEPHONE
Louis R. Bucalo, 2167 North Point, San Francisco, Calif. 94123; Brian D. Bucalo, 1010 S. Ocean Blvd., Pompano, Fla. 33062, and Peter M. Kash, 60 W. 57th St., New York, N.Y. 10019
Filed Jun. 25, 1993, Ser. No. 83,062
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—453 12 Claims

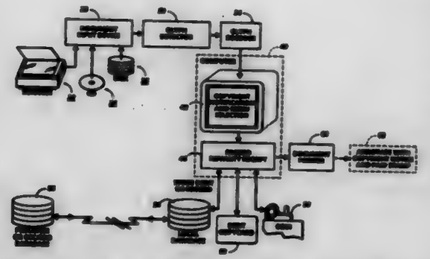
1. Cellular telephone apparatus, comprising:
a portable carrying case including means defining an interior space and means for opening and closing said interior space, said means defining said interior space including a back wall, said interior space of said carrying case encompassing substantially the entire interior of said carrying case, said carrying case having an open position in which said interior space is accessible and a closed position;

a cellular telephone base unit including cellular telephone circuitry means and a power source for operating said circuitry means, said cellular telephone base unit being situated and fixed against said back wall or within said means defining said interior space such that said cellular telephone base unit does not occupy a significant portion of said interior space;
antenna means coupled to said base unit at said carrying case;
a hand-held receiver situated in said interior space of said carrying case, said carrying case including means for



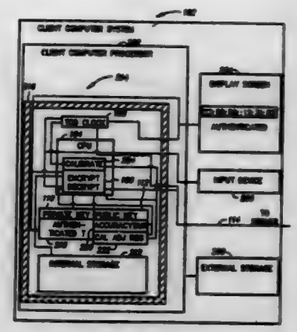
enabling removal of said receiver from said carrying case when said carrying case is in said closed position, said enabling means comprising an opening formed in said carrying case communicating between said interior space and an exterior of said carrying case, said receiver being adapted to pass through said opening; and
means for spacing and coupling said base unit and said hand-held receiver from and into communication with each other through said opening with said receiver removed from said carrying case through said opening and positionable during use spaced away from said antenna means of said carrying case.

5,444,779
ELECTRONIC COPYRIGHT ROYALTY ACCOUNTING SYSTEM USING GLYPHS
Joseph J. Daniele, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 136,842, Oct. 18, 1993, abandoned.
This application Jul. 29, 1994, Ser. No. 282,389
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—3 42 Claims



1. A system to measure and accrue copyright royalties due as a result of printing a copyrighted document on a document printer, including:
a digitized representation of the copyrighted document having a printable code on each page thereof, said representation being provided for reproduction by the document printer;
an image processing device for detecting the presence of the printable code in said digitized representation of the copyrighted document;
a decoder for transforming the printable code into a digital representation of alphanumeric characters;
a parser, responsive to said decoder, for determining whether the alphanumeric characters indicate that a copyright royalty is required for reproduction of the copyrighted document; and
accounting means for recording the copyright royalty due.

5,444,780
CLIENT/SERVER BASED SECURE TIMEKEEPING SYSTEM
Robert C. Hartman, Jr., Woodside, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 22, 1993, Ser. No. 96,132
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 19 Claims

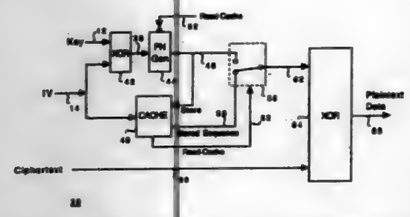


1. A secure timekeeping facility for use in a computer system that includes a central processing unit and electronic storage located in a physically secure package, comprising:
a public key register for holding a public key for use in identifying a private key for encrypting and decrypting at least time and date transmissions;
a private key register for holding the private key;
an input for receiving (a) time and date information and (b) clock accuracy-enhancing operation data, encrypted using the private key;
data decryption means for decrypting (a) the received time and date information and (b) said clock accuracy-enhancing operation data, using the private key;
a time-of-day (TOD) clock including a time clock and a date calendar, having an input for receiving decrypted time and date information and an output for providing unencrypted time and date information, which is subject to modification by said clock accuracy-enhancing operation data.

5,444,781
METHOD AND APPARATUS FOR DECRYPTION USING CACHE STORAGE

Kerry E. Lynn, Redwood City; Jonathan M. Zweig, Santa Clara, and Richard W. Mincher, San Jose, all of Calif., assignors to Apple Computer Inc., Cupertino, Calif.

Continuation of Ser. No. 110,402, Aug. 23, 1993, Pat. No. 5,345,508. This application Jun. 6, 1994, Ser. No. 254,774
The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.
Int. Cl.[6] H04C 9/26
U.S. Cl. 380—46 21 Claims

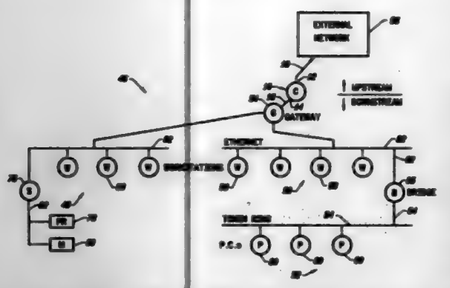


19. A system for decrypting an encrypted data sequence comprising:
- a random number generator which combines a secret key with an initialization sequence of data to produce a decryption sequence of data;
- a memory coupled to the random number generator which stores the decryption sequence produced by the random number generator; and
- a decoder coupled to the random number generator and to the memory which receives a sequence of ciphertext associated with the initialization sequence and decodes the ciphertext by combining the ciphertext with a corresponding decryption sequence stored in the memory if the decryption sequence corresponding to the associated initialization sequence is stored in memory, otherwise the decoder decodes the ciphertext by combining the ciphertext with a decryption sequence from the random number generator if the corresponding decryption sequence is not stored in memory.

5,444,782
COMPUTER NETWORK ENCRYPTION/DECRYPTION DEVICE

Richard L. Adams, Jr., Fairfax, Va., and Peter D. Hallenbeck, Elfland, N.C., assignors to UUNET Technologies, Inc., Falls Church, Va.

Continuation-in-part of Ser. No. 28,437, Mar. 3, 1993, abandoned. This application Jan. 19, 1994, Ser. No. 184,631
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—49 45 Claims

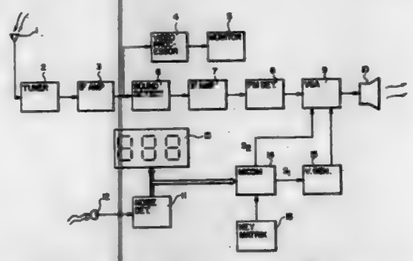


14. An apparatus for decrypting the data field of a second packet transmitted from a second computer network to a first computer network, wherein said second packet includes a header field containing information about the second packet and a data field containing data, said apparatus comprising:
- means for receiving said second packet from said second network;
- means, coupled to said means for receiving, for extracting said information about the second packet from said header field of said second packet;
- memory means for storing matching criteria, said matching criteria including a list of source addresses and destination addresses;
- means, coupled to said memory means, for comparing said information about the second packet extracted from said header field of said second packet with said matching criteria to determine if said data field of said second packet is to be decrypted; and
- means for decrypting said data field of said second packet.

5,444,783
AUTOMATIC SOUND VOLUME CONTROL DEVICE FOR ACOUSTIC INSTRUMENTS

Woon H. Na, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kungki-Do, Rep. of Korea

Continuation of Ser. No. 902,375, Jun. 23, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 183,240
Claims priority, application Rep. of Korea, Jul. 19, 1991, 91-12408
Int. Cl.[6] H03G 3/24
U.S. Cl. 381—57 9 Claims



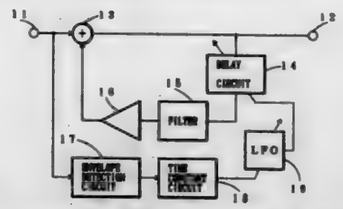
1. An automatic sound volume control device for an audio device which outputs an audio signal comprising:
- a background noise level digital display;
- background noise detecting means for generating display driving signals each for driving a segment of said digital display, said display driving signals are each a voltage for driving a segment of a tens-position of the digital display;
- control signal generating means for receiving said display driving signals and generating a control signal responsive to said display driving signals; and
- means for controlling the audio signal in accordance with said control signal.

5,444,784
ACOUSTIC SIGNAL PROCESSING UNIT

Soichi Toyama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 21, 1993, Ser. No. 64,804
Claims priority, application Japan, May 26, 1992, 4-133501; Aug. 4, 1992, 4-207975
Int. Cl.[6] H03G 3/00
U.S. Cl. 381—61 2 Claims

1. An acoustic signal processing unit including a sound echo machine, said sound echo machine comprising:
- an input terminal for receiving an acoustic signal,
- an adder for adding said acoustic signal and a feedback signal to generate an output signal,
- a delay circuit for delaying the output signal of said adder for a certain time, and
- an attenuator for attenuating the signal fed from said delay circuit through a filter and feeding back said attenuated signal to said adder as said feedback signal, wherein said sound echo machine further comprises;
- an input signal level detector for detecting the level of the signal fed through the input terminal, and

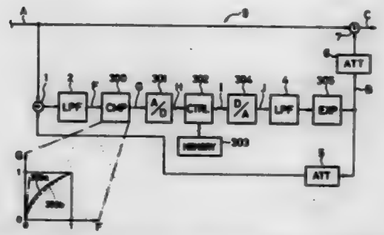


- a local frequency oscillator for varying the oscillating frequency in accordance with the detected signal level fed from said input signal level detector and feeding the varied frequency to said delay circuit to modulate the time to be delayed at a predetermined cycle wherein the output signal of said adder is also the output of said sound echo machine.

5,444,785
ECHO ATTACHING CIRCUIT AND AUDIO DEVICE USING THE SAME

Kaoru Izawa; Shigeyoshi Hayashi, and Jun Hirai, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 8,712, Jan. 25, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 347,197
Claims priority, application Japan, Jan. 24, 1992, 4-034125; Sep. 3, 1992, 4-260666
Int. Cl.[6] H03G 3/00
U.S. Cl. 381—63 8 Claims

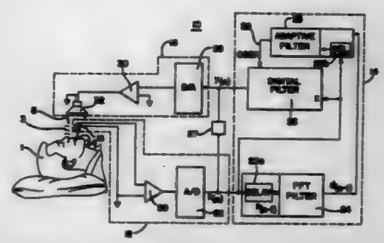


1. An echo attaching circuit for producing an echo signal by delaying an audio signal and outputting the audio signal together with the echo signal, comprising:
- an analog signal compression circuit responsive to an audio signal or a signal including an audio signal and an echo signal for compressing the audio signal or the signal according to a compression function exhibiting compression rate for a large amplitude range larger than that for a smaller amplitude;
- an A/D converter for converting an output signal of the analog signal compression circuit into a digital signal;
- a memory for storing the digital signal;
- a D/A converter for converting the digital signal stored in the memory for a predetermined delay time into an analog signal and for supplying the analog signal as a delay signal;
- a control circuit for writing said digital signal from said A/D converter in said memory and reading out said digital signal written in said memory and sending it to said D/A converter;
- an analog expansion circuit for expanding the delay signal according to a reverse function to the compression function and outputting it as an echo signal; and
- wherein said compression function is a monotonouly increasing, convex function which is represented by a convex curve starting at an original point at which a gradient of the curve is greatest, and wherein the original point corresponds to a lowest level of the echo signal of differential transistors and a current control circuit connected downstream of said differential transistor pair for controlling an operation current to said differential transistors, for producing a voltage signal corresponding to a difference between said input signal and a predetermined reference value, a second amplifier circuit responsive to said voltage signal for producing a current signal corresponding to the value of said voltage signal and a third amplifier circuit responsive to said current signal for producing said output signal by amplifying said current signal with a predetermined amplification,. whereby said value of said operating current is controlled according to said output signal so that said output signal is produced according to said compression function.

5,444,786
SNORING SUPPRESSION SYSTEM

Gil Raviv, Northbrook, Ill., assignor to SNAP Laboratories L.L.C., Glenview, Ill.

Filed Feb. 9, 1993, Ser. No. 15,569
Int. Cl.[6] G10K 11/16
U.S. Cl. 381—71 20 Claims



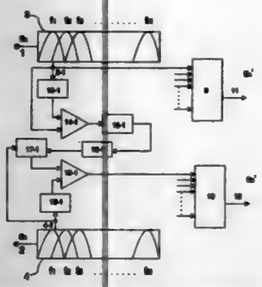
1. A system for globally suppressing snoring signals generated from a snore sound source wherein a snoring sound signal has a phase angle and amplitude associated therewith, the system comprising:
- means, proximate the snore sound source, for receiving the snoring sound signal;
- sound transducing means proximate the snore sound source for directing a snore cancelling signal toward the snoring sound source to form a doublet between said sound transducing means and the snore sound source; and
- means, operatively coupled to said receiving means and to said sound transducing means, for generating said snore cancelling signal based on said received snore signal, such that said snore cancelling signal, as measured at a plane of emission of said sound transducing means, has approximately an 180 degree phase difference from the snoring signal phase angle and a substantially same amplitude as the snoring signal amplitude as measured at the sound source.

5,444,787

AUDIO SIGNAL PROCESSING DEVICE

Haruo Sakata, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 169,610
Claims priority, application Japan, Jan. 22, 1993, 5-027599
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94 17 Claims



1. An audio signal processing device comprising:
first filter means for decomposing a first signal into a first frequency component of said first signal;
said first frequency component having a first amplitude and a first central frequency;
second filter means for decomposing a second signal into a second frequency component of said second signal;
said second frequency component having a second amplitude and a second central frequency equal to said first central frequency;
means for limiting said first amplitude of said first frequency component to produce a first intermediate signal;
means for subtracting said first intermediate signal from said first frequency component to produce a second intermediate signal;
said second intermediate signal having a third amplitude;
means for limiting said third amplitude of said second intermediate signal to produce a third intermediate signal;
means for adding said third intermediate signal to said second frequency component to produce a fourth intermediate signal;
means for limiting said second amplitude of said second frequency component to produce a fifth intermediate signal; and
means for subtracting said fifth intermediate signal from said fourth intermediate signal.

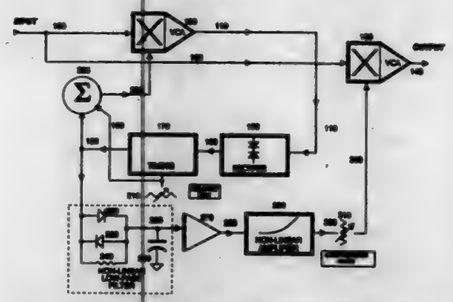
5,444,788

AUDIO COMPRESSOR COMBINING FEEDBACK AND FEEDFOWARD SIDECHAIN PROCESSING

Robert A. Orban, Belmont, Calif., assignor to AKG Acoustics, Inc., San Leandro, Calif.

Filed Sep. 3, 1993, Ser. No. 116,496
Int. Cl.[6] H03G *7/00*
U.S. Cl. 381—106 10 Claims

1. An audio compressor comprising;
a feedback compressor coupled to receive an input audio signal and having a gain-control signal in a feedback path between an output of the feedback compressor and a gain-control port of the feedback compressor, the feedback compressor operated so as to provide envelope detection of the input audio signal; and
a feedforward compressor controlled by the gain-control signal of the feedback compressor after the gain-control signal has been passed through a non-linear low-pass filter and wherein the non-linear low-pass filter has an attack and decay characteristic non-linearly dependent on the amplitude of a signal input thereto;
said feedback compressor using a first voltage controlled amplifier, the gain of which is proportional to the exponential of the gain-control signal, and wherein said feed-



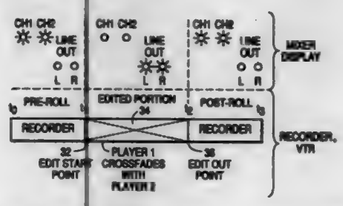
forward compressor uses a second voltage controlled amplifier having substantially the same characteristics as the first voltage controlled amplifier.

5,444,789

MONITOR SELECT INDICATOR FOR AN AUDIO FOLLOW VIDEO MIXER

Michael A. Zampini, and Alan Flum, both of Boca Raton, Fla., assignors to Sony Electronics Inc., Park Ridge, N.J.

Filed Jun. 15, 1993, Ser. No. 76,761
Int. Cl.[6] H04B *1/00*
U.S. Cl. 381—119 8 Claims



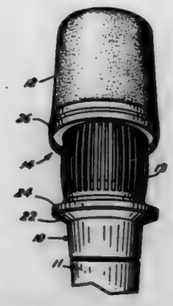
1. An audio follow video mixer apparatus comprising:
a multi-channel audio mixer console;
means for providing a plurality of audio channels to said audio mixer console;
means located within said audio mixer console for processing said audio channels;
a display portion of said audio mixer console separated into distinct areas corresponding to one or a pair of said audio channels;
a line-out signal path in said audio mixer console, said line-out signal path coupling a processed audio signal determined by said processing means to an output terminal;
a video editor operatively coupled to said mixer console to provide control signals to said processing means, said control signals determining the manner by which said audio channels are processed;
monitor means coupled to said mixer console for monitoring a selected one of said audio channels and said processed audio signal on the basis of said control signals;
a plurality of LEDS, each provided on said distinct areas of said display portion and being illuminated when the channel or pair of channels corresponding to the distinct area of said mixer console is monitored by said monitoring means; and
at least one additional LED located on said display portion, said LED being illuminated when said processed audio signal is monitored by said monitoring means.

5,444,790

MICROPHONE WINDSCREEN MOUNTING

James H. Kogen, Wilmette, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Filed Feb. 28, 1994, Ser. No. 203,322
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—168 12 Claims



1. A mounting device for detachably securing a windscreen to a microphone comprising annular magnetic ring means adapted to be secured to said microphone and said windscreen having an open end, ferrous ring means secured adjacent said open end of said windscreen, said ferrous ring means being complementary in shape to said annular magnetic ring means and cooperating with said annular magnetic ring means to enable detachable connection of said windscreen to said microphone; said annular magnetic ring means including an annular non-ferrous resilient ring and at least one magnet secured thereto, said annular non-ferrous resilient ring including a base portion and projections extending therefrom for engaging and holding the annular resilient ring on the microphone.

5,444,791

MOVING BODY RECOGNITION APPARATUS

Hiroshi Kamada; Takashi Kubota, and Morito Shiohara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 17, 1992, Ser. No. 946,540
Claims priority, application Japan, Sep. 17, 1991, 3-236464; Sep. 17, 1991, 3-236465; Sep. 17, 1991, 3-236466; Sep. 17, 1991, 3-236467; Nov. 15, 1991, 3-300591
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—190 14 Claims



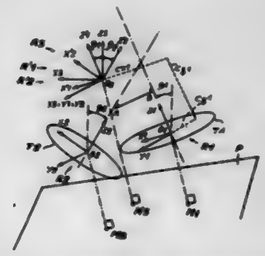
1. A moving body recognition apparatus for recognizing a movement of a moving object by positions of features points in an image corresponding to said moving object, comprising:
image input means for capturing three images of said moving object at three instances in time at equal time intervals, said three images being observed from a direction perpendicular to an axis of rotation of said object moving on a single plane and said object having a rotation at a constant rate;
feature point extraction means for extracting two feature points each in said three images captured by said image input means, said feature point extraction means including space filter means for extracting an outline image from said three images captured by said image input means and edge point extraction means for extracting an edge point from said outline image;
feature point position storage means for storing known position data corresponding to said extracted two feature points and for storing said edge point as feature point data; and,
shape/movement recognition means for calculating actual positions of said extracted two feature points and a movement of said object from said known position data.

5,444,792

PROCESS AND APPARATUS FOR THE RECONSTRUCTION OF THREE-DIMENSIONAL IMAGES OF AN OBJECT USING TWO CIRCULAR ACQUISITION PATHS

Pierre Grangeat, Saint Ismier; Philippe Rizo, Grenoble, and Pascal Sire, Sassenage, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 788,179, Nov. 5, 1991, abandoned. This application Jun. 13, 1994, Ser. No. 259,336
Claims priority, application France, Nov. 29, 1990, 90 14958
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—131 12 Claims



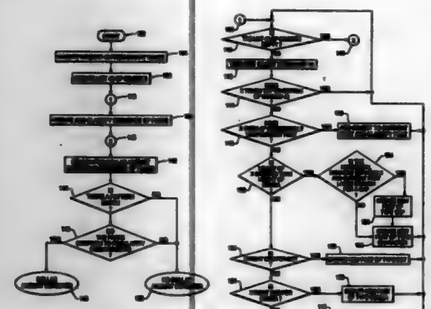
1. A process for reconstructing a three-dimensional image of an object, comprising the steps of:
using at least one two-dimensional array of sensors for acquiring at least two measurement sets of a function at selected points of the object defined by coordinates in an object reference frame, said function, which represents the image of the object, being a property of a radiation viewed by said sensors, wherein the at least one array travels along at least two circular trajectories around the object, the sensors of each of said at least one array of sensors being focused to a respective common focal point beyond the object and at a constant position with respect to said sensors so that each focal point travels along a respective circular focal trajectory and said sensors view a conical space and one trajectory reference frame and one of the measurement sets being associated with each of the focal trajectories;
reconstructing the image of the object from the measurement sets of the image, said image reconstruction including the steps of:
computing for each of the measurement sets, sums of the function over planes (P) of a respective plane set of a plane domain, wherein the planes of the respective plane set are defined by coordinates in the trajectory reference frame associated with the measurement step, the planes of the respective plane set crossing the focal trajectory to which the measurement set is associated and including at least one point of the object, so as to get as many sums as said planes;
merging in an object reference frame the sums provided in the measurement sets in computing, for each of the planes of the plane domain, coordinates defining said plane; and
inverting the merged sums in the object reference frame in order to get the reconstructed image of the object.

5,444,793

METHOD FOR DETECTING MACHINE PRINTED MONETARY AMOUNTS IN BINARY IMAGES

Stewart B. Kelland, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 15, 1993, Ser. No. 77,692
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—138 8 Claims



1. A machine method for locating a monetary amount in a binary bit mapped image of a document comprising, the steps of:

(a) positioning a window of a predetermined size over a portion of said binary bit mapped image, with a binary 1 representing a black pixel and a binary 0 representing a white pixel;

(b) generating a list of objects within said window, with an object defined as a set of contiguous black pixels, with contiguity defined as a first black pixel and at least a second black pixel in one of eight positions surrounding said first black pixel; said generating step further comprising:

(b-1) determining if any of said objects touch a top or bottom of said window; and

(b-2) excluding objects that are determined in step (b-1) to be touching a top or bottom of said window;

(c) processing said objects according to predetermined criteria to generate classified parts and determining whether or not the classified parts fit into a pattern indicative of a monetary amount without performing character recognition on the classified parts; and

(d) using said pattern indicative of a monetary amount, when found, to indicate the presence of a monetary amount if the associated classified parts conform to certain geometric criteria relating to vertical regularity of the classified parts.

5,444,794

CHECK IMAGE CAPTURE SYSTEM

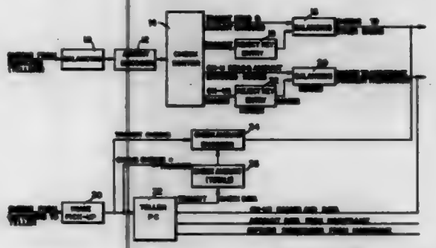
Joseph C. Uhland, Sr., Cherry Hill, N.J., assignor to SQN, Rancocas, N.J.

Filed Aug. 25, 1993, Ser. No. 112,761
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—137 6 Claims

1. A system for processing bank checks, comprising:

a first processing system located remotely from a bank teller, comprising a first balancing station for receiving checks from branches and/or tellers in said bank; an amount encoder receiving said checks from said first balancing station and encoding on each check the amount of that check; a check sorter receiving said checks from said amount encoder; a second balancing station operatively coupled to said sorter, wherein said sorter provides amount encoded transit checks to said second encoder; a first key entry station operatively coupled to said sorter, wherein said sorter provides transit checks that are not properly amount encoded to said first key entry station, and wherein checks from said first key entry station are passed to said second balancing station; a third balancing station operatively coupled to said sorter, wherein on-us read and amount-encoded check images are passed from said sorter to said third balancing station; a second key entry station operatively coupled to said sorter, wherein on-us images of checks not properly amount encoded are provided by said sorter to said second key entry station, and wherein images from said second key entry station are passed to said third balancing station; and a mainframe computer, wherein said on-us check images are sent by said third balancing station to said mainframe computer, said mainframe computer preparing customer statements to be sent to customers associated with the respective checks; and

a check image capture system, operatively coupled to said first processing system and located at the site of a bank teller, comprising image pickup means, located at the site of said teller, for scanning checks presented to said teller



and forming image data representing respective images of said checks; classifying means, operatively coupled to said image pickup means, for classifying each of said checks as an on-us check or a transit check; check amount adder means for receiving amount data indicative of the respective amounts associated with the transit checks and computing a total of said amounts; check amount encoder means for encoding each transit check with the amount associated therewith; truncation means, operatively coupled to said image pickup means, for truncating said on-us checks and for transporting said transit checks to said check amount encoder means; amount input means for obtaining amount data indicative of an amount recorded on each of said checks; and a computer, operatively coupled to said image pickup means, check amount adder means, and amount input means, said computer being programmed to store said image data and to identify and store account number data, bank number data, and check number data associated with said checks, and to provide the amount data associated with said transit checks to said check amount adder means.

5,444,795

SURFACE ROUGHNESS CHARACTERIZATION OF EXTRUDED PLASTIC PRODUCTS

Costas Tzoganakis, Kitchener, Canada, assignor to University of Waterloo, Waterloo, Canada

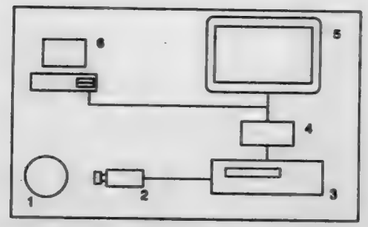
Filed Jul. 30, 1993, Ser. No. 99,563
Claims priority, application United Kingdom, Jul. 31, 1992, 9216392
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—141 7 Claims

1. A method for controlling the surface roughness of an extruded polymeric material, which comprises:

extruding a polymeric material,

forming a digital image of a surface of said extruded polymeric material,

determining the fractal dimension of any surface distortions of said extruded surface from said digital image as a measure of surface roughness, and



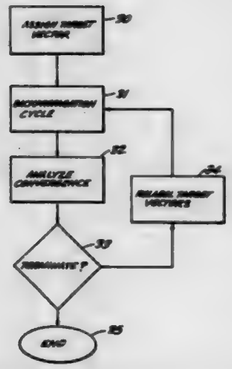
adjusting conditions of extruding the polymeric material to provide an extruded polymeric material having a desired surface roughness.

5,444,796

METHOD FOR UNSUPERVISED NEURAL NETWORK CLASSIFICATION WITH BACK PROPAGATION

Leonard Ornstein, White Plains, N.Y., assignor to Bayer Corporation, Tarrytown, N.Y.

Filed Oct. 18, 1993, Ser. No. 139,396
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—157 13 Claims



1. A method for training a neural network to generate classifications from a training sample signal set, said neural network having an input layer, an Output layer for providing an output vector signal having at least one component, and at least one hidden layer between the input layer and the output layer, each layer including nodes connected to nodes of successive layers, and wherein each connection between nodes of successive layers is characterized by an internal weight signal, said method comprising the steps of:

(a) arbitrarily assigning a numeric label to each training sample signal of said training sample Signal set as a target vector signal for an output vector signal for classification, said numeric label selected from a set comprising a plurality of values;

(b) executing a back propagation-like training run by cycling through said training sample set, applying each said training sample signal to said input layer of said neural network, thereby generating said output vector signal for each said training sample signal, and modifying the internal weight signals of said neural network based on the differences between said output vector signals and their corresponding target vector signals;

(c) estimating the convergence of the components of said output vector signal towards the respective components of said target vector signal;

(d) permuting said components of each said target vector signal according to said convergence, thereby updating said target vector signal;

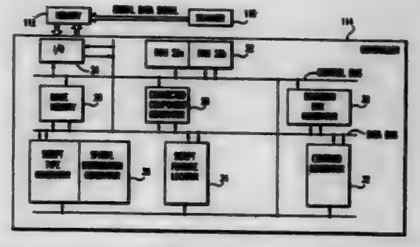
(e) repeating steps (b), (c), and (d) until a predetermined condition is satisfied, thereby generating a final set of said internal weight signals to be applied to the neural network for future classifications with said neural network.

5,444,797

METHOD AND APPARATUS FOR AUTOMATIC CHARACTER SCRIPT DETERMINATION

A. Lawrence Spitz, Palo Alto, and David A. Hull, Stanford, both of Calif., assignors to Xerox Corporation, Stamford, Conn. and Fuji Xerox Corporation, Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 47,515
Int. Cl.[6] G06K 9/46, 9/34
U.S. Cl. 382—192 24 Claims



11. An automatic script determining apparatus for determining a script-type of a script of a document, the script including alphanumeric elements, phonetic elements, ideographic elements or pictographic elements, the document comprising an image comprising a plurality of pixels and having a text portion, the text portion comprising a plurality of characters, the apparatus comprising:

input means for inputting a digital data signal representative of the text portion, the digital data signal comprising a plurality of signal portions, each portion corresponding to one of the plurality of pixels;

connected component generating means for generating a plurality of connected components from the plurality of signal portions, each character of the text portion comprising at least one of the plurality of connected components;

feature determining means for identifying script features within the text portion, corresponding to at least one predetermined type of script feature, based on the plurality of connected components; and

script determining means for comparing a distribution of the identified script features with at least one predetermined script feature distribution and determining the script type of the text portion based on the comparison.

5,444,798

SYSTEM FOR DETECTING AN EDGE OF AN IMAGE

Hajime Enomoto, Kawasaki, and Isao Miyamura, Niigata, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

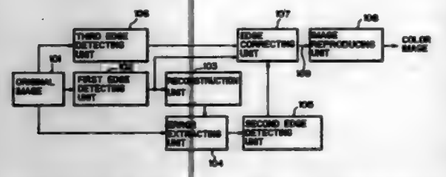
Continuation of Ser. No. 853,182, Mar. 18, 1992, abandoned.
This application Dec. 28, 1993, Ser. No. 174,627
Claims priority, application Japan, Mar. 18, 1991, 3-051867
Int. Cl.[6] G06K 9/48
U.S. Cl. 382—199 11 Claims

1. A system for detecting an edge of an image, comprising:

first edge detecting means for extracting a first edge of an original image using a first threshold;

reproduction processing means, operatively connected to said first edge detecting means, for obtaining a reproduced image corresponding to the original image using the first edge;

error extracting means, operatively connected to said reproduction processing means, for extracting an error between the original image and the reproduced image;



second edge detecting means, operatively connected to said error extracting means, for detecting a second edge in the error extracted by said error extracting means using a second threshold smaller than the first threshold; and

edge correcting means, operatively connected to said first edge detecting means and said second edge detecting means, for correcting said first edge by logically adding said first edge and said second edge to obtain a corrected edge in a corrected reproduced image.

5,444,799

IMAGE PROCESSING APPARATUS AND METHOD OF STRAIN CORRECTION IN SUCH AN IMAGE PROCESSING APPARATUS

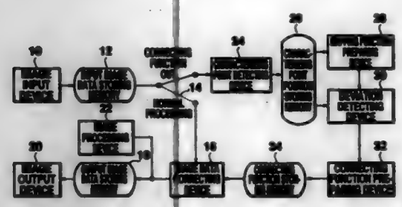
Hideo Hirono, and Hironobu Takahashi, both of Tsukuba, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 25, 1993, Ser. No. 36,818

Claims priority, application Japan, Mar. 26, 1992, 4-068295

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—287 **11 Claims**



1. A method of correcting the strain of an image in pick-up data obtained by an image pick-up device, said method comprising the steps of:

(A) providing a substantially planar, optically observable calibration pattern having optically detectable characterizing points;

(B) forming an image of the calibration pattern, in the image pick-up device, and deriving, from the image, data representative of a plurality of image points including image points corresponding to characterizing points;

(C) extracting the characterizing points from the resulting data;

(D) calculating a mapping function representing the relationship between the positions of the characterizing points in the pick-up data obtained by said step of extracting the characterizing points and the positions of the characterizing points that have been known in said calibration pattern;

(E) calculating reference positions at which the characterizing points should be present in the pick-up data from the positions of the characterizing points in the calibration pattern by the use of said mapping function; and

(F) calculating a correcting function for correcting the positions of the characterizing points, based on said reference positions and the positions of the characterizing points in the pick-up data.

5,444,800

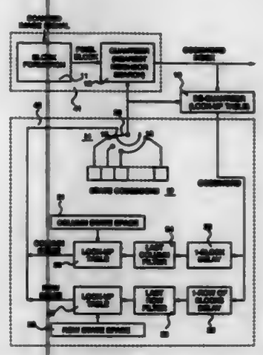
SIDE-MATCH AND OVERLAP-MATCH VECTOR QUANTIZERS FOR IMAGES

Taejeong Kim, Seoul, Rep. of Korea, assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 938,314, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 464,719, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 272,860, Nov. 18, 1988, abandoned. This application Mar. 14, 1994, Ser. No. 213,472

Int. Cl.[6] G06K *9/36, 9/46*

U.S. Cl. 382—239 **4 Claims**



1. A method implemented in a circuit for encoding a first signal to form an encoded signal, said first signal representing a particular block in an array of blocks, wherein each block in said array of blocks comprises an array of pixels, said method comprising the steps of:

a. selecting, based solely on the last row of pixels in the block in said plurality of blocks above said particular block and in the right-most column of pixels in the block in said plurality of blocks to the left of said particular block, a codebook from among a plurality of codebooks wherein each codebook comprises codewords and wherein each codeword has an associated index, wherein the step of selecting a codebook comprises the steps of:

1. forming a first codeword based on a first index, said first index being associated with the codeword in the codebook used to encode the block that is above said particular block;

2. forming a second codeword based on a second index, said second index being associated with the codeword in the codebook used to encode the block that is to the left of said particular block;

3. generating a row state output signal by delaying said first codeword by one row and filtering said first codeword to pass only the last row of pixels in the array of pixels in the block that is above said particular block;

4. generating a column state output signal by delaying said second codeword by one column and filtering said second codeword to pass only the right-most column of pixels in the array of pixels in the block that is to the left of said particular block; and

5. selecting said codebook based on said row state output signal and said column state output signals;

b. selecting a codeword in the selected codebook which codeword best approximates said particular block based on a predetermined error criterion;

c. forming said encoded signal based on the index associated with said selected codeword; and

d. transmitting said encoded signal over a communication channel.

5,444,801

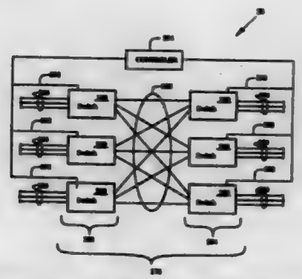
APPARATUS FOR SWITCHING OPTICAL SIGNALS AND METHOD OF OPERATION

Richard H. Laughlin, 1906 Campbell Trail, Richardson, Tex. 75082

Filed May 27, 1994, Ser. No. 251,837

Int. Cl.[6] G02B *6/00, 6/36*

U.S. Cl. 385—16 **26 Claims**



1. An apparatus for switching an input optical signal to one of a plurality of output optical locations, the apparatus comprising:

a lens for collimating the input optical signal into a collimated beam; and

a reflector for reflecting the collimated beam and having a plurality of positions for changing the angle of the collimated beam by a selected amount in order to direct the beam to a different one of the output optical locations, wherein the reflector further comprises;

a first refractor having a first reflective surface for reflecting the collimated beam by total internal reflection,

a second refractor having a contact surface and a reflective surface,

wherein the second refractor's contact surface is operable to frustrate the total internal reflection of the collimated beam by the first refractor's first reflective surface when the second refractor is in proximal contact with the first refractor and so that the collimated beam enters the second refractor, and

wherein the second refractor's reflective surface is operable to reflect the collimated beam and to change the angle of the collimated beam by a selected amount in order to direct the beam to a different one of the output optical locations.

5,444,802

OPTICAL SWITCH

Yasuo Saibata, Zama, and Masahiro Ikeda, Fukuyama, both of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 91,206, Jul. 14, 1993, abandoned. This application Nov. 16, 1994, Ser. No. 341,929

Claims priority, application Japan, Jul. 15, 1992, 4-188065

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—16 **12 Claims**

1. An optical grating switch for ON-OFF switch control of a signal light transmission and a signal light-reflection under control of a control light, comprising:

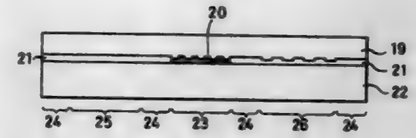
an input optical waveguide region for receiving the signal light, the signal light having a first wavelength;

a coupler region, coupled to the input optical waveguide region, for coupling a control light colinearly to the signal light, the control light having a second wave-length, the second wavelength being different from the first wavelength;

a switching region, coupled to the coupler region, for switching between a transmission and a reflection of the signal light, the switching region being responsive to the control light which is colinearly coupled to the signal light;

a separator region, coupled to the switching region, for separating the signal light and the control light based on the respective wavelengths of the signal light and the control light; and

an output region, coupled to the separator region, for outputting the signal light.



5,444,803

FIBER-OPTIC DEVICES AND SENSORS USING FIBER GRATING

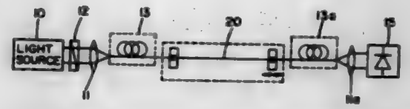
Byoung Y. Kim, Seoul; Yoon W. Koh, and Seak H. Yun, both of Daejon, all of Rep. of Korea, assignors to Agency of Defense Development, Rep. of Korea

Filed Feb. 15, 1994, Ser. No. 196,641

Claims priority, application Rep. of Korea, Apr. 24, 1993, 6932/1993

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—28 **9 Claims**



1. A fiber optic apparatus using an optical fiber grating, comprising:

a. an optical fiber grating in which a grating structure is written in an optical fiber having a longitudinal axis, said optical fiber having a core with a refractive index distribution designed to support a first optical propagation mode and a second optical propagation mode for an optical signal propagating through the optical fiber, said core being doped with germanium, and the germanium being exposed by a writing light having a intensity distribution in a cross-sectional pattern and in a period along the longitudinal axis of said optical fiber, such that the refractive index of said core is increased permanently in said cross-sectional pattern and said period along the longitudinal axis of the optical fiber, said grating structure being defined by an incremental amount of said refractive index, said cross-sectional pattern, and said period along said longitudinal axis, said grating structure causing optical energy coupling of the optical signal between said first optical propagation mode and said second optical propagation mode;

b. a signal light source for introducing an optical signal into said optical fiber grating;

c. means, located between said light source and said optical

fiber grating, for introducing only the first optical propagation mode into said optical fiber grating;

d. means, located at a distal end of said optical fiber grating from said signal light source, for selecting only said second optical propagation mode, said second optical propagation mode being generated from said first optical propagation mode by optical energy coupling in said optical fiber grating, such that said second optical propagation mode has an intensity which is a function of the amount of said optical energy coupling; and

e. means for perturbing said optical fiber grating by applying an external perturbation to said optical fiber grating, said perturbing means including a mechanical element for applying a strain to said optical fiber grating along said longitudinal axis, such that said grating structure is changed proportional to the applied strain and the amount of optical energy coupled between said first optical propagation mode and second optical propagation mode is controlled by the applied strain.

5,444,804

OPTICAL WAVEGUIDE MODULE

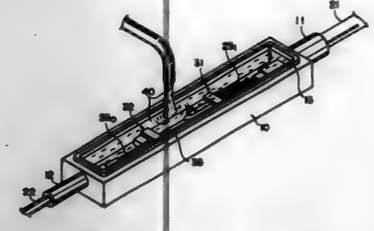
Dai Yui; Shinji Ishikawa; Hiroshi Suganuma, and Shigeru Semura, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 29, 1994, Ser. No. 282,452

Claims priority, application Japan, Jul. 29, 1993, 5-188348; Jul. 6, 1994, 6-154916

Int. Cl.[5] E02B *6/255*

U.S. Cl. 385—49 **6 Claims**



1. An optical waveguide module comprising:

a module unit having a waveguide device with a waveguide substrate on which an optical waveguide is formed, and a fiber connector for holding an optical fiber cable, said waveguide device being bonded to said fiber connector;

a housing having a space therein sufficiently large to accommodate the entire module unit, said housing having an opening to said space, said module unit being housed entirely within said space of said housing;

a member made of a resin covering at least a bonding portion between said waveguide device and said fiber connector, said member being introduced in liquid-state into said space of said housing to immerse at least said bonding portion and thereafter being cured in said space of said housing; and

a cover unit having a substantially flat shape for covering said opening of said housing to seal said housing.

5,444,805

INTEGRATED OPTICAL COMPONENT

Klaus-Michael Mayer, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

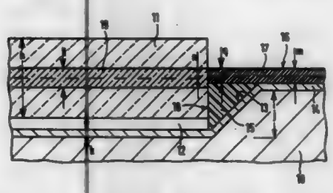
Filed Sep. 2, 1994, Ser. No. 302,708

Claims priority, application Germany, Mar. 7, 1992, 42 07 311.1; Mar. 13, 1992, 42 08 278.1

Int. Cl.[6] G02B *6/20*

U.S. Cl. 385—49 **22 Claims**

1. Integrated optical component, particularly modulator, directional coupler, switch, polarizer, distributor or the like, having a light waveguide of an optical polymer and disposed on a silicon substrate that has at least one optical buffer layer having a low refraction index, further having a positioning trench that is anisotropically etched into the subtrate, is essentially aligned with the light waveguide and has a V-shaped cross-section for receiving a glass fiber to be coupled to the coupling end surface of the light waveguide by means of end-to-end coupling, characterized in that the positioning trench



(12) is filled with a plastic material (15) at the coupling-side end region, wherein the light waveguide (17) extends on the plastic material (15) up to an end surface (18) of the plastic material (15) which extends perpendicular to the axial direction of the light waveguide (17) and lies in the plane of the coupling end surface, and that this end surface (18) is disposed outside of a diagonally-extending end region (13) of the positioning trench (12).

5,444,806

ADAPTOR AND PLUG PORTION FOR ATTAINMENT OF AN OPTICAL PLUG CONNECTION

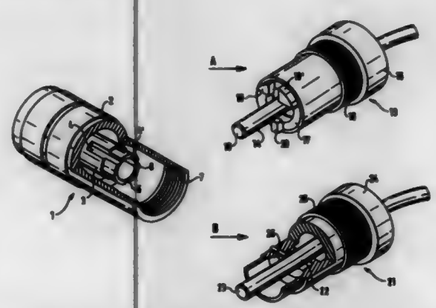
Silverio de Marchi, Contra, Switzerland, and Thomas Mühl, Eningen, Germany, assignors to Diamond SA, Losone, Switzerland and Wandel & Goltermann GmbH & Co., Eningen, Germany

Filed Sep. 23, 1994, Ser. No. 311,587

Claims priority, application European Pat. Off., Dec. 8, 1993, 93810857

Int. Cl.[6] G02B *6/00, 6/36*

U.S. Cl. 385—75 **9 Claims**



1. Adaptor (1) for the attainment of an optical plug connection between a firmly mounted, fixed plug portion and a freely mobile, transferable plug portion, the adaptor possessing a sleeve (3) surrounded by a sleeve housing (2), said sleeve possessing an axially parallel slot (6) or an axially parallel groove for the accommodation of a rotational security device on an initial category of fixed plug portion (21) and, further, the sleeve housing (2) being able to be connected releasably with the fixed plug portion (21), characterized in that the sleeve (3) possesses on its outer casing at least one further axially parallel recess (4, 4', 5) for exactly fitting accommodation of a rotational security device on a second category of fixed plug portion (13), the adaptor being selectably able to be connected with the fixed plug portion of the initial or second category.

5,444,807

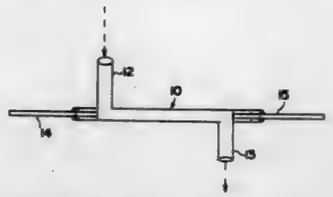
MICRO CHEMICAL ANALYSIS EMPLOYING FLOW THROUGH DETECTORS

Su Y. Lin, Sarasota, Fla., assignor to World Precision Instruments, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 169,310, Dec. 17, 1993, which is a continuation-in-part of Ser. No. 38,520, Mar. 29, 1993, abandoned. This application May 13, 1994, Ser. No. 242,739

Int. Cl.[6] G02B *6/20*

U.S. Cl. 385—125 **21 Claims**



1. A method of detecting the presence of an analyte in a solvent stream, said method comprising the steps of:

fabricating a waveguide capillary from a fluorocarbon polymer having a refractive index of less than 1.33, the capillary having spatially displaced inlet and discharge ports;

delivering the solvent containing the dissolved analyte to the inlet port of the waveguide;

maintaining a pressure differential between the waveguide inlet and discharge ports whereby a solvent stream will flow through the waveguide and will form the light transmitting core thereof;

inserting the first end of a first optical fiber into the waveguide core at a point displaced from the flow path between the inlet and discharge ports, the optical fiber being in intimate contact with the solvent;

coupling a source of measurement light to the second end of the first optical fiber whereby light will be launched into the solvent stream flowing between the waveguide inlet and discharge ports; and

receiving and analyzing light resulting from the passage of light from the source through the waveguide.

5,444,808

PLASTICS PACKAGED OPTICAL FIBRE AND METHOD OF MAKING SAME

Nigel Shackleton, Upper Cwmbran, and Laura E. Pears, Sawbridgeworth, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 889,644, May 28, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 254,655

Claims priority, application United Kingdom, Jun. 12, 1991, 9112636

Int. Cl.[6] G02B *6/22;* **B05D** *5/06;* **C03C** *25/02*

U.S. Cl. 385—128 **19 Claims**



1. A method of providing an optical fibre with plastic packaging, in which method the fibre is provided with a plastics coating upon which another plastics coating is applied from an aqueous dispersion, wherein the dispersion is dried without producing a sintering of the residual material of the coating and wherein a further coating is applied over the dried coating leaving the dried coating in its unsintered state.

5. A plastics packaged glass optical fiber having an outer layer of plastics packaging spaced from an inner acrylate layer of plastics packaging by an unsintered dispersion deposited intermediate layer of plastics material, said inner acrylate plastics layer being a composite layer having sub-layers of different modulus.

5,444,809

FLAME RETARDANT RESIN COMPOSITION AND FLAME RETARDANT PLASTIC OPTICAL FIBER CABLE USING THE SAME

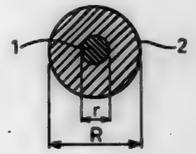
Kazunori Aoki, Sagamihara; Yasufumi Yamamoto, and Koji Ueki, both of Ichihara, all of Japan, assignors to Mitsubishi Rayon Company Ltd. and Du Pont-Mitsui Polychemicals Co., Ltd., both of Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 300,556

Claims priority, application Japan, Sep. 7, 1993, 5-223602; Sep. 7, 1993, 5-246165

Int. Cl.[6] C09K *21/12;* **G02B** *6/44*

U.S. Cl. 385—128 **11 Claims**



1. A flame retardant resin composition comprising a mixture of:

a) 10 to 70 parts by weight of an ethylene/(meth)acrylic ester copolymer;

b) 30 to 90 parts by weight of a low crystalline ethylene/-higher olefin copolymer;

c) 0 to 30 parts by weight of an ethylene polymer selected from the group consisting of polyethylene and crystalline ethylene/α-olefin copolymers;

d) 150 to 250 parts by weight, based on 100 parts by weight of the polymer components a), b) and c), of a metal hydroxide flame retardant; and

e) 2 to 30 parts by weight of red phosphorus.

7. A flame retardant plastic optical fiber cable comprising a plastic optical fiber core and, provided on the periphery thereof, a covering layer of a flame retardant resin composition according to claim 1.

5,444,810

FIBER OPTIC CABLE END CONNECTOR

Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc. Inc., Maulius, N.Y.

Division of Ser. No. 832,706, Feb. 7, 1992, Pat. No. 5,315,684, which is a continuation-in-part of Ser. No. 713,821, Jun. 12, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 135,166

Int. Cl.[6] G02B *6/44*

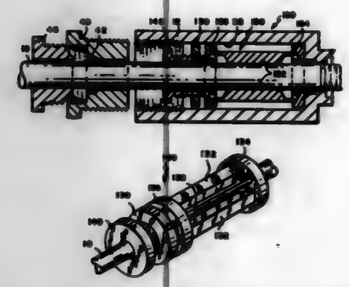
U.S. Cl. 385—139 **12 Claims**

1. An end connector for connecting a fiber optic cable to a port associated with a piece of equipment, said cable having at least one optic fiber and at least one other support member surrounded by a jacket, said end connector comprising:

a housing member having a front end and a rear end, said housing member defining a passageway extending from said rear end to said front end for passing said cable therethrough;

coupling means for coupling said housing member to said port, said coupling means including a front end coupler

disposed at said front end of said housing member, and cable supporting means for supporting said cable disposed external said equipment, said cable supporting means being releasably coupled at one end to said front end coupler and being releasably coupled at the opposite end to said port such that said end connector may be coupled and decoupled as a unit from said port without rotating said housing member and said cable, and without removing said cable from said end connector;



clamp means received in said passageway and adapted to at least partially surround said cable, said clamp means being adjustable between an expanded state which accommodates movement of said cable with respect to said housing and a constricted state which fixedly secures said cable with respect to said housing; and

clamp adjustment means for adjusting said clamp means between said expanded and said constricted states.

5,444,811

ORGANIC FUNCTIONAL OPTICAL THIN FILM, FABRICATION AND USE THEREOF

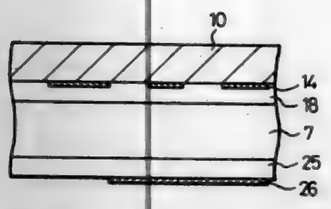
Tetsuzo Yoshimura; Ei Yano; Satoshi Tatsuura, and Wataru Sotoyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 26, 1992, Ser. No. 858,074

Claims priority, application Japan, Mar. 26, 1991, 3-132448; Sep. 19, 1991, 3-239559

Int. Cl.[6] G02B *6/12*; B05D *5/06*

U.S. Cl. 385—141 **88 Claims**



1. An organic functional thin film comprising a polymer of a molecule having two or more identical or different groups selected from the group consisting of a carbonyloxycarbonyl group, a carboxylic acid group, a carboxylic acid halide group, a carboxyl group, a —COCl group, an —NCO group and an epoxy group and a molecule having two or more identical or different groups selected from the group consisting of an amino group, groups containing at least one amino proton, an alkylamino group, a silylated alkylamino group and a hydroxyl group, formed by vapor-phase deposition, said polymer having a donor group or an acceptor group or a donor group and an acceptor group thereon, and wherein at least one portion of the groups contained in a molecule is separated from a conjugate π electron system that composes the backbone of the molecule by two or more single bonds.

12. A process for preparing an organic functional thin film, said film comprising a polymer of a molecule having two or more identical or different groups selected from the group consisting of a carbonyloxycarbonyl group, a carboxylic acid group, a carboxylic acid halide group, a carboxyl group, a —COCl group, an —NCO group and an epoxy group and a molecule having two or more identical or different groups selected from the group consisting of an amino acid, groups containing at least one amino proton, an alkylamino group, a silylated alkylamino group and a hydroxyl group, said polymer having a donor group or an acceptor group or a donor and an acceptor group thereon, said process comprising introducing or evaporating the molecules in vacuum followed by at least one of combining and polymerization whereby to form a thin film of said polymer by vapor-phase deposition, and wherein a molecule able to act as a curing agent is introduced in vacuum to deposit the film.

5,444,812

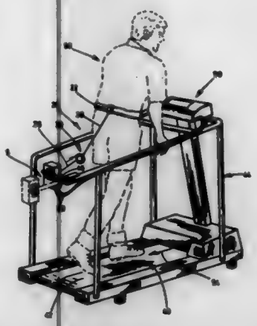
AUTOMATIC SPEED SERVO-CONTROL APPARATUS FOR ELECTRICALLY POWERED WALKING-RUNNING EXERCISE MACHINE

Émile Thibodeau, 4560, promenade Paton, unité 317, Chomedey, Laval (Québec), Canada H7W 4W2

Filed May 19, 1994, Ser. No. 246,138

Int. Cl.[6] H02P *7/288*

U.S. Cl. 388—840 **6 Claims**



1. A speed servo-control apparatus for use in combination with a walking-running exercise machine including a moving belt on which a user may walk or run and an at least two wire direct current drive input for controlling the speed of said moving belt, said apparatus comprising:

a frame bracket;

a control unit rotatably mounted to said frame bracket;

mounting means for mounting said frame bracket at a predetermined position with respect to said machine;

cord means having two opposite extremities, one of said extremities being operatively connected to said control unit, the other one of said extremities being attachable to the user of the apparatus so as to rotate said control unit in a given direction when said cord means is pulled forward by said user;

moving means operatively connected to said control unit for rotating the control unit in a direction opposite to said given direction as soon as said cord means are released; and

generator means operatively connected to said control unit and provided with at least two wires connectable to said at least two wire direct current drive input, said generator means producing electrical signals which are proportional to a rotation of said control unit in said given direction,

whereby, after said frame bracket has been mounted at said

predetermined position and said at least two wires of the generator means have been electrically connected to said at least two wire direct current drive input, the position of the user on said moving belt increases or decreases the speed thereof.

5,444,813

INFRARED LAMP MOUNTING ARRANGEMENT USING SPACED MOUNTING HOLES ENABLING DESIRED POSITIONING THEREOF

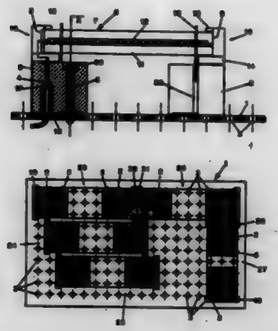
Ronald Stehling, Alzenau, and Karl Schülke, Grosskrotzenburg, both of Germany, assignors to Heraeus Noblelight GmbH, Hanau, Germany

Filed Mar. 31, 1993, Ser. No. 40,404

Claims priority, application Germany, Mar. 31, 1992, 42 10 519.6

Int. Cl.[6] H05B *3/06*

U.S. Cl. 392—407 **18 Claims**



1. An irradiation system having an assembly plate (1) formed with a plurality of receiving elements (3) for selectively fastening

bases (2) for mounting thereon

at least one infra-red lamp (6), each lamp having a quartz glass tube (7) containing a heating coil (12) and two electrical terminals at respective ends of said tube (7), and first and second ceramic closure caps (10) at respective ends of said tube, each of said caps being associated with one of said bases;

at least one of the two bases (2) supporting each lamp (6) is formed with an electrical passage (4) running perpendicular to the plane of said assembly plate (1), electrical leads to said lamp terminals being fed, in an insulated manner, through said electrical passage (4) and the closure cap associated with said at least one base (2);

wherein, in accordance with the invention,

said receiving elements (3) are a plurality of assembly apertures (3) formed in said assembly plate and arranged in a raster pattern having at least three-fold symmetry;

said bases (2) are formed with at least one fastening hole (5), running perpendicular to the plane of said assembly plate, for receiving a fastening element (29) which engages in one of said assembly apertures (3);

the bases (2) formed with said electrical passage (4) and with said fastening hole (5) are so dimensioned that the spacing, between said passage (4) and said fastening hole (5), is compatible with said raster pattern of said assembly apertures (3); said closure caps are releasably mounted on respective ones of said bases (2); and

said lamp electrical terminals comprise two contact pins (17) which extend out of one of said closure caps (10) and have free ends at right angles to the longitudinal axis of the quartz glass tube (7) which make electrical contact to a power supply in said electrical passage (4) of said at least one base (2).

5,444,814

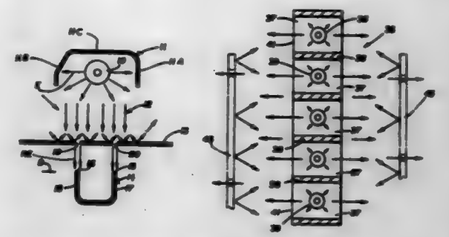
METHOD OF INFRARED WELDING ON THERMOPLASTIC PARTS UTILIZING CONTOURED ENERGY REFLECTING SHIELDS

David V. Hoffus, Sr., 235 Pierce Ave., Sharpsville, Pa. 16150

Filed Nov. 1, 1993, Ser. No. 144,344

Int. Cl.[6] F26B *3/30*

U.S. Cl. 392—407 **2 Claims**



1. A method of infrared IR energy welding of thermoplastic parts with infrared radiation from an infrared source, comprising providing a source of infrared energy, providing a thermoplastic part to be radiated, providing a valving means spaced in relation to said source of infrared energy and to said thermoplastic part to be radiated, to limit said infrared radiation to selective predetermined areas of said thermoplastic parts, said valving means comprising a projection contoured in relation to its horizontal plane and is contoured in relation to contoured thermoplastic parts, defining multi-line parallel surfaces, said parallel surfaces having apertures within and extending therebetween said parallel surfaces that correspond with said selective predetermined areas of said thermoplastic parts, said projection within said energy stream, including energizing the infrared radiation source from a power source, projecting said selective valve infrared radiation at a predetermined point beyond said valving means, and aligning said thermoplastic part to be radiated in specific parallel relation with said valving means.

5,444,815

MULTI-ZONE LAMP INTERFERENCE CORRECTION SYSTEM

Yong J. Lee, Richardson, and Mehrdad M. Moslehi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1993, Ser. No. 168,433

Int. Cl.[6] H05B *3/62*; H01L *21/00*

U.S. Cl. 392—416 **18 Claims**

1. A method for multi-zone lamp interference correction for a multi-zone illuminator having a plurality of lamps arranged in a plurality of zones, comprising the steps of:

a. determining, for each of said plurality of zones, a relative efficiency of radiation factor from each of said plurality of zones;

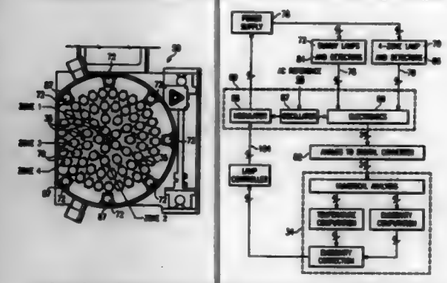
b. modulating a plurality of power sources synchronized to a line frequency and connected to said plurality of zones;

c. monitoring the radiance of a wafer using a first plurality of pyrometric temperature sensors, wherein each of said first plurality of temperature sensors generates an output signal;

d. monitoring the modulation depths of said zones;

e. determining a corrected wafer radiance for each wafer

temperature sensor by removing a lamp interference component from at least a portion of one of the output signals,



wherein said lamp interference component is based on at least one of said relative efficiency of radiation factors.

5,444,816

DYNAMIC CODEBOOK FOR EFFICIENT SPEECH CODING BASED ON ALGEBRAIC CODES

Jean-Pierre Adoul, and Claude Laflamme, both of Sherbrooke, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

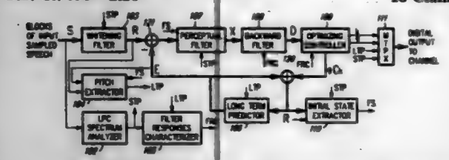
PCT No. PCT/CA90/00381, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/13432, PCT Pub. Date Sep. 5, 1991

PCT Filed Nov. 6, 1990, Ser. No. 927,528

Claims priority, application Canada, Feb. 23, 1990, 2010830

Int. Cl.[5] G10L *5/00*

U.S. Cl. 395—2.28 **18 Claims**



1. A method of producing an excitation signal to be used by a sound signal synthesis means to synthesize a sound signal, comprising the steps of:

generating a codeword signal in response to an index signal associated to said codeword signal, said signal generating step using an algebraic code to generate said codeword signal; and

prefiltering the generated codeword signal to produce said excitation signal, said prefiltering step comprising processing the codeword signal through an adaptive prefilter having a transfer function varying in time in relation to parameters representative of spectral characteristics of said sound signal to thereby shape frequency characteristics of the excitation signal so as to damp frequencies perceptually annoying a human ear.

5,444,817

SPEECH RECOGNIZING APPARATUS USING THE PREDICTED DURATION OF SYLLABLES

Yumi Takizawa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1992, Ser. No. 955,487

Claims priority, application Japan, Oct. 2, 1991, 3-255093; Mar. 5, 1992, 4-048210; Jun. 18, 1992, 4-159839

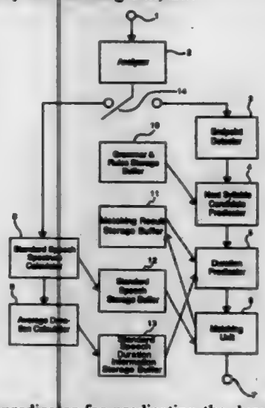
Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2.63 **14 Claims**

1. A speech recognizing apparatus for recognizing an input speech by dividing a total utterance period of the input speech to be recognized into a plurality of small sections, each one of said plurality of small sections forming a recognition unit of the input speech, said speech recognizing apparatus comprising:

a matching unit for performing a matching between a reference speech and the input speech for each one of the recognition units and for outputting a matching result;

a matching result storage buffer for storing the matching result and duration data representing a duration of each one of the recognition units which have already been matched by the matching unit; and



a duration predicator for predicating the duration data for each one of the recognition units to be subsequently matched by the matching unit using the stored duration data; and

wherein the matching unit performs the matching between the reference speech and the input speech for each of the recognition units using the duration data predicated by the duration predicator.

5,444,818

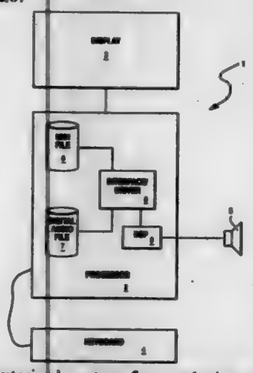
SYSTEM AND METHOD FOR DYNAMICALLY CONFIGURING SYNTHESIZERS

Ronald J. Lisle, Cedar Park, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1992, Ser. No. 984,780

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.67 **27 Claims**



11. A computerized system for producing audio signals comprising

means for storing a first dataset corresponding to a first mode of producing said audio signals;

means for generating a datastream defining parameters associated with said producing of said audio signals, including a specified said first mode;

means for detecting from said datastream if said first mode of said producing said audio signals is specified; and

means for producing said audio signals in said first mode with said datastream and said first dataset in response to said detecting said specified first mode.

5,444,819

ECONOMIC PHENOMENON PREDICTING AND ANALYZING SYSTEM USING NEURAL NETWORK

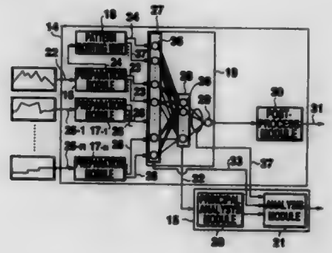
Michiro Negishi, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,143

Claims priority, application Japan, Jun. 8, 1992, 4-147497

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **34 Claims**



1. An economic phenomenon predicting system comprising:

(a) a predicting neural network comprising (a1) an input layer having a plurality of input layer neurons for inputting signals indicating respective economic phenomena, (a2) a predetermined number of hidden layers comprising a plurality of hidden layer neurons, respectively, each of said input neurons making synaptic combinations with arbitrary ones of said hidden layer neurons, each synaptic combination having a weight, and (a3) an output layer comprising a predetermined number of output layer neurons, each of said hidden layer neurons making synaptic combinations with arbitrary ones of said output layer neurons, each synaptic combination having a weight, and each of said output layer neurons outputting an output signal, and (a4) wherein the weights of the synaptic combinations between said input layer neurons and hidden layer neurons and the weights of the synaptic combinations between said hidden layer neurons and said output layer neurons are organized by learning so that when data indicating variations of various principal economic indices including an economic phenomenon to be predicted and data indicating a variation pattern of the economic phenomenon to be predicted are input to said input layer neurons, said signals output from said output layer neurons represent a result of prediction of the economic phenomena;

(b) moving-average-value arithmetic means for inputting time series data indicating various principal economic indices including the economic phenomenon to be predicted and for obtaining moving-average values for a plurality of recent predetermined periods, said moving-average-value arithmetic means supplying said obtained moving-average values, as part of said data indicating the variations of the various principal economic indices including the economic phenomenon to be predicted, to said input layer neurons;

(c) difference arithmetic means for obtaining difference at least a first to an n-th order between said moving-average values, said difference arithmetic means supplying the obtained differences, as part of said data indicating the variations of said various principal economic indices including the economic phenomenon to be predicted;

(d) trend removing means for removing trends from the time series data indicating the economic phenomenon to be predicted by subtracting from said time series data indicting the economic phenomenon to be predicted the individual moving-average value of the economic phenomenon to be predicted for any of the plurality of predetermined periods; and

(e) pattern-sorting means for sorting said time series data indicating the economic phenomenon to be predicted after removing the trends into patterns, said pattern-sorting means outputting patterns, said patterns being obtained from the sorting, as data indicating a variation pattern of the economic phenomenon to be predicted to said input layer neurons.

5,444,820

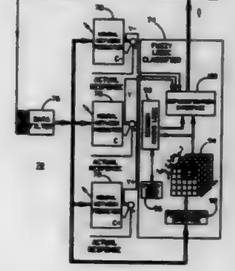
ADAPTIVE SYSTEM AND METHOD FOR PREDICTING RESPONSE TIMES IN A SERVICE ENVIRONMENT

Anthony Tzes, Brooklyn, and Vassilis Tsotras, New York, both of N.Y., assignors to Long Island Lighting Company, Hicksville, N.Y.

Filed Dec. 9, 1993, Ser. No. 165,020

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **9 Claims**



1. An apparatus for predicting a prospective response time of a service provider to a current service request, the apparatus comprising:

a memory for storing historical data, including previous response times to corresponding previous service requests;

a neural network having a plurality of processing elements, each processing element including memory means for storing a respective weight, said neural network trained by a plurality of test data to modify the weights, said neural network being responsive to a plurality of inputs, including the current month of the current service request and historical data input from the memory for a plurality of months of the previous year for generating a plurality of tentative response time predictions; and

means for classifying the current month of the current service request as similar according to predetermined rules to a first month of the plurality of months of the previous year for generating the prospective response time from a weighting of the plurality of tentative response time predictions in a mapping determined from the current month and the first month.

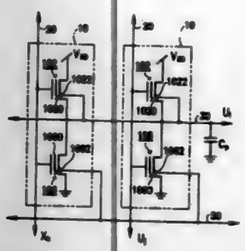
VOL 1177 ISS 4 AUG 22 1995 UMI

5,444,821

ARTIFICIAL NEURON ELEMENT WITH ELECTRICALLY PROGRAMMABLE SYNAPTIC WEIGHT FOR NEURAL NETWORKS

Zhi-Jian Li; Bing-Xue Shi, and Yang Wang, all of Beijing, China, assignors to United Microelectronics Corp., Hsin Chu, China

Filed Nov. 10, 1993, Ser. No. 150,460
Int. Cl.[6] H03K *19/08*
U.S. Cl. 395—24 **2 Claims**



1. A neuron element with electrically programmable synaptic weight for an artificial neural network comprising:

an excitatory-connected floating-gate transistor having a floating gate, a control gate electrode for receiving an input signal, a drain electrode for connection to a power source voltage, a source electrode for connection to an output line, and a programming electrode connected to said source electrode, said control gate electrode and said programming electrode being utilized to program the threshold voltage of said excitatory-connected floating-gate transistor, and thus the synaptic weight of said neuron element; and

an inhibitory-connected floating-gate transistor having a floating gate, a control gate electrode to receive said input signal, a drain electrode connected to said source electrode of said excitatory-connected floating-gate transistor, a source electrode for connection to ground, and a programming electrode, said control gate electrode and said programming electrode of said inhibitory-connected floating-gate transistor being utilized to program the threshold voltage of said inhibitory-connected floating-gate transistor, and thus the synaptic weight of said neuron element.

5,444,822

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE CARRYING OUT PARALLEL OPERATIONAL PROCESSING WITH ELECTRONICALLY IMPLEMENTED NEURAL NETWORK

Hirofumi Shinohara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

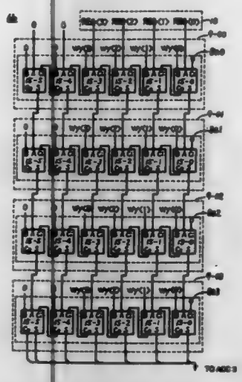
Filed Jun. 16, 1993, Ser. No. 77,143
Claims priority, application Japan, Jul. 28, 1992, 4-201467
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 **15 Claims**

1. A parallel operation semiconductor integrated circuit device comprising:

a plurality of first operational means for carrying out a predetermined operation of first data and predetermined second data;

a plurality of second operational means provided corresponding to said plurality of first operational means, each for receiving an output of a corresponding first operational means at a first input;

first connection means for cascade connecting said plurality of second operational means with each other, said first connection means comprising means for connecting said plurality of second operational means in a lateral connection in which an output of an upstream second operational means is connected to a second input of a second operational means subsequent to said upstream second operational means in the cascade connection; and



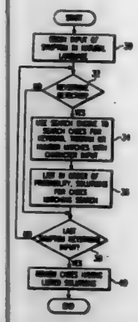
nonlinear conversion means for carrying out a nonlinear conversion processing on an output of a final second operational means in the cascade connection.

5,444,823

INTELLIGENT SEARCH ENGINE FOR ASSOCIATED ON-LINE DOCUMENTATION HAVING QUESTIONLESS CASE-BASED KNOWLEDGE BASE

Trung D. Nguyen, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 48,879, Apr. 16, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 325,541
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—51 **8 Claims**



5. A method for determining a solution to a problem using on-line documentation, comprising the steps of:

forming a questionless case-based knowledge base, said questionless case-based knowledge base comprised of a series of questionless case structures stored in memory, each said questionless case structure comprised of a title, a description of a particular problem and a solution to said particular problem;

determining a natural language description of said problem, said natural language description of said problem comprised of one or more strings of alpha-numeric characters;

inputting, to a search engine, said one or more strings of alpha-numeric characters which describe said natural language description of said problem, one alpha-numeric character at a time;

conducting first, second and third searches of said questionless case-based knowledge base each time one of said alpha-numeric characters is input into said search engine;

said first search of said questionless case-based knowledge base searching for questionless case structures which contain at least one word, or a portion thereof, which exactly matches one of said strings of alpha-numeric characters previously input into said search engine;

said second search of said questionless case-based knowledge base searching for questionless case structures which contain at least one word, or a portion thereof, which exactly matches three consecutive characters of one of said alpha-numeric character strings previously input into said search engine;

said third search of said questionless case-based knowledge base searching for questionless case structures which contain a numeric representation which differs from a numeric representation forming part of one of said alpha-numeric character strings previously input into said search engine by less than a pre-determined value;

determining which of said matching questionless case structures contains a most probable solution to said problem; and

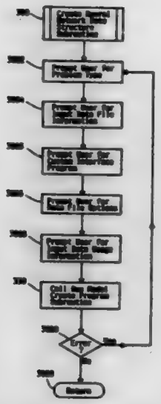
selecting, for review, said matching questionless case structures determined to contain the most probable solution to said problem.

5,444,824

ENHANCED NEURAL NETWORK SHELL FOR APPLICATION PROGRAMS

Shawn M. Austvold; Joseph P. Bigus; Jonathan D. Henckel, and Paul A. Hospers, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 687,582, Apr. 18, 1991, Pat. No. 5,235,673. This application Aug. 3, 1993, Ser. No. 101,526
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—76 **5 Claims**



1. A program product for creating a neural network data structure for a neural network in a computer system, said program product comprising a plurality of instructions recorded on a computer readable recording medium and capable of being executed by said computer system, said instructions executed by said computer system comprising:

means for prompting a user for a problem type;

means for prompting said user for an input data file, said input data file having an input data format;

means for selecting a neural network model based on said problem type and said input data format;

means for prompting said user for input data usage information; and

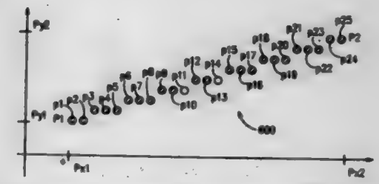
means for creating said neural network data structure for said neural network model selected by said selecting means based on said input data usage information.

5,444,825

METHOD AND APPARATUS FOR SCALING LINE PATTERNS

Charles L. Bain, Rhinebeck; Fai Chu; Paul D. Dinicola, both of Kingston, and John J. Lawless, Red Hook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 746,382, Aug. 16, 1991, abandoned. This application Jun. 14, 1994, Ser. No. 259,734
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—143 **9 Claims**



1. A method of applying a line pattern having a predetermined first number of pixels each having a pattern pixel value to an actual line having a second number of pixels as the actual line is drawn in a graphics system having a processor and a memory, the method comprising the steps of:

determining a line pattern error threshold based on a ratio of said second number of pixels to said first number of pixels said line error being distinct from an actual line drawing error threshold;

sequentially generating pixel positions for said actual line and modifying a line pattern error term;

for each generated actual line pixel position applying a next pattern pixel value from said line pattern and incrementing a line pattern error term;

determining a next pattern pixel value to apply as the next sequential pattern pixel value from said line pattern unless said line pattern error term exceeds said error threshold;

assigning a modified next pattern pixel value if said line pattern error term exceeds said error threshold and resetting said error term.

5,444,826

IMAGE PROCESSING APPARTUS WHICH PROCESSES A PLURALITY OF COMMAND LANGUAGES

Kunio Okada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 818,357, Jan. 9, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 356,780
Claims priority, application Japan, Jan. 11, 1991, 3-014004
Int. Cl.[6] G16F *3/12*
U.S. Cl. 395—112 **34 Claims**

1. A data processing apparatus, comprising:

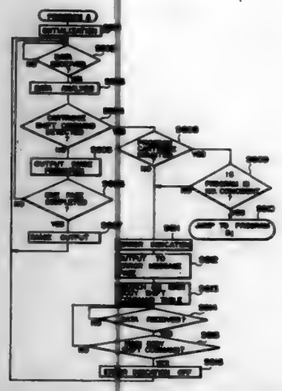
means for receiving data in one of a plurality of command languages;

a data processor for processing the data;

a first specifying means for specifying which one of the plurality of command languages describes the received data;

judging means for judging whether or not data in the specified command language can be processed by said data processor;

means for continuing to receive the data even if the judgment is that data in the specified command language cannot be processed by said data processor; and



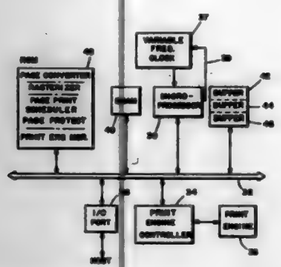
a second specifying means for specifying a different one of said plurality of command languages to describe the data if the judgment is that data in the originally specified command language cannot be processed by said data processor.

5,444,827

METHOD AND APPARATUS FOR PREVENTING PRINT OVERRUNS BY RASTERIZING COMPLEX PAGE STRIPS USING AN INCREASED CLOCK FREQUENCY

Randall D. Briggs, and Greg L. Allen, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 23, 1994, Ser. No. 247,806
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—115 **9 Claims**



1. A page printer comprising:

variable frequency clock (VFC) means for producing a first frequency clock signal and a second higher frequency clock signal;

first memory for storing a page processing procedure;

second memory for storing display commands allocated to plural page strips, each page strip comprising a portion of a page;

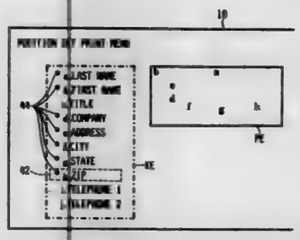
processor means coupled to said VFC means, first memory and second memory and operational at said first clock frequency in conjunction with said page processing procedure to derive a total rasterization execution time (RET) for said display commands allocated to each said page strip, comparing a total RET for each page strip with a threshold value that is dependent upon a page strip rasterization time, rasterizing display commands allocated to each page strip whose total RET is equal to or less than said threshold value and, for a complex page strip whose total RET exceeds said threshold value, causing said VFC means to generate said second higher frequency clock signal and to operate at a rate determined by said second higher frequency clock signal to rasterize display commands comprising said complex page strip.

5,444,828

DOCUMENT PROCESSING DEVICE AND METHOD

Misao Katsuoka, Mie, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 826,527, Jan. 27, 1992, abandoned. This application May 25, 1994, Ser. No. 249,064
Claims priority, application Japan, Feb. 28, 1991, 3-059449
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—117 **21 Claims**



1. A document processing device including input means for inputting characters and instruction signals, a data memory for storing item-title data for a plurality of items and item-content data which are input in correspondence with the respective items, said item-title data and item-content data being input and stored in advance to a print position setting operation, and display means having a display unit capable of displaying characters over a plurality of lines, said document processing device further comprising:

display control means for displaying a plurality of item-titles read from the data memory in an item-title displaying area in a first section of said display unit based upon a displaying instruction input from said input means, and for concurrently displaying in a second section of said display unit a paper-imitating area corresponding to a shape of a print sheet on which item contents in the data memory are to be printed; and

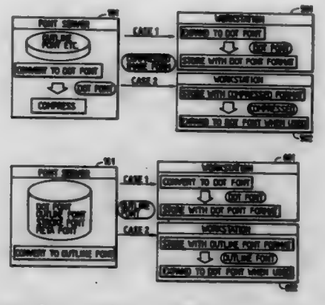
print position setting means, responsive to a print position setting instruction, for instructing said display control means to display indicia representative of a selected item-title from the plurality of item-titles at a selected one of a plurality of positions within the paper-imitating area of said display unit, a location of the selected one of the plurality of positions being adjustable within the paper-imitating area to obtain a desired display position for the representative indicia within the paper imitating area, the print position setting means storing, in association with each other, the selected item-title and a print position for printing contents of the selected item-title on a print paper, said print position corresponding to the display position set in the paper-imitating area.

5,444,829

SYSTEM FOR CENTRALLY CONTROLLING LETTER DATA

Atsushi Kawabata; Shuuichi Miura; Kimiya Yamaashi, all of Hitachi; Yuji Taki, Takasaki; Yoshiki Kobayashi, and Shinya Tanifuji, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 395,764, Aug. 18, 1989, abandoned. This application Dec. 28, 1992, Ser. No. 997,628
Claims priority, application Japan, Aug. 24, 1988, 63-208397
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—100 **41 Claims**



1. A system for centrally controlling letter data comprising:

a) a plurality of letter data output devices;

b) a letter data controller controlling said letter data output devices; and

c) a transmission path interconnecting said letter data output devices and said letter data controller;

wherein said letter data controller includes:

(i) means for storing commonly used letter data having a font format;

(ii) means for comparing stored letter data in said means for storing with a desired data format according to a request from one of said letter data output devices;

(iii) means for converting said letter data to said desired data format according to a result from said means for comparing; and

(iv) means for transmitting said desired data format to at least one of said letter data output devices via said transmission path;

wherein at least two of said plurality of letter data output devices are arranged to signal to said letter data controller via said transmission path for causing said letter data controller to transmit said desired data format;

wherein said at least two of said letter data output devices are arranged to store said desired data format; and

wherein a further one of said letter data output devices includes means for storing a plurality of desired data formats stored by said at least two of said letter data output devices.

5,444,830

METHOD AND APPARATUS FOR CONTROLLING EXPOSURE AND TRANSFERENCE IN AN ELECTROPHOTOGRAPHIC RECORDING APPARATUS

Soo-Hwan Oh, Suwon, and Byeong-Oh Park, Seoul, both of Rep. of Korea, assignors to SamSung electronics Co., Ltd., Suwon, Rep. of Korea

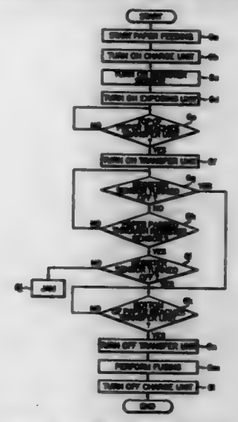
Filed Feb. 16, 1993, Ser. No. 18,244
Claims priority, application Rep. of Korea, Feb. 19, 1992, 1992-2487; Mar. 23, 1992, 1992-4764
Int. Cl.[6] G03G *15/00*
U.S. Cl. 395—109 **26 Claims**

2. A method for controlling exposure in an electrophotographic recording apparatus, comprising the steps of:

setting a size of a printable medium and setting a developing condition for said printable medium in response to a printing command;

feeding the printable medium into said electrophotographic recording apparatus;

generating image data representative of data information to be printed onto the printable medium and starting exposure of a photosensitive drum with said image data;



checking whether the trailing edge of the printable medium has been fed by a set length toward said photosensitive drum before reaching said photosensitive drum;

terminating said exposure when the trailing edge of the printable medium has been fed by said set length;

releasing said developing condition; and

discharging said printable medium from said electrophotographic recording apparatus.

5,444,831

DEVELOPED PRODUCT SHAPE DECIDING METHOD FOR A COMPUTER-AIDED DESIGN SYSTEM

Masaki Seki, Tokyo; Shizuaki Hayasagi, Yamanashi; Koji Suzuki, Yamanashi, and Takeshi Hosono, Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation-in-part of Ser. No. 566,471, filed as PCT/JP89/01235, Dec. 8, 1989, published as WO 90/07748, July 12, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 998,247
Claims priority, application Japan, Dec. 24, 1988, 63-324794
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—127 **14 Claims**

5. A method for determining an original planar shape of a finished product formed by bending the original planar shape, the finished product having at least two sides, said method comprising the steps of:

(a) storing, on a computer-aided design system, a representation of a first view of the finished product projected onto a first plane parallel to a first side of the finished product, using a two-dimensional coordinate system having coordinate axes;

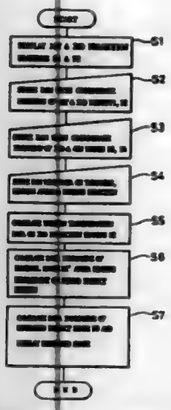
(b) storing, on the computer-aided design system, a representation of a second view of the finished product projected onto a second plane parallel to a second side of the finished product, using the two-dimensional coordinate system, the first and second sides having a bending line in common;

(c) calculating a relative movement of one of the first and second views relative to the other required to align the bending line in the first view with the bending line in second view, said calculating including the steps of:

(c1) calculating a rotational angle between the first and second views; and

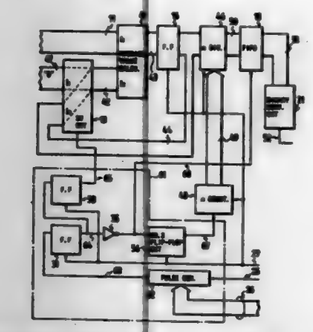
(c2) calculating distances of movement parallel to the

coordinate axes of the two-dimensional coordinate system; and



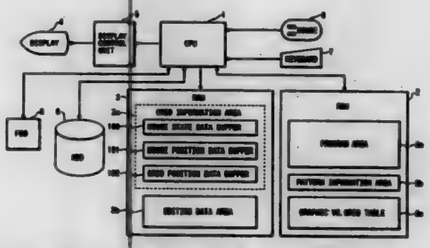
(d) generating the original planar shape in dependence upon the relative amount of movement calculated in step (c).

5,444,832
PIXEL DENSITY CONVERTER
Masato Suzuki, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 10,472, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 588,139, Sep. 26, 1990, abandoned. This application Mar. 18, 1994, Ser. No. 215,973
Claims priority, application Japan, Jan. 31, 1990, 2-19105
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—132 1 Claim



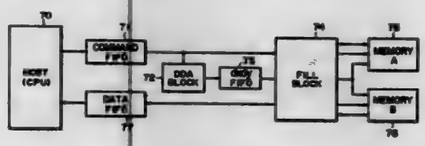
1. An electrical signal converter comprising:
means responsive to an electrical signal sequentially representing pixels of an image read by an image sensor for combining multi-valued data representing the respective intensity levels of a first temporarily fixed number of pixels to yield a set of successive electrical signals each representing the intensity level of a single integrated pixel;
means responsive to the combining means for sequentially changing the first temporarily fixed number as applicable in the combining means a plurality of times to provide a sequence of first, second and third temporarily fixed numbers to satisfy the condition that the total of the values of the temporarily fixed numbers in the sequence reaches a required value, the values of the temporarily fixed numbers being otherwise not constrained; and
means for converting by binary conversion each of the set of successive electrical signals to a binary notation in which each represented intensity value is compared to a fixed threshold value and the difference is represented to yield a resultant electrical signal sequentially representing pixels of a data-reduced image, which resultant electrical signal is transmitted to an image reproduction device.

5,444,833
GRAPHIC EDITING APPARATUS WITH GRID SIZE SELECTION
Tomoaki Kawai, Yokohama; Takashi Nakamura, Hiratsuka; Tsuneaki Kadosawa, Kanagawa; Kunitaka Ozawa, Isehara; Eiji Koga, Hadano, and Satoshi Ogiwara, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 480,574, Feb. 15, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 22,620
Claims priority, application Japan, Feb. 15, 1989, 1-33796
Int. Cl.[6] G06T *11/80*
U.S. Cl. 395—133 16 Claims



1. A graphic editing apparatus for editing a graphic pattern on an image display frame, the image display frame having a grid size variable according to operating information indicating a content of an operation, comprising:
input means for entering a plurality of operating information units for the graphic pattern, indicating the content of the operation;
executing means responsive to the entry of each of said plurality of operating information units for executing a process corresponding to each of said plurality of operating information units: and
switching means for switching the grid size according to each of said plurality of operating information units.

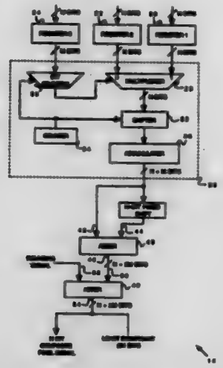
5,444,834
FILLING PATTERN GENERATION APPARATUS AND METHOD INCLUDING CORRECTION FOR PATTERN OVERFLOW
Naoyuki Kai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 31, 1991, Ser. No. 738,555
Claims priority, application Japan, Jul. 31, 1990, 2-201529
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—134 17 Claims



15. A filling pattern generation apparatus for filling an interior space of a closed curve defined by an outline, comprising:
means for generating outline data based on differences between the coordinates of adjacent points when said outline

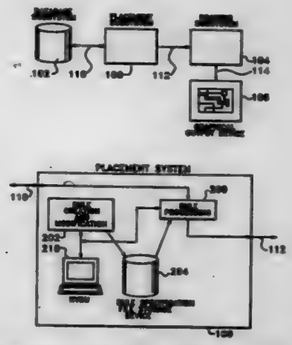
is quantized on a bit map, said bit map having a first and second work area;
means for generating filling flag data including set and unset flags on said first work area based on said outline data and filling flag generation rules, said first work area defined by maximum and minimum points along a first coordinate axis and maximum and minimum points along a second coordinate axis;
means for determining if a point of said outline defined by a first coordinate relative to said first axis and a second coordinate relative to said second coordinate axis is outside said first work area in a predetermined direction along said first coordinate axis by comparing a first coordinate of said point with a first coordinate of said maximum point along said first coordinate axis; and
means for setting a filling flag at a point defined by said second coordinate of said point and said first coordinate of said maximum point along said first coordinate axis if said determining means determines that the point defined by said first and second coordinates is outside of said work area in said predetermined direction.

5,444,835
APPARATUS AND METHOD FOR FORMING A COMPOSITE IMAGE PIXEL THROUGH PIXEL BLENDING
Kenneth E. Turkowski, Menlo Park, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Sep. 2, 1993, Ser. No. 116,115
Int. Cl.[6] G06F *15/00, 3/153*
U.S. Cl. 395—135 22 Claims



1. A circuit for forming a composite image pixel through pixel blending, the blending comprising the combination of a foreground pixel signal and a background pixel signal relative to a blending factor signal to create the composite pixel, the circuit comprising:
a signal selecting multiplier having a plurality of first inputs, a plurality of second inputs, a plurality of third inputs and a plurality of outputs, for generating a compound pixel signal from a combination of the foreground pixel and the background pixel signals, wherein the foreground pixel signal is combined with the background pixel signal relative to the blending factor signal, the plurality of first inputs receiving the foreground pixel signal, the plurality of second inputs receiving the background pixel signal, and the plurality of third inputs receiving the blending factor signal;
a first adder having a plurality of first inputs, a plurality of second inputs, and a plurality of outputs, for modifying the signal generated by the signal selecting multiplier, the plurality of first inputs of the first adder coupled to the plurality of outputs of the signal selecting multiplier, the plurality of second inputs of the first adder coupled to receive a first correction signal; and
a second adder having a plurality of first inputs, a plurality of second inputs, and a plurality of outputs, for generating a composite pixel signal from the Output of the first adder, the plurality of first inputs of the second adder coupled to the plurality of outputs of the first adder, the plurality of second inputs of the second adder coupled to receive a rounding signal.

5,444,836
APPARATUS AND METHOD FOR IMPROVED PLACEMENT OF OBJECTS IN COMPUTER AIDED DRAFTING
Robert E. Hollingsworth, Boulder; Eugene P. Kindrachuk, and James E. Hargis, both of Englewood, all of Colo., assignors to Information and Graphics Systems, Inc., Boulder, Colo.
Filed Mar. 10, 1994, Ser. No. 208,976
Int. Cl.[6] G06T *17/00*
U.S. Cl. 395—135 11 Claims



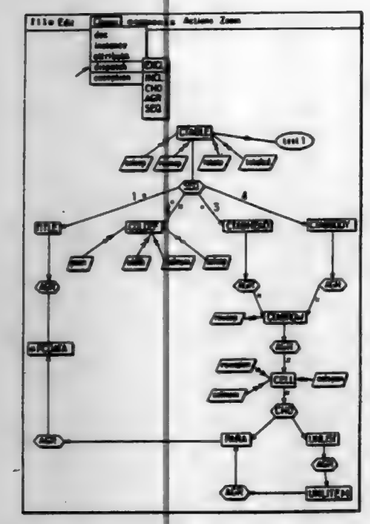
1. An apparatus for creating and displaying graphical images comprising:
graphical output means for drawing graphical objects on said graphical images for viewing by a user;
database means for storing and retrieving information regarding said graphical objects to be drawn by said graphical output means, said information including nominal placement of said graphical objects on said graphical images;
rule definition means for permitting a user of said apparatus to define placement rules for modifying said nominal placement of said graphical objects on said graphical images, said placement rules comprising overplot information elements for specifying which of said graphical objects may be overplotted by others of said graphical objects; and
rule application means operatively linked with said database means, with said rule definition means, and with said graphical output means, for applying information representing said placement rules to said information regarding said graphical objects to modify said nominal placement of said graphical objects on said graphical images in accord with said overplot information elements and to cause said graphical output means to draw said graphical objects on said graphical images.

5,444,837

METHOD FOR STRUCTURING INFORMATION USED IN AN INDUSTRIAL PROCESS AND ITS APPLICATION TO AIRCRAFT PILOTING ASSISTANCE

Muriel Bomans, Boulogne; Francine Pierre, Paris, and Hugues Robin, Bougenais, all of France, assignors to Sextant Avionique, Meudon la Foret, France

Filed Dec. 29, 1993, Ser. No. 174,818
Claims priority, application France, Jan. 12, 1993, 93 00377
Int. Cl.[6] G06T 9/00
U.S. Cl. 395—140 15 Claims



1. A method for structuring a set of information used in an industrial process, using a terminal comprising a processor, a display screen and a keyboard for introducing commands for displaying graphical symbols on said display screen, and for introducing characteristics associated with said symbols, these graphical symbols being assembled on said display screen in a graph representing an information structure model, said graph comprising at least symbols of a first type representing nodes, and symbols of a second type establishing links between said nodes, said method comprising the steps of:

hierarchical splitting the set of information into subsets having a limited number of different structures and identifying the structure of each of said subsets;

grouping into objects said subsets together by similar structures;

determining characteristics specific to each object;

introducing into said terminal commands for displaying on said display screen a node type symbol for each of said objects, and characteristics of each of said object;

introducing into said terminal commands for displaying on said display screen construction link type symbols each connecting at least two of said node type symbols so as to construct a graph on said display screen, and introducing types and characteristics of said links, each of said links indicating a hierarchical include relation between two objects;

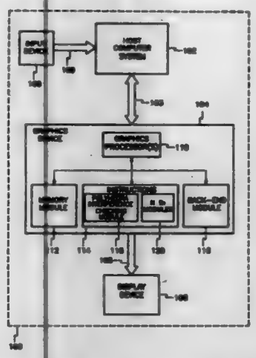
translating by the processor said graph into a structure model of said set of information expressed in a computer language, and detecting by said processor inconsistencies in said model and indicating these inconsistencies on said display screen.

5,444,838

COMPUTER SYSTEM AND METHOD FOR INTERFERENCE CHECKING OF POLYHEDRA USING CAPPING POLYGONS

Steven J. Kommrusch, Ft. Collins, Colo.; Daniel G. Schmidt, Logan, Utah, and Howard D. Stroyan, Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 18, 1991, Ser. No. 671,070
Int. Cl.[6] G06T 17/40
U.S. Cl. 395—141 53 Claims



50. A computer graphics system configured to allow a user to move at least one sectioning plane about at least one polyhedron having a plurality of polygons and to display, if necessary, an interference area between the plurality of polygons, the computer graphics system comprises;

(*a*) at least one processor and at least one memory unit configured with the computer graphics system to process data;

(*b*) an input device configured with the computer graphics system to allow the user to specify the at least one sectioning plane;

(*c*) an interference checking module configured with the computer graphics system to generate a two-dimensional interference cap polygon having a boundary, wherein said boundary is determined by at least one cap polygon generated by an intersection of at least one sectioning plane and at least one polyhedron; and

(*d*) a display device configured with the computer graphics system to display said interference cap polygon.

5,444,839

OBJECT BASED GRAPHICS SYSTEM FOR RASTERIZING IMAGES IN REAL-TIME

Kia Silverbrook, Wollahra; Michael J. Webb, Lane Cove; David W. Funk, Meadowbank, and Simon R. Walmsley, Epping, all of Australia, assignors to Canon Kabushiki Kaisha, Tokyo, Japan and Canon Information Systems & Research Australia Pty Limited, NSW, Australia

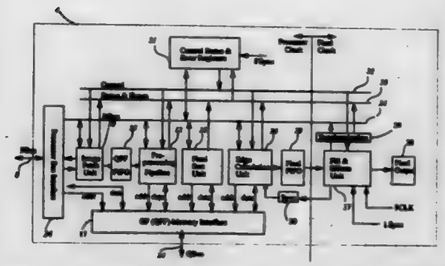
Filed Apr. 28, 1993, Ser. No. 53,373
Claims priority, application Australia, Apr. 29, 1992, PL 2147
Int. Cl.[6] G06F 15/72
U.S. Cl. 395—141 20 Claims

1. An object based graphics processor comprising:

input means for receiving object outlines of an image intended for rasterized display, each said outline comprising at least one object fragment and a corresponding priority level;

sorting means for sorting said object fragments into a rasterization sequence corresponding to each display line of a raster format;

reading means for reading said sequence in real-time and calculating object edges, each having one of said priority levels in each said display line; and



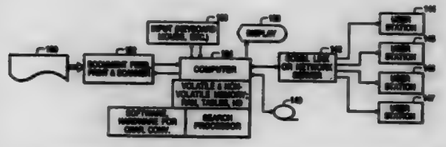
priority means for assigning pixel data values within each said display line based upon the priority level of said object edges, said pixel data values being output from said processor for rasterized display.

5,444,840

MULTIPLE IMAGE FONT PROCESSING

Horst Froessl, Gutenbergstrasse 2-4, 6944 Hemsbach, Germany

Continuation of Ser. No. 779,629, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 536,769, Jun. 12, 1990, Pat. No. 5,109,439, and a continuation-in-part of Ser. No. 547,190, Jul. 3, 1990, Pat. No. 5,396,588. This application Dec. 21, 1994, Ser. No. 361,846
Int. Cl.[6] G06T 7/00; G06F 17/30
U.S. Cl. 395—145 12 Claims



1. A computer-implemented method of retrievably storing contents of a plurality of documents having images imprinted thereon comprising

optically scanning the documents to form a digital representation of the images on the documents,

storing the image representation of each document,

establishing from images of the scanned documents a font table in image of alphanumeric characters in a plurality of different fonts each character in each font correlated with an equivalent character in code,

searching for a document by the steps of

interactively selecting a search word by a user,

entering by a user the selected search word in code,

machine-constructing an image of the selected search word from the font table in at least one font,

comparing the constructed search word with the image representations of scanned documents until a match in a stored document image is found, and

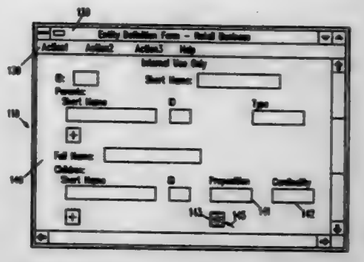
displaying an image thereof of the matched document.

5,444,841

GRAPHICAL USER INTERFACE CONTROL FOR REPLICATING DATA FIELDS IN FORMS

Howard J. Glaser, San Jose, Calif.; Joanna M. Strain, Ford, and Angus T. Tuckey-Smith, Bedhampton, both of Great Britain, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 789,353, Nov. 8, 1991, abandoned. This application Apr. 26, 1994, Ser. No. 233,894
Int. Cl.[6] G06F 17/21
U.S. Cl. 395—149 11 Claims



1. In a data processing system for providing a menu-driven graphical user interface for the display of text data, the data processing system having a data processing unit, a video display terminal, a keyboard, a cursor control device for providing control inputs to said system and a data storage resource, and the graphical user interface providing a document form display representation (document representation) on said video display terminal including at least one data field for text entry and display, a combination comprising:

pushbutton means for generating a pushbutton image in said document display adjacent to said data field, said pushbutton means being positioned to provide a visual indication of a replication direction in which said data field can be replicated;

means for generating a pointer in said document display;

means for positioning said pointer in said document display in response to a first control input from said cursor control device; and

replicating means responsive to said pointer positioned at said pushbutton image and to a second control input from said cursor control device representing a data field replicating command for replicating said data field in said document representation.

5,444,842

METHOD AND APPARATUS FOR DISPLAYING AND UPDATING STRUCTURED INFORMATION

Sheridan Bentson, and William R. Rassman, both of c/o DataView Partners, 5699 Kanan Rd., Suite 253, Agoura, Calif. 91301

Filed Jul. 24, 1992, Ser. No. 918,604
Int. Cl.[6] G06F 17/30
U.S. Cl. 395—161 52 Claims

1. A method for displaying structured information formed from plural interrelated tables, the method comprising the steps of:

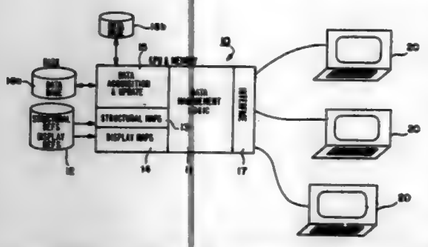
storing the plural interrelated tables such that each of the tables includes at least one join field which links that table to at least one other of the plural tables;

storing a structural map which, based on the join fields in the plural tables, describes interrelationships and pathing among the plural tables which form the structured information;

storing plural display maps, each said display map corresponding to one user-selectable display of information from the plural tables and defining the manner and placement of information on display means, each said display

map including an information display part which designates which of the plural tables information for display is obtained from, and at least some of said display maps including a structural display part which designates when structural indicators rather than information from the plural tables is to be displayed; and

displaying information from the plural tables in accordance with a user selection of one or more of said plural display maps, wherein, based on the information display part of the selected display map, information from designated



ones of the plural tables is displayed on display means in the manner and placement defined by the selected display map, and wherein in the case where the selected display map includes a structural display part, a structural indicator in accordance with the structural map is displayed;

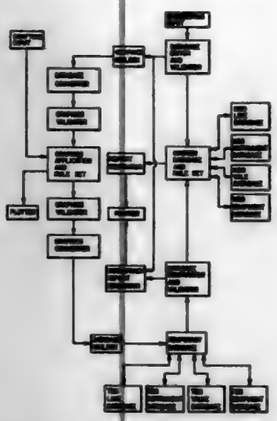
wherein when information is displayed the information is filtered in accordance with the interrelationships and pathing defined in the structural map such that not all information designated in the information display part of the selected display map is necessarily displayed.

5,444,843

METHOD FOR PRODUCING DATABASE COORDINATED DRAWINGS FOR A FACILITY

Paul E. Nilsson, Long Beach, Calif.; Frances A. Laughlin, Portland, Me., and Roy Wyma, Pasadena, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 13, 1993, Ser. No. 135,835
Int. Cl.[6] G06T *11/20*
U.S. Cl. 395—161 **10 Claims**



1. A method for generating drawings for at least a portion of an industrial facility and coordinating said drawings with a master database and rule set of selected requirements for said industrial facility so that said drawings meet said selected requirements, said method comprising:

a) entering drawing information into a graphics system to produce a drawing in a format adapted for conversion to a form suitable for comparison with said master database and rule set, said drawing including symbols identifying at least a portion of components shown on said drawing and user identification numbers assigned to at least a portion of said components, said drawing information further including a unique identification number for each component and class of use information related to component function, component operating conditions and component requirement;

b) converting said drawing information into converted drawing information of a form suitable for comparison with said master database and rule set;

c) comparing said converted drawing information to said master database and rule set;

d) generating a discrepancy report of any discrepancies between said drawing and said master database and rule set;

e) resolving any such discrepancies;

f) entering said drawing information into said master database; and,

g) editing said master database;

h) transferring an edited copy of said master database to said graphics system;

i) importing said edited copy of said master database into said graphics system and updating symbology as appropriate; and,

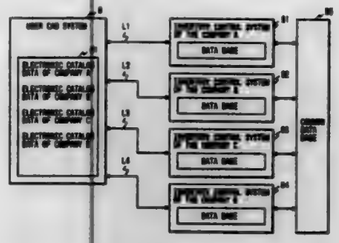
j) generating a human readable copy of said drawing information.

5,444,844

FIGURE DRAWING APPARATUS AND INVENTORY PURCHASING SYSTEM USING THE SAME

Kimio Inoue, Kanagawa; Hisao Tanaka, Tokyo; Toshio Katou, Kanagawa; Masaki Ikeda, Kanagawa; Masao Wakimoto, Kanagawa, and Katsuhiko Hamamura, Kanagawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 892,997, Jun. 3, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 302,379
Claims priority, application Japan, Jun. 4, 1991, 3-132791
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—161 **2 Claims**



1. An inventory purchase system using a figure drawing apparatus, comprising:

a figure drawing apparatus comprising:

a figure drawing menu including at least one schematic symbol of an electronic catalog portion,

a figure formation selection means for selecting a figure drawing subject to be drawn in accordance with a positional instruction corresponding to one of said schematic symbols of said electronic catalog portion,

an input selection means for selecting assignment data which corresponds to figure drawing data,

a memory device for storing the figure drawing data so that a first data base is formed with numerical data of a parametric system corresponding to said assignment data,

a data selection means for selecting said figure drawing data based on said assignment data from said first data base formed in said memory device, and

a drawing information production means for producing display data for drawing a figure by the parametric system in accordance with said figure drawing data; and

an inventory purchase apparatus including a second data base storing inventory contents information of said figure drawing subject,

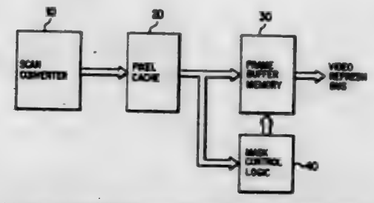
wherein said automatic figure drawing apparatus is connected with said inventory purchase system through an online communication link in such a manner that order information of said subject can be transmitted and received through the online communication link while a figure of said subject is drawn with said automatic figure drawing apparatus.

5,444,845

RASTER GRAPHICS SYSTEM HAVING MASK CONTROL LOGIC

Young-Keon Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jun. 29, 1993, Ser. No. 83,339
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—162 **2 Claims**



1. A raster graphic system having a scan converter for producing pixel data, a pixel cache for storing pixel data sequentially supplied from the scan converter, and a frame buffer, comprising:

a mask control logic circuit arranged between said pixel cache and said frame buffer,

wherein said mask control logic circuit comprises NOR gates for NORing pixel data in a tile of the pixel cache in which the pixel data is unwritten by the scan converter, and OR gates for ORing outputs of the NOR gates with a write enable signal WE#, wherein the ORed results are supplied as write enable signals WE#0 to WE#1 to said frame buffer.

5,444,846

IMAGE PROCESSING APPARATUS HAVING DIAGNOSTIC MODE

Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 866,278, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 570,972, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 257,157, Oct. 12, 1988, abandoned, which is a continuation of Ser. No. 767,196, Aug. 19, 1985, abandoned, which is a continuation of Ser. No. 396,463, Jul. 8, 1982, abandoned. This application Dec. 30, 1993, Ser. No. 175,675
Claims priority, application Japan, Jul. 15, 1981, 56-109402; Jul. 15, 1981, 56-109403; Jul. 15, 1981, 56-109404
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—163 **11 Claims**

1. An image processing apparatus comprising:

key input means for setting an image formation mode;

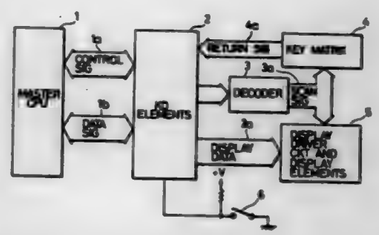
display means for displaying the image formation mode set by said key input means for displaying an operation condition of said image processing apparatus and for performing a predetermined diagnostic display operation;

a first processor for discriminating data from said key input means and for outputting display data for operating said display means, said first processor being controlled on the basis of data from a second processor; and

diagnostic instruction input means for inputting a diagnostic instruction for checking said key input means and said display means at an arbitrary timing after power on;

wherein said first processor discriminates whether the diagnostic instruction is inputted or not through said diagnostic instruction input means,

wherein when said first processor discriminates that the diagnostic instruction is not input, said first processor is set to a normal operation mode in which image formation is enabled on the basis of the image formation mode set by



said key input means, the data discriminated by said first processor is sent to said second processor, and said first processor outputs display data on the basis of data from said second processor, and

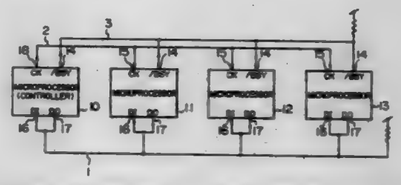
wherein when said first processor discriminates that the diagnostic instruction is input, said first processor is set to a diagnosis mode in which data is prohibited from being sent to and received from said second processor, and said first processor first performs a display check operation by controlling said display means to execute the predetermined diagnostic display operation independent of an input of said key input means, and when data is entered from said key input means after performance of the display check operation, said first processor performs a key check operation by outputting, independent from said second processor, display data varied in accordance with a type of the data entered from said key input means.

5,444,847

DATA TRANSFER METHOD FOR TRANSFERRING A DATA FRAME AMONG A PLURALITY OF DEVICES CONNECTED TO A SERIAL DATA BUS

Hiroyuki Iitsuka, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,809
Claims priority, application Japan, May 8, 1991, 3-102444
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—287 **6 Claims**



1. In a system comprising a plurality of devices including a controller, said plurality of devices being interconnected through a serial data bus comprising a data line, a clock line

and a control line one, each of said devices being assigned a specific one of a plurality of device addresses, a data transfer method for effecting transfer of a data frame serially between a master designated from among said plurality of devices and at least one slave designated from among said plurality of devices, said data transfer method comprising:

(a) applying a high-level signal to said control line to cause a voltage of said control line to be at a high level;

(b) controlling said controller to output to said data line a sequence of tokens, each token of said sequence of tokens containing one of said plurality of device addresses, one token of said sequence of tokens being output at every predetermined time interval during a time period when said voltage of said control line is at said high level;

(c) causing said plurality of devices to receive said sequence of tokens and causing said master, when said master receives one token of said sequence of tokens containing one of said plurality of device addresses which is assigned to said master, to apply a low-level signal to said control line to change said voltage of said control line to a low level before said controller outputs a next token, whereby said low level of said voltage of said control line signifies that said master is presently operating as said master;

(d) controlling said master to output a signal identifying said at least one slave and to control said transfer of said data frame between said master and said at least one slave;

(e) when said transfer of said data frame is complete, controlling said master to stop applying said low-level signal to said control line so that said voltage of said control line returns to said high level; and

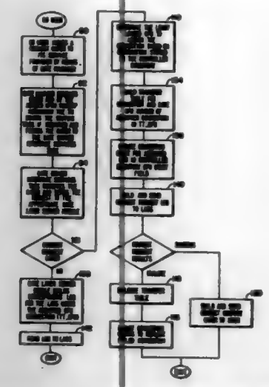
(f) causing, during a time period when said voltage of said control line is at said low level, said controller to output to said clock line a clock signal required for said transfer of said data frame between said master and said at least one slave.

5,444,848

DISTRIBUTION OF COMMUNICATIONS CONNECTIONS OVER MULTIPLE SERVICE ACCESS POINTS BY CHOOSING REMOTE AND LOCAL ACCESS POINTS HAVING LOWEST NUMBER OF CONNECTIONS

David B. Johnson, Jr., Wakefield, Mass.; Dennis W. Chasse, Litchfield, N.H., and Tommy W. Kwan, Billerica, Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Apr. 30, 1992, Ser. No. 876,667
Int. Cl.[6] G06F *13/14, 13/00, 3/00*
U.S. Cl. 395—200.15 **6 Claims**



1. In a data processing system including a plurality of computer systems interconnected by a communications network, at least one of said computer systems including a processing system having a plurality of central processing units, at least one user of the communications network executing on one of at least the plurality of central processing units, and a plurality of service access points, each service access point including at least one communication controller having at least one network device connected to the communications network and forming a communications service access point for communication connections between users and other computer systems, a communications control system for distributing execution of communication connections among the service access points of a local computer system and remote computer systems, comprising: in each computer system,

in each user, a means for generating a request for a communication operation with another computer system,

a driver interface service means having an active invocation in a single central processing unit of the processing system having a user executing therein,

a gate layer server being responsive to said request for said communication operation for constructing a corresponding path request gater,

said corresponding path request gater containing

an identification of a local user requesting a connection to a remote user on another computer system, and

an identification of the remote user,

a remote load balancing means, including

a local user list means for storing a number of communications connections being executed by each local service access point, and

a remote user list means for storing the number of communication connections between each said local service access point in the local computer system and a remote service access point in each remote computer system connected into the communications network with the local computer system, and

a path selection means for

scanning the local user list means and the remote user list means to select said local service access point and said remote service access point forming a communications path between the local user and the remote user presently executing a lowest number of communications connections, and

constructing a path response gater containing

an identification of the selected local service access point, and

an identification of the selected remote service access point,

the gate layer server being responsive to said path response gater for writing the identifications of the selected local and remote service access points into a control block and providing the control block to a local communications controller in which the selected local service access point resides,

the local communications controller being responsive to the control block for directing the network device of the selected local service access point to execute the communication connection.

5,444,849

METHOD FOR EXCHANGING LINK LEVEL MESSAGES BETWEEN A MANAGER FOR A COMPUTER SYSTEM AND A REMOTE FACILITY ASYNCHRONOUSLY LINKED THEREWITH

Scott C. Farrand, Tomball; Thomas J. Hernandez, Houston; Ronald A. Neyland, Spring; Richard A. Stupek; Andrew J. Miller, both of Houston; Patrick E. Dobyns, Garland, and Stephen R. Johnson, Jr., Plano, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 756,509, Sep. 9, 1991, Pat. No. 5,257,384. This application Jul. 12, 1993, Ser. No. 90,920
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—200.09 **9 Claims**

1. A method exchanging, at a link level, messages between a manager for a computer system and a remote facility asynchronously linked with said system manager, comprising the steps of:

polling for a first character code which identifies the start of a data packet containing a message therein;

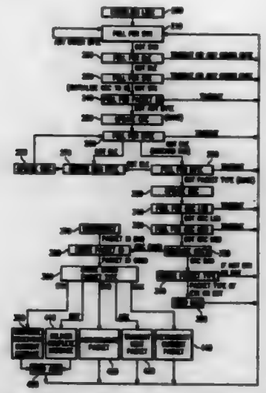
upon receiving said first character code, polling for a communication control character code which indicates that a data packet communication character code for said data packet follows;

upon receiving said communication control character code, polling for a first data packet communication character code which identifies the start of valid command data;

upon receiving said data packet character code, polling for command data which identifies said data packet being transmitted;

upon receiving said command data which identifies said data packet being transmitted, polling for a first part of a variable length data signal, said variable length data signal comprised of a plurality of data characters and at least one communication control character code;

upon receiving, as said first part of said variable length data signal, a first one of said at least one communication control character codes, discarding said received communication control character code and polling for a next part of said variable length data signal;



upon receiving, as said first part of said variable length data signal, a first one of said plurality of data characters, storing said received data character and polling for a next part of said variable length data signal;

upon receiving, as said next part of said variable length data signal, a first one of said at least one communication control character codes, discarding said received communication control character code and again polling for a next part of said variable length data signal;

upon receiving, as said next part of said variable length data signal, a next one of said plurality of data characters, storing said received data character and again polling for a next part of said variable length data signal;

upon receiving, as said next part of said variable length data signal, a second one of said at least one communication control character codes, storing said received second communication control character code and again polling for a next part of said variable length data signal;

upon receiving, as said next part of said variable length data signal, a second data packet communication character code which indicates the type of data packet received, determining a CRC checksum for said received signals; and

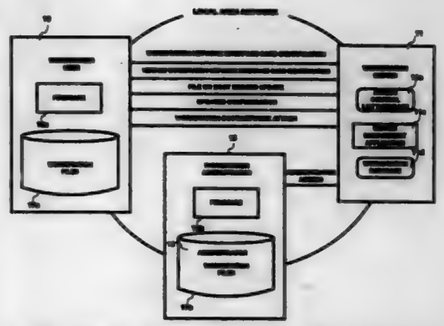
polling for a CRC checksum comparison signal for comparing to said determined CRC checksum.

5,444,850

METHOD AND APPARATUS FOR CONTROLLING NETWORK AND WORKSTATION ACCESS PRIOR TO WORKSTATION BOOT

Steve M. Chang, Rancho Palos Verdes, Calif., assignor to Trend Micro Devices Incorporated, Torrance, Calif.

Filed Aug. 4, 1993, Ser. No. 101,837
Int. Cl.[6] G06F *15/177, 9/24*
U.S. Cl. 395—200.1 **7 Claims**



1. An apparatus for enabling predetermined workstation resources to be controlled via a network connection prior to loading of a complete workstation operating system onto a storage medium accessible to a processor of the workstation comprising:

a) transferring control means, operable upon workstation startup for transferring control from a workstation preboot process to an external process prior to loading the complete workstation operating system onto a storage medium of the workstation accessible to a processor of the workstation;

b) responsive to the external process, network connection initiation means for initiating a network connection of the workstation to a server on the network;

c) upon initiating the network connection, workstation authentication means for authenticating the workstation identification through the server to ensure that the workstation is authorized to be connected to the network;

d) upon authenticating the workstation identification, file updating means for updating selected files located within the workstation based upon data located within files in the server;

e) upon updating the selected files, return control means for returning control to the workstation boot process to load the complete workstation operating system.

5,444,851

METHOD OF ACCESSING CONFIGURED NODES IN A FACILITES MANAGEMENT SYSTEM WITH A NON-CONFIGURED DEVICE

Karen L. Woest, Wauwatosa, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

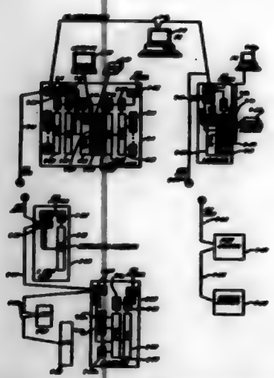
Division of Ser. No. 476,031, Jan. 30, 1990, abandoned. This application Jan. 21, 1994, Ser. No. 185,674
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.1 **20 Claims**

1. A method of accessing network controllers in a facilities management system with a portable computing unit, the network controllers in the facilities management system being arranged to control a process, the network controllers being configured as at least one network and being interconnected by at least one communication link, each of the network controllers including an equipment interface for receiving data related to the process, and a processor including a drop port, the processor being coupled to the equipment interface, the facili-

ties management system being initialized so that the network controllers are configured to each have a network address indicative of a particular location in the facilities management system, the network address including a subset indicative of an associated communication link to which the network controller is connected, a local address indicative of the network controller, and a node drop ID indicating that the network controller is a configured network controller, the portable computing unit being a non-configured device not part of the network, the method comprising:

connecting the portable computing unit to a first port of a first network controller of the network controllers, the first configured network controller configured on the system at a first location defined by the subset indicative of the communication link and a first local address indicative of the first network controller;

assigning a first network address to the portable computing unit, the first network address including the subset, the



first local address and a first drop identifier indicative of the first drop port of the first network controller;

transmitting a request for data received at an equipment interface of a second network controller located at a second network address from the portable computing unit to the second network controller, the request including the second network address as a destination indicator and the first network address as a source indicator;

transmitting the data from the second network controller to the portable computing unit in response to the request for data, the data including the second network address as the source indicator and the first network address as the destination indicator;

receiving the data from the second network controller at the processor of the first network controller according to the subset and local address of the first network address;

transmitting the data to the portable computing unit through the first drop port specified by the first drop identifier portion of the first network address.

5,444,852

I/O DEVICE INTERFACE HAVING BUFFER MAPPED IN PROCESSOR MEMORY ADDRESSING SPACE AND CONTROL REGISTERS MAPPED IN PROCESSOR I/O ADDRESSING SPACE

Takao Nakabayashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,584

Claims priority, application Japan, Oct. 26, 1990, 2-290117

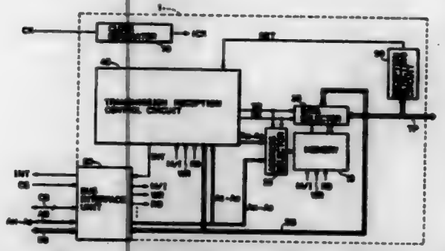
Int. Cl.[6] G06F *13/00, 13/12*

U.S. Cl. 395—823 **12 Claims**

1. An input/output device for use with a data processor having an address bus and a data bus for controlling inputting-/outputting of data to/from external equipment in a separate-type input/output system in which a memory space and an I/O space are separated from each other and an address on the memory space and an address on the I/O space are designated using said address bus, said input/output device comprising:

storage means having an address selector and a data selector respectively coupled to said address bus and said data bus, for storing data received from said data bus to be transmitted to said external equipment and for storing data received from said external equipment to be transmitted to said data bus, said storage means having addresses assigned in the memory space;

control means, coupled to said data selector and said address selector of said storage means, said address bus, and said data bus, said control means including holding means for holding control data received over said data bus, said



holding means having addresses assigned in the I/O space, said control means being responsive to the control data held in said holding means for controlling said address selector and said data selector of said storage means to read data from said storage means and transmit said data to said external equipment and to receive data from said external equipment and write said data into said storage means; and

designation signal receiving means coupled to said control means for receiving a designation signal designating whether an address signal supplied through said address bus indicates an address of said storage means or said control means,

said storage means and said control means being selectively activated in response to said designation signal.

5,444,853

SYSTEM AND METHOD FOR TRANSFERRING DATA BETWEEN A PLURALITY OF VIRTUAL FIFO'S AND A PERIPHERAL VIA A HARDWARE FIFO AND SELECTIVELY UPDATING CONTROL INFORMATION ASSOCIATED WITH THE VIRTUAL FIFO'S

Derek J. Lentz, Los Gatos, Calif., assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 31, 1992, Ser. No. 862,623

Int. Cl.[6] G06F *13/12, 13/14*

U.S. Cl. 395—250 **21 Claims**

1. A virtual FIFO peripheral interface system for use with a host processor and a peripheral processor in connection with queuing, control and transfer of data from the host processor to a peripheral, comprising:

(a) at least one virtual FIFO data structure located in a main memory;

(b) a control addresses block associated with each of said at least one virtual FIFO data structure;

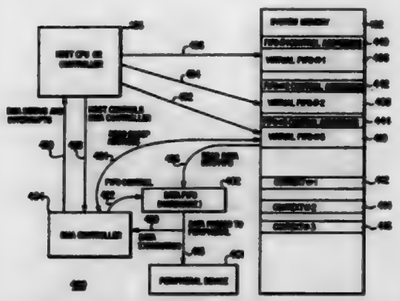
(c) a hardware FIFO, coupled to said virtual FIFO data structure, and controlled by the peripheral processor, which supplies data to the peripheral;

(d) a direct memory access (DMA) controller, coupled to said hardware FIFO and the host processor, which controls the data transfer from said at least one virtual FIFO data structure to the peripheral processor;

(e) wherein said control address block includes a start address pointer and an end address pointer, wherein said start and end address pointers indicate the memory location in said associated virtual FIFO data structure where information is stored, said start address pointer and said end address pointer are managed jointly by the host processor and said DMA controller; and

(f) means for updating said start address pointer in said control address block according to the following protocol:

(i) updating said start address pointer if the amount of data left in said virtual FIFO data structure is less than the



maximum increment which can be fetched from said virtual FIFO data structure in a single memory transaction;

(ii) updating said start address pointer if the context is switched in said associated virtual FIFO data structure;

(iii) updating said start address pointer if said hardware FIFO is empty;

(iv) updating said start address pointer if the amount of data read from said hardware FIFO since the last time said start address pointer was updated is substantially large; and

(v) updating said start address pointer if requested by the host processor.

5,444,854

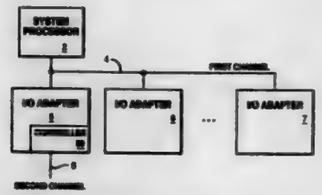
INPUT/OUTPUT INITIATE COMMAND MECHANISM

Joseph R. Mathis, Georgetown, Tex.; Richard R. Oehler, Somers, N.Y., and Carl Zeitler, Jr., Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 675,118, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 297,780, Jan. 13, 1989, abandoned. This application Mar. 6, 1992, Ser. No. 849,643

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—825 **6 Claims**



1. A data processing system comprising;

a processor means connected only to a first communications channel for issuing a communications command on said first communications channel for communications on a second communications channel; and

a peripheral means connected to said first communications channel and to the second communications channel operating asynchronously, said peripheral means for executing said command including control means for simultaneously providing a status word to said processor means in response to said command indicating that said peripheral means is executing said command on said second communications channel at the same time that said peripheral means is providing said status word.

5,444,855

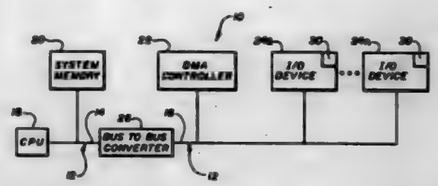
SYSTEM FOR GUARANTEED CPU BUS ACCESS BY I/O DEVICES MONITORING SEPARATELY PREDETERMINED DISTINCT MAXIMUM NON CPU BUS ACTIVITY AND INHIBITING I/O DEVICES THEREOF

Stephen P. Thompson, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1992, Ser. No. 870,581

Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—287 **20 Claims**



1. A computer system, comprising:

system memory and a memory controller for controlling access thereto;

a central processing unit (cpu);

at least one input/output device having a coprocessor incorporated therein;

a system bus for electrically connecting said system memory, said memory controller, said central processing unit and said at least one input/output device, control of which bus may be taken by any one of said memory controller, said central processing unit and said at least one input/output device when communicating over said bus with each other or with said system memory, each of said at least one input/output device assigned separately a predetermined distinct maximum time period indicating a maximum time period of non-cpu bus activity;

said at least one input/output device incorporating bus control logic therein for (i) storing a value corresponding to said separately predetermined distinct maximum time period therein, (ii) monitoring bus activity to count the bus mastering time during which either said memory controller or one of said at least one input/output devices controls said bus, irrespective of the number of data transfer operation constituting said bus activity which are initiated by said memory controller or said at least one input/output device and (iii) outputting an inhibit signal which denies access to said bus by said at least one input-/output device in which said bus control logic is incorporated, if said counted bus mastering time is equal to or greater than the separately predetermined distinct maximum time period indicating a maximum time period of non-cpu bus activity assigned to that input/output device enabling said cpu to access said system bus; and

wherein said control logic on each of said at least one input-/output device monitors said bus activity during the same predetermined monitoring time; and

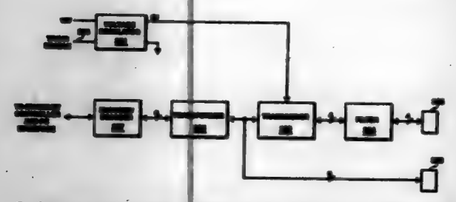
wherein a first counter is used to count said predetermined monitoring time period and a second counter is used to count said bus mastering time elapsing during said predetermined monitoring time period.

5,444,856

APPARATUS AND METHOD FOR SWITCHING ETHERNET MEDIA TYPE

Richard A. Bowers, Beaverton; Phillip Martin, Banks, and Robert A. Jacobs, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 7, 1992, Ser. No. 910,711
Int. Cl.[6] G06F 11/20
U.S. Cl. 395—200.1 8 Claims



1. A computer system having an interface for coupling said computer system with a computer network, said interface comprising:

a first input/output port for connecting said computer system to said computer network by a first transmission media type, said first input/output port being selectively enabled or disabled for data transfer,

a second input/output port for connecting said computer system to said computer network by a second transmission media type, said second input/output port being always enabled for data transfer,

means for generating an enable/disable signal for selectively enabling or disabling said first port,

detecting means, coupled to said first input/output port and said second input/output port, for detecting which one of said first or said second port is connected to said computer network, said detecting means comprising:

a) means for controlling said means for generating to enable said first port,

b) means for transmitting a data packet to an address corresponding to said computer system via said first port;

c) means for determining a status of a data packet transmission transmitted to said address corresponding to said computer system,

d) means for controlling said means for generating to disable said first port if said data packet is not successfully transmitted on said first port,

e) means for transmitting a data packet to an address corresponding to said computer system via said second port if said data packet is not successfully transmitted on said first port, and

a means for transmitting and receiving data via one of said first port or said second port, depending on which of said first and said second port is connected to said computer network.

5,444,857

METHOD AND APPARATUS FOR CYCLE TRACKING VARIABLE DELAY LINES

Stephen T. Rowland, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 12, 1993, Ser. No. 60,804
Int. Cl.[6] G06F 13/38
U.S. Cl. 395—309 19 Claims

1. An apparatus for generating an output reference during a bus cycle, said apparatus comprising:

a bus;

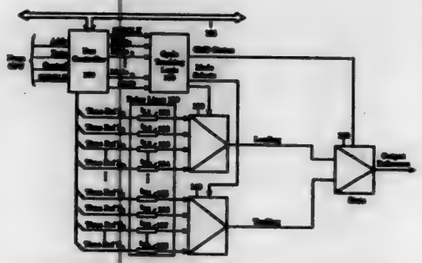
a bus controller coupled to said bus for generating a plurality of leading bus cycle events, a plurality of trailing bus cycle events, and a bus mode for said bus cycle;

a plurality of delay lines coupled to receive said leading bus cycle events and said trailing bus cycle events for delaying each leading bus cycle event and each trailing bus cycle event a pre-determined time to generate a plurality of delayed leading bus cycle events and a plurality of delayed trailing bus cycle events;

a first multiplexer coupled to said delay lines to receive, as inputs, said plurality of delayed leading bus cycle events, and to generate, as an output, a single delayed leading bus cycle event;

a second multiplexer coupled to said delay lines to receive, as inputs, said plurality of delayed trailing bus cycle events, and to generate, as an output, a single delayed trailing bus cycle event;

a third multiplexer coupled to said first and second multiplexers to receive, as inputs, said single delayed leading bus cycle event and said single delayed trailing bus cycle event, and to generate, as an output, an output reference; and



cycle tracking logic coupled to said bus controller to receive said bus mode and coupled to said first and second multiplexers to select said single delayed leading bus cycle event and said single delayed trailing bus cycle event for said bus cycle, and for controlling said third multiplexer to select, during a leading state, said single delayed leading bus cycle event as said output reference, and to select, during a trailing state, said delayed trailing bus cycle event as said output reference such that said cycle tracking logic selects said single delayed trailing bus cycle in said second multiplexer before said trailing state in said third multiplexer so that said single delayed trailing bus cycle event is stable during selection as said output reference to provide glitch protection for said output reference, wherein changing said output reference in response to a change in a timing specification for said bus requires only changing said pre-determined time for said delay lines.

5,444,858

COMPUTER SYSTEMS AND METHODS FOR PIPELINED TRANSFER OF DATA BETWEEN MODULES

John F. Wakerly, Mountain View, Calif., assignor to Alantec Corporation, San Jose, Calif.

Continuation of Ser. No. 964,180, Oct. 19, 1992, abandoned, which is a division of Ser. No. 304,053, Jan. 30, 1989, Pat. No. 5,237,670. This application Jul. 18, 1994, Ser. No. 276,877
Int. Cl.[6] G06F 13/00, 1/04
U.S. Cl. 395—304 10 Claims

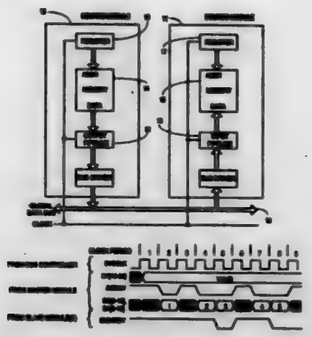
7. A computer system comprising:

a first module;

a second module; and

a bus for transferring data between the first and second modules;

wherein the first module is responsive to a clock signal to deliver data to said bus starting at a beginning of a period of said clock signal and through at least one period of said clock signal and to deliver to said bus a signal M1 indicating whether said first module is delivering data to said bus such that when the first module delivers data to said bus, the first module delivers the signal M1 substantially simultaneously with the data; and



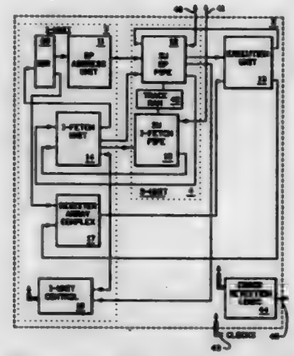
wherein the second module is responsive to said clock signal and the signal M1 to accept data from said bus at the end of said at least one period during which the first module delivers data to said bus.

5,444,859

METHOD AND APPARATUS FOR TRACING MULTIPLE ERRORS IN A COMPUTER SYSTEM SUBSEQUENT TO THE FIRST OCCURENCE AND PRIOR TO THE STOPPING OF THE CLOCK IN RESPONSE THERETO

Jeffrey L. Baker, Milpitas; Robert G. Stebbins, and Quang H. Nguyen, both of San Jose, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Sep. 29, 1992, Ser. No. 953,543
Int. Cl.[6] G06F 11/00
U.S. Cl. 395—575 15 Claims



1. An apparatus for tracing errors in a data processing system having a clock, error detection logic which stops the clock within a number of cycles after detection of an error and a plurality of signal lines, comprising:

a memory having an input port and an output port;

means, coupled to the memory and the plurality of signal lines, for connecting the plurality of signal lines in parallel to the input port of the memory;

means, coupled to the clock and the input port of the memory, for storing information from the plurality of signal lines on the input port in successive locations in the memory in response to successive cycles of the clock;

means, coupled to the output port of the memory and the error detection logic, for reading the information in the memory for use in error analysis after detection of an error; and

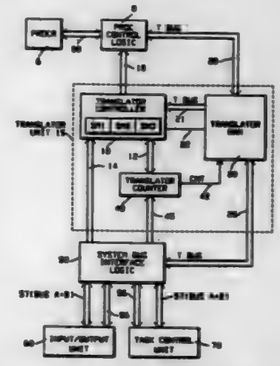
means, coupled with the error detection logic, for storing a multiple error signal upon a second occurrence of an error between a first occurrence of said error and the stopping of the clock in response to the first occurrence of said error, for use in analysis of the information in the memory.

5,444,860

TRANSLATOR SYSTEM FOR MESSAGE TRANSFERS BETWEEN DIGITAL UNITS OPERATING ON DIFFERENT MESSAGE PROTOCOLS AND DIFFERENT CLOCK RATES

Wayne C. Datwyler, and Paul B. Ricci, both of Laguna Niguel, Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 14, 1992, Ser. No. 837,174
Int. Cl.[6] G06F 5/06
U.S. Cl. 395—500 3 Claims



1. A message transfer system for accommodating message transfers between digital units operating on different message protocols comprising:

(a) processor means , operating at a first clock rate, for sending and receiving message data at a rate of one single 48-bit word message per message cycle;

(b) resource means, operating at a second clock rate, for sending and receiving message data at a rate of four 48-bit word messages per message cycle;

(c) translation means connecting said processor means and said resource means and including:

(c1) means for accumulating and converting said processor derived single word messages into four 48-bit word messages for delivery to said resource means;

(c2) means for accumulating said resource derived 48-bit word messages for delivery to said processor means at a rate of one single 48-bit word message per message cycle;

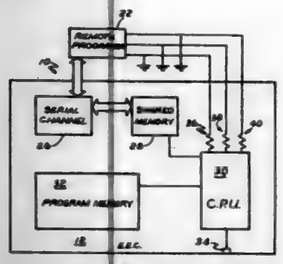
(c3) translator controller means for regulating the transfer of said word messages between said processor means and said means for accumulating processor derived single word messages, and for regulating the transfer of words between said resource means and said means for accumulating resource derived 48-bit word messages, and including:

(c3a) message status register means, for indicating to said processor means, that a request from said processor means is still incomplete;

(d) dual system bus means providing first and second busses connecting said translation means to said resource means wherein each one of said busses operates concurrently to facilitate data transfers and wherein any one of said busses

alone can provide data transfer operations if the other bus is disabled.

5,444,861
SYSTEM FOR DOWNLOADING SOFTWARE
William B. Adamec; Robert E. Cox, both of Enfield, and Scott A. Gigandet, East Granby, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 890,776, Jun. 1, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,984
Int. Cl.[6] G06F *15/16, 9/06, 9/24*
U.S. Cl. 395—700 17 Claims



1. A system for downloading software from a remote programmer to an Electronic Engine Control ("E.E.C.") unit comprising:
a. a serial channel within the E.E.C. unit that receives, communications from and transmits communications to the remote programmer;
b. a shared memory within the E.E.C. unit that receives, stores, and transmits communications from the serial channel;
c. a central processing unit ("C.P.U.") within the E.E.C. unit that receives, stores, executes, and transmits communications from the shared memory, and generates control signals for transmission out of the E.E.C. unit by way of an in/out port in the E.E.C. unit;
d. a program memory within the E.E.C. unit that receives and stores communications from the C.P.U. and transmits communications to the C.P.U.; and
e. control circuit means for enabling the remote programmer to select either:
i. a first E.E.C unit operating means for operating the E.E.C. unit in a first mode of operation, wherein the serial channel receives incoming code as serial data words and stores the code in the shared memory; the shared memory is written and/or read by the serial channel; and the C.P.U. is idle, so that the remote programmer can download a boot program through the serial channel for storage in the shared memory, or
ii. a second E.E.C. unit operating means for operating the E.E.C unit in a second mode of operation, wherein the C.P.U. automatically executes code in the shared memory and is enabled to read and/or write to the shared memory and program memory, so that the remote programmer can download software code through the serial channel, shared memory, C.P.U. to the program memory; or
iii. a third E.E.C. unit operating means for operating the E.E.C. unit in a third mode of operation, wherein the C.P.U. controls the serial channel; the C.P.U. and the serial channel can read and/or write to the shared memory; and, the C.P.U. reads from, but cannot write to, the program memory, so that the C.P.U. can execute software code stored in the program memory, and the remote programmer cannot access the program memory.

5,444,862
CIRCUIT FOR STOPPING DATA TRANSMISSION RESPONDING TO LOW LEVEL AND RAPID FALL OF RECEIVED ELECTRIC FIELD
Kunio Hibino, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 30, 1992, Ser. No. 953,781
Int. Cl.[6] H04B *1/26*
U.S. Cl. 455—54.1 34 Claims

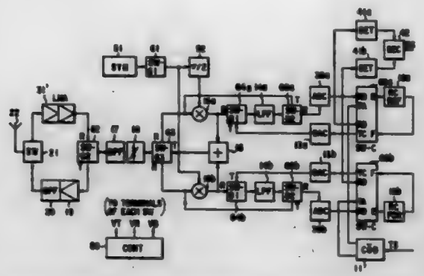


1. A mobile radio communication apparatus, comprising:
signal reception means for receiving a first radio frequency signal, and a signal transmission means for transmitting a second radio frequency signal;
a transmitting signal generating means for generating the second radio frequency signal to be transmitted through the antenna;
a transmission stopping means for immediately stopping the operation of transmitting the second radio frequency signal when receiving a stop control signal;
a strength indicating signal generating means for receiving the radio frequency signal received by the antenna, and generating a strength indicating signal having an amplitude corresponding to a strength of an electric field received by the antenna, based on the received radio frequency signal;
a first comparator means for receiving said strength indicating signal, and comparing the amplitude of the strength indicating signal with a reference voltage to detect a first condition in which the amplitude of the strength indicating signal is below the reference voltage, to output a result of the detecting of the first condition;
a rapid fall detecting means for receiving the strength indicating signal, and detecting a second condition in which the amplitude of the strength indicating signal decreases at a rate exceeding a predetermined decreasing rate; and
a stop control signal generating means for generating the stop control signal to be supplied to the transmission stopping means, when both the first and second conditions are satisfied.

5,444,863
RADIO COMMUNICATION APPARATUS HAVING COMMON CIRCUITS USABLE BY TRANSMITTER AND RECEIVER SYSTEMS
Kenichi Torii, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 30, 1992, Ser. No. 969,058
Claims priority, application Japan, Oct. 31, 1991, 3-286837
Int. Cl.[6] H04B *1/44*
U.S. Cl. 455—83 22 Claims

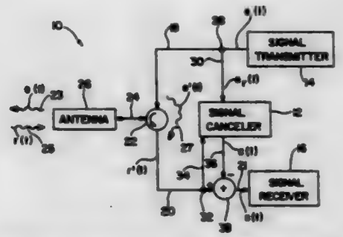
14. A radio communication apparatus for use in a radio communication system wherein speech signals or data signals are transmitted over a radio link established between a base station and the radio communication apparatus, the radio communication apparatus comprising:
control means for generating at least one control signal for controlling said radio communication apparatus to operate in one of a transmit mode and a receive mode;
a low noise receiver amplifier for receiving a first radio frequency signal transmitted over the radio link;

modulating means for modulating signals to be transmitted over the radio link into a second radio frequency signal;
adjusting means for adjusting a level of the first and second radio frequency signals;
demodulating means for demodulating an adjusted first radio frequency signal received from said adjusting means into analog signals of a certain frequency;
a transmission power amplifier for amplifying an adjusted second radio frequency signal received from said adjusting means;



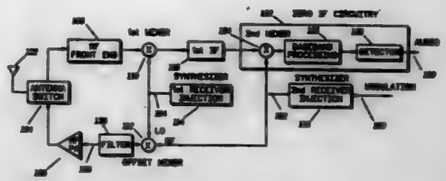
first switching means for switchably connecting one of said receiver amplifier and said modulating means to an input of said adjusting means according to said control signal of said control means; and
second switching means for switchably connecting one of said transmission power amplifier and said demodulating means to an output of said adjusting means according to said control signal of said control means.

5,444,864
METHOD AND APPARATUS FOR CANCELLING IN-BAND ENERGY LEAKAGE FROM TRANSMITTER TO RECEIVER
Winthrop W. Smith, Greenville, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Filed Dec. 22, 1992, Ser. No. 995,055
Int. Cl.[6] H04B *1/56*
U.S. Cl. 455—84 14 Claims



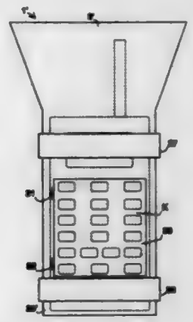
1. A system for processing a transmitted signal and a received signal to generate an output signal representing an estimate of an undesired signal mixed within the received signal, wherein the undesired signal is a by-product of the transmitted signal, comprising:
means for processing the transmitted and received signals to generate a correction signal, said correction signal comprising estimates of the gain and phase of the undesired signal mixed within the received signal; and
means for processing the received signal and the correction signal according to the gain and phase estimates of the correction signal to generate the output signal substantially gain and phase matched to the undesired signal mixed within the received signal.

5,444,865
GENERATING TRANSMIT INJECTION FROM RECEIVER FIRST AND SECOND INJECTIONS
Joseph P. Heck, Ft. Lauderdale, Fla., and David B. Ellingson, Bedford, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 1, 1991, Ser. No. 677,909
Int. Cl.[6] H04B *1/40*
U.S. Cl. 455—86 3 Claims



1. A time domain multiplexed (TDM) radio transceiver having a transmitter and a zero intermediate frequency (IF) receiver and the transmitter and zero IF receiver operate at substantially the same frequency in both transmit and receive modes, comprising:
a first local oscillator (LO) means for providing a first LO signal for use in both transmit and receive modes;
a first mixer means having a radio frequency (RF) input, a second input for receiving the first LO signal, and having an output for providing a first IF signal;
a second local oscillator means for providing a second LO signal having substantially the same frequency as the first IF signal for use in both transmit and receive modes;
a second mixer means having a first input for receiving the first IF signal, a second input for receiving the second LO signal, and for providing a second IF signal; and
a transmitter offset mixer means having a first input for receiving the first LO signal, a second input for receiving the second LO signal, and having an output for providing a modulated RF signal.

5,444,866
DEVICE FOR SHIELDING A CELLULAR TELEPHONE USER FROM ELECTROMAGNETIC WAVES
Robert C. Cykiert, 4 Rock Meadow La., Scarsdale, N.Y. 10583
Filed Feb. 24, 1993, Ser. No. 21,816
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—89 13 Claims



10. A device for shielding a user from electromagnetic waves emitted by a cellular telephone including a body with a keypad, an earpiece and a mouthpiece and an antenna extending outwardly from a top portion thereof, the device comprising: a shielding member comprising electromagnetic shielding

material; means for mounting the shielding member on the cellular telephone body for sliding movement from a non-operative position wherein the shielding member is disposed between the user and the keypad, mouthpiece and earpiece and obstructs access to the keypad, mouthpiece and earpieces to an operative position wherein the shielding member is disposed between the antenna and the user and wherein the user has unobstructed access to the keypad, the mouthpiece and the earpiece on the telephone.

5,444,867

ADAPTER UNIT FOR ADAPTIVELY SUPPLYING A PORTABLE RADIO TELEPHONE WITH POWER

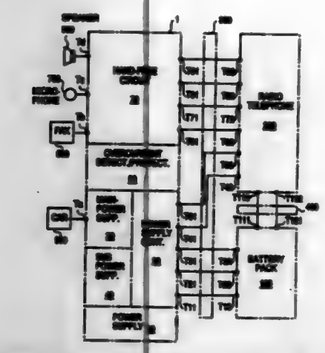
Kuniyoshi Marui, Saitama; Goichi Sato, Tokyo; Takaaki Ishii, Kanagawa; Shinji Takacki, Tokyo; Buntaro Sawa, Kanagawa, and Hiroshi Sato, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jan. 9, 1992, Ser. No. 818,589

Claims priority, application Japan, Jan. 11, 1991, 3-002291; Jan. 11, 1991, 3-002294; Jan. 11, 1991, 3-002297; Jan. 11, 1991, 3-002298; Jan. 11, 1991, 3-002299

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—89 **2 Claims**



1. An adapter unit for use with a portable radio unit having a rechargeable battery, the portable radio unit being connectable to the adapter unit, the adapter unit comprising:

detecting means for detecting the operational state of the portable radio unit when the portable radio unit is connected to the adapter unit;

first power supply means for charging the rechargeable battery with electric power in the event that the portable radio unit is connected to the adapter unit and said detecting means detects that the portable radio unit is not being powered;

second power supply means for supplying the portable radio unit with electric power in the event that the portable radio unit is attached to the adapter unit and said detecting means detects that the portable radio is in a communication state and is being powered by the rechargeable battery, the power supply capacity of the second power supply means being larger than that of the first power supply means;

a microphone;

a speaker;

a hand-free circuit for controlling a level of signals output from the speaker in response to a level of signals input to the microphone, wherein said hand-free-circuit is activated in response to a connection between the adapter unit and the portable radio unit when the portable radio unit is in the communication state; and

an overcurrent detection circuit for detecting an abnormal charging current supplied to the rechargeable battery and for inhibiting said second power supply means responsive to the detection of the abnormal charging current.

5,444,868

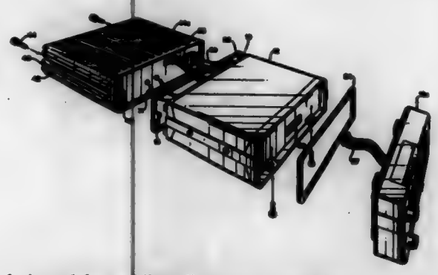
MODULAR MOBILE RADIO SYSTEM

Gary R. Reynolds; Richard Culbertson, both of Lynchburg, and Ralph R. Sherman, Jr., Campbell, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Mar. 23, 1993, Ser. No. 36,206

Int. Cl.[6] H04B *1/38, 1/08*

U.S. Cl. 455—89 **11 Claims**



1. A modular mobile radio system comprising:

a radio having a power amplifier, transceiver and a control head electrically coupled to one another and with at least one electrical connection at a rear end of said amplifier, a bracket having top, bottom and side walls defining a receptacle and a wall at one end of the receptacle opposite an opening at the opposite end of the receptacle for receiving the radio, an electrical connection fitting in said one end wall for electrically coupling with said electrical connection on said amplifier when said radio is inserted through said opening into said receptacle and finally seated therein, a handle pivotally carried by said radio between a radio carrying position upon removal of the radio from the receptacle and a latching position releasably securing the radio to the receptacle, said handle and said receptacle carrying latching parts engageable with one another when said handle is in said latching position and said radio is finally seated in said receptacle.

5,444,869

METHOD AND APPARATUS IN A COMMUNICATION DEVICE FOR AUTOMATIC TRANSFER OF CONTROL FROM AN INTERNAL PROCESSOR TO AN EXTERNAL COMPUTER

Douglas M. Stricklin, Boynton Beach; William R. VanDyke, Jr., Lighthouse Point; Tony Y. Maroun, Boynton Beach, and Gregory L. Canaan, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 962,754, Oct. 19, 1992, abandoned.

This application Aug. 5, 1994, Ser. No. 286,589

Int. Cl.[6] H04B *1/40*; H04Q *7/18*

U.S. Cl. 455—89 **16 Claims**

9. A battery-powered portable radio communication device comprising:

antenna means for intercepting radio signals comprising address and message information;

receiver means coupled to the antenna means for demodulating the intercepted radio signals;

decoder means coupled to the receiver means for decoding demodulated addresses;

processor means coupled to the receiver means and to the decoder means for controlling the portable radio communication device;

memory means coupled to the processor means for storing software operating instructions and demodulated messages;

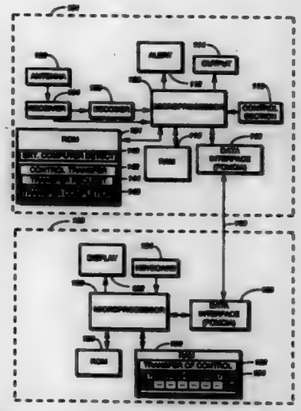
data port means coupled to the processor means for communicating with an external computer;

a first processor element coupled to the processor means for detecting a signal at the data port means, the signal indicating that the external computer is coupled to the portable radio communication device; and

a second processor element coupled to the processor means for conserving battery power in the portable radio communication device by transferring control of the portable radio communication device from the processor means to the external computer, the second processor element comprising:

a transfer request element for requesting a transfer of control from the internal processor to the external computer; and

a transfer completion element coupled to the transfer request element for transferring control of functional



elements listed in a response from the external computer.

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DESIGN PATENTS

GRANTED AUG. 22, 1995

ERRATA

For CLASS	See PATENT NO.
D008–316	D 361,436
D013–110	D 361,538
D023–209	D 361,622
D023–223	D 361,623
D023–257	D 361,624
D023–296	D 361,625
D023–309	D 361,626
D023–235	D 361,627
D023–312	D 361,628
D032–041	D 361,634
D032–042	D 361,635
D026–085	D 361,639
D026–106	D 361,640
D026–110	D 361,641
D034–032	D 361,642
D034–021	D 361,643
D034–029	D 361,644
D034–034	D 361,645

VOL
1177
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1995
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DESIGNS

AUGUST 22, 1995

361,423
SANDAL BOOT
Irma J. Luque, 3843 W. Charter Oak, Phoenix, Ariz. 85029
Continuation-in-part of Ser. No. 853,312, Mar. 17, 1992, Pat. No. Des. 352,153. This application Jun. 21, 1994, Ser. No. 24,762
Term of patent 14 years
U.S. Cl. D2—910



361,424
REMOVABLE SOLE FOR GOLF SHOE
Raul Medina, 1495 E. Warner, Fresno, Calif. 93710
Filed Mar. 10, 1994, Ser. No. 19,811
Term of patent 14 years
U.S. Cl. D2—914



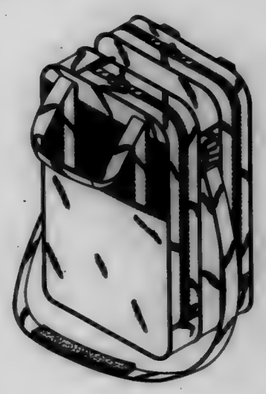
361,425
SHOE UPPER
Peter Backus, Portland, Oreg., assignor to Avia Group International, Inc., Beaverton, Oreg.
Filed Feb. 25, 1994, Ser. No. 19,857
Term of patent 14 years
U.S. Cl. D2—969



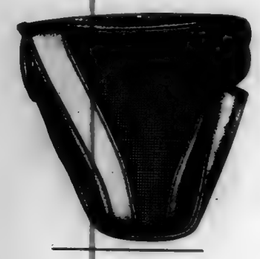
361,426
SHOE UPPER
David Baker, Foxboro, Mass., assignor to Mercury International Trading Corp., Attleboro, Mass.
Filed Feb. 15, 1994, Ser. No. 18,789
Term of patent 14 years
U.S. Cl. D2—970



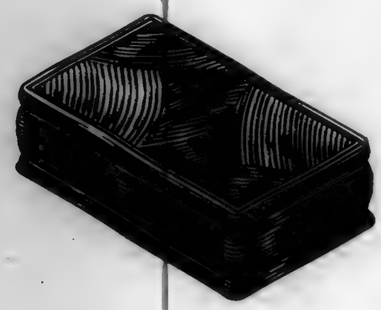
361,427
COMPARTMENTED SPORT BAG
Jon Taguchi; Alexander Gajowskyj, and Gaile Thorstad, all of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Continuation of Ser. No. 8,803, May 27, 1993, which is a continuation-in-part of Ser. No. 7,580, Apr. 27, 1993, abandoned.
This application Feb. 22, 1994, Ser. No. 19,025
Term of patent 14 years
U.S. Cl. D3—254



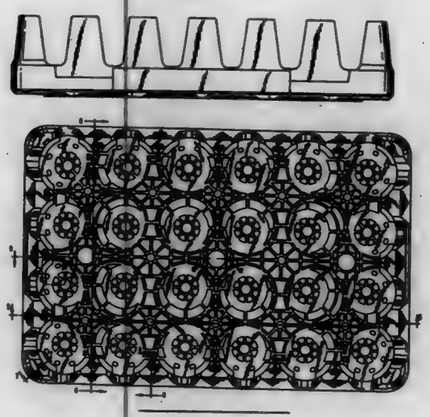
361,428
CAMERA CASE
Jun Akahane, Yokohama, and Nobuo Hashimoto, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jul. 6, 1994, Ser. No. 25,183
Claims priority, application Japan, Jan. 24, 1994, 6-1181
Term of patent 14 years
U.S. Cl. D3—267



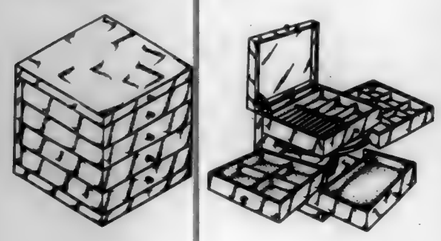
361,429
JEWELRY BOX
James G. Mohundro, No. 20, Ta-Lung Road, 11F-4, Taichung, Taiwan
Filed Jun. 10, 1994, Ser. No. 24,260
Term of patent 14 years
U.S. Cl. D3—294



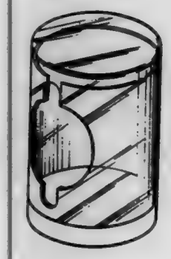
361,431
NESTABLE DISPLAY CRATE FOR BOTTLES
Gerald R. Koefelda, Atlanta, Ga., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Filed Feb. 3, 1994, Ser. No. 18,317
Term of patent 14 years
U.S. Cl. D3—304



361,436
JEWELRY BOX
James G. Mohundro, No. 20, Ta-Lung Road, 11F-4, Taichung, Taiwan
Filed May 4, 1994, Ser. No. 22,413
Term of patent 14 years
U.S. Cl. D3—297



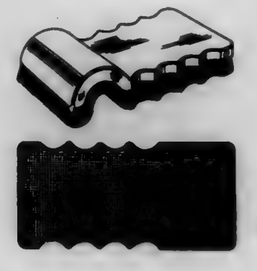
361,432
CONTAINER, DISPENSER FOR EAR CLEANING STICKS
Giovanni Lotti, Strada Ostigliese, 8, 46038 - Mantova, Italy
Filed Mar. 28, 1994, Ser. No. 20,536
Claims priority, application Italy, Nov. 12, 1993, DM/027864
Term of patent 14 years
U.S. Cl. D3—203



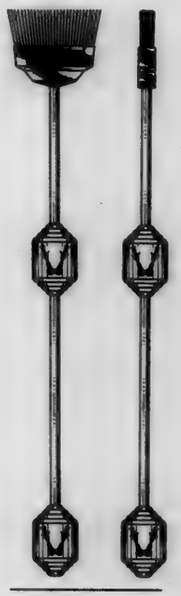
361,433
ELECTRIC TOOTHBRUSH
C. S. Yang, 6Fl., No. 41, Lane 228 Ho Ping East Road, Sec. 3, Taipei, Taiwan
Filed Apr. 11, 1994, Ser. No. 21,143
Term of patent 14 years
U.S. Cl. D4—101



361,434
PERSONAL HAND AND NAIL CLEANING BRUSH
Andre D. Summers, 6 Massconemet Ave., Norfolk, Mass. 02056
Filed Sep. 29, 1994, Ser. No. 29,127
Term of patent 14 years
U.S. Cl. D4—130



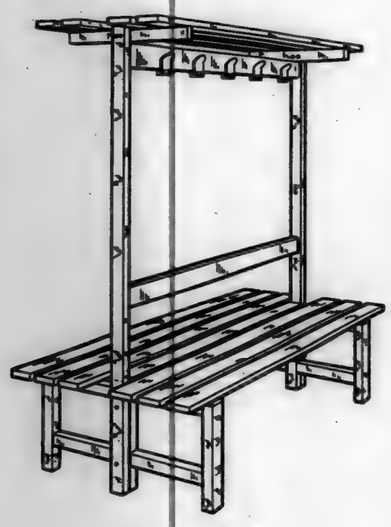
361,435
SCREW HANDLE PAINTBRUSH
Benedict J. Joseph, 128 Grafton St., Brooklyn, N.Y. 11212
Filed Mar. 8, 1993, Ser. No. 5,639
Term of patent 14 years
U.S. Cl. D4—132



361,436
GRAB BAR HANDLE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Aug. 31, 1994, Ser. No. 27,869
Term of patent 14 years
U.S. Cl. D8—316



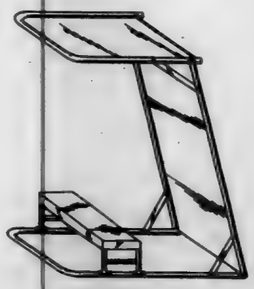
361,437
MODULAR BENCH
Amelia Sacchi Lodispoto, Piazza Carducci, 7, Bologna, Italy 40125
Filed Apr. 12, 1994, Ser. No. 21,180
Claims priority, application Italy, Oct. 13, 1993, B09300041
Term of patent 14 years
U.S. Cl. D6—336



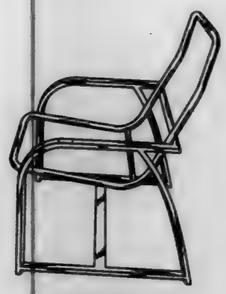
361,438
DENTAL PATIENT CHAIR
John W. Spencer, Dundee; Barry S. Young, Tualatin; Richard W. Hanson, Sherwood, and John W. Lewis, Newberg, all of Oreg., assignors to MDT Corporation, Torrance, Calif.
Filed Oct. 21, 1993, Ser. No. 14,421
Term of patent 14 years
U.S. Cl. D6—367



361,439
COLLAPSIBLE PORTABLE SHELTER WITH BENCH
Mark A. Patton, RR 3, Orr Lake, Elmvale, Ontario, Canada L0L 1P0
Filed May 25, 1994, Ser. No. 23,459
Term of patent 14 years
U.S. Cl. D6—368



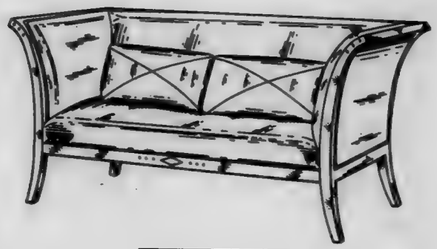
361,440
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Co., Birmingham, Ala.
Filed Jun. 1, 1994, Ser. No. 23,833
Term of patent 14 years
U.S. Cl. D6—373



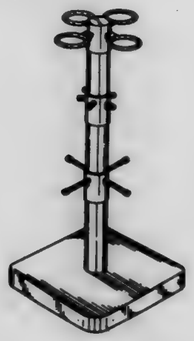
361,441
CHAIR
Peter Goldstein, Dallas County, Tex., assignor to Peter Goldstein Furniture Designs, Inc., Dallas, Tex.
Filed Jun. 18, 1994, Ser. No. 17,617
Term of patent 14 years
U.S. Cl. D6—374



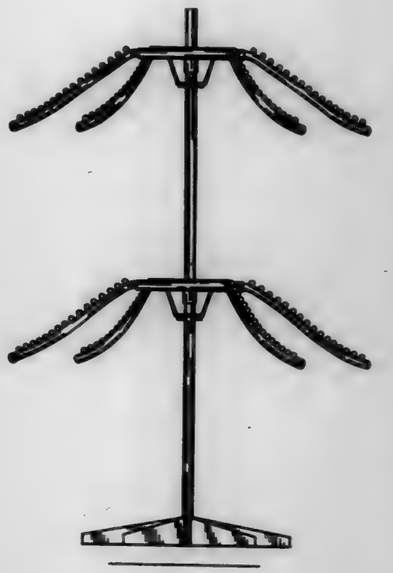
361,442
SETTEE
Sally S. Lewis, 8727 Melrose Ave., Los Angeles, Calif. 90069-5086
Filed Dec. 28, 1993, Ser. No. 16,874
Term of patent 14 years
U.S. Cl. D6—381



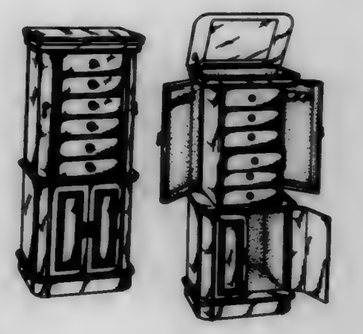
361,443
PLANTER STAND
William Bohland, 101 N. 72nd Ave., Pensecola, Fla. 32506
Filed Jul. 21, 1994, Ser. No. 26,205
Term of patent 14 years
U.S. Cl. D6—405



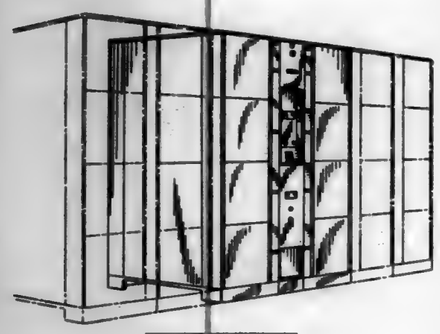
361,444
DISPLAY STAND
Dennis J. Egan, Irvine, Calif., assignor to Catalina Carpet Mills, Inc., Cerritos, Calif.
Filed Oct. 19, 1994, Ser. No. 29,934
Term of patent 14 years
U.S. Cl. D6—415



361,445
JEWELRY ARMOIRE
James G. Mobundro, No. 20, Ta-Lang Road, 11F-4, Taichung, Taiwan
Filed May 4, 1994, Ser. No. 22,270
Term of patent 14 years
U.S. Cl. D6—440



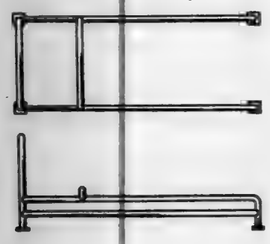
361,446
LOCKER
Christian H. G. G. Acard, Quebec, Canada, assignor to Mors, Paris, France
Filed Oct. 22, 1992, Ser. No. 789
Claims priority, application France, Apr. 23, 1992, 92 2609
Term of patent 14 years
U.S. Cl. D6—445



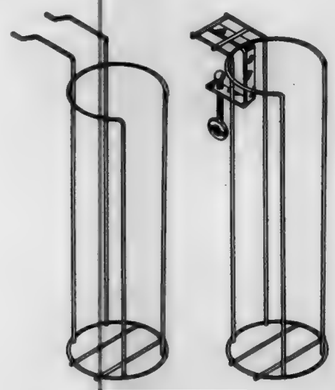
361,447
COMPUTER SUPPORT STAND
Edward Meore, Brossard, Canada, assignor to 2749394 Canada Inc., Westmount, Canada
Division of Ser. No. 578,176, Sep. 6, 1990, Pat. No. Des. 334,101. This application Mar. 15, 1993, Ser. No. 5,900
Term of patent 14 years
U.S. Cl. D6—462



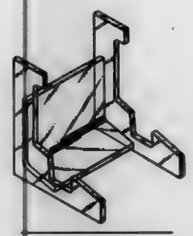
361,448
SHOPPING CART HOLDER
Robert S. Buckley, P.O. Box 246, Keene, N.H. 03431
Filed Apr. 22, 1994, Ser. No. 21,713
Term of patent 14 years
U.S. Cl. D6—462



361,449
DISPLAY RACK
Gerry Rittenberg, North Brunswick, N.J., assignor to Amscan, Inc., Harrison, N.Y.
Filed May 24, 1994, Ser. No. 23,388
Term of patent 14 years
U.S. Cl. D6—462



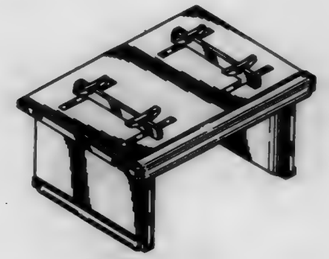
361,450
PLATE/BOWL HOLDER
Glenn D. Weatherby, 733 Parkview Dr., Burleson, Tex. 76028
Filed Jan. 21, 1994, Ser. No. 17,742
Term of patent 14 years
U.S. Cl. D6—466



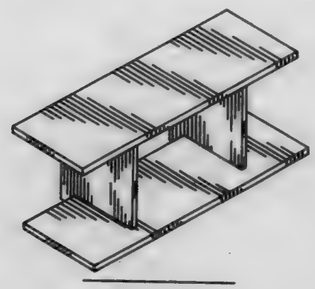
361,451
LARGE NOTE EARRING TREE
Philomene M. Relland, 303 E-23rd St. #3, Sterling, Ill. 61081-1242
Continuation of Ser. No. 880,972, May 11, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 21,135
Term of patent 14 years
U.S. Cl. D6—466



361,452
SUPPORT FOR VIDEO GAME JOY STICK
Michael Neylon, 5246 Rowan Ct., Indianapolis, Ind. 46237
Filed May 12, 1993, Ser. No. 8,223
Term of patent 14 years
U.S. Cl. D6—467



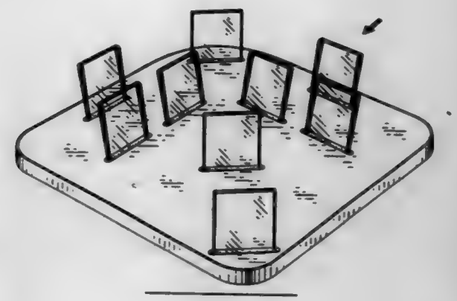
361,453
DISPLAY STAND
Sy Sussman, 435 Promontory Dr. West, Newport Beach, Calif. 92660
Filed May 3, 1993, Ser. No. 7,734
The portion of the term of this patent subsequent to Dec. 1, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—474



361,454
DISPLAY STAND
William Compton, Odessa, and Mark T. Anderson, Tampa, both of Fla., assignors to Tropical Sportswear International Corporation, Tampa, Fla.
Filed Aug. 20, 1993, Ser. No. 12,029
Term of patent 14 years
U.S. Cl. D6—474



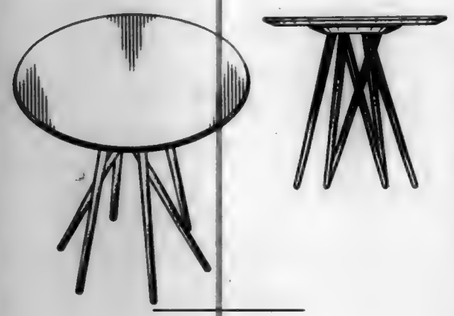
361,455
TRADING CARD DISPLAY SYSTEM
Donald J. Eason, 687 Patoux Trail, Pocahontas, Ark. 72455
Filed Oct. 25, 1993, Ser. No. 14,484
Term of patent 14 years
U.S. Cl. D6—476



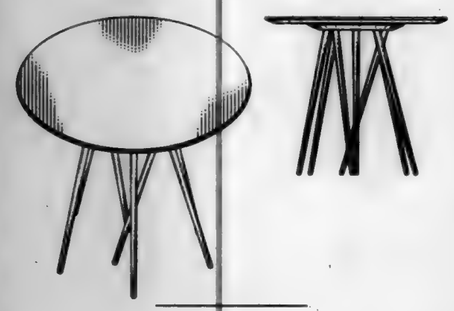
361,456
DRESSING TABLE
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Wetauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 6, 1993, Ser. No. 8,053
Term of patent 14 years
U.S. Cl. D6—479



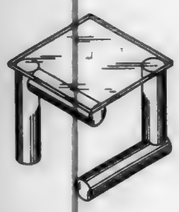
361,457
TABLE
Lawrence Lauke, Chicago, Ill., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 31, 1994, Ser. No. 23,694
Term of patent 14 years
U.S. Cl. D6—480



361,458
TABLE
Lawrence Lauke, Chicago, Ill., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 31, 1994, Ser. No. 23,740
The portion of the term of this patent subsequent to Jul. 25, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—480



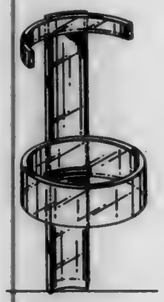
361,459
TABLE
John A. Hansen, 620 E. 13th St., Apt. 206, Sioux Falls, S. Dak. 57104
Filed Dec. 29, 1993, Ser. No. 16,876
Term of patent 14 years
U.S. Cl. D6—487



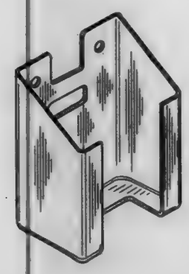
361,460
TOWEL BAR
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.
Filed Aug. 31, 1994, Ser. No. 27,868
Term of patent 14 years
U.S. Cl. D6—549



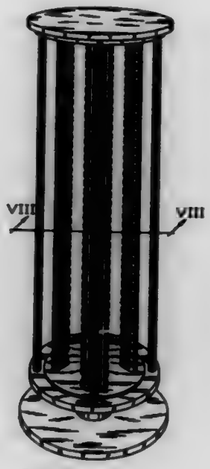
361,461
BOTTLE HOLDER FOR FLORAL ARRANGEMENTS
Gary Linzenbold, 244 Main St., Sharpsville, Pa. 16150
Filed Jan. 24, 1994, Ser. No. 17,835
Term of patent 14 years
U.S. Cl. D6—556



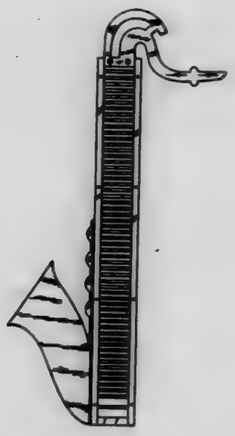
361,462
CONTROL MODULE HOLSTER
Paul F. Newham, San Antonio, Tex., assignor to Bed-Check Corporation, Tulsa, Okla.
Filed Aug. 4, 1994, Ser. No. 26,708
Term of patent 14 years
U.S. Cl. D6—567



361,463
COMPACT DISC HOLDER FOR STORING AND DISPLAYING COMPACT DISCS
Michael L. Todd, 16360 Evans Ave., South Holland, Ill. 60473
Filed Jan. 5, 1994, Ser. No. 17,290
Term of patent 14 years
U.S. Cl. D6—629



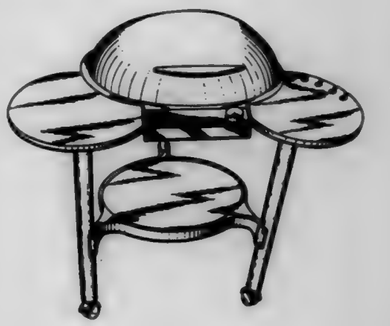
361,464
STORAGE ASSEMBLY
Shahriar Dardashti, 236 S. Oakhurst Dr., Beverly Hills, Calif. 90212
Filed Jan. 21, 1994, Ser. No. 17,825
Term of patent 14 years
U.S. Cl. D6—629



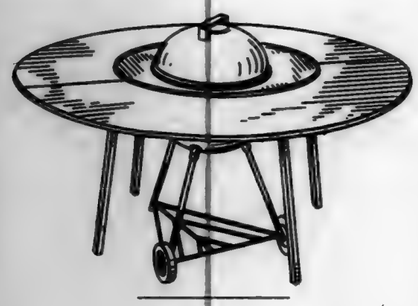
361,465
TWO-SIDED STORAGE RACK
Shahriar Dardashti, 236 Oakhurst Dr., Beverly Hills, Calif. 90212
Filed Jan. 5, 1994, Ser. No. 17,108
The portion of the term of this patent subsequent to Jun. 27, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—630



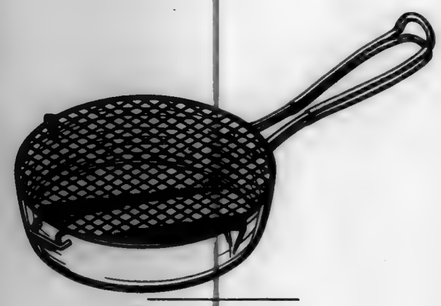
361,466
BARBECUE GRILL
Monte L. Peterson, Barrington; James M. Fitzgerald, Schaumburg; Patrick L. Francomb, Galena, all of Ill.; Greg Brolding, Columbus, Ohio; Mark Cieslo, Westerville, Ohio, and Andreas Roessner, Columbus, Ohio, assignors to The Thermos Company, Freeport, Ill.
Filed Oct. 14, 1992, Ser. No. 432
The portion of the term of this patent subsequent to May 9, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—334



361,467
COMBINED GRILL AND TABLE
Yoshio Kabeyama, 5413 N. Sayre Ave., Chicago, Ill. 60656
Filed Jan. 7, 1994, Ser. No. 17,295
Term of patent 14 years
U.S. Cl. D7—334



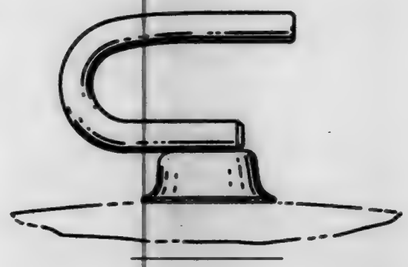
361,468
GRILL TOP PAN
Brenda K. Wilkes, 506 Lawson St., West Monroe, La. 71292
Filed Feb. 14, 1994, Ser. No. 18,656
Term of patent 14 years
U.S. Cl. D7—361



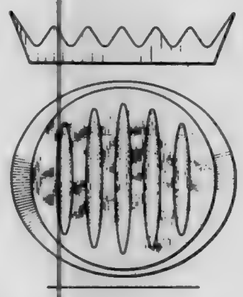
361,469
CUP LID
Brian Q. Young, P.O. Box 862469 Terminal Annex, Los Angeles, Calif. 90086-2469
Filed Feb. 4, 1994, Ser. No. 18,392
Term of patent 14 years
U.S. Cl. D7—392.1



361,470
LID HANDLE
Jose A. Arbunies, Zaragoza, Spain, assignor to Vitrex, S.A., Spain
Continuation of Ser. No. 636,977, Jan. 2, 1991, abandoned. This application Jan. 27, 1994, Ser. No. 18,028
Term of patent 14 years
U.S. Cl. D7—393



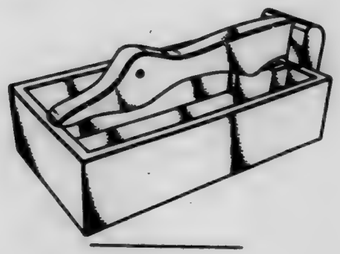
361,471
MICROWAVABLE TACO PLATE
Pete J. Santiago, 4916 Eagle St., Denver, Colo. 80239, and Sonia M. Santiago, 9707 E. Colorado Ave. #106, Denver, Colo. 80231
Filed Apr. 8, 1994, Ser. No. 21,088
Term of patent 14 years
U.S. Cl. D7—504



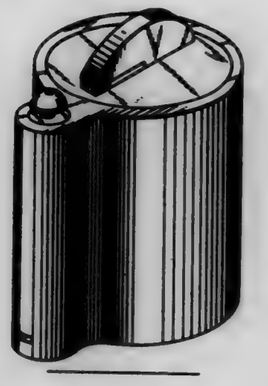
361,472
FRUIT HANGER AND BOWL
Jamie Heilicher, Edina, Minn., assignor to Company's Coming, Inc., Edina, Minn.
Filed Apr. 29, 1994, Ser. No. 22,169
Term of patent 14 years
U.S. Cl. D7—505



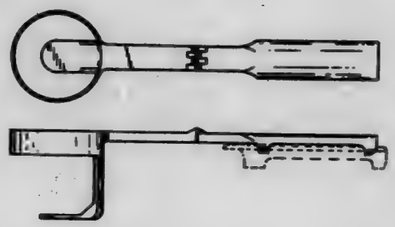
361,473
COMBINED NUT CRACKER AND NUT/SHELL CONTAINER
Linda G. Brandin, and Eric K. Brandin, both of #3 2304 Carpenter Street, Clearbrook, British Columbia, Canada
Filed Jan. 30, 1994, Ser. No. 25,349
Term of patent 14 years
U.S. Cl. D7—508



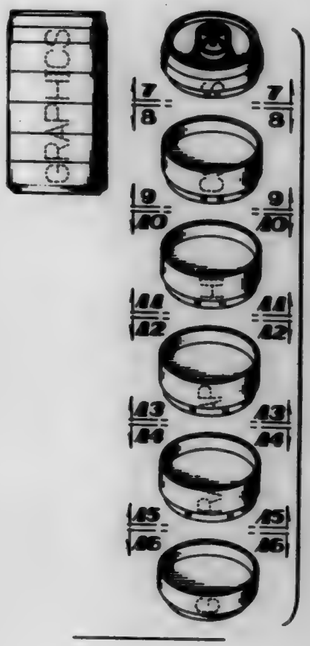
361,474
VACUUM SEALED CANISTER
Demetrio A. Lacalle, Jr., 34 Stiles Ln., Greenwich, Conn. 06831
Filed Mar. 18, 1994, Ser. No. 19,813
Term of patent 14 years
U.S. Cl. D7—612



361,475
DRINK HOLDER FOR SPORTING EVENTS
Andrew H. Strong, 1412 Mayapple Trail, Glencoe, Mo. 63038
Filed Jan. 5, 1994, Ser. No. 17,099
Term of patent 14 years
U.S. Cl. D7—620



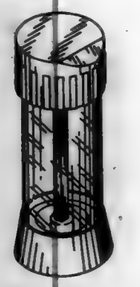
361,476
SET OF COASTERS
Christopher C. Bidwell, 1989 Dunbar Dr., Dunwoody, Ga. 30338
Filed Apr. 25, 1994, Ser. No. 21,834
Term of patent 14 years
U.S. Cl. D7—625



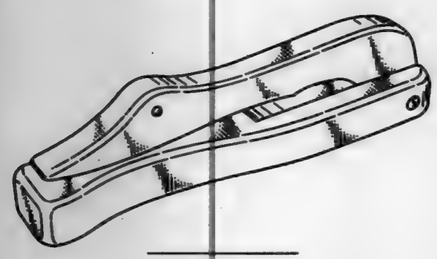
361,477
COLLANDER
Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740
Filed Jan. 17, 1994, Ser. No. 24,635
Term of patent 14 years
U.S. Cl. D7—667



361,478
DISPOSABLE CONDIMENT MILL
Walter E. Klaaman, 14 Rockingham Dr., Newport Beach, Calif. 92660, and Warren L. Atkins, 824 S. Barnett St., Anaheim, Calif. 92805
Filed Apr. 20, 1994, Ser. No. 21,532
Term of patent 14 years
U.S. Cl. D7—679



361,479
NUT CRACKER
Linda G. Brundin, and Erik K. Brundin, both of #3 2204 Carpenter Street, Clearbrook, British Columbia, Canada
Filed Jun. 30, 1994, Ser. No. 25,377
Term of patent 14 years
U.S. Cl. D7—680



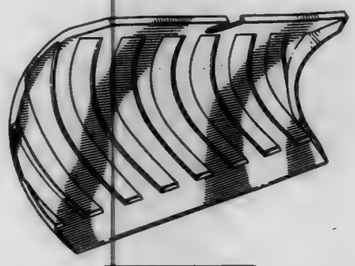
361,480
HAND PORTIONER
William A. Cooper, Uckfield, England, assignor to Mitchell & Cooper Limited, Sussex, England
Filed Mar. 30, 1994, Ser. No. 20,654
Claims priority, application United Kingdom, Oct. 1, 1993, 2034282
Term of patent 14 years
U.S. Cl. D7—681



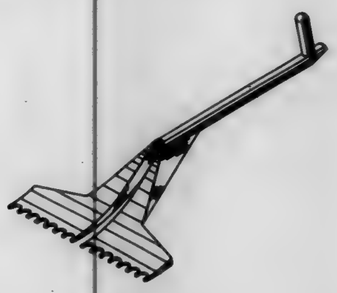
361,481
TREE LIMB TRIMMER
Spencer C. Rees, Sugar Grove, and James S. Stanley, Willowbrook, both of Ill., assignors to Wen Products, Inc., Chicago, Ill.
Filed Nov. 23, 1994, Ser. No. 31,340
Term of patent 14 years
U.S. Cl. D8—8



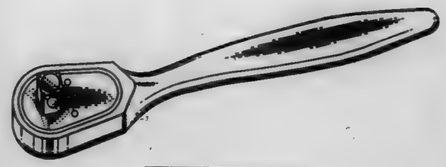
361,482
SNOW SHOVEL BLADE
Sherman L. Fugal, 646 S. 100 West, Orem, Utah 84058
Filed Jul. 13, 1993, Ser. No. 10,634
Term of patent 14 years
U.S. Cl. D8—10



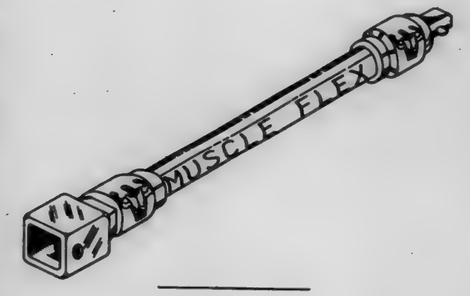
361,483
RAKE SCOOPER
Otto H. Schuele, R.R. #1, 42 Maplecrest Crt.,, Barrie, Ontario, Canada L4W 4Y8
Filed May 19, 1994, Ser. No. 23,252
Term of patent 14 years
U.S. Cl. D8—13



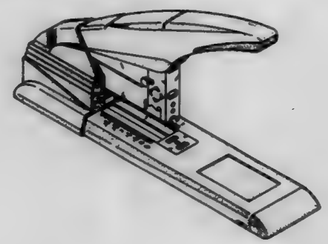
361,484
RATCHET WRENCH
Lowell B. Whitley, Arlington, Tex., assignor to Stanley Mechanics Tools, Carrollton, Tex.
Filed Dec. 20, 1994, Ser. No. 32,531
Term of patent 14 years
U.S. Cl. D8—25



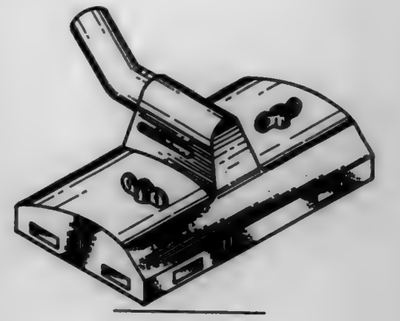
361,485
FLEXIBLE EXTENSION TOOL
Clarence Seltz, 9133 State Rd., Otisville, Mich. 48463
Filed Aug. 2, 1993, Ser. No. 11,261
Term of patent 14 years
U.S. Cl. D8—29



361,486
STAPLER
Gee I. Yang, 5Fl., No. 412-12, 2 Sec., Chung Shan Rd., Tai Ping, Taichung, Taiwan
Filed Aug. 1, 1994, Ser. No. 26,641
Term of patent 14 years
U.S. Cl. D8—50



361,487
SANDING ATTACHMENT FOR A SHOP VAC
Kimberly Sandow, and Louis Sandow, both of 201 Blough Ct., Fairless Hills, Pa. 19030
Filed Jul. 20, 1994, Ser. No. 26,140
Term of patent 14 years
U.S. Cl. D8—70

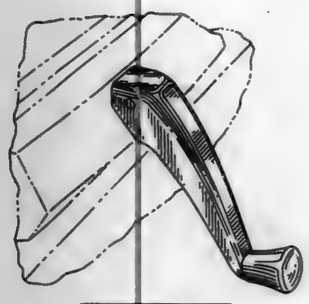


361,488
DOOR LEVER
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Aug. 13, 1993, Ser. No. 11,806
Term of patent 14 years
U.S. Cl. D8—308

361,489
DOOR LEVER
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Aug. 13, 1993, Ser. No. 11,805
Term of patent 14 years
U.S. Cl. D8—308



361,490
OUTER SURFACE OF A FOLDING OPERATOR HANDLE
Gregory J. Vetter, Owatonna, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.
Filed May 9, 1994, Ser. No. 22,601
Term of patent 14 years
U.S. Cl. D8—307



361,491
KNOB
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,968
Term of patent 14 years
U.S. Cl. D8—310



361,492
KNOB
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,969
Term of patent 14 years
U.S. Cl. D8—310



361,493
KNOB
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,967
Term of patent 14 years
U.S. Cl. D8—310



361,494
KNOB
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,966
Term of patent 14 years
U.S. Cl. D8—310



361,495
GRAB BAR HANDLE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Aug. 31, 1994, Ser. No. 27,867
Term of patent 14 years
U.S. Cl. D8—316



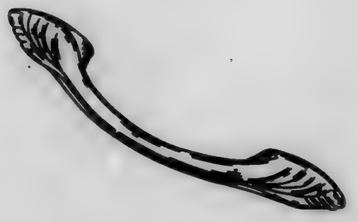
361,496
PULL
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,926
Term of patent 14 years
U.S. Cl. D8—317



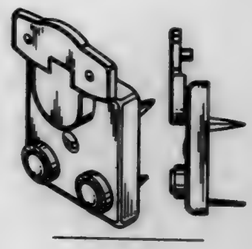
361,497
PULL
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,964
Term of patent 14 years
U.S. Cl. D8—317



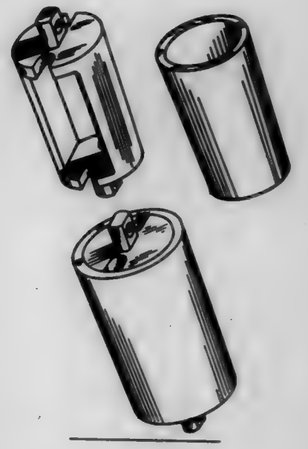
361,498
PULL
Robert Chieda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Apr. 6, 1994, Ser. No. 20,965
Term of patent 14 years
U.S. Cl. D8—317



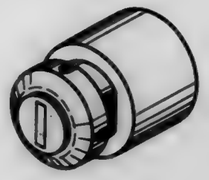
361,499
LUGGAGE LOCK
Urs Gisiger, Schulhausstrasse 19, 2545 Selzach, Switzerland
Filed Mar. 25, 1994, Ser. No. 20,394
Term of patent 14 years
U.S. Cl. D8—331



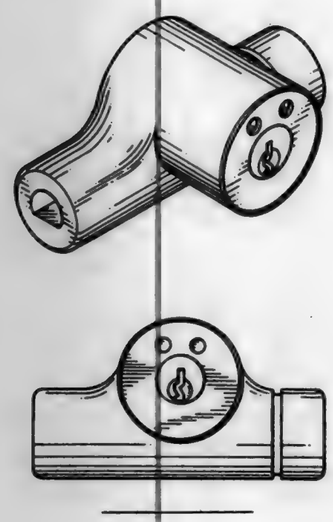
361,500
ELECTRIC PLUG LOCKBOX
Michael F. Jenovese, Rt. 5 Box 238, Penacook, N.H. 03303
Filed Jun. 22, 1993, Ser. No. 9,745
Term of patent 14 years
U.S. Cl. D8—331



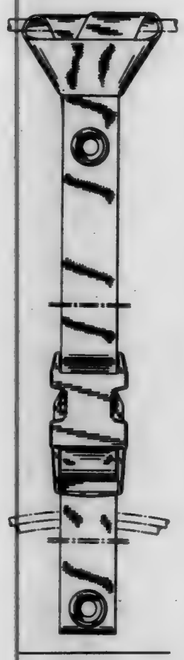
361,501
MOTORCYCLE SWITCH LOCK
Gary L. Myers, Monee, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Aug. 25, 1994, Ser. No. 27,608
Term of patent 14 years
U.S. Cl. D8—331



361,502
CYLINDER BODY OF A VEHICLE STEERING WHEEL LOCK
Chao C. Shen, No. 62, Houhsu St., Tainan, Taiwan
Filed Jul. 12, 1994, Ser. No. 25,823
Term of patent 14 years
U.S. Cl. D8—343



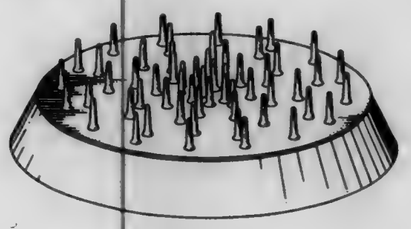
361,504
FLEXIBLE NAUTICAL HANGER
Ronald R. Woller, 2305 Stratford Rd., Decatur, Ala. 35601
Filed Jun. 21, 1993, Ser. No. 9,657
Term of patent 14 years
U.S. Cl. D8—373



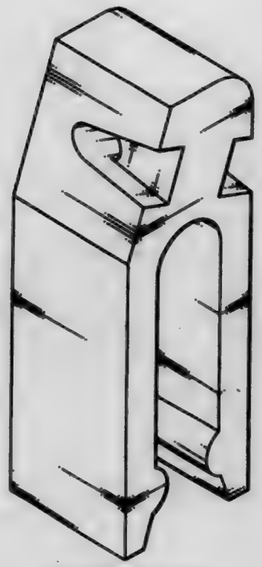
361,503
PIPE POSITIONING BRACKET
George R. Hubbard, Del Mar, Calif., assignor to Securus, Inc., San Marcos, Calif.
Filed Jun. 24, 1993, Ser. No. 10,023
Term of patent 14 years
U.S. Cl. D8—354



361,505
CARPET PROTECTOR
Edward A. Carioli, 138 Twilight Shores Dr., Estonton, Ga. 31024
Filed Jun. 25, 1993, Ser. No. 9,930
Term of patent 14 years
U.S. Cl. D8—374



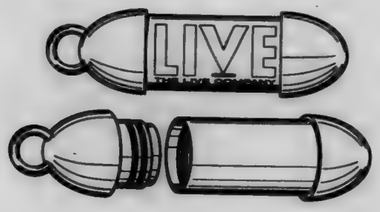
361,506
CHRISTMAS LIGHT CLIP
Donald Rumpel, Box 549, Smeltzville, Id. 83868, assignor to Donald Rumpel, Smeltzville, Id.
Filed Apr. 16, 1993, Ser. No. 7,264
Term of patent 14 years
U.S. Cl. D8—395



361,508
CONTAINER
Peter G. Schnack, 357 Sutton Pl., Santa Rosa, Sonoma County, Calif. 95407
Filed Apr. 22, 1994, Ser. No. 21,882
Term of patent 14 years
U.S. Cl. D9—341



361,507
SCREWABLE CONTAINER
Johannes Langemann, Reitzensteinstrasse 4, 82031 Grunwald, Germany
Filed Oct. 13, 1993, Ser. No. 14,098
Claims priority, application Germany, Apr. 15, 1993, 93 03 108.4
Term of patent 14 years
U.S. Cl. D9—337



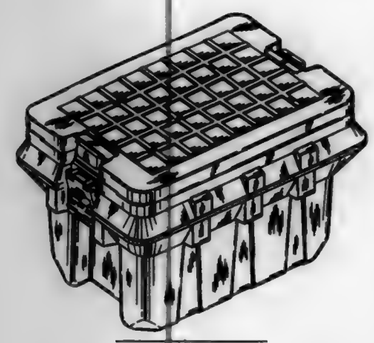
361,509
DUAL-CHAMBER BOTTLE
Lawrence C. Dull, Greensboro, and Larry A. Simmons, Winston-Salem, both of N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 13, 1994, Ser. No. 22,881
Term of patent 14 years
U.S. Cl. D9—347



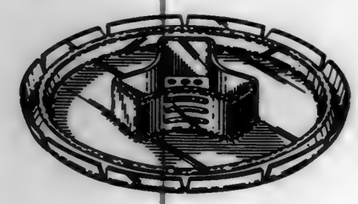
361,510
DISPLAY PACKAGE FOR SHOE INSERTS
Roger W. Jordan, Bellingham; Rand A. Lien, Lynden, and Chance E. Martenson, Bellingham, all of Wash., assignors to Northwest Podiatric Laboratory, Inc., Blaine, Wash.
Filed May 6, 1994, Ser. No. 22,549
Term of patent 14 years
U.S. Cl. D9—415



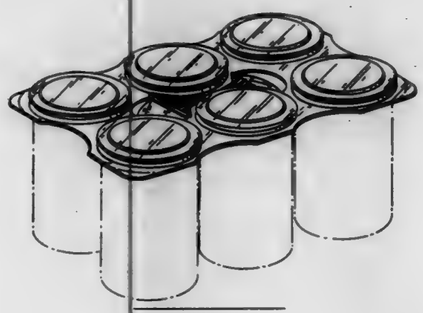
361,511
PACKING CONTAINER
Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 16,535, Dec. 17, 1993, Pat. No. Des. 355,118. This application Sep. 19, 1994, Ser. No. 28,633
Term of patent 14 years
U.S. Cl. D9—425



361,512
COVER FOR A TOBACCO CONTAINER
Armand G. Dalmaz, Lyons, France, assignor to Crealise Conditionnement Inc. and Packaging Inc. Crealise, both of Rawdon, Canada
Filed Aug. 9, 1993, Ser. No. 11,545
Term of patent 14 years
U.S. Cl. D9—440



361,513
BEVERAGE CAN-CARRYING DEVICE
Arthur E. Adami, Andover, Mass., and Christopher P. Amberg, Owings Mills, Md., assignors to Sweetheart Cup Company Inc., Chicago, Ill.
Division of Ser. No. 924,635, Aug. 5, 1992, Pat. No. Des. 354,227, and a continuation-in-part of Ser. No. 741,942, Aug. 8, 1991, Pat. No. Des. 352,239, which is a continuation-in-part of Ser. No. 741,935, Aug. 8, 1991, abandoned. This application Sep. 30, 1994, Ser. No. 29,238
Term of patent 14 years
U.S. Cl. D9—455



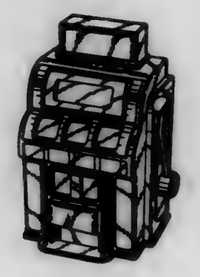
361,514
BREAD TRAY
Clavin S. Krupa, Medina, and Robert Knoss, Anoka, both of Minn., assignors to Ultra Pac, Inc., Rogers, Minn.
Filed Sep. 12, 1994, Ser. No. 28,296
Term of patent 14 years
U.S. Cl. D9—456



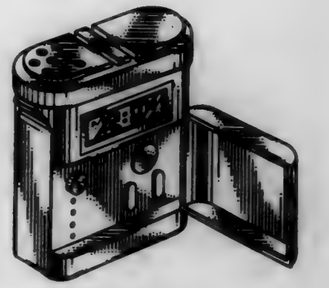
361,515
BOTTLE
Gérard Caron, Paris, France, assignor to Martell & Co., Cognac, France
Filed Nov. 2, 1993, Ser. No. 14,914
Claims priority, application Hague Agreement, Jan. 2, 1993, DM/027484
Term of patent 14 years
U.S. Cl. D9—522



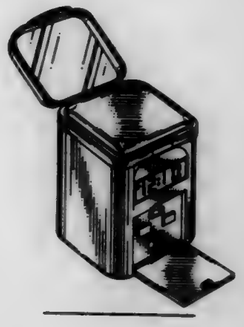
361,516
CLOCK
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Polyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 21, 1994, Ser. No. 25,148
Claims priority, application WIPO, Jan. 3, 1994, DM/028308
Term of patent 14 years
U.S. Cl. D10—6



361,517
REPLICA SPICE SHAKER CLOCK
Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812
Filed Aug. 16, 1994, Ser. No. 27,243
Term of patent 14 years
U.S. Cl. D10—6



361,518
REPLICA CANISTER CLOCK
Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812
Filed Aug. 16, 1994, Ser. No. 27,244
Term of patent 14 years
U.S. Cl. D10—6



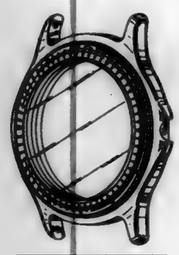
361,519
TRAVEL ALARM CLOCK
Yasuo Inoue, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Mar. 28, 1994, Ser. No. 20,511
Term of patent 14 years
U.S. Cl. D10—18



361,520
WALL CLOCK
Paul P. Chen, 307 S. State St. #7, Champaign, Ill. 61820
Filed Jun. 16, 1993, Ser. No. 9,551
Term of patent 14 years
U.S. Cl. D10—21



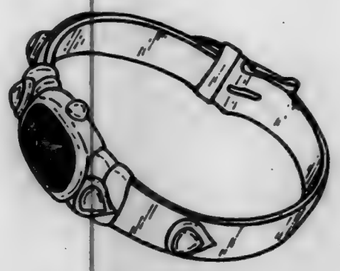
361,521
WRIST WATCH
Ryoichi Koga, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Japan
Filed Apr. 11, 1994, Ser. No. 21,142
Claims priority, application Japan, Dec. 10, 1993, 5-37205
Term of patent 14 years
U.S. Cl. D10—30



361,522
WATCH
Jean-Pierre Chodat, Auvernier, Switzerland, assignor to Ebel, S.A., Switzerland
Filed Oct. 11, 1994, Ser. No. 29,555
Claims priority, application WIPO, Apr. 12, 1994, DMA/002485
Term of patent 14 years
U.S. Cl. D10—30



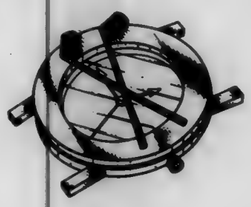
361,523
WATCH
Marina Bulgari, Montecarlo, Monaco, assignor to Marina B Creation S.A., Vaduz, Liechtenstein
Filed Jan. 24, 1994, Ser. No. 17,840
Claims priority, application WIPO, Jul. 30, 1993, DMA/002.240
Term of patent 14 years
U.S. Cl. D10—32



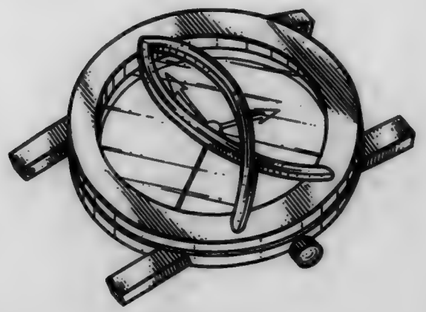
361,524
WATCH
Marina Bulgari, Montecarlo, Monaco, assignor to Marina B. Creation S.A., Vaduz, Liechtenstein
Filed Jan. 24, 1994, Ser. No. 17,853
Claims priority, application WIPO, Jul. 30, 1993, DMA/002.240
Term of patent 14 years
U.S. Cl. D10—32



361,525
WRIST WATCH WITH CROSSED GOLF CLUBS
Sanford S. Yudovin, 1770 Stuart St., Cambria, Calif. 93428
Filed Dec. 15, 1994, Ser. No. 32,291
Term of patent 14 years
U.S. Cl. D10—33



361,526
WRIST WATCH WITH RELIGIOUS SYMBOL
Sanford S. Yudovin, 1770 Stuart St., Cambria, Calif. 93428
Filed Dec. 15, 1994, Ser. No. 32,292
Term of patent 14 years
U.S. Cl. D10—34



361,527
WRIST WATCH
Hatsue Hayashi, Tokyo, and Seikichi Masui, Yokohama, both of Japan, assignors to Citizen Watch Co., Ltd., Japan
Filed Apr. 11, 1994, Ser. No. 21,127
Term of patent 14 years
U.S. Cl. D10—39



361,528
WRIST WATCH
Hatsue Hayashi, Tokyo, and Seikichi Masui, Yokohama, both of Japan, assignors to Citizen Watch Co., Ltd., Japan
Filed Apr. 11, 1994, Ser. No. 21,130
Term of patent 14 years
U.S. Cl. D10—39



361,529
WRISTWATCH
Shigeo Sakai, and Hiroshi Kawamata, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Filed Jun. 17, 1994, Ser. No. 24,646
Term of patent 14 years
U.S. Cl. D10—39



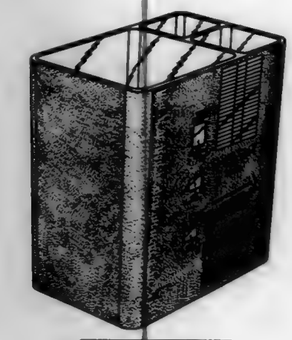
361,530
WRISTWATCH
Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari S.p.A., Rome, Italy
Filed Jul. 28, 1994, Ser. No. 26,009
Claims priority, application Hague Agreement, Jan. 31, 1994, DMA/002 411
Term of patent 14 years
U.S. Cl. D10—39



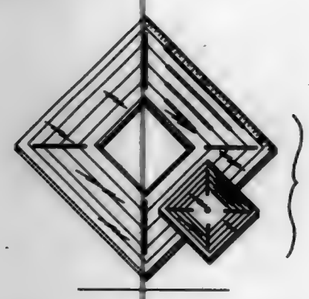
361,531
PARKING METER TIMER
Harry Wolkenfeld, 304 Newbury St., Apt. 247, Boston, Mass. 02115
Filed Aug. 8, 1994, Ser. No. 26,894
Term of patent 14 years
U.S. Cl. D10—40



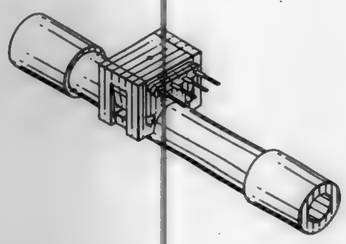
361,532
RATIO CUP
Thomas G. North, III, Woodstock, and Michael J. Riley, Alpharetta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Mar. 31, 1994, Ser. No. 20,702
Term of patent 14 years
U.S. Cl. D10—46.3



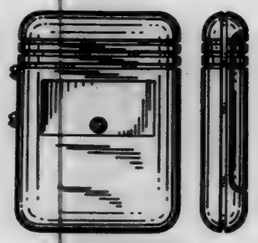
361,533
ELECTRICAL CONDUIT ENTRY TEMPLATE
James E. Kerry, Sr., 1536 Ballard Dr., St. Louis, Mo. 63137
Filed Oct. 13, 1994, Ser. No. 29,667
Term of patent 14 years
U.S. Cl. D10—64



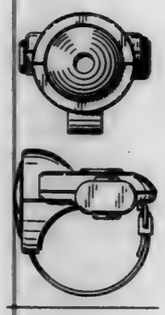
361,534
FLOWTHROUGH PRESSURE SENSOR
James D. Cook, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jun. 24, 1994, Ser. No. 24,997
Term of patent 14 years
U.S. Cl. D10—96



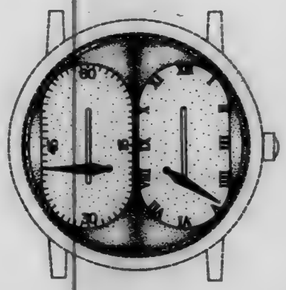
361,535
PERSONAL SECURITY ALARM
Alvin T. Levenberg, 567 Middle Bay Dr., Baldwin, N.Y. 11510
Filed May 10, 1994, Ser. No. 22,656
Term of patent 14 years
U.S. Cl. D10—106



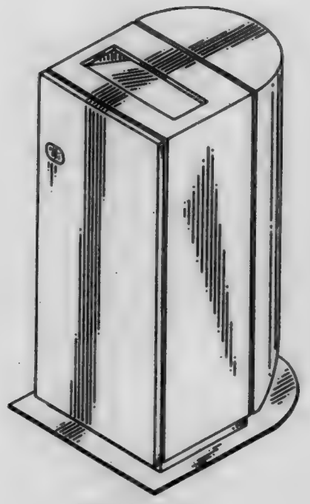
361,536
BICYCLE HORN
David A. Pagani, and Anthony D. Pagani, both of Montpelier, Vt., assignors to New Ventures Product Development and Marketing, Inc., Montpelier, Vt.
Filed Oct. 28, 1994, Ser. No. 30,385
Term of patent 14 years
U.S. Cl. D10—120



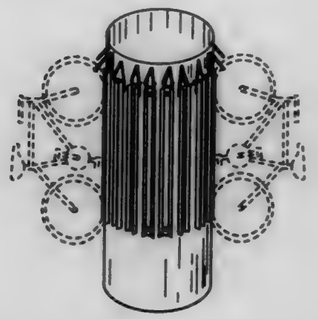
361,537
WATCH DIAL
Carlo Ferraro, 24 Via G. di Colloredo, I-00152 Rome, Italy
Filed Oct. 13, 1994, Ser. No. 29,707
Claims priority, application Italy, Oct. 14, 1993, RM9400086
Term of patent 14 years
U.S. Cl. D10—126



361,538
AUXILIARY POWER UNIT FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 3, 1994, Ser. No. 22,287
Term of patent 14 years
U.S. Cl. D13—110



361,539
BICYCLE DISPLAY RACK
Bill Mutlaga, 10765 Wheatfield La., Parker, Colo. 80134
Filed Jan. 19, 1993, Ser. No. 3,855
Term of patent 14 years
U.S. Cl. D12—115

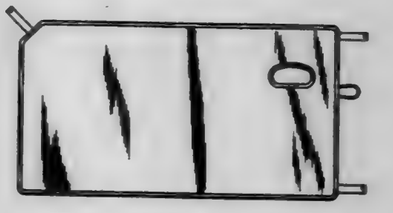


361,540
SHOPPING CART COVER
Edward P. Powers, One Mark Rd., Wilbraham, Mass. 01095
Continuation of Ser. No. 890,488, Jun. 1, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 21,974
Term of patent 14 years
U.S. Cl. D12—133

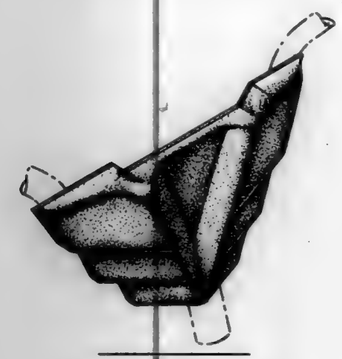


361,541
COMBINED TRAILER COUPLER HOUSING AND HANDLE
Martin L. Denny, Des Moines, Iowa, assignor to Dico, Inc., Des Moines, Iowa
Filed Mar. 22, 1994, Ser. No. 20,237
Term of patent 14 years
U.S. Cl. D12—162

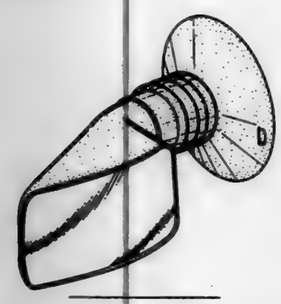
361,542
CAR EXTERIOR PROTECTOR
Alcides M. Arauz, and Sheila M. Arauz, both of 3618 Barnes Ave. #4, Baldwin Park, Calif. 91706
Filed May 5, 1994, Ser. No. 22,431
Term of patent 14 years
U.S. Cl. D12—167



361,543
BICYCLE FAIRING
Paul Haney, Dayton, and Tim Dietz, Springboro, both of Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Dec. 29, 1993, Ser. No. 16,877
Term of patent 14 years
U.S. Cl. D12—182



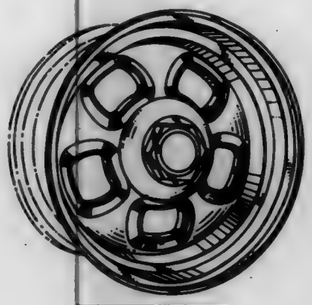
361,544
SUCTION CUP MIRROR
Kenneth D. Elcesbraun, Birmingham, Mich., assignor to United Industrial Trading Corp., Troy, Mich.
Filed Jul. 11, 1994, Ser. No. 25,757
Term of patent 14 years
U.S. Cl. D12—187



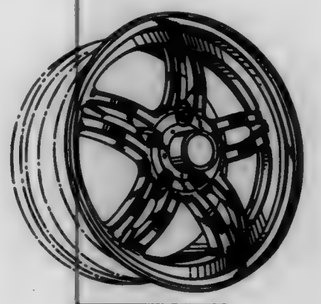
361,545
WINDOW GRILL FOR VEHICLES
Darren S. Wilhelm, #6 Invermere Place, St. Albert, Alberta, Canada
Filed Aug. 18, 1994, Ser. No. 27,411
Term of patent 14 years
U.S. Cl. D25—190



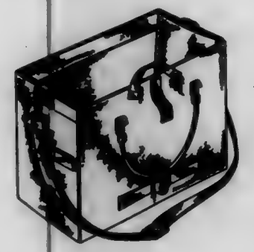
361,546
VEHICLE WHEEL
Richard G. Weld, 1222 Union, Kansas City, Mo. 64101
Filed Jan. 5, 1994, Ser. No. 17,064
Term of patent 14 years
U.S. Cl. D12—209



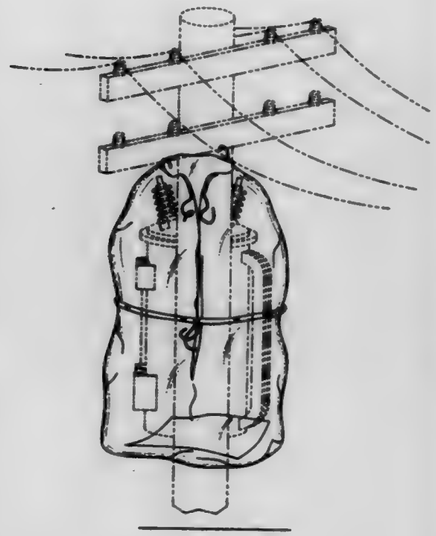
361,547
VEHICLE WHEEL FRONT FACE
Richard G. Weld, 1222 Union, Kansas City, Mo. 64101
Filed Jan. 5, 1994, Ser. No. 17,069
Term of patent 14 years
U.S. Cl. D12—211



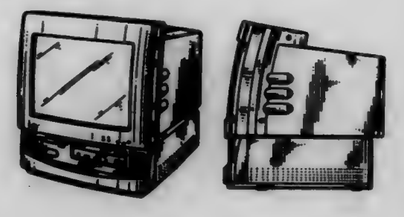
361,548
BICYCLE BASKET
Earl Bascom, 3136 W. Taro La., Phoenix, Ariz. 85027
Filed Oct. 4, 1993, Ser. No. 13,828
Term of patent 14 years
U.S. Cl. D12—407



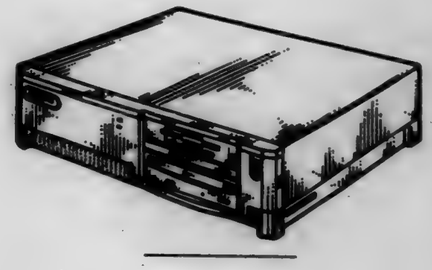
361,549
SPILL-CONTAINMENT ENVELOPE FOR A TRANSFORMER
Frank J. McAtarian, 416 Edgewood Pl., Rutherford, N.J. 07070
Filed Nov. 4, 1993, Ser. No. 14,898
Term of patent 14 years
U.S. Cl. D13—118



361,550
MULTIMEDIA PERSONAL COMPUTER WITH INTEGRATED MONITOR
Kevin W. Mandt, Spring, Tex.; Kevin G. Moore, deceased, late of Canoga Park, Calif.; by Michael G. Moore, legal representative, and by Sandra C. Moore, legal representative, both of Arlington, Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Jan. 23, 1994, Ser. No. 24,919
Term of patent 14 years
U.S. Cl. D14—100



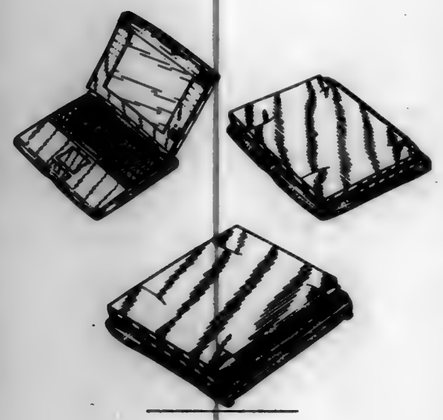
361,551
PERSONAL COMPUTER
Randall W. Martin, The Woodlands; Peter B. Barron, Houston, both of Tex.; Thor R. Halseth, Simi Valley, and James L. Holtorf, Thousand Oaks, both of Calif., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Jan. 23, 1994, Ser. No. 24,916
Term of patent 14 years
U.S. Cl. D14—100



361,552
ELECTRONIC COMPUTER
Masaaki Iiso, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jan. 28, 1994, Ser. No. 25,233
Claims priority, application Japan, Feb. 22, 1994, 6-4062
Term of patent 14 years
U.S. Cl. D14—100



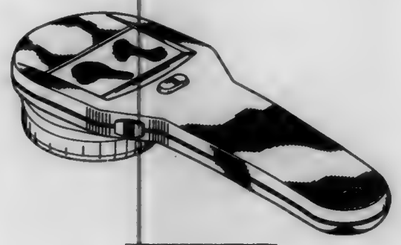
361,553
PORTABLE COMPUTER
Daniele De Iuliis, San Francisco, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Apr. 1, 1994, Ser. No. 20,521
Term of patent 14 years
U.S. Cl. D14—106



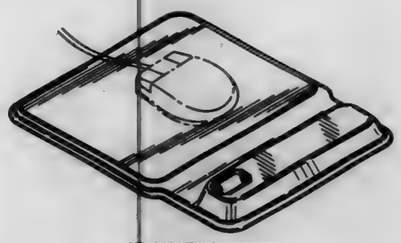
361,554
IMAGE INPUTTING MACHINE FOR COMPUTERS
Naoto Mochizuki; Yoshihito Iida, and Hidemi Saito, all of Yamanashi, Japan, assignors to Nisca Corporation, Yamanashi, Japan
Filed Jan. 8, 1993, Ser. No. 3,576
Claims priority, application Japan, Jul. 17, 1992, 4-21495
Term of patent 14 years
U.S. Cl. D14—107



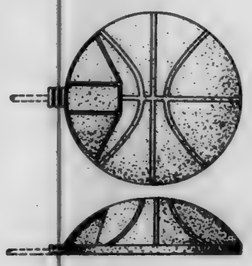
361,555
COMBINED PROGRAMMER AND MONITOR FOR AN IMPLANTABLE TISSUE GROWTH STIMULATOR
John H. Erickson, Plano; John C. Tepper, Carrollton; Mark A. Bettin, Plano; Robert W. Lee, Carrollton, and Glenn Jacobs, Flower Mound, all of Tex., assignors to AMEI Technologies Inc., Wilmington, Del.
Filed Feb. 17, 1993, Ser. No. 4,938
Term of patent 14 years
U.S. Cl. D14—114



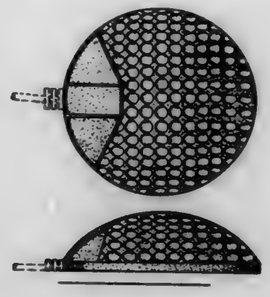
361,556
COMBINED COMPUTER MOUSE PAD AND WRIST REST
Edward J. Moro, Trabuco Canyon, and Patrick Sullivan, Orange, both of Calif., assignors to Robert A. Egly, Newport Beach, Calif.
Filed Apr. 26, 1993, Ser. No. 7,554
Term of patent 14 years
U.S. Cl. D14—114



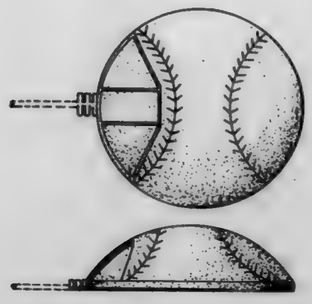
361,557
COMPUTER MOUSE
Peter Siano, Jr., 2821 Asbury Ave., Wayside, N.J. 07712
Filed Aug. 26, 1993, Ser. No. 12,200
Term of patent 14 years
U.S. Cl. D14—114



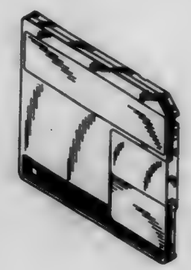
361,558
COMPUTER MOUSE
Peter Siano, Jr., 2821 Asbury Ave., Wayside, N.J. 07712
Filed Aug. 26, 1993, Ser. No. 12,196
Term of patent 14 years
U.S. Cl. D14—114



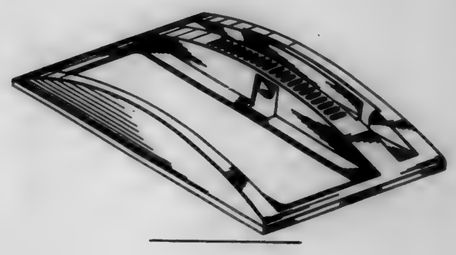
361,559
COMPUTER MOUSE
Peter Siano, Jr., 2821 Asbury Ave., Wayside, N.J. 07712
Filed Aug. 26, 1993, Ser. No. 12,198
Term of patent 14 years
U.S. Cl. D14—114



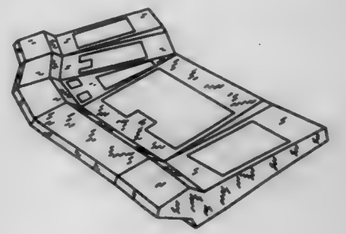
361,560
OPTICAL DISC CARTRIDGE
Koji Shindo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 8, 1993, Ser. No. 16,121
Claims priority, application Japan, Jun. 8, 1993, 5-17204
Term of patent 14 years
U.S. Cl. D14—114



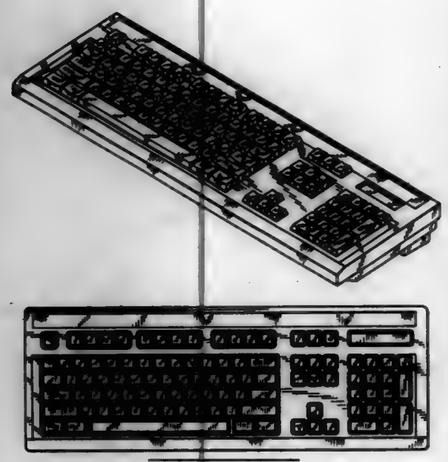
361,561
STAND FOR A CONNECTION UNIT AND COMPUTER WRITE-ON TABLET
Pascal Boudot, Chateauneuf de Grasse, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 18, 1994, Ser. No. 17,608
Term of patent 14 years
U.S. Cl. D14—114



361,562
KEYBOARD HOUSING
Michael A. Beltz, Wausau, Wis., assignor to Renaissance Research Incorporated, Wausau, Wis.
Continuation of Ser. No. 3,645, Jan. 12, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 29,575
Term of patent 14 years
U.S. Cl. D14—115



361,563
COMPUTER KEYBOARD WITH A CURVED TOP CONFIGURATION
Ching-Cheng Tsai, Kaohsiung, Taiwan, assignor to Chicony Electronics Co., Ltd., Taipei, Taiwan
Filed Dec. 3, 1993, Ser. No. 15,954
Term of patent 14 years
U.S. Cl. D14—115



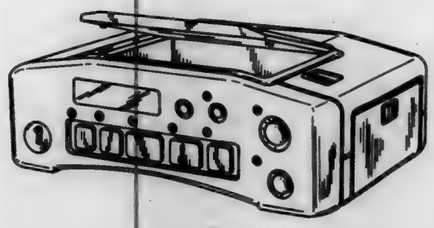
361,564
BARCODE READER
Toshiya Inaba, Tokyo, Japan, assignor to Mitsubishi Corporation and Asahi Kogaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan
Filed May 18, 1994, Ser. No. 23,112
Claims priority, application Japan, Nov. 19, 1993, 5-35170
Term of patent 14 years
U.S. Cl. D14—116



361,565
HAND-HELD OPTICAL SCANNER
Vincent T. LaManna, Webster, and L. Michael Hone, Pittsford, both of N.Y., assignors to PSC, Inc., Webster, N.Y.
Filed May 10, 1993, Ser. No. 8,077
The portion of the term of this patent subsequent to May 23, 2029, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—116



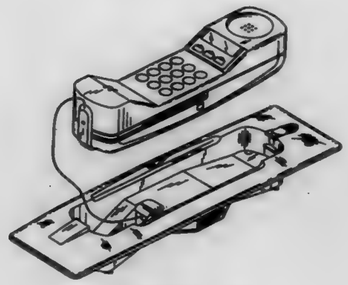
361,566
VIDEO TAPE RECORDER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira; Katsuhiro Takashima, Urawa, and Yasunobu Shimizu, Tokyo, all of Japan, assignors to Tesc Corporation, Tokyo, Japan
Filed Dec. 1, 1993, Ser. No. 15,866
Claims priority, application Japan, Jun. 2, 1993, 5-16273
Term of patent 14 years
U.S. Cl. D14—135



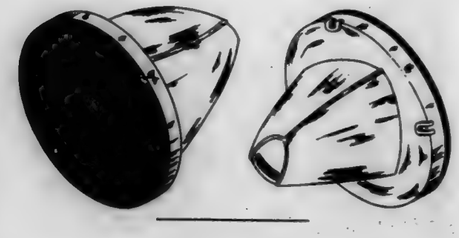
361,567
TELEPHONE
Yuen C. Keung, Kowloon, Hong Kong, assignor to Shandong Hongsheng Electronics Company Limited, China
Filed Jan. 21, 1994, Ser. No. 17,693
Term of patent 14 years
U.S. Cl. D14—138



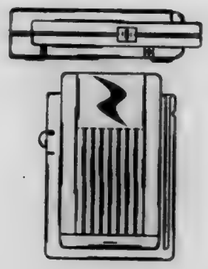
361,568
AIRPLANE TELEPHONE SET
Walter R. Kepley, III, Gaithersburg; Dana J. Groer, Frederick, both of Md., and Richard A. Shields, Jr., Bellevue, Wash., assignors to Claircom Communications Group, L.P., Seattle, Wash.
Filed Mar. 26, 1993, Ser. No. 7,592
Term of patent 14 years
U.S. Cl. D14—148



361,569
ANTENNA DOME
James W. Jervis, 18710 Hanna Dr., Cupertino, Calif. 95014
Filed May 27, 1994, Ser. No. 23,639
Term of patent 14 years
U.S. Cl. D14—230



361,570
PORTABLE MODEM
Samuel W. Harris, Norcross; James R. Heberling, Lawrenceville; Vikram Bhargava, Alpharetta, and Ketan G. Patel, Lawrenceville, all of Ga., assignors to Hayes Microcomputer Products, Inc., Atlanta, Ga.
Filed Nov. 4, 1992, Ser. No. 1,503
Term of patent 14 years
U.S. Cl. D14—242



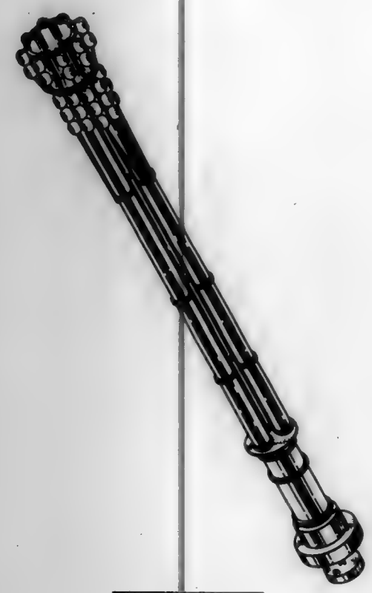
361,571
PUMP
Michio Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1993, Ser. No. 12,867
Claims priority, application Japan, Apr. 9, 1993, 5-10426
Term of patent 14 years
U.S. Cl. D15—7



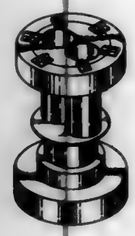
361,572
PUMP
Michio Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1993, Ser. No. 12,865
The portion of the term of this patent subsequent to Jul. 11, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—7



361,573
PUMP
Michio Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1993, Ser. No. 12,868
The portion of the term of this patent subsequent to Jul. 11, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—7



361,574
PUMP
Michio Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1993, Ser. No. 12,890
Term of patent 14 years
U.S. Cl. D15—7

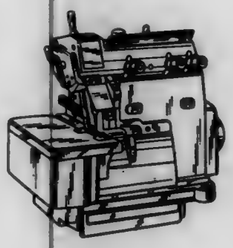


361,575
PUMP
Michio Makino, Funabashi, Japan, assignor to Kaiyo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1993, Ser. No. 12,893
Claims priority, application Japan, Apr. 19, 1993, 5-10427
Term of patent 14 years
U.S. Cl. D15—7

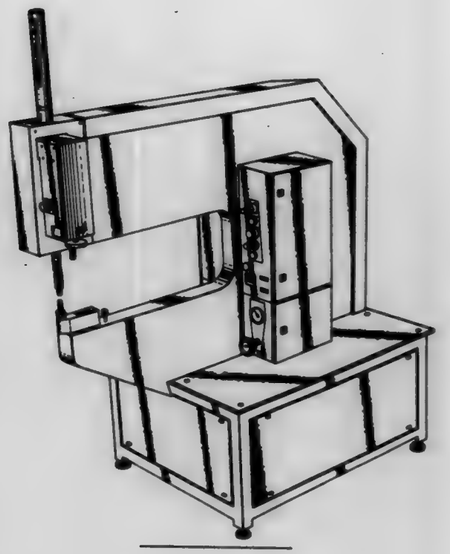


361,576
WHEEL LOADER
Yoshitaka Matsubara, and Tadashi Kasunoki, both of Sakai, Japan, assignors to Kubota Corporation, Japan
Filed Jun. 30, 1994, Ser. No. 25,442
Claims priority, application Japan, Jan. 17, 1994, 6-632
Term of patent 14 years
U.S. Cl. D15—25

361,577
SEWING MACHINE
Yujiro Motomiya, Fuchu, Japan, assignor to Juki Corporation, Tokyo, Japan
Filed Jan. 12, 1994, Ser. No. 17,374
Claims priority, application Japan, Jul. 12, 1993, 5-21348
Term of patent 14 years
U.S. Cl. D15—70



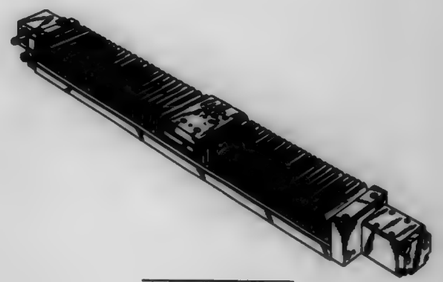
361,578
PRESS
Robert C. Wareham, Oakdale, Calif., assignor to Haeger, Incorporated, Oakdale, Calif.
Filed Mar. 7, 1994, Ser. No. 19,572
Term of patent 14 years
U.S. Cl. D15—128



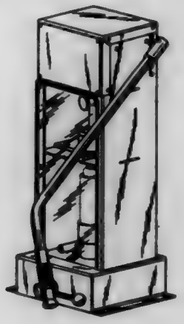
361,579
SHANK FOR A HOLE CUTTER
Osamu Asano, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1994, Ser. No. 25,206
Claims priority, application Japan, Apr. 27, 1994, 6-11894
Term of patent 14 years
U.S. Cl. D15—138



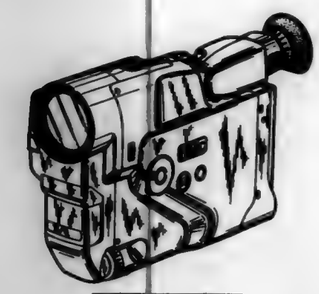
361,580
LINEAR SLIDE WITH TOOTHED BELT DRIVES
Siegfried Bauer, Mauebach-Volkersheuen, Germany, assignor to Deutsche Star GmbH, Schweinfurt, Germany
Division of Ser. No. 16,498, Dec. 16, 1993, which is a division of Ser. No. 795,640, Nov. 21, 1991, Pat. No. Des. 345,041. This application Sep. 1, 1994, Ser. No. 27,929
Claims priority, application Germany, May 22, 1991, 91 03 755.7
Term of patent 14 years
U.S. Cl. D15—138



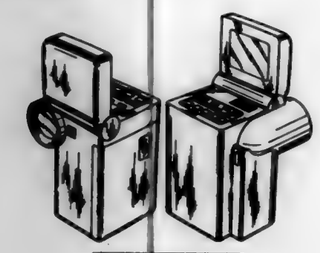
361,581
PRESSURIZED CAN FILLING APPARATUS
Donald J. Hirz, 835 Charles St., Willowick, Ohio 44095
Filed Jun. 24, 1994, Ser. No. 24,982
Term of patent 14 years
U.S. Cl. D15—145



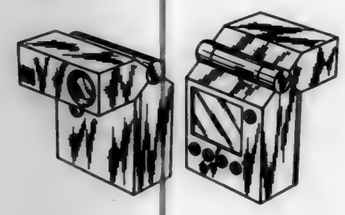
361,582
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Naofumi Sekine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 15,816, Nov. 30, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 28,625
Claims priority, application Japan, Jun. 2, 1993, 5-16532
Term of patent 14 years
U.S. Cl. D16—202



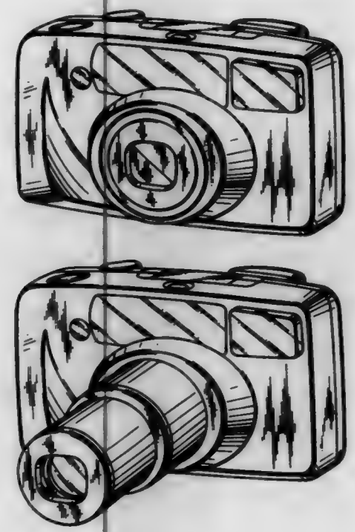
361,583
VIDEO CAMERA WITH LIQUID CRYSTAL MONITOR AND VIDEO TAPE RECORDER
Masakazu Mori; Nozomu Oito, and Masaaki Goto, all of Ehime, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 7, 1994, Ser. No. 29,507
Claims priority, application Japan, Apr. 8, 1994, 6-9930
Term of patent 14 years
U.S. Cl. D16—202



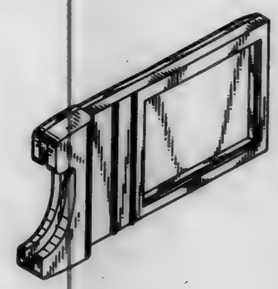
361,584
VIDEO CAMERA WITH LIQUID CRYSTAL MONITOR AND VIDEO TAPE RECORDER
Masakazu Mori, Ehime, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 7, 1994, Ser. No. 29,508
Claims priority, application Japan, Apr. 8, 1994, 6-9929
Term of patent 14 years
U.S. Cl. D16—202



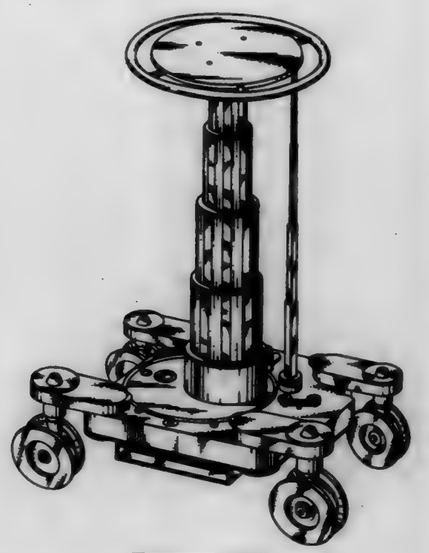
361,585
35 MM CAMERA
Eiji Hayamizu, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 10, 1994, Ser. No. 31,218
Claims priority, application Japan, May 11, 1994, 6-13366
Term of patent 14 years
U.S. Cl. D16—209



361,586
SHEET FILM HOLDER
Mariko Noda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 14, 1994, Ser. No. 18,638
Claims priority, application Japan, Aug. 13, 1993, 5-24877
Term of patent 14 years
U.S. Cl. D16—236



361,587
COMBINED CAMERA DOLLY AND SUPPORT COLUMN THEREFOR
Leonard T. Chapman, North Hollywood, Calif., assignor to Leonard Studio Equipment, Inc., North Hollywood, Calif.
Division of Ser. No. 261,039, Sep. 16, 1991, Pat. No. Des. 347,501, which is a continuation-in-part of Ser. No. 591,527, Oct. 1, 1990, Pat. No. Des. 338,030. This application May 10, 1994, Ser. No. 22,643
Term of patent 14 years
U.S. Cl. D16—242



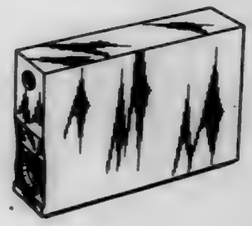
361,588
INK RIBBON CASSETTE
Tadashi Yamaka, and Toshihiko Nakagawara, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Jun. 3, 1993, Ser. No. 9,898
Claims priority, application Japan, Mar. 23, 1993, 5-8202
Term of patent 14 years
U.S. Cl. D18—12



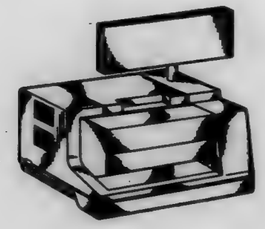
361,590
TONER CARTRIDGE
Kazuhito Ishida, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 15, 1994, Ser. No. 28,269
Claims priority, application Japan, Mar. 15, 1994, 6-6822
Term of patent 14 years
U.S. Cl. D18—43



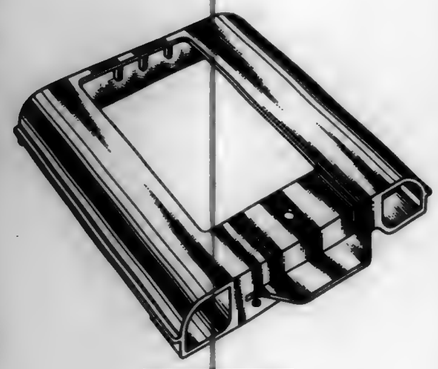
361,591
INK CARTRIDGE FOR PRINTER
Hiroyuki Tekeda, Yokohama; Tetsuya Sekine, Kawasaki; Masahiko Higuma, Togane; Tsutomu Abe, Ichara, and Masami Ikeda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1993, Ser. No. 15,854
Claims priority, application Japan, Jun. 7, 1993, 5-17106
The portion of the term of this patent subsequent to Feb. 28, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



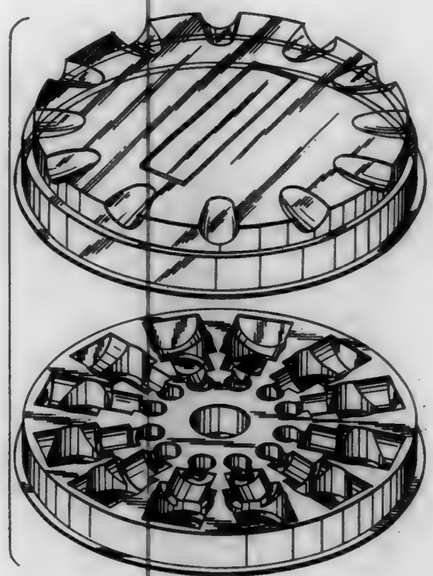
361,588
PRINTER
Hsing-Liang Chiu, Miao-Li, Taiwan, assignor to Senor Science Co., Ltd., Taipei, Taiwan
Filed Aug. 17, 1992, Ser. No. 930,903
Term of patent 14 years
U.S. Cl. D18—4



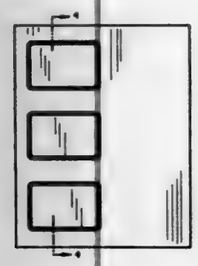
361,592
RIBBON CASSETTE FOR VIDEO PRINTER
Harumi Niwano, Akikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 22, 1994, Ser. No. 26,229
Claims priority, application Japan, Mar. 25, 1994, 6-9055
Term of patent 14 years
U.S. Cl. D18—56



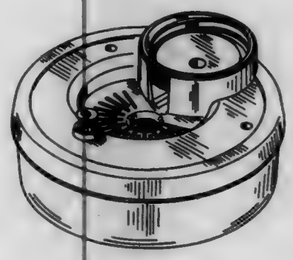
361,594
ART SUPPLY PACKAGE
Lawrence R. Salis, Parkland, Fla., assignor to Salis International Inc., Hollywood, Fla.
Filed Aug. 25, 1994, Ser. No. 27,594
Term of patent 14 years
U.S. Cl. D19—35



361,593
DOCUMENT SHEET WITH APERTURES FOR CARDS
Paul R. Edwards, 235 Greenbriar Estates Dr., St. Louis, Mo. 63122, assignor to Paul R. Edwards, St. Louis, Mo.
Division of Ser. No. 798, Oct. 23, 1992, Pat. No. Des. 352,310. This application Jul. 11, 1994, Ser. No. 25,774
Term of patent 14 years
U.S. Cl. D19—32



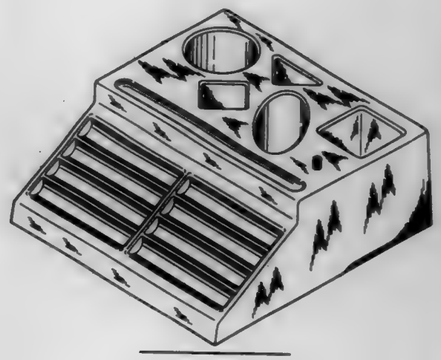
361,595
ARTIST'S BRUSH CLEANING APPARATUS
Laurel Ramsey, 6930 NE. 56th St. #102, Altoona, Iowa 50009, and C. Thomas Grimes, P.O. Box 437 3401 Convenience Blvd., Ankeny, Iowa 50021
Filed Aug. 31, 1994, Ser. No. 27,849
Term of patent 14 years
U.S. Cl. D19—35



361,596
WRITING INSTRUMENT
Brian Q. Young, P.O. Box 862469, Los Angeles, Calif. 90086-2469
Filed Jan. 28, 1994, Ser. No. 18,064
Term of patent 14 years
U.S. Cl. D19—49



361,598
ORGANIZER FOR ASSORTED DESK ARTICLES
Glenda C. Adams, 1206 Golden Hill Dr., Indianapolis, Ind. 46208
Continuation-in-part of Ser. No. 6,858, Apr. 7, 1993, Pat. No. Des. 352,068. This application Aug. 12, 1994, Ser. No. 27,060
Term of patent 14 years
U.S. Cl. D19—77



361,597
INTERACTIVE AUDIOVISUAL BOARD
Zeb Billings, and Deborah J. Billings, both of Hartland, Wis., assignors to Western Publishing Co., Racine, Wis.
Filed Jan. 10, 1994, Ser. No. 17,315
Term of patent 14 years
U.S. Cl. D19—60



361,599
BOX FOR PENCILS
John Melzian, Rancho Palos Verdes, and Daniel Schwartz, Long Beach, both of Calif., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Aug. 31, 1994, Ser. No. 27,873
Term of patent 14 years
U.S. Cl. D19—82



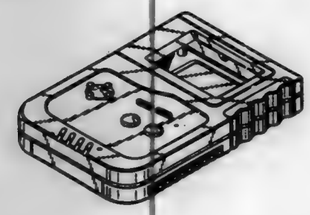
361,600
SIGN FOR CHEERLEADING
Severina E. Bradley, 1817 Butler St., Winston-Salem, N.C. 27107
Filed Sep. 2, 1994, Ser. No. 27,966
Term of patent 14 years
U.S. Cl. D20—10



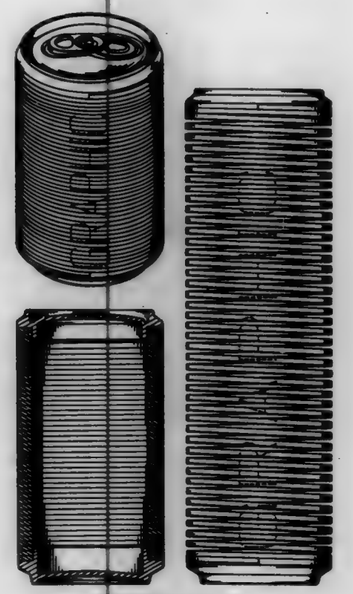
361,601
SUPPORT BRACE FOR HANGING POSTERS
Margery J. Goldman, Denver, and Joyce L. Cranston, Arvada, both of Colo., assignors to Eye-D Unlimited, Inc., Denver, Colo.
Continuation-in-part of Ser. No. 7,722, Apr. 29, 1993. This application Aug. 22, 1994, Ser. No. 27,398
Term of patent 14 years
U.S. Cl. D20—42



361,602
HAND-HELD CARTRIDGE GAME
Kenny S.-Y. Lee, Hong Kong, Hong Kong, assignor to ABC International Traders, Inc., North Hill, Calif.
Filed May 18, 1994, Ser. No. 23,089
Term of patent 14 years
U.S. Cl. D21—13



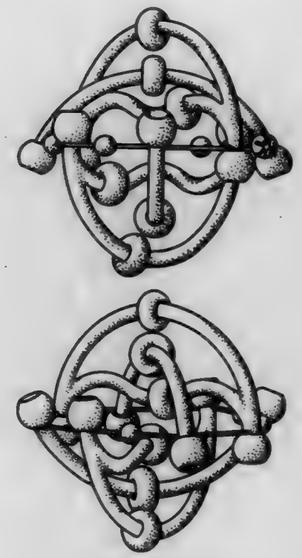
361,603
CHILD'S TOY
Christopher C. Bidwell, 1009 Dunbar Dr., Dunwoody, Ga. 30338
Filed Apr. 25, 1994, Ser. No. 21,833
Term of patent 14 years
U.S. Cl. D21—59



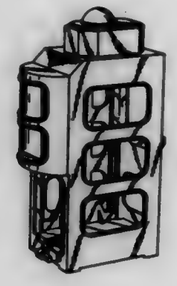
361,604
JUMPING BALL
Florindo Stroppiana, Gallo D'Alba, Italy, assignor to Mondo S.P.A., Gallo D'Alba, Italy
Filed May 11, 1994, Ser. No. 22,745
Claims priority, application Italy, Nov. 16, 1993, DMA/002355
Term of patent 14 years
U.S. Cl. D21—66



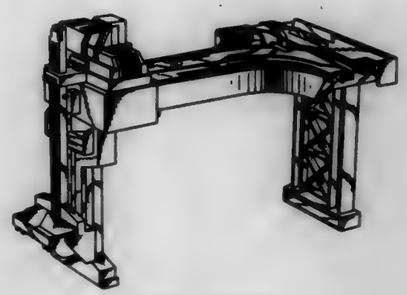
361,605
TOY
Thomas E. Flemons, 18308 East Pender Street, Vancouver, British Columbia, Canada V5L 1W7
Filed Jan. 21, 1994, Ser. No. 17,736
Term of patent 14 years
U.S. Cl. D21—104



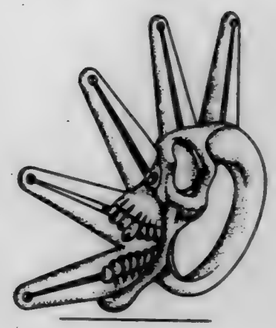
361,606
TOY ELEVATOR
Hisashi Shiraishi, Tokyo, Japan, assignor to Tomy Company, Ltd., Katsushika, Japan
Filed Aug. 19, 1993, Ser. No. 11,988
Claims priority, application Japan, Feb. 19, 1993, 5-4771
Term of patent 14 years
U.S. Cl. D21—118



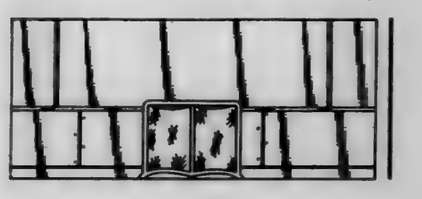
361,607
TOY CRANE
Hisashi Shiraishi, Tokyo, Japan, assignor to Tomy Company Ltd., Katsushika, Japan
Filed Aug. 19, 1993, Ser. No. 11,987
Claims priority, application Japan, Feb. 19, 1993, 5-4772
Term of patent 14 years
U.S. Cl. D21—119



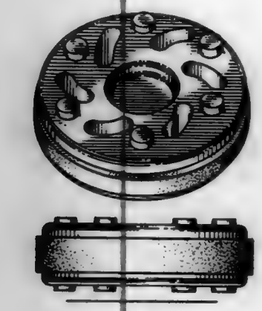
361,608
TOY WEAPON
Chung-Hing Choi, Hong Kong, Hong Kong, assignor to Hing Fat Toys Manufacturer Limited, Hong Kong, Hong Kong
Filed Sep. 19, 1994, Ser. No. 28,555
Term of patent 14 years
U.S. Cl. D21—145



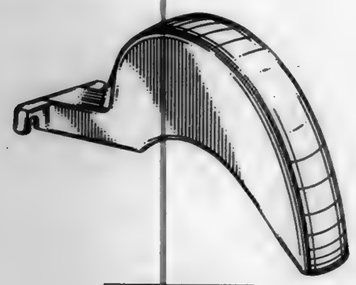
361,609
TARGET FOR HOCKEY PRACTICE
James W. Bartlett, 16 Millside Road S.W., Calgary, Alberta, Canada T2Y 2P9
Filed Jan. 18, 1994, Ser. No. 17,510
Term of patent 14 years
U.S. Cl. D21—200



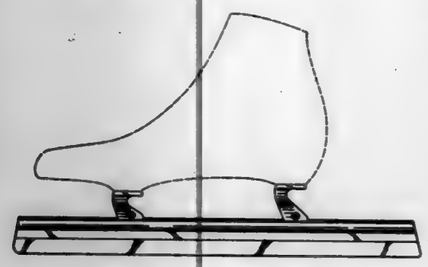
361,610
HOCKEY PUCK
Issa Y. Malki, 8081 San Helice Cir., Buena Park, Calif. 90620
Filed Jun. 9, 1994, Ser. No. 24,166
Term of patent 14 years
U.S. Cl. D21—203



361,611
COMBINED BALL CATCHING AND THROWING SCOOP
Charles E. Bloom, 1 SE. 3rd Ave., Sun Bank International Center, Suite 2240, Miami, Fla. 33131
Filed Jul. 13, 1994, Ser. No. 25,830
Term of patent 14 years
U.S. Cl. D21—210



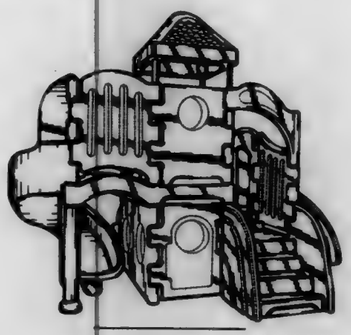
361,612
COMBINED ICE SKATE AND BRACKETS
Martin H. Hill, Syracuse, and William H. Dewey, Phoenix, both of N.Y., assignors to Built for Speed, Inc., Syracuse, N.Y.
Filed May 27, 1993, Ser. No. 8,813
Term of patent 14 years
U.S. Cl. D21—225



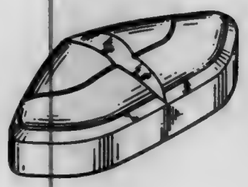
361,613
HAND POSITIONING GUIDE FOR A GOLF CLUB
Carlisle A. Thomas, Kalamazoo, Mich., assignor to Thomas Industries, Inc., Kalamazoo, Mich.
Filed Jul. 21, 1994, Ser. No. 26,170
Term of patent 14 years
U.S. Cl. D21—234



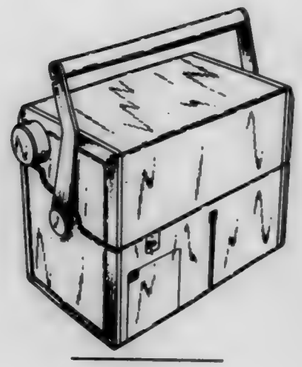
361,614
PLAYGROUND STRUCTURE WITH CIRCULAR SLIDE
Kevin R. Aker, Hudson, Ohio; Robert L. Houry, and Keith D. Ratliff, both of Farmington, Mo., assignors to The Little Tikes Company, Hudson, Ohio
Filed Nov. 8, 1993, Ser. No. 14,994
Term of patent 14 years
U.S. Cl. D21—244



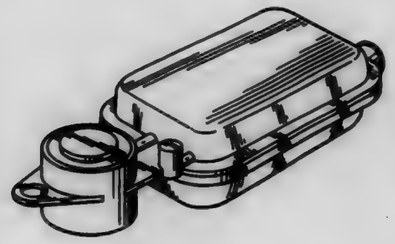
361,615
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Welwyn Garden City, England, assignor to SmithKline Beecham p.l.c., Brentford, England
Filed Dec. 3, 1991, Ser. No. 802,768
Claims priority, application United Kingdom, Jun. 4, 1991, 2015108
The portion of the term of this patent subsequent to Jan. 24, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—101



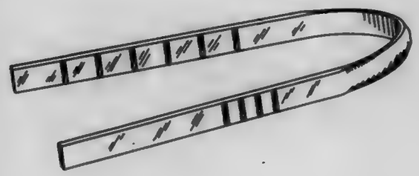
361,616
PORTABLE HEMAPHERESIS DEVICE
Tsuyoshi Tsuji, Tokyo, Japan, assignor to Baxter International Inc., Deerfield, Ill.
Filed Nov. 5, 1993, Ser. No. 14,966
Term of patent 14 years
U.S. Cl. D24—111



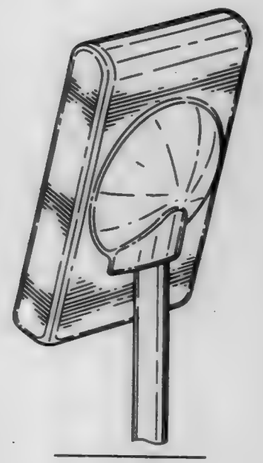
361,617
INFUSION PUMP
Gregory E. Sancoff, Rancho Santa Fe; Mark C. Doyle, San Diego, and Frederic P. Field, Solana Beach, all of Calif., assignors to River Medical, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 105,327, Aug. 6, 1993, and Ser. No. 105,284, Aug. 6, 1993, Pat. No. 5,397,303. This application Nov. 23, 1993, Ser. No. 15,664
Term of patent 14 years
U.S. Cl. D24—129



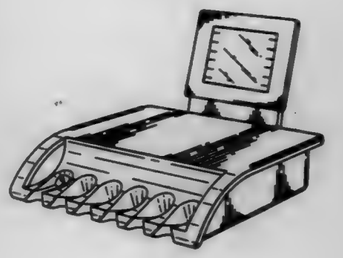
361,618
TONGUE SCRAPER
Nilesh R. Patel, 730 Saratoga Ave., San Jose, Calif. 95129
Filed Feb. 18, 1994, Ser. No. 18,950
Term of patent 14 years
U.S. Cl. D24—147



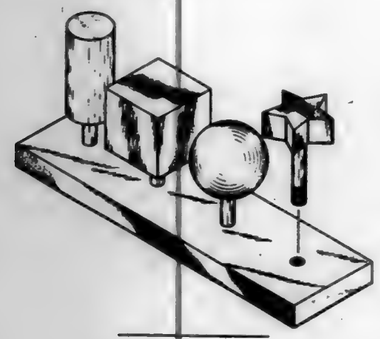
361,619
INTRAORAL SENSOR FOR A DENTAL X-RAY APPARATUS
Tilman Phleps, and Michael Doebert, both of Lorsch, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 15, 1994, Ser. No. 19,969
Claims priority, application WIPO, Nov. 17, 1993, DM/002358
Term of patent 14 years
U.S. Cl. D24—158



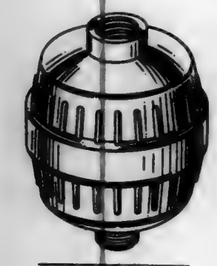
361,620
DENTAL INSTRUMENT TABLE
Tilman Phleps, Lorsch, and Klaus Stoeckl, Bensheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Division of Ser. No. 7,826, May 4, 1993, Pat. No. Des. 354,136. This application Jul. 19, 1994, Ser. No. 26,099
Claims priority, application WIPO, Nov. 4, 1992, DM/001940
Term of patent 14 years
U.S. Cl. D24—177



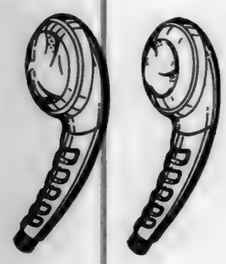
361,621
HAND THERAPY BOARD
Cloyed R. Johnson, 2822 Pinewept St., Pasadena, Tex. 77503
Filed Jul. 25, 1994, Ser. No. 26,278
Term of patent 14 years
U.S. Cl. D24—188



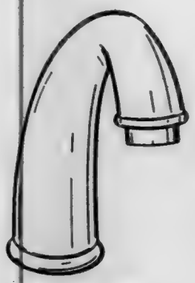
361,622
SHOWER FILTER HOUSING
David K. Farley, c/o Sprite Industries, 1827 Capital St., Corona, Calif. 91720
Filed Oct. 14, 1994, Ser. No. 29,746
Term of patent 14 years
U.S. Cl. D23—209



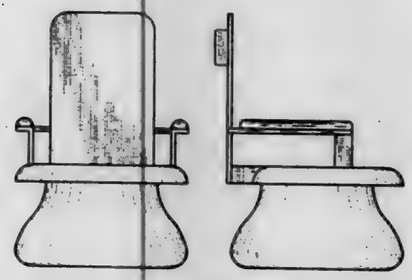
361,623
SHOWER HEAD
Hing-Wah Haen, Kowloon, Hong Kong, assignor to Fairform Mfg. Co., Ltd., Hong Kong
Filed Nov. 9, 1993, Ser. No. 15,153
Term of patent 14 years
U.S. Cl. D23—223



361,624
TUB FILLER SPOUT
Wolfgang Fabian, Mannheim, Germany, assignor to American Standard Inc., N.J.
Filed Apr. 6, 1994, Ser. No. 20,999
Term of patent 14 years
U.S. Cl. D23—257



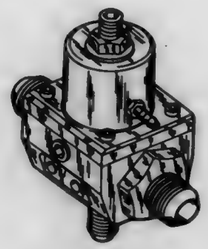
361,625
POTTY
Sherry L. Jacobs, 7155 E. 38th St., Tucson, Ariz. 85730
Filed May 5, 1994, Ser. No. 22,438
Term of patent 14 years
U.S. Cl. D23—296



361,626
VAGINAL MIRROR
Janice M. Brown, 1802 Slater Ave., Fayetteville, N.C. 28301
Filed Jun. 10, 1994, Ser. No. 24,239
Term of patent 14 years
U.S. Cl. D23—309



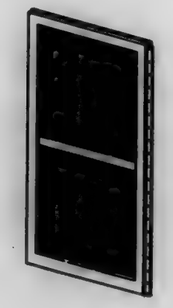
361,627
FUEL REGULATOR
James H. Garrard, Kirkwood; Eric A. Stenborg, High Ridge, and Mark A. Jones, St. Louis, all of Mo., assignors to Essex Industries, Inc., St. Louis, Mo.
Filed Jan. 14, 1994, Ser. No. 24,433
Term of patent 14 years
U.S. Cl. D23—235



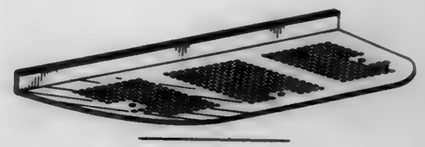
361,628
COMBINED TOILET SEAT AND COVER
Marvin D. Maxwell, R.R. 1, Nabb, Ind. 47147
Filed Jan. 9, 1994, Ser. No. 24,142
Term of patent 14 years
U.S. Cl. D23—312



361,629
SCREEN DOOR
Robert C. Tweedt, Ankeny, Iowa, assignor to Emco Enterprises, Inc., Des Moines, Iowa
Filed Aug. 8, 1994, Ser. No. 26,848
Term of patent 14 years
U.S. Cl. D25—48



361,630
WINDOW WELL COVER
Michael L. Guernsey, 6780 Union St., Arvada, Colo. 80004
Filed Jan. 18, 1994, Ser. No. 17,999
Term of patent 14 years
U.S. Cl. D25—54



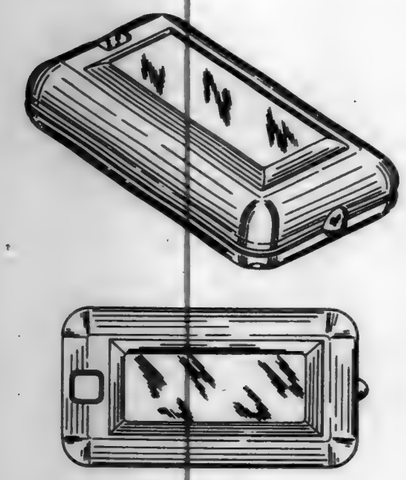
361,631
POST DESIGN FOR PLAYGROUND EQUIPMENT
Steven G. King, Long Lake, Minn., assignor to Landscape Structures, Inc., Delano, Minn.
Filed Sep. 8, 1994, Ser. No. 28,163
Term of patent 14 years
U.S. Cl. D25—128



361,632
COMBINED CANDLE HOLDER AND STAND THEREFOR
Ristomatti Ratia, Chicago, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
Filed Jan. 6, 1994, Ser. No. 17,197
Term of patent 14 years
U.S. Cl. D26—10



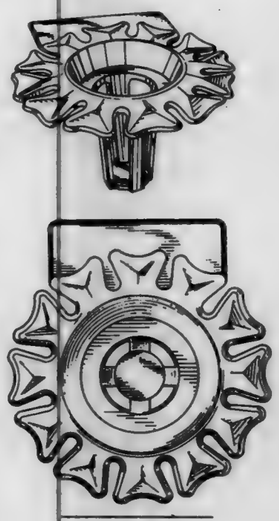
361,633
FLAT FLASHLIGHT
Meena G. Chabria, Wayne, Ill., assignor to Press-A-Lite Corporation, West Chicago, Ill.
Continuation-in-part of Ser. No. 8,439, May 17, 1993, Pat. No. Des. 355,272. This application Nov. 1, 1994, Ser. No. 30,541
Term of patent 14 years
U.S. Cl. D26—37



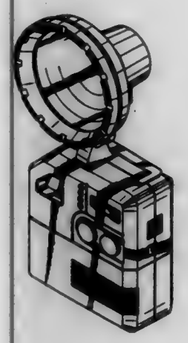
361,634
BODY SQUEEGEE
Robert L. J. Swinton, 80 Atlantic Ave., Oceanside, N.Y. 11572-2611
Filed Oct. 9, 1992, Ser. No. 266
Term of patent 14 years
U.S. Cl. D32—41



361,635
COMBINED SCRAPER AND GARBAGE DISPOSER AID FOR SINKS
Norton Sarnoff, Northbrook, and John F. Chmela, Mt. Prospect, both of Ill., assignors to Essar Corporation, Wheeling, Ill.
Filed Jan. 13, 1994, Ser. No. 17,440
Term of patent 14 years
U.S. Cl. D32—42



361,636
ELECTRICAL LANTERN WITH RECHARGEABLE BATTERY PACK
Tit-ying Poon, Chaiwan, Hong Kong, assignor to Flying Dragon Development Ltd., Hong Kong
Filed Sep. 19, 1994, Ser. No. 28,634
Claims priority, application United Kingdom, Jun. 29, 1994, 2040018
Term of patent 14 years
U.S. Cl. D26—44



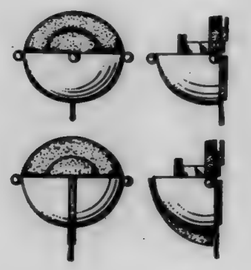
361,637
RAZOR
Michael Miskin, 4927 N. Lester, Chicago, Ill. 60630
Division of Ser. No. 916,404, Jul. 20, 1992, Pat. No. D. 351,685. This application Jun. 30, 1994, Ser. No. 25,413
Term of patent 14 years
U.S. Cl. D28—47



361,638
MASCARA DISPENSER
Joël Desgrippes, Paris, France, assignor to Cosmétique Sans Soucis GmbH, Baden-Baden, Germany
Filed Jun. 15, 1994, Ser. No. 24,572
Claims priority, application Germany, Dec. 23, 1993, M 93 10 124.4
The portion of the term of this patent subsequent to Dec. 6, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—76



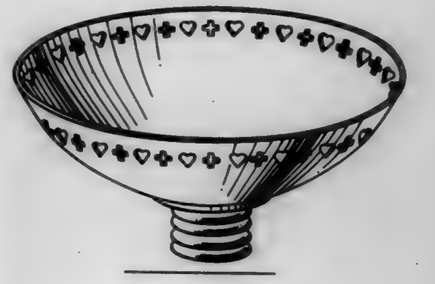
361,639
WALL MOUNTED LIGHT
Demetrios L. Christopoulos, P.O. Box 7081, Boca Raton, Fla. 33431
Filed May 9, 1994, Ser. No. 22,558
Term of patent 14 years
U.S. Cl. D26—85



361,640
TABLE LAMP
Simon V. Boughoul, Outremont, Canada, assignor to Bazz Inc., Montreal, Canada
Filed Dec. 30, 1993, Ser. No. 17,146
Claims priority, application Canada, Nov. 5, 1993, 5-11-93-6
Term of patent 14 years
U.S. Cl. D26—106



361,641
HALOGEN TORCHIERE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed May 17, 1994, Ser. No. 23,063
Term of patent 14 years
U.S. Cl. D26—110



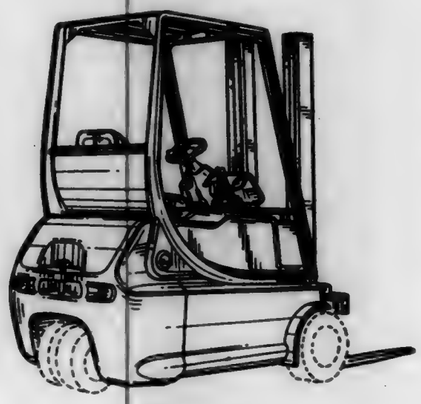
361,642
PORTABLE BOAT BOARDING RAMP
James Smith, 135 Paris Ct., West Islip, N.Y. 11795, and Brian R. Smith, 1719 Paisley Blue Ct., Vienna, Va. 22182
Filed Apr. 11, 1994, Ser. No. 21,223
Term of patent 14 years
U.S. Cl. D34—32



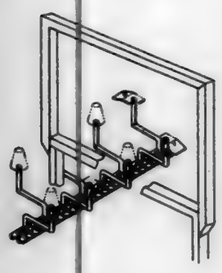
361,643
IN-HOUSE MAIL DELIVERY CART
Rusty B. Snell, Maryville, Tenn., assignor to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Jul. 7, 1994, Ser. No. 25,608
Term of patent 14 years
U.S. Cl. D34—21



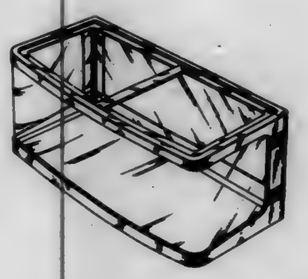
361,645
FORK LIFT TRUCK
Roland Heller, Tiefenbronn, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed May 24, 1994, Ser. No. 23,418
Claims priority, application Germany, Nov. 29, 1993, M 93 09 268.7
The portion of the term of this patent subsequent to May 2, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D34—34



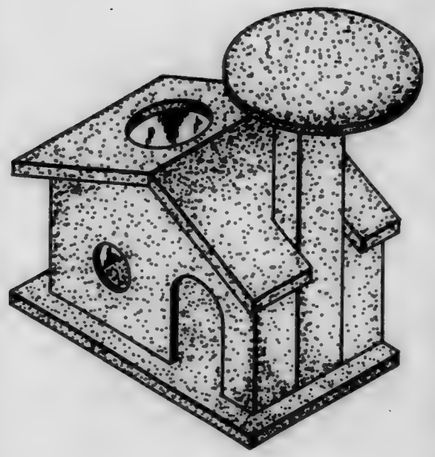
361,644
CONVEYOR ASSEMBLY PORTION WITH VARIABLE OFFSET ARMS FOR SUPPORTING POULTRY AND POULTRY PARTS
James F. Davis, 11976 Bells Ferry Rd., Canton, Ga. 30114
Filed Jan. 18, 1994, Ser. No. 17,593
Term of patent 14 years
U.S. Cl. D34—29



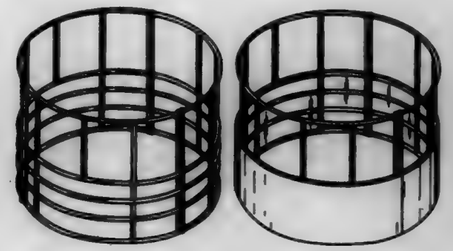
361,646
AQUARIUM TANK
Hiroaki Hashimoto, Showamachi, Japan, assignor to Nisui Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,234
The portion of the term of this patent subsequent to Aug. 8, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—101



361,647
CAT HOUSE
Joseph M. Thomas, and Henriette Hatle, both of 4519 SW. 8th Pl., Cape Coral, Fla. 33914
Filed Mar. 7, 1994, Ser. No. 19,585
Term of patent 14 years
U.S. Cl. D30—108



361,648
LIVESTOCK FEEDER
Calvin A. Charbonneau, P.O. Box 88, Gerald, Mo. 63037
Filed Mar. 3, 1993, Ser. No. 5,396
Term of patent 14 years
U.S. Cl. D30—121



361,649
COMBINED LITTER BOX AND SIFTING COVER FOR FELINES
Jean-Francois De La Chevrotiere, 1979 Emile-Nelligan, Varennes, Quebec, Canada J3X 1X1
Filed Mar. 22, 1994, Ser. No. 20,248
Term of patent 14 years
U.S. Cl. D30—161



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TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Hiltunen, Matti A.; and Ikonen, Osmi, 5,443,654, Cl. 134-22.120.
Isaksson, Juhani; and Koskinen, Jari, 5,443,906, Cl. 423-237.000.

A. O. Smith Corporation: *See*—
Laven, James R.; and Hooper, Roger B., 5,442,885, Cl. 52-731.300.

A.P.M. Distributing, Inc.: *See*—
Gabree, Joseph P.; Campbell, Steve W.; and Hood, Charles, 5,442,898, Cl. 53-459.000.

A. Raymond GmbH & Co., KG: *See*—
Mutz, Bernd; Hullmann, Klaus; and Daler, Helmo, 5,443,343, Cl. 411-30.000.

Abbott Labatories: *See*—
Garleb, Keith A.; and Demichele, Stephen J., 5,444,054, Cl. 514-54.000.

Abbott, Martin H.: *See*—
Amies, Kevin T.; and Abbott, Martin H., 5,443,036, Cl. 119-707.000.

Abdulally, Iqbal F.: *See*—
Winkin, Justin P.; Campbell, Walter R., Jr.; Goidich, Stephen J.; Tang, John; Abdulally, Iqbal F.; and Phalen, John W., 5,443,022, Cl. 110-245.000.

Abe, Hirofumi; and Shibata, Tadashi, to Nippondenso Co., Ltd. Semiconductor programmable read only memory device. 5,444,650, Cl. 365-96.000.

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Abe, Hitoshi: *See*—
Nishizawa, Junichi; and Abe, Hitoshi, 5,443,033, Cl. 117-86.000.

Abe, Masatoshi: *See*—
Tanaka, Yoshiyuki; Abe, Masatoshi; and Ito, Taka-aki, 5,444,596, Cl. 361-120.000.

Abe, Michiyo: *See*—
Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,444,329, Cl. 313-479.000.

Abe, Tomoaki: *See*—
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,444,471, Cl. 347-72.000.

Abe, Yoshinori: *See*—
Ito, Akio; Ichikawa, Hiroyuki; and Abe, Yoshinori, 5,444,556, Cl. 358-501.000.

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Cline, Harvey E.; Rohling, Kenneth W.; and Abeling, Walter R., 5,443,068, Cl. 128-653.500.

Abeyama, Katsutoshi: *See*—
Inoue, Shinichi; Abeyama, Katsutoshi; Munekane, Fuminori; Watanabe, Hisanobu; and Minake, Yasuyuki, 5,443,693, Cl. 201-1.000.

Abloy Security Ltd Oy: *See*—
Kahonen, Hannu; and Pitkanen, Jukka, 5,442,941, Cl. 70-34.000.

Abrams, Richard L.: *See*—
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Steffee, Arthur D., 5,443,514, Cl. 623-17.000.

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Young, Lesley; Rhodes, Brian D.; Acton, Gary; Oglesby, Michael L.; and Furcigh, Michael L., 5,443,211, Cl. 239-146.000.

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Hug, Paul; Hines, Horace; and Lamp, Mark L., 5,444,252, Cl. 250-363.080.

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adatomed Pharmazeutische und medizintechnische Gesellschaft mbH: *See*—
Jacobi, Karl W., 5,443,507, Cl. 623-6.000.

Adiletta, Joseph D.: *See*—
Kirnbauer, Erwin; White, Donald H., Jr.; and Adiletta, Joseph D., 5,443,735, Cl. 210-668.000.

Adir et Compagnie: *See*—
de Nanteuil, Guillaume; Lila, Christine; Laubie, Michel; Verbeuren, Tony; Simonet, Serge; Rupin, Alain; and Portevin, Bernard, 5,444,049, Cl. 514-18.000.

Adkinson, Steven Spence: *See*—
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Advanced Cardiovascular Systems, Inc.: *See*—
Eury, Robert P., 5,443,458, Cl. 604-891.100.
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McMahon, Scott H. R.; Buchanan, James M.; and Horne, Stephen C., 5,444,402, Cl. 327-170.000.

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Aajum, Mohammed; Barki, Ibrahim K.; and Christian, Craig W., 5,444,024, Cl. 437-200.000.
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Ganapathy, Gopi; and Horne, Stephen C., 5,444,407, Cl. 327-295.000.
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Sweeny, Greg A.; and Conboy, Michael R., 5,444,637, Cl. 364-556.000.

Advanced Tissue Sciences, Inc.: *See*—
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Yoshida, Tomio; and Shimawaki, Kazuhiro, 5,444,645, Cl. 364-717.000.

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Asquith, Joseph G.; Peschel, William P.; and Sperling, Jacob L., 5,442,907, Cl. 60-39.060.

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Kim, Byoung Y.; Koh, Yeon W.; and Yun, Seok H., 5,444,803, Cl. 385-28.000.

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Yamane, Takashi, 5,443,503, Cl. 623-3.000.

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Krafft, Werner; Jonas, Friedrich; Laivani, Prem; Andries, Hartwig; and Mues, Willem, 5,443,944, Cl. 430-529.000.

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Watson, James A.; McClintock, Cameron R.; Randhawa, Hiten S.; Li, Ken M.; and Ahanin, Bahram, 5,444,394, Cl. 326-45.000.

Ahluwalia, Gurpreet S. Method of reducing the rate of hair growth. 5,444,090, Cl. 514-547.000.

Ahn, Seong-Ho, to Samsung Heavy Industries Co., Ltd. Method for controlling operation of an excavator having electronic micro-module. 5,442,868, Cl. 37-348.000.

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Aida, Midori: *See*—
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Paparo, Mario; and Aiello, Natale, 5,444,291, Cl. 257-552.000.

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Aikawa, Yoshihiko, 5,443,213, Cl. 241-73.000.

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Frey, Richard L.; Gass, Richard C., Jr.; George, Robert L., II; Hladik, Stephen M.; Lester, Howard L.; Packette, Charles M.; and Ray, Jimmy C., 5,444,762, Cl. 379-58.000.

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Kishi, Hiroshi; Ito, Toru; Morimoto, Kyomi; Yokoyama, Shoji; and Kuroda, Kenji, 5,444,629, Cl. 364-449.000.

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Aitken, John M.; Beyer, Klaus D.; Crowder, Billy L.; and Greco, Stephen E., to International Business Machines Corporation. Large scale IC personalization method employing air dielectric structure for extended conductors. 5,444,015, Cl. 437-182.000.

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Orban, Robert A., 5,444,788, Cl. 381-106.000.

Aki, Osami; Kashi, Rikujiro; Nakatani, Kanji; and Okada, Atsunori, to Fuji Sangyo Kaisha, Ltd.; and Takeda Chemical Industries, Ltd. Soap compounded with vitamin B_1-containing garlic extract. 5,443,834, Cl. 424-401.000.

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Sugawara, Ryuta; and Akimoto, Satoshi, 5,443,583, Cl. 303-169.000.

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Kawaguchi, Masakiyo; Yoneda, Keiichi; Hirasaka, Naoto; and Akiyama, Akira, 5,443,280, Cl. 280-660.000.

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Yamamoto, Yuji; and Akiyama, Kiichiro, 5,444,744, Cl. 375-376.000.

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Aksbro, Erik: *See*—
Krogh, Soren-Christian; and Aksbro, Erik, 5,443,077, Cl. 128-737.000.

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Oyama, Shigeo T.; Yu, Chunzhe C.; and Sherif, Fawzy G., 5,444,173, Cl. 585-671.000.

Alahuzos, George A.: *See*—
Stone, Henry W.; Lloyd, James W.; and Alahuzos, George A., 5,443,354, Cl. 414-729.000.

Alantec Corporation: *See*—
Wakerly, John F., 5,444,858, Cl. 395-304.000.

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Koller, Stefan; and Albeck, Bernhard, 5,442,848, Cl. 29-566.100.

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Bach, Lars, 5,443,891, Cl. 428-182.000.
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Seville, Jacqueline M.; and Ferguson, William G. A., 5,443,629, Cl. 105-21.00A.

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Alexander, William J., III; and Summey, Shala W., III, 5,443,226, Cl. 242-533.800.

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Lind, Ole; Ornerfors, Benny; Grimm, Hartmut; and Rabold, Karl, 5,443,035, Cl. 119-14.030.

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Byers, Charles L.; Beutell, James W.; and Fleming, Matthew C., 5,443,493, Cl. 607-137.000.

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Pfeiffer, Bernd, 5,443,097, Cl. 138-89.000.
Thiel, Rudolf; Doell, Andreas; and Halasy-Wimmer, Georg, 5,443,141, Cl. 188-71.900.

Alger, Terry W.: *See*—
Chang, Jim J.; and Alger, Terry W., 5,444,332, Cl. 313-618.000.

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Polites, Michael E.; and Alhorn, Dean C., 5,443,247, Cl. 267-283.000.

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Strahl, Paul B.; Allard, John E.; and Adams, Gary V., 5,443,284, Cl. 280-728.200.

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Briggs, Randall D.; and Allen, Greg L., 5,444,827, Cl. 395-115.000.

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Stott, John A.; and Allen, John G., 5,443,741, Cl. 210-726.000.

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Holmes, Alix A., 5,443,178, Cl. 221-64.000.

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Claeys, Henry M.; Clarke, Kathrine J.; and Matulich, Dan S., 5,442,905, Cl. 60-39.070.
Cordova, David S.; Weedon, Gene C.; Winckilhofer, Robert C.; Boose, Mark B.; Kirkland, Kevin M.; Weber, Charles P., Jr.; and LaCasse, Greogry J., 5,442,815, Cl. 2-161.700.
Patterson, Michael; Blackadder, David; and Bell, John F., 5,443,224, Cl. 242-384.200.

Alliger, Howard M.; Librizzi, Joseph; and Ginsburg, Robert, to Misonix, Inc. Catheter with collapsible wire guide. 5,443,456, Cl. 604-280.000.

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Allison, David B.: *See*—
Wall, Stanley J.; Allison, David B.; and Henry, Michael W., 5,443,123, Cl. 166-288.000.

Alltrista Corporation: *See*—
Price, Mark E., 5,443,020, Cl. 108-115.000.

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Heredia, George L.; Almblad, Robert E.; and Mueller, Mike A., 5,443,339, Cl. 409-81.000.

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Blaine, George R.; and Zwaard, Robert T., 5,444,635, Cl. 364-474.130.

Alter, Barbara: *See*—
Ochoa, Augusto C.; Bach, Fritz H.; Alter, Barbara; and Soudei, Paul, 5,443,983, Cl. 435-240.200.

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Watson, James A.; McClintock, Cameron R.; Randhawa, Hiten S.; Li, Ken M.; and Ahanin, Bahram, 5,444,394, Cl. 326-45.000.

Althausen, Ferdinand: *See*—
Prokas, Ferdinand; Sulzbach, Hans-Michael; Althausen, Ferdinand; Duschanek, Helmut; and Raffel, Reiner, 5,443,797, Cl. 422-133.000.

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Sitges Menendez, Francisco J.; Sitges Menendez, Fernando; Alvarez Tamargo, Francisco; Lefevre, Ives; and Martinez Valdes, Jose M., 5,443,708, Cl. 204-286.000.

ALZA Corporation: *See*—
Atkinson, Linda E.; Dunn, John T.; Gale, Robert M.; and Rivera, David L., 5,443,461, Cl. 604-892.100.
Phipps, Joseph B.; and Moodie, Lyn C., 5,443,442, Cl. 604-20.000.
Wong, Patrick S. L.; Theeuwes, Felix; Larsen, Steven D.; and Dong, Liang C., 5,443,459, Cl. 604-892.100.

AM International, Inc.: *See*—
Hawkes, Richard B., 5,443,639, Cl. 118-244.000.

Amada Company, Limited: *See*—
Ito, Shigeru, 5,442,985, Cl. 83-155.000.

Amano, Akira: *See*—
Kitamura, Shoji; Shiado, Yoichi; and Amano, Akira, 5,444,726, Cl. 372-36.000.

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Kawaguchi, Yoji; Amano, Hirofumi; and Kashihara, Satoshi, 5,443,897, Cl. 428-237.000.

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Baker, Jeffrey L.; Stebbins, Robert G.; and Nguyen, Quang H., 5,444,859, Cl. 395-575.000.

Amemiya, Mitsuaki: *See*—
Miyake, Akira; and Amemiya, Mitsuaki, 5,444,758, Cl. 378-113.000.

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Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehiro; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

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Malamas, Michael S., 5,444,086, Cl. 514-445.000.

Americate Transtech, Inc.: *See*—
D'Angelo, Joseph P.; Schur, Henry; Hsu, Kodu; and Glenn, Daniel J., 5,443,080, Cl. 128-771.000.

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Anderson, Ken B.; and Miller, Jeffrey T., 5,443,716, Cl. 208-113.000.
Buttke, Robert D.; and Frey, John R., 5,443,718, Cl. 208-157.000.
Yanniruscas, Demetrios V.; and Spencer, Mark F., 5,443,118, Cl. 166-251.000.

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Amstad, Paul: *See*—
Reddel, Roger R.; Ke, Yang; Rhim, Johng S.; Brash, Douglas E.; Su, Robert T.; Lechner, John F.; Gerwin, Brenda I.; Harris, Curtis C.; and Amstad, Paul, 5,443,954, Cl. 435-7.210.

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Brumbaugh, Ernest H., 5,443,757, Cl. 252-548.000.

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Robinson, Derek W.; Krieger, William A.; Martinez, Andre M.; and McDevitt, Marion R., 5,444,285, Cl. 257-378.000.

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Dobbs, John; Banks, David; and Katz, Leonhard, 5,444,752, Cl. 378-19.000.

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Hennes, Jacques; and Ancelin, Jean-Pierre, 5,443,243, Cl. 254-93.00R.

Anchor Hocking Packaging Co.: *See*—
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Anderson, Corrie T. M.: *See*—
Namenye, Joseph A.; Stephenson, James G.; and Anderson, Corrie T. M., 5,443,488, Cl. 607-104.000.

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Anderson, William W.: *See*—
Gal, George; Anderson, William W.; Herman, Bruce J.; and Shough, Dean M., 5,444,572, Cl. 359-619.000.

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Vassbotn, Flemming S.; Andersson, Maria; Backstrom, Gudrun; Engstrom, Ulla; Heldin, Carl-Henrik; Hellman, Ulf; stman, Arne; and Westermark, Bengt, 5,444,151, Cl. 530-324.000.

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Nakajima, Kazuhiko; Ando, Satoshi; Doba, Akira; and Yoshitome, Hideo, 5,443,812, Cl. 423-700.000.

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Dyott, Richard B.; Brooker, Eric L.; Bennett, Sidney M.; and Myhre, John D., 5,444,534, Cl. 356-350.000.

Andries, Hartwig: *See*—
Krafft, Werner; Jonas, Friedrich; Laivani, Prem; Andries, Hartwig; and Mues, Willem, 5,443,944, Cl. 430-529.000.

Angelos Corporation: *See*—
Berghoff, Gene; Latterell, Scott; and Monroe, Paul, 5,443,065, Cl. 128-639.000.

Angell, Richard G., Jr.: *See*—
Scarola, Leonard S.; Roberts, Ernest H.; Hobbs, Kenneth E.; and Angell, Richard G., Jr., 5,443,652, Cl. 134-7.000.

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Miller, David; and Perez, Edward, 5,443,473, Cl. 606-166.000.

Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., to Advanced Micro Devices, Inc. Method for low energy implantation of argon to control titanium silicide formation. 5,444,024, Cl. 437-200.000.

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Enomoto, Minoru; Aono, Toshio; Komuro, Fumihiko; Yamamoto, Tsuyoshi; Tanaka, Katsuhisa; and Ohtake, Tomoyuki, 5,444,343, Cl. 318-568.110.

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Takahashi, Hirosori; Urakami, Tsuneyuki; Aoshima, Shinichiro; and Hirano, Isuke, 5,444,365, Cl. 324-96.000.

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Chu, Ke-Chiang, 5,444,441, Cl. 341-87.000.
Lynn, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., 5,444,781, Cl. 380-46.000.
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Farwell, Charles Y.; Miller, Richard D.; and Windhausen, Richard A., 5,444,766, Cl. 379-60.000.
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Goossen, Keith W.; and Walker, James A., 5,443,685, Cl. 156-635.100.
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Collins, Donald A., Jr., 5,444,226, Cl. 235-462.000.
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Vanderbeke, E. M. M.; De Schrijver, M.; and Vermeire, A. M. M., 5,443,979, Cl. 435-195.000.

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Brandon, Ronald E. Steam turbine bell seals. 5,443,589, Cl. 415-134.000.
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Brannon, Selby M., to Plasticolors, Inc. Process for preparing pigmented thermoplastic polymer compositions and low shrinking thermosetting resin molding composition. 5,443,775, Cl. 264-143.000.
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Cunningham, Patrick M., 5,443,240, Cl. 248-638.000.
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Brazil, Harry. Acoustic broom. 5,444,323, Cl. 310-328.000.
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Briggs, Randall D.; and Allen, Greg L., to Hewlett-Packard Company. Method and apparatus for preventing print overruns by rasterizing complex page strips using an increased clock frequency. 5,444,827, Cl. 395-115.000.
Brisco, David P., to Halliburton Company. Plug container with fluid pressure responsive cleanout. 5,443,122, Cl. 166-285.000.
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Mewburn, Judith J., 5,443,082, Cl. 128-897.000.
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Barnsley, Peter E., 5,444,560, Cl. 359-138.000.
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Meister, James L., 5,442,999, Cl. 99-426.000.
Brock, Michael; Hardt, Peter; Klimmek, Helmut; and Stockhausen, Dolf, to Huels Aktiengesellschaft. Process for the quaternization of triethanolamine fatty acid esters and imidazolinamides and the use of the reaction mixtures in laundry softener compositions. 5,443,631, Cl. 106-244.000.
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Broitzman, Stephen K. Fluid pouring container with asymmetrical solids separator. 5,443,184, Cl. 222-189.070.
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Kitazawa, Yasunori, 5,443,318, Cl. 400-120.010.
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Brown, Stephen H., to Mobil Oil Corporation. Process for the production of symmetrical ethers from secondary alcohols. 5,444,168, Cl. 568-664.000.
Browne, Bruce. Slammer for use in playing milk cap type games and method of manufacture. 5,443,106, Cl. 156-182.000.

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Brundage, David A.; and Jones, Jerry E. Net apparatus. 5,442,875, Cl. 43-11.000.

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Bucalo, Louis R.; Bucalo, Brian D.; and Kash, Peter M. Apparatus incorporating a cellular telephone. 5,444,778, Cl. 379-453.000.

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Buchko, Raymond G., to Rapidpak, Inc. Apparatus for advancing preformed containers. 5,443,150, Cl. 198-463.300.

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Buelna, Terrance J., to Applied Medical Resources Corporation. Cholangiography catheter. 5,443,449, Cl. 604-105.000.

Buenz, Robert J., to Tri Service, Inc. Printing machine with integrated temperature control system. 5,443,007, Cl. 101-480.000.

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Buffat, Bernard; Pillias, Danicle; and Lerbet, Francois, to Saint-Gobain Vitrage International. Process for the treatment of thin films having properties of electrical conduction and/or reflection in the infrared. 5,443,862, Cl. 427-526.000.

Buhler, Jurg, to Hoffmann-La Roche Inc. Pipetting device. 5,443,792, Cl. 422-67.000.

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Bumen, Werner: *See—*
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Burba, John L., III; and Christenson, Christopher P., to Dow Chemical Company, The. Elastic solids having reversible strain-induced fluidity. 5,443,761, Cl. 252-315.500.

Burchard, Thomas; and Bredow, Wolfgang, to NBB Nachrichtentechnik GmbH & Co. KG. Switch for operating an electric device, in particular a radio remote control device. 5,444,199, Cl. 200-43.040.

Burgess, Arnold C.: *See—*
Hilbish, Brian K.; Burgess, Arnold C.; and Wilson, Michael A., 5,443,333, Cl. 406-88.000.

Burkard, Walter; Ulrich, Ewald; and Reichelt, Helmut, to Mercedes-Benz AG. Variously positionable pivot joint connection for wheel guide arms in motor vehicles. 5,443,281, Cl. 280-661.000.

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Burns, Hubert E.: *See—*
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Burroughs, Thomas C. Lubricating means for marine steering system. 5,443,407, Cl. 440-63.000.

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Bursi, Hugh A. Golf swing plane training aid. 5,443,266, Cl. 273-187.200.

Burton Industries, Inc.: *See—*
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Busch, Alfred: *See—*
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Buttke, Robert D.; and Frey, John R., to Amoco Corporation. Reduced gas holdup in ebullated reactor. 5,443,718, Cl. 208-157.000.

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Byers, Charles L.; Beasell, James W.; and Fleming, Matthew C., to Alfred E. Mann Foundation For Scientific Research. Cochlea stimulating electrode assembly, insertion tool, holder and method of implantation. 5,443,493, Cl. 607-137.000.

Byrne, Christine J.; Blonski, Robert P.; and Welch, John J., to Ferro Corporation. Process for making bismuth-vanadium-molybdenum-containing compositions. 5,443,810, Cl. 423-593.000.

C. J. Associates, Ltd.: *See—*
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Cabler, Carlin D., to Advanced Micro Devices Inc. Low noise apparatus for receiving an input current and producing an output current which mirrors the input current. 5,444,363, Cl. 323-315.000.

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Calgon Carbon Corporation: *See—*
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Camberlin, Yves; Mignani, Gerard; Meyrueix, Remi; and Tapolsky, Gilles, to Flamel Technologies. Optionally oriented, monomeric and polymeric nonlinearly optically active materials and derivatives thereof. 5,444,136, Cl. 526-262.000.

Cambou, Bertrand F.; and Hughes, Donald L., to Motorola. Vertical and lateral isolation for a semiconductor device. 5,444,289, Cl. 257-510.000.

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Campagnuolo, Carl J.; Emmerman, Phil; and Kreider, Stephen, to United States of America, Army. Thermoelectric device for vehicle identification. 5,444,242, Cl. 250-495.100.

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Ito, Akio; Ichikawa, Hiroyuki; and Abe, Yoshinori, 5,444,556, Cl. 358-501.000.
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Capuano, Vincenzo: *See—*
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Carbomedics, Inc.: *See—*
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Cardini, Giuseppe; and Parroni, Alessandro, to Axis USA, Inc. Heatless resin coating system. 5,443,643, Cl. 118-712.000.

Cardiovascular Imaging Systems, Incorporated: *See—*
Gisa, Richard S.; and Salmon, Stephen M., 5,443,457, Cl. 604-280.000.

Carey, Richard J.: *See—*
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Cargill, Lee B., to Enel Company. Cargo restraint apparatus for a pick-up truck. 5,443,586, Cl. 410-143.000.

Carl, John L. Electric connector plug retainer. 5,443,397, Cl. 439-369.000.

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Kelch, Gerhard; Labres, Hans; and Wietschorke, Helmut, 5,444,503, Cl. 351-169.000.

Carnahan, David W., to CJ's Distributing, Inc. Sprayable isocionic neoprene latex adhesive and method of preparation. 5,444,112, Cl. 524-272.000.

Carney, Walter P., to Oncogene Science, Inc. Detection, quantitation and classification of RAS proteins in body fluids and tissues. 5,443,956, Cl. 435-7.230.

Caron, Richard W., to Ford Motor Company. Calibration technique for production mass air flow sensor flow stands. 5,442,957, Cl. 73-168.000.

Carr, Francis L.; and Cancil, George P., to SAFCO Corporation. Fuseholder. 5,444,428, Cl. 337-188.000.

Carrier Corporation: *See—*
Mistry, Mayank C.; Waterman, Timothy J.; and Larsen, Michael J., 5,443,364, Cl. 415-214.100.

Carrington Laboratories, Inc.: *See—*
Moore, D. Eric; and McAnalley, Bill H., 5,443,830, Cl. 424-195.100.

Carroll, Gary T.; and Pauley, J. Donald, to Racom Systems, Inc. Low power consumption oscillator using multiple transconductance amplifiers. 5,444,421, Cl. 331-111.000.

Carroll, Sean B. Immobilization of *Crotalus atrox* and *Crotalus durissus terrificus* whole venoms on aldehyde-activated agarose. 5,443,976, Cl. 435-178.000.

Carroll, Walter R. Seed furrow closing apparatus for agricultural planters. 5,443,023, Cl. 111-191.000.

Carter, John W.: *See—*
Fisher, Daniel J.; Agrawal, Raj K.; Crank, Douglas; and Carter, John W., 5,443,673, Cl. 156-345.000.

Carter, Walter A.: *See—*
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Cartmell, Robert L.: *See—*
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Cartry, Jean Pierre, to Framatome. Method and device for repairing a defective zone of the wall of a metal part and in particular of a tubular part. 5,443,201, Cl. 228-119.000.

Cartwright, Richard W.: *See—*
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Casas, Luis M.: *See—*
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Casio Computer Co., Ltd.: *See—*
Ishikawa, Ryo, 5,444,458, Cl. 345-98.000.
Sato, Takaaki; and Sano, Teruo, 5,444,553, Cl. 358-465.000.
Yoshida, Tetsushi; Fujita, Yutaka; and Kotani, Kanihiko, 5,443,756, Cl. 252-299.630.

Castelberg, Manfred: *See—*
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Caterpiller Inc.: *See—*
Sandborg, Thomas R.; Parupalli, Prasad V.; and Sisa, Scott G., 5,444,627, Cl. 364-431.050.

Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hase, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Krosick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Morden, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hsiung; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hsiung; and Whiteley, Norman M., to Perkin Elmer - Applied Biosystems Division. Automated molecular biology laboratory. 5,443,791, Cl. 422-65.000.

Catt, Jamie P.: *See—*
Chokhawala, Rahul S.; and Catt, Jamie P., 5,444,591, Cl. 361-18.000.

Cattach, Malcolm K.: *See—*
Stanley, John; Cattach, Malcolm K.; and Lee, Stephen J., 5,444,374, Cl. 324-334.000.

Caudillo, Roberto; and Scoggins, Rebecca, to Carbomedics, Inc. Rotatable heart valve holder. 5,443,502, Cl. 623-2.000.

Cecic, Dennis: *See—*
Pildner, Reinhart K.; and Cecic, Dennis, 5,444,432, Cl. 340-567.000.

Celerier, Eric P. G.; and Henrio, Philippe, to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.A.). Method for simultaneously molding portions of separable article. 5,443,784, Cl. 264-571.000.

Celleco Hedemora AB: *See—*
Fjallstrom, Roland; Frykhult, Rune; and Atkinson, Charles, 5,443,737, Cl. 210-360.100.

CEM Corporation: *See—*
Revear, Robert N., 5,443,795, Cl. 422-90.000.

Cercek, Boris; and Cercek, Lea. DNA encoding the cancer associated SCM recognition factor. 5,443,967, Cl. 435-69.300.

Cercek, Lea: *See—*
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Cerna, Pavel; and Hay, Robert E., to Netrix Telcom Systems Corporation. Packet switching communication system. 5,444,707, Cl. 370-94.100.

Cerri, Alberto; Bernardi, Luigi; Bianchi, Giuseppe; Florio, Monica; Folpini, Elena; and Mellosi, Piero, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. 17-hydroxyiminomethyl-5-β, 14 β-androstane derivatives active on the cardiovascular system, processes for their preparation and pharmaceutical compositions containing same. 5,444,055, Cl. 514-182.000.

Cervantes, Alicia: *See—*
Patterson, John W.; Morgans, David, Jr.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Ptdencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Sjogren, Eric B.; Trejo, Alejandra; Walton, Ann M.; and Wellert, Robert J., 5,444,072, Cl. 514-320.000.

Cervelli, Stefano; and Capuano, Vincenzo, to Ente Per Le Nuove Technologie, L'Energia E L'Ambiente (ENEA); and Consiglio Nazionale Delle Ricerche. Method of binding enzymes to sintered expanded clays. 5,443,975, Cl. 435-175.000.

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Costas, James A.; and Gernert, James M., 5,442,964, Cl. 73-862.680.

Cha, Gi B.: *See—*
Song, Chi J.; and Cha, Gi B., 5,444,301, Cl. 257-737.000.

Chambers, Michael R.; and Sprunt, Eve S., to Mobil Oil Corporation. Method for controlling sand production from a hydrocarbon producing reservoir. 5,443,119, Cl. 166-254.000.

Chambers, Robert V.: *See*—
Goldman, Frank M.; Chambers, Robert V.; Clippard, William L., III; Henn, Steven M.; and Otto, William E., 5,444,634, Cl. 364-474.110.

Champein, Roger; Kissi, Noureddine; and Zalkin, Daniel, to Taema. Apparatus for providing a breathing gas with an overpressure and process of controlling such apparatus installation. 5,443,061, Cl. 128-204.210.

Champion, Patrick; and Thenoise, Jacky, to Framatome Connectors Internationaal. Electrical connector for mother and daughter printed circuit boards. 5,443,401, Cl. 439-680.000.

Chaudonnet, Alain; and Larose, Gilles, to Institut National d'Optique. Optical switch and Q-switched laser. 5,444,723, Cl. 372-14.000.

Chang, Jim J.; and Alger, Terry W. Hollow - cathode electrode for high-power, high-pressure discharge devices. 5,444,332, Cl. 313-618.000.

Chang, Steve M., to Trend Micro Devices Incorporated. Method and apparatus for controlling network and workstation access prior to workstation boot. 5,444,850, Cl. 395-200.100.

Chantot, Jean-Francois: *See*—
Agouridas, Constantin; Benedetti, Yannick; Chantot, Jean-Francois; Denis, Alexis; Frossentin, Claude; and Le Martret, Odile, 5,444,051, Cl. 514-29.000.

Chapman, Arthur S.; and Tsuji, Tsuyoshi, to Baxter International Inc. Peristaltic pumping assembly. 5,443,451, Cl. 604-153.000.

Chapman, Christopher C., to Battelle Memorial Institute. Earth melter. 5,443,618, Cl. 75-414.000.

Charles Stark Draper Laboratories, The: *See*—
Kerrebrock, Peter, 5,443,798, Cl. 422-129.000.

Chasse, Dennis W.: *See*—
Johnson, David B., Jr.; Chasse, Dennis W.; and Kwan, Tommy W., 5,444,848, Cl. 395-200.150.

Chatelain, Pierre: *See*—
Gubin, Jean; Chatelain, Pierre; Inion, Henri; and Rosseels, Gilbert, 5,444,056, Cl. 514-18.300.

Chaussepied, Jacques E. C.; Huvey, Michel; Odru, Pierre; and Sparks, Charles P., to Aerospatiale Societe Nationale Industrielle; and Institut Francais Du Petrole. Tube of composite material for drilling and/or transport of liquid or gaseous products, in particular for offshore oil exploitation and method for fabrication of such a tube. 5,443,099, Cl. 138-109.000.

Chee, Uriel H.: *See*—
Hergenrother, Robert; Chee, Uriel H.; and Schaller, Laurent, 5,443,455, Cl. 428-380.000.

Chen, Frank J.: *See*—
Cheradame, Herve M.; Chen, Frank J.; Stanat, Jon E. R.; Nguyen, Hung A.; and Tabar, Behrooz R., 5,444,135, Cl. 526-219.200.

Chen, Fusen E.; Dixit, Girish A.; and Wei, Che-Chia, to SGS-Thomson Microelectronics, Inc. Semiconductor contact via structure and method. 5,444,019, Cl. 437-192.000.

Chen, Yinliang: *See*—
Freedman, David; Chen, Yinliang; and Zheng, Zhenbin, 5,443,802, Cl. 422-298.000.

Chen, Yunquan; Laszlo, Charles A.; and Hershler, Cecil, to University of British Columbia, The. Brush-tip electrode. 5,443,559, Cl. 128-639.000.

Cheng, Wen-Heng, to Xerama Industrial Co., Ltd. Pedal device with two-piece cleat. 5,442,976, Cl. 74-594.600.

Cheng, Yu-Feng. Tri-cassette carrier. 5,443,159, Cl. 206-387.100.

Cheradame, Herve M.; Chen, Frank J.; Stanat, Jon E. R.; Nguyen, Hung A.; and Tabar, Behrooz R., to Exxon Chemical Patents Inc. Direct synthesis by living cationic polymerization of nitrogen-containing polymers. 5,444,135, Cl. 526-219.200.

Chern, Cory Y.: *See*—
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Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Zimmerman, Amy C.; and Rosser, David A., 5,443,817, Cl. 424-47.000.

Chestnut, M. Gaines, to Warner-Lambert Company. Hester apparatus for use in a liquid environment. 5,444,227, Cl. 219-506.000.

Chevalier, Jacques P.: *See*—
Chevalier, Pierre A. M.; Chevalier, Jacques P.; and Veniard, Gilbert E., 5,443,678, Cl. 156-356.000.

Chevalier, Pierre A.: *See*—
Chevalier, Pierre A. M.; Chevalier, Jacques P.; and Veniard, Gilbert E., 5,443,678, Cl. 156-356.000.

Chevalier, Pierre A. M.; Chevalier, Jacques P.; and Veniard, Gilbert E., to Chevalier, Pierre A. Method and apparatus for manufacturing a product comprising a substrate on which an adheaive with delayed action and a protection strip are located. 5,443,678, Cl. 156-356.000.

Chick Machine Tool, Inc.: *See*—
Swann, George R., 5,442,844, Cl. 29-281.100.

Chigusa, Hisashi: *See*—
Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,444,329, Cl. 313-479.000.

Chikami, Toshihide: *See*—
Yamanami, Tsuguya; and Chikami, Toshihide, 5,444,190, Cl. 178-18.000.

Childers, Edwin R., III; Henry, Michael; and Nemoto, Masaru, to International Business Machines Corporation. Leaf spring lock for a carriage in a media player that is actuated by the carriage and position of a cartridge. 5,444,690, Cl. 369-263.000.

Ching, Sheu L. Wheel caps. 5,443,582, Cl. 301-37.370.

Chiodini, Daniele S., to La Minerva Di Chiodini Mario S.r.l. Hamburger maker. 5,442,996, Cl. 99-517.000.

Chiu, Anthony M., to Texas Instruments Incorporated. Wafer burn-in and test system. 5,444,366, Cl. 324-158.100.

Chiyoda Corporation: *See*—
Kaji, Hitoshi; and Yoshioka, Toshiaki, 5,443,040, Cl. 122-13.100.

Cho, Deok-Ho: *See*—
Ryum, Byung-Ryul; Han, Tae-Hyeon; Lee, Soo-Min; Cho, Deok-Ho; Lee, Seong-Hearn; and Kang, Jin-Young, 5,444,014, Cl. 437-62.000.

Cho, Gwan S.; Jang, Seok M.; and Shin, Dong G., to Goldstar Co., Ltd. Stirling cycle system driving device. 5,442,913, Cl. 60-518.000.

Cho, Jaeshin: *See*—
Abrokwah, Jonathan K.; Huang, Jenn-Hwa; and Cho, Jaeshin, 5,444,016, Cl. 437-184.000.

Cho, Kyung-seok, to Halla Climate Control Corporation. Assembly of fan and shroud. 5,443,363, Cl. 415-211.100.

Cho, Young-Keon, to Samsung Electronics Co., Ltd. Raster graphics system having mask control logic. 5,444,845, Cl. 395-162.000.

Choate, Glenda: *See*—
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Choi, Ho Young: *See*—
Park, Sang Hoon; and Choi, Ho Young, 5,444,010, Cl. 437-60.000.

Choi, Jae K., to Daewoo Electronics Co., Ltd. Magnetic erasing head with structure for retain the head in a hole of the base of a video cassette recorder and plugging the head into a circuit board. 5,444,588, Cl. 360-104.000.

Choi, Ji-hyun: *See*—
Kim, Chang-kyu; Lee, Myeong-beom; Choi, Ji-hyun; Joung, Woo-in; Im, Young-jin; Kim, Won-joo; Hong, Jin-gi; and Kang, Geung-won, 5,444,026, Cl. 437-240.000.

Choi, Jin-seok: *See*—
Kim, Yun-gi; Kim, Fui-aong; Choi, Jin-seok; and Park, Jong-ho, 5,444,005, Cl. 437-52.000.

Choi, Song, to Goldstar Co., Ltd. Lubricating device for horizontal type rotary compressor. 5,443,376, Cl. 418-63.000.

Chokhawala, Rahul S.; and Catt, Jamie P., to International Rectifier Corporation. IGBT fault current limiting circuit. 5,444,591, Cl. 361-18.000.

Chong, Pele: *See*—
Jackson, Gail; Fahim, Raafat; Tan, Larry; Chong, Pele; Vose, John; and Klein, Michel, 5,444,159, Cl. 530-412.000.

Choo, Gyoung S.; and Kang, Deuk C., to Goldstar Co., Ltd. Apparatus and method for extending pulling range of automatic fine tuning of television receiver. 5,444,498, Cl. 348-733.000.

Chou, Kuo-Chih: *See*—
Pal, Uday B.; Chou, Kuo-Chih; Yuan, Shi; and Hasham, Zain, 5,443,699, Cl. 204-64.00R.

Chow, Winston; Hecker, George E.; Musalli, Yusuf G.; and Syrett, Barry C., to EPRI. Targeted fluid delivery system. 5,442,921, Cl. 60-657.000.

Christ AG: *See*—
Schmitt, Serge, 5,443,740, Cl. 210-673.000.

Christensen, Per B., to V. Kann Rasmussen Industri A/S. Counterbalanced window operator. 5,442,879, Cl. 49-386.000.

Christenson, Christopher P.: *See*—
Burba, John L., III; and Christenson, Christopher P., 5,443,761, Cl. 257-315.500.

Christian, Craig W.: *See*—
Anjum, Mohammed; Burki, Ibrahim K.; and Christian, Craig W., 5,444,024, Cl. 437-200.000.

Christians, Jorg: *See*—
Nagel, Heinz-Dieter; Christians, Jorg; and Lechler, Gerald, 5,443,140, Cl. 187-253.000.

Christiansen, Chris C.: *See*—
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Christie, Gregor B. Y.; Wexler, David; and Turney, Terence W., to Commonwealth Scientific and Industrial Research Org. Temperature sensitive valve for atmosphere control for film packaged products. 5,443,851, Cl. 426-88.000.

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Chu, Helen: *See*—
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Chu, Henry: *See*—
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Chu, Ke-Chiang, to Apple Computer, Inc. Master + exception list method and apparatus for efficient compression of data having redundant characteristics. 5,444,445, Cl. 341-87.000.

Chung, Hae Y.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,442,824, Cl. 8-159.000.

Chung, Hyung D. High power, high pulse repetition frequency, compact, pulsed laser diode driver. 5,444,729, Cl. 372-38.000.

Chung, In S.; and Kim, Youn J., to Hyundai Electronics Industries Co., Ltd. Method for making a contact hole of a semiconductor device. 5,444,021, Cl. 437-195.000.

Chung, Jin Y.; and Kwak, Deog Y., to Goldstar Electron Co., Ltd. Dual back-biss voltage generating circuit with switched outputs. 5,444,362, Cl. 323-313.000.

Church & Dwight Co., Inc.: *See*—
Greczyn, Wendy R.; Lajoie, M. Stephen; Berschied, John R.; and Kirschner, Lawrence, 5,443,822, Cl. 424-65.000.
Mazzola, Louis R., 5,443,751, Cl. 252-174.130.
Winston, Anthony E., 5,443,835, Cl. 424-407.000.

Ciampi, Joan. Horse training device. 5,442,900, Cl. 54-71.000.

Ciiano, Joseph E., to Zexel-Gleason USA, Inc. Differential with friction-enhancing wedge. 5,443,431, Cl. 475-249.000.

Cincinnati Milacron Inc.: *See*—
Kneifel, R. William, II; Walsh, Stephen T.; Minaich, Thomas W.; Crovella, Robert M.; and Morser, A. Harold, 5,444,341, Cl. 318-432.000.

Ciocca, Quintino M. Linear winding assembly. 5,443,218, Cl. 242-256.000.

Ciokajlo, John J.; Hauser, Ambrose A.; and Davison, Samuel H., to General Electric Company. Rotatable turbine frame. 5,443,590, Cl. 416-128.000.

Citra Science Ltd.: *See*—
Dotolo, Vincent A., 5,443,749, Cl. 252-170.000.

CJ's Distributing, Inc.: *See*—
Carnahan, David W., 5,444,112, Cl. 524-272.000.

Claesson, Knut, to Corroventa Avfuktning AB. Method and apparatus for increasing the yield of an air-drying process. 5,443,624, Cl. 95-113.000.

Claeys, Henry M.; Clarke, Kathrine J.; and Matulich, Dan S., to Allied-Signal Inc. Integrated power and cooling environmental control system. 5,442,905, Cl. 60-39.070.

Claiborne, Jimmy D.: *See*—
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Clarion Co., Ltd.: *See*—
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Clark, Andrew R.; Wright, Paul; and Ratcliffe, Julia H., to Fisons plc. Pharmaceutical compositions. 5,443,833, Cl. 424-400.000.

Clark, Richard: *See*—
Koen, Jacobus P. L.; and Clark, Richard, 5,444,769, Cl. 379-94.000.

Clark, Richard H.; Gray, Steven G.; and Long, John D., to Deere & Company. Scraper for planting mechanism gauge wheel. 5,443,125, Cl. 172-608.000.

Clark, William J.: *See*—
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Clarke, Kathrine J.: *See*—
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Clarke, Robert J.: *See*—
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Clarkson University: *See*—
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Clifford, Joseph W.: *See*—
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Cline, Harvey E.; Rohling, Kenneth W.; and Abeling, Walter R., to General Electric Company. Mechanical positioner for magnetic resonance guided ultrasound therapy. 5,443,068, Cl. 128-653.500.

Clinical Product Development Limited: *See*—
Peters, Joseph L.; and Kerr, James W., 5,443,443, Cl. 604-27.000.

Clippard, William L., III: *See*—
Goldman, Frank M.; Chambers, Robert V.; Clippard, William L., III; Henn, Steven M.; and Otto, William E., 5,444,634, Cl. 364-474.110.

Cossin, Giovanni; De Cecco, Corrado; Genaini, Gianni; and Gerussi, Sergio, to Danieli & C. Officine Meccaniche SpA. Electric arc furnace with alternative sources of energy and operating method for such electric furnace. 5,444,733, Cl. 373-72.000.

Coates, James A.; and Gernert, James M., to CG&G Enterprises Limited Liabilility Company. Apparatus and method for measuring force with static electric field produced by picaoid elements. 5,442,964, Cl. 73-862.680.

Coates, Randolph S.; and Edmasson, William R., to United States of America, Army. Technique for inducing subcaliber projectile yaw. 5,443,011, Cl. 102-522.000.

Coating Machinery Systems, Inc.: *See*—
Long, Richard L., Jr.; and Barber, Donald E., 5,443,637, Cl. 118-16.000.

Coca-Cola Company, The: *See*—
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Coe, Jotham W.; Pfiri, Anton F. J.; Kaneko, Takashi; and Larson, Eric R., to Pfizer Inc. Quinazolines derivatives for enhancing antitumor activity. 5,444,062, Cl. 514-260.000.

Coeling, Kenneth J.; Saidman, Laurence B.; Smith, James C.; Messerly, James W.; and Mayer, Stanley E., to Nordson Corporation. Method and apparatus for preventing the formation of a solid precipitate in a coating material formulation. 5,443,796, Cl. 422-129.000.

Coenen, Norbert; Wirtz, Ulrich; Hermanns, Ferdinand-Josef; and Breser, Jurgen, to W. Schlafhorst AG & Co. Method and apparatus for detecting the position of a carrier that carries a textile bobbin. 5,444,633, Cl. 364-470.000.

Cocurveille, Michel; Rafilipomanana, Christine; Barack, Yves; and Millet, Magali, to Societe Francaise de Recherches et d'Investissements (SFRI). Device for automatically analyzing samples. 5,443,790, Cl. 422-63.000.

Cohen, Bernard; and Jameson, Lee K., to Kimberly-Clark Corporation. Hydrosonically embedded soft thin film materials. 5,443,886, Cl. 428-131.000.

Cohen, Eran: *See*—
Betts, William L.; Cohen, Eran; Crupi, Joseph A.; Gardenhour, Cletus L.; Weitzner, Andrew T.; and Werner, Jean-Jacques, 5,444,712, Cl. 370-110.100.

Cohen, Isaac. Standby loss minimizing controller for boilers with tankless water heaters. 5,443,206, Cl. 236-20.00R.

Cohen, Robert C.; and Averill, Robert G., to Implex Corporation. Vertebral body prosthetic implant with slidably positionable stabilizing member. 5,443,515, Cl. 623-17.000.

Cohen, Robert C.: *See*—
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Coker, Elzie L. Telephone line lockout device. 5,444,772, Cl. 379-161.000.

Cole, Louis F.: *See*—
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Collingborn, Peter A. G.: *See*—
Nicol, Stuart W.; Collingborn, Peter A. G.; Stringfellow, Christopher; and Phillips, Ronald, 5,443,048, Cl. 123-450.000.

Collins, Donald A., Jr., to AT&T Global Information Solutions Company. Real-time barcode scanning performance feedback system. 5,444,226, Cl. 235-462.000.

Collins, Jerry. Method and composition for treating psoriasis. 5,444,092, Cl. 514-560.000.

Collins, Steven R.: *See*—
Toure, Abron S.; Collins, Steven R.; and LeBlanc, Bruce W., 5,443,688, Cl. 216-13.000.

Colman, Robert W.: *See*—
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Colt's Manufacturing Company Inc.: *See*—
Epes, Dennis O.; and Ladd, Scott A., 5,443,543, Cl. 42-102.000.
Khoury, Donald S., 5,443,542, Cl. 42-99.000.

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Garrec, Philippe, 5,444,348, Cl. 318-640.000.
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Pfister, Jean-Claude, 5,444,731, Cl. 372-99.000.

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Christie, Gregor B. Y.; Wexler, David; and Turney, Terence W., 5,443,851, Cl. 426-88.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
Sly, Lindsay I.; Arunpairojana, Vullapa; and Dixon, David R., 5,443,729, Cl. 210-611.000.

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Holland, Gunther; and Jeremias, Gunter, 5,443,926, Cl. 429-120.000.

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Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Miller, Andrew J.; Dobyns, Patrick E.; and Johnson, Stephen R., Jr., 5,444,849, Cl. 395-200.090.
Nguyen, Trung D., 5,444,823, Cl. 395-51.000.
Noblett, Ronald D.; and Bowman, Kurtis J., 5,444,312, Cl. 327-552.000.
Stortz, James L., 5,444,467, Cl. 347-12.000.

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Jackson, Gail; Fahim, Raafat; Tan, Larry; Chong, Pele; Vose, John; and Klein, Michel, 5,444,159, Cl. 530-412.000.

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Ittah, Jean; and Plessis, Olivier, 5,443,592, Cl. 439-851.000.

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Kovacs, Gregory J.; and Connell, G. A. Neville, 5,444,463, Cl. 347-116.000.

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Cervelli, Stefano; and Capuano, Vincenzo, 5,443,975, Cl. 435-175.000.

Consol Inc.: *See*—
Hawkins, Gerald M.; and Kutay, Carl H., 5,443,283, Cl. 280-709.000.

Consorzio per la Ricerca Sulla Microelettronica Nel Mezzogiorno: *See*—
Paparo, Mario; and Aiello, Natale, 5,444,291, Cl. 257-552.000.

Convents, Andre ; Busch, Alfred; and Baeck, Andre C., to Procter & Gamble Company, The. Detergent compositions with high activity cellulase and softening clays. 5,443,750, Cl. 252-174.120.

Conway, Lynn, to University of Michigan, The Regents of the. System and method for teleinteraction. 5,444,476, Cl. 348-15.000.

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Fontaine, Arthur B., 5,443,498, Cl. 623-1.000.

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Copley, Mark; Fish, David G.; Odell, Chris L.; and Whiteside, Charles H., to Forte Networks, Inc.; and Fluke Corporation. Token ring local area network testing apparatus providing station history information. 5,444,695, Cl. 370-17.000.

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Cornell, Bruce A.; Braach-Maksvytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Raguse, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., to Australian Membrane and Biotechnology Research Institute. Receptor membranes and ionophore gating. 5,443,955, Cl. 435-7.210.

Corning Incorporated: *See*—
Urruti, Eric H., 5,443,610, Cl. 65-486.000.

Corroventa Avfuktning AB: *See*—
Claesson, Knut, 5,443,624, Cl. 95-113.000.

Cortex Pharmaceuticals: *See*—
Bartus, Raymond T.; Eveleth, David D.; and Power, James C., 5,444,042, Cl. 514-2.000.

Cosandier, Henri: *See*—
Tschannen, Andreas; and Cosandier, Henri, 5,444,671, Cl. 368-10.000.

Cosmo Oil Co., Ltd.: *See*—
Usui, Kazushi; Nakashiza, Shigenori; and Ishida, Kentarou, 5,444,033, Cl. 502-314.000.

Cosmo Research Institute: *See*—
Usui, Kazushi; Nakashiza, Shigenori; and Ishida, Kentarou, 5,444,033, Cl. 502-314.000.

Costall, Brenda: *See*—
Perregaard, Jens K.; and Costall, Brenda, 5,444,073, Cl. 514-321.000.

Costanzo, Michael A.: *See*—
Briesch, Michael S.; and Costanzo, Michael A., 5,442,908, Cl. 60-39.182.

Cota, Jose G. Integrated collapsible guitar, sound studio and case. 5,442,986, Cl. 84-267.000.

Cottarel, Guillaume: *See*—
Draetta, Giulio; Cottarel, Guillaume; and Damagnez, Veronique, 5,443,962, Cl. 435-29.000.

Cotter, Jonathan P., to Diebold International, Inc. Compact fitting. 5,443,580, Cl. 285-179.000.

Courtaulds plc: *See*—
Bartholomew, Alan J.; Probert, Paul L.; Richardson, Michael; and Wilkes, Andrew G., 5,443,776, Cl. 264-168.000.

Coury, Arthur J.: *See*—
Schwartz, Robert S.; Brennahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, 5,443,496, Cl. 623-1.000.

Covey, D. Kevin, to National Semiconductor Corporation. Fully static 32 bit alu with two stage carry bypass. 5,444,646, Cl. 364-730.500.

Cowger, Bruce, to Hewlett Packard Corporation. Printing method and apparatus for registering dots. 5,444,469, Cl. 347-14.000.

Cowing, Scott, to United States of America, Navy. Apparatus and method for determining amount of gases dissolved in liquids. 5,442,948, Cl. 73-19.050.

Cox, Charles E.; Fettweis, Gerhard P.; Hasaner, Martin A.; and Schwiegelshohn, Uwe, to International Business Machines Corporation. Adjustable error-correction composite Reed-Solomon encoder/syndrome generator. 5,444,719, Cl. 371-37.100.

Cox, Robert E.: *See*—
Adamec, William B.; Cox, Robert E.; and Gigandet, Scott A., 5,444,861, Cl. 395-700.000.

Craft, Jon A.: *See*—
Prinz, Peter F.; Wallace, Jeffery L.; and Craft, Jon A., 5,443,294, Cl. 294-68.230.

Crafts, Harold S., to AT&T Global Information Solutions Company; and Hyundai Electronics America. Current limited output driver for a gate array circuit. 5,444,401, Cl. 327-108.000.

Crank, Douglas: *See*—
Fisher, Daniel J.; Agrawal, Raj K.; Crank, Douglas; and Carter, John W., 5,443,673, Cl. 156-245.000.

Crawford, David R.; Meeker, Matthew A.; and Van Scyoc, Thomas W., to Gaston County Dyeing Machine Co. Carrier for supporting textile material in a wet treatment machine. 5,442,939, Cl. 68-198.000.

Crawmer, Daryl E.; and Selby, Ray W., to Miller Thermal, Inc. Dimensionally stable subsonic plasma arc spray gun with long wearing electrodes. 5,444,209, Cl. 219-121.520.

Crayne, Lynn M.; and Zawada, Gary J., to Nicholson Construction Company. Apparatus and method for encapsuling drums containing hazardous wastes. 5,443,177, Cl. 220-453.000.

Creamer, Allen R.: *See*—
Johnson, Ernest V.; Creamer, Allen R.; and Mills, Edward, 5,444,587, Cl. 360-104.000.

Creative Rollers: *See*—
Rouyer, Louis; and Bastin, Jacques, 5,443,411, Cl. 451-11.000.

Crippa, Peter K.; and Szilagyi, Tomany, to National Semiconductor Corporation. Wireless data transceiver. 5,444,737, Cl. 375-219.000.

Crites, Timothy E.; Barker, Douglas C.; Clifford, Joseph W.; and Crouser, Darwin S., to Hoover Company, The. Air turbine. 5,443,362, Cl. 415-184.000.

Crockett, Richard H.: *See*—
Tsui, Chiu-Wing; and Crockett, Richard H., 5,443,997, Cl. 437-225.000.

Cromwell, Carl E. Folding tray for attachment to a vehicle seat back. 5,443,018, Cl. 108-44.000.

Crosby, John: *See*—
Blacker, Andrew J.; Crosby, John; and Herbert, John A. L., 5,443,970, Cl. 435-125.000.
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Crose, James R.; and Waldman, Alan A., to Imsco, Inc. Apparatus for separating caffeine from a liquid containing the same. 5,443,709, Cl. 204-302.000.

Crouse, Edward M.; and Osowski, Denis M., to Lincoln Electric Company, The. Apparatus and method for synchronizing a firing circuit for a brushless alternator rectified D. C. welder. 5,444,214, Cl. 219-133.000.

Crouser, Darwin S.: *See*—
Crites, Timothy E.; Barker, Douglas C.; Clifford, Joseph W.; and Crouser, Darwin S., 5,443,362, Cl. 415-184.000.

Crovella, Robert M.: *See*—
Kneifel, R. William, II; Walsh, Stephen T.; Minnich, Thomas W.; Crovella, Robert M.; and Morser, A. Harold, 5,444,341, Cl. 318-432.000.

Crowder, Billy L.: *See*—
Aitken, John M.; Beyer, Klaus D.; Crowder, Billy L.; and Greco, Stephen E., 5,444,015, Cl. 437-182.000.

Crown Cork & Seal Company, Inc.: *See*—
Kelly, Ronald L.; and Price, Mike, 5,443,175, Cl. 220-298.000.

Crowninshield, Roy D.: *See*—
Parr, Jack E.; Crowninshield, Roy D.; Devanathan, Thirumalai N. C.; and Chu, Helen, 5,443,512, Cl. 623-16.000.

Crupi, Joseph A.: *See*—
Betts, William L.; Cohen, Eran; Crupi, Joseph A.; Gardenhour, Cletus L.; Weitzner, Andrew T.; and Werner, Jean-Jacques, 5,444,712, Cl. 370-110.100.

CTC International: *See*—
Wood, Edward T.; Brooks, Robert T.; Dion, Michael O.; Gurley, Derrel G.; and Harris, Monty E., 5,443,124, Cl. 166-374.000.

Cucheran, John S.; and Aftanas, Jeffrey M., to JAC Products, Inc. Truck bed support rails. 5,443,190, Cl. 224-405.000.

Cuchiaro, Joseph D.: *See*—
Paz De Araujo, Carlos A.; McMillan, Larry D.; and Cuchiaro, Joseph D., 5,448,290, Cl. 257-530.000.

Culbertson, Richard: *See*—
Reynolds, Gary R.; Culbertson, Richard; and Sherman, Ralph R., Jr., 5,444,868, Cl. 455-89.000.

Cummings, Gerald W.: *See*—
Segan, Marc H.; Strauss, Gary; and Cummings, Gerald W., 5,443,259, Cl. 273-1.50R.

Cummings, Paul: *See*—
Gagliardi, Ugo O.; Hsu, Meichun; Cummings, Paul; and Mattin, Stephen A., 5,444,703, Cl. 370-60.100.

Cummins, Donald L., deceased (by executor, Marian G. Cummins), to Cummins Eagle, Inc. Dough treating and dispensing method and apparatus. 5,443,854, Cl. 426-231.000.

Cummins Eagle, Inc.: *See*—
Cummins, Donald L., deceased, 5,443,854, Cl. 426-231.000.

Cummins Engine Company, Inc.: *See*—
Kamel, Mostafa M.; and Moore, Greg A., 5,442,920, Cl. 60-602.000.

Cunningham, Donald J.; and Erickson, James D., to Morton International, Inc. Gas generator for vehicle occupant restraint system. 5,443,286, Cl. 280-741.000.

Cunningham, John E.; and Goossen, Keith W., to AT&T Corp. Surface-normal semiconductor optical cavity devices with antireflective layers. 5,444,270, Cl. 257-98.000.

Cunningham, Patrick M., to Branson Ultrasonics Corporation. Mounting means for vibration member. 5,443,240, Cl. 248-638.000.

Curatolo, William J.; and Lo, Jeelin, to Pfizer Inc. Gastric resention system for controlled drug release. 5,443,843, Cl. 424-464.000.

Cureton, George K.; and Profaca, Mark S., to Scalzo Automotive Research Limited. Trochoidal piston construction. 5,443,375, Cl. 418-61.300.

Cybeq Systems Incorporated: *See*—
Volodarsky, Konstantine; Kajiwara, Jiro; Owens, Herbert W., Jr.; and King, Jan M., 5,443,416, Cl. 451-388.000.

Cykiert, Robert C. Device for shielding a cellular telephone user from electromagnetic waves. 5,444,866, Cl. 455-89.000.

Cypher, Robert E.; and Gravano, Luis, to International Business Machines Corporation. Method of packet routing in torus networks with two buffers per edge. 5,444,701, Cl. 370-60.000.

Cypress Semiconductor Corp.: *See*—
Meyer, George R., 5,443,998, Cl. 437-241.000.

Daewoo Electronics Co., Ltd.: *See*—
Choi, Jae K., 5,444,588, Cl. 360-104.000.

Dahl, James: *See*—
McDarren, Deborah J.; and Dahl, James, 5,442,869, Cl. 40-406.000.

Dahlback, Bjorn. Method for the diagnosis of blood coagulation disorders. 5,443,960, Cl. 435-13.000.

Dahlitz, Ronald R., to Buffalo Bullet Company. Muzzle loading rifle projectile. 5,443,010, Cl. 102-511.000.

Dahms, Gerd H., to Tioxide Specialties Limited. Oil-in-water emulsions. 5,443,759, Cl. 252-302.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Akiyama, Noboru, 5,444,691, Cl. 369-291.000.

Dai Nippon Printing Co., Ltd.: *See*—
Takahashi, Norio; and Fujiyoshi, Takaaki, 5,444,225, Cl. 235-457.000.

Daikin Industries, Ltd.: *See*—
Kitamura, Ikuo; Arase, Takuya; Kamiya, Fumihiro; and Daimon, Shigeo, 5,443,666, Cl. 148-513.000.

Daimler-Benz Aerospace Airbus GmbH: *See*—
Mueller, Mario; and Sekonlow, Ivan, 5,443,733, Cl. 210-651.000.

Daimon, Shigeo: *See*—
Kitamura, Ikuo; Arase, Takuya; Kamiya, Fumihiro; and Daimon, Shigeo, 5,443,666, Cl. 148-513.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Hirse, Sadao; Kouno, Motohiro; and Sakai, Takamasa, 5,444,389, Cl. 324-765.000.

Daiwa Can Company: *See*—
Uehira, Shoji; and Matsura, Masako, 5,443,569, Cl. 222-190.000.

Daiwa Seiko, Inc.: *See*—
Hashimoto, Hiroshi, 5,443,219, Cl. 242-300.000.
Hirano, Kazuo, 5,443,570, Cl. 242-284.000.

Dale, Amarjit; and Bingham, George H., to Omation Corporation. Remittance processing apparatus and method. 5,443,253, Cl. 271-177.000.

Daler, Helmo: *See*—
Mutz, Bernd; Hallmann, Klaus; and Daler, Helmo, 5,443,343, Cl. 411-30.000.

Dalm, Govert: *See*—
Lelong, Pierre; Dalm, Govert; and Klija, Jan, 5,444,678, Cl. 348-39.000.

Damagnez, Veronique: *See*—
Draetta, Giulio; Cottarel, Guillaume; and Damagnez, Veronique, 5,443,962, Cl. 435-29.000.

Dana Corporation: *See*—
Baxter, Ralph W., Jr., 5,443,429, Cl. 475-204.000.

D'Angelo, Joseph J.; and D'Angelo, Joseph J., Jr. All-electric web feeding, cutting and sheet dispensing machine. 5,442,983, Cl. 83-56.000.

D'Angelo, Joseph J., Jr.: *See*—
D'Angelo, Joseph J.; and D'Angelo, Joseph J., Jr., 5,442,983, Cl. 83-56.000.

D'Angelo, Joseph P.; Schur, Henry; Han, Kedu; and Glenn, Daniel J., to Americate Transtech, Inc. Integrated system for biological fluid constituent analysis. 5,443,080, Cl. 128-771.000.

Daniele, Joseph J., to Xerox Corporation. Electronic copyright royalty accounting system using glyphs. 5,444,779, Cl. 380-3.000.

Danieli & C. Officine Meccaniche SpA: *See*—
Coassin, Giovanni; De Cecco, Corrado; Gensini, Gianni; and Gerussi, Sergio, 5,444,733, Cl. 373-72.000.

Danishefsky, Samuel J.: *See*—
Janda, Kim; Lerner, Richard A.; and Danishefsky, Samuel J., 5,444,155, Cl. 530-388.100.

Danjou, Seiji; Miyata, Katsuya; and Ohta, Shuji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Differential axle housing. 5,442,977, Cl. 74-607.000.

Danner, Paul A., to Pacific Microelectronics Corporation. Method of fabricating solder ball array. 5,442,852, Cl. 29-843.000.

DanPrex A/S: *See*—
Grennes, Torbjorn; and Nielsen, Bent, 5,444,121, Cl. 525-89.000.

Dao, Huong: *See*—
Kogan, Timothy P.; Dupre, Brian; Scott, Ian L.; Keller, Karin; Dao, Huong; and Beck, Pamela J., 5,444,050, Cl. 514-25.000.

Darr, Richard C.: *See*—
Slat, William A.; and Darr, Richard C., 5,443,766, Cl. 264-37.000.

Darrow, Robert D.: *See*—
Dumoulin, Charles L.; and Darrow, Robert D., 5,443,066, Cl. 128-653.100.

Datta, Timir: *See*—
Hermana, Allen M.; Naziripour, Gol A.; and Datta, Timir, 5,444,425, Cl. 335-216.000.

Datwyler, Wayne C.; and Ricci, Paul B., to Unisys Corporation. Translator system for message transfers between digital units operating on different message protocols and different clock rates. 5,444,860, Cl. 395-300.000.

Daum, Henry A., III: *See*—
Kirkpatrick, Francis H.; Willis, T. Chad; Watt, William; Daum, Henry A., III; Kaura, Satyis; and Johnson, Pegram A., 5,443,704, Cl. 204-180.100.

Davenport, Esther L.: *See*—
Backaus, Marjorie S.; Barrera, Claire D.; Davenport, Esther L.; Fahrer, Harold; Ostroff, Barry N.; Petrelli, Robert; and Sonke, Susan K., 5,444,713, Cl. 370-110.100.

Davenport, Theodore M.: *See*—
Newbold, George T.; Davenport, Theodore M.; and Bray, Raymond L., 5,442,862, Cl. 33-265.000.

Davenport, Wayne E.: *See*—
Ehrlich, John J.; Davenport, Wayne E.; and Taylor, Travis S., 5,443,793, Cl. 422-83.000.

Davidson, Grant M.: *See*—
Kiritsy, Emmett R.; and Davidson, Grant M., 5,443,536, Cl. 30-90.800.

Davidson Textron Inc.: *See*—
Mills, Daniel H., 5,443,777, Cl. 264-255.000.

Davies, Ann L.: *See*—
Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry C.; and Osbon, Barbara A., 5,444,624, Cl. 364-424.010.

Davies, Henry C.: *See*—
Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry C.; and Osbon, Barbara A., 5,444,624, Cl. 364-424.010.

Davis, Bradford F. Apparatus to vary the pitch of a designated string of a musical instrument. 5,442,987, Cl. 84-312.00R.

Davis, Carl W.: *See*—
Gale, Richard O.; Lawson, Randall S.; Cleveland, Harlan P.; Chu, Henry; Davis, Carl W.; Heimbuch, Scott D.; and Tew, Claude E., 5,444,566, Cl. 359-291.000.

Davis, Richard A.; Frick, Kenneth L.; Muir, Gregory; and Nowack, James, to Radish Communications Systems, Inc. Telephone handset interface for automatic switching between voice and data communications. 5,444,770, Cl. 379-99.000.

Davis, Thomas G., to Johnson & Johnson Vision Products, Inc. Apparatus for carrying ophthalmic lenses. 5,443,152, Cl. 206-5.100.

Davis, William F., Jr. Compressed natural gas fuel tank for vehicles. 5,443,578, Cl. 280-834.000.

Davis, William H., Jr.: *See*—
Dollinger, Susan E.; and Davis, William H., Jr., 5,443,104, Cl. 152-510.000.

Davison, Samuel H.: *See*—
Ciokajlo, John J.; Hauser, Ambrose A.; and Davison, Samuel H., 5,443,590, Cl. 416-128.000.

Dawans, Francois; Huvey, Michel; and Lesage, Jean, to Institut Francais du Petrole. Device for detecting pollutant traces in an aqueous medium. 5,443,712, Cl. 204-400.000.

Daws, Joe C.: *See*—
Todd, William G.; Grimm, Patrick A.; and Daws, Joe C., 5,444,133, Cl. 526-116.000.

Day, Donal F.; and Lee, Jin W., to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Acetylated alginates, and method for producing acetylated alginates. 5,444,160, Cl. 536-3.000.

Dayco Products, Inc.: *See*—
Henderson, Dewey D., 5,443,424, Cl. 474-135.000.

Dayner, David: *See*—
Hirsohn, Paul; Dayner, David; and Lacker, Virginia, 5,444,773, Cl. 379-219.000.

Dean, Richard T.; McBride, William; and Buttram, Scott, to Diatech, Inc. Technetium-99m labeled peptides for imaging. 5,443,815, Cl. 424-1.410.

Deane, Alastair R.; Kulczycki, Stanley J.; and Mastrangelo, Vincent, to Budd Company, The. Live spindle hub with inboard bearing retention. 5,443,316, Cl. 384-485.000.

Deary, Reynaldo M. Evaporator discharge cooled transmission oil pan. 5,443,114, Cl. 165-41.000.

DeBan, Abdou F.: *See*—
Tuney, David M.; Cartmell, Robert L.; Riazzi, Timothy J.; DeBan, Abdou F.; and McQuain, David B., 5,443,440, Cl. 601-152.000.

De Bie, Boele; Van Der Kruk, Willem L.; and Woo, George T. H., to U.S. Philips Corporation. Cassette adapter for a playback deck of the front-loading or the side-loading type. 5,444,675, Cl. 369-2.000.

Debuisschert, Thierry; Pocholle, Jean-Paul; and Papuchon, Michel, to Thomson-CSF. Non-linear optical devices. 5,444,571, Cl. 359-566.000.

De Cecco, Corrado: *See*—
Coassin, Giovanni; De Cecco, Corrado; Gensini, Gianni; and Gerussi, Sergio, 5,444,733, Cl. 373-72.000.

Dechaure, Jean-Marie: *See*—
Bernard, Gilles P.; Tinland, Jean-Michel; Dechaure, Jean-Marie; and Simon, Pascal, 5,443,326, Cl. 405-25.000.

DeCicco, Benedict T.; and Keeven, James K. Detection system for microbial contamination in health-care products. 5,443,987, Cl. 435-4.000.

Deckner, Andre : *See*—
Zweymuller, K.; and Deckner, Andre , 5,443,520, Cl. 623-22.000.

De Claviere, Anne Marie. Apparatus and method for transdermal delivery of cosmetic compositions. 5,443,441, Cl. 604-20.000.

Deep Root Partners, L.P.: *See*—
Albrecht, Leonard N., 5,442,891, Cl. 52-745.140.

Deere & Company: *See*—
Clark, Richard H.; Gray, Steven G.; and Long, John D., 5,443,125, Cl. 171-608.000.
Koltookian, Sarkis A.; and Roby, Michael E., 5,442,854, Cl. 29-898.070.
Revankar, Gopal S., 5,443,916, Cl. 428-539.500.
Schuhmacher, Ernst, 5,443,352, Cl. 414-526.000.

Dervi, Soetharana C.; and Lowe, Bruce D., Jr., to Philip Morris Incorporated. Chemical heat source comprising metal nitride, metal oxide and carbon. 5,443,560, Cl. 131-359.000.

DePellice, Thomas H.; and Sherman, Michael M., to Oldham Saw Co., Inc. Method of merchandising cutter bits and display case therefor. 5,443,310, Cl. 312-329.000.

de Geeter, Pieter J., to Spencon Pty. Ltd.; and Marecon Pty. Ltd. Stabilization means. 5,443,329, Cl. 405-172.000.

Deguchi, Takeshi: *See*—
Urushibata, Ikuni; Yoshimura, Takumi; Deguchi, Takeshi; Yonekura, Norihisa; Sakai, Junetsu; and Hayashi, Shigeru, 5,444,060, Cl. 514-25.600.

DeJonghe, Lutgard: *See*—
Doeff, Marca M.; Ma, Yanping; Visco, Steven J.; and DeJonghe, Lutgard, 5,443,601, Cl. 29-623.500.

Dekalb Plant Genetics: *See*—
Pfund, John H., 5,444,177, Cl. 800-200.000.

Delano, Gary L., to National Semiconductor Corporation. Low voltage filter transconductance cell. 5,444,414, Cl. 327-563.000.

Delco Electronics Corp.: *See*—
Lake, Donald E., deceased; Alhoussami, Aiman I.; and Eytcheson, Charles T., 5,444,295, Cl. 257-678.000.

DeLeo, Gary D.: *See*—
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Gammill, Jerry D.; and Frank, Randy, 5,443,242, Cl. 251-337.000.
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Montgomery, Daniel P., 5,443,636, Cl. 106-805.000.
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Frost, Barry L., to New Venture Gear, Inc. Transfer case with integrated planetary gear assembly and "on-demand" four-wheel drive. 5,443,426, Cl. 475-91.000.
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Boucher, James A.; Frushell, Matthew R.; and Mallory, Niles, 5,443,509, Cl. 623-16.000.
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Fuchs, Karl H., to Ing. Erich Pfeiffer GmbH & Co. K.G. Dispenser for media. 5,443,185, Cl. 222-321.800.
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Huddas, Richard V., 5,443,085, Cl. 134-95.100.
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Kitamura, Shoji; Shindo, Yoichi; and Amano, Akira, 5,444,726, Cl. 372-36.000.
Ueno, Katsunori, 5,444,273, Cl. 257-138.000.
Fuji, Hiroshi, to Sharp Kabushiki Kaisha. Information reproducing circuit. 5,444,688, Cl. 369-59.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Morikawa, Koji, 5,443,567, Cl. 60-274.000.
Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo; and Inoue, Koji, 5,443,872, Cl. 428-35.700.
Asami, Masahiro, 5,443,946, Cl. 430-567.000.
Hioki, Takanori; Kato, Takashi; Ikeda, Tadashi; and Ohshima, Naoto, 5,443,949, Cl. 430-576.000.
Kitajima, Masao, 5,443,988, Cl. 436-46.000.
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Fuji Photo Optical Co., Ltd.: *See*—
Morizumi, Masaaki, 5,444,512, Cl. 354-430.000.
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Aki, Osami; Kashi, Rikujiro; Nakatani, Kanji; and Okada, Atsunori, 5,443,834, Cl. 424-401.000.
Fuji Xerox Co., Ltd.: *See*—
Sameshima, Junichirou; Hokari, Norio; and Honobe, Satoshi, 5,444,523, Cl. 355-309.000.
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Suzuki, Takahiro; Ashiya, Seiji; and Murase, Masanori, 5,443,934, Cl. 430-64.000.
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Spitz, A. Lawrence; and Hull, David A., 5,444,797, Cl. 382-192.000.
Fujii, Shozo: *See*—
Mitsuda, Makoto; Ohtaka, Hideki; Sakakibara, Yoshio; Kobayashi, Kazuhiko; Fujii, Shozo; and Hashimoto, Atsushi, 5,444,580, Cl. 360-73.060.
Fujimori, Kenichi; Nakayama, Yoshitaro; Shimokura, Takumi; Iwasawa, Atsushi; Hagiwara, Toshimitsu; and Kobayashi, Tohru, to Shindengen Electric Manufacturing Co., Ltd.; Yamanashi Electronics Co., Ltd.; and Takasago International Corporation. Electrophotographic photoreceptor. 5,443,933, Cl. 430-59.000.
Fujimori, Yoshihisa: *See*—
Ikeda, Kouji; Sogami, Atsushi; Yoshikawa, Masanori; Fujimori, Yoshihisa; and Taguchi, Nobuyoshi, 5,444,465, Cl. 347-213.000.
Fujimoto, Masahiro: *See*—
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Fujimoto, Ryo, to Canon Kabushiki Kaisha. Image signal processing apparatus having multiplexing capability. 5,444,546, Cl. 358-335.000.
Fujino, Junji: *See*—
Nonogaki, Mitsuhiro; Fujino, Junji; Adachi, Akira; Murakami, Kohei; Moribiro, Yoshiyuki; and Hayashi, Osamu, 5,443,659, Cl. 148-23.000.
Fujino, Masatoshi: *See*—
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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Sugiyama, Masashi; Tanaka, Kyoichi; and Komatsu, Kazuo, 5,443,635, Cl. 106-717.000.
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, to Honda Giken Kogyo Kabushiki Kaisha. Slide member. 5,443,919, Cl. 428-687.000.
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Fujishiro, Takeshi: *See*—
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Fujita, Kagari: *See*—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, 5,444,152, Cl. 530-331.000.
Fujita, Kenjiro; Usuki, Katsutoshi; and Hatta, Katsuhiro, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for speed change control of an automotive automatic transmission. 5,443,432, Cl. 477-155.000.
Fujita, Masaru: *See*—
Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Maseo, Mizukami; Fujita, Masaru; Miyazawa, Sadao; and Araga, Noriaki, 5,444,316, Cl. 310-49.00R.
Fujita, Takashi: *See*—
Tomita, Masayuki; Uchino, Hidenhi; Sugano, Toshihiko; Fujita, Takashi; and Aritomi, Mitsutoshi, 5,444,125, Cl. 515-293.000.
Fujita, Yuji; Kawamura, Tetsuya; Yokoyama, Kosichi; Yokomizo, Katsuyuki; and Toki, Shigeyuki, to Tonen Corporation. Thermoplastic resin composition. 5,444,119, Cl. 525-64.000.
Fujita, Yutaka: *See*—
Yoshida, Tetsuhi; Fujita, Yutaka; and Kotani, Kunihiko, 5,443,756, Cl. 252-299.630.
Fujitaka, Shigeaki; and Kiji, Akio, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for displaying outlined characters in a video display system. 5,444,460, Cl. 345-144.000.
Fujitsu Limited: *See*—
Enomoto, Hajime; and Miyamura, Isao, 5,444,798, Cl. 382-199.000.
Hibino, Kunio, 5,444,862, Cl. 455-54.100.
Izawa, Naoyuki; Aso, Yasuhiro; Uchida, Yoshihiro; and Kakuma, Satoshi, 5,444,658, Cl. 365-189.070.
Kamada, Hiroshi; Kubota, Takashi; and Shiohara, Morito, 5,444,791, Cl. 382-190.000.
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Satoh, Takamasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Ose, Yoshihisa; Yamada, Keiji; and Oshima, Toru, 5,444,257, Cl. 250-398.000.
Sono, Michio; Saito, Kouji; Takenaka, Masashi; and Yoshimoto, Masanori, 5,444,025, Cl. 437-207.000.

Takechi, Satoshi; Takahashi, Makoto; and Kaimoto, Yuko, 5,443,690, Cl. 430-286.000.
Takeda, Shiro; Nasuiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro; Tadaki, Shinji; and Koshino, Nagaaki, 5,444,266, Cl. 250-580.000.
Watanabe, Yoshihiro, 5,444,699, Cl. 370-54.000.
Yanagi, Shigenori; Kudo, Kazuki; and Katoh, Kikuji, 5,444,684, Cl. 369-44.200.
Yokoyama, Hiromitsu; Omote, Koji; Suzuki, Hitoshi; Tsukada, Minehare; Kamehara, Hobuo; and Niwa, Koichi, 5,443,786, Cl. 419-9.000.
Yoshimura, Tetsuzo; Yasu, Eiji; Tatsuura, Satoshi; and Sotoyama, Wataru, 5,444,811, Cl. 385-141.000.
Fujitsu VLSI Limited: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Ose, Yoshihisa; Yamada, Keiji; and Oshima, Toru, 5,444,257, Cl. 250-398.000.
Fujiyoshi, Takaaki: *See*—
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Fukami, Takehiro: *See*—
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Fukano, Masumi: *See*—
Yamadera, Hitoshi; Kawasaki, Takafumi; Matsubara, Takashi; Takatsuki, Hiroaki; Yoshida, Atsuo; Shibata, Yoji; Fukano, Masumi; Iahida, Kiyoshi; and Ishinabe, Iwao, 5,444,477, Cl. 348-15.000.
Fukuchi, Masakazu: *See*—
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Fukuda, hinji: *See*—
Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nokano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.
Fukuda, Kazushi: *See*—
Yoshizumi, Keiichi; Fukuda, Kazushi; Ariga, Seiichi; Ikeda, Shuji; Saeki, Makoto; Nagai, Kiyoshi; Hashiba, Soichiro; Nishihara, Shinji; and Kanai, Fumiyuki, 5,444,012, Cl. 437-60.000.
Fukui, Wataru; and Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Method for detecting misfiring in an internal combustion engine. 5,442,954, Cl. 73-115.000.
Fukui, Yasuo: *See*—
Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; and Taguchi, Nobuyoshi, 5,444,037, Cl. 503-227.000.
Fukumochi, Yasuaki: *See*—
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Fukuroda, Takahiro: *See*—
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Fukushima, Akira: *See*—
Matsunaga, Eiju; Fukushima, Akira; Nakashima, Noriyuki; Murai, Toshiyuki; Takemoto, Shinya; Tanabe, Mikio; and Kinoshita, Hisashi, 5,444,621, Cl. 364-424.050.
Fukushima, Hisashi; Moriguchi, Haruhiko; and Takekoshi, Nobuhiko, to Canon Kabushiki Kaisha. Image forming apparatus with means for correcting image density unevenness. 5,444,468, Cl. 347-14.000.
Fukushima, Ryosuke: *See*—
Ohmi, Tadahiro; Ishihara, Yoshio; and Fukushima, Ryosuke, 5,444,379, Cl. 324-450.000.
Fukushima, Tetsuaki: *See*—
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Fukuzawa, Daizo: *See*—
Tomoyuki, Yohji; Nakamura, Shunji; Ohtsuka, Yasumasa; Okuda, Koichi; Sakaki, Eihiro; Hayakawa, Akira; and Fukuzawa, Daizo, 5,444,521, Cl. 355-285.000.
Funai Electric Co., Ltd.: *See*—
Maeda, Osamu; and Higuchi, Yoshio, 5,443,391, Cl. 439-84.000.
Funaki, Masaki, to Victor Company of Japan, Ltd. Semiconductor device including polysilicon semiconductor element and MOS-FET as the element thereof. 5,444,284, Cl. 257-364.000.
Funk, David W.: *See*—
Silverbrook, Kia; Webb, Michael J.; Funk, David W.; and Walmsley, Simon R., 5,444,839, Cl. 395-141.000.
Fureigh, Michael L.: *See*—
Young, Lesley; Rhodes, Brian D.; Acton, Gary; Oglesby, Michael L.; and Fureigh, Michael L., 5,443,211, Cl. 239-146.000.
Furiosi, Giuseppe: *See*—
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Furukawa, Hideaki: *See*—
Nakazawa, Noriaki; Furukawa, Hideaki; Kobayashi, Kenji; and Tsujino, Hiromichi, 5,444,506, Cl. 353-104.000.
Furukawa, Hiroshi: *See*—
Shibazaki, Tokio; Koyama, Seiichiro; Eada, Kenichi; Aizawa, Yoshikatsu; and Furukawa, Hiroshi, 5,442,899, Cl. 53-589.000.
Furuno, Masahiro: *See*—
Kinoshita, Ryoichi; Takei, Yoshiyuki; Takigawa, Yoshizumi; and Furuno, Masahiro, 5,442,949, Cl. 73-23.350.
Furuno, Takeshi; Nakamura, Yasuhiro; and Matsuo, Akinori, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corp. Semiconductor integrated circuit operable and programmable at multiple voltage levels. 5,444,663, Cl. 365-226.000.
Furuya, Yukitsuna: *See*—
Okancon, Kazuhiro; Ushirokawa, Akihisa; and Furuya, Yukitsuna, 5,444,721, Cl. 371-43.000.
Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Semiconductor memory device having a memory cell unit including a plurality of transistors connected in series. 5,444,652, Cl. 365-149.000.
Fuse, Masaru, to Matsushita Electric Industries Co., Ltd. Apparatus for transmitting an intensity-modulated light signal. 5,444,562, Cl. 359-161.000.
Fuse, Toshihiko, to Nippon Pillar Packing Co., Ltd. Non-contact mechanical seal. 5,443,274, Cl. 277-38.000.
Fushimi, Norio: *See*—
Takagawa, Makoto; Inamasa, Kenji; Fushimi, Norio; Hashimoto, Akio; and Sasaki, Takayo, 5,444,172, Cl. 585-452.000.
Fuziwara, Yoshihide: *See*—
Shintani, Ryoei; Fuziwara, Yoshihide; Kawana, Shozo; Tanaka, Haruo; and Ito, Daiji, 5,444,221, Cl. 219-635.000.
G.A.L. Manufacturing Corp.: *See*—
Glaser, Walter, 5,443,142, Cl. 187-316.000.
G. D. S.p.A.: *See*—
Stivani, Eros; and Minarelli, Alessandro, 5,443,681, Cl. 156-504.000.
Gabb, Philip J.; Sutliff, Kenton E.; Wells, Barry A.; and Evans, J. Philip, to Kennecott Corporation. Hydrometallurgical processing of impurity streams generated during the pyrometallurgy of copper. 5,443,622, Cl. 75-743.000.
Gabree, Joseph P.; Campbell, Steve W.; and Hood, Charles, to A.P.M. Distributing, Inc. Method and apparatus for opening, filling and closing a premade wicketed bag. 5,442,898, Cl. 53-459.000.
Gabriele, Joseph F. Non-slip closure grip for jar lids and the like. 5,443,172, Cl. 215-203.000.
Gadberry, Donald L.: *See*—
Hart, Charles C.; and Gadberry, Donald L., 5,443,452, Cl. 604-167.000.
Gaddis, Benjamine A.: *See*—
Higgins, Kenneth B.; and Gaddis, Benjamine A., 5,443,881, Cl. 428-93.000.
Gagliardi, Ugo O.; Hsu, Meichun; Cummings, Paul; and Mattin, Stephen A. ISDN interfacing of personal computers. 5,444,703, Cl. 370-60.100.
Gagnon, David R., to Minnesota Mining and Manufacturing Company. Articles having a polymeric shell and method for preparing same. 5,443,727, Cl. 210-490.000.
Gajek, Joachim; and Stumpf, Hannsjorg, to Fichtel & Sachs AG. Hydraulic actuating device for brakes and gearshifts of bicycles or the like. 5,443,134, Cl. 188-344.000.
Gal, George; Anderson, William W.; Herman, Bruce J.; and Shough, Dean M., to Lockheed Missiles & Space Company, Inc. Wavefront corrector for scanning microlens arrays. 5,444,572, Cl. 359-619.000.
Gale, Richard O.; Lawson, Randall S.; Cleveland, Harlan P.; Chu, Henry; Davis, Carl W.; Heimbuch, Scott D.; and Tew, Claude E., to Texas Instruments Incorporated. Optimized electronic operation of digital micromirror devices. 5,444,566, Cl. 359-291.000.
Gale, Robert M.: *See*—
Atkinson, Linda E.; Dunn, John T.; Gale, Robert M.; and Rivera, David L., 5,443,461, Cl. 604-892.100.
Galecki, Dawn M., to Motorola. Method of providing a subscription lock to a radiotelephone system. 5,444,764, Cl. 379-58.000.
Gallas, John M. Trap for controlling room standing waves in rooms. 5,444,198, Cl. 181-295.000.
Gammill, Jerry D.; and Frank, Randy, to Gammill Parts, Inc. Conformed valve spring wear plate. 5,443,242, Cl. 251-337.000.
Gammill Parts, Inc.: *See*—
Gammill, Jerry D.; and Frank, Randy, 5,443,242, Cl. 251-337.000.
Ganapathy, Gopi; and Horne, Stephen C., to Advanced Micro Devices, Inc. Microprocessor with distributed clock generators. 5,444,407, Cl. 327-295.000.
Gantenbein, Reinhard: *See*—
Schneider, Andreas; and Gantenbein, Reinhard, 5,443,055, Cl. 123-602.000.
Gao, Chunping: *See*—
Hay, Allan S.; and Gao, Chunping, 5,444,147, Cl. 528-193.000.
Gao, Guilian; Baker, Jay D.; Nation, Brenda J.; and Adams, Karen M., to Ford Motor Company. Water-based no-clean flux formulation. 5,443,660, Cl. 148-24.000.
Garabet, Antoine L. Lens with variable optical properties. 5,443,506, Cl. 623-6.000.
Gardenhour, Cletus L.: *See*—
Betts, William L.; Cohen, Eran; Crupi, Joseph A.; Gardenhour, Cletus L.; Weitzner, Andrew T.; and Werner, Jean-Jacques, 5,444,712, Cl. 370-110.100.
Gardner, Donald S., to Intel Corporation. Method of fabricating an interconnection structure for an integrated circuit. 5,444,022, Cl. 437-195.000.
Garland, Angela: *See*—
Smith, W. Stan; Deutsch, Robert D.; Hockney, Fred H.; and Garland, Angela, 5,443,056, Cl. 126-263.050.
Garlieb, Keith A.; and Demichele, Stephen J., to Abbott Laboratories. Method of treating ulcerative colitis. 5,444,054, Cl. 514-54.000.

Garnet, Arrow. Bookmark having body with looped marking straps and slidably mounted tabs. 5,443,029, Cl. 116-235.000.
Garofalo, Giovanni, to H.T.M. Sport S.p.A. Swimming flipper. 5,443,593, Cl. 441-64.000.
Garrec, Philippe, to Commissariat a l'Energie Atomique. Electric jack having a rotation-translation movement conversion system and with energy recovery. 5,444,348, Cl. 318-640.000.
Garrett, Jimmy R. Glue unit. 5,443,683, Cl. 156-578.000.
Gartmann, Uwe; Idstein, Hermann; and Hultzsch, Guenter, to Hoechst Aktiengesellschaft. Device for generating a subatmospheric pressure. 5,443,638, Cl. 118-50.000.
Garvey, Gerald J., II: *See*—
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Ryan, William; Worek, William M.; and Zheng, Weixiang, 5,442,931, Cl. 62-101.000.
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Stucchi, Giovanni; and Gatti, Marco, 5,443,291, Cl. 285-316.000.
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Frey, Richard L.; Gaus, Richard C., Jr.; George, Robert L., II; Hladik, Stephen M.; Lester, Howard L.; Puckette, Charles M.; and Ray, Jimmy C., 5,444,762, Cl. 379-58.000.
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Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., to Amrad Corporation Limited. Human leukemia inhibitory factor. 5,443,825, Cl. 424-85.100.
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Dupraz, Jean-Pierre; Gris, Jean-Paul; and Trenchat, Daniel, 5,444,599, Cl. 361-274.100.
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Gehrmann, Rainer, to U.S. Philips Corporation. Method of separating a foreground picture signal from a mixed picture signal, and arrangement for preforming said method. 5,444,496, Cl. 348-587.000.
Gehrs, Donald F.; and White, Percy A., to Eaton Corporation. Polymeric electrical enclosure with improved knockout. 5,444,183, Cl. 174-65.00R.
Geisler, Bruce T. Automotive anti-theft protection apparatus. 5,442,942, Cl. 70-209.000.
Gellert, Jobst U. Injection molding one-piece insert having cooling chamber with radial rib portions. 5,443,381, Cl. 425-549.000.
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Gelus, Dominique, to SEB S.A. Flat, flexible heating element with integrated connector. 5,444,228, Cl. 219-549.000.
Gemplus Card International: *See*—
Kowalski, Jacek, 5,444,412, Cl. 327-541.000.
Geneiabe Incorporated: *See*—
Reyes, Gregory R.; Kim, Jungsuh P.; and Moeckli, Randolph, 5,443,965, Cl. 435-693.000.
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Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry C.; and Osbon, Barbara A., 5,444,624, Cl. 364-424.010.
General Electric: *See*—
Laskaris, Evangelos T.; and Dorri, Bizhan, 5,442,928, Cl. 62-51.100.
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Ciokajlo, John J.; Hauser, Ambrose A.; and Davison, Samuel H., 5,443,590, Cl. 416-128.000.
Cline, Harvey E.; Rohling, Kenneth W.; and Abeling, Walter R., 5,443,068, Cl. 128-653.500.
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Ingling, Theodore R.; and Manharth, Gary B., 5,443,365, Cl. 416-193.00A.
Kramer, John R.; and Young, Larry V., 5,443,877, Cl. 428-43.000.
O'Brien, Michael T.; and Bobo, Melvin, deceased, 5,443,229, Cl. 244-34.000.
Rushmer, Michael W.; Ruddy, Thomas A.; Brukalo, Krzystof; Z.; and Ritter, Allen M., 5,443,566, Cl. 212-275.000.
Snow, Barton H.; Markstein, David J.; Wills, Thomas K.; and Schmitt, Thomas P., 5,442,909, Cl. 60-204.000.
Speaker, Lawrence W.; and Kiefer, George E., 5,444,334, Cl. 315-209.0CD.
Terhune, James H., 5,444,747, Cl. 376-372.000.
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Montgomery, Peter; Becker, Don; Robins, Cathy; Slack, Mike; Lee, Tim; and Oliver, Bill, 5,444,642, Cl. 364-550.000.
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Genise, Thomas A., to Eaton Corporation. Recagagement control/-method for mechanical transmission system with automatic shift implementation. 5,444,623, Cl. 364-424.100.
Genoa, Inc.: *See*—
Downey, James M.; and Mullane, Kevin, 5,443,836, Cl. 424-423.000.
Gensini, Gianni: *See*—
Coassin, Giovanni; De Cecco, Corrado; Gensini, Gianni; and Gerussi, Sergio, 5,444,733, Cl. 373-72.000.
Gentex Optics, Inc.: *See*—
Kischkoo, Paresh V.; and Sallavanti, Robert A., 5,443,597, Cl. 8-444.000.
George, Douglas B.: *See*—
Kempster, Robert W.; and George, Douglas B., 5,444,367, Cl. 324-204.000.
George, John B.; and Williams, Kevin M., to Thomson Consumer Electronics, Inc. Left and right raster correction. 5,444,338, Cl. 315-371.000.
George, Robert L., II: *See*—
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Truong, Kwan K.; and Mersereau, Russell M., 5,444,489, Cl. 348-422.000.
Georgia Tech Research Corporation (GTRC): *See*—
Bartus, Raymond T.; Eveleth, David D.; and Power, James C., 5,444,042, Cl. 514-2.000.
Gerard, Dominique: *See*—
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Gerber, David J., to Gerber Scientific Products, Inc. Mosaic tile maker. 5,443,680, Cl. 156-362.000.
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Gerber, David J., 5,443,680, Cl. 156-362.000.
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James, Donald R.; Baker, Don R.; Mielich, Steven D.; Michaely, William J.; Fitzjohn, Steven; Knudsen, Christopher G.; Mathews, Christopher; and Gerdes, John M., 5,444,038, Cl. 504-251.000.
Gerhardinger, Dieter: *See*—
Von Au, Gunter; and Gerhardinger, Dieter, 5,443,627, Cl. 106-2.000.
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Heitsch, Holger; Wagner, Adalbert; Kleemann, Heinz-Werner; Gerhards, Hermann; and Scholkens, Bernward, 5,444,068, Cl. 514-303.000.
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Costea, James A.; and Gernert, James M., 5,442,964, Cl. 73-862.680.
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Arslan, Ahmet V.; Bobeck, James D.; Gerrish, Jeffrey A.; and McDonald, David E., 5,444,693, Cl. 370-16.000.
Gerster, John F.: *See*—
Nikolaides, Nick; and Gerster, John F., 5,444,063, Cl. 514-293.000.
Gerussi, Sergio: *See*—
Coassin, Giovanni; De Cecco, Corrado; Gensini, Gianni; and Gerussi, Sergio, 5,444,733, Cl. 373-72.000.
Gerwin, Brenda L.: *See*—
Reddel, Roger R.; Ke, Yang; Rhim, Johng S.; Brash, Douglas E.; Su, Robert T.; Lechner, John F.; Gerwin, Brenda L.; Harris, Curtis C.; and Amstad, Paul, 5,443,954, Cl. 435-7.210.
Gessner, Scott L.; Merriman, Marcus C.; and Parnca, Charles H., to Fiberweb North America, Inc. Nonwoven webs and method of making same. 5,443,898, Cl. 428-286.000.
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Werle, Paulo; and Gettachald, Victor M. F. B., 5,444,350, Cl. 318-727.000.
Gherardi, Bernard; Bourret, Gerard; and Leroy, Jean-Bernard, to Alcatel CIT. Device for assessing the transmission quality of an optical amplifier equipment. 5,444,238, Cl. 250-227.110.
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Gunz, Stefan; Ghisleni, Livio; and Castelberg, Manfred, 5,444,232, Cl. 250-201.100.
Giampapa, Vincent C. Subcutaneous implantable multiple agent delivery system. 5,443,508, Cl. 623-11.000.
Gibbons, Leo G.: *See*—
Hildreth, Richard; Shaw, Malcolm; Tripp, Terrance B.; and Gibbons, Leo G., 5,442,978, Cl. 73-363.000.
Gibbs, Edward L. Rolled metal fence rail. 5,443,244, Cl. 256-22.000.
Gigandet, Scott A.: *See*—
Adamec, William B.; Cox, Robert E.; and Gigandet, Scott A., 5,444,861, Cl. 395-700.000.
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Millet, Guy; and Gillet, Vincent, 5,444,694, Cl. 370-16.100.

Gillis, James P., to Repco Inc. Cryogenically-treated electrical contacts. 5,442,929, Cl. 62-62.000.

Gillner, Arnold: *See*—
Bliesner, F. Dieter; Preissig, Kai-Uwe; Gillner, Arnold; and Petring, Dirk, 5,444,210, Cl. 219-121.670.

Gima, Takeji: *See*—
Motoyama, Hajime; Kimizuka, Junichi; Gima, Takeji; and Nakamura, Akihiro, 5,444,319, Cl. 355-219.000.

Gina, Richard S.; and Salmon, Stephen M., to Cardiovascular Imaging Systems, Incorporated. Tracking tip for a short lumen rapid exchange catheter. 5,443,457, Cl. 604-280.000.

Ginsburg, Robert: *See*—
Allegra, Howard M.; Librizzi, Joseph; and Ginsburg, Robert, 5,443,456, Cl. 604-280.000.

Globiotics, Inc.: *See*—
Kolar, William J., 5,443,621, Cl. 75-711.000.

Gipser, Michael, to Mercedes-Benz AG. Active wheel supporting system for vehicles. 5,443,282, Cl. 280-690.000.

Gipson, Ronnie G., to Excel Industries, Inc. Window assembly with slider. 5,442,880, Cl. 49-413.000.

Girard, Gerald R.; Hampel, Judith; Hill, David T.; Samanen, James; and Weinstock, Joseph, to SmithKline Beecham Corporation. Substituted [1H-imidazol-5-ylialkanoic acids having angiotension II receptor antagonist activity. 5,444,080, Cl. 514-397.000.

GL Science Inc.: *See*—
Kinoshita, Ryoichi; Takei, Yoshiyuki; Takigawa, Yoshizumi; and Furuno, Masahiro, 5,442,949, Cl. 73-23.350.

Glabiszewski, Richard, to Otto Bock Orthopaedische Industrie Beatz- und Verwaltungs-Kommanditgesellschaft. Elbow fitting part. 5,443,530, Cl. 623-59.000.

Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., to International Business Machines Corporation. Graphical user interface control for replicating data fields in forms. 5,444,841, Cl. 395-149.000.

Glaser, Walter, to G.A.L. Manufacturing Corp. Elevator door tampering protection system. 5,443,142, Cl. 187-316.000.

Glaxo Inc.: *See*—
Burns, Henry K., III; Burns, Hubert E.; DiNardo, Thomas P.; and Ingram, James E., 5,442,893, Cl. 53-53.000.

Gleason, Craig W.: *See*—
Bloch, Ricardo A.; Gutierrez, Antonio; Ryer, Jack; Watts, Raymond F.; and Gleason, Craig W., 5,443,744, Cl. 252-32.70E.

Gleason, John G.; Hempel, Judith; Hill, David T.; Samanen, James; and Weinstock, Joseph, to SmithKline Beecham Corp. Substituted histidines having angiotension II receptor antagonist activity. 5,444,081, Cl. 514-399.000.

Glenn, Daniel J.: *See*—
D'Angelo, Joseph P.; Schur, Henry; Han, Kedu; and Glenn, Daniel J., 5,443,080, Cl. 128-771.000.

Glentech Inc.: *See*—
Sherman, Michael I., 5,443,162, Cl. 209-274.000.

Globe-Union Inc.: *See*—
Tiedemann, William H., 5,443,600, Cl. 429-134.000.

Glossop, F. Raymond, Jr., to TDW Delaware, Inc. Fluid blocking device. 5,443,095, Cl. 138-94.000.

Godec, Richard D.; Kosenka, Paul K.; and Hutte, Richard, to Sievers Instruments, Inc. Method for the determination of dissolved carbon in water. 5,443,991, Cl. 436-145.000.

Goetcheus, Gregory J.; Clarke, Robert J.; and Russell, Richard H., to Goetcheus, Gregory J. Systems and methods for recording and delivering personalized audio messages. 5,444,767, Cl. 379-67.000.

Goettsche, Reimer; and Borck, Hans-Volker, to Dr. Wolman GmbH. Wood preservatives. 5,444,093, Cl. 514-611.000.

Goidich, Stephen J.: *See*—
Winkin, Justin P.; Campbell, Walter R., Jr.; Goidich, Stephen J.; Tang, John; Abdulally, Iqbal F.; and Phalen, John W., 5,443,022, Cl. 110-245.000.

GOJO Industries, Inc.: *See*—
Bell, Ronald F.; and Wysocki, J. Christopher, 5,443,236, Cl. 248-311.300.

Golda, George S.: *See*—
Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

Goldberg, Steven J., to Motorola, Inc. Method and apparatus for remote memory management in an acknowledge-back selective call communication system. 5,444,438, Cl. 340-825.440.

Golden, Michael D.: *See*—
Swann, Lynn J.; Wedertz, Larry D.; and Golden, Michael D., 5,442,991, Cl. 89-33.100.

Golden Valley Microwave Foods, Inc.: *See*—
Jensen, Michael L.; and Risch, Sara J., 5,443,858, Cl. 426-618.000.

Goldman, Frank M.; Chambers, Robert V.; Clippard, William L., III; Hess, Steven M.; and Otto, William E., to Illinois Tool Works Inc. Lubricant nozzle positioning system and method. 5,444,634, Cl. 364-474.110.

Goldstar Co., Ltd.: *See*—
Baek, Myung C., 5,444,585, Cl. 360-85.000.
Cho, Gwan S.; Jang, Seok M.; and Shin, Dong G., 5,442,913, Cl. 60-518.000.
Choi, Song, 5,443,376, Cl. 418-63.000.

Choo, Gyoung S.; and Kang, Deuk C., 5,444,498, Cl. 348-733.000.
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,442,824, Cl. 8-159.000.
Ko, Byoung D., 5,443,410, Cl. 445-73.000.
Kwon, Ho C., 5,442,937, Cl. 68-4.000.

Goldstar Electron Co., Ltd.: *See*—
Chung, Jin Y.; and Kwak, Deog Y., 5,444,362, Cl. 323-313.000.
Han, Jeong-Su; and Lee, Seung-Hee, 5,444,006, Cl. 437-60.000.
Song, Chi J.; and Cha, Gi B., 5,444,301, Cl. 257-737.000.

Gollner, Erwin; and Hutter, Horst, to Deutsche Aerospace AG. Device for testing pipes for interior leaks. 5,442,951, Cl. 73-40.50R.

Goodyear Tire & Rubber Company, The: *See*—
Wideman, Lawson G.; and Sandstrom, Paul H., 5,444,109, Cl. 524-91.000.

Goossen, Keith W.; and Walker, James A., to AT&T Corp. Composition and method for off-axis growth sites on nonpolar substrates. 5,443,683, Cl. 156-635.100.

Goossen, Keith W.: *See*—
Cunningham, John E.; and Goossen, Keith W., 5,444,270, Cl. 257-98.000.

Gopisetthan, Venugopal; and Varma, Seema, to Texas Instruments Incorporated. Apparatus and method for duplicating currents. 5,444,446, Cl. 341-135.000.

Gorbaty, Martin L.: *See*—
Grenoble, Dane C.; Halle, Roy T.; Gorbaty, Martin L.; and Helmke, Harold W., 5,443,715, Cl. 208-95.000.

Gorbel, Inc.: *See*—
Taylor, Michael K., 5,443,151, Cl. 198-860.100.

Gore, William C.; and Hyche, Kenneth W., to Eastman Chemical Company. Aqueous additive systems, methods and polymeric particles. 5,443,910, Cl. 428-407.000.

Goss, Neil H.; and Richardson, Michael A., to Biotech Australia Pty Limited. Variants of PAI-2. 5,444,153, Cl. 424-141.000.

Gosselin, Stephane: *See*—
Puskett, Peter; Mullins, Dennis; Nomoto, Shinichi; and Gosselin, Stephane, 5,444,440, Cl. 342-354.000.

Gosslinghoff, Reinhard, to Ferag AG. Method and apparatus for inserting objects into multi-sheet products, particularly printed products. 5,443,250, Cl. 270-57.000.

Goto, Hiroshi, to Omron Corporation. Optical scanner. 5,444,565, Cl. 359-224.000.

Goto, Hiroshi, to Anritsu Corporation. Tunable wavelength light source incorporated optical filter using interferometer into external cavity. 5,444,724, Cl. 372-20.000.

Goto, Koji: *See*—
Ishiiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukada, hinji, 5,444,206, Cl. 219-121.630.

Goto, Shigeki: *See*—
Shimei, Masato; Goto, Shigeki; Sakai, Takahiro; and Nakagawa, Masahiko, 5,443,595, Cl. 477-155.000.

Gotthelf, Jeffrey B., to ITT Corporation. Pressure-reducing regulator for compressed natural gas. 5,443,083, Cl. 137-484.800.

Gottlieb Guhring KG: *See*—
Reinauer, Josef; Effenberger, Wolfgang; and Friedl, Franz, 5,443,340, Cl. 409-231.000.

Goubault, Eric; Lancon, Emmanuel; Menez, Jean; and Raimondo, Catherine, to International Business Machines Corporation. Method and apparatus for coding digital data using vector quantizing techniques. 5,444,488, Cl. 348-414.000.

Gough, Nicholas M.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Wilson, Tracy A., 5,443,825, Cl. 424-85.100.

Gould Inc.: *See*—
Kurz, David W., 5,444,129, Cl. 525-528.000.

Goulding, Victor V.: *See*—
Nair, Parameswaran B.; Price, James F.; and Goulding, Victor V., 5,444,616, Cl. 364-505.000.

Goy, Heinrich: *See*—
Englisch, Wolfgang; Goy, Heinrich; Sauerwein, Paul; Hitzschke, Peter; Simmat, Fritz; Takke, Rolf; and Steiner, Gerhard, 5,443,607, Cl. 65-64.000.

Grabow, Wilhelm; and Bode, Friedrich-Wilhelm, to Robert Bosch GmbH. System for bidirectional data transmission between a plurality of stationary units and a vehicle. 5,444,742, Cl. 375-267.000.

Gracheck, Stephen J.: *See*—
Connor, David T.; Gracheck, Stephen J.; and Post, Leonard, 5,444,085, Cl. 514-443.000.

Grand Haven Stamped Products Co., Div. of JSJ Corp.: *See*—
Osborn, Charles, 5,442,975, Cl. 74-473.00R.

Grangeat, Pierre; Rizo, Philippe; and Sire, Pascal, to Commissariat a l'Energie Atomique. Process and apparatus for the reconstruction of three-dimensional images of an object using two circular acquisition paths. 5,444,792, Cl. 382-131.000.

Granie, Charles L.: *See*—
Wenstadt, Thomas D.; Blanchard, Clarence E.; and Granie, Charles L., 5,443,026, Cl. 114-56.000.

Grant, Thomas J.: *See*—
Treseder, Robert C.; and Grant, Thomas J., 5,444,327, Cl. 313-337.000.

Gratzer, Franz, to Steyr-Daimler Puch AG. Rotationally dependent free-wheeling coupling. 5,443,147, Cl. 192-27.000.

Grau Limited: *See*—
Broome, William S., 5,443,306, Cl. 303-3.000.

Gravano, Luis: *See*—
Cypher, Robert E.; and Gravano, Luis, 5,444,701, Cl. 370-60.000.

Gray, Douglas G.: *See*—
Masood, Shakeel; and Gray, Douglas G., 5,444,685, Cl. 369-47.000.

Gray, Murray R.: *See*—
Lu, George Z.; Gray, Murray R.; and Thompson, Bradley G., 5,443,985, Cl. 435-240.250.

Gray, Steven G.: *See*—
Clark, Richard H.; Gray, Steven G.; and Long, John D., 5,443,125, Cl. 172-608.000.

Greco, Stephen E.: *See*—
Aitken, John M.; Beyer, Klaus D.; Crowder, Billy L.; and Greco, Stephen E., 5,444,015, Cl. 437-182.000.

Greczyn, Wendy R.; Lajoie, M. Stephen; Berschied, John R.; and Kirschner, Lawrence, to Church & Dwight Co., Inc. Antiperspirant-deodorant cosmetic stick products. 5,443,822, Cl. 424-65.000.

Green Technologies, Inc.: *See*—
Riggio, Chris A., 5,444,359, Cl. 323-237.000.

Greenawalt, Kent S. Adjustable chiropractic diagnostic apparatus. 5,443,079, Cl. 128-781.000.

Greenberg, Robert S., to Johns Hopkins University, The. Caffed oropharyngeal airway. 5,443,063, Cl. 128-207.150.

Greene, Tweed & Co.: *See*—
Amin, Harshad P.; and Aufdermarsh, Carl A., 5,444,116, Cl. 524-495.000.

Greenfield Industries, Inc.: *See*—
Hsu, George, 5,442,979, Cl. 76-108.600.

Greenlee Textron Inc.: *See*—
Sanner, Lanny R.; and Elsasser, Scott, 5,442,992, Cl. 91-428.000.

Greenwood, Carol E.: *See*—
Tatton, William G.; and Greenwood, Carol E., 5,444,095, Cl. 514-654.000.

Greenwood, Jonathon; Hendricks, Douglas W.; and Juskey, Frank, to Motorola, Inc. Wire bond pad arrangement having improved pad density. 5,444,303, Cl. 257-786.000.

Greenwood, Martin: *See*—
Dent, Peter; and Greenwood, Martin, 5,444,415, Cl. 329-302.000.

Greer, David G., to BioChem, Inc. Apparatus for heat processing foodstuff. 5,442,995, Cl. 99-487.000.

Greer, Mark: *See*—
Stewart, Larry D.; Gautieri, Steven; Simon, Jerome; and Greer, Mark, 5,443,260, Cl. 273-26.00R.

Gregory, Michael: *See*—
Pavliny, Mark; Lewandowski, Edward; Lawrence, William; Gregory, Michael; and Ozers, Guntis, 5,443,008, Cl. 101-484.000.

Grennes, Torbjorn; and Nielsen, Bent, to DanPren A/S. Thin-walled rubber article with walls having a relatively high degree of tear. 5,444,121, Cl. 525-89.000.

Grenoble, Dane C.; Halle, Roy T.; Gorbaty, Martin L.; and Helmke, Harold W., to Exxon Chemical Patents Inc. Method for upgrading steam cracker tars. 5,443,715, Cl. 208-95.000.

Grenoble, Dane C.; Halle, Roy T.; and Thomson, William D., to Exxon Chemical Patents Inc. Process for recovering olefins from cat-cracked gas without accumulating undesirable oxides of nitrogen. 5,444,176, Cl. 585-809.000.

Gretag Imaging AG: *See*—
Staheli, Willi; and Tschannen, Rudolf, 5,444,513, Cl. 355-27.000.

Greve, Christopher: *See*—
Keller, C. Michael, III; Keller, Pamela S.; Greve, Christopher; and O'Connor, Ronald, 5,443,001, Cl. 101-27.000.

Griffiths, Clifford H.: *See*—
Mastalski, Henry T.; and Griffiths, Clifford H., 5,443,785, Cl. 264-573.000.

Grigoryan, Vladimir G.; Minakov, Valeriy I.; Obukhov, Vladimir A.; and Ogadjanov, Petr P., to Societe Europeenne de Propulsion. Ion-optics system for a source of ions to be discharged into a gas. 5,444,258, Cl. 250-423.00R.

Grill, Benjamin. Fluid dispenser which has a button actuated regulator valve and a pressure relief port in the button. 5,443,186, Cl. 222-396.000.

Grimm, Hartmut: *See*—
Lind, Ole; Ornerfors, Benny; Grimm, Hartmut; and Rabold, Karl, 5,443,035, Cl. 119-14.020.

Grimm, Patrick A.: *See*—
Todd, William G.; Grimm, Patrick A.; and Daws, Joe C., 5,444,133, Cl. 526-116.000.

Grinstein, Reuben H.: *See*—
Miskel, John J., Jr.; Grinstein, Reuben H.; and Fischer, Stephen A., 5,444,127, Cl. 525-504.000.

Gris, Jean-Paul: *See*—
Dupraz, Jean-Pierre; Gris, Jean-Paul; and Trenchat, Daniel, 5,444,599, Cl. 361-274.100.

GroPep, Pty. Ltd.: *See*—
Francis, Geoffrey L.; Walton, Paul E.; Ballard, F. John; McMurty, John P.; and Phelps, Patricia V., 5,444,045, Cl. 514-12.000.

Gropper, Daniel R. Modular emergency or weather alert interface system. 5,444,433, Cl. 340-601.000.

Grueser, Thomas A.: *See*—
Stover, Kevin L.; Cartwright, Richard W.; Grueser, Thomas A.; and Boryca, Walter J., 5,443,655, Cl. 134-18.000.

Gruetzner, Matthias; and Starke, Cordt W., to International Business Machines Corporation. AC interconnect test of integrated circuit chips. 5,444,715, Cl. 371-22.300.

Guell, Thomas C., to Pall Corporation. Gas plasma treated porous medium and method of separation using same. 5,443,743, Cl. 210-767.000.

GTE Products Corporation: *See*—
Tarry, Christopher A., 5,443,917, Cl. 428-545.000.

Gubin, Jean; Chatelain, Pierre; Inion, Henri; and Rosseels, Gilbert, to Sanofi. Aminoalkoxyphenyl derivatives, process for their preparation and compositions containing them. 5,444,056, Cl. 514-18.300.

Guerini, Albert J.: *See*—
Iftikar, Syed H.; Thompson, Herbert E.; and Guerini, Albert J., 5,444,586, Cl. 360-99.120.

Guest, John D. Tube couplings. 5,443,289, Cl. 285-39.000.

Gugel, Leslie H. Portable powered hack-saw. 5,442,857, Cl. 30-392.000.

Guibert, Bettina: *See*—
Guibert, Raul; and Guibert, Bettina, 5,443,487, Cl. 607-101.000.

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Guilford Mills, Inc.: *See*—
Nielsen, Arne; McCartney, Phillip D.; Thompson, Donnie J.; and Moghaddassi, Majid, 5,442,842, Cl. 26-80.000.

Guillot, Gerard L. H.: *See*—
Bouleau, Jean-Paul A. A.; and Guillot, Gerard L. H., 5,444,216, Cl. 219-245.000.

Guiremand, Harry A.: *See*—
Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

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Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,443,919, Cl. 428-687.000.
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,443,920, Cl. 428-687.000.

Gunnarsson, Sven-Eric, to Asea Brown Boveri AB. Safety switch for an industrial machine. 5,444,203, Cl. 200-510.000.

Gunz, Stefan; Ghisleni, Livio; and Castelberg, Manfred, to Xelux AG. Antiglare device to protect eyes during welding and immediately thereafter for a time based on the intensity and duration of the welding light. 5,444,232, Cl. 250-201.100.

Guo, Shao-Hua, to Arco Chemical Technology, L.P. Process for making vinyl aromatic/allylic alcohol copolymers. 5,444,141, Cl. 526-347.000.

Gupta, Harish C., to Illinois Tool Works Inc. Fastener-sleeve assembly and strip of collated fasteners. 5,443,345, Cl. 411-441.000.

Gupta, Sankar D. Ceramic fibre and process therefor. 5,443,771, Cl. 264-82.000.

Gurit-Essex AG: *See*—
Schreiber, Herbert; Burkart, Gunter; and Knaus, Bruno, 5,443,911, Cl. 428-413.000.

Gurley, Derrel G.: *See*—
Wood, Edward T.; Brooks, Robert T.; Dion, Michael O.; Gurley, Derrel G.; and Harris, Monty E., 5,443,124, Cl. 166-374.000.

Gutierrez, Antonio: *See*—
Bloch, Ricardo A.; Gutierrez, Antonio; Ryer, Jack; Watts, Raymond F.; and Gleason, Craig W., 5,443,744, Cl. 252-32.70E.

Gyoten, Masayoshi: *See*—
Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyoten, Masayoshi; and Saito, Takeshi, 5,444,336, Cl. 315-307.000.

H. B. Fuller Licensing & Financing Inc.: *See*—
Fresonke, Flavia M.; and Mehta, Ramesh, 5,443,674, Cl. 156-331.700.
Haggquist, James A. E.; and Micek, Lawrence L., 5,444,108, Cl. 523-455.000.

H. C. Starck, Inc.: *See*—
Hildreth, Richard; Shaw, Malcolm; Tripp, Terrance B.; and Gibbons, Leo G., 5,442,978, Cl. 75-363.000.

H. Lundbeck A/S: *See*—
Perregaard, Jens K.; and Costall, Brenda, 5,444,073, Cl. 514-323.000.

H. Magnetic Corp.: *See*—
Horber, Ralph W., 5,444,368, Cl. 324-207.160.

H.T.M. Sport S.p.A.: *See*—
Garofalo, Giovanni, 5,443,593, Cl. 441-64.000.

Ha, Jin S. Variable bolt pin chain belt transmission system. 5,443,423, Cl. 474-47.000.

Haas, Ken A.: *See*—
Haas, Kevin L.; Haas, Ken A.; and Vought, Kimber J., 5,444,325, Cl. 310-368.000.

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Haba, Shinji: *See*—
Ishikawa, Hiroyuki; Haba, Shinji; Ebina, Kouichi; Takeda, Takashi; Ito, Hirokazu; and Seki, Hideya, 5,444,683, Cl. 369-44.280.

Habbinga, Erik R.: *See*—
Hall, Steven G.; Tougher, Lawrence N.; Monroe, Kerry J.; Warling, Christian J.; Bloom, Thomas L.; Repasky, William P.; and Habbinga, Erik R., 5,444,400, Cl. 327-108.000.

Haber, Edgar; Bode, Christoph; and Runge, Marschall S., to President and Fellows of Harvard College; and Emory University. Fibrin-targeted inhibitors of thrombin. 5,443,827, Cl. 424-133.100.

Hach, Karl-Heinz: *See*—
Dreilich, Ludwig; Schmeling, Hans-Joachim; and Hach, Karl-Heinz, 5,443,133, Cl. 188-250.00G.

Hachiya, Tadashi: *See*—
Kobara, Yuji; and Hachiya, Tadashi, 5,443,004, Cl. 101-365.000.

Hackett, Steven S.: *See*—
Slaikeu, Paul; Burmeister, Paul H.; Cappetta, Richard E.; and Hackett, Steven S., 5,443,907, Cl. 428-375.000.

Haensing, Werner: *See*—
Bessette, Michael; Haensing, Werner; Hilbert, Wolfgang; Rothhaar, Ulrich; Sloboda, Robert; Torno, Oskar; Unland, Stefan; and Surjadi, Iwan, 5,442,918, Cl. 60-602.000.

Haendle, Joerg; and Horbaschek, Heinz, to Siemens Aktiengesellschaft. Radiological system with control of the modulation transfer function dependent on ambient light. 5,444,755, Cl. 378-98.000.

Hagen, Floyd W., to B.F. Goodrich Company, The. Deployable probe combined with flush static port. 5,442,958, Cl. 73-170.020.

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Fujimori, Kenichi; Nakayama, Yoshitaro; Shinohara, Takumi; Iwanami, Atsushi; Hagiwara, Toshimitsu; and Kobayashi, Tohru, 5,443,933, Cl. 430-59.000.

Hagquist, James A. E.; and Micek, Lawrence L., to H. B. Fuller Licensing & Financing, Inc. Mechanically peelable masking coating composition. 5,444,108, Cl. 523-455.000.

Hahn, Norbert; Triervieler, William; Kellermann, Richard; and Schwager, Jeff, to Rite-Hite Corporation. Dock leveler weather seal. 5,442,825, Cl. 14-71.100.

Heinfeld, James F., to Associated Universities, Inc. Loading and conjugating cavity biostructures. 5,443,813, Cl. 424-1.170.

Halasy-Wimmer, Georg: *See*—
Thiel, Rudolf; Doell, Andreas; and Halasy-Wimmer, Georg, 5,443,141, Cl. 188-71.900.

Halen, Lars, to Atlas Copco Controls AB. Torque delivering power tool. 5,442,965, Cl. 73-862.220.

Hall, Ruth M.: *See*—
Cornell, Bruce A.; Braach-Maksvytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Ragusa, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., 5,443,955, Cl. 435-7.210.

Hall, Steven G.; Taugher, Lawrence N.; Monroe, Kerry J.; Warling, Christian J.; Bloom, Thomas L.; Repasky, William P.; and Habbinga, Erik R., to Hewlett-Packard Company. Logic output circuit with high transient pull-up current. 5,444,400, Cl. 327-108.000.

Halla Climate Control Corporation: *See*—
Cho, Kyung-seok, 5,443,363, Cl. 415-211.100.

Hallam, Colin J.: *See*—
Vane, Jeffrey A.; and Hallam, Colin J., 5,442,935, Cl. 66-84.00A.

Halle, Roy T.: *See*—
Grenoble, Dane C.; Halle, Roy T.; Gorbaty, Martin L.; and Helmlet, Harold W., 5,443,715, Cl. 208-95.000.
Grenoble, Dane C.; Halle, Roy T.; and Thomson, William D., 5,444,176, Cl. 585-809.000.

Hallenbeck, Peter D.: *See*—
Adams, Richard L., Jr.; and Hallenbeck, Peter D., 5,444,782, Cl. 380-49.000.

Halliburton Company: *See*—
Brisco, David P., 5,443,122, Cl. 166-285.000.
Ross, Colby M., 5,443,117, Cl. 166-51.000.
Wall, Stanley J.; Allison, David B.; and Henry, Michael W., 5,443,123, Cl. 166-288.000.

Hamada, Toshihiro: *See*—
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehiro; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

Hamamatsu Photonics K.K.: *See*—
Takahashi, Hironori; Urakami, Tsuneyuki; Aoshima, Shinichiro; and Hirano, Isuke, 5,444,365, Cl. 324-96.000.

Hamamura, Katuhiko: *See*—
Inoue, Kimio; Tanaka, Hisao; Katou, Toshio; Ikeda, Masaki; Wakimoto, Masao; and Hamamura, Katuhiko, 5,444,844, Cl. 395-161.000.

Hamilton, Jeffery L. Removable truck tie-down device. 5,443,341, Cl. 410-116.000.

Hamilton, Jeffrey L., to LSI Logic Corporation. Method and apparatus for detecting defective semiconductor wafers during fabrication thereof. 5,444,265, Cl. 250-559.420.

Hammond, Dennis L.: *See*—
Scheitelhoffer, Anthony S.; Dueck, Dianna B.; Hammond, Dennis L.; Wasolkiasiak, Soracha; Myers, William R.; Opalko, Robert J.; and Abrams, Richard L., 5,443,768, Cl. 264-39.000.

Hampel, Judith: *See*—
Girard, Gerald R.; Hampel, Judith; Hill, David T.; Samanen, James; and Weinstock, Joseph, 5,444,080, Cl. 514-397.000.

Han, Jeong-Su; and Lee, Seung-Hee, to Goldstar Electron Co., Ltd. Method of manufacturing a capacitor in a semiconductor memory device. 5,444,006, Cl. 437-60.000.

Han, Kedu: *See*—
D'Angelo, Joseph P.; Schur, Henry; Han, Kedu; and Glenn, Daniel J., 5,443,080, Cl. 128-771.000.

Han, Tae-Hyeon: *See*—
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Han, Yu P.; and Nagalingam, Samuel J. S., to VLSI Technology, Inc. High-performance punchthrough implant method for MOS/VLSI. 5,444,008, Cl. 437-45.000.

Hanazawa, Yuji: *See*—
Ogata, Taizo; Hanazawa, Yuji; Iwata, Yasuo; and Shigeta, Toshio, 5,442,894, Cl. 53-234.000.

Hane, Marianne: *See*—
Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Ikeda, Tadayoshi, to Konica Corporation. Color image forming apparatus with mountable cartridge therein. 5,444,515, Cl. 355-200.000.

Haney, Donald E. Sander with orbiting platen and abrasive. 5,443,414, Cl. 451-28.000.

Hanke, Dietmar, to Hughes Aircraft Company. Optical warm stop with fresnel type reflective surface. 5,444,250, Cl. 250-352.000.

Hannant, Keith, to Smiths Industries Public Limited Company. Electrical apparatus for controlling the supply of power to an insertable electrode. 5,443,462, Cl. 606-34.000.

Hanrahan, Robert J.: *See*—
Parker, Robia Z.; and Hanrahan, Robert J., 5,443,804, Cl. 423-230.000.

Hansen, Dennis D., to Minnesota Mining and Manufacturing Company. Hot melt stick. 5,443,903, Cl. 428-355.000.

Hansen, Hans J.; Leung, Shui-on; and Shevitz, Jerry, to Immunomedics, Inc. Preparation and use of immunoconjugates. 5,443,953, Cl. 424-1.490.

Hansen, Karl A.; and Weisberg, Edward C., to Boeing Company, The. Asymmetric induction work coil for thermoplastic welding. 5,444,220, Cl. 219-633.000.

Hanson, Michael J.: *See*—
Rozman, Gregory I.; Hanson, Michael J.; and Markunas, Albert L., 5,444,349, Cl. 318-716.000.

Hanus, Joseph P.: *See*—
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Har-El, Moshe: *See*—
Laniado, Josephe; and Har-El, Moshe, 5,443,923, Cl. 428-476.100.

Hara, Hiroyuki; and Watanabe, Yoshinori, to Kabushiki Kaisha Toshiba. ROM with Bi-CMOS gate arrays. 5,444,654, Cl. 365-177.000.

Hara, Kouji; and Tanabe, Jun, to Hitachi, Ltd. Semiconductor device having a radiating part. 5,444,304, Cl. 257-796.000.

Hara, Kouzi: *See*—
Ichizuka, Isamu; Takahashi, Shuitsu; Hara, Kouzi; Waki, Hiroshi; Kobe, Shinji; Sakurada, Tadayuki; Okouchi, Yoshitaka; Ohkubo, Ken; and Shimizu, Hiroshi, 5,444,128, Cl. 524-507.000.

Hara, Mitsunori: *See*—
Machida, Toyoji; Hara, Mitsunori; Moriwaki, Kazuro; Tsujioku, Keiichi; Amazutsumi, Tooru; Tamaki, Hiyoshi; Yamauchi, Yasuhiro; and Narukawa, Satoshi, 5,443,925, Cl. 429-94.000.

Hara, Tetsuro: *See*—
Ajito, Keiichi; Kurihara, Kenichi; Ishizuka, Tsuneo; Hara, Tetsuro; Usui, Takayuki; and Shibahara, Seiji, 5,444,174, Cl. 536-7.100.

Harada, Shoichiro: *See*—
Abe, Hiroshi; Fukushima, Tetsuaki; Sotoya, Kohshiro; Harada, Shoichiro; Kitagawa, Hiroshi; Morii, Masayoshi; and Isayama, Yasutoshi, 5,444,099, Cl. 521-129.000.

Harada, Tamotsu: *See*—
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Harada, Tomoharu: *See*—
Okamoto, Katsuya; Harada, Tomoharu; Yamamoto, Takashi; and Nishida, Singi, 5,444,746, Cl. 376-245.000.

Harada, Toshio: *See*—
Tatezono, Fumio; Harada, Toshio; Irie, Masahiro; and Ohara, Meguru, 5,443,940, Cl. 430-270.000.

Harako, Mieko, to Eiken Kagaku Kabushiki Kaisha. Composition for measuring ionic strength or specific gravity of liquid specimen and test piece prepared from said composition. 5,443,990, Cl. 436-74.000.

Hardt, Peter: *See*—
Brock, Michael; Hardt, Peter; Klimmek, Helmut; and Stockhausen, Dolf, 5,443,631, Cl. 106-244.000.

Hardwick, R. Eugene: *See*—
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Hargis, James E.: *See*—
Hollingsworth, Robert E.; Kindrachuk, Eugene P.; and Hargis, James E., 5,444,836, Cl. 395-135.000.

Harmonic Design, Inc.: *See*—
Domel, Douglas R.; and Walker, Winston G., 5,444,339, Cl. 318-17.000.

Harms, Jurgen: *See*—
Biedermann, Lutz; and Harms, Jurgen, 5,443,467, Cl. 606-65.000.

Harris Corporation: *See*—
Hirsohn, Paul; Dayner, David; and Lacker, Virginia, 5,444,773, Cl. 379-219.000.
Wernlund, James V., 5,444,420, Cl. 331-1.00R.

Harris, Curtis C.: *See*—
Reddel, Roger R.; Ke, Yang; Rhim, Johng S.; Brash, Douglas E.; Su, Robert T.; Lechner, John F.; Gerwin, Brenda I.; Harris, Curtis C.; and Amstad, Paul, 5,443,954, Cl. 435-7.210.

Harris, Gary L. Laminated graphics-to-glass composite back-lit display panels. 5,443,869, Cl. 428-13.000.

Harris, Kenneth; Eridon, John M.; and Sikkenga, Steven L., to Cannon-Muskegon Corporation. Low yttrium, high temperature alloy. 5,443,789, Cl. 420-443.000.

Harris, Monty E.: *See*—
Wood, Edward T.; Brooks, Robert T.; Dion, Michael O.; Gurley, Derrel G.; and Harris, Monty E., 5,443,124, Cl. 166-374.000.

Harris, Norman H.; Pierce, Brian M.; Townsend, Carl W.; and Dougherty, Thomas K., to Hughes Aircraft Company. Ferroelectric aerogel composites for voltage-variable dielectric tuning, and method for making the same. 5,443,746, Cl. 252-62.900.

Harris, Rodney M., to Sherwin-Williams Company, The. Tricarboxylic acid-functional monomers and polymers prepared from same. 5,444,122, Cl. 525-119.000.

Harrison, Jerry R.: *See*—
Smyczek, Paul J.; Azmani, Youssef; and Harrison, Jerry R., 5,444,466, Cl. 347-4.000.

Hart, Charles C.; and Gadberry, Donald L., to Applied Medical Resources. Seal assembly for access device. 5,443,452, Cl. 604-167.000.

Hart, Robert N.; and Simmons, Christopher S., to Nordam. Chemically induced crazing resistant acrylic. 5,443,914, Cl. 428-447.000.

Hartman, Robert C., Jr., to International Business Machines Corporation. Client/server based secure timekeeping system. 5,444,780, Cl. 380-30.000.

Hartmann, Robert H.: *See*—
Fisher, William D.; and Hartmann, Robert H., 5,442,953, Cl. 73-105.000.

Hartz Mountain Corp., The: *See*—
Suchowski, Bernard, 5,443,039, Cl. 119-865.000.

Harwood, H. James: *See*—
Valpey, Richard S., III; Kraus, John D.; and Harwood, H. James, 5,444,139, Cl. 526-271.000.

Hase, Hiroyuki; Shoji, Rihito; and Wakamiya, Masayuki, to Matsushita Electric Industrial Co., Ltd. Torque sensor. 5,442,966, Cl. 73-862.335.

Hasegawa, Akira: *See*—
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Hasegawa, Hiroshi: *See*—
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Hasegawa, Isahiro: *See*—
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Hasegawa, Takanori; and Nonoyama, Shoji, to Riso Kagaku Corporation. Method and apparatus for mounting a master plate on a printing drum having an integral cutter. 5,443,556, Cl. 101-116.000.

Hasegawa, Takanori, to Riso Kagaku Corporation. Printing drum assembly for a stencil printing device. 5,443,557, Cl. 101-119.000.

Hasegawa, Takashi: *See*—
Kabasawa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oinuma, Hitoshi; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtarou; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.

Hashan, Zain: *See*—
Pal, Uday B.; Chou, Kuo-Chih; Yuan, Shi; and Hashan, Zain, 5,443,699, Cl. 204-64.00R.

Hashiba, Soichiro: *See*—
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Hashiguchi, Tadato; Tachikawa, Michiyoshi; Ukai, Takeshi; Kaneko, Yoshio; Takahashi, Hiroshi; Seitoh, Takashi; Murai, Kazuo; Sakano, Yukio; Aida, Midori; Yamakawa, Shinji; and Hikita, Toshiya, to Ricoh Company, Ltd. Image forming apparatus which adds identification information to recorded images to prevent forgery. 5,444,518, Cl. 355-201.000.

Hashiguchi, Yukihide: *See*—
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Hashimoto, Akio: *See*—
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Hashimoto, Atsushi: *See*—
Mitsuda, Makoto; Ohtaka, Hideki; Sakakibara, Yoshio; Kobayashi, Kazuhiko; Fujii, Shozo; and Hashimoto, Atsushi, 5,444,580, Cl. 360-73.060.

Hashimoto, Hiroshi, to Daiwa Seiko, Inc. Reversal preventive device for fishing reel. 5,443,219, Cl. 242-300.000.

Hashimoto, Yoshiki: *See*—
Matsuo, Yasuhiro; and Hashimoto, Yoshiki, 5,444,342, Cl. 318-563.000.

Hashiura, Masayoshi: *See*—
Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Seto, Takashi; and Fukada, hinji, 5,444,206, Cl. 219-121.630.

Haskins, Julius L. Method of balancing and aligning wheels on trucks. 5,443,537, Cl. 33-193.000.

Hassel, ARild, to Alcatel Kabel Norge AS. Method and cable for transmitting communication signals and electrical power between two spaced-apart locations. 5,444,184, Cl. 174-113.00R.

Hassenboehler, Charles B., Jr.; and Wadsworth, Larry C., to University of Tennessee Reserch Corporation, The. Post-treatment of laminated nonwoven cellulosic fiber webs. 5,443,606, Cl. 55-486.000.

Hassner, Martin A.: *See*—
Cox, Charles E.; Fettweis, Gerhard P.; Hassner, Martin A.; and Schwiegelshohn, Uwe, 5,444,719, Cl. 371-37.100.

Hassi, Keini, to Murata Kikai Kabushiki Kaisha. Bobbin feeding system of automatic winder. 5,443,165, Cl. 209-602.000.

Hatachi Chemical Company, Ltd.: *See*—
Kaji, Makoto, 5,443,758, Cl. 252-582.000.

Hatakeyama, Shuichi: *See*—
Nakano, Akishi; Tsuyama, Kouichi; Kida, Akinari; Hatakeyama, Shuichi; and Urasaki, Naoyuki, 5,444,189, Cl. 174-262.000.

Hatamori, Akira: *See*—
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Hatta, Katsuhiro: *See*—
Fujita, Kenjiro; Usuki, Katsutoshi; and Hatta, Katsuhiro, 5,443,432, Cl. 477-155.000.

Hattori, Kiyoshi: *See*—
Marui, Kuniyoshi; Takahashi, Shinya; and Hattori, Kiyoshi, 5,444,765, Cl. 379-59.000.

Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsuro; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tamao, Koichi; and Aono, Kenji, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 5,444,473, Cl. 347-87.000.

Hattori, Yoshinori: *See*—
Sugimoto, Satoshi; Akita, Toshiki; Hattori, Yoshinori; and Ishiguro, Kazuyoshi, 5,442,974, Cl. 74-335.000.

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O'Donnell, Brian D.; Secrist, Donald C.; and Nottke, William H., 5,443,204, Cl. 229-242.000.
Sakich, John D.; and Comber, Michael G., 5,444,429, Cl. 338-21.000.

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Brock, Michael; Hardt, Peter; Klimmek, Helmut; and Stockhausen, Dolf, 5,443,631, Cl. 106-244.000.

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Salvador, Yvan; Gerard, Dominique; and Huet, Eric, 5,443,611, Cl. 65-507.000.

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Anzel, Bernard M., 5,443,231, Cl. 244-164.000.
Hanke, Dietmar, 5,444,250, Cl. 250-352.000.
Harris, Norman H.; Pierce, Brian M.; Townsend, Carl W.; and Dougherty, Thomas K., 5,443,746, Cl. 252-62.900.
Hobrock, Lowell M., 5,444,577, Cl. 359-885.000.
Hsu, Hui-Pin, 5,443,227, Cl. 244-3.120.
Newberg, Irwin L., 5,444,564, Cl. 359-187.000.
Redford, Gary R., 5,444,235, Cl. 250-208.100.

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Cambou, Bertrand F.; and Hughes, Donald L., 5,444,289, Cl. 257-510.000.

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Hullmann, Klaus: *See*—
Mutz, Bernd; Hullmann, Klaus; and Daler, Helmo, 5,443,343, Cl. 411-30.000.

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Mahoney, Dennis M.; and Mossaad, George S., 5,443,698, Cl. 204-59.0QM.

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Gartmann, Uwe; Idstein, Hermann; and Hultzsch, Guenter, 5,443,638, Cl. 118-50.000.

Hung, David T. H.: *See*—
Wolters, Harrie J. M.; Brooks, Philip M.; Hung, David T. H.; Motamedi, Richard C.; and Rosinski, Louis S., Jr., 5,442,858, Cl. 33-1.00N.

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Ruppel, Remy; Laurent, Pierre; and Hungler, Joel, 5,443,889, Cl. 428-172.000.

Hunter Industries, Inc.: *See*—
Woytowitz, Peter J.; Munger, Burton L., IV; Randolph, Scott W.; Hopkins, Larry K.; and Kreitzer, Donald L., 5,444,611, Cl. 364-145.000.

Hurley, Rick A.: *See*—
Innes, Mark E.; and Hurley, Rick A., 5,444,309, Cl. 307-125.000.

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Huber, Manfred; Mueller, Richard; and Schaller, Anton, 5,443,338, Cl. 409-7.000.

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Lamb, Douglas; and Elliott, Gordon, 5,443,360, Cl. 414-799.000.

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Popp, Franz; and Husler, Hans, 5,443,181, Cl. 222-95.000.

Hussey, Charles E., Jr.: *See*—
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Bellamy, Alain; Blanchet, Emmanuel; and Richard, Pascal, 5,443,245, Cl. 267-140.130.

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Godec, Richard D.; Kosenka, Paul K.; and Hutte, Richard, 5,443,991, Cl. 436-145.000.

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Gollner, Erwin; and Hutter, Horst, 5,442,951, Cl. 73-40.50R.

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Beisel, Hermann; Blaser, Peter T.; Hauck, Dieter; Hutzenlaub, Rudolf; Jager, Helmut; Jahn, Hans-Georg; Muller, Robert; Rodi, Anton; and Spiegel, Nikolaus, 5,443,006, Cl. 101-477.000.

Huvey, Michel: *See*—
Chaussepied, Jacques E. C.; Huvey, Michel; Odru, Pierre; and Sparks, Charles F., 5,443,099, Cl. 138-109.000.
Dawans, Francois; Huvey, Michel; and Lesage, Jean, 5,443,712, Cl. 204-400.000.

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Gose, William C.; and Hyche, Kenneth W., 5,443,910, Cl. 428-407.000.

Hyde, Jeffrey R.: *See*—
Beckman, George P.; Conroy, Gary M.; Hyde, Jeffrey R.; and Norris, Gene K., 5,444,111, Cl. 524-180.000.

Hydro-Quebec: *See*—
Bourgeois, Jean-Marc; Missout, Gilles; Lalonde, Francois; and Belanger, Jacques, 5,444,380, Cl. 324-529.000.

Hykes, Timothy W.: *See*—
Pflager, William W.; and Hykes, Timothy W., 5,443,413, Cl. 451-11.000.

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Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

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Hyslop, Gregory L.; Kraemer, John W.; and Mizgate, Kurt A., to McDonnell Douglas, Corp. System and method for designating a target for a remote aerial vehicle. 5,443,228, Cl. 244-3.140.

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Crafts, Harold S., 5,444,401, Cl. 327-108.000.
Lee, Steven S.; Fuchs, Kenneth P.; and Miller, Gayle W., 5,443,996, Cl. 437-200.000.

Hyundai Electronics Industries Co., Ltd.: *See*—
Chung, In S.; and Kim, Youn J., 5,444,021, Cl. 437-195.000.
Oh, Young N., 5,444,666, Cl. 365-230.080.

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Park, Sang Hoon; and Choi, Ho Young, 5,444,010, Cl. 437-60.000.

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Ibah, Inc.: *See*—
Owen, Albert J.; Yiv, Seang H.; and Sarkahian, Ani B., 5,444,041, Cl. 514-2.000.

Ibaraki, Toshikazu; and Kushi, Naoto, to Toyota Jidosha Kabushiki Kaisha. Engine power regulator. 5,443,558, Cl. 123-325.000.

Ibusuki, Makoto: *See*—
Seki, Shinji; Ibusuki, Makoto; and Nomoto, Yasuei, 5,444,618, Cl. 364-420.000.

Ichien, Kenji, to Optex Co., Ltd. Method and apparatus for checking the condition of adhesive application in packages. 5,444,248, Cl. 250-342.000.

Ichihashi, Motomi, to Mitsubishi Denki Kabushiki Kaisha. Packaged semiconductor pressure sensor including lead supports within the package. 5,444,286, Cl. 257-420.000.

Ichikawa, Hiroo. Method of production of reinforced composite corrugated body and method of formation of corrugating rollers for use therein. 5,443,779, Cl. 264-286.000.

Ichikawa, Hiroyuki: *See*—
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Ichikawa, Toru; and Tahara, Tomio, to Hosokawa Yoko Co., Ltd.; and Kamaya Kagaku Kogyo Co., Ltd. Container housing containing disposable container. 5,443,176, Cl. 220-403.000.

Ichisaomiya, Yoshiaki: *See*—
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Lloyd, John M.; and Stuart, Audrey G., 5,443,764, Cl. 264-15.000.

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Werle, Paulo; and Gettschald, Victor M. F. B., 5,444,350, Cl. 318-727.000.

Ida, Yasuhiko; and Sakamaki, Makoto, to Toyo Denso Kabushiki Kaisha. Ignition coil device for engine. 5,444,427, Cl. 336-198.000.

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Hosokawa, Chishio; Higashi, Hisahiro; and Kusumoto, Tadashi, 5,443,921, Cl. 428-690.000.
Matsumoto, Junichi, 5,444,134, Cl. 526-159.000.
Okada, Akihiko; and Masuyama, Akitoshi, 5,444,126, Cl. 525-391.000.

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Idstein, Hermann: *See*—
Gartmann, Uwe; Idstein, Hermann; and Hultzsch, Guenter, 5,443,638, Cl. 118-50.000.

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Igarashi, Tatsuhi: *See*—
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Ihara Chemical Industry Co., Ltd.: *See*—
Urushibata, Ikumi; Yoshimura, Takumi; Deguchi, Takeshi; Yonekura, Norihasa; Sakai, Junetsu; and Hayashi, Shigeru, 5,444,060, Cl. 514-25.600.

Ihara, Masaki: *See*—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, 5,444,152, Cl. 530-331.000.

Iijima, Osamu: *See*—
Kuroda, Mitsunobu; Nakano, Susumu; Yamada, Osamu; Iijima, Osamu; and Terada, Motoharu, 5,444,439, Cl. 340-825.070.

Iitsuka, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Data transfer method for transferring a data frame among a plurality of devices connected to a serial data bus. 5,444,847, Cl. 395-287.000.

Ikarashi, Tsunehiko: *See*—
Kohno, Masahide; Kuroda, Kazuhiro; Ishikawa, Yasushi; Sasaki, Hideki; Takasugi, Yasufumi; Ikarashi, Tsunehiko; and Inoue, Osamu, 5,443,913, Cl. 428-425.900.

Ikari, Hideyuki, to Hoshizaki Denki Kabushiki Kaisha. Ice detection device. 5,444,200, Cl. 200-61.200.

Ikeda, Kouji; Sogami, Atsushi; Yoshikawa, Masanori; Fujimori, Yoshihisa; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Thermal transfer recording apparatus. 5,444,465, Cl. 347-213.000.

Ikeda, Masahiro: *See*—
Shibata, Yasuo; and Ikeda, Masahiro, 5,444,802, Cl. 385-16.000.

Ikeda, Masaki: *See*—
Inoue, Kimio; Tanaka, Hisao; Katou, Toshio; Ikeda, Masaki; Wakimoto, Masao; and Hamamura, Katuhiko, 5,444,844, Cl. 395-161.000.

Ikeda, Shuji: *See*—
Yoshizumi, Keiichi; Fukuda, Kazushi; Ariga, Seiichi; Ikeda, Shuji; Saeki, Makoto; Nagai, Kiyoshi; Hashiba, Soichiro; Nishihara, Shinji; and Kanai, Fumiyuki, 5,444,012, Cl. 437-60.000.

Ikeda, Tadashi: *See*—
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Ikeda, Tadayoshi: *See*—
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Ikeda, Tetsu: *See*—
Kimura, Tadashi; Nagano, Yoshinobu; Tomita, Kazuyuki; and Ikeda, Tetsu, 5,443,689, Cl. 216-63.000.

Ikeda, Tetsuya: *See*—
Tabata, Yoneho; Otsubata, Kazushige; Ikeda, Tetsuya; Ueno, Kohji; Yoshida, Yuichi; Oshima, Akihiro; Suguchi, Tadao; and Kudoh, Hisashi, 5,444,103, Cl. 522-5.000.

Ikegami, Kiyoshi: *See*—
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Ikemoto, Fumihiko: *See*—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, 5,444,152, Cl. 530-331.000.

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Ishikawa, Fukuo; Konishi, Shuuichi; Nakamura, Katsumi; Ikemoto, Hideyuki; and Ishida, Toshio, 5,444,595, Cl. 361-86.000.

Ikkai, Yasufumi: *See*—
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Ikon Corporation: *See*—
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Ikonen, Ossi: *See*—
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Escher, Claus; Illian, Gerhard; Hemmerling, Wolfgang; and Wingen, Rainer, 5,443,754, Cl. 252-299.610.

Illig, Carl R.; Toner, John L.; Lee, Robert W.; and Baker, Edward J., to Sterling Winthrop, Inc. X-ray contrast compositions containing iodophenoxyalkanes and cellulose derivatives. 5,443,814, Cl. 424-9.450.

Illingworth, Lewis, to Avionic Instruments, Inc. Method and apparatus for three-phase voltage doubling. 5,444,357, Cl. 363-87.000.

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Holsen, Thomas M.; and Noll, Kenneth E., 5,443,271, Cl. 73-863.220.

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Burlington, Geoffrey M., 5,443,196, Cl. 227-131.000.
Goldman, Frank M.; Chambers, Robert V.; Clippard, William L., III; Hess, Steven M.; and Otto, William E., 5,444,634, Cl. 364-474.110.
Gupta, Harish C., 5,443,345, Cl. 411-441.000.

Ilnycky, Peter. Shingles. 5,442,888, Cl. 52-524.000.

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Imachi, Hiroshi: *See*—
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Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; and Taguchi, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Thermal dye transfer printing method and intermediate media therefor. 5,444,037, Cl. 503-227.000.

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Imajo, Yasutaka: *See*—
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Imamura, Isao, to Canon Kabushiki Kaisha. Process for removing resist. 5,443,942, Cl. 430-329.000.

Imanaka, Yasuhiro: *See*—
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Imbanner, William P., to SGS-Thomson Microelectronics, Inc. Integrated thin film approach to achieve high ballast levels for overlay structures. 5,444,292, Cl. 257-580.000.

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IMP, Inc.: *See*—
Klein, Hans W.; and Robinson, Moises E., 5,444,579, Cl. 360-67.000.

Imperial Chemical Industries plc: *See*—
De Vos, Rik; and Biesmans, Guy, 5,444,101, Cl. 521-131.000.
Roberts, David A.; Russell, Simon T.; and Pearce, Robert J., 5,444,071, Cl. 514-312.000.
Stott, John A.; and Allen, John G., 5,443,741, Cl. 210-726.000.

Impink, A. J., Jr.: *See*—
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Implemed, Inc.: *See*—
Sfakianos, Peter; and Milder, Fredric L., 5,443,474, Cl. 606-167.000.

Implex Corporation: *See*—
Averill, Robert G.; and Cohen, Robert C., 5,443,519, Cl. 623-32.000.
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Imsco, Inc.: *See*—
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Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, to Kabushiki Kaisha Toshiba. Cleaning compositions. 5,443,747, Cl. 252-94.000.
Inamasa, Kenji: *See*—
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Inazawa, Shinji: *See*—
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Inber, Jacob: *See*—
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Indiana Mills & Manufacturing, Inc.: *See*—
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Information and Graphics Systems, Inc.: *See*—
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Ing. Erich Pfeiffer GmbH & Co. K.G.: *See*—
Fuchs, Karl H., 5,443,185, Cl. 222-321.800.
Ingersoll-Rand Company: *See*—
Martin, Daniel T.; and Bichler, Devin D., 5,443,369, Cl. 417-53.000.
Ingling, Theodore R.; and Manhardt, Gary B., to General Electric Company. Fan blade for blade-out protection. 5,443,365, Cl. 416-193.00A.
Ingram, James E.: *See*—
Burns, Henry K., III; Burns, Hubert E.; DiNardo, Thomas P.; and Ingram, James E., 5,442,892, Cl. 53-53.000.
Inion, Henri: *See*—
Gubin, Jean; Chatelain, Pierre; Inion, Henri; and Rosseels, Gilbert, 5,444,056, Cl. 514-18.300.
Inman, John K.; and Robey, Frank A., to United States of America, Health and Human Services. Amino acid derivative and bromoacetyl modified peptides for the preparation of synthetic peptide polymers, conjugated peptides, and cyclic peptides. 5,444,150, Cl. 530-300.000.
Innes, Mark E.; and Hurley, Rick A., to Eaton Corporation. Reduced wattage PLC interface. 5,444,309, Cl. 307-125.000.
Innovative Products Unlimited, Inc.: *See*—
Focha, Arthur J., 5,443,304, Cl. 297-467.000.
Inoue, Kimio; Tanaka, Hisao; Kasoe, Toshio; Ikeda, Masaki; Wakimoto, Masao; and Hamamura, Katuhiko, to NSK Ltd. Figure drawing apparatus and inventory purchasing system using the same. 5,444,844, Cl. 395-161.000.
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Inoue, Osamu: *See*—
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Insall, John N., to Zimmer, Inc. Knee position indicator. 5,443,518, Cl. 623-20.000.
Institut Francais du Petrole: *See*—
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Dawans, Francois; Huvey, Michel; and Lesage, Jean, 5,443,712, Cl. 204-400.000.
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Chandonnet, Alain; and Larose, Gilles, 5,444,723, Cl. 372-14.000.
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Ameronges, Helen M.; Nestra, Marian R.; and Knehenbuhl, Jean-Pierre, 5,443,832, Cl. 424-278.100.
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Wederhorn, Markku; and Kopsala, Panu, 5,444,754, Cl. 378-38.000.
Integral Information Systems: *See*—
Shetye, Mohan S.; and Bodos, Paul E., 5,444,192, Cl. 178-18.000.
Intel Corporation: *See*—
Banerjee, Koushik; Natarajan, Siva; Mallik, Debendra; and Jain, Praveen, 5,444,602, Cl. 361-705.000.
Bauer, Mark; and Javanifard, Johnny, 5,444,656, Cl. 365-189.010.
Bowers, Richard A.; Martin, Philip; and Jacobs, Robert A., 5,444,856, Cl. 395-200.100.
Gardner, Donald S., 5,444,022, Cl. 437-195.000.
Rowland, Stephen T., 5,444,857, Cl. 395-309.000.
Schutz, Joseph D., 5,444,298, Cl. 257-691.000.
Intermedics, Inc.: *See*—
Housworth, Craig M.; and Schroeppel, Edward A., 5,443,485, Cl. 607-28.000.
International Bioview, Inc.: *See*—
Elmore, J. Charles, 5,443,057, Cl. 600-133.000.
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Agata, Hiroaki; Imei, Toshitaka; Kamijo, Noboru; and Takahashi, Toshiki, 5,443,326, Cl. 400-715.000.
Aitken, John M.; Beyer, Klaus D.; Crowder, Billy L.; and Greco, Stephen E., 5,444,015, Cl. 437-182.000.
Austvold, Shawn M.; Bigus, Joseph P.; Henckel, Jonathan D.; and Hospers, Paul A., 5,444,824, Cl. 395-76.000.
Bain, Charles L.; Chu, Fai; Dinicola, Paul D.; and Lawless, John J., 5,444,825, Cl. 395-143.000.
Basso, Claude; Calvignac, Jean; and Verplanken, Fabrice, 5,444,692, Cl. 370-13.000.
Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,444,287, Cl. 257-467.000.
Childers, Edwin R., III; Henry, Michael; and Nemoto, Masaru, 5,444,690, Cl. 369-263.000.
Cox, Charles E.; Pettweis, Gerhard P.; Hassner, Martin A.; and Schwiegelshohn, Uwe, 5,444,719, Cl. 371-37.100.
Cypher, Robert E.; and Gravano, Luis, 5,444,701, Cl. 370-60.000.
Glaser, Howard J.; Strain, Joanna M.; and Tuckey-Smith, Angus T., 5,444,841, Cl. 395-149.000.
Goubault, Eric; Lascon, Emmanuel; Menez, Jean; and Raimondo, Catherine, 5,444,488, Cl. 348-414.000.
Gruetzner, Matthias; and Starke, Cordt W., 5,444,715, Cl. 371-22.300.
Hartman, Robert C., Jr., 5,444,780, Cl. 380-30.000.
Hu, Hung L.; and Tsang, Ching H., 5,444,589, Cl. 360-113.000.
Kerth, Randall T., 5,442,850, Cl. 29-603.000.
Kokkosoulis, George D.; Muyshondt, Jorge E.; and Wilkie, Bruce J., 5,443,390, Cl. 439-76.100.
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Lisle, Ronald J., 5,444,818, Cl. 395-2.670.
Mathis, Joseph R.; Oehler, Richard R.; and Zeitler, Carl, Jr., 5,444,854, Cl. 395-825.000.
Merialdo, Bernard, 5,444,617, Cl. 364-419.100.
Moitis, Richard; Rolland, Jean-Marie; and Renard, Jacques, 5,444,391, Cl. 326-16.000.
Olnowich, Howard T.; Barker, Thomas N.; Kogge, Peter M.; and Vandling, Gilbert C., III, 5,444,705, Cl. 370-85.600.
Thompson, Stephen P., 5,444,855, Cl. 395-287.000.
Tisdale, Stephen L.; and Viehbeck, Alfred, 5,443,865, Cl. 427-304.000.
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Jones, Fletcher; Muroski, Kenneth J., Jr.; and Robinson, Bennett, 5,443,686, Cl. 216-37.000.
International Mobile Satellite Organization: *See*—
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Miner, Jon S., 5,442,817, Cl. 2-195.100.
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Uflacker, Renan, 5,443,078, Cl. 128-772.000.
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Siekman, Allen R.; and Nachod, Julius E., III, 5,442,823, Cl. 5-653.000.
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Underwood, Ted T., Jr., 5,443,344, Cl. 411-43.000.
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Isawa, Kazuyuki; Yamamoto, Ayako; Itoh, Makoto; Adachi, Seiji; and Yamauchi, Hisao, to Tohoku Electric Power Copany, Incorporated; Sumitomo Electric Industries, Ltd.; Matsushita Electric Industrial Co., Ltd.; and International Superconductivity Technology Center. (Hg,Pb)-Ba-Ca-Cu-O superconductor and method of manufacturing the same. 5,444,039, Cl. 505-125.000.
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Ishibe, Shouichi: *See*—
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Ishida, Kentaroo: *See*—
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Ishida, Toshio: *See*—
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Ishihara, Hiroki: *See*—
Yamanaka, Motosuke; Hoshiko, Tomonori; Suda, Shinji; Yoneda, Naoki; Mori, Nobuyuki; Shino, Mitsumasa; Ishihara, Hiroki; Seito, Mamoru; and Matsuoka, Toshiyuki, 5,444,083, Cl. 514-429.000.
Ishihara, Kazuya; Onishi, Shigeo; and Komai, Masaya, to Sharp Kabushiki Kaisha. Crystallizing method of ferroelectric film. 5,443,030, Cl. 117-8.000.
Ishihara, Yoshio: *See*—
Ohmi, Tadahiro; Ishihara, Yoshio; and Fukushima, Ryosuke, 5,444,379, Cl. 324-450.000.
Ishii, Isamu: *See*—
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Ishii, Kazuo: *See*—
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Ishii, Takaaki: *See*—
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Ishii, Tomoyuki: *See*—
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Yamamoto, Yoshitaka; and Ishii, Yutaka, 5,444,651, Cl. 365-101.000.
Ishikawa, Fukuo; Koniahi, Shunichi; Nakamura, Katsumi; Ikemoto, Hideyuki; and Ishida, Toshio, to Nippondenso Co., Ltd.; and Anden Co., Ltd. Load drive apparatus including power transistor protection circuit from overcurrent. 5,444,595, Cl. 361-86.000.
Ishikawa, Hiroyuki; Haba, Shinji; Ebina, Kouichi; Takeda, Takashi; Ito, Hirokazu; and Seki, Hideya, to Seiko Epson Corporation. Optical reporting reproducing device having fixed and movable optical systems. 5,444,683, Cl. 369-44.280.
Ishikawa, Keiichi: *See*—
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Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, to Banyu Pharmaceutical Co., Ltd. Endothelin antagonistic peptide derivatives. 5,444,152, Cl. 530-331.000.
Ishikawa Manufacturing Co., Ltd.: *See*—
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Ishikawa, Osamu: *See*—
Tsurusoka, Katsuhiko; Nishida, Shozo; Wakamori, Masafumi; Tanaka, Takemitsu; Yada, Masaaki; Ishikawa, Osamu; and Miki, Hiroyuki, 5,444,118, Cl. 524-828.000.
Ishikawa, Ryo, to Casio Computer Co., Ltd. Display data write control device. 5,444,458, Cl. 345-98.000.
Ishikawa, Shinji: *See*—
Yui, Dai; Ishikawa, Shinji; Saganuma, Hiroshi; and Semura, Shigeru, 5,444,804, Cl. 385-49.000.
Ishikawa, Yasuki: *See*—
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Kohno, Masahide; Kuroda, Kazuhiro; Ishikawa, Yasushi; Sasaki, Hideki; Takasugi, Yasufumi; Ikarashi, Tsunehiko; and Inoue, Osamu, 5,443,913, Cl. 428-425.900.
Ishikawa, Yutaka; and Nomura, Shingo, to Sharp Kabushiki Kaisha. Digital FM demodulation apparatus demodulating sampled digital FM modulated wave. 5,444,416, Cl. 329-341.000.
Ishikawajima Harima Heavy Industries Co., Ltd.: *See*—
Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Masao, Mizukami; Fujita, Masaru; Miyazawa, Sadao; and Aruga, Noriaki, 5,444,316, Cl. 310-49.008.
Ishinabe, Iwao: *See*—
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Ishiwata, Hiroshi; Ohishi, Takashi; Ueda, Atsushi; and Obi, Naotake, to Zexel Corporation. Fuel injection system. 5,443,047, Cl. 123-446.000.
Ishiwata, Koji; and Tobita, Satoru, to Sony Corporation. Method and apparatus for recording signals with sub-signals indicative of outline of the signals. 5,444,681, Cl. 369-32.000.
Ishizaka, Junji: *See*—
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Ishizuka, Tsuneo: *See*—
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Isogami, Hisashi: *See*—
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Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Seto, Takashi; and Fukuda, hinji, to Hitachi, Ltd. Structure of metal container having trunk pipe and branch pipe, and manufacturing method and apparatus therefor. 5,444,206, Cl. 219-121.630.
Istomin, Sergei S.: *See*—
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Itagaki, Junji: *See*—
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Itakura, Tetsuro: *See*—
Kimura, Tomohisa; and Itakura, Tetsuro, 5,444,413, Cl. 327-562.000.
Itani, Hitoshi; Yamasaki, Yuji; and Murakami, Hirotoshi, to Sumitomo Rubber Industries, Ltd. Silicone rubber roller for electrophotography and method of producing the same. 5,443,873, Cl. 428-36.900.
Ito, Akihiro': *See*—
Hayashi, Masateru; Ishii, Kazuo; Ito, Akihiro'; Kawai, Hidenao; Hirao, Yasuhiko; and Iokawa, Hiroshi, 5,443,116, Cl. 165-149.000.
Ito, Akio; Ichikawa, Hiroyuki; and Abe, Yoshinori, to Canon Kabushiki Kaisha. Image forming apparatus for forming a pattern image corresponding to a color of an input image. 5,444,556, Cl. 358-501.000.
Ito, Akira: *See*—
Seki, Yoichi; Saito, Hiroyuki; Ito, Akira; Ishii, Isamu; and Iwamatsu, Yoshiyuki, 5,444,511, Cl. 354-403.000.
Ito, Daiji: *See*—
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Ito, Hirokazu: *See*—
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Ito, Kazuhiko: *See*—
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Ito, Shigeru, to Asada Company, Limited. Work table apparatus for plate material processing machine. 5,442,985, Cl. 83-155.000.
Ito, Taka-aki: *See*—
Tanaka, Yoshiyuki; Abe, Masatoshi; and Ito, Taka-aki, 5,444,596, Cl. 361-120.000.
Ito, Toru: *See*—
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Ito, Tosikazu: *See*—
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Itoh, Keizou: *See*—
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Itoh, Makoto: *See*—
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Itoh, Munehiko; Arakawa, Masao; and Mittra, Raj, to Matsushita Electric Works, Ltd. Dual frequency antenna. 5,444,452, Cl. 343-700.0MS.

Itou, Takeo: *See*—
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ITT Corporation: *See*—
Gotthelf, Jeffrey B., 5,443,083, Cl. 137-484.800.
Palmer, Gary L., 5,444,597, Cl. 354-82.000.
Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., 5,444,568, Cl. 359-400.000.

Ittah, Jean; and Plessis, Olivier, to Connecteurs Cinch. Female electrical contact member. 5,443,392, Cl. 439-851.000.

Iwamatsu, Yoshiyuki: *See*—
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Iwasaki, Akiko; Toyofuku, Kunitaka; Uchida, Kyoko; and Fujino, Masatoshi, to New Oil Paper Co., Ltd. Thermosensitive recording material. 5,444,036, Cl. 503-209.000.

Iwasaki, Jun: *See*—
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Iwata, Mitsugu: *See*—
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Iwata, Toshio: *See*—
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Iwata, Yasuo: *See*—
Ogata, Taizo; Hanazawa, Yuji; Iwata, Yasuo; and Shigeta, Toshio, 5,442,894, Cl. 53-234.000.

Iwayama, Takashi; Miyagawa, Atsushi; and Inaba, Masaichi, to Nippon Mektron, Ltd. Flexible circuit wiring board and method of producing the same. 5,444,188, Cl. 174-261.000.

Izawa, Kaoru; Hayashi, Shigeyoshi; and Hirai, Jun, to Rohm Co., Ltd. Echo attaching circuit and audio device using the same. 5,444,785, Cl. 381-63.000.

Izawa, Naoyuki; Aso, Yasuhiro; Uchida, Yoshihiro; and Kakuma, Satoshi, to Fujitsu Limited. Elastic store memory circuit. 5,444,658, Cl. 365-189.070.

Izhar, Shamay; and Izsak, Eva, to State of Israel, Ministry of Agriculture. Infra short-day strawberry types. 5,444,179, Cl. 800-200.000.

Izsak, Eva: *See*—
Izhar, Shamay; and Izsak, Eva, 5,444,179, Cl. 800-200.000.

Izuchi, Syuichi: *See*—
Nakajima, Yasumasa; Izuchi, Syuichi; Imachi, Hiroshi; and Fukutome, Hiroyuki, 5,443,927, Cl. 429-215.000.

J. Vogel Premium Water Company: *See*—
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JAC Products, Inc.: *See*—
Cucheran, John S.; and Aftanas, Jeffrey M., 5,443,190, Cl. 224-405.000.

Jackman, Ann L.: *See*—
Bisset, Graham M. F.; Jackman, Ann L.; and Jodrell, Duncan I., 5,444,061, Cl. 514-259.000.

Jackson, Gail; Fahim, Raafat; Tan, Larry; Chong, Pele; Vose, John; and Klein, Michel, to Connaught Laboratories Limited. Purification of a pertussis outer membrane protein. 5,444,159, Cl. 530-412.000.

Jackson, Ricky L.: *See*—
Steiner, Carl A.; and Jackson, Ricky L., 5,443,726, Cl. 210-393.000.

Jacobi, Karl W., to adatomed Pharmazeutische und medizintechnische Gesellschaft mbH. Intraocular lens set. 5,443,507, Cl. 623-6.000.

Jacobs, Eino, to U.S. Philips Corporation. CMOS integrated circuit having improved power-supply filtering. 5,444,288, Cl. 257-503.000.

Jacobs, Moises; Slater, Charles R.; and Smith, Kevin W., to Symbiosis Corporation. Sharply angled kelly (Jacobs) clamp. 5,443,480, Cl. 606-207.000.

Jacobs, Robert A.: *See*—
Bowers, Richard A.; Martin, Philip; and Jacobs, Robert A., 5,444,856, Cl. 395-200.100.

Jacobs, Robert S.: *See*—
Fenical, William H.; Jacobs, Robert S.; and Jensen, Paul R., 5,444,043, Cl. 514-9.000.

Jacobsen, Jeffrey: *See*—
Spitzer, Mark B.; Salerno, Jack P.; and Jacobsen, Jeffrey, 5,444,557, Cl. 359-59.000.

Jacobsen, Kenneth H.; and Cole, Louis F. Unitary check valve. 5,443,183, Cl. 222-145.600.

Jager, Helmut: *See*—
Beisel, Hermann; Blaser, Peter T.; Hauck, Dieter; Hutzenlaub, Rudolf; Jager, Helmut; Jahn, Hans-Georg; Muller, Robert; Rodi, Anton; and Spiegel, Nikolaus, 5,443,006, Cl. 101-477.000.

Jahn, Hans-Georg: *See*—
Beisel, Hermann; Blaser, Peter T.; Hauck, Dieter; Hutzenlaub, Rudolf; Jager, Helmut; Jahn, Hans-Georg; Muller, Robert; Rodi, Anton; and Spiegel, Nikolaus, 5,443,006, Cl. 101-477.000.

Jain, Praveen: *See*—
Banerjee, Koushik; Natarajan, Siva; Mallik, Debendra; and Jain, Praveen, 5,444,602, Cl. 361-705.000.

Jain, Praveen K.; Edwards, Gary A.; Hubbard, Carl; and Bannard, Douglas R., to Northern Telecom Limited. High frequency power distribution system. 5,444,608, Cl. 363-17.000.

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Tsuruoka, Katsuhiko; Nishida, Shozo; Wakamori, Masafumi; Tanaka, Takemitsu; Yada, Masaaki; Ishikawa, Osamu; and Miki, Hiroyuki, 5,448,118, Cl. 524-828.000.

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Szegda, Andrew, 5,444,810, Cl. 385-139.000.

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Venbrux, Anthony, 5,443,497, Cl. 623-1.000.

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Strobl, Georg, 5,442,849, Cl. 29-597.000.

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Johnson, Roger D.: *See*—
Farnsworth, John T.; and Johnson, Roger D., 5,443,092, Cl. 137-542.000.

Johnson Service Company: *See*—
Divjak, August A., 5,444,644, Cl. 364-550.000.
Woest, Karen L., 5,444,851, Cl. 395-200.100.

Johnson, Stephen R., Jr.: *See*—
Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Miller, Andrew J.; Dobyns, Patrick E.; and Johnson, Stephen R., Jr., 5,444,849, Cl. 395-200.090.

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Van Loan, David R.; Johnston, Charles J.; and Swart, Mark A., 5,444,387, Cl. 324-754.000.

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Jonese, David R. Disposable baby change kit. 5,443,161, Cl. 206-581.000.

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Welser, Wolfgang, 5,443,137, Cl. 182-222.000.

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Hornung, Barbara; Jungbauer, Dietmar; and Masero, Javier, 5,443,792, Cl. 252-299.010.

Junino, Alex; Bonaventure, Nicole; and Lagrange, Alain, to L'Oreal. Keratinous fiber dyeing compositions and processes utilizing oxidation dye precursors in combination with dimethoxy meta-aminophenol couplers. 5,443,596, Cl. 8-442.000.

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Greenwood, Jonathon; Hendricks, Douglas W.; and Juskey, Frank, 5,444,303, Cl. 257-786.000.

Just, Jan; and Reuter, Dieter, to Dr. Ing. h.c.F. Porsche AG. Wind protector for a passenger vehicle with a rearwardly folding top. 5,443,296, Cl. 296-107.000.

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Bedi, Ram D.; and van der Griendt, Adrianus J., 5,443,138, Cl. 184-1.500.

Kassinen, Pentti J.; Lilja, Launo L.; Makitalo, Valto J.; and Valli, Lasse J., to Outokumpu Engineering Contractors Oy. Method for oxidizing pulverous fuel with two gases having different oxygen contents. 5,443,620, Cl. 75-629.000.

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Zhou, Stephen Q.; Sy, Jennifer C.; Berteig, Michelle A.; and Richards, Thomas P., 5,444,106, Cl. 523-107.000.

Kabuki, Kimiaki: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, 5,443,747, Cl. 252-94.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
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Kabushiki Kaisha Kobe Seiko Sho: *See*—
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kawakami, Hideaki; and Enomae, Satoru, 5,443,436, Cl. 483-9.000.
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Kabushiki Kaisha Shinkawa: *See*—
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Kabushiki Kaisha Toshiba: *See*—
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Hara, Hiroyuki; and Watanabe, Yoshinori, 5,444,654, Cl. 365-177.000.
Honda, Keizoh; Makino, Yoshinobu; Kimura, Seiichiro; Honda, Tsutomu; and Tachikawa, Nobuo, 5,444,213, Cl. 219-121.760.
Honda, Masami; Takada, Masaki; and Miura, Yousuke, 5,444,601, Cl. 361-683.000.
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Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, 5,443,747, Cl. 252-94.000.
Kai, Naoyuki, 5,444,834, Cl. 395-134.000.
Kamimishi, Katsuji, 5,444,561, Cl. 359-158.000.
Kawashima, Kazuhiro; and Serizawa, Mutsumu, 5,444,736, Cl. 375-219.000.
Kimura, Tomohisa; and Itakura, Tetsuro, 5,444,413, Cl. 327-562.000.
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Marui, Kuniyoshi; Sato, Goichi; Ishii, Takaaki; Takechi, Shinji; Sawa, Buntaro; and Sato, Hiroshi, 5,444,867, Cl. 455-89.000.
Matsuda, Hidemi; Itou, Takeo; Chigusa, Hisashi; and Abe, Michiyo, 5,444,329, Cl. 313-479.000.
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Nagazawa, Makoto, 5,444,403, Cl. 327-172.000.
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Sawa, Buntaro; and Hoshino, Makoto, 5,444,306, Cl. 307-9.100.
Sekine, Makoto; Horioka, Keiji; Otsuo, Haruo; Okumura, Katsuya; Hasegawa, Isahiro; and Narita, Masaki, 5,444,207, Cl. 219-121.430.
Takahashi, Masaki; Kurihara, Teruo; Komiyama, Nakabe; and Mikami, Manabu, 5,444,525, Cl. 355-327.000.
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Tomita, Toyofumi, 5,443,552, Cl. 73-861.170.
Torii, Kenichi, 5,444,863, Cl. 455-83.000.

Tsuchiaki, Masakatsu, 5,444,007, Cl. 437-35.000.
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Yoshikawa, Kuniyoshi, 5,444,655, Cl. 365-185.000.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
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Kabushiki Kaisha Yakult Honsha: *See*—
Yamamoto, Takaharu; Morotomi, Masami; and Tanaka, Ryuichiro, 5,443,951, Cl. 435-6.000.
Kabushikikaisha Wacom: *See*—
Yamamami, Tsuguya; and Chikami, Toshihide, 5,444,190, Cl. 178-18.000.
Kadlecek, Alois; Laver, Kenneth J.; and Parise, Jack A., to Snap-on Incorporated. Pull-out work platform for drawer. 5,443,311, Cl. 312-308.000.
Kadosawa, Tsuneaki: *See*—
Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Eiji; and Ogiwara, Satoshi, 5,444,833, Cl. 395-133.000.
Kadota, Michio: *See*—
Minami, Kunio; and Kadota, Michio, 5,444,322, Cl. 310-313.00D.
Kagan, Andrew; Selden, Gerald P.; and Wickstead, James C. Miniature disposable blood flow monitor. 5,443,072, Cl. 128-691.000.
Kagasaki, Takeshi: *See*—
Kobama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,443,972, Cl. 435-125.000.
Kahata, Shin: *See*—
Yoshimura, Isao; and Kahata, Shin, 5,443,765, Cl. 264-22.000.
Kahonen, Hannu; and Pitkanen, Jukka, to Abloy Security Ltd Oy. Padlock. 5,442,941, Cl. 70-34.000.
Kai, Junichi: *See*—
Satoh, Takamasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Ose, Yoshihisa; Yamada, Keiji; and Oshima, Toru, 5,444,257, Cl. 250-398.000.
Kai, Naoyuki, to Kabushiki Kaisha Toshiba. Filling pattern generation apparatus and method including correction for pattern overflow. 5,444,834, Cl. 395-134.000.
Kai, Yoshiaki: *See*—
Murai, Mikio; Takahashi, Kiyoshi; Odagiri, Masaru; Kai, Yoshiaki; Suzuki, Takashi; and Kunieda, Toshiaki, 5,443,888, Cl. 428-143.000.
Kaide, Tadayoshi: *See*—
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Kaimoto, Yuko: *See*—
Takechi, Satoshi; Takahashi, Makoto; and Kaimoto, Yuko, 5,443,690, Cl. 430-286.000.
Kaji, Hitoshi; and Yoshioka, Toshiaki, to Chiyoda Corporation. Pipestill heater and method for controlling combustion in pipestill heater. 5,443,040, Cl. 122-13.100.
Kaji, Makoto, to Hatachi Chemical Company, Ltd. Non-linear optical material containing steroidal ketone compound. 5,443,758, Cl. 252-582.000.
Kajima Corporation: *See*—
Nishimura, Isao; Sakamoto, Mitsuo; and Sasaki, Katsuyasu, 5,442,883, Cl. 52-167.200.
Kajiwara, Jiro: *See*—
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Kakuma, Satoshi: *See*—
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Kalota, Dennis J.; and Silverman, David C., to Monsanto Company. Process for metal cleaning. 5,443,651, Cl. 134-2.000.
Kamada, Hiroshi; Kubota, Takashi; and Shiohara, Morito, to Fujitsu Limited. Moving body recognition apparatus. 5,444,791, Cl. 382-190.000.
Kamaya Kagaku Kogyo Co., Ltd.: *See*—
Ichikawa, Toru; and Tahara, Tomio, 5,443,176, Cl. 220-403.000.
Kamehara, Nobuo: *See*—
Yokoyama, Hironitsu; Omote, Koji; Suzuki, Hitoshi; Tsukada, Mineharu; Kamehara, Nobuo; and Niwa, Koichi, 5,443,786, Cl. 419-9.000.
Kamei, Kazuo: *See*—
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Kamei, Toshio: *See*—
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Kamel, Mostafa M.; and Moore, Greg A., to Cummins Engine Company, Inc. Altitude compensation for spark-ignited turbocharged internal combustion engines. 5,442,920, Cl. 60-602.000.
Kamijo, Noboru: *See*—
Agata, Hiroaki; Imai, Toshitaka; Kamijo, Noboru; and Takahashi, Toshiki, 5,443,320, Cl. 400-713.000.
Kamikawa, Yuuji, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Apparatus and method for drying substrates. 5,443,540, Cl. 34-471.000.
Kaminishi, Katsuji, to Kabushiki Kaisha Toshiba. Optical transmission apparatus. 5,444,561, Cl. 359-158.000.
Kamitani, Takayuki: *See*—
Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyoten, Masayoshi; and Saito, Takeshi, 5,444,336, Cl. 315-307.000.
Kamiya, Fumihiro: *See*—
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Kamizono, Akihito: *See*—
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Kamohara, Hideaki: *See*—
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Kampfer, Robert D.: *See*—
Perrington, Kenneth J.; and Kampfer, Robert D., 5,444,035, Cl. 303-201.000.
Kan, Shoichi; and Araki, Tomoyuki, to Canon Kabushiki Kaisha. Sheet feeding apparatus. 5,443,251, Cl. 271-16.000.
Kanagawa, Shuichi: *See*—
Hirano, Yasuhiro; Endo, Yasuhiro; Takebe, Kazuo; Shibata, Mitsuhiro; Kanagawa, Shuichi; Shiomi, Yutaka; Akiba, Masatsugu; and Kitayama, Shinichiro, 5,444,165, Cl. 548-521.000.
Kanai, Fumiyuki: *See*—
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Kanda, Yoshihiro: *See*—
Yamada, Shinichi; Moriya, Mitsurou; Yamaguchi, Hiroyuki; Yamaguchi, Osamu; Kanda, Yoshihiro; and Matsumoto, Yasuki, 5,444,682, Cl. 369-32.000.
Kanebo Ltd.: *See*—
Nakajima, Kazuhiko; Ando, Satoshi; Dohi, Akira; and Yoshitome, Hideo, 5,443,812, Cl. 423-700.000.
Kaneko, Isao: *See*—
Kobama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,443,972, Cl. 435-125.000.
Kaneko, Takashi: *See*—
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Kaneko, Yoshio: *See*—
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Kaneyuki, Kazutoshi; and Nishimura, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Charging generator for a vehicle. 5,444,355, Cl. 322-58.000.
Kang, Chil-Yong; and Luo, Lizhong, to Korea Green Cross Corporation, a part interest. Chimeric HIV-2 gag particles. 5,443,828, Cl. 424-188.100.
Kang, Deuk C.: *See*—
Choo, Gyoung S.; and Kang, Deuk C., 5,444,498, Cl. 348-733.000.
Kang, Geung-won: *See*—
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Kanoll, Hiroshi, to Sanden Corporation. Coupling mechanism for a compressor. 5,443,372, Cl. 417-319.000.
Kansai Electric Power Co., Ltd.: *See*—
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Kansai Paint Co., Ltd.: *See*—
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Kanter, Fred W.: *See*—
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Kanzaki Paper Manufacturing Co., Ltd.: *See*—
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Karabedian, James A.; and Blackwelder, Maurice W., to Owens-Illinois Plastic Products Inc. Polystyrene foam sheet manufacture. 5,443,769, Cl. 264-46.100.
Karalus, Andrea L.: *See*—
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Sinn, Rolf, 5,443,195, Cl. 225-104.000.
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Kataoka, Shozo; and Ohnishi, Masahito, to Matsushita Electric Works, Ltd. Apparatus for operating discharge lamps. 5,444,310, Cl. 307-125.000.
Katayama, Ichiro. Sintered diamond drill bits and method of making. 5,443,337, Cl. 408-145.000.
Katayama, Toshiharu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and manufacturing method thereof. 5,444,278, Cl. 257-296.000.
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Kawabata, Atsushi; Miura, Shuuichi; Yamasshi, Kimiya; Taki, Yuji; Kobayashi, Yoshiki; and Tasifuji, Shinya, to Hitachi, Ltd. System for centrally controlling letter data. 5,444,829, Cl. 395-100.000.
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Kawaguchi, Masakiyo; Yoneda, Keiichi; Hirasaka, Naoto; and Akiyama, Akira, to Toyota Jidosha Kabushiki Kaisha. Underbody structure. 5,443,280, Cl. 280-660.000.
Kawaguchi, Yoji; Amano, Hirofumi; and Kashihara, Satoshi, to Toyo Linoleum Company Limited. Electrically conductive decorative material. 5,443,897, Cl. 428-237.000.
Kawai, Hidenao: *See*—
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Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Eiji; and Ogiwara, Satoshi, to Canon Kabushiki Kaisha. Graphic editing apparatus with grid size selection. 5,444,833, Cl. 395-133.000.
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Kawajiri, Yukio: *See*—
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Kawakami, Hideaki; and Enomae, Satoru, to Kabushiki Kaisha Komatsu Seisakusho. Automatic exchanging device of cross bar of transfer feeder and control system therefor. 5,443,436, Cl. 483-9.000.
Kawakami, Hiroyuki: *See*—
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Kawase, Haruo; Matsumoto, Katsunori; and Nakamura, Shinichi, to Mitsubishi Materials Corporation. Gun drill. 5,443,585, Cl. 408-199.000.
Kawashima, Kazuhiro; and Serizawa, Mutsumu, to Kabushiki Kaisha Toshiba. Radio communication apparatus having an automatic frequency control circuit for controlling a transmission frequency on the basis of a reception frequency. 5,444,736, Cl. 375-219.000.
Kawate, Keith W.: *See*—
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Ruppel, Remy; Laurent, Pierre; and Hungler, Joel, 5,443,889, Cl. 428-172.000.
Kazmerski, Lawrence L., to Midwest Research Institute. Atomic-level imaging, processing and characterization of semiconductor surfaces. 5,444,260, Cl. 250-492.300.

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Keddy, Rex J.: *See*—
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Keeler, Russell L.: *See*—
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Keen, Robert J. Fishing boat mountable on jet-ski-type watercraft and combination thereof. 5,443,028, Cl. 114-248.000.

Keese, Jack D.; and King, Peter H., to Duke University. Methods and compositions useful in the recognition, binding and expression of ribonucleic acids involved in cell growth, neoplasia and immunoregulation. 5,444,149, Cl. 530.300.000.

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Kelland, Stewart B., to NCR Corporation. Method for detecting machine printed monetary amounts in binary images. 5,444,793, Cl. 382-131.000.

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Kellogg Company: *See*—
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Kelly, Brendan P., to U.S. Philips Corporation. Temperature sensing device and a temperature sensing circuit using such a device. 5,444,219, Cl. 219-505.000.

Kelly, Ronald L.; and Price, Mike, to Crown Cork & Seal Company, Inc. Resealable closure device. 5,443,175, Cl. 220-298.000.

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Karvinen, Saila, 5,443,811, Cl. 423-616.000.
Weckman, Stig-Goran A.; Peraaho, Robert; and Riihmaki, Sakari, 5,443,808, Cl. 423-309.000.

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Gabb, Philip J.; Sutliff, Kenton E.; Wells, Barry A.; and Evans, J. Philip, 5,443,622, Cl. 75-743.000.

Kennedy, James K.: *See*—
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Kenny, Paul M. Intrusion monitoring device. 5,444,431, Cl. 340-541.000.

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Kerrebrock, Peter, to Charles Stark Draper Laboratories, The. Separator plate for a chemical oxygen generator candle and assembly and generator made therefrom. 5,443,798, Cl. 422-129.000.

Kertesz, Janos, to Rasmussen GmbH. Thermoplastic pipe nipple. 5,443,098, Cl. 138-109.000.

Kerth, Michael S.: *See*—
Dyment, James A.; and Kerth, Michael S., 5,443,168, Cl. 211-149.000.

Kerth, Randall T., to International Business Machines Corporation. Magnetic head slider process. 5,442,850, Cl. 29-603.000.

Keshaviah, Prakash: *See*—
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Kesinger, Donald A.; and Kesinger, Eric S. Apparatus for hanging TV cable and the like. 5,443,232, Cl. 248-62.000.

Kesinger, Eric S.: *See*—
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Keuning, Sytze A., to Stavo Industries, Inc. Sanitary cartridge filter housing. 5,443,730, Cl. 210-232.000.

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Khabal, Zinovi: *See*—
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Khanna, Pyare: *See*—
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Khoury, Donald S., to Colt's Manufacturing Company Inc. Revolver barrel with improved barrel throat and method of manufacture. 5,443,542, Cl. 42-59.000.

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Nakaso, Akiaki; Tsuyama, Kouichi; Kida, Akinari; Hatakeyama, Shuichi; and Urasaki, Naoyuki, 5,444,189, Cl. 174-262.000.

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Kihara, Taku, to Sony Corporation. Processing circuit for video signals of two different aspect ratios. 5,444,492, Cl. 348-445.000.

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Kikuchi, Masayoshi; Kunai, Kenji; and Yamada, Takafumi, to Tokuyama Corporation. Method of assaying fibrinogen, dry reagent therefor, and process for the preparation thereof. 5,443,959, Cl. 435-13.000.

Kilgore, Michael A.: *See*—
Kline, Paul J.; Kilgore, Michael A.; and Martin, Cynthia C., 5,444,632, Cl. 364-468.000.

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Pai, Joseph Y.; and Kim, Choon-Woo, 5,444,756, Cl. 378-98.800.

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Jung, Hyung J.; Yoon, Ki H.; Kim, Dong P.; and Kim, Eung S., 5,444,027, Cl. 501-135.000.

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Kim, Heon-soo, to Samsung Electron Devices Co., Ltd. Far infrared emitting image display device. 5,444,261, Cl. 250-493.100.

Kim, Hyung S.: *See*—
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Kim, Jin: *See*—
Banjanin, Zoran B.; and Kim, Jin, 5,443,071, Cl. 128-661.090.

Kim, Jong K. Automatically put-on automobile safety belt. 5,443,577, Cl. 280-802.000.

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Kim, Jungmuh P.: *See*—
Reyes, Gregory R.; Kim, Jungmuh P.; and Moeckli, Randolph, 5,443,965, Cl. 435-693.000.

Kim, Taejeong, to AT&T Corp. Side-match and overlap-match vector quantizers for images. 5,444,800, Cl. 382-239.000.

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Kim, Chang-kyu; Lee, Myeong-beom; Choi, Ji-hyun; Joung, Woo-in; Im, Young-jin; Kim, Won-joo; Hong, Jin-gi; and Kang, Geung-won, 5,444,026, Cl. 437-240.000.

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Kimball, William C., to N. A. Taylor Co., Inc. Low drag buoy. 5,443,408, Cl. 441-22.000.

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Cohen, Bernard; and Jameson, Lee K., 5,443,886, Cl. 428-131.000.

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Nakamura, Kosei; Hayashi, Yoshiyuki; Kimijima, Masami; and Arimatsu, Yohei, 5,444,319, Cl. 310-211.000.

Kimizuka, Junichi: *See*—
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Kindrachuk, Eugene P.: *See*—
Hollingsworth, Robert E.; Kindrachuk, Eugene P.; and Hargis, James E., 5,444,836, Cl. 395-135.000.

King, George M.: *See*—
Tsai, Tom C.; Kanter, Fred W.; and King, George M., 5,442,924, Cl. 62-15.000.

King, Jan H.: *See*—
Volodarsky, Konstantine; Kajiwara, Jiro; Owens, Herbert W., Jr.; and King, Jan H., 5,443,416, Cl. 451-388.000.

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Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,443,825, Cl. 424-85.100.

King, Lionel G.: *See*—
Cornell, Bruce A.; Braach-Maksvytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Raguse, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., 5,443,955, Cl. 435-7.210.

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Kinsella, Kevin G. Basketball return device. 5,443,258, Cl. 273-1.50A.

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Ayyildiz, Metin; and Kirchner, Holger, 5,443,146, Cl. 188-374.000.

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Sumita, Masahiko, 5,444,480, Cl. 348-127.000.

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Kirkendall, Gregory S., to Washington Mills Ceramics Corporation. Light weight ceramic abrasive media. 5,443,603, Cl. 51-296.000.

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Kirkpatrick, Francis H.; Willis, T. Chad; Watt, William; Daum, Henry A., III; Kaura, Satyin; and Johnson, Pegram A., to FMC Corporation. Electrophoresis gel container assemblies. 5,443,704, Cl. 204-180.100.

Kirnbauer, Erwin; White, Donald H., Jr.; and Adiletta, Joseph D., to Pall Corporation. Method and device for inhibiting bacterial growth on sorbent media. 5,443,735, Cl. 210-668.000.

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Greczyn, Wendy R.; Lajoie, M. Stephen; Berschied, John R.; and Kirschner, Lawrence, 5,443,822, Cl. 424-65.000.

Kishi, Hiroshi; Ito, Toru; Morimoto, Kyomi; Yokoyama, Shoji; and Kuroda, Kenji, to Aisin AW Co.; and Toyota Jidosha Kabushiki Kaisha. Vehicle-guiding device for recognizing curved road and leading vehicle along curved road aurally. 5,444,629, Cl. 364-449.000.

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Kitayama, Shinichiro: *See*—
Hirano, Yasuhiro; Endo, Yasuhiro; Takebe, Kazao; Shibata, Mitsuhiro; Kanagawa, Shuichi; Shiomi, Yutaka; Akiba, Masatsugu; and Kitayama, Shinichiro, 5,444,165, Cl. 548-521.000.

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Kivlighn, Salah; Lotti, Victor J.; Rivero, Ralph A.; Siegl, Peter K. S.; and Zingaro, Gloria J., to Merck & Co., Inc. Pharmaceutical treatment methods using angiotensin II receptor agonists bearing a thiophene moiety. 5,444,067, Cl. 514-303.000.

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Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,444,677, Cl. 369-13.000.

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Jackson, Gail; Fahim, Raafat; Tan, Larry; Chong, Pete; Vose, John; and Klein, Michel, 5,444,159, Cl. 530-412.000.

Klemp, Roger: *See*—
Adams, Thomas P.; Hanus, Joseph P.; Ebenhoch, Kenneth G.; and Klemp, Roger, 5,443,419, Cl. 453-17.000.
Klija, Jan: *See*—
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Kline, Paul J.; Kilgore, Michael A.; and Martin, Cynthia C., to Texas Instruments Incorporated. Apparatus and method for controlling and scheduling processing machines. 5,444,632, Cl. 364-468.000.
Klosterman, James J., to Lake Region Manufacturing Co., Inc. Guidewire containment apparatus and method. 5,443,081, Cl. 128-772.000.
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Schmidt, Karl-Jurgen; and Knaak, Eberhard, 5,443,714, Cl. 205-241.000.
Knaus, Bruno: *See*—
Schreiber, Herbert; Burkart, Gunter; and Knaus, Bruno, 5,443,911, Cl. 428-413.000.
Kneifel, R. William, II; Walsh, Stephen T.; Minnich, Thomas W.; Crovella, Robert M.; and Morser, A. Harold, to Cincinnati Milacron Inc. Method and apparatus for torque ripple compensation. 5,444,341, Cl. 318-432.000.
Knobl, Karl-Heinz; and Schleuthle, Dieter, to Zettl GmbH CNC Prazisions- und Soderwerkzeuge. Chuck. 5,443,275, Cl. 279-60.000.
Knoth, Donald E.; and Phillips, William L., to Mauch Laboratories, Inc. Hydraulic control unit for prosthetic leg. 5,443,521, Cl. 623-44.000.
Knott, David S.; Paluszkiewicz, Czeslaw; Adams, Martyn P.; and Sethianathan, Sivasubramaniam K., to Rolls-Royce plc. Gas turbine engine fan blade assembly. 5,443,366, Cl. 416-221.000.
Knox, David E.; Fortin, J. Donato; and Hintz, Harold L., to Westvaco Corporation. Postforming decorative laminates. 5,443,902, Cl. 428-340.000.
Knudsen, Christopher G.: *See*—
James, Donald R.; Baker, Don R.; Mielich, Steven D.; Michaely, William J.; Fitzjohn, Steven; Knudsen, Christopher G.; Mathews, Christopher; and Gerdes, John M., 5,444,038, Cl. 504-253.000.
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Owsley, Norman L.; Law, John F.; Vanasse, Robert D.; Ebner, Stephen P.; Knutson, Richard K.; and Norris, Roger C., 5,443,027, Cl. 114-244.000.
Ko, Byoung D., to Goldstar Co., Ltd. Getter fixing device for a cathode ray tube. 5,443,410, Cl. 445-73.000.
Ko, Seong-ro, to Samsung Electronics Co., Ltd. Optical disk driver for reading data from a disk based on ID information. 5,444,679, Cl. 369-32.000.
Kobayakawa, Yasukazu: *See*—
Tsukada, Yutaka; Kobayakawa, Yasukazu; Maeda, Yoji; and Tsuchita, Shubei, 5,444,209, Cl. 257-693.000.
Kobayashi, Kazuhiko: *See*—
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Nakazawa, Noriaki; Furukawa, Hideaki; Kobayashi, Kenji; and Tsujino, Hiromichi, 5,444,506, Cl. 353-104.000.
Kobayashi, Masakazu: *See*—
Matsumoto, Kiyoichi; Tahara, Shu; Ozeki, Eiichi; Ogaito, Makoto; and Kobayashi, Masakazu, 5,443,780, Cl. 264-290.200.
Kobayashi, Noriyuki: *See*—
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Kobayashi, Shigeo: *See*—
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Kobayashi, Tohru: *See*—
Fujimori, Kenichi; Nakayama, Yoshitaro; Shinohara, Takumi; Iwanami, Atsushi; Hagiwara, Toshimitsu; and Kobayashi, Tohru, 5,443,933, Cl. 430-59.000.
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Kobayashi, Yoshiki: *See*—
Kawabata, Atsushi; Miura, Shuuichi; Yamashi, Kimiya; Taki, Yuji; Kobayashi, Yoshiki; and Tanifuji, Shinya, 5,444,829, Cl. 395-100.000.
Kobayashi, Yutaka: *See*—
Ishiki, Osamu; Matsushita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.
Kobe Natural Products & Chemicals Co., Ltd.: *See*—
Tatezono, Fumio; Harada, Toshio; Irie, Masahiro; and Ohara, Meguru, 5,443,940, Cl. 430-270.000.
Kobe, Shinji: *See*—
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Koch, Jochim; and Oetomo, Bambang, to Dragerwerk AG. Ultrasonic stomizer with a metering unit. 5,443,059, Cl. 128-200.160.
Kochanowski, George E. Reflective sign. 5,442,870, Cl. 40-582.000.
Kochinke, Frank: *See*—
Wong, Vernon G.; and Kochinke, Frank, 5,443,505, Cl. 623-4.000.
Koda, Toshiyasu: *See*—
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Kodama, Kohtarou: *See*—
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Kodama, Naoki; and Suzuki, Hiroyuki, to Hitachi, Ltd. Longitudinal magnetic recording medium exhibiting various coercivitiy relationships. 5,443,879, Cl. 428-65.700.
Koen, Jacobus P. L.; and Clark, Richard, to Zietsman, David Wallace. Data communications system for establishing links between subscriber stations and broadcast stations. 5,444,769, Cl. 379-94.000.
Koenig, Steven M., Jr. Nutritional supplementation system. 5,443,838, Cl. 424-439.000.
Koga, Eiji: *See*—
Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Eiji; and Ogiwara, Satoshi, 5,444,833, Cl. 395-133.000.
Kogan, Timothy P.; Dupre, Brian; Scott, Ian L.; Keller, Karin; Dao, Huong; and Beck, Pamela J., to Texas Biotechnology Corporation. Binding of E-selectin or P-selectin to sialyl Lewis^x or sialyl-Lewis^a. 5,444,050, Cl. 514-25.000.
Kogen, James H., to Shure Brothers, Inc. Microphone windscreen mounting. 5,444,790, Cl. 381-168.000.
Kogge, Peter M.: *See*—
Olnowich, Howard T.; Barker, Thomas N.; Kogge, Peter M.; and Vandling, Gilbert C., III, 5,444,705, Cl. 370-85.600.
Kogure, Hideo: *See*—
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Koh, Yeon W.: *See*—
Kim, Byoung Y.; Koh, Yeon W.; and Yun, Seok H., 5,444,803, Cl. 385-28.000.
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, to Sankyo Company, Limited. Process to prepare leustroducsins. 5,443,972, Cl. 435-125.000.
Kohara, Yuji; and Hachiya, Tadashi, to Tokyo Kikai Seisakusho, Ltd. Ink fountain apparatus. 5,443,004, Cl. 101-365.000.
Kohhashi, Teruo; and Matsuyama, Hideo, to Hitachi, Ltd. Wien filter apparatus with hyperbolic surfaces. 5,444,243, Cl. 250-305.000.
Kohler, Josef: *See*—
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Kohno, Masahide; Kuroda, Kazuhiro; Ishikawa, Yasushi; Sasaki, Hideki; Takasugi, Yasufumi; Ikarashi, Tsunehiko; and Inoue, Osamu, to TDK Corporation. Magnetic recording medium. 5,443,913, Cl. 428-425.900.
Kohr, William J., to Giobiotics, Inc. Method for recovering gold and other precious metals from carbonaceous ores. 5,443,621, Cl. 75-711.000.
Koide, Takeharu: *See*—
Tanaka, Koichi; Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Kuramochi, Kojiro, 5,443,130, Cl. 180-65.600.
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Koito Manufacturing Co., Ltd.: *See*—
Otsuka, Yasushi; Unno, Masayoshi; and Ohashi, Hideki, 5,444,603, Cl. 362-66.000.
Kojima, Hironao; and Tanaka, Isao, to Seiko Epson Corporation. Superconductive oxide single crystal and manufacturing method thereof. 5,444,044, Cl. 505-238.000.
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Kojima, Takao; Ishiguro, Hiroyuki; Yamano, Masaru; Kondo, Noriaki; Yamada, Masahito; and Sawada, Toshiki, to NGK Spark Plug Co., Ltd. Oxygen-sensor element. 5,443,711, Cl. 204-429.000.
Kojima, Takashi; Suzuki, Shinichi; and Shigematsu, Yasuyuki, to Mitsubishi Petrochemical Co., Ltd. Electrophotographic photoreceptor. 5,443,935, Cl. 430-78.000.
Kokkosoulis, George D.; Muyshondt, Jorge E.; and Wilkie, Bruce J., to International Business Machines, Corp. Computer audio joystick and MIDI breakout box. 5,443,390, Cl. 439-76.100.
Koller, Stefan; and Albeck, Bernhard, to Vossloh-Schwabe GmbH. Wire positioning and cut-off tool. 5,442,848, Cl. 29-566.100.
Koller, Tim J.: *See*—
Akkala, Steven M.; Aylward, Andy; and Koller, Tim J., 5,443,327, Cl. 405-118.000.
Koltookian, Sarkis A.; and Roby, Michael E., to Deere & Company. Process and apparatus for assembling multiple rolling bearing and a rotating member onto a shaft. 5,442,854, Cl. 29-898.070.
Komai, Masaya: *See*—
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Komatsu, Kazunari, to Tokico Ltd. Brake fluid pressure generator. 5,442,915, Cl. 60-547.100.
Komatsu, Kazuo: *See*—
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Komeya Inc.: *See*—
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Komiyama, Nakabe: *See*—
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Komiyama, Takeshi: *See*—
Kuwabara, Mitsuo; Ikegami, Kiyoshi; Yoshida, Teruaki; Takahashi, Koji; Harada, Tamotsu; Komiyama, Takeshi; Hirai, Fumio; and Hayashi, Masamichi, 5,443,615, Cl. 75-230.000.
Kommrusch, Steven J.; Schmidt, Daniel G.; and Stroyan, Howard D., to Hewlett-Packard Company. Computer system and method for interference checking of polyhedra using capping polygons. 5,444,838, Cl. 395-141.000.
Komoda, Michio, to Mitsubishi Denki Kabushiki Kaisha. Multiplier circuit and division circuit with a round-off function. 5,444,647, Cl. 364-761.000.
Komuro, Fumihiko: *See*—
Enomoto, Minoru; Aono, Toshio; Komuro, Fumihiko; Yamamoto, Tsuyoshi; Tanaka, Katsuhisa; and Ohtake, Tomoyuki, 5,444,343, Cl. 318-568.110.
Kondo, Jun: *See*—
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Kondo, Masaya, to Canon Kabushiki Kaisha. Image reduction with controlled image thinning. 5,444,549, Cl. 358-444.000.
Kondo, Noriaki: *See*—
Kojima, Takao; Ishiguro, Hiroyuki; Yamano, Masaru; Kondo, Noriaki; Yamada, Masahiko; and Sawada, Toshiki, 5,443,711, Cl. 204-429.000.
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Kondo, Yasuhiro: *See*—
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Konica Corporation: *See*—
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Nishizaki, Kouji; Takeuchi, Shigeki; Shibata, Toyoko; and Tamaki, Kiyoshi, 5,443,922, Cl. 428-690.000.
Konishi, Shuuichi: *See*—
Ishikawa, Fukuo; Konishi, Shuuichi; Nakamura, Katsumi; Ikemoto, Hideyuki; and Ishida, Toshio, 5,444,595, Cl. 361-86.000.
Konno, Toshio: *See*—
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Konshak, Michael V.: *See*—
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Prodin, James E.; Pellow, Scott; and Kramp, Jean, 5,443,418, Cl. 451-540.000.
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Krieger, William A.: *See*—
Robinson, Derek W.; Krieger, William A.; Martinez, Andre M.; and McDevitt, Marion R., 5,444,285, Cl. 257-378.000.
Krishnadev, Madhavarao: *See*—
Banthia, Nemkumar; and Krishnadev, Madhavarao, 5,443,918, Cl. 428-603.000.
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Diefendahl, Wolfgang; and Wiedack, Hans-Norbert, 5,443,584, Cl. 14-2.400.
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Hippe, Werner; Meyer, Gunter; and Reinke, Martin, 5,443,694, Cl. 201-41.000.

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Muto, Hakaru; and Kubota, Hiromi, 5,444,470, Cl. 347-15.000.

Kubota, Hiroshi: *See*—
Kitagawara, Yutaka; Kubota, Hiroshi; and Tamatsuka, Masaro, 5,444,246, Cl. 250-339.080.

Kubota, Takashi: *See*—
Kamada, Hiroshi; Kubota, Takashi; and Shiohara, Morito, 5,444,791, Cl. 382-190.000.

Kudo, Kazuki: *See*—
Yanagi, Shigenori; Kudo, Kazuki; and Katoh, Kikuji, 5,444,684, Cl. 368-44.280.

Kudo, Takayuki: *See*—
Yoshii, Yuji; and Kudo, Takayuki, 5,443,374, Cl. 418-55.100.

Kudoh, Hisaaki: *See*—
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Taneka, Keishin; Hitiichi, Toichiro; and Kumagai, Chiaki, 5,444,625, Cl. 364-426.030.

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Tsurumi, Koichi; Shimazaki, Shinji; and Kumagai, Koichi, 5,443,382, Cl. 432-59.000.

Kumiai Chemical Industry Co., Ltd.: *See*—
Urushibata, Ikumi; Yoshimura, Takumi; Deguchi, Takeshi; Yonekura, Norihasa; Sakai, Junetsu; and Hayashi, Shigeru, 5,444,060, Cl. 514-253.500.

Kunai, Kenji: *See*—
Kikuchi, Masayoshi; Kunai, Kenji; and Yamada, Takafumi, 5,443,999, Cl. 435-13.000.

Kunieda, Toshiaki: *See*—
Murai, Mikio; Takahashi, Kiyoshi; Odagiri, Masaru; Kai, Yoshiaki; Suzuki, Takashi; and Kunieda, Toshiaki, 5,443,888, Cl. 428-143.000.

Kunihira, Tadashi; and Yanagawa, Yoshifumi, to Matsushita Electric Industrial Co., Ltd. Rotary head for use in a magnetic recordiang and reproducing apparatus which includes height adjuster. 5,444,581, Cl. 360-75.000.

Kuramochi, Kojiro: *See*—
Tanaka, Koichi; Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Kuramochi, Kojiro, 5,443,130, Cl. 180-65.600.

Kuraray Co., Ltd.: *See*—
Uetsuki, Masao; and Tsunematsu, Takashi, 5,444,570, Cl. 359-423.000.

Kuratomi, Yasunori: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,443,864, Cl. 428-1.000.

Kuribayashi, Hiroki: *See*—
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Kurihara, Kenichi: *See*—
Ajito, Keiichi; Kurihara, Kenichi; Ishizuka, Tsuneo; Hara, Tetsuro; Usui, Takayuki; and Shibahara, Seiji, 5,444,174, Cl. 536-7.100.

Kurihara, Teruo: *See*—
Takahashi, Masaki; Kurihara, Teruo; Komiyama, Nakaba; and Mikami, Manabu, 5,444,525, Cl. 353-327.000.

Kurisaki, Nobuo: *See*—
Yoshida, Jun; Kawana, Akira; and Kurisaki, Nobuo, 5,444,636, Cl. 364-474.300.

Kurita, Akitsugu: *See*—
Inada, Minoru; Kaboki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, 5,443,747, Cl. 252-94.000.

Kuroda, Kazuhiro: *See*—
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Kuroda, Kenichi; and Matsubara, Kiyoshi, to Hitachi, Ltd. Flash memory and a microcomputer. 5,444,664, Cl. 365-226.000.

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Kishi, Hiroshi; Ito, Tore; Morimoto, Kyomi; Yokoyama, Shoji; and Kuroda, Kenji, 5,444,629, Cl. 364-449.000.

Kuroda, Masao; and Sakakibara, Yutaka, to Kuroda, Masao; and Yamato Setubi Construction Co., Ltd. Biocatalyst-immobilized electrode and method for treatment of water by use of the electrode. 5,443,706, Cl. 204-242.000.

Kuroda, Mitsunobu; Nakane, Susumu; Yanada, Osamu; Iijima, Osamu; and Terada, Motoharu, to Matsushita Electric Works, Ltd. Data setting system for terminal units in remote supervisory and controlling system employing data transmission. 5,444,439, Cl. 340-825.070.

Kurokawa, Hiroshi: *See*—
Yamamoto, Yuji; Nohma, Toshiyuki; Kurokawa, Hiroshi; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,443,929, Cl. 429-224.000.

Kuroki, Tadao: *See*—
Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, 5,443,904, Cl. 428-364.000.

Kurtz, John O.: *See*—
Miller, Charles M.; Westerdale, Mark W.; Tilles, David J.; and Kurtz, John O., 5,443,359, Cl. 414-798.900.

Kurz, David W., to Gould Inc. Styrene type monomers containing substituents thereon, e.g. urea, and polymers and copolymers thereof. 5,444,129, Cl. 525-528.000.

Kushi, Naoto: *See*—
Ibaraki, Toshikazu; and Kushi, Naoto, 5,443,558, Cl. 123-325.000.

Kushita, Masayuki, to NEC Corporation. Time-keeping radio display pager precisely calibrated to local standard time. 5,444,672, Cl. 368-47.000.

Kusumoto, Tadashi: *See*—
Hosokawa, Chishio; Higashi, Hisahiro; and Kusumoto, Tadashi, 5,443,921, Cl. 428-690.000.

Kutay, Carl H.: *See*—
Hawkins, Gerald M.; and Kutay, Carl H., 5,443,283, Cl. 280-709.000.

Kutenev, Vadim F.: *See*—
Romanchev, Jury A.; Kutenev, Vadim F.; Istomin, Sergei S.; Zlenko, Mikhail A.; and Kvasnikov, Boris V., 5,442,971, Cl. 74-53.000.

Kuwabara, Mitsuo; Ikegami, Kiyoshi; Yoshida, Teruaki; Takahashi, Koji; Harada, Tamotsu; Komiyama, Takeshi; Hirai, Fumio; and Hayashi, Masamichi, to Honda Giken Kogyo Kabushiki Kaisha. Molded ceramic articles. 5,443,615, Cl. 75-230.000.

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Romanchev, Jury A.; Kutenev, Vadim F.; Istomin, Sergei S.; Zlenko, Mikhail A.; and Kvasnikov, Boris V., 5,442,971, Cl. 74-53.000.

Kverneland Klepp AS: *See*—
Skj veland, Magne, 5,443,126, Cl. 172-271.000.

Kwak, Deog Y.: *See*—
Chung, Jin Y.; and Kwak, Deog Y., 5,444,362, Cl. 323-313.000.

Kwan, Chiu K.: *See*—
Lee, James S. W.; and Kwan, Chiu K., 5,443,261, Cl. 273-86.00R.

Kwan, Tommy W.: *See*—
Johnson, David B., Jr.; Chasse, Dennis W.; and Kwan, Tommy W., 5,444,848, Cl. 395-200.150.

Kwon, Ho C., to Goldstar Co., Ltd. Apparatus for determining a tilt angle of a tub in a convertible washing machine. 5,442,937, Cl. 68-4.000.

Kwong, David: *See*—
Wong, Anthony Y.; Kwong, David; Yang, Lee; and Hsiao, Charles, 5,444,397, Cl. 326-81.000.

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Kyocera Corporation: *See*—
Murano, Shuna, 5,444,520, Cl. 355-229.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Murata, Kazue; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sanada, Yoshika; and Miwa, Teiichi, 5,442,826, Cl. 15-3.510.

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Treloar, Kerry R.; La Grouw, Johannes; and La Grouw, Cornelius, 5,443,878, Cl. 428-60.000.

La Jolla Cancer Research Foundation: *See*—
Engvall, Eva; and Sanes, Joshua, 5,444,158, Cl. 530-395.000.

La Minerva Di Chiodini Mario S.r.l.: *See*—
Chiodini, Daniele S., 5,442,996, Cl. 99-517.000.

Labatt Brewing Company Limited: *See*—
Axelrod, Norman N., 5,444,535, Cl. 356-369.000.

Labor Birkmayer Ges. m.b.H.: *See*—
Birkmayer, Joerg G. D., 5,444,033, Cl. 514-52.000.

Laboratorios Del Dr. Esteve, S.A.: *See*—
Frigola-Constansa, Jordi; and Merce-Vidal, Ramon, 5,444,059, Cl. 514-252.000.

LaCasse, Gregory J.: *See*—
Cordova, David S.; Weedon, Gene C.; Winckhofer, Robert C.; Boose, Mark B.; Kirtland, Kevin M.; Weber, Charles P., Jr.; and LaCasse, Gregory J., 5,442,815, Cl. 2-161.700.

Lachenmeier, Eric: *See*—
Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

Lacker, Virginia: *See*—
Hirsohn, Paul; Dayner, David; and Lacker, Virginia, 5,444,773, Cl. 379-219.000.

Lackmann, Rainer; and Weichert, Gerhard, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Method and device of contactless measurement of electric voltages in a unit under measurement with an insulating surface. 5,444,384, Cl. 324-751.000.

Ladd, Scott A.: *See*—
Epes, Dennis O.; and Ladd, Scott A., 5,443,543, Cl. 42-102.000.

Ladduwahetty, T.: *See*—
Baker, R.; Ladduwahetty, T.; Seward, E. M.; and Swain, C. J., 5,444,074, Cl. 514-326.000.

Lafarge Fondu International: *See*—
Letourneux, Jean-Pierre; and Bourdeau, Alain, 5,443,730, Cl. 210-631.000.

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Adoul, Jean-Pierre; and Laflamme, Claude, 5,444,816, Cl. 395-2.280.

Lafond, Luc. Insulation strip and method for single and multiple atmosphere insulating assemblies. 5,443,871, Cl. 428-54.000.

LaFond, Ronald K.: *See*—
Wacker, Robert W.; Smica, Ronald J.; LaFond, Ronald K.; and Hemberger, Dale M., 5,443,017, Cl. 108-3.000.

Lagarrigue, Gerard, to Rhone-Poulenc Fibres. Thermoset twist composed of synthetic monofilamenta. 5,442,903, Cl. 57-236.000.

Laghi, Aldo A. Conductive patch for control of prosthetic limbs. 5,443,525, Cl. 623-25.000.

Lagrange, Alain: *See*—
Junino, Alex; Bonaventure, Nicole; and Lagrange, Alain, 5,443,596, Cl. 8-442.000.

La Grouw, Cornelius: *See*—
Treloar, Kerry R.; La Grouw, Johannes; and La Grouw, Cornelius, 5,443,878, Cl. 428-60.000.

La Grouw, Johannes: *See*—
Treloar, Kerry R.; La Grouw, Johannes; and La Grouw, Cornelius, 5,443,878, Cl. 428-60.000.

Lahoda, Edward J.; Lin, C. Y.; Battaglia, J. A.; and Impink, A. J., Jr., to Westinghouse Electric Corporation. Boron isotope separation using continuous ion exchange chromatography. 5,443,732, Cl. 210-635.000.

Lahres, Hans: *See*—
Kelch, Gerhard; Lahres, Hans; and Wietschorke, Helmut, 5,444,503, Cl. 351-169.000.

Lai, Yen-Pin. Saddle mounting frame assembly. 5,443,301, Cl. 297-195.100.

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Germain, Jean-Pierre, 5,442,927, Cl. 62-50.200.

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Lajoie, Donald L. Hammer mill. 5,443,216, Cl. 241-194.000.

Lajoie, M. Stephen: *See*—
Greczyn, Wendy R.; Lajoie, M. Stephen; Berschied, John R.; and Kirschner, Lawrence, 5,443,822, Cl. 424-65.000.

Lake, Donald E., deceased (by Lake, Juanita, executrix); Alhoussami, Aiman I.; and Eytcheson, Charles T., to Delco Electronics Corp. Linear dual switch module. 5,444,295, Cl. 257-678.000.

Lake, Juanita, executrix: *See*—
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Lake Region Manufacturing Co., Inc.: *See*—
Klosterman, James J., 5,443,081, Cl. 128-772.000.

Lalezari, Farzin, to Ball Corporation. Microstrip antenna structure having an air gap and method of constructing same. 5,444,453, Cl. 343-700.0MS.

Lalonde, Francois: *See*—
Bourgeois, Jean-Marc; Missout, Gilles; Lalonde, Francois; and Belanger, Jacques, 5,444,380, Cl. 324-529.000.

Lalvani, Prem: *See*—
Krafft, Werner; Jonas, Friedrich; Lalvani, Prem; Andries, Hartwig; and Mues, Willem, 5,443,944, Cl. 430-529.000.

Lamb, Douglas; and Elliott, Gordon, to Husky Injection Molding Systems Ltd. Method and apparatus for transferring hollow plastic articles. 5,443,360, Cl. 414-799.000.

Lambach, Heinrich W.: *See*—
Jorgensen-Beck, Frode; and Lambach, Heinrich W., 5,443,202, Cl. 229-146.000.

Lamp, Mark L.: *See*—
Hug, Paul; Hines, Horace; and Lamp, Mark L., 5,444,252, Cl. 250-361.000.

Lancon, Emmanuel: *See*—
Goubeault, Eric; Lancon, Emmanuel; Menez, Jean; and Raimondo, Catherine, 5,444,488, Cl. 348-414.000.

Lancrenon, Xaivier: *See*—
Saska, Michael; and Lancrenon, Xaivier, 5,443,650, Cl. 127-46.200.

Landau, Simcha. Method for making a bouquet with an improved wrap including an integral ribbon. 5,443,670, Cl. 156-191.000.

Lang, Gerald S.: *See*—
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Langford, Terrence R., to KEW Import/Export Inc. Endoscope cleaner/steriliser. 5,443,801, Cl. 422-294.000.

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Nimitz, Jonathan S.; and Lankford, Lance H., 5,444,102, Cl. 521-131.000.

Laporte, Alain, to Regie Nationale des Usines Renault. Seat support for a motor vehicle. 5,443,239, Cl. 248-503.100.

Lara, Teresa: *See*—
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Lareau, Richard T.: *See*—
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Largess, Didier, to Solartron Group Limited. Temperature-compensated vibrating beam microsensor. 5,442,963, Cl. 73-766.000.

Larison, Karen D.: *See*—
Haughland, Richard P.; Huang, Zhijian; Larison, Karen D.; and Zhang, Yu-zhong, 5,443,986, Cl. 435-4.000.

Larkin, Scott R.: *See*—
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Alvarez, Juan G.; and Ludmir, Jack, 5,443,989, Cl. 436-71.000.

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Lynn, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., to Apple Computer Inc. Method and apparatus for decryption using cache storage. 5,444,781, Cl. 380-46.000.

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White, Joseph F., 5,444,454, Cl. 343-754.000.

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Snichelotto, Eugenio, 5,443,491, Cl. 607-122.000.

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Segan, Marc H.; Strauss, Gary; and Cummings, Gerald W., 5,443,259, Cl. 273-1.50R.

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Parker, Thomas W., 5,442,994, Cl. 99-468.000.

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Dragotta, Peter J., 5,444,540, Cl. 356-427.000.

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Okada, Kazuo, 5,444,314, Cl. 310-40.00MM.

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Suzuki, Masaharu; Nikaido, Tomoki; and Mabuchi, Takeshi, 5,443,605, Cl. 51-307.000.

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Reynolds, Jon O.; and Madsen, Michael D., 5,444,356, Cl. 323-282.000.

Maeda, Eiichi, to Ricoh Company, Ltd. Digital electronic camera apparatus for recording still video images and motion video images. 5,444,483, Cl. 348-231.000.

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Maeda, Yoji: *See—*
Tsukada, Yutaka; Kobayakawa, Yasukazu; Maeda, Yoji; and Tsuchita, Shuhei, 5,444,299, Cl. 257-693.000.

Maeda, Yuuji: *See—*
Takahashi, Naoyuki; Maeda, Yuuji; Masumoto, Shouju; and Kanke, Atsushi, 5,444,354, Cl. 322-28.000.

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Magnien, Walter. Paint trimming apparatus. 5,443,533, Cl. 15-201.100.

Maher, Thomas R.: *See—*
LeComte, Norman E.; Nott, Sepideh H.; Kawate, Keith W.; and Maher, Thomas R., 5,444,590, Cl. 361-18.000.

Mahieux, Yannick, to France Telecom. Filtering method and device for reducing digital audio signal pre-echoes. 5,444,741, Cl. 375-254.000.

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McLeod, Daniel W.; and Mahler, Peter A., 5,442,841, Cl. 26-7.000.

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Maier, Rolf, to Robert Bosch GmbH. Slip control system for driven wheels. 5,443,307, Cl. 303-169.000.

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Yoshida, Jun; Kawana, Akira; and Kurisaki, Nobuo, 5,444,636, Cl. 364-474.300.

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Makoff, Andrew J.: *See—*
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Malis, Michael J.; and Neagle, Gilbert J., to United States Surgical Corporation. Locking mechanism for a skin stapler cartridge. 5,443,197, Cl. 227-176.000.

Mallik, Debendra: *See—*
Banerjee, Koushik; Natarajan, Siva; Mallik, Debendra; and Jain, Praveen, 5,444,602, Cl. 361-705.000.

Mallory, Niles: *See—*
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Malm, Timo: *See—*
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Malmgren, Bozena: *See—*
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Malone, Tommy W., to Wood George & Co., Inc. Clamp assembly for clamp hub connectors and a method of installing the same. 5,443,581, Cl. 285-364.000.

Mandoh, Ritsuo; Minami, Takehiro; Ishida, Katsuhiko; and Mitoh, Hisayoshi, to Kanzaki Paper Manufacturing Co., Ltd. Microcapsule containing ultraviolet absorber. 5,443,909, Cl. 428-402.210.

Manero, Javier: *See—*
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Mangold, Edmund: *See—*
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Manitowoc Company, The: *See—*
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Kensil, Charlotte A.; Soltysik, Sean; and Marciani, Dante J., 5,443,829, Cl. 424-195.100.

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de Geeter, Pieter J., 5,443,329, Cl. 495-172.000.

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Marin, Ralph: *See—*
Marin, Michael L.; and Marin, Ralph, 5,443,477, Cl. 606-198.000.

Marino, Frank. Adaptable pet guide assembly. 5,443,038, Cl. 119-784.000.

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Stern, Roger A.; Soderstrom, Richard M.; Sullivan, Vincent N.; and Marion, Robert L., 5,443,463, Cl. 606-51.000.
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Markstein, David J.: *See—*
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Markunas, Albert L.: *See—*
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Marom, Emanuel: *See—*
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Marotta, Alessandro: *See—*
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Maroun, Tony Y.: *See—*
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Mars Incorporated: *See—*
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Marsden, James R.: *See—*
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Newbold, George T.; Davenport, Theodore M.; and Bray, Raymond L., 5,442,862, Cl. 33-265.000.

Martin, Cynthia C.: *See—*
Kline, Paul J.; Kilgore, Michael A.; and Martin, Cynthia C., 5,444,632, Cl. 364-468.000.

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Martin, Guy, to Omia. Process for destroying suspended particles. 5,444,029, Cl. 502-38.000.

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Holcombe, Cressie E.; and Bird, Eugene L., 5,443,892, Cl. 428-216.000.

Martin, Philip: *See—*
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Martinez, Andre M.: *See—*
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Maruhashi, Yoshitugu: *See—*
Oda, Yasuhiro; Maruhashi, Yoshitugu; Sakano, Kouzaburo; and Yamaguchi, Yuji, 5,443,868, Cl. 428-35.700.

Marui, Kuniyoshi; Takahashi, Shinya; and Hattori, Kiyoshi, to Kabushiki Kaisha Toshiba. Radio telephone apparatus having a service area confirmation. 5,444,765, Cl. 379-59.000.

Marui, Kuniyoshi; Sato, Goichi; Ishii, Takaaki; Takachi, Shinji; Sawa, Buntaro; and Sato, Hiroshi, to Kabushiki Kaisha Toshiba. Adapter unit for adaptively supplying a portable radio telephone with power. 5,444,867, Cl. 455-89.000.

Masao, Mizukami: *See—*
Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Masao, Mizukami; Fujita, Maseru; Miyazawa, Sadao; and Aruga, Noriaki, 5,444,316, Cl. 310-49.00R.

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Mase, Toshiaki: *See—*
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Masood, Shakeel; and Gray, Douglas G., to Advanced Micro Devices, Inc. Sector mark pattern detection for optical data disk controller. 5,444,685, Cl. 369-47.000.

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Pal, Uday B.; Chou, Kuo-Chih; Yuan, Shi; and Hasham, Zain, 5,443,699, Cl. 204-64.00R.
Sage, Jay P., 5,444,751, Cl. 377-78.000.

Mastalski, Henry T.; and Griffiths, Clifford H., to Xerox Corporation. Method of treating seamless belt substrates and carriers therefor. 5,443,785, Cl. 264-573.000.

Mastnak, Wolfgang R., to Systec Ausbausysteme GmbH. Instrument for the visual recognition of authenticity features in banknotes and security documents. 5,444,263, Cl. 250-504.00H.

Mastrangelo, Vincent: *See—*
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Masumoto, Shouju: *See—*
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Masuyama, Akitoshi: *See—*
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Mathews, Christopher: *See—*
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Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, 5,444,046, Cl. 514-12.000.

Matsubara, Kiyoshi: *See—*
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Matsubara, Takashi: *See—*
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Matsuda, Keiichi: *See—*
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Matsuda, Mitsuhide: *See—*
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Matsui Manufacturing Co., Ltd.: *See—*
Murata, Kazue; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sasada, Yoshika; and Miwa, Teiichi, 5,442,826, Cl. 15-3.510.

Matsui, Osamu: *See—*
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Matsui, Yoshinori, to NEC Corporation. Semiconductor memory circuit. 5,444,305, Cl. 365-207.000.

Matsui, Yoshinori, to NEC Corporation. Semiconductor memory device having test circuit. 5,444,661, Cl. 365-201.000.

Matsumoto, Junichi, to Idemitsu Kosan Co., Ltd. Process for producing olefin based polymers and olefin polymerization catalyst. 5,444,134, Cl. 526-159.000.

Matsumoto, Katsunori: *See—*
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Matsumoto, Kiyoichi; Tahara, Sisu; Ozeki, Eiichi; Ogaito, Makoto; and Kobayashi, Masakazu, to Shimadzu Corporation. Oriented films of polylactic acid and methods of producing same. 5,443,780, Cl. 264-290.200.

Matsumoto, Sadayuki; Saikatsu, Takeo; Sakurai, Takehiko; and Hoshizaki, Junichiro, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for controlling an image display having gas discharge lamps. 5,444,335, Cl. 315-246.000.

Matsumoto, Tom T.: *See—*
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Matsunaga, Eiju; Fukushima, Akira; Nakashima, Noriyuki; Murai, Toshiyuki; Takemoto, Shinya; Tanabe, Mikio; and Kinoshita, Hisashi, to Nippondenso Co., Ltd. Suspension control system for controlling suspension of automotive vehicle based on wheel speed data. 5,444,621, Cl. 364-424.050.

Matsuno, Akira: *See—*
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Matsuno, Hiromitsu; Igarashi, Tatsushi; Hiramoto, Tatsumi; and Ooishi, Yasuo, to Ushiodenki Kabushiki Kaisha. Dielectric barrier discharge lamp. 5,444,331, Cl. 313-553.000.

Matsuo, Akinori: *See—*
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Matsuo, Hiroyuki: *See—*
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Matsuoka, Toshiyuki: *See*—
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Matsura, Masako: *See*—
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Matsushima, Osamu: *See*—
Ishiiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Seto, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.

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Kimura, Tadashi; Nagano, Yoshinobu; Tomita, Kazuyuki; and Ikeda, Tetsu, 5,443,689, Cl. 216-63.000.
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Mino, Norihisa; Soga, Mamoru; and Kazufumi, Ogawa, 5,443,901, Cl. 428-336.000.
Mitsuda, Makoto; Ohtaka, Hideki; Sakakibara, Yoshio; Kobayashi, Kazuhiko; Fujii, Shozo; and Hashimoto, Atsushi, 5,444,580, Cl. 360-73.060.
Mizuguchi, Noboru; Uchimura, Kiyoshi; Tanaka, Masatoshi; and Kitaji, Seiho, 5,444,711, Cl. 370-99.000.
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Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyoten, Masayoshi; and Saito, Takeshi, 5,444,336, Cl. 315-307.000.
Sadakata, Mareo; Iwasaki, Yoichiro; Yano, Yoshiharu; and Toyama, Masakazu, 5,444,442, Cl. 340-916.000.
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,443,864, Cl. 428-1.000.
Takizawa, Yumi, 5,444,817, Cl. 395-2.630.
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McShane, Richard. Motor vehicle security system. 5,444,430, Cl. 340-426.000.

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Miklusek, John M. Non-kinking tubing adaptor for intravenous catheter and associated flexible tubing. 5,443,460, Cl. 604-282.000.

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Miller, George C. Control clip for use with a toothpaste tube. 5,442,839, Cl. 24-563.000.

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Miller, William E.; and Tomczuk, Zygmunt, to United States of America, Energy. Electrorefiner. 5,443,705, Cl. 204-227.000.

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Milstein, Sam J.; and Kantor, Martin L., to Emisphere Technologies, Inc. Proteinoid microspheres and methods for preparation and use thereof. 5,443,841, Cl. 424-451.000.

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Minarelli, Alessandro: *See*—
Stivani, Eros; and Minarelli, Alessandro, 5,443,681, Cl. 156-504.000.

Minasakanian, Gevork; and Peck, James V. Penetration enhancers for transdermal delivery of systemic agents. 5,444,075, Cl. 514-327.000.

Mincher, Richard W.: *See*—
Lyna, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., 5,444,781, Cl. 380-46.000.

Miner, Frank H., Jr.: *See*—
Arthur, Mark T.; and Miner, Frank H., Jr., 5,444,734, Cl. 373-73.000.

Miner, Jon S., to InterNational Designs, Inc. Cardboard emblem bearing cap attachment for adjustable caps. 5,442,817, Cl. 2-195.100.

Minerals Technologies Inc.: *See*—
Francis, Raymond C.; and Evans, Daniel B., 5,443,634, Cl. 106-465.000.

Minister of National Defence: *See*—
Kempster, Robert W.; and George, Douglas B., 5,444,367, Cl. 324-204.000.

Ministry of International Trade & Industry: *See*—
Yamane, Takashi, 5,443,503, Cl. 623-3.000.

Minnesota Mining and Manufacturing Company: *See*—
Baldwin, Dwight G.; Kennedy, James K.; and Saxe, Steven G., 5,444,230, Cl. 235-462.000.
Gagnon, David R., 5,443,727, Cl. 210-490.000.
Hansen, Dennis D., 5,443,903, Cl. 428-355.000.
Herzberg, Carol E., 5,443,893, Cl. 428-198.000.
Koskenmaki, David C.; and Calhoun, Clyde D., 5,443,876, Cl. 428-40.000.
Lund, Marlys E., 5,443,963, Cl. 435-34.000.
Mader, Roger A.; and Ryther, Robert J., 5,443,742, Cl. 210-758.000.
Nikolaides, Nick; and Gerster, John F., 5,444,065, Cl. 514-293.000.
Psi, Joseph Y.; and Kim, Choon-Woo, 5,444,756, Cl. 378-98.800.
Perrington, Kenneth J.; and Kampfer, Robert D., 5,444,035, Cl. 503-201.000.
Pihl, Richard M.; Hayes, Duane J.; Barber, Loren L., Jr.; Welygan, Dennis G.; Hardwick, R. Eugene; and Zembke, Ronald O., deceased, 5,443,906, Cl. 428-370.000.
Satterwhite, James R.; Horning, Sandra J.; Wyatt, Gerald A.; and Reinem, Daniel E., 5,444,364, Cl. 324-67.000.

Minnich, Thomas W.: *See*—
Kneifel, R. William, II; Walsh, Stephen T.; Minnich, Thomas W.; Crovella, Robert M.; and Morner, A. Harold, 5,444,341, Cl. 318-432.000.

Mino, Kazuyoshi: *See*—
Tanaka, Katsuji; Mino, Kazuyoshi; and Nakazima, Yuka, 5,444,144, Cl. 528-503.000.

Mino, Norihisa; Soga, Mamoru; and Kazufumi, Ogawa, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium having an adsorbed film of molecules comprising two species of straight carbon chain molecules. 5,443,901, Cl. 428-336.000.

Mino, Norihisa: *See*—
Ogawa, Kazufumi; Mino, Norihisa; and Soga, Mamoru, 5,443,511, Cl. 623-16.000.

Minolta Camera Kabushiki Kaisha: *See*—
Murasaatsu, Hideo; Nakatani, Munehiro; and Nakajima, Akio, 5,444,554, Cl. 358-494.000.

Minorikawa, Hitoshi: *See*—
Honda, Yoshiaki; Minorikawa, Hitoshi; and Kamohara, Hideaki, 5,444,321, Cl. 310-263.000.

Misake, Yasuyuki: *See*—
Inoue, Shinichi; Abeyama, Katsutoshi; Munekane, Fuminori; Watanabe, Hisanobu; and Misake, Yasuyuki, 5,443,693, Cl. 201-1.000.

Misawa, Takeshi; and Ohta, Takeshi, to Fuji Photo Film Co., Ltd. Digital electronic camera for selectively recording a frame of still image and movie fields of image in a recording medium. 5,444,482, Cl. 348-220.000.

Mishima, Osamu: *See*—
Era, Koh; Suda, Yoshiyuki; Agawa, Satoshi; and Mishima, Osamu, 5,444,017, Cl. 437-184.000.

Miskel, John J., Jr.; Grinstein, Reuben H.; and Fischer, Stephen A., to Henkel Corporation. Tertiary amine derivatives as components of polymer forming systems. 5,444,127, Cl. 525-504.000.

Misonix, Inc.: *See*—
Alliger, Howard M.; Librizzi, Joseph; and Ginsburg, Robert, 5,443,456, Cl. 604-280.000.

Missout, Gilles: *See*—
Bourgeois, Jean-Marc; Missout, Gilles; Lalonde, Francois; and Belanger, Jacques, 5,444,380, Cl. 324-529.000.

Mistry, Mayank C.; Waterman, Timothy J.; and Larsen, Michael J., to Carrier Corporation. Snap-fit inducer housing and cover for gas furnace. 5,443,364, Cl. 415-214.100.

Misumi, Teruo: *See*—
Otoshi, Hirokazu; Takei, Tetsuya; Takai, Yasuyoshi; Okamura, Ryuji; Shirai, Shigeru; and Misumi, Teruo, 5,443,645, Cl. 118-718.000.

Mita, Yoshinobu: *See*—
Enokida, Miyuki; Mita, Yoshinobu; and Shishizuka, Junichi, 5,444,550, Cl. 358-453.000.

Mitani, Masao, to Hitachi Koki Co., Ltd. Thermal recording head. 5,444,475, Cl. 347-200.000.

Mitchell, Lawrence. Framed picture hanger system. 5,443,238, Cl. 248-478.000.

Mitoh, Hisayoshi: *See*—
Mandoh, Ritsuo; Minami, Takehiro; Ishida, Katsuhiko; and Mitoh, Hisayoshi, 5,443,909, Cl. 428-402.210.

Mitotix, Inc.: *See*—
Draetta, Giulio; Cottarel, Guillaume; and Damagnez, Veronique, 5,443,962, Cl. 435-29.000.

Mitron OY: *See*—
Heinonen, Ilkka; Helisten, Markku; and Maim, Timo, 5,444,264, Cl. 250-559.290.

Mitsubhishi Rayon Company Ltd.: *See*—
Aoki, Kazunori; Yamamoto, Yasufumi; and Ueki, Koji, 5,444,809, Cl. 385-128.000.

Mitsubishi Chemical Corporation: *See*—
Tanaka, Katsuji; Mino, Kazuyoshi; and Nakazima, Yuka, 5,444,144, Cl. 528-503.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Eguchi, Koji, 5,444,186, Cl. 174-250.000.
Endo, Takafumi, 5,444,464, Cl. 347-195.000.
Fujitaka, Shigeaki; and Kiji, Akio, 5,444,460, Cl. 345-144.000.
Fukui, Wataru; and Iwata, Toshio, 5,442,954, Cl. 73-115.000.
Hirai, Hayao, 5,444,640, Cl. 364-474.350.
Ichihashi, Motomi, 5,444,286, Cl. 257-420.000.
Ideta, Yasushi; Umezu, Tsunemori; and Washitani, Akihiro, 5,444,388, Cl. 324-755.000.
Inoue, Takeshi, 5,444,222, Cl. 235-380.000.
Kaneyuki, Kazutoshi; and Nishimura, Shinji, 5,444,355, Cl. 322-58.000.
Katayama, Toshiharu, 5,444,278, Cl. 257-296.000.
Komoda, Michio, 5,444,647, Cl. 364-761.000.
Matsumoto, Sadayuki; Saikatsu, Takeo; Sakurai, Takehiko; and Hoshizaki, Junichiro, 5,444,335, Cl. 315-246.000.
Nakabayashi, Takeo, 5,444,852, Cl. 395-823.000.
Negishi, Michiro, 5,444,819, Cl. 395-22.000.
Nonogaki, Mitsuhiro; Fujino, Junji; Adachi, Akira; Murakami, Kohei; Morihiro, Yoshiyuki; and Hayashi, Osamu, 5,443,659, Cl. 148-23.000.
Ohsawa, Toshio; and Murata, Shigemi, 5,444,375, Cl. 324-380.000.
Oka, Kenichiro; and Onishi, Masaru, 5,444,544, Cl. 358-332.000.
Oshima, Seiichi; Tametani, Fumitaka; Yamagata, Jun; and Takanashi, Ken, 5,444,297, Cl. 257-691.000.
Shinohara, Hirofumi, 5,444,822, Cl. 395-27.000.
Sokai, Katsuji, 5,444,426, Cl. 336-57.000.
Takahasna, Akiko; Nakamura, Masahiko; Nakayama, Hiroyuki; Arita, Eiji; and Aasmoto, Yoichi, 5,444,495, Cl. 348-458.000.
Terazawa, Takeshi, 5,444,578, Cl. 360-65.000.
Uenishi, Akio; Yamaguchi, Hiroshi; and Fukumochi, Yasuaki, 5,443,999, Cl. 437-6.000.
Yamaguchi, Yasuo; Ajika, Natsuo; and Yamano, Tsuyoshi, 5,444,282, Cl. 257-344.000.
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Yutani, Naoki; and Kimata, Masafumi, 5,444,484, Cl. 348-305.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Takagawa, Makoto; Inamasa, Kenji; Fushimi, Norio; Hashimoto, Akio; and Sasaki, Takayo, 5,444,172, Cl. 585-452.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Fujita, Kenjiro; Usuki, Katsutoshi; and Hatta, Katsuhiro, 5,443,432, Cl. 477-155.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hayashi, Masateru; Ishii, Kazuo; Ito, Akihiro'; Kawai, Hideaso; Hirao, Yasuhiko; and Iokawa, Hiroshi, 5,443,116, Cl. 165-149.000.

Mitsubishi Kasei Corporation: *See*—
Inoue, Shinichi; Abeyama, Katsutoshi; Munekane, Fuminori; Watanabe, Hisanobu; and Misake, Yasuyuki, 5,443,693, Cl. 201-1.000.
Suzuki, Fujio; Hiraki, Yuji; Tanaka, Hideho; Kamizono, Akihiro; Kondo, Jun; and Teranishi, Yutaka, 5,444,157, Cl. 530-395.000.

Mitsubishi Materials Corporation: *See*—
Kawase, Haruo; Matsumoto, Katsunori; and Nakamura, Shinichi, 5,443,585, Cl. 408-199.000.
Shimano, Takamasa; Arai, Tatsuo; and Saito, Takayoshi, 5,443,335, Cl. 407-113.000.
Tanaka, Yoshiyuki; Abe, Masatoshi; and Ito, Taka-aki, 5,444,596, Cl. 361-120.000.

Mitsubishi Paper Mills Limited: *See*—
Matsushita, Toshihiko; and Takahashi, Shunsuke, 5,443,908, Cl. 428-402.240.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Kojima, Takashi; Suzuki, Shinichi; and Shigematsu, Yasuyuki, 5,443,935, Cl. 430-78.000.
Tachi, Kazuhisa; Okamoto, Takeshi; and Muramatsu, Mikiko, 5,443,874, Cl. 428-36.700.
Tomita, Masayuki; Uchino, Hideshi; Sugano, Toshihiko; Fujita, Takashi; and Aritomi, Mitsutoshi, 5,444,125, Cl. 515-293.000.

Mitsuda, Makoto; Ohtaka, Hideki; Sakakibara, Yoshio; Kobayashi, Kazuhiko; Fujii, Shozo; and Hashimoto, Atsushi, to Matsushita Electric Industrial Co., Ltd. Apparatus for recording/reproducing digital data on/from recording medium. 5,444,580, Cl. 360-73.060.

Mitsui Toatsu Chemicals, Inc.: *See*—
Ajioka, Masanobu; Esomoto, Katashi; Yamaguchi, Akihiro; and Shinoda, Hosei, 5,444,107, Cl. 523-124.000.
Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, 5,444,143, Cl. 528-361.000.
Oshiwata, Kenichi; Shimada, Masao; and Hatamori, Akira, 5,443,973, Cl. 435-129.000.
Shimada, Shizio; Sudo, Tadashi; and Iwata, Daiji, 5,443,957, Cl. 435-7.240.

Mitsuya, Morihiro: *See*—
Tsuchiya, Yoshimi; Nomoto, Takashi; Mitsuya, Morihiro; Nonoshita, Katsumasa; Hayashi, Masahiro; Satoh, Toshihiko; Sawasaki, Yoshio; and Kamei, Toshio, 5,444,084, Cl. 514-438.000.

Mittra, Raj: *See*—
Itoh, Munehiko; Arakawa, Masao; and Mittra, Raj, 5,444,452, Cl. 343-700.0MS.

Mitzlaff, James E., to Motorola, Inc. Method and apparatus for feedforward power amplifying. 5,444,418, Cl. 330-52.000.

Mitzutani, Natsuhiko, to Canon Kabushiki Kaisha. Single-wavelength semiconductor laser. 5,444,730, Cl. 372-45.000.

Miura, Hideo: *See*—
Nakajima, Takashi; Miura, Hideo; Ohta, Hiroyuki; and Okamoto, Noriaki, 5,444,302, Cl. 257-755.000.

Miura, Shuuichi: *See*—
Kawabata, Atsushi; Miura, Shuuichi; Yamasaki, Kimiya; Taki, Yuji; Kobayashi, Yoshiki; and Tanifuji, Shinya, 5,444,829, Cl. 395-100.000.

Miura, Yousuke: *See*—
Honda, Masami; Takada, Masaaki; and Miura, Yousuke, 5,444,601, Cl. 361-683.000.

Miwa, Teiichi: *See*—
Murata, Kazue; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sanada, Yoshika; and Miwa, Teiichi, 5,442,826, Cl. 15-3.510.

Miyagawa, Atsushi: *See*—
Iwayama, Takeshi; Miyagawa, Atsushi; and Inaba, Masaichi, 5,444,188, Cl. 174-261.000.

Miyajima, Noriyoshi: *See*—
Odaira, Michiya; Sugihara, Kazunori; Miyajima, Noriyoshi; Miyaki, Takumi; and Hiramatsu, Motohiko, 5,443,241, Cl. 251-129.070.

Miyake, Akira; and Amemiya, Mitsuaki, to Canon Kabushiki Kaisha. Beam position detecting device. 5,444,758, Cl. 378-113.000.

Miyake, Jun: *See*—
Yamaguchi, Yasunori; and Miyake, Jun, 5,444,665, Cl. 365-230.020.

Miyaki, Takumi: *See*—
Odaira, Michiya; Sugihara, Kazunori; Miyajima, Noriyoshi; Miyaki, Takumi; and Hiramatsu, Motohiko, 5,443,241, Cl. 251-129.070.

Miyako Jidosha Kogyo Kabushikigaisha: *See*—
Saito, Kazuo; Yasuda, Takao; and Oyama, Toru, 5,442,916, Cl. 60-547.100.

Miyakoshi, Atsushi; and Matsuno, Akira, to Kabushiki Kaisha Komatsu Seisakusho. Thin film el device. 5,444,268, Cl. 257-79.000.

Miyamoto, Moritoshi, to Canon Kabushiki Kaisha. Optical information recording/reproducing apparatus. 5,444,224, Cl. 235-454.000.

Miyamura, Isao: *See*—
Enomoto, Hajime; and Miyamura, Isao, 5,444,798, Cl. 382-199.000.

Miyata, Katsuya: *See*—
Daujou, Seiji; Miyata, Katsuya; and Ohta, Shuji, 5,442,977, Cl. 74-607.000.

Miyauchi, Masato: *See*—
Sato, Hiroya; and Miyauchi, Masato, 5,444,300, Cl. 257-737.000.

Miyauchi, Michihiro: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kurotomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Azuyama, Junko, 5,443,864, Cl. 428-1.000.

Miyazaki, Kenji: *See*—
Sato, Tadanori; Sawada, Kazuo; Nakai, Yoshihiro; and Miyazaki, Kenji, 5,443,665, Cl. 148-909.000.

Miyazaki, Koji: *See*—
Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyotea, Masayoshi; and Saito, Takeshi, 5,444,336, Cl. 315-307.000.

Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, to Nisshin Flour Milling Co., Ltd.; and Nagata Sangyo Co., Ltd. Amylase inhibitors. 5,444,046, Cl. 514-12.000.

Miyazawa, Sadao: *See*—
Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Masuo, Mizukami; Fujita, Masaru; Miyazawa, Sadao; and Aruga, Noriaki, 5,444,316, Cl. 310-49.00R.

Miyazono, Yutaka: *See*—
Ohtsubo, Kazumi; Matsuda, Mitsuhide; Miyazono, Yutaka; and Horio, Hideaki, 5,444,474, Cl. 347-87.000.

Miyoshi, Motosuke: *See*—
Nagai, Takamitsu; Yamazaki, Yuichiro; and Miyoshi, Motosuke, 5,444,256, Cl. 250-396.00R.

Mizgate, Kurt A.: *See*—
Hyslop, Gregory L.; Kraemer, John W.; and Mizgate, Kurt A., 5,443,228, Cl. 244-3.140.

Mizuguchi, Noboru; Uchimura, Kiyoshi; Tanaka, Masatoshi; and Kitaji, Seiko, to Matsushita Electric Industrial Co., Ltd. HDTV signal transmission apparatus. 5,444,711, Cl. 370-99.000.

Mizukami, Masao; and Kanazawa, Nobuaki, to Hitachi, Ltd.; and Hitachi Communication Systems, Inc. A ternary signal transmission circuit and method. 5,444,740, Cl. 375-286.000.

Mizumura, Tsutomu, to Tokyo Seimitsu Co., Ltd. Probing apparatus having an automatic probe card install mechanism and a semiconductor wafer testing system including the same. 5,444,386, Cl. 324-754.000.

Mizuno, Takayoshi; and Yamamori, Motohiko, to Elmo Co., Ltd. Portable image input equipment. 5,444,486, Cl. 348-376.000.

Mizuno, Tatsuji; Takeshima, Shinichi; Sekizawa, Kazuhiko; and Kasahara, Senshi, to Toyota Jidosha Kabushiki Kaisha; and Tosoh Corporation. Catalyst for purifying exhaust gas. 5,443,803, Cl. 423-213.200.

Mniece, James R., to Hewlett-Packard Company. Ultrasound prode with banks of interconnected electrostrictive transducer elements. 5,443,070, Cl. 128-661.010.

Moberly, Christopher R. Collapsible cap for a pickup truck. 5,443,295, Cl. 296-105.000.

Mobil Oil Corporation: *See*—
Brown, Stephen H., 5,444,108, Cl. 568-664.000.
Chambers, Michael R.; and Sprunt, Eve S., 5,443,119, Cl. 166-254.000.
Howell, David A., 5,443,120, Cl. 166-265.000.
Morgan, Kevin P., 5,442,837, Cl. 24-400.000.
Richardson, Dale; and Smith, Roger W., 5,442,838, Cl. 24-402.000.

Modinger, Thomas; and Schmid, Johannes, to TRW Repa GmbH. Belt retractor with a belt pretensioner acting on the belt drum. 5,443,222, Cl. 242-374.000.

Moeckli, Randolph: *See*—
Reyes, Gregory R.; Kim, Jungsuh P.; and Moeckli, Randolph, 5,443,965, Cl. 435-693.000.

Moffat, Karen A.: *See*—
Paine, Anthony J.; Pontes, Fatima M.; and Moffat, Karen A., 5,444,140, Cl. 526-346.000.

Mogensen, Peder, to Fredrik Mogensen AB. Apparatus for screening granular materials. 5,443,163, Cl. 209-315.000.

Moghaddasi, Majid: *See*—
Nielsen, Arne; McCartney, Phillip D.; Thompson, Donnie J.; and Moghaddasi, Majid, 5,442,842, Cl. 26-80.000.

Mohammed, Gaffar. Powered glare screen device. 5,443,300, Cl. 296-97.400.

Moitie, Richard; Rolland, Jean-Marie; and Renard, Jacques, to International Business Machines Corporation. Tie-up and tie-down circuits with a primary input for testability improvement of logic networks. 5,444,391, Cl. 326-16.000.

Moldt, Peter; Scheel-Kruger, Jorgen; and Jensen, Leif H., to Neuro-Search A/S. Phenyl substituted heterocyclic compounds. 5,444,070, Cl. 514-304.000.

Molecular Displays, Inc.: *See*—
Leventis, Nicholas; and Wrighton, Mark S., 5,444,330, Cl. 313-506.000.

Molecular Probes, Inc.: *See*—
Haughland, Richard P.; Huang, Zhijiau; Larison, Karen D.; and Zhang, Yu-zhong, 5,443,966, Cl. 435-4.000.

Molex Incorporated: *See*—
Wang, Leland, 5,443,395, Cl. 439-159.000.

Molten Metal Technology, Inc.: *See*—
Wilkinson, Mark A.; and Nagel, Christopher J., 5,443,572, Cl. 266-46.000.

Momono, Tatsuobu; and Mutoh, Yasushi, to NSK Ltd. Rolling bearing having balls of different diameters. 5,443,317, Cl. 384-491.000.

Monarch Marking Systems, Inc.: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; and Kawamura, Kouichi, 5,443,319, Cl. 400-250.000.

Mondek, Martin J.; and Sullivan, Donald K., to Outboard Marine Corporation. Vibration isolating mounting for outboard motor. 5,443,406, Cl. 440-52.000.

Monka, Jurgen: *See*—
Rohwetter, Norbert; and Monka, Jurgen, 5,443,149, Cl. 198-392.000.

Monroe, Kerry J.: *See*—
Hall, Steven G.; Tougher, Lawrence N.; Monroe, Kerry J.; Warling, Christian J.; Bloom, Thomas L.; Repasky, William P.; and Habbinga, Erik B., 5,444,400, Cl. 327-108.000.

Monroe, Paul: *See*—
Berghoff, Gene; Letterell, Scott; and Monroe, Paul, 5,443,065, Cl. 128-639.000.

Monsanto Company: *See*—
Kalota, Dennis J.; and Silverman, David C., 5,443,651, Cl. 134-2.000.

Montefiore Medical Center: *See*—
Wadler, Scott, 5,444,064, Cl. 514-274.000.

Montgomery, Daniel P., to Fritz Industries, Inc. Composition for and method of pumping concrete. 5,443,636, Cl. 106-805.000.

Montgomery, Peter; Becker, Don; Robins, Cathy; Slack, Mike; Lee, Tim; and Oliver, Bill, to General Signal Corporation. Computer system for monitoring events and which is capable of automatically configuring itself responsive to changes in system hardware. 5,444,642, Cl. 364-550.000.

Moodie, Lyn C.: *See*—
Phippa, Joseph B.; and Moodie, Lyn C., 5,443,442, Cl. 604-20.000.

Moody, James A. Survival and camping tool. 5,442,856, Cl. 30-314.000.

Moog Inc.: *See*—
Haumann, Anton, 5,443,089, Cl. 137-82.000.

Moore, D. Eric; and McAnalley, Bill H., to Carrington Laboratories, Inc. Drink containing mucilaginous polysaccharides and its preparation. 5,443,830, Cl. 424-195.100.

Moore Epitaxial Inc.: *See*—
Moore, Gary M.; and Nishikawa, Katsuhito, 5,444,217, Cl. 219-405.000.

Moore, Gary M.; and Nishikawa, Katsuhito, to Moore Epitaxial Inc. Rapid thermal processing apparatus for processing semiconductor wafers. 5,444,217, Cl. 219-405.000.

Moore, Greg A.: *See*—
Kamel, Mostafa M.; and Moore, Greg A., 5,442,920, Cl. 60-602.000.

Morancais, Jean-Luc; Lety, Alain; and Vanlerberghe, Guy, to L'Oreal. Cosmetic and/or pharmaceutical composition containing a dispersion of lipid vesicles, process for the preparation of the said dispersion and dispersion of lipid vesicles. 5,443,840, Cl. 424-450.000.

Mordan, William J.: *See*—
Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hase, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

Morgan, Kevin P., to Mobil Oil Corporation. Integrated end stops for zipper slider. 5,442,837, Cl. 24-400.000.

Morgans, David, Jr.: *See*—
Patterson, John W.; Morgans, David, Jr.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Sjogren, Eric B.; Trejo, Alejandro; Waltos, Ann M.; and Weikert, Robert J., 5,444,072, Cl. 514-320.000.

Mori, Atsushi: *See*—
Nakata, Yoshinori; and Mori, Atsushi, 5,444,211, Cl. 219-121.670.

Mori, Hiroyuki, to NEC Corporation. Apparatus for electroplating the main surface of a substrate. 5,443,707, Cl. 204-242.000.

Mori, Nobuyuki: *See*—
Kabeuwa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oinuma, Hitoaki; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtaro; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.
Yamanaka, Motosuke; Hoshiko, Tomonori; Suda, Shinji; Yoneda, Naoki; Mori, Nobuyuki; Shino, Mitsumasa; Ishihara, Hiroki; Saito, Mamoru; and Matsuoka, Toshiyuki, 5,444,083, Cl. 514-429.000.

Mori, Terao; Yamaguchi, Noriahige; and Wakayama, Katsuhiko, to TDK Corporation. Method for preparing iron system soft magnetic sintered body. 5,443,787, Cl. 419-32.000.

Mori, Toshiaki: *See*—
Yoshimori, Takashi; and Mori, Toshiaki, 5,444,393, Cl. 326-38.000.

Moriguchi, Haruhiko: *See*—
Fukushima, Hisashi; Moriguchi, Haruhiko; and Takekoshi, Nobuhiko, 5,444,468, Cl. 347-14.000.

Morihiro, Yoshiyuki: *See*—
Nonogaki, Mitsuhiro; Fujino, Junji; Adachi, Akira; Murakami, Kohei; Morihiro, Yoshiyuki; and Hayashi, Osamu, 5,443,659, Cl. 148-23.000.

Morii, Masayoshi: *See*—
Abe, Hiroshi; Fukushima, Tetsuki; Sotoya, Kohshiro; Harada, Shoichiro; Kitagawa, Hiroshi; Morii, Masayoshi; and Isayama, Yasutoshi, 5,444,099, Cl. 521-129.000.

Morikawa, Hiroshi: *See*—
Niemela, Paul W.; Morikawa, Hiroshi; and Demarco, Stephen M., 5,442,901, Cl. 56-11.900.

Morikawa, Koji, to Fuji Jukogyo Kabushiki Kaisha. Exhaust gas recirculation system. 5,443,547, Cl. 60-274.000.

Morimoto, Kiyoshi: *See*—
Murata, Kazuo; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sanada, Yoshika; and Miwa, Teiichi, 5,442,826, Cl. 15-3.510.
Okada, Kenji; Morimoto, Kiyoshi; Udagawa, Masaharu; Yuki, Koichiro; Niwa, Masaaki; Hirai, Yoshihiko; and Yasui, Juro, 5,444,267, Cl. 257-14.000.

Morimoto, Kyomi: *See*—
Kishi, Hiroshi; Ito, Toru; Morimoto, Kyomi; Yokoyama, Shoji; and Kuroda, Kenji, 5,444,629, Cl. 364-449.000.

Morimoto, Toshihisa: *See*—
Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, 5,444,046, Cl. 514-12.000.

Morinaga, Kazuyuki; Sootome, Sumitoshi; and Tomura, Hisayuki, to Canon Kabushiki Kaisha. Sheet supplying apparatus for feeding sheets from cassettes having different sheet holding capacities. 5,443,252, Cl. 271-127.000.

Morita, Akihiro: *See*—
Takezawa, Minoru; Yatsu, Shigeo; Endo, Fumihisa; Morita, Akihiro; and Kishi, Yuji, 5,444,100, Cl. 521-131.000.

Morita, Shizuo: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Ikeda, Tadayoshi, 5,444,515, Cl. 355-200.000.

Moriwaki, Kazuro: *See*—
Machida, Toyoji; Hara, Mitsunori; Moriwaki, Kazuro; Tsujioku, Keiichi; Amazutsumi, Tooru; Tanaki, Hiyoshi; Yamauchi, Yasuhiro; and Narukawa, Satoshi, 5,443,925, Cl. 429-94.000.

Moriya, Mitsurou: *See*—
Yamada, Shinichi; Moriya, Mitsurou; Yamaguchi, Hiroyuki; Yamaguchi, Osamu; Kanda, Yoshihiro; and Matsumoto, Yasuki, 5,444,682, Cl. 369-32.000.

Moriyasu, Hiro, to Zeelan Technology, Inc. Signal acquisition system utilizing ultra-wide time range time base. 5,444,459, Cl. 345-133.000.

Morizumi, Masaaki, to Fuji Photo Optical Co., Ltd. Camera vibration correction apparatus. 5,444,512, Cl. 354-430.000.

Morotomi, Masami: *See*—
Yamamoto, Takaharu; Morotomi, Masami; and Tanaka, Ryuichiro, 5,443,951, Cl. 435-6.000.

Morris, Carol A.: *See*—
Cornell, Bruce A.; Brasch-Makavytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Raguse, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., 5,443,955, Cl. 435-7.210.

Morris, Frederic J.; and McKiernan, Edward F., to Sealand Technology, Inc. Testing of hoses. 5,442,952, Cl. 73-40.700.

Morser, A. Harold: *See*—
Kneifel, R. William, II; Walsh, Stephen T.; Minnich, Thomas W.; Crovella, Robert M.; and Morser, A. Harold, 5,444,341, Cl. 318-432.000.

Mortemard de Boisse, Jerome, to Avesay Partners S.A.R.L. Planning tool including support having delimited reception zones to receive movable slips. 5,443,387, Cl. 434-108.000.

Mortensen, Robert V., to FMC Corporation. Multiple source plasma generation and injection device. 5,444,208, Cl. 219-121.480.

Morton International, Inc.: *See*—
Beekman, George F.; Conroy, Gary M.; Hyde, Jeffrey R.; and Norris, Gene E., 5,444,111, Cl. 524-180.000.
Cunningham, Donald J.; and Erickson, James D., 5,443,286, Cl. 280-741.000.
Strahl, Paul E.; Allard, John E.; and Adams, Gary V., 5,443,284, Cl. 280-728.200.

Mosel Vitelic Corporation: *See*—
Liang, Mong-Song; Hu, Cheng C.; and Wong, Ting-Wah, 5,444,283, Cl. 257-361.000.

Moser, Richard, to HL Display AB. Device for holding strip-like information carriers. 5,442,872, Cl. 40-642.000.

Moslehi, Mehrdad M.: *See*—
Lee, Yong J.; and Moslehi, Mehrdad M., 5,443,315, Cl. 374-126.000.
Lee, Yong J.; and Moslehi, Mehrdad M., 5,444,815, Cl. 392-416.000.

Mosley, Keith A.; and Elrod, Kent H., to Murray, Inc. Rotary mower having integrated deflector/mulching plug and improved blade. 5,442,902, Cl. 56-17.500.

Mossaad, George S.: *See*—
Mahoney, Dennis M.; and Mossaad, George S., 5,443,698, Cl. 204-59.0QM.

Motamedi, Richard C.: *See*—
Wolters, Harrie J. M.; Brooks, Philip M.; Hung, David T. H.; Motamedi, Richard C.; and Rosinski, Louis S., Jr., 5,442,858, Cl. 33-1.00N.

Motorola: *See*—
Cambou, Bertrand F.; and Hughes, Donald L., 5,444,289, Cl. 257-510.000.
Galecki, Dawn M., 5,444,764, Cl. 379-58.000.

Motorola, Inc.: *See*—
Eagar, Dwight D.; Sundstrom, Ray D.; and Pham, Phuc C., 5,444,395, Cl. 326-73.000.
Goldberg, Steven J., 5,444,438, Cl. 340-825.440.
Greenwood, Jonathon; Headricks, Douglas W.; and Jaskey, Frank, 5,444,303, Cl. 257-786.000.
Hase, Kevin L.; Hase, Ken A.; and Vought, Kimber J., 5,444,325, Cl. 310-368.000.

Heck, Joseph P.; and Ellingson, David B., 5,444,865, Cl. 455-86.000.
Mitzlaff, James E., 5,444,418, Cl. 330-52.000.
Olds, Keith A.; and Maine, Kristine P., 5,444,430, Cl. 342-357.000.
Stricklin, Douglas M.; VanDyke, William R., Jr.; Marom, Tony Y.; and Cannon, Gregory L., 5,444,869, Cl. 455-89.000.

Motoyama, Hajime; Kimizuka, Junichi; Gima, Takeji; and Nakamura, Akihiro, to Canon Kabushiki Kaisha. Electrophotographic image forming apparatus and its high voltage power source device. 5,444,519, Cl. 355-219.000.

Moulinex (Societe Anonyme): *See*—
Bouleau, Jean-Paul A. A.; and Guillot, Gerard L. H., 5,444,216, Cl. 219-245.000.

Mousseau, Missoum; Lin, Ruey Y.; and Stark, Casper F., to Howmedica Inc. Composite orthopedic implant. 5,443,513, Cl. 623-16.000.

Mount Sinai School of Medicine of the City University of New York: *See*—
Ornstein, Leonard, 5,444,105, Cl. 522-40.000.

Moving Magnet Technologies S.A.: *See*—
Oudet, Claude, 5,444,313, Cl. 310-17.000.

Moyer, Bruce A.; Sachleben, Richard A.; and Bonnesen, Peter V., to United States of America, Energy. Process for extracting technetium from alkaline solutions. 5,443,731, Cl. 210-634.000.

MTU Motoren und Turbinen Union: *See*—
Kiefer, Guenther, 5,443,042, Cl. 123-41.490.

MTU Motoren- und Turbinen-Union Muenchen GmbH: *See*—
Satzger, Wilhelm; and Mangold, Edmund, 5,444,536, Cl. 356-376.000.

Mueller, Mario; and Sekoulow, Ivan, to Daimler-Benz Aerospace Airbus GmbH. Method and apparatus for treating waste water. 5,443,733, Cl. 210-651.000.

Mueller, Mike A.: *See*—
Heredia, George L.; Almblad, Robert E.; and Mueller, Mike A., 5,443,339, Cl. 409-81.000.

Mueller, Richard: *See*—
Huber, Manfred; Mueller, Richard; and Schaller, Anton, 5,443,338, Cl. 409-7.000.

Mueller Steam Specialty: *See*—
Desai, Ashvin D.; and Whritenour, Robert, 5,443,722, Cl. 210-253.000.

Mues, Willem: *See*—
Krafft, Werner; Jonas, Friedrich; Lalvani, Prem; Andries, Hartwig; and Mues, Willem, 5,443,944, Cl. 430-529.000.

Muhl, Thomas: *See*—
de Marchi, Silverio; and Muhl, Thomas, 5,444,806, Cl. 385-75.000.

Muir, David J.: *See*—
Sarkinas, Robert; Muir, David J.; and Hillstrom, David U., 5,442,871, Cl. 40-606.000.

Muir, Gregory: *See*—
Davis, Richard A.; Frick, Kenneth L.; Muir, Gregory; and Nowack, James, 5,444,770, Cl. 379-99.000.

Mulholland, Ronald; and McCallum, Donald, to Howden Group PLC. Heat exchangers. 5,443,113, Cl. 165-8.000.

Mullane, Kevin: *See*—
Downey, James M.; and Mullane, Kevin, 5,443,836, Cl. 424-423.000.

Muller, John J. Umbrella cover assembly. 5,443,086, Cl. 135-34.200.

Muller, Karlheinz: *See*—
Haussler, Bernd; Thurner, Thomas; and Muller, Karlheinz, 5,444,643, Cl. 364-579.000.

Muller, Robert: *See*—
Beisel, Hermann; Blaser, Peter T.; Hauck, Dieter; Hutmeslaub, Rudolf; Jager, Helmut; Jahn, Hans-Georg; Muller, Robert; Rodi, Anton; and Spiegel, Nikolaus, 5,443,006, Cl. 101-477.000.

Muller, Roger: *See*—
Ertavi, Tibor; and Muller, Roger, 5,443,256, Cl. 271-277.000.

Mullinax, Bill M.: *See*—
Shebanow, Michael S.; Plourde, Thomas R.; and Mullinax, Bill M., 5,443,415, Cl. 451-302.000.

Mullins, Dennis: *See*—
Poskett, Peter; Mullins, Dennis; Nomoto, Shimichi; and Gosselin, Stephane, 5,444,449, Cl. 342-354.000.

Multiform Desiccants, Inc.: *See*—
Kiyani, M. Reza, 5,443,626, Cl. 96-108.000.

Munekane, Fuminori: *See*—
Inoue, Shinichi; Abeyama, Katsutoshi; Munekane, Fuminori; Watanabe, Hinnobu; and Miaske, Yasuyuki, 5,443,693, Cl. 201-1.000.

Munger, Burton L., IV: *See*—
Woytowitz, Peter J.; Munger, Burton L., IV; Randolph, Scott W.; Hopkins, Larry K.; and Kreiner, Donald L., 5,444,611, Cl. 364-145.000.

Murai Co., Ltd.: *See*—
Hyoi, Isao, 5,444,502, Cl. 351-107.000.

Murai, Kazuo: *See*—
Hashiguchi, Tadato; Tachikawa, Michiyoshi; Ukai, Takeshi; Kaneko, Yoshio; Takahashi, Hiroshi; Saitoh, Takashi; Murai, Kazuo; Sakano, Yukio; Aida, Midori; Yamakawa, Shinji; and Hikita, Toshiya, 5,444,518, Cl. 355-201.000.

Murai, Mikio; Takahashi, Kiyoshi; Odagiri, Masuru; Kai, Yoshiaki; Suzuki, Takashi; and Kuwada, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium having a carbon protective layer and partially fluorinated alkyl carboxylic acid lubricant layer. 5,443,888, Cl. 428-143.000.

Murai, Toshiyuki: *See*—
Matsunaga, Eiju; Fukushima, Akira; Nakashima, Noriyuki; Murai, Toshiyuki; Takemoto, Shinya; Tanabe, Mikio; and Kinoshita, Hisashi, 5,444,621, Cl. 364-424.050.

Murakami, Hirotoshi: *See*—
Itasi, Hitoshi; Yamasaki, Yuji; and Murakami, Hirotoshi, 5,443,873, Cl. 428-36.300.

Murakami, Kohei: *See*—
Nonogaki, Mitsuhiro; Fujino, Junji; Adachi, Akira; Murakami, Kohei; Morihiro, Yoshiyuki; and Hayashi, Osamu, 5,443,659, Cl. 148-23.000.

Muramaki, Kazuo: *See*—
Ohno, Hiromoto; Ohi, Toshio; Nakayama, Hidetoshi; and Muramaki, Kazuo, 5,444,171, Cl. 570-177.000.

Muramatsu, Hideo; Nakatani, Munehiro; and Nakajima, Akio, to Minolta Camera Kabushiki Kaisha. Image reading apparatus and method for reading images of different sizes of originals. 5,444,554, Cl. 358-494.000.

Muramatsu, Mikiko: *See*—
Tachi, Kazuhisa; Okamoto, Takeshi; and Muramatsu, Mikiko, 5,443,874, Cl. 428-36.700.

Murano, Shunji, to Kyocera Corporation. Image devices. 5,444,520, Cl. 355-229.000.

Murase, Heihachi: *See*—
Nagano, Toshiaki; Murase, Heihachi; and Kogure, Hideo, 5,443,900, Cl. 428-332.000.

Murase, Masanori: *See*—
Suzuki, Takahiro; Ashiya, Seiji; and Murase, Masanori, 5,443,934, Cl. 430-64.000.

Murashima, Yoshihiro: *See*—
Tanaka, Takayuki; Seikino, Yoshimasa; Murashima, Yoshihiro; Tokunaga, Yasuhiro; Ueno, Joji; and Yonaga, Takeru, 5,444,662, Cl. 365-203.000.

Murashita, Masaki: *See*—
Ishiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.

Murata, Kazue; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sanada, Yoshika; and Miwa, Teiichi, to Matsui Manufacturing Co., Ltd.; and Kyowa Hakko Kogyo Co., Ltd. Apparatus for cleaning the inside of a pipe. 5,442,826, Cl. 15-3.510.

Murata Kikai Kabushiki Kaisha: *See*—
Hasui, Keisi, 5,443,165, Cl. 209-602.000.
Nishikawa, Kazuo; and Nakagawa, Takashi, 5,443,217, Cl. 242-35.50A.
Ohnishi, Toru, 5,444,771, Cl. 379-100.000.

Murata Manufacturing Co., Ltd.: *See*—
Minami, Kunio; and Kadota, Michio, 5,444,322, Cl. 310-313.00D.
Yoshida, Ryuhei, 5,444,326, Cl. 310-359.000.

Murata, Masanao; Yamashita, Teppei; Tanaka, Tsuyoshi; Hoshiko, Takahide; Karita, Mitsuji; Kawano, Hitoshi; and Shinya, Totomu, to Shinko Electric Co., Ltd. Wafer conveying system in a clean room. 5,443,346, Cl. 414-222.000.

Murata, Shigemi: *See*—
Obsawa, Toshio; and Murata, Shigemi, 5,444,375, Cl. 324-380.000.

Murayama, Ryuji: *See*—
Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, 5,444,046, Cl. 514-12.000.

Murayama, Yoshinobu: *See*—
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,443,755, Cl. 252-299.610.

Muroaki, Kenneth J., Jr.: *See*—
Jones, Fletcher; Muroaki, Kenneth J., Jr.; and Robinson, Bennett, 5,443,686, Cl. 216-37.000.

Murray, Charles R., to At Plastics Inc. Uni-axially co-oriented thermoplastic film and bags made therefrom. 5,443,866, Cl. 428-35.700.

Murray, Inc.: *See*—
Mosley, Keith A.; and Elrod, Kent H., 5,442,902, Cl. 56-17.500.

Musalli, Yusuf G.: *See*—
Chow, Winston; Hecker, George E.; Musalli, Yusuf G.; and Syrett, Barry C., 5,442,921, Cl. 60-657.000.

Muto, Hakaru; and Kubota, Hiromi, to Canon Kabushiki Kaisha. Image forming apparatus including rotatable magnetic field generating means and control means for controlling image tone. 5,444,470, Cl. 347-15.000.

Mutoh Industries: *See*—
Takahashi, Isamu, 5,443,194, Cl. 225-2.000.

Mutoh, Katsuhiko: *See*—
Yamada, Yuka; and Mutoh, Katsuhiko, 5,443,646, Cl. 118-722.000.

Mutoh, Yasushi: *See*—
Momono, Tatunobu; and Mutoh, Yasushi, 5,443,317, Cl. 384-491.000.

Mutz, Bernd; Hullmann, Klaus; and Daler, Helmo, to A. Raymond GmbH & Co., KG. Metal dowel for anchorage in thin wall panels. 5,443,343, Cl. 411-30.000.

Muyshondt, Jorge E.: *See*—
Kokkosoulis, George D.; Muyshondt, Jorge E.; and Wilkie, Bruce J., 5,443,390, Cl. 439-76.100.

Mycynek, Victor G., to Zenith Electronics Corp. Low phase noise high frequency integrated oscillator with minimum pins. 5,444,422, Cl. 331-116.00R.

Myers, Fred D.: *See*—
Alcock, John M.; Nicholson, Joseph A.; Thistlethwaite, Trevor J.; and Myers, Fred D., 5,443,328, Cl. 405-169.000.

Myers, William R.: *See*—
Scheibelhoffer, Anthony S.; Dusek, Dianna B.; Hammond, Dennis L.; Wimolkiatisak, Surachai; Myers, William R.; Opalko, Robert J.; and Abrams, Richard L., 5,443,768, Cl. 264-39.000.

Myhre, John D.: *See*—
Dyott, Richard B.; Brooker, Eric L.; Bennett, Sidney M.; and Myhre, John D., 5,444,534, Cl. 356-350.000.

Myles, Colin K., to Meiko Limited. Method and system for controlling a pressurized fluid and valve assembly for use therein. 5,443,087, Cl. 137-14.000.

N. A. Taylor Co., Inc.: *See*—
Kimball, William C., 5,443,408, Cl. 441-22.000.

Na, Woon H., to Samsung Electronics Co., Ltd. Automatic sound volume control device for acoustic instruments. 5,444,783, Cl. 381-57.000.

Naan Irrigation Systems: *See*—
Dinur, Eldad, 5,443,212, Cl. 239-542.000.

Nachod, Julius E., III: *See*—
Siekman, Allen R.; and Nachod, Julius E., III, 5,442,823, Cl. 5-653.000.

Nacman, Aron; Appel, James J.; and Strauch, Andrew M., to Xerox Corporation. Fiber optic scanning beam detector. 5,444,239, Cl. 250-235.000.

Nagai, Kiyoshi: *See*—
Yoshizumi, Keiichi; Fukuda, Kazushi; Ariga, Seiichi; Ikeda, Shuji; Saeki, Makoto; Nagai, Kiyoshi; Hashiba, Soichiro; Nishihara, Shinji; and Kanai, Fumiyuki, 5,444,012, Cl. 437-60.000.

Nagai, Mitsuo: *See*—
Inoue, Shigeki; Tsuda, Fumiaki; Nagai, Mitsuo; Sakai, Tadamoto; and Nakamura, Kazuyuki, 5,443,772, Cl. 264-102.000.

Nagai, Takamitsu; Yamazaki, Yuichiro; and Miyoshi, Motosuke, to Kabushiki Kaisha Toshiba. Electrostatic lens and method for producing the same. 5,444,256, Cl. 250-396.00R.

Nagalingam, Samuel J. S.: *See*—
Han, Yu P.; and Nagalingam, Samuel J. S., 5,444,008, Cl. 437-45.000.

Nagano, Toshiaki; Murase, Heihachi; and Kogure, Hideo, to Kansai Paint Co., Ltd. Electromagnetic wave absorber. 5,443,900, Cl. 428-332.000.

Nagano, Yoshinobu: *See*—
Kimura, Tadashi; Nagano, Yoshinobu; Tomita, Kazuyuki; and Ikeda, Tetsu, 5,443,689, Cl. 216-63.000.

Naganuma, Takeo: *See*—
Ohtake, Shuji; Matsuoka, Hideki; Mikasa, Tetsuo; Naganuma, Takeo; and Ohno, Kazuto, 5,443,574, Cl. 267-140.140.

Nagasawa, Hideharu; Honma, Kazunari; Takeda, Yasuhiro; and Yoneda, Kiyoshi, to Sanyo Electric Co., Ltd. Semiconductor memory device with stack type memory cell. 5,444,653, Cl. 365-149.000.

Nagasawa, Kenichi: *See*—
Hoshi, Nobuhiro; and Nagasawa, Kenichi, 5,444,542, Cl. 358-261.100.

Nagasawa, Makoto, to Kabushiki Kaisha Toshiba. Duty discriminating circuit. 5,444,403, Cl. 327-172.000.

Nagase, Toshio: *See*—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, 5,444,152, Cl. 530-331.000.

Nagashima, Akira, to Pioneer Electronic Corporation. On-vehicle mobile radio telephone with an answering function. 5,444,761, Cl. 379-58.000.

Nagashima, Nao, to Canon Kabushiki Kaisha. Management system for controlling operation of an image processing apparatus. 5,444,517, Cl. 355-201.000.

Nagashima, Nao, to Canon Kabushiki Kaisha. Image processing apparatus having diagnostic mode. 5,444,846, Cl. 395-163.000.

Nagata Sangyo Co., Ltd.: *See*—
Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, 5,444,046, Cl. 514-12.000.

Nagata, Yasuhisa, to Toho Rayon Co., Ltd. Carbon film and process for preparing the same. 5,443,859, Cl. 427-122.000.

Nagel, Christopher J.: *See*—
Wilkinson, Mark A.; and Nagel, Christopher J., 5,443,572, Cl. 266-46.000.

Nagel, Heinz-Dieter; Christians, Jorg; and Lechler, Gerald, to Inventio AG. Method and apparatus for reducing the power required by an hydraulic elevator drive. 5,443,140, Cl. 187-253.000.

Nagura, Jun: *See*—
Nishikibe, Masaru; Kamei, Kazuo; Nagura, Jun; and Fukuroda, Takahiro, 5,444,077, Cl. 514-356.000.

Nair, Parameswaran B.; Price, James F.; and Goulding, Victor V., to MicroBilt Corporation. Financial transaction systems and methods utilizing a multi-reader transaction terminal. 5,444,616, Cl. 364-405.000.

Nakabayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha. I/O device interface having buffer mapped in processor memory addressing space and control registers mapped in processor I/O addressing space. 5,444,852, Cl. 395-823.000.

Nakagawa, Akio: *See*—
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

Nakagawa, Masahiko: *See*—
Shimei, Masato; Goto, Shigeki; Sakai, Takahiro; and Nakagawa, Masahiko, 5,443,595, Cl. 477-155.000.

Nakagawa, Sadao: *See*—
Ishiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.

Nakagawa, Takashi: *See*—
Nishikawa, Kazuo; and Nakagawa, Takashi, 5,443,217, Cl. 242-35.50A.

Nakahara, Toshiaki: *See*—
Saito, Mitsuru; and Nakahara, Toshiaki, 5,444,614, Cl. 364-191.000.

Nakai, Junichi; Imanaka, Yasuhiro; Aoki, Tetsuro; Ishibe, Shouichi; and Watanabe, Tooru, to Sharp Kabushiki Kaisha. Solid imaging pick-up element. 5,444,277, Cl. 257-223.000.

Nakai, Yoshihiro: *See*—
Sano, Tadanori; Sawada, Kazuo; Nakai, Yoshihiro; and Miyazaki, Kenji, 5,443,665, Cl. 148-509.000.

Nakajima, Akio: *See*—
Muramatsu, Hideo; Nakatani, Munehiro; and Nakajima, Akio, 5,444,554, Cl. 358-494.000.

Nakajima, Kazuhiko; Aado, Satoshi; Doba, Akira; and Yoshitome, Hideo, to Kanebo Ltd. Stabilized synthetic zeolite and a process for the preparation thereof. 5,443,812, Cl. 423-700.000.

Nakajima, Sakuya: *See*—
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

Nakajima, Shin; Hirao, Noriyoshi; Yamauchi, Kiyotaka; and Shimoe, Osamu, to Hitachi Metals, Ltd. Surge current-suppressing circuit and magnetic device therein. 5,443,664, Cl. 148-307.000.

Nakajima, Takashi; Miura, Hideo; Ohta, Hiroyuki; and Okamoto, Noriaki, to Hitachi, Ltd. Semiconductor device including multi-layer conductive thin film of polycrystalline material. 5,444,302, Cl. 257-755.000.

Nakajima, Yasumasa; Izuchi, Syuichi; Imachi, Hiroshi; and Fukutome, Hiroyuki, to Yuasa Corporation. Cathode composite. 5,443,927, Cl. 429-215.000.

Nakamura, Akihiro: *See*—
Motoyama, Hajime; Kimizuka, Junichi; Gima, Takeji; and Nakamura, Akihiro, 5,444,519, Cl. 355-219.000.

Nakamura, Eitaro: *See*—
Kitazawa, Kouita; Ohrui, Kouichi; and Nakamura, Eitaro, 5,444,110, Cl. 524-100.000.

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Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yoso; and Abe, Tomoaki, 5,444,471, Cl. 347-72.000.

Nakamura, Katsumi: *See*—
Ishikawa, Fukuo; Koaishi, Shuuichi; Nakamura, Katsumi; Ikemoto, Hideyuki; and Ishida, Toshio, 5,444,595, Cl. 361-86.000.

Nakamura, Kazuyuki: *See*—
Inoue, Shigeki; Tsuda, Fumiaki; Nagai, Mitsuo; Sakai, Tadamoto; and Nakamura, Kazuyuki, 5,443,772, Cl. 264-102.000.

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Takahama, Akiko; Nakamura, Masahiko; Nakayama, Hiroyuki; Arita, Eiji; and Asamoto, Yoichi, 5,444,495, Cl. 348-458.000.

Nakamura, Masashi: *See*—
Shimizu, Motohiro; and Nakamura, Masashi, 5,444,592, Cl. 361-21.000.

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Nakamura, Shunji: *See*—
Tomoyuki, Yohji; Nakamura, Shunji; Ohtsuka, Yasumasa; Okuda, Kouichi; Sakaki, Eihiro; Hayakawa, Akira; and Fukuzawa, Daizo, 5,444,521, Cl. 355-285.000.

Nakamura, Takashi: *See*—
Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Biji; and Ogiwara, Satoshi, 5,444,833, Cl. 395-133.000.

Nakamura, Takemichi: *See*—
Kobama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Esokita, Ryuzo; and Matsuda, Keiichi, 5,443,972, Cl. 435-125.000.

Nakamura, Yasahiro: *See*—
Furuno, Takeshi; Nakamura, Yasuhiro; and Matsuo, Akinori, 5,444,663, Cl. 365-226.000.

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Arai, Tohru; Nakanishi, Kazuyuki; Takeda, Hiromasa; and Tachikawa, Hideo, 5,443,662, Cl. 148-209.000.

Nakano, Seizo: *See*—
Ishiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.

Nakano, Susumu: *See*—
Kuroda, Mitsunobu; Nakano, Susumu; Yamada, Osamu; Iijima, Osamu; and Terada, Motoharu, 5,444,439, Cl. 340-825.070.

Nakano, Tsukasa: *See*—
Negoro, Hisashi; Nakano, Tsukasa; and Minakata, Yoshiyuki, 5,444,514, Cl. 355-74.000.

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Nakashiro, Shigenori: *See*—
Usui, Kazushi; Nakashiro, Shigenori; and Ishida, Kentarou, 5,444,033, Cl. 502-314.000.

Nakaso, Akishi; Tsuyama, Kouichi; Kida, Akimari; Hatakeyama, Shuichi; and Urasaki, Naoyuki, to Hitachi Chemical Co., Ltd. Printed wiring board and production thereof. 5,444,189, Cl. 174-262.000.

Nakata, Yoshinori; and Mori, Atsushi, to Pasec, Ltd. Laser beam machine for cutting a workpiece using multiple machine conditions. 5,444,211, Cl. 219-121.670.

Nakatani, Kanji: *See*—
Aki, Osami; Kashi, Rikujiro; Nakatani, Kanji; and Okada, Atsunori, 5,443,834, Cl. 424-401.000.

Nakatani, Munehiro: *See*—
Muramatsu, Hideo; Nakatani, Munehiro; and Nakajima, Akio, 5,444,554, Cl. 358-494.000.

Nakayama, Akihito, to Sony Corporation. Position detecting apparatus employing an estimating function. 5,444,240, Cl. 250-237.00G.

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Ohno, Hiromoto; Obi, Toshio; Nakayama, Hidetoshi; and Muramaki, Kazuo, 5,444,171, Cl. 570-177.000.

Nakayama, Hiroyuki: *See*—
Takahama, Akiko; Nakamura, Masahiko; Nakayama, Hiroyuki; Arita, Eiji; and Asamoto, Yoichi, 5,444,495, Cl. 348-458.000.

Nakayama, Yoshitaro: *See*—
Fujimori, Kenichi; Nakayama, Yoshitaro; Shinohara, Takumi; Iwanami, Atsushi; Hagiwara, Toshimitsu; and Kobayashi, Tohru, 5,443,933, Cl. 430-59.000.

Nakazawa, Noriaki; Furukawa, Hideaki; Kobayashi, Kenji; and Tsujino, Hiromichi, to Canon Aptex Inc.; and Canon Kabushiki Kaisha. Projection original film feeding apparatus. 5,444,506, Cl. 353-104.000.

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Tanaka, Katsuji; Mino, Kazuyoshi; and Nakazima, Yuka, 5,444,144, Cl. 528-503.000.

Nalco Chemical Company: *See*—
Syrinek, Allen R., 5,444,088, Cl. 514-526.000.

Naldi, Valter, to Selco S.r.l. Automatic slide-on panel loading system. 5,443,356, Cl. 414-790.300.

Nam, Tom L.; Araikum, Shawn; and Keddy, Rex J. Diamond radiation detector element. 5,444,251, Cl. 250-361.00R.

Nambu Electric Co., Ltd.: *See*—
Nambu, Kunio, 5,444,749, Cl. 377-6.000.

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Takeda, Shiro; Namiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro; Tadaki, Shinji; and Koshino, Nagaki, 5,444,266, Cl. 250-586.000.

Nanba, Hideyuki; Hirata, Koji; and Sasaki, Shigenori, to Fujitsu, Ltd. Paper transport mechanism. 5,443,255, Cl. 271-273.000.

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Ejzak, Richard P.; and Nanda, Sanjiv, 5,444,718, Cl. 371-32.000.

Naporano, Joseph F.: *See*—
Baker, Bennie A.; Woodruff, Kenneth L.; and Naporano, Joseph F., 5,443,157, Cl. 209-12.100.

Nariishi, Masaaki: *See*—
Kugishima, Masahiro; Sato, Hiroyuki; Nariishi, Masaaki; Yamakawa, Noboru; and Yamamoto, Takahiro, 5,444,275, Cl. 257-206.000.

Narishige, Takeshi: *See*—
Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Guuji, Takahiro; and Okamoto, Kazuhisa, 5,443,919, Cl. 428-687.000.
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Narita, Masaki: *See*—
Sekine, Makoto; Horioka, Keiji; Okano, Haruo; Okumura, Katsuya; Hasegawa, Isahiro; and Narita, Masaki, 5,444,207, Cl. 219-121.430.

Narukawa, Satoshi: *See*—
Machida, Toyoji; Hara, Mitsunori; Moriwaki, Kazuro; Tsujioka, Keiichi; Amazutsumi, Toora; Tanaki, Hiyoshi; Yamauchi, Yasuhiro; and Narukawa, Satoshi, 5,443,925, Cl. 429-94.000.

Nasser, Edward A.; and Staebler, Manfred, to S-B Power Tool Company. Self-locking blade holder. 5,443,276, Cl. 279-77.000.

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Banerjee, Koushik; Natarajan, Siva; Mallik, Debendra; and Jain, Praveen, 5,444,602, Cl. 361-705.000.

Nation, Brenda J.: *See*—
Gao, Guilian; Baker, Jay D.; Nation, Brenda J.; and Adams, Karen M., 5,443,660, Cl. 148-24.000.

National Institute for Research in Inorganic Materials: *See*—
Era, Koh; Suda, Yoshiyuki; Agawa, Satoshi; and Mishima, Osamu, 5,444,017, Cl. 437-184.000.

National Semiconductor Corporation: *See*—
Buriya, Anand J.; Sethi, Satyendra S.; and Brown, Kevin C., 5,443,941, Cl. 430-313.000.
Covey, D. Kevin, 5,444,644, Cl. 364-730.500.
Crippa, Peter K.; and Szilagyi, Tomany, 5,444,737, Cl. 375-219.000.
Delmao, Cary L., 5,444,414, Cl. 327-563.000.
Polhemus, Gary D., 5,444,410, Cl. 327-317.000.
Solbeim, Alan G., 5,443,994, Cl. 437-164.000.

National Wood Treating Company: *See*—
Helsing, Guy G.; and Atherton, Jon, 5,443,641, Cl. 118-407.000.

Natsuhori, Hiroyuki: *See*—
Imanishi, Dai; Ohkoechi, Nozomu; Ohtawara, Kazushige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hironitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

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Naughton, Gail K.; and Naughton, Brian A., 5,443,950, Cl. 435-1.000.

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Naumann, Willi. Device for displaying CAD-drawings. 5,442,859, Cl. 33-18.100.

Nayuki, Shinichi: *See*—
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,443,755, Cl. 252-299.610.

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Hermann, Allen M.; Naziripour, Gol A.; and Datta, Timir, 5,444,425, Cl. 335-216.000.

NBB Nachrichtentechnik GmbH & Co. KG: *See*—
Burchard, Thomas; and Bredow, Wolfgang, 5,444,199, Cl. 200-43.040.

NCR Corporation: *See*—
Kelland, Stewart B., 5,444,793, Cl. 382-138.000.

NDM Acquisition Corp.: *See*—
Tunesy, David M.; Cartmell, Robert L.; Riazzi, Timothy J.; DeBan, Abdou F.; and McQuain, David B., 5,443,440, Cl. 601-152.000.

Neagle, Gilbert J.: *See*—
Malis, Michael J.; and Neagle, Gilbert J., 5,443,197, Cl. 227-176.000.

NEC Corporation: *See*—
Ezuriko, Hiroshi, 5,444,738, Cl. 375-229.000.
Hosoma, Tetsuya, 5,444,023, Cl. 437-195.000.
Kimura, Katsuji, 5,444,648, Cl. 364-841.000.
Kito, Eiji, 5,444,698, Cl. 370-29.000.
Kushita, Masayuki, 5,444,672, Cl. 368-47.000.
Matsui, Yoshinori, 5,444,305, Cl. 365-207.000.
Matsui, Yoshinori, 5,444,661, Cl. 365-201.000.
Mori, Hiroyuki, 5,443,707, Cl. 204-242.000.
Obara, Takashi, 5,444,667, Cl. 365-233.000.
Oguro, Shizuo; and Suzuki, Tetsuya, 5,443,661, Cl. 148-33.500.
Okanoue, Kazuhiro; Ushirokawa, Akihisa; and Furuya, Yukitsuna, 5,444,721, Cl. 371-43.000.
Shimizu, Hiroyuki, 5,444,703, Cl. 370-95.300.
Suzuki, Yasuhiro, 5,444,294, Cl. 257-666.000.
Tokuyama, Michiko, 5,444,001, Cl. 437-10.000.
Tsunai, Shiro, 5,444,281, Cl. 257-239.000.

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Ahkola, Steven M.; Aylward, Andy; and Koller, Tim J., 5,443,327, Cl. 405-118.000.

Negishi, Michiro, to Mitsubishi Denki Kabushiki Kaisha. Economic phenomenon predicting and analyzing system using neural network. 5,444,819, Cl. 395-22.000.

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Nelson, Joyce K.: *See*—
Macheras, James T.; Bikson, Benjamin; and Nelson, Joyce K., 5,443,728, Cl. 210-500.230.

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Patterson, John W.; Morgans, David, Jr.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario; Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Sjogren, Eric B.; Trejo, Alejandra; Waltos, Ann M.; and Weikert, Robert J., 5,444,072, Cl. 514-320.000.

Nemirovsky, Mario D., to Apple Computer, Inc. Associative memory system having configurable means for comparing fields in an array of stored data words with corresponding one or more fields in a supplied argument word. 5,444,649, Cl. 365-49.000.

Nemoto, Masaru: *See*—
Childers, Edwin B., III; Henry, Michael; and Nemoto, Masaru, 5,444,690, Cl. 369-263.000.

Neopost: *See*—
Vermesse, Bernard, 5,444,631, Cl. 364-464.020.

Nesch, Wolfgang: *See*—
Jaroschek, Christoph; Steger, Reinhard; Nesch, Wolfgang; Gehring, Alexander; and Bourdon, Karlheinz, 5,443,378, Cl. 425-130.000.

Nestec S.A.: *See*—
Farnsworth, John T.; and Johnson, Roger D., 5,443,092, Cl. 137-542.000.
Hirsbrunner, Pierre; and Roulin, Denys, 5,443,633, Cl. 106-287.130.
Hsu, Jau Y.; and Orzech, Thomas S., 5,443,379, Cl. 425-335.000.

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Cerna, Pavel; and Hay, Robert E., 5,444,707, Cl. 370-94.100.

Network Equipment Technologies, Inc.: *See*—
Burnett, John L.; and Newman, Peter, 5,444,702, Cl. 370-60.100.

Neubauer, Michael G.: *See*—
Purchio, Anthony F.; Skonier, John E.; and Neubauer, Michael G., 5,444,164, Cl. 536-23.500.

Neuer, Rainer: *See*—
Thiele, Harry; Neuer, Rainer; and Hosan, Hans-Josef, 5,443,573, Cl. 267-64.120.

Neumann, Ranier: *See*—
Zeltner, Doris; Niessner, Norbert; Seitz, Friedrich; Neumann, Ranier; and Seelert, Stefan, 5,444,123, Cl. 525-133.000.

Neurath, A. Robert: *See*—
Jiang, Shibo; Lin, Kang; and Neurath, A. Robert, 5,444,044, Cl. 514-12.000.

NeuroSearch A/S: *See*—
Moldt, Peter; Scheel-Kruger, Jorgen; and Jensen, Leif H., 5,444,070, Cl. 514-304.000.

Neutra, Marian R.: *See*—
Amerongen, Helen M.; Neutra, Marian R.; and Kraehenbuhl, Jean-Pierre, 5,443,832, Cl. 424-278.100.

New Brunswick Scientific Co., Inc.: *See*—
Freedman, David; Chen, Yinliang; and Zheng, Zhenbin, 5,443,802, Cl. 422-298.000.

New Castle Battery Manufacturing Company: *See*—
Hutchings, Philip F., 5,444,352, Cl. 320-15.000.

New Holland North America, Inc.: *See*—
Packler, Robert L., 5,443,215, Cl. 241-101.300.

New Oil Paper Co., Ltd.: *See*—
Iwasaki, Akiko; Toyofuku, Kunitaka; Uchida, Kyoko; and Fujino, Masatoshi, 5,444,036, Cl. 503-209.000.

New Venture Gear, Inc.: *See*—
Frost, Barry L., 5,443,426, Cl. 475-91.000.

New Vision Systems, Inc.: *See*—
Pellegrini, Joseph C., 5,444,538, Cl. 356-401.000.

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Jiang, Shibo; Lin, Kang; and Neurath, A. Robert, 5,444,044, Cl. 514-12.000.

Newberg, Irwin L., to Hughes Aircraft Company. Optoelectronic controlled RF matching circuit. 5,444,564, Cl. 359-187.000.

Newbold, George T.; Davenport, Theodore M.; and Bray, Raymond L., to Martin Archery, Inc. Variably adjustable archery bow sight. 5,442,862, Cl. 33-265.000.

Newman, Peter: *See*—
Burnett, John L.; and Newman, Peter, 5,444,702, Cl. 370-60.100.

Neyland, Ronald A.: *See*—
Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Miller, Andrew J.; Dobyns, Patrick E.; and Johnson, Stephen R., Jr., 5,444,849, Cl. 395-200.090.

NGK Spark Plug Co., Ltd.: *See*—
Kojima, Takao; Ishiguro, Hiroyuki; Yamano, Masaru; Kondo, Noriaki; Yamada, Masahiko; and Sawada, Toshiki, 5,443,711, Cl. 204-429.000.

Nguyen, Hung A.: *See*—
Cheradame, Herve M.; Chen, Frank J.; Stanat, Jon E. R.; Nguyen, Hung A.; and Tabar, Behrooz R., 5,444,135, Cl. 526-219.200.

Nguyen, Quang H.: *See*—
Baker, Jeffrey L.; Stebbins, Robert G.; and Nguyen, Quang H., 5,444,859, Cl. 395-575.000.

Nguyen, Trung D., to Compaq Computer Corporation. Intelligent search engine for associated on-line documentation having questionless case-based knowledge base. 5,444,823, Cl. 395-51.000.

Nice, Edouard C.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,443,825, Cl. 424-85.100.

Nicholas, John D., to Pawling Corporation. Fire-rated corner guard structure. 5,442,884, Cl. 52-516.000.

Nicholson Construction Company: *See*—
Creyse, Lynn M.; and Zawada, Gary J., 5,443,177, Cl. 220-453.000.

Nicholson, Joseph A.: *See*—
Alcock, John M.; Nicholson, Joseph A.; Thistlethwaite, Trevor J.; and Myers, Fred D., 5,443,328, Cl. 405-169.000.

Nicol, Stuart W.; Collingborn, Peter A. G.; Stringfellow, Christopher; and Phillips, Ronald, to Lucas Industries Public Limited Company. Fuel pumping apparatus. 5,443,048, Cl. 123-450.000.

Nicola, Nicos A.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,443,825, Cl. 424-85.100.

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Kobayashi, Toshiro; Yoshimura, Kazuhiro; Hayashi, Akihiro; Hosoi, Yoshinobu; and Yano, Nobuyuki, 5,444,504, Cl. 351-237.000.

Nielsen, Arne; McCartney, Phillip D.; Thompson, Dousie J.; and Moghaddassi, Majid, to Guilford Mills, Inc. Apparatus for guiding longitudinal travel of tubular fabric. 5,442,842, Cl. 26-80.000.

Nielsen, Bent: *See*—
Greunes, Torbjorn; and Nielsen, Bent, 5,444,121, Cl. 525-89.000.

Niemela, Paul W.; Morikawa, Hiroshi; and Demarco, Stephen M., to Ryobi North America. Self-propelled mower. 5,442,901, Cl. 56-11.900.

Niese, Karl. Pressure cooker. 5,442,998, Cl. 99-337.000.

Niessner, Norbert: *See*—
Zeltner, Doris; Niessner, Norbert; Seitz, Friedrich; Neumann, Ranier; and Seelert, Stefan, 5,444,123, Cl. 525-133.000.

Nihei, Ryo: *See*—
Torii, Nobutoshi; Nihei, Ryo; and Kato, Tetsuaki, 5,444,612, Cl. 364-161.000.

Niimi, Masami: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,443,553, Cl. 74-7.00R.

Niiyama, Kenji: *See*—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Niiyama, Kenji; Nagase, Toshio; Mase, Toshiaki; Fujita, Kagari; Ihara, Masaki; Ikemoto, Fumihiko; and Yano, Mitsuo, 5,444,152, Cl. 530-331.000.

Niiyama, Tsunefumi: *See*—
Ataka, Hiroshi; and Niiyama, Tsunefumi, 5,443,427, Cl. 475-123.000.

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de With, Peter H. N.; Nijssen, Stephanus J. J.; Brondijk, Robert A.; and Brula, Wilhelmus H. A., 5,444,490, Cl. 348-423.000.

Niksido, Tomoki: *See*—
Suzaki, Masaharu; Niksido, Tomoki; and Mabuchi, Takeshi, 5,443,605, Cl. 51-307.000.

Nikolaides, Nick; and Gerster, John F., to Minnesota Mining and Manufacturing Company. Fused cycloalkylimidazopyridines as inducer of interferon α biosynthesis. 5,444,065, Cl. 514-293.000.

Nikon Corporation: *See*—
Ohishi, Sueyuki, 5,444,509, Cl. 354-202.000.
Ohki, Hiroshi; Arimoto, Rieko; Iwasaki, Yutaka; and Iwasaki, Jun, 5,444,689, Cl. 369-109.000.
Okano, Hiroshi; Shiokama, Yoshiharu; Tanioka, Hiroshi; and Yamano, Shozo, 5,444,510, Cl. 354-400.000.
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Nilsson, Paul E.; Laughlin, Frances A.; and Wyma, Roy, to Atlantic Richfield Company. Method for producing database coordinated drawings for a facility. 5,444,843, Cl. 395-161.000.

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Nimco Shredding Co.: *See*—
Baker, Beanie A.; Woodruff, Kenneth L.; and Naporano, Joseph F., 5,443,157, Cl. 209-12.100.

Nimitz, Joathan S.; and Lankford, Lance H., to Ikos Corporation. Fluoroiodocarbon blends as CFC and halon replacements. 5,444,102, Cl. 521-131.000.

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Saito, Mitsuru; and Nakalura, Toshiaki, 5,444,614, Cl. 364-191.000.

Nippon Mektron, Ltd.: *See*—
Iwayama, Takeshi; Miyagawa, Atsushi; and Inaba, Masaichi, 5,444,188, Cl. 174-261.000.

Nippon Oil Co., Ltd.: *See*—
Sakamoto, Tetsuro; Sunami, Motoshi; and Hasegawa, Hiroshi, 5,443,745, Cl. 252-52.00A.

Nippon Pillar Packing Co., Ltd.: *See*—
Fuse, Toshihiko, 5,443,274, Cl. 277-38.000.

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Nakao, Sadao, 5,443,887, Cl. 428-137.000.

Nippon Sanso Corporation: *See*—
Ohmi, Tadahiro; Ishihara, Yoshio; and Fukushima, Ryosuke, 5,444,379, Cl. 324-450.000.

Nippon Telegraph & Telephone Corporation: *See*—
Shibata, Yasuo; and Ikeda, Masahiro, 5,444,802, Cl. 385-16.000.
Yanagi, Shigesori; Kudo, Kazuki; and Katoh, Kikuji, 5,444,684, Cl. 369-44.230.

Nippon Zeon Co., Ltd.: *See*—
Kitazawa, Kouitu; Ohrui, Kouichi; and Nakamura, Eitaro, 5,444,110, Cl. 524-100.000.

Nippondenso Co., Ltd.: *See*—
Abe, Hirofumi; and Shibata, Tadashi, 5,444,650, Cl. 365-96.000.
Ishikawa, Fukuo; Konishi, Shunichi; Nakamura, Katsumi; Ikemoto, Hideyuki; and Ishida, Toshio, 5,444,595, Cl. 361-86.000.
Matsunaga, Eiji; Fukushima, Akira; Nakashima, Noriyuki; Murai, Toshiyuki; Takemoto, Shinya; Tanabe, Mikio; and Kinoshita, Hisashi, 5,444,621, Cl. 364-424.050.
Odaira, Michiye; Sugihara, Kazunori; Miyajima, Noriyoshi; Miyaki, Takumi; and Hiramatsu, Motohiko, 5,443,241, Cl. 251-129.070.
Shiga, Tutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,443,553, Cl. 74-7.00R.

Nishida, Shozo: *See*—
Tsurusoka, Katsuhiko; Nishida, Shozo; Wakamori, Masafumi; Tanaka, Takemitsu; Yada, Masaki; Ishikawa, Osamu; and Miki, Hiroyuki, 5,444,118, Cl. 524-828.000.

Nishida, Singi: *See*—
Okamoto, Katsuya; Harada, Tomoharu; Yamamoto, Takashi; and Nishida, Singi, 5,444,746, Cl. 376-245.000.

Nishihara, Shinji: *See*—
Yoshizumi, Keiichi; Fukada, Kazushi; Ariga, Seiichi; Ikeda, Shoji; Saeki, Makoto; Nagai, Kiyoshi; Hashiba, Soichiro; Nishihara, Shinji; and Kasai, Fumiyuki, 5,444,012, Cl. 437-60.000.

Nishijima, Takashi: *See*—
Tani, Makoto; and Nishijima, Takashi, 5,444,613, Cl. 364-167.010.

Nishikawa, Katsuhito: *See*—
Moore, Gary M.; and Nishikawa, Katsuhito, 5,444,217, Cl. 219-405.000.

Nishikawa, Kazuo; and Nakagawa, Takashi, to Murata Kikai Kabushiki Kaisha. Bobbin supplying system having a bobbin reserve line. 5,443,217, Cl. 242-35.50A.

Nishikibe, Masaru; Kamei, Kazuo; Nagara, Jun; and Fukuroda, Takahiro, to Banyu Pharmaceutical Co., Ltd. Ameliorant of cerebral circulation and optical isomer of NB-818, processes for its use. 5,444,077, Cl. 514-356.000.

Nishimura, Akihiro; and Sato, Koji, to Kabushiki Kaisha Shinkawa. Tape bonding apparatus. 5,443,679, Cl. 156-361.000.

Nishimura, Isao; Sakamoto, Mitsuo; and Sasaki, Katsuyasu, to Kajima Corporation. Vibration control device for structure. 5,442,883, Cl. 52-167.300.

Nishimura, Shinji: *See*—
Kaneyuki, Kazutoshi; and Nishimura, Shinji, 5,444,355, Cl. 322-58.000.

Nishio, Koji: *See*—
Shoji, Yoshihiro; Yamasaki, Mikiya; Nishio, Koji; and Saito, Toshihiko, 5,443,930, Cl. 429-224.000.
Yamamoto, Yuji; Nohma, Toshiyuki; Kurokawa, Hiroshi; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,443,929, Cl. 429-224.000.

Nishiura, Yoso; Iwashita, Takaki; and Ooka, Akihiro, to Sumitomo Electric Industries, Ltd. Fiber-optic gyroscope obtaining a signal from a perturbed light source. 5,444,533, Cl. 356-350.000.

Nishizaki, Kouji; Takeuchi, Shigeki; Shibata, Toyoko; and Tanaki, Kiyoshi, to Konica Corporation. Organic thin film electroluminescence element. 5,443,922, Cl. 428-690.000.

Nishizawa, Junichi; and Abe, Hitoshi, to Research Development Corporation of Japan; Nishizawa, Junichi; and Oki Electric Industry Company Limited. Semiconductor crystal growth method. 5,443,033, Cl. 117-86.000.

Nissan Motor Co., Ltd.: *See*—
Sudo, Hideki; and Yamamura, Yoshinori, 5,444,346, Cl. 318-616.000.
Yamamura, Yoshinori; Ishikawa, Yasuki; Kitajima, Yasuhiko; Okura, Kazuma; and Nojiri, Hidetoshi, 5,444,351, Cl. 318-811.000.

Nissei Plastic Industrial Co., Ltd.: *See*—
Nakamura, Nobuyuki; Koda, Toshiyasu; and Shioiri, Takayoshi, 5,443,782, Cl. 264-328.100.
Takizawa, Michiaki, 5,443,587, Cl. 417-222.100.

Nisshin Flour Milling Co., Ltd.: *See*—
Miyazaki, Toshiyuki; Morimoto, Toshihisa; Murayama, Ryuji; and Matsubara, Hiroshi, 5,444,046, Cl. 514-12.000.

Niwa, Koichi: *See*—
Yokoyama, Hiromitsu; Omote, Koji; Suzuki, Hitoshi; Tsukada, Mineharu; Kamehara, Nobuo; and Niwa, Koichi, 5,443,786, Cl. 410-9.000.

Niwa, Masaki: *See*—
Okada, Kenji; Morimoto, Kiyoshi; Udagawa, Masaharu; Yaki, Koichiro; Niwa, Masaaki; Hirai, Yoshihiko; and Yasui, Juro, 5,444,267, Cl. 257-14.000.

Noble, Stephen W., Jr., to Pioneer Hi-Bred International, Inc. Inbred corn line PHHB4. 5,444,178, Cl. 800-200.000.

Noblett, Ronald D.; and Bowman, Kurtis J., to Compaq Computer Corp. Soft switching circuit for audio muting or filter activation. 5,444,312, Cl. 327-552.000.

Nohma, Toshiyuki: *See*—
Yamamoto, Yuji; Nohma, Toshiyuki; Kurokawa, Hiroshi; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,443,929, Cl. 429-224.000.

Nojiri, Hidetoshi: *See*—
Yamamura, Yoshinori; Ishikawa, Yasuki; Kitajima, Yasuhiko; Okura, Kazuma; and Nojiri, Hidetoshi, 5,444,351, Cl. 318-811.000.

Nok-Megalastik Co., Ltd.: *See*—
Obtake, Shuji; Matsuoka, Hideki; Mikasa, Tetsuo; Naganuma, Takeo; and Ohno, Kazuto, 5,443,574, Cl. 267-140.140.

Nokia Mobile Phones Ltd.: *See*—
Ali-Vehmas, Timo, 5,444,745, Cl. 375-347.000.

Noll, Kenneth E.: *See*—
Holeca, Thomas M.; and Noll, Kenneth E., 5,443,271, Cl. 73-863.220.

Nomoto, Shimichi: *See*—
Poskett, Peter; Mullins, Dennis; Nomoto, Shimichi; and Gosselin, Stephane, 5,444,449, Cl. 342-354.000.

Nomoto, Takashi: *See*—
Tsuchiya, Yoshimi; Nomoto, Takashi; Mitsuya, Morihiro; Nonoshita, Katsumasa; Hayashi, Masahiro; Satoh, Toshihiko;

Sawaoki, Yoshio; and Kamei, Toshio, 5,444,084, Cl. 514-438.000.

Nomoto, Yasuo: *See*—
Seki, Shinji; Ibuoki, Makoto; and Nomoto, Yasuo, 5,444,618, Cl. 364-420.000.

Nomura, Koji: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,443,864, Cl. 428-1.000.

Nomura, Shingo: *See*—
Ishikawa, Yutaka; and Nomura, Shingo, 5,444,416, Cl. 329-341.000.

Nonogaki, Mitsuhiro; Fujino, Junji; Adachi, Akira; Murakami, Kohei; Morihiro, Yoshiyuki; and Hayashi, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Flux for soldering and solder composition comprising the same and soldering method using the same. 5,443,659, Cl. 148-23.000.

Nonoshita, Katsumasa: *See*—
Tsuchiya, Yoshimi; Nomoto, Takashi; Mitsuya, Morihiro; Nonoshita, Katsumasa; Hayashi, Masahiro; Satoh, Toshihiko; Sawaoki, Yoshio; and Kamei, Toshio, 5,444,084, Cl. 514-438.000.

Nonoyama, Shoji: *See*—
Hasegawa, Takasori; and Nonoyama, Shoji, 5,443,556, Cl. 101-116.000.

Noranda, Inc.: *See*—
Li, Rui-Qing; and Peacey, John G., 5,443,614, Cl. 75-10.290.

Nordam: *See*—
Hart, Robert N.; and Simmons, Christopher S., 5,443,914, Cl. 428-447.000.

Nordson Corporation: *See*—
Cocling, Kenneth J.; Saidman, Laurence B.; Smith, James C.; Messerly, James W.; and Mayer, Stanley E., 5,443,796, Cl. 422-129.000.

Noritsu Koki Co., Ltd.: *See*—
Negoro, Hisashi; Nakano, Tsukasa; and Minakata, Yoshiyuki, 5,444,514, Cl. 355-74.000.

Norris, Gene K.: *See*—
Beekman, George F.; Conrow, Gary M.; Hyde, Jeffrey R.; and Norris, Gene K., 5,444,111, Cl. 524-180.000.

Norris, Peter E.: *See*—
Ascoin, Thomas R.; Wittstruck, Richard H.; Zhao, Jing; Zawadzki, Peter A.; Bearck, William R.; and Norris, Peter E., 5,443,647, Cl. 118-723.0ME.

Norris, Roger C.: *See*—
Owsley, Norman L.; Law, John F.; Vanasse, Robert D.; Ebner, Stephen P.; Knutson, Richard K.; and Norris, Roger C., 5,443,027, Cl. 114-244.000.

Norsk Hydro a.s.: *See*—
Svendsen, Jens, 5,443,102, Cl. 141-10.000.

North American Palladium Ltd.: *See*—
McDoulett, C. Dale, Jr.; and Reschke, George W., 5,443,619, Cl. 75-421.000.

Northern Telecom Limited: *See*—
Fisher, David A.; and Welton, Paul D., 5,444,710, Cl. 370-95.300.
Jain, Praveen K.; Edwards, Gary A.; Hubbard, Carl; and Bansard, Douglas R., 5,444,608, Cl. 363-17.000.
Shackleton, Nigel; and Pears, Laura E., 5,444,808, Cl. 385-128.000.
Vogt, John V., III; and Summers, Charles E., 5,444,759, Cl. 379-30.000.

Norton Company: *See*—
Frodin, James E.; Pellow, Scott; and Kramp, Jean, 5,443,418, Cl. 451-540.000.

Notar, Robert; and Schwander, Udo, to Coca-Cola Company, The; and Bosch-Siemens Hausgerate GmbH. Apparatus for mixing water with CO_2 gas to produce carbonated water. 5,443,763, Cl. 261-140.100.

Noto, Nobuhiko: *See*—
Adomi, Keizo; Noto, Nobuhiko; and Takenaka, Takao, 5,444,269, Cl. 257-094.000.

Nott, Sepideh H.: *See*—
LeComte, Norman E.; Nott, Sepideh H.; Kawate, Keith W.; and Maher, Thomas R., 5,444,590, Cl. 361-18.000.

Nottke, William H.: *See*—
O'Donnell, Brian D.; Secrist, Donald C.; and Nottke, William H., 5,443,204, Cl. 229-242.000.

Novametrix Medical Systems, Inc.: *See*—
Viveshwara, Nadaraja; and Otto, Roy, 5,443,060, Cl. 128-200.260.

Nowack, James: *See*—
Davis, Richard A.; Frick, Kenneth L.; Muir, Gregory; and Nowack, James, 5,444,770, Cl. 379-99.000.

NSK Ltd.: *See*—
Inoue, Kimio; Tanaka, Hisao; Katou, Toshio; Ikeda, Masaki; Wakimoto, Masao; and Hamamura, Katuhiko, 5,444,844, Cl. 395-161.000.
Moronoo, Tatunobu; and Mutoh, Yasushi, 5,443,317, Cl. 384-491.000.

Nulman, Jaim, to Applied Materials, Inc. Method for metallizing a semiconductor wafer. 5,443,995, Cl. 437-197.000.

Nurnberger, Gunter, to Fichtel & Sachs AG. Bicycle and bicycle with multispeed wheel hub. 5,443,279, Cl. 280-236.000.

O&K Orenstein & Koppel, AG: *See*—
Schoeneweiss, Klaus, 5,443,143, Cl. 198-323.000.

Oae, Yoshihisa: *See*—
Satoh, Tafumasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Oae, Yoshihisa; Yamada, Keiji; and Oshima, Toru, 5,444,257, Cl. 250-398.000.

Obara, Takashi, to NEC Corporation. Semiconductor synchronous memory device having input circuit for producing constant main control signal operative to allow timing generator to latch command signals. 5,444,667, Cl. 365-233.000.

OBrien, Michael E.: *See*—
Dee, George B.; Standard, John W.; Pino, Anthony P.; OBrien, Michael E.; and Pope, Thomas S., 5,444,472, Cl. 347-85.000.

O'Brien, Michael T.; and Bobo, Melvin, deceased (by Bobo, Beatrice L., executor), to General Electric Company. Aircraft gas turbine engine sideways mount. 5,443,229, Cl. 244-54.000.

Obuchi, Shoji: *See*—
Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, 5,444,143, Cl. 528-361.000.

Obukhov, Vladimir A.: *See*—
Grigoryan, Vladimir G.; Minakov, Valeriy I.; Obukhov, Vladimir A.; and Ogadjanov, Petr P., 5,444,258, Cl. 250-423.00R.

Occidental Chemical Corporation: *See*—
Rowe, Edward A., 5,443,762, Cl. 252-364.000.
Todd, William G.; Grimm, Patrick A.; and Dawa, Joe C., 5,444,133, Cl. 526-116.000.

Ochiai, Masami: *See*—
Hirata, Toichi; Sugiyama, Genroku; and Ochiai, Masami, 5,442,912, Cl. 60-426.000.

Ochoa, Augusto C.; Bach, Fritz H.; Alter, Barbara; and Sondel, Paul, to University of Minnesota, Regents of the. Method of culturing lymphocytes and method of treatment using such lymphocytes. 5,443,983, Cl. 435-240.200.

Ochs, Dennis E.: *See*—
Kwong, Manlik; Fieldhouses, Edward L.; and Ochs, Dennis E., 5,444,638, Cl. 364-571.040.

O'Connor, Ronald: *See*—
Keller, C. Michael, III; Keller, Pamela S.; Greve, Christopher; and O'Connor, Ronald, 5,443,001, Cl. 101-27.000.

Oculex Pharmaceuticals, Inc.: *See*—
Wong, Vernon G.; and Kochinke, Frank, 5,443,505, Cl. 623-4.000.

Oda, Kiyoshi, to Yoshida Kogyo K.K. Method of manufacturing a slide fastener. 5,443,535, Cl. 29-408.000.

Oda, Yasuhiro; Maruhashi, Yoshitugu; Sakano, Kouzaburo; and Yamaguchi, Yuji, to Toyo Seikan Kaisha Ltd. Blow-molded multilayer containers having excellent surface luster and process for producing the same. 5,443,868, Cl. 428-35.700.

Odagiri, Masaru: *See*—
Murai, Mikio; Takahashi, Kiyoshi; Odagiri, Masaru; Kai, Yoshiaki; Suzuki, Takashi; and Kunieda, Toshiaki, 5,443,888, Cl. 428-143.000.

Odaira, Michiya; Sugihara, Kazunori; Miyajima, Noriyoshi; Miyaki, Takumi; and Hiramatsu, Motohiko, to Nippondenso Co. Ltd.; and Tokai Riki Mfg. Co. Electro-magnetic drive control valve. 5,443,241, Cl. 251-129.070.

Odell, Chris L.: *See*—
Copley, Mark; Fish, David G.; Odell, Chris L.; and Whiteside, Charles H., 5,444,695, Cl. 370-17.000.

O'Donnell, Brian D.; Secrist, Donald C.; and Nottke, William H., to Hubbell Incorporated. Package with reclosable lid. 5,443,204, Cl. 229-242.000.

Odru, Pierre: *See*—
Chaussepied, Jacques E. C.; Huvey, Michel; Odru, Pierre; and Sparks, Charles P., 5,443,099, Cl. 138-109.000.

Oehler, Richard R.: *See*—
Mathis, Joseph R.; Oehler, Richard R.; and Zeitler, Carl, Jr., 5,444,854, Cl. 395-425.000.

Oetomo, Bambang: *See*—
Koch, Jochim; and Oetomo, Bambang, 5,443,059, Cl. 128-200.160.

Ofosu-Amaah, William: *See*—
Tanaka, Shigeru; and Ofosu-Amaah, William, 5,444,594, Cl. 361-58.000.

Ogadjanov, Petr P.: *See*—
Grigoryan, Vladimir G.; Minakov, Valeriy I.; Obukhov, Vladimir A.; and Ogadjanov, Petr P., 5,444,258, Cl. 250-423.00R.

Ogaito, Makoto: *See*—
Matsumoto, Kiyoichi; Tahara, Shu; Ozeki, Eiichi; Ogaito, Makoto; and Kobayashi, Masakazu, 5,443,780, Cl. 264-290.200.

Ogata, Taizo; Hanazawa, Yuji; Iwata, Yasuo; and Shigeta, Toshio, to Tokyo Automatic Machinery Works, Ltd. Packaging device. 5,442,894, Cl. 53-234.000.

Ogata, Takashi, to Olympus Optical Co., Ltd. Magneto-optic recording magnetic head having magnetic gap which has different sizes in magnetic field modulation mode and light modulation recording mode. 5,444,678, Cl. 369-13.000.

Ogawa, Hisahito: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,443,864, Cl. 428-1.000.

Ogawa, Kazufumi; Mino, Norihisa; and Soga, Masaoru, to Matsushita Electric Industrial Co., Ltd. Medical member method of manufacturing the same. 5,443,511, Cl. 623-16.000.

Ogawa, Toshiaki: *See*—
Kabasawa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oinuma, Hitoshi; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtarou; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.

Ogawa, Yoshiro; Okutsu, Heiji; and Kobayashi, Noriyuki, to Kabushiki Kaisha Toshiba. Radio frequency amplifying apparatus. 5,444,337, Cl. 315-349.000.

Ogiwara, Satoshi: *See*—
Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Eiji; and Ogiwara, Satoshi, 5,444,833, Cl. 395-133.000.

Oglesby, Michael L.: *See*—
Young, Lesley; Rhodes, Brian D.; Acton, Gary; Oglesby, Michael L.; and Fureigh, Michael L., 5,443,211, Cl. 239-146.000.

Oguni, Takayuki: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, 5,443,747, Cl. 252-94.000.

Oguro, Shizuo; and Suzuki, Tatsuya, to NEC Corporation. SOI (silicon on insulator) substrate with enhanced gettering effects. 5,443,661, Cl. 148-33.500.

Oh, Kyung-seok: *See*—
Lee, Seung-ku; and Oh, Kyung-seok, 5,444,020, Cl. 437-195.000.

Oh, Soo-Hwas; and Park, Byeong-Oh, to SamSung electronics Co., Ltd. Method and apparatus for controlling exposure and transference in an electrophotographic recording apparatus. 5,444,830, Cl. 395-109.000.

Oh, Young N., to Hyundai Electronics Industries Co., Ltd. Data output equipment for a semiconductor memory device. 5,444,666, Cl. 365-230.080.

Ohara, Hideto: *See*—
Kabasawa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oinuma, Hitoshi; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtarou; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.

Ohara, Meguru: *See*—
Tatezono, Fumio; Harada, Toshio; Irie, Masahiro; and Ohara, Meguru, 5,443,940, Cl. 430-270.000.

Ohashi, Hideki: *See*—
Otsuka, Yasushi; Unno, Masayoshi; and Ohashi, Hideki, 5,444,603, Cl. 362-66.000.

O'Hearne, Robert L., to Seco Products Corporation. Open topped, air curtain closed cooler chest. 5,442,932, Cl. 62-255.000.

Ohgaki, Tatsuo: *See*—
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,444,677, Cl. 369-13.000.

Ohhashi, Shuzo: *See*—
Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Ohhashi, Shuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, 5,444,732, Cl. 373-42.000.

Ohi, Naotake: *See*—
Ishiwata, Hiroshi; Ohishi, Takashi; Ueda, Atsushi; and Ohi, Naotake, 5,443,047, Cl. 123-446.000.

Ohi Seisakusho Co., Ltd.: *See*—
Shimada, Junichi; and Kato, Yuichi, 5,443,292, Cl. 292-341.160.

Ohi, Toshio: *See*—
Ohno, Hiromoto; Ohi, Toshio; Nakayama, Hidetoshi; and Muramaki, Kazuo, 5,444,171, Cl. 570-177.000.

Ohishi, Sueyuki, to Nikon Corporation. Camera shake compensating camera. 5,444,509, Cl. 354-202.000.

Ohishi, Takashi: *See*—
Ishiwata, Hiroshi; Ohishi, Takashi; Ueda, Atsushi; and Ohi, Naotake, 5,443,047, Cl. 123-446.000.

Ohkase, Wataru, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kabushiki Kaisha. Vertical heat treatment apparatus with a rotary holder turning independently of a liner plate. 5,443,648, Cl. 118-724.000.

Ohki, Hiroshi; Arimoto, Rieko; Iwasaki, Yutaka; and Iwasaki, Jun, to Nikon Corporation. Detection of phase and amplitude modulation information on optical medium with a waveguide. 5,444,689, Cl. 369-109.000.

Ohkouchi, Nozomu: *See*—
Imanishi, Dai; Ohkouchi, Nozomu; Ohtawara, Kazushige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hiromitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

Ohkubo, Ken: *See*—
Ichizuka, Isamu; Takahashi, Shuitsu; Hara, Kouzi; Waki, Hiroshi; Kobe, Shinji; Sakurada, Tadayuki; Okouchi, Yoshitaka; Ohkubo, Ken; and Shimizu, Hiroshi, 5,444,128, Cl. 524-507.000.

Ohkubo, Norio; Suzuki, Makoto; Sasaki, Katsuro; and Homma, Yoshio, to Hitachi, Ltd. Method of fabricating integrated circuit with improved yield rate. 5,444,000, Cl. 437-8.000.

Ohm, Heinz J., to Leifheit AG. Floor mop. 5,442,830, Cl. 15-147.200.

Ohmes, Ove, to Pharmacia Biosensor AB. Method of producing a sealing means in a microfluidic structure and a microfluidic structure comprising such sealing means. 5,443,890, Cl. 428-167.000.

Ohmi, Masanori: *See*—
Shiga, Tsutomu; Hayashi, Nobuyuki; Ohmi, Masanori; and Niimi, Masami, 5,443,553, Cl. 74-7.00R.

Ohmi, Tadahiro. Plasma processing apparatus. 5,444,259, Cl. 250-452.210.

Ohmi, Tadahiro; Ishihara, Yoshio; and Fukushima, Ryosuke, to Horiba, Ltd.; Nippon Sanso Corporation; and Ohmi, Tadahiro. Electric conductivity measuring cell. 5,444,379, Cl. 324-450.000.

Ohnishi, Masahito: *See*—
Kataoka, Shozo; and Ohnishi, Masahito, 5,444,310, Cl. 307-125.000.

Ohnishi, Shuji; and Amano, Tadashi, to Shin-Etsu Chemical Co., Ltd. Process for producing vinyl chloride-based polymer. 5,444,130, Cl. 526-67.000.

Ohnishi, Shuji; Tanifuji, Yoichi; and Amano, Tadashi, to Shin-Etsu Chemical Co., Ltd. Polymerization process with recycle line containing screen with rodlike projection. 5,444,131, Cl. 526-67.000.

Ohnishi, Toru, to Murata Kikai Kabushiki Kaisha. Facsimile machine having answering function. 5,444,771, Cl. 379-100.000.

Ohno, Hiromoto; Ohi, Toshio; Nakayama, Hidetoshi; and Muramaki, Kazuo, to Showa Denko Kabushiki Kaisha. Method for purification of 1,1,1,2-tetrafluoroethane. 5,444,171, Cl. 570-177.000.

Ohno, Kazuto: *See*—
Ohtake, Shuji; Matsuoka, Hideki; Mikasa, Tetsuo; Naganuma, Takeo; and Ohno, Kazuto, 5,443,574, Cl. 267-140.140.

Ohrui, Kouichi: *See*—
Kitazawa, Kouitu; Ohrui, Kouichi; and Nakamura, Eitaro, 5,444,110, Cl. 524-100.000.

Ohsawa, Toshio; and Murata, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Ionization current detector for detecting the ionization current generated in a plurality of ignition coils of an internal combustion engine. 5,444,375, Cl. 324-380.000.

Ohshima, Naoto: *See*—
Hioki, Takanori; Kato, Takashi; Ikeda, Tadashi; and Ohshima, Naoto, 5,443,949, Cl. 430-576.000.

Ohshita, Shoji, to France Bed Co., Ltd. Bed apparatus and method for driving a bedstead. 5,443,439, Cl. 601-90.000.

Ohta, Hirohisa; Ozawa, Kunitaka; Kawakami, Eigo; and Uzawa, Shunichi, to Canon Kabushiki Kaisha. Exposure method. 5,443,932, Cl. 430-22.000.

Ohta, Hiroyuki: *See*—
Nakajima, Takashi; Miura, Hideo; Ohta, Hiroyuki; and Okamoto, Noriaki, 5,444,302, Cl. 257-755.000.

Ohta, Masahiro; Obuchi, Shoji; and Yoshida, Yasunori, to Mitsui Toatsu Chemicals, Inc. Preparation process of polyhydroxycarboxylic acid. 5,444,143, Cl. 528-361.000.

Ohta, Masuo; and Sako, Yukinobu, to Matsushita Electric Industrial Co., Ltd. LED display apparatus. 5,444,456, Cl. 345-39.000.

Ohta, Shuji: *See*—
Danjou, Seiji; Miyata, Katsuya; and Ohta, Shuji, 5,442,977, Cl. 74-607.000.

Ohta, Takeshi: *See*—
Misawa, Takeshi; and Ohta, Takeshi, 5,444,482, Cl. 348-220.000.

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Imanishi, Dai; Ohkouchi, Nozomu; Ohtawara, Kazushige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hironitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

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Ohtsuka, Yasumasa: *See*—
Tomoyuki, Yohji; Nakamura, Shunji; Ohtsuka, Yasumasa; Okuda, Kouichi; Sakaki, Eihiro; Hayakawa, Akira; and Fukuzawa, Daizo, 5,444,521, Cl. 355-285.000.

Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Masao, Mizukami; Fujita, Masaru; Miyazawa, Sadao; and Aruga, Noriaki, to Ishikawajima Harima Heavy Industries Co., Ltd. Hybrid stepping motor, driving method for the same and coil winding method for the same. 5,444,316, Cl. 310-49.00R.

Oie, Yoshinobu: *See*—
Ohta, Yasuo; Kuroki, Tadao; and Oie, Yoshinobu, 5,443,904, Cl. 428-364.000.

Oinuma, Hitoshi: *See*—
Kabasawa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oinuma, Hitoshi; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtarou; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.

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Yokota, Miho; and Okabe, Masatomi, 5,444,276, Cl. 257-207.000.

Okada, Akihiko; and Masuyama, Akitoshi, to Idemitsu Kosan Co., Ltd. Process for producing a modified polyphenylene ether. 5,444,126, Cl. 525-391.000.

Okada, Atsunori: *See*—
Aki, Osami; Kashi, Rikujiro; Nakatani, Kanji; and Okada, Atsunori, 5,443,834, Cl. 424-401.000.

Okada, Kazuo, to Mabuchi Motor Co., Ltd. Miniature motor. 5,444,314, Cl. 310-40.00MM.

Okada, Kenji; Morimoto, Kiyoshi; Udagawa, Masaharu; Yuki, Koichiro; Niwa, Masaaki; Hirai, Yoshihiko; and Yasui, Juro, to Matsushita Electric Industrial Co., Ltd. Quantum device utilizing the quantum effect. 5,444,267, Cl. 257-14.000.

Okada, Kikuo: *See*—
Hirose, Yasuo; and Okada, Kikuo, 5,443,700, Cl. 204-149.000.

Okada, Kunio, to Canon Kabushiki Kaisha. Image processing apparatus which processes a plurality of command languages. 5,444,826, Cl. 395-117.000.

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Fujisawa, Yoshikazu; Tsuji, Makoto; Narishige, Takeshi; Gunji, Takahiro; and Okamoto, Kazuhisa, 5,443,919, Cl. 428-687.000.
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Nakajima, Takashi; Miura, Hideo; Ohta, Hiroyuki; and Okamoto, Noriaki, 5,444,302, Cl. 257-755.000.

Okamoto, Takeshi: *See*—
Tachi, Kazuhisa; Okamoto, Takeshi; and Muramatsu, Mikiko, 5,443,874, Cl. 428-36.700.

Okamura, Ryuji: *See*—
Otoshi, Hirokazu; Takei, Tetsuya; Takai, Yasuyoshi; Okamura, Ryuji; Shirai, Shigeru; and Misumi, Teruo, 5,443,645, Cl. 118-718.000.

Okano, Haruo: *See*—
Sekine, Makoto; Horioka, Keiji; Okano, Haruo; Okumura, Katsuya; Hasegawa, Isahiro; and Narita, Masaki, 5,444,207, Cl. 219-121.430.

Okano, Hiroshi; Shiokama, Yoshiharu; Tanioka, Hiroshi; and Yamano, Shozo, to Nikon Corporation. Automatic focusing camera with control of focusing optical system position and driving power source velocity. 5,444,510, Cl. 354-400.000.

Okano, Hiroshi: *See*—
Takada, Mitsuru; and Okano, Hiroshi, 5,443,594, Cl. 477-98.000.

Okanoue, Kazuhiro; Ushirokawa, Akihisa; and Faruya, Yukitsuna, to NEC Corporation. Maximum likelihood sequence estimation apparatus. 5,444,721, Cl. 371-43.000.

Oki Electric Industry Company Limited: *See*—
Nishizawa, Junichi; and Abe, Hitoshi, 5,443,033, Cl. 117-86.000.
Tanaka, Takayuki; Sekino, Yoshimasa; Murashima, Yoshihiro; Tokunaga, Yasuhiro; Ueno, Joji; and Yonaga, Takeru, 5,444,662, Cl. 363-203.000.

Okouchi, Yoshitaka: *See*—
Ichizuka, Isamu; Takahashi, Shuitsu; Hara, Kouzi; Waki, Hiroshi; Kobe, Shinji; Sakurada, Tadayuki; Okouchi, Yoshitaka; Ohkubo, Ken; and Shimizu, Hiroshi, 5,444,128, Cl. 524-507.000.

Okoyama, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit for taking plural simultaneous exposures. 5,444,508, Cl. 354-120.000.

Oku, Hidehisa: *See*—
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, 5,443,524, Cl. 623-24.000.

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Okumura, Hitoshi; and Taniuchi, Osamu, to Sumitomo Wiring Systems, Ltd. Lever type connector. 5,443,393, Cl. 439-157.000.

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Okumura, Takatoshi, to Yamaha Corporation. Method and device for accessing an optical disc. 5,444,687, Cl. 369-50.000.

Okura, Kazuma: *See*—
Yamamura, Yoshinori; Ishikawa, Yasuki; Kitajima, Yasuhiko; Okura, Kazuma; and Nojiri, Hidetoshi, 5,444,351, Cl. 318-811.000.

Okutsu, Heiji: *See*—
Ogawa, Yoshiro; Okutsu, Heiji; and Kobayashi, Noriyuki, 5,444,337, Cl. 315-349.000.

Oldham Saw Co., Inc.: *See*—
DeFelice, Thomas H.; and Sherman, Michael M., 5,443,310, Cl. 312-329.000.

Olds, Keith A.; and Maine, Kristine P., to Motorola, Inc. Radio telecommunications system and method with adaptive location determination convergence. 5,444,450, Cl. 342-357.000.

O'Lenick, Anthony J., Jr., to Siltech Inc. Crosslinked protein polymers as humectants. 5,444,154, Cl. 530-356.000.

Oliver, Bill: *See*—
Montgomery, Peter; Becker, Don; Robins, Cathy; Slack, Mike; Lee, Tim; and Oliver, Bill, 5,444,642, Cl. 364-550.000.

Olmsted, Robert G.; and Russell, Alvah A. Special component configuration system. 5,443,263, Cl. 270-157.00R.

Olsowich, Howard T.; Barker, Thomas N.; Kogge, Peter M.; and Vandling, Gilbert C., III, to International Business Machines Corp. Dual priority switching apparatus for simplex networks. 5,444,705, Cl. 370-85.600.

O'Loughlin, James P., to United States of America, Air Force. Nanosecond transmission line charging apparatus. 5,444,308, Cl. 307-106.000.

Olsen, Ib L., to Valence Technology, Inc. Manufacture of cathode materials by the decomposition of ammonium metal oxides in a fluidized bed. 5,443,809, Cl. 423-592.000.

Olson, Jan B., to Sierracin Corporation. Laminated environmental protection layer for acrylic aircraft windows. 5,443,912, Cl. 428-425.600.

Olson, Scott R.; and Pasek, Steven E., to Ecolab Inc. Concentrated product dilution system. 5,443,094, Cl. 137-892.000.

Olympus Optical Co., Ltd.: *See*—
Ogata, Takashi, 5,444,678, Cl. 369-13.000.
Ono, Katsuya; and Hasegawa, Akira, 5,444,574, Cl. 359-708.000.
Saito, Yoshiharu, 5,444,573, Cl. 359-659.000.

Omation Corporation: *See*—
Dale, Amarjit; and Bingham, George H., 5,443,253, Cl. 271-177.000.

Omia: *See*—
Martin, Guy, 5,444,029, Cl. 502-38.000.

Omote, Koji: *See*—
Yokoyama, Hiromitsu; Omote, Koji; Suzuki, Hitoshi; Tsukada, Mineharu; Kamekura, Nobuo; and Niwa, Koichi, 5,443,786, Cl. 419-9.000.

Omron Corporation: *See*—
Goto, Hiroshi, 5,444,565, Cl. 359-224.000.
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,444,677, Cl. 369-13.000.

Oncogene Science, Inc.: *See*—
Carney, Walter P., 5,443,956, Cl. 435-7.230.

Onishi, Masaru: *See*—
Oka, Kenichiro; and Onishi, Masaru, 5,444,544, Cl. 358-332.000.

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Ishihara, Kazuya; Onishi, Shigeo; and Komai, Masaya, 5,443,030, Cl. 117-8.000.

Ono, Katsuya; and Hasegawa, Akira, to Olympus Optical Co., Ltd. Electronic image pickup apparatus equipped with means for eliminating moire . 5,444,574, Cl. 359-708.000.

Ono, Takashi, to Canon Kabushiki Kaisha. Image reading apparatus and method for reading a document during acceleration or deceleration of a stepping motor. 5,444,555, Cl. 358-494.000.

Ontrak Systems, Inc.: *See*—
Lutz, Rick A., 5,442,828, Cl. 15-88.300.

Ooka, Akihiro: *See*—
Nishiura, Yozo; Iwashita, Takaki; and Ooka, Akihiro, 5,444,533, Cl. 356-350.000.

Oonishi, Yasuo: *See*—
Matsuno, Hiromitsu; Igarashi, Tatsushi; Hiramoto, Tatsumi; and Oonishi, Yasuo, 5,444,331, Cl. 313-553.000.

Opalko, Robert J.: *See*—
Scheibelhoffer, Anthony S.; Dusek, Dianna B.; Hammond, Dennis L.; Wimolkiatisak, Surachai; Myers, William R.; Opalko, Robert J.; and Abrams, Richard L., 5,443,768, Cl. 264-39.000.

OPL Limited: *See*—
Li, Tung L., 5,444,293, Cl. 257-666.000.

Optex Co., Ltd.: *See*—
Ichizu, Kenji, 5,444,248, Cl. 250-342.000.

Optibase Advanced Systems (1990) Ltd.: *See*—
Oz, Ran; Elmaliah, Yehuda; and Herzlich, Doron, 5,444,461, Cl. 345-154.000.

Orban, Robert A., to AKG Acoustics, Inc. Audio compressor combining feedback and feedfoward sidechain processing. 5,444,788, Cl. 381-106.000.

Orca Industries, Inc.: *See*—
Adamson, Keith, 5,443,409, Cl. 441-130.000.

Orgral International Technologies Corporation: *See*—
Alexanyan, Georgy G.; Librovitch, Nikolay B.; and Prochukhane, Yuri A., 5,443,795, Cl. 422-231.000.

Ornerfors, Benny: *See*—
Lind, Ole; Ornerfors, Benny; Grimm, Hartmut; and Rabold, Karl, 5,443,035, Cl. 119-14.020.

Ornstein, Leonard, to Mount Sinai School of Medicine of the City University of New York. Specimen mounting adhesive composition. 5,444,105, Cl. 522-40.000.

Ornstein, Leonard, to Bayer Corporation. Method for unsupervised neural network classification with back propagation. 5,444,796, Cl. 382-157.000.

Orschein Co.: *See*—
Arnold, James H., 5,443,132, Cl. 188-138.000.

Ortega, Jose L., to Robinson Nugent, Inc. Inverse backplane connector system. 5,443,398, Cl. 439-378.000.

Orzech, Thomas S.: *See*—
Hsu, Jan Y.; and Orzech, Thomas S., 5,443,379, Cl. 425-335.000.

Osaki, Yoshiro, to Kabushiki Kaisha Toshiba. Packet exchange network and method of controlling discard of packets in packet exchange network. 5,444,706, Cl. 370-94.100.

Osbon, Barbara A.: *See*—
Wilkinson, Robert M.; Davies, Ann L.; Davies, Henry C.; and Osbon, Barbara A., 5,444,624, Cl. 364-424.010.

Osborn, Charles, to Grand Haven Stamped Products Co., Div. of JSJ Corp. Bearing arrangement for shift lever. 5,442,975, Cl. 74-473.00R.

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Husted, Gerald O.; and Lipinski, Jeffrey M., 5,443,154, Cl. 206-213.100.

Oshima, Akihiro: *See*—
Tabata, Yoneho; Otsuhata, Kazushige; Ikeda, Tetsuya; Ueno, Kohji; Yoshida, Yuichi; Oshima, Akihiro; Suguchi, Tadao; and Kudoh, Hisaaki, 5,444,103, Cl. 522-5.000.

Oshima, Masatosi; and Aoki, Yoshihide, to Sanyo Machine Works, Ltd. Method of calibrating a CCD camera. 5,444,481, Cl. 348-187.000.

Oshima, Seiichi; Tametani, Fumitaka; Yamagata, Jun; and Takanashi, Ken, to Mitsubishi Denki Kabushiki Kaisha. Noise resistant semiconductor power module. 5,444,297, Cl. 257-691.000.

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Satoh, Takamasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Ose, Yoshihisa; Yamada, Keiji; and Oshima, Toru, 5,444,257, Cl. 250-398.000.

Oshiwata, Kenichi; Shimada, Masao; and Hatamori, Akira, to Mitsui Toatsu Chemicals, Inc. Method of producing α-hydroxyisobutyramide from acetone cyanohydrin by nitril hydratase. 5,443,973, Cl. 435-129.000.

Osman, Peter D. J.: *See*—
Cornell, Bruce A.; Braach-Maksvytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Raguse, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., 5,443,955, Cl. 435-7.210.

Osowski, Denis M.: *See*—
Crouse, Edward M.; and Osowski, Denis M., 5,444,214, Cl. 219-133.000.

Ostroff, Barry N.: *See*—
Backaus, Marjorie S.; Barrera, Claire D.; Davenport, Esther L.; Fahrer, Harold; Ostroff, Barry N.; Petrelli, Robert; and Sonke, Susan K., 5,444,713, Cl. 370-110.100.

Ota, Katsuro: *See*—
Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, hinji, 5,444,206, Cl. 219-121.630.

Otani, Uichi: *See*—
Akutagawa, Tokuji; and Otani, Uichi, 5,443,856, Cl. 426-515.000.

Oto, Hideki: *See*—
Imai, Tadashi; and Oto, Hideki, 5,444,311, Cl. 327-565.000.

Oto, Roy: *See*—
Visveshwara, Nadarasa; and Oto, Roy, 5,443,060, Cl. 128-200.260.

Otoshi, Hirokazu; Takei, Tetsuya; Takai, Yasuyoshi; Okamura, Ryuji; Shirai, Shigeru; and Misumi, Teruo, to Canon Kabushiki Kaisha. Microwave plasma CVD apparatus comprising coaxially aligned multiple gas pipe gas feed structure. 5,443,645, Cl. 118-718.000.

Otsuhata, Kazushige: *See*—
Tabata, Yoneho; Otsuhata, Kazushige; Ikeda, Tetsuya; Ueno, Kohji; Yoshida, Yuichi; Oshima, Akihiro; Suguchi, Tadao; and Kudoh, Hisaaki, 5,444,103, Cl. 522-5.000.

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Otsuki, Shinya: *See*—
Hosokawa, Hayami; Ohgaki, Tatsuo; Tomita, Kouhei; Kiyomoto, Hironobu; Yasuda, Naru; and Otsuki, Shinya, 5,444,677, Cl. 369-13.000.

Ott, Edward J., III; and Walcott, Robert A., Jr., to Ott, Edward J., III. Safety stepladder. 5,443,136, Cl. 182-172.000.

Otto Bock Orthopaedische Industrie Besitz- und Verwaltungs-Kommanditgesellschaft: *See*—
Glabiszewski, Richard, 5,443,530, Cl. 623-59.000.
Hiemisch, Christian, 5,443,522, Cl. 623-49.000.

Otto, William E.: *See*—
Goldman, Frank M.; Chambers, Robert V.; Clippard, William L., III; Henn, Steven M.; and Otto, William E., 5,444,634, Cl. 364-474.110.

Oudet, Claude, to Moving Magnet Technologies S.A. Electromagnetic actuator having two opposite phase movable parts. 5,444,313, Cl. 310-17.000.

Ough, Yon D. Blade for telescopic laryngoscope. 5,443,058, Cl. 600-188.000.

Outboard Marine Corporation: *See*—
Mondek, Martin J.; and Sullivan, Donald K., 5,443,406, Cl. 440-52.000.
VanRens, Russell J., 5,443,044, Cl. 123-195.0HC.
Wenstadt, Thomas D.; Blanchard, Clarence E.; and Granie, Charles L., 5,443,026, Cl. 114-56.000.

Outokumpu Engineering Contractors Oy: *See*—
Kasninen, Pentti J.; Lilja, Lasse L.; Makitalo, Valto J.; and Valli, Lasse J., 5,443,620, Cl. 75-629.000.

Overmyer, Thad J. Method of disinfecting and lubricating dental/medical device. 5,443,385, Cl. 433-104.000.

Owen, Albert J.; Yiv, Seang H.; and Sarkahian, Asi B., to Ibah, Inc. Convertible microemulsion formulations. 5,444,041, Cl. 514-2.000.

Owens, Alvin J., Jr., to Xerox Corporation. Replaceable cleaner subsystem that prevents particle spillage. 5,444,522, Cl. 355-296.000.

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Volodarsky, Konstantine; Kajiwara, Jiro; Owens, Herbert W., Jr.; and King, Jan H., 5,443,416, Cl. 451-388.000.

Owens-Illinois Closure Inc.: *See*—
Sprowl, Frank L., 5,443,171, Cl. 215-252.000.

Owens-Illinois Plastic Products Inc.: *See*—
Karabedian, James A.; and Blackwelder, Maurice W., 5,443,769, Cl. 264-46.100.

Owsley, Norman L.; Law, John F.; Vanasse, Robert D.; Ebner Stephen P.; Knutson, Richard K.; and Norris, Roger C., to United States of America, Navy. Lateral force device for underwater towed array. 5,443,027, Cl. 114-244.000.

Oyama, Shigeo T.; Yu, Chunzhe C.; and Sherif, Fawzy G., to Akzo Nobel N.V.; and Clarkson University. Catalytic bimetallic oxynitrides and nitrides. 5,444,173, Cl. 585-671.000.

Oyama, Toru: *See*—
Saito, Kazuo; Yasuda, Takao; and Oyama, Toru, 5,442,916, Cl. 60-547.100.

Oz, Ran; Elmaliah, Yehuda; and Herzlich, Doron, to Optibase Advanced Systems (1990) Ltd. Bi-dimensional visual model. 5,444,461, Cl. 345-154.000.

Ozaki, Fumihiro: *See*—
Kabesawa, Yasuhiro; Ozaki, Fumihiro; Ishibashi, Keiji; Hasegawa, Takashi; Oisuma, Hitoshi; Ogawa, Toshiaki; Adachi, Hideyuki; Katoh, Hiroshi; Kodama, Kohtaro; Ohara, Hideto; Mori, Nobuyuki; and Minami, Norio, 5,444,066, Cl. 514-300.000.

Ozawa, Kunitaka: *See*—
Kawai, Tomoaki; Nakamura, Takashi; Kadosawa, Tsuneaki; Ozawa, Kunitaka; Koga, Eiji; and Ogiwara, Satoshi, 5,444,833, Cl. 395-133.000.
Ohta, Hirohisa; Ozawa, Kunitaka; Kawakami, Eigo; and Uzawa, Shunichi, 5,443,932, Cl. 430-22.000.

Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyotea, Masayoshi; and Saito, Takeshi, to Matsushita Electric Industrial Co., Ltd. An inverter driven lamp arrangement having a current detection circuitry coupled to a resonant output circuit. 5,444,336, Cl. 315-307.000.

Ozawa, Osamu, to Kashiyama Industry Co., Ltd. Gas exhaust system and pump cleaning system for a semiconductor manufacturing apparatus. 5,443,644, Cl. 118-715.000.

Ozeki, Eiichi: *See*—
Matsumoto, Kiyoichi; Tahara, Shu; Ozeki, Eiichi; Ogaito, Makoto; and Kobayashi, Masakazu, 5,443,780, Cl. 264-290.200.

Ozers, Guntis: *See*—
Pavliny, Mark; Lewandowski, Edward; Lawrence, William; Gregory, Michael; and Ozers, Guntis, 5,443,008, Cl. 101-484.000.

Pace, Ronald J.: *See*—
Cornell, Bruce A.; Braach-Maksvytis, Vijoleta L. B.; Pace, Ronald J.; King, Lionel G.; Raguse, Burkhard; Baxter, Claire R.; Hall, Ruth M.; Morris, Carol A.; and Osman, Peter D. J., 5,443,955, Cl. 435-7.210.

Pacific Communication Sciences, Inc.: *See*—
Petranovich, James E., 5,444,696, Cl. 370-17.000.

Pacific Microelectronics Corporation: *See*—
Danner, Paul A., 5,442,852, Cl. 29-843.000.

Padgett, John D.: *See*—
Simonelli, Michael T.; Padgett, John D.; and Bowhall, Garry, 5,443,325, Cl. 404-75.000.

Pagel, Gene; Pick, Charles; and Roloff, Mark, to Manitowoc Company, The. Crane backhitch. 5,443,169, Cl. 212-298.000.

Pai, Joseph Y.; and Kim, Choon-Woo, to Minnesota Mining and Manufacturing Company. X-ray machine, solid state radiation detector and method for reading radiation detection information. 5,444,756, Cl. 378-98.800.

Paielli, Perry M.: *See*—
Meaney, John D.; and Paielli, Perry M., 5,444,628, Cl. 364-431.050.

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Pal, Uday B.; Chou, Kuo-Chih; Yuan, Shi; and Hasham, Zain, to Massachusetts Institute of Technology. Method for refining molten metals and recovering metals from slags. 5,443,699, Cl. 204-64.00R.

Pall Corporation: *See*—
Gsell, Thomas C., 5,443,743, Cl. 210-767.000.
Jonas, Leonard A.; and White, Donald H., Jr., 5,443,623, Cl. 95-101.000.
Kirnbauer, Erwin; White, Donald H., Jr.; and Adiletta, Joseph D., 5,443,735, Cl. 210-668.000.
Williamson, Kenneth M.; Whitney, Scott A.; Rausch, Alan R.; and Welch, Thomas C., Jr., 5,443,724, Cl. 210-323.200.

Palm, Bengt: *See*—
Arph, Olle; Palm, Bengt; Malmgren, Bozena; and Ringstrom, Roland, 5,443,857, Cl. 426-522.000.

Palmberg, Paul W.: *See*—
Larson, Paul E.; and Palmberg, Paul W., 5,444,242, Cl. 250-305.000.

Palmer, Gary L., to ITT Corporation. Device for coupling night vision assembly to a video camcorder. 5,444,907, Cl. 354-82.000.

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Williams, George M., Jr.; Palmer, Gary L.; and Popow, John D., 5,444,568, Cl. 359-400.000.

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Palmer, Michael R. Portable reticle alingment device for firearms. 5,442,860, Cl. 33-233.000.

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Rivera, Eric J. Illumination device for a purse. 5,444,605, Cl. 362-156.000.

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Locher, Johannes; Fischer, Werner; and Barth, Joerg, 5,444,381, Cl. 324-657.000.
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Mayer, Klaus-Michael, 5,444,805, Cl. 385-49.000.
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Schneider, Andreas; and Gantenbein, Reinhard, 5,443,055, Cl. 123-602.000.
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Robertshaw Controls Company: *See*—
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Robinson, Derek W.; Krieger, William A.; Martinez, Andre M.; and McDevitt, Marion E., to Analog Devices, Inc. Complementary bipolar polysilicon emitter devices. 5,444,285, Cl. 257-378.000.

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Robinson, Moises E.: *See*—
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Semiatin, Sheldon L.; El Soudani, Sami M.; Vollmer, Donald C.; and Thompson, Clarence R., 5,442,847, Cl. 29-527.500.
White, Stanley A., 5,444,639, Cl. 364-572.000.
White, Stanley A., 5,444,661, Cl. 364-484.000.

Rodemer, Karl; and Palluncic, Zdravko, to Lincoln GmbH. Non-return valve with improved line connecting mechanism. 5,443,091, Cl. 137-515.700.

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Beisel, Hermann; Blaser, Peter T.; Hauck, Dieter; Hutzenlaub, Rudolf; Jager, Helmut; Jahn, Hans-Georg; Muller, Robert; Rodi, Anton; and Spiegel, Nikolaus, 5,443,006, Cl. 101-477.000.

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Yoshida, Tetsushi; Fujita, Yutaka; and Kotani, Kunihiko, 5,443,756, Cl. 252-299.630.

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Vasquez, Carlos E. M., 5,444,076, Cl. 514-352.000.

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Sinclair, Richard G.; Lipinsky, Edward S.; Browning, James D.; Bigg, Donald; and Rogers, Thomas A., 5,444,113, Cl. 524-306.000.

Rogers, Wesley A., to Electronic Development Inc. Battery state of charge monitor. 5,444,378, Cl. 324-428.000.

Roh, Young H.: *See*—
Kim, Jung H.; Kim, Hyung S.; Lee, Byeong H.; Roh, Young H.; and Chung, Hae Y., 5,442,824, Cl. 8-159.000.

Rohling, Kenneth W.: *See*—
Cline, Harvey E.; Rohling, Kenneth W.; and Abeling, Walter R., 5,443,068, Cl. 128-653.500.

Rohm Co., Ltd.: *See*—
Izawa, Kaoru; Hayashi, Shigeyoshi; and Hirai, Jun, 5,444,785, Cl. 381-63.000.

Rohm and Haas Company: *See*—
Yu, Bing; and Mattox, John R., 5,444,078, Cl. 514-372.000.

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Laniado, Josephe; and Har-El, Moshe, 5,443,923, Cl. 428-476.100.

Rolland, Jean-Marie: *See*—
Mottie, Richard; Rolland, Jean-Marie; and Renard, Jacques, 5,444,391, Cl. 324-16.000.

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Knott, David S.; Paluszkiewicz, Czeslaw; Adams, Martyn P.; and Sathianathan, Sivasubramanian K., 5,443,366, Cl. 416-221.000.

Roloff, Mark: *See*—
Pagel, Gene; Pick, Charles; and Roloff, Mark, 5,443,169, Cl. 213-298.000.

Romanchev, Jury A.; Kutenev, Vadim F.; Istomin, Sergei S.; Zlenko, Mikhail A.; and Kvasnikov, Boris V., to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut. Mechanism for transforming rotary motion of a shaft into translational motion of actuating members. 5,442,971, Cl. 74-53.000.

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Hoskins, Josiah C.; and Ronen, Joshua M., 5,444,619, Cl. 364-411.000.

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Wolters, Harrie J. M.; Brooks, Philip M.; Hung, David T. H.; Motamedi, Richard C.; and Rosinski, Louis S., Jr., 5,442,858, Cl. 33-1.00N.

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Weeks, Alan L.; Fortier, Gerald J.; Matte', Stephen R.; Gaudet, Peter W.; Stein, Martin; Rosner, Steven C.; and Lepofsky, Robert J., 5,443,368, Cl. 417-27.000.

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Zimmerman, Amy C.; and Rosser, David A., 5,443,817, Cl. 424-47.000.

Rossiter, Steven L.: *See*—
Swamy, Mahesh M.; Bisel, Gerald R.; and Rossiter, Steven L., 5,444,609, Cl. 363-47.000.

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Koresberg, Hendrik J.; Roth, Arjen R.; and Tiggeloven, Leonardus J. A., 5,443,425, Cl. 474-163.000.

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Baeuerle, Michael; Haeming, Werner; Hilbert, Wolfgang; Rothhaar, Ulrich; Sloboda, Robert; Torno, Oskar; Unland, Stefan; and Surjadi, Iwan, 5,442,918, Cl. 60-602.000.

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rotring International GmbH & Co. KG: *See*—
Jozat, Walter; and Wunsche, Steffen, 5,443,322, Cl. 401-151.000.

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Roussel UCLAF: *See*—
Agouridas, Constantin; Benedetti, Yannick; Chantot, Jean-Francois; Denis, Alexis; Fromentin, Claude; and Le Martret, Odile, 5,444,051, Cl. 514-29.000.
Jobard, Alain, 5,443,837, Cl. 424-423.000.

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Rowland, Stephen T., to Intel Corporation. Method and apparatus for cycle tracking variable delay lines. 5,444,857, Cl. 395-309.000.

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Fenneker, Leo M.; and Rubiowsky, Stefan J., 5,444,479, Cl. 348-42.000.

Ruddy, Thomas A.: *See*—
Rushmer, Michael W.; Ruddy, Thomas A.; Brukalo, Krzystof; Z.; and Ritter, Allen M., 5,443,566, Cl. 212-275.000.

Rudibaugh, John W.; and Van Auken, Charles L., to Pennsy Corporation. Center bowl wear liners for railroad cars with varying hardness values. 5,443,015, Cl. 105-199.400.

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Haber, Edgar; Bode, Christoph; and Runge, Marschall S., 5,443,827, Cl. 424-133.100.

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de Nanteuil, Guillaume; Lila, Christine; Laubie, Michel; Verbeuren, Tony; Simonet, Serge; Rupin, Alain; and Portevin, Bernard, 5,444,049, Cl. 514-18.000.

Ruppel, Remy; Laurent, Pierre; and Hungler, Joel, to Kayserberg. Marked multi-ply paper sheets and method and equipment for their manufacture. 5,443,889, Cl. 428-172.000.

Rushmer, Michael W.; Ruddy, Thomas A.; Brukalo, Krzystof; Z.; and Ritter, Allen M., to General Electric Company. Electronic antisway control. 5,443,566, Cl. 212-275.000.

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Russell, Alvah A.: *See*—
Olmsted, Robert G.; and Russell, Alvah A., 5,443,263, Cl. 273-157.00R.

Russell, Richard H.: *See*—
Goetcheus, Gregory J.; Clarke, Robert J.; and Russell, Richard H., 5,444,767, Cl. 379-67.000.

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Roberts, David A.; Russell, Simon T.; and Pearce, Robert J., 5,444,071, Cl. 514-312.000.

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Belanger, Faith C.; and Lindstrom, Jon T., 5,443,981, Cl. 435-223.000.

Rutgers University: *See*—
Wilson, Thomas M. A.; and Hwang-Lee, Duk-Ju, 5,443,969, Cl. 435-91.320.

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Ryan, William; Worek, William M.; and Zheng, Weixiang, to Gas Research Institute. Simplified adsorption heat pump using passive heat recuperation. 5,442,931, Cl. 62-101.000.

Ryat, Marc H., to SGS-Thomson Microelectronics, Inc. Wideband linear and logarithmic signal conversion circuits. 5,444,361, Cl. 323-312.000.

Ryer, Jack: *See*—
Bloch, Ricardo A.; Gutierrez, Antonio; Ryer, Jack; Watts, Raymond F.; and Gleason, Craig W., 5,443,744, Cl. 252-32.70E.

Ryobi North America: *See*—
Niemela, Paul W.; Morikawa, Hiroshi; and Demarco, Stephen M., 5,442,901, Cl. 56-11.900.

Ryther, Robert J.: *See*—
Mader, Roger A.; and Ryther, Robert J., 5,443,742, Cl. 210-758.000.

Ryum, Byung-Ryul; Han, Tae-Hyeon; Lee, Soo-Min; Cho, Deok-Ho; Lee, Seong-Hearn; and Kang, Jin-Young, to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Method for fabricating semiconductor device. 5,444,014, Cl. 437-62.000.

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Nasser, Edward A.; and Staebler, Manfred, 5,443,276, Cl. 279-77.000.

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Nilsson, Per-Inge; and Bergsten, Lars, 5,443,043, Cl. 123-48.00C.

Saab, Mark A. Method of preparing disposable sheath with optically transparent windows formed continuously integral therewith. 5,443,781, Cl. 264-291.000.

Sachleben, Richard A.: *See*—
Moyer, Bruce A.; Sachleben, Richard A.; and Bonnesen, Peter V., 5,443,731, Cl. 210-634.000.

Sadakata, Mareo; Iwasaki, Yoichiro; Yano, Yoshiharu; and Toyama, Masakazu, to Matsushita Electric Industrial Co., Ltd.; and Tokai University Educational System. Method for predicting traffic space mean speed and traffic flow rate, and method and apparatus for controlling isolated traffic light signaling system through predicted traffic flow rate. 5,444,442, Cl. 340-916.000.

Saeki, Makoto: *See*—
Yoshizumi, Keiichi; Fukuda, Kazashi; Ariga, Seiichi; Ikeda, Shuji; Saeki, Makoto; Nagai, Kiyoshi; Hashiba, Soichiro; Nishihara, Shinji; and Kanai, Fumiyuki, 5,444,012, Cl. 437-60.000.

SAFCO Corporation: *See*—
Carr, Francis L.; and Canell, George P., 5,444,428, Cl. 337-188.000.

Sage, Jay P., to Massachusetts Institute of Technology. Tunnel diode shift register utilizing tunnel diode coupling. 5,444,751, Cl. 377-78.000.

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Saidman, Laurence B.: *See*—
Coeling, Kenneth J.; Saidman, Laurence B.; Smith, James C.; Messerly, James W.; and Mayer, Stanley E., 5,443,796, Cl. 422-129.000.

Saikatsu, Takeo: *See*—
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Saikawa, Hideo: *See*—
Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsuro; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,444,473, Cl. 347-87.000.

Saint-Gobain Vitrage International: *See*—
Buffat, Bernard; Pillias, Daniele; and Lerbet, Francois, 5,443,862, Cl. 427-526.000.

St. Louis, Robert M. Dual element electrical clother dryer with single element interrupt circuit. 5,443,541, Cl. 34-486.000.

Saito, Hiroyuki: *See*—
Seki, Yoichi; Saito, Hiroyuki; Ito, Akira; Ishii, Isamu; and Iwamatsu, Yoshiyuki, 5,444,511, Cl. 354-403.000.

Saito, Kazuo; Yasuda, Takao; and Oyama, Toru, to Miyako Jidosha Kogyo Kabushikigaisha. Control valve assembly for total pressure hydraulic brake. 5,442,916, Cl. 60-547.100.

Saito, Kouji: *See*—
Sono, Michio; Saito, Kouji; Takenaka, Masashi; and Yoshimoto, Masanori, 5,444,025, Cl. 437-207.000.

Saito, Masaru: *See*—
Yamanaka, Motosuke; Hoshiko, Tomonori; Sada, Shinji; Yoseda, Naoki; Mori, Nobuyuki; Shino, Mitsunasa; Ishihara, Hiroki; Saito, Masaru; and Matsuoka, Toshiyuki, 5,444,083, Cl. 514-429.000.

Saito, Mitsuru; and Nakahara, Toshiaki, to Nippon Filcon Co., Ltd. Apparatus for creating operation data concerning operating device. 5,444,614, Cl. 364-191.000.

Saito, Takayoshi: *See*—
Shimano, Takamasa; Arai, Tatsuo; and Saito, Takayoshi, 5,443,335, Cl. 407-113.000.

Saito, Takeshi: *See*—
Ozawa, Masataka; Horii, Shigeru; Miyazaki, Koji; Waki, Atsuo; Kamitani, Takayuki; Yoshikawa, Nobuhisa; Ito, Kazuhiko; Gyoten, Masayoshi; and Saito, Takeshi, 5,444,336, Cl. 315-307.000.

Saito, Toshihiko: *See*—
Shoji, Yoshihiro; Yamasaki, Mikiya; Nishio, Koji; and Saito, Toshihiko, 5,443,930, Cl. 429-224.000.
Yamamoto, Yuji; Nohma, Toshiyuki; Kurokawa, Hiroshi; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,443,929, Cl. 429-224.000.

Saito, Yoshiharu, to Olympus Optical Co., Ltd. Microscope objective. 5,444,573, Cl. 359-659.000.

Saitoh, Mitsumasa, to Sony Corporation. Audio video apparatus with intelligence for learning a history of user control. 5,444,499, Cl. 348-734.000.

Saitoh, Nobuhiro: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, 5,443,747, Cl. 252-94.000.

Saitoh, Takashi: *See*—
Hashiguchi, Tadato; Tachikawa, Michiyoshi; Ukai, Takeshi; Kaneko, Yoshio; Takahashi, Hiroshi; Saitoh, Takashi; Murai, Kazuo; Sakano, Yukio; Aida, Midori; Yamakawa, Shinji; and Hikita, Toshiya, 5,444,518, Cl. 355-201.000.

Sakai, Jun, to Brother Kogyo Kabushiki Kaisha. Photosensitive printing member having ink-receptive capillary structures in the support and photosensitive layer. 5,443,930, Cl. 430-162.000.

Sakai, Junetsu: *See*—
Urushibata, Ikumi; Yoshimura, Takumi; Deguchi, Takeshi; Yonekura, Norihasa; Sakai, Junetsu; and Hayashi, Shigeru, 5,444,060, Cl. 514-25.600.

Sakai, Tadamoto: *See*—
Inoue, Shigeki; Tsuda, Fumiaki; Nagai, Mitsuo; Sakai, Tadamoto; and Nakamura, Kazuyuki, 5,443,772, Cl. 264-102.000.

Sakai, Takahiro: *See*—
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Sakai, Takamasa: *See*—
Hirae, Sadao; Kouno, Motohiro; and Sakai, Takamasa, 5,444,389, Cl. 324-765.000.

Sakaki, Eihiro: *See*—
Tomoyuki, Yohji; Nakamura, Shunji; Ohtsuka, Yasumasa; Okuda, Kouichi; Sakaki, Eihiro; Hayakawa, Akira; and Fukuzawa, Daizo, 5,444,521, Cl. 355-285.000.

Sakakibara, Yoshio: *See*—
Mitsuda, Makoto; Ohtaka, Hideki; Sakakibara, Yoshio; Kobayashi, Kazuhiko; Fujii, Shozo; and Hashimoto, Atsushi, 5,444,580, Cl. 360-73.060.

Sakakibara, Yutaka: *See*—
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Sakamaki, Makoto: *See*—
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Sakamori, Katsuji, to Kabushiki Kaisha Toshiba. Sheet processing apparatus. 5,443,257, Cl. 271-128.000.

Sakamoto, Mitsuo: *See*—
Nishimura, Isao; Sakamoto, Mitsuo; and Sasaki, Katsuyasu, 5,442,883, Cl. 52-167.200.

Sakamoto, Tetsuro; Sunami, Motoshi; and Hasegawa, Hiroshi, to Nippon Oil Co., Ltd. Lubricant for refrigerating machine. 5,443,745, Cl. 252-52.00A.

Sakano, Kouzaburo: *See*—
Oda, Yasuhiro; Maruhashi, Yoshitugu; Sakano, Kouzaburo; and Yamaguchi, Yuji, 5,443,868, Cl. 428-35.700.

Sakano, Yukio, to Ricoh Company, Ltd. Method and apparatus for detecting a closed-loop area of an image. 5,444,543, Cl. 358-296.000.

Sakano, Yukio: *See*—
Hashiguchi, Tadato; Tachikawa, Michiyoshi; Ukai, Takeshi; Kaneko, Yoshio; Takahashi, Hiroshi; Saitoh, Takashi; Murai, Kazuo; Sakano, Yukio; Aida, Midori; Yamakawa, Shinji; and Hikita, Toshiya, 5,444,518, Cl. 355-201.000.

Sakata, Haruo, to Clarion Co., Ltd. Audio signal processing device. 5,444,787, Cl. 381-94.000.

Sakata, Yoshiyasu; and Sugiyama, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Fuel vapor discharge limiting device for fuel tank. 5,443,561, Cl. 137-202.000.

Sakich, John D.; and Comber, Michael G., to Hubbell Incorporated. Electrical assembly with surge arrester and insulator. 5,444,429, Cl. 338-21.000.

Sako, Yukinobu: *See*—
Ohta, Masuo; and Sako, Yukinobu, 5,444,456, Cl. 345-39.000.

Sakurada, Tadayuki: *See*—
Ichizuka, Isamu; Takahashi, Shuitsu; Hara, Kouzi; Waki, Hiroshi; Kobe, Shinji; Sakurada, Tadayuki; Okouchi, Yoshitaka; Ohkubo, Ken; and Shimizu, Hiroshi, 5,444,128, Cl. 524-507.000.

Sakurai, Takehiko: *See*—
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Salani, Giuliana: *See*—
Frigerio, Marco; Ferrari, Patrizia; Mellosi, Piero; and Salani, Giuliana, 5,444,082, Cl. 514-409.000.

Saleme, M. Cecilia. Canine seat belt and harness. 5,443,037, Cl. 119-771.000.

Salerno, Jack P.: *See*—
Spitzer, Mark B.; Salerno, Jack P.; and Jacobsen, Jeffrey, 5,444,557, Cl. 359-59.000.

Salesi, Remy. Paper moisteaer device and moist toilet paper dispenser. 5,443,084, Cl. 134-58.00R.

Sallavanti, Robert A.: *See*—
Kitchloo, Paresh V.; and Sallavanti, Robert A., 5,443,597, Cl. 8-444.000.

Salmon, Stephen M.: *See*—
Ginn, Richard S.; and Salmon, Stephen M., 5,443,457, Cl. 604-280.000.

Salvador, Yvan; Gerard, Dominique; and Huet, Eric, to Vetrotex France. Apparatus for producing and treating glass threads. 5,443,611, Cl. 65-507.000.

Samanen, James: *See*—
Girard, Gerald R.; Hampel, Judith; Hill, David T.; Samanen, James; and Weinstock, Joseph, 5,444,080, Cl. 514-397.000.
Gleason, John G.; Hempel, Judith; Hill, David T.; Samanen, James; and Weinstock, Joseph, 5,444,081, Cl. 514-399.000.

Sameshima, Junichirou; Hokari, Norio; and Honobe, Satoshi, to Fuji Xerox Co., Ltd. Image forming device including transfer material carrier device with grounding member. 5,444,523, Cl. 355-309.000.

Samit, Marc; and Weiss, Michael A., to United Technologies Corporation. Hollow fan blade dovetail. 5,443,367, Cl. 416-248.000.

Samsung Electron Devices Co., Ltd.: *See*—
Kim, Heon-soo, 5,444,261, Cl. 250-493.100.

Samsung Electronics Co., Ltd.: *See*—
Cho, Young-Keon, 5,444,845, Cl. 395-162.000.
Kim, Chang-kyu; Lee, Myeong-beom; Choi, Ji-hyun; Joung, Woo-in; Im, Young-jin; Kim, Won-joo; Hong, Jin-gi; and Kang, Geung-won, 5,444,026, Cl. 437-240.000.
Kim, Dong J.; and Yang, Duk J., 5,443,420, Cl. 454-256.000.
Kim, Yun-gi; Kim, Pui-eong; Choi, Jin-seok; and Park, Jong-ho, 5,444,005, Cl. 437-52.000.
Ko, Seong-ro, 5,448,679, Cl. 369-32.000.
Lee, Bong-Gi, 5,446,524, Cl. 355-316.000.
Lee, Hyung-heui, 5,444,545, Cl. 358-335.000.
Lee, Seung-ku; and Oh, Kyung-seok, 5,444,020, Cl. 437-195.000.
Na, Woon H., 5,448,783, Cl. 381-57.000.
Oh, Soo-Hwan; and Park, Byeong-Oh, 5,444,830, Cl. 395-109.000.
Park, Won-mo; and Lee, Jong-jin, 5,443,993, Cl. 437-60.000.
Yun, Hee-sun, 5,444,714, Cl. 371-182.020.

Samsung Heavy Industries Co., Ltd.: *See*—
Ahn, Seong-Ho, 5,442,868, Cl. 37-348.000.

Samuelsson, Sven-Erik, to Metpump AB. Pump apparatus for pumping melt metal. 5,443,187, Cl. 222-595.000.

Sanada, Yoshika: *See*—
Murata, Kazue; Tada, Hiroshi; Koishi, Yoshitaka; Matsui, Osamu; Morimoto, Kiyoshi; Sanada, Yoshika; and Miwa, Teiichi, 5,442,826, Cl. 15.3.510.

Sandborg, Thomas R.; Parupalli, Prasad V.; and Sinn, Scott G., to Caterpiller Inc. Fuel delivery temperature compensation system and method of operating same. 5,444,627, Cl. 364-431.050.

Sanden Corporation: *See*—
Kanoll, Hiroshi, 5,443,372, Cl. 417-319.000.
Yoshii, Yuji; and Kudo, Takayuki, 5,443,374, Cl. 418-55.100.

Sander, Wendell B.: *See*—
Richards, John G.; Flores, Hector; and Sander, Wendell B., 5,444,009, Cl. 437-51.000.

Sandoz Ltd.: *See*—
Baumann, Hans-Peter, 5,443,598, Cl. 8-455.000.

Sandstrom, Paul H.: *See*—
Wideman, Lawson G.; and Sandstrom, Paul H., 5,444,109, Cl. 524-91.000.

Sandvik AB: *See*—
Pantzar, Goran, 5,443,334, Cl. 407-113.000.

Sanei Kasei Co., Ltd.: *See*—
Takahashi, Yasunori, 5,443,617, Cl. 75-254.000.

Sanes, Joshua: *See*—
Engvall, Eva; and Sanes, Joshua, 5,444,158, Cl. 530-395.000.

Sankyo Company, Limited: *See*—
Kohama, Takafumi; Kaneko, Isao; Nakamura, Takemichi; Kagasaki, Takeshi; Enokita, Ryuzo; and Matsuda, Keiichi, 5,443,972, Cl. 435-125.000.

Sanner, Lanny R.; and Elsasser, Scott, to Greenlee Textron Inc. Hydraulic control apparatus with selectively operated check valve assembly. 5,442,992, Cl. 91-428.000.

Sano, Tadanori; Sawada, Kazuo; Nakai, Yoshihiro; and Miyazaki, Kenji, to Sumitomo Electric Industries, Ltd. Method of manufacturing a copper electrical conductor, especially for transmitting audio and video signals and quality control method for such conductors. 5,443,665, Cl. 148-509.000.

Sano, Teruo: *See*—
Sato, Takashi; and Sano, Teruo, 5,444,553, Cl. 358-465.000.

Sanofi: *See*—
Gubin, Jean; Chatelain, Pierre; Inion, Henri; and Rosseels, Gilbert, 5,444,056, Cl. 514-18.300.

Sanyo Electric Co., Ltd.: *See*—
Hirono, Hideo; and Takahashi, Hironobu, 5,444,799, Cl. 382-257.000.
Kawai, Tsuyoshi; and Sekiya, Ryoichi, 5,442,926, Cl. 62-211.000.
Machida, Toyoji; Hara, Mitsunori; Moriwaki, Kazuro; Tsujioku, Keiichi; Amazutsumi, Tooru; Tamaki, Hiyoshi; Yamauchi, Yasuhiro; and Narukawa, Satoshi, 5,443,925, Cl. 429-94.000.
Nagasawa, Hidekaru; Honma, Kazunari; Takeda, Yasuhiro; and Yoneda, Kiyoshi, 5,444,653, Cl. 365-149.000.
Shoji, Yoshihiro; Yamasaki, Mikiya; Nishio, Koji; and Saito, Toshihiko, 5,443,930, Cl. 429-224.000.
Takahashi, Hisakazu; Ezaki, Kenichi; Baba, Yoko; and Shibata, Kenichi, 5,444,028, Cl. 501-136.000.
Takezawa, Minoru; Yatsu, Shigeo; Endo, Fumihisa; Morita, Akihiro; and Kishi, Yuji, 5,444,100, Cl. 521-131.000.
Tatezono, Fumio; Harada, Toshio; Irie, Masahiro; and Ohara, Meguru, 5,443,940, Cl. 430-270.000.
Yamamoto, Yuji; Nohma, Toshiyuki; Kurokawa, Hiroshi; Uehara, Mayumi; Nishio, Koji; and Saito, Toshihiko, 5,443,929, Cl. 429-224.000.

Sanyo Machine Works, Ltd.: *See*—
Oshima, Masatoei; and Aoki, Yoshihide, 5,444,481, Cl. 348-187.000.

Sarkahian, Ani B.: *See*—
Owen, Albert J.; Yiv, Seang H.; and Sarkahian, Ani B., 5,444,041, Cl. 514-2.000.

Sarkisian, Robert; Muir, David J.; and Hillstrom, David U., to Marketing Displays, Inc. Poster and sign display assembly. 5,442,871, Cl. 40-606.000.

Sarl Dassau Distribution: *See*—
Dassau, Christian, 5,443,180, Cl. 222-1.000.

Sasaki, Goro, to Sumitomo Electric Industries Ltd. Photodetector and opto-electronic integrated circuit. 5,444,274, Cl. 257-184.000.

Sasaki, Hideki: *See*—
Kohno, Masahide; Kuroda, Kazuhiro; Ishikawa, Yasushi; Sasaki, Hideki; Takasugi, Yasufumi; Ikarashi, Tsunehiko; and Inoue, Osamu, 5,443,913, Cl. 428-425.900.

Sasaki, Junsou: *See*—
Hitomi, Mitsuo; Sasaki, Junsou; and Kaide, Tadayoshi, 5,443,050, Cl. 123-492.000.

Sasaki, Katsuro: *See*—
Ohkubo, Norio; Suzuki, Makoto; Sasaki, Katsuro; and Homma, Yoshio, 5,444,000, Cl. 437-8.000.

Sasaki, Katsuyasu: *See*—
Nishimura, Isao; Sakamoto, Mitsuo; and Sasaki, Katsuyasu, 5,442,883, Cl. 52-167.200.

Sasaki, Kenichi, to Canon Kabushiki Kaisha. An optical or magnetooptical information recording/reproducing apparatus and a focusing pull-in method for such apparatus generating a light beam for focusing error signal detection. 5,444,233, Cl. 250-201.500.

Sasaki, Mitsuhiro: *See*—
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,443,936, Cl. 430-99.000.

Sasaki, Shigenori: *See*—
Nanba, Hideyuki; Hirata, Koji; and Sasaki, Shigenori, 5,443,255, Cl. 271-273.000.

Sasaki, Takayo: *See*—
Takagawa, Makoto; Inamasa, Kenji; Fushimi, Norio; Hashimoto, Akio; and Sasaki, Takayo, 5,444,172, Cl. 585-452.000.

Saska, Michael; and Lancrenon, Xaivier, to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College; and Societe Nouvelle de Recherches et D'Applications Industrielles D'Echangeurs D'ions Appleton. Process for softening a sugar-containing aqueous solution, such as sugar juice or molasses. 5,443,650, Cl. 127-46.200.

Sathe, Sudarshan R.: *See*—
Palowitz, Francis S.; and Sathe, Sudarshan R., 5,443,788, Cl. 419-65.000.

Sathianathan, Sivasubramaniam K.: *See*—
Knott, David S.; Paluszkiewicz, Czesław; Adams, Martyn P.; and Sathianathan, Sivasubramaniam K., 5,443,366, Cl. 416-221.000.

Sato, Goichi: *See*—
Marui, Kuniyoshi; Sato, Goichi; Ishii, Takaaki; Takachi, Shinji; Sawa, Buntaro; and Sato, Hiroshi, 5,444,867, Cl. 455-89.000.

Sato, Hiroshi: *See*—
Marui, Kuniyoshi; Sato, Goichi; Ishii, Takaaki; Takachi, Shinji; Sawa, Buntaro; and Sato, Hiroshi, 5,444,867, Cl. 455-89.000.

Sato, Hiroya; and Miyauchi, Maseto, to Sharp Kabushiki Kaisha. Semiconductor apparatus with heat sink. 5,444,300, Cl. 257-737.000.

Sato, Hiroyuki: *See*—
Kugishima, Masahiro; Sato, Hiroyuki; Nariishi, Masaaki; Yamakawa, Noboru; and Yamamoto, Takahiro, 5,444,275, Cl. 257-206.000.

Sato, Koji: *See*—
Nishimura, Akihiro; and Sato, Koji, 5,443,679, Cl. 156-361.000.

Sato, Takashi; and Sano, Teruo, to Casio Computer Co., Ltd. Image processing apparatus including binary data producing unit. 5,444,553, Cl. 358-465.000.

Sato, Takashi: *See*—
Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, Shinji, 5,444,206, Cl. 219-121.630.

Sato, Toshiaki: *See*—
Ohya, Hiroo; Sato, Toshiaki; Takahashi, Toshio; Wakakuwa, Makoto; Masao, Mizukami; Fujita, Masaru; Miyazawa, Sadao; and Aruga, Noriaki, 5,444,316, Cl. 310-49.008.

Satoh, Takamasa; Yasuda, Hiroshi; Yamada, Akio; Kai, Junichi; Ose, Yoshihisa; Yamada, Keiji; and Oshima, Toru, to Fujitsu Limited; and Fujitsu VLSI Limited. Electron-beam exposure system for reduced distortion of electron beam spot. 5,444,257, Cl. 250-398.000.

Satoh, Takashi: *See*—
Isshiki, Osamu; Murashita, Masaki; Matsushima, Osamu; Nakagawa, Sadao; Nakano, Seizo; Goto, Koji; Hashiura, Masayoshi; Kobayashi, Yutaka; Satoh, Takashi; Ota, Katsuro; Kikuchi, Hideaki; Sato, Takashi; and Fukuda, Shinji, 5,444,206, Cl. 219-121.630.

Satoh, Toshihiko: *See*—
Tsuchiya, Yoshimi; Nomoto, Takashi; Mitsuya, Morihiro; Nonoshita, Katsumasa; Hayashi, Masahiro; Satoh, Toshihiko; Sawasaki, Yoshio; and Kamei, Toshio, 5,444,084, Cl. 514-438.000.

Satoh, Yasuhiro; Kiyosawa, Yoshiyuki; and Kimura, Yuichi, to Ricoh Company, Ltd.; and Ricoh Research Institute of General Electronics Co., Ltd. Pen input device. 5,444,193, Cl. 178-18.000.

Satterwhite, James R.; Horning, Sandra J.; Wyatt, Gerald A.; and Reiesn, Daniel E., to Minnesota Mining and Manufacturing Company. Circuit tracer having an electric field sensor, a differential electric field sensor and an inductive sensor. 5,444,364, Cl. 324-67.000.

Saturn Machine & Welding Co., Inc.: *See*—
Baird, William R.; and Baird, Billy C., 5,443,696, Cl. 202-248.000.

Satzger, Wilhelm; and Mangold, Edmund, to MTU Motoren- und Turbinen-Union Muenchen GmbH. Apparatus for measuring the carvature of a profile, such as an edge of a turbine blade. 5,444,536, Cl. 356-376.000.

Saucier, Randolph J. Gravel-packing apparatus & method. 5,443,121, Cl. 166-278.000.

Saudi Arabian Oil Company: *See*—
Unalmiser, Servet; and Swalwell, Terry J., 5,442,950, Cl. 73-38.000.

Sauerwein, Paul: *See*—
Englisch, Wolfgang; Goy, Heinrich; Sauerwein, Paul; Hitzschke, Peter; Simmat, Fritz; Takke, Rolf; and Steiner, Gerhard, 5,443,607, Cl. 65-64.000.

Savignac, Dominique: *See*—
Sommer, Diether; and Savignac, Dominique, 5,444,392, Cl. 326-31.000.

Saville, Jacqueline M.; and Ferguson, William G. A., to Alex Wilson Coldstream, Ltd. Latent image ink. 5,443,629, Cl. 106-21.00A.

Sawa, Buntaro; and Hoshino, Makoto, to Kabushiki Kaisha Toshiba. Mobile radio telephone apparatus. 5,444,306, Cl. 307-9.100.

Sawa, Buntaro: *See*—
Marui, Kuniyoshi; Sato, Goichi; Ishii, Takaaki; Takachi, Shinji; Sawa, Buntaro; and Sato, Hiroshi, 5,444,867, Cl. 455-89.000.

Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, to Sumitomo Electric Industries, Ltd. Heat and oxidation resistant composite electrical conductor. 5,443,905, Cl. 428-368.000.

Sawada, Kazuo: *See*—
Sano, Tadanori; Sawada, Kazuo; Nakai, Yoshihiro; and Miyazaki, Kenji, 5,443,665, Cl. 148-509.000.

Sawada, Toshiki: *See*—
Kojima, Takao; Ishiguro, Hiroyuki; Yamano, Masaru; Kondo, Noriaki; Yamada, Masahiko; and Sawada, Toshiki, 5,443,711, Cl. 204-429.000.

Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Yuki, Mikio; Horiguchi, Shiro; Araki, Yoshihisa; Yuki, Shigeru; and Hamada, Toshihiro, to Kabushiki Kaisha Kobe Seiko Sho; and Hyogo Prefectual Social Welfare Corporation. Teaching playback swing-phase-controlled above knee prosthesis. 5,443,524, Cl. 623-24.000.

Sawasaki, Yoshio: *See*—
Tsuchiya, Yoshimi; Nomoto, Takashi; Mitsuya, Morihiro; Nonoshita, Katsumasa; Hayashi, Masahiro; Satoh, Toshihiko; Sawasaki, Yoshio; and Kamei, Toshio, 5,444,084, Cl. 514-438.000.

Sawyer, Evelyn S.; and Sawyer, Philip J., to Sea Run Holdings, Inc. Method for culturing mammalian cells in a medium containing fish serum. 5,443,984, Cl. 435-240.200.

Sawyer, Linda C.: *See*—
Shepherd, James P.; Sawyer, Linda C.; and Farrow, Gerald, 5,443,783, Cl. 264-540.000.

Sawyer, Philip J.: *See*—
Sawyer, Evelyn S.; and Sawyer, Philip J., 5,443,984, Cl. 435-240.200.

Saxe, Steven G.: *See*—
Baldwin, Dwight G.; Kennedy, James K.; and Saxe, Steven G., 5,444,230, Cl. 235-462.000.

Scalliet, Robert M.; Koopersmith, Craig A.; and Carter, Walter A., to Scaltech, Inc. Recycle of waste streams. 5,443,717, Cl. 208-131.000.

Scaltech, Inc.: *See*—
Scalliet, Robert M.; Koopersmith, Craig A.; and Carter, Walter A., 5,443,717, Cl. 208-131.000.

Scalxo Automotive Research Limited: *See*—
Curetos, George K.; and Profaca, Mark S., 5,443,375, Cl. 418-61.300.

Scarola, Leonard S.; Roberts, Ernest H.; Hobbs, Kenneth E.; and Angell, Richard G., Jr., to Union Carbide Chemicals & Plastics Technology Corporation. Method and apparatus for cleaning contaminants from plastics. 5,443,652, Cl. 134-7.000.

Scarpa, Carl G., to Hitachi America, Ltd. Synchronous pulse generator. 5,444,743, Cl. 375-368.000.

Schablonentechnik Kufstein Ges. m.b.H.: *See*—
Fischer, Hans, 5,443,677, Cl. 156-345.000.

Schaetzle, Ulrich, to Siemens Aktieng sellschaft. Therapeutic ultrasound applicator for the urogenital region. 5,443,069, Cl. 128-660.030.

Schaffhausen, John M. Air filtering fixture. 5,443,625, Cl. 95-273.000.

Schaller, Anton: *See*—
Huber, Manfred; Mueller, Richard; and Schaller, Anton, 5,443,338, Cl. 409-7.000.

Schaller, Laurent: *See*—
Hergenrother, Robert; Cree, Uriel H.; and Schaller, Laurent, 5,443,455, Cl. 428-380.000.

Schallreuter, Karin U.: *See*—
Wood, John M.; and Schallreuter, Karin U., 5,443,819, Cl. 424-59.000.

Schblonentechnik Kufstein Ges. m.b.H.: *See*—
Achreiner, Jakob, 5,443,676, Cl. 156-345.000.

Scheel-Kruger, Jorgen: *See*—
Moldt, Peter; Scheel-Kruger, Jorgen; and Jensen, Leif H., 5,444,070, Cl. 514-304.000.

Scheibelhoffer, Anthony S.; Dosek, Dianna B.; Hammond, Dennis L.; Wimolkiatisak, Surachai; Myers, William R.; Opalko, Robert J.; and Abrams, Richard L., to Ferro Corporation, The. Abrasive and purge compositions. 5,443,768, Cl. 264-39.000.

Scheideman, Floyd P. Water flow and heat exchange control system and method between heat source and water reservoir. 5,443,112, Cl. 165-1.000.

Schenk, Joachim, to Robert Bosch GmbH. Control system for calculating parameter control values in repetitive control processes. 5,444,626, Cl. 364-431.040.

Schepis, Dominic J.: *See*—
Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,444,287, Cl. 257-467.000.

Scheuthle, Dieter: *See*—
Knobl, Karl-Heinz; and Scheuthle, Dieter, 5,443,275, Cl. 279-60.000.

Schick, Thomas: *See*—
Lemaire, Charles A.; Schick, Thomas; and Striemer, Bryan L., 5,444,768, Cl. 379-68.000.

Schilling, Peter, to Westvaco Corporation. Cationic aqueous bituminous emulsion-aggregate slurries. 5,443,632, Cl. 106-277.000.

Schimweg, John J., to Sunnen Products Company. On edge honing devices. 5,443,417, Cl. 451-540.000.

Schinazi, Raymond F., to Emory University. Enantiomerically pure β-D-dioxolane nucleosides with selective anti-Hepatitis B virus activity. 5,444,063, Cl. 514-262.000.

Schlingman, Robert M., to Temptress Incorporated. Vent apparatus and method for thermoset injection moulding systems. 5,443,778, Cl. 264-257.000.

Schloegl, Gunter: *See*—
Peiffer, Herbert; Schloegl, Gunter; and Bothe, Lothar, 5,443,895, Cl. 428-220.000.

Schlumberger Technology Corporation: *See*—
Hoskins, Josiah C.; and Ronen, Joshua M., 5,444,619, Cl. 364-421.000.

Schlund, Bruno; and Bouilloux, Alain, to Elf Atochem S.A. Compatibilized fluoropolymer/aromatic polyester thermoplastic polyblends. 5,444,124, Cl. 525-166.000.

Schluter, Robert J. Rack assembly for facilitating access to wall and cabinet-mounted serviceable equipment. 5,443,312, Cl. 312-334.270.

Schmeling, Hans-Joachim: *See*—
Dreilich, Ludwig; Schmeling, Hans-Joachim; and Hach, Karl-Heinz, 5,443,133, Cl. 188-250.00G.

Schmid, Johannes: *See*—
Modinger, Thomas; and Schmid, Johannes, 5,443,222, Cl. 242-374.000.

Schmidt, Daniel G.: *See*—
Kommrusch, Steven J.; Schmidt, Daniel G.; and Stroyan, Howard D., 5,444,838, Cl. 395-141.000.

Schmidt, Karl-Jurgen; and Knaak, Eberhard, to Blasberg Oberflachentechnik, GmbH. Process and electrolyte for depositing lead and lead-containing layers. 5,443,714, Cl. 205-241.000.

Schmidt, Martin; and Pohan, Claus, to Siemens Aktiengesellschaft. Gas detector for x-radiation. 5,444,255, Cl. 250-385.100.

Schmidt, Mathew G.: *See*—
Priest, John F.; and Schmidt, Mathew G., 5,444,324, Cl. 310-334.000.

Schmitt, Peter J., to Meadox Medicals, Inc. Radially expandable tubular prosthesis. 5,443,499, Cl. 623-1.000.

Schmitt, Serge, to Christ AG. Process for the conditioning of ion exchange resins. 5,443,740, Cl. 210-673.000.

Schmitt, Thomas P.: *See*—
Snow, Barton H.; Markstein, David J.; Wills, Thomas K.; and Schmitt, Thomas P., 5,442,909, Cl. 60-204.000.

Schnatterer, Jurgen: *See*—
Stoll, Kurt; and Schnatterer, Jurgen, 5,443,093, Cl. 137-596.170.

Schneider, Andreas; and Gantenbein, Reinhard, to Robert Bosch GmbH. Ignition system for internal combustion engines. 5,443,055, Cl. 123-602.000.

Schnitzer, Israel: *See*—
Hock, Elisha; Schnitzer, Israel; and Yusim, Victor, 5,443,088, Cl. 137-68.130.

Schoeneck, Mario G.: *See*—
Stewart, William L.; Miller, Leonard A.; Peterman, Thomas H.; Schoeneck, Mario G.; and Schoeneck, Richard J., 5,444,750, Cl. 377-8.000.

Schoeneck, Richard J.: *See*—
Stewart, William L.; Miller, Leonard A.; Peterman, Thomas H.; Schoeneck, Mario G.; and Schoeneck, Richard J., 5,444,750, Cl. 377-8.000.

Schoeneweiss, Klaus, to O&K Orenstein & Koppel, AG. Safety device at the run-in point of a circulating handrail. 5,443,145, Cl. 198-323.000.

Scholkens, Bernward: *See*—
Heitsch, Holger; Wagner, Adalbert; Kleemann, Heinz-Werner; Gerhards, Hermann; and Scholkens, Bernward, 5,444,068, Cl. 514-303.000.

Schreiber, Herbert; Burkart, Gunter; and Knaus, Bruno, to Gurit-Essex AG. Curable resins comprising halogenated epoxy resins and 1-oxa-3-aza tetraline compounds, method for preparing and use of resins. 5,443,911, Cl. 428-413.000.

Schrell, Andreas: *See*—
von der Eltz, Andreas; Schrell, Andreas; and Steuernagel, Hans-Helmut, 5,443,630, Cl. 106-22.00R.

Schremmer, Gottfried; and Peitsmeier, Karl, to Mercedes-Benz AG. Steering lock for motor vehicles. 5,442,943, Cl. 70-252.000.

Schroeppel, Edward A.: *See*—
Housworth, Craig M.; and Schroeppel, Edward A., 5,443,485, Cl. 607-28.000.

Schuermann, Josef H.; Heinecke, Guenter; and Kremer, Rudolf, to Texas Instruments Deutschland GmbH. Arrangement interrogation unit for transponder. 5,444,448, Cl. 342-42.000.

Schuhmacher, Ernst, to Deere & Company. Combine grain tank discharge system. 5,443,352, Cl. 414-526.000.

Schulein, Fritz: *See*—
Berger, Johann; and Schulein, Fritz, 5,442,936, Cl. 66-204.000.

Schulke, Karl: *See*—
Stehling, Ronald; and Schulke, Karl, 5,444,813, Cl. 392-407.000.

Schulman, Michael B.; and Slade, Paul G., to Eaton Corporation. Multiple electrode structure for a vacuum interrupter. 5,444,201, Cl. 218-118.000.

Schulmeyer, Britta: *See*—
Stoll, Reiner; and Schulmeyer, Britta, 5,443,672, Cl. 156-244.170.

Schur Engineering A/S: *See*—
Jorgensen-Beck, Frode; and Lambach, Heinrich W., 5,443,202, Cl. 229-146.000.

Schur, Henry: *See*—
D'Angelo, Joseph P.; Schur, Henry; Han, Kedu; and Glenn, Daniel J., 5,443,080, Cl. 128-771.000.

Schutte, John H.; and Wurzelbacher, Walt L. Storage rack for use with a break press. 5,443,166, Cl. 211-70.600.

Schutz, Joseph D., to Intel Corporation. Voltage converting integrated circuit package. 5,444,298, Cl. 257-691.000.

Schwager, Jeff: *See*—
Hahn, Norbert; Trierweiler, William; Kellermann, Richard; and Schwager, Jeff, 5,442,825, Cl. 14-71.100.

Schwaiger, Karl-Heinz, to Telefunken, Fernseh und Rundfunk GmbH. Method for the transmission of items of auxiliary information in an AM radio broadcast signal. 5,444,720, Cl. 371-42.000.

Schwander, Udo: *See*—
Notar, Robert; and Schwander, Udo, 5,443,763, Cl. 261-140.100.

Schwartz, Robert S.; Bresnahan, John; Bergman, Rebecca M.; Coury, Arthur J.; Lindell, Elaine; Hull, Vincent W.; and Dror, Michael, to Medtronic, Inc. Intravascular radially expandable stent. 5,443,496, Cl. 623-1.000.

Schweighofer, Peter: *See*—
Beyerlein, Walter; and Schweighofer, Peter, 5,444,757, Cl. 378-101.000.

Schweitzer, Frederick F., Jr.: *See*—
Walker, Clarence L.; Schweitzer, Frederick F., Jr.; Patag, Alfredo E.; and Garvey, Gerald J., II, 5,443,453, Cl. 604-248.000.

Schwiegelsohn, Uwe: *See*—
Cox, Charles E.; Pettweis, Gerhard P.; Hassner, Martin A.; and Schwiegelsohn, Uwe, 5,444,719, Cl. 371-37.100.

Scientific Design Company, Inc.: *See*—
Rizkalla, Nabil, 5,444,034, Cl. 502-347.000.

Scientific Imaging Technologies, Inc.: *See*—
Blouke, Morley M.; and Rhoads, Geoffrey B., 5,444,280, Cl. 257-226.000.

Scientific Technology, Inc.: *See*—
Wang, Ting-I, 5,444,530, Cl. 356-338.000.

Scimed Life Systems, Inc.: *See*—
Slaikeu, Paul; Burmeister, Paul H.; Cappetta, Richard E.; and Hackett, Steven S., 5,443,907, Cl. 428-375.000.

Scimed Lifesystems Inc.: *See*—
Buscemi, Paul J.; Buirge, Andrew W.; and Bilge, Fertac, 5,443,495, Cl. 623-1.000.

Scios Nova, Inc.: *See*—
Kyle, Donald J., 5,444,048, Cl. 514-16.000.

Scoggins, Rebecca: *See*—
Caudillo, Roberto; and Scoggins, Rebecca, 5,443,502, Cl. 623-2.000.

Scope Industries: *See*—
Linson, Richard L., 5,442,895, Cl. 53-381.200.

Scott, Barry R.: *See*—
Bailey, Thomas F.; and Scott, Barry R., 5,443,129, Cl. 175-45.000.

Scott, Fraser M. Bicycle chain lubrication. 5,443,139, Cl. 184-15.200.

Scott, Ian L.: *See*—
Kogan, Timothy P.; Dupre, Brian; Scott, Ian L.; Keller, Karin; Dao, Huong; and Beck, Pamela J., 5,444,050, Cl. 514-25.000.

Scripps Research Institute, The: *See*—
Janda, Kim; Lerner, Richard A.; and Danishefsky, Samuel J., 5,444,155, Cl. 530-388.100.

Sea Run Holdings, Inc.: *See*—
Sawyer, Evelyn S.; and Sawyer, Philip J., 5,443,984, Cl. 435-240.200.

Sealand Technology, Inc.: *See*—
Morris, Frederic J.; and McKiernan, Edward F., 5,442,932, Cl. 73-40.700.

Sealoltz, Elwood F.: *See*—
Fetner, Martin J.; and Sealoltz, Elwood F., 5,443,734, Cl. 210-656.000.

SEB S.A.: *See*—
Gelus, Dominique, 5,444,228, Cl. 219-549.000.

Secker, Herbert; Hornung, Guenter; Ulmer, Friedemann; Takacs, Zoltan; and Herrmann, Andreas, to Hewlett-Packard Company. Apparatus and method for evaluating the fetal condition. 5,442,940, Cl. 128-670.000.

Seco Products Corporation: *See*—
O'Hearne, Robert L., 5,442,932, Cl. 62-255.000.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See*—
Sutton, Philip, 5,444,441, Cl. 340-850.000.

Secrist, Donald C.: *See*—
O'Donnell, Brian D.; Secrist, Donald C.; and Nottke, William H., 5,443,204, Cl. 229-242.000.

SEEC, Inc.: *See*—
Erickson, Stewart, 5,443,016, Cl. 105-411.000.

Seegmiller, Ben L. Threaded bar construction. 5,443,331, Cl. 405-259.100.

Seelert, Stefan: *See*—
Zeltner, Doris; Niessner, Norbert; Seitz, Friedrich; Neumann, Ranier; and Seelert, Stefan, 5,444,123, Cl. 525-133.000.

Segan, Marc H.; Strauss, Gary; and Cummings, Gerald W., to M. H. Segan Limited Partnership. Game apparatus including basketball, pinball, and target bowling. 5,443,259, Cl. 273-1.50R.

Seghizzi, Roberto; and Furiosi, Giuseppe, to Inverni Della Beffa Farmaceutici S.r.l. Oral formulations of ubidecarenone in form of capsules. 5,443,842, Cl. 424-456.000.

Seiko Epson Corporation: *See*—
Ishikawa, Hiroyuki; Haba, Shinji; Ebina, Kouichi; Takeda, Takashi; Ito, Hirokazu; and Seki, Hideya, 5,444,683, Cl. 369-44.280.
Kojima, Hironao; and Tanaka, Isao, 5,444,040, Cl. 505-238.000.
Lentz, Derek J., 5,444,853, Cl. 395-250.000.
Takeuchi, Kesatoshi, 5,444,497, Cl. 348-719.000.
Truong, Ho D.; and Lin, Chong M., 5,444,405, Cl. 327-239.000.
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,444,471, Cl. 347-72.000.

Seiko Instruments Inc.: *See*—
Kinoshita, Ryoichi; Takei, Yoshiyuki; Takigawa, Yoshizumi; and Furuno, Masahiro, 5,442,949, Cl. 73-23.350.
Kitamura, Tadashi, 5,444,245, Cl. 250-307.000.

Seikosha Co., Ltd.: *See*—
Seki, Yoichi; Saito, Hiroyuki; Ito, Akira; Ishii, Isamu; and Iwamatsu, Yoshiyuki, 5,444,511, Cl. 354-403.000.

Seitz, Friedrich: *See*—
Zeltner, Doris; Niessner, Norbert; Seitz, Friedrich; Neumann, Ranier; and Seelert, Stefan, 5,444,123, Cl. 525-133.000.

Seketa, Nicholas F. Surgical glove. 5,442,816, Cl. 2-161.700.

Seki, Hideya: *See*—
Ishikawa, Hiroyuki; Haba, Shinji; Ebina, Kouichi; Takeda, Takashi; Ito, Hirokazu; and Seki, Hideya, 5,444,683, Cl. 369-44.280.

Seki, Masaki; Hayasagi, Shizuaki; Suzuki, Koji; and Hosono, Takeshi, to Fanuc Ltd. Developed product shape deciding method for a computer-aided design system. 5,444,831, Cl. 395-127.000.

Seki, Shinji; Ibusuki, Makoto; and Nomoto, Yasuei, to Hitachi, Ltd.; and Hitachi Information Control Systems, Inc. Apparatus and method for topographic processing. 5,444,618, Cl. 364-420.000.

Seki, Yoichi; Saito, Hiroyuki; Ito, Akira; Ishii, Isamu; and Iwamatsu, Yoshiyuki, to Seikosha Co., Ltd. Distance measuring device for camera. 5,444,511, Cl. 354-403.000.

Sekine, Makoto; Horioka, Keiji; Okano, Haruo; Okamura, Katsuya; Hasegawa, Isahiro; and Narita, Masaki, to Kabushiki Kaisha Toshiba. Plasma generating device and surface processing device and method for processing wafers in a uniform magnetic field. 5,444,207, Cl. 219-121.430.

Sekino, Yoshimasa: *See*—
Tanaka, Takayuki; Sekino, Yoshimasa; Murashima, Yoshihiro; Tokunaga, Yasuhiro; Ueno, Joji; and Yonaga, Takeru, 5,444,662, Cl. 365-203.000.

Sekiya, Ryouichi: *See*—
Kawai, Tsuyoshi; and Sekiya, Ryouichi, 5,442,926, Cl. 62-211.000.

Sekizawa, Kazuhiko: *See*—
Mizuno, Tatsuji; Takeshima, Shinichi; Sekizawa, Kazuhiko; and Kasahara, Senshi, 5,443,803, Cl. 423-213.200.

Seko Spa: *See*—
Loppoli, Giuseppe, 5,443,588, Cl. 414-526.000.

Sekonlow, Ivan: *See*—
Mueller, Mario; and Sekonlow, Ivan, 5,443,733, Cl. 210-651.000.

Selas S.A.: *See*—
Agius, Michel, 5,443,608, Cl. 65-268.000.

Selby, Ray W.: *See*—
Crawmer, Daryl E.; and Selby, Ray W., 5,444,209, Cl. 219-121.520.

Selco S.r.l.: *See*—
Naldi, Valter, 5,443,356, Cl. 414-790.300.

Selden, Gerald P.: *See*—
Kagan, Andrew; Selden, Gerald P.; and Wickstead, James C., 5,443,072, Cl. 128-691.000.

Sellie, Clifford N. Hand held decimal timer with improved frequency division. 5,444,674, Cl. 368-107.000.

Semistis, Sheldon L.; El Soudani, Sami M.; Vollmer, Donald C.; and Thompson, Clarence R., to Rockwell International Corporation. Method for thermomechanical processing of ingot metallurgy near gamma titanium aluminides to refine grain size and optimize mechanical properties. 5,442,847, Cl. 29-527.500.

Semiconductor Systems, Inc.: *See*—
Biche, Michael R.; and Larye, Alexander, 5,443,348, Cl. 414-416.000.

Semura, Shigeru: *See*—
Yui, Dai; Ishikawa, Shinji; Sugamma, Hiroshi; and Semura, Shigeru, 5,444,804, Cl. 385-49.000.

Serby, Victor M. Extended life smoke detector. 5,444,434, Cl. 340-628.000.

Serizawa, Mutsumu: *See*—
Kawashima, Kazuhiro; and Serizawa, Mutsumu, 5,444,736, Cl. 375-219.000.

Seshan, Krishna: *See*—
Bezama, Raschid J.; Schepis, Dominic J.; and Seshan, Krishna, 5,444,287, Cl. 257-467.000.

Sethi, Satyendra S.: *See*—
Bariya, Anand J.; Sethi, Satyendra S.; and Brown, Kevin C., 5,443,941, Cl. 430-313.000.

Setra Systems, Inc.: *See*—
Lee, Shih-Ying, 5,442,962, Cl. 73-718.000.

Sevik, Maurice M., to United States of America, Navy. Anechoic and decoupling coating. 5,444,668, Cl. 367-1.000.

Seward, E. M.: *See*—
Baker, R.; Ladduwahetty, T.; Seward, E. M.; and Swain, C. J., 5,444,074, Cl. 514-326.000.

Sextant Avionique: *See*—
Bomans, Muriel; Pierre, Francine; and Robin, Hugues, 5,444,837, Cl. 395-140.000.

Sfakianos, Peter; and Milder, Fredric L., to Implemed, Inc. Meniscectomy knife. 5,443,474, Cl. 606-167.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Chen, Fusen E.; Dixit, Girish A.; and Wei, Che-Chia, 5,444,019, Cl. 437-192.000.
Imhauser, William P., 5,444,292, Cl. 257-580.000.
Ryat, Marc H., 5,444,361, Cl. 323-312.000.

SGS-Thomson Microelectronics S.A.: *See*—
Botti, Edoardo; and Branca, Guido, 5,444,417, Cl. 330-51.000.

Shackleton, Nigel; and Pears, Laura E., to Northern Telecom Limited. Plastics packaged optical fibre and method of making same. 5,444,808, Cl. 385-128.000.

Shaffer, Burt: *See*—
Rapaport, Jeffrey; and Shaffer, Burt, 5,444,091, Cl. 514-557.000.

Shah, Mrugesh K. Method and apparatus for treating fractures of a bone. 5,443,466, Cl. 606-62.000.

Shahidi, Fereidoon; and Pegg, Ronald B. Proteinaceous food product containing stabilized cooked cured-meat pigment. 5,443,852, Cl. 426-92.000.

Shapiro, Henry. Microsurgical scissor apparatus with rotary cutting blade. 5,443,476, Cl. 606-174.000.

Sharp Kabushiki Kaisha: *See*—
Fuji, Hiroshi, 5,444,688, Cl. 369-59.000.
Ishihara, Kazuya; Onishi, Shigeo; and Komai, Masaya, 5,443,030, Cl. 117-8.000.
Ishikawa, Yutaka; and Nomura, Shingo, 5,444,416, Cl. 329-341.000.
Naksi, Junichi; Imanaka, Yasuhiro; Aoki, Tetsuro; Ishibe, Shouichi; and Watanabe, Toora, 5,444,277, Cl. 257-223.000.
Sato, Hiroya; and Miyauchi, Masato, 5,444,300, Cl. 257-737.000.
Taniguchi, Kouji, 5,444,011, Cl. 437-60.000.
Yamamoto, Yoshitaka; and Ishii, Yutaka, 5,444,651, Cl. 165-108.000.

Shattuck-Eidens, Donna M.: *See*—
Ellenberger, Suzanne R.; Peiser, Galen D.; Bell, Russell N.; Hussey, Charles E., Jr.; Shattuck-Eidens, Donna M.; and Swedlund, Bradley D., 5,443,978, Cl. 435-193.000.

Shaw, Malcolm: *See*—
Hildreth, Richard; Shaw, Malcolm; Tripp, Terrance B.; and Gibbons, Leo G., 5,442,978, Cl. 75-363.000.

Shebanow, Michael S.; Plourde, Thomas R.; and Mullinax, Bill M., to International Technology Partners, Inc. Burnishing apparatus for flexible magnetic disks and method therefor. 5,443,415, Cl. 451-302.000.

Sheets, Allen R.; and Parks, Donald, to Sheets Electronics, Inc. Wiper-activated headlight circuit. 5,444,307, Cl. 307-10.800.

Sheets Electronics, Inc.: *See*—
Sheets, Allen R.; and Parks, Donald, 5,444,307, Cl. 307-10.800.

Sheets, Laurence L.; and Peterson, Daniel C., to Teltread Inc. Bridge for a network interface unit. 5,444,776, Cl. 379-399.000.

Sheldrick, Garry R. Mechanic's work tray. 5,443,019, Cl. 108-44.000.

Shellhammer, Stephen J.; and Marom, Emanuel, to Symbol Technologies, Inc. Bar code scan stitching. 5,444,231, Cl. 235-462.000.

Shepherd, James P.; Sawyer, Linda C.; and Farrow, Gerald, to Hoechst Celanese Corp. Process for blow molding articles from liquid crystal polymers. 5,443,783, Cl. 264-540.000.

Sherif, Fawzy G.: *See*—
Oyama, Shigeo T.; Yu, Chunzhe C.; and Sherif, Fawzy G., 5,444,173, Cl. 585-671.000.

Sherman, Michael L. to Glentech Inc. High capacity high pressure feeding. 5,443,162, Cl. 209-274.000.

Sherman, Michael M.: *See*—
DeFelice, Thomas H.; and Sherman, Michael M., 5,443,310, Cl. 312-329.000.

Sherman, Ralph R., Jr.: *See*—
Reynolds, Gary R.; Culbertson, Richard; and Sherman, Ralph R., Jr., 5,444,868, Cl. 455-89.000.

Sherwin-Williams Company, The: *See*—
Harris, Rodney M., 5,444,122, Cl. 525-119.000.
Valpey, Richard S., III; Kraan, John D.; and Harwood, H. James, 5,444,139, Cl. 526-271.000.

Sherwood Medical Company: *See*—
Walker, Clarence L.; Schweitzer, Frederick F., Jr.; Patag, Alfredo E.; and Garvey, Gerald J., II, 5,443,453, Cl. 604-248.000.

Shetty, H. Ravindranath; and Pinchuson, Clarence M., to Zimmer, Inc. Porous coated implant and method of making same. 5,443,510, Cl. 419-2.000.

Shetye, Mohan S.; and Boden, Paul E., to Integral Information Systems. Interactive data entry apparatus. 5,444,192, Cl. 178-18.000.

Shevitz, Jerry: *See*—
Hansen, Hans J.; Leung, Shui-on; and Shevitz, Jerry, 5,443,953, Cl. 424-1.490.

Shi, Bing-Xue: *See*—
Li, Zhi-Jian; Shi, Bing-Xue; and Wang, Yang, 5,444,821, Cl. 395-24.000.

Shi, Qiwen. Coasting device for a vehicle. 5,443,148, Cl. 192-48.200.

Shibahara, Seiji: *See*—
Ajito, Keiichi; Kurihara, Kenichi; Ishizuka, Tsuneo; Hara, Tetsuro; Usui, Takayuki; and Shibahara, Seiji, 5,444,174, Cl. 536-7.100.

Shibata, Kenichi: *See*—
Takahashi, Hisakazu; Ezaki, Kenichi; Babe, Yoko; and Shibata, Kenichi, 5,444,028, Cl. 501-136.000.

Shibata, Makoto: *See*—
Koyama, Shuji; Kawajiri, Yukio; Shibata, Makoto; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,443,687, Cl. 216-27.000.

Shibata, Mitsuhiro: *See*—
Hirano, Yasuhiro; Endo, Yasuhiro; Takebe, Kazuo; Shibata, Mitsuhiro; Kanagawa, Shuichi; Shiomi, Yutaka; Akiba, Masatsugu; and Kitayama, Shinichiro, 5,444,165, Cl. 548-521.000.

Shibata, Tadashi: *See*—
Abe, Hirofumi; and Shibata, Tadashi, 5,444,650, Cl. 365-96.000.

Shibata, Toyoko: *See*—
Nishizaki, Kouji; Takeuchi, Shigeki; Shibata, Toyoko; and Tamaki, Kiyoshi, 5,443,922, Cl. 428-690.000.

Shibata, Yasuo; and Ikeda, Masahiro, to Nippon Telegraph & Telephone Corporation. Optical switch. 5,444,802, Cl. 385-16.000.

Shibata, Yoji: *See*—
Yamadera, Hitoshi; Kawasaki, Takafumi; Matsubara, Takashi; Takatsuki, Hiroaki; Yoshida, Atsuo; Shibata, Yoji; Fukano, Masumi; Ishida, Kiyoshi; and Ishinabe, Iwao, 5,444,477, Cl. 348-15.000.

Shibazaki, Tokio; Koyama, Seiichiro; Enda, Kenichi; Aizawa, Yoshikatsu; and Furukawa, Hiroshi, to Strapack Corporation. Band charging apparatus for packing machine. 5,442,899, Cl. 53-589.000.

Shiber, Samuel, to Surgical Systems & Instruments, Inc. Atherectomy system. 5,443,443, Cl. 604-22.000.

Shiga, Nobuo, to Sumitomo Electric Industries, Ltd. Mixer circuit. 5,444,399, Cl. 327-105.000.

Shiga, Tsutomu; Hayashi, Noriyuki; Ohmi, Masanori; and Niimi, Masami, to Nippondenso Co., Ltd. Starter. 5,443,553, Cl. 74-7.00R.

Shigematsu, Yasuyuki: *See*—
Kojima, Takashi; Suzuki, Shinichi; and Shigematsu, Yasuyuki, 5,443,935, Cl. 430-78.000.

Shigeta, Masanobu: *See*—
Imanishi, Dai; Ohkouchi, Nozomu; Ohtawara, Kazuhige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hiromitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

Shigeta, Toshio: *See*—
Ogata, Taizo; Hanazawa, Yuji; Iwata, Yasuo; and Shigeta, Toshio, 5,442,894, Cl. 53-234.000.

Shigeura, John: *See*—
Cathcart, G. Richard; Bresnan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmaier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.
Cathcart, G. Richard; Bresnan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hane, Marianne; Hoff, Louis B.; Lachenmaier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.

Shimada, Junichi; and Kato, Yuichi, to Ohi Seisakusho Co., Ltd. Power lid closing device. 5,443,292, Cl. 292-341.160.

Shimada, Masao: *See*—
Oshiwata, Kenichi; Shimada, Masao; and Hatamori, Akira, 5,443,973, Cl. 435-129.000.

Shimada, Mizuho, to Equestrian Co., Ltd. Cooled reflective mirror apparatus. 5,444,576, Cl. 359-845.000.

Shimada, Shizio; Sudo, Tadashi; and Iwata, Daiji, to Mitsui Toatsu Chemicals, Inc. Anti-asialo-GM1 monoclonal antibodies and method of use. 5,443,957, Cl. 435-7.240.

Shimada, Tadayuki: *See*—
Imanishi, Dai; Ohkouchi, Nozomu; Ohtawara, Kazuhige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hiromitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

Shimada, Yozo: *See*—
Usui, Minoru; Kota, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,444,471, Cl. 347-72.000.

Shimadzu Corporation: *See*—
Matsumoto, Kiyoshi; Tahara, Shu; Ozeki, Eiichi; Ogaito, Makoto; and Kobayashi, Masakazu, 5,443,780, Cl. 264-290.200.

Shimano, Takamasa; Arai, Tatsuo; and Saito, Takayoshi, to Mitsubishi Materials Corp. Cutting insert. 5,443,335, Cl. 407-113.000.

Shimawaki, Kazuhiro: *See*—
Yoshida, Tomio; and Shimawaki, Kazuhiro, 5,444,645, Cl. 364-717.000.

Shimazaki, Shinji: *See*—
Tsurumi, Koichi; Shimazaki, Shinji; and Kumagai, Koichi, 5,443,382, Cl. 432-59.000.

Shimei, Masato; Goto, Shigeki; Sakai, Takahiro; and Nakagawa, Masahiko, to Aisin Seiki Kabishuki Kaisha. Control apparatus for automatic transmission. 5,443,595, Cl. 477-155.000.

Shimizu, Hiroshi: *See*—
Ichizuka, Isamu; Takahashi, Shuitsu; Hara, Kouzi; Waki, Hiroshi; Kobe, Shinji; Sakurada, Tadayuki; Okouchi, Yoshitaka; Ohkubo, Ken; and Shimizu, Hiroshi, 5,444,128, Cl. 524-507.000.

Shimizu, Hiroyuki, to NEC Corporation. Time-division multiplex radio transmission apparatus. 5,444,708, Cl. 370-95.300.

Shimizu, Hisanaga; Takeshita, Shinji; and Kitamura, Kazuo, to Teijin Chemicals, Ltd. Thermoplastic resin composition. 5,444,114, Cl. 524-413.000.

Shimizu, Motohiro; and Nakamura, Masashi, to Honda Giken Kogyo Kabushiki Kaisha. Portable power unit. 5,444,592, Cl. 361-21.000.

Shimizu, Shigeo: *See*—
Imanishi, Dai; Ohkouchi, Nozomu; Ohtawara, Kazuhige; Natsuhori, Hiroyuki; Shimizu, Shigeo; Konno, Toshio; Shigeta, Masanobu; Takenaka, Hiromitsu; and Shimada, Tadayuki, 5,444,558, Cl. 359-72.000.

Shimizu, Tsutomu: *See*—
Tanaka, Minoru; and Shimizu, Tsutomu, 5,443,297, Cl. 296-203.000.

Shimoe, Osamu: *See*—
Nakajima, Shin; Hirao, Noriyoshi; Yamauchi, Kiyotaka; and Shimoe, Osamu, 5,443,664, Cl. 148-307.000.

Shin, Dong G.: *See*—
Cho, Gwan S.; Jang, Seok M.; and Shin, Dong G., 5,442,913, Cl. 60-518.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Ohnishi, Shuji; and Amano, Tadashi, 5,444,130, Cl. 526-67.000.
Ohnishi, Shuji; Tsuifuji, Yoichi; and Amano, Tadashi, 5,444,131, Cl. 526-67.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Adomi, Keizo; Noso, Nobuhiko; and Takenaka, Takao, 5,444,269, Cl. 257-094.000.
Kitagawara, Yutaka; Kubota, Hiroshi; and Tamatsuka, Masaro, 5,444,246, Cl. 250-339.080.

Shindengen Electric Manufacturing Co., Ltd.: *See*—
Fujimori, Kenichi; Nakayama, Yoshitaro; Shinohara, Takumi; Iwanami, Atsuaki; Hagiwara, Toshimitsu; and Kobayashi, Tohru, 5,443,933, Cl. 430-59.000.

Shindo, Yoichi: *See*—
Kitamura, Shoji; Shindo, Yoichi; and Amano, Akira, 5,444,726, Cl. 372-36.000.

Shinko Electric Co., Ltd.: *See*—
Murata, Masanao; Yamashita, Teppei; Tanaka, Tsuyoshi; Hoshiko, Takahide; Karita, Mitsuji; Kawano, Hitoshi; and Shinya, Tutomu, 5,443,346, Cl. 414-222.000.

Shino, Mitsumasa: *See*—
Yamanaka, Motosuke; Hoshiko, Tomonori; Suda, Shinji; Yoneda, Naoki; Mori, Nobuyuki; Shino, Mitsumasa; Ishihara, Hiroki; Saito, Mamoru; and Matsuoka, Toshiyuki, 5,444,083, Cl. 514-429.000.

Shinoda, Hosei: *See*—
Ajioka, Masanobu; Enomoto, Katashi; Yamaguchi, Akihiro; and Shinoda, Hosei, 5,444,107, Cl. 523-124.000.

Shinohara, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit device carrying out parallel operational processing with electronically implemented neural network. 5,444,822, Cl. 395-27.000.

Shinohara, Shigeru; and Takano, Nobuhiro, to Hitachi Koki Co., Ltd. Battery charger. 5,444,353, Cl. 320-39.000.

Shinohara, Takumi: *See*—
Fujimori, Kenichi; Nakayama, Yoshitaro; Shinohara, Takumi; Iwanami, Atsuaki; Hagiwara, Toshimitsu; and Kobayashi, Tohru, 5,443,933, Cl. 430-59.000.

Shintani, Ryoei; Fuziwara, Yoshihide; Kawana, Shozo; Tanaka, Haruo; and Ito, Deiji, to Honda Giken Kogyo Kabushiki Kaisha. High-frequency induction heating apparatus for rocker arms. 5,444,221, Cl. 219-635.000.

Shinya, Tutomu: *See*—
Murata, Masanao; Yamashita, Teppei; Tanaka, Tsuyoshi; Hoshiko, Takahide; Karita, Mitsuji; Kawano, Hitoshi; and Shinya, Tutomu, 5,443,346, Cl. 414-222.000.

Shioda, Kazuaki, to Kabushiki Kaisha Kawai Gakki Seisakusho. Sound effect-creating device. 5,444,180, Cl. 84-660.000.

Shioda, Takehiko: *See*—
Yamamoto, Yukinori; Araya, Masahiro; Iwamura, Hiroshi; and Shioda, Takehiko, 5,444,494, Cl. 348-448.000.

Shioda, Yoshihiko. Stowable golf bag cover. 5,443,156, Cl. 206-315.400.

Shiohara, Morito: *See*—
Kamada, Hiroshi; Kubota, Takashi; and Shiohara, Morito, 5,444,791, Cl. 382-190.000.

Shioiri, Takayoshi: *See*—
Nakamura, Nobuyuki; Koda, Toshiyasu; and Shioiri, Takayoshi, 5,443,782, Cl. 264-328.100.

Shiokawa, Yoshiharu: *See*—
Okano, Hiroshi; Shiokawa, Yoshiharu; Tanioka, Hiroshi; and Yamano, Shozo, 5,444,510, Cl. 354-400.000.

Shiomi, Yutaka: *See*—
Hirano, Yasuhiro; Endo, Yasuhiro; Takebe, Kazuo; Shibata, Mitsuhiro; Kanagawa, Shuichi; Shiomi, Yutaka; Akiba, Masatsugu; and Kitayama, Shinichiro, 5,444,165, Cl. 548-521.000.

Shipley Company Inc.: *See*—
Szmanda, Charles R.; and Carey, Richard J., 5,443,736, Cl. 210-668.000.

Shirai, Shigeru: *See*—
Otoshi, Hirokazu; Takei, Tetsuya; Takai, Yasuyoshi; Okamura, Ryuji; Shirai, Shigeru; and Misumi, Teruo, 5,443,645, Cl. 118-718.000.

Shishizuka, Junichi: *See*—
Enokida, Miyuki; Mita, Yoshinobu; and Shishizuka, Junichi, 5,444,550, Cl. 358-453.000.

Shnaid, Isaac. Gas turbine with bottoming air turbine cycle. 5,442,904, Cl. 60-39.020.

Shoham, Benjamin: *See*—
Willner, Itamar; Katz, Evgeny; Riklin, Azalia; Kasher, Ron; and Shoham, Benjamin, 5,443,701, Cl. 204-153.120.

Shoji, Rihito: *See*—
Hase, Hiroyuki; Shoji, Rihito; and Wakamiya, Masayuki, 5,442,966, Cl. 73-862.335.

Shoji, Yoshihiro; Yamasaki, Mikiya; Nishio, Koji; and Saito, Toshihiko, to Sanyo Electric Co., Ltd. Nonaqueous electrolyte battery. 5,443,930, Cl. 429-224.000.

Shough, Dean M.: *See*—
Gal, George; Anderson, William W.; Herman, Bruce J.; and Shough, Dean M., 5,444,572, Cl. 359-619.000.

Showa Denko Kabushiki Kaisha: *See*—
Ohno, Hiromoto; Ohi, Toshio; Nakayama, Hidetoshi; and Muramaki, Kazuo, 5,444,171, Cl. 570-177.000.

Shturman Cardiology Systems, Inc.: *See*—
Shturman, Leonid, 5,443,446, Cl. 604-49.000.

Shturman, Leonid, to Shturman Cardiology Systems, Inc. Method and apparatus for in vivo heart valve decalcification. 5,443,446, Cl. 604-49.000.

Shu, Timour: *See*—
Hinzmann, Alfred; Preisner, Peter; Shu, Timour; and Drewnowski, Wojciech, 5,442,897, Cl. 53-449.000.

Shu, Yue-Zhong: *See*—
Patel, Pramathesh S.; and Shu, Yue-Zhong, 5,444,087, Cl. 514-475.000.

Shure Brothers, Inc.: *See*—
Kogen, James H., 5,444,790, Cl. 381-168.000.

Shutt, George V.: *See*—
Auerbach, Burt J.; and Shutt, George V., 5,443,475, Cl. 606-170.000.

Siberta, J. Bruce: *See*—
Keleda, Maher I.; and Siberta, J. Bruce, 5,443,721, Cl. 210-232.000.

Sibley, Thomas. Silicon carbide carrier for wafer processing in vertical furnaces. 5,443,649, Cl. 118-728.000.

Siegl, Peter K. S.: *See*—
Kivlighn, Saiah; Lotti, Victor J.; Rivero, Ralph A.; Siegl, Peter K. S.; and Zingaro, Gloria J., 5,444,067, Cl. 514-303.000.

Sieksman, Allen R.; and Nachod, Julius E., III, to Invacare Corporation. Wheelchair cushion utilizing foams of different stiffnesses. 5,442,823, Cl. 5-653.000.

Siemens AG: *See*—
Sommer, Diether; and Savignac, Dominique, 5,444,392, Cl. 326-31.000.

Siemens Aktieng sellschaft: *See*—
Schaetzle, Ulrich, 5,443,069, Cl. 128-660.030.

Siemens Aktiengesellschaft: *See*—
Adam, Peter; and Michel, Peter, 5,444,315, Cl. 310-42.000.
Beyerlein, Walter; and Schweighofer, Peter, 5,444,757, Cl. 378-101.000.
Haendle, Joerg; and Horbaschek, Heinz, 5,444,755, Cl. 378-98.000.
Kiehl, Oliver; Bonner, Fergal; Killian, Michael; and Lau, Klaus J., 5,444,398, Cl. 327-55.000.
Longueville, Jacques; and Hoolhorst, Albert, 5,443,392, Cl. 439-108.000.
Risch, Lothar; Vogelsang, Thomas; Hofmann, Franz; and Hofmann, Karl, 5,443,992, Cl. 437-29.000.
Schmidt, Martin; and Pohan, Claus, 5,444,255, Cl. 250-385.100.

Siemens Medical Systems, Inc.: *See*—
Banjanin, Zoran B.; and Kim, Jin, 5,443,071, Cl. 128-661.090.

Sierracin Corporation: *See*—
Olson, Jan B., 5,443,912, Cl. 428-425.600.

Sievers Instruments, Inc.: *See*—
Godec, Richard D.; Kosenka, Paul K.; and Hutte, Richard, 5,443,991, Cl. 436-145.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
Cerri, Alberto; Bernardi, Luigi; Bianchi, Giuseppe; Florio, Monica; Folpini, Elena; and Melloni, Piero, 5,444,055, Cl. 514-182.000.
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Kommrusch, Steven J.; Schmidt, Daniel G.; and Stroyan, Howard D., 5,444,838, Cl. 395-141.000.
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Lloyd, John M.; and Stuart, Audrey G., 5,443,764, Cl. 264-15.000.
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Sullivan, Keith D., to Waters Construction Co., Inc. Pinning system for prefabricated barriers. 5,443,324, Cl. 404-6.000.
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Sumita, Masahiko, to Kirin Techno-System Corporation. Method of inspecting solid body for foreign matter. 5,444,480, Cl. 348-127.000.
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Hirano, Yasuhiro; Endo, Yasuhiro; Takebe, Kazuo; Shibata, Mitsuhiro; Kanagawa, Shuichi; Shiomi, Yutaka; Akiba, Masatsugu; and Kitayama, Shinichiro, 5,444,165, Cl. 548-521.000.
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Nishiura, Yozo; Iwashita, Takaki; and Ooka, Akihiro, 5,444,533, Cl. 356-350.000.
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Itasi, Hitoshi; Yamasaki, Yuji; and Murakami, Hirotoshi, 5,443,873, Cl. 428-36.500.
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Summers, Andre D. Personal hand and nail brush. 5,442,829, Cl. 15-106.000.
Summers, Charles E.: *See*—
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Summey, Shala W., III: *See*—
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Sundstrom, Ray D.: *See*—
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Suzuki, Masaharu; Nikaido, Tounoki; and Mabuchi, Takeshi, to Denki Kagaku Kogyo Kabushiki Kaisha. Polycrystalline cubic boron nitride abrasive. 5,443,605, Cl. 51-307.000.
Suzuki, Masato, to Fuji Xerox Co., Ltd. Pixel density converter. 5,444,832, Cl. 395-132.000.
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Yamamoto, Keisuke; Kawasaki, Takehiko; Suzuki, Yoshio; and Kawada, Haruki, 5,444,191, Cl. 178-18.000.
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Swann, Lynn J.; Wedertz, Larry D.; and Golden, Michael D., to Hughes Missile Systems Company. Accumulating rotary transfer unit. 5,442,991, Cl. 89-33.100.
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Van Loan, David R.; Johnston, Charles J.; and Swart, Mark A., 5,444,387, Cl. 324-754.000.
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Ellenberger, Suzanne R.; Peiser, Galen D.; Bell, Russell N.; Hussey, Charles E., Jr.; Shattuck-Eidens, Donna M.; and Swedlund, Bradley D., 5,443,978, Cl. 435-193.000.
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Symbiosis Corporation: *See*—
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Symbol Technologies, Inc.: *See*—
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Syrett, Barry C.: *See*—
Chow, Winston; Hecker, George E.; Musalli, Yusuf G.; and Syrett, Barry C., 5,442,921, Cl. 60-657.000.
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Szegda, Andrew, to John Mezzalingua Assoc. Inc. Fiber optic cable end connector. 5,444,810, Cl. 385-139.000.
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Szmanda, Charles R.; and Carey, Richard J., to Shipley Company Inc. Purification process. 5,443,736, Cl. 210-668.000.
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Tabata, Yoneho; Otsuhata, Kazushige; Ikeda, Tetsuya; Ueno, Kohji; Yoshida, Yuichi; Oshima, Akihiro; Suguchi, Tadao; and Kudoh, Hisaaki, to Raytech Corporation. Modified polytetrafluoroethylene and process for its production by irradiation. 5,444,103, Cl. 522-5.000.
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Tachikawa, Hideo: *See*—
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Tachikawa, Michiyoshi: *See*—
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Tada, Hiroshi: *See*—
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Tadaki, Shinji: *See*—
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Taguchi, Nobuyoshi: *See*—
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Imai, Akihiro; Matsuo, Hiroyuki; Fukui, Yasuo; and Taguchi, Nobuyoshi, 5,444,037, Cl. 503-227.000.

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Tai, Lily: *See*—
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Taimisto, Miriam: *See*—
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Takacs, Zoltan: *See*—
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Hiroso, Hideo; and Takahashi, Hironobu, 5,444,799, Cl. 382-287.000.

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Takahashi, Koji: *See*—
Kuwabara, Mitsuo; Ikegami, Kiyoshi; Yoshida, Teruaki; Takahashi, Koji; Harada, Tamotsu; Komiyama, Takeshi; Hirai, Fumio; and Hayashi, Masamichi, 5,443,615, Cl. 75-230.000.

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Takeuchi, Satoshi; Takahashi, Makoto; and Kaimoto, Yuko, 5,443,690, Cl. 430-286.000.

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Takahashi, Shuitsu: *See*—
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Matsushita, Toshihiko; and Takahashi, Shunsuke, 5,443,908, Cl. 428-402.240.

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Agata, Hiroaki; Imai, Toshitaka; Kamijo, Noboru; and Takahashi, Toshiki, 5,443,320, Cl. 400-715.000.

Takahashi, Toshio: *See*—
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Takanashi, Ken: *See*—
Oshima, Seiichi; Tametani, Fumitaka; Yamagata, Jun; and Takanashi, Ken, 5,444,297, Cl. 257-691.000.

Takano, Nobuhiro: *See*—
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Takasago International Corporation: *See*—
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Takatsuki, Hiroaki: *See*—
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Takazawa, Yoshiharu; and Yokoyama, Seiichi, to Teijin Limited. Fed batch culture method for protein secreting cells. 5,443,968, Cl. 435-70.300.

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Yoshioka, Minoru; Horibe, Hidetoshi; and Kashihara, Toshio, 5,443,846, Cl. 424-498.000.

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Takeda, Mitsunori: *See*—
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Takeda, Shiro; Namiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro; Tadaki, Shinji; and Koshino, Nagaaki, to Fujitsu Limited. Photostimulable phosphor plate and photostimulable phosphor reader. 5,444,266, Cl. 250-586.000.

Takeda, Takashi: *See*—
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Takenaka, Masashi: *See*—
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Takenaka, Takao: *See*—
Adomi, Keizo; Noto, Nobuhiko; and Takenaka, Takao, 5,444,269, Cl. 257-094.000.

Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Obhashi, Shuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, to Japan Steel Works, The. Electrode for electroslag remelting and process of producing alloy using the same. 5,444,732, Cl. 373-42.000.

Takeshima, Sadao; and Ishii, Tomoyuki, to Jidosha Kiki Co., Ltd. Method of controlling electric power steering apparatus. 5,444,622, Cl. 364-424.050.

Takeshima, Shinichi: *See*—
Mizuno, Tatsuji; Takeshima, Shinichi; Sekizawa, Kazuhiko; and Kasahara, Senshi, 5,443,803, Cl. 423-213.200.

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Takeuchi, Esther S.; and Leising, Randolph A., to Wilson Greatbatch Ltd. Carbon electrode for a nonaqueous secondary electrochemical cell. 5,443,928, Cl. 429-218.000.

Takeuchi, Kesatoshi, to Seiko Epson Corporation. Apparatus and method of transferring video data of a moving picture. 5,444,497, Cl. 348-719.000.

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Takezawa, Minoru; Yatsu, Shigeo; Endo, Fumihisa; Morita, Akihiro; and Kishi, Yuji, to Sanyo Electric Co., Ltd. Method for the mixing of low-boiling foaming agent. 5,444,100, Cl. 521-131.000.

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Takigawa, Yoshizumi: *See*—
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Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Aoyama, Junko, to Matsushita Electric Industrial Co., Ltd. Spatial light modulator and a neural network circuit. 5,443,864, Cl. 428-1.000.

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Takizawa, Tsutomu, to Toyo Glass Company Limited. Apparatus for inspecting a bottom border portion of transparent glass vessel for a foreign article. 5,444,237, Cl. 250-223.00B.

Takizawa, Yumi, to Matsushita Electric Industrial Co., Ltd. Speech recognizing apparatus using the predicted duration of syllables. 5,444,817, Cl. 395-2.630.

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Tamaki, Satoshi; Ikizi, Yasufumi; and Kondo, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Controlling apparatus of motor. 5,444,340, Cl. 318-139.000.

Tamatsuka, Masaro: *See*—
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Tanaka, Haruo: *See*—
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Tanaka, Katsuji; Mino, Kazuyoshi; and Nakazima, Yuka, to Mitsubishi Chemical Corporation. Process for producing polyethylene terephthalate. 5,444,144, Cl. 528-503.000.

Tanaka, Kazuna; and Kapec, Jeffrey. Methods and apparatus for preparing and delivering bone cement. 5,443,182, Cl. 222-137.000.

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Tanaka, Masatoshi: *See*—
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Tanaka, Ryuichiro: *See*—
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Tanaka, Yasuhiko: *See*—
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Tang, John: *See*—
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Target Therapeutics, Inc.: *See*—
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Tarry, Christopher A., to GTE Products Corporation. Ceramic armor. 5,443,917, Cl. 428-545.000.

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Taylor, Michael D.: *See*—
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Taylor, Michael K., to Gorbel, Inc. Conveyor or crane beam of extruded aluminum alloy. 5,443,151, Cl. 198-860.100.

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Louzir, Ali; and Fujimoto, Masahiro, 5,444,455, Cl. 343-895.000.

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Millet, Guy; and Gillet, Vincent, 5,444,694, Cl. 370-16.100.

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Cathcart, G. Richard; Brennan-Marquez, Thomas; Bridgham, John A.; Golda, George S.; Guiremand, Harry A.; Hase, Marianne; Hoff, Louis B.; Lachenmeier, Eric; Kronick, Melvyn N.; Keith, Douglas H.; Mayrand, Paul E.; Metzker, Michael L.; Metzker, Michael L.; Mordan, William J.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; Whiteley, Norman M.; McBride, Lincoln J.; Shigeura, John; Ting, Chen-Hanson; and Whiteley, Norman M., 5,443,791, Cl. 422-65.000.
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Zaborney, John F.; and Tinsley, William N., 5,443,668, Cl. 156-86.000.

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Yada, Yukihiko; and Ito, Toshikazu, 5,443,299, Cl. 296-93.000.

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Sadakata, Mareo; Iwasaki, Yoichiro; Yano, Yoshiharu; and Toyama, Masakazu, 5,444,442, Cl. 340-916.000.

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Ohkase, Wataru, 5,443,648, Cl. 118-724.000.

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Kamikawa, Yuuji, 5,443,540, Cl. 34-471.000.

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Mizumura, Tsutomu, 5,444,386, Cl. 324-754.000.

Tomczak, Zygmunt: *See*—
Miller, William E.; and Tomczak, Zygmunt, 5,443,705, Cl. 204-227.000.

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Illig, Carl R.; Toner, John L.; Lee, Robert W.; and Baker, Edward J., 5,443,814, Cl. 424-9.450.

Tonnager, Wayne M. Adjustable trowel. 5,442,832, Cl. 15-235.700.

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Beer, James M.; Toqan, Maged A.; Marotta, Alessandro; and Beretta, Alberto, 5,443,805, Cl. 423-235.000.

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Kirk, Michael D.; Smith, Ian R.; Tortonese, Marco; Cahill, Sean S.; and Slater, Timothy G., 5,444,244, Cl. 250-306.000.

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Sadakata, Marco; Iwasaki, Yoichiro; Yano, Yoshiharu; and Toyama, Masakazu, 5,444,442, Cl. 340-916.000.

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Ohta, Yasuo; Karoki, Tadao; and Oie, Yoshinobu, 5,443,904, Cl. 428-364.000.

Toyo Denso Kabushiki Kaisha: *See*—
Ida, Yasuhiko; and Sakamaki, Makoto, 5,444,427, Cl. 336-198.000.

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Kawaguchi, Yoji; Amano, Hirofumi; and Kashihara, Satoshi, 5,443,897, Cl. 428-237.000.

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Oda, Yasuhiro; Maruhashi, Yoshitugu; Sakano, Kouzaburo; and Yamaguchi, Yuji, 5,443,868, Cl. 428-35.700.

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Tanaka, Minoru; and Shimizu, Tsutomu, 5,443,297, Cl. 296-203.000.

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Iwasaki, Akiko; Toyofuku, Kunitaka; Uchida, Kyoko; and Fujino, Masatoshi, 5,444,036, Cl. 503-209.000.

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Baba, Yasutoshi; and Hashiguchi, Yukihide, 5,442,955, Cl. 73-117.300.
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Iberaki, Toshikazu; and Kushi, Naoto, 5,443,558, Cl. 123-325.000.
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Kishi, Hiroshi; Ito, Toru; Morimoto, Kyomi; Yokoyama, Shoji; and Kuroda, Kenji, 5,444,629, Cl. 364-449.000.
Mizuno, Tatsuji; Takeshima, Shinichi; Sekizawa, Kazuhiko; and Kasahara, Senshi, 5,443,803, Cl. 423-213.200.
Otsuka, Takayuki, 5,443,051, Cl. 123-520.000.
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Tran, Dan T., to Unisys Corporation. Memory module with address error detection. 5,444,722, Cl. 395-183.180.

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Patterson, John W.; Morgans, David, Jr.; Smith, David B.; Talamas, Francisco X.; Artis, Dean R.; Cervantes, Alicia; Elworthy, Todd R.; Fernandez, Mario Franco, Fidencio; Hawley, Ronald C.; Lara, Teresa; Loughhead, David G.; Nelson, Peter H.; Sjogren, Eric B.; Trejo, Alejandra; Walton, Ann M.; and Weikert, Robert J., 5,444,072, Cl. 514-320.000.

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Dupraz, Jean-Pierre; Gris, Jean-Paul; and Trenchat, Daniel, 5,444,599, Cl. 361-274.100.

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Chang, Steve M., 5,444,850, Cl. 395-200.100.

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Trepaud, Pierre, 5,443,021, Cl. 110-219.000.

Trepaud, Pierre, to Trepaud Environnement. Dump and process for vitrifying waste. 5,443,021, Cl. 110-219.000.

Treseder, Robert C.; and Grant, Thomas J., to Varian Associates, Inc. Anisotropic pyrolytic graphite heater. 5,444,327, Cl. 313-337.000.

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Buesz, Robert J., 5,443,007, Cl. 101-480.000.

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Hildreth, Richard; Shaw, Malcolm; Tripp, Terrance B.; and Gibbons, Leo G., 5,442,978, Cl. 75-363.000.

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Phan, Dean V.; and Trokhan, Paul D., 5,443,691, Cl. 162-115.000.

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Alcock, John M.; Nicholson, Joseph A.; Thistlethwaite, Trevor J.; and Myers, Fred D., 5,443,328, Cl. 405-169.000.

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Persson, Erland, 5,442,956, Cl. 73-118.100.

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Modinger, Thomas; and Schmid, Johannes, 5,443,222, Cl. 242-374.000.

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Yosin, Dean T.; and Emmerling, Larry F., 5,443,223, Cl. 242-379.000.

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de With, Peter H. N.; Nijssen, Stephanus J. J.; Brondijk, Robert A.; and Bruls, Wilhelmus H. A., 5,444,490, Cl. 348-423.000.
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Kelly, Brendan P., 5,444,219, Cl. 219-505.000.
Leiong, Pierre; Dalm, Govert; and Klija, Jan, 5,444,478, Cl. 348-39.000.
Perraud, Jean-Claude, 5,444,409, Cl. 327-315.000.
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Sinn, Hans-Jurgen F., 5,442,896, Cl. 53-430.000.
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Balliotti, John A., II; and Lauck, Kenneth L., 5,442,993, Cl. 92-84.000.
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Kuroda, Masao; and Sakakibara, Yutaka, 5,443,706, Cl. 204-242.000.

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Yano, Yoshiharu: *See*—
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Yusim, Victor: *See*—
Hoch, Elisha; Schnitzer, Israel; and Yusim, Victor, 5,443,088, Cl. 137-68.130.

Yutani, Naoki; and Kimata, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Solid-state imaging device. 5,444,484, Cl. 348-305.000.

Zaborney, John F.; and Tinsley, William N., to Duracell, Inc. Method for labeling an electrochemical cell. 5,443,668, Cl. 156-86.000.
Zalkin, Daniel: *See*—
Champain, Roger; Kissi, Noureddine; and Zalkin, Daniel, 5,443,061, Cl. 128-204.210.
Zamora, Paul O.; and Rhodes, Buck A., to Rhomed Incorporated. Peptide-metal ion pharmaceutical preparation and method. 5,443,816, Cl. 424-1.690.
Zampini, Michael A.; and Flum, Alan, to Sony Electronics Inc. Monitor select indicator for an audio follow video mixer. 5,444,789, Cl. 381-119.000.
Zawada, Gary J.: *See*—
Crayne, Lynn M.; and Zawada, Gary J., 5,443,177, Cl. 220-453.000.
Zawadzki, Peter A.: *See*—
Asbeln, Thomas R.; Wittstruck, Richard H.; Zhao, Jing; Zawadzki, Peter A.; Bearck, William R.; and Norris, Peter E., 5,443,647, Cl. 118-723.0ME.
Zebco Corporation: *See*—
Kang, Young, 5,443,571, Cl. 242-311.000.
Zeelan Technology, Inc.: *See*—
Moriyasu, Hiro, 5,444,459, Cl. 345-133.000.
Zehrfeld, Jurgen: *See*—
Bottcher, Axel; Doring, Manfred; and Zehrfeld, Jurgen, 5,444,030, Cl. 502-150.000.
Zeitler, Carl, Jr.: *See*—
Mathis, Joseph R.; Oehler, Richard R.; and Zeitler, Carl, Jr., 5,444,854, Cl. 395-825.000.
Zeller, Hubert R., III: *See*—
Vinciarelli, Patrizio; and Zeller, Hubert R., III, 5,443,534, Cl. 29-593.000.
Zelniker, Lillian Z.; and Sternberg, Alberto. Electrically heated pressure processor apparatus for production of dental prostheses. 5,444,218, Cl. 219-440.000.
Zeltner, Doris; Niesner, Norbert; Seitz, Friedrich; Neumann, Rainer; and Seelert, Stefan, to BASF Aktiengesellschaft. Halogen-free flame-proofed thermoplastic molding materials based on polyphenylene ethers and polystyrene. 5,444,123, Cl. 525-133.000.
Zembke, Ronald O., deceased: *See*—
Pihl, Richard M.; Hayes, Duane J.; Barber, Loren L., Jr.; Welygan, Dennis G.; Hardwick, E. Eugene; and Zembke, Ronald O., deceased, 5,443,906, Cl. 428-370.000.
Zemke, Joy D., legal representative: *See*—
Pihl, Richard M.; Hayes, Duane J.; Barber, Loren L., Jr.; Welygan, Dennis G.; Hardwick, E. Eugene; and Zembke, Ronald O., deceased, 5,443,906, Cl. 428-370.000.
Zeneca Limited: *See*—
Blacker, Andrew J.; Crosby, John; and Herbert, John A. L., 5,443,970, Cl. 435-125.000.
Blacker, Andrew J.; Crosby, John; and Herbert, John A. L., 5,443,971, Cl. 435-125.000.
James, Donald R.; Baker, Don R.; Mielich, Steven D.; Michaely, William J.; Fitzjohn, Steven; Knudsen, Christopher G.; Mathews, Christopher; and Gerdes, John M., 5,444,038, Cl. 504-253.000.
Jung, Frederic H., 5,444,057, Cl. 514-210.000.
Zenith Electronics Corp.: *See*—
Mycynek, Victor G., 5,444,422, Cl. 331-116.00R.
Stewart, David S., 5,444,584, Cl. 360-85.000.
Zestotherm Inc.: *See*—
Smith, W. Stas; Deutsch, Robert D.; Hockney, Fred H.; and Garland, Angela, 5,443,056, Cl. 126-263.050.
Zettl GmbH CNC Prazisions- und Soderwerkzeuge: *See*—
Knobl, Karl-Heinz; and Scheuthle, Dieter, 5,443,275, Cl. 279-60.000.
Zexel Corporation: *See*—
Ishiwata, Hiroshi; Ohishi, Takashi; Ueda, Atsushi; and Ohi, Naotake, 5,443,047, Cl. 123-446.000.
Zexel-Gleason USA, Inc.: *See*—
Cisno, Joseph E., 5,443,431, Cl. 475-249.000.
Zeygerman, Yevgeniy. Bike board. 5,443,405, Cl. 440-12.000.
Zheng, Lanyin: *See*—
Krstic, Vladimir D.; and Zheng, Lanyin, 5,443,770, Cl. 264-60.000.
Zhang, Yu-zhong: *See*—
Haughland, Richard P.; Huang, Zhijias; Larison, Karen D.; and Zhang, Yu-zhong, 5,443,986, Cl. 435-4.000.
Zhao, Jing: *See*—
Ascoli, Thomas R.; Wittstruck, Richard H.; Zhao, Jing; Zawadzki, Peter A.; Bearck, William R.; and Norris, Peter E., 5,443,647, Cl. 118-723.0ME.
Zhejiang Provincial Hospital of Traditional Chinese Medicine: *See*—
Li, Da P., 5,444,089, Cl. 514-547.000.
Zheng, Weixiang: *See*—
Ryan, William; Worek, William M.; and Zheng, Weixiang, 5,442,931, Cl. 62-101.000.
Zheng, Zhenbin: *See*—
Freedman, David; Chen, Yinliang; and Zheng, Zhenbin, 5,443,802, Cl. 422-298.000.
Zhou, Stephen Q.; Sy, Jennifer C.; Berteig, Michelle A.; and Richards, Thomas P., to Kabi Pharmacia Ophthalmics, Inc. High refractive index silicone compositions. 5,444,106, Cl. 523-107.000.
Zhu, Yong H.: *See*—
Kirsch, Wolff M.; and Zhu, Yong H., 5,443,484, Cl. 604-164.000.
Zidbeck, Juha: *See*—
Martikainen, Olli; Rastikainen, Pertti; Suoknuutti, Marko; and Zidbeck, Juha, 5,444,700, Cl. 370-58.100.
Zietsman, David Wallace: *See*—
Koen, Jacobus P. L.; and Clark, Richard, 5,444,769, Cl. 379-94.000.
Zimmer, Inc.: *See*—
Insall, John N., 5,443,518, Cl. 623-20.000.
Parr, Jack E.; Crowninshield, Roy D.; Devanathan, Thirumalai N. C.; and Chu, Helen, 5,443,512, Cl. 623-16.000.
Shetty, H. Ravindranath; and Panchison, Clarence M., 5,443,510, Cl. 419-2.000.
Zimmerman, Amy C.; and Rosser, David A., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Self-foaming cleanser. 5,443,817, Cl. 424-47.000.
Zingaro, Gloria J.: *See*—
Kivlighn, Salah; Lotti, Victor J.; Rivero, Ralph A.; Siegl, Peter K. S.; and Zingaro, Gloria J., 5,444,067, Cl. 514-303.000.
Zirngibl, Martin, to AT&T IPM Corp. Multifrequency laser. 5,444,725, Cl. 372-20.000.
Zlenko, Mikhail A.: *See*—
Romanchev, Jury A.; Kutenev, Vadim F.; Istomin, Sergei S.; Zlenko, Mikhail A.; and Kvasnikov, Boris V., 5,442,971, Cl. 74-53.000.
Zurcher, Ernst, to GEC Alsthom T&D AG. Actuator for electrical switches. 5,444,202, Cl. 200-400.000.
Zwaard, Robert T.: *See*—
Blaine, George R.; and Zwaard, Robert T., 5,444,635, Cl. 364-474.130.
Zweig, Jonathan M.: *See*—
Lyza, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., 5,444,781, Cl. 380-46.000.
Zweymuller, K.; and Deckner, Andre , to Plus Endoprothetik AG. Cementless fixation element for an artificial hip joint with rotating cover element. 5,443,520, Cl. 623-22.000.
301 LVMH Recherche: *See*—
Meybeck, Alain, 5,443,839, Cl. 424-450.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderton, Richard L., to OEC Medical Systems. Battery enhanced power generation for mobile X-ray machine. Re. 35,025, Cl. 378-101.000.
Englund, Richard L.; and Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Compounding, glazing or polishing pad. Re. 35,021, Cl. 15-230.160.
Ferrar, Carl M., to Honeywell Inc. Fiber optic gyro with a source at a first wavelength and a fiber optic loop designed for single mode operation at a wavelength longer than the first wavelength. Re. 35,023, Cl. 356-350.000.
Foster, Raymond K. Reduced size drive/frame assembly for a reciprocating floor conveyor. Re. 35,022, Cl. 198-750.500.
Hanks, Charles W. Electron beam gun with grounded shield to prevent arc down. Re. 35,024, Cl. 373-10.000.
Hewlett-Packard Corporation: *See*—
Mahoney, Steven A., Re. 35,026, Cl. 400-120.170.
Honeywell Inc.: *See*—
Ferrar, Carl M., Re. 35,023, Cl. 356-350.000.
Mahoney, Steven A., to Hewlett-Packard Corporation. Self-aligning thermal print head and paper loading mechanism. Re. 35,026, Cl. 400-120.170.
Minnesota Mining and Manufacturing Company: *See*—
Englund, Richard L.; and Schwartz, Thomas W., Re. 35,021, Cl. 15-230.160.
OEC Medical Systems: *See*—
Anderton, Richard L., Re. 35,025, Cl. 378-101.000.
Schwartz, Thomas W.: *See*—
Englund, Richard L.; and Schwartz, Thomas W., Re. 35,021, Cl. 15-230.160.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Antonicus, Anthony J. Iron type golf club head with improved weight configuration. B1 5,328,184, 8-22-95, Cl. 273-169.000.
Jacobsen, Stephen C.: *See*—
Peterlenz, Tomasz J.; Stephen, Robert L.; and Jacobsen, Stephen C., B1 4,752,285, Cl. 604-20.000.
Peterlenz, Tomasz J.; Stephen, Robert L.; and Jacobsen, Stephen C., to University of Utah Research Foundation, The. Methods and apparatus for iontophoresis application of medicaments. B1 4,752,285, 8-22-95, Cl. 604-20.000.
Stephen, Robert L.: *See*—
Peterlenz, Tomasz J.; Stephen, Robert L.; and Jacobsen, Stephen C., B1 4,752,285, Cl. 604-20.000.
University of Utah Research Foundation, The: *See*—
Peterlenz, Tomasz J.; Stephen, Robert L.; and Jacobsen, Stephen C., B1 4,752,285, Cl. 604-20.000.

LIST OF DESIGN PATENTEES

ABC International Traders, Inc.: *See*—
Lee, Kenny S.-Y., 361,602, Cl. D21-13.000.
Abe, Tsutomu: *See*—
Tokuda, Hiroyuki; Sekine, Tetsuya; Higuma, Masahiko; Abe, Tsutomu; and Ikeda, Masami, 361,591, Cl. D18-56.000.
Acard, Christian H. G. G., to Mora Locher. 361,446, 8-22-95, Cl. D6-445.000.
Adami, Arthur E.; and Amberg, Christopher P., to Sweetheart Cup Company Inc. Beverage can-carrying device. 361,513, 8-22-95, Cl. D9-425.000.
Adams, Glenda C. Organizer for assorted desk articles. 361,598, 8-22-95, Cl. D19-77.000.
Akabane, Jun; and Hashimoto, Nobuo, to Nikon Corporation. Camera case. 361,428, 8-22-95, Cl. D3-267.000.
Aker, Kevin R.; Houry, Robert L.; and Ratliff, Keith D., to Little Tikes Company, The. Playground structure with circular slide. 361,614, 8-22-95, Cl. D21-244.000.
Amberg, Christopher P.: *See*—
Adami, Arthur E.; and Amberg, Christopher P., 361,513, Cl. D9-455.000.
AMEI Technologies Inc.: *See*—
Erickson, John H.; Tepper, John C.; Bettin, Mark A.; Lee, Robert W.; and Jacobs, Glenn, 361,555, Cl. D14-114.000.
American Standard Inc.: *See*—
Fabian, Wolfgang, 361,624, Cl. D23-257.000.
Amscan, Inc.: *See*—
Ritteaberg, Gerry, 361,449, Cl. D6-462.000.
Anderson, Mark T.: *See*—
Compton, William; and Anderson, Mark T., 361,454, Cl. D6-474.000.
Apple Computer, Inc.: *See*—
De Iuliis, Daniele, 361,553, Cl. D14-106.000.
Arauz, Alcides M.; and Arauz, Sheila M. Car exterior protector. 361,542, 8-22-95, Cl. D12-167.000.
Arauz, Sheila M.: *See*—
Arauz, Alcides M.; and Arauz, Sheila M., 361,542, Cl. D12-167.000.
Arbunies, Jose A., to Vitrex, S.A. Lid handle. 361,470, 8-22-95, Cl. D7-393.000.
Asahi Kogaku Kobyo Kabushiki Kaisha: *See*—
Hayamizu, Eiji, 361,585, Cl. D16-209.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Inaba, Toshiya, 361,564, Cl. D14-116.000.
Asano, Osamu, to Nitto Kohki Co., Ltd. Shank for a hole cutter. 361,579, 8-22-95, Cl. D15-138.000.
Atkins, Warren L.: *See*—
Kinsman, Walter E.; and Atkins, Warren L., 361,478, Cl. D7-679.000.
Avia Group International, Inc.: *See*—
Backus, Peter; Burgess, Ian; and Richard, Daniel, 361,425, Cl. D2-969.000.
Backus, Peter; Burgess, Ian; and Richard, Daniel, to Avia Group International, Inc. Shoe upper. 361,425, 8-22-95, Cl. D2-969.000.
Baker, David, to Mercury International Trading Corp. Shoe upper. 361,426, 8-22-95, Cl. D2-970.000.
Barros, Peter B.: *See*—
Martin, Randall W.; Barros, Peter B.; Halseth, Thor R.; and Holtorf, James L., 361,551, Cl. D14-100.000.
Bartlett, James W. Target for hockey practice. 361,609, 8-22-95, Cl. D21-200.000.
Bascom, Earl. Bicycle basket. 361,548, 8-22-95, Cl. D12-407.000.
Baudot, Pascal, to Hewlett-Packard Company. Stand for a connection unit and computer write-on tablet. 361,561, 8-22-95, Cl. D14-114.000.
Bauer, Siegfried, to Deutsche Star GmbH. Linear slide with toothed belt drives. 361,580, 8-22-95, Cl. D15-138.000.
Baxter International Inc.: *See*—
Tsuji, Tsuyoshi, 361,616, Cl. D24-111.000.
Bazz Inc.: *See*—
Benghozi, Simon V., 361,640, Cl. D26-106.000.

Bed-Check Corporation: *See*—
Newham, Paul F., 361,462, Cl. D6-567.000.
Beltz, Michael A., to Renaissance Research Incorporated. Keyboard housing. 361,562, 8-22-95, Cl. D14-115.000.
Benghozi, Simon V., to Bazz Inc. Table lamp. 361,640, 8-22-95, Cl. D26-106.000.
Bettin, Mark A.: *See*—
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Bhargava, Vikram: *See*—
Harris, Samuel W.; Heberling, James R.; Bhargava, Vikram; and Patel, Ketan G., 361,570, Cl. D14-242.000.
Bidwell, Christopher C. Set of coasters. 361,476, 8-22-95, Cl. D7-625.000.
Bidwell, Christopher C. Child's toy. 361,603, 8-22-95, Cl. D21-59.000.
Billings, Deborah J.: *See*—
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Billings, Zeb; and Billings, Deborah J., to Western Publishing Co. Interactive audiovisual board. 361,597, 8-22-95, Cl. D19-60.000.
Bloom, Charles E. Combined ball catching and throwing scoop. 361,611, 8-22-95, Cl. D21-210.000.
Bohland, William. Planter stand. 361,443, 8-22-95, Cl. D6-405.000.
Bradley, Severius E. Sign for cheerleading. 361,600, 8-22-95, Cl. D20-10.000.
Breiding, Greg: *See*—
Peterson, Monte L.; Fitzgerald, James M.; Francomb, Patrick L.; Breiding, Greg; Ciesko, Mark; and Roessner, Andreas, 361,466, Cl. D7-334.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Ishida, Kazuhito, 361,590, Cl. D18-43.000.
Brown, Janice M. Vaginal mirror. 361,626, 8-22-95, Cl. D23-309.000.
Brundin, Eric K.: *See*—
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Brundin, Erik K.: *See*—
Brundin, Linda G.; and Brundin, Erik K., 361,479, Cl. D7-680.000.
Brundin, Linda G.; and Brundin, Erik K. Combined nut cracker and nut/shell container. 361,473, 8-22-95, Cl. D7-508.000.
Brundin, Linda G.; and Brundin, Erik K. Nut cracker. 361,479, 8-22-95, Cl. D7-680.000.
Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Dressing table. 361,456, 8-22-95, Cl. D6-479.000.
Buckley, Robert S. Shopping cart holder. 361,448, 8-22-95, Cl. D6-462.000.
Built for Speed, Inc.: *See*—
Hill, Martin H.; and Dewey, William H., 361,612, Cl. D21-225.000.
Bulgari, Giovanni, to Gianni Bulgari S.p.A. Wristwatch. 361,530, 8-22-95, Cl. D10-39.000.
Bulgari, Marina, to Marina B Creation S.A. Watch. 361,523, 8-22-95, Cl. D10-32.000.
Bulgari, Marina, to Marina B. Creation S.A. Watch. 361,524, 8-22-95, Cl. D10-32.000.
Burgess, Ian: *See*—
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Canon Kabushiki Kaisha: *See*—
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Tokuda, Hiroyuki; Sekine, Tetsuya; Higuma, Masahiko; Abe, Tsutomu; and Ikeda, Masami, 361,591, Cl. D18-56.000.
Carioli, Edward A. Carpet protector. 361,505, 8-22-95, Cl. D8-374.000.
Caron, Gerard, to Martell & Co. Bottle. 361,515, 8-22-95, Cl. D9-322.000.
Carsello, Anthony J., to Emhart Inc. Door lever. 361,488, 8-22-95, Cl. D8-308.000.
Carsello, Anthony J., to Emhart Inc. Door lever. 361,489, 8-22-95, Cl. D8-308.000.
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Niwano, Harumi, 361,592, Cl. D18-56.000.
Catalina Carpet Mills, Inc.: *See*—
Egan, Dennis J., 361,444, Cl. D6-415.000.
Chabria, Meena G., to Press-A-Lite Corporation. Flat flashlight. 361,633, 8-22-95, Cl. D26-37.000.
Chapman, Leonard T., to Leonard Studio Equipment, Inc. Combined camera dolly and support column therefor. 361,587, 8-22-95, Cl. D16-242.000.
Charbonneau, Calvin A. Livestock feeder. 361,648, 8-22-95, Cl. D30-121.000.
Chen, Paul P. Wall clock. 361,520, 8-22-95, Cl. D10-21.000.
Chicony Electronics Co., Ltd.: *See*—
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Chieda, Robert, to Newell Operating Company. Knob. 361,491, 8-22-95, Cl. D8-310.000.
Chieda, Robert, to Newell Operating Company. Knob. 361,492, 8-22-95, Cl. D8-310.000.
Chieda, Robert, to Newell Operating Company. Knob. 361,493, 8-22-95, Cl. D8-310.000.
Chieda, Robert, to Newell Operating Company. Knob. 361,494, 8-22-95, Cl. D8-310.000.
Chieda, Robert, to Newell Operating Company. Pull. 361,496, 8-22-95, Cl. D8-317.000.
Chieda, Robert, to Newell Operating Company. Pull. 361,497, 8-22-95, Cl. D8-317.000.
Chieda, Robert, to Newell Operating Company. Pull. 361,498, 8-22-95, Cl. D8-317.000.
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Choi, Chung-Hing, to Hing Fat Toys Manufacturer Limited. Toy weapon. 361,608, 8-22-95, Cl. D21-145.000.
Christopoulos, Demetrios L. Wall mounted light. 361,639, 8-22-95, Cl. D26-85.000.
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Kepley, Walter R., III; Greer, Dana J.; and Shields, Richard A., Jr., 361,568, Cl. D14-148.000.
Coca-Cola Company, The: *See*—
North, Thomas G., III; and Riley, Michael J., 361,532, Cl. D10-46.300.
Company's Coming, Inc.: *See*—
Heilicher, Jamie, 361,472, Cl. D7-505.000.
Compaq Computer Corporation: *See*—
Martin, Randall W.; Barron, Peter B.; Halseth, Thor R.; and Holtorf, James L., 361,551, Cl. D14-100.000.
Mundt, Kevin W.; Moore, Kevin G., deceased; Moore, Michael G., legal representative; and Moore, Sandra C., legal representative, 361,550, Cl. D14-100.000.
Compton, William; and Anderson, Mark T., to Tropical Sportswear International Corporation. Display stand. 361,454, 8-22-95, Cl. D6-474.000.
Contico International, Inc.: *See*—
Dickinson, Thomas; and Gale, Bradley D., 361,511, Cl. D9-425.000.
Cook, James D., to Honeywell Inc. Flowthrough pressure sensor. 361,534, 8-22-95, Cl. D10-96.000.
Cooper, William A., to Mitchell & Cooper Limited. Hand portioner. 361,480, 8-22-95, Cl. D7-681.000.
Cosmetique Sans Soucis GmbH: *See*—
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Crealise, Packaging Inc.: *See*—
Dalmaz, Armand G., 361,512, Cl. D9-440.000.
Dalmaz, Armand G., to Crealise Conditionnement Inc.; and Crealise, Packaging Inc. Cover for a tobacco container. 361,512, 8-22-95, Cl. D9-440.000.
Dardashti, Shahriar. Storage assembly. 361,464, 8-22-95, Cl. D6-629.000.
Dardashti, Shahriar. Two-sided storage rack. 361,465, 8-22-95, Cl. D6-630.000.
Davis, James F. Conveyor assembly portion with variable offset arms for supporting poultry and poultry parts. 361,644, 8-22-95, Cl. D34-29.000.
De La Chevrotiere, Jean-Francois. Combined litter box and sifting cover for felines. 361,649, 8-22-95, Cl. D30-161.000.
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Desgrippes, Joel, to Cosmetique Sans Soucis GmbH. Mascara dispenser. 361,638, 8-22-95, Cl. D28-76.000.
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Eason, Donald J. Trading card display system. 361,455, 8-22-95, Cl. D6-476.000.

Ebel, S.A.: *See*—
Chodat, Jean-Pierre, 361,522, Cl. D10-30.000.
Edwards, Paul R., to Edwards, Paul R. Document sheet with apertures for cards. 361,593, 8-22-95, Cl. D19-32.000.
Egan, Dennis J., to Catalina Carpet Mills, Inc. Display stand. 361,444, 8-22-95, Cl. D6-415.000.
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Laske, Lawrence, to Westinghouse Electric Corporation. Table. 361,458, 8-22-95, Cl. D6-480.000.

Latella, Demetrio A., Jr. Vacuum sealed canister. 361,474, 8-22-95, Cl. D7-612.000.

Lee, Kenny S.-Y., to ABC International Traders, Inc. Hand-held cartridge game. 361,602, 8-22-95, Cl. D21-13.000.

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Laque, Irma J. Sandal boot. 361,423, 8-22-95, Cl. D2-910.000.

Makino, Michio, to Kaiyo Kogyo Kabushiki Kaisha. Pump. 361,571, 8-22-95, Cl. D15-7.000.

Makino, Michio, to Kaiyo Kogyo Kabushiki Kaisha. Pump. 361,572, 8-22-95, Cl. D15-7.000.

Makino, Michio, to Kaiyo Kogyo Kabushiki Kaisha. Pump. 361,573, 8-22-95, Cl. D15-7.000.

Makino, Michio, to Kaiyo Kogyo Kabushiki Kaisha. Pump. 361,574, 8-22-95, Cl. D15-7.000.

Makino, Michio, to Kaiyo Kogyo Kabushiki Kaisha. Pump. 361,575, 8-22-95, Cl. D15-7.000.

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Hayashi, Hatsue; and Masui, Seikichi, 361,528, Cl. D10-39.000.

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Maxwell, Marvin D. Combined toilet seat and cover. 361,628, 8-22-95, Cl. D23-312.000.

McAtarian, Frank J. Spill-containment envelope for a transformer. 361,549, 8-22-95, Cl. D13-118.000.

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Mochizuki, Naoto; Iida, Yoshihito; and Saito, Hidemi, to Nisca Corporation. Image inputting machine for computers. 361,554, 8-22-95, Cl. D14-107.000.

Mohundro, James G. Jewelry box. 361,429, 8-22-95, Cl. D3-294.000.

Mohundro, James G. Jewelry box. 361,430, 8-22-95, Cl. D3-297.000.

Mohundro, James G. Jewelry armoire. 361,445, 8-22-95, Cl. D6-440.000.

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Mundt, Kevin W.; Moore, Kevin G., deceased; Moore, Michael G., legal representative; and Moore, Sandra C., legal representative, 361,550, Cl. D14-100.000.

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Mundt, Kevin W.; Moore, Kevin G., deceased; Moore, Michael G., legal representative; and Moore, Sandra C., legal representative, 361,550, Cl. D14-100.000.

Mori, Masakazu; Oiso, Nozomu; and Goto, Masaki, to Matsushita Electric Industrial Co., Ltd. Video camera with liquid crystal monitor and video tape recorder. 361,583, 8-22-95, Cl. D16-202.000.

Mori, Masakazu, to Matsushita Electric Industrial Co., Ltd. Video camera with liquid crystal monitor and video tape recorder. 361,584, 8-22-95, Cl. D16-202.000.

Moro, Edward J.; and Sullivan, Patrick, to Egly, Robert A. Combined computer mouse pad and wrist rest. 361,556, 8-22-95, Cl. D14-114.000.

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Motomiza, Yujiro, to Juki Corporation. Sewing machine. 361,577, 8-22-95, Cl. D15-70.000.

Mundt, Kevin W.; Moore, Kevin G., deceased; by Moore, Michael G., legal representative; and by Moore, Sandra C., legal representative, to Compaq Computer Corporation. Multimedia personal computer with integrated monitor. 361,550, 8-22-95, Cl. D14-100.000.

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Newham, Paul F., to Bed-Check Corporation. Control module holster. 361,462, 8-22-95, Cl. D6-567.000.

Neylon, Michael. Support for video game joy stick. 361,452, 8-22-95, Cl. D6-467.000.

Nike, Inc.: *See*—
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Niwano, Harumi, to Casio Computer Co., Ltd. Ribbon cassette for video printer. 361,592, 8-22-95, Cl. D18-56.000.

Noda, Mariko, to Fuji Photo Film Co., Ltd. Sheet film holder. 361,586, 8-22-95, Cl. D16-236.000.

North, Thomas G., III; and Riley, Michael J., to Coca-Cola Company, The. Ratio cup. 361,532, 8-22-95, Cl. D10-46.300.

Northwest Podiatric Laboratory, Inc.: *See*—
Jordan, Roger W.; Lien, Rand A.; and Martenson, Chance E., 361,510, Cl. D9-415.000.

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Pagani, David A.; and Pagani, Anthony D., to New Ventures Product Development and Marketing, Inc. Bicycle horn. 361,536, 8-22-95, Cl. D10-120.000.

Patel, Ketan G.: *See*—
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Patel, Nilesh R. Tongue scraper. 361,618, 8-22-95, Cl. D24-147.000.

Patton, Mark A. Collapsible portable shelter with bench. 361,439, 8-22-95, Cl. D6-368.000.

Peersmann, Richard F. M., to Pollyflame International B.V. Clock. 361,516, 8-22-95, Cl. D10-6.000.

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Peterson, Monte L.; Fitzgerald, James M.; Francomb, Patrick L.; Breiding, Greg; Cieslo, Mark; and Roessner, Andreas, to Thermos Company, The. Barbecue grill. 361,466, 8-22-95, Cl. D7-334.000.

Petruzzi, Thomas G. Replica spice shaker clock. 361,517, 8-22-95, Cl. D10-6.000.

Petruzzi, Thomas G. Replica canister clock. 361,518, 8-22-95, Cl. D10-6.000.

Phleps, Tilman; and Doebert, Michael, to Siemens Aktiengesellschaft. Intraoral sensor for a dental X-ray apparatus. 361,619, 8-22-95, Cl. D24-158.000.

Phleps, Tilman; and Stoeckl, Klaus, to Siemens Aktiengesellschaft. Dental instrument table. 361,620, 8-22-95, Cl. D24-177.000.

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Poon, Tit-ying, to Flying Dragon Development Ltd. Electrical lantern with rechargeable battery pack. 361,636, 8-22-95, Cl. D26-44.000.

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411 5,443,016

CLASS 106
2 5,443,627
23 C 5,443,628
21 A 5,443,629
22 R 5,443,630
244 5,443,631
277 5,443,632
287.13 5,443,633
465 5,443,634
717 5,443,635
803 5,443,636

CLASS 108
3 5,443,017
44 5,443,018
5,443,019
115 5,443,020

CLASS 110
219 5,443,021
245 5,443,022

CLASS 111
191 5,443,023

CLASS 112
470.05 5,443,024
470.18 5,443,025

CLASS 116
56 5,443,026
244 5,443,027
248 5,443,028

CLASS 116
235 5,443,029

CLASS 117
8 5,443,030
84 5,443,032
86 5,443,033
208 5,443,034

CLASS 118
16 5,443,637
50 5,443,638
244 5,443,639
312 5,443,640
407 5,443,641
688 5,443,642
712 5,443,643
715 5,443,644
718 5,443,645
722 5,443,646
723 ME 5,443,647
724 5,443,648
728 5,443,649

CLASS 119
14.02 5,443,035
707 5,443,036
771 5,443,037
784 5,443,038
865 5,443,039

CLASS 122
13.1 5,443,040
379 5,443,041

CLASS 123
41.49 5,443,042
48 C 5,443,043
195 HC 5,443,044
299 5,443,045
325 5,443,558
438 5,443,046
446 5,443,047
450 5,443,048
458 5,443,049
492 5,443,050
520 5,443,051
525 5,443,052
557 5,443,053
599.1 5,443,054
602 5,443,055

CLASS 126
263.05 5,443,056

CLASS 127
46.2 5,443,630

CLASS 128
200.16 5,443,059
200.26 5,443,060
204.21 5,443,061
204.26 5,443,062
207.15 5,443,063
5,443,064
639 5,443,065
5,443,559
653.1 5,443,066
653.5 5,443,068
660.03 5,443,069
661.01 5,443,070
661.09 5,443,071
670 5,442,940
691 5,443,072
713 5,443,073
5,443,074
725 5,443,075
731 5,443,076
737 5,443,077
771 5,443,080
772 5,443,078
5,443,081
781 5,443,079
897 5,443,082

CLASS 131
359 5,443,560

CLASS 134
2 5,443,651
7 5,443,652
8 5,443,653
18 5,443,655
22.12 5,443,654
42 5,443,656
58 R 5,443,084
95.1 5,443,085

CLASS 135
34.2 5,443,086

CLASS 136
253 5,443,657

CLASS 137
14 5,443,087
68.13 5,443,088
82 5,443,089
202 5,443,561
484.8 5,443,083
489 5,443,090
515.7 5,443,091
542 5,443,092
596.17 5,443,093
892 5,443,094

CLASS 138
89 5,443,097
94 5,443,095
99 5,443,096
109 5,443,098
5,443,099
154 5,443,100

CLASS 140
105 5,443,101

CLASS 141
10 5,443,102

CLASS 144
2 Z 5,443,562
3 R 5,443,103

CLASS 148
23 5,443,658
5,443,659
24 5,443,660
33.5 5,443,661
209 5,443,662
222 5,443,663
307 5,443,664
309 5,443,665
513 5,443,666

CLASS 152
510 5,443,104
540 5,443,105

CLASS 156
73.4 5,443,687
86 5,443,668
102 5,443,669
182 5,443,106
191 5,443,670
226 5,443,671
244.17 5,443,672
245 5,443,673
331.7 5,443,674
345 5,443,675
5,443,676
5,443,677
336 5,443,678
361 5,443,679

362 5,443,680
504 5,443,681
552 5,443,682
578 5,443,683
604.1 5,443,684
635.1 5,443,685

CLASS 160
133 5,443,107
167 5,443,108
238 5,443,563
298 5,443,109
368.1 5,443,110

CLASS 163
115 5,443,691
396 5,443,692

CLASS 166
254 5,443,111

CLASS 165
1 5,443,112
8 5,443,113
41 5,443,114
70 5,443,115
149 5,443,116

CLASS 166
51 5,443,117
251 5,443,118
254 5,443,119
265 5,443,120
278 5,443,121
285 5,443,122
288 5,443,123
374 5,443,124

CLASS 172
271 5,443,126
608 5,443,125
634 5,443,127

CLASS 173
200 5,443,564

CLASS 174
52.1 5,443,182
65 R 5,443,183
113 R 5,443,184
124 F 5,443,185
230 5,443,186
260 5,443,187
261 5,443,188
262 5,443,189

CLASS 179
25 5,443,128
45 5,443,129
431 5,443,565

CLASS 178
18 5,443,190
5,443,191
5,443,192
5,443,193

CLASS 180
65.6 5,443,130

CLASS 181
150 5,443,194
208 5,443,195
227 5,443,196
264 5,443,197
295 5,443,198

CLASS 182
172 5,443,136
222 5,443,137

CLASS 184
1.5 5,443,138
15.2 5,443,139

CLASS 187
253 5,443,140
316 5,443,142

CLASS 188
3 R 5,443,131
71.9 5,443,141
138 5,443,132
250 F 5,443,135
150 G 5,443,133
346 5,443,134
374 5,443,146

CLASS 192
27 5,443,147
48.2 5,443,148
85 CA 5,443,143

CLASS 194
317 5,443,144

CLASS 198
323 5,443,145
392 5,443,149
463.3 5,443,150

790.5 Re.35,022
860.1 5,443,151

CLASS 200
43.04 5,444,199
61.2 5,444,200
400 5,444,202
510 5,444,203

CLASS 201
1 5,443,693
41 5,443,694

CLASS 202
153 5,443,695
248 5,443,696

CLASS 203
57 5,443,697

CLASS 204
59 QM 5,443,698
64 R 5,443,699
149 5,443,700
153.12 5,443,701
157.22 5,443,702
165 5,443,703
180.1 5,443,704
227 5,443,705
242 5,443,706
5,443,707
286 5,443,708
301 5,443,709
400 5,443,712
403 5,443,710
429 5,443,711

CLASS 205
70 5,443,713
241 5,443,714

CLASS 206
5.1 5,443,152
192 5,443,153
213.1 5,443,154
223 5,443,155
315.4 5,443,156
387.1 5,443,139
561 5,443,160
581 5,443,161

CLASS 208
95 5,443,715
113 5,443,716
131 5,443,717
157 5,443,718

CLASS 209
12.1 5,443,157
166 5,443,158
274 5,443,162
315 5,443,163
380 5,443,164
602 5,443,165

CLASS 210
101 5,443,719
232 5,443,720
5,443,721
253 5,443,722
321.75 5,443,723
325.2 5,443,724
340.1 5,443,737
393 5,443,726
401 5,443,725
490 5,443,727
500.23 5,443,728
611 5,443,729
631 5,443,730
634 5,443,731
635 5,443,732
641 5,443,738
651 5,443,733
652 5,443,739
656 5,443,734
668 5,443,735
5,443,736
673 5,443,740
726 5,443,741
758 5,443,742
767 5,443,743

CLASS 211
70.6 5,443,166
87 5,443,167
149 5,443,168

CLASS 212
275 5,443,566
298 5,443,169

CLASS 213
32 C 5,443,170

CLASS 215
252 5,443,171
303 5,443,172

CLASS 216
13 5,443,688
27 5,443,687
37 5,443,686
63 5,443,689

CLASS 218
118 5,444,201

CLASS 219
69.11 5,444,204
69.12 5,444,205
121.43 5,444,207
121.48 5,444,208
121.52 5,444,209
121.63 5,444,206
121.67 5,444,210
5,444,211
121.7 5,444,212
121.76 5,444,213
133 5,444,214
222 5,444,215
245 5,444,216
405 5,444,217
440 5,444,218
505 5,444,219
506 5,444,227
549 5,444,228
630 5,444,229
633 5,444,220
635 5,444,221

CLASS 220
6 5,443,173
212 5,443,174
298 5,443,175
403 5,443,176
453 5,443,177

CLASS 221
64 5,443,178
265 5,443,179

CLASS 222
1 5,443,180
93 5,443,181
127 5,443,182
145.6 5,443,183
189.07 5,443,184
190 5,443,569
321.1 5,443,185
396 5,443,186
595 5,443,187

CLASS 223
66 5,443,188

CLASS 224
252 5,443,193
253 5,443,192
405 5,443,190
501 5,443,189
543 5,443,191

CLASS 225
2 5,443,194
104 5,443,195

CLASS 227
131 5,443,196
176 5,443,197
179 5,443,198

CLASS 228
29 5,443,199
102 5,443,200
119 5,443,201

CLASS 229
146 5,443,202
198.2 5,443,203
242 5,443,204
243 5,443,205

CLASS 235
380 5,444,222
435 5,444,223
456 5,444,224
457 5,444,225
462 5,444,226
5,444,230
5,444,231

CLASS 236
20 R 5,443,206

CLASS 237
8 R 5,443,207
12.3 A 5,443,208

CLASS 239
90 5,443,209
104 5,443,210
146 5,443,211
542 5,443,212

CLASS 241
29 5,443,567

73 5,443,213
82.2 5,443,214
101.3 5,443,215
189.1 5,443,568
194 5,443,216

CLASS 243
35.5 A 5,443,217
256 5,443,218
284 5,443,570
300 5,443,219
311 5,443,571
332.8 5,443,220
364.1 5,443,221
374 5,443,222
379 5,443,223
384.2 5,443,224
392 5,443,225
533.8 5,443,226

CLASS 244
3.12 5,443,227
3.14 5,443,228
54 5,443,229
5,443,230
164 5,443,231

CLASS 248
62 5,443,232
118 5,443,233
246 5,443,234
278 5,443,235
311.3 5,443,236
441.1 5,443,237
498 5,443,238
503.1 5,443,239
638 5,443,240

CLASS 250
101.1 5,444,232
201.5 5,444,233
206.5 5,444,234
208.1 5,444,235
5,444,236
223 B 5,444,237
227.11 5,444,238
235 5,444,239
237 G 5,444,240
253 5,444,241
305 5,444,242
5,444,243
306 5,444,244
307 5,444,245
339.08 5,444,246
339.12 5,444,247
342 5,444,248
343 5,444,249
352 5,444,250
361 B 5,444,251
363.08 5,444,252
369 5,444,253
370.07 5,444,254
385.1 5,444,255
396 R 5,444,256
398 5,444,257
423 B 5,444,258
452.21 5,444,259
492.3 5,444,260
493.1 5,444,261
495.1 5,444,262
504 R 5,444,263
559.29 5,444,264
559.42 5,444,265
586 5,444,266

CLASS 251
129.07 5,443,241
337 5,443,242

CLASS 252
32.7 E 5,443,744
52 A 5,443,745
62.9 5,443,746
94 5,443,747
162 5,443,748
170 5,443,749
174.12 5,443,750
174.13 5,443,751
299.01 5,443,752
5,443,753
299.61 5,443,754
5,443,755
299.63 5,443,756
302 5,443,759
315.5 5,443,761
364 5,443,762
548 5,443,757
582 5,443,758

CLASS 254
93 R 5,443,243

CLASS 256
22 5,443,244

CLASS 257
14 5,444,267
79 5,444,268

98 5,444,270
094 5,444,269
136 5,444,271
137 5,444,272
138 5,444,273
184 5,444,274
206 5,444,275
207 5,444,276
223 5,444,277
226 5,444,280
239 5,444,281
296 5,444,278
316 5,444,279
344 5,444,282
361 5,444,283
364 5,444,284
378 5,444,285
420 5,444,286
467 5,444,287
503 5,444,288
510 5,444,289
530 5,444,290
552 5,444,291
580 5,444,292
666 5,444,293
5,444,294
678 5,444,295
686 5,444,296
691 5,444,297
5,444,298
693 5,444,299
737 5,444,300
5,444,301
755 5,444,302
786 5,444,303
796 5,444,304

CLASS 261
140.1 5,443,763

CLASS 264
15 5,443,764
22 5,443,765
37 5,443,766
5,443,767
39 5,443,768
46.1 5,443,769
80 5,443,770
82 5,443,771
102 5,443,772
5,443,773
130 5,443,774
143 5,443,775
168 5,443,776
255 5,443,777
257 5,443,778
286 5,443,779
290.2 5,443,780
291 5,443,781
328.1 5,443,782
540 5,443,783
571 5,443,784
573 5,443,785

CLASS 266
46 5,443,572

CLASS 267
64.12 5,443,573
140.13 5,443,245
140.14 5,443,574
283 5,443,247

CLASS 269
5,443,246

CLASS 270
53 5,443,248
5,443,249
57 5,443,250

CLASS 271
16 5,443,251
127 5,443,252
177 5,443,253
225 5,443,254
228 5,443,257
273 5,443,255
277 5,443,256

CLASS 273
1.5 A 5,443,258
1.5 R 5,443,259
36 R 5,443,260
58 C 5,443,576
73 D 5,443,575
86 R 5,443,261
89 5,443,262
157 R 5,443,263
169 B1 5,328,184
186.1 5,443,264
186.2 5,443,265
187.2 5,443,266
188 A 5,443,267
241 5,443,268
5,443,269
290 5,443,270

416 5,443,272
423 5,443,273

CLASS 277
38 5,443,274

CLASS 279
60 5,443,275
77 5,443,276

CLASS 280
11.23 5,443,277
28 5,443,278
236 5,443,279
660 5,443,280
661 5,443,281
690 5,443,282
709 5,443,283
728.2 5,443,284
733 5,443,285
741 5,443,286
802 5,443,577
822 5,443,287
834 5,443,578

CLASS 283
2 5,443,288
93 5,443,579

CLASS 288
39 5,443,289
95 5,443,290
179 5,443,580
316 5,443,291
364 5,443,581

CLASS 293
341.16 5,443,292

CLASS 294
7 5,443,293
68.23 5,443,294
87.2 5,443,398

CLASS 296
93 5,443,299
97.4 5,443,300
105 5,443,295
107 5,443,296
203 5,443,297

CLASS 297
195.1 5,443,301
408 5,443,303
467 5,443,304
471 5,443,302

CLASS 299
13 5,443,305

CLASS 301
37.37 5,443,582

CLASS 303
3 5,443,306
115.4 5,443,308
119.2 5,443,309
169 5,443,307
5,443,583

CLASS 307
9.1 5,443,306
10.8 5,443,307
106 5,443,308
135 5,443,309
5,443,310

CLASS 310
17 5,444,313
40 MM 5,444,314
42 5,444,315
49 R 5,444,316
77 5,444,317
5,444,318
211 5,444,319
239 5,444,320
263 5,444,321
313 D 5,444,322
328 5,444,323
334 5,444,324
359 5,444,326
368 5,444,325

CLASS 312
308 5,443,311
329 5,443,310
334.27 5,443,312

CLASS 313
337 5,444,327
446 5,444,328
479 5,444,329
506 5,444,330
553 5,444,331
618 5,444,332

CLASS 315
94 5,444,333

209 CD 5,444,334
246 5,444,335
307 5,444,336
349 5,444,337
371 5,444,338

CLASS 318
17 5,444,339
139 5,444,340
432 5,444,341
563 5,444,342
568.11 5,444,343
599 5,444,344
603 5,444,345
616 5,444,346
632 5,444,347
640 5,444,348
716 5,444,349
727 5,444,350
811 5,444,351

CLASS 320
15 5,444,352
39 5,444,353

CLASS 322
28 5,444,354
58 5,444,355

CLASS 323
222 5,444,358
237 5,444,359
265 5,444,360
282 5,444,356
312 5,444,361
313 5,444,362
315 5,444,363

CLASS 324
67 5,444,364
96 5,444,365
158.1 5,444,366
204 5,444,367
207.16 5,444,368
207.2 5,444,370
207.20 5,444,369
212 5,444,371
248 5,444,372
5,444,373
334 5,444,374
380 5,444,375
402 5,444,376
424 5,444,377
428 5,444,378
450 5,444,379
528 5,444,380
657 5,444,381
690 5,444,382
697 5,444,383
751 5,444,384
752 5,444,385
754 5,444,386
5,444,387
755 5,444,388
765 5,444,389
770 5,444,390

CLASS 326
16 5,444,391
31 5,444,392
38 5,444,393
45 5,444,394
73 5,444,395
81 5,444,396
5,444,397

CLASS 327
55 5,444,398
105 5,444,399
108 5,444,400
5,444,401
170 5,444,402
172 5,444,403
185 5,444,404
239 5,444,405
277 5,444,406
295 5,444,407
306 5,444,408
315 5,444,409
317 5,444,410
361 5,444,411
541 5,444,412
552 5,444,312
562 5,444,413
563 5,444,414
565 5,444,311

CLASS 329
302 5,444,413
341 5,444,416

CLASS 330
51 5,444,417
52 5,444,418
266 5,444,419

CLASS 331
1 R 5,444,420

111 5,444,421
116 R 5,444,422

CLASS 332
167 5,444,423
172 5,444,424
216 5,444,425

CLASS 326
57 5,444,426
115 5,444,162
198 5,444,427

CLASS 327
188 5,444,428

CLASS 328
21 5,444,429

CLASS 340
426 5,444,430
541 5,444,431
567 5,444,432
601 5,444,433
628 5,444,434
632 5,444,435
635 5,444,436
815.4 5,444,437
825.07 5,444,439
825.32 5,444,440
825.44 5,444,438
850 5,444,441
916 5,444,442
933 5,444,443
994 5,444,444

CLASS 341
87 5,444,445
135 5,444,446
156 5,444,447

CLASS 342
42 5,444,448
354 5,444,449
357 5,444,450
453 5,444,451

CLASS 343
700 MS 5,444,452
5,444,453
754 5,444,454
895 5,444,455

CLASS 348
39 5,444,456
94 5,444,457
98 5,444,458
133 5,444,459
144 5,444,460
154 5,444,461
158 5,444,462

CLASS 347
4 5,444,466
12 5,444,467
14 5,444,468
5,444,469
15 5,444,470
72 5,444,471
85 5,444,472
87 5,444,473
5,444,474
118 5,444,463
195 5,444,464
200 5,444,475
213 5,444,465

CLASS 348
15 5,444,476
5,444,477
39 5,444,478
42 5,444,479
127 5,444,480
187 5,444,481
220 5,444,482
231 5,444,483
305 5,444,484
335 5,444,485
376 5,444,486
405 5,444,487
414 5,444,488
422 5,444,489
423 5,444,490
441 5,444,491
445 5,444,492
448 5,444,493
5,444,494
458 5,444,495
587 5,444,496
719 5,444,497
733 5,444,498
734 5,444,499
807 5,444,500

CLASS 381
44 5,444,501
107 5,444,502
169 5,444,503

237 5,444,504

CLASS 352
28 5,444,505
106 5,444,506

CLASS 204
82 5,444,507
120 5,444,508
202 5,444,509
450 5,444,510
603 5,444,511
430 5,444,512

CLASS 205
27 5,444,513
74 5,444,514
200 5,444,515
5,444,516
201 5,444,517
5,444,518
219 5,444,519
229 5,444,520
285 5,444,521
296 5,444,522
309 5,444,523
316 5,444,524
327 5,444,525

CLASS 206
71 5,444,526
73 5,444,527
5,444,528
337 5,444,529
338 5,444,530
341 5,444,531
349 5,444,532
350 Re.35,023
5,444,533
5,444,534
369 5,444,535
376 5,444,536
5,444,537
401 5,444,538
427 5,444,539
5,444,540
432 5,444,541

CLASS 358
261.1 5,444,542
296 5,444,543
332 5,444,544
335 5,444,545
5,444,546
444 5,444,549
453 5,444,550
456 5,444,551
465 5,444,552
5,444,553
494 5,444,554
5,444,555
501 5,444,556

CLASS 359
48 5,444,686
59 5,444,557
72 5,444,558
85 5,444,559
138 5,444,560
158 5,444,561
161 5,444,562
179 5,444,563
187 5,444,564
224 5,444,565
291 5,444,566
319 5,444,567
400 5,444,568
435 5,444,569
482 5,444,570
566 5,444,571
619 5,444,572
659 5,444,573
708 5,444,574
845 5,444,576
885 5,444,577

CLASS 360
64 5,444,575
85 5,444,578
67 5,444,579
73.06 5,444,580
75 5,444,581
78.09 5,444,582
5,444,583
85 5,444,584
5,444,585
99.12 5,444,586
104 5,444,587
5,444,588
113 5,444,589

CLASS 361
18 5,444,590
5,444,591
21 5,444,592
56 5,444,593
58 5,444,594

86 5,444,595
120 5,444,596
234 5,444,597
253 5,444,598
274.1 5,444,599
303 5,444,600
643 5,444,601
705 5,444,602

CLASS 362
66 5,444,603
158 5,444,605
226 5,444,604
340 5,444,606
352 5,444,607

CLASS 363
17 5,444,608
47 5,444,609
54 5,444,610
87 5,444,357

CLASS 364
145 5,444,611
161 5,444,612
167.01 5,444,613
191 5,444,614
401 5,444,615
405 5,444,616
419.1 5,444,617
420 5,444,618
421 5,444,619
434.01 5,444,620
5,444,624
434.05 5,444,621
5,444,622
434.1 5,444,623
436.03 5,444,625
431.04 5,444,626
431.05 5,444,627
5,444,628
449 5,444,629
464.02 5,444,630
5,444,631
468 5,444,632
470 5,444,633
474.11 5,444,634
474.13 5,444,635
474.3 5,444,636
474.35 5,444,640
484 5,444,641
550 5,444,642
5,444,644
556 5,444,637
571.04 5,444,638
572 5,444,639
579 5,444,643
717 5,444,645
730.5 5,444,646
761 5,444,647
841 5,444,648

CLASS 365
49 5,444,649
96 5,444,650
108 5,444,651
149 5,444,652
5,444,653
177 5,444,654
185 5,444,655
189.01 5,444,656
189.07 5,444,658
189.09 5,444,659
189.12 5,444,660
201 5,444,661
203 5,444,662
207 5,444,305
226 5,444,663
5,444,664
230.02 5,444,665
230.08 5,444,666
233 5,444,667

CLASS 366
2 5,443,313
215 5,443,314

CLASS 367
1 5,444,668
90 5,444,670
96 5,444,669

CLASS 368
10 5,444,671
47 5,444,672
63 5,444,673
107 5,444,674

CLASS 369
2 5,444,675
4 5,444,676
13 5,444,677
5,444,678
32 5,444,679
5,444,680
5,444,681
5,444,682
44.28 5,444,683

47 5,444,684
50 5,444,685
59 5,444,688
109 5,444,685
263 5,444,690
291 5,444,691

CLASS 370
13 5,444,692
16 5,444,693
16.1 5,444,694
17 5,444,695
5,444,696
19 5,444,697
20 5,444,698
34 5,444,699
58.1 5,444,700
60 5,444,701
60.1 5,444,702
5,444,703
84 5,444,704
85.6 5,444,705
94.1 5,444,706
5,444,707
5,444,709
95.3 5,444,708
5,444,710
99 5,444,711
110.1 5,444,712
5,444,713

CLASS 371
22.3 5,444,715
5,444,716
27 5,444,717
32 5,444,718
37.1 5,444,719
42 5,444,720
43 5,444,721
182.02 5,444,714

CLASS 372
16 5,444,723
20 5,444,724
5,444,725
36 5,444,726
38 5,444,727
5,444,728
5,444,729
45 5,444,730
99 5,444,731

CLASS 373
10 Re.35,024
42 5,444,732
72 5,444,733
73 5,444,734

CLASS 374
126 5,443,315

CLASS 375
219 5,444,736
5,444,737
5,444,738
232 5,444,739
254 5,444,741
267 5,444,742
286 5,444,740
347 5,444,745
368 5,444,743
376 5,444,744

CLASS 376
245 5,444,746
372 5,444,747
436 5,444,748

CLASS 377
6 5,444,749
8 5,444,750
78 5,444,751

CLASS 378
19 5,444,752
35 5,444,753
38 5,444,754
98 5,444,755
98.8 5,444,756
101 Re.35,025
5,444,757
113 5,444,758

CLASS 379
30 5,444,759
45 5,444,760
58 5,444,761
5,444,762
5,444,763
13 5,444,764
5,444,765
60 5,444,766
67 5,444,767
68 5,444,768
84 5,444,769
99 5,444,770

130 5,444,771
161 5,444,772
219 5,444,773
266 5,444,774
360 5,444,775
399 5,444,776
413 5,444,777
453 5,444,778

CLASS 380
3 5,444,779
30 5,444,780
46 5,444,781
49 5,444,782

CLASS 381
57 5,444,783
61 5,444,784
63 5,444,785
71 5,444,786
94 5,444,787
106 5,444,788
119 5,444,789
168 5,444,790

CLASS 382
131 5,444,792
137 5,444,794
138 5,444,793
141 5,444,795
157 5,444,796
190 5,444,791
192 5,444,797
199 5,444,798
239 5,444,800
287 5,444,799

CLASS 384
65 5,443,316
491 5,443,317

CLASS 385
16 5,444,801
5,444,802
28 5,444,803
49 5,444,804
5,444,805
75 5,444,806
125 5,444,807
128 5,444,808
5,444,809
139 5,444,810
141 5,444,811

CLASS 388
840 5,444,812

CLASS 392
407 5,444,813
5,444,814
416 5,444,815

CLASS 395
2.28 5,444,816
2.63 5,444,817
11.67 5,444,818
22 5,444,819
5,444,820
24 5,444,821
37 5,444,822
51 5,444,823
76 5,444,824
100 5,444,829
109 5,444,830
112 5,444,826
115 5,444,827
117 5,444,828
127 5,444,831
132 5,444,832
133 5,444,833
134 5,444,834
135 5,444,835
5,444,836
140 5,444,837
141 5,444,838
5,444,839
143 5,444,825
145 5,444,840
149 5,444,841
161 5,444,842
5,444,843
5,444,844
162 5,444,845
163 5,444,846
183.18 5,444,732
200.09 5,444,849
202.1 5,444,850
5,444,851
5,444,856
200.15 5,444,848
230 5,444,853
287 5,444,847
5,444,855
304 5,444,858
309 5,444,857
320 5,444,860
375 5,444,859

700 5,444,861
823 5,444,852
825 5,444,854

CLASS 400

120.01 5,443,318
120.17 Re.35,026
250 5,443,319
715 5,443,320

CLASS 401

28 5,443,321
151 5,443,322

CLASS 402

289 5,443,323

CLASS 404

6 5,443,324
75 5,443,325

CLASS 405

25 5,443,326
118 5,443,327
169 5,443,328
224.2 5,443,330
239.1 5,443,331
259.6 5,443,332

CLASS 406

88 5,443,333

CLASS 407

113 5,443,334
5,443,335

CLASS 408

61 5,443,336
145 5,443,337
199 5,443,585

CLASS 409

7 5,443,338
81 5,443,339
233 5,443,340

CLASS 410

116 5,443,341
143 5,443,586
151 5,443,342

CLASS 411

30 5,443,343
43 5,443,344
441 5,443,345

CLASS 414

222 5,443,346
412 5,443,347
416 5,443,348
490 5,443,349
495 5,443,350
523 5,443,351
526 5,443,352
5,443,588
537 5,443,353
729 5,443,354
786 5,443,355
790.3 5,443,356
792.9 5,443,357
796.9 5,443,358
798.9 5,443,359
799 5,443,360

CLASS 415

3.1 5,443,361
134 5,443,589
186 5,443,362
211.1 5,443,363
214.1 5,443,364

CLASS 416

128 5,443,590
193 A 5,443,365
221 5,443,366
248 5,443,367

CLASS 417

27 5,443,368
53 5,443,369
222.1 5,443,587
238 5,443,370
312 5,443,371
319 5,443,372

CLASS 418

55.1 5,443,374
61.3 5,443,375
63 5,443,376

CLASS 419

2 5,443,510
9 5,443,786
32 5,443,787
65 5,443,788

CLASS 420

443 5,443,789

CLASS 422

63 5,443,790
65 5,443,791
67 5,443,792
83 5,443,793
84 5,443,794
90 5,443,795
129 5,443,796
5,443,798
133 5,443,797
186.16 5,443,800
231 5,443,799
294 5,443,801
298 5,443,802

CLASS 423

213.2 5,443,803
230 5,443,804
235 5,443,805
237 5,443,806
247 5,443,807
309 5,443,808
592 5,443,809
593 5,443,810
616 5,443,811
700 5,443,812

CLASS 434

1.17 5,443,813
1.41 5,443,815
1.49 5,443,953
1.69 5,443,816
9.45 5,443,814
47 5,443,817
59 5,443,818
5,443,819
5,443,820
65 5,443,821
5,443,822
70.1 5,443,823
78.02 5,443,824
78.03 5,443,760
85.1 5,443,825
91.3 5,443,826
133.1 5,443,827
141 5,444,153
186.1 5,443,828
195.1 5,443,829
5,443,830
199.1 5,443,831
278.1 5,443,832
400 5,443,833
401 5,443,834
5,443,855
407 5,443,835
423 5,443,836
5,443,837
439 5,443,838
450 5,443,839
5,443,840
451 5,443,841
456 5,443,842
464 5,443,843
484 5,443,844
490 5,443,845
498 5,443,846
639 5,443,847
643 5,443,848
667 5,443,849
682 5,443,850

CLASS 425

11 5,443,377
130 5,443,378
335 5,443,379
549 5,443,381

CLASS 426

88 5,443,851
92 5,443,852
107 5,443,853
231 5,443,854
513 5,443,856
522 5,443,857
618 5,443,858

CLASS 427

122 5,443,859
248.1 5,443,860
249 5,443,861
304 5,443,865
526 5,443,862
579 5,443,863

CLASS 428

1 5,443,864
13 5,443,869
17 5,443,870
35.7 5,443,866
5,443,867
5,443,868
36.5 5,443,872
36.7 5,443,874
40 5,443,875
5,443,876
43 5,443,877
54 5,443,871
60 5,443,878
65.7 5,443,879
78 5,443,880
93 5,443,881
103 5,443,882
5,443,883
116 5,443,884
121 5,443,885
131 5,443,886
137 5,443,887
143 5,443,888
167 5,443,890
172 5,443,889
182 5,443,891
198 5,443,893
213 5,443,894
216 5,443,892
220 5,443,895
237 5,443,897
267 5,443,896
286 5,443,898
288 5,443,899
332 5,443,900
336 5,443,901
340 5,443,902
355 5,443,903
364 5,443,904
368 5,443,905
370 5,443,906
375 5,443,907
380 5,443,455
402.21 5,443,909
402.24 5,443,908
407 5,443,910
413 5,443,911
425.6 5,443,912
425.9 5,443,913
447 5,443,914
461 5,443,915
476.1 5,443,923
539.5 5,443,916
545 5,443,917
603 5,443,918
687 5,443,919
5,443,920
690 5,443,921
5,443,922

CLASS 429

65 5,443,924
5,443,925
5,443,926
120 5,443,600
134 5,443,927
215 5,443,928
218 5,443,929
224 5,443,930

CLASS 430

7.9 5,443,958
13 5,443,959
5,443,960
27 5,443,961
29 5,443,962
34 5,443,963
69.1 5,443,964
69.3 5,443,965
5,443,966
70.3 5,443,968
91.32 5,443,969
125 5,443,970
5,443,971
5,443,972
129 5,443,973
172.3 5,443,974
175 5,443,975
178 5,443,976
193 5,443,978
195 5,443,979
198 5,443,980
223 5,443,981
235.1 5,443,982
240.2 5,443,983
5,443,984
240.25 5,443,985
240.27 5,444,156
693 5,443,965

CLASS 436

46 5,443,988
71 5,443,989
74 5,443,990
145 5,443,991

CLASS 437

6 5,443,996
8 5,444,000
10 5,444,001
27 5,444,002
29 5,443,992
31 5,444,003
5,444,004
35 5,444,007
45 5,444,008
51 5,444,009
52 5,444,005
60 5,443,993
5,444,006
5,444,010
5,444,011
5,444,012
5,444,013
62 5,444,014
164 5,443,994
182 5,444,015
184 5,444,016
5,444,017
190 5,444,018
192 5,444,019
195 5,444,020
5,444,021
5,444,022
5,444,023
197 5,443,995
200 5,443,996
5,443,997
207 5,444,025
225 5,443,997
240 5,444,026
241 5,443,998

CLASS 439

35 5,443,389
76.1 5,443,390
84 5,443,391
108 5,443,392
157 5,443,393
5,443,394
159 5,443,395
266 5,443,396
342 5,443,991
369 5,443,397
378 5,443,398
619 5,443,399
650 5,443,400
680 5,443,401
699.2 5,443,402
701 5,443,403
717 5,443,404
851 5,443,592

CLASS 440

12 5,443,405
52 5,443,406
63 5,443,407

CLASS 441

22 5,443,408
64 5,443,393
130 5,443,409

CLASS 445

73 5,443,410

CLASS 451

5 5,443,412
11 5,443,411
5,443,413
5,443,414
28 5,443,415
302 5,443,416
388 5,443,417
540 5,443,418

CLASS 453

17 5,443,419

CLASS 454

256 5,443,420

CLASS 455

54.1 5,444,862
83 5,444,863
84 5,444,864
86 5,444,865
89 5,444,866
5,444,867
5,444,868
5,444,869

CLASS 460

106 5,443,421

CLASS 464

57 5,443,422

CLASS 474

47 5,443,423
135 5,443,424
163 5,443,425

CLASS 475

91 5,443,426
123 5,443,427
163 5,443,428
204 5,443,429
248 5,443,430
249 5,443,431

CLASS 477

98 5,443,594
155 5,443,432
5,443,595

CLASS 482

59 5,443,434
70 5,443,433
74 5,443,435

CLASS 483

9 5,443,436

CLASS 493

359 5,443,437

CLASS 494

84 5,443,438

CLASS 498

172 5,443,329

CLASS 501

135 5,444,027
136 5,444,028

CLASS 502

38 5,444,029
150 5,444,030
180 5,444,031
235 5,444,032
314 5,444,033
347 5,444,034

CLASS 503

201 5,444,035
209 5,444,036
227 5,444,037

CLASS 504

253 5,444,038

CLASS 508

125 5,444,039
238 5,444,040

CLASS 514

2 5,444,041
5,444,042
9 5,444,043
12 5,444,044
5,444,045
5,444,046
16 5,444,047
18 5,444,048
18.1 5,444,049
25 5,444,056
25.6 5,444,050
29 5,444,051
31 5,444,052
52 5,444,053
54 5,444,054
182 5,444,055
210 5,444,057
252 5,444,059
259 5,444,061
260 5,444,062
262 5,444,063
274 5,444,064
293 5,444,065
300 5,444,066
303 5,444,067
5,444,068
5,444,069
306 5,444,070
312 5,444,071
320 5,444,072
333 5,444,073
326 5,444,074
327 5,444,075
352 5,444,076
356 5,444,077
372 5,444,078
374 5,444,079
397 5,444,080
399 5,444,081
409 5,444,082
429 5,444,083
438 5,444,084
443 5,444,085
445 5,444,086
475 5,444,087
526 5,444,088
547 5,444,089
5,444,090
357 5,444,091
360 5,444,092
611 5,444,093
643 5,444,094
654 5,444,095
770 5,444,096

CLASS 515

293 5,444,125

CLASS 521

61 5,444,097
95 5,444,098
129 5,444,099
131 5,444,100
5,444,101
5,444,102

CLASS 522

5 5,444,103
24 5,444,104
40 5,444,105
5,444,106
107 5,444,106
124 5,444,107
455 5,444,108

CLASS 524

91 5,444,109
100 5,444,110
180 5,444,111
272 5,444,112
306 5,444,113
413 5,444,114
437 5,444,115
495 5,444,116
507 5,444,128
590 5,444,117
828 5,444,118

CLASS 525

64 5,444,119
66 5,444,120
89 5,444,121
119 5,444,122
133 5,444,123
166 5,444,124
391 5,444,126
506 5,444,127
528 5,444,129

CLASS 526

67 5,444,130
5,444,131
106 5,444,132
116 5,444,133
159 5,444,134
219.2 5,444,135
262 5,444,136
263 5,444,137
271 5,444,139
346 5,444,140
347 5,444,141
348.3 5,444,145

CLASS 528

49 5,444,146
193 5,444,147
196 5,444,148
353 5,444,142
361 5,444,143
503 5,444,144

CLASS 530

300 5,444,149
5,444,150

324 5,444,151
331 5,444,152
356 5,444,154
388.1 5,444,155
395 5,444,157
5,444,158
412 5,444,159

CLASS 536

3 5,444,160
4.1 5,444,161
7.1 5,444,174
23.5 5,444,164
23.51 5,444,167
23.6 5,444,166

CLASS 540

133 5,444,163

CLASS 548

521 5,444,165

CLASS 568

664 5,444,168
855 5,444,169
861 5,444,170

CLASS 570

177 5,444,171

CLASS 585

452 5,444,172
671 5,444,173
714 5,444,175
809 5,444,176

CLASS 600

133 5,443,057
188 5,443,058

CLASS 601

90 5,443,439
152 5,443,440

CLASS 602

26 5,443,444

CLASS 604

20 5,443,441
5,443,442
B1 4,752,285

CLASS 606

22 5,443,443
27 5,443,445
49 5,443,446
96 5,443,447
5,443,448
105 5,443,449
141 5,443,450
153 5,443,431
164 5,443,484
167 5,443,452
248 5,443,453
264 5,443,454
280 5,443,456
5,443,457

CLASS 607

282 5,443,460
891.1 5,443,458
892.1 5,443,459
5,443,461

CLASS 606

34 5,443,462
51 5,443,463
54 5,443,464
59 5,443,465
62 5,443,466
65 5,443,467
74 5,443,483
80 5,443,468
86 5,443,469
99 5,443,471
114 5,443,472
166 5,443,473
167 5,443,474
170 5,443,475
174 5,443,476
198 5,443,477
200 5,443,478
205 5,443,479
207 5,443,480
213 5,443,481
232 5,443,482

CLASS 607

5 5,443,490
28 5,443,485
59 5,443,486
98 5,443,470
101 5,443,487
104 5,443,488
115 5,443,489
122 5,443,491
131 5,443,492
137 5,443,493
149 5,443,494

CLASS 623

1 5,443,495
5,443,496
5,443,497
5,443,498
5,443,499
5,443,500
2 5,443,501
5,443,502
3 5,443,503
5,443,504
4 5,443,505
6 5,443,506
5,443,507
11 5,443,508
16 5,443,509
5,443,511
5,443,512
5,443,513
17 5,443,514
5,443,515
18 5,443,516
20 5,443,518
22 5,443,519
5,443,520
23 5,443,521
24 5,443,524
25 5,443,525
38 5,443,526
44 5,443,521
49 5,443,522
5,443,527
52 5,443,528
106 5,443,529
59 5,443,530
66 5,443,531

CLASS 868

200 5,444,177
5,444,178
5,444,179

CLASSIFICATION OF DESIGNS

D2— 910 361,423
914 361,424
969 361,425
970 361,426
D3— 203 361,432
254 361,427
267 361,428
294 361,429
297 361,430
304 361,431
D4— 101 361,433
120 361,434
132 361,435
D6— 336 361,437
367 361,438
368 361,439
373 361,440
374 361,441
381 361,442
425 361,443
D8— 8 361,481
415 361,444
10 361,482
440 361,445
13 361,483
445 361,446
25 361,484
462 361,447
29 361,485
361,448
50 361,486
361,449
70 361,487
466 361,450
361,451
467 361,452
474 361,453
361,454
476 361,455
479 361,456
480 361,457
361,458
487 361,459
549 361,460
556 361,461
D7— 334 361,466
361,467
361 361,468
392.1 361,469
393 361,470
504 361,471
505 361,472
508 361,473
612 361,474
620 361,475
625 361,476
667 361,477
679 361,478
680 361,479
681 361,480
361,481
18 361,519
21 361,520
30 361,521
361,522
12 361,523
361,524
307 361,490
308 361,488
310 361,491
361,492
361,493
361,494
316 361,436
317 361,496
361,497
361,498
D9— 337 361,507
341 361,508
347 361,509
415 361,510
425 361,511
440 361,512
453 361,513
456 361,514
522 361,515
D10— 6 361,516
361,517
361,518
18 361,519
21 361,520
30 361,521
361,522
12 361,523
361,524
33 361,525
34 361,526
39 361,527
361,528
361,529
361,530
40 361,531
46.3 361,532
64 361,533
96 361,534
106 361,535
120 361,536
D12— 126 361,537
115 361,539
133 361,540
162 361,541
167 361,542
182 361,543
187 361,544
189 361,546
211 361,547
407 361,548
D13— 110 361,538
118 361,549
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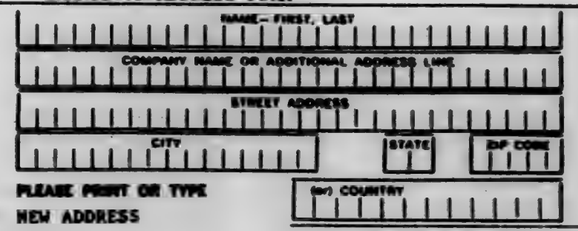
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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

August 29, 1995 Volume 1177 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1175 O.G. 52, on June 20, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1174 O.G. 57, on May 9, 1995.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective June 20, 1995, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1722.00
International fees	
Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

May 30, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 25, 1995 for which maintenance fees due at 3 years

and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,140,707 through 5,142,701
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 23, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,764,985 through 4,766,607
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 21, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,466,135 through 4,467,474
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 21, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,178	07/250,334	03/13/90
(4,673,190)	(06/795,515)	(06/16/87)
Re. 33,883	07/367,300	04/14/92
(4,673,973)	(06/697,930)	(06/16/87)
Re. 34,079	07/735,396	09/29/92
(5,024,205)	(07/502,410)	(06/18/91)
Re. 34,252	07/813,827	05/18/93
(5,024,195)	(07/536,016)	(06/18/91)
4,388,736	06/270,368	06/21/83
4,388,749	06/346,734	06/21/83
4,388,750	06/224,753	06/21/83
4,388,765	06/313,297	06/21/83
4,388,767	06/243,700	06/21/83
4,388,781	06/304,218	06/21/83
4,388,782	06/258,068	06/21/83
4,388,787	06/274,299	06/21/83
4,388,798	06/271,943	06/21/83
4,388,800	06/337,891	06/21/83
4,388,803	06/281,875	06/21/83
4,388,807	06/247,436	06/21/83
4,388,814	06/362,486	06/21/83
4,388,816	06/226,944	06/21/83
4,388,821	06/240,355	06/21/83
4,388,822	06/283,537	06/21/83
4,388,829	06/308,468	06/21/83
4,388,832	06/279,606	06/21/83
4,388,835	06/289,290	06/21/83
4,388,836	06/228,285	06/21/83
4,388,839	06/287,713	06/21/83
4,388,846	06/319,451	06/21/83
4,388,857	06/247,335	06/21/83
4,388,859	06/232,027	06/21/83
4,388,865	06/242,099	06/21/83
4,388,867	06/246,698	06/21/83
4,388,877	06/280,978	06/21/83
4,388,888	06/257,385	06/21/83
4,388,890	06/216,315	06/21/83
4,388,896	06/291,717	06/21/83
4,388,900	06/293,217	06/21/83
4,388,901	06/284,233	06/21/83
4,388,905	06/280,968	06/21/83
4,388,908	06/311,676	06/21/83
4,388,916	06/307,615	06/21/83
4,388,921	06/266,351	06/21/83
4,388,932	06/221,910	06/21/83
4,388,933	06/277,571	06/21/83
4,388,940	06/246,323	06/21/83
4,388,942	06/225,536	06/21/83
4,388,945	06/336,686	06/21/83
4,388,946	06/255,388	06/21/83
4,388,952	06/225,247	06/21/83
4,388,953	06/222,658	06/21/83
4,388,973	06/249,724	06/21/83
4,388,983	06/342,149	06/21/83
4,388,986	06/252,767	06/21/83

Patent Number	Serial Number	Issue Date
4,388,987	06/240,040	06/21/83
4,388,989	06/286,113	06/21/83
4,388,997	06/255,358	06/21/83
4,389,006	06/308,832	06/21/83
4,389,017	06/254,376	06/21/83
4,389,018	06/243,000	06/21/83
4,389,023	06/265,657	06/21/83
4,389,024	06/319,942	06/21/83
4,389,039	06/299,879	06/21/83
4,389,040	06/387,540	06/21/83
4,389,048	06/329,194	06/21/83
4,389,054	06/287,612	06/21/83
4,389,058	06/254,404	06/21/83
4,389,080	06/283,462	06/21/83
4,389,093	06/246,286	06/21/83
4,389,100	06/358,778	06/21/83
4,389,101	06/239,880	06/21/83
4,389,127	06/273,123	06/21/83
4,389,128	06/290,299	06/21/83
4,389,129	06/275,013	06/21/83
4,389,134	06/231,175	06/21/83
4,389,141	06/221,716	06/21/83
4,389,149	06/287,079	06/21/83
4,389,164	06/278,437	06/21/83
4,389,168	06/248,388	06/21/83
4,389,174	06/222,386	06/21/83
4,389,175	06/263,908	06/21/83
4,389,176	06/334,048	06/21/83
4,389,179	06/325,956	06/21/83
4,389,186	06/240,194	06/21/83
4,389,189	06/288,201	06/21/83
4,389,193	06/335,234	06/21/83
4,389,194	06/341,444	06/21/83
4,389,206	06/243,981	06/21/83
4,389,209	06/332,905	06/21/83
4,389,213	06/371,231	06/21/83
4,389,218	06/302,827	06/21/83
4,389,221	06/401,192	06/21/83
4,389,227	06/225,109	06/21/83
4,389,235	06/346,111	06/21/83
4,389,237	06/304,539	06/21/83
4,389,242	06/359,439	06/21/83
4,389,245	06/311,175	06/21/83
4,389,249	06/370,908	06/21/83
4,389,251	06/225,047	06/21/83
4,389,253	06/315,736	06/21/83
4,389,254	06/258,480	06/21/83
4,389,259	06/257,379	06/21/83
4,389,262	06/221,941	06/21/83
4,389,267	06/381,066	06/21/83
4,389,270	06/218,273	06/21/83
4,389,273	06/283,397	06/21/83
4,389,279	06/391,418	06/21/83
4,389,285	06/390,489	06/21/83
4,389,287	06/336,614	06/21/83
4,389,292	06/270,457	06/21/83
4,389,295	06/375,626	06/21/83
4,389,301	06/314,141	06/21/83
4,389,304	06/258,237	06/21/83
4,389,305	06/258,975	06/21/83
4,389,307	06/275,987	06/21/83
4,389,309	06/317,536	06/21/83
4,389,323	06/316,816	06/21/83
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4,389,357	06/277,724	06/21/83
4,389,364	06/284,829	06/21/83
4,389,365	06/217,522	06/21/83
4,389,366	06/300,935	06/21/83
4,389,374	06/278,772	06/21/83
4,389,375	06/262,017	06/21/83
4,389,383	06/326,915	06/21/83
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4,389,423	06/224,929	06/21/83
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4,389,432	06/386,230	06/21/83
4,389,434	06/348,385	06/21/83
4,389,440	06/346,574	06/21/83
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4,389,448	06/396,458	06/21/83
4,389,459	06/325,691	06/21/83
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4,389,463	06/286,128	06/21/83
4,389,470	06/295,268	06/21/83
4,389,471	06/230,085	06/21/83
4,389,485	06/294,510	06/21/83
4,389,486	06/316,526	06/21/83
4,389,487	06/269,023	06/21/83
4,389,495	06/422,629	06/21/83
4,389,497	06/285,115	06/21/83
4,389,502	06/334,161	06/21/83
4,389,507	06/298,784	06/21/83
4,389,511	06/327,440	06/21/83
4,389,512	06/268,218	06/21/83
4,389,514	06/327,864	06/21/83
4,389,520	06/365,729	06/21/83
4,389,521	06/322,892	06/21/83
4,389,526	06/289,743	06/21/83
4,389,528	06/350,792	06/21/83
4,389,529	06/370,763	06/21/83
4,389,531	06/350,936	06/21/83
4,389,533	06/242,101	06/21/83
4,389,541	06/254,496	06/21/83
4,389,542	06/261,151	06/21/83
4,389,548	06/248,330	06/21/83
4,389,557	06/293,112	06/21/83
4,389,559	06/229,275	06/21/83
4,389,560	06/253,034	06/21/83
4,389,572	06/246,872	06/21/83
4,389,573	06/233,858	06/21/83
4,389,574	06/222,110	06/21/83
4,389,576	06/282,786	06/21/83
4,389,580	06/227,476	06/21/83
4,389,590	06/296,402	06/21/83
4,389,592	06/343,149	06/21/83
4,389,593	06/255,121	06/21/83
4,389,599	06/395,654	06/21/83
4,389,606	06/228,643	06/21/83
4,389,608	06/306,987	06/21/83
4,389,613	06/255,979	06/21/83
4,389,618	06/254,353	06/21/83
4,389,627	06/323,074	06/21/83
4,389,629	06/349,815	06/21/83
4,389,631	06/221,749	06/21/83
4,389,637	06/293,194	06/21/83
4,389,638	06/307,057	06/21/83
4,389,643	06/308,498	06/21/83
4,389,647	06/219,455	06/21/83
4,389,653	06/263,564	06/21/83
4,389,663	06/274,260	06/21/83
4,389,664	06/282,730	06/21/83
4,389,673	06/242,120	06/21/83
4,389,676	06/216,338	06/21/83
4,389,684	06/239,889	06/21/83
4,389,691	06/254,694	06/21/83
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4,389,728	06/219,237	06/21/83
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4,672,694	06/893,664	06/16/87
4,672,696	06/839,134	06/16/87

Patent Number	Serial Number	Issue Date
4,672,698	06/826,984	06/16/87
4,672,705	06/657,900	06/16/87
4,672,706	06/813,748	06/16/87
4,672,708	06/836,836	06/16/87
4,672,710	06/767,004	06/16/87
4,672,720	06/846,031	06/16/87
4,672,721	06/865,057	06/16/87
4,672,722	06/856,466	06/16/87
4,672,730	06/882,790	06/16/87
4,672,731	06/920,460	06/16/87
4,672,740	06/644,962	06/16/87
4,672,743	06/906,987	06/16/87
4,672,745	06/720,855	06/16/87
4,672,747	06/806,486	06/16/87
4,672,748	06/837,651	06/16/87
4,672,750	06/891,066	06/16/87
4,672,752	06/856,395	06/16/87
4,672,762	06/728,584	06/16/87
4,672,766	06/835,104	06/16/87
4,672,767	06/630,854	06/16/87
4,672,772	06/909,771	06/16/87
4,672,777	06/836,847	06/16/87
4,672,778	06/837,655	06/16/87
4,672,780	06/647,017	06/16/87
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4,672,808	06/873,183	06/16/87
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5,024,108	07/458,091	06/18/91
5,024,112	07/378,236	06/18/91
5,024,115	07/511,624	06/18/91
5,024,121	07/597,018	06/18/91
5,024,136	07/497,359	06/18/91
5,024,139	07/523,481	06/18/91
5,024,147	07/213,812	06/18/91
5,024,149	07/335,956	06/18/91
5,024,150	07/349,042	06/18/91
5,024,156	06/915,312	06/18/91
5,024,158	07/524,475	06/18/91
5,024,159	07/049,547	06/18/91
5,024,163	07/488,666	06/18/91
5,024,165	07/419,675	06/18/91
5,024,166	07/389,777	06/18/91
5,024,167	07/350,812	06/18/91
5,024,168	07/532,011	06/18/91
5,024,180	07/488,936	06/18/91
5,024,206	07/285,652	06/18/91

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5,024,207	07/581,161	06/18/91
5,024,208	07/605,081	06/18/91
5,024,214	07/350,330	06/18/91
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5,024,245	07/448,238	06/18/91
5,024,246	07/462,599	06/18/91
5,024,247	07/512,437	06/18/91
5,024,250	07/462,407	06/18/91
5,024,254	07/453,029	06/18/91
5,024,256	07/502,711	06/18/91
5,024,259	07/447,835	06/18/91
5,024,270	07/412,655	06/18/91
5,024,277	07/475,689	06/18/91
5,024,283	07/475,819	06/18/91
5,024,291	07/428,899	06/18/91
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5,024,298	07/353,040	06/18/91
5,024,300	07/353,412	06/18/91
5,024,303	07/428,919	06/18/91
5,024,304	07/450,129	06/18/91
5,024,315	07/223,454	06/18/91
5,024,324	07/577,146	06/18/91
5,024,325	07/465,854	06/18/91
5,024,335	07/278,329	06/18/91
5,024,337	07/375,276	06/18/91
5,024,339	07/484,092	06/18/91
5,024,341	07/514,007	06/18/91
5,024,350	07/462,836	06/18/91
5,024,353	07/448,339	06/18/91
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5,024,364	07/308,920	06/18/91
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5,024,368	07/553,321	06/18/91
5,024,372	07/520,995	06/18/91
5,024,373	07/495,423	06/18/91
5,024,375	07/495,109	06/18/91
5,024,381	07/321,853	06/18/91
5,024,383	07/405,312	06/18/91
5,024,384	07/437,073	06/18/91
5,024,397	07/479,771	06/18/91
5,024,402	07/524,336	06/18/91
5,024,403	07/481,905	06/18/91
5,024,405	07/351,052	06/18/91
5,024,407	07/560,412	06/18/91
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5,024,414	07/484,812	06/18/91
5,024,416	07/370,251	06/18/91
5,024,417	07/501,271	06/18/91
5,024,421	07/520,478	06/18/91
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5,024,526	07/333,392	06/18/91
5,024,536	07/553,238	06/18/91
5,024,545	07/442,307	06/18/91
5,024,546	07/111,293	06/18/91
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5,024,551	07/453,949	06/18/91
5,024,560	07/532,855	06/18/91
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5,024,626	07/649,407	06/18/91
5,024,629	07/425,223	06/18/91
5,024,630	07/530,737	06/18/91
5,024,632	07/435,715	06/18/91
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5,024,675	07/341,099	06/18/91
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5,024,701	07/291,412	06/18/91
5,024,703	07/382,241	06/18/91
5,024,704	07/521,356	06/18/91
5,024,705	07/521,837	06/18/91
5,024,707	07/369,743	06/18/91
5,024,713	07/406,765	06/18/91
5,024,730	07/534,808	06/18/91
5,024,732	07/241,595	06/18/91
5,024,734	07/457,421	06/18/91
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5,024,765	07/416,224	06/18/91
5,024,770	07/219,275	06/18/91
5,024,778	06/645,463	06/18/91
5,024,780	07/400,564	06/18/91
5,024,781	07/435,923	06/18/91
5,024,786	07/263,665	06/18/91
5,024,789	07/368,016	06/18/91
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5,024,796	07/295,970	06/18/91
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5,024,812	07/547,034	06/18/91
5,024,828	07/007,648	06/18/91
5,024,845	07/337,587	06/18/91
5,024,846	07/561,477	06/18/91
5,024,849	07/517,130	06/18/91
5,024,860	07/356,183	06/18/91
5,024,862	07/587,604	06/18/91
5,024,876	07/486,563	06/18/91
5,024,879	07/453,173	06/18/91
5,024,881	07/346,058	06/18/91
5,024,900	07/599,152	06/18/91
5,024,916	07/587,293	06/18/91
5,024,919	07/271,301	06/18/91
5,024,928	07/381,098	06/18/91
5,024,930	07/523,876	06/18/91
5,024,943	06/927,249	06/18/91
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5,024,946	06/912,106	06/18/91
5,024,950	07/460,417	06/18/91
5,024,952	07/371,112	06/18/91
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5,024,980	07/049,985	06/18/91
5,024,983	07/323,718	06/18/91
5,024,987	07/438,921	06/18/91
5,024,989	07/514,169	06/18/91
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5,024,993	07/518,004	06/18/91
5,024,994	07/233,320	06/18/91
5,025,002	07/238,722	06/18/91
5,025,006	07/543,946	06/18/91
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5,025,013	07/465,330	06/18/91
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5,025,016	07/248,927	06/18/91
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5,025,023	07/414,357	06/18/91
5,025,026	07/400,118	06/18/91
5,025,030	07/376,721	06/18/91
5,025,034	07/476,562	06/18/91
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5,025,041	07/366,900	06/18/91
5,025,044	07/586,855	06/18/91
5,025,047	07/615,267	06/18/91
5,025,050	07/494,398	06/18/91
5,025,051	07/446,891	06/18/91
5,025,062	07/518,337	06/18/91
5,025,064	07/547,273	06/18/91
5,025,068	07/150,002	06/18/91
5,025,079	07/377,507	06/18/91
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5,025,096	06/768,461	06/18/91
5,025,097	07/424,556	06/18/91
5,025,102	07/553,835	06/18/91
5,025,109	07/459,221	06/18/91
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5,025,112	07/580,035	06/18/91
5,025,116	07/470,881	06/18/91
5,025,119	07/513,460	06/18/91
5,025,120	07/293,937	06/18/91
5,025,123	07/630,802	06/18/91
5,025,129	07/368,456	06/18/91
5,025,130	07/448,346	06/18/91
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5,025,190	07/139,396	06/18/91
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5,025,198	07/506,676	06/18/91
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5,025,212	07/407,589	06/18/91
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5,025,233	07/331,555	06/18/91
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5,025,253	07/416,387	06/18/91
5,025,255	07/407,315	06/18/91
5,025,264	07/482,525	06/18/91
5,025,275	07/537,116	06/18/91
5,025,286	07/373,989	06/18/91
5,025,288	07/429,650	06/18/91
5,025,304	07/277,607	06/18/91
5,025,320	07/404,077	06/18/91
5,025,328	07/321,068	06/18/91
5,025,346	07/312,642	06/18/91
5,025,351	07/493,633	06/18/91
5,025,353	07/492,074	06/18/91
5,025,354	07/531,875	06/18/91
5,025,360	07/453,751	06/18/91
5,025,361	07/390,475	06/18/91
5,025,362	07/216,541	06/18/91
5,025,363	07/320,091	06/18/91
5,025,369	07/236,493	06/18/91
5,025,382	07/448,965	06/18/91
5,025,392	07/529,879	06/18/91
5,025,408	07/387,601	06/18/91
5,025,416	07/360,173	06/18/91
5,025,421	07/459,887	06/18/91
5,025,428	07/628,102	06/18/91
5,025,439	07/236,913	06/18/91
5,025,446	07/300,389	06/18/91
5,025,453	07/450,191	06/18/91
5,025,463	07/540,601	06/18/91
5,025,464	07/498,249	06/18/91
5,025,467	07/151,977	06/18/91
5,025,471	07/389,682	06/18/91
5,025,473	07/399,236	06/18/91
5,025,491	07/427,976	06/18/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,185,092, Re. S.N. 08/385,922, Feb. 9, 1995, Cl. 252/56, LUBRICATING OIL FOR REFRIGERATOR, Masaki Fukuda, et. al., Owner of Record: *Tosen Corp., Tokyo, Japan,* Attorney or Agent: Barry E. Bretschneider, Ex. Gp.: 1111

5,193,084, Re. S.N. 08/353,968, Dec. 9, 1994, Cl. 348/413, SYSTEMS AND METHODS FOR CODING EVEN FIELDS OF INTERLACED VIDEO SEQUENCES, Feng Ming Wang, el. al., Owner of Record: *Trustees of Columbia University, Morningside Heights, N.Y.,* Attorney or Agent: Henry Y.S. Tang, Ex. Gp.: 2615

5,197,061, Re. S.N. 08/409,499, Mar. 23, 1995, Cl. 370/11, DEVICE FOR THE TRANSMISSION OF DIGITAL DATA WITH AT LEAST TWO LEVELS OF PROTECTION AND CORRESPONDING RECEPTION DEVICES, Roselyn Halbert Lassalle, et. al., Owner of Record: *Telediffusion De France S.A., Montrouge Cedex, France,* Attorney or Agent: A. James Richardson, Ex. Gp.: 2603

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,553,314, Reexam. No. 90/003,874, July 5, 1995, Cl. 437/193, METHOD FOR MAKING A SEMICONDUCTOR DEVICE, Tsiu C. Chan, et. al., Owner of Record: *SGS-Thompson Microelectronics, Carrollton, Tex.,* Attorney or Agent: Kenneth L. Cage, Willian Brinks Hofer Gilson & Lione, Washington, D.C., Ex. Gp.: 1104, Requester: International Rectifier Corp., El Segundo, Calif., c/o Samuel H. Weiner Ostrolenk Faber Gerb & Soffen, New York, N.Y.

4,890,605, Reexam. No. 90/003,872, July 7, 1995, Cl. 607/015, PACEMAKER FOR DETECTING AND TERMINATING A TACHYCARDIA, Benjamin D. Pless, et. al., Owner of Record: *Intermedics, Inc., Angleton, Tex.,* Attorney or Agent: John R. Merkling, Angleton, Tex., Ex. Gp.: 3305, Requester: Steven M. Mitchell, Ventritex, Inc., Sunnyvale, Calif.

4,993,171, Reexam. No. 90/003,871, June 23, 1995, Cl. 034/092, COVERING FOR A HYDRAULIC RAM OF A FREEZE DRYER, Ernesto Renzi, Owner of Record: *The BOC Group, New Providence, N.J.,* Attorney or Agent: David M. Rosenblum, New Providence, N.J., Ex. Gp.: 3404, Requester: Hull Corp., c/o Oliver D. Olson, Olson & Olson, Portland, Oreg.

5,074,991, Reexam. No. 90/003,873, June 23, 1995, Cl. 208/236, SUPPRESSION OF THE EVOLUTION OF HYDROGEN SULFIDE GASSES, Jerry J. Weers, Owner of Record: *Petrolite Corp., St. Louis, Mo.,* Attorney or Agent: Kenneth Solomon, Petrolite Corp., St. Louis, Mo., Ex. Gp.: 1106, Requester: Arnold, White & Dunkee, Houston, Tex.

5,124,395, Reexam. No. 90/003,875, July 6, 1995, Cl. 527/166, NON-OZONE DEPLETING, NON-FLAMMABLE TIRE SEALER AND INFLATER COMPOSITION, Horst Abramowski, et. al., Owner of Record: *Radiator Specialty Corp., Charlotte, N.C.,* Attorney or Agent: Popham Haik Schnobrich & Kaufman, Washington, D.C., Ex. Gp.: 1511, Requester: Penzoil Prod. Co., The Woodlands, Tex.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 12, 1995 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
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43,317	70/043,317	09/06/1904
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316,722	71/351,898	09/04/1934
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594,717	71/658,488	09/07/1954
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594,880	71/596,666	09/07/1954
594,882	71/629,011	09/07/1954
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594,912	71/656,613	09/07/1954
594,930	71/655,502	09/07/1954
594,954	71/634,180	09/07/1954
594,955	71/644,256	09/07/1954
594,956	71/647,100	09/07/1954
594,962	71/638,285	09/07/1954
594,991	71/648,936	09/07/1954
594,998	71/554,170	09/07/1954
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992,235	73/001,185	09/03/1974

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992,240	73/001,126	09/03/1974
992,247	73/002,975	09/03/1974
992,250	73/000,106	09/03/1974
992,251	73/001,320	09/03/1974
992,259	73/003,637	09/03/1974
992,264	72/449,868	09/03/1974
992,265	72/453,083	09/03/1974
992,266	72/453,587	09/03/1974
992,273	72/405,879	09/03/1974
992,275	72/456,228	09/03/1974
992,276	72/356,301	09/03/1974
992,277	72/373,972	09/03/1974
992,283	72/448,078	09/03/1974
992,286	72/449,321	09/03/1974
992,288	72/451,825	09/03/1974
992,289	72/451,831	09/03/1974
992,291	72/458,799	09/03/1974
992,292	72/458,973	09/03/1974
992,293	72/458,145	09/03/1974
992,295	72/445,579	09/03/1974
992,297	72/401,145	09/03/1974
992,298	72/404,482	09/03/1974
992,300	72/406,858	09/03/1974
992,301	72/413,644	09/03/1974
992,303	72/416,583	09/03/1974
992,305	72/435,142	09/03/1974
992,308	72/441,332	09/03/1974
992,310	72/449,658	09/03/1974
992,312	72/455,569	09/03/1974
992,317	72/461,887	09/03/1974
992,321	72/425,709	09/03/1974
992,322	72/437,907	09/03/1974
992,333	72/459,701	09/03/1974
992,340	72/458,098	09/03/1974
992,342	72/423,776	09/03/1974
992,343	72/427,290	09/03/1974
992,344	72/427,291	09/03/1974
992,347	72/444,033	09/03/1974
992,349	72/450,238	09/03/1974
992,351	72/358,267	09/03/1974
992,354	72/435,637	09/03/1974
992,361	72/448,012	09/03/1974
992,362	72/448,023	09/03/1974
992,365	72/461,758	09/03/1974
992,367	72/462,457	09/03/1974
992,368	72/463,324	09/03/1974
992,369	72/464,210	09/03/1974
992,373	72/371,405	09/03/1974
992,377	72/407,877	09/03/1974
992,381	72/428,364	09/03/1974
992,387	72/439,837	09/03/1974
992,392	72/445,583	09/03/1974
992,394	72/449,158	09/03/1974
992,396	72/450,963	09/03/1974
992,398	72/454,112	09/03/1974
992,399	72/454,125	09/03/1974
992,405	72/461,966	09/03/1974
992,409	72/464,747	09/03/1974
992,416	72/409,149	09/03/1974
992,419	72/440,614	09/03/1974
992,421	72/445,456	09/03/1974
992,429	72/456,187	09/03/1974
992,434	72/460,888	09/03/1974
992,436	72/462,410	09/03/1974
992,439	72/390,373	09/03/1974
992,441	72/418,303	09/03/1974
992,445	72/429,996	09/03/1974
992,447	72/438,599	09/03/1974
992,451	72/439,784	09/03/1974
992,453	72/441,912	09/03/1974
992,454	72/443,967	09/03/1974
992,455	72/443,975	09/03/1974
992,461	72/451,403	09/03/1974
992,462	72/453,802	09/03/1974
992,463	72/454,140	09/03/1974
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992,469	72/460,624	09/03/1974
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992,476	72/426,706	09/03/1974
992,478	72/436,612	09/03/1974
992,482	72/441,238	09/03/1974
992,484	72/448,931	09/03/1974
992,485	72/450,605	09/03/1974
992,486	72/451,254	09/03/1974
992,487	72/453,045	09/03/1974
992,488	72/453,583	09/03/1974
992,490	72/457,852	09/03/1974
992,495	72/464,563	09/03/1974
992,496	72/464,564	09/03/1974
992,500	72/465,011	09/03/1974
992,501	72/465,185	09/03/1974
992,505	72/465,885	09/03/1974
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992,508	72/466,056	09/03/1974
992,513	72/435,876	09/03/1974
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992,522	72/451,781	09/03/1974
992,524	72/453,467	09/03/1974
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992,548	72/452,748	09/03/1974
992,549	72/452,916	09/03/1974
992,556	72/448,817	09/03/1974
992,558	72/449,304	09/03/1974
992,561	72/453,473	09/03/1974
992,563	72/457,953	09/03/1974
992,569	72/444,070	09/03/1974
992,570	72/444,977	09/03/1974
992,572	72/446,538	09/03/1974
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992,579	72/457,717	09/03/1974
992,582	72/459,905	09/03/1974
992,583	72/465,950	09/03/1974
992,584	72/465,955	09/03/1974
992,586	72/457,093	09/03/1974
992,587	72/446,619	09/03/1974
992,588	72/446,869	09/03/1974
992,590	72/452,529	09/03/1974
992,592	72/455,613	09/03/1974
992,593	72/456,925	09/03/1974
992,594	72/464,713	09/03/1974
992,595	72/461,393	09/03/1974
992,596	72/373,328	09/03/1974
992,597	72/415,762	09/03/1974
992,599	72/428,325	09/03/1974
992,600	72/432,990	09/03/1974
992,604	72/436,945	09/03/1974
992,605	72/442,157	09/03/1974
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992,630	72/416,187	09/03/1974
992,635	72/433,811	09/03/1974
992,636	72/439,904	09/03/1974
992,637	72/447,917	09/03/1974
992,638	72/449,800	09/03/1974
992,643	72/460,868	09/03/1974
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992,663	72/422,160	09/03/1974
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992,678	72/445,875	09/03/1974

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992,682	72/356,302	09/03/1974
992,683	72/444,032	09/03/1974
992,687	72/461,282	09/03/1974
992,688	72/462,157	09/03/1974
992,694	72/430,798	09/03/1974
992,695	72/432,678	09/03/1974
992,696	72/434,191	09/03/1974
992,704	72/447,720	09/03/1974
992,705	72/447,721	09/03/1974
992,706	72/452,174	09/03/1974
992,708	72/455,175	09/03/1974
992,709	72/458,383	09/03/1974
992,710	72/460,853	09/03/1974
992,711	72/462,430	09/03/1974
992,715	72/414,921	09/03/1974
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992,723	72/455,851	09/03/1974
992,727	72/460,507	09/03/1974
992,728	72/460,838	09/03/1974
992,730	72/463,714	09/03/1974
992,734	72/466,475	09/03/1974
992,736	72/426,568	09/03/1974
992,738	72/447,006	09/03/1974
992,741	72/458,496	09/03/1974
992,742	72/461,467	09/03/1974
992,744	72/464,721	09/03/1974
992,745	72/437,353	09/03/1974
992,746	72/440,280	09/03/1974
992,755	72/446,146	09/03/1974
992,761	72/465,936	09/03/1974
992,771	72/438,768	09/03/1974
992,773	72/432,867	09/03/1974
992,779	72/455,793	09/03/1974

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Silver Solarium USA, Inc., South Francisco, Calif., Reg. No. 1,585,498, "SILVER SOLARIUM", Canc. No. 23,046.

Bell Information Services Corporation DBA Metro-Tel, Tacoma, Wash., Reg. No. 1,612,313 for the mark "MINT", Canc. No. 22,907.

Bell Information Services Corporation DBA Metro-Tel, Tacoma, Wash., Reg. No. 1,611,505 for the mark "MINT AND DESIGN", Canc. No. 22,908.

Crossroads of Sports, Inc., Wellesley, Mass., Reg. No. 1,008,077 for the mark "THE CROSSROADS OF SPORTS INC.", Canc. No. 23,148.

Kap & Kor, Inc., New Orleans, La., Reg. No. 384,311 for the mark "PAL CAP", Canc. No. 23,527.

Frank Whittle, White Plains. N.Y., Reg. No. 1,692,710 for the mark "AUDIOFILE", Canc. No. 23,430.

CWC Industries Inc., New York, N.Y., Reg. Nos. 1,117,332 and 1,376,002 for the mark "CENTRAL PARK", Canc. No. 23,429.

Intercapital Organization, Inc. Great Neck, N.Y., Reg. No. 1,588,158, for the mark "INTERCAPITAL AND DESIGN", Canc. No. 23,842.

JEAN BROWN
Administrator
Trademark Trial and
Appeal Board,
for Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Training Materials on the Final Utility Examination Guidelines are Available

Copies of materials developed to train Examiners on how to apply the Final Utility guidelines are now available to the public.

On January 3, 1995 the Patent and Trademark Office (PTO) published in the Federal Register (60 FR 97) proposed utility examination guidelines establishing the policies and procedures to be followed by Examiners when examining applications for compliance with the utility requirement of 35 U.S.C. § 101. Comments from interested members of the public were requested at that time. On July 14, 1995 the PTO published in the Federal Register (60 FR 36263) the final version of the guidelines to be used by Office personnel in their review of patent applications for compliance with the utility requirement of 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph.

Training materials to supplement the Legal Analysis and Utility Examination Guidelines are now available. The training materials include a brief synopsis designed to give quick generic guidance with regard to the most common situations where a question of utility under 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph might arise. Examples which are frequent in the examining groups are presented for each of the six categories identified and have been drafted as raising various questions concerning the utility examination guidelines.

Requests for paper copies submitted by mail should be addressed to the Commissioner of Patents and Trademarks, marked to the attention of Jeff Kushan, Box 4, Patent and Trademark Office, Washington, D.C. 20231. Requests in person may be submitted in Room 902, Two Crystal Park, 2121 Crystal Drive, Arlington, Virginia. Requests may also be submitted by telephone at (703) 305-9300 and by telefax at (703) 305-8885.

The training materials are available for retrieval from the Internet (address: www.uspto.gov) or File Transfer Protocol (address: ftp.uspto.gov). This material can also be accessed on the PTO Bulletin Board System at (703) 305-8950 by using a computer with a modem and telecommunication software set at any speed from 1200 to 9600 baud, 8 character bits, no parity, and 1 start/stop bit.

August 4, 1995

STEPHEN G. KUNIN
Deputy Assistant Commissioner for
Patent Policy and Projects

Department of Commerce
Patent and Trademark Office

37 CFR Parts 1, 2, and 7
[Docket No. 950501124-5185-02]
RIN 0651-AA74

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.
Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent and trademark cases, Parts 1, 2 and 7 of title 37, Code of Federal Regulations, to adjust certain patent and trademark fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation, and is amending the requirements for recording documents on the Government Register. This rule also includes information

relating to the availability of patent and trademark information products provided by the PTO.

Effective Date: October 1, 1995.

For Further Information Contact: Robert Kopson by telephone at (703) 305-8510, fax at (703) 305-8525, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed to adjust PTO fees in accordance with the applicable provisions of title 35, United States Code; section 31 of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113); and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (as amended by section 8001 of Public Law 103-66), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

The cover sheet referenced in 37 CFR 7.1 (c) must be in a format approved by the Office. The Office of Public Records will maintain a list of approved formats that will meet this requirement. Contact the Office of Public Records at (703) 308-9743 regarding specific questions relating to this requirement and to seek approval of additional formats.

BACKGROUND

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and (b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (amended by section 8001 of Public Law 103-66) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and (b) to collect $111 million in fiscal year 1996.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for all other services and materials relating to trademarks and other marks.

Section 31(a) of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113(a)), as amended, allows trademark fees to be adjusted once each year to reflect, in the aggregate, any fluctuations during the preceding 12 months in the CPI.

Section 31 also allows new trademark fee amounts to take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the United States Patent and Trademark Office*.

Recovery Level Determinations

This rule adjusts patent and trademark fees for a planned recovery of $643,014,000 in fiscal year 1996, as proposed in the Administration's budget request to the Congress.

The patent statutory fees established by 35 U.S.C. 41(a) and (b) are being adjusted on October 1, 1995, to reflect any fluctuations occurring during the previous 12 months in the Consumer Price Index (CPI-U). In calculating these fluctuations, the Office of Management and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately 21 days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of May 1995. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the 12-month period ending September 30, 1995, which is 3.2 percent. Based on this projection, patent statutory fees will be adjusted by 3.2 percent. Before the final fee schedule is published, the fees may be slightly adjusted based on actual data available from the Department of Labor.

Certain non-statutory patent processing fees established under 35 U.S.C. 41(d) and PCT processing fees established under 35 U.S.C. 376 are being adjusted to recover their estimated average costs in fiscal year 1996. Three patent service fees that are set by statute will not be adjusted. The three fees that are not being adjusted are assignment recording fees, printed patent copy fees and photocopy charge fees.

Certain trademark service fees established under 15 U.S.C. 1113 are being adjusted to recover their estimated average costs in fiscal year 1996.

The fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to an even number so that the comparable small entity fee would be a whole number.

Workload Projections

Determination of workloads varies by fee. Principal workload projection techniques are as follows:

Patent application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an in-house patent production model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 79 percent, 55 percent and 32 percent, respectively. Service fee workloads follow linear trends from prior years' activities.

General Procedures

Any fee amount that is paid on or after the effective date of the fee increase would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 1.8 is not "proper" for items which are specifically excluded from the provisions of Section 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing or Transmission is not "proper." Such items include, inter alia, the filing of national and international applications for patents and the filing of trademark applications. However, the provisions of 37 CFR 1.10 relating to filing papers and fees with an "Express Mail" certificate do apply to any paper or fee (including patent and trademark applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a proper certificate dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

A notice of final rulemaking was published at 60 FR 20195 (April 25, 1995) wherein several new fee provisions were made to implement the 20-year patent term and provisional applications. Language changes were made in 37 CFR 1.16(a), (b), (d), (f), and (g) which are reproduced in this final rule package. In addition, fees involving 37 CFR 1.17(r) and (s) are being adjusted by changes in the CPI to remain equal to the basic filing fee for a utility patent application.

PTO Information Dissemination Products

The PTO provides information to the public in the Patent Search Room and the Trademark Search Library in Arlington, Virginia, and at 78 Patent and Trademark Depository Libraries around the country. A list of the libraries is included in each issue of the *Official Gazette of the Patent and Trademark Office*. In addition, a number of patent and trademark search tools and document-delivery products, published on paper and on various machine-readable media, are sold directly to the public.

Printed PTO publications may be ordered from the Government Printing Office (GPO) or one of its Book Stores located throughout the country. A list of patent and trademark-related publications with current prices and ordering information is available from the GPO (Subject Bibliography SB 021).

Superintendent of Documents
P.O. Box 371984
Pittsburgh, Pa. 15250-7954
Voice: 202-512-1800
Fax: 202-512-2250

Machine-readable publications, including magnetic tapes and CD-ROMs, may be ordered directly from the PTO. A printed catalog of machine-readable products, including current prices and ordering information, is available from the Office of Information Products Development.

US Patent and Trademark Office
Office of Information Products Development
Crystal Park 3, Room 412
Washington, D.C. 20231
Voice: 703-308-0322
Fax: 703-308-0493

The catalog of machine-readable products is published in the *Official Gazette of the Patent and Trademark Office* in late December each year and may also be viewed on, or downloaded from, the PTO electronic bulletin board (703-305-8950, 8/no/1) or from the PTO's home page on the Internet (http://www.uspto.gov/).

In order to ensure clarity in the implementation of the new fees, a discussion of specific sections is set forth below.

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a), (b), (d), and (f)-(i), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.16, paragraphs (a), (b), (d), and (g) include language changes relating to provisional patent applications (see 60 FR 20195, dated April 25, 1995).

37 CFR 1.17 *Patent application processing fees.*

Section 1.17, paragraphs (b)-(g) (m), (r), and (s), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.17, paragraphs (j) and (n)-(p), is revised to adjust fees established therein to recover costs.

37 CFR 1.18 *Patent issue fees.*

Section 1.18, paragraphs (a)-(c), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.19 *Document supply fees.*

Section 1.19, paragraphs (a)(1)(ii) and (a)(1)(iii), is revised to amend the language to reflect the PTO's most recent business practices.

Section 1.19, paragraph (b)(1), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.20 *Post-issuance fees.*

Section 1.20, paragraphs (c), (i), and (j), is revised to adjust fees established therein to recover costs.

Section 1.20, paragraphs (e)-(g), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 *Miscellaneous fees and charges.*

Section 1.21, paragraph (a)(1), is revised to adjust fees established therein to recover costs.

37 CFR 1.445 *International application filing, processing, and search fees.*

Section 1.445, paragraph (a), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.482 *International preliminary examination fees.*

Section 1.482, paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.492 *National stage fees.*

Section 1.492, paragraphs (a), (b) and (d), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 2.6 *Trademark fees.*

Section 2.6, paragraphs (b)(1)(ii) and (b)(1)(iii), is revised to amend the language to reflect the PTO's most recent business practices.

Section 2.6, paragraph (b)(2), is revised to adjust fees therein to recover costs.

37 CFR 7.1 Requirements

Section 7.1, is revised to designate the current language as paragraph (a), and to add new paragraphs (b)-(j) to clarify that the requirements for patent and patent application assignment documents, including the requirement for the fee set forth in § 1.21(h), submitted for recording also apply to instruments submitted for recording on the Government Register. Sections 7.1(b)-(d) and (f)-(i) contain language similar to that in §§ 3.21, 3.28, 3.31, 3.34, 3.26, 3.27, and 3.41, respectively.

Section 7.1(b), is added to provide that an instrument relating to a patent must identify the patent by the patent number, that an instrument relating to a national patent application must identify the national patent application by the application number (consisting of the series code and the serial number, e.g., 07/123,456) or the serial number and filing date, that an instrument relating to an international patent application which designates the United States of America must identify the international application by the international application number (e.g., PCT/US90/01234), and that if an assignment is executed concurrently with, or subsequent to, the execution of the patent application, but before the patent application is filed, it must identify the patent application by its date of execution, name of each inventor, and title of the invention so that there can be no mistake as to the patent application intended.

Section 7.1(c), is added to provide that each instrument submitted to the PTO for recording must be accompanied by a cover sheet referring to those patent applications and patents against which the instrument is to be recorded, that one set of instruments and cover sheets to be recorded should be filed, and that if an instrument to be recorded is not accompanied by a completed cover sheet, the instrument and any incomplete cover sheet will be returned for proper completion of a cover sheet and resubmission of the instrument and a completed cover sheet.

Section 7.1(d), is added to provide that each cover sheet must contain: (1) the name of the party conveying the interest; (2) the name and address of the party receiving the interest; (3) a description of the interest conveyed or transaction to be recorded; (4) each application number or patent number against which the instrument is to be recorded, or an indication that the instrument is filed together with a patent application; (5) the name and address of the party to whom correspondence concerning the request to record the instrument should be mailed; (6) the number of applications or patents identified in the cover sheet and the total fee; (7) the date the instrument

was executed; (8) a statement by the party submitting the instrument that to the best of the person's knowledge and belief, the information contained on the cover sheet is true and correct and any copy submitted is a true copy of the original instrument; and (9) the signature of the party submitting the instrument.

Section 7.1(e), is added that each patent cover sheet required by paragraph (c) of this section seeking to record a governmental interest as provided by paragraph (a) of this section must: (1) indicate that the instrument is to be recorded on the governmental register, and, if applicable, that the instrument is to be recorded on the Secret Register. See § 7.7, and (2) indicate, if applicable, that the instrument to be recorded is not an instrument affecting title. See paragraph (j) of this section.

Section 7.1 (f), is added to provide for the correction of errors in the cover sheet. Specifically, § 7.1(e), provides that an error in a cover sheet recorded pursuant to this Part will be corrected only if: (1) the error is apparent when the cover sheet is compared with the recorded instrument to which it pertains, and (2) a corrected cover sheet accompanied by the recording fee set forth in paragraph (i) of this section and either the original recorded instrument or a copy of the original recorded instrument is filed for recordation.

Section 7.1(g), is added to provide that the Office will accept and record non-English language instruments only if accompanied by a verified English translation signed by the individual making the translation.

Section 7.1(h), is added to provide that instruments and cover sheets to be recorded should be addressed to the Commissioner of Patents and Trademarks, Box Assignment, Washington, D.C. 20231.

Section 7.1(i), is added to provide that all requests, except as provided by paragraph (j) of this section, to record instruments must be accompanied by the recording fee set forth in § 1.21(h) of this chapter, and that the fee set forth in § 1.21(h) of this chapter is required for each application and patent against which the instrument is recorded as identified in the cover sheet.

Section 7.1 (j), is added to provide that no fee is required for each patent application and patent against which an instrument required by Executive Order 9424 (3 CFR 1943-1948 Comp.) to be filed if: (1) the instrument does not affect title and is so identified in the cover sheet (see paragraph (e) of this section); and (2) the cover sheet is filed in a format approved by the Office.

Response to Comments on the Rules

A notice of proposed rulemaking to adjust certain patent and trademark fee amounts and to amend the requirements for recording an assignment to apply to documents forwarded for recording on the Government Register was published in the *Federal Register* on May 26, 1995, at 60 FR 27934, and in the *Official Gazette of the United States Patent and Trademark Office* on May 30, 1995, at 1174 OG 134.

A public hearing was held June 29, 1995. Nine comments were received and considered in adopting the rules set forth herein. No oral testimony was presented.

Comments: Two respondents stated that the proposed inflationary increase of patent and trademark fees is unnecessary because the PTO is already operating at a surplus.

Response: Current PTO resources include carryover funds from fiscal year 1994. These carryover funds are partly unobligated balances to be carried forward, but primarily advanced fee payments for work to be done in fiscal year 1995. Furthermore, this carryover includes fee income generated from trademark-related products and services which, according to 35 U.S.C. 42(c), may be used only for trademark-related activities. Therefore, to recover all costs associated with the processing of patent applications, and to remain consistent with the current rate of inflation, the PTO is increasing certain patent fees by 3.2 percent as authorized by 35 U.S.C. 41(f).

In addition, two trademark service fees were proposed to be increased. The adopted fee amounts will recover the average cost of providing the service as authorized by 35 U.S.C. 41(d), and will also remain consistent with the equivalent patent service fee amounts.

Comments: Seven respondents objected to the proposal to amend the requirements for recording an assignment to apply to documents forwarded for recording on the Government Register. The respondents stated that not only are Government agencies required by Executive Order 9424 to forward an assignment to the PTO for recordation, but also the PTO lacks the authority under Title 35 of the United States Code to impose a fee for recording an assignment on the Government Register.

Response: 35 U.S.C. 41(d)(1) provides that the Commissioner shall charge a fee of $40 per property for recording any document affecting title. An assignment is a document affecting title. Therefore, the Office must require a $40 recording fee for recording any assignment, even those being recorded on the Government Register. If a document to be recorded on the Government Register does not affect title and if it is accompanied by the appropriate cover sheet, then no fee is required.

Other Considerations

This final rule change is in conformity with the requirements of Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. This rulemaking contains no information collection within the meaning of the Paperwork Reduction Act. This final rule has been determined not to be significant for purposes of Executive Order 12866.

The PTO has determined that this final rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the final rule change would not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The final rule change increases fees to reflect the change in the CPI as authorized by 35 U.S.C. 41(f). Further, the principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a 50-percent reduction in the major patent fees.

A comparison of existing and new fee amounts is included as an Appendix to this notice of final rulemaking.

Lists of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

37 CFR Part 7

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Chapter 1, Part 1, as set forth below.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a), (b), (d), and (f) through (i), to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except provisional, design or plant applications:

By a small entity (§ 1.9(f)) $375.00
By other than a small entity $750.00

(b) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $39.00
By other than a small entity $78.00

*****

(d) In addition to the basic filing fee in an original application, except provisional applications, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $125.00
By other than a small entity $250.00

(If the additional fees required by paragraphs (b), (c), and (d) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

*****

(f) Basic fee for filing each design application

By a small entity (§ 1.9(f)) $155.00
By other than a small entity $310.00

(g) Basic fee for filing each plant application, except provisional applications:

By a small entity (§ 1.9(f)) $255.00
By other than a small entity $510.00

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f)) $375.00
By other than a small entity $750.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§ 1.9(f)) $39.00
By other than a small entity $78.00

*****

3. Section 1.17 is amended by revising paragraphs (b) through (g), (j), (m) through (p), (r), and (s) to read as follows:

§ 1.17 Patent application processing fees.

*****

(b) Extension fee for response within second month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $190.00
By other than a small entity $380.00

(c) Extension fee for response within third month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $450.00
By other than a small entity $900.00

(d) Extension fee for response within fourth month pursuant to § 1.136(a):

By a small entity (§ 1.9(f)) $700.00
By other than a small entity $1,400.00

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§ 1.9(f)) $145.00
By other than a small entity $290.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§ 1.9 (f)) $145.00
By other than a small entity $290.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:

By a small entity (§ 1.9(f)) $125.00
By other than a small entity $250.00

*****

(j) For filing a petition to institute a public use proceeding under § 1.292 ..... $1,430.00

*****

(m) For filing a petition:

(1) For revival of an unintentionally abandoned application, or

(2) For the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§ 1.9(f)) $625.00
By other than a small entity $1,250.00

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to § 1.104—$870.00 reduced by the amount of the application basic filing fee paid.

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to § 1.104—$1,740.00 reduced by the amount of the application basic filing fee paid.

(p) For submission of an information disclosure statement under § 1.97(c) $220.00

*****

(r) For entry of a submission after final rejection under §1.129(a):

By a small entity (§ 1.9(f)) $375.00
By other than a small entity $750.00

(s) For each additional invention requested to be examined under § 1.129(b):

By a small entity (§ 1.9(f)) $375.00
By other than a small entity $750.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§ 1.9(f)) $625.00
By other than a small entity $1,250.00

(b) Issue fee for issuing a design patent:

By a small entity (§ 1.9(f)) $215.00

By other than a small entity $430.00

(c) Issue fee for issuing a plant patent:

By a small entity (§ 1.9(f)) $315.00
By other than a small entity $630.00

5. Section 1.19 is amended by revising paragraphs (a)(1)(ii), (a)(1)(iii), (b)(1)(i), and (b)(1)(ii) to read as follows:

§ 1.19 Document supply fees.

*****

(a) ***

(1) ***

*****

(ii) Overnight delivery to PTO Box or overnight fax $6.00
(iii) Expedited service for copy ordered by expedited mail or fax delivery service and delivered to the customer within two workdays $25.00

*****

(b) ***

(1) ***

(i) Regular service $15.00
(ii) Expedited regular service $30.00

*****

6. Section 1.20 is amended by revising paragraphs (c), (e) through (g), (i)(1), (i)(2), and (j) to read as follows:

§ 1.20 Post issuance fees.

*****

(c) For filing a request for reexamination (§ 1.510(a)) $2,390.00

*****

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

*****

(i) ***

(1) unavoidable $660.00
(2) unintentional $1,550.00

*****

(j) For filing an application for extension of the term of a patent (§ 1.740) $1,060.00

7. Section 1.21 is amended by revising paragraph (a)(1) to read as follows:

§ 1.21 Miscellaneous fees and charges.

*****

(a) ***

(1) For admission to examination for registration to practice: fee payable upon application $310.00

*****

8. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) $220.00
(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with basic filing fee has been filed $660.00
(ii) A corresponding prior United States national application with basic filing fee has been filed $430.00

(3) A supplemental search fee when required, per additional invention $190.00

*****

9. Section 1.482 is amended by revising paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

(a) ***

(1) A preliminary examination fee is due on filing the Demand:

(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of $470.00
(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of $710.00

(2) ***

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office $250.00

*****

10. Section 1.492 is amended by revising paragraphs (a), (b), and (d) to read as follows:

§ 1.492 National stage fees.

*****

(a) The basic national fee:

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $340.00
By other than a small entity $680.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f)) $375.00
By other than a small entity $750.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $505.00
By other than a small entity $1,010.00

(4) Where an international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f)) $47.00
By other than a small entity $94.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:

By a small entity (§ 1.9(f)) $440.00
By other than a small entity $880.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $39.00
By other than a small entity $78.00

*****

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $125.00
By other than a small entity $250.00

*****

Part 2 - Rules of Practice in Trademark Cases

1. The authority citation for 37 CFR Part 2 would continue to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is amended by revising paragraphs (b)(1)(ii), (b)(1)(iii), (b)(2)(i), and (b)(2)(ii) to read as follows:

§ 2.6 Trademark fees.

*****

(b) ***

(1) ***

*****

(ii) Overnight delivery to PTO Box or overnight fax $6.00
(iii) Expedited service for copy ordered by expedited mail or fax delivery service and delivered to the customer within two work days $25.00

*****

(2) ***

(i) Regular service $15.00
(ii) Expedited local service $30.00

*****

Part 7 - Register of Government Interests in Patents

1. The authority citation for 37 CFR Part 7 would continue to read as follows:

Authority: E.O. 9424, February 18, 1944, 9 FR 1959; 3 CFR 1943-1948 Comp.

2. Section 7.1 is revised to read as follows:

a) Executive Order 9424 (3 CFR 1943-1948 Comp.) requires the several departments and other executive agencies of the Government, including Government-owned or Government-controlled corporations, to forward promptly to the Commissioner of Patents and Trademarks for recording all licenses, assignments, or other interests of the Government in or under patents or applications for patents.

(b) An instrument relating to a patent must identify the patent by the patent number. An instrument relating to a national patent application must identify the national patent application by the application number (consisting of the series code and the serial number, *e.g.*, 07/123,456) or the serial number and filing date. An instrument relating to an international patent application which designates the United States of America must identify the international application by the international application number (*e.g.*, PCT/US90/01234). If an assignment is executed concurrently with, or subsequent to, the execution of the patent application, but before the patent application is filed, it must identify the patent application by its date of execution, name of each inventor, and title of the invention so that there can be no mistake as to the patent application intended.

(c) Each instrument submitted to the Office for recording must be accompanied by at least one cover sheet as specified in paragraph (d) of this section referring to those patent applications and patents against which the instrument is to be recorded. Only one set of instruments and cover sheets to be recorded should be filed. If an instrument to be recorded is not accompanied by a completed cover sheet, the instrument and any incomplete cover sheet will be returned for proper completion of a cover sheet and resubmission of the instrument and a completed cover sheet.

(d) Each cover sheet required by paragraph (c) of this section must contain:

(1) the name of the party conveying the interest;
(2) the name and address of the party receiving the interest;
(3) a description of the interest conveyed or transaction to be recorded;
(4) each application number or patent number against which the instrument is to be recorded, or an indication that the instrument is filed together with a patent application;

(5) the name and address of the party to whom correspondence concerning the request to record the instrument should be mailed;
(6) the number of applications or patents identified in the cover sheet and the total fee;
(7) the date the instrument was executed;
(8) a statement by the party submitting the instrument that to the best of the person's knowledge and belief, the information contained on the cover sheet is true and correct and any copy submitted is a true copy of the original instrument; and
(9) the signature of the party submitting the instrument.

(e) Each patent cover sheet required by paragraph (c) of this section seeking to record a governmental interest as provided by paragraph (a) of this section must:

(1) indicate that the instrument is to be recorded on the governmental register, and, if applicable, that the instrument is to be recorded on the Secret Register. See § 7.7.
(2) indicate, if applicable, that the instrument to be recorded is not an instrument affecting title. See paragraph (j) of this section.

(f) An error in a cover sheet recorded pursuant to this Part will be corrected only if:

(1) the error is apparent when the cover sheet is compared with the recorded instrument to which it pertains, and
(2) a corrected cover sheet accompanied by the recording fee set forth in paragraph (i) of this section and either the original recorded instrument or a copy of the original recorded instrument is filed for recordation.

(g) The Office will accept and record non-English language instruments only if accompanied by a verified English translation signed by the individual making the translation.

(h) Instruments and cover sheets to be recorded should be addressed to the Commissioner of Patents and Trademarks, Box Assignment, Washington, D.C. 20231.

(i) All requests to record instruments must be accompanied by the appropriate fee. Except as provided in paragraph (j) of this section, a recording fee set forth in § 1.21(h) of this chapter fee is required for each application and patent against which the instrument is recorded as identified in the cover sheet.

(j) No fee is required for each patent application and patent against which an instrument required by Executive Order 9424 (3 CFR 1943 - 1948 Comp.) to be filed if:

(1) the instrument does not affect title and is so identified in the cover sheet (see paragraph (e) of this section); and
(2) the cover sheet is filed in a format approved by the Office.

August 4, 1995

BRUCE A. LEHMAN
Secretary of Commerce and
Commissioner of Patents and Trademarks

NOTE- The following appendix will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995
1.16(a)	Basic Filing Fee	$730	$750
1.16(a)	Basic Filing Fee (Small Entity)	$365	$375
1.16(b)	Independent Claims	$76	$78
1.16(b)	Independent Claims (Small Entity)	$38	$39
1.16(c)	Claims in Excess of 20	$22	—
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	—
1.16(d)	Multiple Dependent Claims	$240	$250
1.16(d)	Multiple Dependent Claims (Small Entity)	$120	$125
1.16(e)	Surcharge - Late Filing Fee	$130	—
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	—
1.16(f)	Design Filing Fee	$300	$310
1.16(f)	Design Filing Fee (Small Entity)	$150	$155
1.16(g)	Plant Filing Fee	$490	$510
1.16(g)	Plant Filing Fee (Small Entity)	$245	$255
1.16(h)	Reissue Filing Fee	$730	$750
1.16(h)	Reissue Filing Fee (Small Entity)	$365	$375
1.16(i)	Reissue Independent Claims	$76	$78
1.16(i)	Reissue Independent Claims (Small Entity)	$38	$39
1.16(j)	Reissue Claims in Excess of 20	$22	—
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	—
1.16(k)	Provisional Application Filing Fee	$150	—
1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	—
1.17(a)	Extension - First Month	$110	—
1.17(a)	Extension - First Month (Small Entity)	$55	—
1.17(b)	Extension - Second Month	$370	$380
1.17(b)	Extension - Second Month (Small Entity)	$185	$190
1.17(c)	Extension - Third Month	$870	$900
1.17(c)	Extension - Third Month (Small Entity)	$435	$450
1.17(d)	Extension - Fourth Month	$1,360	$1,400
1.17(d)	Extension - Fourth Month (Small Entity)	$680	$700
1.17(e)	Notice of Appeal	$280	$290
1.17(e)	Notice of Appeal (Small Entity)	$140	$145
1.17(f)	Filing a Brief	$280	$290
1.17(f)	Filing a Brief (Small Entity)	$140	$145
1.17(g)	Request for Oral Hearing	$240	$250
1.17(g)	Request for Oral Hearing (Small Entity)	$120	$125
1.17(h)	Petition - Not All Inventors	$130	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995
1.17(h)	Petition - Correction of Inventorship	$130	—
1.17(h)	Petition - Decision on Questions	$130	—
1.17(h)	Petition - Suspend Rules	$130	—
1.17(h)	Petition - Expedited Licensee	$130	—
1.17(h)	Petition - Scope of License	$130	—
1.17(h)	Petition - Retroactive License	$130	—
1.17(h)	Petition - Refusing Maintenance Fee	$130	—
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	—
1.17(h)	Petition - Interference	$130	—
1.17(h)	Petition - Reconsider Interference	$130	—
1.17(h)	Petition - Late Filing of Interference	$130	—
1.20(b)	Petition - Correction of Inventorship	$130	—
1.17(h)	Petition - Refusal to Publish SIR	$130	—
1.17(i)	Petition - For Assignment	$130	—
1.17(i)	Petition - For Application	$130	—
1.17(i)	Petition - Late Priority Papers	$130	—
1.17(i)	Petition - Suspend Action	$130	—
1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	—
1.17(i)	Petition - For Interference Agreement	$130	—
1.17(i)	Petition - Amendment After Issue	$130	—
1.17(i)	Petition - Withdrawal After Issue	$130	—
1.17(i)	Petition - Defer Issue	$130	—
1.17(i)	Petition - Issue to Assignee	$130	—
1.17(i)	Petition - Accord a Filing Date Under § 1.53	$130	—
1.17(i)	Petition - Accord a Filing Date Under § 1.62	$130	—
1.17(i)	Petition - Make Application Special	$130	—
1.17(j)	Petition - Public Use Proceeding	$130	—
1.17(k)	Non-English Specification	$1,390	$1,430
1.17(l)	Petition - Revive Abandoned Appl.	$130	—
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$110	—
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$55	—
1.17(m)	Petition - Revive Unintentionally Abandoned Appl. (Small Entity)	$1,210	$1,250
1.17(n)	SIR - Prior to Examiner's Action	$605	$625
1.17(o)	SIR - After Examiner's Action	$840	$870
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	$1,690	$1,740
1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$210	$220
1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	—
1.17(r)	Filing a submission after final rejection (1.129(a))	$50	—
1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$730	$750
1.17(s)	Per add'l invention to be examined (1.129(b))	$365	$375
1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$730	$750
1.18(a)	Issue Fee	$365	$375
1.18(a)	Issue Fee (Small Entity)	$1,210	$1,250
1.18(b)	Design Issue Fee	$605	$625
1.18(b)	Design Issue Fee (Small Entity)	$420	$430
1.18(c)	Plant Issue Fee	$210	$215
1.18(c)	Plant Issue Fee (Small Entity)	$610	$630
1.19(a)(1)(i)	Copy of Patent	$305	$315
1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$3	—
1.19(a)(1)(iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$6	—
1.19(a)(2)	Plant Patent Copy	$25	—
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$12	—
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$24	—
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$12	$15
1.19(b)(2)	Cert. or Uncert. Copy of Patent-Related File Wrapper/Contents	$24	$30
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$150	—
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	—
1.19(c)	Library Service	$25	—
1.19(d)	List of Patents in Subclass	$50	—
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$3	—
1.19(f)	Copy of Non-U.S. Patent Document	$10	—
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	—
1.19(h)	Duplicate or Corrected Filing Receipt	$25	—
1.20(a)	Certificate of Correction	$25	—
1.20(c)	Reexamination	$100	—
1.20(d)	Statutory Disclaimer	$2,320	$2,390
1.20(d)	Statutory Disclaimer (Small Entity)	$110	—
1.20(e)	Maintenance Fee - 3.5 Years	$55	—
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$960	$990
1.20(f)	Maintenance Fee - 7.5 Years	$480	$495
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$1,930	$1,990
1.20(g)	Maintenance Fee - 11.5 Years	$965	$995
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$2,900	$2,990
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$1,450	$1,495
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$130	—
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$65	—
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$640	$660
		$1,500	$1,550

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995
1.20(j)	Extension of Term of Patent	$1,030	$1,060
1.21(a)(1)	Admission to Examination	$300	$310
1.21(a)(2)	Registration to Practice	$100	—
1.21(a)(3)	Reinstatement to Practice	$15	—
1.21(a)(4)	Certificate of Good Standing	$10	—
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	—
1.21(a)(5)	Review of Decision of Director, OED	$130	—
1.21(a)(6)	Regrading of Examination	$130	—
1.21(b)(1)	Establish Deposit Account	$10	—
1.21(b)(2)	Service Charge Below Minimum Balance	$25	—
1.21(b)(3)	Service Charge Below Minimum Balance	$25	—
1.21(c)	Filing a Disclosure Document	$10	—
1.21(d)	Box Rental	$50	—
1.21(e)	International Type Search Report	$40	—
1.21(g)	Self-Service Copy Charge	$.25	—
1.21(h)	Recording Patent Property	$40	—
1.21(i)	Publication in the OG	$25	—
1.21(j)	Labor Charges for Services	$30	—
1.21(k)	Unspecified Other Services	Actual Cost	—
1.21(k)	Terminal Use APS-CSIR (per hour)	$50	—
1.21(m)	Processing Returned Checks	$50	—
1.21(n)	Handling Fee - Incomplete Application	$130	—
1.21(o)	Terminal Use APS-TEXT	$40	—
1.24	Coupons for Patent and Trademark Copies	$3	—
1.296	Handling Fee - Withdrawal SIR	$130	—
1.445(a)(1)	Transmittal Fee	$210	$220
1.445(a)(2)(i)	PCT Search Fee - No U.S. Application	$640	$660
1.445(a)(2)(ii)	PCT Search Fee - Prior U.S. Application	$420	$430
1.445(a)(3)	Supplemental Search	$180	$190
1.482(a)(1)(i)	Preliminary Exam Fee	$460	$470
1.482(a)(1)(ii)	Preliminary Exam Fee	$690	$710
1.482(a)(2)(i)	Additional Invention	$140	—
1.482(a)(2)(ii)	Additional Invention	$240	$250
1.492(a)(1)	Preliminary Examining Authority	$660	$680
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$330	$340
1.492(a)(2)	Searching Authority	$730	$750
1.492(a)(2)	Searching Authority (Small Entity)	$365	$375
1.492(a)(3)	PTO Not ISA nor IPEA	$980	$1,010
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$490	$505
1.492(a)(4)	Claims - IPEA	$92	$94
1.492(a)(4)	Claims - IPEA (Small Entity)	$46	$47
1.492(a)(5)	Filing with EPO/JPO Search Report	$850	$880
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$425	$440
1.492(b)	Claims - Extra Individual (Over 3)	$76	$78
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$38	$39
1.492(c)	Claims - Extra Total (Over 20)	$22	—
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	—
1.492(d)	Claims - Multiple Dependents	$240	$250
1.492(d)	Claims - Multiple Dependents (Small Entity)	$120	$125
1.492(e)	Surcharge	$130	—
1.492(e)	Surcharge (Small Entity)	$65	—
1.492(f)	English Translation - After 20 Months	$130	—
2.6(a)(1)	Application for Registration, Per Class	$245	—
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	—
2.6(a)(3)	Statement of Use, Per Class	$100	—
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	—
2.6(a)(5)	Application for Renewal, Per Class	$300	—
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	—
2.6(a)(7)	Publication of Mark Under § 12(c), Per Class	$100	—
2.6(a)(8)	Issuing New Certificate of Registration	$100	—
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	—
2.6(a)(10)	Filing Disclaimer to Registration	$100	—
2.6(a)(11)	Filing Amendment to Registration	$100	—
2.6(a)(12)	Filing Affidavit Under Section 8, Per CLass	$100	—
2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	$100	—
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	—
2.6(a)(15)	Petitions to the Commissioner	$100	—
2.6(a)(16)	Petition to Cancel, Per Class	$200	—
2.6(a)(17)	Notice of Opposition, Per Class	$200	—
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	—
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	—
2.6(b)(1)(i)	Copy of Registered Mark	$3	—
2.6(b)(1)(ii)	Copy of Registered Mark, overnight delivery to PTO box or fax	$6	—
2.6(b)(1)(iii)	Copy of Reg. Mark Ordered Via Exp. Mail or Fax, Exp. Svc.	$25	—
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$12	$15
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$24	$30
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	$50	—

37 CFR Sec.	DESCRIPTION	Pre-Oct 1995	Oct 1995
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$10	—
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$20	—
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	—
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	—
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	—
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	—
2.6(b)(8)	Terminal Use X-SEARCH	$40	—
2.6(b)(9)	Self-Service Copy Charge	$0.25	—
2.6(b)(10)	Labor Charges for Services	$30	—
2.6(b)(11)	Unspecified Other Services	Actual Cost	—

—These fees are not affected by this rulemaking.

Certificate of Correction For Week of August 29, 1995

P. 9,077	5,264,485	5,328,959	5,362,926	5,385,440	5,400,818	5,411,003	5,420,309
P. 9,102	5,266,488	5,329,126	5,363,066	5,385,775	5,401,299	5,411,326	5,420,395
Re. 34,740	5,266,584	5,329,130	5,363,544	5,385,841	5,401,406	5,411,431	5,420,534
D. 330,459	5,268,775	5,329,251	5,364,507	5,385,887	5,401,432	5,411,887	5,420,984
D. 354,956	5,271,758	5,329,443	5,365,941	5,385,998	5,401,514	5,411,930	5,421,205
D. 355,354	5,272,175	5,329,586	5,366,349	5,386,703	5,401,640	5,412,624	5,421,416
D. 358,505	5,273,971	5,329,623	5,367,839	5,387,608	5,401,722	5,413,438	5,421,641
D. 358,724	5,274,416	5,329,818	5,368,304	5,387,634	5,402,052	5,413,671	5,421,750
D. 359,040	5,275,607	5,330,687	5,368,422	5,388,725	5,402,680	5,413,749	5,421,759
D. 359,054	5,276,008	5,332,718	5,369,099	5,389,613	5,403,019	5,414,036	5,422,518
D. 359,151	5,276,382	5,333,508	5,370,437	5,389,855	5,403,721	5,414,064	5,422,688
4,508,729	5,278,049	5,334,355	5,370,839	5,390,272	5,403,955	5,414,492	5,422,807
4,870,762	5,279,317	5,337,995	5,370,853	5,390,792	5,404,283	5,415,017	5,422,889
4,961,938	5,280,212	5,338,632	5,372,066	5,390,923	5,404,999	5,415,025	5,422,890
5,026,624	5,283,712	5,342,814	5,372,176	5,391,218	5,405,171	5,415,316	5,423,153
5,029,294	5,287,408	5,342,986	5,373,722	5,391,366	5,405,172	5,415,466	5,423,281
5,060,088	5,287,603	5,345,230	5,374,196	5,391,382	5,405,212	5,415,962	5,423,380
5,076,273	5,289,148	5,347,412	5,374,252	5,391,428	5,405,239	5,415,967	5,423,575
5,097,347	5,291,970	5,348,582	5,374,465	5,392,730	5,405,421	5,416,096	5,423,626
5,104,502	5,296,125	5,348,621	5,374,642	5,392,745	5,405,669	5,416,451	5,423,744
5,121,429	5,297,114	5,349,961	5,374,764	5,392,776	5,405,948	5,416,608	5,424,438
5,130,303	5,300,565	5,351,451	5,375,129	5,393,447	5,406,392	5,416,727	5,424,461
5,132,291	5,302,983	5,352,248	5,375,534	5,393,657	5,406,650	5,416,762	5,424,582
5,136,315	5,305,038	5,354,595	5,377,069	5,393,763	5,406,775	5,416,773	5,425,238
5,140,103	5,305,269	5,354,818	5,377,674	5,394,054	5,407,249	5,416,855	5,425,533
5,146,448	5,310,844	5,354,826	5,377,828	5,394,449	5,407,803	5,417,046	5,426,090
5,162,938	5,312,843	5,354,893	5,378,253	5,395,238	5,408,559	5,417,720	5,426,577
5,200,862	5,313,373	5,355,784	5,379,121	5,395,868	5,408,876	5,417,927	5,426,612
5,210,084	5,313,378	5,356,082	5,379,172	5,396,030	5,409,124	5,417,949	5,428,174
5,213,808	5,317,451	5,356,882	5,379,307	5,396,275	5,409,260	5,418,019	5,428,932
5,216,248	5,322,018	5,357,267	5,379,746	5,396,295	5,409,421	5,418,206	5,429,114
5,217,002	5,322,130	5,357,998	5,379,934	5,396,352	5,409,461	5,418,228	5,429,766
5,222,326	5,323,510	5,359,681	5,380,196	5,396,360	5,409,511	5,418,715	5,429,994
5,226,019	5,325,056	5,360,269	5,380,848	5,396,478	5,409,570	5,418,769	5,430,810
5,239,524	5,327,192	5,360,837	5,380,905	5,397,320	5,409,670	5,419,454	5,431,017
5,256,798	5,327,303	5,361,157	5,381,627	5,397,330	5,409,774	5,419,474	5,431,078
5,257,617	5,327,431	5,361,211	5,382,400	5,397,818	5,409,802	5,419,781	5,431,723
5,258,538	5,328,704	5,362,613	5,384,245	5,398,018	5,410,132	5,420,027	5,431,727
				5,399,189	5,410,153	5,420,112	5,433,754
				5,400,367	5,410,384	5,420,158	5,434,950
				5,400,770			

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

June 19-23, 1995

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-20	EX	74/113,844	Carl W. Ostrand	2(d)	Refusal Reversed		"CAFE LA PALOMA" [Arabica coffee]	"LA PALOMA" [hotel and restaurant services]	No
6-20	EX	74/800,414	United Technologies Motor Systems, Inc.	2(e)(1)	Refusal Reversed		"MOTOR SYSTEMS" [voltage regulators and parts therefor]		No
6-20	EX EX	74/367,293 74/367,704	Sante Fe USA. Inc.	whether the matter sought to be registered funtions as a service mark	Refusal Affirmed (in each case)		design of a coyote; design of a cactus [both marks for restaurant services]		No
6-20	EX	74/406,406	The Lottery Channel, Inc.	2(e)(1)	Refusal Affirmed		"THE LOTTERY CHANNEL" [cable television programming in the field of lottery-related information]		No
6-20	EX	74/302,070	American Distribution, Inc.	Section 6 disclaimer requirement (of word "ENTERTAINMENT")	Refusal Reversed		"AMERICAN ENTERTAINMENT" (and eagle design) [mail order sales of comic books, sports and non-sports related trading and collector cards, clothing, posters, toys and games, books, pre-recorded video tapes, models, and collector supplies]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-20	EX	74/406,700	Parfums de Coeur, Ltd.	2(d)	Refusal Affirmed (but only as to the cited mark "GRECIAN GODDESS")		"GODDESS" [perfumes, cologne and fragrance body spray]	"GRECIAN GODDESS" [face powder, lotion, perfume, etc.]; "SUN GODDESS" [sun tan oil and spray]; "EGYPTIAN GODDESS" [cleansing cream, wash cleanser, moisture lotion, etc.]	No
6-22	EX	74/323,972	Pillowtex Corp.	2(d)	Refusal Affirmed		"NOTTINGHAM" [decorative pillows]	"NOTTINGHAM FINE FURNITURE" [upholstered furniture]	No
6-22	EX	74/303,658	Global Travel Network, Inc.	2(e)(1); 2(d)	Refusal Affirmed (on both grounds)		"GLOBAL TRAVEL NETWORK" [travel agency services, namely, arranging travel tours and car rentals]	"GLOBAL TRAVEL NETWORK" [franchising services, namely, offering technical assistance in the establishment and/ or operation of travel agencies]	No
6-22	EX	74/372,416	Pyle Industries, Inc.	2(e)(1)	Refusal Afirmed		"TOOBZ" [loudspeakers]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark: Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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	New York Public Library (The Research Libraries)	(212) 930-0917
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennesace	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

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J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	03/31/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	06/16/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	08/15/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	07/14/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	01/18/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	09/13/93
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/25/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	04/21/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	308-0771	03/18/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	02/18/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	12/14/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	01/24/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/09/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	03/08/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	06/02/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/21/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	04/18/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 253, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Erskine, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/30/95
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/95	05/08/95
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/27/95	03/01/95
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	03/06/95
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/06/95	05/01/95
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/95	05/01/95
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/95	04/12/95
Law Office 10—Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/08/95	04/03/95
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/17/95	02/27/95
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/27/95	04/17/95
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/01/94	04/03/95
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/21/94	05/25/95
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/02/95	03/29/95
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	08/10/94	—0—
Renewals (All Classes)	05/03/95	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

AUGUST 29, 1995

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,086,716 (2660th)
SYSTEM, APPARATUS AND METHOD FOR DISPOSING OF SOLID WASTE
Fred A. Lafser, Jr., University City, Mo., assignor to Perma-Fix Corporation
Reexamination Request No. 90/002,822, Aug. 28, 1992.
Reexamination Certificate for Patent No. 5,086,716, issued Feb. 11, 1992, Ser. No. 516,210, Apr. 30, 1990.
Int. Cl.[6] F23G *7/04*
U.S. Cl. 110—345

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 3, 5 and 6 are cancelled.

Claims 1, 4 are determined to be patentable as amended.

New claim 7 is added and determined to be patentable.

1. A method for disposing of solid waste in a rotary kiln of the type which produces cement, the kiln comprising a rotating, generally cylindrical vessel having first and second longitudinally opposite ends, interior walls and means for heating gases in the interior of the vessel to progressively greater temperatures from one end to the other end for processing material in the vessel, the interior of the kiln including at least two zones, a calcining zone wherein the temperature ranges from approximately 950° C. to 1200° C. and a clinkering zone wherein the temperature ranges from above 1200° C. to approximately 1925° C., the method comprising the step of delivering pre-packaged sealed containers of solid waste to the clinkering zone inside the vessel where the gas temperature is in excess of 1700° C. *and less than approximately 1925° C.*

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REISSUES

AUGUST 29, 1995

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,027

PICK AND PLACE METHOD AND APPARATUS

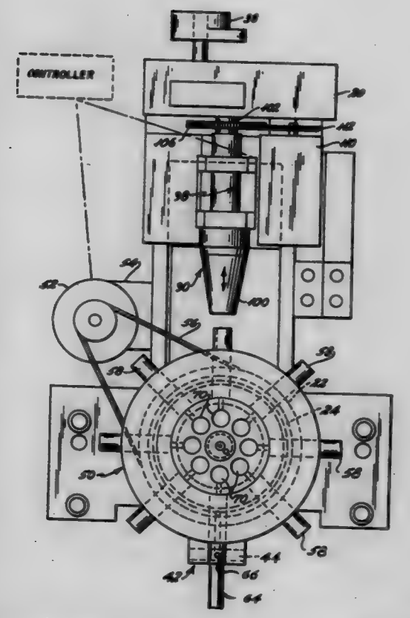
Phillip A. Ragard, Binghamton, N.Y., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Original No. 4,872,258, dated Oct. 10, 1989, Ser. No. 247,512, Sep. 22, 1988. Continuation of Ser. No. 888,314, May 27, 1992, abandoned, which is a continuation of Ser. No. 773,154, Oct. 8, 1991, abandoned. Application for reissue Oct. 4, 1993, Ser. No. 131,561

Int. Cl.[6] H05K *3/30*

U.S. Cl. 29—740

17 Claims



15. An apparatus for equipping printed circuit boards with electronic components, said apparatus comprising:

at least two supply stations;

a rotatable turret having a plurality of pick-up spindles for components, each said spindle having a vacuum nozzle suitable for picking components from any of said supply stations;

at least one processing station contiguous with said rotatable turret; and

means for displacing and positioning said turret together with said at least one processing station in X and Y directions, said means including programmable controller means for controlling the movement of said turret in said X and Y directions and permitting a plurality of components to be picked up from different supply stations by the plurality of vacuum nozzles so that the components picked up by said spindles from said supply stations can be passed by said processing station during indexing and translation of said turret and so that any of said plurality of components loaded on said plurality of spindles from any of said supply stations then may be placed on the circuit board at any programmable position.

Re. 35,028

SAFETY HARNESS WITH ADJUSTABLE FRONT D-RING

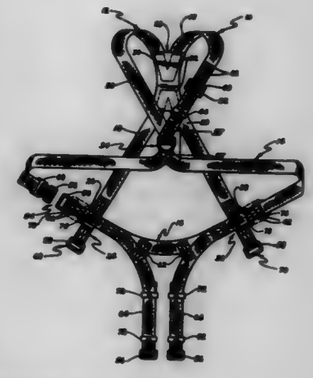
Scott C. Casebolt, St. Paul Park, Minn., and Brian K. Fisk, Portland, Oreg., assignors to D B Industries, Inc., Red Wing, Minn.

Original No. 5,203,829, dated Apr. 20, 1993, Ser. No. 782,575, Oct. 25, 1991. Application for reissue Dec. 22, 1993, Ser. No. 173,651

Int. Cl.[6] A62B *35/00*; B64D *17/30*

U.S. Cl. 119—857

41 Claims



34. A safety harness, comprising:

a shoulder strap having a first end region and a second end region;

a waist strap segment having a first end region and a second end region;

a front slide assembly, through which pass said shoulder strap and said waist strap segment;

a rear suspension assembly, engaging intersecting intermediate portions of said shoulder strap; and

an adjustable seat strap having first and second end regions and first and second intermediate portions, and wherein said first and second end regions of said shoulder strap intersect and engage said first and second intermediate portions of said seat strap, respectively, said second end region of said waist strap segment is releasably attached to said first intermediate portion of said seat strap, said first end region of said waist strap segment engages said second intermediate portion of said seat strap, said first end region of said shoulder strap is releasably attached to said first end region of said seat strap, and said second end region of said shoulder strap is releasably attached to said second end region of said seat strap.

Re. 35,029

COMPUTER-GENERATED AUTOSTEREOGRAPHY METHOD AND APPARATUS

Ellen R. Sander; Daniel J. Sandin, both of Chicago; William T. Connally, Island Lake, and Stephan B. Meyers, Chicago, all of Ill., assignors to The Phocogram Venture, Inc., Chicago, Ill.

Original No. 5,113,213, dated May 12, 1992, Ser. No. 296,775, Jan. 13, 1989. Application for reissue May 3, 1994, Ser. No. 237,591

Int. Cl.[6] G03D *27/32*

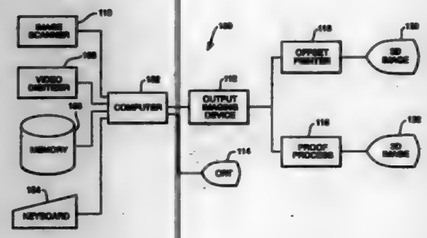
U.S. Cl. 353—22

45 Claims

16. A method of making autostereographic images of an object, comprising the steps of:

inputting to a computer a predetermined plurality of planar images of the object, each of the planar images being a view of the object from one of the predetermined plurality of different viewpoints;

interleaving the predetermined plurality of planar images in the computer;



printing the interleaved images with a high-resolution output imaging device, a selected edge of each interleaved image being aligned with a predetermined printing direction;

placing the printed interleaved images on one side of a transparent spacer; and

positioning a lenticular sheet on the spacer in a registration relationship with the interleaved images on the opposite side of the transparent spacer.

Re. 35,030

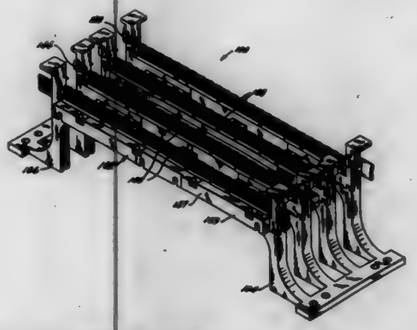
WIRING BLOCK HAVING DETACHABLE LEG ASSEMBLIES

John A. Siemon, Woodbury, and Howard Reynolds, Waterbury, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Original No. 5,312,270, dated May 17, 1994, Ser. No. 934,923, Aug. 25, 1992. Application for reissue Aug. 29, 1994, Ser. No. 297,499

Int. Cl.[6] H01R *9/24*

U.S. Cl. 439—532 **44 Claims**



23. A wiring block comprising:

at least one wiring strip, said wiring strip including,

(1) a generally rectangular member having first and second pairs of opposing surfaces, and

(2) a plurality of spaced apart teeth extending normally upward from one of said first surfaces, said teeth defining a plurality of wire retaining slots, said teeth having a channel in opposing sides thereof, said adjacent channels defining a plurality of openings;

a base having first and second pairs of opposing surfaces, said base having opposing ends, said at least one wiring strip disposed on one of said first surfaces; and

leg means removably attached to said base at each of said ends.

PLANT PATENTS

GRANTED AUGUST 29, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,261

SHRUB ROSE PLANT NAMED 'POULMA'

Poulille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Devor Nurseries, Inc., Watsonville, Calif.

Filed Sep. 21, 1994, Ser. No. 310,805

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub rose class, substantially as shown and described.

9,262

HYBRID TEA ROSE PLANT NAMED 'MEISINPLOX'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 28, 1994, Ser. No. 314,391

Claims priority, application France, Jun. 28, 1994, 13527

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive long-lasting intense yellow blossoms that well retain their coloration,

(b) exhibits an erect growth habit with glossy dark green decorative foliage that contrasts well with the intense yellow blossom coloration,

(c) is well susceptible to forcing, and

(d) exhibits excellent disease resistance;

substantially as herein shown and described.

9,263

NECTARINE TREE — 'POLLOK' CULTIVAR

Zenith E. Pollok, Mason, Mich., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.

Filed Nov. 28, 1994, Ser. No. 348,177

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—413 **1 Claim**

1. A new and distinct nectarine cultivar having the following combination of characteristics:

(a) consistently forms attractive late-maturing fruit having a moderately large size wherein approximately 60 to 90 percent of the skin is bright red in coloration at the time of harvest,

(b) forms a firm highly-flavored yellow freestone fruit flesh of excellent quality having only a slight amount of red tinging,

(c) exhibits a moderately vigorous growth habit, and

(d) exhibits cold hardiness, resistance to bacterial leafspot, and resistance to trunk canker that is at least as great as that exhibited by the Redgold and Sunglo cultivars;

substantially as herein shown and described.

9,264

NECTARINE TREE—'SCARLET SUN' CULTIVAR

Thomas O. Chamberlain, Visalia, Calif., assignor to Metropolitan Life Insurance Company, Del Ray, Calif.

Filed Dec. 2, 1994, Ser. No. 352,869

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—41.3 **1 Claim**

1. A new and distinct cultivar of nectarine cultivar, having the following combination of characteristics.

(a) forms attractive early-maturing fruit having a generally uniformly large size wherein approximately 75 to 90 percent of the skin is bright red in coloration.

(b) forms firm, crisp, highly-flavored yellow freestone flesh of excellent quality having a small amount of red tinging, and

(c) exhibits a spreading and slightly growth habit;

substantially as herein shown and described.

9,265

RHODODENDRON RHODUNTER 10

Walter Preil, Amersbek, and Rainer Ebbinghaus, Ahrensburg, both of Germany, assignors to Inkarho Pflanzenvertrieb GmbH+Co. KG, Glesselhorst, Germany

Filed Dec. 1, 1993, Ser. No. 160,576

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of rhododendron plant used as rootstock, as shown and described, characterized by a plant height, of the original plant, of 1.0 m, with a plant width of 1.2 m in 13 years; a habit of broad bush, very compact; an annual terminal growth of mature plants being about 10–15 cm, and for young plants being 20–25 cm; a flowering period in the first week of May to the third week of May; a flower color of white, R.H.S. Colour chart 155D, with green tinge and faint yellow-brown markings, nearly 164 B–173 A according to R.H.S. Colour Chart; 10 stamens of very striking brown color, with a green stigma and stamens much longer than style; leaf shape being small and elliptical, 6–9 cm long and 1.5–3.5 cm broad, with a dark green upper surface and light green lower surface; and being hardy to a temperature down to −26° C., or −10° F.

9,266

CARNATION PLANT NAMED 'CFPC NUGGET'

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 29, 1994, Ser. No. 315,134

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—70.4 **1 Claim**

1. A new and distinct dwarf variety of carnation plant named 'CFPC Nugget', substantially as shown and described.

9,267

CARNATION PLANT NAMED 'CFPC COTILLION'

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 29, 1994, Ser. No. 315,132

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—70.5 **1 Claim**

1. A new and distinct dwarf variety of carnation plant named 'CFPC Cotillion' substantially as shown and described.

9,268

CARNATION PLANT NAMED 'CFPC DART'

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 29, 1994, Ser. No. 315,133

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—70.7 **1 Claim**

1. A new and distinct dwarf variety of carnation plant named 'CFPC Dart', substantially as shown and described.

9,269

CARNATION PLANT NAMED 'CFPC FRESCO'

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Sep. 29, 1994, Ser. No. 315,135
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—70.7 1 Claim

1. A new and distinct dwarf variety of carnation plant named 'CFPC Fresco', substantially as shown and described.

9,270

VERBENA PLANT 'L. ARCHER'

Lennie Archer, Thomson, Ga., assignor to McCorkle Nursery Inc., Dearing, Ga.

Filed Jun. 24, 1994, Ser. No. 265,469
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87 1 Claim

1. A new and distinct cultivar of *Verbena*×*hybrida* substantially as described and illustrated herein, characterized particularly as to novelty by its deep red-rose flower color, cold hardiness, rapid, particularly under nursery conditions, and free and basal branching providing a cultivar well suited as a flowering pot plant having no unusual susceptability to the traditional *Verbena*×*hybrida* diseases and insects.

9,271

VARIETY OF LILIUM NAMED 'HOLEBY'

Petrus M. M. Hoff, Stuzenbergen, Netherlands, assignor to Hoffgaarde B.V., Netherlands

Filed Sep. 26, 1994, Ser. No. 312,213
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinct variety of lily plant substantially as shown and described.

9,272

NEW GUINEA IMPATIENS NAMED 'BFP-347 RED'

Scott C. Trees, Arroyo Grande, Calif., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed Nov. 8, 1994, Ser. No. 337,529
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of New Guinea impatiens named BFP-347 Red substantially as herein shown and described, which:
(a) exhibits attractive large red flowers,
(b) forms medium green foliage,
(c) exhibits a good basal branching character, and
(d) exhibits a medium upright growth habit.

PATENTS

GRANTED AUG. 29, 1995

ERRATA

For CLASS	See PATENT NO.
005–421	5,444,878
009–427	5,445,073
232–039	5,445,086
126–059	5,445,137
600–117	5,445,140
600–105	5,445,142
607–089	5,445,146
137–080	5,445,176
116–298	5,445,222
220–366	5,445,291
220–306	5,445,292
220–319	5,445,293
226–112	5,445,305
292–336	5,445,326
285–001	5,445,419
604–009	5,445,600
216–022	5,445,707
216–017	5,445,708
216–071	5,445,709
216–013	5,445,711
205–259	5,445,724
202–173	5,445,731
501–064	5,446,007
501–068	5,446,008
310–090	5,446,018
524–536	5,446,064
526–068	5,446,116
526–134	5,446,117
526–245	5,446,118
548–253	5,446,121
536–024	5,446,143
544–198	5,446,144
562–013	5,446,187
558–030	5,446,193
558–401	5,446,194
235–382	5,446,265

ERRATA–CONTINUED

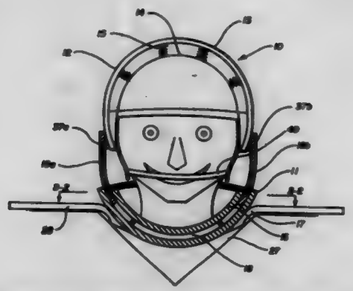
For CLASS	See PATENT NO.
235–382	5,446,266
235–440	5,446,267
326–057	5,446,321
327–044	5,446,322
327–066	5,446,396
327–066	5,446,397
327–113	5,446,398
346–138	5,446,477
345–139	5,446,479
345–157	5,446,480
345–163	5,446,481
345–199	5,446,482
345–212	5,446,483
380–007	5,446,794
380–013	5,446,795
380–024	5,446,796

PATENTS

GRANTED AUGUST 29, 1995

GENERAL AND MECHANICAL

5,444,870
FOOTBALL HELMET AND SHOULDER PAD COMBINATION
David Pinson, 242 Cambridge Ave., Englewood, N.J. 07631
Filed Feb. 7, 1994, Ser. No. 192,374
Int. Cl.[6] A41D *13/00*; A42B *3/00*
U.S. Cl. 2—2 3 Claims



1. A helmet and shoulder pad combination having an aperture for the wearer's head to prevent injuries by limiting the movement of the wear's head comprising:

an inner helmet portion positioned over the wearer's head,

an outer helmet portion resiliently mounted to the inner helmet portion, and,

a neck assembly coupled to the outer helmet at one end to permit but limit the movement of the helmet in all directions, said assembly being mounted on the shoulder pads at the other end to dissipate any impacts, the neck assembly comprising an inner cylindrical guide, a movable inner member concentrically mounted about the inner guide and coupled to the helmet and an outer guide concentrically mounted about the movable member having predetermined stops to limit the movement of the helmet and wherein:

the inner guide, the movable member and the outer guide are all substantially cylindrical with openings at both ends and each includes a hinge along one wall and a latch at the opposite wall to permit opening and attachment about the wearer's neck.

5,444,871
MEDICAL GOWN WITH SEAMLESS SLEEVE PROTECTOR
Francisco G. Lopez, El Paso, Tex., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.
Filed Jul. 26, 1993, Ser. No. 97,359
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—114 14 Claims

1. A medical gown for use with an elastomeric surgical glove and that includes a body portion and two sleeve portions, in which each sleeve portion comprises:

a) a sleeve having a first end attached to a cuff, a second end attached to the body portion, and an outside surface; and

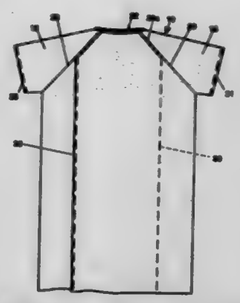
b) a tubular, seamless, and impervious protective layer surrounding the sleeve and having a first end permanently attached to the sleeve adjacent to the cuff and engageable by the glove, and a second end permanently attached to the outside surface of the sleeve between the first and second ends of the sleeve;

whereby when the sleeve is placed over a user's arm and the surgical glove is placed over a user's hand with the glove coveting the cuff and engaging the protective layer first



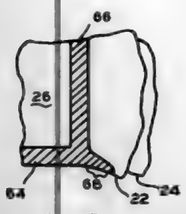
end, wicking along the sleeve and beneath the glove of fluid which has splattered onto the sleeve is inhibited.

5,444,872
OVERLAPPING HOSPITAL GOWN
Catherine A. Johnson, 720 Gordon Ter., Suite 11K, Chicago, Ill. 60613
Continuation-in-part of Ser. No. 16,571, Dec. 20, 1993, This application Jul. 25, 1994, Ser. No. 279,516
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—114 3 Claims



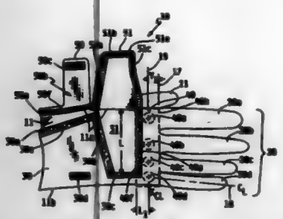
1. A hospital-type gown comprising, a pair of substantially identical sleeve pattern panels and a pair of substantially identical body pattern panels each of the body pattern panels including a hemmed neck portion, each of said sleeve panels being affixed to respective ones of the body panels along a sleeve-body panel seam which extends at least along a rear side of the respective body panel from the neck hem angularly to under the arm pit to thereby form first and second gown halves, said gown halves being disposed so as to have a substantial overlap forming front and rear overlapping portions and overlapping necklines and being connected together by a securement running along the overlapping portions of the respective rear necklines disposed between the rear sleeve-body panel seams and continuing from the overlapping necklines down and along each of the rear sleeve-body panel seams to secure a portion of each gown half to the sleeve-body panel seam of the other gown half, the rear overlapping portions being about ¼ the overall width of the gown, and releasable fastener means connecting the frontal overlapping body panels together, the overlapping frontal portions being about ¼ the overall width of the gown.

5,444,873
DISPOSABLE PROTECTIVE GOWNS
Allan Levin, Mundelein, Ill., assignor to Medline Industries, Inc., Mundelein, Ill.
Filed Feb. 14, 1994, Ser. No. 195,542
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—114 5 Claims



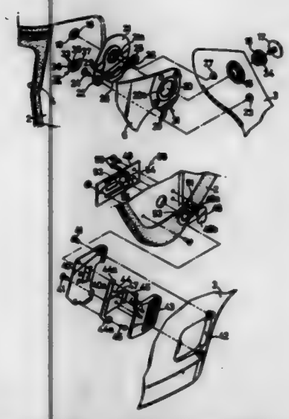
1. A disposable protective gown comprising:
a body portion having an upper part formed to extend over the shoulders of the user of the gown, said upper part having a centrally located somewhat semicircular head aperture for passage of the wearer's head, a perimeter of said semicircular head aperture having a rise at the front of said gown in order to cover the junction between the front of the neck and chest of the wearer;
a pair of sleeves extending outwardly from opposite sides of said upper part, each of said sleeves comprising a somewhat generally conical member that is attached to the gown body portion by a heat weld seam extending around 360 degrees of a circumference of a sleeve opening in said upper part of said of said body portion, each of said sleeves including a single continuous heat weld seam which extends along the entire length of the sleeves, intersects with and projects somewhat beyond said 360 degree to form a generally L-shaped seam;
means for maintaining the orientation of each sleeve located at an opposite end thereof; and
means for securing the body portion of the wearer, said securing means being a pair of belts attached to opposite sides of said body portion.

5,444,874
EASY ACCESS HAND COVERING
John K. Samelian, 920 Rae Ct., Mendota Heights, Minn. 55118, and Jennifer Walsh, 8635 Woodcliff Rd., Bloomington, Minn. 55438
Filed Feb. 23, 1994, Ser. No. 200,494
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 13 Claims



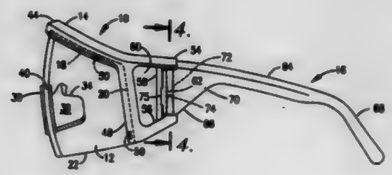
1. A hand coveting to permit a user easy hand access thereto and to permit a user to temporarily and quickly extract a hand from the hand covering while retaining the hand covering secured to a wrist of the user comprising:
a finger portion for covering the user's fingers;
a thumb and palm portion connected to said finger portion for covering the thumb and palm portion of a user's hand, said thumb and palm portion having a first edge and a second edge;
a knuckle portion connected to said finger portion, said knuckle portion normally covering the knuckles of a user when the user's finger's are located in said finger portion;
a first foldable flap hingedly connected to said first edge of said thumb and palm portion, said first flap foldable between an open condition and a closed condition;
a second foldable flap adjacent said first foldable flap, said second foldable flap hingedly connected to said first edge of said thumb and palm portion, said second flap foldable between an open condition and a closed condition; and
a third foldable flap hingedly connected to said second edge of said thumb and palm portion,said third foldable flap foldable between an open condition and a closed condition, said first foldable flap and said third foldable flap securable to each other when in a closed condition to retain the hand covering on a user, while the second foldable flap can be maintained in an open condition to form a hand opening to permit extension of a user's hand therethrough by the user performing a metacarpel flexion motion with the hand to withdraw the user's fingers from the finger portion of the hand covering.

5,444,875
HELMET FOR RIDING VEHICLE
Fujio Taninchi, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 6, 1994, Ser. No. 177,939
Claims priority, application Japan, Jul. 19, 1993, 5-178304
Int. Cl.[6] A42B *1/08*
U.S. Cl. 2—424 7 Claims



1. A helmet for riding a vehicle comprising:
a cap body which is comprised of a main cap body provided at a front surface thereof with a large window opening opened at a lower edge thereof, and an auxiliary cap body pivotally connected at left and right opposite sidewalls of the main cap body;
said auxiliary cap body being pivotable between a lowered position for covering a lower half of the large window opening so as to make an upper half of the large window opening serve as a small window opening, and a lifted position for opening the entire large window opening;
a lock mechanism provided between the main and auxiliary cap bodies for automatically locking the auxiliary cap body, when the auxiliary cap body is pivoted to the lowered position;
wherein said lock mechanism comprises a lock plate mounted on one of the main and auxiliary cap bodies, a lock pin mounted on the other of the main and auxiliary cap bodies for engaging with said lock plate at the lowered position of the auxiliary cap body, a spring means for biasing the lock pin in a direction to engage the lock plate, and a releasing element mounted on the auxiliary cap body such that the lock pin is disengaged from the lock plate against a biasing force of the spring means, said lock pin being provided with a slant for inducing the lock plate into engagement with the lock pin when the auxiliary cap body is pivoted toward the lowered position.

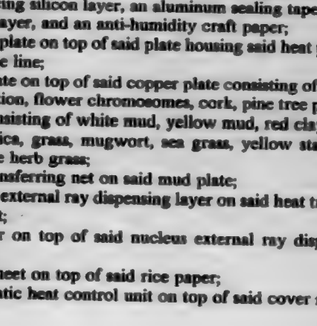
5,444,876
CONVERTIBLE PROTECTIVE EYEWEAR
James M. Cooper, Countryside; Donald L. Rohrs, Overland Park, and David D. McCormick, Prairie Village, all of Kans., assignors to Parmelee Industries, Inc., Lenexa, Kans.
Filed Jan. 31, 1994, Ser. No. 189,596
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—450 14 Claims



1. In eyewear having at least one lens, and at least one frame section, the improvement comprising:
said frame including a pair of hinge pins located adjacent each lateral end of said eyewear, said pins of each said pair extending towards each other generally vertically in coaxial spaced opposed relation; and
a temple associated with each said pair of hinge pins, each said temple including a pivot end having a pivot hole receiving an associated pair of said hinge pins, each said pivot end including a cutout at a first longitudinal end of said pivot hole, said cutout having a length slightly greater than, and a projected width slightly less than, said hinge pin extending into said first longitudinal end, whereby
said hinge pin extending into said first longitudinal end may pass through said cutout while the remaining hinge pin of said hinge pin pair is received within said pivot hole to allow said temple to be attached to, and removed from, said frame.

5,444,877
FOOT ACTUATED DOUBLE ACTING LEVER FOR LIFTING A TOILET SEAT
Jey Kumarasurier, 39113 Sundale Dr., Fremont, Calif. 94538
Continuation-in-part of Ser. No. 28,251, Mar. 9, 1993, abandoned. This application Jul. 12, 1994, Ser. No. 274,208
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.1 15 Claims

1. A device for orienting a lid member by a user from a first position to a second position and locking said lid member in said second position, said lid member adapted to be secured to a hinge adapted to be mounted on a base to rotate about a hinge axis, which device comprises:
a lever having a first end and having a second end adapted for being rotatably mounted on said base;
a hinge gear member adapted to be rotatably mounted about said hinge axis anti adapted to be securely coupled to said lid member;
a shaft member adapted for mounting on said base;
a drive gear member rotatably mounted on said shaft member and engaged with said hinge gear member;
a means for coupling said drive gear to said second end of said lever;
a ratchet means for operatively connected to said second end of said lever for locking said lid member in said second



position when said first end is depressed and released by said user and unlocking and reorienting said lid member to said first position when said user again depresses and releases said first end.

5,444,878
HEAT PRODUCING MATTRESS FILLED WITH HARDENED MUD
Moo W. Kang, 17532 Vierra Ave., Cerritos, Calif. 90703
Filed Aug. 23, 1994, Ser. No. 294,589
Int. Cl.[6] A47C *21/04*
U.S. Cl. 5—421 1 Claim

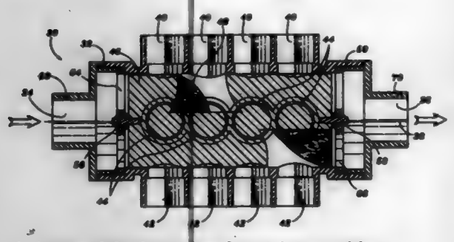
1. A heat producing mattress filled with hardened mud comprising:
a lower plate;
a side wall perpendicular to said lower plate;
an initial layer of said lower plate;
a heat producing pipe line attached on top of said initial layer;
a plate housing said heat producing pipe line consisting of OPP synthetic skin, aluminum coating, calbanium, a heat elevation prevention device, a heat sensing device, a heat producing silicon layer, an aluminum sealing tape, a Urethane layer, and an anti-humidity craft paper;
a copper plate on top of said plate housing said heat producing pipe line;
a mud plate on top of said copper plate consisting of natural vegetation, flower chromosomes, cork, pine tree powder, soil consisting of white mud, yellow mud, red clay, powder, silica, grass, mugwort, sea grass, yellow stalk, and Chinese herb grass;
a heat transferring net on said mud plate;
a nucleus external ray dispensing layer on said heat transferring net;
rice paper on top of said nucleus external ray dispensing layer;
a cover sheet on top of said rice paper;
an automatic heat control unit on top of said cover sheet.

5,444,879

PULSATING WATER INJECTION SYSTEM AND VALVE FOR HYDROTHERAPY SPA WITH HELICAL WATER DISTRIBUTION GROOVE

Michael D. Holtmaier, Camarillo, Calif., assignor to B&S Plastics, Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 54,535, Apr. 27, 1993, abandoned. This application May 3, 1994, Ser. No. 237,921
Int. Cl.[6] E03C 1/048
U.S. Cl. 4—541.01 15 Claims



1. A water injection system for a tub, comprising:
a plurality of nozzles for injecting water into the tub; and
a water distribution valve including:
a housing having an inlet for receiving said water and a plurality of outlets connected to the nozzles respectively; and
a rotor which is rotatably disposed in the housing and shaped so as to be rotated by said water flowing into the housing from the inlet, said rotor including a water conduit that sequentially aligns with and connects the outlets to the inlet as the rotor rotates, said conduit having an area that substantially encompasses an outlet with which it is aligned;
said housing having a longitudinal axis about which the rotor is rotatably disposed, and said outlets being longitudinally spaced from each other parallel to said longitudinal axis.

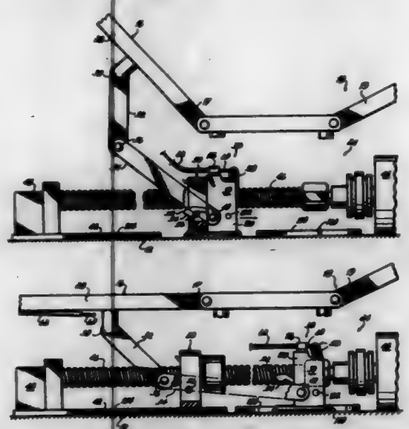
5,444,880

BED WITH EMERGENCY HEAD RELEASE AND AUTOMATIC KNEE DOWN

Matthew W. Weismiller, Batesville; John R. Wilker, Jr., Greensburg; David A. Albersmeyer; Peter M. Wuknsick, both of Batesville, and Kenneth L. Kramer, Greensburg, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Nov. 3, 1993, Ser. No. 147,166
Int. Cl.[6] A61G 7/06
U.S. Cl. 5—424 26 Claims

14. A bed having an upper body section pivotally connected to a lower body section, a lower drive connected to the lower body section and an upper drive, the bed including a release mechanism pivotally connected to the upper body section and releasably connected to the upper drive to disconnect the upper drive from the upper body section in response to a first actuation of the release mechanism, thereby permitting the upper body section to be pulled in a generally downward direction by gravity, the bed comprising a switching circuit responsive to the first actuation of the release mechanism for



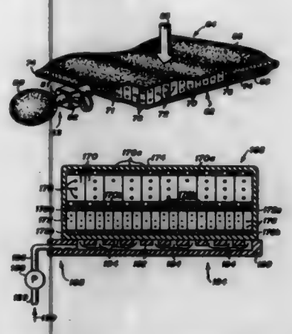
commanding an operation of the lower drive to initiate motion of the lower body section in a generally downward direction.

5,444,881

ANATOMICAL SUPPORT APPARATUS

Curtis L. Landi; Susan L. Wilson, both of Sunnyvale, and Peter M. Cazalet, Los Altos Hills, all of Calif., assignors to Supracor Systems, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 974,474, Nov. 12, 1992, which is a continuation-in-part of Ser. No. 717,523, Jun. 19, 1991, Pat. No. 5,180,619, which is a continuation-in-part of Ser. No. 446,320, Dec. 4, 1989, Pat. No. 5,039,567. This application Jun. 22, 1993, Ser. No. 80,745
Int. Cl.[6] A47C 27/08, 27/00; B32B 3/12
U.S. Cl. 5—454 15 Claims



1. In an anatomical support apparatus having a frame for supporting said apparatus, an outer envelope, and a resilient inner body encased within said envelope, both said inner body and said envelope being supported by said frame, an improved resilient inner body, comprising:
a first panel including
a first honeycomb core formed of undulated strips of resilient thermoplastic material, thermal compression bonded together to form cell walls defining a plurality of contiguous regularly shaped cells, the opposite extremities of said cell walls forming first and second core faces on opposite sides of said first core, at least some of said cell walls having perforations therein; and

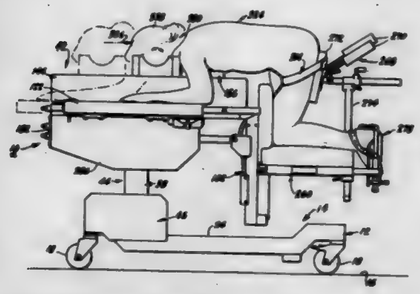
means tending to said first core in its expanded cellular configuration so that it will anisotropically flex to stabilize and spread any load applied thereto by a user of said apparatus and including a first facing sheet bonded to said first face and a second facing sheet bonded to said second face, said first facing sheet and said second facing sheet of said first panel being sealingly joined together about the perimeter of said core to provide a chamber enveloping said first core; and
means fluid-communicatively coupled to said first panel for selectively adding fluid to or subtracting fluid from said chamber, said fluid flowing into said cells and through the perforations of said walls to change certain characteristics of said first panel.

5,444,882

SPINAL SURGERY TABLE

E. Trent Andrews, San Francisco; Robert R. Moore, and Steven R. Lamb, both of Hayward, all of Calif., assignors to Orthopedic Systems, Inc., Union City, Calif.

Continuation of Ser. No. 62,079, May 14, 1993, abandoned, which is a continuation of Ser. No. 971,313, Nov. 4, 1992, abandoned, which is a continuation of Ser. No. 659,726, Feb. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 583,149, Sep. 17, 1990, abandoned. This application Apr. 8, 1994, Ser. No. 225,348
Int. Cl.[6] A61G 7/00
U.S. Cl. 5—618 15 Claims



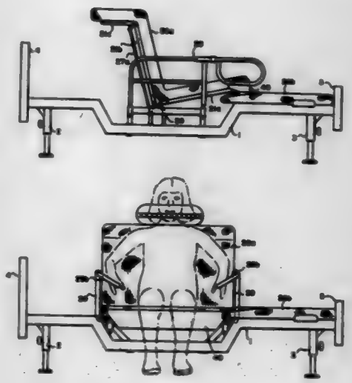
1. A patient surgery table comprising:
a. a frame member, said frame member including means for supporting said frame member on a surface;
b. a platform for supporting the patient, said platform including a transversely movable portion;
c. joining means for connecting said platform to said frame member;
d. a torso support, for directly supporting the torso of the patient, said torso support including a carriage supported by said platform, said torso support being connected to and movable with said transversely movable portion of said platform;
e. a leg support, said leg support being in articulated relationship with said platform and including means for pivoting said leg support relative to said platform;
f. means for linking the hip portion of the patient to said rotatable leg support, such that a pulling force is exerted on the hip portion of the patient during said rotation of said leg support and
g. an arm support, said arm support being movable transversely with said transverse movement of said torso support; said torso support and said arm support being connected to said means for pivoting said leg support, such that said transverse movements of said torso support and said arm support are achieved with said pivoting of said leg support.

5,444,883

ROTARY, INVALID BED

Tadashi Iura, 172-4, Befucho, Matsuyama-shi, EHIME791, Japan

Continuation of Ser. No. 651,371, Dec. 26, 1991, abandoned. This application Sep. 16, 1994, Ser. No. 307,100
Claims priority, application Japan, Jun. 26, 1989, 1-163004; Jun. 30, 1989, 1-170021; Jul. 1, 1989, 1-169999; Jul. 1, 1989, 1-170000; Aug. 17, 1989, 1-211795
Int. Cl.[6] A61G 7/015, 7/00
U.S. Cl. 5—618 3 Claims



1. A bed comprising:
a fixed frame;
a pivoting frame provided on the fixed frame;
a front bed section, provided on the pivoting frame, for receiving an upper half of a body at least above a femur, said front bed section including a waist supporting frame and a back supporting frame;
a rear bed section, provided on the fixed frame, for receiving a lower half of the body below the waist, wherein a shape of the front bed section abutting the rear bed section when viewed from above is a convex circular arc from a center of said front bed section; and
a pivoting mechanism provided between said fixed frame and said pivoting frame to pivot and stop the front bed section when the front bed section is moved from a straight position to an L hook-shaped position with respect to the fixed rear bed section.

5,444,884

CONTROLLING SCREEN BACKFLUSH AND WASH DISTRIBUTION IN A PRESSURE DIFFUSER

Marco F. Marois, Queensbury, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

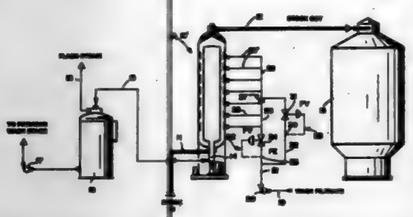
Filed Jul. 15, 1994, Ser. No. 275,875
Int. Cl.[6] D21D 5/04
U.S. Cl. 8—156 20 Claims

1. A pressure diffuser assembly, comprising:
a superatmospheric pressure vessel elongated in a dimension of elongation, and having an inner wall, an inlet and an outlet for pulp, an outlet for withdrawn liquid, and a plurality of inlets for treatment liquid along said dimension of elongation thereof;
a screen assembly mounted within said vessel and defining a pulp flow annulus between an exterior surface thereof and said inner vessel wall, pulp flowing from said inlet to said outlet through the annulus generally in a first direction along said dimension of elongation, and defining an interior withdrawn liquid volume communicating with said outlet for withdrawn liquid;

means for moving the screen assembly for slow movement in the first direction along said dimension of elongation, and for rapid, backflushing, movement in a second direction, opposite the first direction, rapid movement in said second direction causing pulp compression adjacent the pulp inlet; and

means for providing continued substantially constant volume flow of treatment liquid through said inlets for treatment liquid, including treatment liquid inlets adjacent said pulp inlet, despite compression of the pulp caused by rapid movement of said screen assembly in said second direction.

8. A method of operating a pressure diffuser assembly for treating cellulosic pulp with a treatment liquid, the assembly including: a superatmospheric pressure vessel elongated in a dimension of elongation, and having an inner wall, an inlet and an outlet for pulp, an outlet for withdrawn liquid, and a plurality of inlets for treatment liquid along the dimension of elonga-



tion thereof; a screen assembly mounted within said vessel and defining a pulp flow annulus between an exterior surface thereof and said inner vessel wall, pulp flowing from said inlet to said outlet through said annulus generally in a first direction along said dimension of elongation, and defining an interior withdrawn liquid volume communicating with said outlet for withdrawn liquid; and means for moving said screen assembly for slow movement in said first direction along said dimension of elongation, and for rapid, backflushing, movement in a second direction, opposite said first direction, rapid movement in said second direction causing pulp compression adjacent said pulp inlet;

said method comprising the step of (a) providing continued substantially constant volume flow of treatment liquid through said inlets for treatment liquid, including treatment liquid inlets adjacent said pulp inlet, despite compression of the pulp caused by rapid movement of said screen assembly in said second direction.

5,444,885

PLATFORM EDGE WARNING RAMP

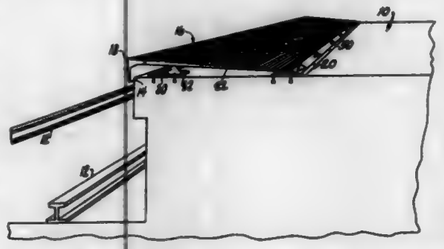
Peter J. Hanrahan, 2115 E. 1st St., Brooklyn, N.Y. 11223; E. Kevin Keegan, 30 Blenheim Dr., Manhasset, N.Y. 11030, and Albert T. Goffe, 2716-2730 Schurz Ave., Apt. N-1, Bronx, N.Y. 10465

Filed Dec. 23, 1993, Ser. No. 172,555
Int. Cl.[6] E01D 1/00
U.S. Cl. 14—69.5 17 Claims

1. A substantially level train platform having a platform surface, a platform edge, and an apparatus for warning persons on said platform that they are within a predetermined distance of the platform edge, said apparatus comprising:

an inclined supporting surface extending over a portion of the platform surface from above the platform edge to a predetermined distance from the platform edge;

wherein that portion of said supporting surface that is located said predetermined distance from the platform edge is closer to the platform surface than that portion of said supporting surface above the platform edge, and wherein said supporting surface is mounted on said platform sur-



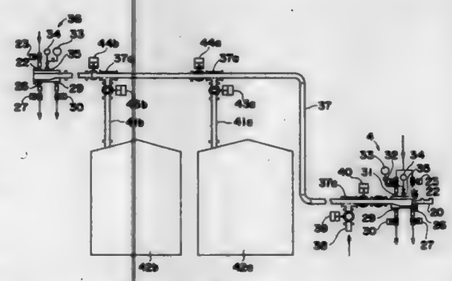
face such that it is stationary as a train arrives next to said platform to provide a secure access to said train.

5,444,886

APPARATUS FOR CLEANING A PIPING

Shoichi Takashina, Hannan, and Koichi Ishihara, Habikino, both of Japan, assignors to Fuji Oil Co., Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 115,712
Int. Cl.[6] B08B 9/04
U.S. Cl. 15—3.51 7 Claims



1. An apparatus for cleaning a piping, comprising:

a pipe conduit;

a pig arranged in said pipe conduit;

a launcher disposed in communication with a first end of said pipe conduit for transferring said pig through the pipe conduit toward a second end thereof;

a catcher disposed in communication with said second end of said pipe conduit for receiving said pig;

a first sensor for detecting the arrival of said pig at said catcher and generating a first signal indicative of the arrival of said pig at said catcher;

a control means for receiving said first signal from said first sensor and, upon receipt of said first signal, causing supply of compressed fluid to thereby transfer said pig with pressure from said catcher towards said launcher;

wherein said pipe conduit comprises a main piping arranged between said launcher and said catcher, and a branch pipe connected to said main piping by a branched part and branching from said main piping; and

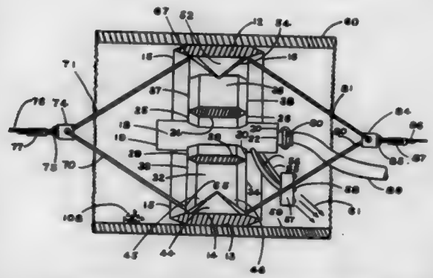
wherein said branched part has a double pipe structure comprising an outer pipe and an inner pipe, said inner pipe constituting a portion of said main piping and having a communicating hole formed therein to be communicated with said branch pipe to thereby restrict invasion of said pig into said branch pipe.

5,444,887

METHOD AND DEVICE FOR CLEANING UNDERWATER PIPES

Paul G. Rufolo, 149 Gregory St., Mt. Prospect, Ill. 60056

Filed Dec. 4, 1991, Ser. No. 801,820
Int. Cl.[6] B08B 9/04
U.S. Cl. 15—104.31 19 Claims



1. A cleaning device for removing shellfish obstructions from an interior surface of an underwater intake pipe comprising:

a curved outer member extended about a longitudinal axis, an inner member concentrically disposed on the longitudinal axis and radially spaced inwardly from the outer member, and a plurality of radial braces extending between the outer and inner members;

said outer member having inner and outer surfaces each extended parallel to the longitudinal axis, and a front cutting edge on said outer member proximate forward ends of the inner and outer surfaces;

a plurality of blades extending radially inward from the inner surface of said outer member toward but not reaching said inner member, each of said blades having opposed surfaces each extended parallel to the longitudinal axis, and a front cutting edge on each blade proximate forward ends of the respective opposed surfaces of the blades;

each of said braces having opposed surfaces each extended parallel to the longitudinal axis, and a front cutting edge on each brace proximate forward ends of the respective opposed surfaces of the blades; and

means including connection apparatus coupled to forward and rearward ends of the outer member operable to be coupled to powered tow means running longitudinally through the underwater pipe, said tow means operable to move the cleaning device axially forwardly and rearwardly through the underwater pipe,

whereby the obstructions are cored from the interior pipe surface by said front cutting edge on said outer member and are cut radially by said front cutting edges on said blades and said braces.

5,444,888

FOOT CLEANING APPARATUS

Edward L. Withey, 950 Andante Rd., Santa Barbara, Calif. 93105

Filed Sep. 27, 1994, Ser. No. 313,322
Int. Cl.[6] A47K 7/04
U.S. Cl. 15—114 12 Claims

1. A foot-and-toe cleaning apparatus comprising:

an elongated shaft formed from a stiff material;

a cleaning assembly fixedly mounted adjacent the lower end of said shaft, wherein said cleaning assembly includes:

means for cleaning between the toes;

a brush mounted on said shaft and positioned diametrically opposite that of said toe-cleaning means for cleaning the foot area including the ankle and lower portion of the user's legs;

the toe-cleaning means comprising;

a pair of support arm members which extend outwardly from said shaft and are fixedly mounted thereto in an aligned spaced-apart position relative to each other;

a toe-cleaning element having oppositely disposed free ends



arranged to be removably mounted to said spaced-apart support arm members; and

means for removably securing said cleaning element to each of said spaced-apart support arm members.

5,444,889

TOOTHBRUSH ASSEMBLY

Bertrand Barre, Doumartin, France, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Apr. 19, 1994, Ser. No. 233,601
Claims priority, application United Kingdom, Apr. 29, 1993, 9308903
Int. Cl.[6] A46B 9/04
U.S. Cl. 15—167.1 6 Claims



1. A toothbrush assembly comprising:

a toothbrush comprising a head portion and a handle portion, the head portion having a major surface and bristles orthogonally attached to the major surface, the handle having first and second ends, the first end being connected to the head portion; and

a stand for releasably retaining the toothbrush, consisting essentially of

a cup portion having a cavity with a mouth at an upper end thereof within which the second end of the handle can be accommodated;

a pair of legs separate and unattached to one another substantially along their entire length and spaced from each other on opposite sides of the cup portion in an arrangement that by themselves support the cup portion, each with an upper and lower end distant from one another, the upper end being connected to the cup portion, each of the legs consisting of a thigh and a calf segment, the thigh segment extending from the upper end of the leg downwards to a thigh joint end, the calf

segment extending from the lower end of the leg upwards to a calf joint end, the thigh and calf joint ends being angularly connected to form a bent knee pointed outwardly away from the cup portion; and

a foot for each leg, the foot being connected to the lower end of the respective leg, the foot having a sole forming a flat lower surface for supporting the stand on a horizontal surface external to the assembly and said mouth of the said cup portion being substantially parallel to each flat lower surface of said sole.

5,444,890

LENS CLEANING DEVICES

Timothy B. Higginson, Highland Park, Ill., assignor to Yuvee Company, Highland Park, Ill.

Filed Feb. 14, 1994, Ser. No. 195,151
Int. Cl.[6] G02C *13/00*
U.S. Cl. 15—214 **15 Claims**



1. A lens cleaning device for cleaning a lens, the lens cleaning device comprising:

first and second flaps including a non-lens-scratching supple material, each flap including an end region substantially the size of the lens and a neck region; and

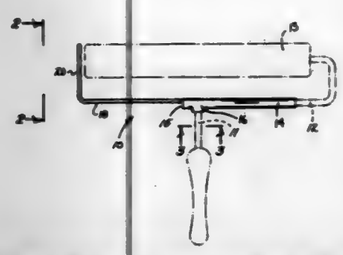
a main piece, sized for fitting in a palm, the main piece encircling the neck region of the first and second flaps and fixing the neck region of the first and second flaps together wherein the main piece includes a nylon webbing material.

5,444,891

EDGE GUARD FOR PAINT ROLLER

Donna M. Benson, P. O. Box 153 30 Old Coach La., Hampton Falls, N.H. 03844

Filed Dec. 12, 1994, Ser. No. 354,422
Int. Cl.[6] B05C *17/02*
U.S. Cl. 15—248.2 **3 Claims**



1. An edge guard for a paint roller having a first handle shaft and a second handle shaft, with a roller member rotatably mounted to the second handle shaft, wherein the edge guard comprises,

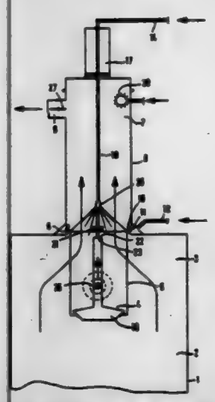
an elongate, resilient body formed of shape retentive material, having an elongate body cavity, the body having a body first end spaced from a body second end, the body first end including a body end wall, with a solid body portion extending into the body from the body end wall, with the body arranged for securement to the first handle shaft, with a rod extending from the body end wall, with the body symmetrically oriented about its longitudinal body axis, and the rod parallel to the body axis, with the rod having a blade secured to an end thereof spaced from the body end wall, with the blade oriented obliquely relative to the axis.

5,444,892

APPLIANCE FOR THE WET CLEANING OF FILTER CARTRIDGES IN FLUIDISED-BED APPARATUSES, SPRAY DRIERS AND MOVING-BED INTALLATIONS

Jürg Ris, Birsfelden; Hugo Eglin, Liestal; Mikael Bonde, Basel; Urs Frey, Muttenz, all of Switzerland, and Francois Bubendorf, Ranspach-le-Bas, France, assignors to Niro-Aeromatic AG, Switzerland

Filed May 25, 1993, Ser. No. 67,518
Claims priority, application Switzerland, May 26, 1992, 1698/92; Jan. 21, 1993, 0176/93
Int. Cl.[6] B08B *3/02*
U.S. Cl. 15—304 **15 Claims**



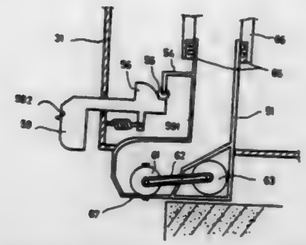
1. Appliance for wet cleaning adhering particles from filter cartridges (4) in process units of the type including fluidised-bed apparatuses, spray driers, moving-bed installations and combinations of such units, by treatment with cleaning fluid which is introduced by a ring of nozzle orifices (10) within the process unit and matched to the cross-sectional geometry of the filter cartridges (4) and fed via a delivery, comprising adjusting members for controlling all material streams, characterized in that the nozzle orifices (10) positioned in the form of a ring are directed towards a filter casing (5) at an angle of inclination α and are arranged in an exhaust-gas space (7), which a sealing point (6) seals off hermetically from a head of a reaction space (3), and a lifting device (17) for executing up-and-down movement of the filter cartridge (4) and an actuable filter-cartridge bottom outlet (18), said filter cartridge (4) being suspended on a linkage (19) of the lifting device (17).

5,444,893

APPARATUS FOR PREVENTING BUMPING AND FALLING OF AUTOMATIC TRAVELLING VACUUM CLEANER

Jin S. Hwang, and Jang W. Lee, both of Busan, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 8, 1993, Ser. No. 117,626
Claims priority, application Rep. of Korea, Sep. 8, 1992, 16351/1992; Sep. 22, 1992, 17275/1992
Int. Cl.[6] A47L *11/10*
U.S. Cl. 15—319 **8 Claims**



1. An apparatus for preventing bumping and falling of an automatic travelling cleaner, comprising:

a cleaner body including an interior portion and an exterior portion;

a dust collecting chamber formed in the interior of said cleaner body;

an extension pipe connected to said dust collecting chamber;

an intake member slidably fitted in said extension pipe;

a packing fitted in one end of said extension pipe and adapted to prevent a fluid from leaking through the one end of said extension pipe;

an ultrasonic wave emitting element disposed between said extension pipe and the dust collecting chamber and adapted to emit an ultrasonic wave indicating a flow rate of a fluid being sucked through said extension pipe;

a pair of ultrasonic wave receiving elements disposed between said extension pipe and said dust collecting chamber and adapted to receive the ultrasonic wave from said ultrasonic wave emitting element and output a signal representative thereof;

fluid flow rate sensing/suction work ratio calculating means, adapted to receive the signal output from said ultrasonic wave receiving elements, for sensing a variation in the flow rate of said fluid being sucked, and calculating a suction work ratio, based on said received ultrasonic waves;

a bumper provided on the exterior portion of said body member;

a bumper hole provided at a predetermined position within said cleaner body;

a contact protrusion member extending through the bumper hole, said contact protrusion member being adapted to support said intake member and disposed to reciprocate forward and backward; and

a spring adapted to resiliently connect said contact protrusion member with said bumper.

5,444,894

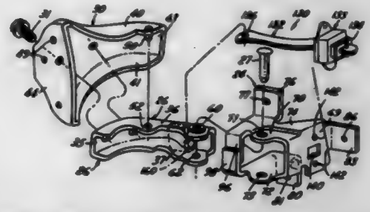
VEHICLE DOOR HINGE WITH INTEGRATED CHECK

Cornelius T. Hefler, Detroit, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1993, Ser. No. 173,225
Int. Cl.[6] E05D *7/10*
U.S. Cl. 16—262 **10 Claims**

1. A three piece hinge assembly for mounting a door for swinging between open and closed positions on the body of a vehicle, said hinge assembly comprising a combination of a body-half hinge sub-assembly providing a body-half hinge mounting plate and a link plate, a door-half hinge mounting plate, means for securing said body-half plate and door-half plate to the body and the door, respectively, a hinge pin for pivotally connecting said link plate to the body-half plate, means for detachably connecting said link plate to said door-half plate, and an elongated track member and track guide hold-open door check mechanism, the combination further comprising:

said body-half hinge plate having an upstanding mounting portion provided with an aperture for mounting said guide mechanism thereon with said guide mechanism slidably receiving said track member, said track member adapted for releasable engagement with the guide mechanism, said track member having one end thereof projecting from said



guide mechanism and through said mounting aperture, and means for pivotally attaching said track member one end to said link plate;

whereby upon the vehicle door being moved between a closed position and an open position that is displaced from the closed position by a predetermined angle said track member engaging said guide mechanism so as to releasably maintain the door in said open position; and

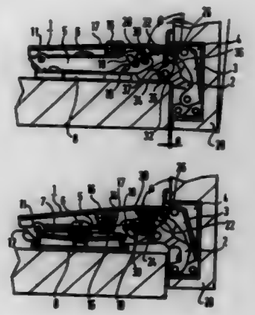
whereby with said door in said open position said link plate being adapted for detachment from said door-half hinge plate such that said door and door-half hinge plate adapted for separation from the vehicle body and said body-half hinge subassembly without the need of dissembling said elongated track member and track guide hold-open door check mechanism.

5,444,895

FURNITURE HINGE

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Oct. 28, 1993, Ser. No. 141,952
Claims priority, application Germany, Oct. 28, 1992, 42 36 444.2
Int. Cl.[6] E05F *1/12, 1/14*
U.S. Cl. 16—278 **6 Claims**



1. A hinge comprising:

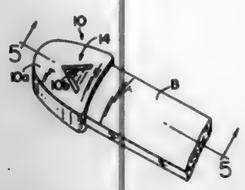
a stationary fitting part in the form of a hinge arm with a base plate carrying said stationary fitting part, said stationary fitting part being connected via pivot levers with a pivotal fitting part, and said pivotal fitting part being pivotable for lateral adjustment of a door or flap carried by the pivotal fitting part in relation to the base plate by a setting device located in a pivot plane of the hinge, a stop member bearing on the hinge arm and being acted upon by a resilient element, said stop member acting upon a cam, being pivotable with the pivotal fitting part so as to urge the pivotal fitting part, in a closing part of its range of movement, towards a closed position and outside said closing part of its range of movement, said stop member being free of effect by said cam, said stop member being connected to the hinge arm and with the base plate by means for moving said stop member by each pivotal movement of the hinge arm in relation to the base plate into a setting, in which said stop member maintains substantially a same position in relation to the cam in the closed position.

5,444,896

MOLDED METAL TIP FOR LEATHER BELT

John Bourget, Southington, Conn., assignor to Waterbury Style, Inc., Newington, Conn.

Filed Dec. 23, 1993, Ser. No. 173,684
Int. Cl.[6] A44B *1/04*
U.S. Cl. 24—265 A **6 Claims**



1. A molded metal tip for a leather belt, said tip comprising a molded metal member having an opening to receive the end of the belt, said molded metal member having front and rear walls adapted to overlie the front and rear surfaces of the belt adjacent the end of the belt, said rear wall having slot means molded therein, said slot means defining a tab portion of said rear wall that can be non-resiliently deformed whereby said tab portion can be embedded into the leather belt to secure said molded metal tip to the end of the leather belt, said slot means having a depth slightly less than the thickness of said rear wall to define a thin skin or flash for said slot means whereby deforming said tab portion of said rear wall at assembly of the metal tip with a leather belt causes said thin skin or flash to rupture and thereby achieve a secure holding action between said deformed tab portion and the belt.

5,444,897

HOOKS RECIPROCABLE BETWEEN A RECESSED INOPERATIVE POSITION AND AN EXPOSED OPERATIVE POSITION

Nathan R. Gross, HCR 70 Box 64, Volborg, Mont. 59851

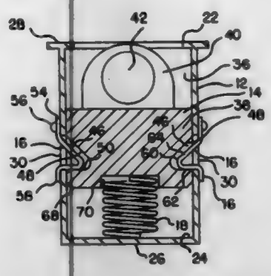
Filed Jan. 6, 1994, Ser. No. 178,008
Int. Cl.[6] B63B *21/04*
U.S. Cl. 24—265 CD **4 Claims**

1. An improved hook assembly reciprocable between a recessed inoperative position and an exposed operative position comprising, in combination:

a housing formed with a cylindrical side wall having an open exterior end and in interior end with a circular end cap enclosing the side wall at the interior end to define a cylindrical opening therebetween, a flange extending radially outwardly from the open exterior end, a pair of apertures formed through a central axial extent of the side wall at diametrically opposed locations and exteriorly facing marking notches formed on the exterior surface of the flange in circumferential alignment with the apertures;

a support positionable within the opening of the housing, the support having an interior extent in a cylindrical configuration and a forward extent with a hook, the cylindrical extent including a pair of recesses at an intermediate axial extent defining a rearward portion inwardly thereof and a forward portion outwardly thereof, each recess having an angled forward ramp and a rearward radial edge;

a pair of leaf springs each having a forward end, a rearward end and a central portion therebetween, the forward end being secured to the exterior surface of the housing axially aligned on opposite sides of the housing, the rearward end being movable radially with respect to its associated aperture, the central portion having a forward extent and a rearward extent and extending into the housing, the central portion of each spring being configured with the rearward extent extending axially transverse to the longitudinal axis of the housing and support, the forward extent of each central portion being formed at an angle generally



parallel with the ramp, the housing with its apertures and springs being sized and positioned with respect to the support and its recesses whereby when the hook is in the forward operative position the central portions of the springs are located within the recesses to effect a locking relationship therebetween but when the support is depressed the support will move radially outwardly by the force of the ramp of the support against the forward extent of the spring to effect a disengagement therebetween whereupon rotation of the support will allow the support to move the hook to the operative position;

a coil spring located between the end cap and the rearward surface of the support urging the support to the exposed operative orientation;

the hook being formed as a circular loop and further including an arcuate extent within the circular loop for functioning as a rope gripper with barbs on the interior surface of the arcuate extent; and

further including a cutting blade formed on an exterior portion of the loop with a clip pivotally mounted with respect thereto for shielding the blade for safety purposes.

5,444,898

WATER-RESISTANT CLOSURE

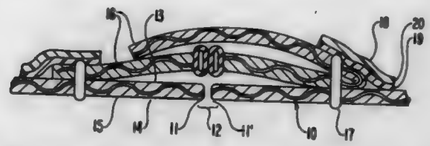
Jean Norvell, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 959,832, Oct. 13, 1992, abandoned.
This application Dec. 20, 1993, Ser. No. 215,195
Int. Cl.[6] A44B *19/32*
U.S. Cl. 24—389 **9 Claims**

1. A water-resistant closure comprising:

(a) a layer of waterproof material selected from the group consisting of rubber, waterproof plastic, coated fabric, and laminated fabric, said waterproof material having two parallel longitudinal edges which define an opening in the waterproof material and having an inside surface and an outside surface;

(b) a longitudinally disposed slide fastening assembly comprising a slide fastening device having a series of cooperating slide fastener elements, and having a first and a second stringer tape positioned and attached longitudinally on either side of said slide fastening device, said stringer tapes each being attached on opposing sides of the opening on the inside surface of the waterproof material so as to cover the opening in the waterproof material;



(c) sealing tape comprising thermoplastic polymeric adhesive, covering and sealing each boundary formed at the point of attachment of each stringer tape and the inside surface of the adjacent layer of waterproof material;

said stringer tapes comprising a waterproof fabric, and

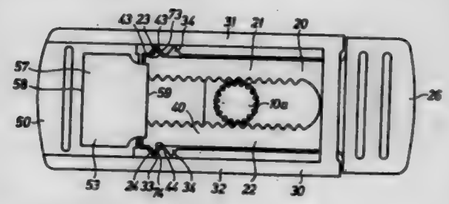
said first stringer tape being longitudinally folded back upon itself to form a flap which covers the series of cooperating slide fastener elements.

5,444,899

SAFETY CATCH

Leo Koppelomäki, Reftele, Sweden, assignor to Lars Brandel, Falkenberg, Sweden

PCT No. PCT/SE92/00274, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO92/19118, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 27, 1992, Ser. No. 137,185
Claims priority, application Sweden, Apr. 30, 1991, 9101364
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—625 **6 Claims**



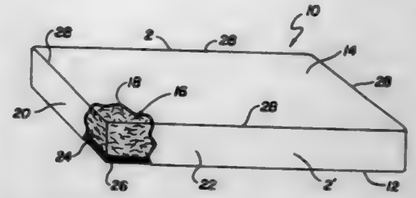
1. An apparatus including a male portion (20) and a female portion (30) disposed, when the male portion is inserted in the female portion, to separate the male portion from the female portion when both portions are subjected to opposingly directed traction forces exceeding a certain magnitude, said male portion (2) including a fork-like device (40) including a first arm (21), a second arm (22) and a web portion (25) interconnecting both arms in their one end regions (45, 46); said female portion (30) including a first material portion (31) and a second material portion (32) between which the fork-like device of the male portion is located when the male portion has been inserted in the female portion; both arms of the male portion and both material portions of the female portion including locking devices (23, 24; and 33, 34, respectively), which cooperate for retention of the male portion in the female portion; the locking devices of the male portion and/or the female portion being provided with abutment surfaces (43, 44; 73, 74, respectively), which are oriented at an oblique angle in relation to the direction of the tractive forces; the arms (21, 22) of the male portion and/or the material portions (31, 32) of the female portion being dimensioned so as to be under the action of forces directed substantially at right angles to the direction of the traction forces, and being resiliently yieldable to be displaced for the separation of cooperating locking devices (23, 24; 33, 34, respectively) from one another when said traction forces exceed said certain magnitude, and a support body disposed, between both arms (21, 22) of the fork-like device (40) to prevent the arms from being displaced towards one another, said support body (10, 10a) being adjustable to fixed positions between the web portion (25) and end areas (47, 48) of both arms located most distally from the web portion.

5,444,900

FLUID-ENCAPSULATING CASKET MATTRESS

Jim Shawhan, Centerville; Gary L. Cox, Boston, both of Ind., and Steve Woodi, Oxford, Ohio, assignors to Vandor Corporation, Richmond, Ind.

Filed Apr. 27, 1993, Ser. No. 53,730
Int. Cl.[6] A63G *17/00*
U.S. Cl. 27—19 **17 Claims**



1. A mattress for retaining fluids within a casket which comprises:

a liquid-impermeable elongated backing sheet;

a liquid-permeable elongated top sheet; and

an absorbent core containing a fiber batting disposed between said backing sheet and said top sheet, and particles of liquid-absorbent polymeric hydrogel in an amount sufficient to retain at least 2 gallons of fluid within said liquid-absorbent, polymeric hydrogel, said top sheet having an inner surface which is contiguous with one face of said absorbent core and said backing sheet having an inner surface which is contiguous with the opposite face of said absorbent core, said backing sheet having a width and length greater than that of said absorbent core, said backing sheet being folded vertically upwardly at its perimeter to thereby provide side walls and end walls which form an impermeable reservoir for said fluids, said top sheet being attached to the walls of said backing sheet so as to enclose said batting and said particles of said liquid-absorbent polymeric hydrogel.

5,444,901

METHOD OF MANUFACTURING SILICON PRESSURE SENSOR HAVING DUAL ELEMENTS SIMULTANEOUSLY MOUNTED

Walter J. Wiegand, Glastonbury; Frank W. Gobetz, South Windsor; Robert H. Bullis, Avon; James P. Tovey, West Granby, and James W. Leanos, West Suffield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

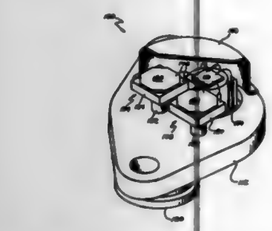
Filed Oct. 25, 1993, Ser. No. 142,237
Int. Cl.[6] H01G *7/00*; G01L *9/12*
U.S. Cl. 29—25.42 **17 Claims**

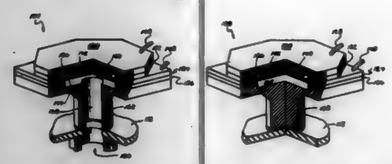
1. A method of fabricating a dual-element, silicon capacitive pressure sensor that provides an electrical signal indicative of a capacitance that varies in a corresponding amount to the variance in the pressure of a fluid applied to a sensing surface of the sensor, comprising the steps of:

a. fabricating a sensing element comprising a conductive

silicon sensing substrate and a conductive silicon sensing diaphragm arranged in parallel and separated by a first dielectric spacer to form an enclosed sensing chamber therebetween;

b. fabricating a reference element comprising a conductive silicon reference substrate and a conductive silicon reference diaphragm arranged in parallel and separated by a second dielectric spacer to form an enclosed reference





chamber therebetween, the conductive silicon reference substrate being fabricated from the same silicon wafer as the conductive silicon sensing substrate, the conductive silicon reference diaphragm being fabricated from the same silicon wafer as the conductive silicon reference diaphragm; and

c. mounting simultaneously the sensing element and reference element to a header.

5,444,902

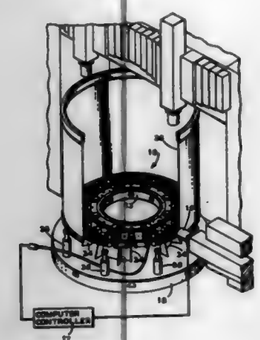
CYLINDER ROUNDING/HOLDING TOOL

Scott E. Casturo, North Canton, Ohio; P. E. Lewis, Mt. Vernon, Ind.; E. V. Harlow, Norris City, Ill.; Gerald L. Olsen, Evansville, Ind.; E. Rod Hensley, Evansville, Ind., and Keith M. Wing, Evansville, Ind., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 29, 1994, Ser. No. 269,225

Int. Cl.[6] B23Q *3/08*

U.S. Cl. 29—56.6 **7 Claims**



1. A cylinder rounding/holding tool, comprising:

a. a generally circular frame having a locating boss at the inner diameter and a plurality of flats around the exterior diameter;

b. two jacks attached to said frame at each flat on said frame such that said jacks are movable radially relative to said frame;

c. a motor operatively engaged with each jack for causing movement of said jacks;

d. a guide tube assembly attached substantially at the center of each of said flats so as to be movable radially relative to said frame;

e. a jack plate attached to each of said jacks and said guide tube assemblies; and

f. a shoe attached to each of said jack plates.

5,444,903

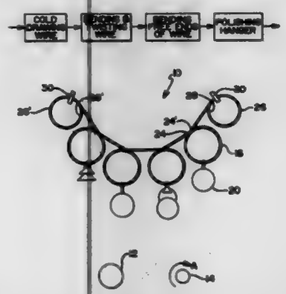
METHOD OF MAKING A LOOP FOR HANGING JEWELRY

Ronald T. Wachler, 9487 Marina Dr., White Lake, Mich. 48386

Continuation-in-part of Ser. No. 115,844, Sep. 2, 1993, abandoned. This application Jul. 14, 1994, Ser. No. 275,113

Int. Cl.[6] B21F *3/00, 43/00*

U.S. Cl. 29—160.6 **15 Claims**



1. A method of making a jewelry loop hanger, the method comprising:

(a) drawing a wire formed of a precious metal and of a first cross-section thickness and first length to a second cross-section thickness and a second length, the wire obtaining a strain-hardened spring-like elasticity;

(b) concurrently bending the wire to a desired shaped loop hanger design while twisting the spring-like wire about its longitudinal axis, the twisting of the wire generating an initial tension in the wire causing a first portion of a loop to spring back and tightly urge against a second portion of the loop.

5,444,904

DEVICE FOR REPLACING THE KNIVES OF A DISC CHIPPER

Pekka Kokko, Hollola, Finland, assignor to Andritz-Patentverwaltungs-Gesellschaft m.b.h., Graz, Austria

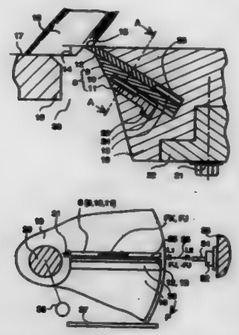
Filed Nov. 8, 1993, Ser. No. 148,320

Claims priority, application Finland, Nov. 18, 1992, 925226

Int. Cl.[6] B27G *13/08*

U.S. Cl. 29—402.08 **12 Claims**

1. A device for fastening and replacing a knife of a disc chipper, each in a single step, the disc chipper including a chipper disc rotatable about a rotational axis, the device comprising in combination a knife holding element provided with at least one elastic element for distributing holding forces to the knife, means for moving said knife holding element in a radial direction of the chipper disc, the knife holding element being movable toward the rotational axis to release the knife from the disc chipper and the knife holding element being



movable away from the rotational axis to fasten the knife to the disc chipper.

5,444,905

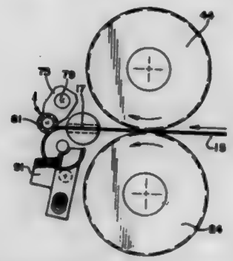
APPARATUS FOR MANUFACTURING MATTRESSES AND BOX SPRINGS

Albert R. St. Clair, Lilburn, Ga., assignor to Simmons Company, Atlanta, Ga.

Filed Mar. 14, 1994, Ser. No. 212,235

Int. Cl.[6] B23P *21/00*; B21F *3/06*

U.S. Cl. 29—564.7 **19 Claims**



1. An apparatus for forming springs from wire and inserting said springs into a mattress, comprising:

a) an inserting assembly for compressing coil springs, inserting said springs into pocketing fabric, and sealing said springs within said fabric to provide a pocketed coil string;

b) a coiler assembly for forming wire into coil springs, comprising:

a frame;

a lower feed roll shaft rotatably mounted relative to said frame;

a lower feed roll attached to said lower feed roll shaft;

an upper feed roll shaft rotatably and pivotably mounted relative to said frame;

an upper feed roll attached to said lower feed roll shaft, said upper feed roll positioned relative to said lower feed roll such that said upper and lower feed rolls are configured to grip wire between them when said upper and lower feed rolls are in a first relative position, and configured to release wire between them when said upper and lower feed rolls are moved from said first relative position to a second relative position;

means for rotating said lower and upper feed roll shafts such that wire is fed at a rate directly proportional to the rotation of said lower wire feed shaft when said upper and lower feed rolls are in said first relative position;

an upper shaft indexing assembly configured to allow said upper and lower shafts to be periodically brought together and separated, causing said upper and lower feed rolls to be correspondingly brought together to said first relative position and separated to said second relative position, to allow wire positioned between said feed rolls to be correspondingly gripped and released;

a first change gear removably attached to said lower feed roll shaft;

a jackshaft rotatably mounted relative to said frame;

a second change gear removably attached to said jackshaft;

a bull gear rotatably mounted relative to said frame;

a wire feed assembly for coordinating gripping and releasing of said wire by said upper and lower feed rolls to the rotation of said bull gear;

a wire cutting assembly for providing periodic cutting of said wire, said periodic cutting being synchronized to the rotation of said bull gear;

a wire diameter forming assembly for providing periodic diameter forming of said wire, said periodic diameter forming being synchronized to the rotation of said bull gear;

a wire spreader assembly for providing periodic spreading of said wire, said periodic spreading being synchronized to the rotation of said bull gear; and

a timing shaft assembly including a timing shaft rotatably mounted relative to said frame and rotatably driven at a speed directly proportional to that of said bull gear, said timing shaft configured to provide timing signals to said string assembly, such that the steps of said coil compression, insertion, and sealing are all synchronized to said timing shaft,

such that said change gears may be selected and replaced to allow the rate of wire feed to be correspondingly changed for a given rate of rotational speed of said bull gear.

5,444,906

MACHINE FOR ASSEMBLING A CONNECTOR TO THE EDGE OF A CIRCUIT BOARD

Iosif Korsunsky; Joanne E. Shipe, both of Harrisburg; Ted M. Harlan, Mechanicsburg; Gerald L. Foreman, Hummelstown; Robert C. Klotz, and Robert W. Brown, both of Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 2, 1993, Ser. No. 116,170

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—741 **16 Claims**

1. A machine for positioning an electrical connector onto a circuit board having first and second opposed major surfaces and having circuitry on at least one thereof extending to adjacent an edge thereof having an edge surface perpendicular to the opposed major surfaces, wherein the connector is being positioned with respect to the edge for electrical and mechanical attachment of leads of said connector to the circuitry, said circuit board defining a plane intermediate and substantially parallel to the opposed major surfaces thereof and that intersects the center of the edge surface at said edge, said machine comprising:

(a) a frame;

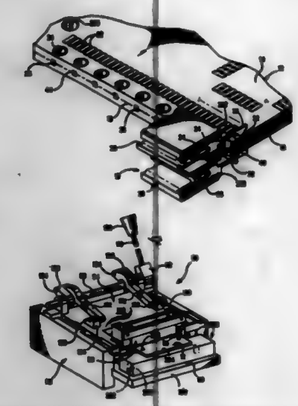
(b) means attached to said frame for receiving said circuit board and positioning said second major surface and said edge with respect to said frame;

(c) sensing means for sensing the thickness of said circuit board;

(d) alignment means coupled to said frame and responsive to said sensing means for positioning said connector in a first position with a centerline thereof in alignment with said plane; and

(e) advancing means for moving said connector from said

first position along said plane and in alignment therewith to a second position wherein said leads of said connector



enter into engagement with said circuitry on said circuit board.

5,444,907

DEVICE TO PULL ELECTRIC METER

John Becker, 218 SW. 13th St., Cape Coral, Fla. 33991

Filed Dec. 13, 1993, Ser. No. 165,169
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—764 10 Claims

1. A device for removing an electric power meter from a meter box, said electric power meter having a protective transparent cover, said device comprising;

a) a single elongated staff having a first end and a second end and constructed of non conductive material;

b) a meter engagement member, said meter engagement member attached to said first end of said staff, said meter engagement member having a contact surface, said contract surface constructed of a non conductive material;

c) securing means extending laterally from said contact surface, said securing means to allow attachment of said contact surface of said meter engagement member, at said contact surface, to said protective transparent cover of said electric power meter;

d) a grip, said grip formed by said second end of said staff, said grip providing leverage means to allow the operator to apply pivotal pressure to said device;

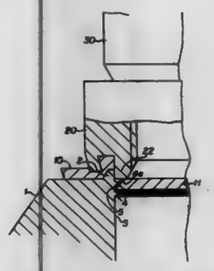
whereby said contact surface of the device attaches to the protective cover of the electric meter, pivotal pressure is applied to the grip, a pivoting action occurs to the electric meter relative to the meter box to facilitate remove of the electric meter from the meter box.

5,444,908

DIE FOR DRIVING PIERCE NUT

Hiroshi Kazino, Komaki, Japan, assignor to Aoyama Seisakusho Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 21,357, Feb. 23, 1993, abandoned. This application May 16, 1994, Ser. No. 243,552
Int. Cl.[6] B23P *19/00*; B21D *28/34*
U.S. Cl. 29—798 8 Claims



1. A die for driving a pierce nut through a plate member during punching of the plate member, comprising:

a die body (1) having an elongated center aperture (3) extending through the die body;

an annular coining portion (2) provided on a top surface of the die body (1) and extending upwardly from said top surface of the die body (1) said annular coining portion (2) having:

an inner surface substantially continuous with an inner wall surface of said center aperture (3) such that said inner surface of said coining portion and said inner wall surface of said center aperture (3) together define a surface which is substantially straight in an axial direction of said center aperture (3), and

a substantially flat top surface meeting said inner surface of said annular coining portion at a right angle,

said annular coining portion being arranged to receive a punch portion of the pierce nut therein during punching of the plate member, said punch portion of the pierce nut having an outer diameter which is slightly smaller than an inner diameter of said annular coining portion, and said punch portion of said pierce nut having an outer surface which is substantially straight and which extends in said axial direction of said center aperture (3); and

at least two spaced apart annular projections (4) provided at an upper portion of the wall surface of said center aperture (3), each of said annular projections (4) extending inwardly from the wall surface of said center aperture (3) so as to form at least two respective reduced diameter portions in said center aperture, adjacent ones of said at least two spaced apart annular projections (4) having a space (5) therebetween in said axial direction of said center aperture (3) for temporarily holding punched debris of the plate member which is pressed into said center aperture (3) and into said space (5) between said adjacent ones of said at least two spaced apart annular projections (4), when said pierce nut is driven through the plate member to punch the plate member;

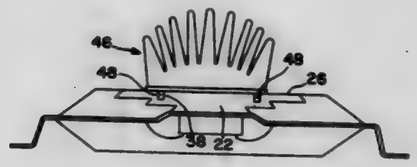
said plate member being punched with an outer edge of a lower end of said punch portion of said pierce nut and an edge formed between said substantially flat top surface and said inner surface of said annular coining portion, substantially without drawing central portions of said punched debris at the time of punching, when said pierce nut is driven through the plate member to punch the plate member.

5,444,909

METHOD OF MAKING A DROP-IN HEAT SINK

Behrooz Mehr, Tempe, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 174,772, Dec. 29, 1993. This application Mar. 22, 1994, Ser. No. 216,156
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 2 Claims



1. A method for constructing an electronic package, comprising:

a) inserting an alignment pin of a mold into corresponding alignment hole of a heat sink;

b) placing a lead frame and integrated circuit onto said heat sink;

c) enclosing said heat sink, said integrated circuit and a portion of said lead frame with a mold cover;

d) filling said mold with a dielectric housing material wherein said lead frame, said integrated circuit, said heat sink and said dielectric housing form a package;

e) removing said package from said mold; and,

f) pressing a pin of a heat fin into said hole of said heat sink attach said heat fin to said package.

5,444,910

PROCESS FOR ASSEMBLING A CONNECTOR INCORPORATING CURVED CONTACT ELEMENTS

Michel Pesson, Sille le Philippe, and Michel Fontenceau, Le Mans, both of France, assignors to Framatome Connectors International, Paris la Defense, France

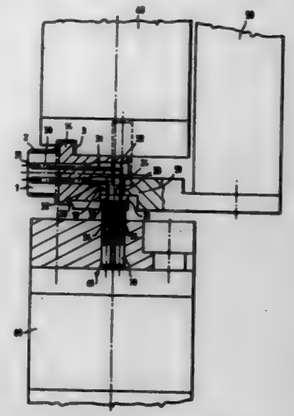
Continuation of Ser. No. 42,629, Apr. 5, 1993, abandoned. This application Aug. 16, 1994, Ser. No. 288,737
Claims priority, application France, Apr. 3, 1992, 92 04066
Int. Cl.[6] H01R *43/20*
U.S. Cl. 29—878 4 Claims

1. Process for assembly of a connector incorporating an insulator comprising a front portion in which working parts of a plurality of contact elements are inserted, said contact elements comprising bent rear portions incorporating a distal end fitted into a corresponding slot in a rear wing of said insulator, said process comprising the steps of

(a) heating hollow pins (70) to a thermoforming temperature of material making up said insulator (1,20);

(b) inserting said distal ends (33) of said contact elements into blind holes (71) in said hollow pins until front ends (74) of said hollow pins abut against edges (23) of said slots (21) of said rear wing;

(c) forcefully pressing said front ends of said hollow pins into said slots to produce, by melting said material of said



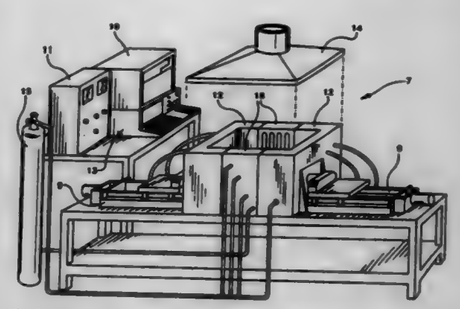
insulator, thermoformed impressions (4) in which said distal ends are immobilized.

5,444,911

GAS TURBINE ENGINE VANE ASSEMBLY REPAIR

Frank J. Goodwater, Carson; Lang D. Huynh, and David S. Kang, both of Carson City, all of Nev., assignors to Chromalloy Gas Turbine Corporation, San Antonio, Tex.

Filed May 5, 1994, Ser. No. 238,317
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.7 14 Claims



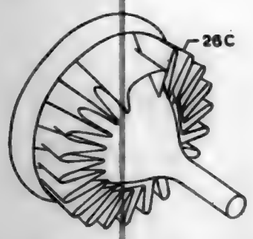
1. A process for repairing a gas turbine engine brazed vane assembly having an airfoil attached by brazing to a platform comprising:

preheating the brazed vane assembly to a temperature below the solidus of the base metal of the vane assembly and above the liquidus of the braze material;

maintaining the temperature while separating the platform from the airfoil by pulling the platform and airfoil apart; followed by repairing or replacing the airfoil and/or platform; and

then reassembling the vane assembly.

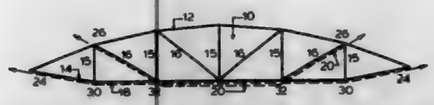
5,444,912
METHOD FOR FORMING AIRCRAFT ENGINE NACELLE EXHAUST MIXERS AND SIMILAR PRODUCTS
Carroll W. Folmer, 29781 Pebble Beach Dr., Sun City, Calif. 92586
Filed Oct. 29, 1993, Ser. No. 145,944
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.01 4 Claims



1. A method for integrally forming aircraft engine nacelle exhaust mixers from a tubular sleeve made of sheet metal comprising the steps of:
a) taking one or more flat sheets of metal and forming the flat sheets into a cylindrical preform shape having abutting edges, top and bottom edges and a longitudinal axis and welding the abutting edges of the cylindrical preform shape together, said cylindrical preform shape having an outer surface and an inner surface;
b) inserting the cylindrical preform shape into a cylindrical pressure reactor having an inner surface and top and bottom edges so that the outer surface of said cylindrical preform shape opposes the inner surface of said cylindrical pressure reactor;
c) positioning a plurality of preform blades into radially extending slots in a preform blade holder and positioning said preform blade holder inside said cylindrical preform;
d) sealing the top and bottom edges of said cylindrical preform with the interior of said cylindrical pressure reactor to form a first cylindrical chamber between the cylindrical preform shape and the cylindrical pressure reactor;
e) applying pressure to the interior of said first cylindrical chamber to force the inner surface of said cylindrical preform shape into the radially extending spaces between said respective radially extending preform blades;
f) releasing the seals on the top and bottom edges of said cylindrical preform shape the removing said cylindrical pressure reactor and positioning dies having blade shaped cavities into position surrounding the outside surface of said cylindrical preform shape;
g) sealing the top and bottom edges of said cylindrical preform shape and said dies and installing a case over said cylindrical preform shape and said dies;
h) applying pressure to the inner surface of said cylindrical preform shape to force its outer surface against the blade shaped cavities of said dies to give a final form to said nacelle exhaust mixer;
i) removing said nacelle exhaust mixer.

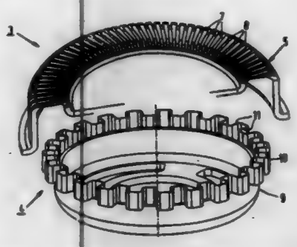
5,444,913
LONG SPAN TRUSSED FRAME
Z. John Nyitray, 6600 SW. 125 Ter., Miami, Fla. 33156
Continuation of Ser. No. 812,407, Dec. 23, 1991, abandoned. This application Jan. 14, 1994, Ser. No. 181,455
Int. Cl.[6] B21D *39/04*; B23P *17/00*
U.S. Cl. 29—897.31 3 Claims

1. A method for constructing a load carrying trussed frame for use in long span structures having the steps of:
a. Providing at least one a hollow, tubular steel compression chord member having internal force transfer means attached thereto at predetermined intervals;
b. Providing a rolled structural shape steel tension chord member;
c. Providing rolled structural steel web members;
d. Connecting said compression chord member, said tension chord member and said web members to form an initial structure of said trussed frame;
e. Attaching each end of at least one high strength steel



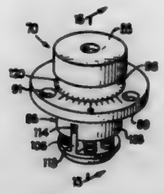
tendon at predetermined locations onto said trussed frame without attaching any other portions of said high strength steel tendon to said trussed frame;
f. Filling said compression chord member with high strength concrete;
g. Waiting a sufficient time to allow said concrete to attain a predetermined strength and to obtain a composite action with said tubular steel compression chord; and,
h. Tensioning said high strength steel tendon in pre-determined increments to pre-compress said trussed frame.

5,444,914
SHAVING APPARATUS
Jacobus N. Dekker, and Dirk Wevers, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 15, 1993, Ser. No. 152,766
Claims priority, application European Pat. Off., Nov. 23, 1992, 92203607
Int. Cl.[6] B26B *19/04*
U.S. Cl. 30—43.6 2 Claims



1. A shaving apparatus having at least one shaving unit comprising an external shaving member and an internal shaving member which is rotatable relative to the external shaving member, the external shaving member having an annular wall portion with inner and outer sides and with lamellae which extend in substantially radial directions and between which hair entry apertures are formed, the internal shaving member comprising a ring-shaped cutter body having a rim adjoining the inner side of the annular wall portion of the external shaving member, said rim being undulated continuously in a plane containing said inner side of the annular wall portion and being provided with cutting edges.

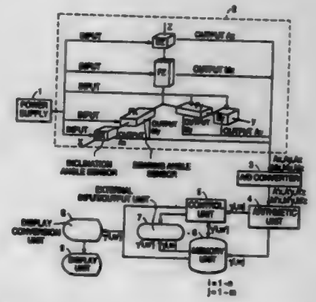
5,444,915
LINK SYSTEM
Leonard D. Hedman, Roscoe, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Division of Ser. No. 125,295, Sep. 22, 1993, Pat. No. 5,337,462, which is a continuation of Ser. No. 913,564, Jul. 14, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 193,705
Int. Cl.[6] G01C *15/02*
U.S. Cl. 33—293 5 Claims



1. A target for attaching to a locator surface on a machine or fixture and for providing an adjustable datum reference surface as part of a datum plane or a reference surface spaced at a predetermined distance from and parallel to a locator surface on a machine tool or a fixture, said target comprising:
a body having an inner flat, planar surface finished accurately for engaging against the precision locator surface of a machine or fixture;
a movable member having an outer flat, planar reference datum surface movably mounted on the body for movement relative to the body to be spaced parallel to the locator surface at a predetermined distance therefrom;
the reference datum surface adapted to cooperate with an indicator to establish a plane or a distance;
the movable member including a threaded shaft having a first precisely ground portion;
a second thread in the body threadedly mated with the threaded shaft; a bore in the body being precisely ground and mated with the first precisely ground portion to prevent a cocking of the outer flat, planar reference datum surface relative to the inner, flat planar surface as the threaded shaft is turned in the second thread on the body;
means acting between the body and the movable member to preload the same against unwanted movement relative to each other; and
indicia associated with the body to indicate the in or out travel of the target datum reference surface relative to the body.

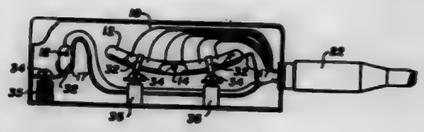
5,444,916
ELECTRONIC STEREO CLINO-COMPASS
Haruo Fukushima, and Shosuke Sooda, both of Tokyo, Japan, assignors to Sato Kogyo Co., Ltd., Toyama, Japan
Filed Oct. 28, 1993, Ser. No. 141,941
Claims priority, application Japan, Jan. 25, 1993, 5-010029
Int. Cl.[6] G01C *17/28*
U.S. Cl. 33—361 3 Claims

1. An electronic stereo clino-compass comprising:
(a) a sensor assembly containing a three-axis inclination angle sensor for outputting electrical signals indicative of an inclination angle of a plane of an object relative to a horizontal reference plane and a three-axis azimuth angle sensor for outputting electrical signals indicative of an azimuth angle of the plane of the object relative to the horizontal reference plane, said three axis inclination angle sensor and said three-axis azimuth angle sensor being composed of three sensor pairs of an inclination angle sensor and an azimuth angle sensor, each sensor pair allocated to a respective axis of a three axis coordinate system;
(b) an analogue-to-digital converter for outputting digital signals converted from said electrical signals outputted from said sensor assembly;
(c) an arithmetic means for computing and outputting data denoting an overall inclination angle and an overall azimuth angle of the plane of the object based on the digital signals output from said analogue-to-digital converter;
(d) a memory means for storing the data denoting the overall inclination angle and the overall azimuth angle output from said arithmetic means, said memory means operatively connectable to an external device so as to supply data to said external device;
(e) a display conversion means for converting the data output from said arithmetic means into display data in conformity with a predetermined display criteria;
(f) display means for displaying the display data obtained by said display conversion means;
(g) control means for sending the data outputted from said



arithmetic means to the memory means, controlling the memory means to send data to the external device, and outputting the data outputted from the arithmetic means to the display conversion means;
wherein said arithmetic means computes and outputs as the data denoting the overall azimuth angle an angle between an intersection line between the plane of the object and the horizontal reference plane and a line extending in a magnetic north direction from the intersection line, and wherein said arithmetic means computes and outputs as the data denoting the overall inclination angle an angle between a line extending perpendicular to the intersection line within the horizontal reference plane and a line extending along a maximum inclination vector of the plane of the object perpendicular to the intersection line, and wherein the overall azimuth angle and the overall inclination angle together define a normal vector of the plane of the object.

5,444,917
SENSING DEVICE
Donald F. Nelson, 305 - 4311 - 73rd Street N.W., Calgary, Alberta, Canada T3B 2M2
Filed Nov. 8, 1993, Ser. No. 148,458
Int. Cl.[6] G01C *9/06*
U.S. Cl. 33—366 10 Claims



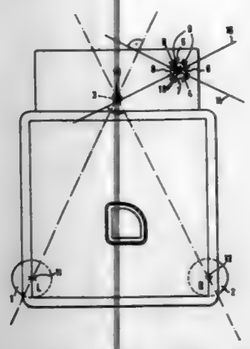
1. A sensing device comprising:
a body containing an arcuate tube;

a first conductor in the tube able to move along the tube;
a plurality of spaced contacts within the tube, said contacts comprising electrically conducting strips of material mounted on a non-conducting base, said base being adhered to the arcuate tube, neighbouring conducting strips being spaced apart by an area of said non-conducting base;
conductors extending from said conducting strips;
a remote read-out to receive information from said conducting strips to indicate the position of the first conductor in the tube and thus the inclination of the tube.

5,444,918
ARRANGEMENT FOR ALIGNING AN APPARATUS UNIT

Roger Leisinger, Zurich, Switzerland, assignor to Mettler-Toledo AG, Greifensee, Switzerland

Filed Dec. 7, 1993, Ser. No. 163,844
Claims priority, application Germany, Feb. 26, 1993, 9302828.8 U
Int. Cl.[6] G01C 9/20
U.S. Cl. 33—384 10 Claims

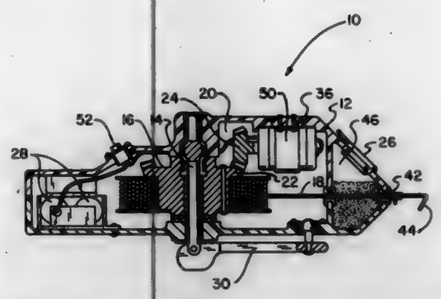


1. An arrangement for aligning an apparatus unit with respect to the direction of gravity, the arrangement comprising a first support device acting on a first support point of the apparatus unit, a second support device acting on a second support point of the apparatus unit, and a third support device acting on a third support point of the apparatus unit, a measuring level serving for controlling alignment of the apparatus unit, the measuring level having a center and containing a bubble having a center, whereby a displacement of the center of the bubble with respect to the center of the measuring level indicates an alignment status of the apparatus unit, the first and second support devices being adjustable support devices, such that the positions of the first and second support points are adjustable in the direction of gravity, wherein the three support points are arranged in the corners of a triangle, the arrangement further comprising two separate optically distinguishable partial areas marked at the measuring level, wherein the first partial area is intersected by a plane through the center of the measuring level extending perpendicularly to a line connecting the first support point and the third support point, and wherein the second partial area is intersected by a plane through the center of the measuring level extending perpendicularly to a line connecting the second support point and the third support point in order to indicate that, for improving the alignment status of the apparatus unit, the first support device requires adjustment when an imaginary straight line extending through the center of the bubble and the center of the measuring level intersects the first partial area and the second support device requires adjustment when an imaginary straight line extending through the center of the bubble and the center of the measuring level intersects the second partial area.

5,444,919
BATTERY POWERED CHALK LINE SYSTEMS

Antonio D. Alves, 100 Pear St., Palmyra, N.J. 08065

Filed Mar. 1, 1994, Ser. No. 203,932
Int. Cl.[6] B44D 3/38
U.S. Cl. 33—414 4 Claims

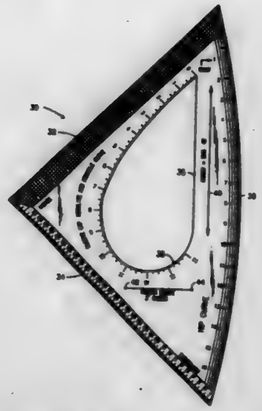


1. A new and improved battery powered chalk line system comprising, in combination:
a housing formed of a rigid material having a top face, a bottom face and side walls as well as a front end and a rear end forming a chamber therein;
a drive shaft secured within the side walls for rotational movement and extending across the width of the chamber;
a spindle mounted on the shaft and selectively couplable for rotation therewith;
a chalk line mounted on the spindle for being dispensed and retrieved with the rotation of the spindle, the chalk line extending through an aperture in the front end of the housing with a hook secured to the end of the line exterior of the housing, the hook being sized to preclude its movement into the housing;
a cavity in the chamber adjacent to the front end in proximity to the aperture for coating the line with chalk powder as the line is moved therethrough;
a plug extending through a wall in the chamber in operative communication with the cavity for the filling of supplemental chalk after use;
a driven bevel gear formed with the spindle for rotation therewith;
a motor within the housing with an output shaft with a drive bevel gear secured thereto in meshing engagement with the driven bevel gear for rotation to rotate the driven bevel gear and the spindle to reel in the line;
batteries located within the chamber coupled to the motor with a switch coupled therebetween to activate and inactivate the motor at the discretion of the user;
a handle mounted to one end of the drive shaft exterior of the housing, the handle being movable to a first position locked with respect to the housing to allow rotation of the spindle through the motor independent of the drive shaft for the automatic reeling in the line, the handle being movable to an operative position to couple the drive shaft with the spindle for manual reeling in the line;
a bubble cartridge functioning as a level mounted to the top face of the housing, with the top face and bottom face being planar and parallel, to determine flatness of an adjacent surface; and
a scribe element having a pointed end and a threaded end with a washer secured intermediate the extent of the threaded end and an associated recipient surface in the rear end of the housing for receiving the threads of the scribe element with the point extending either internally or externally.

5,444,920
TOOLS FOR USE IN DRESSMAKING

Sieglinde E. Nelson, 2149 Pineview Circle, Pensacola, Fla. 32526-8877

Filed Oct. 20, 1993, Ser. No. 139,259
Int. Cl.[6] B43L 7/00
U.S. Cl. 33—494 3 Claims



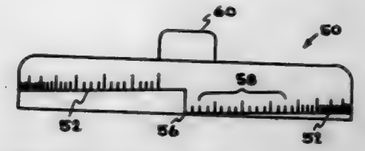
1. A drafting tool comprising:
a generally triangular base member having a pair of sides disposed at ninety degrees to one another and a hypotenuse having a predetermined curvature formed therein;
said predetermined curvature having utility in forming hip curves in dress patterns;
a first side of said pair of sides is a ruler means having an inch scale imprinted along the extent thereof;
a second side of said pair of sides is a ruler means having a centimeter scale imprinted along the extent thereof;
a central opening formed in said tool;
said central opening having a peripheral border of predetermined curvature;
said predetermined curvature providing a sleeve cap, neckline, and armhole curve;
a straight side formed in said central opening for construction of 45 degree angles and for locating fabric bias;
said straight side being disposed at a 45 degree angle from either straight edge of the triangle;
a pair of apertures formed in said tool, radially outwardly of said central apertures being spaced apart from one another by a predetermined distance to enable the construction of a Raglan sleeve.

5,444,921
EDGE BEAD REMOVAL GAP GAUGE

Daniel V. Milina, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 2, 1994, Ser. No. 190,420
Int. Cl.[6] G01B 5/14, 3/30
U.S. Cl. 33—833 6 Claims

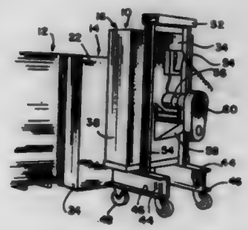
1. An apparatus for determining the distance of a semiconductor wafer from an edge bead removal nozzle comprising:
a rotationally adjustable gap gauge having a top and bottom surface, said gap gauge further comprised of;
a circular recessed area centrally located within said bottom surface of said gap gauge, said circular recessed area extending a first distance into said bottom surface of said gap gauge to a planar surface disposed within said bottom surface of said gap gauge, and
a ramped surface disposed on said bottom surface of said gap gauge peripherally surrounding said circular recessed area, said ramped surface having a first end and a second end, said first end of said ramped surface positioned flush with said bottom surface of said gap gauge, said second end of said ramped surface extending into said bottom surface of said gap gauge such that said second end is flush with said planar surface, said ramped surface disposed making a single revolution around said circular recessed area, said ramped surface configured such that the distance which said ramped surface extends into said bottom surface of said gap gauge towards said planar surface varies with the position of said ramped surface around said circular recessed area.



5,444,922
CORRUGATED PRODUCT DRYER

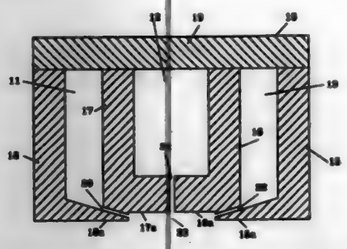
Paul L. Ubelhor, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Filed Sep. 8, 1994, Ser. No. 303,163
Int. Cl.[6] F26B 19/00
U.S. Cl. 34—210 12 Claims



1. A single pass airflow apparatus for cooling and drying corrugated product having open flutes, the apparatus comprising
an airflow duct having a first cross-sectional area having an inlet and an outlet,
a plenum having a first side in airflow communication with the inlet of the airflow duct and a second side open to provide an open-faced chamber in communication with a stack of corrugated product situated outside of the plenum, said second side being open abuttingly to face the stack of corrugated product which presents the open flutes to the plenum, the plenum having a second cross-sectional area greater than the first cross-sectional area, and
fan means for sequentially drawing a fresh airflow charge through the corrugated product into the plenum and from there into the airflow duct through the said inlet and from the airflow duct the fresh charge of drawn airflow is exhausted directly to atmosphere through the outlet of the airflow duct, the fan means being situated in the airflow duct between its inlet and outlet.

5,444,923
QUICK CURE EXHAUST MANIFOLD
Douglas W. Romm; Larry W. Nye, both of Sherman, Tex., and Michael R. Head, Colbert, Okla., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 13, 1993, Ser. No. 47,592
Int. Cl.[6] F26B *13/00*
U.S. Cl. 34—233 8 Claims



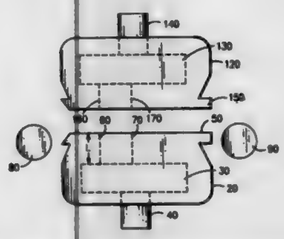
1. An exhaust manifold for use in semiconductor processing for drawing contaminants away from an exposed surface of a semiconductor die mounted on a leadframe mounting pad, comprising:
a manifold housing positioned above and adjacent to said mounted semiconductor die;
an air input channel in said housing for directing air through said housing onto the exposed surface of said semiconductor die: and
two air exhaust channels in said housing adjacent said semiconductor die for drawing air away form and around the exposed surface and side of said semiconductor die.

5,444,924
ELECTRONIC CONTROL OF CLOTHER DRYER
Dan F. Joslin, and Dan J. Ryherd, both c/o WCI Laundry Division, 600 Stockdale St., Webster City, Iowa 50595
Division of Ser. No. 514,700, Apr. 26, 1990, Pat. No. 5,291,667.
This application Oct. 21, 1993, Ser. No. 139,005
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—486 4 Claims



1. A method for predicting a time required for drying a load in a dryer including a heater, an air inlet receiving air from said heater and having a temperature, and an air exhaust exhausting said air from said dryer and having a temperature, the method comprising:
measuring said inlet temperature at a first and second time;
measuring said exhaust temperature at a first and second time;
forming a first difference between the second and first inlet temperatures;
forming a second difference between the second and first exhaust temperatures; and
predicting the required drying time as a function of said first and second differences.

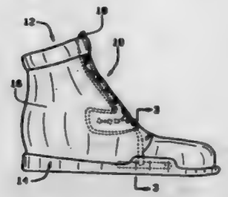
5,444,925
FLUID TREATMENT APPARATUS AND METHOD
Steven L. Bard, Endwell; Jeffrey D. Jones, Newark Valley; Robert H. Katyl, Vestal; Ronald J. Moore, Binghamton, and Oscar A. Moreno, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 911,610, Jul. 10, 1992, Pat. No. 5,289,639. This application Dec. 9, 1993, Ser. No. 164,502
The portion of the term of this patent subsequent to Dec. 9, 2010, has been disclaimed.
Int. Cl.[6] F26B *9/00*
U.S. Cl. 34—638 6 Claims



4. A method for treating a substrate with a fluid, comprising the steps of:
transporting said substrate over a surface, of finite dimensions, including an entrance edge and an exit edge and characterized by an axis extending from said entrance edge to said exit edge, said transporting being carried out at a distance, H, from said surface, from said entrance edge to said exit edge, along a direction which is substantially parallel to said axis; and
impinging at least a first row of at least two fluid jets upon said substrate, emanating from a first row of at least two, spaced-apart fluid jet injectors characterized by a center-to-center spacing denoted by S, said first row of fluid jet injectors being aligned transversely to said axis and penetrating said surface, and therefore said first row of fluid jets is aligned transversely to said axis, each of said fluid jet injectors including a drilled hole of diameter D and length L, with the ratio L/D ranging from about 0.5 to about 40 and with the ratio S/D being greater than 1 but less than or equal to 20, and wherein each of said fluid jets is characterized by a fluid speed, V, at said fluid jet injectors and the fluid of said fluid jets is characterized by a kinematic viscosity nu, and wherein a Reynolds number associated with each of said fluid jets, defined as the ratio V*D/nu, ranges from about 50 to about 30,000.

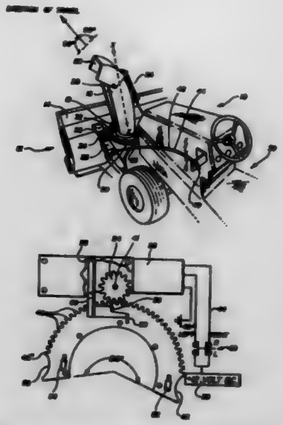
5,444,926
REACTIVE ENERGY APPARATUS PROVIDING CUSHIONING AND A CUSTOM FIT AT THE INSTEP AREA OF A SHOE UPPER AND THE FOREFOOT AREA OF THE SHOE SOLE
Bernie Allen, Wayland; Christopher J. Edington, Derry, N.H.; Eric Swartz, Wilmington, Mass.; Rui Parracho, Peabody, Mass., and Richard Mochen, Milton, Mass., assignors to Converse Inc., North Reading, Mass.
Continuation of Ser. No. 952,297, Sep. 28, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,489
Int. Cl.[6] A43B *7/14*
U.S. Cl. 36—93 17 Claims

1. A reactive energy apparatus providing cushioning, support, and a custom fit to a shoe having an upper with a tongue and an instep area and a shoe sole with a forefoot area located on the sole beneath a forefoot area of a shoe wearer's foot, the apparatus comprising:
first means located on the tongue of the shoe upper for containing a fluid on the tongue of the shoe upper;
second means located on the forefoot area of the shoe sole for containing a fluid on the forefoot area of the shoe sole;
means for communicating fluid between the first fluid containing means and the second fluid containing means, the means including at least one fluid conducting conduit extending between the first and second fluid containing



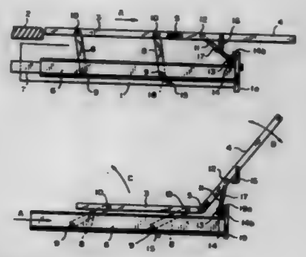
means, the conduit extends through a hollow tube, the tube extends through portions of both the shoe upper and the shoe sole, and the tube forms a protective cover over the conduit and protects the conduit from collapsing and closing due to external forces exerted on the tube; and,
a fluid filling the first fluid containing means and, the second fluid containing means, a portion of the fluid filling one of the first and second fluid containing means being caused to be communicated by the fluid communicating means to the other of the first and second fluid containing means in response to a force being exerted on the one of the first and second fluid containing means.

5,444,927
MOTORIZED MECHANISM FOR ADJUSTING SNOW BLOWING DISCHARGE CHUTE
Paul Sosenko, 314 Cayuga St., Fulton, N.Y. 13069
Filed Mar. 7, 1994, Ser. No. 206,932
Int. Cl.[6] E01H *5/09*
U.S. Cl. 37—260 16 Claims



1. A snow blowing apparatus having a wheeled chassis, said chassis having a front end and an operator's station positioned rearwardly of said front end, said snow blowing apparatus comprising:
a) a snow gathering housing mounted to said front end of said chassis;
b) a snow discharge chute extending essentially vertically upward from said snow gathering housing, said chute having an inlet end rotatably mounted to said snow gathering housing and an opposite, open outlet end, and further having an essentially vertically extending axis about which said chute is rotatable;
c) first gear means fixedly attached to said discharge chute adjacent said inlet end thereof and in concentric relation to said essentially vertically extending axis said first gear means including a plurality of teeth extending in circumferentially spaced relation between first and second terminal ends said first and second terminal ends define first and second end teeth respectively, and being rotatable between terminal clockwise and terminal counter-clockwise positions;
d) second gear means positioned in meshing engagement with said first gear means;
e) means for automatically idling said second gear means upon said first gear means being positioned in one of said terminal clockwise and counter-clockwise positions said idling means including first and second notches formed in said first gear means adjacent said first and second end teeth, respectively;
f) means biasing said first gear means in clockwise and counter-clockwise directions upon reaching said terminal counter-clockwise and clockwise positions, respectively, said biasing means including:
i) first and second spring loaded plungers fixedly attached to said first gear means adjacent said first and second notches, respectively; and
ii) first and second stop means positioned for compressing said first and second plungers upon said first gear means reaching said terminal clockwise and terminal counter-clockwise positions, respectively;
g) motor means connected to said second gear means, said motor means being selectively actuable to rotate said second gear means in alternating clockwise and counter-clockwise directions; and
h) switch means electrically connected to said motor means, said switch means selectively, manually operable to cause said motor means to rotate said second gear means in either of said clockwise and counter-clockwise directions, thereby rotating said first gear means and said chute in counter-clockwise and clockwise directions, respectively.

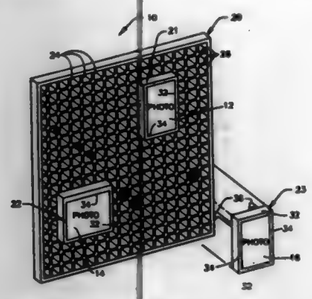
5,444,928
TELESCOPING BUILT-IN IRONING BOARD
Heinrich Segel, Brakel, Germany, assignor to Vauth-Segel GmbH & Co., Brakel, Germany
Filed Sep. 12, 1994, Ser. No. 304,221
Claims priority, application Germany, Sep. 11, 1993, 43 30 867.8
Int. Cl.[6] D06F *81/02*
U.S. Cl. 38—139 11 Claims



1. A built-in ironing board, comprising:
a rear board part having a top face;
a front board part having two longitudinal sides and a top face;

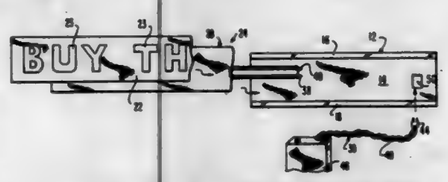
a hinge pivotably connecting said front board part and said rear board part;
a displacement guide having a front end a rear end;
a plurality of parallel guide rods having an upper end and a lower end and being disposed between said rear board part and said displacement guide, said lower end of said parallel guide rods being seated on said displacement guide;
said front board part capable of being folded at said hinge over on top of said rear board part into a resting position so that said top face of said front board part rests on said top face of said rear board part, said front board part capable of being folded out at said hinge and away from said rear board part into an operating position, said top face of said front board part forms a plane with said top face of said rear board part, said rear board part being supported so that it is pivotable from said resting position into said operating position by said plurality of parallel guide rods seated in said displacement guide;
a cross-connector means; and
a guide support disposed between said front board part and said displacement guide in a hinged pivotable manner, said guide support capable of forming a forced guidance for said rear board part (3) and said parallel guide rods (8), and of supporting said front board part (4) in said operating position.

5,444,929
APPARATUS FOR THE DISPLAY OF A MULTIPLICITY OF OBJECTS OR PICTURES
Michael Joseloff, 1148 Fifth Ave., Apt. 9D, New York, N.Y. 10128
Continuation-in-part of Ser. No. 816,609, Dec. 31, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,457
Int. Cl.[6] G09F *7/00*
U.S. Cl. 40—152.1 17 Claims



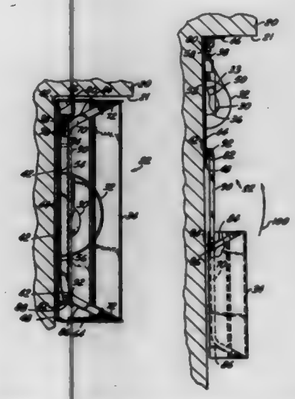
1. A display apparatus, comprising:
a support grid having a first plurality of parallel members and a second plurality of parallel members that intersect at a predetermined angle, said first and second parallel members having a uniform thickness thereby defining a plurality of compartments;
at least one frame capable of displaying a planar object, said at least one frame having a peripheral frame border of a thickness generally equal to said uniform thickness, wherein said frame border includes at least first and second nonparallel sides;
attachment means for selectively attaching said at least one frame to said support grid wherein said first side of said frame border aligns in parallel with said first plurality of members and said second side of said frame border aligns in parallel with said second plurality of members.

5,444,930
POINT OF PURCHASE CHANNEL DISPLAY SIGN WITH ELECTROLUMINESCENT LAMP
Jonathon Loew, E. Meadow, N.Y., assignor to Design Display Group, Inc., Carlstadt, N.J.
Filed Aug. 16, 1993, Ser. No. 106,925
Int. Cl.[6] G09F *13/22*
U.S. Cl. 40—544 12 Claims



1. A point of purchase channel display sign comprising:
an elongated channel member including an elongated web having an opening extending therethrough and upper and lower longitudinally extending lips forming an elongated channel space;
a stencil including an elongated flat flexible sheet with symbols formed by openings formed therethrough, said stencil received in said elongated channel space; and
lamp means including an elongated flat flexible electroluminescent lamp panel received in said elongated channel space between said web and said stencil, and power means coupled to said lamp panel to illuminate said lamp panel to provide illumination through the openings in said stencil, said power means including a voltage source and conductors for coupling said voltage source to said lamp panel, said conductors passing through said opening formed in said web of said channel member.

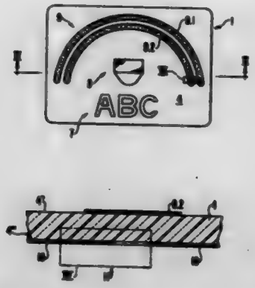
5,444,931
SWING ARM MECHANISM FOR WALL SIGN
Brian J. Hillstrom, Milford, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.
Filed Dec. 23, 1993, Ser. No. 172,548
Int. Cl.[6] G09F *13/04*
U.S. Cl. 40—564 12 Claims



1. An illuminated display device for mounting on a surface comprising:
a housing having a first housing portion adapted for attachment to said surface and a second housing portion removably attached to said first portion;

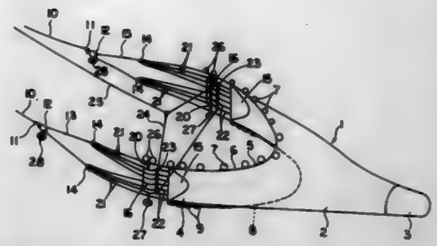
said first housing portion including a rear panel member and at least one light source;
said second housing portion including a front panel member and a frame structure;
at least two arm members connecting together said first housing portion and said second housing portion;
said arm members being rotatably attached to each of said first and second housing portions;
said second housing portion being rotatable by said bracket members from a first position mated with said first housing portion to a second position separated from said first housing portion;
wherein said second position is immediately below said first housing portion relative to said surface.

5,444,932
ELECTRIC SIGN ADVERTISING ELEMENT
Rudolf Jeroma, Bremen, Germany, assignor to Werbelicht KG Rudolf Jeroma, Bremen, Germany
Continuation of Ser. No. 845,423, Mar. 6, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 322,523
Claims priority, application Germany, Mar. 7, 1991, 41 07 581.1
Int. Cl.[6] G09F *13/00*
U.S. Cl. 40—564 11 Claims



1. An illuminatable sign advertising element comprising:
a substantially light-impermeable installation carrier;
at least one light source disposed within an interior of said carrier;
a translucent front panel made from a translucent material covering said carrier, said front panel having an inside which is adjacent to the interior of said carrier and an outside; and
at least one light transmissive advertisement disposed on the outside of said front panel, said advertisement having a color which is different from a color of a region of the front panel adjacent to the advertisement; wherein
the inside of said front panel is light transmissive in an area substantially aligned with the advertisement and light-impermeable elsewhere, and
a light transmissiveness of said light transmissive area varies gradually and regularly thereacross.

5,444,933
TRAWL FISHING GEAR AND TRAWL FISHING METHOD
Hiroui Kinoshita, 6-2, Ohtemachi 2-chome, Chiyoda-ku, Tokyo; Yoshiki Matsushita, Bow Urayasu 206, 14-29, Fujimi 3-chome, Urayasu-shi, Chiba; Yoshihiro Inoue, 18-5, Higashinakano 4-chome, Nakano-ku, Tokyo, all of Japan; Zykin V. Ignatyevich, Pacific Department of Perspective Scientific Fishering Research (TURNIF) 2, 1st May Street, Vladivostok, 690019,
Filed Nov. 10, 1992, Ser. No. 973,911
Claims priority, application Japan, Nov. 12, 1991, 3-295969
Int. Cl.[6] A01K *73/02*
U.S. Cl. 43—9.7 11 Claims



10. Fishing gear for trawling behind a vessel, comprising:
1) an elongate net-body having a closed cod end at the downstream end of said net-body and an expandable and contractible net-mouth at the upstream end of said net-body;
2) elongate warps mounted to opposed sides of said net-mouth for trawling said net-body through a body of water;
3) net-mouth expanding bodies mounted to opposed sides of said net-mouth for expanding and contracting said net-mouth, said net-mouth bodies being deformable to change the surface area of said bodies and pivotable about action points relative to said net-mouth to change the angle of attack of said bodies,
a) said net-mouth bodies comprise an ordered arrangement of juxtaposed, collapsible kites, said kites comprising:
i) sheets of flexible, canvas material extended between metallic frames;
ii) two opposed edges of said canvas material being cramped to said metallic frames and two opposed edges of said canvas material are unsupported;
iii) the vertical length of said kites being approximately 1/7 the length of the forward, vertical edge of said net-mouth;
b) adjacent collapsible kites being interconnected along a common edge;
c) said kites being pivotally mounted to a deformable, vertically extending action point, said action point comprising:
i) a vertically extending chain;
ii) said metallic frames including brackets mounted proximate to and extending from the upstream edge of said metallic frames at one end, and rotatably mounted to said chain at the opposed end;
4) means for pivoting said net-mouth expanding bodies about said action points from the vessel,
i) said pivoting means being rotatably mounted proximate the downstream edge of said metallic frames.

5,444,934

INTRODUCTION AND DESCRIPTION OF THE PRIOR ART

Desmond J. LaTouche, 1315 Patricia Blvd., Kingsville, Ontario, Canada N9Y 2R3

Filed Dec. 14, 1993, Ser. No. 166,716
Int. Cl.[6] A01K 87/00
U.S. Cl. 43—18.1 18 Claims



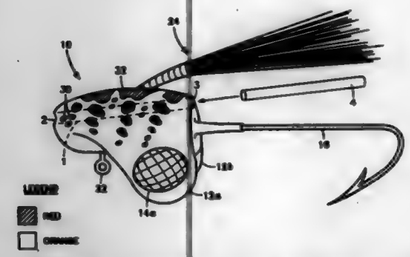
1. A portable collapsible fishing rig providing attachment means for internal and external industry standard reels of left and right-hand orientation, and for internal storage of a rod, said rig comprising a longitudinally extending main body adapted to be gripped by the user and having a cavity open at one end for receiving an internal reel, a nose cone screwably attached to one end of the main body to removably enclose said cavity, an extension handle pivotally attached to the other end of said main body for extra leverage, and a rod mast pivotally attached to the free end of said nose cone, said rod mast adapted to support a rod during fishing and having a cavity to store said rod when not fishing.

5,444,935

FISHING LURE WITH JET-STREAM HOLE AND DRIED BAIT PLUGS FOR INSERTION THEREIN

William E. Pable, 203 Madera St., Ventura, Calif. 93003

Continuation-in-part of Ser. No. 838,544, Feb. 19, 1992, Pat. No. 5,245,782. This application Jul. 12, 1993, Ser. No. 90,286
Int. Cl.[6] A01K 85/00
U.S. Cl. 43—42.06 15 Claims



1. A fishing lure comprising: a lure body having a cavity therein for receiving a water-disassociatable bait plug, said cavity having at least one opening sized to permit insertion of a cylindrical bait plug therethrough and into said cavity;

wherein said cavity comprises a cylindrical jet-stream hole having a second opening, said jet-stream hole extending from said one opening to said second opening, one of said openings permitting influx of water to dissociate said bait plug and the other of said openings permitting outflow of water containing material dissociated from said bait plug, said cylindrical jet-stream hole and said first opening having at least nearly equal diameters,

a pair of sloping wings extending non-horizontally with respect to a line of flight of said lure through water and a reflective eye in each of said wings, said fish hook extending in a direction corresponding to that of said sloping wings, and

light transmissive chambers extending from the rear of each of said eyes to a back surface of each of said wings, whereby to admit light rearwardly into each of said eyes.

5,444,936

TROLLING UNIT

Donald McDonald, 3375 Maple Rd., Wixom, Mich. 48393, assignor to Donald McDonald, Walled Lake, Mich.

Continuation of Ser. No. 939,613, Sep. 2, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,068
Int. Cl.[6] A01K 91/00
U.S. Cl. 43—42.74 25 Claims



1. A trolling unit for attachment to a fishing line comprising:

a spreader, said spreader including a central elongated member and two outwardly extending arm portions configured such that fishing tackle for hooking a fish may be connected to said arm portions;

a self-releasing weight release mechanism interconnecting said fishing line and said spreader, said self-releasing weight release mechanism connected on one end to said fishing line and connected on an opposite end to said spreader, said weight release mechanism operative to release a weight attached thereto when a force applied to said fishing line exceeds a threshold value wherein said self-releasing weight mechanism remains connected to said fishing line and said spreader after said weight is released from said weight release mechanism.

5,444,937

CLIP PARTICULARLY FOR USE AS A SINKER

Jacques Berner, 17, Chemin des Billettes, 17220 Clavette, France

Filed Mar. 31, 1994, Ser. No. 220,919
Claims priority, application France, Mar. 31, 1993, 93 03729
Int. Cl.[6] A01K 95/00
U.S. Cl. 43—44.91 8 Claims

1. A clip for use as a sinker for fishing, comprising two half-shells (1, 2) forming jaws having the shape of spherical sectors of the same diameter, the sector of at least one of the half-shells (1, 2) subtending an angle less than 180°, said half-shells (1, 2) being assembled with each other about a pivotal axis (D) forming a common diameter of said half-shells (1, 2) by a resilient blade (3) anchored on the half-shells (1, 2) at a point (8) on said diameter, said resilient blade (3) being so



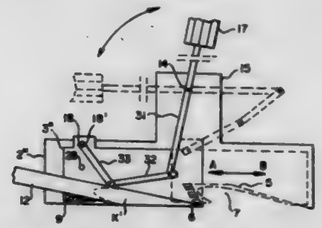
shaped as to exert a continuous gripping action maintaining the two half-shells (1, 2) in a closed position.

5,444,938

DEVICE FOR VEE - GRAFTING

Siegfried Piessenberger, Vienna, Austria, assignor to Progias Handelsgesellschaft m.b.H. & Co. KG, Vienna, Austria

Filed Aug. 11, 1993, Ser. No. 107,778
Claims priority, application Austria, Oct. 12, 1990, A 2058/90
Int. Cl.[6] A01G 1/00
U.S. Cl. 47—6 8 Claims



1. Device for Vee-grafting, comprising:

a V-shaped outer part defining a longitudinal axis;

a V-shaped inner part adapted to slidingly move in said outer part along said longitudinal axis;

means for moving said inner part in said outer part along said longitudinal axis;

said V-shaped outer part having a forward aperture formed therein for partly receiving a stock into which a V-shaped groove is to be cut; and having a rear aperture formed therein for receiving a scion;

an angled knife formed at said rear aperture for cutting the scion when said inner part is moved in said outer part along said longitudinal axis; and

an angled knife operatively associated with said forward aperture for cutting the V-shaped groove in the stock when said inner part is moved in said outer part along said longitudinal axis.

5,444,939

PLANT TIE FOR INDOOR PLANTS

Brian Cullen, P.O. Box 3124, La Grande, Oreg. 97850

Filed Mar. 30, 1994, Ser. No. 219,921
Int. Cl.[6] A01G 17/06, 17/14
U.S. Cl. 47—44 1 Claim

1. A plant tie for the stabilization and support of delicate and soft stemmed house plants in combination with a plant, said tie comprising an elongate strip of flaccid cloth, said strip encircling a portion of a stem of said plant in a closed loop for the support thereof, said strip having opposed ends, cooperating fastener means in the form of flexible hooks and loops on said opposed ends adjustably and releasably securing said ends to each other to form said closed loop, and mounting means located substantially midway between said opposed end for securing said tie to an interior support surface, said mounting means comprising a single fastener having a head portion engaged with said strip for clamping a portion of said strip against said surface, said head portion presenting an enlarged



area for accommodating a user's finger or thumb thereagainst, and an elongate, thin pin-like shaft fixed to said head portion and projecting through said strip generally laterally from a face thereof for insertion into said support surface upon finger or thumb pressure engagement against said head portion to secure said tie to the surface, said mounting means being manually removable and repositionable.

5,444,940

TERRACED PLANTER

Kimberly L. White-Wexler, and Richard T. Wexler, both of 590 Berkley St., Berkley, Mass. 02779

Filed Aug. 17, 1993, Ser. No. 107,514
Int. Cl.[6] A01G 25/00
U.S. Cl. 47—82 10 Claims



1. A portable and decorative planter for holding arrangements of plants, comprising:

A) an integrally-formed housing of rigid, unitary construction having a plurality of compartments defined by a plurality of partition walls, each said compartment being arranged to hold soil defining a separate plant bed for growing one or more plants having similar soil and watering needs, said housing further including an outer wall, and a bottom connected orthogonally to said outer wall; and

B) a drip pan disposed under said housing for collecting water therefrom, said drip pan including a bottom wall, an upstanding lip connected to said bottom wall and disposed around the perimeter of said housing, and a plurality of stand-offs disposed between said housing and said lip for providing a gap therebetween to permit evaporation of water from said drip pan;

C) drainage means associated with each said compartment for allowing water to exit each said compartment and enter said drip pan, the drainage means associated with each said compartment being operable independently of said drainage means associated with other of said compartments, each said drainage means comprising at least

one weep hole of selected size located at a bottom wall of said associated compartment; and

D) spacing means disposed between said housing bottom wall and a bottom wall of said drip pan for establishing a spacing therebetween for collection of water, said spacing means having a plurality of ribs, said ribs comprising a first rib disposed along said housing bottom wall and between said outer wall and said drip pan bottom wall, and a second rib disposed across said housing bottom wall, whereby a mix of plants having differing soil and watering needs can be grown together within separate ones of said compartments of said planter.

5,444,941

MANTRAP

Thomas Gallenschütz, Bühl/Baden, Germany, assignor to Gallenschütz Sicherheitstechnik GmbH, Bühl/Baden, Germany

Filed Apr. 15, 1994, Ser. No. 228,119

Claims priority, application Germany, Apr. 16, 1993, 43 12 477.1

Int. Cl.[5] E06B *11/08*

U.S. Cl. 49—42 **11 Claims**



1. A mantrap comprising a demarcation in shape of a segment of an arc at one side of a passage, said demarcation having an open side facing the other side of the passage; said demarcation extending along a predetermined angle of circumference and having a barrier element rotating around a vertical axis positioned approximately in a center of the demarcation and having leaves extending out from the vertical axis of rotation and including equal angles and comprising grating rods positioned separately and one above another; a barrier rake extending out from an axis of said barrier element to the other side of the passage, said barrier rake comprising grating rods displaced in position from the grating rods in said leaves and one above another; said barrier-rake rods allowing unimpeded rotation of the barrier element; said barrier rake being a gate element movable between a closing position and a releasing position; said barrier element being a rotating door with at least two leaves.

5,444,942

WINDOW CONSTRUCTIONS

Rolf A. Knudsen, Vatne, Norway, assignor to A/S Spilka International Ltd., Alesund, Norway

Filed Jun. 25, 1993, Ser. No. 82,764

Claims priority, application Norway, Jun. 30, 1992, 922578

Int. Cl.[5] E05D *15/56*

U.S. Cl. 49—261 **11 Claims**

1. A window construction comprising

a window frame;

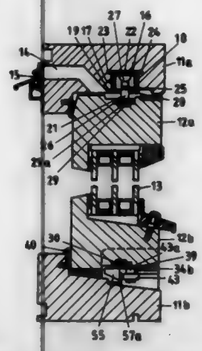
a window casement side-hingedly mounted in said frame for rotation through 180 degrees;

a carriage containing support wheels displaceable in a first horizontal guide of said window frame;

said casement being pivotally mounted about a first vertical axis at one upper end thereof via a first pivot pin of said carriage and at a lower corner thereof via a second pivot pin of a lower guide member displaceable in a second horizontal guide of said window frame;

said casement being pivotally mounted approximately at its center axis about a second vertical axis at one end of upper and lower support arms while the opposite end of each said arm is pivotally mounted about a third vertical axis at an associated corner of said window frame;

said carriage being adapted to support said window casement in a suspended condition via a support head at the upper end of a stem portion of said first pivot pin and designed with a partially spherical seat forming a pivot



bearing for an equivalent partially spherical support surface of said support head; and

said carriage defining a vertical bore through which said first pivot pin passes between forward and rear wheels thereof, the diameter of said vertical bore being less than the diameter of said seat and greater than the diameter of said stem portion of said first pivot pin.

5,444,943

ROOF FOR A SILO OR THE LIKE

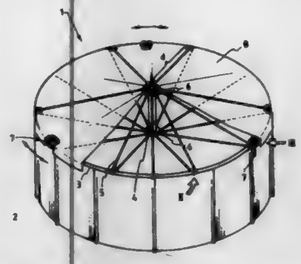
Hendrik W. Schelfhorst, Eerbeek 2, Zwolle NL-8033 BJ, Netherlands

Continuation of Ser. No. 63,117, May 17, 1993, abandoned, which is a continuation of Ser. No. 800,984, Dec. 2, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 184,737

Claims priority, application European Pat. Off., Jun. 21, 1991, 91201603

Int. Cl.[6] E04B *7/00*

U.S. Cl. 52—63 **30 Claims**



1. Roof for a silo comprising:

a frame having a variable tension, said frame having a peripheral element that is adjustable in length, a central core, and a plurality of tension elements, said central core having a first support and a second support mutually connected at an axial distance apart along said central core; said tension elements being distributed about the peripheral element;

wherein each of said tension elements has (1) a first end attached to said first support; (2) an intermediate section in contact with said peripheral element and positioned a distance d from said first support; and (3) a second edge attached to said second support, such that the tension of the frame is varied by varying the distance d between the intermediate section and the first support; and

wherein the peripheral element has a circumference that is adjustable in magnitude for varying the distance d between the intermediate section and the first support.

5,444,944

LOW COST COLLAPSIBLE ENCLOSURE

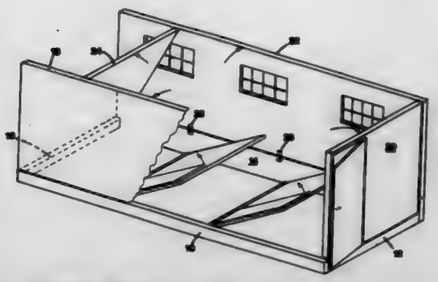
Malcolm J. C. Roelofsz, P.O. Box 360 Umhlanga Rocks, 4320 Natal, South Africa

Filed Aug. 25, 1993, Ser. No. 111,450

Claims priority, application South Africa, Aug. 25, 1992, 92/1344

Int. Cl.[6] E04H *1/00*

U.S. Cl. 52—64 **7 Claims**



1. A foldable unit for an enclosure comprising a plurality interconnected of base elements of differing heights, each of said base elements having a wall hinged thereto in overlapping relationship when said walls are folded relative to said plurality of base elements; and means to secure the walls in an erected enclosure-forming structure when said walls are unfolded relative to said plurality of base elements.

5,444,945

WALL PANELLING SYSTEM

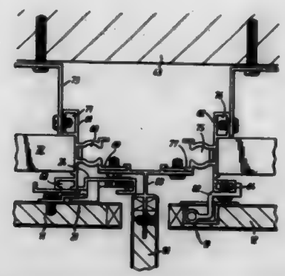
David Goodwin, Warren Lane, Great Britain, assignor to Thrislington Sales Limited, Deeside, England

Filed Nov. 24, 1992, Ser. No. 980,952

Claims priority, application United Kingdom, Nov. 25, 1991, 9125009

Int. Cl.[6] E04B *2/90, 1/344*

U.S. Cl. 52—65 **20 Claims**



1. A wall panelling system comprising: two upright posts, a panel having a front face and a rear face, a hinge connecting said panel to one of said posts and means for locking said panel to the other of said posts; said posts having a cross-sectional shape providing features for the attachment of said hinge and said locking means; said locking means comprising a latch member pivotally mounted with respect to said first post, a catch fixed relative to said panel and an actuating element; said latch member being movable by means of said actuating element between a latched position in which said actuating element engages said catch and an unlatched position in which said actuating element does not engage said catch, said hinge comprising a hinge bracket and a first hinge element on said hinge bracket, said hinge bracket being fixed to said second post, and a second hinge element which is let into said rear surface of said panel, said first hinge element comprising a bush and said second hinge element comprising a housing including a pin on which said bush is pivotally mounted.

5,444,946

PORTABLE SHELTER ASSEMBLIES

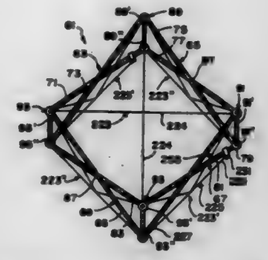
Theodore R. Zeigler, Alexandria, Va., assignor to World Shelters, Inc., Alexandria, Va.

Filed Nov. 24, 1993, Ser. No. 156,695

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[6] E04H *12/18*

U.S. Cl. 52—86 **40 Claims**



1. An expandable and collapsible scissor assembly for an expandable and collapsible structure, comprising:

a first strut having a first and a second end;

a second strut having a first and a second end;

means for limiting the first and second ends of the first and second struts to movement in a substantially common plane, the first and second struts overlying each other at a point in the plane;

first means for preventing movement of the first end of the first strut away from the second end of the second strut beyond a first expanded distance;

releasable means for releasably preventing movement of the second end of the first strut away from the first end of the second strut beyond a second expanded distance, the releasable means being releasable to permit movement of the second end of the first strut away from the first end of the second strut beyond the second expanded distance;

first means for locking the first end of the first strut in a spaced relationship with the first end of the second strut;

second means for locking the second end of the first strut in a spaced relationship with the second end of the second strut.

5,444,947

FOUNDATION VENT

Barry K. Miller, Seattle, Wash., assignor to Noll Manufacturing Co., Richmond, Calif.

Filed Feb. 9, 1993, Ser. No. 15,605

Int. Cl.[6] E04G *15/00, 21/14*

U.S. Cl. 52—100 **8 Claims**

1. Apparatus for creating an opening when forming concrete with forms, said apparatus being adjustable to accommodate a plurality of concrete thicknesses, comprising:

(a) a first frame comprising:

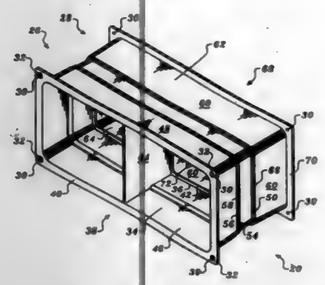
(i) a first hollow body having a first inner end and a first outer end, said first hollow body having forming walls for contacting and retaining concrete to create a portion of the opening;

(ii) a first flange surrounding said first outer end, said first flange including first means for attachment to the forms, said first means for attachment including a first breakaway section of said first flange, said first breakaway section having an ability to hold said first frame in place to form the concrete but being sufficiently weakened so that, when the forms are pulled away, said first breakaway section breaks off said first flange without damaging other areas of said first flange, said first breakaway section comprising an annular groove immediately adjacent an area of attachment of said first flange to the forms; and

(iii) at least one shoulder circumscribing an exterior surface of said first hollow body; and

(b) a second frame comprising:

(i) a second hollow body having a second inner end and a



second outer end, said second inner end having a perimeter larger than the perimeter of said first inner end of said first hollow body;

(ii) a second flange surrounding said second outer end, said second flange including second means for attachment to the forms, said second means for attachment including a second breakaway section of said second flange, said second breakaway section having an ability to hold said second frame in place to form the concrete but being sufficiently weakened so that, when the forms are pulled away, said second breakaway section breaks off said second flange without damaging other areas of said second flange, wherein said second breakaway section comprises an annular groove immediately adjacent an area of attachment of said second flange to the forms; and

(iii) at least one ridge around the inside of said second hollow body, said at least one ridge being shaped to engage said at least one shoulder of said first frame as said second inner end of said second frame is telescoped over said first inner end of said first frame.

5,444,948

ADJUSTABLE ARCH SUPPORT

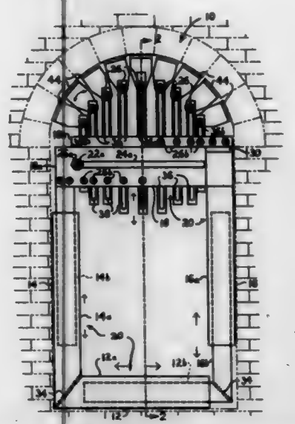
William B. Trapp, 135 Madden Run Rd., New Gallilee, Pa. 16141

Filed Feb. 9, 1994, Ser. No. 194,504
Int. Cl.[6] E04G *21/26*
U.S. Cl. 52—127.2 10 Claims

1. An adjustable arch support for use in the construction of masonry arches, comprising:

a substantially horizontal base member having opposite first and second ends, oppositely spaced apart substantially vertical first and second side members extending upwardly respectively from said first and second ends of said base member with each of said side members respectively having a lower and an upper end, and a substantially horizontal header having opposite first and second ends and extending between said upper ends of said first and second side members to form a generally rectangular frame;

said header including a plurality of vertically adjustable, mutually coplaner masonry support fingers extending substantially vertically upwardly therefrom to define an interior surface of an arch, whereby;



said arch support is placed in a partially completed opening in a masonry structure and said masonry support fingers are vertically adjusted to provide support for a masonry arch constructed over the opening during arch construction.

5,444,949

COLLAPSIBLE GROUND PIERCING WHEEL ANCHOR FOR MOTOR VEHICLE

Rick Ciaccio, 2687 A Orange Ave., Costa Mesa, Calif. 92627

Filed Mar. 24, 1994, Ser. No. 217,492
Int. Cl.[6] B60T *3/00*; B60S *9/00*
U.S. Cl. 52—155 10 Claims



1. A collapsible wheel anchor for restraining a motor vehicle, comprising:

(a) a penetrating means of predetermined shape and size for piercing and displacing an earth surface,

(b) an upper frame member joined to said penetrating means by an attaching means,

(c) a base frame member disposed in substantial horizontal relation to said upper frame member, with said frame members being joined by an engaging means,

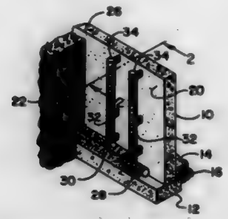
(d) said frame members are linked by a pair of elongated struts disposed on each side thereof by a hinging means and in spaced relation so as to be able to support said members in a rigid, open triangular orientation.

5,444,950

DRAINAGE SYSATEM FOR BUILDING FOUNDATIONS

Chad M. Kelly, and Rodney J. Kelly, both of 5011 N. 10th St., Marion, Iowa 52302

Filed Dec. 28, 1992, Ser. No. 997,335
Int. Cl.[6] E02D *19/00*
U.S. Cl. 52—169.5 4 Claims



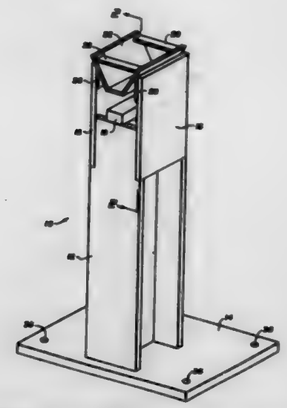
1. A drainage system for draining surface and groundwater from a substantially vertical structure that extends beneath the surface of the ground and which has an exterior surface in contact with the ground, said drainage system comprising: a drain pipe extending substantially horizontally along the structure at a level beneath the ground surface, said drain pipe having a plurality of openings for receiving the water to be drained, and a plurality of individual vertically extending drain pipes located at selected spaced intervals along and near the exterior surface of the structure, each of the vertically extending drain pipes being independently installed along the exterior surface of the structure and each pipe having a plurality of openings throughout its entire length for receiving the water to be drained from the ground surrounding the pipe, and each of the vertically extending drain pipes extending from a point beneath the ground surface to a point above the horizontally extending drain pipe.

5,444,951

BRACKET FOR SUPPORTING FENCE POSTS

James R. Scott, Seabird Mobile Home Park, RR 1, Ladysmith, British Columbia, Canada V0R 2E0 , and Andrew R. Hrytsak, 5909 Tweedsmuir Crescent, Nanaimo, British Columbia, Canada V9T 5Y7

Filed Mar. 7, 1994, Ser. No. 207,292
Int. Cl.[6] F02D *5/54*
U.S. Cl. 52—169.9 8 Claims



1. A bracket for supporting a fence post comprising:

a base plate having attachment means to a base;

a longitudinal member extending up from the base plate and attached thereto having at least one aperture therein, the longitudinal member having a cross-section to provide a sliding fit within a fence post;

an expansion basket at the top of the longitudinal member, the basket having tapered sides extending from within the longitudinal member to a larger cross-section than within the longitudinal member, and

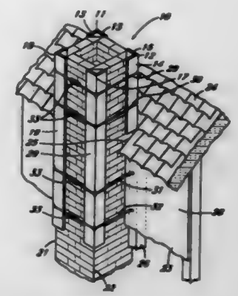
tension means between the expansion basket and the longitudinal member to force the expansion basket within the longitudinal member and expand the longitudinal member to grip a fence post positioned over the longitudinal member.

5,444,952

CHIMNEY REINFORCING DEVICE

Paul R. Jackson, 4020 S. Lindsey Ave., Pico Rivers, Calif. 90660

Filed Dec. 12, 1994, Ser. No. 353,683
Int. Cl.[6] E04C *5/00*
U.S. Cl. 52—219 7 Claims



1. A chimney and reinforcing device in combination for increasing the resistance of a brick chimney to destruction during an earthquake, the chimney to be reinforced being of the type which is constructed between vertical studs within a wall, said chimney extending outwardly from the wall past a roof, the chimney having two external corners and two internal corners which intersect the roof, and the chimney having four top corners, the reinforcing device comprising:

two longer lengths of angle iron extending over the two external corners from near two of the top corners downwardly to a distance of at least two feet below the lowest point of intersection of the chimney with the roof line;

two shorter lengths of angle iron extending over the two internal corners from near two of the top corners to near the intersection of the chimney with the roof; and

at least one upper cable surrounding the four lengths of angle iron, said cable including tightening means; and

at least one lower cable surrounding the two longer lengths of angle iron, said lower cable being secured to the vertical studs between which the chimney is constructed, whereby the chimney is protected against damage during an earthquake.

5,444,953

INTERIOR CORNER JOINT SIMULATING GROUT LINE FOR WALL BOARDS SIMULATING TILES EMBEDDED IN GROUT

Paul J. Koenig; Douglas F. Hutchings; David W. Gibbard, all of Lapeer, and Richard C. Maxwell, Millington, all of Mich., assignors to Trayco, Inc., Lapeer, Mich.

Filed Aug. 9, 1991, Ser. No. 742,977
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—282.1 4 Claims

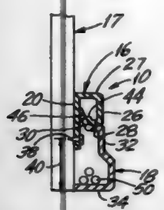
1. A plastic corner joint simulating grout line adapted to join

together at least two wall board panels simulating tiles embedded in grout at a corner intersection comprising:
- a first base section having an outer edge and an inner edge;
- a second base section having an outer edge and an inner edge, said inner edge of said second base section being adjacent and joined to said inner edge of said first base section, said second base section extending from said inner edge of said first base section and being substantially perpendicular to said first base section, said second base section being substantially straight between its outer and inner edges;
- a substantially straight rib extending from said first base



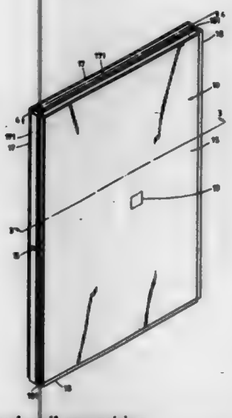
section toward said outer edge of said second base section, said rib being disposed adjacent said second base section and being canted toward said second base section, said rib, first base section and second base section defining a first channel adapted to receive at least a first wall board panel;
- a flange, including an outer surface which is concave in cross-section and simulates a grout line, extending from said rib in the direction of said outer edge of said first base section and being inclined toward said first base section, said flange, rib and first base section defining a second channel adapted to receive at least a second wall board panel in a substantially perpendicular relationship to said at least first wall board panel.

5,444,954
DOOR MOLDINGS
Carl Anderson, 2589 Richmond Ter., Staten Island, N.Y. 10303
Filed Aug. 11, 1993, Ser. No. 104,288
Int. Cl.[6] E04F *19/02*
U.S. Cl. 52—288.1 **19 Claims**



18. Door, window, floor molding and the like, comprising:
- a stationary piece for attachment to a structure wall, including:
- a back wall for positioning against and attachment to the structure wall; and
- a clamping pocket extending outward from the back wall on a side opposite the side for attachment to the structure wall; and
- a removable piece including:
- a lip section;
- a stabilizing wall; and
- a mid section connecting the lip section and stabilizing wall, wherein the lip section is slideably and removably positioned within the clamping pocket of the stationary piece and wherein the clamping pocket includes:
- a side wall attached, at a first side, to a first end of the back wall and extending outward therefrom;
- a front wall extending outward from a second side of the wall and along but separated from the back wall; and
- a clamping wall attached to the front wall, extending between the front wall and back wall, and spaced from the back wall.

5,444,955
COMBINATION WALL
Yang-Chiu Ou, Nantou, Taiwan, assignor to An Shun Enterprise Co., Ltd., Nantou, Taiwan
Filed Jan. 31, 1994, Ser. No. 188,759
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—309.9 **4 Claims**



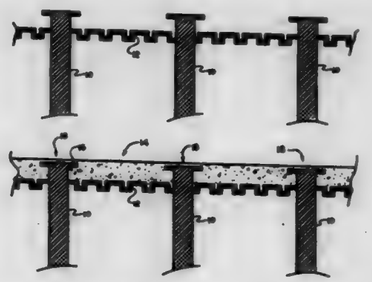
1. An improved wall comprising:
- a foundation member having two wall boards, each having inner and outer surfaces spaced in a parallel manner, said foundation member further having a plurality of partition boards arranged at an interval and in a parallel manner between said two wall boards, said partition boards being perpendicular to said two wall boards, with both sides of each of said partition boards being fastened to an inner surface of each of said two wall boards;
- two foam boards fastened respectively to an outer surface of each of said two wall boards; and
- two face boards fastened respectively to an outer surface of each of said two foam boards.

5,444,956
TRIM MOLDING WITH REMOVABLE INSERT
Floyd A. Searer, Elkhart, and Charles W. Tack, Warsaw, both of Ind., assignors to Fas, Inc., Elkhart, Ind.
Filed Apr. 4, 1994, Ser. No. 222,272
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—312 **7 Claims**

1. A mold trim member, comprising:
- an elongated body member including spaced elongated channels extending along the longitudinal axis thereof;
- a backing member attached to said spaced channels so that the surface of the backing member is exposed between said channel members;
- a removable first insert member including cut-out portions and being inserted between said channels with said surface viewable between said cut-out portions; and
- a removable second insert member inserted between said removable first insert member and the surface of said backing member, with the surface of said second removable member viewable between the cut-out portions of said removable first insert member.



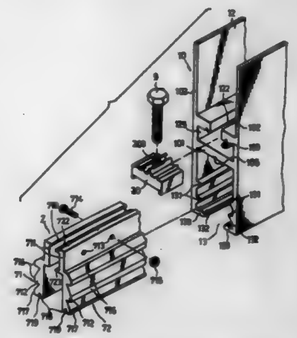
5,444,957
MULTISTORY SLAB CONSTRUCTION
Walter R. Roberts, 709 N. Florida St., Arlington, Va. 22205
Filed Feb. 1, 1994, Ser. No. 190,359
Int. Cl.[6] E04B *1/16*
U.S. Cl. 52—745.05 **15 Claims**



1. A method of constructing a building comprising the steps of:
- a) erecting a first tier of vertical columns having upper terminal portions, said tier including horizontal retaining elements joining said vertical columns adjacent said terminal portions;
- b) forming a concrete slab by pouring concrete into said retaining elements sufficiently deep to cover said upper terminal portions of said vertical columns with a thin layer of concrete;
- c) finishing said concrete slab;
- d) removing the thin layer of concrete to expose said upper terminal portions of said vertical columns; and
- e) extending said vertical columns to erect a second tier of vertical columns.

5,444,958
DOOR FRAME
Ching-Nan Lu, No. 16, Lane 83, Tzu-Chiang-I Rd., Chien-Chin Dist., Kaohsiung City, Taiwan
Filed Nov. 2, 1993, Ser. No. 144,429
Int. Cl.[6] E06B *1/30*
U.S. Cl. 52—775 **6 Claims**

2. The door frame as defined in claim 1, wherein a first one of said clamping plates has a retaining flange which is formed along a topmost edge of said joining portion and which extends toward said joining portion of a second one of said clamping plates, said second one of said remaining clamping plates having an elongated first abutting flange with a flange width that is wider than that of said retaining flange, said first abutting flange extending toward said retaining flange, and a second abutting flange formed on said joining portion of said second one of said remaining clamping plates parallel to and below said first abutting flange, said second abutting flange having a



width that is narrower than said flange width of said first abutting flange.

5,444,959
THREE-DIMENSIONAL STRUCTURAL COMPONENT
Gunter Tesch, Avenue Jean-Marie-Musy 15, CH-1700 Fribourg, Switzerland
Continuation of Ser. No. 663,822, Apr. 16, 1991, abandoned.
This application Feb. 4, 1994, Ser. No. 191,754
Claims priority, application Switzerland, Jul. 31, 1989, 02842/89
Int. Cl.[6] B32B *3/28*; B29D *7/00*; E04C *2/24*
U.S. Cl. 52—794.1 **12 Claims**

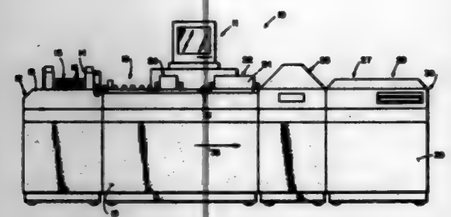


1. A three-dimensional grid comprising:
- a planar base portion; and
- a plurality of protrusions being spaced about and projecting substantially perpendicular from said base portion, each of said protrusions being convexly curved, said planar base portion and said plurality of protrusions being integrally formed of a single slitted and shrunken sheet of plastic.

5,444,960

Patent Not Issued For This Number

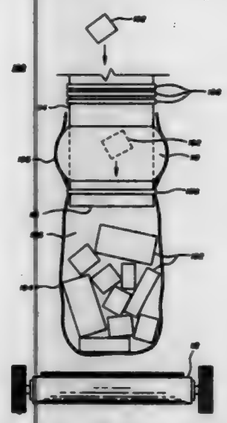
5,444,961
HIGH THROUGHPUT, LOW COST, NON-IMPACT PRINTING
L. Gerald Deane, and John Van de Ven, both of Grand Island, N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jul. 6, 1992, Ser. No. 909,014
Int. Cl.[6] B65B *35/50, 61/02, 63/04*
U.S. Cl. 53—411 20 Claims



1. A method of continuously, in immediate succession, transforming flexible sheets into printed and folded business forms at speeds in excess of 200 documents per minute, comprising the steps of continuously and sequentially:
(a) feeding sheets, having first and second faces, one at a time from a stack in a first direction; then immediately
(b) aligning the sheets; then immediately
(c) non-impact printing the first face of each of the sheets; then immediately
(d) inverting the sheets; then immediately
(e) non-impact printing the second face of each of the sheets, at least one of steps (c) and (e) practiced to print variable data; then
(f) folding the sheets to produce printed, folded business forms;
each of steps (a)–(f) being practiced at essentially the same speed, and in excess of 200 documents per minute.

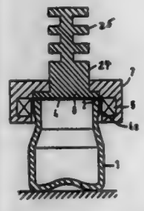
5,444,962
METHOD AND APPARATUS FOR LOADING AND CLOSING A CONTAINER
Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Feb. 14, 1994, Ser. No. 195,875
Int. Cl.[5] B65B *51/00*
U.S. Cl. 53—417 5 Claims

1. A method for loading and closing a container having a flexible open end, comprising the steps of:
(a) placing the open end of the container around an inflatable bladder, the bladder being disposed around an open end of a chute;
(b) inflating the bladder to secure the container to the chute;
(c) placing an elastic closure device around a portion of the open end of the container disposed about the chute;
(d) delivering material through the chute into the container; and
(e) after step (c), deflating the bladder to release the container from the chute, whereby the container slides off the



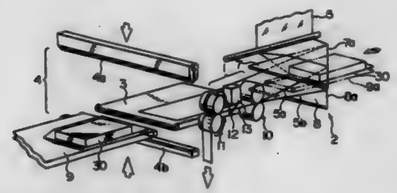
end of the chute and the elastic closure device automatically closes the open end of the container.

5,444,963
PROCESS AND EQUIPMENT FOR SHAPING CONTAINER SEALS
Erich Steingroever, Bonn, and Udo Biedermann, Cologne, both of Germany, assignors to Magnet-Physik Dr. Steingroever GmbH, Germany
Filed Mar. 10, 1994, Ser. No. 208,231
Claims priority, application Germany, Mar. 11, 1993, 43 07 708.0; Mar. 11, 1993, 43 26 813.7
Int. Cl.[6] B67B *3/18*
U.S. Cl. 53—488 29 Claims



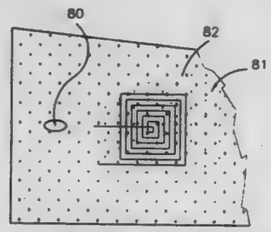
1. A process for shaping a container seal of the type including closures and caps made of a magnetic field responsive material, including the steps of:
bracing the top of said seal with a plate; and
applying a magnetic force shaped by said plate and generated by an electromagnetic pulse that acts on said seal by shaping said seal to conform to the exterior surface of a container neck.

5,444,964
AUTOMATIC PACKAGE MACHINE, AND WRAPPING FILM FUSING AND SEALING BLADE
Toshiyuki Hanagata, Toyama, Japan, assignor to Hanagata Corporation, Toyama, Japan
Filed May 13, 1994, Ser. No. 242,433
Claims priority, application Japan, Jun. 22, 1993, 5-150703; Jul. 7, 1993, 5-167670
Int. Cl.[6] B65B *51/26, 9/06*
U.S. Cl. 53—550 16 Claims



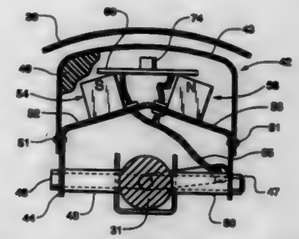
1. An automatic package machine comprising:
(a) a roll of wrapping film;
(b) a film opener for opening the film, which is drawn from said roll, into such a shape that the film can wrap an article to be wrapped;
(c) a conveyer for introducing the article, which is to be wrapped, into the opening of the film opened by said film opener; and
(d) a sealing unit situated contiguously to a downstream end of said conveyer for sealing edge portions of the film opening, said sealing unit including a heater body, a fusing and sealing blade being heated by said heater body, projecting from one end of said heater body, being vertically adjustable solely or together with said heater body, and being penetrable into the edge portions of the film opening parallel to a travelling path of the film, and two pairs of upper and lower feed rollers situated upstream and downstream, respectively, of said fusing and sealing blade, said fusing and sealing blade having along at least its upstream side edge a cutting edge.

5,444,965
CONTINUOUS AND AUTONOMOUS MOWING SYSTEM
André Colens, 39 avenue Louis Lepoutre, B-1060 Bruxelles, Belgium
PCT No. PCT/BE91/00068, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/04817, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 23, 1991, Ser. No. 50,371
Claims priority, application Belgium, Sep. 24, 1990, 9000906; Jun. 4, 1991, 9100537
Int. Cl.[6] A01D *34/82*
U.S. Cl. 56—10.2 A 20 Claims



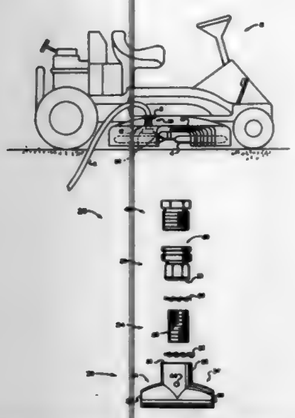
1. Autonomous lawn mower, with electric motors, comprising at least one driving wheel, a cutting system, an electronic operating and control system for operating and controlling said electric motors associated with said at least one driving wheel and said cutting system, a rechargeable battery and/or photovoltaic cells to supply energy for said electric motors and for said operating and control system, the total power utilized by said motors being less than 120 Watts and a microprocessor and means for detecting obstacles on, and/or limits of, a lawn surface being provided, said detecting means supplying relevant environmental information to said microprocessor; an algorithm stored in the memory of the microprocessor, the electronic operating and control system operating the lawn mower according to the responses to obstacles on, and/or limits of, the aforesaid surface supplied by the detector means and the algorithm, the algorithm maintaining the mower continuously either in operation, or in state of waiting for sunshine or recharging the rechargeable battery, the operation depending upon the state of charge of the rechargeable battery and/or the sunshine.

5,444,966
METAL DETECTION APPARATUS FOR AGRICULTURAL HARVESTER
Richard P. Strosser, Akron; Marvin G. Weaver, Jr., Lititz, and Mark K. Chow, Paoli, all of Pa., assignors to New Holland North America, Inc., New Holland, Pa.
Filed Feb. 3, 1994, Ser. No. 191,181
Int. Cl.[6] A01D *75/18;* A01F *12/16*
U.S. Cl. 56—10.2 *J* 12 Claims



1. Apparatus for detecting the passage of ferrous metal objects through the crop feed path of an agricultural harvester, said harvester having feed means for feeding crop material along said crop feed path in a crop feed direction, said apparatus comprising:
a plurality of magnets disposed in a first row and a second row adjacent said crop feed path and extending across said crop feed path transverse to said crop feed direction, magnets of said first row having South poles generally facing said crop feed path and magnets of said second row having North poles generally facing said crop feed path whereby magnetic fields produced by the magnets are traversed by crop material and any ferrous metal objects therein being fed along the crop feed path, said ferrous metal objects causing variations in at least one of said magnetic fields;
a plurality of generally planar Hall sensing elements, each element being spaced from and disposed between a pair of magnets comprising a magnet in said first row and a magnet in said second row such that a magnetic field produced by a given pair of magnets extends through the Hall sensing element disposed between said given pair of magnets in a direction normal to the plane of the Hall sensing element;
means for causing a direct current to flow through the Hall sensing elements whereby a given Hall sensing element produces an output signal when a ferrous metal object passes through the magnetic field in whch the given Hall sensing element is disposed; and,
means responsive to an output signal from any said Hall sensing elements for stopping said crop feed means when passage of a ferrous metal object through at least one of said magnetic fields is detected.

5,444,967
MOWER DECK WASH OUT PORT
William I. Meuth, 1316 E. Division St., Evansville, Ind. 47711-5971
Filed Sep. 6, 1994, Ser. No. 300,810
Int. Cl.[6] A01D *34/82*
U.S. Cl. 56—12.1 6 Claims



1. A water distributing assembly for discharging water onto the rotating blade of a power mower having a deck, said assembly comprising a conduit further comprising a male threaded pipe nipple and a double female threaded fitting having means defining a passageway therethrough, communicating with said pipe nipple, said double female threaded fitting having means defining a connection port mating with a garden hose, said connection port having threads cooperating with corresponding threads formed in the garden hose, said double female threaded fitting connected to said pipe nipple thereabove, said pipe nipple disposed through the deck of the power mower, said double female threaded fitting for receiving water from a garden hose water source, and conducting said water through said deck to the blade of the mower, said conduit having:

an interior cross sectional area and at least one discharge nozzle having a second interior cross sectional area, the total of said second cross sectional area being at least as great as said cross sectional area of said conduit; and

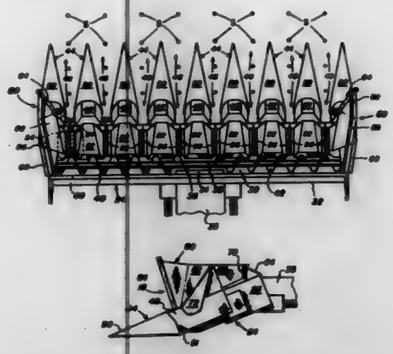
means for attaching said conduit to the mower;

said assembly further comprising a hollow tee fitting comprising a hollow stem member having threads corresponding and mating to said threads formed in said pipe nipple, said hollow tee being threaded thereto below the deck of the mower, and including two hollow cross members communicating with and extending from said hollow stem member and providing two of said nozzles, wherein said at least one discharge nozzle has a flattened profile, whereby momentum of water flowing through said discharge nozzles is increased.

5,444,968
OUTBOARD CROP DIVIDER STRUCTURE GUARD ASSEMBLY
Herald M. Barton, 19052 Kale Ave., Silver Lake, Minn. 55381
Filed Nov. 9, 1994, Ser. No. 337,335
Int. Cl.[6] A01D *45/02, 63/04, 75/00*
U.S. Cl. 56—119 20 Claims

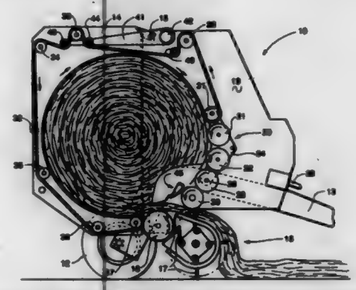
1. An outboard guard assembly for mounting on each of a pair of opposite outboard divider structures disposed at respective opposite lateral ends of a multi-row crop gathering header and extending forwardly from a pair of opposite side walls of a frame of the header, said outboard guard assembly comprising:

(a) support means attachable on each of the opposite outboard crop divider structures to extend upwardly therefrom; and



(b) a barrier panel attached at a forward end portion to said support means and extending rearwardly therefrom so as to extend along and above a portion of the respective outboard crop divider structure with the support means attached thereon.

5,444,969
ROUND BALER APPARATUS FOR MONITORING BALE SHAPE
Robert A. Wagstaff, Lancaster, and John B. Crego, New Holland, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.
Filed Jul. 12, 1993, Ser. No. 89,545
Int. Cl.[6] A01F *15/07*
U.S. Cl. 56—341 12 Claims



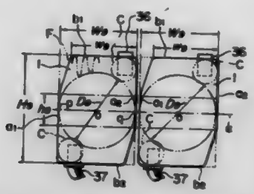
4. In a round baler having an expandable bale forming chamber and means for feeding crop material into said chamber to form a generally cylindrical package of crop material, a crop loading monitor comprising

signal means, and

apparatus operably coupled with said signal means for indicating when the compactness of said generally cylindrical package of crop material in said expandable bale forming chamber reaches a predetermined acceptable level,

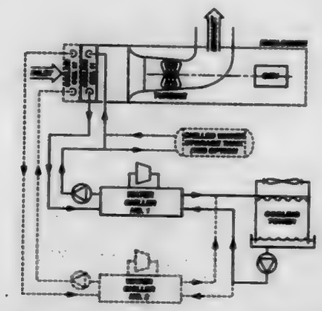
said apparatus includes sensor means for sensing changes in the compactness of said crop material in said expandable bale forming chamber under conditions where it is being continuously formed into an expanded generally cylindrical package.

5,444,970
SPINDLE DIRECTLY DRIVEN BY MOTOR AND TEXTILE MACHINE USING SAME
Hideaki Kobayashi, Sakura, and Hidekazu Matsui, Funabashi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 802,728, Dec. 5, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 74,483
Claims priority, application Japan, Dec. 5, 1990, 2-400452
Int. Cl.[6] D01H *7/00*
U.S. Cl. 57—100 14 Claims



1. A spindle assembly comprising a plurality of spindles, each of said spindles being directly driven by a respective electrical motor having an electrical motor body, means for mounting said plurality of spindles on a spindle rail of a textile machine so as to form a row of adjacent spindles in such a manner that each electrical motor body is subject to slight axial rotation relative to the spindle rail over a period of time of use, wherein each electrical motor body has a pair of side surfaces with said spindles being disposed on said spindle rail with one side surface of one electrical motor body being disposed in opposition to one side surface of an adjacent electrical motor body, and wherein a portion of at least one side surface of the electrical motor body of each spindle is directed away from said adjacent electrical motor body along the overall length thereof in the axial direction so that an electrical motor body of one spindle which rotates through said slight axial rotation relative to the spindle rail will not interfere or come into contact with the electrical motor body of an adjacent spindle.

5,444,971
METHOD AND APPARATUS FOR COOLING THE INLET AIR OF GAS TURBINE AND INTERNAL COMBUSTION ENGINE PRIME MOVERS
Charles R. Holenberger, 611 S. Euclid St, Fullerton, Calif. 92635
Filed Apr. 28, 1993, Ser. No. 54,869
Int. Cl.[6] F02C *1/00*
U.S. Cl. 60—39.02 11 Claims



1. A method for optimizing the power output and performance of combustion prime movers such as gas turbines and internal combustion engines having air inlets taking in inlet air at the minimum acceptable inlet air temperature to prevent damage to the prime mover and its auxiliary components for admixture with fuel for combustion, and associated with a prime mover load application to increase power output and reduce fuel consumption, comprising:

a. inputting into a computer processor a data base containing the prime mover's performance output, fuel consumption, heat rate, the load application power, output power, parasitic load consumption, and other related performance system information,

b. computer generating optimal thermodynamic cooling efficiencies corresponding to a sectionalized, sequentially divided psychrometric turbine inlet air cooling path enthalpy curve of the average ambient air temperature prime mover performance and the optimum air inlet temperature for maximum prime mover performance,

c. Structuring and providing a stage refrigerant cooling system having separate refrigerant cooling components mounted within and associated with the air inlet to provide incremental sequential staged cooling of the inlet air by circulating refrigerant to absorb heat from the inlet air and deliver the absorbed heat to a heat sink to increase the cycle efficiency of the refrigeration system by using cooled condensate to subcool the liquid refrigerant before expansion;

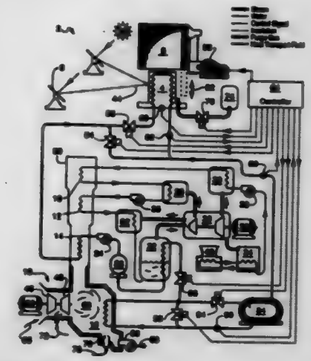
d. Cascading from stage to stage cooled refrigerant from a first cooling stage as feed into a successive subsequent cooling stage to sequentially cool the inlet air to a desired temperature for optimum prime mover performance,

e. Inputting into the computer processor current operating costs associated with fuel consumption, maintenance, and other related operating costs of the prime mover, and current revenues from energy generation by the prime mover load application,

f. Generating the optimal net revenue performance curve for the prime mover and prime mover load application, and

g. Powering and adjusting power means to drive the prime mover and multi-stage refrigerant cooling system in accordance with the optimal net revenue performance curve.

5,444,972
SOLAR-GAS COMBINED CYCLE ELECTRICAL GENERATING SYSTEM
Roger M. Moore, Newbury Park, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Apr. 12, 1994, Ser. No. 226,744
Int. Cl.[6] F02C *6/18*
U.S. Cl. 60—39.182 5 Claims



1. An electric power generation system comprising:

a gas turbo-burner turbine generator for generation electricity from a combustible fluid,

the turbo-burner turbine generator having a turbine,

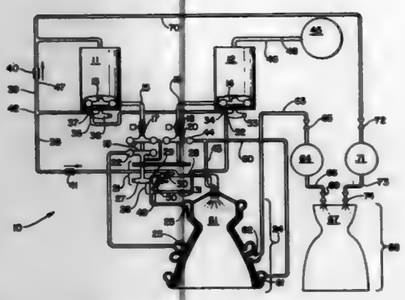
the turbo-burner turbine generator having hot exhaust gas emitted from the turbine,
a primary furnace for receiving hot exhaust gas emitted from the gas turbo-burner turbine generator,
the primary furnace having a heat exchanger for heating a heat transporting fluid from the gas turbo-burner turbine generator exhaust gas,
the primary furnace having a fuel source for burning fuel to add heat to the heat exchanger and creating more thermal energy,
a steam generator for generating steam, the steam generator receiving heat from the heat transporting fluid,
a steam turbine-generator for generating electricity, the steam turbine-generator running on steam from the steam generator,
a solar central receiver for receiving sunlight,
a heliostat for concentrating sunlight on the solar central receiver for heating the solar central receiver,
the solar central receiver having a heat exchanger for transferring heat generated by the sunlight to the heat transport fluid, said heat transport fluid communicating with the steam generator for generation of steam in the steam generator, and selectively communicating with the primary furnace heat exchanger by use of a valve.

5,444,973

PRESSURE-FED ROCKET BOOSTER SYSTEM

Charles D. Limerick, Palm Beach Gardens, and James R. Brown, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1993, Ser. No. 166,425
Int. Cl.[6] F20K *9/00*
U.S. Cl. 60—204 **13 Claims**



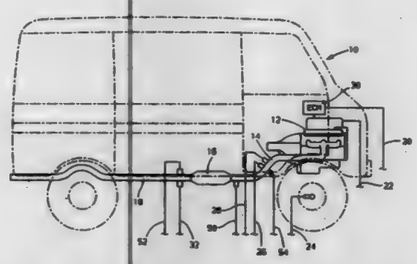
1. A method of delivering booster fuel and booster oxidizer from a booster fuel tank and a booster oxidizer tank, respectively, of a space launch vehicle's booster engine to a booster combustion chamber of the booster engine, said method comprising:
providing a main engine on said vehicle, said main engine including cryogenic fuel in a cryogenic fuel tank and cryogenic oxidizer in a cryogenic oxidizer tank, and a main combustion chamber/nozzle assembly having a main combustion chamber therein;
providing a booster fuel supply line connecting said booster fuel tank to said booster combustion chamber;
providing a booster oxidizer supply line connecting said booster oxidizer tank to said booster combustion chamber;
pumping said cryogenic fuel from said cryogenic fuel tank to a heat source;
pumping a first portion of said cryogenic oxidizer from said cryogenic oxidizer tank to said main combustion chamber;
pumping a second portion of said cryogenic oxidizer from said cryogenic oxidizer tank to said heat source;
heating and vaporizing said cryogenic fuel and said second portion of cryogenic oxidizer to a pressure greater than the ambient pressure within said booster combustion chamber;
delivering a first portion of the vaporized fuel to the main combustion chamber;
delivering a second portion of the vaporized fuel to the booster fuel tank at a pressure greater than ambient pressure in said booster combustion chamber to provide a fuel pressure differential between said pressure in said booster fuel tank and said ambient pressure in said booster combustion chamber;
delivering a third portion of the vaporized fuel to the cryogenic fuel tank to provide pressurization thereof;
delivering said second portion of vaporized oxidizer to the booster oxidizer tank at a pressure greater than ambient pressure in said booster combustion chamber to provide an oxidizer pressure differential between said pressure in said booster oxidizer tank and said ambient pressure in said booster combustion chamber;
combusting said first portion of vaporized fuel and said first portion of cryogenic oxidizer in said main combustion chamber; and,
using the fuel pressure differential to drive the booster fuel from the booster fuel tank through the booster fuel supply line to the booster combustion chamber and using the oxidizer pressure differential to drive the booster oxidizer from the booster oxidizer tank through the booster oxidizer supply line to the booster combustion chamber.

5,444,974

ON-BOARD AUTOMOTIVE EXHAUST CATALYST MONITORING WITH A CALORIMETRIC SENSOR

Donald D. Beck, Rochester Hills; Jayanthi Doraswamy, Flint, and Oscar A. Lecea, Flushing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1993, Ser. No. 88,029
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **7 Claims**



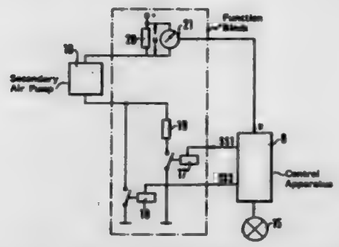
1. A method of diagnosing the performance of an on-board catalytic converter for the oxidation of carbon monoxide (CO) and unburned hydrocarbons (HC) in the exhaust stream of an operating automotive vehicle powered by a hydrocarbon or alcohol fuel and on which vehicle the engine fuel supply is managed by operation of on-board computer means, comprising
producing an electrical signal from a calorimetric sensor located in the exhaust stream flow of said vehicle downstream from said converter, said sensor comprising a first element bearing an oxidation catalyst for CO and HC and an adjacent second element that is oxidation catalyst-free but otherwise substantially identical in mass and exhaust stream profile to the first element, the electrical signal being directly related to a temperature difference between said elements,
monitoring vehicle engine air-to-fuel ratio, said calorimetric sensor temperature and exhaust gas flow rate in said computer means, and
reading said sensor signal in said computer means for diagnosis of the oxidative performance of said converter only when said parameters are of predetermined values productive of a signal useful for said diagnosis.

5,444,975

METHOD AND ARRANGEMENT FOR CONTROLLING THE SUPPLY OF SECONDARY AIR FOR AN INTERNAL COMBUSTION ENGINE

Jochen Göhre, Karlsruhe, and Winfried Moser, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 25, 1994, Ser. No. 218,342
Claims priority, application Germany, Mar. 26, 1993, 43 09 854.1
Int. Cl.[6] F01N *3/22*
U.S. Cl. 60—274 **8 Claims**



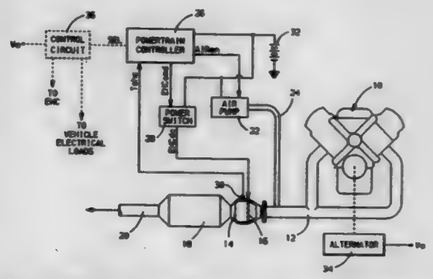
1. A method of controlling the supply of secondary air to the exhaust gas of an internal combustion engine equipped with an electrically-driven secondary air pump, the secondary air pump having a current supply containing resistors, the method comprising the steps of:
driving the secondary air pump in at least two stages in dependence upon operating parameters of the engine so as to cause the supply of secondary air to be finely adapted to the actual value of the exhaust gas quantity outputted by the engine to a degree determined by the number of said stages; and,
switching resistors in said current supply.

5,444,976

CATALYTIC CONVERTER HEATING

Eugene V. Gonze, Sterling Heights, and David B. Brown, Shelby Township, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1994, Ser. No. 266,394
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 **13 Claims**



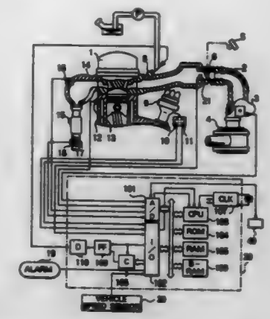
1. A method for controlling heat energy delivered by an electrical heater to internal combustion engine exhaust gas, comprising for each of a series of engine coldstart events, the steps of:
referencing a preserved desired power level at which to operate the heater;
operating the heater at the desired power level;
estimating the performance of the heater in delivering heat energy to the engine exhaust gas at an end of a predetermined heating period;
determining when the performance is unsatisfactory;
increasing the desired power level when the performance is determined to be unsatisfactory; and
preserving the increased desired power level.

5,444,977

AIR/FUEL RATIO SENSOR ABNORMALITY DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Tsuyoshi Kawabata, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 1, 1993, Ser. No. 143,884
Claims priority, application Japan, Nov. 2, 1992, 4-294523; Aug. 30, 1993, 5-214416
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 **4 Claims**



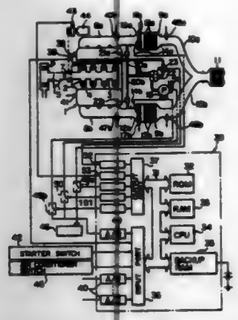
1. In an internal combustion engine having:
a catalytic converter arranged in an exhaust passage of the internal combustion engine for exhaust purification;
an upstream side air/fuel ratio sensor arranged in the exhaust passage upstream of said catalytic converter for detecting an air/fuel ratio in the internal combustion engine;
a downstream side air/fuel ratio sensor arranged in the exhaust passage downstream of said catalytic converter for detecting an air/fuel ratio in the internal combustion engine;
control means for performing an air/fuel ratio feedback control on the basis of results of detection of both air/fuel ratio sensors,
an air/fuel ratio sensor abnormality detecting device for detecting abnormality of said downstream side air/fuel ratio sensor comprising:
linear air/fuel ratio sensors for linearly detecting the air/fuel ratio being employed as said upstream side and downstream side air/fuel ratio sensors;
delay period deriving means for deriving a gas response delay period between said both air/fuel ratio sensors on the basis of the results of detection of said upstream side and downstream side air/fuel ratio sensors while the air/fuel ratio feedback control is effected under lean condition of the air/fuel ratio; and
abnormality detecting means for detecting abnormality of said downstream side air/fuel ratio sensor on the basis of the derived delay period.

5,444,978

CATALYST WARMING UP DEVICE OF AN INTERNAL COMBUSTION ENGINE

Kouji Yoshizaki, Numazu, and Hiroaki Tanaka, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1994, Ser. No. 209,019
Claims priority, application Japan, Mar. 15, 1993, 5-054047; Jun. 29, 1993, 5-158850
Int. Cl.[6] F01N 3/20
U.S. Cl. 60—276 6 Claims



1. A catalyst warming-up device of an internal combustion engine, said device comprising:
an electrically heated type catalyst disposed in an exhaust gas passage of said engine;
a secondary air supplying means for supplying secondary air into said exhaust gas passage at an upstream of said catalyst;
a catalyst energizing means for energizing said catalyst with an electric current;
an air-fuel ratio detecting means for detecting an air-fuel ratio of an exhaust gas in said exhaust gas passage;
controlling means for controlling said secondary air supplying means and said catalyst energizing means in such a manner that, during an engine warming-up condition, in which an air-fuel ratio of a mixture introduced into engine cylinders is controlled to be rich, if the air-fuel ratio of the exhaust gas is detected as lean or the same as a theoretical air-fuel ratio due to the secondary air, the secondary air is supplied to said exhaust gas passage after said catalyst is energized, and if the air-fuel ratio of the exhaust gas cannot be controlled to lean or the same as a theoretical air-fuel ratio, an operation of said catalyst energizating means is stopped.

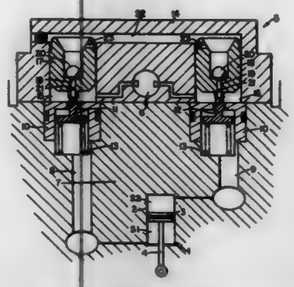
5,444,979

FLUID PASSAGE CONTROL DEVICE FOR FLUID PRESSURE ACTUATOR

Yasuo Funami; Hisao Takayanagi, and Omito Toyoshima, all of Saitama, Japan, assignors to Showa Corporation, Saitama, Japan

Continuation-in-part of Ser. No. 55,030, Apr. 30, 1993, abandoned. This application Jul. 13, 1994, Ser. No. 274,552
Claims priority, application Japan, Apr. 30, 1992, 4-36299
Int. Cl.[6] F15B 7/00
U.S. Cl. 60—460 5 Claims

5. A fluid passage control device comprising
first and second chambers,
a first pair of fluid passages each for receiving fluid under pressure in the alternative,
a different on/off valve each movably disposed in a different one of said fluid passages,
each fluid passage connected via an on/off valve to a different one of said chambers,
a pair of shuttle valves movably positioned in coaction each with a different one of said on/off valves,
said shuttle valves having respective oil passages defined therein each in facing relationship with a different one of said on/off valves,
a pair of ball valves each associated with a different shuttle valve for selectively placing said oil passages of said shuttle valves into communication with one another upon one of said first pair of fluid passages being pressurized,



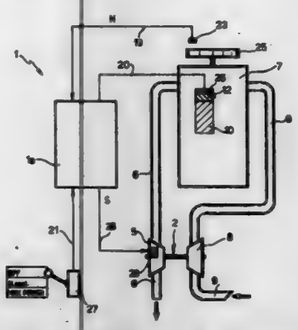
each said on/off valve being responsive to fluid pressure developed in its associated fluid passage of said first pair of fluid passages to supply oil under pressure to one of said first and second chambers,
said other on/off valve being opened by said shuttle valve receiving fluid under pressure via said oil passages interconnected via one of said ball valves,
said shuttle valves further including auxiliary passages communicating with the oil passages of said shuttle valves and the oil supply passages.

5,444,980

ELECTRONIC CONTROL SYSTEM FOR A VARIABLE GEOMETRY TURBOCOMPRESSOR FOR AN ENGINE PROVIDED WITH A CONTINUOUS BRAKING DEVICE

Giancarlo Dellora, Settimo Torinese, and Paolo Polverelli, Civitella Marittima, both of Italy, assignors to Iveco Fiat S.p.A., Turin, Italy and Nissan Diesel Motor Co., Ltd., Saitama, Japan

Filed Nov. 26, 1993, Ser. No. 158,926
Claims priority, application Italy, Nov. 27, 1992, TO92A0965
Int. Cl.[6] F02D 23/00
U.S. Cl. 60—602 13 Claims



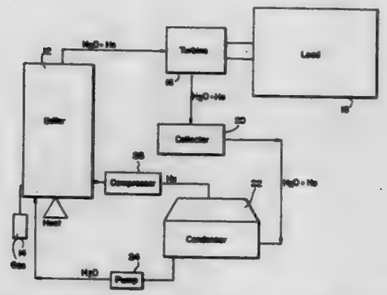
1. An electronic control system for a variable geometry turbocompressor (VGT) (2) applied to an internal combustion engine (7), said engine (7) being provided with a continuous braking device (10) adapted to modify the normal operation of the engine (7) so as to cause the engine to operate substantially as an air compressor dissipating energy, said control system comprising electronic control means (10a, 10b) for controlling the variable geometry turbocompressor (VGT) to modify geometric characteristics of the turbocompressor (2) in order to modulate braking action provided by the continuous braking device (10), said control means comprising electronic means (10a) adapted to regulate the geometric characteristics of the turbocompressor (2) in order to maintain speed (N) of the engine (7) substantially constant.

5,444,981

METHOD AND APPARATUS FOR INCREASING EFFICIENCY AND PRODUCTIVITY IN A POWER GENERATION CYCLE

Thomas Kakovitch, Herndon, Va., assignor to Millennium Rankine Technologies, Inc., Reston, Va.

Continuation-in-part of Ser. No. 929,433, Aug. 14, 1992, Pat. No. 5,255,519. This application Oct. 22, 1993, Ser. No. 140,315
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[6] F01K 21/04
U.S. Cl. 60—649 20 Claims



1. In a process for converting heat energy to mechanical energy, comprising:
applying heat energy to a working fluid in a reservoir sufficient to convert the working fluid from liquid to vapor form;
passing the working fluid in vapor form to a means for converting energy therein to mechanical work, with expansion and reduction in temperature of the working fluid; and condensing expanded, temperature reduced working fluid from said means for converting to provide expanded temperature reduced working fluid in liquid form
recycling the expanded, temperature reduced working fluid in liquid form to the reservoir;
the improvement comprising adding to the working fluid in the reservoir, a gas having a molecular weight no greater than the approximate molecular weight of the working fluid;
separating the gas from the working fluid external to the reservoir after the working fluid and gas have passed through said means for converting;
compressing the separated gas; and
recycling the compressed, separated gas to the reservoir.

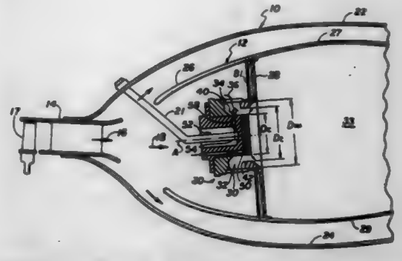
5,444,982

CYCLONIC PRECHAMBER WITH A CENTERBODY

Paul V. Heberling; Mark P. Kelsey, both of Cincinnati, and Willard J. Dodds, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 12, 1994, Ser. No. 180,245
Int. Cl.[6] F23R 3/32
U.S. Cl. 60—737 13 Claims

13. A combustion apparatus for use in a gas turbine engine combustor, said apparatus comprising:
an axially extending cyclonic prechamber assembly to vaporize liquid fuel injected therein having an annular cyclonic chamber and terminating in an annular throat axially downstream of said annular cyclonic chamber,
said annular cyclonic chamber extending through at least an axially extending portion of said prechamber assembly,
said cyclonic chamber having a radially outer cyclonic chamber inlet and a radially inner cyclonic chamber outlet,
a swirling means disposed in said cyclonic chamber inlet for inducing cyclonic motion in said cyclonic chamber,



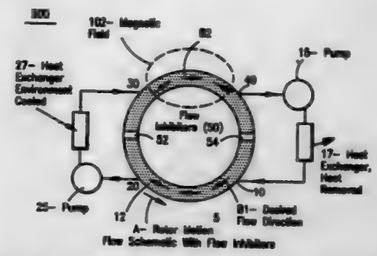
a centerbody centrally axially disposed within said prechamber assembly and extending through to at least said throat and in part forming a prechamber assembly outlet downstream of said cyclonic chamber outlet wherein said throat is disposed in said prechamber assembly outlet, and
said centerbody at said throat exit has a centerbody diameter (D_c), which is sized to substantially match the diameter of a potential core for a predetermined operating condition in the combustor.

5,444,983

MAGNETIC HEAT PUMP FLOW DIRECTOR

Frank S. Howard, Indian Harbour Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 28, 1994, Ser. No. 203,093
Int. Cl.[6] F25B 21/02
U.S. Cl. 62—3.1 3 Claims



1. In a magnetic heat pump system having a defined magnetic field, a rotor of magnetic material rotating through said magnetic field in a first direction, fluid flow passage within said rotor with heat transfer fluid contained therein, and at least one heat exchange flow path interconnected to said fluid flow passage having defined inlet and outlet ports to cool a portion of said heat transfer fluid as it passes through said system; an improvement consisting of at least one flow director installed in said fluid flow passage between said inlet and outlet ports to divert substantially all of said heat transfer fluid in a second direction opposite said first direction and through said heat exchange flow path, thereby improving the cooling efficiency of said system wherein said rotor consists of a plurality of

cylindrical disc plates having spaces between each of said plates to permit passage of said heat transfer fluid.

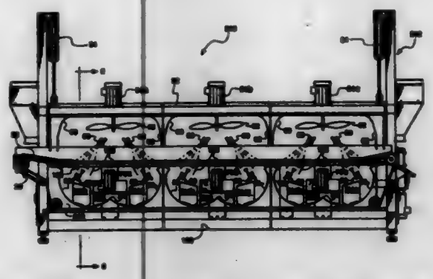
5,444,984
STORAGE CABINET WITH ACTIVE DEHUMIDIFIER
Steven D. Carson, 12817 Chandler, Omaha, Nebr. 68138
Filed May 10, 1994, Ser. No. 241,301
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.4 5 Claims



1. A thermoelectrically dehumidified storage cabinet, comprising:
(a) a cabinet having a top and bottom, opposing sides, a back and a hollow door, said hollow door having a front panel and a rear panel;
(b) a solid state dehumidifier having a power supply, a thermoelectric device sandwiched between a heat exchanger and a heat sink, and an air circulation fan; said heat exchanger, thermoelectric device and heat sink affixed to a first aperture in said rear panel of said door, said heat exchanger extending to within said cabinet and said heat sink extending to within said hollow door; said air circulation fan affixed to a second aperture in said rear panel whereby air is forced through said hollow door to cool said heat sink.

5,444,985
CRYOGENIC TUNNEL FREEZER
Gary D. Lang; Walter C. Broderdorf, both of Wooster, Ohio, and William M. Blumthal, Naperville, Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.
Filed May 13, 1994, Ser. No. 242,531
Int. Cl.[6] F25D *13/06, 17/02, 25/04, 3/12*
U.S. Cl. 62—63 32 Claims

29. A method of cooling products carried along a perforate endless conveyor belt having at least an upper conveyor belt run and travelling through a tunnel enclosing a cooling environment, comprising the steps of:
spraying carbon dioxide snow downwardly onto products carried on the upper conveyor belt run;
blowing the carbon dioxide snow downwardly through the upper conveyor belt run and also onto products carried on the upper conveyor belt run;
blowing the carbon dioxide snow passing downwardly through the upper conveyor belt run, downwardly away from the upper conveyor belt run;
deflecting the carbon dioxide snow along the underside of the upper conveyor belt run; and

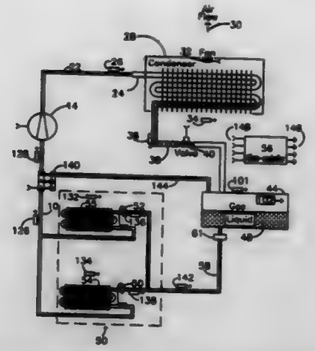


deflecting the carbon dioxide snow upwardly toward the underside of the upper conveyor belt run.

5,444,986
METHOD OF PRODUCING ICE BY USING FLUORINATED PENTANE
Toshiyuki Hino, Tokyo, Japan, assignor to Kajima Corporation, Tokyo, Japan
Continuation of Ser. No. 38,814, Mar. 29, 1994, abandoned. This application Feb. 4, 1994, Ser. No. 191,525
Claims priority, application Japan, Jul. 16, 1992, 4-189164
Int. Cl.[6] F25C *1/00*; C09K *5/04*
U.S. Cl. 62—66 9 Claims

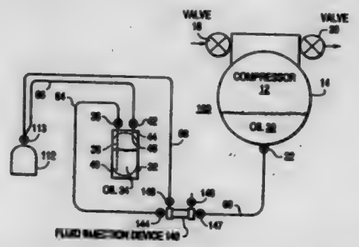
1. A direct contact icemaking method characterized by being free from clathration, said method comprising bringing a hardly-water-soluble refrigerant into direct contact with water to form a water-refrigerant mixture consisting essentially of said refrigerant and water, and evaporating said refrigerant while deriving heat from said water to thereby cool said water to form ice directly from said water, said refrigerant consisting essentially of a compound or mixture of compounds selected from the group consisting of a perfluoropentane, fluorohydropentane $C_5F_nH_{12-n}$ wherein $1 \leqq n \leqq 11$ and mixtures thereof, said refrigerant being in liquid phase and being mixed with said water at a pressure higher than the saturation pressure P_0 of the refrigerant for 0° C., the evaporation being accomplished by ejecting said water-refrigerant mixture into a tank at a pressure equal to or less than the saturation pressure P_0, so as to evaporate the refrigerant and thereby cool the water.

5,444,987
REFRIGERATION SYSTEM UTILIZING A JET ENTHALPY COMPRESSOR FOR ELEVATING THE SUCTION LINE PRESSURE
Richard H. Alsenz, 2402 Creek Meadows, Missouri City, Tex. 77459
Filed Jul. 2, 1993, Ser. No. 87,174
Int. Cl.[6] F25B *1/00*
U.S. Cl. 62—116 17 Claims



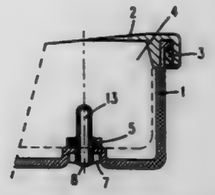
2. A method of pre-compressing a low pressure gas refrigerant leaving an evaporator of a closed loop vapor compression refrigeration system, comprising the steps of:
(a) evaporating a high temperature condensate liquid into the low pressure gas refrigerant and discharging the low pressure gas refrigerant into a suction line;
(b) expanding a portion of the condensate liquid into vapor before evaporating the condensate liquid:
(c) discharging the expanded vapor into the suction line in a manner which elevates the pressure in the suction line above the evaporator pressure;
(d) compressing the gas refrigerant from the suction line to a high temperature; and
(e) condensing the high temperature gas refrigerant into the high temperature condensate liquid.

5,444,988
CLOSED LOOP OIL CHARGING FOR AC OR REFRIGERANT COMPRESSOR UNITS
Herbert R. Eden, 421 SW. 124 Ave., Miami, Fla. 33184
Division of Ser. No. 94,947, Jul. 21, 1993. This application Sep. 19, 1994, Ser. No. 308,552
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—125 4 Claims



2. A closed loop oil system in combination with a refrigerant compressor, said compressor having lubricating oil therein, and a submerged oil drain port, the closed oil system comprising:
a portable sealed canister for containment of compressor lubricating oil, said canister having a first and a second valve, said first valve having a stem with submerged fluid port located near a bottom of said canister and said second valve having short stem with a port located near a top of said canister;
a portable contained supply of refrigerant;
a first coupler hose fluidly connecting said first valve and said drain port, and a second coupler gaseously connecting said supply of refrigerant and said second valve.

5,444,989
COLD-STORAGE CARTRIDGE
Klaus Gawron, Aachen, Germany, and Reinhard Prandl, Perlach, Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 17, 1994, Ser. No. 243,896
Claims priority, application Germany, May 25, 1993, 43 17 341.1
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—129 33 Claims

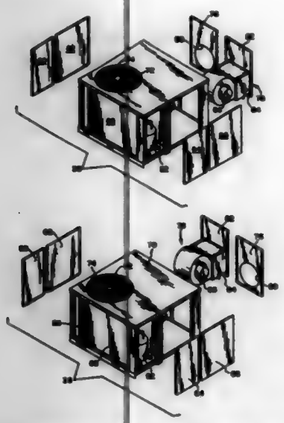


1. A cold-storage cartridge comprising a housing (1,2) having an interior into which a cold-storage medium (4) is introduced and having a device for indicating the charging state of the cold-storage medium, wherein the indicator device comprises an indicator substance (13) whose melting temperature Ti is lower than the melting temperature Ts of the cold-storage medium (4), the indicator substance (13) is held in a container (10) which is in heat-conducting contact with the cold-storage medium (4), the container (10) comprises an optically transparent wall portion (8) and the indicator device is connected to the cold-storage cartridge in such a manner that the transparent wall portion (8) is visible from outside the cold-storage cartridge.

5,444,990
REVERSIBLE FAN ASSEMBLY PANEL FOR PACKAGE AIR CONDITIONERS AND HEAT PUMPS
Robert S. McGill, III, Murfreesboro; Timothy A. Wright, Franklin; Danny R. Burdette, Murfreesboro, all of Tenn., and Paul L. Doppel, Madison, Ala., assignors to Inter-City Products Corporation, Lavergne, Tenn.
Filed Jan. 25, 1994, Ser. No. 186,669
Int. Cl.[6] F25D *19/00*
U.S. Cl. 62—298 14 Claims

9. An air conditioner comprising:
a reversible blower assembly for moving conditioned air;
a housing including at least two rectangular openings of approximately equal size;
said blower assembly including a panel having a generally rectangular exterior surface corresponding to the size of said at least two rectangular openings, said panel also defining a port; and
a blower attached to said panel, said blower having an outlet connected with said port, and an inlet;

whereby said blower assembly may be selectively mounted in either said first or second openings to selectively reverse the flow of conditioned air through said first and second openings.

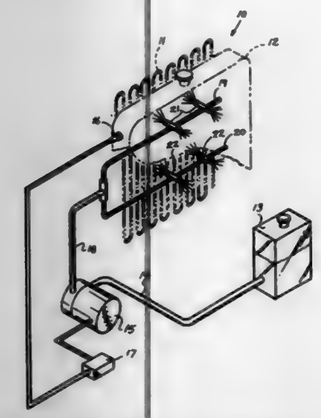


5,444,991

ENGINE COOLING APPARATUS

William L. Cox, 222-14 133rd Ave., Jamaica, N.Y. 11413

Filed May 3, 1993, Ser. No. 55,272
Int. Cl.[6] F24F *13/00*; F25B *39/04*
U.S. Cl. 62—305 1 Claim



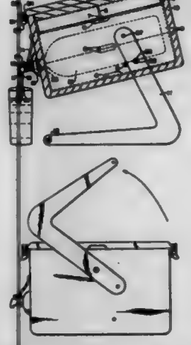
1. An engine cooling apparatus comprising in combination,
a condenser panel, and
a cooling radiator, with the apparatus further including a reservoir container, and
a fluid pump, with a first fluid delivery conduit arranged in fluid communication with the reservoir container and the fluid pump, and
a second fluid delivery conduit arranged in fluid communication between the fluid pump directing fluid from the fluid pump, and
the second fluid delivery conduit including a first fluid supply conduit and a second fluid supply conduit extending from the second fluid delivery conduit, with the first fluid supply conduit and the second fluid supply conduit extending between the condenser panel and the radiator, and
a temperature sensor mounted into the radiator, and a control unit in operative communication with the temperature sensor, and the control unit arranged in operative communication with the fluid pump to effect actuation of the fluid pump upon the temperature
sensor detecting a predetermined elevated temperature within the radiator, and
the first fluid supply conduit includes a plurality of first nozzle members, and the second fluid supply conduit includes a plurality of second nozzle members, with each of the first nozzle members and each of the second nozzle members including a first nozzle end and a second nozzle end, with the first nozzle end arranged in facing relationship relative to the radiator, and each of the second nozzle ends arranged in facing relationship relative to the condenser panel, and
the first nozzle end includes a first outlet port, and the second nozzle end includes a second outlet port, and the first nozzle end and the second nozzle end are of a concave configuration, and
the first nozzle members each include a plurality of deflection cups, with each deflection cup of said deflection cups positioned in adjacency relative to one of said nozzle ends of said first nozzle end and said second nozzle end, and the deflection cup including a concave surface and a pour spout oriented between the first nozzle members and the second nozzle members, and each pour spout having an overflow conduit arranged in fluid communication between the pour spout and a second nozzle member nozzle end of said first nozzle end and said second nozzle end.

5,444,992

PORTABLE TWO LITER SODA BOTTLE FOUNTAIN/COOLER

Gary L. Bell, 407 Hershey Dr., Hopkinsville, Ky. 42240

Filed Aug. 27, 1993, Ser. No. 112,307
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—372 6 Claims



1. An insulated beverage dispenser comprised of:
a rectangular shaped enclosure having two insulated side walls, insulated front and rear walls, an insulated bottom wall, and an insulated cover lid, with said front wall defining a front end of said enclosure and said rear wall defining a rear end of said enclosure;
a pair of v-shaped leg/handle sections each comprised of first and second straight section joined at one end to form a V, with the remaining ends of said straight sections defining respective first and second ends, said first ends of said respective v-shaped leg/handle sections are joined together by a rod thereby forming a v-shaped leg/handle, with each of the other ends of said respective v-shaped leg/handle sections being attached to one of said side walls at a respective point which is vertically in the center and horizontally offset to the rear of the center of said respective side walls such that said v-shaped leg/handle pivots about an axis defined by said side wall attachment points and is biased so that said front end of said rectangular shaped enclosure is compelled by gravity to lean downward when the said first straight sections of said v-shaped leg/handle are disposed in a horizontal position below said rectangular shaped enclosure, thereby defining a leg stand position;
projections located on each of said respective wall located below said side wall attachment points defining means to hold the enclosure in place at a downward angle when said v-shaped leg/handle is disposed in said leg stand position;
spring buttons located above said side wall attachment points defining means to allow said v-shaped leg/handle to be locked in place with said first straight sections of said v-shaped leg/handle disposed in a position substantially above said rectangular shaped enclosure, thereby defining a carrying handle position;
whereby said v-shaped leg/handle may be rotated about said axis defined by said side wall attachment points to either said leg stand position or said carrying handle position;
a pair of identical ice packs filled with a refreezable liquid, said blocks when held together have common outer dimensions that conform to inner dimensions of said rectangular shaped enclosure and form an inner cavity shaped to receive a beverage container, so that the beverage container is in close heat transfer contact with the ice packs and said ice packs are snugly received in said rectangular shaped enclosure;
a hole in said front wall of said rectangular shaped enclosure positioned so that a neck of said beverage container will project through said hole when said ice packs and said beverage container received therein are received in said rectangular shaped enclosure;
whereby a beverage stored in said beverage container may be chilled in said rectangular shaped enclosure, said projections, said side wall attachment points and said v-shaped leg/handle, when in said leg/stand position, define means to hold said rectangular shaped enclosure and said beverage container at a downward angle to dispense said beverage from said beverage container; and said v-shaped leg/handle, when in said carrying handle position define means to hand carry said insulated beverage dispenser by grasping said rod.

5,444,993

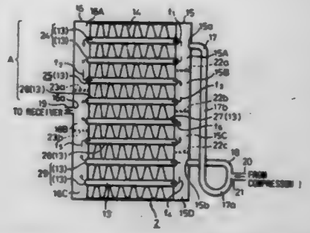
CONDENSER FOR REFRIGERATING CYCLE

Ken Yamamoto, Oobu; Isao Karoyanagi, Anjo; Yasushi Yamasaka, Nakashima, and Nobuharu Kakehashi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 23, 1994, Ser. No. 247,971
Claims priority, application Japan, May 24, 1993, 5-121462; Apr. 11, 1994, 6-072059
Int. Cl.[6] F25B *39/04*
U.S. Cl. 62—473 7 Claims

1. A condenser for constructing, together with a compressor, a pressure reducing means and an evaporator, a refrigerating cycle, said condenser comprising:
a plurality of vertically spaced heat exchanging tubes in which a refrigerant in the refrigerating cycle flows, while an outer flow of a heat exchanging medium contacts the heat exchanging tubes, so that a heat exchange occurs between the refrigerant in the heat exchanging tubes and the heat exchanging medium, causing the heat to be emitted from the heat exchanging tubes;
an inlet of the gaseous state refrigerant from the compressor into the heat exchanging tubes;

an outlet of the condensed refrigerant from the heat exchanging tubes;
the heat exchanging pipes being grouped into at least two sets, the heat exchanging pipes in the first set defining a first heat exchanging passageway for the refrigerant, the heat exchanging pipes in said second set defining a second heat exchanging passageway for the refrigerant, the flows of the refrigerant in the first and second passageways taking place separate from each other;
a first inlet passageway for connecting said inlet with the first heat exchanging passageway in the first set of the heat exchanging pipes for introducing a part of the introduced gaseous refrigerant into the first heat exchanging passageway;



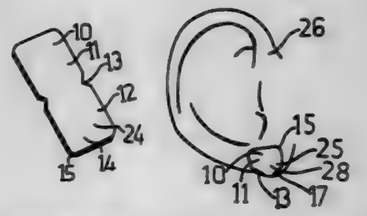
a second inlet passageway for connecting said inlet with the second heat exchanging passageway in the second set of the heat exchanging pipes for introducing a remaining part of the introduced gaseous refrigerant into the second heat exchanging passageway;
said first inlet passageway forming, at a location along the flow of the refrigerant, a portion for causing a lubricant mixed with the refrigerant to stay at the portion;
said portion being such that the lubricant held at the portion closes the first inlet passageway for blocking the flow of the refrigerant in the first inlet passageway when the amount of the flow of the refrigerant is smaller than a predetermined value, thereby introducing the refrigerant from the compressor only into the second heat exchanging passageway.

5,444,994

PRESSURE DISPLACEMENT DEVICE

Rhonda Poorting, and Brad C. Poorting, both of 16538 Dartolo Rd., Ramona, Calif. 92065

Continuation-in-part of Ser. No. 73,728, Jun. 8, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,413
Int. Cl.[6] A44C *7/00*
U.S. Cl. 63—14.3 11 Claims



1. A pressure displacement device for aiding in holding a clip-on earring, comprising a strip of pliant material of a predetermined thickness having central small V-shaped notches to provide a more conforming fit, said notches being shaped so as to allow for maximum coverage of said device from front, underneath, and around to the back of wearer's earlobe, said device having a front portion and rear portion with a non-

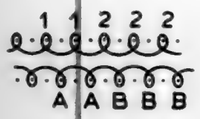
adhesive surface of sufficient area to allow for periodic adjustment of a clip-on earring so the wearer of said earring may slide said earring to a more comfortable area on said strip of pliant material without removing said earring, said strip of pliant material comprises a portion having a thickness greater than said predetermined thickness said portion having a ledge facing outwardly to create a safety shelf upon which said earring can rest, whereby said shelf prevents said earring from lateral movement and falling off.

5,444,995

PROCESS FOR MANUFACTURING A COMPLETE GARMENT ON A TWO NEEDLE BED FLAT KNITTING MACHINE

Giuliana Benetton, Treviso, Italy, assignor to Benetton Group S.P.A., Ponzano-Veneto, Italy

Filed Mar. 4, 1994, Ser. No. 205,715
Claims priority, application Italy, Mar. 5, 1993, MI93A0423
Int. Cl.[6] D04B *1/24*
U.S. Cl. 66—64 4 Claims



1. A process for making a tubular knit article comprising the steps of:

(a) providing on a two-needle-bed latch needle knitting machine a front needle bed having a multiplicity of front latch needles with a given spacing and a rear needle bed with a corresponding number of rear latch needles with the same spacing;

(b) looping a yarn onto alternate ones of said front latch needles to form front working needles with loops thereon alternating with front idle needles, and looping said yarn onto alternate ones of said rear latch needles located between the front working needles to form rear working needles alternating with rear idle needles and aligned with said front idle needles;

(c) knitting a seamless tubular portion of said article using only said working needles; and

(d) knitting a narrowed portion of said article directly on and as a continuation of said tubular portion by

(d1) transferring loops from some of said rear working needles to certain front idle needles aligned therewith,

(d2) shifting said rear bed by a distance corresponding to the spacing of a plurality of needles relative to said front bed in one direction to align rear working needles with loops thereon with said certain front idle needles

(d3) transferring loops from said certain front idle needles to said rear working needles having nontransferred loops thereon and loops from some of the front working needles to certain of said idle needles of the rear bed

(d4) shifting said rear bed in a direction opposite said one direction to align said certain of said idle needles of the rear bed with loop-retaining working needles of the front bed, and

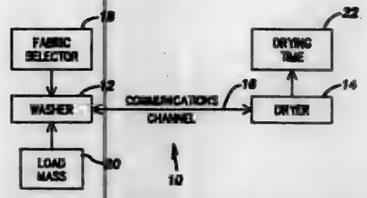
(d5) transferring loops from said certain of said idle needles of the rear bed to said loop-retaining working needles of the front bed.

5,444,996

WASHER AND DRYER COMMUNICATION

Daniel F. Joslin, Sartell, Minn., and Daniel J. Ryherd, Webster City, Iowa, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 14, 1994, Ser. No. 275,624
Int. Cl.[6] D06F *33/02*
U.S. Cl. 68—12.04 6 Claims



1. A method for controlling a fabric washer and a fabric dryer, said method comprising:

sensing if said dryer is in operation drying a first load of fabric;

providing a signal indicative of said dryer operation;

sensing if said washer is in a final spin operation spinning a second load of fabric, said final spin operation having an initial length;

providing a signal indicative of said washer operation; and

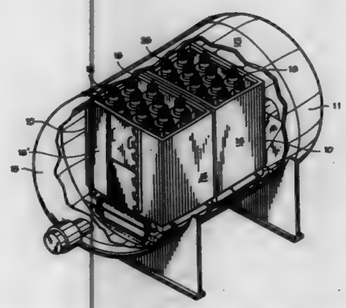
extending said final spin operation beyond said initial length in response to said washer and dryer operation signals.

5,444,997

CARRIER FOR SUPPORTING TEXTILE MATERIAL IN A WET TREATMENT MACHINE

J. Keith Turner; Matthew A. Meeker, and Thomas W. Van Scyoc, all of Stanley, N.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.

Continuation-in-part of Ser. No. 8,134,912, Oct. 12, 1993, and a continuation-in-part of Ser. No. 8,049,835, Apr. 19, 1993. This application Mar. 28, 1994, Ser. No. 218,573
Int. Cl.[6] D06B *5/18*
U.S. Cl. 68—198 22 Claims



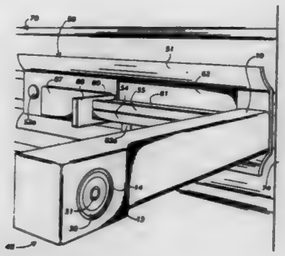
1. A carrier insertable into a vessel of a wet treatment machine for selectively supporting diverse numbers of annular textile material packages during wet treatment operations, the carrier comprising a base, wall means upstanding from the base and defining therewith an enclosure for retaining treating liquid, and at least one post extending outwardly from the base for mounting a plurality of the textile material packages in series about the post, the wall means comprising a selectively movable panel for forming a liquid weir at a selectively variable level relative to the base to determine a maximum level of liquid which may be retained in the enclosure.

5,444,998

HINGED LOCKING MECHANISM

Paul L. James, 3217 Buford Highway, Apartment C, Atlanta, Ga. 30324

Continuation of Ser. No. 927,218, Aug. 10, 1992, Pat. No. 5,287,710. This application Jan. 26, 1994, Ser. No. 186,778
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[6] E05B *67/12*
U.S. Cl. 70—14 6 Claims



1. A locking apparatus comprising:

a frame including, at least,

a bar including, at least,

a first end, and

a second end opposite said first end,

a pair of frame pins depending normally from said bar defining parallel centerlines, and

a hinge component extending from said first end of said bar; and

a case hingeably connected to said frame through said hinge component,

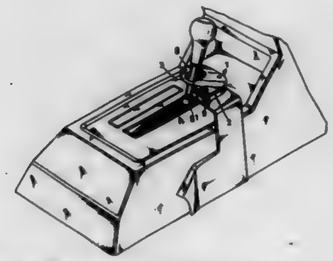
wherein said case is so hingeably connected to said frame that said case pivots about an axis which is parallel to said parallel centerlines.

5,444,999

GEAR SHIFT LEVER LOCK

Yung-Chi Haiao, No. 19-1, Lane 245, Hai Sheng Street, Hsin Chuang City, Taipei Hsien, Taiwan

Filed Sep. 2, 1994, Ser. No. 300,338
Int. Cl.[6] B60R *25/06*
U.S. Cl. 70—247 1 Claim



1. A gear shift lever lock comprising:

a lock body fixedly fastened to the console of a car near a gear shift lever, said lock body comprising a half-round flange vertically downwards extended from a bottom wall thereof and defining a constraint chamber, a groove at the top, a circularly arched sliding way above said groove, a recessed hole, a locating groove communicated between said groove and said recessed hole;

a top cover shell covered on said lock body at the top, having a locating hole vertically aligned with said recessed hole of said lock body, and an annular groove within said locating hole;

a shackle made to slide in and out of said sliding way, having a front end made with a side notch and a side handle and a rear end terminating in a stop block;

a shackle spring received in said groove, having one end fastened to the stop block of said shackle and an opposite end stopped against an end wall at a front end of said groove;

a cylinder lock mounted within the locating hole on said top cover and the recessed hole on said lock body, said cylinder lock comprising a cylindrical casing mounted within the locating hole of said top cover and received within the recessed hole of said lock body, a lock cylinder received within said cylindrical casing and having a key way disposed at the top, a driving plate received within the recessed hole of said lock body and coupled to said lock cylinder at the bottom and having a driving rod, and a protective cap mounted within the locating hole of said top cover and disposed above said lock cylinder and having two opposite stub pins respectively inserted into the annular groove within the locating hole of said top cover;

a latch bolt received in the locating groove, having a beveled front end moved to engage the notch on said shackle, a rear end supported on a spring being fastened inside the locating groove of said lock body; and

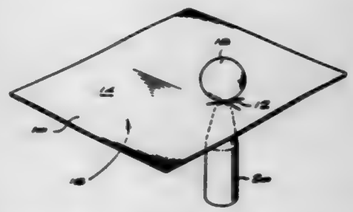
wherein pulling said shackle out of said sliding way causes the beveled front end of said latch bolt to engage the notch on said shackle permitting the gear shift lever of the car to be locked in said constraint chamber; turning the lock cylinder of said cylinder lock backwards with a key causes said latch bolt to be moved backwards from the notch of said shackle by the driving rod of said driving plate to unlock the gear shift lever.

5,445,000

LOCATION METHOD AND PANEL PRESSING APPARATUS

Gordon C. Brown, 11 Charmion Avenue, Glenvista, Johannesburg, Transvaal, South Africa

Filed Oct. 25, 1993, Ser. No. 142,805
Claims priority, application South Africa, Oct. 28, 1992, 92/8325
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—31 10 Claims



1. A method of locating and repairing a dent in a motor vehicle panel having a dented outer surface in which the dent is formed and an inner surface in which the dent is not readily visible, the method including the steps of: determining the location of the dent on the inner surface by: locating a magnetisable ball on the outer surface of the panel, arranging a panel pressing tool, which has an operative end carrying a magnet, adjacent the inner surface of the panel so that the magnet attracts the ball through the panel and causes the ball to move on the outer surface when the panel pressing tool is moved relative to the inner surface, moving the panel pressing tool relative to the inner surface in a manner to move the ball visibly on the outer surface to the location of the dent such that

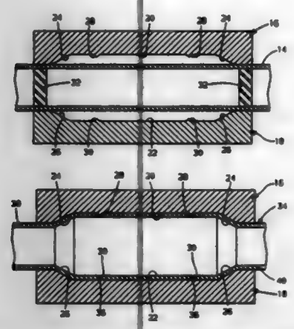
the panel pressing tool will then be located on the inner surface of the panel in a position opposite the dent on the outer surface thereof, and repairing the dent by operating the panel pressing tool to apply an outwardly directed pressing force to the inner surface of the panel at the position opposite the dent, thereby to remove the dent in the panel.

5,445,001

METHOD AND APPARATUS FOR FORMING AND CUTTING TUBING

Gary L. Snavely, Milford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1994, Ser. No. 288,631
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—55 **1 Claim**



1. A combined method of forming a tube from a tube blank and cutting a complex end edge on said tube, comprising the steps of,

providing a pair of dies having mating cavities with surfaces defining the desired final shape of said tube, said die cavities also having a pair of mating sharp ribs protruding from said cavity surfaces to a height less than the desired final wall thickness of said tube, said ribs matching said complex end edge shape,

expanding said tube blank into said cavities, thereby simultaneously forcing said tube blank into pressurized contact with said sharp ribs and creating a formed tube blank with a groove continuously around said formed tube blank having a depth insufficient to cut through said formed tube blank but sufficient to locally increase the electrical resistance of said formed tube blank, and,

applying an electrical current to said formed tube blank across said groove sufficient to melt said formed tube blank through at said groove, thereby forming said complex end edge and completing said tube.

5,445,002

FILL AND PRESSURIZATION APPARATUS

Ivano G. Cudini; Murray R. Mason, and Gerrald A. Klages, all of Woodstock, Canada, assignors to TI Corporate Services Limited, London, England

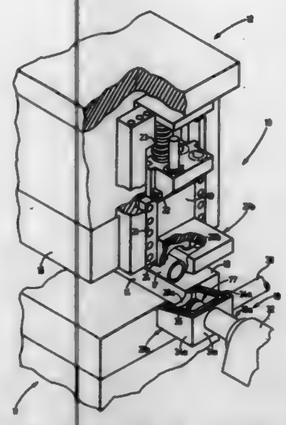
Filed Aug. 16, 1993, Ser. No. 106,751
Int. Cl.[6] B21D *39/08*
U.S. Cl. 72—62 **19 Claims**

1. A fill and pressurization apparatus for filling and pressurizing a hollow tube through an open end thereof comprising:

(a) a lower die section;

(b) an upper die section disposed adjacent and movable relative to said lower die section;

(c) a sectional fluid conductor disposed adjacent said lower die section, said sectional fluid conductor including a first conductor section fixed relative to said lower die section, and at least one further conductor section movable with said upper die section relative to said lower die section and relative to said first conductor section between relatively open and closed positions, an inlet in the first conductor section communicable with a high flow—low pressure circuit, and said sectional conductor in the closed position of said at least one further conductor section being configured for defining a fluid conduit between the circuit and the open end of the tube; and



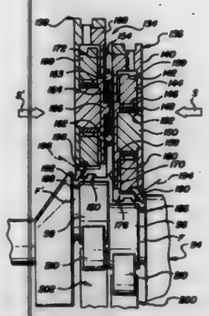
(d) a movable shaft disposed adjacent said sectional fluid conductor, said movable shaft having a bore communicable with a low flow—high pressure circuit, said shaft movable into a pressurizing position communicating said bore with the interior of the hollow tube and separating said fluid conduit therefrom.

5,445,003

ENGINE CRANK PIN ROLLING EQUIPMENT, ROLLING TOOL AND METHOD OF ROLLING ADJACENT AND OFFSET CRANK PINS

William P. Gottschalk, Davisburg, and Hans T. Lauten, Commerce Township, both of Mich., assignors to Hegenscheidt Corporation, Troy, Mich.

Filed Jan. 3, 1994, Ser. No. 176,792
Int. Cl.[6] B21K *1/08*
U.S. Cl. 72—110 **11 Claims**



1. A rolling tool for simultaneously and compressively rolling facing annular fillets of contiguous pin journals of a metallic crankshaft arcuately offset from one another comprising first and second housings, each of said housings having a cage at the lower end thereof, a hardened fillet work roller operatively mounted in each of said cages and operatively inclined outward to physically engage an associated one of said fillets

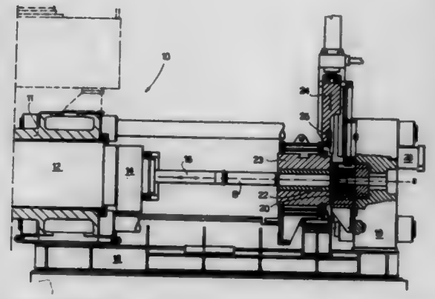
so that both of said facing fillets can be simultaneously rolled by said work rollers, bearing structure directly and operatively mounted between said housings allowing said housings to move in substantially parallel planes relative to one another and for receiving opposing side loads resulting from the simultaneous rolling of said facing fillets of said contiguous and arcuately offset pin journals.

5,445,004

EXTRUSION METHOD WITH GAS EVACUATION, AND EXTRUSION PRESS

Leandro Nannini, Milan, and Franco Libera, Sesto San Giovanni, both of Italy, assignors to Breda Danieli Extrusion and Forging Presses Spa, both of Milan, Italy

Filed Nov. 24, 1993, Ser. No. 157,211
Int. Cl.[6] B21C *27/00*
U.S. Cl. 72—272 **8 Claims**



1. An extrusion method for extruding a billet in an extrusion press, with gas ejection, the extrusion taking place through an extrusion die, comprising the steps of:

introducing the billet into a container which is movable towards and against the extrusion die and away from the extrusion die along an extrusion axis:

applying on the billet a stem which is movable along the extrusion axis towards an inside the container and towards and away from the die;

temporarily stopping movement of the container thereby leaving a gap between the container and the die for air ejection;

moving the stem inside the container towards the die in order to upset the billet;

obtaining at least a beginning of upsetting of the billet in the container;

applying to the container a force due to fluid pressure opposite to a frictional force transmitted by the stem to the container through the billet which is being upset; and

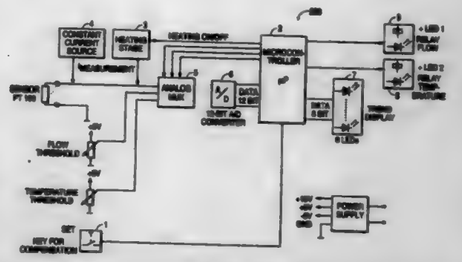
moving the container towards the die and in a sealing position against the die under a resulting force applied to the container, said resulting force comprising the force due to fluid pressure applied to the container, and the frictional force transmitted to the container by the stem through the billet which is being upset.

5,445,005

PROCESS FOR CALIBRATING A CALORIMETRIC FLOW INDICATOR

Jürgen Willner, Schwalbach, Germany, and Kurt Steilen, Frankfurt am Main, Germany, assignors to Klaus Kobold, Belleair Shore, Fla.

Filed Sep. 27, 1993, Ser. No. 126,647
Claims priority, application Germany, Oct. 2, 1992, 42 33 290.7; Oct. 29, 1992, 42 36 559.7
Int. Cl.[6] G01F *25/00*
U.S. Cl. 73—3 **17 Claims**



1. A process for calibrating a calorimetric flow indicator for a medium to be measured, wherein the calorimetric flow indicator comprises a sensor element that is located by a flow of the medium to be measured, that produces a temperature-dependent resistance, that is heatable by electrical current, and that produces measurable resistance variations which represent a measure of the flow velocity of the medium to be measured flowing by the sensor element, and wherein the calorimetric flow indicator has a resistance value R0 for a zero flow of a specified medium other than the medium to be measured and a resistance value Rmax at a maximum flow of the specified medium, thus defining a preset range of measurement Rmax—R0 for the calorimetric flow indicator, said process comprising the steps of:

measuring a resistance value Rx of the sensor element at a zero flow of the medium to be measured;

measuring a resistance value Ry of the sensor element at a maximum operating flow of the medium to be measured; and

automatically coinciding a measuring range Ry—Rx for the medium to be measured, defined by the resistance values Rx and Ry, with the preset measuring range Rmax—R0 by displacing and extending the measuring range Ry—Rx in relation to the preset measuring range Rmax—R0.

5,445,006

SELF-TESTABLE MICRO-ACCELEROMETER AND METHOD

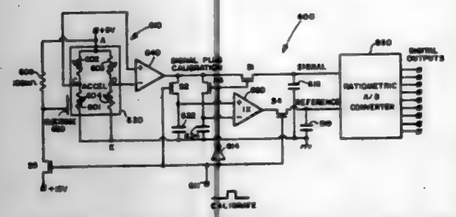
Henry V. Allen, Fremont; Stephen C. Terry, Palo Alto, and Diederik W. De Bruin, Santa Clara, all of Calif., assignors to IC Sensors, Inc., Milpitas, Calif.

Division of Ser. No. 915,792, Jul. 17, 1992, Pat. No. 5,253,510, which is a continuation of Ser. No. 668,100, Mar. 12, 1991, abandoned, which is a division of Ser. No. 370,364, Jun. 22, 1989, Pat. No. 5,103,667. This application Oct. 18, 1993, Ser. No. 138,349
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[6] G01P *21/02*
U.S. Cl. 73—1 D **10 Claims**

1. A method of testing the temperature insensitivity of an accelerometer having a housing, a deformable member formed in said housing movable relative to said housing in response to an applied force, said deformable member including a conductive mass formed thereon, at least one capacitive plate attached to said housing and disposed such that a potential difference between said capacitive plate and said mass causes a movement

of said mass, means for producing a potential difference between said mass and said capacitive plate, and at least one piezoresistive element attached to said housing and said deformable member for sensing movement of said mass, comprising the steps of:

subjecting said accelerometer to a plurality of different temperatures over a substantial range of temperature,



maintaining a predetermined initial distance between said capacitive plate and said mass, and

applying a predetermined potential difference between said capacitive plate and said mass producing substantially the same electrostatic acceleration between said capacitive plate and said mass for each of said plurality of temperatures.

5,445,007

METHOD OF BALANCING A VIBRATING RATE SENSOR BY REMOVING A PORTION OF THE VIBRATING CYLINDER

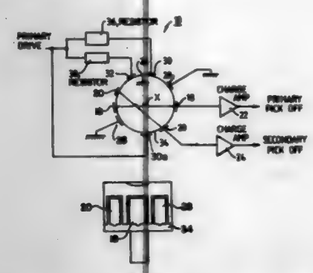
Malcolm P. Varnham, and James McInnes, both of Plymouth, Great Britain, assignors to British Aerospace Public Limited Company, Hampshire, United Kingdom

Filed Apr. 23, 1993, Ser. No. 51,388

Claims priority, application United Kingdom, Apr. 24, 1992, 9208953

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—1 DV **6 Claims**



1. A method of mechanically balancing vibrating cylinder made of piezoelectric material of a vibrating cylindrical rate sensor of a type having a primary drive transducer, a secondary drive transducer, a primary pick-off transducer, and a secondary pick-off transducer, the method including the steps of:

(a) applying a sinusoidal signal to the primary drive transducer;

(b) adjusting a frequency of the sinusoidal signal until a desired vibration mode is excited in the vibrating cylinder of the vibrating rate sensor and a phase of a signal from the primary pick-off transducer is at 90 degrees with respect to a phase of the sinusoidal signal applied to the primary drive transducer;

(c) measuring an output of said primary pick-off transducer as a primary vibratory mode frequency (f_{np});

(d) repeating steps (a) and (b) for the secondary drive transducer;

(e) measuring an output of said secondary pick-off transducer as a secondary vibratory mode frequency (f_{ns});

(f) removing a small amount of said piezoelectric material from the vibrating cylinder of the vibrating rate sensor adjacent one of the primary drive transducer, the secondary drive transducer, the primary pick-off transducer and the secondary pick-off transducer corresponding to one of the primary vibratory mode frequency (f_{np}) and the secondary vibratory mode frequency (f_{ns}) having a lower value so as to reduce a difference between the primary vibratory mode frequency (f_{np}) and the secondary vibratory mode frequency (f_{ns}) to within a desired amount.

5,445,008

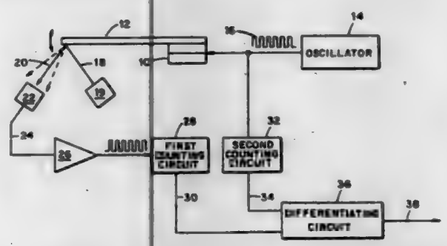
MICROBAR SENSOR

Eric A. Wachter, Oak Ridge, and Thomas G. Thundat, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 24, 1994, Ser. No. 217,411

Int. Cl.[6] G01N *27/00*

U.S. Cl. 73—24.06 **20 Claims**



1. An apparatus for detecting the presence of a predetermined vapor phase chemical in a monitored atmosphere comprising:

a piezoelectric transducer having a least one cantilevered spring element secured thereto, said spring element having an area thereof coated with a chemical having an affinity for said predetermined vapor phase chemical;

oscillator means for stimulating said transducer at or about a resonant vibrational frequency of said cantilevered spring element; and,

vibration detection means comprising photo-detection means for emitting a signal in synchronization with said spring element vibration for measuring a vibrational frequency change in said spring element due to a change in the vibrated mass of said spring element.

5,445,009

APPARATUS AND METHOD FOR DETECTING HUMIDITY IN A MICROWAVE OVEN

Woo J. Yang; Hyoung T. Lim, and Sung J. Han, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 29, 1993, Ser. No. 159,852

Claims priority, application Rep. of Korea, Nov. 27, 1992, 92-22590

Int. Cl.[6] G01W *1/00*; G01N *27/04*

U.S. Cl. 73—29.01 **3 Claims**

1. An apparatus for detecting humidity in a microwave oven, the apparatus having a magnetron driven by an alternating current with a predetermined frequency and period, each period comprising first and second half periods, the apparatus comprising:

an absolute humidity sensor which includes a thermistor for sensing humidity and a thermistor for temperature compensation;

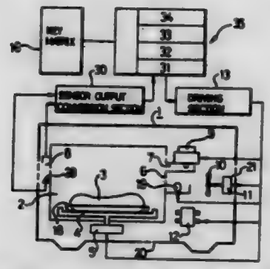
sensor output conversion means for converting a detected value of said absolute humidity sensor into a voltage value;

means for reading said voltage value outputted from said sensor output conversion means repeatedly and separately for each of said first and second half periods of the predetermined frequency;

means for calculating first and second cumulative differences of said read voltage values for each of said first half periods and for each of said second half periods, respectively;

means for comparing each of said first and second calculated cumulative differences, and determining times when said magnetron is oscillating and not oscillating according to which of the first and second calculated cumulative differences is larger and which is lesser relative to each other, respectively; and

analog to digital converting means for converting said determined voltage values associated with the time when the



magnetron is not oscillating and providing the converted voltage values as humidity sensor information.

3. A method for detecting humidity in a microwave oven the apparatus having a magnetron driven by an alternating current with a frequency and period, each period comprising first and second half periods, comprising steps of:

reading humidity-sensed values in a humidity sensor repeatedly and separately for each of said first and second half periods of the predetermined frequency; calculating first and second cumulative differences of said read humidity-sensed values for each said half period;

comparing said first and second calculated cumulative differences and determining times when said magnetron is oscillating and not oscillating according to which of the first and second calculated cumulative differences is larger and which is lesser relative to each other; and

analog to digital converting said humidity-sensed values associated with the time when the magnetron is not oscillating and providing the converted voltage values as humidity-sensed information.

5,445,010

LEAK DETECTION OF UNDERGROUND OR OTHERWISE INACCESSIBLE LIQUID STORAGE TANKS

Clifford T. Peacock, 8 Cliff Lane, Brierley, Nr. Barnsley S72 9HR, England

Filed Jul. 14, 1994, Ser. No. 275,147

Claims priority, application United Kingdom, Jul. 15, 1993, 9314637

Int. Cl.[6] G01M *3/30*; G01N *3/26*

U.S. Cl. 73—49.2 **8 Claims**

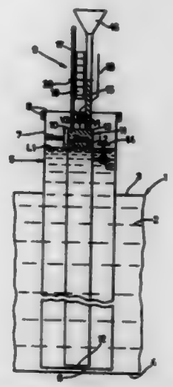
1. A test procedure for testing liquid storage tanks, for leakage, comprising:

(1) immersing a lower part of test equipment in the liquid in question and fixing the equipment in position with respect to the tank with an upper part of said equipment above, and external to, said tank for visual read-out;

(2) allowing a quantity of the liquid in question to be admitted to a multiplier tube, of relatively large diameter (e.g. 28 mm), forming part of the test equipment, until the level of liquid in the multiplier tube equates to that in the tank;

(3) isolating the liquid in the multiplier tube from that in the tank for an appropriate test period;

(4) introducing into a transparent measuring tube which extends above, and externally of, said tank a measure (M) of liquid of the same nature as that in the tank into the test equipment with said measure (M) being of sufficient volume such that the liquid level in said multiplier tube rises up to partially fill said transparent measuring tube, which is of relatively small diameter (e.g. 2 mm), thereby yielding a visible meniscus reading at the portion of the test equipment above, and external to, the storage tank; a



transparent tube of relatively small diameter (e.g. 2 mm) also forming part of the test equipment;

(5) removing the predetermined measure (M) of liquid from the test equipment;

(6) re-connecting the liquid in the multiplier tube with that in the tank;

(7) waiting a prescribed period of time;

(8) taking the same measure (M) as in step (4) of liquid of the same nature as that in the tank and re-introducing this measure into the test equipment; and

(9) observing any fall of the meniscus of that measure from the datum level established in step (4), which fall would indicate leakage from the tank.

5,445,011

SCANNING FORCE MICROSCOPE USING AN OPTICAL TRAP

Lucien P. Ghislain, Cornell University, Clark Hall, Ithaca, N.Y. 14853-2501, and Watt W. Webb, 409 Highland Rd., Ithaca, N.Y. 14850

Filed Sep. 21, 1993, Ser. No. 123,972

Int. Cl.[6] G01B *5/28, 15/00*

U.S. Cl. 73—105 **29 Claims**

1. An optical force microscope comprising:

a sensing probe;

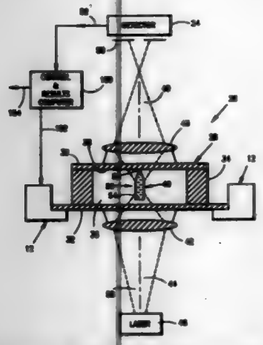
a laser light source generating a light beam at a predetermined wavelength, said light beam having an axis extending in the direction of beam propagation;

means for focusing said light beam with sufficient convergence to generate at least one gradient force optical trap at a beam focal region;

a sensing probe having dimensions comparable to the size of said focal region, said probe being carried by said optical trap at a position of local stable equilibrium near the beam focal region of said laser light source, said optical trap providing three dimensional confinement and accurate positioning of said sensing probe; and

a light detector means disposed for receiving laser light

directly related to displacement of said probe relative to the focal region of said laser light source and outputting an



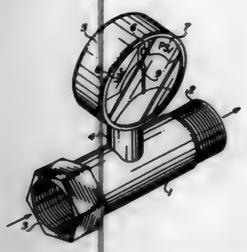
electrical signal directly related to the power of said received laser light.

5,445,012

MARINE IMPELLER TESTER

Larry A. Barone, P.O. Box 344, Goodyear, Ariz. 85336

Continuation-in-part of Ser. No. 8,474, Jan. 25, 1993, abandoned. This application Jun. 3, 1994, Ser. No. 253,972
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 3 Claims



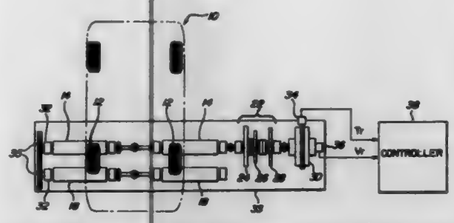
1. A water impeller tester for a marine engine, comprising a cylindrical member 1 including
   a first end having means 3 for connecting the member 1 to a water source, and
   a second end having means 2 for fluidly connecting the member to the water impeller of a marine engine;
a pressure gauge fluidly connected between the first and second ends of the cylindrical member, said gauge including both a rotatable indicating face 5 that further includes a pressure scale 7, vacuum scale 8, and zero marker 6 between the two scales, and rotatable pointer 9 that permits pressure readings to be taken from the scales;
the rotatable face 5 providing a means to zero the gauge with respect to the pressure scale 7 prior to supplying water to the impeller;
the pressure scale 7 and zero marker 6 providing a means for an operator to assure that a sufficient amount of water is being supplied to the water impeller prior to starting the marine engine;
the rotatable face 5 providing a means to zero the gauge with respect to the vacuum scale 8 after the sufficient amount of water is assured;
the vacuum scale 8 and zero marker 6 providing a means to determine if sufficient vacuum is being produced by the water impeller immediately after the marine engine is started.

5,445,013

DYNAMOMETER FOR SIMULATING THE INERTIAL AND ROAD LOAD FORCES ENCOUNTERED BY MOTOR VEHICLES AND METHOD

William Clayton, Jr., San Marino, and Dmitry Shchedrin, Arcadia, both of Calif., assignors to Clayton Industries, El Monte, Calif.

Filed Aug. 30, 1993, Ser. No. 114,220
Int. Cl.[6] G01L *3/16*
U.S. Cl. 73—117 24 Claims



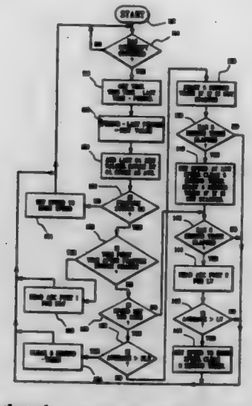
1. In a dynamometer having a minimum, maximum and trim rotational inertia, at least one roll for engaging the driven wheel or wheels of a motor vehicle, and a power absorbing/inertia simulating unit permanently coupled to the roll for simulating the inertial and road load forces which the motor vehicle would experience during operation on a road bed, where the maximum rotational inertia is equal to the largest inertia which the dynamometer is designed to simulate, the minimum rotational inertia is equal to the smallest inertia which the dynamometer is designed to simulate and the trim rotational inertia is equal to the difference between the minimum inertia and the inertia of the roll and the rotating components of the dynamometer which are permanently coupled to the roll excluding the power absorbing/inertia simulating unit, the combination comprising:
   a) a frame, the roll being rotatably mounted on the frame;
   b) the power absorbing/inertia simulating unit comprising a rotor having an electrically and magnetically conducting rotor wheel and shaft rotatably mounted on the frame and permanently coupled to the roll for rotation therewith and at least one stationary field coil positioned adjacent the wheel for inducing eddy currents in the wheel during rotation of the roll to apply a braking torque to the roll, the rotational inertia of the rotor being equal to the trim inertia of the dynamometer;
   c) a plurality of flywheels mounted on the frame;
   d) coupling means for selectively and individually coupling each of the flywheels to the roll for rotation therewith as required to provide the inertia to be simulated for the vehicle;
   e) force sensing means coupled between the roll and the frame for providing a measure of the force applied to the vehicle wheel minus the force attributable to the dynamometer parasitic losses;
   f) speed sensing means for providing a measure of the roll speed; and
   g) control means responsive to the roll speed and the force applied to the vehicle wheel for controlling the current to the field coil to absorb power from the roll so that the force applied to the vehicle wheel is proportional to a force associated with a selected simulated inertia and road load for the vehicle.

5,445,014

ELECTRONIC ENGINE LOAD AND REVOLUTION SENSING DEVICE

John A. Florenza, II, Slinger; Richard A. Dykstra, Cedar Grove; Joseph L. Pfaff, Brookfield; Scott L. Wesenberg, Hartland, and Douglas Shears, Milwaukee, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Aug. 12, 1994, Ser. No. 289,907
Int. Cl.[6] G01L *3/26*
U.S. Cl. 73—117.3 33 Claims



1. A device that changes an operating parameter of an internal combustion engine, said engine including a revolving crankshaft and said engine igniting fuel in a combustion chamber during a combustion event, said device comprising:
   determining means for determining a first period functionally related to the duration of a first crankshaft revolution during which a combustion event occurs in said combustion chamber, and for determining a second period functionally related to the duration of a second subsequent crankshaft revolution during which no combustion event occurs in said combustion chamber;
   means for generating a difference value functionally related to the difference between said first period and said second period; and
   means for generating a change signal to change said operating parameter of said engine as a function of said difference value.

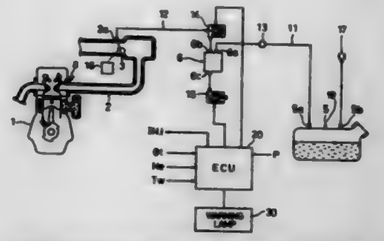
5,445,015

METHOD AND APPARATUS OF DETECTING FAULTS FOR FUELS EVAPORATIVE EMISSION TREATMENT SYSTEM

Koichi Namiki; Takuya Matsumoto; Toru Hashimoto, all of Kyoto, and Yasuhisa Yoshida, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,718
Claims priority, application Japan, Jun. 26, 1992, 4-169067
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—118.1 18 Claims

1. A method of detecting faults for a fuel evaporative emission treatment system in which fuel evaporative emission in a fuel tank is adsorbed by a canister, and the fuel evaporative emission, separated from the canister by admitting atmospheric air into the canister through a vent port of the canister during a subsequent engine operation, is fed to a suction pipe of an engine, comprising the steps of:
   reducing an internal pressure of the fuel tank;
   detecting a change in internal pressure of the fuel tank after the internal pressure of the fuel tank is reduced; and
   judging whether the fuel evaporative emission treatment system has a fault on the basis of the detected change in internal pressure of the fuel tank;
   wherein said step of reducing the internal pressure of the fuel tank includes the sub-steps of,
   closing the vent port of the canister;
   opening a control valve installed in a first passage means connecting an outlet port of the canister to the suction pipe, so that fuel evaporative emission in the fuel tank is exhausted via the first passage means and a second passage means connecting an inlet port of the canister to the fuel tank; and
   closing the control valve to complete the exhaust of the fuel evaporative emission when a predetermined time elapses from a point of time when the control valve is opened.

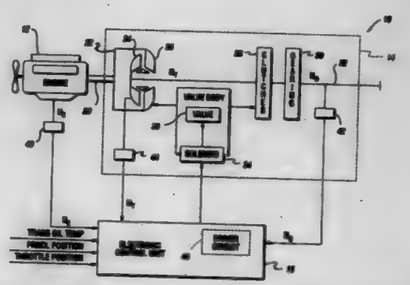


5,445,016

TORQUE CONVERTER CLUTCH SOLENOID FUNCTIONAL TEST

James J. Neigebauer, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 10, 1994, Ser. No. 257,315
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—118.1 6 Claims



1. For use with a vehicle having an electronic control unit and a driveline system including an engine, a transmission, and a torque converter operating to transfer engine torque to the transmission, the driveline system also including a torque converter clutch and a bypass clutch system for controlling operation of the torque converter clutch, and a solenoid for use with the torque converter clutch, a method for testing the functionality of the torque converter clutch solenoid comprising:
   determining the gear state of the transmission;
   determining the apply state of the torque converter clutch;
   determining the operational state of the bypass clutch system based on the gear state and the apply state of the torque converter clutch;
   modifying a plurality of counters associated with the torque converter clutch solenoid based at least on the gear state and the apply state of the torque converter clutch;
   comparing the value of the plurality of torque converter

clutch solenoid counters to a like plurality of associated thresholds; and

determining the functional state of the torque converter clutch solenoid based on the comparison.

5,445,017

MOTOR START EXAMINING DEVICE AND METHOD

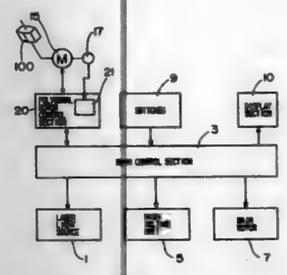
Masayuki Mizuno, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Aug. 12, 1994, Ser. No. 289,228

Claims priority, application Japan, Aug. 24, 1993, 5-209185; Aug. 24, 1993, 5-209186

Int. Cl.[6] G01N *15/00*

U.S. Cl. 73—118.1 **12 Claims**



1. A motor start examining device for examining a rotating state of a motor immediately after starting the motor, said motor start examining device comprising:

a timer for starting to measure time in response to the start of a supply of power to the motor, to output a time-up signal when said timer measures a predetermined first time period;

speed detecting means for detecting a rotational speed of the motor;

means for outputting a stability signal when the rotational speed detected by the speed detecting means is maintained in a predetermined relationship with a predetermined target speed;

first judging means for judging whether said stability signal is outputted, said first judging means making a judgment every other second time period, which second time period is sufficiently shorter than the first time period, said first judgment occuring before the time-up signal is outputted from said timer, said first judging means outputting signal when the stability signal is outputted continuously for a predetermined third time period which is sufficiently shorter than the second time period;

second judging means which waits until a fourth time period has elapsed since the signal from the first judging means was outputted, for judging whether said stability signal is outputted after an elapse of the fourth time period; and

third judging means for judging whether the motor is stabilized at the target speed in response to a judgement of the second judging means that the stability signal has been outputted.

5,445,018

SYSTEM AND METHOD FOR MEASURING THE RATE OF FUEL COMSUMPTION OF AN INTERNAL COMBUSTION ENGINE

Joseph W. Harpster, Galena, Ohio, assignor to Intek, Inc., Westerville, Ohio

Filed Jan. 27, 1994, Ser. No. 188,558

Int. Cl.[6] G01F *9/00*

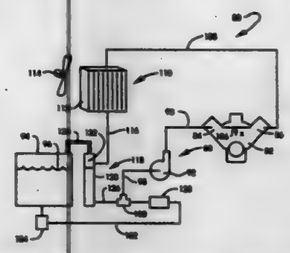
U.S. Cl. 73—118.2 **16 Claims**

1. The method for deriving a value for the consumption of fuel by an internal combustion engine operated with fuel from a fuel tank having a given tank pressure, said engine having a fuel injection assembly with a fuel supply pump having a suction input and a discharge output, said discharge output being coupled in fuel supply and cooling relationship with fuel injectors and said assembly having a return conduit carrying return fuel from said injectors, comprising the steps of:

providing a fuel supply conduit between said fuel tank and said pump suction input, said supply conduit carrying make-up fuel from said fuel tank;

providing a fuel combiner at a combiner location within said fuel supply conduit;

providing a gas phase separator having an input and a fuel output coupled to convey fuel to said fuel combiner;



directing return fuel from said return conduit to said gas phase separator;

removing non-condensible gases from said return fuel at said gas phase separator;

venting said removed non-condensible gases from said gas phase separator into said fuel tank to effect a substantial equalization of pressures therebetween;

directing said return fuel from said gas phase separator output to said fuel combiner to combine said return fuel with said make-up fuel; and

measuring the rate of flow of said make-up fuel at a measurement location within said fuel supply conduit intermediate said combiner location and said fuel tank.

5,445,019

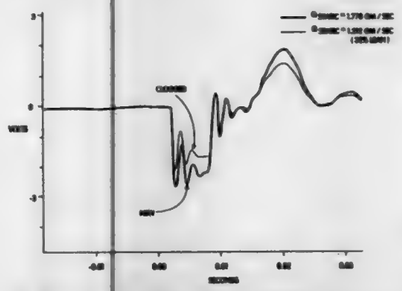
INTERNAL COMBUSTION ENGINE WITH ON-BOARD DIAGNOSTIC SYSTEM FOR DETECTING IMPAIRED FUEL INJECTORS

John M. Glidewell, Dearborn; Granger K. Chui, Dearborn Heights, and Woong-Chul Yang, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 19, 1993, Ser. No. 47,905

Int. Cl.[6] F02M *65/00*

U.S. Cl. 73—119 A **13 Claims**



1. An internal combustion engine comprising:

fuel supply means for supplying liquid fuel under pressure to combustion cylinders of the engine, comprising at least one fuel injector operatively connected to a fuel rail;

fuel injector control means for individually actuating said at least one fuel injector to pass fuel from the fuel rail during a controlled actuation period; and

an on-board diagnostic system for detecting impaired fuel injectors during engine operation, said on-board diagnostic system comprising:

pressure sensor means for sensing transient fuel pressure waves in the fuel rail resulting from actuation of the fuel injector and for generating pressure signals based thereon corresponding to fuel quantity passed by the fuel injector during actuation; and

signal processing means for processing pressure signals from the pressure sensor means and for generating an output signal in response thereto.

5,445,020

TIRE INFLATION SENSOR

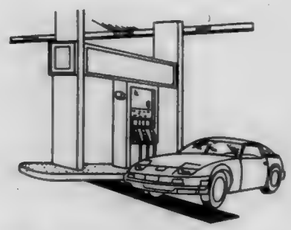
Ronald E. Rosensweig, Summit, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 799,791, Nov. 29, 1991, Pat. No. 5,396,817. This application Dec. 2, 1993, Ser. No. 160,988

The portion of the term of this patent subsequent to Mar. 14, 2012, has been disclaimed.

Int. Cl.[6] G01L *17/00, 16/0958*

U.S. Cl. 73—146.2 **11 Claims**



1. A system for determining the pressure of a pneumatic vehicular tire while mounted on the wheel of a vehicle, comprising:

a. A two-dimensional array of load sensors which provide a two-dimensional pattern of the force distribution exerted by said tire in contact with said sensors while the vehicle is moving or at rest on said array

b. a computer which is programmed (programmed computer) to determine said tire inflation pressure from said force distribution data independent of the make or model of said tire and said vehicle; and

c. means for displaying said pressure.

5,445,021

METHOD AND DEVICE FOR ASSISTANCE IN PILOTING AN AERODYNE BY THE GRAPHIC REPRESENTATION OF THE VERTICAL FLIGHT PLAN OF THIS AERODYNE

Thierry Cattoen, Legnevin; Daniel Duturc, Colomiers, and Mariannick Vaquier, Limours, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris and Sextant Avionique, Meudon la Foret, both of France

Continuation of Ser. No. 37,434, Mar. 26, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 266,118

Claims priority, application France, Mar. 26, 1992, 92 03643

Int. Cl.[6] G01C *21/00*; A47B *97/04*

U.S. Cl. 73—178 R **8 Claims**

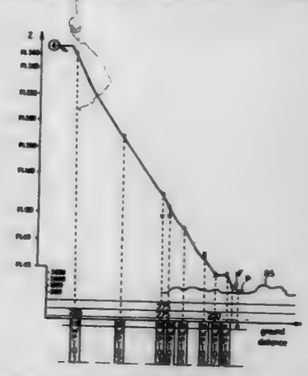
1. A method for assistance in piloting an aerodyne, said method comprising the steps of displaying a theoretical reference vertical profile of a flight plan of said aerodyne on a screen in a pilot's cockpit of said aerodyne of an altitude/-ground distance reference system having a horizontal ground distance axis and a vertical altitude axis,

said vertical profile comprising a succesion of way points, each of which is identifiable by an altitude on the vertical axis and a ground distance on the horizontal axis, each of said succession of way points being connected together by connecting lines to constitute said profile, displaying with said vertical profile an altitude constraint information signal comprising at least three altitude constraint symbols:

a first symbol of said symbols provided on a vertical line running through a first way point of said succession said first symbol being located above said first way point so as to indicate a maximum altitude at which the aerodyne can pass, when said aerodyne passes through said first vertical line,

a second symbol of said symbols provided on a second vertical line running through a second way point of said succession, said second symbol being located below said second way point so as to indicate a minimum altitude at which the aerodyne can pass when said aerodyne passes through said second vertical line, and

a third symbol of said symbols provided on a third vertical line running through a third way point of said succession,



said third symbol pointing to said third way point so as to indicate an altitude range at which the aerodyne should pass, when said aerodyne passes through said third vertical line,

displaying with said vertical profile a first speed information signal with at least one way point, said first speed information signal respectively indicating a speed value at or under which the aerodyne is required to fly and a predicted speed value of the aerodyne,

displaying with said vertical profile a mark which represents an instantaneous position of the aerodyne with respect to said profile, said mark being displayed with a second speed information signal indicating an actual speed value of the aerodyne and a value of a next speed at or under which the aerodyne is required to fly,

and displaying a warning message when the aerodyne exceeds an altitude or speed respectively set by any of the three constraint symbols, first speed information signal or second speed information signal along with the symbol or signal actuating the warning signal.

5,445,022

MEASURING SCOOP

John A. Vassallo, Lititz, Pa., assignor to Kerr Group, Inc., Lancaster, Pa.

Filed May 24, 1994, Ser. No. 248,046

Int. Cl.[6] G01F *19/00*; E05D *1/02*

U.S. Cl. 73—436 **12 Claims**

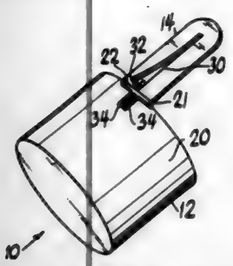
1. A measuring device adapted to be included in a package containing a product, the measuring device comprising:

a product receptacle including an open end through which the product may be introduced into the receptacle, a side wall surrounding the open end and extending a predeter-

mined distance away from the open end in a first direction and a sealing member disposed opposite the open end and coupled to the side wall, wherein the side wall is coupled to the sealing member so that product received in the receptacle can leave the receptacle only through the open end;

a substantially straight, rigid handle extending from a first end to a second end, the first end being rotatably coupled to the side wall via a hinge so that a consumer of the product may rotate the handle from an initial position, in which the handle is maintained as the measuring device and the product are packed into the package, to a measuring position for measuring desired quantities of the product, wherein, when in the initial position, the handle extends from the side wall substantially parallel to the first direction so that the second end of the handle is further from the sealing member than the first end of the handle is from the sealing member and, when in the measuring position, the handle extends away from the side wall in a direction substantially perpendicular to the first direction, wherein the handle includes an abutting surface for contacting the product receptacle to prevent the handle from rotating past the measuring position; and;

means for maintaining the handle in the initial position during the packing of the measuring device and the product into the package.

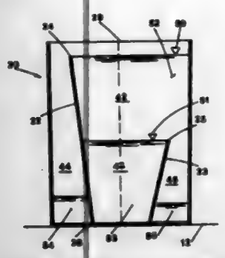


5,445,023

SAFE, ACCURATE AND FAST MEASURING DEVICE

Robert R. Reed, 312 E. Faris Rd., Greenville, S.C. 29605

Filed Apr. 15, 1994, Ser. No. 228,227
Int. Cl.[6] G01F *19/00*
U.S. Cl. 73—427 9 Claims



1. An improvement in a single container for safely measuring at least one exact volume of a fluent material including:

at least one first volumetric portion for receiving and containing up to an exact predetermined volume of said fluent material when a base portion of the container is supported approximately horizontally and when said first volumetric portion is filled with said material;

at least one overflow weir to limit the elevation of a top surface of the material in each respective first volumetric portion to achieve a respective exact volume of said material;

at least one safety lip extending above the elevation of both a respective top surface and a respective weir to contain said material within said container; and

a second volumetric portion to coexist with each respective first volumetric portion in said container which receives and contains any overflow volume from the respective weir after the respective first volumetric portion has been filled to the elevation of said respective top surface, wherein said respective exact volume of said material can be discharged by lifting and rotating said container in a respective first direction by one of a hand and an apparatus, wherein the improvement comprises:

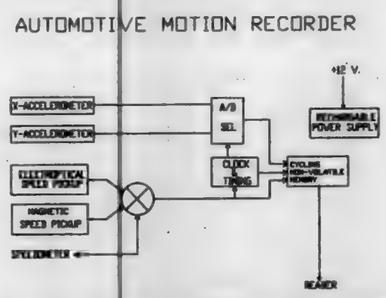
each of the first volumetric portions being separated from a respective second volumetric portion by a respective thin planar diaphragm, wherein said diaphragm is characterized by an angular orientation with respect to said single container, said angular orientation being such that the overflow volume is retained by said diaphragm when discharging said exact volume, wherein said diaphragm separates the exact volume from the overflow volume and said diaphragm includes said weir to accurately obtain said exact volume.

5,445,024

AUTOMOTIVE MOTION RECORDER

Claude R. Riley, Jr., 121 Crowfield Rd., Knoxville, Tenn. 37922, and Michael G. Sunseri, 5636 Erlanger Rd., Kenner, La. 70065

Filed Sep. 7, 1993, Ser. No. 72,001
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—489 1 Claim



1. A method to provide vehicle impact data, comprising:

A. providing a motion recorder comprising: a case; a first accelerometer oriented to sense acceleration in the direction of vehicle travel; a second accelerometer oriented to sense acceleration perpendicular to the direction of travel; a speed sensor to sense vehicle speed; first means for transferring acceleration data from both accelerometers to a circular non-volatile memory circuit when the speed sensor senses a speed above a preset value; second means for transmitting date/time data to the memory; third means for transmitting vehicle speed data from the speed sensor to the memory; whereby the accelerometers, speed sensor, and first, second and third means are located in the case;

B. attaching the recorder to the vehicle, the vehicle further comprising either an automobile, motorcycle, truck or bus equipped with an antilock brake system; and,

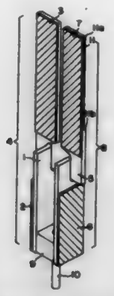
C. subsequent to vehicle impact, removing the recorder from the vehicle, connecting the recorder and using a predetermined access code for retrieving the acceleration data from both accelerometers, the vehicle speed and date/time data for subsequent analysis.

5,445,025

ANGULAR VELOCITY SENSOR HAVING A BALANCED TUNING FORK STRUCTURE AND THE METHOD OF MANUFACTURE

Jiro Terada, Hirakata; Hiroshi Takenaka, Ikoma; Masaharu Ushihara, Hirakata; Masami Tamura, Uji; Hitoshi Nishimura, and Kikuo Kaino, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 15, 1993, Ser. No. 92,354
Claims priority, application Japan, Feb. 3, 1993, 5-016054; Feb. 3, 1993, 5-016122
Int. Cl.[6] G01P *9/04*
U.S. Cl. 73—504.15 7 Claims



1. An angular velocity sensor comprising:

a first metal plate having a generally rectangular shape, a first lengthwise dimension, and a first metal surface;

a second metal plate having a generally rectangular shape, a second lengthwise dimension, and a second metal surface;

one of said first metal plate and said second metal plate having at least one beveled corner edge, said one beveled corner edge having a lengthwise dimension parallel to an axis of detection of the angular velocity sensor and parallel to said first lengthwise dimension and said second lengthwise dimension;

a first vibrator including a first actuator and a first detector joined orthogonally to each other;

a second vibrator including a second actuator and a second detector joined orthogonally to each other;

an electrode block coupling between the first and second vibrators;

said first and second vibrators arranged parallel to each other along the axis of detection and coupled to each other by said electrode block at the lowermost ends of said actuators forming a tuning-fork structure;

said first actuator and said first detector including first piezoelectric elements bonded to said first metal surface; and

said second actuator and said second detector including second piezoelectric elements bonded to said second metal surface.

5,445,026

ELECTRONIC INSTRUMENT FOR LOCATING AND DIAGNOSING ENGINE SOUNDS

Chris S. Eagan, 670 Eldorado La., Las Vegas, Nev. 89123

Filed Jun. 14, 1993, Ser. No. 75,790
The portion of the term of this patent subsequent to Jul. 25, 2012, has been disclaimed.
Int. Cl.[6] G01N *29/00*; G01H *1/00*
U.S. Cl. 73—591 11 Claims

1. An acoustic signal and sound diagnostic instrument for discriminating audible automotive engine and industrial machinery abnormalities for use by a professional maintenance operator comprising:

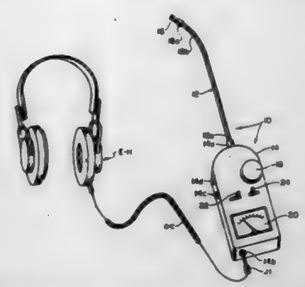
a) an elongated deformable, semi-rigid probe arm bearing an acoustic transducer microphone at the forward end thereof for detecting and converting audible acoustic signals and sounds having a frequency in the range of from about 500 to about 10,000 Hz into electromagnetic signals;

b) an electronics housing conformed to be held in the hand of said maintenance operator, said housing mechanically connected to and supporting said probe arm at the rearward end thereof;

c) pre-amplifier circuitry within said housing electrically coupled to said transducer microphone for receiving said electromagnetic signals from said microphone;

d) range selector circuitry within said housing for selecting sound level ranges respecting said electromagnetic signals;

e) a decibel meter mounted to the exterior of said housing and electrically interconnected to said pre-amplifier circuitry for visually indicating changes and peaks in the sound levels detected by said transducer microphone;



f) operational audio amplifier circuitry within said housing electrically interconnected to said pre-amplifier circuitry for converting said electromagnetic signals into secondary audible acoustic signals;

g) a battery power supply electrically interconnected to said range selector circuitry and said pre-amplifier circuitry for energizing said instrument; and

h) an earphone headset electrically interconnected to said audio amplifier circuitry for use by said operator whereby said secondary audible acoustic signals are available to said operator for audible discrimination of engine and machinery abnormalities.

5,445,027

METHOD AND APPARATUS FOR DETECTING AND LOCATING DEFECTS IN A COMPONENT OF A TURBINE

Walter Zörner, Baiersdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 17, 1994, Ser. No. 198,882
Claims priority, application Germany, Aug. 19, 1991, 41 27 395.8
Int. Cl.[6] G01H *13/00*; G01M *13/00*; G01N *29/12*
U.S. Cl. 73—593 17 Claims

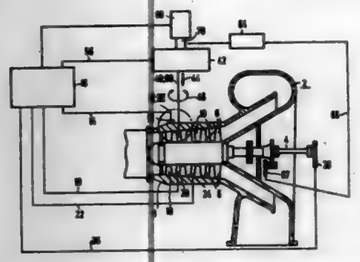
1. A method for detecting and locating defects in a component of a turbine, which comprises:

determining at least one measured value during operation of a turbine;

comparing the at least one measured value to a standard for detecting a defect; and

when a deviation from the standard value in the at least one measured value is determined during operation of the turbine, inserting a probe into the interior of the turbine; and

measuring a first acoustic spectrum generated by a component of the turbine with the probe and comparing the first



acoustic spectrum with a first reference spectrum to locate the defect.

5,445,028

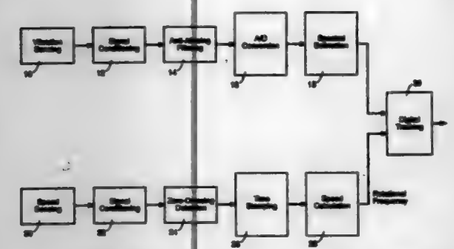
DYNAMIC DIGITAL TRACKING FILTER

Robert G. Bianchi, Billerica, Mass., and David L. Garcia, Salem, N.H., assignors to Ametek Aerospace Products Inc., Wilmington, Mass.

Continuation of Ser. No. 944,913, Sep. 18, 1992, abandoned. This application Feb. 10, 1995, Ser. No. 387,014

Int. Cl.[6] G01H *1/08*; G01M *13/02*; G01N *29/00*

U.S. Cl. 73—593 **40 Claims**



1. A tracking filter system for measuring the amplitude of the vibration of a rotating body during a measurement period when the rotational rate is uniform or non-uniform comprising:

a first sensor for sensing the vibration motion of said rotating body and for producing vibration digital data representative of vibration motion of said rotating body during said measurement period;

a second sensor for producing rotational speed digital data by measuring the time between rotations during said measurement period, simultaneous with said sensing of said vibration motion;

means for identifying a range of frequencies from said speed digital data comprising means for deriving the range of 1/REV frequencies for said speed digital data from the lowest time between rotations to the highest time between rotations during said measurement period;

means for decomposing said vibration digital data into two or more vibration frequency components; and

means for summing two or more of said vibration frequency components corresponding to a multiple of the range of 1/REV speed frequencies from said speed digital data to produce a measure of the amplitude of vibration at the rotational frequency of said body.

5,445,029

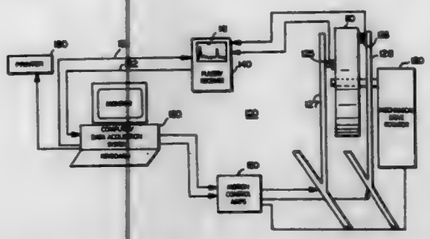
CALIBRATION AND FLAW DETECTION METHOD FOR ULTRASONIC INSPECTION OF ACOUSTICALLY NOISY MATERIALS

Robert V. Falsetti, Schenectady, and Elizabeth L. Dixon, Delanson, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Nov. 8, 1993, Ser. No. 149,208

Int. Cl.[6] G01N *29/04*

U.S. Cl. 73—609 **20 Claims**



1. In a nondestructive testing system for performing ultrasonic inspections, including a processor for controlling the positioning of at least one ultrasonic transducer element with respect to a surface of a specimen under test, acquiring, digitizing and preserving ultrasonic measurement data produced at least in part from internal scattering of ultrasonics signals in the specimen, and performing calculations based on said data, a method for dynamic automatic adjustment of a flaw/defect detection threshold, comprising the steps of:

(a) scanning a surface of a specimen under test in a predetermined pattern with at least one transducer and operating at least one transducer that is used for said scanning to acquire groups of ultrasonic measurement signal data corresponding to a plurality of ultrasonic test data points arranged within distinct planes, said distinct planes defined substantially parallel to the scanned surface of said specimen;

(b) calculating a unique signal-to-noise (S/N) ratio value corresponding to each test point of said plurality of ultrasonic test data points in a particular plane of said distinct planes based on a rolling average of signal levels measured over an area localized about each of said plurality of ultrasonic test data points acquired in step (a); and

(c) setting a flaw/defect detection threshold level for said particular plane in said specimen based on a predetermined function of a standard deviation value of all S/N values calculated for said particular plane in step (b).

5,445,030

SPHERICAL COUPLING

Terry L. Hagen, Corona, Calif., assignor to Wyle Laboratories, El Segundo, Calif.

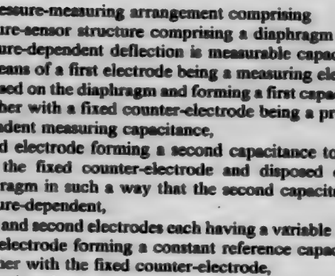
Filed Oct. 6, 1993, Ser. No. 132,749

Int. Cl.[6] B04B *3/00*

U.S. Cl. 73—663 **10 Claims**

1. A shake table apparatus which includes a table, at least one actuator and at least one bearing assembly which transmits force between said actuator and said table while allowing shifting of the table relative to the actuator, wherein said bearing assembly includes upper and lower spherical bearings, each including an inner member with a partial spherical outer surface and an outer member with a partial spherical inner surface engaged with said outer surface, an outside transmit member which couples said outer members and a shaft which couples said inner members, at least said outer member of said upper spherical bearing having a greater average thickness than the corresponding inner member, characterized by:

said inner member of said upper spherical bearing is formed of a material having a greater Young's Modulus of Elasticity, than the material of the outer member of said upper bearing, to thereby more closely equalize bending of the



inner and outer members of said upper spherical bearing, with the material of said outer member having a lower density than the material of said inner bearing.

5,445,031

PRESSURE-MEASURING ARRANGEMENT WITH HIGH LINEARITY

Hubert Benzel, Pliezhausen, Germany, assignor to Endress+Hauser GmbH+Co., Germany

Continuation-in-part of Ser. No. 90,183, Jul. 22, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 252,416

Claims priority, application Germany, Nov. 28, 1991, 41 39 162.4; Dec. 19, 1991, 41 42 101.9

Int. Cl.[6] G01L *9/12*; H01G *7/00, 7/06*

U.S. Cl. 73—724 **6 Claims**

1. A pressure-measuring arrangement comprising

a pressure-sensor structure comprising a diaphragm whose pressure-dependent deflection is measurable capacitively by means of a first electrode being a measuring electrode disposed on the diaphragm and forming a first capacitance together with a fixed counter-electrode being a pressure-dependent measuring capacitance,

a second electrode forming a second capacitance together with the fixed counter-electrode and disposed on the diaphragm in such a way that the second capacitance is pressure-dependent,

the first and second electrodes each having a variable radius,

a third electrode forming a constant reference capacitance together with the fixed counter-electrode,

an evaluating circuit which derives the pressure by a capacitance measurement and has the following transfer function:

$$F=[C_f(p)-C_r]/C_f(p)$$

where C_p is the measuring capacitance, C_r is the constant reference capacitance, and C_f is the second capacitance, and wherein the first electrode and the second electrode are separated by a boundary having an angularly extending profile which varies as a function of the variable radius of the first electrode and the variable radius of the second electrode.

5,445,032

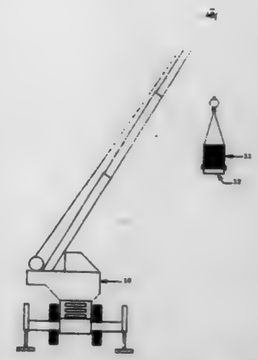
LOAD TESTING APPARATUS AND METHOD FOR A PERSONNEL PLATFORM

Joe K. Dixon, 2334 Red Barn La., Charlotte, N.C. 28210

Filed Sep. 9, 1994, Ser. No. 303,431

Int. Cl.[6] G01N *3/00*

U.S. Cl. 73—788 **6 Claims**



1. Load testing apparatus for releasably attaching a test-weight to and releasing a test-weight from, a personnel platform having a floor, open ended forklift tubes extending between two sides of the personnel platform beneath the floor of the platform and means for suspending the personnel platform from a crane, said load testing apparatus comprising:

a test-weight including

means integrated with the test-weight for releasably attaching the test-weight to and releasing the test-weight from the forklift tubes on the personnel platform, whereby the forklift tubes on the personnel platform may be guided into registry with the means integrated with the test-weight for releasably attaching the test-weight to and releasing the test-weight from the forklift tubes on the personnel platform while a crane positions the personnel platform on the testweight.

5,445,033

BOTTOM POUR MELT FLOW RATE MEASUREMENT USING MAGNETIC FIELD

Sudhir D. Savkar, Schenectady; Walter Whipple, III, Amsterdam, and Lawson P. Harris, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 37,759, Mar. 26, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 295,566

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—861.12 **9 Claims**

1. An atomization apparatus for atomization of a melt at high temperature, said atomization apparatus comprising:

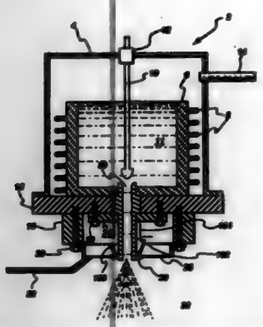
a container;

a melt guide tube extending from the bottom of said container, said melt guide tube having a melt discharge end for delivery of a melt to a zone at said melt discharge end;

a gas delivery system surrounding said melt guide tube, said gas delivery system including a gas plenum and a gas plenum exhaust for delivery of atomizing gas into said zone; and

a flow rate detector surrounding said melt guide tube, said flow rate detector comprising first and second electromagnets, first and second electrodes embedded in said melt guide tube, and a voltage measuring device con-

nected to said first and second electrodes, said first electromagnet comprising a first coil having a single turn and



said second electromagnet comprising a second coil having a single turn.

5,445,034

METHOD OF MEASURING THE PRESSURE OF A GAS IN A GAS ACCUMULATOR, AND A GAS ACCUMULATOR FOR CARRYING OUT THE METHOD

Gunter Peter, Tholey-Theley, and Norbert Weber, Sulzbach, both of Germany, assignors to Hydac Technology GmbH, Sulzbach, Germany

PCT No. PCT/EP92/01047, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO92/21012, PCT Pub. Date Nov. 26, 1992

PCT Filed May 13, 1992, Ser. No. 119,147

Claims priority, application Germany, May 21, 1991, 41 16 482.2

Int. Cl.[5] G01F *1/28*

U.S. Cl. 73—861.75 14 Claims

1. A method of measuring pressure of a gas in a gas accumulator, coupled to a fluid circuit, for storing and supplying fluid pressure for the fluid circuit, comprising the steps of:

separating gas from pressure fluid inside a gas accumulator housing by a separating means movably mounted in the housing, the housing having attachment means coupled to a fluid pressure side of the housing and conveying fluid pressure in said housing to a fluid circuit;

measuring pressure of the pressure fluid with a pressure detector means coupled to said gas accumulator when the separating means is in a preadjustable position having a gas pressure assignable thereto;

detecting the preadjustable position by a monitoring means coupled to the pressure detector means; and

initiating measurement of the fluid pressure upon detection of the separating means in the preadjustable position.

5,445,035

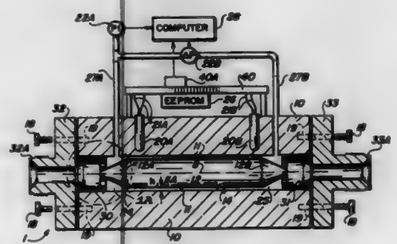
PRECISION GAS MASS FLOW MEASUREMENT APPARATUS AND METHOD MAINTAINING CONSTANT FLUID TEMPERATURE IN THIN ELONGATED FLOW PATH

Pierre R. Delajoud, 109 Rue de Longchamp, 92200 Neuilly sur Seine, France

Continuation of Ser. No. 809,677, Dec. 18, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 166,264

Int. Cl.[6] G01F *1/37*

U.S. Cl. 73—861.52 21 Claims



1. A mass flow meter comprising in combination:

(a) a body having a cylindrical bore therein;

(b) an elongated cylindrical piston positioned in the bore concentrically therewith, an elongated annular fluid flow channel of uniform depth being bounded by a cylindrical surface of the piston and a surface of the bore, fluid flowing laminarly through the channel;

(c) first and second elastically deformable positioning and holding means located at first and second end portions of the piston, respectively, for precisely positioning and holding the piston concentrically in the bore by elastically expanding in response to longitudinal forces on the first and second end portions of the piston to symmetrically engage a wall of the bore, the bore and the first end portion of the piston bounding a first pressure equalization chamber behind a first laminar flow restriction upstream from the channel, the bore and the second end portion of the piston bounding a second pressure equalization chamber before a second laminar flow restriction downstream from the channel;

(d) first pressure measuring means in fluid communication with the first pressure equalization chamber for measuring fluid pressure in the first pressure equalization chamber, and second pressure measuring means in fluid communication with the first and second pressure equalization chambers for measuring the difference in fluid pressure between the first and second pressure equalization chambers;

(e) means for maintaining the temperature of the fluid flowing through the channel constant;

(f) means for determining the temperature of the fluid flowing through the channel; and

(g) means for computing a mass flow of the fluid through the channel on the basis of a difference between the pressure measured in the first pressure equalization chamber and the pressure measured in the second pressure equalization chamber, and the temperature of the fluid flowing through the channel.

5,445,036

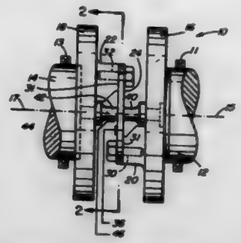
TORQUE SENSOR

Ivar Hordnes, Vancouver; Andre C. Bidaud, Burnaby, and Sheldon I. Green, Vancouver, all of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Jun. 15, 1994, Ser. No. 260,442

Int. Cl.[6] G01L *3/02*

U.S. Cl. 73—862.321 9 Claims



1. A torque sensing system comprising a coupling means having a first face plate and a second face plate, means mounting said first and second plates for rotation, said coupling means including link means interconnecting said first and second plates, first connecting means connecting said link means adjacent to one end of said link means to said first plate and second connecting means connecting said link means adjacent to the other end of said link means remote from said one end to said second plate, said first and said second connecting means connecting said link means to said first and said second plates at locations radially offset from their axes of rotation thereby positioning said link means relative to said axes to transfer torque in one direction at a time between said first plate and said second plate substantially solely through tension in said link means and a sensor means for sensing tension in said link means and thrust transmitting means for transmitting axial thrust between said first and said second plates.

5,445,037

SAMPLE SORTING APPARATUS

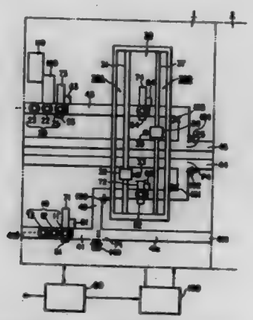
Teruaki Itoh, 5-25, Kokaihoumachi, Kumamoto-shi, Kumamoto-ken 860, Japan

Filed Jan. 21, 1994, Ser. No. 183,742

Claims priority, application Japan, Jan. 29, 1993, 5-013295

Int. Cl.[6] G01N *35/02*

U.S. Cl. 73—864.25 14 Claims



1. A sample sorting apparatus comprising:

first conveying means for conveying a parent sample vessel containing a parent sample along a first convey path, said first convey path comprising a branch path;

means for taking up the parent sample from said parent sample vessel conveyed by said first conveying means;

sample recognition information reading means for reading sample recognition information attached to said parent sample vessel;

second conveying means for conveying child sample vessels along a second convey path; and

means for distributing the parent sample took up by said taking up means into a number of child sample vessels in accordance with sample recognition information read by said reading means.

5,445,038

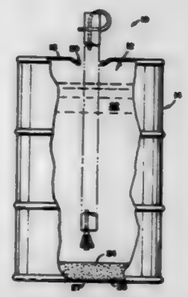
APPARATUS FOR SAMPLING FLUIDS IN CONTAINERS

Theodore H. Hueller, Cary, Bruce A. Blair, Sycamore, both of Ill., assignors to Safety-Kleen Corp., Elgin, Ill.

Filed Dec. 6, 1993, Ser. No. 163,674

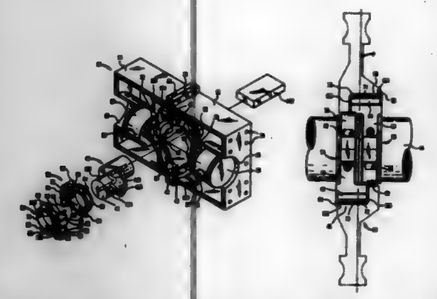
Int. Cl.[6] G01N *1/12*

U.S. Cl. 73—864.63 10 Claims



1. An apparatus for sampling liquids in containers, said apparatus comprising, in combination, a sample retention tube, a tube plug unit, and an operating rod and handle unit, said retention tube being of a cylindrical cross-section and having a continuous thin sidewall made from a thermoplastic material, said tube having completely open, top and bottom end portions, said tube plug body including a rod-receiving, center section and a plug unit having a generally upwardly directed top surface and a peripheral seal extending radially outwardly from a lower portion of said plug body, said seal being adapted to sealingly engage an inner surface of said tube sidewall, said operating rod having a main section, a lower end and having its handle at the top of said rod, said rod having an overall length in excess of that of the retention tube and having said lower end portion received snugly within said plug center section, said handle including a loop portion at its upper end, with said loop portion terminating in a transverse section, with said loop portion also being inclined relative to the axis of said rod main section, whereby said transverse end section is spaced apart from an adjacent portion of said rod main section by a distance substantially greater than the thickness of said tubing wall, said tubing top end portion being engageable with said transverse end section of said rod in one position of said rod handle, and with the uppermost portion of said loop end engaging said tubing top end portion in another position of said rod, and with said rod length and loop size being arranged such that, with said transverse end in contact with said top tube end, said entire tube plug unit is disposed within said retention tube, and with said top tube end engaging said upper loop portion, said plug is sufficiently spaced from said bottom tube end to permit the liquid to be sampled to flow into said bottom tube end.

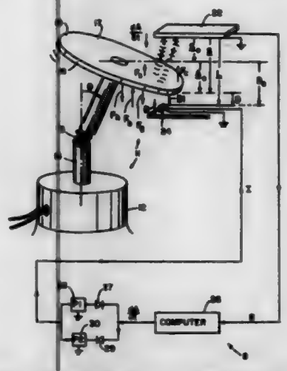
5,445,039
CONJUGATE DRIVE MECHANISM
Douglas C. Brackett, P.O. Box 306, Portland, Me. 04112
Filed Mar. 18, 1994, Ser. No. 210,875
Int. Cl.[6] F16H *21/18*
U.S. Cl. 74—49 18 Claims



1. A motion converter apparatus, comprising a shuttle movable in a reciprocating fashion along a rectilinear path, said shuttle having an aperture therein, one side of said aperture being defined by a first trackable profile and an opposite side of said aperture being defined by a second trackable profile; a rotatable crankshaft having a crankpin positioned within said aperture of said shuttle and rotatable in a circular path; a pair of conjugate drivers rotatably mounted on said crankpin by a corresponding pair of mounting means positioned on opposite sides of an imaginary plane which passes through said crankpin and which is oriented normal to a longitudinal axis of said crankpin, one of said conjugate drivers including a first tracking profile having a first profiled portion positioned on one side of said imaginary plane and a second profiled portion positioned on an opposite side of said imaginary plane, whereby said second profiled portion of said first tracking profile overhangs the other of said conjugate drivers, said other conjugate driver including a second tracking profile having a first profiled portion positioned on said opposite side of said imaginary plane and a second profiled portion positioned on said one side of said imaginary plane, whereby said second profiled portion of said second tracking profile overhangs said one conjugate driver, said first and second tracking profiles engaging said first and second trackable profiles, respectively, in a continuous conjugating manner as said crankpin rotates in said circular path, whereby the reciprocating rectilinear motion of said shuttle is continuously converted into the rotary motion of said crankpin or vice versa.

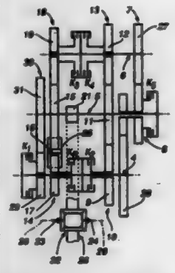
5,445,040
CAGING SYSTEM
Louis H. Martinage, Reading; Edward M. Cusson, Winchester, and Penn H. Clower, Andover, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 20, 1994, Ser. No. 247,162
Int. Cl.[6] G01C *19/30*; G05B *13/00*
U.S. Cl. 74—5.46 12 Claims

1. A caging system that cages a moving body, comprising:
(a) means for remotely detecting amounts of movement of the body over time;
(b) means for determining an instantaneous linear deflection velocity of the body from such detected amounts of linear movement of the body over time; and
(c) means remote from the body for directly applying a caging force to the moving body in a direction opposite to a direction of linear movement of the moving body, the magnitude of the caging force being equal to a selected value of caging coefficient times the instantaneous linear



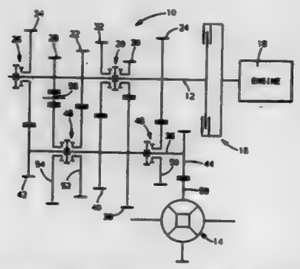
deflection velocity of the moving body, the caging force changing a linear position of the body.

5,445,041
GEARWHEEL CHANGE TRANSMISSION OF THE COUNTERSHAFT TYPE
Wolfgang Zaiser, Steinheim, and Helmut Bender, Pleidelsheim, both of Germany, assignors to Mercedes-Benz AG, Germany
Filed Jun. 7, 1994, Ser. No. 257,323
Claims priority, application Germany, Jun. 7, 1993, 43 18 713.7
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—331 2 Claims



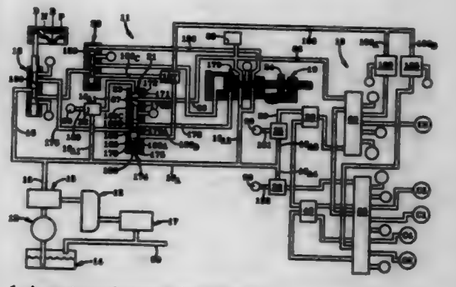
1. A gearwheel change transmission for a motor vehicle, comprising an input shaft, a countershaft and an output shaft selectively connectable into constant drive connection with drivable vehicle wheels of the motor vehicle, the countershaft and the output shaft being arranged parallel to the input shaft which is drivable from an engine of the motor vehicle, the countershaft being in constant drive connection with the input shaft via a bound gearwheel stage and having a middle loose gearwheel on the output shaft, a loose wheel of a gearwheel stage of one forward gear, which has a fixed wheel arranged on the output shaft, is couplable to the countershaft via a non-positive first shift coupling, and a loose wheel of a gearwheel stage of a further forward gear, which has a fixed wheel of which is assigned to the output shaft, is couplable to the input shaft via a non-positive second shift coupling, and a three-membered reverse gear gearwheel stage, which has a fixed wheel operatively arranged with the output shaft and a middle gearwheel for reversing direction of rotation of the output shaft, is operatively arranged rotatably as a reversing wheel on an intermediate shaft and is configured to be insertable into a force flux between the input shaft and output shaft via an additional shift coupling as a drive connection, wherein a gearwheel of the reverse gear gearwheel stage constitutes a loose wheel on the countershaft, is arranged independently of the further forward gear shift coupling associated with the input shaft and is couplable to the countershaft via the additional shift coupling, the fixed wheel of the reverse gear gearwheel stage is constantly rotationally fixedly connected to the output shaft, a fixed wheel of the gearwheel stage, couplable via a loose wheel thereof to the countershaft via the one forward gear first shift coupling is configured to mesh with the further forward gear gearwheel stage loose wheel, which is couplable to the input shaft via the second shift coupling, and the fixed wheel of the reverse gear gearwheel stage is configured to mesh with a third forward gear gearwheel stage loose wheel and is couplable to the input shaft via a non-positive fourth shift coupling.

5,445,042
TRANSMISSION AND CONTROL WITH HYDRAULICALLY ACTUATED SYNCHRONIZERS
Robert B. Deady, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 21, 1993, Ser. No. 140,657
Int. Cl.[6] F16H *61/18, 3/083*
U.S. Cl. 74—329 8 Claims



1. In combination, a transmission and control comprising:
a plurality of synchronizer clutch means for selectively establishing a plurality of speed ratios between an input shaft and an output shaft;
first servo means selectively movable to a first position, second position and neutral position for operating a first of said synchronizer clutch means to establish a first ratio, a second ratio and a neutral condition, respectively, and including a neutral pressure chamber;
second servo means selectively movable to a first position, second position and neutral position for operating a second of said synchronizer clutch means to establish a third ratio, a fourth ratio and a neutral condition, respectively, and including a neutral pressure chamber;
servo disengage valve means for selectively supplying fluid pressure to the neutral pressure chambers for individually controlling each of said servo means into the neutral condition;
shift valve means for selectively conditioning one of the servo means to a respective ratio condition and for controlling the servo disengage valve means to establish the neutral condition in the other of the servo means; and
means for establishing and directing pressurized fluid to said servo means and said servo disengage valve means and said neutral chambers being selectively pressurized to selectively enforce the neutral condition.

5,445,043
HYDRAULIC SHIFT CONTROL FOR A POWER TRANSMISSION
James R. Eaton, and Joseph H. Hunter, both of Carmel, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 22, 1994, Ser. No. 199,400
Int. Cl.[6] F16H *1/20*
U.S. Cl. 74—335 12 Claims



1. An automatic transmission drive ratio control comprising:
a source of fluid pressure;
a first two-position spool valve means;
a control chamber incorporated in said first spool valve means;
first on/off solenoid control valve means connected with said source of fluid pressure;
first control conduit means for directing fluid from said first on/off solenoid control means to said control chamber in the first spool valve means to effect a pressure-set state when said first on/off solenoid control valve means is on;
spring means for biasing said first spool valve means to effect a spring-set state when said first on/off solenoid control valve means is off;
a second two-position spool valve means;
a control chamber incorporated in said second spool valve means;
second on/off solenoid control valve means connected with said source of fluid pressure;
second control conduit means for directing fluid from said second on/off solenoid control valve means to said control chamber in said second spool valve means for effecting a pressure-set state to said second spool valve mean when said second on/off solenoid control means is on;
spring means for biasing said second spool valve means to effect a spring-set state to said second spool valve means when said second on/off solenoid control valve means is off;
a plurality of torque transfer devices;
each torque transfer device effecting a selected drive ratio;
first modulating solenoid valve means connected to said source of fluid pressure and to said first spool valve means for directing fluid flow to selected torque transfer devices; and,
second modulating solenoid valve means connected to said source of fluid pressure and to said second spool valve means for directing fluid flow to selected of the other torque transfer devices.

5,445,044
CLUTCHLESS MECHANICAL GEAR TRANSMISSION
Gary D. Lee, Woodland Hills, Utah, assignor to The Anchored Corporation, Woodland Hills, Utah
Filed May 25, 1993, Ser. No. 66,663
Int. Cl.[6] F16H *3/083*
U.S. Cl. 74—372 2 Claims

1. A transmission apparatus for changing the speed of a

driven member relative to the speed of a driving member, said apparatus comprising:

a plurality of reducing gears;

driving means for causing said reducing gears to move in response to movement of said driving member;

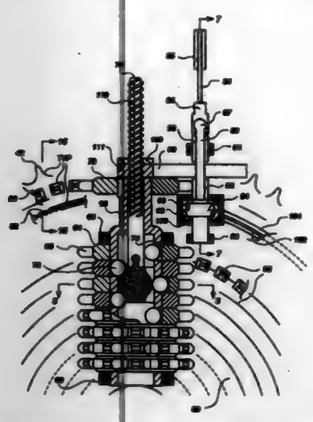
a plurality of annular cam gears each in continuous driving engagement with a corresponding one of said reducing gears, each of said cam gears having an inner cam surface with at least one peak and at least one, valley;

a hollow drum mounted for rotation about an axis and having a plurality of apertures extending from an inner drum surface to an outer drum surface, at least one of said apertures corresponding to each of said cam gears, and said cam gears being mounted for rotation about said outer drum surface with said inner cam surface opposite to said at least one corresponding aperture;

a plurality of detents, one corresponding to each of said drum apertures and each arranged for reciprocating radial movement within its corresponding drum aperture;

a cam member mounted within said drum for reciprocal axial movement back and forth along said drum axis, said cam member comprising an outer cam surface having a central portion extending radially for respectively engaging said detents to hold the engaged detent in a first position at which it engages the valley of the corresponding cam gear, end portions on either side of said central portion for allowing the engaged detent to move into a second position out of engagement with the peak of the corresponding cam gear, and intermediate portions on either side of said central portion for causing said detentes to reciprocate between said first and second positions in response to axial movement of said cam member; and,

actuating means for selectively moving said cam member in either axial direction relative to said drum so as to cause a selected detent to engage the valley of its corresponding cam gear such that a driving connection is made between said driving member and said driven member through said engaged cam gear, the inner cam surface of said cam gears and the outer cam surface of said cam member being contoured relative to each other to time the axial movement of said cam member such that said axial movement may commence only about when the peak of a cam gear to be disengaged from its corresponding detent is substantially aligned with the valley of an adjacent cam gear to be engaged by its corresponding detent, and said axial movement may cease only about when the valley of the cam gear to be disengaged is substantially aligned with the peak of the adjacent cam gear to be engaged.



5,445,045

ACTUATOR AND ACTUATOR ARRANGEMENT

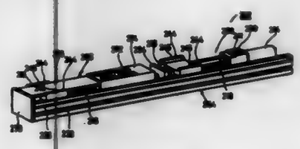
Shigekazu Negai; Akio Saitoh; Toru Sugiyama, and Masahisa Hasegawa, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

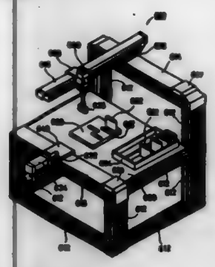
Continuation of Ser. No. 80,949, Jun. 24, 1993, abandoned, which is a division of Ser. No. 922,986, Jul. 31, 1992, Pat. No. 5,234,386. This application Jun. 17, 1994, Ser. No. 261,881

Claims priority, application Japan, Aug. 1, 1991, 3-193269; Sep. 9, 1991, 3-229185; Dec. 28, 1991, 3-360632; Dec. 28, 1991, 3-360633

Int. Cl.[6] B25J 9/02, 9/08; F16H 25/20

U.S. Cl. 74—490.09 10 Claims





1. An actuator comprising:

a beam member;

a drive source held in said beam member;

a slider base held in said beam member and having a slider displaced along said beam member under the action of said drive source; and

a cover covering said drive source and said slider base held in said beam member;

said beam member having at least one groove which enables other beam members to be mounted therewith, said groove being defined in at least an outer side of said beam member along a longitudinal direction thereof in a substantially identical structure to the other beam members;

said slider base comprising a base plate, said base plate having connecting members thereon detachably connecting an end block and a connecting block thereto; and

wherein said drive source is disposed between said connecting block and said end block, such that said drive source is removably disposed within said beam member.

4. An assembly apparatus constructed from a plurality of beam members connected together in a frame, and including a plurality of actuator modules disposed at respective positions around a work table, each of said actuator modules comprising:

a beam member;

a drive source held in said beam member;

a slider base held in said beam member and having a slider displaced along said beam member under the action of said drive source; and

a cover covering said drive source and said slider base held in said beam member;

said beam members each having at least one groove which enables said beam members to be mounted to other beam members of said work table and said actuator modules, said groove being defined in at least an outer side of said beam members along the longitudinal direction thereof in a substantially identical structure to the other beam members.

5,445,046

DETENT MECHANISM FOR AUTOMATIC TRANSMISSION SHIFT CONTROL DEVICE

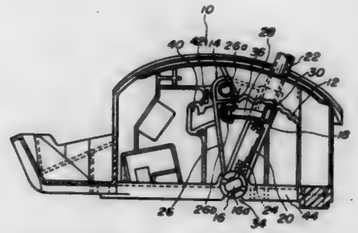
Yoshimasa Katsumi, and Yasuyuki Ikegami, both of Kosai, Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,994

Claims priority, application Japan, Jan. 29, 1993, 5-002074 U; Jul. 29, 1993, 5-041581 U

Int. Cl.[6] F16H 63/38, 59/04

U.S. Cl. 74—527 14 Claims



2. A detent mechanism for an automatic transmission shift control device, comprising:

a stationary base having a plurality of detent teeth;

a single piece pivotal connecting unit having a horizontal shaft portion which is pivotally installed on said base, first and second upstanding parallel tubular portions connected at lower ends thereof to said shaft portion, and a base portion at a side of said first and second tubular portions;

said first tubular portion installing therein a shift lever;

a spring installed in said second tubular portion and having an upper end portion protruding from same; and

a detent arm pivotally installed at a first longitudinal end on said base portion and engaged at a second longitudinal end with said protruding end portion of said spring;

said detent arm having at said second longitudinal end a projection releasably engaged with one of said detent teeth.

5,445,047

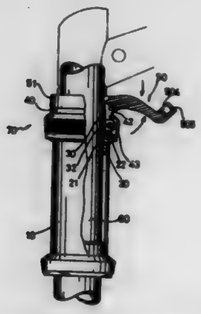
HANGER MEANS FOR A WHEELED VEHICLE

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Nov. 29, 1993, Ser. No. 158,528

Int. Cl.[6] B62K 21/12

U.S. Cl. 74—551.1 2 Claims



1. A hanger means for a wheeled vehicle having a head set disposed thereto, and comprising a fastening member and a hanger, said fastening member adapted to be securely mounted above said head set of said wheel vehicle, said fastening member being a C-shaped member having two opposed peripheral edges, a lug, with an engaging hole defined therein, extending radially and outwardly from each of said peripheral edges; and

said hanger having first and second ends, said first end thereof having a through hole defined therein, said second end thereof having a hole defined therein and pivotally engaged between said lugs of said fastening member by extending a bolt through said hole and said engaging holes of said lugs such that said hanger is able to be swung up for a convenience of accessing said head set.

5,445,048

STEERING WHEEL

Helmut Kaufer, Mettmann; Maximilian Grimm, Hamburg, and Martin Kreuzer, Kleinwallstadt, all of Germany, assignors to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Germany

Continuation of Ser. No. 854,940, Mar. 19, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,771

Claims priority, application Germany, Mar. 20, 1991, 41 08 973.1

Int. Cl.[6] B62D 1/04; B23B 5/16

U.S. Cl. 74—552 1 Claim



1. A steering wheel suitable for the steering system of a motor vehicle, comprising a steering wheel skeleton which has been made by injection molding from a partly crystalline thermoplastic plastic, optionally sheathed by a plastic layer, at least parts of the skeleton of the steering wheel having a uniaxial structure the molecules of which extend at right angles to the circumferential direction of the rim of the steering wheel.

5,445,049

TORSIONAL VIBRATION DAMPER

Günter Ullrich, Hemsbach; Herwig Hönlinger, Gross-Rohrheim, and Uwe Henrich, Otzberg, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed May 25, 1994, Ser. No. 249,009

Claims priority, application Germany, Sep. 6, 1993, 43 19 168.1

Int. Cl.[6] F16F 15/10

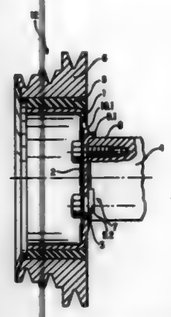
U.S. Cl. 74—574 10 Claims

1. A torsional vibration damper for a machine part subject to torsional vibrations, said damper comprising:

a substantially cup-shaped hub ring made from deep drawn sheet metal, said hub ring comprising a base having at least one orifice shaped for mounting said damper to said machine part, said base further comprising an annular centering collar comprising at least two retaining prongs extending in an axial direction from said base, said annular centering collar shaped so as to fit around an outer periphery of said machine part, said centering collar and said base being formed integrally with one another;

at least one spring element made of an elastomeric material; and

at least one inertial ring, said hub ring being joined by said at least one spring element to said inertial ring in a manner



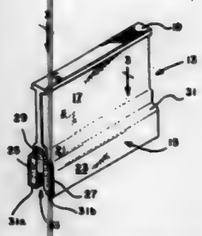
allowing relative rotation between said inertial ring and said hub ring.

5,445,050

HAND-HELD ICE SKATE BLADE SHARPENER TOOL

Michael R. Owens, 40 Bobbie Dr., Ivyland, Pa. 18974

Filed Dec. 30, 1993, Ser. No. 175,979
Int. Cl.[6] B23F *21/03*
U.S. Cl. 76—83 16 Claims



1. A disposable hand-held ice skate blade sharpening tool comprising:

a housing;

a handle extending away from said housing and connected thereto;

a plurality of sharpening surfaces positioned within said housing for simultaneously dressing each of the hollow bottom and both sides of an ice skate blade in contact therewith during a single stroke of said ice skate blade over said plural sharpening surfaces; and

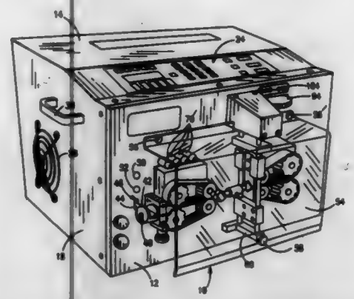
wherein said housing includes sharpening pressure control means comprising a pair of opposing walls, each said wall in contact with and supporting a respective one of a pair of opposed side sharpening surfaces which simultaneously dress both sides of said skate blade, said housing opposing walls being deformable under finger pressure for moving said pair of opposed blade side sharpening surfaces into closer contact with said skate blade sides.

5,445,051

MEASURE-CUT-STRIP WIRE PROCESSING APPARATUS

Thomas S. Carpenter, Manlius; David D. Hand, Cazenovia, and David J. Palmowski, Syracuse, all of N.Y., assignors to Carpenter Manufacturing Co., Inc., Manlius, N.Y.

Filed Feb. 23, 1994, Ser. No. 200,817
Int. Cl.[6] H02G *1/12*
U.S. Cl. 81—9.51 54 Claims



1. In processing apparatus for an elongated, filamentary member having a core surrounded by a coating material, said apparatus including means for moving said filamentary member in a longitudinal direction relative to a fixed plane perpendicular to said direction as said member is cut into separate, longitudinal sections and said coating material is at least partially severed at preselected longitudinal positions, the improvement comprising:

a) a first blade member having a first, planar surface positioned in said fixed plane, and a first, continuous, peripheral edge also positioned in said fixed plane and fully surrounding a first, through opening in said first blade member;

b) a second blade member having a second, planar surface positioned in said fixed plane, and a second, continuous, peripheral edge also positioned in said fixed plane and fully surrounding a second, through opening in said second blade member;

c) support means holding said first and second blade members in relative positions wherein at least portions of said first and second openings are aligned to permit passage therethrough of said filamentary member in said longitudinal direction; and

d) motive means operatively connected to said support means to impart reciprocal, relative movement to said blade members in first and second, opposite directions with said first and second, planar surfaces in sliding contact with one another in said fixed plane, movement in said first direction serving to move respective first portions of said first and second peripheral edges toward one another while moving respective second portions of said first and second peripheral edges away from one another, movement in said second direction serving to move said second portions of said peripheral edges toward one another while moving said first portion away from one another.

5,445,052

VACUUM CHUCK FOR LATHE

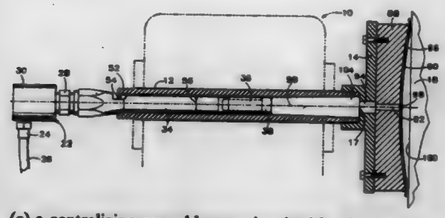
John D. Nichols, Jr., 1850 N. First St., Hermiston, Oreg. 97838

Continuation of Ser. No. 178,054, Jan. 6, 1994, abandoned. This application Sep. 26, 1994, Ser. No. 312,179
Int. Cl.[6] B23B *31/10*; B25B *11/00*
U.S. Cl. 82—152 22 Claims

1. A vacuum connector assembly for applying and maintaining a vacuum in a vacuum chuck of a lathe, comprising:

(a) an elongate vacuum tube having a central portion, a first end, and a second end and defining a central vacuum conduit extending longitudinally thereof;

(b) a centralizing portion located adjacent said first end of said vacuum tube;



(c) a centralizing assembly associated with said second end of said vacuum tube; and

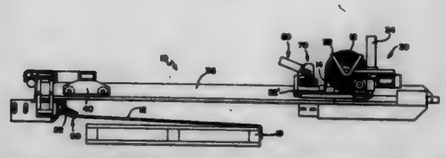
(d) a connector for attaching a rotary vacuum coupling to said first end of said vacuum tube.

5,445,053

SHEET CUTTING AND PLACING APPARATUS, RELATED METHOD, AND RELATED PACKAGE

David J. Kallner, Coral Springs, Fla., assignor to Mima Incorporated, Glenview, Ill.

Filed Mar. 24, 1994, Ser. No. 217,274
Int. Cl.[6] B65H *35/00*
U.S. Cl. 83—23 17 Claims



10. A method for cutting a sheet of film from a supply of flexible film wound upon a roll of film, and for placing said cut sheet of film upon a pallet or upon a layer of one or more boxes or articles disposed upon said pallet, the wound film having a leading end, comprising the steps of:

mounting said roll of film so that said roll of film is rotatable about an axis;

releasably gripping said leading end of said wound film by gripping means;

pulling said gripped leading end of said film longitudinally away from said roll of film so as to rotate said roll of film and thereby unwind a portion of said film from said roll of film so as to cause at least a substantial part of said unwound portion of said film to extend over said pallet or over a layer of one or more boxes or other articles disposed upon said pallet in a suspended mode whereby said unwound portion of said film is only supported, at its opposite ends, by said gripping means and said roll of film;

releasably clamping said unwound portion of said film at said end of said unwound portion of said film disposed adjacent to said roll of film;

cutting said clamped end portion of said film so as to cut a sheet of film having a predetermined length from the film remaining upon said roll of film;

adjusting said gripping means between a lowered position and a raised position with respect to said pallet or said layer of one or more boxes or other articles disposed upon said pallet, respectively, so as to properly position said cut sheet of film with respect to said pallet or said layer of one or more boxes or other articles disposed upon said pallet; and

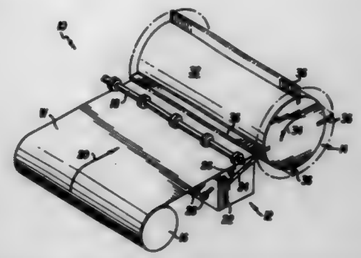
releasing said gripped end of said sheet after said sheet has been cut from said roll of film and positionally adjusted with respect to said pallet or said one or more boxes or other articles disposed upon said pallet so as to permit said sheet to drop down onto said pallet or onto a layer of one or more boxes or other articles disposed upon said pallet.

5,445,054

SHEET CUTTING APPARATUS AND METHOD

James W. Pryor, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 21, 1993, Ser. No. 125,054
Int. Cl.[6] B26D *1/147*, *1/20*
U.S. Cl. 83—37 25 Claims



18. A process for making cut filler from a sheet of reconstituted tobacco or leaf tobacco comprising the step of:

continuously feeding a sheet having a given width in a longitudinal direction over a fixed ledger blade with a scalloped cutting edge such that a portion of said sheet projects past the edge of said ledger blade;

rotating a cutter blade having a scalloped cutting edge complementary to the scalloped cutting edge of said ledger blade into engagement with the scalloped edge of said ledger blade;

coacting said blades to cut off the projecting portion of said sheet across the entire width of said sheet such that the cut off projecting portion has a substantially constant dimension in the longitudinal direction of feed of the sheet material across the entire given width of the sheet material, said blades further coacting to substantially simultaneously cut said projecting portion into a plurality of cut pieces having a scalloped shape and suitable for use as cut filler.

5,445,055

METHOD FOR CUTTING OF THE LEADER OF THE WEB IN A PAPER OR BOARD MACHINE IN THE DRYING SECTION OF THE MACHINE

Ismo Koponen; Jari Vainio, and Umari Rintasalo, all of Rauma, Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

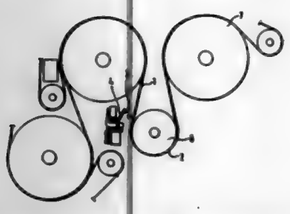
PCT No. PCT/FI92/00311, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO93/10307, PCT Pub. Date May 27, 1993
PCT Filed Nov. 18, 1992, Ser. No. 81,358
Claims priority, application Finland, Nov. 19, 1991, 915450
Int. Cl.[6] B26F *3/00*; D21F *5/04*
U.S. Cl. 83—53 6 Claims

6. Method for cutting a leader of a web in a paper or board machine in a drying section of the machine, the drying section including suction rolls and drying cylinders arranged to define pocket spaces therebetween, comprising the steps of:

carrying the web on a drying wire in a single wire draw of the drying section between said drying cylinders and said suction rolls such that a face of the web is exposed,

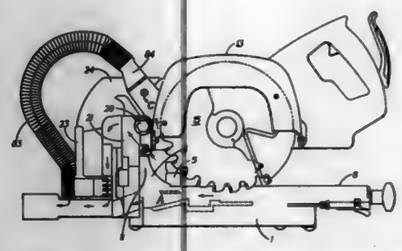
directing a pressurized water jet at the exposed face of the

web through a cutting nozzle as the web is carried on the drying wire, and



moving the cutting nozzle across the width of the web in the pocket spaces between the drying cylinders to thereby cut the web.

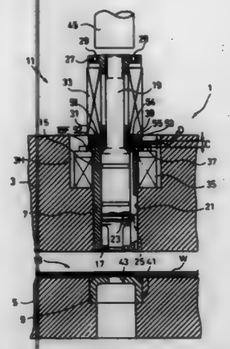
5,445,056
SAW
Giovanni A. Folci, Brioseo, Italy, assignor to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 161,732, Dec. 2, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 390,155
Claims priority, application United Kingdom, Dec. 4, 1992, 9225441
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—100 **15 Claims**



1. A saw comprising a base table, a pivot block on the base table, a pivot member pivoted to the pivot block about a bevel axis lying parallel to the plane of the base table, a motor driven saw blade mounted on the pivot member and adapted to cut workpieces positioned on the base table, a dust extraction passage adapted for connection to suction apparatus for the removal of dust generated during sawing operations, wherein a first part of said dust extraction passage is formed in said pivot block and a second part is formed in said pivot member and communicating with said first part.

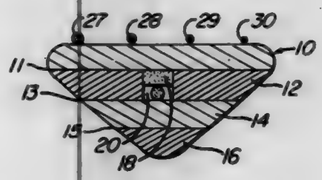
5,445,057
PUNCHING DIE WITH A DAMPING MEMBER
Oriya Fujita, Kanagawa, Japan, assignor to Amada Metrics Company, Limited, Kanagawa, Japan
Filed Feb. 1, 1994, Ser. No. 189,604
Claims priority, application Japan, Feb. 3, 1993, 5-016188
Int. Cl.[6] B26F *1/14*; B21D *45/08*
U.S. Cl. 83—140 **5 Claims**

1. A punching die mounted on a support and driven by a striker, said punching die comprising:
a punch body;
a punch head provided on an upper portion of said punch body, said punch head for being struck by said striker;
a punch guide slidably mounted in said support and disposed in slidable contact with a lower portion of said punch body;
a retainer collar disposed over said punch guide between said punch head and said punch guide and fitted to said punch body;
a stripping spring interposed between said punch head and said retainer collar;



a lifting spring interposed between said punch guide and said support; and
an elastically deformable damping member interposed between an upper surface of said punch guide and a lower surface of said retainer collar.

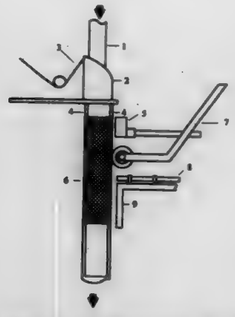
5,445,058
LAMINATED MUSICAL INSTRUMENT NECKS
Clare L. Hoke, Jr., 1318 N. Monte Vista Ave., Upland, Calif. 91786
Filed Dec. 30, 1993, Ser. No. 175,739
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—293 **14 Claims**



1. A neck for a stringed musical instrument having strings extending generally parallel to the neck, said neck comprising:
at least three hardwood laminations secured together in direct contact and extending beneath and generally parallel to said strings, and
each of said hardwood laminations having a surface in confronting relation with and secured in direct contact to a confronting surface of at least one other hardwood lamination, said hardwood laminations being secured together, whereby said neck is structurally stabilized and strengthened against internal and external destabilizing forces, and the musical instrument is more responsive.

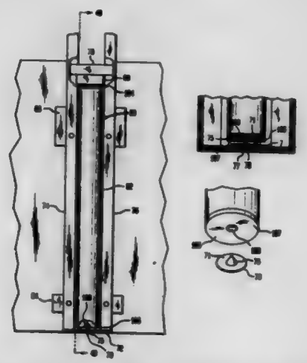
5,445,059
METHOD FOR FORMING PAPER-WRAPPED EMULSION EXPLOSIVE CARTRIDGES
Lawrence D. Lawrence, Sandy, and John B. Halander, Salt Lake City, both of Utah, assignors to Dyno Nobel Inc., Salt Lake City, Utah
Filed Mar. 30, 1994, Ser. No. 220,051
Int. Cl.[6] F42B *7/02*
U.S. Cl. 88—12 **7 Claims**

1. A method for forming filled, paper-wrapped cartridges of gassed emulsion explosive comprising (a) forming a water-in-oil emulsion at an elevated temperature, (b) chemically gassing the emulsion to form a sensitizing, uniform distribution of gas bubbles throughout the emulsion, (c) shaping the chemically gassed emulsion into a continuous rod of emulsion, (d) continuously wrapping the rod of emulsion with a paper packaging



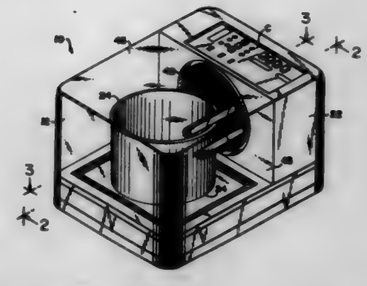
material that is shaped circumferentially around the rod and sealed longitudinally with an adhesive that can withstand the elevated temperature of the emulsion and is water-resistant, (e) cutting the paper-wrapped emulsion rod into individual cartridges, and (f) cooling the cartridges by contacting them directly with a liquid at a temperature below the elevated temperature of the emulsion.

5,445,060
FLOATING FLUID ACTUATED CYLINDER
Frederick Randall, Montclair, and Alfred J. Raven, III, Morganville, both of N.J., assignors to Randall Manufacturing Co., Inc., Hillside, N.J.
Filed Sep. 2, 1994, Ser. No. 300,706
Int. Cl.[6] F01B *15/04*
U.S. Cl. 92—118 **18 Claims**



1. A fluid actuated cylinder in combination with a container, said cylinder operating to lower an object into said container and to raise the object out of said container thereby subjecting said cylinder to bending torques, comprising:
cylinder floating means including a first member on said cylinder in continuous contact with a second member on said container for allowing said cylinder to move laterally in an orbital motion with respect to said container when said cylinder is subjected to the bending torques resulting from the lowering and raising of the object.
9. A fluid actuated cylinder comprising:
a cylinder body having a first end, a second end;
a piston rod assembly which reciprocates within said cylinder body, said piston rod assembly including a piston rod extending through said first end of said cylinder body; and
cylinder floating means formed on said second end of said cylinder body for allowing said first end of said cylinder body to move laterally in an orbital motion with respect to an object to which said cylinder is to be mounted to, when said cylinder is subjected to bending torques applied during the reciprocation of said piston rod assembly within said cylinder body, said cylinder floating means comprising a recess which is adapted for the continuous receipt of a corresponding protrusion disposed on a portion of the object to which said cylinder is to be mounted to.

5,445,061
COMBINATION BREAD MAKING MACHINE AND COOKER
George Barradas, 15 River View Ct., Greenwich, Conn. 06831
Continuation-in-part of Ser. No. 991,260, Dec. 16, 1992, abandoned. This application Jan. 30, 1993, Ser. No. 84,326
Int. Cl.[6] A47J *27/00*
U.S. Cl. 99—340 **8 Claims**

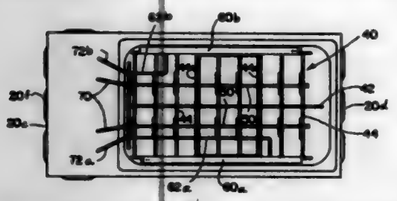


1. A combination bread making machine and cooker for food processing comprising a rectangular heating chamber having interior walls, a shaft in said chamber projecting through a bottom opening and having a dough blade at the free end of said shaft, a heater and a rotatable fan adjacent thereto, a first motor for rotating said shaft, a second motor for operating said fan, a housing adjacent to said heating chamber, said heater, fan, and first and second motors being mounted in said housing laterally disposed from said heating chamber, said housing having a vertical wall adjacent to said chamber, a relatively large opening in said wall, a baffle having an edge extending at an angle to the interior walls of said chamber whereby when said rotating fan propels the heated air through said opening and into bouncing contact with the interior walls of said heating chamber the friction created thereby augments the temperature of the hot air in the chamber, a pulley connected to said shaft, a spaced pulley rotated by said first motor, and a driving belt passing around said pulleys to thereby rotate said shaft when then the first motor is operative.

5,445,062
COOKER/RETHERMALIZER
Louis S. Polster, 2205 Marthas Rd., Alexandria, Va. 22307
Filed May 21, 1993, Ser. No. 63,627
Int. Cl.[6] A23L *3/00*; A47J *27/122*
U.S. Cl. 99—348 **33 Claims**

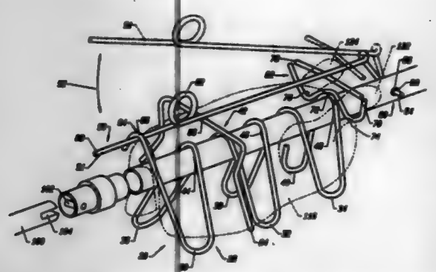
1. A food preparation cooker/rethermalizer comprising:
a food heating vessel having sides and a bottom for retaining an aqueous bath, and including heat supply for heating the aqueous bath;
a food locator rack in said vessel having a plurality of de-

fined locations for supporting packaged food items to be heated;
said rack having fluid outlets to said vessel beneath all of said locations to cause fluid to exit into the bath and agitate the



bath over and past food items in said locations of said food locator rack; and
a fluid connector on said rack for connection to a pressurized source of fluid.

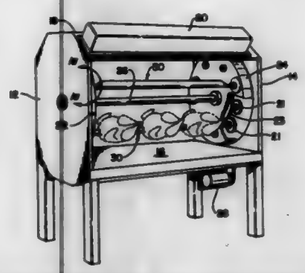
5,445,063
ROTISSERIE MECHANISM
Stephen E. Sherman, P.O. Box 382, Bethel Island, Calif. 94511
Filed Jun. 27, 1994, Ser. No. 266,207
Int. Cl.[6] A47J *37/04, 37/07*
U.S. Cl. 99—421 H 9 Claims



1. A rotisserie mechanism utilizing a rod rotatable over a source of heat comprising:
a. a base member connected to the rod including a first portion and a second portion, said first portion angularly disposed relative to said second portion;
b. holding element movable toward said base member;
c. locking means for fastening said holding element to said base member, said locking means including a loop formed by said base member, said loop being engagable by said holding element; and
d. securing means for supporting said base member to the rod.

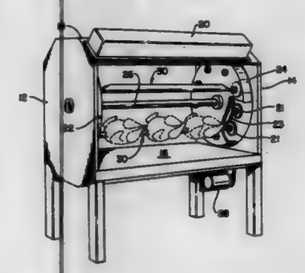
5,445,064
SKEWER FOR ROTIESSERIE
Ira L. Lopata, 234 Eden Rd., Palm Beach, Fla. 33480
Filed Dec. 1, 1994, Ser. No. 347,922
Int. Cl.[6] A47J *37/04*
U.S. Cl. 99—421 H 9 Claims

1. A skewer adapted to fit into a pair of axially spaced reel plates for rotary motion in a rotisserie for supporting a chicken to be cooked in the rotisserie, one of said pair of reel plates having a skewer driver for rotating the skewer relative to said pair of reel plate, said skewer being formed from a single piece comprising an elongated member of substantial uniform thickness having an arcuate shaped spine portion, a pair of spaced wings angularly extending from the peripheral sides of said spine portion and extending substantially the length of said elongated member for defining a rotary drive for said chicken, a first end of said spine portion projecting axially beyond said pair of wings and being tapered to a dimension adapted to fit into a cavity of the skewer driver for being rotated thereby about its rotating axis, at least one end of each of said pair of wings being tapered to define a generally pointed end for receiving said chicken, a second end of said spine portion



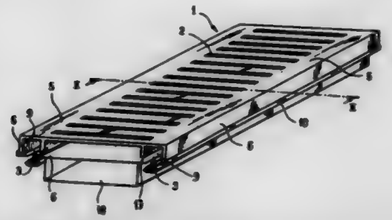
opposite from said first end of said spine portion extending axially from said spine portion and being configured into a generally cylindrically shaped portion for defining a stub shaft for fitting into an aperture of the other of said pair of reel plates that is remotely disposed from said skewer driver whereby said skewer rotates with and relative to said pair of reel plates.

5,445,065
SELF CENTERING MEANS OF A PLANETARY GEAR SYSTEM FOR ROTISSERIE
Ira L. Lopata, 234 Eden Rd., Palm Beach, Fla. 33480
Filed Dec. 1, 1994, Ser. No. 347,924
Int. Cl.[6] A47J *37/04*
U.S. Cl. 99—421 H 5 Claims



1. For a rotisserie having spaced walls and a top wall and bottom wall defining an oven for cooking chickens or like foods therein, a burner attached to top front portion of the oven and oriented to face the rear bottom portion of the oven, a central shaft rotatably supported in said oven, at least a pair of spaced reel plates mounted on said central shaft and rotated therewith for orbital move, at least one skewer horizontally supported in said pair of reel plates for orbital and rotary motion, a planetary system for imparting rotary motion to said skewer, said planetary gear system including a plurality of planet gears circumferentially spaced around the outer face of one of said pair of reel plates, a fixed bull gear in mesh relationship with said planet gears mounted on said central shaft, a bushing centrally mounted in said bull gear for allowing said shaft to rotate relative to said bull gear, means for holding said bull gear in a fixed position to impart rotary motion to said planet gears as said reel plate orbits in said oven.

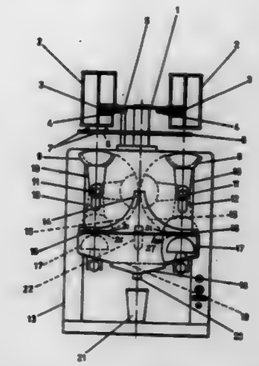
5,445,066
COOKING APPLIANCE HAVING A COOKING PLATE PROVIDED WITH OPENINGS
Roger Rosset, Bloye, France, assignor to SEB S.A., Selongey, France
Filed Apr. 13, 1994, Ser. No. 227,231
Claims priority, application France, Apr. 21, 1993, 93 04688
Int. Cl.[6] A47J *27/00*
U.S. Cl. 99—446 11 Claims



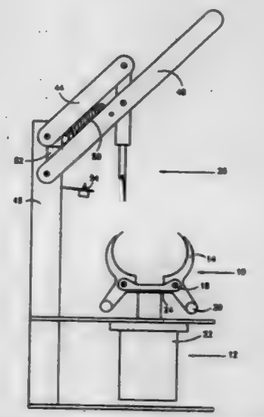
1. A cooking appliance comprising a removable metal cooking plate extending in a longitudinal direction, said cooking plate including openings extending through the plate, said cooking appliance comprising heating elements mounted beneath the cooking plate and a container between said heating elements for collecting fats from cooking, the lower face of the cooking plate comprising housings of downwardly opening substantially U-shaped cross-section extending along opposite longitudinal edges of the cooking plate above the heating elements, said openings terminating on the portions of the cooking plate which are adjacent to said U-shaped housings, wherein said U-shaped housings are integral with said metal cooking plate, said metal cooking plate resting removably by means of a lower part of an outer wall of said U-shaped housings on support means of a body of said cooking appliance, and the heating elements being arranged in such a manner below the U-shaped housings that the central part of the cooking plate is heated mainly by conduction of heat from the said housings.

5,445,067
IMPROVED APPARATUS FOR SQUEEZING CITRUS FRUITS
Rafael O. Font, Urbanizacion Entrenaranjos, C/- 104, No. 1, Ribarroja, Valencia, Spain
Filed Oct. 22, 1993, Ser. No. 142,242
Claims priority, application Spain, Oct. 23, 1992, 9202127
Int. Cl.[6] A23N *1/00*
U.S. Cl. 99—502 7 Claims

1. A machine for squeezing generally spherical fruit to extract juice therefrom, said machine comprising:
first and second alveoli each mounted to pivot back and forth between an upward facing position and a downward facing position, with both of said alveoli being in their said upward facing positions at the same time and being in their said downward facing positions at the same time, and while being pivoted back and forth between said upward and downward facing positions said alveoli passing through a mid position where they are generally horizontal and face one another;
a device for feeding a complete unit of fruit to said first alveolus while it is in its said upward facing position;
a knife for cutting said unit of fruit into first and second pieces as said first alveolus passes through said mid position, and with first and second pieces being carried by said respective first and second alveoli as they move to their downward facing positions;
first and second squeezing cones being below and vertically aligned with the respective first and second pieces when said alveoli are in said downward facing positions; and
slip ramps along which said pieces slide as said alveoli pivot toward their downward facing positions.
wherein with said alveoli in said downward facing position, said alveoli and said slip ramps being operatively mounted together for simultaneous relative linear movement vertically toward said cones whereby said cones engage said pieces to squeeze same and extract juice therefrom, said alveoli and said slip ramps being operatively separately mounted for separate relative movement away from said cones.



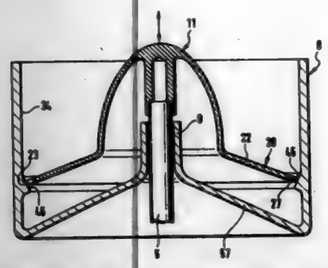
5,445,068
APPARATUS AND METHOD FOR EXTRACTING JUIDE FROM CITRUS FRUITS
Yigal Michelson, 3 Hashkedim, 37000 Padres Hanna, Israel
Filed Jun. 2, 1994, Ser. No. 253,175
Int. Cl.[6] A23N *1/00*
U.S. Cl. 99—504 16 Claims



1. A device for the in situ separation of the juice of a whole juicy fruit from the rest of the fruit, comprising:
(a) means for grasping the juicy fruit;
(b) means for rotating the grasped juicy fruit, said means for rotating being connected to said means for grasping;
(c) a piercing member for piercing the juicy fruit being grasped by said means for grasping, said piercing member having a body and a shredding member connected to said body; and

(d) means for moving said shredding member connected to said piercing member, said means for moving said shredding member causing said shredding member to move within the juicy fruit as the juicy fruit is rotated, said rotation of the juicy fruit taking place at sufficiently high rotational rate so as to bring about the separation of the juice of the juicy fruit from the rest of the juicy fruit by centrifugal force.

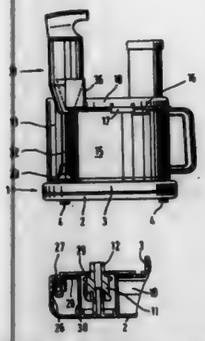
5,445,069
CITRUS JUICER
Rafael P. Lucas, Barcelona; Jose C. Blasco, L'Hospitalet, and Antonio R. Rius, Masnou/Barcelona, all of Spain, assignors to Braun Aktiengesellschaft, Kronberg, Germany
Division of Ser. No. 580,662, Sep. 11, 1990, Pat. No. 5,193,447. This application Feb. 27, 1992, Ser. No. 842,245
Claims priority, application Germany, Sep. 16, 1989, 39 31 015.9; Sep. 16, 1989, 39 31 016.7
Int. Cl.[6] A23N *1/00*; A47J *43/14*
U.S. Cl. 99—508 **10 Claims**



1. A citrus juicer for producing fruit juice comprising a cone, drive shaft structure coupled in driving relation to said cone for driving said cone in rotation, a strainer surrounding said cone, a collecting bowl under said strainer, said bowl having an inner wall and adapted to collect fruit juice, said strainer having its outer periphery bounded by said inner wall of said collecting bowl, the boundary area between said strainer and said inner wall of said collecting bowl being configured as an annular gap, the juice of a citrus fruit passing through said annular gap as said fruit is squeezed, while the pulp is largely retained by said strainer and annular gap, and adjusting structure for producing relative motion between said strainer and said bowl in the vertical direction to vary the cross-sectional area of said annular gap and to thereby control an amount of pulp passing into said collecting bowl through said annular gap.

5,445,070
FOOD PROCESSOR
Joachim Rebel, Reichenbach/Fils, Germany, assignor to Maweva Holding, AG, Switzerland
Filed Dec. 23, 1992, Ser. No. 996,081
Claims priority, application European Pat. Off., Jan. 1, 1992, 91121410
Int. Cl.[6] B26D *1/00*
U.S. Cl. 99—511 **13 Claims**

1. A food processor for use with a removable drive device, said drive device having an electric motor and a rod extending coaxially with a drive shaft driven by said motor to be operatively engaged with the food processor, said rod and drive shaft being detachably connected with said food processor, comprising:
a food processor housing having a bottom part;
a gearing arranged in said bottom part to be operatively engaged with said rod and drive shaft;
a work holder for holding a work device on said bottom part, said work device being drivingly engaged with said gearing;
a cover removably affixed to said work holder and rotatable relative to said work holder into a locked position;
a safety locking device actuatable by said cover, said safety locking device enabling the connection between said electric motor and said gearing only when said cover is placed on the work holder in its locked position, said safety locking device including a movably mounted locking member connected with a movably mounted actuating member, said actuating member being connected with said cover when said cover is in its locked position, said locking member being held in a locked position by said lower

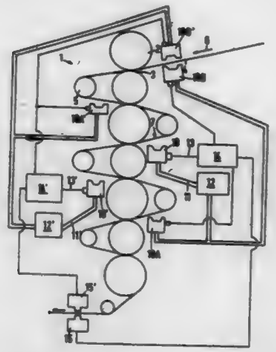


end of said drive device when said lower end part is connected with said bottom part and said gearing, said actuating member being held in a locked position by said locking member when said locking member is locked by said lower end part to prevent rotation of said cover out of its locked position;
wherein said bottom part of said food processor housing includes means for coupling said drive shaft to said gearing, and a recess provided in said bottom part for receiving a distal end of said rod; and
wherein said recess is toggled between an open position for receiving said rod when said actuating member is in the locked position, and a closed safety position.

5,445,071
METHOD FOR ADJUSTING THE GLOSS OR SMOOTHNESS OF A WEB OF MATERIAL
Stefan H. Winheim, Frankfurt, Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Germany
Division of Ser. No. 114,201, Aug. 30, 1993. This application Jun. 3, 1994, Ser. No. 253,372
Claims priority, application Germany, Mar. 20, 1993, 43 09 076.1
Int. Cl.[6] B30B *15/34*; D21G *1/00*
U.S. Cl. 100—38 **19 Claims**

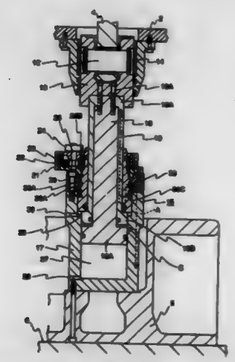
1. A method for adjusting the gloss and smoothness of a web of material having a direction of travel and passing through a roller gap arrangement comprising the steps of:
providing steam to a steam spray tube at a constant pressure, said steam spray tube including valves, each said valve having a linear relationship between its control signal and its output flow rate;
determining an actual value for a characteristic of the web of material selected from the group of gloss and smoothness, said actual value being determined downstream from the roller gap array in the direction of travel of the web;
comparing said actual value with a setpoint value; and
uniformly adjusting each said valve by varying each of their respective control signals by the same amount to adjust the amount of steam dispensed by said steam spray tube

when said comparison indicates a deviation in the characteristic in the direction of travel of the web, said variance



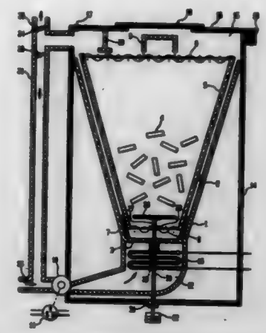
in said control signals being a function of the difference between the setpoint value and the actual value at a single point on the web.

5,445,072
APPARATUS FOR ADJUSTING B.D.C. POSITION OF SLIDE IN MECHANICAL PRESS
Takashi Yagi, and Mitsuo Sato, both of Sagamihara, Japan, assignors to Aida Engineering Ltd., Kanagawa, Japan
Filed Sep. 12, 1994, Ser. No. 304,445
Claims priority, application Japan, Dec. 27, 1993, 5-331347
Int. Cl.[6] B30B *15/14*
U.S. Cl. 100—48 **3 Claims**



1. An apparatus for adjusting bottom-dead-center position of a slide in mechanical press including a connecting rod connected to a crank shaft, and a slide connected to said connecting rod by means of a hydraulic cylinder, wherein:
said hydraulic cylinder has a piston rod one end of which is connected to said connecting rod by means of a plunger, a cylinder body connected to said slide and provided in such a manner as to be movable relative to said piston rod, and a hydraulic chamber provided below said piston rod, pressure oil adjusted by means of a pressure adjusting means capable of being supplied to and discharged from said hydraulic chamber; and an extending member having one end connected to said connecting rod by means of said plunger and another end connected to said cylinder body is fitted around an outer periphery of said piston rod, said extending member being provided in such a manner as to be capable of being extended by the adjustment of hydraulic pressure within said hydraulic chamber.

5,445,073
APPARATUS AND PROCESS FOR COOKING POTATOES
William C. Gilwood, 2233 S. Highland Ave., Apt. 507, Lombard, Ill. 60148
Continuation-in-part of Ser. No. 868,326, Apr. 14, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,810
Int. Cl.[6] A47J *37/00, 37/04*
U.S. Cl. 99—427 **20 Claims**

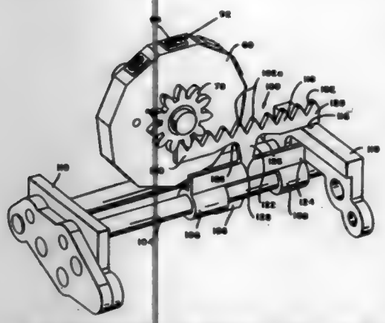


1. An apparatus for cooking potato pieces by heated air comprising:
a housing; a cooking chamber base within said housing, said cooking chamber base being in the shape of an inverted frustum of a cone with its larger diameter on top, said chamber being open at the top and bottom;
a removable air permeable basket in the shape of an inverted frustum of a cone similar in shape to said cooking chamber, with said basket bottom outside diameter almost equal to inside bottom diameter of cooking chamber base; said basket having a screen bottom and a removable screen cover on top;
a means for heating air, a means for blowing heated air upwardly through said cooking chamber base and said screened basket to fluidize potato pieces in basket.

5,445,074
VALUE SELECTION AND PRINTING APPARATUS INCLUDING A SECURITY DEVICE
Richard A. Malin, Westport; Pasquale Cuozzo, and Stephen Rigo, both of Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Nov. 2, 1994, Ser. No. 333,567
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—91 **12 Claims**

8. A value selection and printing apparatus comprising:
a printing device including a printing wheel;
a movable rack gear operatively engaged with said printing wheel such that at times when said rack gear moves along a normal linear operative path of travel said printing wheel is repositioned, said rack gear including a stress concentration area where said rack gear deforms when

subjected to a force sufficient to disassociate said printing wheel from said rack gear; and



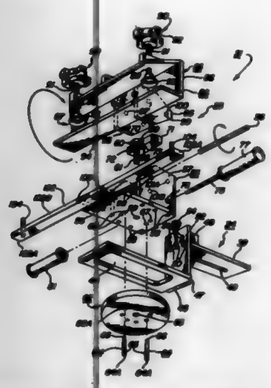
means, interfering with said deformed rack gear, for preventing said deformed rack gear from traversing said normal linear operative path.

5,445,075

DOUBLY ARTICULATED SCREEN PRINTING APPARATUS WITH ON-LINE REGISTRATION CAPABILITY

Charles L. Panipinto, 1901 Rock St. #414, Mountain View, Calif. 94043

Filed Jan. 3, 1994, Ser. No. 176,424
Int. Cl.[6] B41F *15/36*
U.S. Cl. 101—127.1 **16 Claims**



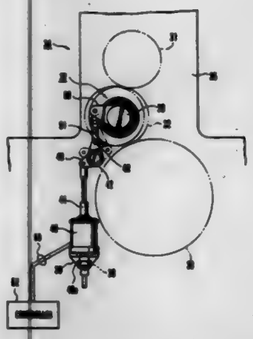
1. A screen printing mechanism comprising;
a. screen frame clamping means adapted to clampingly hold an elongated screen frame member,
b. a base section pivotably supporting said screen frame clamping means in a manner permitting pivotability in a vertical plane of said screen clamping means from a horizontal printing position to an upright position,
c. a transparent calibration plate,
d. an alignment bar attached to said base section, said alignment bar including registration means for removably securing said calibration plate in a precisely repeatable location relative to said base section,
e. an object platen.
f. base section support means comprising in combination a horizontally disposed yoke plate having through its thickness dimension an aperture, and a downwardly depending member protruding from said base section of smaller diameter than said aperture and protruding therethrough, whereby said downwardly depending member may be moved within said aperture to move said base section to a desired horizontal position with respect to said object platen, and
g. base section clamping means for releasably securing said base section to said support means at said horizontal position.

5,445,076

CYLINDER THROW APPARATUS

Hiroyuki Sagiyama, and Norio Hirose, both of Ibaragi, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Sep. 21, 1993, Ser. No. 124,814
Claims priority, application Japan, Oct. 1, 1992, 4-073898 U
Int. Cl.[6] B41F *13/24*
U.S. Cl. 101—218 **4 Claims**



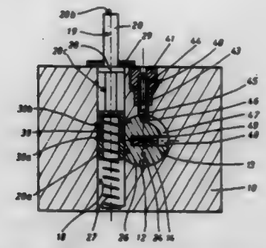
1. A cylinder throw apparatus comprising:
a plate cylinder having a circumferential surface on which a printing plate is mounted;
a printing cylinder disposed to have a circumferential surface thereof kept away from said circumferential surface of said plate cylinder;
a blanket cylinder disposed between said plate cylinder and said printing cylinder; and
driving means for moving said blanket cylinder between an impression-on position in which said blanket cylinder is pressed against said plate cylinder and, through a paper sheet, pressed against said printing cylinder, and an impression throw-off position in which said blanket cylinder is kept away from said plate cylinder and said printing cylinder, and automatically setting a gap between said blanket cylinder and said printing cylinder at the impression-on position in correspondence with a paper thickness, wherein said driving means comprises one pair of eccentric bearings, pivotally provided to a left frame and a right frame, for supporting two ends of said blanket cylinder; and
a control means for calculating a value indicating a moving amount of said blanket cylinder from the impression throw-off position to the impression-on position in correspondence with the input paper thickness, and for controlling an operating of said driving means on the basis of the calculated value,
wherein moving the blanket cylinder between the impression-on and impression throw-off positions and adjusting the blanket cylinder to the printing cylinder for paper thickness are both performed by said one pair of eccentric bearings.

5,445,077

INITIATION DEVICE FOR A PYROTECHNIC SYSTEM

Jean-Paul Dupuy; Gilles Halin, both of Bourges; Laurent Chauveau, Les Aix d'Angillon, and Alain Bonnet, Bourges, all of France, assignors to Giat Industries, Versailles, France

PCT No. PCT/FR93/01179, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO94/15168, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 1, 1993, Ser. No. 244,564
Claims priority, application France, Dec. 18, 1992, 92 15314
Int. Cl.[6] F42B *15/34, 39/14*
U.S. Cl. 102—481 **12 Claims**



1. An initiation device for a pyrotechnic system, comprising a movable primer-container housing a primer and disposed inside a casing box, said primer-container being operatively coupled to a motor for movement from a safety position to an armed position in which the primer is automatically initiated, the primer-container being operatively coupled to a first lock in the safety position, thereby being immobilized in the safety position, said first lock being operatively coupled to a shape memory actuator, said shape memory actuator releasing the immobilization of said primer-container when a surrounding temperature rises above a given value.

5,445,078

APPARATUS AND METHOD FOR DISPENSING PAYLOADS

Frank A. Marion, Glendale, Ariz., assignor to Universal Propulsion Company, Inc., Phoenix, Ariz.

Continuation of Ser. No. 907,301, Jul. 1, 1992, abandoned, which is a continuation of Ser. No. 450,472, Dec. 14, 1989, abandoned. This application Jul. 12, 1994, Ser. No. 273,918
Int. Cl.[6] F42B *12/36*
U.S. Cl. 102—505 **54 Claims**



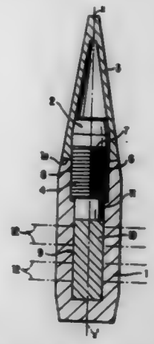
1. A chaff dispenser comprising:
a structural delivery device,
a payload compartment in the structural delivery device,
a selectively activated source of fluid pressure in the payload compartment;
a wrapper in the payload compartment;
a bundle of chaff disposed in the wrapper in at least partially enveloping relation with said source, said wrapper-enclosed bundle being constructed to channel said fluid pressure from said source through said bundle and to provide for the emission of said chaff from said wrapper when the source is activated to provide the pressure;
said source being activated after the ejection of the payload compartment from the structural delivery device to produce the fluid pressure;
the wrapper being slit to facilitate the emission of the chaff from the wrapper; and
means for preventing the wrapper from being emitted with the chaff during the emission of the chaff from the wrapper by the fluid pressure from the source.

5,445,079

ARMOR-PIERCING FRAGMENTATION PROJECTILE

Roland Bousi, Saint-Germain-du-Puy, France, assignor to Giat Industries, Versailles, France

Division of Ser. No. 946,471, Nov. 10, 1992, Pat. No. 5,325,787. This application Mar. 31, 1994, Ser. No. 221,240
Int. Cl.[6] F42B *12/56*
U.S. Cl. 102—506 **12 Claims**



1. An armor-piercing, explosive free fragmentation projectile comprising a one-piece body made of a first material, a head made of a second material, and means for causing multiple fragmentation of the body upon impact, said means comprising a blind bore delimited by the body and occupied by a mass of compressible material subjecting said body to a fragmentation prestress by the compressible material being compressed into said blind bore, wherein fragmentation prestress is between $0.1 \times E0.2\%$ and $0.4 \times E0.2\%$, said head being secured to the body and contacting said compressible material, said blind bore extending within said body substantially along its entire length, wherein said first material is selected from the group consisting of sintered tungsten, depleted uranium, and tungsten carbide.

5,445,080

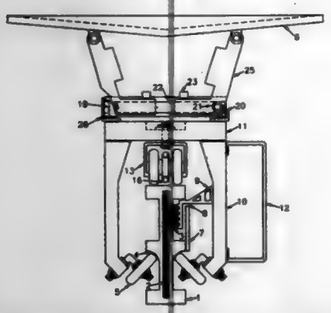
FREE RANGING MONOTRACK SORTVEYOR WITH SELECTIVELY LOCKABLE ARTICLE CARRYING TILT TRAY

Robert Austin, 8014 Madeira Ct. S., Orlando, Fla. 32836

Filed Oct. 21, 1993, Ser. No. 138,972
Int. Cl.[6] B61B *13/04*
U.S. Cl. 104—119 **5 Claims**

1. A monotrack conveyor apparatus comprising:
at least one conveying unit for riding on a track, said unit comprising at least one drive wheel for drivingly engaging a surface of said track, at least one stabilizing wheel for engaging another surface of said track, and an article carrying means on said unit for carrying articles to be conveyed, said article carrying means comprising a tray means pivotally mounted on upper portion of said unit, a

locking means for selectively locking said tray means so as to prevent pivotal movement thereof and for selectively unlocking said tray means so as to enable pivotal movement of said tray means to either side of said track, and a key means connecting said upper portion of said unit to a



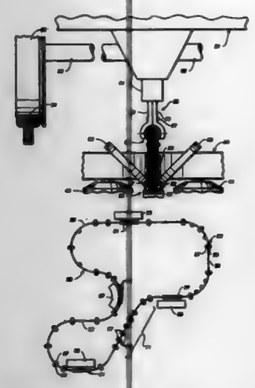
lower portion of said unit at opposite ends of said unit, wherein when the upper portion of one of said opposite ends of said unit is lifted off of the lower portion at said one opposite end, the key means at the other end of said opposite ends prevents said upper and lower portions of said unit at said other opposite end from disengaging.

5,445,081

TRANSIT SYSTEM EMPLOYING A TRACTION BELT

Jan K. Kuczynski, Glenbrook, Nev., assignor to Yantrak, LLC, Carson City, Nev.

Filed Apr. 13, 1994, Ser. No. 227,505
Int. Cl.[6] B61B *13/00*
U.S. Cl. 104—165 **20 Claims**



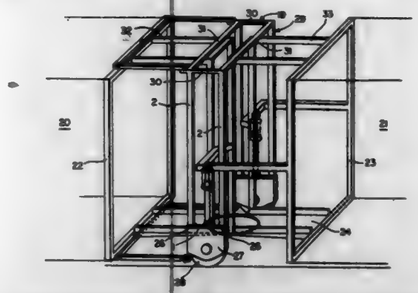
1. A transit system comprising:
a movable vehicle,
an elongated flexible endless traction belt having planar opposite sides and extending along and defining a transit path having opposite ends, said traction belt being coupled to said vehicle to apply a traction force to said vehicle sufficient to propel said vehicle along said path, and
a plurality of drive assemblies distributed in spaced apart locations periodically along said path intermediate said opposite ends and frictionally engaging said opposite sides of said traction belt at said locations and applying a frictional driving force to at least one of said opposite sides as the primary driving force for said belt and said vehicle to displace said traction belt and vehicle along said path.

5,445,082

GANTRY BOGIE FOR CONNECTION BETWEEN SUCCESSIVE CARRIAGES OF RAILBORNE VEHICLES

Leopold Lenk, Vienna, Austria, assignor to SGP Verkehrstechnik Gesellschaft m.b.H., Vienna, Austria

Filed Dec. 2, 1993, Ser. No. 161,302
Int. Cl.[6] B61D *17/20*
U.S. Cl. 105—4.1 **14 Claims**



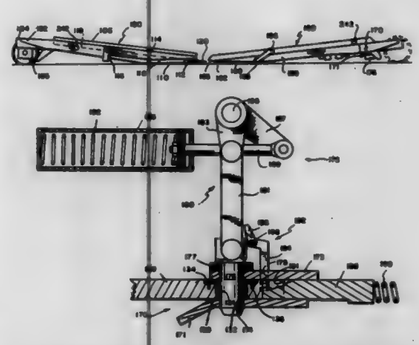
1. Gantry bogey for railborne vehicles inserted between adjoining ends of successive carriages and forming at least in part a passage between the carriages and comprising transversely to the direction of travel mutually opposing at least two loose wheels, each on one side of the gantry bogey which are bridged by a gantry supported on both sides by vertical pillars on a respective wheel case holding the wheel, wherein the vertical pillars are constructed at least in the lower region as tubes each guided by a pin transmitting the guidance of the wheel to the gantry in the vertical axis and carried by the wheel case by a primary spring, the tubes being guided on said pins by means of at least two spaced sleeve members.

5,445,083

LOCK AND COUPLER FOR A RAILWAY RAMP CAR

Thomas H. Engle, Cape Vincent, N.Y., assignor to Knorr Brake Holding Corporation, Westminster, Md.

Filed Jan. 4, 1994, Ser. No. 177,150
Int. Cl.[6] B61D *47/00*
U.S. Cl. 105—355 **13 Claims**



1. A train including a plurality of rail cars and a ramp car connected to each other, said ramp car including a ramp on a first portion of said ramp car removably received in a locking area on a second portion of said ramp car and locked thereto in a raised travel position of said ramp by a locking means, said ramp having a lowered loading position for providing access for vehicles to said train when said ramp is separated from said second portion of said ramp car, said locking means comprising:

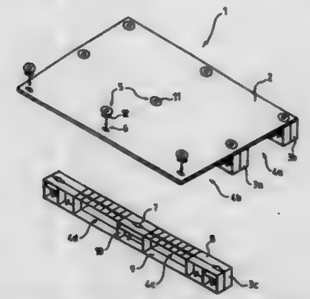
a catch on one of said first and second portions of said ramp car and a catch aperture on the other one of said first and second portions of said ramp car for receiving said catch and locking said ramp in said locking area;
drive means for moving said catch between locking and unlocking positions along a path; and
retaining means for retaining said catch in said unlocking position as said ramp exits said locking area.

5,445,084

NORMED TRANSPORT PALLET

Michel G. Durand, Essonne, France, assignor to Antal Trading, Ltd., Dublin, Ireland

Filed Apr. 1, 1993, Ser. No. 41,113
Int. Cl.[6] B65D *19/12*
U.S. Cl. 108—56.3 **12 Claims**



1. Normed transport pallet comprising a rectangular support surface (2, 20) having normed dimensions, and longitudinal support beams (3*c* to 3*c*), a longitudinal dimension of which corresponds to one dimension of the support surface, which support beams are arranged beneath said support surface (2, 20), characterized in that said beams (3*a* to 3*c*) are fabricated from injected plastic material and in that they are attached to the support surface (2, 20) by releasable fixation means (5, 7) beneath the support surface (2, 20), said fixation means (5, 7) comprising at least one first opening (7) provided in an upper portion of each beam (3*a* to 3*c*), which opening (7) permits the insertion of a latch member (5) for latching the support surface (2) together with beams (3*a* to 3*c*), said latch member (5) comprising a pin with a bayonet means, which comprises a retention plate (11) provided to abut on a side of the support surface (2) which is turned away from the beams (3*a* to 3*c*), an essentially cylindrical portion (12) extending away from said retention plate (11) and which is provided to traverse the support surface (2) through a second opening (6) within said support surface (2, 20) and radial projections (13*a* to 13*b*) which extend radially outwardly from a free end portion of said cylindrical portion (12), and said first opening (7) having a shape essentially corresponding to the essentially cylindrical portion (12) of pin (5) and two eccentric cutaway portions (15*a*, 15*b*) which permit the passage of the projections (13*a*, 13*b*) during the insertion of the pin into each beam (3*a* to 3*c*).

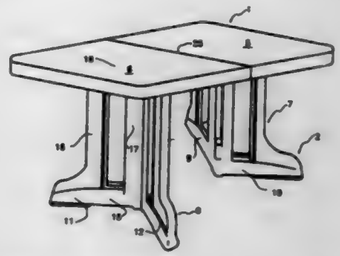
5,445,085

FOLDING TABLE

Josephus P. M. Westerburgen, Heythuysen, Netherlands, assignor to Lawa Comfort S.A., Ans-Alleur, Belgium

Filed Aug. 26, 1993, Ser. No. 112,068
Claims priority, application Netherlands, Aug. 27, 1992, 9201509
Int. Cl.[6] A47B *3/00*
U.S. Cl. 108—115 **10 Claims**

1. Folding table comprising:
a tabletop and a support, said tabletop being composed of two tabletop parts that are connected to one another in such a manner that they can pivot between first and second extreme positions, the tabletop parts lying in one plane and constituting the tabletop in the first extreme position and the tabletop parts being positioned parallel to one another with their bottom sides facing one another, in the second extreme position,
said support consisting of two leg structures, each leg structure being connected to a tabletop part in such a manner that it can pivot around an axis parallel to the tabletop, and each leg structure being capable of assuming a normal position perpendicular to the plane of the tabletop in the first extreme position of the tabletop parts, and the leg



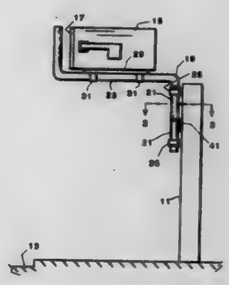
structures being positioned between the tabletop parts in the second extreme position of the tabletop parts, wherein each leg structure comprises two leg parts which are connected to one another via a hinge whose axis of rotation in a normal position of the leg structure is perpendicular to the plane of the tabletop, each leg part being capable of moving between a first extreme leg position in which the leg parts and the hinge are in one plane, and a second extreme leg position in which the leg parts, view in the direction perpendicular to the plane of the tabletop, form an angle and in this second extreme leg position support a tabletop part.

5,445,086

DEFLECTABLE MAILBOX ASSEMBLY

Germain Bolduc, 54 Rabbit Rd., Salisbury, Mass. 01952

Filed Oct. 26, 1993, Ser. No. 141,212
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—39 **3 Claims**



1. A deflectable mailbox assembly comprising:
a mailbox having a longitudinal axis with a planer door and side wall;
a post installable at a point along a roadside, said post having a vertical axis;
a mailbox support means, comprising a vertical shaft, means for rotatably mounting said shaft for rotation around the shaft axis, a horizontal tube extending along said longitudinal axis with a mailbox platform for supporting said mailbox;

said mailbox platform having a normal position, wherein the mailbox extends between the post and the roadway, whereby the mailbox is accessible to the driver of a mail truck in the roadway;

means for releasably retaining said mailbox platform in its normal position, such that the mailbox can be deflected by a moving vehicle at the edge of the roadway without destroying the mailbox and mailbox support means;

a bumper means comprising a horizontal tube extension extending from said horizontal tube at an angle of about 45 degrees with respect to said longitudinal axis to an end location outside the plane of said door and said side wall, and a vertical bumper tube extending upward from the end of said

horizontal tube extension.

5,445,087

APPARATUS FOR INCINERATING WASTE MATERIAL

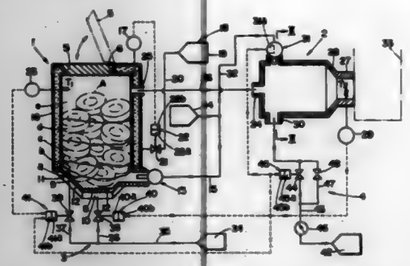
Masamoto Kaneko, 778-2 Yasukamachi, Takasaki-shi, Gunmaken, Japan

Continuation of Ser. No. 46,567, Apr. 16, 1993, abandoned. This application Aug. 15, 1994, Ser. No. 296,160

Claims priority, application Japan, Apr. 17, 1992, 4-098108

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—235 **6 Claims**



1. An apparatus for incinerating a waste material by processing the waste material through dry distillation and gasification, comprising:

a gasification furnace for storing a waste material therein and burning a portion of the waste material and thermally decomposing a remainder of the waste material by way of dry distillation with a heat of combustion of the portion of the waste material, thereby producing a combustible gas;

a cylindrically shaped gas combustion furnace having a circular cross section with a predetermined internal diameter for combusting said combustible gas produced in said gasification furnace, said combustion furnace being connected to said gasification furnace through a gas introduction passage, the combustible gas being introduced into said gas combustion furnace from said gasification furnace through the gas introduction passage, said gas combustion furnace having a substantially cylindrical gas inlet port connected to said gas introduction passage, said gas inlet port having an internal diameter less than said predetermined internal diameter, said gas inlet port being disposed at one end of said gas combustion furnace such that an axis of said gas inlet port is disposed co-axially with an axis of said gas combustion furnaces, said gas inlet port opening into said gas combustion furnace such that said combustible gas enters said gas combustion furnace through said gas inlet port; and

oxygen supply means for supplying said gas combustion furnace with an amount of oxygen required to combust the combustible gas in said gas combustion furnace, said amount of oxygen mixing with said combustible gas for promoting combustion thereof, said oxygen supply means comprising an oxygen inlet port having an interior wall surface disposed tangentially to an inner circumferential wall surface of said gas combustion furnace, and wherein said oxygen supply port is disposed proximate said gas inlet port for generating a vortical oxygen flow that rotates around the axis of said gas inlet port so that the axis of said gas inlet port is disposed substantially at a center of said vortical oxygen flow.

5,445,088

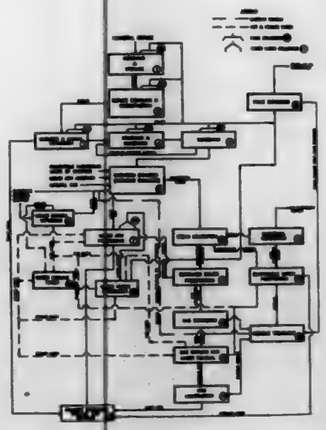
PROCESS FOR THE DISPOSAL OF MUNICIPAL REFUSE AND CERTAIN HAZARDOUS WASTE

William K. Daugherty, P.O. Box 1088, Lake City, Fla. 32056; Bernard A. Parkin, Jr., Rte. 10, Box 207, Lake City, Fla. 32055, and Franklin D. Ling, Rte. 1 Box 281-34, Micanopy, Fla. 32667

Continuation-in-part of Ser. No. 874,953, Jul. 2, 1992, abandoned. This application May 21, 1993, Ser. No, 75,721

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—346 **7 Claims**



1. A process for the complete oxidation of municipal refuse/-waste providing;

a specified amount of properly prepared refuse/waste;

a specified temperature for complete oxidation of refuse/-waste materials;

a specified volume of natural gas;

a specified volume of injected pure oxygen;

a closed system requiring no landfills or sewers and that does not violate any clean air standards;

heating of refuse/waste to 3200 degree F. and converting said refuse/waste materials into environmentally safe restructured products.

5,445,089

SEEDLINGS TRANSPLANTING MACHINE

Chong L. Houng; Po-Ching Wang; Lu Kuei-Lin, all of No. 11, Lane 23, Ching-Li Street, Tucheng city, Taipei, Taiwan; Tingzong Sun, No. 114, Stalin Blvd., Changchun, Jilin Province, China; Yunxiang Fan, No. 114, Stalin Blvd., Changchun, Jilin Province, China; Ziwan Yang, No. 114, Stalin Blvd., Changchun, Jilin Province, China, and Xiourong Wang, No. 114, Stalin Blvd., Changchun, Jilin Province, China

Filed Jul. 27, 1994, Ser. No. 281,188

Int. Cl.[6] A01C *11/02*

U.S. Cl. 111—105 **7 Claims**

1. A seedlings transplanting machine comprising:

a machine base having a platform at the top and a rail transversely disposed above said platform and reciprocated longitudinally;

a sliding frame placed on said platform and reciprocated along said rail;

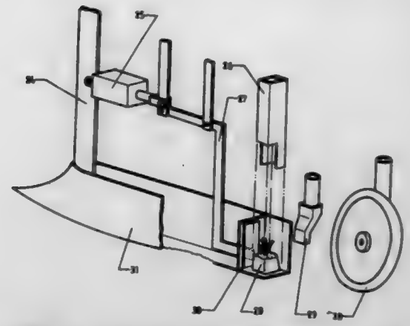
a tray carried on said sliding frame;

a microprocessor-operated controller mounted on said machine base;

a first transmission mechanism controlled by said microprocessor-operated controller to move said sliding frame along said rail;

a second transmission mechanism controlled by said microprocessor-operated controller to reciprocate said rail longitudinally;

a seedling drop unit mounted on said machine base below said platform and controlled by said microprocessor-operated controller to draw seedlings away from said tray through a hole on said platform, permitting the seedlings to be planted in field or guided to predetermined places, said seedling drop unit comprising a mounting frame fixedly fastened to said platform at the bottom, a planting tube having a top end inserted through a hole on said mounting frame and fixedly mounted within a hole on said



platform, a fixed piston fixedly mounted around said planting tube at the bottom, a movable sleeve fitting around said fixed piston and reciprocated vertically, a bottom cover covered on said movable sleeve and defining with said fixed piston a variable suction chamber, said bottom cover having a center opening of diameter bigger than the outer diameter of said planting tube, a door of fabrics controlled to open and close the center opening of said bottom cover, and a movable sleeve driving mechanism controlled to reciprocate said movable sleeve causing a vacuum produced to draw seedlings away from said tray, a seedlings transplanting machine of claim 1, further including

a tillage mechanism mounted on said machine base and controlled by said microprocessor-operated controller, said tillage mechanism comprised of a opener controlled to plow the soil, a seedling pusher controlled to push seedlings out of said opener to the groove on the soil worked by said opener, a water sprayer controlled to spray water over the planted seedlings, and packing wheels controlled to pack the soil.

5,445,090

INTERCHANGEABLE CLAMP FOR USE IN A SEWING MACHINE

Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc.

Filed Jul. 25, 1991, Ser. No. 735,822

Int. Cl.[6] D05B *21/00*

U.S. Cl. 112—102.5 **22 Claims**

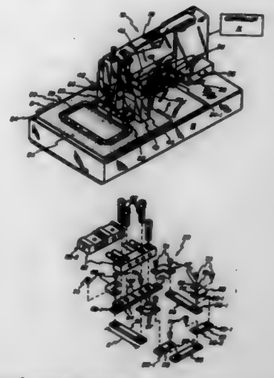
19. A programmable sewing machine for sewing a predetermined stitch pattern on a workpiece, said sewing machine comprising:

a controller for controlling the operation of the programmable sewing machine;

an interchangeable clamp for forcing a workpiece having a predetermined shape against a clamping surface in the programmable sewing machine, said interchangeable clamp being adjustable in order to accommodate workpieces of different shapes;

drive means coupled to said controller and said interchangeable clamp for driving the clamp into engagement with the workpiece to secure the workpiece against the clamping surface, said drive means also being capable of moving said clamping surface in accordance with a program stored in the programmable sewing machine in order to sew the predetermined stitch pattern on the workpiece;

said interchangeable clamp being adjustable to permit the programmable sewing machine to clamp workpieces of different shapes against the clamping surface so that the predetermined stitch pattern can be sewn on the workpiece when said controller causes said drive means to



move the clamping surface in accordance with said program;

said interchangeable clamp comprising:

a plurality of interchangeable members selected from a set of interchangeable members, said plurality of interchangeable members being elongated and generally planar;

securing means for adjustably securing said plurality of interchangeable members together to provide a clamp frame having a generally rectangular configuration, said securing means comprising a plurality of generally L-shaped connector members adapted for connecting one of said plurality of interchangeable members to another of said plurality of interchangeable members; and

a connector having a quick-release mechanism coupled to said clamp frame, said quick-release mechanism being capable of connecting the interchangeable clamp to the programmable sewing machine.

5,445,091

LOOPER FOR A SINGLE-THREAD CHAINSTITCH SEWING MACHINE

Hans-Dieter Bartholomä, Filderstadt, Germany, assignor to Union Special GmbH, Germany

Filed Sep. 20, 1994, Ser. No. 309,097

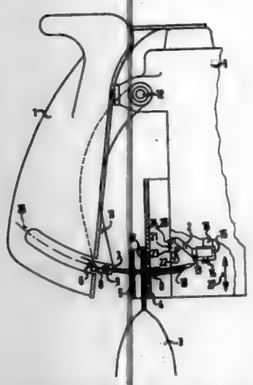
Claims priority, application Germany, Sep. 22, 1993, 43 32 111.9

Int. Cl.[6] D05B *57/02, 13/02*

U.S. Cl. 112—199 **24 Claims**

1. A looper for a single-thread chainstitch sewing machine having a looper shaft, said looper and looper shaft having a

reciprocal feed path that is parallel to the looper shaft, which looper cooperates in use with a needle plate and a sewing needle of the sewing machine in order to form sewing stitches on a workpiece, comprising a blade with a pointed front end, said blade being displaced from and substantially parallel to said looper shaft, a thread guiding surface disposed in a region of the blade facing the looper shaft, a thread driving device formed adjacent to the thread guiding surface and a thread retaining device disposed in a region of the blade facing the



needle plate, the looper being driven in use in such a manner as to pivot about and be displaceable transverse to a movement path of the sewing needle guiding a thread in the forward feed direction of the workpiece, the thread guiding surface being disposed substantially parallel to the feed path of the looper, the thread driving device being disposed transverse to the thread guiding surface towards the looper shaft and that the thread retaining device being formed as a retaining step offset towards the looper shaft.

5,445,092

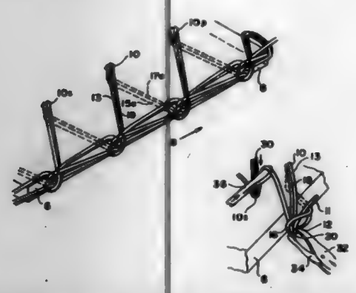
CROCHET STITCH WHICH SIMULATES A WHIP STITCH

John M. Washburn, Jr., West Hartford, Conn., assignor to The Merrow Machine Company, Newington, Conn.

Filed Nov. 16, 1993, Ser. No. 152,384

Int. Cl.[6] D05B *1/20, 93/00*

U.S. Cl. 112—439 **31 Claims**



1. An overedge crochet stitch for a fabric having a first side, a second side and an edge, a plurality of stitches formed along the fabric edge by a length of thread which penetrates the fabric at needle holes, each said stitch and a stitch which is subsequent to said stitch both comprising,

a first loop of thread having a bight at the edge of the fabric and two legs, both of said legs extending from the bight forwardly along the edge of the fabric;

two bends at respective forward ends of said legs of the first loop;

two legs which extend from respective bends to the needle hole;

a second loop of thread having a bight at the edge of the fabric near the bight of the first loop, a first leg extending on a first side of the fabric to the needle hole, and a second leg extending forwardly along the edge of the fabric;

a third loop of thread having a bight which is substantially contiguous with the bight of the second loop, a first leg extending on the first side of the fabric to the needle hole and a second leg which extends to the second leg of a second loop of said stitch which is subsequent to said stitch,

said bights of the second and third loops both being linked to said bends of a substantially identical subsequent stitch, one of said bights of the second and third loops extending through the bight of the first loop.

5,445,093

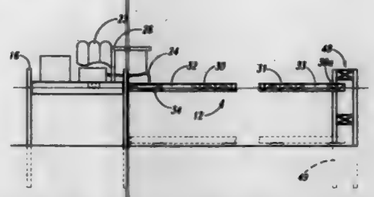
UNLOADING FACILITY FOR FLEXIBLE WATER TRANSPORTING BARGES

Kenneth E. Lilly, Jr., Bothell, Wash., assignor to Terry Spragg, Manhattan Beach, Calif.

Filed May 23, 1994, Ser. No. 248,064

Int. Cl.[6] B65D *88/78*

U.S. Cl. 114—45 **18 Claims**



1. Apparatus for emptying a flexible barge containing fresh water through an upper discharge port in the barge adjacent one end thereof, said apparatus comprising:

a submersible elongated dry dock having an upper support surface for supporting a said flexible barge, said support surface having a downwardly dished area adjacent one end of the dry dock;

ballast means associated with said dry dock for selectively raising and lowering the dry dock between a submerged position whereat a loaded said barge can be floated into a position overlying said support surface with said discharge port positioned above said area, and a raised position supporting the dry dock in an emptied condition; and

water discharging means for emptying said barge through said discharge port as it is raised by said dry dock;

said downwardly dished area providing a corresponding downwardly dished discharge zone in said barge beneath said discharge port for collecting of water in the barge for discharge as emptying of the barge by the water discharging means nears completion.

5,445,094

WORKING APPARATUS TRAVELING THROUGH TANK WEB FRAME OF SHIP

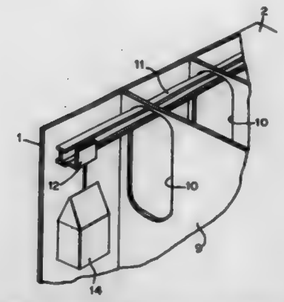
Katsumi Kai, Mitaka; Kenji Okamoto, Yokohama, and Yuuichi Miura, Funabashi, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Japan

Filed May 4, 1994, Ser. No. 237,879

Claims priority, application Japan, Nov. 25, 1993, 5-294829; Nov. 25, 1993, 5-294830

Int. Cl.[6] B63B *3/00*

U.S. Cl. 114—65 R **12 Claims**



1. A working apparatus for traveling through a tank web frame of a ship, comprising openings formed as trolley access holes in the tank web frame of the ship, a rail passed through the openings and secured to the tank web frame, a trolley adapted to travel along the rail, a hoist mounted on the trolley, and a gondola elevatably suspended from the hoist.

5,445,095

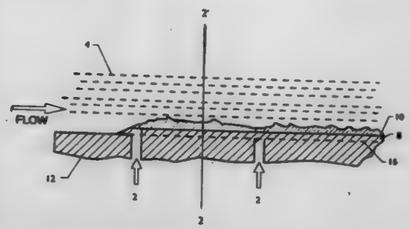
POLYMER/RIBLET COMBINATION FOR HYDRODYNAMIC SKIN FRICTION REDUCTION

Jason C. Reed, Hampton, and Deanis M. Bushnell, Hayes, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 567,025, Aug. 14, 1990, abandoned. This application May 28, 1992, Ser. No. 892,066

Int. Cl.[6] B64C *1/38*

U.S. Cl. 114—67 A **3 Claims**



1. A process for reducing skin friction and inhibiting effects of liquid turbulence, comprising

providing a body having an exterior surface over which a fluid flows,

forming a multiplicity of adjacent, evenly spaced, longitudinal grooves extending along an entire length of the surface, such that the grooves are parallel to the flow over the surface,

providing each of the multiplicity of grooves with small surface projections such that each groove has increased frictional holding power,

injecting a drag reducing polymer into each individual groove valley at multiple points along each groove such that amounts of the polymer needed to reduce skin friction along the entire length of the surface are minimized, and controlling the rate of diffusion of the polymer from each groove into the liquid by the dimensions of each groove.

5,445,096

HULL PROTECTION SYSTEM FOR LIQUEFIED GAS SHIP

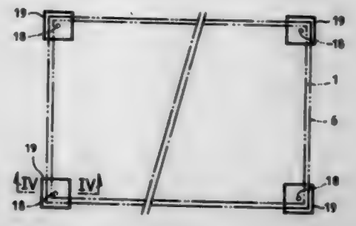
Eiji Aoki, Yokohama; Koichoro Yamada, Tokyo, and Tatsuhiko Yukitomo, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1994, Ser. No. 240,620

Claims priority, application Japan, May 20, 1993, 5-118499; May 27, 1993, 5-126092

Int. Cl.[6] B63B *25/16*

U.S. Cl. 114—74 A **6 Claims**



1. A hull protection system for a liquefied gas ship having a tank body covered at its outer surface with an insulation material and tank supports arranged on a bottom of an inner shell of a hull for supporting the tank body, the hull protection system comprising drainers for discharging leaked liquid, said drainers being mounted each at least at four corners of a lower surface of the insulation material at a bottom of the tank body, a drip tray arranged below each of the drainers and seal means between said tank supports and said insulation material.

5,445,097

TANKER FOR THE PREVENTION OF CARGO OIL SPILLAGE

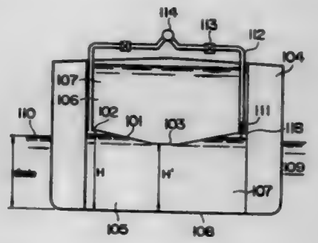
Shigetomo Fujita; Tsukasa Hasegawa; Tomoe Hayashi, and Osamu Suzuki, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 696,575, May 8, 1991, Pat. No. 5,342,943. This application Mar. 18, 1994, Ser. No. 214,422

Claims priority, application Japan, May 23, 1990, 2-133611; Jun. 30, 1990, 2-173101; Feb. 26, 1991, 3-53951

Int. Cl.[6] B63B *25/08*

U.S. Cl. 114—74 R **13 Claims**



1. A tanker comprising:

a ship body having side walls and a bottom;

a plurality of cargo oil tanks arranged in an interior of said ship body;
double-sidewall hull constructions arranged on opposite sides of said cargo oil tanks to prevent outflow of cargo oil from said cargo oil tanks to outside of said side walls;
a mid-height deck arranged to divide said cargo oil tanks into upper cargo oil tanks and lower cargo oil tanks;
air venting tube means for said lower cargo oil tanks;
pressure control valve means in said air venting tube means;
the pressure of cargo oil exerted on said bottom being the sum of the pressure due to the weight of cargo oil and a maximum set pressure value of said pressure control valve means in said air venting tube means for said lower cargo oil tanks; and
said mid-height deck having a highest position in a direction of height measured from said bottom determined to be lower than a position at which the following two pressures are equalized:
pressure of cargo oil exerted on said bottom when each lower cargo oil tank is filled with cargo oil from said bottom to the position of the mid-height deck under a condition of minimum ship draft as the tanker cruises with a cargo oil in said cargo oil tanks, and
pressure of sea water exerted on said bottom;
so that said pressure of seawater is always greater than said cargo oil pressure in each lower cargo oil tank and prevents flow of oil out of said lower cargo oil tanks through a rupture in said bottom.

5,445,098

LUFF GUIDING DEVICE AND IN PARTICULAR FOR A SAIL TO BE WOUND ON THE BOOM

Jean-Pierre Marechal, Saint Jean de Liversay, France, assignor to JP Marechal SA, Marans, France

Filed Mar. 7, 1994, Ser. No. 206,624
Claims priority, application France, Mar. 10, 1993, 93 03040
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—102 21 Claims



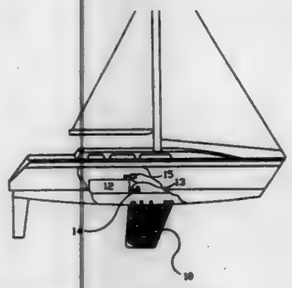
1. Luff guiding device for a sail, the sail being able to be wound on a boom of a sail boat, comprising:
a first element including a continuous groove in which a luff of a sail is adapted to be engaged to freely rotate, said first element comprising said continuous groove adapted to be positioned at a rear of a mast, and is pivotally mounted around a longitudinal axis extending through said element to both sides of a plane of symmetry of a sailboat.

5,445,099

HYDROGEN HYDRIDE KEEL

David D. Rendina, 1053 - Heritage Blvd., North Vancouver, B.C., Canada V7J 3G2

Filed Sep. 20, 1993, Ser. No. 124,692
Int. Cl.[6] B63B *3/38*
U.S. Cl. 114—140 17 Claims



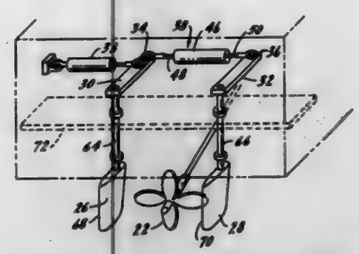
1. A ballast container, comprising:
a. a hydrogen occluding ballast medium;
b. means for directing heat flow through said ballast medium;
c. means for distributing hydrogen gas throughout said ballast medium;
d. means for controlling the rate of absorption and release of said hydrogen gas by said ballast medium; and
e. means for regulating the temperature of said ballast medium.

5,445,100

DUAL RUDDER SYSTEM FOR TRIMMING PLANING-TYPE HULLS

Anthony W. Finkl, 445 E. Royal Flamingo Dr., Sarasota, Fla. 34236

Filed Mar. 4, 1994, Ser. No. 206,473
Int. Cl.[6] B63H *25/06*
U.S. Cl. 114—163 3 Claims



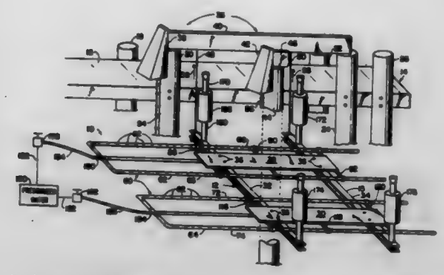
1. A dual rudder system for a marine vessel equipped with a propeller disposed below a transom of the vessel, the vessel also equipped with a planing-type hull, the dual rudder system enabling the operator to adjust the angle of attack of the planing-type hull while the vessel is being operated at planing conditions, the dual rudder system comprising:
first rudder connected to an upwardly protruding first rudder shaft, the first rudder shaft passing through the hull, an upper end of the first rudder shaft connected to a front end of a first forwardly directed tiller arm, the first rudder and first rudder shaft disposed substantially aft of the propeller,
a second rudder connected to an upwardly protruding second rudder shaft, the second rudder shaft passing through the hull, an upper end of the second rudder shaft connected to a front end of a second forwardly directed tiller arm, the second rudder and second rudder shaft disposed substantially aft of the propeller,
one of said tiller arms connected to a steering mechanism,
the first and second rudders being disposed on opposing sides of the propeller,
the first and second tiller arms each including rear ends, the rear ends of the first and second tiller arms being connected by a length-adjustable linkage whereby adjustment of the length-adjustable linkage results in varying the distance between the rear ends of the first and second tiller arms which results in a rotation of the first and second rudders about their respective vertical axes as defined by the first and second rudder shafts, said rotation of the first and second rudders occurring about their respective vertical axes only, the first and second rudders maintaining a vertical orientation at all times,
rotation of the first and second rudders about their respective vertical axes enabling the first and second rudders to assume a plurality of toe-out positions wherein lower edges of the rudders are directed toward each other, a parallel position wherein the first and second rudders are generally parallel with respect to one another and a toe-in position where the lower edges of the rudders are directed away from each other,
the toe-out, toe-in and parallel positions affecting the attitude of the planing-type hull when the vessel is operated at planing-type conditions,
whereby adjustment of the length-adjustable linkage resulting in adjustment of the attitude of the planing-type hull.

5,445,101

SYSTEM FOR SPRAY WASHING BOAT HULLS

Leonard Koch, 226 3rd St., Apt. 111, Bonita Springs, Fla. 33923

Filed May 16, 1994, Ser. No. 242,777
Int. Cl.[6] B63B *59/00*
U.S. Cl. 114—222 20 Claims



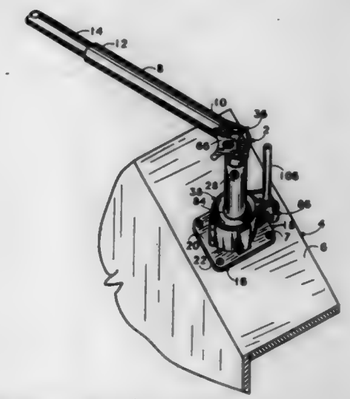
1. A system for lifting and washing a boat that is docked in a body of water, said system comprising:
a boat supporting frame disposed beneath a hull of the docked boat;
means for selectively raising the entire said frame to lift the boat from the water and lowering the entire said frame to lower the boat into the water;
a sprayer assembly having a plurality of spray nozzles;
means for communicably connecting said sprayer assembly to a source of water under pressure; and
means for mounting said sprayer assembly to said frame such that said sprayer assembly is raised and lowered with said frame and said spray nozzles are directed at the hull of the boat supported on said frame, whereby water is introduced into said sprayer assembly and directed out through said spray nozzles to wash the hull of the boat.

5,445,102

FISHING BOAT OUTRIGGER DEVICES

Herbert E. Rupp, 4761 Anchor Ave., Port Salerno, Fla. 33992

Filed Aug. 31, 1992, Ser. No. 937,179
Int. Cl.[6] B63B *35/14*
U.S. Cl. 114—255 18 Claims



1. An outrigger device for use with a fishing boat having a support surface upon which said device can be mounted for movement between various positions including an inboard storage position and an outboard trolling position, said device comprising:
an outrigger pole receptacle tube defined by an inboard end and an outboard end,
a mount unit including a plate for attachment to said support surface defined by parallel top and bottom surfaces, said plate having a circular opening extending through said surfaces,
a standard tube defined by a first longitudinal axis, an upper end portion, a lower end portion and a central portion, said central portion extending through said plate opening with said first longitudinal axis normal to said surfaces and said standard tube being rotatable about said axis relative to said opening,
pivot means mounting said receptacle tube to said standard tube for angled positioning therebetween, and
bifurcated lock means for preventing rotation of said standard tube relative to said opening.

5,445,103

ANCHOR DRIFT INDICATOR

Joel Bleth, and Barb A. Bleth, both of 656 21st St. W., Dickinson, N. Dak. 58601

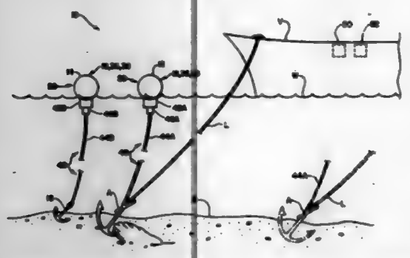
Filed May 1, 1992, Ser. No. 877,202
Int. Cl.[6] B63B *22/08*
U.S. Cl. 114—293 11 Claims

1. For use with art ocean going vessel having a main anchor, an anchor drift indicator comprising:
a first, floating buoy having a first tether line attached to the vessel main anchor, said first tether line having markers disposed therealong;
a first spool included in said first buoy for dispensing said first tether line, whereby the dimension of a length of dispensed tether line may be determined with said markers;
a first line lock, whereby the length of said first tether line dispensed upon deployment of said first buoy is determined, and said first line lock is operable to limit said first tether line dispensed by said first spool to a desired length;
a floating reference buoy having a second tether line and a second anchor, said reference buoy being secured to the

ocean bottom by said second anchor, said second tether line having markers disposed therealong;

a second spool included in said reference buoy for dispensing said second tether line, whereby the dimension of a length of dispensed tether line may be determined with said markers; and

a second line lock, whereby the length of said second tether line dispensed upon deployment of said reference buoy is determined, and said second line lock is operable to limit



said second tether line dispensed by said second spool to a desired length;

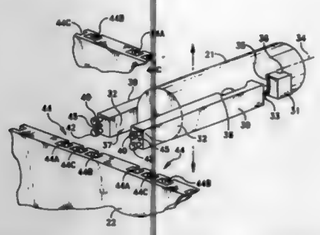
said first and said reference buoys being deployed in close proximity to one another and being visible from the vessel, whereby upon failure of the main anchor to firmly engage the ocean bottom, the main anchor is pulled by the vessel, and a distance divergence between said first and said second buoys is visible from the vessel, indicating that the vessel and the main anchor are drifting.

5,445,104

APPARATUS FOR THE STORAGE OF CYLINDRICAL OBJECTS

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1994, Ser. No. 269,322
Int. Cl.[6] B63G *3/02*
U.S. Cl. 114—316 **19 Claims**



1. Apparatus for storing a plurality of cylindrical objects having predetermined lengths on a base along parallel object axes, said apparatus comprising:

a set of first and second engaging means for engaging opposite sides of each cylindrical object, each of said first and second engaging means including a guide at each end thereof;

first and second supports mounted normally to the base and transversely to the cylindrical object axes and spaced by a distance greater than the predetermined lengths, each of said supports including a set of first and second spaced elongated complementary guides for receiving respectively therealong a plurality of sets of said first and second engaging means with a spacing whereby each set of said first and second engaging means captures a cylindrical object therebetween; and

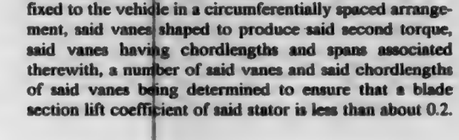
releasable locking means for interconnecting each of said first and second engaging means to said first and second supports thereby to fix the position of said set of first and second engaging means and the cylindrical object between said first and second supports.

5,445,105

TORQUE BALANCED POSTSWIRL PROPULSOR UNIT AND METHOD FOR ELIMINATING TORQUE ON A SUBMERGED BODY

Benjamin Y.-H. Chen; Carol L. Tseng, both of Potomac, both of Md., and Frank B. Peterson, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1994, Ser. No. 313,617
Int. Cl.[6] B63G *8/08*
U.S. Cl. 114—338 **12 Claims**



1. A torque balanced propulsor unit for a small submersible vehicle of the type having a rounded forward section, a longitudinally extending central section including therein a maximum transverse dimension of the vehicle, the maximum transverse dimension being less than or equal to about 80 inches, and a tapered aft section, at least the aft section being axisymmetric about a longitudinal axis of the vehicle, said torque balanced propulsor unit comprising:

rotating means for providing a forward thrust to the vehicle, said rotating means adapted for being rotationally mounted to the tapered aft section of the vehicle, said rotating means having a first torque associated therewith; and

stationary means for producing a second torque, said stationary means adapted for being secured to the vehicle at a location aft of said rotating means, said stationary means configured and positioned so as to function within a wake of said rotating means to produce said second torque, said second torque being substantially equal and opposite said first torque;

wherein said rotating means comprises a rotor, said rotor having a diameter less than or equal to about 96% of the maximum transverse dimension of the vehicle, said rotor including a central axisymmetric hub conforming to a shape of the tapered aft section of the vehicle and having an axis of rotation, and a plurality of circumferentially spaced apart impeller blades extending radially from said central hub, said blades shaped to produce said thrust and said first torque, said blades having chordlengths and spans associated therewith, a number of said blades and said chordlengths of said blades being determined to ensure that a blade section lift coefficient of said rotor is less than about 0.5, and

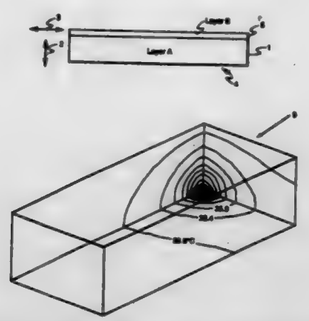
wherein said stationary means comprises a stator having a plurality of stationary vanes, said vanes adapted to be fixed to the vehicle in a circumferentially spaced arrangement, said vanes shaped to produce said second torque, said vanes having chordlengths and spans associated therewith, a number of said vanes and said chordlengths of said vanes being determined to ensure that a blade section lift coefficient of said stator is less than about 0.2.

5,445,106

METHOD FOR MAKING HIGH THERMAL CONDUCTING DIAMOND

Erik O. Elnaet, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1994, Ser. No. 316,995
Int. Cl.[6] C30B *25/02*
U.S. Cl. 117—1 **7 Claims**



1. A method for forming a continuous diamond film having at least two controlled thermal conductivity layers, said method comprising:

(a) depositing by chemical vapor deposition at a first growth rate on a substrate maintained at a temperature that promotes said first growth rate, a first controlled thermal conductivity layer having a continuous columnar structure of diamond crystals, where said first layer has high thermal conductivity in a direction perpendicular to a diamond film plane; and

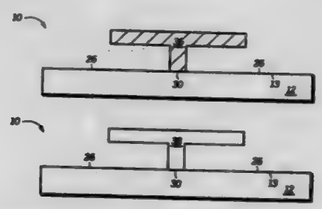
(b) continuing to deposit by chemical vapor deposition, without interrupting the columnar structure of said diamond crystals, a second controlled thermal conductivity layer on top of the first layer at a growth rate less than the first growth rate, said substrate now maintained at a temperature lower than the substrate temperature used for the first layer, where said second layer has high thermal conductivity in directions perpendicular and parallel to the diamond film plane.

5,445,107

SEMICONDUCTOR DEVICE AND METHOD OF FORMATION

Scott S. Roth, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1993, Ser. No. 155,607
Int. Cl.[6] C30B *1/02*
U.S. Cl. 117—8 **13 Claims**



1. A method for forming a semiconductor device comprising the steps of:

providing a semiconductor substrate, the semiconductor substrate having a major surface;

forming a sacrificial mask overlying a first portion of the major surface, the sacrificial mask having an opening formed therein which defines a second exposed portion of the major surface;

forming a layer of amorphous silicon, wherein the layer of amorphous silicon overlies the sacrificial mask and lies within the opening, the layer of amorphous silicon abutting the second exposed portion of the major surface;

patterning the layer of amorphous silicon;

removing the sacrificial mask after the layer of amorphous silicon has been patterned;

annealing the layer of amorphous silicon to form an epitaxial silicon layer, wherein the epitaxial silicon layer is formed after the sacrificial mask has been removed; and

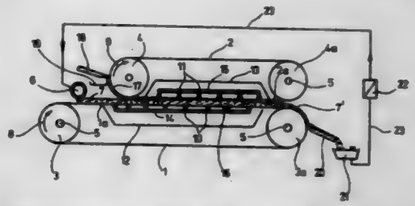
forming a doped region within the epitaxial silicon layer.

5,445,108

PROCESS AND APPARATUS FOR THE CRYSTALLIZATION OF A MELT

Konrad Schermutzki, Remseck, and Herbert Wirmscher, Meitingen, both of Germany, assignors to Santrade Ltd., Luzern, Switzerland

Division of Ser. No. 40,586, Mar. 31, 1993, Pat. No. 5,269,817, which is a continuation of Ser. No. 804,599, Dec. 10, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 118,605
Claims priority, application Germany, Dec. 22, 1990, 40 41 670.4
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—200 **12 Claims**



1. Apparatus for the crystallization of a melt comprising first and second endless belts presenting respective first and second oppositely facing flights forming a gap therebetween, feeding means for feeding a melt into said gap, drive means for rotating said belts such that said flights thereof travel in relatively opposite directions, and means for maintaining said first flight at a temperature lower than a crystallization temperature of said melt so that a surface of said melt contacting said first flight crystallizes thereon and is removed from said gap upon said first flight.

5,445,109

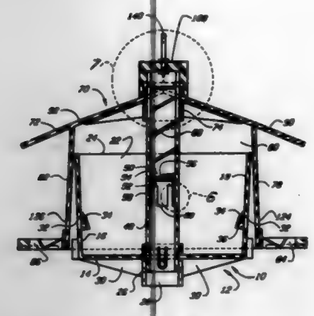
SELECTIVE BIRD FEEDER

Donald F. Gray, 5992 Seymour Rd., Owosso, Mich. 48867, and Louis N. Sperling, 3008 13th St. West, Palmetto, Fla. 34221

Filed Jul. 13, 1994, Ser. No. 274,989
Int. Cl.[6] A01K *39/01*
U.S. Cl. 119—57.9 **20 Claims**

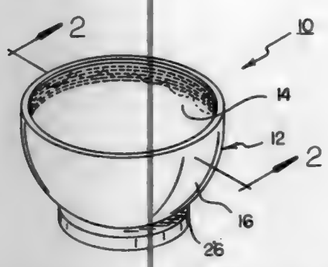
1. A selective bird feeder comprising: a bird feed container with a bottom wall, at least one side wall attached thereto and forming an open top; at least one bird feed access opening in said side wall of said bird feed container; a generally vertical member, with an upper end and a lower end, secured to said bird feed container; a lower spring abutment supported by said generally vertical member; a spring, with an upper end and a lower end, having its lower end supported by said lower spring abutment; a bird feed container cover having a roof, at least one cover integral wall that telescopes over the at least one side wall of said bird feed container, a bird perch attached to the at least one integral wall of said bird feed container cover; a spring follower integral with the roof and having a vertical bore which receives the upper end of said generally vertical member and permits a portion of said generally vertical mem-

ber to extend through the vertical bore and project above the spring follower, and a spring abutment surface on the spring follower in contact with the upper end of said spring; a cap attached to the upper end of said vertical member above said spring follower and having a stop surface that limits expansion of said spring and upward movement of the bird feed container cover relative to the bird feed container; a spring tension



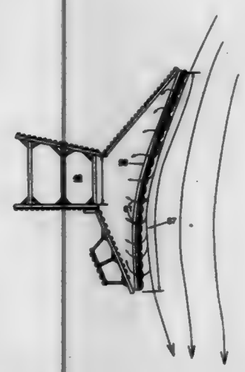
adjustment assembly mounted in vertical member and adjusting the force exerted by said spring when the stop surface on said cap is preventing upward movement of said bird feed container cover relative to the bird feed container; and wherein a load on said bird feed container cover which overcomes said spring will compress said spring, move the bird feed container cover down and cover said at least one bird feed access opening.

5,445,110
PET FEEDING SYSTEM WITH DISPOSABLE INSERTS
Virita L. Birnie, 22661 Marlin Pl., West Hills, Calif. 91307
Filed Mar. 10, 1994, Ser. No. 208,232
Int. Cl.[6] A01K *5/01*
U.S. Cl. 119—61 1 Claim



1. A new and improved animal feeding system comprising, in combination:
a bowl having an outwardly flared inner surface, an outer surface, a bottom, and an upper periphery;
a hollow circular base having a top and a bottom, the top of the hollow circular base being integral with the bottom of the bowl;
a circular weight positioned within the hollow circular base, the circular weight functioning to keep the base and the bowl in an upright orientation;
a plurality of liners, each of the liners having a shape which approximately conforms to the inner surface of the bowl, each of the liners further having an inner surface, an outer surface, an upper periphery, a thumb notch formed along the upper periphery, and a unitary adhesive tab formed along the upper periphery diametrically opposite from the thumb notch for each liner, the plurality of liners being in a stacked relationship such that the outer surface of a second liner lies adjacent the inner surface of a first liner, and the inner surface of a second liner lies adjacent the outer surface of a third liner, furthermore the liners are angularly related to one another such that the thumb notches and adhesive tabs of adjacent liners are circumferentially offset to one another, the adhesive tabs functioning to lightly secure adjacent liners to one another, the plurality of liners being positioned within the inner surface of the bowl.

5,445,111
ELECTRIFIED FISH BARRIERS
David V. Smith, Vancouver, Wash., assignor to Smith-Root, Inc., Vancouver, Wash.
Filed Jun. 22, 1993, Ser. No. 81,785
Int. Cl.[6] H04B *13/02*
U.S. Cl. 119—220 10 Claims

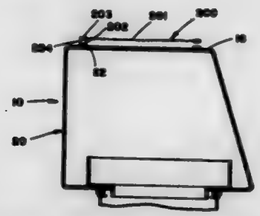


6. An electrified fish barrier disposed in a flow of water, the barrier comprising:
at least first, second and third elongated, fixed electrodes, the electrodes being vertically disposed and spaced, thereby defining a barrier having openings therethrough;
a power source for providing pulsed driving signals to said electrodes, the power source and electrodes cooperating to define electrical fields oriented perpendicularly to the direction of water flow through the barrier; and
flow tailoring structure defining differently sized openings at different positions along the barrier.

5,445,112
TERRARIUM COVER
Bert Grosman, Allentown, Pa., assignor to Novalek, Inc., Hayward, Calif.
Continuation-in-part of Ser. No. 209,144, Mar. 9, 1994. This application Aug. 1, 1994, Ser. No. 283,731
Int. Cl.[6] A01K *63/00*
U.S. Cl. 119—265 6 Claims

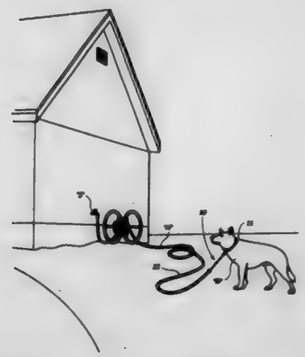
1. A cover arrangement in combination with an opening formed in a tank, including;
a mesh portion having a continuous perimeter;
a first member extending continuously about said perimeter of said mesh portion;
a second member extending continuously about said open-

ing, said first and second members being configured for mutual continuous engagement; and



hook and loop fastener means for joining said first and second members.

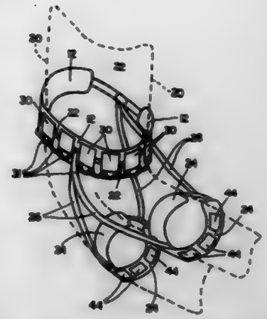
5,445,113
RESTRAINT ATTACHMENT FOR AN ANIMAL
Kami Hostetler, 105 Forrest Dr., Mt. Holly, N.C. 28120
Filed Aug. 24, 1994, Ser. No. 295,517
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—795 5 Claims



1. In combination with a spigot secured to an immovable structure, a restraint attachment for a collar or harness of an animal for use in confining the animal to a predetermined area, said restraint attachment comprising:
(a) a threaded cap removably secured to a connecting end of the spigot, the connecting end including complementary threads for being mated with the threads of said cap to thereby attach the spigot and the cap together; and
(b) attachment means associated with said cap for releasably attaching said cap to the collar or harness of the animal.

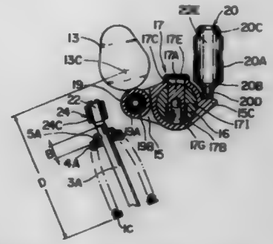
5,445,114
TRAINING HARNESS FOR USE WHEN PRACTICING ROCK CLIMBING AND SPORT CLIMBING
Douglas M. Walker, 1289 E. 300 N., Logan, Utah 84321
Filed Dec. 10, 1993, Ser. No. 164,560
Int. Cl.[6] A63B *21/18, 21/26*
U.S. Cl. 119—857 10 Claims

1. A training harness to be used by a sport climber in practicing sport climbing, said harness comprising
a waist encircling portion having a relatively broad, elongate, fabric, waist member that extends from a first end at a front of the wearer around the wearer's back to a second end spaced from said first end at the front of the wearer;
a cinch strap connecting the first and second ends of said waist member at the front of the wearer;
two leg encircling portions;
straps connecting the leg encircling portions to the waist encircling portion;
at least one compartment or receptacle formed integrally with the waist member; and



at least one thin sheet of a heavy material that can be removably received in said compartment or receptacle to be held snugly against the wearer of the harness.

5,445,115
VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINE
Shinichi Murata, and Noriyuki Miyamura, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 14, 1993, Ser. No. 166,362
Claims priority, application Japan, Dec. 16, 1992, 4-336416; Dec. 7, 1993, 5-306652
Int. Cl.[6] F01L *1/18, 13/00*
U.S. Cl. 123—90.16 27 Claims



1. A valve system for driving engine valves arranged in an internal combustion engine, comprising:
a valve drive arm member pivotally supported on a side of a main body of an engine while being maintained in contact with end portions of said engine valves;
first rocker means for rocking said valve drive arm member;
second rocker means for causing said valve drive arm member to undergo rocking at an amplitude greater than rocking by said first rocker means; and
means for urging said engine valves in closing directions, said urging means being interposed between retainers disposed fixedly on said engine valves and a cylinder head, respectively;
wherein said urging means is provided with interference avoiding means, respectively, so that said urging means keeps out of rocking paths of said first and second rocker means on a side of said urging means, each said urging means comprising a coil spring provided with the corresponding retainer at one end portion thereof on a side of

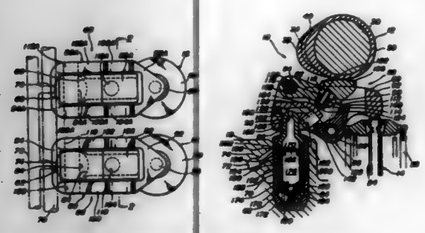
said first and second rocker means, and each interference avoiding means comprises a construction in which a diameter of said coil spring is reduced at a portion thereof on a side of said retainer.

5,445,116

HYDRAULIC VARIABLE LIFT ENGINE VALVE GEAR

Seinosuke Hara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Japan

Filed Dec. 21, 1993, Ser. No. 171,238
Claims priority, application Japan, Dec. 22, 1992, 4-341740; Jan. 22, 1993, 5-009161; Feb. 3, 1993, 5-015777
Int. Cl.[6] F01L *1/18, 1/24*
U.S. Cl. 123—90.16 **1 Claim**



1. An internal combustion engine, comprising:
a cylinder head structure;
a first cylinder valve mounted in said cylinder head structure;
first resilient means for biasing said first cylinder valve towards a closed position thereof;
a second cylinder valve mounted in said cylinder head structure;
second resilient means for biasing said second cylinder valve towards a closed position thereof;
said first and second cylinder valves being arranged for one cylinder of the engine;
a camshaft mounted for rotation in said cylinder head structure, said camshaft being rotatable about an axis;
a first rocker arm mounted in said cylinder head structure for pivotal motion to actuate said first cylinder valve against said first resilient means in response to rotation of said camshaft;
a first free cam follower supported by said first rocker arm for pivotal motion relative to said first rocker arm in response to rotation of said camshaft;
a first latch mechanism having a first position wherein said pivotal motion of said first free cam follower relative to said first rocker arm is prevented and a second position wherein said pivotal motion of said first free cam follower relative to said first rocker arm is allowed;
first hydraulic means for urging said first latch mechanism from said second position thereof towards said first position thereof;
a second rocker arm mounted in said cylinder head structure for pivotal motion to actuate said second cylinder valve against said second resilient means in response to rotation of said camshaft;
a second free cam follower supported by said second rocker arm for pivotal motion relative to said second rocker arm in response to rotation of said camshaft;
a second latch mechanism having a first position wherein said pivotal motion of said second free cam follower relative to said second rocker arm is prevented and a second position wherein said pivotal motion of said second free cam follower relative to said second rocker arm is allowed;
second hydraulic means for urging said second latch mechanism from said second position thereof towards said first position thereof;
wherein said camshaft has a first pair of low lift cam lobes, and a first high lift cam lobe axially disposed between said first pair of low lift cam lobes, and wherein said camshaft also has a second pair of low lift cam lobes, and a second high lift cam lobe axially disposed between said second pair of low lift cam lobes, said second pair of low lift cam lobes having the height lower than the height of the first pair of low lift cam lobes and being completely confined with the circumferential and radial extent of the first pair of low lift cam lobes;
wherein said first rocker arm includes a first elongated rigid link, said first rigid link including one end portion to drivingly engage said first cylinder valve, an opposite end portion, and two rail portions rigidly interconnecting said one and opposite end portions, said two rail portions of said first rigid link defining cam follower surfaces drivingly engaging said first pair of low lift cam lobes, and wherein said first free cam follower is disposed between said two rail portions of said first rigid link and drivingly engages said first high lift cam lobe;
wherein aid second rocker arm includes a second elongated rigid link, said second rigid link including one end portion to drivingly engage said second cylinder valve, an opposite end portion, and two rail portions rigidly interconnecting said one and opposite end portions of said second rigid link, said two rail portions of said second rigid link defining cam follower surfaces drivingly engaging said second pair of low lift cam lobes, and wherein said second cam follower is disposed between said two rail portions of said second rigid link and drivingly engages said second high lift cam lobe;
wherein said cylinder head structure is formed with a common hydraulic fluid passage-communicating with said first and second hydraulic means, and wherein said cylinder head structure is formed with axially spaced first and second lash adjuster mount bores with respect to the axis of rotation of said camshaft, said first and second lash adjuster mount bores being in fluid communication with said common hydraulic fluid passage;
further comprising a first hydraulic lash adjuster including a moveable portion and a second hydraulic lash adjuster including a moveable portion, said first and second hydraulic lash adjusters being mounted in said first and second lash adjuster mount bores of said cylinder head structure, respectively; and
wherein said moveable portion of said first hydraulic lash adjuster defines a hydraulic fluid passage fluidly disposed between said common hydraulic fluid passage and said first hydraulic fluid means to provide fluid communication therebetween, and said moveable portion of said second hydraulic lash adjuster defines a hydraulic fluid passage fluidly disposed between said common hydraulic fluid passage and said second hydraulic fluid means to provide fluid communication therebetween.

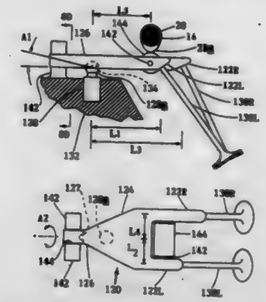
5,445,117

ADJUSTABLE VALVE SYSTEM FOR A MULTI-VALVE INTERNAL COMBUSTION ENGINE

Charles Mendler, 3522 Northampton St., NW., Washington, D.C. 20015

Filed Jan. 31, 1994, Ser. No. 189,325
Int. Cl.[6] F01L *1/08*
U.S. Cl. 123—90.16 **37 Claims**

1. An adjustable valve system for an engine including an axially shiftable camshaft for connection to a source of rotary power and having at least one valve-actuating cam, said at least one cam having a lobe profile which varies along the axis of the camshaft; positioning means for controlling the axial position of said camshaft in said engine; a plurality of valves movable between open and closed positions for controlling fluid communication with said engine; a rocker, said rocker operatively engaging said plurality of valves; support means disposed in said engine for supporting said rocker; a cam follower mounted to said rocker so as to be in engagement with said at least one cam; pivot means for allowing said follower to pivot relative to said engine about one axis and another axis which



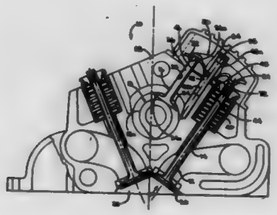
are more or less perpendicular to each other so that when said camshaft is rotated, said follower maintains line contact with said at least one cam, and guide means for inhibiting pivoting of said rocker about axes other than said one axis and said other axis at all axial positions of said camshaft.

5,445,118

VALVE TRAIN ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Eric B. Hudson, Hilbert, Wis., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Apr. 22, 1994, Ser. No. 231,427
Int. Cl.[6] F01L *1/18, 1/20*
U.S. Cl. 123—90.27 **11 Claims**





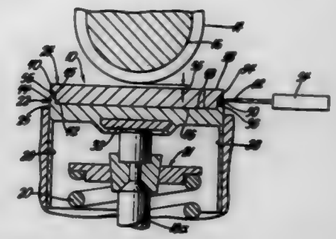
1. In an overhead cam internal combustion engine having an engine block with at least one cylinder therein, a cylinder head, a poppet valve with a valve stem and a drive train for operating said valve including a rocker arm, a valve lifter and a cam shaft with a cam to drive the valve lifter, an improvement comprising:
(a) a center pivot rocker arm having one end comprising an elongated axial recess opening toward the valve lifter;
(b) a valve lifter having a rigid stem riding within a bore in the cylinder head and restricted by the bore to movement along the axis thereof, and a cam following head in contact with a valve actuating cam on the cam shaft, the rigid stem having an end opposite the cam following head terminating in a rounded tip;
(c) means for pivotally mounting the rocker arm at a selected point on the cylinder head between the valve stem and the lifter stem; and
(d) means for maintaining the rounded tip of the lifter stem within the recess in one end of the rocker arm and the other end of the rocker arm in operating engagement with the valve stem,
(e) so that the force of the tip of the lifter stem acting within the recess of the rocker arm and the selected pivot point of the rocker arm control the alignment of the rocker arm with respect to the valve stem.

5,445,119

TAPPET AND SHIM ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

José F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 9, 1994, Ser. No. 352,943
Int. Cl.[6] F01L *1/16*
U.S. Cl. 123—90.48 **8 Claims**



1. A tappet and shim assembly for operating between a valve and a camshaft in an internal combustion engine, said assembly comprising a tappet having a cylindrical recess in one end thereof concentric with an outer cylindrical surface of said tappet, and a dual-diameter cylindrical shim having concentric small and large diameter cylindrical portions, said large diameter cylindrical portion having a circular end face adapted to contact with a cam lobe of a camshaft, said small diameter portion received in and bottoming out in said recess and having an axial dimension larger than the depth of said recess so as to space said large diameter cylindrical portion at a distance from said one end to form a space therebetween for insertion of a tool to remove said shim from said tappet.

5,445,120

DEVICE TO PREVENT AUTOMOBILE STARTER ENGAGEMENT WHEN ENGINE IS RUNNING

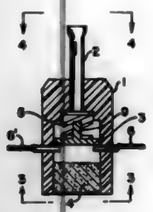
James Spence, 6 Lake Dr., Howell, N.J. 07731

Filed Jun. 2, 1994, Ser. No. 252,370
Int. Cl.[6] F02N *11/10*
U.S. Cl. 123—179.3 **1 Claim**

1. A device to prevent accidentally engagement of an automobile engine starter using engine vacuum comprising:
(a) A cylindrical non-conducting housing having an internal longitudinal bore at its top end and a larger internal longitudinal bore at its bottom end, such that both bores are connected;
(b) A suction tube inserted into the top end bore and extending outwardly therefrom;
(c) A flexible tube attached to the extended end of the suction tube;
(d) A round thin metal contact disc inserted into the bottom bore;
(e) A stem attached to the center of the metal contact disc and extending perpendicular towards the top bore;
(f) A normally extended spring inserted in the bottom bore

between the top of the metal contact disc and the top end of the bottom bore, such that the spring is compressed when engine vacuum is applied through the suction tube and the flexible tube;

(g) An air filter inserted into the bottom end of the bottom bore;



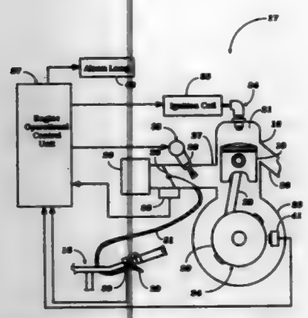
(h) A pair of contact pins inserted into the opposite sides of the housing, extending into the bottom bore, such that the contact disc as pushed by the spring is kept from being ejected from the bore, and is in electrical contact with the inside ends of said pins and the outside ends of said pins are connected to a starter circuit.

5,445,121

ENGINE OPERATIONAL CONTROL UNIT

Manabu Kai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 24, 1993, Ser. No. 157,932
Claims priority, application Japan, Nov. 24, 1992, 4-313341
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 DC **31 Claims**



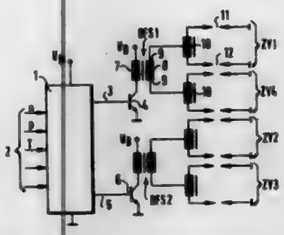
1. An engine control for an internal combustion engine comprising a charge forming system for supplying fuel to said engine, an ignition system for firing a charge in said engine for combustion and operation of said engine, a throttle for controlling the speed of said engine, a throttle position sensor for sensing the position of said throttle, an operator throttle control operably connected to said throttle for manual positioning thereof, a throttle control position sensor for sensing the position of said throttle control, comparator means for comparing the outputs of said throttle position sensor and said throttle control position sensor and providing an abnormal condition signal when said sensors are not coincident, means for discontinuing the firing of the ignition system and the supply of fuel from the charge forming system in response to the sensing of the abnormal condition, and means for sensing the speed of the engine, the discontinuance of the firing of the ignition system and the supply of fuel from the charge forming system being determined depending upon the speed of the engine.

5,445,122

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH DUAL IGNITION

Albert Gerhard, Tamm; Dieter Betz, Vaihingen, and Walter Streit, Ingolstadt, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 22, 1994, Ser. No. 231,078
Claims priority, application Germany, Apr. 22, 1993, 43 13 172.7
Int. Cl.[6] F02P *15/02, 15/08*
U.S. Cl. 123—310 **8 Claims**



1. An ignition system for an internal combustion engine, the ignition system comprising:

at least one ignition coil;

a plurality of cylinders, at least one of the plurality of cylinders associated with at least one end of a secondary winding of the at least one ignition coil;

a balancing element coupled to the at least one end of the secondary winding of the at least one ignition coil; and

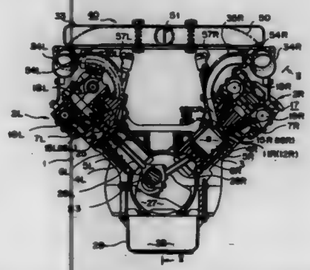
at least two spark plugs associated with the at least one of the plurality of cylinders, the balancing element being coupled between the at least two spark plugs.

5,445,123

RECIPROCATING ENGINE OF A SPARK IGNITION TYPE

Mitsuo Hitomi; Shunji Masuda; Toshihiko Hattori; Kenji Kashiyama, and Junsou Sasaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 936,001, Aug. 27, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 345,344
Claims priority, application Japan, Aug. 27, 1991, 3-240607
Int. Cl.[6] F02B *29/00*
U.S. Cl. 123—311 **22 Claims**



1. A four cycle spark ignition type reciprocating engine of a natural intake system with an ignition plug disposed to face a combustion chamber defined and delimited by a piston inserted into a cylinder so as to move in a reciprocating way, said engine including a cylinder head mounted at one end of said cylinder and an intake valve mounted in an intake port of said cylinder head, wherein:

a bore size of the cylinder ranges from approximately 45 mm to 67 mm;

a ratio of a stroke of the piston to the bore size of the cylinder is larger than 1; and

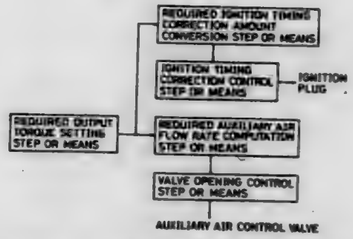
a compression ratio of the engine is at least 11.

5,445,124

METHOD AND APPARATUS FOR CONTROLLING THE IDLE SPEED OF AN INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, and Satoru Watanabe, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Mar. 18, 1994, Ser. No. 210,390
Claims priority, application Japan, Mar. 18, 1993, 5-058878
Int. Cl.[6] F02D *41/16*
U.S. Cl. 123—339.11 **14 Claims**



1. A method for controlling the idle speed of an internal combustion engine comprising:

a target idle speed setting step for setting a target idle speed of the engine at the time of idle operation;

a required output torque setting step for setting a required output torque required for the engine to obtain said target idle speed;

a required ignition timing correction amount conversion step for converting the required output torque set in said required output torque setting step into a value equivalent to a required ignition timing correction amount;

a required auxiliary air flow rate computation step for computing a value equivalent to a required auxiliary air flow rate based on the required output torque set in said required output torque setting step and on said target idle speed;

an ignition timing correction control step for controlling ignition timing correction based on the value equivalent to the required ignition timing correction amount converted in said required ignition timing correction amount conversion step; and

a valve opening control step for controlling the opening degree of an auxiliary air control valve provided in an auxiliary air path bypassing a throttle valve based on the value equivalent to the required auxiliary air flow rate computed in said required auxiliary air flow rate computation step.

5,445,125

ELECTRONIC THROTTLE CONTROL INTERFACE

Jeffrey James Allen, Grosse Pointe, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1994, Ser. No. 213,854
Int. Cl.[6] F02D *11/10*
U.S. Cl. 123—399 **8 Claims**

1. A method for controlling operation of an automotive internal combustion engine having electronic throttle control, comprising the steps of:

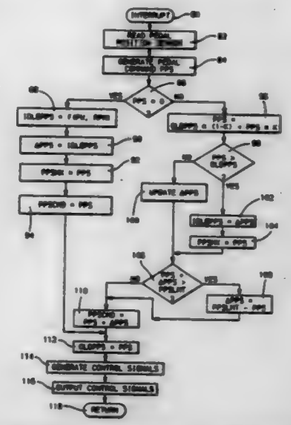
sensing an operator requested engine operating level;

generating a first desired engine operating level when the sensed operator requested engine operating level is substantially zero;

controlling engine operation in accord with the generated first desired engine operating level, when the sensed operator requested engine operating level is substantially zero;

generating a second desired engine operating level when the sensed operator requested engine operating level is not substantially zero, by (a) setting an offset value to a predetermined function of the generated first desired engine operating level, (b) determining when the operator requested engine operating level is decreasing, (b) decreasing the offset value in accord with a predetermined decrease function when the operator requested engine operating level is decreasing, and (c) combining the offset value with the sensed operator requested engine operating level to generate the second desired engine operating level; and

controlling engine operation in accord with the generated second desired engine operating level when sensed operator requested engine operating level is not substantially zero.

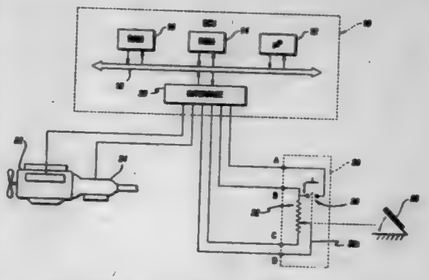


5,445,126

ACCELERATOR PEDAL CALIBRATION AND FAULT DETECTION

Roger A. Graves, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 24, 1994, Ser. No. 265,646
Int. Cl.[6] F02D *7/00*
U.S. Cl. 123—399 **20 Claims**



1. A calibration for use with a vehicle equipped with said throttle controlled engine and an electronic control unit having a processor for executing a predetermined set of instructions stored in a memory so as to control the engine, the vehicle also including in electronic accelerator pedal in communi-

cation with the processor for providing a signal indicative of a requested fueling level for the engine, the accelerator pedal having a range of travel between a fully released position and a fully depressed position, a method for automatically calibrating the electronic accelerator pedal comprising:

associating a first parameter stored in the memory with a value representing the signal provided by the electronic accelerator pedal when power is first applied to the system and the signal is within a first predetermined calibration range;

altering engine fueling progression to provide a decreased engine fueling response to the range of travel of the electronic accelerator pedal so as to induce displacement of the electronic accelerator pedal to the fully depressed position; and

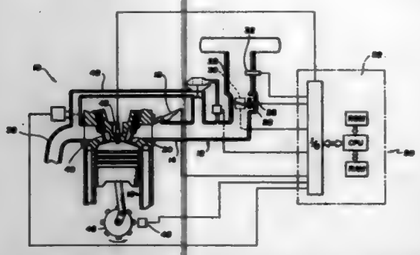
associating a second parameter stored in the memory with a value representing the signal provided by the electronic accelerator pedal when the signal is within a second predetermined calibration range so as to automatically calibrate the electronic accelerator pedal.

5,445,127

METHOD AND SYSTEM FOR REDUCING ENGINE SPARK KNOCK DURING A RAPID TRANSIENT

Michael J. Cullen, Dearborn, Mich.; Joseph N. Ulrey, Hiroshima, Japan; Michael R. Ginagrande, Troy, and Patrick J. Eggers, Fenton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1994, Ser. No. 299,135
Int. Cl.[6] F02P *5/14*
U.S. Cl. 123—422 **15 Claims**



1. A method for reducing engine knock of a spark-ignited internal combustion engine during rapid transient operating conditions, the engine being controlled according to a control strategy executed by an electronic controller having a processor and a memory, the method comprising:

determining, at periodic intervals, an estimate of airflow into a combustion chamber;

determining, at periodic intervals, whether rapid transient operating conditions exist;

upon determining that rapid transient operating conditions exist, calculating an estimated spark advance parameter based on the estimated airflow; and

forming a spark in the combustion chamber based on the estimated spark advance parameter.

5,445,128

METHOD FOR ENGINE CONTROL

Dennis M. Letang, Canton; Douglas J. Babcock, South Lyon, and S. Miller Weisman, II, Farmington Hills, all of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Filed Aug. 27, 1993, Ser. No. 113,424
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—436 **9 Claims**

1. A method of controlling the output torque of a multi-cylinder compression-ignition internal combustion engine including an electronic control unit for controlling the engine, a plurality of cylinders each having an injector apparatus controlled by the electronic control unit for delivering fuel, the method comprising:

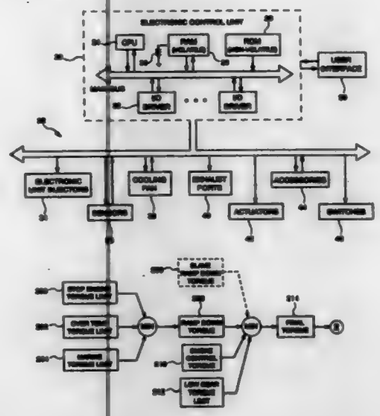
sensing at least one engine operating parameter to obtain at least one operating signal;

determining a desired output torque for each cylinder based on the at least one operating signal;

determining a base fuel pulse width for each cylinder to produce the desired output torque;

determining a pulse width adjustment factor for each cylinder for modifying the base fuel pulse width according to:

$$TMP = PWA_{old} + G*(RPM_{bal} - RPM_{avg})$$



$$PWA_{new} = \max(-ACB_{LIM}, \min(ACB_{LIM}, TMP))$$

wherein "max()" is a function which selects the largest of the parenthetical values, "min()" is a function which selects the smallest of the parenthetical values, ACB_{LIM} is a limiting value for the adjustment, G represents a system gain factor, RPM_{bal} is a balancing value of the engine rotational speed for the current cylinder, and RPM_{avg} is an average of the balancing values of previously fired cylinders; and

controlling the injector apparatus based on the modified base fuel pulse width.

5,445,129

METHOD FOR CONTROLLING A HYDRAULICALLY-ACTUATED FUEL INJECTION SYSTEM

Travis E. Barnes, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

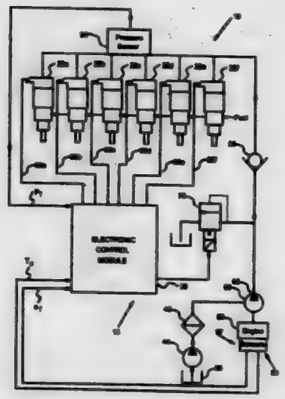
Filed Jul. 29, 1994, Ser. No. 282,834
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—446 **4 Claims**

1. A method for controlling a hydraulically-actuated injector (25) to start an internal combustion engine (55), comprising the steps of:

sensing the temperature of the engine and producing a engine temperature signal (T_e) indicative of the temperature of actuating fluid used to hydraulically actuate the injector (25);

receiving the temperature signal, and producing a desired actuating fluid pressure signal (P_d) whose magnitude oscillates between a pressure range that is a function temperature; and

receiving the desired actuating fluid pressure signal (P_d), determining a desired electrical current, and producing a



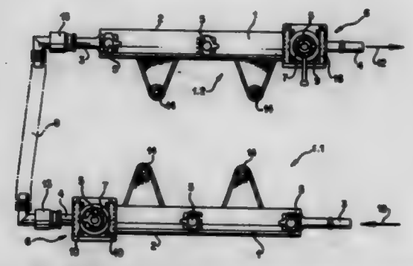
desired electrical current signal (I) to control the fuel injection rate.

5,445,130

FUEL DISTRIBUTOR FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Michael Brümmer, Laudenbach; Antonio Vitiello, Waldmichelbach, and Volker Daume, Hirschorn, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Mar. 21, 1994, Ser. No. 215,349
Int. Cl.[6] F02M *41/00*
U.S. Cl. 123—456 **8 Claims**



1. A fuel distributor for a multi-cylinder internal combustion engine of the type having at least two rows of cylinders and further having a fuel-injection system that includes injection valves, the fuel distributor comprising:

a first fuel flow divider for supplying fuel to a first row of engine cylinders, said fuel flow divider comprising

a tubular distributor housing;

at least one fuel feed connection to serve as a fuel inlet to the first fuel flow divider;

at least one fuel return connection to serve as a fuel outlet to the first fuel flow divider;

a number of first receiving holes which corresponds to the number of injection valves that are serviced by the first fuel flow divider; and a second receiving hole arranged in the region of a terminal portion of the distributor housing;

a second fuel flow divider for supplying fuel to a second row of engine cylinders, said fuel flow divider comprising

a tubular distributor housing;

at least one fuel feed connection to serve as a fuel inlet to the second fuel flow divider;

at least one fuel return connection to serve as a fuel outlet to the second flow divider;

a number of first receiving holes which corresponds to the number of injection valves that are serviced by the second fuel flow divider; and

a second receiving hole arranged in the region of a terminal portion of the distributor housing;

a pressure regulating valve that is attached to the second receiving hole of one of the distributor housings;

a pressure test connection with the second receiving hole of one of the distributor housings; and

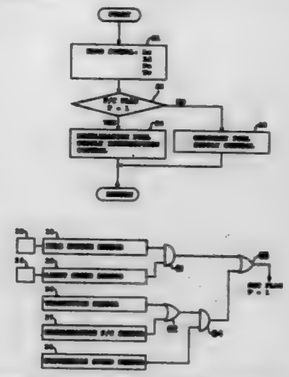
a connecting line serially linking the first and second flow dividers to one another so that fuel can flow via the connecting line from one flow divider to the other flow divider, wherein the second receiving holes of each fuel flow divder are identically formed to thereby accommodate either a pressure test connection or a pressure regulatory valve.

5,445,131

FUEL CONTROL SYSTEM FOR ENGINE

Hideki Kasunoki; Masaki Fujii, and Hideki Kobayashi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 14, 1994, Ser. No. 212,886
Claims priority, application Japan, Mar. 12, 1993, 5-052395
Int. Cl.[6] F02D *41/12*
U.S. Cl. 123—493 **4 Claims**



1. A fuel control system, having fuel supply means for supplying a fuel to an automobile internal combustion engine, which causes said fuel supply means to continue an interruption of fuel supply during a continuous decrease in rotational speed of said engine to a lower limit of a hysteresis range of engine speeds for said interruption of fuel supply and to resume said interruption of fuel supply after a continuous increase in engine speed of said engine beyond an upper limit of said hysteresis range of engine speeds, said fuel control system comprising:

an engine speed sensor for detecting a rotational speed of said engine;

a transition sensor for detecting a transition of said engine between deceleration and non-deceleration; and

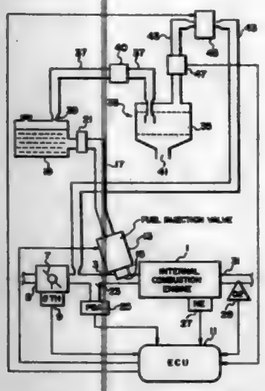
control means for causing compulsorily said fuel supply means to interrupt fuel supply to said engine when said transition sensor detects a transition of said engine from non-deceleration to deceleration while said engine speed sensor detects rotational speeds of said engine between said lower and upper limits of said hysteresis range of rotational speeds.

5,445,132

EVAPORATIVE FUEL-PURGING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takashi Isobe; Hiroshi Yatani, and Fumio Hara, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,084
Claims priority, application Japan, Nov. 10, 1993, 5-064990 U
Int. Cl.[6] F02M 33/02
U.S. Cl. 123—520 22 Claims



1. An evaporative fuel supply system for an internal combustion engines having an intake passage to which liquid fuel in a fuel tank is supplied, said evaporative fuel supply system for the internal combustion engines comprising:

a canister containing an evaporative fuel adsorbent for adsorbing evaporative fuel, the evaporative fuel generated in said fuel tank and fed to said canister;

a purging passage fluidicly communicating said canister to said intake passage of said internal combustion engine, for purging the evaporative fuel adsorbed by said evaporative fuel adsorbent to be fed into said intake passage;

a solenoid control valve provided in said purging passage, for controlling a flow rate of a gaseous mixture containing the evaporative fuel purged from said canister, said control valve being repeatably opened and closed by a control signal;

a detector for detecting an operating condition of said internal combustion engine;

a purging flow rate determinator for determining the flow rate of the evaporative fuel to be purged into said purging passage, based on the operating condition of said internal combustion engine detected by said detector;

a duty ratio determinator for determining a control signal duty ratio corresponding to the determined purging flow rate from said purging flow rate determinator;

a duty ratio comparator for comparing the control signal duty ratio with a preset duty ratio and calculating a result of comparison;

a period selector for selecting one control signal period which creates substantial linearity of the change in actual purging flow rate with respect to the change in the control signal duty ratio in said purging passage among different preset control signal periods according to said result of comparison; and

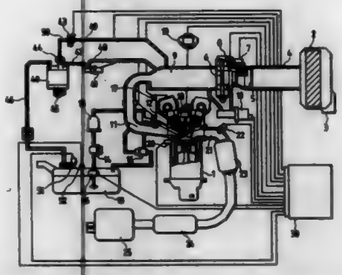
a waveform generator for generating a pulse waveform signal having the selected control signal period from said period selector and the determined control signal duty ratio from said duty ratio determinator, and for outputting the pulse waveform signal as the control signal to said control valve.

5,445,133

CANISTER PURGE GAS CONTROL DEVICE AND CONTROL METHOD FOR INTERNAL COMBUSTION ENGINE

Mamoru Nemoto, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Nov. 23, 1994, Ser. No. 347,085
Claims priority, application Japan, Nov. 26, 1993, 5-296975
Int. Cl.[6] F02M 33/02
U.S. Cl. 123—520 5 Claims



1. A fuel injection control device for an internal combustion engine, comprising:

a canister which temporarily collects fuel vapor purge gas generated in a fuel tank;

a canister purge gas control means which introduces the collected fuel vapor purge gas into the internal combustion engine during the operation thereof;

an air/fuel ratio feed back control means which controls an air/fuel ratio of air and fuel mixture introduced into the internal combustion engine by making use of an air/fuel ratio sensor; and

an air/fuel ratio learning function control means which performs a learning so that an air/fuel ratio correction from said air/fuel ratio feed back control means settles at a predetermined value, wherein said canister purge gas control means includes a purge gas air/fuel ratio calculating means which determines the purge gas air/fuel ratio of the collected fuel vapor purge gas to be introduced into the combustion engine and, only during a time when the purge gas air/fuel ratio calculated by said purge gas air/fuel ratio calculating means is within a predetermined range, said canister purge gas control means interrupts the introduction of the collected fuel vapor purge gas into the internal combustion engine and said air/fuel ratio learning control means is started to perform the air/fuel ratio learning control.

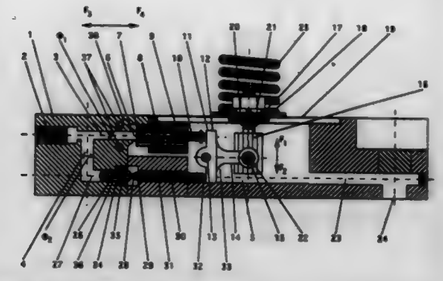
5,445,134

SELF-COMPENSATED AND ELECTRICALLY HEATED REDUCER FOR COMPRESSED GAS OR L.P.G.

Arturo Barbanti, Casalecchio Di Reno, Italy, assignor to B B S.R.L., Forli, Italy

PCT No. PCT/IT92/00085, § 371 Date Jan. 31, 1994, § 102(e) Date Jan. 31, 1994, PCT Pub. No. WO93/03269, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 22, 1992, Ser. No. 182,121
Claims priority, application Italy, Jul. 30, 1991, BO91A0290
Int. Cl.[6] F02M 21/04
U.S. Cl. 123—527 13 Claims

1. A self-compensating and electrically heated reducer for compressed gas or l.p.g. comprising: a supporting body; a chamber fitted with an entrance connected to a bottle for compressed fuels or l.p.g., and an outlet connected to an internal combustion engine; a diaphragm which at each variation of the internal pressure of said chamber, owing to the different amounts of feeding gas, controls a closing mechanism for an opening inlet to keep said pressure inside said chamber constant between said entrance and said outlet in response to vacuum caused by said engine; said opening inlet being situated at the end of a first channel placed in said body between said entrance and said chamber, and said closing mechanism for said opening inlet controlling the flow rate of fuel, owing to the action of manoeuvring elements kinematically connected to said disphragm, and said closing mechanism controlling said pressure of the fuel coming from said bottle; a thrusting mechanism which acts on at least one said manoeuvring elements to cancel the resultant or the momentum which results from the action of said pressure of the fuel on said manoeuvring elements, wherein said diaphragm is connected to a first arm of a manoeuvring lever by means of a connection rod which engages with a second arm of said manoeuvring lever, and said closing mechanism is situated at the end of a first plunger which acts on the second arm of said manoeuvring lever by means of said thrusting action brought about by said pressure of the fuel in said first channel, a second channel, which receives said thrusting mechanism, being disposed between said entrance and said chamber; said manoeuvring lever having a third arm opposite said first arm with reference to the pivot on which it pivots; said thrusting mechanism urging on the third arm to negate the momentum of the first plunger's thrust with a thrust due to said pressure of the fuel in said second channel.

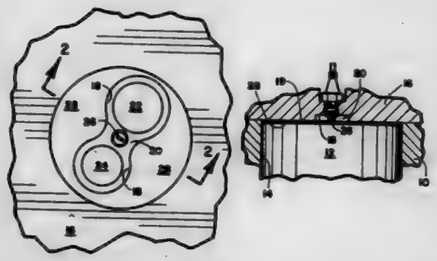


5,445,135

TWO-VALVE COMBUSTION CHAMBER SYSTEM

James J. Fessling, 2521 Palma, Ventura, Calif. 93003

Filed Feb. 3, 1994, Ser. No. 190,840
Int. Cl.[6] F02B 23/00
U.S. Cl. 123—661 18 Claims



1. A combustion chamber system for use with internal combustion engines having at least one combination of a piston in an engine cylinder and a cooperating recessed portion of a cylinder head forming a combustion chamber therebetween, which comprises:

said piston having an overall substantially flat surface lying substantially parallel to the interface between said head and block;

a combustion chamber recess in said cylinder head adjacent to said piston;

an ignition means located substantially centrally in said recess;

an exhaust valve and an intake valve in said head on opposite sides of said ignition means and communicating with said recess;

said recess surrounding said valves and ignition means with the remainder of said head surface opposite said piston being substantially flat and forming head squish pads; and

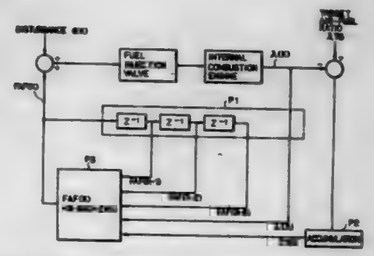
the area of said flat piston surface opposite said head squish pads forming piston squish pads spaced from said head squish pads no more than a distance equal to about 0.015 times the piston diameter when said piston is at top dead center.

5,445,136

AIR-FUEL RATIO CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Yukihiro Yamashita, Kariya, and Toshihiro Sasamura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 25, 1994, Ser. No. 248,951
Claims priority, application Japan, Jun. 25, 1993, 5-155644; Jun. 25, 1993, 5-155646
Int. Cl.[6] F02D 41/14
U.S. Cl. 123—689 8 Claims



1. An air-fuel ratio control apparatus for an internal combustion engine, comprising:

air-fuel ratio detecting means for detecting an actual air-fuel ratio of an air-fuel mixture supplied to said engine;

target air-fuel ratio setting means for setting a target air-fuel ratio (ATG) of said engine;

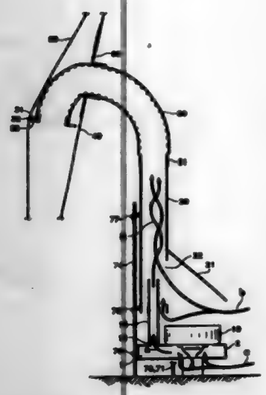
correction coefficient calculating means for setting an optimal feedback gain on the basis of a predetermined dynamic model of said engine and for calculating the coefficient in accordance with said predetermined optimal feedback gain so that said actual air-fuel ratio becomes equal to said target air-fuel ratio;

fuel supply amount determining means for determining a fuel supply amount to said engine on the basis of the calculated correction coefficient;

state determining means for determining, based on output condition of said air-fuel ratio detecting means, whether said engine is in a state where said optimal feedback gain for said dynamic model may be used or not; and

control suppressing means for suppressing a control response speed of said coefficient calculating means in response to determination of non-usableness of said optimal feedback gain, said control suppressing means including switching means for switching to a control mode where either one of a lower feedback gain for said dynamic model and an integral-and-proportional control is used.

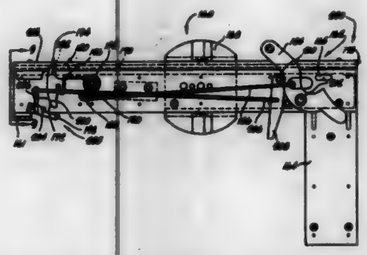
5,445,137
BACKPACKING STOVE FOR TENT USE
Paul B. Crews, 2300 Telequana Dr., Anchorage, Ak. 99517
Filed Nov. 22, 1993, Ser. No. 155,684
Int. Cl.[6] F24C *1/16*
U.S. Cl. 126—59 2 Claims



1. A portable backpack stove with exhaust comprising:
a) a tent having walls;
b) a heating chamber, said heating chamber having a top, said top having an opening to conduct heat to a cooking pot, said heating chamber also having a nipple fixedly placed on said top to permit the flow of combustion gases from said heating chamber through said nipple, said heating chamber having a hexagonal shape;
c) means to support said heating chamber;
d) portable camp stove means, removably placed within said heating chamber;
e) flue means, removably attached to said nipple on said heating chamber to vent combustion gases from the heating chamber;
f) a stack, said stack having a lower stack portion being cylindrical and non flexible, an upper stack portion that is flexible, and means to connect said upper stack and said lower stack to form a single unit, said stack being removably installed above said flue means such that said stack receives said combustion gases from said flue, said stack further having an opening cut into said lower stack portion to permit the entry of ambient air into said stack;
g) hood means removable placed over said opening in said stack to direct the flow of ambient air to said opening;
h) means to support said stack above said flue;
i) a metal roof jack slidably attached to said flexible upper portion of said stack, to permit the flexible upper portion of said stack to pass through the tent wall; and
j) means to secure said roof jack to said tent wall.

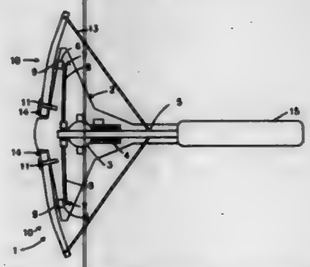
5,445,138
COIN GAME
William B. Faith, 6530 Lakeridge Rd., Los Angeles, Calif. 90068
Division of Ser. No. 914,194, Jul. 9, 1992, Pat. No. 5,326,108.
This application Apr. 19, 1994, Ser. No. 229,817
Int. Cl.[6] F41A *7/00*
U.S. Cl. 124—16 15 Claims

1. A coin toss gun comprising:
a chassis having a loading end and a launching end;
a coin track positioned within the chassis connecting the loading end of the chassis to the launching end of the chassis;
a hammer rotatably supported at the launching end of the chassis;



an adjustable tensioning mechanism coupled to the hammer; and
a trigger linked to the adjustable tensioning mechanism.

5,445,139
HYDRAULIC/PNEUMATIC BOOST SYSTEM FOR ARCHERY BOW AND CROSSBOW
Mark T. Bybee, New Port Richey, Fla., assignor to Barnett International, Inc., Odessa, Fla.
Filed Feb. 7, 1994, Ser. No. 192,700
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—23.1 10 Claims

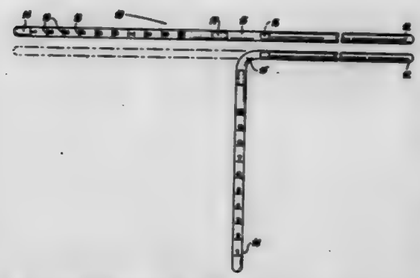


1. A bow having a central frame with a front end, two arms each having inner ends connected to said frame and outer ends connected to each other by a string and a first section defined by an area between their respective inner and outer ends, comprising:
means for pumping fluid mounted on said frame, whereby pressure of a fluid may be increased resulting in increased fluid pressure;
at least two fluid cylinder areas contained in said front end;
at least one fluid cylinder contained in each of said fluid cylinder areas;
at least one fluid line in fluid communication between each said fluid cylinder and said means for pumping, whereby increased fluid pressure is conveyed to said fluid cylinder and results in a change of extension of said fluid cylinder; and
means for converting changes in extension of said fluid cylinders into increased bending and tension of said arms, said means for converting being connected to said fluid cylinders and extending from said front end, whereby an increase in fluid pressure caused by said means for pumping changes the extension of said fluid cylinders and increases tension of said arms.

7. A method for using a bow comprising:
pulling on the center of a string connecting the outer ends of tensioning arms;
bending said tensioning arms;

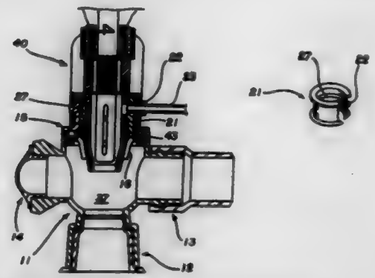
holding the center of said string in a pulled position, which holds said tensioning arms in a bent position;
increasing the pressure of a fluid;
conveying said increased fluid pressure to fluid cylinder areas; and
expanding fluid cylinders in fulcrum areas to apply force to said tensioning arms, whereby the bending angle and tension of said tensioning arms is increased.

5,445,140
ENDOSCOPIC SURGICAL DEVICE
H. Jonathan Tovey, Milford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Jun. 7, 1993, Ser. No. 72,701
Int. Cl.[6] A61B *1/009*
U.S. Cl. 600—117 15 Claims



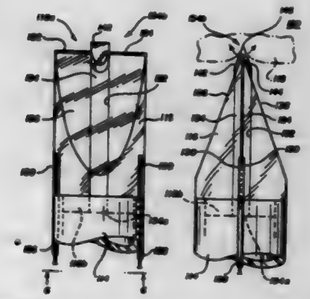
1. In an endoscopic instrument having a proximal, handle portion and an articulating distal, working end portion, the improvement comprising an articulation-providing hinge member made from a temperature responsive thermoplastic resin which is substantially rigid at ambient temperatures and which is tractable above a predetermined temperature, wherein at least a portion of the elongated working distal end portion is rigid.

5,445,141
RESPIRATORY SUPPORT SYSTEM
Kok-Hiong Koo; James G. Schneider, both of St. Louis, and Gene B. Kartchner, Chesterfield, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 962,755, Oct. 19, 1992, Pat. No. 5,333,607. This application Apr. 21, 1994, Ser. No. 230,651
Int. Cl.[6] A61M *39/06*
U.S. Cl. 128—203.12 12 Claims



1. A respiratory support system comprising:
an adaptor formed as part of a respiratory system accessory device, said adaptor including an injection fluid opening therein,
a manifold adapted to be connected for fluid flow attachment between a patient and a ventilator circuit said manifold including an injection fluid inlet opening therein, said manifold including an accessory access port for allowing attachment of said adaptor to said manifold, said accessory access port being normally closed against fluid flow therethrough, said accessory access port further including an injection fluid inlet opening therein, and
said adaptor further including means for opening said accessory access port in response to attachment of said adaptor to said accessory access port to allow fluid flow access between said manifold and said respiratory system accessory device,
means interconnecting said adaptor and said manifold such that, when said adaptor is positioned in said accessory access port of said manifold, said injection fluid inlet opening is in fluid communication with said injection fluid opening of said adaptor regardless of the relative rotational orientation of said adaptor and said manifold, whereby fluid can be injected through said injection fluid inlet opening and said injection fluid opening into said adaptor.

5,445,142
SURGICAL TROCARS HAVING OPTICAL TIPS DEFINING ONE OR MORE VIEWING PORTS
William L. Hassler, Jr., Elyria, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Filed Mar. 15, 1994, Ser. No. 213,044
Int. Cl.[6] A61B *1/00, 17/34*
U.S. Cl. 600—105 18 Claims



1. A surgical apparatus for inserting a cannula through tissue defining a wall of a body cavity, said surgical apparatus comprising:
a hollow axially elongated tube having a proximal end and a distal end;
a substantially solid optically clear tip, said tip having a distal cutting end and a proximal base end secured to said distal end of said tube and including an axial bore extending from its proximal base end to its distal cutting end;
a viewing rod positioned within said axial bore of said tip, said viewing rod having a proximal end defining a viewing port at said proximal base end of said tip and a distal end defining a window at said distal cutting end of said tip for collecting light which is carried to said viewing port by said viewing rod; and
a cutting element disposed at the distal end of said tip for cutting said tissue for insertion of a cannula through said tissue into said body cavity, said cutting element comprising:
at least one electrode disposed at said distal cutting end of said tip; and
at least one electrical conductor extending from said proximal end of said tube to said distal end of said tube, said at least one electrical conductor being connected to said at least one electrode for conducting high frequency energy thereto for electrosurgically cutting said tissue

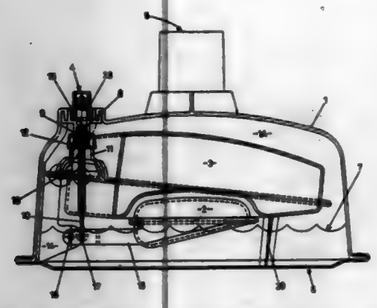
to insert a cannula through said tissue into said body cavity.

5,445,143

HUMIDIFIER WITH DUAL FLOAT VALVES

David J. Sims, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand

Filed Sep. 23, 1993, Ser. No. 125,599
Claims priority, application New Zealand, Sep. 23, 1992, 244454
Int. Cl.[6] A61M *16/14, 16/16, 16/18, 16/20*
U.S. Cl. 128—203.26 10 Claims



1. A float valve system for controlling the level of liquid in a chamber comprising:

a valve body having an inlet for coupling to a liquid supply conduit and an outlet adapted to communicate with said chamber,

a first valve seat formed in said body through which liquid must pass to reach said outlet,

a second valve seat formed in said body located downstream of said first valve seat, through which liquid must pass to reach said outlet,

first and second floats adapted to be disposed within said chamber,

a first valve member actuated by said first float so as to close onto said first valve seat upon the first float assuming a position corresponding to a first predetermined level of liquid in said chamber,

a second valve member actuated by said second float so as to close onto said second valve seat upon the second float assuming a position corresponding to a second predetermined level of liquid in said chamber, said second predetermined level of liquid being higher than said first predetermined level of liquid,

a cylindrical actuating member connected to said second valve member in order to control displacement of said second valve member in response to said second float,

an inner actuating member connected to said first valve member in order to control displacement of said first valve member in response to said first float, said inner actuating member being disposed within said cylindrical actuating member,

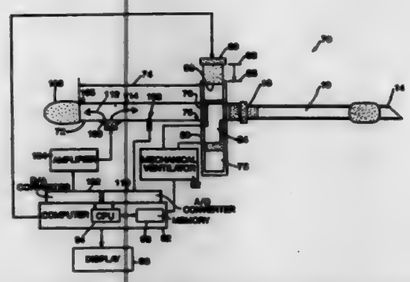
said cylindrical actuating member and said inner actuating member independently connecting said first and second floats to respective valve members, and operable to allow free relative movement between said first and second valve members.

5,445,144

APPARATUS AND METHOD FOR ACOUSTICALLY GUIDING, POSITIONING, AND MONITORING A TUBE WITHIN A BODY

George R. Wodicka, West Lafayette; Jeffrey P. Mansfield, Lafayette, and William D. Voorhees, West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 16, 1993, Ser. No. 168,992
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.14 25 Claims



1. An apparatus for acoustically guiding a distal end of a tube within a body, the apparatus comprising:

a wave guide coupled to a proximal end of the tube;

a mechanical ventilator;

a valve movable from a first position to provide communication between the wave guide and the proximal end of the tube to a second position to provide communication between the mechanical ventilator and the proximal end of the tube;

a speaker coupled to the wave guide for generating an incident sound pulse in the wave guide which propagates into the body;

a microphone coupled to the wave guide between the speaker and the tube for detecting sound pulses moving past the microphone in the wave guide from the incident sound pulse and from reflected sound pulses from within the body; and

means for processing the sound pulses detected by the microphone to guide insertion of the distal end of the tube within the body.

5,445,145

APPARATUS TO MANUALLY OPEN AND CLOSE A SHUTTER-LIKE DEVICE FOR TRACHEOSTOMY PATIENTS TO FACILITATE BREATHING

Robert A. Redmon, 3005 Fondley Rd., Winston Salem, N.C. 27105

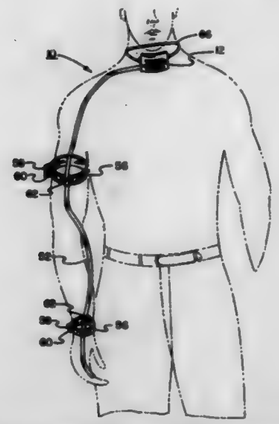
Filed Oct. 18, 1994, Ser. No. 324,796
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.15 4 Claims

1. An apparatus to manually open and close a shutter device for tracheostomy patients to facilitate breathing comprising, in combination:

a shutter box positionsble over a tracheostomy opening in the neck of a patient, the shutter box having slits on the exterior face and a circular aperture on the interior face and a control device with a closure surface pivotable between an open position to allow passage of air through the aperture and slits and a closed position over the aperture to preclude the flow of air therethrough;

motion imparting mechanisms including a pivot pin extending through the box and control device to allow the pivoting thereof and a securement pin on the side of the pivot pin remote from the closure surface to effect rotational movement of the control device, abutment surfaces are provided to limit the extent of rotation of the control device between the open and close position;

a cable attached to the securement pin and extending through an aperture of the shutter box remote, then down a patient's arm with a coupling component for removably securing the remote end of the cable to a patient's finger, the cable having associated therewith, a tube for encasing the cable over the majority of its length; and



a plurality of removably attachable securement straps with pile type fasteners associated therewith and a tube attachment mechanism adapted to secure the tube for the cable thereadjacent whereby the tube and cable may be caused to follow a path of travel down a wearer's arm, whereby the movement of a wearer's finger with the remote end of the cable attached thereto, will urge the upper end of the cable to act against the action of the spring to open the aperture through the rotation of the control device.

5,445,146

BIOLOGICAL TISSUE STIMULATION BY LOW LEVEL OPTICAL ENERGY

Gary J. Bellinger, 10670 N. Central Expressway Suite 405, Dallas, Tex. 75231

Filed Jul. 1, 1991, Ser. No. 724,335
Int. Cl.[6] A61N *5/00*
U.S. Cl. 607—89 12 Claims

1. A method for treating a small treatment area of a biological tissue of a living subject without exposing the tissue to damaging thermal effects, said method comprising:

using a low level reactive laser to generate coherent optical energy radiation having a wavelength in the range of the near infrared region of the electromagnetic spectrum at a power output in the range of from about 100 milliwatts to about 800 milliwatts, and

focusing said coherent optical energy radiation on said small treatment area to achieve a rate of absorption and conversion to heat in the irradiated tissue in the range between a minimum rate, sufficient to elevate the average temperature of the irradiated tissue to a level above the basal body temperature of the living subject, and a maximum rate which is less than the rate at which the irradinted tissue is converted into a collagenous substance.

5,445,147

METHOD AND APPARATUS FOR DETERMINATION OF CHEMICAL SPECIES IN BODY FLUID

Donald W. Schoendorfer, and William R. Miller, both of Santa Ana, Calif., assignors to Sudor Partners, Santa Ana, Calif.

Continuation of Ser. No. 929,628, Aug. 13, 1992, abandoned, which is a continuation of Ser. No. 569,007, Aug. 15, 1990, Pat. No. 5,203,327, which is a continuation-in-part of Ser. No. 241,707, Sep. 8, 1988, Pat. No. 4,957,108. This application Nov. 23, 1994, Ser. No. 344,407
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—632 24 Claims



1. A dermal concentration patch for determining the presence of an analyte in a subject mammal's perspiration, comprising:

a water permeable support layer having a first and a second side;

at least one first and at least one second reagent immobilized in the support layer; and

adhesive tape, said adhesive tape having an upper and lower surface, said lower surface of said adhesive tape facing said second side of said support layer, said lower surface of said adhesive tape further comprising an adhesive substance and being adapted to secure the first side of the support layer in fluid communication with the subject mammal's skin, said adhesive tape comprising a plurality of stress razors disposed thereon so that the tape cannot readily be removed as a unitary whole,

wherein water is permitted to escape through the support layer to the outside of the concentration patch, wherein the first reagent comprises a specific binding partner for the analyte to be determined, and wherein the second reagent comprises a specific binding partner for a reference substituent in the perspiration.

5,445,148

INTRACARDIAC ELECTRICAL POTENTIAL REFERENCE CATHETER

Richard Jaraczewski, Livermore, and Scott West, Tracy, both of Calif., assignors to Medtronic CardioRhythm, San Jose, Calif.

Continuation-in-part of Ser. No. 866,763, Apr. 10, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 138,557
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—642 20 Claims



1. An electrical potential reference catheter comprising:

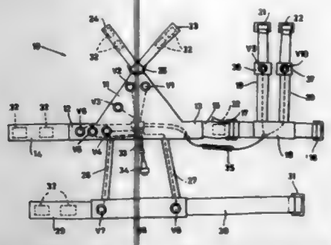
a shaft having a proximal end, a distal end, and a lumen extending between said ends, wherein the shaft is a polymeric shaft tube having a braided reinforcement layer;
a flexible tip section having a proximal end, a distal end, and a lumen extending between said ends, wherein the tip section is a polymeric tip tube and is fixedly attached at its proximal end to the distal end of the shaft;
a tip electrode fixedly secured to the distal end of the flexible tip section;
at least one additional band electrode proximally spaced-apart from the tip electrode on the flexible tip section;
a proximal connector housing fixedly attached to the proximal end of the shaft;
whereby said shaft and said tip section provide torque transmission directly from the housing to the tip electrode;
a single core wire suspended generally coaxially in the lumens of the shaft and flexible tip section and extending between the proximal connector housing and the tip electrode and fixedly connected to both, wherein a distal end of the core wire is anchored coaxially within the tip electrode;
whereby said core wire provides torque transmission directly from the housing to the tip electrode; and
means for electrically connecting the electrodes to the proximal connector housing.

5,445,149

ELECTROCARDIOGRAPHY ELECTRODE POSITIONING DEVICE

Giuseppe Rotolo, Via Monte San Calogero 5, and Gaspare A. Rotolo, Via dei Nebrodi, 61, both of Palermo, Italy 90143

Filed May 20, 1993, Ser. No. 64,274
Claims priority, application Italy, May 22, 1992, MI92A1260
Int. Cl.[6] A61B *5/0408*
U.S. Cl. 128—644 **30 Claims**



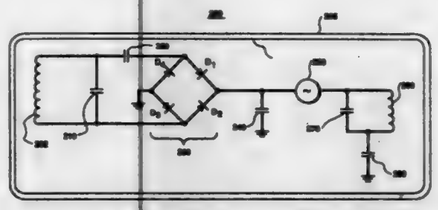
1. Device to be worn on a bust for positioning a plurality of electrocardiographic recording electrodes in contact with predetermined areas of the bust, said device comprising:
a plurality of electrocardiographic recording electrodes,
holding means for holding said electrocardiographic recording electrodes against a predetermined area of the bust
each of said plurality of electrocardiographic recording electrodes includes a contact plate biased by a spring toward an interior of the device and a supporting plate on which said spring reacts for thrust of the contact plate, the supporting plate being peripherally received between superimposed layers of the holding means and between the contact plate and the supporting plate extends a protective bellows element receiving said spring.

5,445,150

INVASIVE SYSTEM EMPLOYING A RADIOFREQUENCY TRACKING SYSTEM

Charles L. Dumoulin, Ballston Lake, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 793,962, Nov. 18, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 10,720
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—653.1 **4 Claims**



1. A invasive imaging system to provide interactive images during an invasive procedure of a subject, comprising:
a) a imaging means for providing an image of said subject;
b) an invasive device adapted to be inserted into said subject;
c) a self-contained radiofrequency (RF) transmitter attached to the invasive device, the self-contained RF transmitter including:
i. power conversion means for converting electrical power into a RF signal at a selected frequency,
ii. power generation means for providing electrical power to the power conversion means comprising an RF coil coupled to receive RF power from an external source during operation, and a rectification means coupled to the RF coil for rectifying the received RF power into electrical power and providing the electrical power to the power conversion means,
iii. broadcasting means for broadcasting the RF signal so as to create a dipole magnetic field, and
iv. hermetically sealed case constructed from non-bioreactive materials encasing the power conversion means, power generation means and broadcasting means having a size and shape allowing it to move freely within said patient;
d) a plurality of receive coils placed at a plurality of known locations for receiving the broadcasted RF signal; and
e) external RF tracking/display means employing a phase-locked loop for synchronizing the external RF tracking-/display means with the RF transmitter, the external RF tracking/display means coupled to the receive coils and responsive to the RF signal for determining a location and orientation of the RF transmitter based upon streagth and phase of the broadcasted RF signal received at the receive coils, and for displaying the image of the subject and a symbol on the image at a position corresponding to the location of the RF transmitter in the subject.

5,445,151

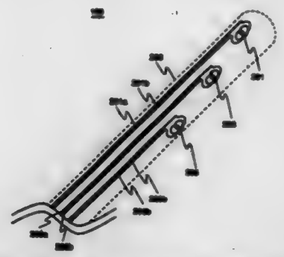
METHOD FOR BLOOD FLOW ACCELERATION AND VELOCITY MEASUREMENT USING MR CATHETERS

Robert D. Darrow, Scotia, and Charles L. Dumoulin, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 23, 1994, Ser. No. 264,281
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.3 **6 Claims**

1. A magnetic resonance (MR) fluid flow measurement system for measuring the flow of a fluid in a vessel of a subject comprising:
a) means for applying a substantially homogeneous magnetic field over said subject;

b) an invasive device for insertion into said subject;
c) an RF transmit coil means attached to the invasive device at a first location, for transmitting intermittent perturbation RF pulses into said subject;
d) an RF transmit/receive coil means, attached to the invasive device at a second location being a predetermined distance from the location of the RF transmit coil means, for transmitting sampling RF pulses into said subject and for receiving an MR response signal from said subject;
e) a transmitter means, coupled to the RF transmit and RF transmit/receive coil means, for providing RF energy of a selected duration, amplitude and frequency to the RF transmit and RF transmit/receive coil means thereby causing nutation of a selected ensemble of spins in said subject when activated;
f) a detection means attached to the RF transmit/receive coil means for detecting an MR response signal from the RF transmit/receive coil means when activated and for determining when a change has occurred in the received MR response signal;



g) a controller means coupled to the means for applying a substantially homogeneous magnetic field, transmitter means and the detection means, for activating the transmitter means at regularly spaced intervals causing the transmitter means to transmit a plurality of regularly spaced RF sampling pulses, and for intermittently activating the transmitter means causing the transmitter means to intermittently transmit perturbation pulses, and for activating the detection means causing the detection means to detect changes in the MR response signal; and
h) a calculation means coupled to the transmitter means and the detection means for determining the time delay between transmission of an RF perturbation pulse and the change in a corresponding MR response signal and for calculating a first fluid flow velocity from this time delay and the predetermined distance.

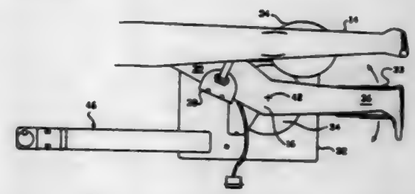
5,445,152

KINEMATIC DEVICE FOR PRODUCING PRECISE INCREMENTAL FLEXING OF THE KNEE

Rodney E. Bell, Kalamazoo, Mich.; Marc S. Kreidler, Sunnyvale; David T. H. Hung, Palo Alto, both of Calif.; Robert L. Moya, Edmonds, Wash., and Harrie J. M. Wolters, Menlo Park, Calif., assignors to Resonex Holding Company, Fremont, Calif.

Filed Nov. 23, 1992, Ser. No. 979,532
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.5 **6 Claims**

1. A kinematic device, for use with magnetic resonance imaging (MRI) apparatus having an aperture, for producing precise incremental flexing movement of the knee of a human patient while substantially avoiding movement of the flexure point of the knee in its sagittal plane, movement of said knee perpendicular to said plane and any movement of the associated thigh comprising:
a horizontal platform movable into said aperture for carrying at least the knee of one leg of said patient into an imaging volume in said aperture, said one leg also having a thigh;
means mounted on said platform for elevating the other leg of said patient to allow movemrnt of the calf of said one leg under said elevated leg in said sagittal plane and to allow positioning of the patient substantially on his side whereby full flexure of said knee is allowed;
means for clamping said thigh to a fixed location on said platform;



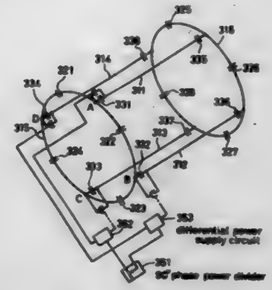
means mounted for rotation on said platform in a horizontal plane and having a center of rotation;
means for clamping said calf to and for rotation with said means for rotation and for locating said flexure point of said knee at said center of rotation;
means for incrementally rotating said means for rotation whereby said knee is incrementally flexed.

5,445,153

ORTHOGONAL RF COIL FOR MRI APPARATUS

Masami Sugie, Kusatsu, and Hirofumi Asuko, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 28, 1994, Ser. No. 187,540
Claims priority, application Japan, Jan. 31, 1993, 5-034170; Jan. 31, 1993, 5-034171
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.5 **12 Claims**



1. An orthogonal RF coil for use in an MRI apparatus, comprising:
two resonator coil loops arranged to have sensitivity directions orthogonal to each other, each of said resonator coil loops having two power supply points; and
power supply means for supplying power so as to provide a 90° RF phase difference between the two power supply points of one of said resonator coil loops and the two power supply points of the other resonator coil loop, and a 180° RF phase difference between the two power supply points of each of said resonator coil loops at a frequency establishing a differential mode, said power supply means including
a 90° phase power divider for outputting two high frequency signals having a 90° phase difference therebetween;
a first differential power supply circuit for receiving a 0° phase high frequency signal from said 90° phase power

divider, and generating a 0° phase high frequency signal and 180° phase high frequency signal, said first differential power supply circuit outputting said 0° phase high frequency signal to one of said power supply points of one of said resonator coil loops, and outputting said 180° phase high frequency signal to the other power supply point of said one of said resonator coil loops; and

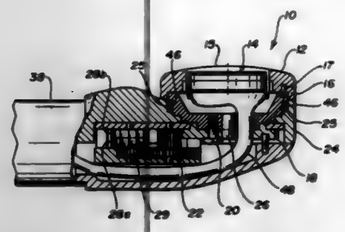
a second differential power supply circuit for receiving a 90° phase high frequency signal from said 90° phase power divider, and generating a 90° phase high frequency signal and 270° phase high frequency signal, said second differential power supply circuit outputting said 90° phase high frequency signal to one of said power supply points of the other resonator coil loop, and outputting said 270° phase high frequency signal to the other power supply point of said other resonator coil.

5,445,154

ULTRASONIC PROBE ASSEMBLY WITH LINEAR ACTUATOR

Paul Larson, Boalsburg, and Rickey L. Wagner, Reedsville, both of Pa., assignors to Interspec, Inc., Ambler, Pa.

Filed Aug. 26, 1993, Ser. No. 112,564
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—660.1 **20 Claims**



1. An ultrasonic probe assembly comprising:

a base unit;

an ultrasonic transducer array unit mounted to said base unit and rotatable through a plurality of angular positions corresponding to different scan planes located about a single axis, said ultrasonic transducer array unit including:

(a) an ultrasonic transducer array for scanning in a scan plane;

(b) transducer mount upon which said ultrasonic transducer array is mounted;

a remote control unit for selecting an angular position of said ultrasonic transducer array;

drive means for rotating said ultrasonic transducer array through said plurality of angular positions about said single axis; and

a linearly reciprocating device, coupled to said drive means, for indexedly controlling said drive means when moved linearly in a single direction in response to said remote control unit.

5,445,155

INTRAVASCULAR IMAGING APPARATUS AND METHODS FOR USE AND MANUFACTURE

Wayne Sieben, Alexandria, Minn., assignor to Scimed Life Systems Incorporated, Maple Grove, Minn.

Continuation-in-part of Ser. No. 668,919, Mar. 13, 1991, Pat. No. 5,353,798. This application Jul. 13, 1994, Ser. No. 275,022
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 **4 Claims**

1. A data processing architecture for use in an imaging device of the type having a video output, for ultrasonic imaging of small vessels of a patient's body, the imaging device having a transducer sized and adapted to be positioned intravascularly to scan small vessels of the patient's body from within a small vessel, a drive cable having a distal end connected to the transducer and operable to transmit electrical signals to and from the transducer and to rotate the transducer to scan the vessel of the person's body with ultrasonic waves, and a signal processor adapted for generating and receiving signals to and from the transducer via the drive cable, the data processing architecture comprising:



a raw data pipeline coupled to said signal processor, adapted to apply a first process to said polar coordinate data derived from the analog signals produced by said transducer;

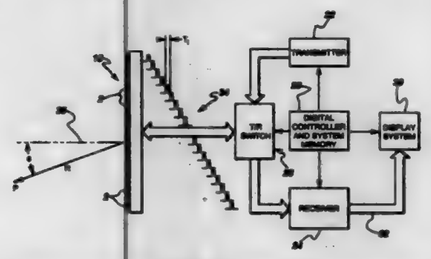
a graphics data pipeline coupled to said raw data pipeline through a look up table for converting polar coordinate data to rectangular coordinate data and adapted to apply a second process to said rectangular coordinate data, thereby generating said video output.

5,445,156

METHOD FOR ADAPTIVELY FILTERING DOPPLER SIGNALS USING A COMPLEX TIME DOMAIN FILTER

Christopher M. W. Daft, Schenectady, N.Y.; Anne L. Hall, New Berlin; Sharbel E. Noujaim, Wauwatosa, both of Wis.; Lewis J. Thomas, Schenectady, and Kenneth B. Welles, II, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1994, Ser. No. 333,184
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.08 **23 Claims**



1. A processor for color flow imaging of velocity of scatterers flowing past moving tissue, comprising:

a source of basebanded signals;

a first velocity estimator for estimating velocity of said tissue based on said basebanded signals;

selection logic means for selecting complex filter coefficients in dependence on at least said estimated tissue velocity;

delay means coupled to receive said basebanded signals;

a complex filter coupled to receive delayed basebanded signals from said delay means and to receive signals representing complex filter coefficients from said selection logic means; and

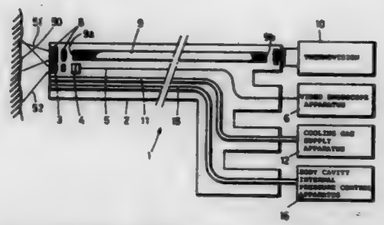
a second velocity estimator for estimating flow velocity of said scatterers based on said filtered basebanded signals.

5,445,157

THERMOGRAPHIC ENDOSCOPE

Renzuke Adachi; Hiroshi Sone, and Chinari Tanaka, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,529
Claims priority, application Japan, Feb. 20, 1992, 4-033009
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—664 **11 Claims**



1. A thermographic/endoscope having an insert part that is inserted into a body cavity, said insert part having an outside and a distal end, said endoscope comprising:

infrared image forming means disposed in said distal end of said insert part so as to form an infrared image of a part under inspection;

means for transmitting the infrared image formed by said infrared image forming means to the outside of said insert part;

means for converting the infrared image, which is transmitted by said infrared image transmitting means, into a visible image and for displaying said visible image, said means for converting the infrared image being a thermovision that visually displays a temperature distribution indicating a temperature difference between normal and abnormal cells, the temperature difference being displayed in the form of variations in color on a display; and

means for injecting a low temperature gas outwardly from the distal end of said insert part of said endoscope, said low temperature gas increasing the variations in color indicating the temperature difference between normal and abnormal cells on said display.

5,445,158

RADIATION DETECTOR PROBE

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Continuation-in-part of Ser. No. 646,855, Jan. 28, 1991, Pat. No. 5,199,436, which is a division of Ser. No. 336,968, Apr. 14, 1989, Pat. No. 5,012,813, which is a continuation-in-part of Ser. No. 280,546, Dec. 6, 1988, Pat. No. 4,993,419. This application Sep. 13, 1991, Ser. No. 760,006
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—664 **49 Claims**

1. A radiation detector comprising:

an infrared radiation sensor positioned in a low thermal conductivity environment; and

an elongated thermally conductive tube extending from a distal end to be directed toward a target to a rear volume of larger cross-sectional area than the tube, in which the sensor is mounted, the tube providing a field of view from the sensor of about sixty degrees or less, the tube and the



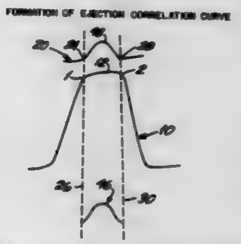
walls of the rear volume being of high thermal conductivity and thermally coupled to the radiation sensor.

5,445,159

MINIMALLY INVASIVE METHOD TO DETERMINE THE LEFT VENTRICULAR PRESSURE WAVEFORM

Wang Cheng, 1619 84 St., Brooklyn, N.Y. 11214

Filed Nov. 21, 1994, Ser. No. 342,707
Int. Cl.[6] A61B *5/021*
U.S. Cl. 128—672 **17 Claims**



1. A minimally invasive method of determining a patient's left ventricular pressure waveform without placement of a catheter inside the left ventricle, said method comprising the steps of:

recording and digitizing a human subject's EKG, peripheral arterial pressure waveform, pulmonary small arterial pressure waveform, pulmonary capillary wedge pressure waveform, and left ventricular pressure waveform;

separating said left ventricular pressure waveform into an ejection phase waveform, an isovolumetric relaxation phase waveform, a filling phase waveform and an isovolumetric contraction phase waveform;

separating said peripheral arterial pressure waveform to obtain an ejection phase waveform;

a first factoring step utilizing said ejection phase waveform of said peripheral arterial pressure waveform and said ejection phase waveform of said left ventricular pressure waveform to form an ejection correlation curve;

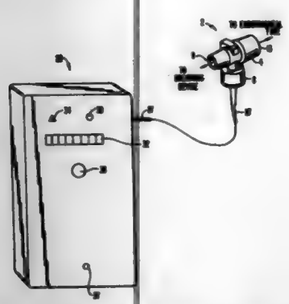
separating said pulmonary capillary wedge pressure waveform to obtain a filling phase waveform;

a second factoring step utilizing said filling phase waveform of said pulmonary capillary wedge pressure waveform and said filling phase waveform of said left ventricular pressure waveform to form a filling correlation curve;

storing, sorting and standardizing said ejection and filling correlation curves obtained from a predetermined number of human subjects to provide standardized ejection and filling correlation curves;

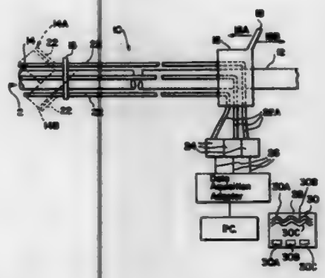
recording and digitizing a patient's EKG, peripheral arterial pressure waveform, pulmonary small arterial pressure waveform and pulmonary capillary wedge pressure waveform;
separating said peripheral arterial pressure waveform of said patient to obtain an ejection phase waveform of said patient;
a third factoring step utilizing said standardized ejection correlation curve and said ejection phase waveform of said patient to form an ejection phase waveform of a left ventricular pressure of said patient;
separating said pulmonary capillary wedge pressure waveform of said patient to obtain a filling phase waveform of said patient;
a fourth factoring step utilizing said standardized filling correlation curve and said filling phase waveform of said patient to form a filling phase waveform of the left ventricular pressure of said patient; and
connecting said ejection and filling phase waveforms of the left ventricular pressure of the patient with two straight lines, one of said straight lines representing said patient's isovolumetric relaxation phase waveform and the other of said straight lines representing the patient's isovolumetric contraction phase waveform to complete a left ventricular pressure waveform of said patient.

5,445,160
PORTABLE CARBON DIOXIDE MONITOR
John A. Calver, San Francisco; Ross F. Flewelling, Oakland; John M. Farbarik, Hayward; Charles E. Stuart, San Jose, and James M. Davenport, Fallbrook, all of Calif., assignors to Nellcor Incorporated, Pleasanton, Calif.
Continuation of Ser. No. 831,126, Feb. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 697,133, May 8, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,329
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—719 23 Claims



1. A sensor system for measuring a constituent gas in the breaths of a patient, the system comprising:
an airway sensor comprising
a disposable sensor body defining a gas inlet, a gas outlet, and a gas passageway between the gas inlet and the gas outlet, first and second optical ports in the sensor body defining an optical path across the gas passageway, and
a light source affixed to the sensor body in alignment with the first optical port; and
a detector module comprising
electrical conductor means,
a photodetector communicating with the electrical conductor means,
first electrical contact means communicating with the electrical conductor means, and
first means for removably coupling the detector module to the airway sensor to place the photodetector in alignment with the second optical port and to provide electrical communication between the first electrical contact means and the light source.

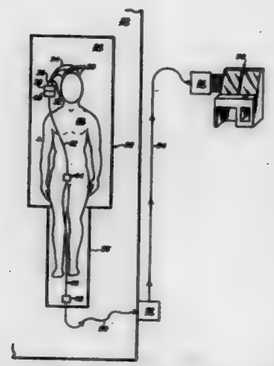
5,445,161
APPARATUS AND METHOD FOR CAPNOGRAPHY-ASSISTED ENDOTRACHEAL INTUBATION
K. C. Huang, 1000 Kensington Rd., Grosse Pointe Park, Mich. 48230
Filed Oct. 8, 1993, Ser. No. 134,110
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—719 13 Claims



1. An apparatus for capnography-assisted endotracheal intubation comprising:
a flexible and steerable intubating tube having a movable distal end;
at least three gas aspirating ports positioned around the distal end of the intubation tube in a vertical plane, said ports having one end movable with said distal end and an opposite end in flow communicating means with means to analyze CO_2 concentrations in a gas stream; means to analyze said CO_2 concentrations;
means to display flow concentrations of said CO_2 concentrations in response to analysis of same; and,
means to steer said distal end of said intubating tube.

5,445,162
APPARATUS AND METHOD FOR RECORDING AN ELECTROENCEPHALOGRAM DURING MAGNETIC RESONANCE IMAGING
John R. Ives, Lexington, Mass., assignor to Beth Israel Hospital Association, Brookline, Mass.
Filed Aug. 27, 1993, Ser. No. 113,785
Int. Cl.[6] A61B *5/0478*
U.S. Cl. 128—731 36 Claims

1. A method for obtaining an electroencephalogram during magnetic resonance imaging of a patient positioned in a magnetic resonance imaging room, comprising the steps of:
placing a plurality of nonmagnetic electrodes on the patient's head so as to be able to record the patient's electroencephalogram;



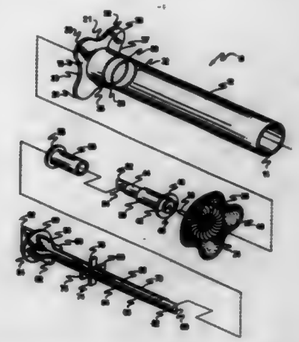
transmitting electroencephalogram signals from the plurality of electrodes to an amplifier; and
recording the amplified electroencephalogram signals.

5,445,163
NEURO-AIDS PINWHEEL
Gilbert A. Machacek, 6497 Debbie La., St. Petersburg, Fla. 33707
Continuation-in-part of Ser. No. 199,599, Feb. 22, 1994, abandoned. This application Jul. 5, 1994, Ser. No. 271,074
Int. Cl.[6] A61H *15/00*
U.S. Cl. 123—744 13 Claims



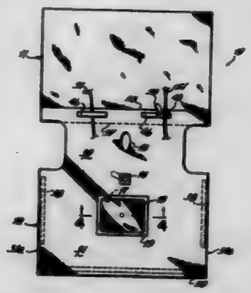
1. A device for testing a patient's sensation for pain comprising:
(a) a handle having a first end and a second end, said first end being adapted to being held by an examiner testing a patient's reaction to pain and touch, and said second end having attached thereto two upwardly extending arms projecting in a U-shape with the two upwardly extending arms said U-shape being prolonged to resemble a two-pronged fork, said second end of said handle being attached to the bottom of said prolonged U-shape;
(b) a disk having a circumference and two sides, said disk at each side thereof having a center and having at each said center a means by which said disk may be rotatably attached to said two upwardly extending arms, said disk having a plurality of points projecting outwardly from said circumference;
said extending arms each having a receiving means to rotatably receive said disk at the center of said disk, said receiving means being positioned from the bottom of said U-shape a distance greater than the radius of said disk and the points projected therefrom whereby said disk may be rotated on its center without contact of the projected points on said disk with the bottom of said U-shape, whereby said examiner may freely rotate said disk with said projected points pressed into contact with a patient's test area; both said disk and said handle being made of a plastic.

5,445,164
CERVICAL TISSUE SAMPLING DEVICE
W. G. Worthen, Springdale, Ark.; Howard V. Worthen, deceased, late of Oklahoma City, Okla. by Mildred W. Worthen, administrator , and W. J. Dunn, Fayetteville, Ark., assignors to Gynetech, Inc., Fayetteville, Ark.
Filed May 11, 1993, Ser. No. 60,414
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—759 40 Claims



1. A cervical tissue sampling device, comprising:
a barrel;
a plunger disposed for reciprocal sliding movement in said barrel; and
collecting means for collecting tissue secured to a distal end of said plunger; said collecting means including a brush and a sponge dimensioned and disposed to at least partially surround said brush when said plunger is retracted within said barrel.

5,445,165
MEDICAL DRAPE WITH DRAIN AND METHOD FOR DEPLOYING
Robert C. Fenwick, Cincinnati, Ohio, assignor to Liebel-Flarsheim Company, Cincinnati, Ohio
Filed Feb. 10, 1993, Ser. No. 15,785
Int. Cl.[6] A61B *19/00, 19/08*
U.S. Cl. 128—849 35 Claims



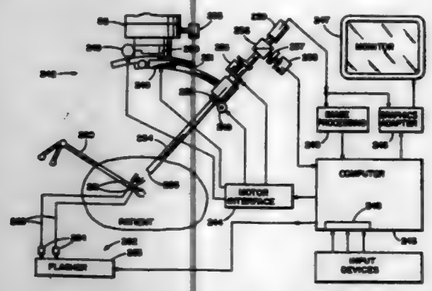
1. A medical drape of the type useful for covering a patient on a table having a drain frame, the drape comprising:
a sheet having an upper sheet section with two side edges, and a lower sheet section with an upper fenestration and a lower fenestration formed therethrough, said lower fenes-

tration having a perimeter substantially surrounding said lower fenestration formed by said lower sheet section, said perimeter being of sufficient surface area to extend beyond and drape over the drain frame when said lower fenestration is positioned within the drain frame;
a screen filter affixed to said lower sheet section and substantially covering said lower fenestration;
a drainage bag with an exit opening and an entrance opening, the entrance opening having a perimeter affixed to said lower sheet section around the perimeter of said lower fenestration; and
a hose having one end attached to and in fluid communication with the exit opening of said drainage bag.

5,445,166
SYSTEM FOR ADVISING A SURGEON

Russell H. Taylor, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 147,088, Nov. 2, 1993, which is a continuation of Ser. No. 714,816, Jun. 13, 1991, abandoned. This application Apr. 6, 1994, Ser. No. 223,862
Int. Cl.[6] A61B *17/36*
U.S. Cl. 128—897 13 Claims



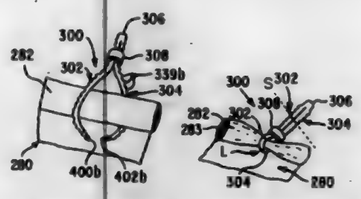
1. A system for assisting a surgeon in positioning an article relative to a target position, the system comprising:
means for determining a surgical plan based upon input patient information;
means for sensing surgical execution of the surgical plan by the surgeon;
means for advising the surgeon based upon comparison of the surgical plan and the sensed surgical execution; and
means for automatically selecting different types of advice to give the surgeon based upon the surgical plan and the sensed surgical execution.

5,445,167
METHODS OF APPLYING SURGICAL CHIPS AND SUTURE TIE DEVICES TO BODILY TISSUE DURING ENDOSCOPIC PROCEDURES

Inbae Yoon; Samuel C. Yoon, and Suzanne J. Yoon, all of 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 719,281, Sep. 18, 1991, Pat. No. 5,366,459, which is a division of Ser. No. 450,301, Dec. 15, 1989, Pat. No. 5,100,418, which is a continuation-in-part of Ser. No. 49,504, May 14, 1987, abandoned, and a continuation-in-part of Ser. No. 515,641, Apr. 2, 1990, Pat. No. 5,171,250, which is a continuation-in-part of Ser. No. 49,526, May 14, 1987, abandoned. This application Sep. 28, 1992, Ser. No. 951,275
Int. Cl.[6] A61B *17/04*
U.S. Cl. 128—898 29 Claims

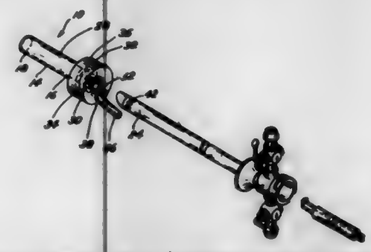
1. A method of suturing bodily tissue, comprising the steps of:
engaging the bodily tissue with at least one distal end of a suture tie device comprised of at least two generally opposed leg members, each of the leg members being comprised of a proximal portion and a distal portion having a tissue engaging portion terminating at a distal end;
displacing one of the leg member distal ends relative to the other so as to position the distal ends adjacent to one another to position the bodily tissue between the leg member distal ends;
displacing the proximal portion of one of the leg members relative to the proximal portion of the opposed leg member to attain a generally superposed orientation, thereby forming a selectively tensionable suture loop between the adjacent leg member distal ends and the generally superposed leg member proximal portions; and
tensioning the suture loop to a user selected level of tissue tension, whereby relative displacement of the leg member proximal portions is accomplished by displacing a locking/tying member along at least one of the leg members toward the adjacently-positioned distal ends.



5,445,168
METHOD FOR TREATING INTERUTERINE WALLS USING A RESECTOSCOPE

Helmut Krebs, 4849 N. Kenneth, Chicago, Ill. 60630

Continuation of Ser. No. 8,680, Jan. 25, 1993, abandoned. This application Nov. 22, 1993, Ser. No. 156,250
Int. Cl.[6] A61B *17/39*
U.S. Cl. 128—898 8 Claims

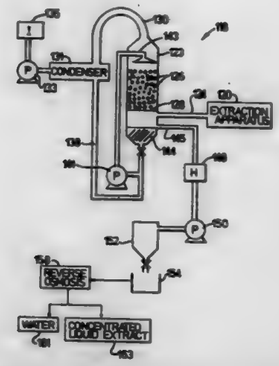


1. An improved method of facilitating insertion of a shaft of a resectoscope within a human uterus having a uterus passageway therein and interuterine walls, said method comprising:
providing a uterine guide tube having an elongated interuterine sheath having a longitudinal dimension and proximal and distal ends, and futher having a resectoscope passageway which has an internal dimension slightly larger than the shaft of the resectoscope;
inserting the distal end of the interuterine sheath into the uterus to a depth substantially less than the length of the uterus;
inserting the shaft of the resectoscope in a first direction within the resectoscope and to a predetermined depth within the uterus which is less than the length of the uterus passageway;
performing a medical procedure within the uterus and upon the interuterine walls by means of the resectoscope;
charging an irrigation liquid through the interuterine sheath into the uterus while performing the medical procedure;
collecting the irrigation liquid from the uterus and discharging the collected irrigation liquid from the interuterine sheath
monitoring the amount of irrigation liquid charged to and collected from the uterus;
removing the resectoscope from the uterus by sliding the shaft of the resectoscope within the interuterine sheath in a second direction which is opposite to the first direction; and
removing the uterine guide tube from the uterus.

5,445,169
PROCESS FOR PROVIDING A TOBACCO EXTRACT

Paul A. Brinkley, Winston-Salem; Jack G. Flinchum, Jr., Pfafftown, and James S. Thomasson, Statesville, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 17, 1992, Ser. No. 931,072
Int. Cl.[6] A24B *15/24*
U.S. Cl. 131—297 5 Claims



1. A process for providing a tobacco extract comprising
(a) providing a tobacco extract by contacting a tobacco material with a basic material comprising ammonia in the presence of an aqueous solvent; and separating aqueous solvent, basic material and tobacco extract from extracted tobacco material;
(b) contacting the aqueous solvent, basic material and tobacco extract with a liquid having a boiling point significantly greater than water to provide a mixture;
(c) subjecting the mixture to conditions sufficient to remove a significant amount of the aqueous solvent therefrom; and
(d) collecting a mixture including tobacco extract and liquid having a boiling point significantly greater than water, such mixture consisting primarily of the liquid having a boiling point significantly greater than water.

5,445,170
HAIR CLIP

Masahiro Yasuda, Higashiosaka-shi, Japan, assignor to Kabushiki Kaisha Yasuda Corporation, Osaka, Japan

Filed Aug. 13, 1993, Ser. No. 106,385
Claims priority, application Japan, Aug. 19, 1992, 4-220045
Int. Cl.[6] A45D *8/22*
U.S. Cl. 132—279 10 Claims

1. A hair clip comprising:
a relatively elongated base plate having at one end a pair of hooking arms capable of overlapping each other, each said hooking arms including a base portion and a clampable portion protruding outwardly from said base portion;
a relatively elongated hair retainer having one end rotatably connected to the other end of the base plate, said hair retainer further having at the other end thereof an engaging part releasably latched by said pair of hooking arms;
a spring board interposed between said base plate and said hair retainer and contacting said hair retainer so as to urge said hair retainer towards its open state as long as said engaging part is latched by said hooking arms;
hair retainer releasing means including (a) said clampable portions operative to contact said engaging parts, the clampable portions having a contour such that, when said one end of said base plate is pressed towards said other end

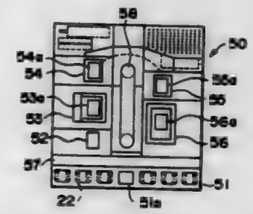


of said hair retainer which is in its latched position, said hooking arms are caused to overlap each other to take a releasable position; (b) a shackling member associated with said spring board having means to hold said hooking arms in overlapping state even after said hooking arms have taken said releasable position; and (c) a restoring member on said spring board and having means to urge said shackling member towards a free position for releasing said hooking arms as said hair retainer is rotated away from said base plate toward its open state in which said engaging part is no longer latched by said hooking arms.

5,445,171
SEMICONDUCTOR CLEANING APPARATUS AND WAFER CASSETTE

Masashi Ohmori; Hiroshi Tanaka; Akira Nishimoto; Hiroshi Sasai, all of Itami; Naohiko Fujino, and Satoru Kotoh, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1993, Ser. No. 123,244
Claims priority, application Japan, Sep. 25, 1992, 4-256827; Sep. 10, 1993, 5-225611
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—61 3 Claims



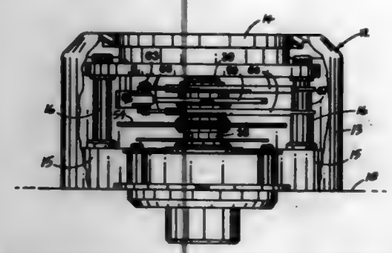
1. A semiconductor cleaning apparatus comprising:
a cassette loader/unloader for accommodating a product cassette;
a product loader/unloader for loading a wafer into and unloading a wafer from a product cassette in the cassette loader/unloader;
a cleaning portion for cleaning a wafer;

a water cleaning portion for cleaning with water a wafer that has been cleaned in the cleaning portion;
a drying portion for drying the wafer that has been cleaned with water in the water cleaning portion; and
a conveyance having a wafer hand for directly holding a wafer unloaded from a product cassette, the hand sequentially conveying the wafer to the cleaning portion, the water cleaning portion, and the drying portion.

5,445,172
WAFER HOLDER WITH FLEXIBLY MOUNTED GRIPPING FINGERS

Raymon F. Thompson, and Aleksander Owczarz, both of Kalispell, Mont., assignors to Semitool, Inc., Kalispell, Mont.

Continuation of Ser. No. 680,204, Jan. 11, 1991, Pat. No. 5,222,310, which is a continuation of Ser. No. 526,243, May 18, 1990, Pat. No. 5,168,887. This application Mar. 8, 1993, Ser. No. 27,863
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[6] B08D 3/02
U.S. Cl. 134—153 85 Claims



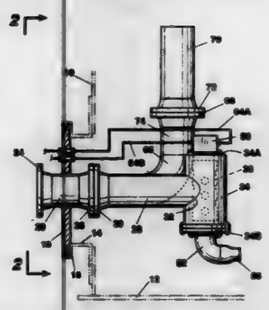
43. A wafer holder for holding a wafer, such as semiconductor wafers, substrates, magnetic disks, or optical disks, during processing, comprising:
a wafer support member;
at least one wafer gripping finger having an inner end and an outer end; said outer end extending to engage and support a wafer along peripheral edges thereof;
at least one flexible supporting diaphragm connecting the at least one wafer gripping finger to the wafer support member to allow annular displacement of the wafer gripping finger;
at least one finger actuator connected to operate said at least one wafer gripping finger for angularly displacing the wafer gripping finger;
wherein the finger actuator includes:
a linkage bar pivotally connected to the wafer gripping finger;
a pivot arm pivotally connected to the wafer support member and pivotally connected to the linkage bar;
a biasing means for biasing the finger into a desired position.

5,445,173
SYSTEM FOR STIRRING AND THEREBY REDUCING BUILD UP OF BOTTOM SEDIMENTS IN A STORAGE TANK

William B. Aiken, Houston, Tex., assignor to Matrix Service, Inc., Tulsa, Okla.

Filed Jul. 18, 1994, Ser. No. 276,270
Int. Cl.[6] B08B 9/12
U.S. Cl. 134—167 R 14 Claims

1. A system for removing sludge from the horizontal bottom of a tank having liquid stored therein which comprises:
a body member;
a casing rotatable with respect to said body member and provided with a horizontally extending nozzle arranged so that liquid discharged therefrom sweeps substantially in a plane above said tank bottom;
means to recycle liquid from said tank and back through said body member, said casing and said nozzle;

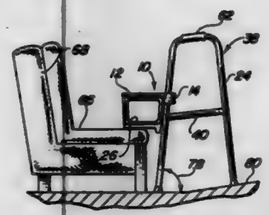


a stepping motor for rotating said casing with respect to said body member; and
means externally of said tank to control said stepping motor.

5,445,174
RISING BRACE AND METHOD FOR AN INVALID WALKER

Thomas W. Cunningham, 3580 Emerywood La., Orlando, Fla. 32812

Filed Feb. 25, 1994, Ser. No. 202,921
Int. Cl.[6] A45B 3/00
U.S. Cl. 135—66 16 Claims

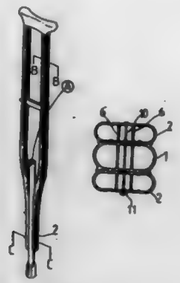


1. A brace for assisting a disabled person in rising from a sitting position to a standing position, the brace comprising:
a portable vertical support;
a handle having a proximal end and a distal end, the handle extending away from the vertical support and having a dimension sufficient for extending over a surface upon which a person is sitting;
a coupling affixed to the handle proximal end, the coupler rotatably affixed to the vertical support, the coupling having an aperture for loosely receiving the vertical support, the coupling further comprises a friction strip affixed within the coupling aperture, the strip having a thickness sufficient for loosely holding the vertical support passing through the aperture, the strip making frictional contact with the vertical support sufficient to hold the brace in a desired position;
a horizontal member having a proximal end and a distal end, the horizontal member extending away from the vertical support and having a dimension sufficient for extending onto a support surface;
a first strut having an upper end and a lower end, the upper end affixed to the handle proximate the handle proximal end, the lower end affixed to the horizontal member proximal end, the first strut forming an angle with the handle at the handle proximal end, the angle formed for inclining first the strut away from the vertical support, the angle sufficient for separating the first strut away from the vertical support as the vertical support is loosely held within the coupling aperture; and
a second strut affixed between the handle and horizontal member distal ends, the second and first struts dimensioned for permitting a sitting person to push downwardly upon the handle for assistance in rising to a standing position.

5,445,175
MEDICAL CRUTCH

Kyungil Cho, 132-7, Togun-dong, Koyang-shi, Kyonggi-do, Rep. of Korea

Filed Jun. 6, 1994, Ser. No. 254,109
Int. Cl.[6] A61H 3/02
U.S. Cl. 135—68 2 Claims



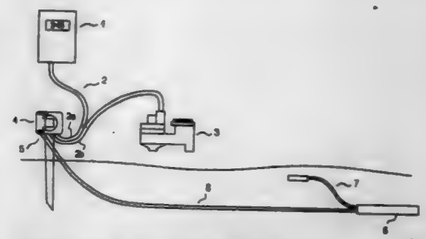
1. A medical crutch comprising:
a hollow bottom leg member and a pair of hollow side rail members running parallel at a predetermined distance apart, and merged by inflections which are in turn engaged to said bottom leg member at its opposite sides, each of said bottom leg and side members having a cross section of a round-cornered rectangle or an ellipsoid with a flat engagement surface with respect to the adjacent members increasing the resistance to the lateral working loads of said crutch in use and facilitating the assembly of said members as well as the precise punching operations for forming screw holes through which a plurality of screw bolts and nuts fasten said members together;
each of said bottom leg and side rail members having a reinforcing means extending inside thereof in a direction vertical to the load-acting lateral direction to prevent a crushing of the member in the punching and a bending operation to form said inflections;
and a grip means including concave and convex surfaces formed integral to each of said bottom leg and side rail members to allow a positive locking engagement between said members while reinforcing said members against the punching operations by effecting the corresponding thickened walls to the areas of the members to be punched.

5,445,176
MOISTURE SENSITIVE IRRIGATION VALVE CONTROL

Milton L. Goff, 325 6th St., Ramona, Calif. 92065

Continuation of Ser. No. 34,982, Mar. 22, 1993, abandoned. This application Mar. 4, 1994, Ser. No. 206,905
Int. Cl.[6] F16K 17/38
U.S. Cl. 137—80 20 Claims

1. For a ground irrigation system including a water valve operated by periodic energization, a device for controlling the valve comprising:
(a) a controller comprising:
(1) means for selecting a moisture level threshold,
(2) means for producing a first signal, the first signal corresponding to a selected moisture level threshold,
(3) means for receiving a second signal, and
(4) means, responsive to the second signal, for de-energizing the water valve;
(b) a detector remotely spaced from the controller comprising:
(1) sensor means for producing a third signal, the third signal corresponding to the moisture level of the ground,

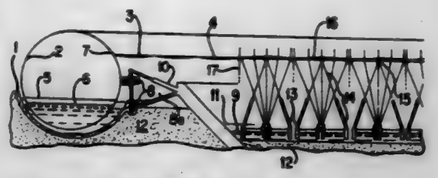


(2) means for receiving the first signal, and
(3) means for comparing the first and third signals and for producing the second signal in response to the comparison showing a predetermined relationship between the first and third signals, and;
(c) means for interconnecting the controller and detector to allow transfer therebetween of the first and second signals.

5,445,177
PLATFORM FOR THE UTILIZATION OF SOLAR POWER

Johannes L. N. Laing, and Ingo Laing, both of 1253 La Jolla Rancho Rd., La Jolla, Calif. 92037

PCT No. PCT/EP91/00808, § 371 Date Mar. 5, 1992, § 102(e) Date Mar. 5, 1992, PCT Pub. No. WO91/17573, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 26, 1991, Ser. No. 781,250
Claims priority, application Germany, Apr. 30, 1990, 40 13 843.7
Int. Cl.[6] H01L 31/052; F24J 2/00
U.S. Cl. 136—246 24 Claims



1. A system for focusing the sun's rays onto one or more energy converters comprising:
a platform floating on a layer of water (9) having a horizontally aligned roof covering said platform, comprising a set of transparent echelon lenses (16, 30*a*, 40*b*, 82, 83, 89*c*, 90*a*) and one or more energy converters (23, 53, 73, 73', 94*b*) positioned in at least one line below said roof,
each of said echelon lenses comprising prism shaped steps (84) having flanks (89, 91) adapted to face the sun and which run perpendicular to said lines of energy converters (53, 73, 73', 94*b*);
each of said echelon lenses having a geometry which refracts wedges of the sun's rays (86) downwards within a limited range of angles (87*h*–87*z*) around a vertical line (153), said range of angles including zero degrees, and in addition, means (16*c*, 90, 121) are provided which concen-

trate the downward refracted sun's rays onto said lines of energy converters.

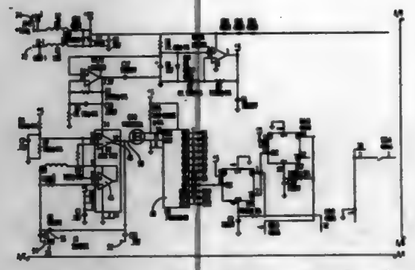
19. A system according to claim 1, wherein each of said energy converters (170, 180, 190) comprises a photovoltaic cell; and, which further comprises a rod-shaped optical element (125, 140, 181) which bends the sun's rays towards the energy converter (170, 180, 190).

5,445,178

SOIL MOISTURE SENSOR

Lenny Feser, 16216 Brooks Rd., Grass Valley, Calif. 95945-9816

Filed Feb. 18, 1994, Ser. No. 198,433
Int. Cl.[6] A01G *25/16*
U.S. Cl. 137—1 28 Claims



1. A method of sensing the moisture content of a volume of a medium, the medium having a dielectric constant dependant on the medium's moisture content, the method comprising the steps of:

disposing first and second spaced apart conductive sensor elements within said volume of the medium, to provide a capacitance dependent upon the dielectric constant of the medium when disposed within said volume of the medium;

coupling an inductance element to said first and second sensor elements in an LC oscillator circuit having an oscillation frequency dependent on the values of the inductance element and the capacitance value provided by the first and second sensor elements disposed in the medium; and

outputting a moisture content indicative output signal as a function of the oscillation frequency of the LC oscillator circuit.

5,445,179

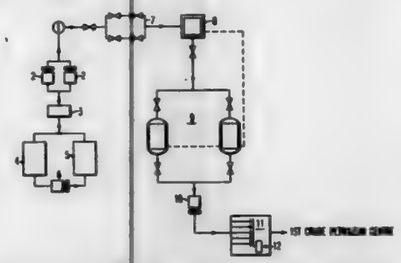
PROCESS FOR RECOVERING AND CAUSING HIGHLY VISCOUS PETROLEUM PRODUCTS TO FLOW

Alberto Di Lullo; Armando Marcotullio, both of Milan, and Enrico Borgarello, Turin, all of Italy, assignors to Eniricerche S.p.A. and AGIP S.p.A., both of Milan, Italy

PCT No. PCT/EP93/01775, § 371 Date Mar. 3, 1994, § 102(e) Date Mar. 3, 1994, PCT Pub. No. WO94/01684, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 3, 1993, Ser. No. 193,051
Claims priority, application Italy, Jul. 6, 1992, MI92A1643; Jul. 15, 1992, MI92A1712
Int. Cl.[6] F17D *1/17*; C10L *1/32*
U.S. Cl. 137—13 11 Claims

1. Process for recovering and causing highly viscous petroleum products to move, characterized in that the above said high-viscosity petroleum products are recovered and caused to flow as aqueous dispersions wherein the water content of said dispersions is of at least 15%, said dispersions being formed by bringing said high-viscosity petroleum products into contact with an aqueous solution of a sulfonated dispersant selected from one or more of alkali metal or ammonium organic sulfonates having, with reference to the sodium salts of said sulfonates, the following properties:

(A) a sulfur content of at least 10%



(B) a water solubility at 20° C. of at least 15% by weight;

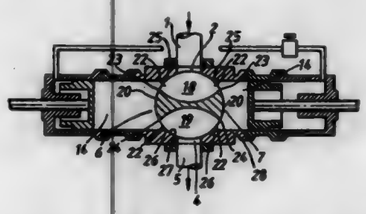
(C) a decrease in water surface tension, at a concentration of 1% by weight, not higher than 10%.

5,445,180

FLUID FLOW CONTROL

John E. Divall, Grove, England, assignor to Odin Developments Limited, Stevenage, United Kingdom

Division of Ser. No. 809,589, Dec. 17, 1991, Pat. No. 5,277,338. This application Nov. 9, 1993, Ser. No. 149,547
Claims priority, application United Kingdom, Dec. 21, 1990, 9027859
Int. Cl.[6] F16K *11/085*
U.S. Cl. 137—15 2 Claims



1. A method of controlling fluid flow, comprising supplying a production fluid, displacing a valve closure member between first and second positions in which a land thereof cooperates with sealing surface means of a valving housing to enable and obstruct, respectively flow of said production fluid between first and second ports extending through the sealing surface means, ceasing to supply said production fluid, subsequently displacing said valve closure member into a third position in which said land is disposed at the second port with gaps between respective opposite sides of said land, on the one hand, and respective opposite edge portions of said sealing surface means bounding said second port, on the other hand, and causing a cleaning fluid to flow through said gaps and said second port.

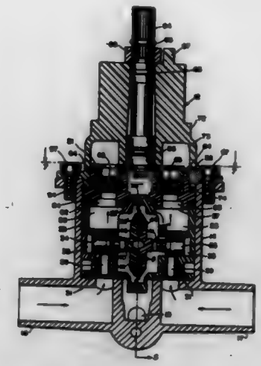
5,445,181

MIXING VALVE

Weldon R. Kuhn, Elkhart Lake, Wis., and Dana F. Buccicone, Crystal Lake, Ill., assignors to Kohler Co., Kohler, Wis.

Filed Sep. 15, 1994, Ser. No. 306,352
Int. Cl.[6] F16K *11/074*; G05D *23/13*
U.S. Cl. 137—98 5 Claims

1. A pressure-compensated mixing valve of the type having a housing defining an inlet chamber, hot and cold inlet passages leading to the inlet chamber, diaphragm means that extends across the inlet chamber between the inlet passages to divide the inlet chamber into hot and cold sections, and that is movable toward and away from the inlet passages in response to pressure differentials in the sections, compensating valve means connected to the diaphragm and operable to control flow through the inlet passages in response to movement of the diaphragm, hot and cold outlets leading respectively from the hot and cold sections, and mixing valve means operable to control flow from the outlets, the improvement comprising:



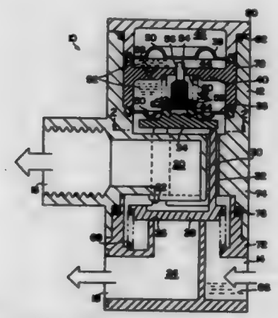
the compensating valve means has piston head valve members operatively positioned in the inlet passages to control flow from the hot and cold inlet passages and connecting members attached to the diaphragm at one end and to the piston head valve members at another end by a self-aligning connection that permits the piston head valve members to flex relative to an axis perpendicular to the diaphragm.

5,445,182

TOGGLE FLUID CONTROL VALVE

Oded E. Sturman, 3973 Santa Monica Ct., Newbury Park, Calif. 91320; Benjamin Grill, 9819 Etiwanda Ave., Northridge, Calif. 91329, and Walter L. Harrison, 23554 Cherry St., Newhall, Calif. 91321

Filed Aug. 11, 1994, Ser. No. 297,388
Int. Cl.[6] F16K *11/044*
U.S. Cl. 137—119 9 Claims



1. A control valve, comprising:

a housing with an inlet, a first outlet and a second outlet;

a popper within said housing, said poppet being adapted to be in a first position such that said inlet is in fluid communication with said first outlet, said poppet also being adapted to be in a second position such that said inlet is in fluid communication with said second outlet, said poppet being further adapted to normally be in said first position when working fluid is first introduced into said inlet;

spring means for moving said poppet into said second position when said working fluid pressure decreases to a first predetermined value; and,

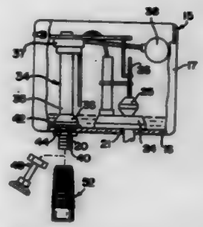
timing switch means operatively connected to said poppet for moving said popper from said second position to said first position within a predetermined amount of time, said popper will remain in said second position when said working fluid pressure is subsequently increased to a second predetermined value within said predetermined amount of time.

5,445,183

FLUSH TANK TOOL FOR REPLACING A BALLCOCK ASSEMBLY

Ken J. Mitson, 40W381 Winchester Way, St. Charles, Ill. 60175

Filed Sep. 2, 1994, Ser. No. 300,166
Int. Cl.[6] F16K *43/00*
U.S. Cl. 137—315 21 Claims



1. A tool for facilitating the replacement of a ballcock assembly in the flush tank of a toilet and preventing the leakage of residual water, wherein the tank includes a bottom wall, upstanding side walls and two spaced apart openings in the bottom wall, a flush valve at the bottom of the tank mounted at one of said openings, a ballcock assembly mounted in the tank at the other opening and having an inlet shank extending through said other opening and being sealingly secured to the bottom wall by a shank nut and sealing members, said tool comprising an elongated tubular body of resilient material, a tubular stiffening core of rigid material within said body to prevent collapse of said body when it is in sealing engagement with the shank opening, and a plug within the core to seal against the passage of water therethrough, said core being sized to fit over the shank of the ballcock assembly after the shank nut has been removed, and said resilient body sized to sealingly engage the opening through which the shank extends to plug the opening and prevent leakage of water from the tank when the ballcock assembly is removed, whereby insertion of said resilient body of the tool to engage the opening is coordinated with the removal of the ballcock assembly from said tank and said tool is removed upon the coordinated replacement of either one of a repaired and a new ballcock assembly after which the shank nut is placed on the shank to sealingly assemble either one of the repaired and the new ballcock assembly to the flush tank.

5,445,184

MAGNETIC VALVE RESET MECHANISM

Raymond P. Racine, 6809 Town Harbor Blvd. Apt. #1912, and Bert D. Maisni, 6662 Boca Del Mar Dr. No. 711 Club Royale, both of Boca Raton, Fla. 33433

Filed Sep. 26, 1994, Ser. No. 312,519
Int. Cl.[6] F16K *17/20*
U.S. Cl. 137—460 3 Claims

1. A fluid control valve with re-set mechanism, the valve including a housing, a fluid inlet passage, a fluid outlet passage

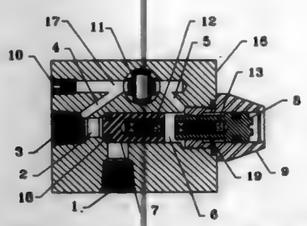
in communication with said fluid inlet passage, said fluid control device comprising:

(a) a reciprocating valve capable of permitting, limiting, or precluding communication between said inlet and outlet passages, said reciprocating valve comprising a ferromagnetic armature defining a magnetic axis co-linear with its axis of reciprocation, said axis corresponding to the longitudinal center of a fluid tight chamber within said housing wherein said valve may reciprocate, said valve having a variable flow responsive integral radial end face disposed within a region of communication between said inlet and outlet passages, said outlet passage having an entrance complemental to the geometry of said first end face;

(b) a reset channel disposed in said housing; allowing communication between a volumetric area of said chamber adjacent to the second radial end face of said reciprocating valve and the said outlet passageway;

(c) an externally actuated reset valve normally preventing communication through said reset channel; and

(d) a magnetic bias and calibration means disposed within



said housing and normally in contact with said reciprocating valve, near the radial end opposite to said flow-responsive radial end of said valve, said bias and calibration mechanism is provided with an axis of magnetic polarity essentially co-linear with said valve exerting a magnetic influence attracting said reciprocating valve; whereby,

resetting said reciprocating valve to its normally open position, even though there exists an excess of fluid pressure retaining said valve in its closed position, is accomplished by actuating the reset valve and allowing communication between the volumetric area of the fluid tight chamber adjacent to the rear radial end face of the reciprocating piston closest to the calibration and bias mechanism and the outlet passage, and thereby, relieving said excess fluid pressure, and thus eliminating opposition to the return of the reciprocating valve to its normally open position, and creating a pressure differential between the inlet passage and said volumetric area of the fluid tight chamber, said pressure differential immediately effectuating the return of said reciprocating valve to its normally open position in a snap action movement without equalizing fluid pressure between the inlet and outlet passages.

5,445,185

PIEZOELECTRIC FLUID CONTROL VALVE

Shunso F. Watanabe, Livonia; Steven J. Eckert, Royal Oak; Gerald H. Engelman, Dearborn, all of Mich.; Neil T. Dionesotes, Acton, Mass.; Steven R. Collins, Lexington, Mass., and Steven D. Bernstein, Brookline, Mass., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 43,127, Apr. 5, 1993, Pat. No. 5,267,589. This application Dec. 6, 1993, Ser. No. 163,212

Int. Cl.[6] F16K *11/14*

U.S. Cl. 137—596.17 **20 Claims**

1. A piezoelectric fluid control valve comprising:

a valve body having

a supply port for introducing fluid into the valve;

a chamber defined within the valve body;

an outlet port in communication with the chamber, the outlet port being capable of delivering the fluid to a controlled device which is operable in response thereto; and

a relief port for returning the fluid to a source thereof;

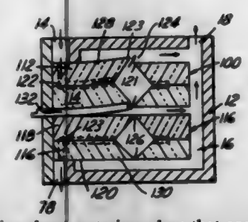
an upper metering element supported within the chamber,

a lower metering element supported within the chamber;

each metering element having

an anchored end affixed to a wall of the chamber, the anchored end of the upper metering element and the anchored end of the lower metering element being provided respectively with an inlet and an outlet channel;

a cantilevered spring valve which is positionable in relation to the associated metering element, each cantilevered spring valve and the associated metering element defining therebetween a pair of opposing metering orifices, each cantilevered spring valve having a pair of



opposing sharp metering edges that cooperate with the associated metering element, each metering orifice in a pair thereof exerting forces which counterbalance each other, each cantilevered spring valve being continuously displaceable between an open position and a normally closed position, the metering edges blocking fluid when the cantilevered spring valve is in the closed position; and

a polymorph positioned between and in operative communication with the cantilevered spring valves, the polymorph having a characteristic that as a potential difference is applied thereto as a function of a sensed condition, the polymorph deflects in proportion to the potential difference, thereby displacing an associated cantilevered spring valve, the fluid in the outlet port thereby being continuously modulated in response to the sensed condition.

5,445,186

BACK-FLOW PREVENTING BAG VALVE FOR BAG-IN-BOX CONTAINER

Simon J. Richter, Blairsville, Ga.; Kevin J. Totten, South Elgin, Ill.; William S. Credle, Jr., Stone Mountain, and Thomas R. Boston, Fairburn, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 189,828, Feb. 1, 1994. This application Jun. 16, 1994, Ser. No. 260,572

Int. Cl.[6] F16L *37/28*

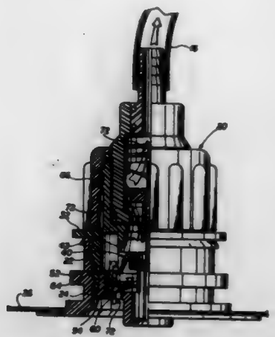
U.S. Cl. 137—614.2 **10 Claims**

1. A bag valve coupling member for a collapsible bag of a bag-in-box container comprising:

(a) a housing having an inner end and an outer end and having a liquid passageway extending therethrough for dispensing liquid flow therethrough in the direction from said inner to said outer end:

(b) a first self-sealing valve having closed and open positions and being disposed in said passageway and including a first valve seat, a first valve member movable into and out of sealing contact with said first valve seat biasing means for biasing said first valve member into sealing contact with said first valve seat, and a movable actuating stem connected to said valve member and extending toward said outer end of said housing for causing said first valve to move to its open position when said stem is caused to move;

(c) a back-flow preventing one-way valve disposed in said passageway for preventing reverse liquid flow through said passageway in the direction from said outer end to said inner end, said one-way valve including a second valve seat and a second valve member being movable toward and into sealing contact with said second valve seat by reverse liquid flow through said passageway closings aid passageway, and being movable away from and



out of contact with said second valve seat by dispensing liquid flow through said passageway, opening said passageway; and

(d) wherein said housing is cylindrical and said inner end of said housing includes a flat, circular wall perpendicular to the axis of said passageway, said wall including a plurality of equally spaced-apart circular openings in a circular array, and said second valve member being ring-shaped.

5,445,187

CONDENSATE TRAPS

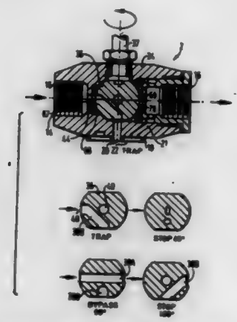
Keith R. Farquhar, Cheltenham, United Kingdom, assignor to Spirax-Sarco Limited, Cheltenham, United Kingdom

Filed Jun. 16, 1994, Ser. No. 260,826

Claims priority, application United Kingdom, Jun. 22, 1993, 9312843

Int. Cl.[6] F16T *1/38*; F16K *11/085*

U.S. Cl. 137—625.32 **8 Claims**



1. A condensate trap assembly comprising:

a valve body;

a valve chamber defined within the valve body;

a valve element which partially occupies the valve chamber, thereby defining an unoccupied region of the valve chamber, the valve element being housed for rotation about an axis within the valve body;

an inlet passage and an outlet passage of the valve body which open into the valve chamber at an inlet passage port and an outlet passage port, respectively:

a transfer duct which communicates with the valve element and which opens into the valve chamber at a respective port which is disposed on the axis of rotation of the valve element; and

seals disposed at the inlet and outlet passage ports, the valve element having a surface which is contacted by the seals thereby sealing the inlet and outlet passages from the unoccupied region of the valve chamber, the valve element having first, second and third passageways, and the valve element being disposed within the chamber for movement between three operative positions, in which, respectively:

(i) the inlet passage port and the outlet passage port are closed by the valve element;

(ii) the inlet passage port communicates with the outlet passage port through the first passageway in the valve element, and

(iii) one of the inlet passage port and the outlet passage port communicates with the unoccupied region of the valve chamber through the second passageway in the valve element, and the other of the inlet passage port and the outlet passage port communicates with the transfer duct through the third passageway in the valve element, means being provided for preventing direct communication between the transfer duct and the unoccupied region of the valve chamber.

5,445,188

PILOT OPERATED SERVO VALVE

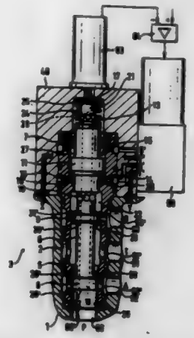
Arsène Bourkel, Belvaux, Luxembourg; Bernd Lanfermann, Rees, Germany; Karl Tratberger, Duisburg, Germany, and Karl H. Post, Kaarst, Germany, assignors to Hydrolux S.a.r.l., Luxembourg

Filed May 24, 1994, Ser. No. 248,146

Claims priority, application Luxembourg, May 27, 1993, 88277

Int. Cl.[6] F15B *13/043*

U.S. Cl. 137—625.64 **24 Claims**



1. A pilot operated servo valve comprising:

a control sleeve having:

first, second, and third main stream port openings therethrough, each of said main stream port openings corresponding to a respective main stream port and said openings being axially spaced;

a first hydraulic connection within said control sleeve between said first and second main stream port openings;

a second hydraulic connection within said control sleeve between said second and third main stream port openings;

first and second control chambers; and

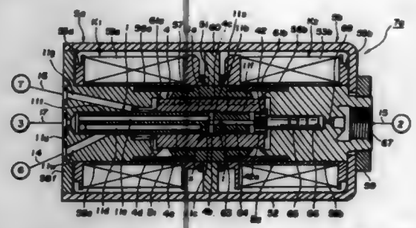
a counter-stop surface;

a pressure-equalizing chamber;

a main control piston disposed for axial displacement within said control sleeve, said main control piston having:
- a first end having a first piston end surface formed thereon, said first main-stream port opening being disposed opposite said first piston end surface and said second and third main-stream port openings being disposed sideways from said main control piston;
- a second end;
- a first control edge disposed to control flow through said first hydraulic connection;
- a second control edge disposed to control flow through said second hydraulic connection;
- a first actuating surface disposed in said first control chamber;
- a second actuating surface disposed in said second control chamber and axially opposing said first actuating surface;
- a pressure-equalizing surface disposed in said pressure-equalizing chamber and axially opposing said first piston end surface;
- a pressure-equalizing duct therethrough fluidically coupling said first main stream port opening to said pressure-equalizing chamber; and
- a stop surface disposed for selective engagement with said counter-stop surface, said piston being in a first axial end position when said stop and counter-stop are engaged;

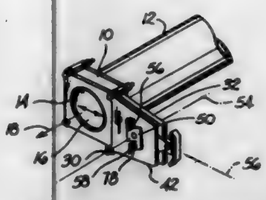
a pilot valve fluidically coupled to at least one of said first and second control chambers;
a feedback loop between said main control piston and said pilot valve, said feedback loop including a position transducer measuring the axial position of said main control piston within said control sleeve; and
a spring engaging said main control piston to bias said piston toward said first axial end position.

5,445,189
STRUCTURE FOR CONTROL VALVE
Shigeaki Yamamuro, Kanagawa, Japan, assignor to Unisia Jecs Corporation, Kanagawa, Japan
Filed Nov. 19, 1993, Ser. No. 155,176
Claims priority, application Japan, Nov. 20, 1992, 4-311731
Int. Cl.[6] F16K *31/06, 11/06*
U.S. Cl. 137—625.65 5 Claims



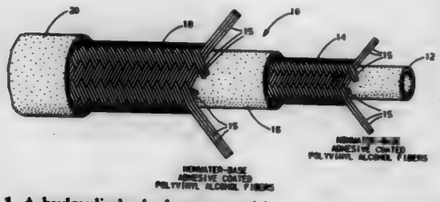
1. A structure for a fluid pressure control valve fluidly disposed between a first fluid pressure source and a fluid-pressure operated actuator and between a fluid reservoir and said actuator, comprising:
- a valve housing defining therein first and second axial bores separated from each other and axially aligned with each other;
- a cylindrical stationary valve member press-fitted into said first axial bore and having a portion projected out of said first axial bore;
- a cylindrical solenoid plunger slidably coaxially arranged with said stationary valve member so that an inner peripheral surface of said plunger slidably engages an outer peripheral surface of the projected portion of said staionary valve member, said plunger being cooperative with said stationary valve member to define at least one variable throttling orifice on the two opposing peripheral surfaces, for regulating a fluid pressure of working fluid fed from said first fluid pressure source to said pressure control valve, by varying a throttling rate of said orifice depending on an axial position of said plunger to said stationary valve member;
- a return spring for biasing said plunger in a pressure reduction direction in which the regulated fluid pressure from said pressure control valve to said actuator is reduced;
- a reaction piston slidably axially disposed in the projected end of said stationary valve member and receiving the regulated fluid pressure at an innermost end thereof, for pushing said plunger by an outermost end thereof and for returning said plunger in said pressure reduction direction; and
- electromagnetic solenoid means coaxially arranged on an outer periphery of said plunger for axially sliding said plunger in proportion to a value of attraction force based on a value of exciting current applied to said solenoid means.

5,445,190
GATE VALVE ACTUATOR
James A. Gunder, 13693 McGuire, Taylor, Mich. 48180
Filed Jul. 18, 1994, Ser. No. 276,602
Int. Cl.[6] F16K *3/00*; B60R *15/00*
U.S. Cl. 137—899 7 Claims



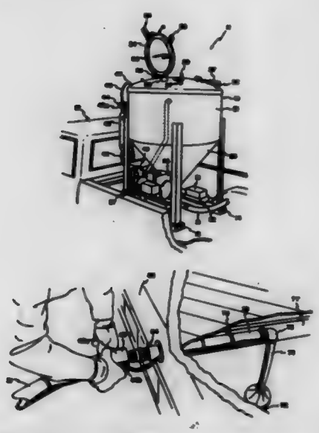
1. An external actuator for manually operating a gate valve in a drainage line of a holding tank of a recreational vehicle, the gate valve having a housing and a linearly-sliding gate in the housing movable between open and closed positions, and an elongated valve stem attached to the gate valve to slide in a reciprocal path of motion along the longitudinal axis of the valve stem, the actuator comprising:
- a support member comprising a plate supported adjacent and extending in a direction on the same side as and spaced from the valve stem;
- means for fastening the support member to the gate valve housing;
- linkage means including a first link and a second link extending along said support plate;
- first connection means pivotally connecting the first link to the support plate;
- second connection means pivotally connecting the second link to the valve stem;
- third connection means pivotally connecting the first link to the second link such that the first link is pivotally moveable with respect to the second link extending along said support plate in a first direction for moving the valve stem and the gate valve toward a closed position, and moveable in the opposite direction for moving the valve stem and the gate valve toward an open position; and
- handle means mounted on said support plate and connected to the linkage means for manually turning the first link with respect to the second link causing the second link to move linearly for moving the gate between open and closed positions, the handle means including an actuator handle rotatable about an axis generally perpendicular to the support plate.

5,445,191
HIGH PRESSURE BRAKE HOSE WITH REINFORCING LAYER OF NONWATER-BASED ADHESIVE COATED POLYVINYL ALCOHOL FIBERS
Randall L. Green; Robert A. Sauer, and Gary P. Ford, all of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 11, 1994, Ser. No. 288,857
Int. Cl.[6] F16L *11/08*
U.S. Cl. 138—126 2 Claims



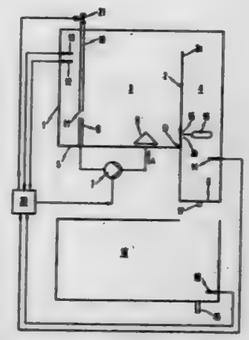
1. A hydraulic brake hose comprising:
an elastomeric core tube consisting essentially of extruded and cured ethylene-propylene-diene monomer elastomer compounded without oil;
a first reinforcing braid layer of nonwater-base adhesive coated polyvinyl alcohol fibers overlying said core tube;
an elastomeric cushion layer overlying said first braided reinforcing layer and consisting essentially of cured ethylene-propylene-diene monomer elastomer;
a second reinforcing braid layer of nonwater-base adhesive coated polyvinyl alcohol fibers overlying said cushion layer; and
an elastomeric cover layer overlying said second braid layer,,., and consisting essentially of cured ethylene-propylene-diene monomer elastomer compounded without oil.

5,445,192
METHOD FOR DELIVERY OF SALT
Roger L. Hansen, Wood Lake, Minn., assignor to Equity Elevator and Trading Company, Wood Lakes, Minn.
Filed Dec. 20, 1993, Ser. No. 170,387
Int. Cl.[6] B65B *1/00*
U.S. Cl. 141—2 5 Claims



1. A method of remotely filling a salt bin of a water softener disposed within a residence or other structure having an external wall, a coupling member disposed externally of said wall and a conduit between said coupling member and a salt bin, the method comprising:
- transporting a vehicle having a sealed hopper containing salt to a point proximate said residence or other structure;
- connecting the end coupling of a salt delivery hose leading from the outlet of the salt hopper to the coupling member at said external wall;
- pressurizing the salt hopper;
- opening a gate valve disposed at the hopper outlet to cause salt to enter the delivery hose under pressure;
- closing the gate valve when the salt level in the salt bin has reached a predetermined level; and
- detaching the end coupling of the salt delivery hose from said external coupling member.

5,445,193
APPARATUS FOR PREPARING AND DISPENSING LIQUIDS FOR THE TREATMENT OF PHOTOSENSITIVE MATERIAL
Horst Koesinger, Munich, and Walter Kohlhauer, Kaufbeuren, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 10, 1993, Ser. No. 29,120
Claims priority, application Germany, Apr. 1, 1992, 42 10 794.6
Int. Cl.[6] B65B *3/04*
U.S. Cl. 141—18 14 Claims



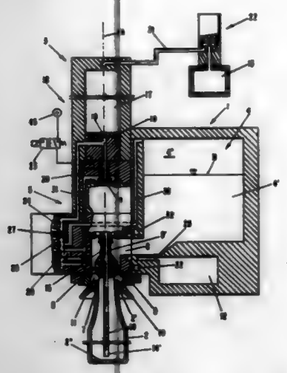
1. Apparatus for preparing and dispensing a liquid for the treatment of photosensitive materials, comprising:
a mixing chamber including means for making a mixture of at least one liquid substance with at least one second substance; a storage chamber adjacent to said mixing chamber and being separated from said mixing chamber by a partition, said storage chamber having an outlet for the mixture of said liquid and second substances, said chambers defining a first path for the overflow of mixture above said partition from said mixing chamber into said storage chamber when the mixture in said mixing chamber rises to a first predetermined level; and a second path for the flow of mixture between said chambers when the mixture in said storage chamber rises to a second predetermined level.

5,445,194

FILLING ELEMENT FOR FILLING MACHINES FOR DISPENSING A LIQUID FILLING MATERIAL INTO CONTAINERS

Ludwig Clüsserath, Bad Kreuznach, Germany, assignor to KHS Maschinen- und Anlagenbau Aktiengesellschaft, Bad Kreuznach, Germany

Filed Mar. 10, 1994, Ser. No. 209,161
Claims priority, application Germany, Mar. 10, 1993, 43 07 521.5; Nov. 12, 1993, 43 38 669.5
Int. Cl.[6] B65B *31/00*
U.S. Cl. 141—39 23 Claims



1. A filling element for filling machines for dispensing a liquid filling material into containers placed beneath said filling element, said filling element having a liquid channel that is provided with a liquid flow valve therein which forms a discharge opening via which, during a filling phase, said liquid filling material flows into a container that has been placed against said filling element, said filling element further comprising:

an operational element that is adapted to be introduced into said container; and

a control means for moving said operational element, in the direction of an axis of said filling element, between a lower stroke position, in which at least in said filling phase a given length of said operational element extends beyond an underside of said filling element and into said container that has been placed against said filling element, and an upper stroke position in which at least a portion of said given length of said operational element is retracted into said filling element, and wherein said control means is a piston/cylinder arrangement with at least one cylinder and one piston that is displaceable therein, with said piston defining within said at least one cylinder at least one cylinder chamber to which, for a stroke movement of said operational element, can be supplied the pressure of at least one operating medium that is also supplied to said container during at least one of said filling phase and treatment phases that precede and follow said filling phase.

5,445,195

AUTOMATIC COMPUTER-CONTROLLED LIQUID DISPENSER

Dae S. Kim, 49 Floral St., Newton, Mass. 02161

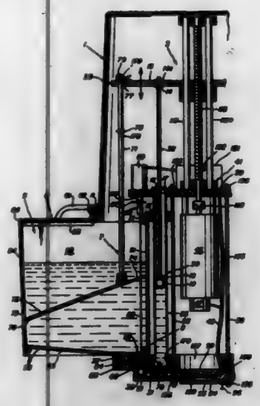
Filed Jul. 15, 1992, Ser. No. 913,855
Int. Cl.[6] G01F *11/16*
U.S. Cl. 141—104 19 Claims

1. An automatic computer-controlled device for dispensing a plurality of fluids in preset amounts, comprising:

a plurality of substantially identical sets each having a piston-actuated pump, a fluid reservoir, a stirrer within said fluid reservoir, and a flow diversion valve for directing fluid from said reservoir to said pump;

each of said fluid reservoirs being open to each other through a space common to each of said fluid reservoirs to allow the passage of vapors between each of said fluid reservoirs and said common space;

each of said sets are in fluid communication with a respective dispensing nozzle;



means for holding said plurality of substantially identical sets;

means for moving said pistons of said pumps and said stirrers between two preset vertical positions in unison;

means for controlling said diversion valve for dispensing; and

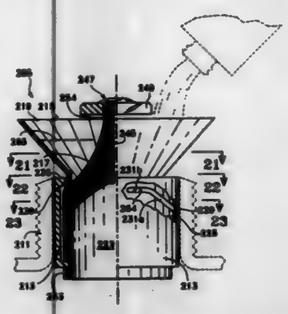
means for simultaneously dispensing fluid from any number of said substantially identical sets into a container.

5,445,196

FILLER FOR SMALL TANKS OR THE LIKE

Lewis Tyree, Jr., Mulberry Hill, Liberty Hall Rd., Lexington, Va. 24450

Continuation-in-part of Ser. No. 995,774, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 813,125, Dec. 23, 1991, Pat. No. 5,195,567, which is a continuation-in-part of Ser. No. 514,295, Apr. 25, 1990, Pat. No. 5,074,343. This application Jul. 7, 1994, Ser. No. 272,115
Int. Cl.[6] B67C *11/00*
U.S. Cl. 141—297 24 Claims



1. A filling unit to prevent overfilling of a container having an upstanding generally tubular inlet which container inlet is normally closed by attaching a closure thereto, which filling unit comprises

(a) means for engaging said tubular container inlet to seal therewith,

(b) funnel means for receiving liquid and leading to an always open depending passageway through which free flow of liquid substantially unhindered by surface tension can occur into said container and through which air in said container can escape upward, said funnel means having a filling position extending above said tubular inlet when said closure is removed,

(c) displacer means linked to said engaging means and said funnel means which has a hollow interior region and extends through said tubular inlet when installed and is disposed within said container, said displacer means itself displacing a predetermined amount of liquid in the container when said funnel means is in said filling position, said predetermined amount being such that, when said container is filled with liquid so that liquid extends upward to a predetermined level in said funnel means when in said filling position, said displaced predetermined amount is sufficient so that the entire volume of liquid occupying said funnel means up to said predetermined level when in said filling position can be accommodated in said container, and

(d) valve means preventing said hollow interior region of said displacer means from filling when said funnel means is in said filling position and the remainder of the interior of said container is filling with liquid but, upon manipulation without breaking said seal between said engaging means and said container inlet, allowing flow of liquid into said hollow interior region and additional flow of liquid from said funnel means into said container,

whereby filling may be carried out so that the liquid level extends above the upper end of said container inlet to a visible location within said funnel means, and

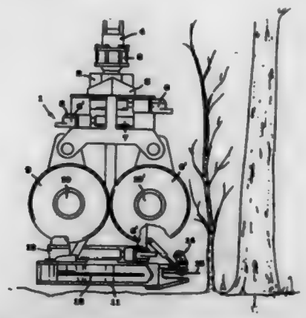
whereby manipulation of said preventing means permits all the liquid previously remaining in said funnel means up to said predetermined level in said filling position to be accommodated in said container.

5,445,197

ARRANGEMENT IN TREE-PROCESSING ASSEMBLY

Sune Larsson, S-822 91 Malvik 61, Alfta, Sweden

PCT No. PCT/SE92/00067, § 371 Date Nov. 29, 1993, § 102(e) Date Nov. 29, 1993, PCT Pub. No. WO92/14352, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 5, 1992, Ser. No. 107,682
Claims priority, application Sweden, Feb. 21, 1991, 9100512
Int. Cl.[6] A01G *23/08*
U.S. Cl. 144—34 R 7 Claims



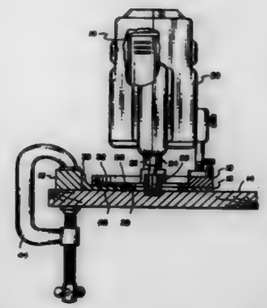
1. In a tree-processing assembly comprising a frame (2), a rotator (3), and wherein said frame is connectable to a tip of a crane by said rotator, a pivoted carrier (5) hingedly connected to said frame, said carrier having at least one set of grapple means (6,6'6") for gripping and holding a log, and a cutting tool (12) attached to a lower part (11) of said carrier, the improvement wherein a rotary saw blade (15) is mounted on said lower part (11) of said carrier (5), said rotary saw blade (15) being pivotally mounted for movement between an inactive position and an active position in which said rotary saw blade (15) can cut material.

5,445,198

ROUTER SUB-BASE

Ronald C. McCarry, West Union, S.C., assignor to Ryobi Motor Products Corporation, Easley, S.C.

Filed Aug. 31, 1994, Ser. No. 299,207
Int. Cl.[6] B27C *5/10*
U.S. Cl. 144—134 D 19 Claims



1. A sub-base for a router adapted to engage a stationary guide while cutting a workpiece, the router having a base with a central opening, a housing with a motor disposed therein, and a rotatable shaft drivable by the motor, the shaft having a collet for receiving and supporting a router bit through the opening in the base for cutting the workpiece, the sub-base comprising:

a plate having a generally planer surface for cooperating with the workpiece, a linear edge, and a central opening adapted for communication with the central opening in the base and for receiving the router bit therethrough;

a straight elongated guide-edge affixed to the plate linear edge and extending perpendicularly away from the plate planer surface in a manner as to lie in outboard shielding relationship to the base; and

means for detachably securing the plate to the base with the central opening of the plate in communication with the central opening of the base and with the guide-edge outboard of the base, wherein the plate is positioned such that the plate planer surface engages the workpiece and the guide-edge extends to engage the stationary guide, and wherein the router bit extends through the openings in the base and the plate to cut the workpiece.

5,445,199

BILLFOLD WITH COIN HOLDER

Youke Jia, 320 W. 27th St., Apt. 2F, Chicago, Ill. 60616

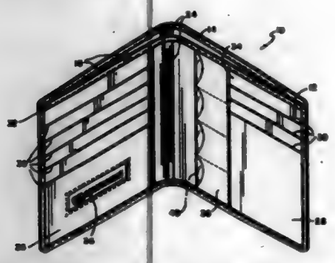
Filed May 5, 1994, Ser. No. 238,536
Int. Cl.[6] A45C *1/06*
U.S. Cl. 150—136 15 Claims

1. In combination with a billfold of the type having a plurality of item-receiving pockets therein adapted to receive paper currency, credit cards, identification pieces and the like, the billfold having a fold line and being foldable upon itself along the fold line,

the billfold having an inner membrane and an outer membrane juxtaposed one to the other, each of the membranes having a periphery defining a top, bottom and two side

edges, the bottom and side edges of each membrane being attached one to the other about the periphery thereof, an opening to a one of the item-receiving pockets adapted to receive paper currency being defined between the top edges of the members,

a single layer strip of material having a bottom and two side edges, the single layer strip being attached in fixed parallel juxtaposition by the bottom and side edges of the single layer strip to the billfold inner membrane so as to substantially define a plurality of coin pockets in side by side relation, each of the plurality of coin pockets adapted to snugly receive therein a single coin only,



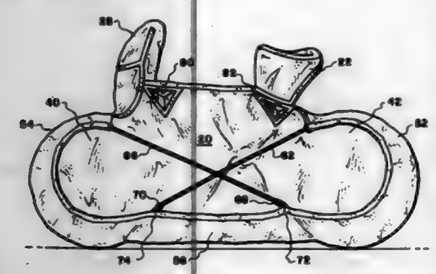
each of the coin pockets having a closed bottom edge, two closed side edges and an open top edge, each of the coin pocket bottom and side edges being attached to the inner membrane such that the open top edge of each of the plurality of coin pockets is adjacent the fold line for insertion of the coin within and removal of the coin from one of the plurality of coin pockets, and such that when the billfold is folded upon itself, the coin within the one of the plurality of coin pockets is restrained within the one of the plurality of coin pockets.

5,445,200

BICYCLE ENCLOSING PROTECTIVE COVER

Mario Celestino, 9608 Oakdale Ave., Chatsworth, Calif. 91311, and Barbara C. Inglehart, 2141 Benecia Ave., Los Angeles, Calif. 90025

Filed Jun. 14, 1993, Ser. No. 76,736
Int. Cl.[5] B60R 9/10
U.S. Cl. 150—167 10 Claims



1. A protective cover for bicycles and similar two-wheeled vehicles comprising;

means forming a handle bar enclosure;

means forming a seat enclosure;

means for sealing said handle bar enclosure means and seat enclosure means;

means forming fitted wheel covers, said means forming fitted wheel covers being a protective fabric formed to fit the shape of and wrap around one wheel and extend along the side of said bicycle to wrap around the second wheel;

alignment means on said means forming said handle bar enclosure, said means forming said seat enclosure and said means for forming said fitted wheel covers for aligning said protective cover with said handle bars, said seat and the plane of said wheels to simplify installation;

closing panel means folding over and wrapping around a side of said bicycle opposite the side covered by said means forming fitted wheel covers;

said handle bar enclosure means and seat enclosure means each comprising a pocket, said alignment means comprising webbing trimming said pockets to indicate the outline of said handle bar seat;

tightening means drawing said closing panel means tight to securely and complete enclose said bicycle;

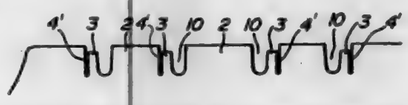
whereby said bicycle is completely enclosed and protected from environmental elements.

5,445,201

HEAVY DUTY PNEUMATIC TIRES PREVENTING UNEVEN WEARING

Takashi Kukimoto; Yasutoshi Aoki; Nsoto Yamagishi, all of Kodaira, and Shinji Usui, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 838,328, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 257,896, Oct. 14, 1988, Pat. No. 5,131,444. This application Oct. 19, 1993, Ser. No. 137,757
Claims priority, application Japan, Oct. 20, 1987, 62-266011; Oct. 22, 1987, 62-265248
Int. Cl.[6] B60C 11/13
U.S. Cl. 152—209 R 3 Claims



1. A heavy duty pneumatic tire preventing uneven wearing comprising main grooves continuously extending in a tread of the tire along a circumference thereof, land portions separated by the main grooves, and stepped means having a flat surface located radially inside a contour line of the tread as viewed sectionally, said stepped means extending substantially continuously in a tire circumferential direction and being positioned in a main groove, said stepped means being comprised of at least one stepped portion bounded on opposite sides by a narrow groove and a narrow cut, respectively, with said narrow groove and said narrow cut each having substantially an identical depth whereby an uneven wear-sacrificed portion is formed by said surface of said stepped means, said uneven wear-sacrificed portion contacting the ground within a ground-contacting area of the tread for supporting a load exerted upon the tire.

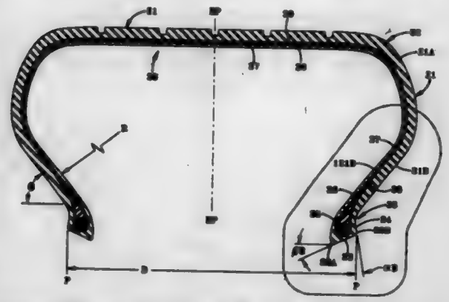
5,445,202

RADIAL PLY TIRE WITH SPECIFIED BEAD PORTION FITMENT TO DESIGN RIM

Gia V. Nguyen, Arlon, Belgium, and Roland A. Terver, Ettelbruck, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 31, 1993, Ser. No. 114,797
Int. Cl.[6] B60C 3/00, 15/024
U.S. Cl. 152—454 7 Claims

1. An improved radial-ply pneumatic passenger tire having an axis of rotation, and a pair of axially-spaced beads respectively including an annular tensile member, and at least one radial ply extending between the annular tensile members of the respective beads, a reinforcing belt structure disposed radially outwardly of the at least one ply, the beads each having a heel portion and a toe portion designed to engage a design rim having bead seat and a design rim width, the design rim having a bead seat angle β_R of about 5° relative to the axis of rotation, the improved tire being characterized by a first annular surface between the heel and toe of each bead and a second annular surface radially outwardly from each bead heel, the first annular surface being in contact with the bead seat of the design rim when the tire is mounted and inflated to normal pressure, the first annular surface, when the tire is unmounted, forming an average angle β with the axis of the tire, when the beads are axially spaced a distance equal to the design rim width, that is at least three degrees greater than the angle formed between the mating bead seat of the design rim and the axis of the tire, and the second annular surface being in contact with an annular flange of the design rim when the tire is mounted and inflated to normal pressure, the second annular surface of the unmounted tire being inclined, relative to a plane P perpendicular to the axis of rotation, at an angle α at least three degrees less than the angle formed between the rim



flange and the plane P perpendicular to the axis of rotation, the angle α being substantially equal to the angular difference of the first annular surface β minus the bead seat angle β_R of about 5°, the second annular surface forming a clearance fit relative to the rim in which upon assembly and inflation the tire beads rotate such that the second surface contacts the rim flange, the improved radial ply pneumatic tire having a pair of sidewalls, one sidewall extending from each bead portion toward a radially outer tread, the maximum axial distance between the sidewalls defining the maximum section width of the tire, the sidewall radially above the location of the maximum section width being the upper sidewall, the sidewall radially below the location of the maximum section width being the lower sidewall, the pair of lower sidewalls being of substantially constant thickness and over a majority of its length forming a conical surface in the tire's unmounted state.

5,445,203

RADIAL TIRE WITH EVEN WEAR AT TREAD SHOULDERS

Kenji Saito, Frankfurt am Main, Germany; Akira Kajikawa, Kobe, Japan; Akihiro Nakatani, Kakogawa, Japan; Atsushi Yamahira, Nishinomiya, Japan; Hiroyuki Noma, Kobe, Japan, and Kazuhiko Kawamura, Akashi, Japan, assignors to Sumitomo Rubber Industries Ltd., Kobe, Japan

Filed Dec. 5, 1991, Ser. No. 802,518
Claims priority, application Japan, Dec. 10, 1990, 2-410002; Dec. 10, 1990, 2-410083; Dec. 28, 1990, 2-415640
Int. Cl.[6] B60C 9/18, 9/20, 9/28
U.S. Cl. 152—527 12 Claims

1. A belted radial ply tire comprising

a tread

a bead core disposed in each of a pair of bead portions,

a carcass extending between the pair of bead portions and turned up around each of the bead cores, and

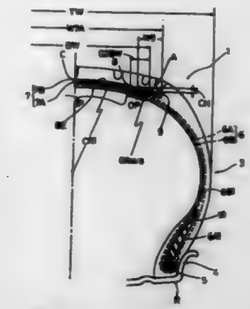
a belt comprising at least two cross plies disposed radially outside the carcass and inside the tread,

in a normal state that the tire is mounted on its regular rim and inflated to its regular inner pressure but loaded with no tire load,

a belt profile comprising a central part IP and a pair of lateral parts OP, wherein,

said belt profile is defined by a thickness center curve L drawn radially equidistantly from the centers of the cords which compose each of two plies forming the effective belt part BE, the effective belt part BE being the part of the belt where the two widest plies overlap such that the cord directions of the respective plies cross each other,

said central part IP extends between two points B, one located on each side of the tire equatorial plane and spaced apart a distance of 0.3 times the effective belt width BW from the tire equatorial plane, the effective belt width BW in millimeters being the maximum width of the effective belt part BE measured between the axially outermost edge points A thereof,



said central part IP having a single radius CR1 of curvature being more than 1.4 times and not more than 15 times the tire section width TW in millimeters,

each said lateral part OP extending axially outwardly from one of the points B to the adjacent outermost edge point A and having a curvature smoothly connected to the curvature of said central part IP, and

the axially outer edge of each said lateral part OP cambered radially inwardly of the tire, so that said effective belt width BW, said tire section width TW and the belt edge camber height CH in millimeters defined as the radial distance between each of said points A and corresponding points B satisfy the following equation:

$$2.50(BW/TW)-1.25<CH<13.3(BW/TW)-4.65.$$

5,445,204

WINDOW BLINDS

Franciscus J. van der Wielen, Oosterhout, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 69,522, Jun. 1, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,454
Claims priority, application United Kingdom, Jun. 2, 1992, 9211545
Int. Cl.[6] E06B 9/06
U.S. Cl. 160—84.04 36 Claims

1. A blind comprising a first set of pairs of elongate planar first and second members, the members of the first set of pairs being hinged together at a first series of hinge lines; a second set of pairs of elongate planar third and fourth members, the members of the second set of pairs being hinged together at a second series of hinge lines; a plurality of first and second connection means, the first connection means hingedly connecting the second members to next adjacent third members and the second connection means hingedly connecting first members to next adjacent fourth members, whereby the first series of hinge lines lie to one side of a given plane, the second

series of hinge lines lie to the other side of said plane, and said first connection means lie in or to one side of said plane and the second set of connection means lie in or to the other side of said plane and whereby the planar members may be arranged in zig-zag array; and operating means effective to cause either the



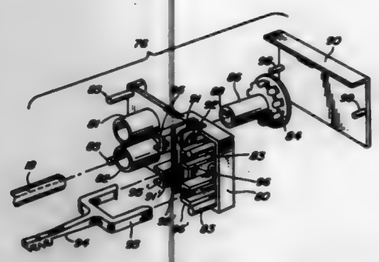
first and second members to be folded towards one another and the third and fourth members to be folded away from one another or the first and second members to be folded away from one another and the third and fourth members to be folded towards one another.

5,445,205

VERTICAL BLIND ASSEMBLY

Don Hansen, 1703 E. Heritage Cir., Anaheim, Calif. 92804

Filed Oct. 8, 1993, Ser. No. 133,569
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—168.1 **20 Claims**



1. A vertical blind system comprising a head casing having open ends and a track therein, a plurality of suspended vertical blinds held vertically by a plurality of carrier means movable along said track between said open ends of said head casing by operating means connected thereto, and each carrier means comprising an elongate, open sided, substantially rectangular housing having two ends and a substantially hollow interior with vertical blind holding means rotatably secured therein, said vertical blind holding means coacting with a worm gear rotatably mounted in each of said carrier means, adjacent to and in engagement with a gear formed on said vertical blind holding means, and wherein:

said open ends of said head casing are closed by interchangeable and reversible end caps;

said elongate, open sided, substantially rectangular housing of each of said carrier means includes a rachet means formed interiorly of an internal opening formed in said worm gear to allow said vertical blinds held in said vertical blind holding means to be self aligning;

each of said carrier means having a pull cord holding element formed integrally at one of the ends of said elongate, open sided, substantially rectangular housing; and

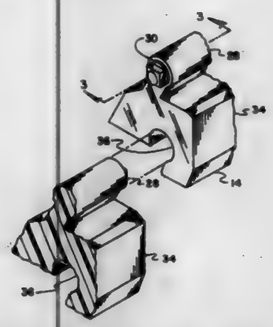
said pull cord holding element having a resilient opening means formed therein for quick and easy insertion of said pull cord into said pull cord holding element from outside of said head casing through said resilient opening means.

5,445,206

FLEXIBLE CLOSURES FORMED OF INTERLOCKING SEGMENTS

James M. Shepard, 2997 Avery Rd., St. Johns, Mich. 48879

Filed Mar. 7, 1994, Ser. No. 206,606
Int. Cl.[6] E05D *15/26*
U.S. Cl. 160—201 **1 Claim**



1. A new and improved flexible closure formed of interlocking segments slidable between a closed operative orientation and an out-of-the-way stored orientation comprising, in combination:

a pair of rails extending parallel with each other in a vertical orientation at their lower extents and extending generally horizontal at their upper extents with curved extents between the upper and lower extents, the rails being formed with facing guide recesses;

a plurality of segments which together constitute the closure, each of the segments located between the facing recesses of the rails to essentially fill the space between the rails at the lower extents when in a closed operative orientation and to essentially fill the space between the rails at the upper extents when in the inoperative storage orientation, each of the segments having an upper portion with a generally semi-circular cross-sectional configuration over the majority of its extent with the axis of the upper portion extending horizontally between the rails, each of the segments also having a lower portion within the lower part thereof with a recess being of a generally semi-circular configuration over the majority of its extent with its axis parallel with the axis of the upper portion, the upper portion of one segment being received within the recess of the lower portion of the next adjacent segment to thereby form coupling zones and thereby allow the flexing of the closure about the axes formed at the coupling zones between adjacent segments, each segment being located between its associated coupling zones, a recess formed in the exterior surface of the lowermost segment for constituting a handle to open and close the closure;

an aperture formed through each upper portion with a shaft extending therethrough with the ends of the shaft slidably recessed in the opposed recesses of the rails with a spherical bearing assembly in each end of each shaft coupling each rail with its associated upper portion; and

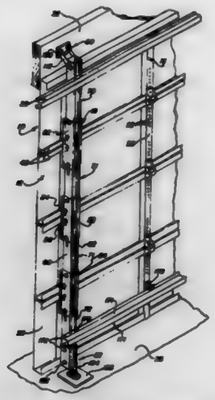
recesses extending generally perpendicular to the axes formed on the exterior surfaces of the segment above the lowermost segment for decorative purposes.

5,445,207

REINFORCED COLLAPSIBLE GARAGE DOOR ASSEMBLY

Aldo Romanelli, Pompano Beach, Fla.; David K. Wegner, Milford, Mich.; George A. Sivore, Jr., Delray Beach, and Dennis M. Romanelli, Lighthouse Point, both of Fla., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 10, 1993, Ser. No. 150,406
Int. Cl.[6] E05D *15/26*
U.S. Cl. 160—209 **27 Claims**



1. A reinforcement assembly for reinforcing a door of the overhead type having a plurality of horizontally extending panels pivotably connected along their top and bottom edges comprising:

(a) a plurality of elongated reinforcing members dimensioned and configured to be operatively mounted vertically on the inner surface of an associated door between the top edge and the bottom edge of each of the several door panels;

(b) a plurality of cap members overlying the adjacent ends of said reinforcing members;

(c) pivot means pivotally connecting said cap members to said adjacent ends of said reinforcing members and permitting relative pivotal movement of said adjacent ends of said reinforcing members in the direction away from said cap members for pivoting of the panels of the associated door as the door is moved between open and closed positions, the configuration of said cap members and pivot means preventing pivoting of said ends of said reinforcing members in the direction of said cap members to prevent buckling of the associated door in the closed position thereof under pressures applied externally thereof; and

(d) disengageable lock means engageable with said cap members and said ends of said reinforcing members at a point spaced from said pivot means to prevent pivoting of said ends of said reinforcing members away from said cap members to prevent buckling of the panels of the associated door in the closed position thereof under positive and negative pressures applied thereto.

5,445,208

VINYL DOOR PANEL SECTION

John F. Shaner, Munroe Falls, and Daniel W. Evans, Hudson, both of Ohio, assignors to Associated Materials, Inc., Akron, Ohio

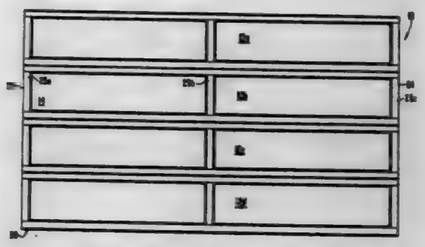
Filed May 27, 1993, Ser. No. 68,067
Int. Cl.[6] E06B *3/12*
U.S. Cl. 160—232 **14 Claims**

1. A rectangular door panel section having a front skin, a rear skin; opposing top and bottom portions, and first and second sides, said door panel section comprising:

a polyvinylchloride first sheet member having an outer surface, an inner surface, a top section and a bottom section, wherein said front skin of said door panel section being comprised essentially of said first sheet member;

a polyvinylchloride second sheet member having an outer surface, an inner surface, a top section and a bottom section, wherein said rear skin of said door panel section being comprised essentially of said second sheet member, and wherein said inner surface of said first sheet member faces said inner surface of said second sheet member; and

a rigid foamed core enclosed between said front and rear skins for unitizing the panel section, said foamed core



extending continuously from the top portion of the panel section to the bottom portion of the panel section, said foamed core being bonded to the inner surface of said first sheet member and to the inner surface of said second sheet member;

said rigid foamed core being a foamed-in-place polyurethane chemically bonded to the inner surface of the first sheet member and to the inner surface of the second sheet member for structurally unitizing the door panel section and eliminating the need for exterior reinforcing supports;

said door panel section having a rear exterior including the outer surface of said rear skin, said rear exterior of said door panel section being substantially void of reinforcing stiles.

5,445,209

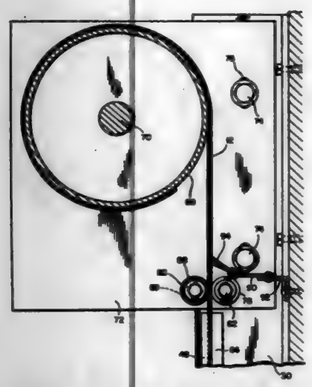
GUIDE SYSTEM FOR VERTICALLY MOVEABLE FLEXIBLE DOOR

Dale M. Licky, 214 Royal Daulton Ct., Gibsonia, Pa. 15044

Filed Jan. 4, 1993, Ser. No. 70,949
Int. Cl.[6] E06B *9/56*
U.S. Cl. 160—273.1 **15 Claims**

1. In a vertically movable closure door including a flexible curtain movable vertically between a closed position in occluding relation to a door opening and an open position out of registry with the door opening, a guide structure along side edges of a door opening for guiding movement of the flexible curtain, the improvement comprising each guide structure including a guide channel opening toward the door opening, said guide channel being defined by spaced, generally parallel flanges, coacting means adjacent the side edge of the curtain and on at least one flange of the guide channel to releasably retain the side edge of the curtain within the guide channel, to guide the vertical movement of the curtain, and to release the curtain from the guide channel upon engagement of a sufficient impact force on said curtain, said coacting means including a laterally extending, outwardly facing projection adjacent the side edge of the curtain and a laterally extending inwardly facing projection on said at least one flange with said projections normally facing each other during vertical movement of the curtain, said projection on said at least one flange of the guide channel being releasably secured to said flange to retain the side edge of the curtain within the guide channel during

vertical movement and enabling the projection to be displaced by separation from the flange of the guide channel upon an



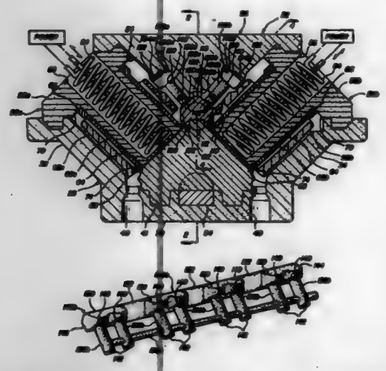
excessive impact force engaging the curtain, thereby enabling the side edge of the curtain to separate from the guide channel.

5,445,210

CASTING CORE FOR FORMING CAST-IN INTERSECTING PUSH ROD PASSAGES AND OIL GALLERY WITHIN A CYLINDER BLOCK

David Brassell, Walled Lake, Mich., assignor to CMI International, Inc., Southfield, Mich.

Continuation of Ser. No. 920,605, Jul. 17, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,891
Int. Cl.[6] B22C *9/00*
U.S. Cl. 164—369 33 Claims



1. A foundry core construction for use in manufacturing a cast cylinder block of an internal combustion engine, said core construction comprising;

a one-piece foundry core fabricated of reducible refractory material including push rod passage-forming means comprising a plurality of laterally spaced push rod passage-forming portions of said core and oil gallery-forming means comprising an integral oil gallery-forming portion of said core extending transversely between push rod passage ends of said push rod passage-forming portions, at least some of said push rod passage-forming portions intersecting and supporting said oil gallery-forming portion intermediate its oil gallery ends for disposition within a casting cavity of a cylinder block casting mold for forming an associated plurality of cast-in push rod passages and intersecting oil gallery within a cylinder block cast in the mold.

24. A method of forming intersecting oil gallery and push rod passages within a cylinder block of an internal combustion engine, said method comprising the steps of:

forming a casting mold having a cylinder block-forming mold cavity therein;

forming a one piece foundry core fabricated of reducible refractory material including a plurality of laterally spaced push rod passage-forming portions and an integral oil gallery-forming portion extending between opposite gallery ends transversely of said push rod passage-forming portions and arranged so that at least some of the push rod passage-forming portions intersect and support the oil gallery-forming portion intermediate said gallery;

positioning the foundry core within the mold cavity so as to preserve a space in the cavity and supporting the oil gallery portion corresponding to the oil gallery and push rod passages to be formed;

casting molten metal into the mold cavity and around the foundry core and allowing the metal to solidify forming a resultant cylinder block having a plurality of cast-in push rod passages and an intersecting oil gallery of the same configuration and arrangement as in the foundry core; and

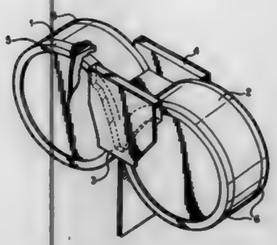
removing the cylinder block from the mold cavity and removing the foundry core from the cylinder block to clear the oil gallery and push rod passages.

5,445,211

ROLLS FOR STRIP CONTINUOUS CASTING MACHINES

Pietro Tolve; Riccardo Tonelli, both of Rome, and Romeo Capotosti, Narni, all of Italy, assignors to Centro Sviluppo Materiali S.p.A., Rome, Italy

PCT No. PCT/EP92/01204, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/21459, PCT Pub. Date Dec. 10, 1992
PCT Filed May 29, 1992, Ser. No. 969,838
Claims priority, application Italy, May 30, 1991, RM91A0374
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—428 10 Claims



1. A strip continuous casting machine comprising:

a pair of rolls, each roll having an outer cylindrical surface;

a plurality of flat bases, each flat base being connected to one end of a respective roll, each flat base extending perpendicular to an axis of rotation of the respective roll; and

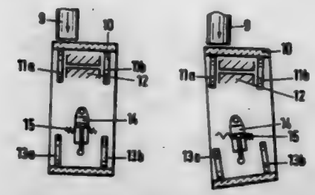
a plurality of annular flanges made of a material resistant to wear and to thermal cycling, wherein each flange is attached to one of the plurality of flat bases, the flange being positioned at an edge between the flat base and the cylindrical surface of the respective roll and protruding in an axial direction from the flat base.

5,445,212

CASTING WHEEL FOR A STRIP CASTING MACHINE

Armin Frasenkrou, Iserlohn; Volker Ilchmann, Menden; Erhard Vogt, Düsseldorf, and Herbert Gellenbeck, Hemer-Sundwig, all of Germany, assignors to Sundwiger Eisenhutte Maschinenfabrik GmbH & Co., Hemer-Sundwig, Germany

Filed May 4, 1993, Ser. No. 57,710
Claims priority, application Germany, May 8, 1992, 42 14 729.8
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—429 25 Claims



1. A casting wheel for a strip casting machine comprising,

a casting ring rotatably mounted internally on rollers,

at least one first roller mounted radially rigid inside of said casting ring on at least one first supporting element in a first zone of feeding molten metal of said casting ring,

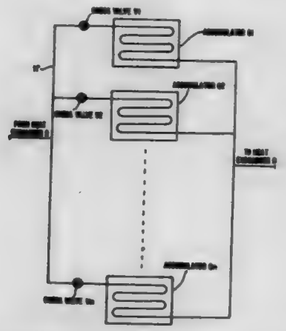
at least one second roller mounted radially adjustably opposite said first zone on at least one second supporting element, wherein said at least one second roller and said at least one second supporting element adjusts radially so that said at least one first roller and at least one second roller continue to support said casting ring, which is conically deformed from thermal expansion, by pulling said casting ring against said first rollers so as to maintain said casting ring in a constant position in said first zone, wherein at least one of said second rollers is pivoted in relation to the axis of the casting ring.

5,445,213

HEAT ACCUMULATOR FOR HEAT ENERGY AND COLD ENERGY ACCUMULATING SYSTEM

Jong-Sung Im, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Sawon City, Rep. of Korea

Filed Jun. 7, 1994, Ser. No. 255,964
Claims priority, application Rep. of Korea, Jun. 7, 1993, 93-10231
Int. Cl.[6] F28D *19/00*; F25D *3/00*
U.S. Cl. 165—10 4 Claims



1. A heat accumulator assembly for a thermal energy accumulating system, comprising:

a plurality of thermal accumulator units, each charged with a phase change material; and

a heat exchanging pipe arrangement passing through said accumulator units in parallel relationship for conducting refrigerant;

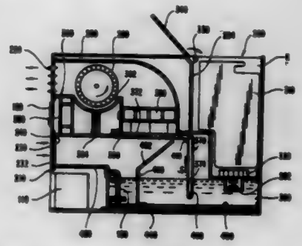
each accumulator unit having a pressure controller varying the pressure and melting temperature of the phase change material disposed therein such that the phase change materials in the respective accumulators have different melting temperatures from each other.

5,445,214

COOLING/HEATING AIR CONDITIONER AND CONTROL CIRCUIT THEREOF

Gaen-Pil Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 7, 1993, Ser. No. 57,850
Claims priority, application Rep. of Korea, May 7, 1992, 92,7737; Jul. 8, 1992, UM92 12523 U
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—11.1 14 Claims



1. An air conditioner comprising:

a housing forming an internal air path extending from an inlet to an outlet;

a fan for inducing an air flow through said air path from said inlet to said outlet;

a water-containing tank mounted at a lower side of said housing;

a heat exchange filter passing across said air path and arranged to be moistened with water from said tank so that air passing through said filter exchanges heat with the water in said filter; and

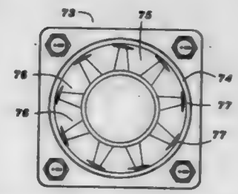
a moisture collecting filter disposed in said air path downstream of said second portion of said filter for removing moisture from the air after the air has passed through said filter.

5,445,215

FAN ASSEMBLY WITH HEAT SINK

Edward Herbert, 1 Dyer Cemetery Rd., Canton, Conn. 06019-2029

Continuation-in-part of Ser. No. 994,671, Dec. 22, 1992, Pat. No. 5,297,617. This application Mar. 28, 1994, Ser. No. 218,759
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[6] F28F *13/12*
U.S. Cl. 165—80.3 13 Claims



1. A fan assembly with heat sink comprising:

a fan having a plurality of fan blades, means for rotating the fan so that air is moved within the fan assembly with heat sink,

a fan duct having a wall with an inside and an outside surface surrounding the fan, the fan rotating within the fan duct with the plurality of fan blades of the fan proximate to the inside surface of the fan duct, at least one heat sink mounting surface integral to the fan duct for mounting a device to be cooled or heated, whereby

the heat further being conducted from the fan duct to air which is moved within the fan assembly with heat sink, and whereby

the conduction of heat is enhanced by the high velocity and turbulence of the air in the vicinity of the plurality of fan blades of the fan.

5,445,216

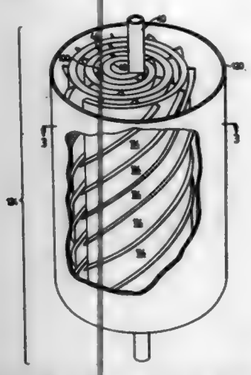
HEAT EXCHANGER

Antonio Cannata, 14 Patience Crescent, London, Ontario, Canada N6E 2K9

Filed Mar. 10, 1994, Ser. No. 209,645

Int. Cl.[6] F25B *3/00*

U.S. Cl. 165—88 **18 Claims**



1. A wound plate heat exchanger, comprising:

a fluid receiving chamber including first and second opposed edges and having at least first and second regions interconnected adjacent said first edge;

an inlet manifold at said second edge and connected to said first region;

an outlet manifold at said second edge and connected to said second region, said inlet and outlet manifold defining an axis;

a plurality of elongate induction fins extending substantially normally from a surface of said chamber and orientated ant an angle from between about 10 degrees to about 80 degrees with respect to said axis, said chamber being wound about said longitudinal axis such that said induction fins define passages arranged between convolutions of said chamber;

first and second bearing members connected to a respective one of said inlet manifold and said outlet manifold such that said inlet and outlet manifolds and said chamber are rotatably mounted to said first and second bearing members; and

drive means to rotate said chamber such that air is drawn through said passages.

5,445,217

DEVICE FOR THE PRODUCTION OF COLD AND/OR HEAT BY SOLID-GAS REACTION

Jean Castaing, Pollestres, and Pierre Neveu, Saint-Jean Lasseilles, both of France, assignors to Societe Nationale Elf Aquitaine, France

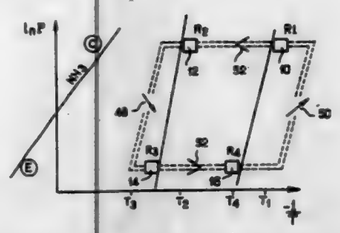
PCT No. PCT/FR93/00135, § 371 Date Oct. 7, 1993, § 102(e) Date Oct. 7, 1993, PCT Pub. No. WO93/16339, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 10, 1993, Ser. No. 129,074

Claims priority, application France, Feb. 14, 1992, 92 01680

Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.12 **4 Claims**



1. Device for producing cold and/or heat by chemical reaction comprising at least four reactors, each containing a salt capable of reacting chemically with a gas, a vessel intended to receive the gas from the reactors and a vessel intended to deliver the gas to the reactors, the device being arranged so that, during the chemical reaction, two reactors are at the same higher pressure level and two reactors are at the same lower pressure level, the device additionally comprising a heat transfer fluid circuit intended to transfer heat between the reactors which are at the same pressure level, wherein the heat transfer fluid circuit is closed and connects the four reactors, this circuit additionally comprising a cooler and a heating device for a fluid in the heat transfer fluid circuit.

5,445,218

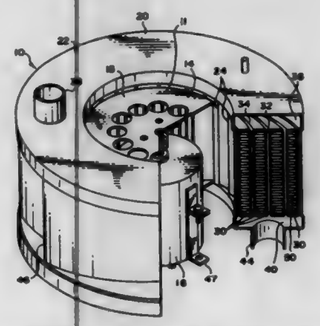
COMPACT HEAT EXCHANGER

Sen Nieh, 14345 Hollyhock Way, Burtonsville, Md. 20866

Filed Feb. 22, 1994, Ser. No. 198,038

Int. Cl.[6] F28F *13/12*

U.S. Cl. 165—125 **13 Claims**



1. A heat exchanger for a first and a second fluid and comprising an annular body having a longitudinal axis, an exterior and an interior peripheral wall with said interior peripheral wall defining an interior volume, a plurality of first fluid inlets located on said interior peripheral wall in said interior volume and a corresponding plurality of first fluid outlets located on said exterior of said body, said body having a first end and a second end spaced therefrom along said axis, a second fluid inlet adjacent said first end and a second fluid outlet spaced from said second fluid inlet;

said body having interiorly thereof a plurality of first fluid passages extending from each said first fluid inlet on said interior wall to a respective one of said first fluid outlets on said exterior peripheral wall with said first fluid passages each curving smoothly and arcuately from said interior to said exterior peripheral wall;

said body having interiorly thereof a plurality of second fluid passages extending from said first end of said body to said second end thereof and then to said second fluid outlet, said second fluid passages being substantially uniformly interposed between said first fluid passages;

said interior volume of said annular body including a fluid pumping means for pumping a fluid of a selected temperature from said interior volume through said first fluid passages to said first fluid outlets.

5,445,219

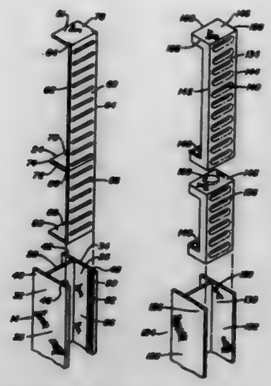
TWO-PIECE HEADER

Scott L. Hutto, and John M. McCrady, both of Burleson, Tex., assignors to Wynn's Climate Systems, Inc.

Division of Ser. No. 102,694, Aug. 5, 1993, Pat. No. 5,366,007. This application Aug. 16, 1994, Ser. No. 291,208

Int. Cl.[6] F28D *1/06*

U.S. Cl. 165—173 **9 Claims**



1. A hent exchanger comprising in combination:

a pair of header channels, each header channel having a substantially rectangular cross section with two side walls, a hollow interior, first and second opposite ends and having a longitudinally extending open portion extending between the first and second ends;

a pair of header plates, each header plate being substantially flat and having opposite side edges and an upper end and a lower end, each header plate having a series of holes extending along the length of the plate, each header plate being joined to one of the header channels so that each header plate extends over the open portion of said one of the header channels;

a plurality of generally parallel tubes having opposite ends, the tubes being disposed between the pair of header channels so that the ends of each tube extead through the holes of each header plate;

a web portion which extends along and is integrally formed with the side edges of each header plate; and

a pair of end caps integrally formed on the ends of each header plate, each end cap having opposite side edges and an end edge, the end caps projecting into the interior of each header channel for capping the header channels; and wherein the web portion extends along and is integrally formed with the side edges and end edge of each end cap.

5,445,220

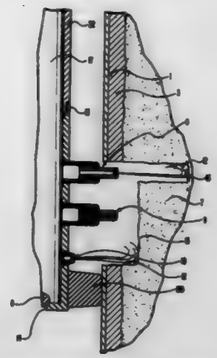
APPARATUS FOR INCREASING PRODUCTIVITY BY CUTTING OPENINGS THROUGH CASING, CEMENT AND THE FORMATION ROCK

Alexander E. Gurevich, Los Angeles, Calif., and Ralph R. Hoelscher, Scottsdale, Ariz., assignors to Allied Oil & Tool Co., Inc., Scottsdale, Ariz.

Filed Feb. 1, 1994, Ser. No. 189,548

Int. Cl.[6] E21B *29/06*

U.S. Cl. 166—55 **17 Claims**



1. A perforator for cutting into the wall of a wellbore comprising:

a perforator body;

a port for receiving into the perforator body a liquid under pressure;

a jet nozzle means for ejecting therefrom the liquid under pressure in the perforator, said jet nozzle means moving into an extended position thereof away from the perforator body as a function of the pressure of the liquid in the perforator;

a biasing means for urging the jet nozzle means into a retracted position thereof towards the perforator body;

a stationary nozzle means for cutting a slot into the wall of the wellbore, the stationary nozzle means being stationary relative to the perforator body and having a plurality of jets for ejecting therefrom the liquid under pressure in the perforator body; and

said jet nozzle means further comprising:

an inner cylinder situated in an outer cylinder, the inner cylinder moving between a retracted position into the outer cylinder and an extended position out of the outer cylinder and away from the perforator body and into the slot cut into the wall of the wellbore by the stationary nozzle means, said inner cylinder moving into the extended position thereof as a function of the pressure of the liquid in the perforator body, the inner cylinder having a jet for ejecting therefrom the liquid under pressure so as to cut a slot into the wall of the wellbore that is deeper than the slot cut by the stationary nozzle means; and

a means for biasing the inner cylinder into the retracted position thereof.

5,445,221

CONTROLLING FERRIC IONS WHILE ACIDIZING SUBTERRANEAN FORMATIONS

Edward F. Vinson, Duncan, Okla., assignor to Plainsman Technology, Inc., Marlow, Okla.

Filed Apr. 21, 1994, Ser. No. 230,749
Int. Cl.[6] E21B *43/27*
U.S. Cl. 166—279 20 Claims

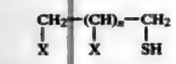
17. A method of preventing the formation of ferric iron-containing compounds and the formation of sludge while treating a subterranean formation containing heavy crude with an aqueous composition in the presence of ferric ions, said method comprising the steps of:

forming an acidic composition by mixing an aqueous acidic solution with an effective amount of a water soluble ferric ion reducing agent,

placing said acidic composition in contact with said formation

permitting said acidic solution to dissolve portions of said formation and said ferric ion reducing agent to reduce said ferric ions in the presence said acidic composition to ferrous ions whereby the formation of ferric iron-containing compounds and the formation of said sludge is prevented;

wherein said ferric ion reducing agent is a compound represented by the general formula



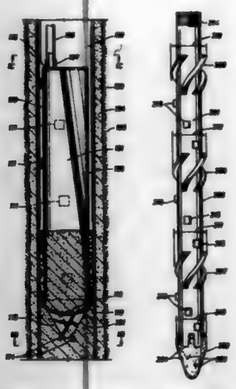
wherein n is a number in the range of from 0 to about 4, X is selected from the group consisting of H, OH, SH and mixtures thereof and the pH of said aqueous acidic solution has a value of about 4 or less.

5,445,222

WHIPSTOCK AND STAGED SIDETRACK MILL

Michael D. Pritchard; James R. McCain; Gary R. McCain, and Mark D. Bright, all of Bakersfield, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 7, 1994, Ser. No. 260,158
Int. Cl.[6] E21B *7/08, 29/06, 10/26*
U.S. Cl. 116—298 19 Claims



1. A sidetrack mill for drilling through a cased borehole to provide a sidetracked wellbore having a final diameter, the mill comprising:

a pilot mill having a tapered cutting surface being, at its largest diameter, between about 50% and about 75% of the final diameter;

a second stage cutting surface being, at its smallest diameter about the diameter of the maximum diameter of the pilot mill, and being at its largest diameter, at least five percent greater in diameter than the largest diameter of the pilot mill; and

a final stage cutting surface being, at its largest diameter, about the final diameter, and at the smallest cutting surface diameter, being a diameter of at least about 5% smaller than the final diameter,

wherein each of the stages are placed along a drive and separated along the drive by a distance at least five times the final diameter.

8. A method to provide a sidetracked wellbore through a cased borehole the sidetracked wellbore having a final diameter, the method comprising:

providing a whipstock, the whipstock comprising an elongated wedge shaped body having a wedge surface of a hardness greater than the casing, and less than tungsten carbide;

securing the whipstock in the borehole with wellbore cement; and

milling a window in the casing by rotating a mill in the wellbore along the wedge surface of the whipstock.

5,445,223

DELAYED BORATE CROSSLINKED FRACTURING FLUID HAVING INCREASED TEMPERATURE RANGE

Erik B. Nelson, Broken Arrow, Okla.; Kay E. Cawiezel, Longview, Tex., and Vernon G. Constien, Sperry, Okla., assignors to Dowell, a division of Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 15, 1994, Ser. No. 213,640
Int. Cl.[6] E21B *43/267*
U.S. Cl. 166—308 5 Claims

1. A method of fracturing a subterranean formation comprising the steps of:

a. providing an aqueous hydrated galactomannan gum fluid,

b. adding to the hydrated galactomannan gum fluid a base and an organic polyol,

c. adding an encapsulated soluble boron-containing compound to the hydrated galactomannan gum fluid containing a base and an organic polyol, and

d. pumping the galactomannan gum fluid with the added components into a wellbore to a subterranean formation at fracturing pressures.

5,445,224

HYDROSTATIC CONTROL VALVE

Luther R. Comeaux, 9993 J. Torres Rd., P.O. Box 356, Maringouin, La. 70757

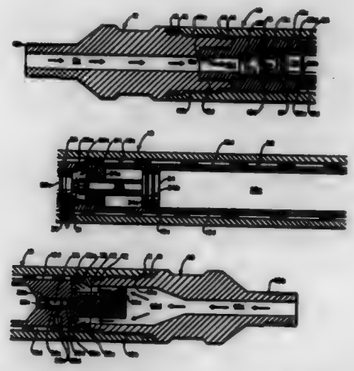
Filed Sep. 1, 1994, Ser. No. 299,310
Int. Cl.[6] E21B *34/10, 37/00*
U.S. Cl. 166—312 20 Claims

1. A hydraulically actuated control valve assembly for location in a tubing string for controlling the flow of fluids being injected into an oil or gas well through the tubing string, said control valve assembly comprising:

a. generally cylindrical hollow body means for connection to said tubing string for receiving and selectively conveying fluids received from said tubing string therethrough, said body means having an open top end and an open bottom end, said body means having a flow passage therein for conveying fluids from said top end of said hollow body means to said bottom end of said hollow body means, said top end being provided with means for connecting said top end to said tubing string, said bottom end being provided with means for connecting said bottom end to a tool for injecting said fluids into a well,

b. a movable piston slidably received in said body means, said movable piston being movable upward against a top seal to stop the flow of fluids through said flow passage and being movable downward against a stop to enable fluids to flow through said flow passage from said top end to said bottom end in response to sufficient hydraulic pressure being applied to said fluids in said tubing string,

c. biasing means contained inside said body means for biasing said piston toward said top end of said body means to stop the conveyance of fluids through said flow passage, and



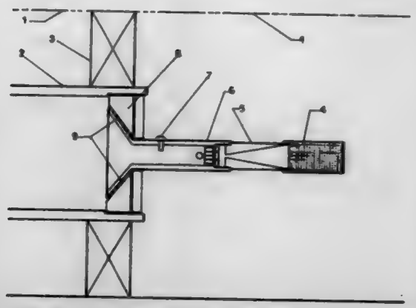
d. port means located beneath said piston for conveying fluids contained in said body means beneath said piston to the exterior of said body means when said piston is forced against said top seal, said port means being closed by said piston when said piston is forced downward against said stop.

5,445,225

CHOKE FOR ENHANCED GAS AND OIL WELL PRODUCTION

Merl D. Wiggins, Sr., 8227 Misty Oaks Ave., Baker, La. 70714

Filed Sep. 2, 1994, Ser. No. 298,973
Int. Cl.[6] E21B *34/00*
U.S. Cl. 166—319 19 Claims



1. In combination with a well including an outer tubular casing, an inner tubular production string concentrically disposed within said casing and a packer disposed within an annulus defined by an outer surface of said tubular production string and an inner surface of said outer casing, a choke apparatus comprising:

a housing having an inlet and an outlet interconnected by a passageway and a valve seat across said outlet;

a screen including a plurality of openings therethrough, said screen disposed adjacent to said inlet of said housing;

a valve member cooperable with said valve seat to control flow therethrough;

a funnel having large first open end, and a small second open end interconnected by a passageway, said small second open end axially and releasably attached to said housing adjacent to said outlet; and

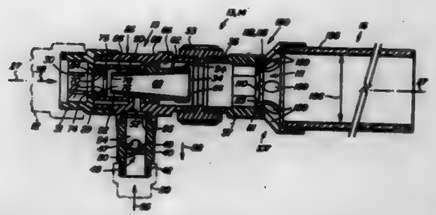
an annular seat having an inside surface and an outside surface, wherein said inside surface of annular seat surrounds an outer surface of said large first open end of said funnel and is releasably engageable therewith, and said outside surface of said annular seat is disposed against and releasably engageable to an inner surface of said production string.

5,445,226

FOAM GENERATING APPARATUS FOR ATTACHMENT TO HOSE DELIVERING PRESSURIZED LIQUID

Blayney J. Scott, Victoria; Barry G. Gilbert, Sidney, and George R. Cowan, Barnstown, all of Canada, assignors to Scott Plastics Ltd., Victoria, Canada

Filed May 4, 1993, Ser. No. 55,882
Int. Cl.[6] A62C *31/12*
U.S. Cl. 169—15 11 Claims



1. A fire fighting apparatus for use with a water bearing hose delivering water under pressure, the apparatus comprising:

(a) a foaming apparatus attachable to the hose, the foaming apparatus comprising a mixing body having a water inlet port connectable to the hose to receive the water therefrom, a foam concentrate inlet port to receive foam concentrate, and a mixture outlet port to discharge a foam/water mixture therethrough, the foaming apparatus further comprising an eductor nozzle having an eductor inlet portion to receive the water from the water inlet port, an eductor outlet portion communicating with the mixture outlet port to discharge the foam/water mixture therethrough, and an eductor suction port located between the inlet and outlet portions, the eductor outlet portion being free of obstruction and having a downstream diverging passage to provide an increasing cross-sectional area in direction of flow therethrough, the foaming apparatus further comprising delivery manifold means for supplying the foam concentrate to the eductor suction port and extending peripherally around the eductor suction port to permit the foam concentrate to be drawn into the eductor nozzle for discharge therethrough, and a foam concentrate conduit communicating with the foam concentrate inlet port to supply the foam concentrate to the delivery manifold means;

(b) a source of foam concentrate having an opening communicating with the foam concentrate inlet port;

(c) an air entrainment nozzle communicating with the mixture outlet port to generate foamed water, the air entrainment nozzle comprising a nozzle body with a nozzle inlet portion connected to the mixing body adjacent the mixture outlet port thereor for receiving the mixture, a nozzle outlet portion to discharge the foamed water, and an intermediate portion disposed between the nozzle inlet and outlet portions, the nozzle outlet portion having an essentially constant cross-sectional area, and the intermediate portion having a plurality of air entrainment openings disposed therearound to entrain air into the mixture passing through the nozzle; and

(d) an agitator means for agitating the foam/water mixture

to produce the foamed water, the agitator means being located generally adjacent the air entrainment openings in the air entrainment nozzle, the agitator means comprising:

(i) an agitator body having an agitator jet orifice comprising an inlet jet opening and an outlet jet opening disposed in series, the outlet jet opening being larger than the inlet jet opening and communicating with the inlet jet opening to define a diverging passage extending through the agitator means and the jet opening being aligned about a jet axis passing therethrough;

(ii) the inlet jet opening having a plurality of elongated inlet slits extending outwardly from the jet axis, the inlet slits having a width defined by space between oppositely facing inlet slit side walls;

(iii) the outlet jet opening having a plurality of elongated outlet slits extending outwardly from the jet axis, the outlet slits having a width defined by space between outlet slit side walls, the width of an outlet slit of a pair of aligned inlet and outlet slits being greater than the width of the inlet slit of the said pair; and

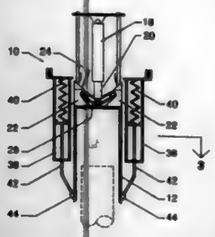
(iv) each pair of inlet and outlet openings has at least one step, of a first step means, located between an inlet slit side wall and an outlet slit side wall adjacent one side of the pair of inlet and outlet slits, so that flow through the inlet and outlet jet openings passes across the first step means to agitate the flow to enhance foamings.

5,445,227

RELEASE MECHANISM FOR A HYDRAULIC POST DRIVER

Alden Heppner, Box 348, Lac la Biche, Alberta, Canada T0A 2C0

Filed Mar. 31, 1994, Ser. No. 220,538
Int. Cl.[6] E02D *7/08*
U.S. Cl. 173—124 6 Claims



5. A release mechanism for an hydraulic post driver having a hammer, guide means for directing the hammer from a raised release position along a substantially vertical downward impact path, and a fluid expandable cylinder disposed above the hammer and having a telescopically extendible piston serving as means for lifting the hammer to the raised position, the improvement comprising:

a hammer having a female top member with inwardly directed gripping dogs;

a piston having a generally "V" shaped male member with arms outwardly biased by a spring, the outwardly biased arms having gripping rollers at each extremity and tripping rollers adjacent the gripping rollers, the tripping rollers being vertically aligned with and move along the guide means; and

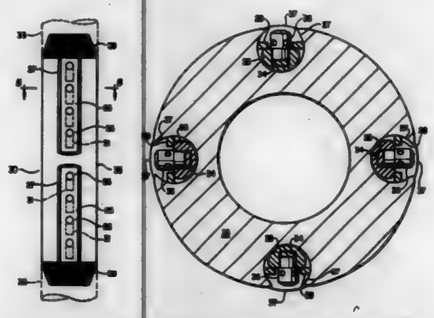
inclined planes on the guide means, such that the tripping rollers move along the guide means until they engage the inclined planes, as the tripping rollers move up the inclined planes the outwardly biased arms of the "V" shaped male members move together thereby releasing the gripping rollers from the inwardly directed gripping dogs of the female top member on the hammer to let the hammer fall by force of gravity.

5,445,228

METHOD AND APPARATUS FOR FORMATION SAMPLING DURING THE DRILLING OF A HYDROCARBON WELL

James J. Rathmell, Rockwall, and Charles L. Vavra, Lucas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 7, 1993, Ser. No. 88,169
Int. Cl.[6] E21B *49/04*
U.S. Cl. 175—4 19 Claims



12. A method for obtaining samples of the formation from the sidewalls of a wellbore, comprising:

assembling a tool comprising a sub having first and second ends for coupling within a drill string and having a mandrel along an exterior surface, said mandrel having an open cross-section extending to the first end of said sub, by sliding a gun assembly into said mandrel from the first end of said sub, said gun assembly comprising:

a housing, having a size and shape allowing it to be inserted into said mandrel from the first end of said sub;

a plurality of sampling bits disposed within said housing; and

a plurality of charges, each coupled to one of said plurality of sampling bits;

coupling said sub within the drill string near a drill bit;

drilling a wellbore with the drill bit;

activating one of said plurality of charges to fire its associated sampling bit into the formation adjacent said sub;

withdrawing said drill string and sub from said wellbore, so that the sample of the formation obtained by said sampling bit after the activating step may be analyzed;

detaching the first end of the sub from the drill string; and

slidably removing the gun assembly from the mandrel in said sub.

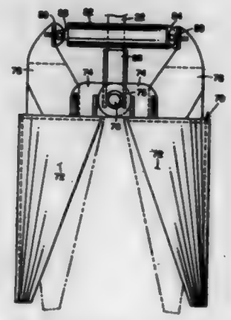
5,445,229

METHOD AND APPARATUS FOR DRILLING, CRACKING, AND WITHDRAWING EARTH CORES

Robert L. Delima, P.O. Box 117, Kurtistown, Hi. 96760

Filed Sep. 12, 1994, Ser. No. 304,776
Int. Cl.[6] E21B *7/26, 25/10*
U.S. Cl. 175—20 17 Claims

11. An apparatus for grabbing and removing earth cores comprising a grabbing means sized to fit a drill groove made by a conventional rotary core drill after said core drill is withdrawn, whereby said grabbing means is screwed into said drill groove, activated to engage said earth core, and hoisted to lift and remove said earth core leaving a core hole.

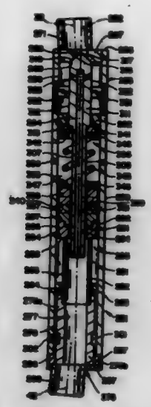


5,445,230

DOWNHOLE DRILLING SUBASSEMBLY AND METHOD FOR SAME

Willard H. Watteaburg, 711 Parkwood Dr., Chico, Calif. 95928, and Eric J. Watteaburg, 535 Oak Ave., Davis, Calif. 95616

Filed Oct. 1, 1993, Ser. No. 130,286
Int. Cl.[6] E21B *7/08*
U.S. Cl. 175—74 31 Claims



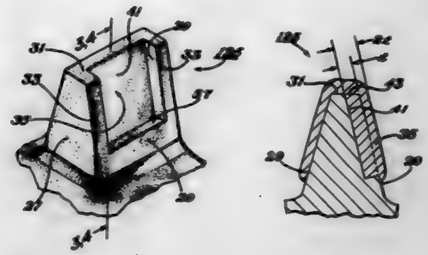
28. In a downhole drilling subassembly for use with a pressurized fluid carrying drill string extending from a well head down a bore hole and having upper and lower sections disposed at an angle with respect to each other in the bore hole, the upper and lower sections having respective upper and lower longitudinal axes, an upper tubular housing adapted to couple to the upper section of the drill string at an oblique angle and extending along a subassembly longitudinal axis, a lower tubular housing slidably concentrically carried by the upper tubular housing and adapted to couple to the lower section of the drill string at an oblique angle, a tubular element slidably carried within the upper and lower tubular housings, the upper and lower tubular housings and the tubular element having respective bores extending longitudinally therethrough adapted to permit the passage of pressurized fluid, means carried by the upper and lower tubular housings for causing the upper and lower tubular housings to rotate with respect to one another between first and second relative angular positions about the subassembly longitudinal axis as the lower tubular housing is longitudinally extended from and retracted back into the upper tubular housing and means carried by the lower tubular housing and the tubular element dependent upon the relative angular position of the upper and lower tubular housings for adjusting the fluid pressure at which fluid flow commences through the subassembly upon pressurization of the drill string.

5,445,231

EARTH-BURNING BIT HAVING AN IMPROVED HARD-FACED TOOTH STRUCTURE

Danny E. Scott; Mou-Chih Lu, and Rudolf C. O. Pessier, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 25, 1994, Ser. No. 279,583
Int. Cl.[6] E21B *10/16, 10/50*
U.S. Cl. 175—374 20 Claims



1. An improved earth-boring bit comprising:

a bit body;

at least one cutter rotatably secured to the bit body, the cutter including a plurality of teeth formed integrally with the cutter and arranged in circumferential rows on the cutter, each tooth having a pair of ends, a pair of flanks, and a crest substantially transversely connecting the ends and flanks;

a pair of ribs formed on at least one of the flanks of at least one of the teeth, the ribs being spaced apart to define a central depression therebetween in the flank of the tooth, the depression extending through the crest of the tooth; and

a thickness of wear-resistant material generally filling the depression and applied over the ribs, the crest, and a portion of the ends and flanks of the tooth, the thickness of the wear-resistant material over the depression being substantially greater than elsewhere on the at least one tooth.

5,445,232

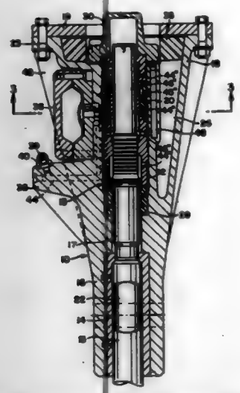
HYDRAULIC BREAKING HAMMER

Östen Brännström, Saltsjö-Boo, and Roland Henriksson, Nacka, both of Sweden, assignors to Atlas Copco Berema Aktiebolag, Nacka, Sweden

PCT No. PCT/SE93/00382, § 371 Date Oct. 5, 1994, § 102(e) Date Oct. 5, 1994, PCT Pub. No. WO93/22106, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 29, 1993, Ser. No. 313,307
Claims priority, application Sweden, Apr. 29, 1992, 9201340
Int. Cl.[6] E21B *10/00*
U.S. Cl. 175—417 16 Claims

1. A hydraulic breaking hammer (10) comprising a machine housing (11), in which a percussion motor (15) includes a cylinder part (12) and a percussion piston (17) which is reciprocatingly movable in the cylinder part (12) and which delivers blows to a breaking tool (13) supported in a tool-receiving portion (16) at the front of the housing (11), wherein the housing (11) is carried by a surrounding carrier support (18) which

is attached to a connector means (19) for guiding the hammer (10) mechanically during its work, characterized in that the machine housing (11) is undivided in its axial direction and interiourly in a guide passage (21) of the housing, without the support of side bolts, carries the cylinder part (12) of the percussion motor (15) fixed axially in said guide passage (21)



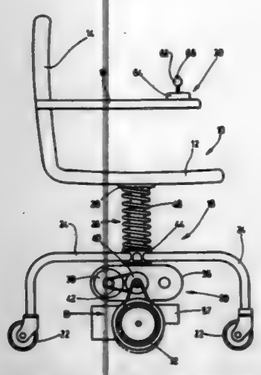
between an inner abutment (29) adjacent the tool-receiving portion (16) of the housing and a cover member (30) attached to the rear end of the housing; in that the machine housing (11) merges with the carrier support (18) via stiffening intermediate walls (24, 25); and in that the carrier support (18), the intermediate walls (24, 25) and the machine housing (11) are incorporated in a single one-piece metal structure.

5,445,233

MULTI-DIRECTIONAL MOTORIZED WHEELCHAIR

Geoffrey R. Fernie, 29 Blaketon Road, Islington Ontario, Canada M9B 4W4 , and Gerald T. Griggs, 77 Shrewsbury Square, Scarborough Ontario, Canada M1T 1L4

Filed Aug. 4, 1994, Ser. No. 285,743
Int. Cl.[6] B62D *11/04*
U.S. Cl. 180—6.5 **5 Claims**



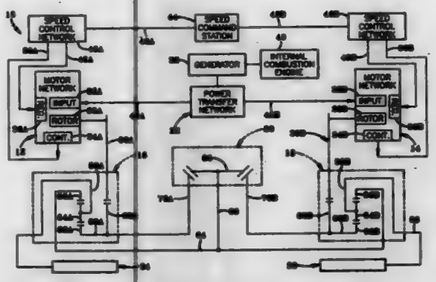
1. A multi-directional motorized wheelchair having a seat portion, and a back portion, and comprising;
two drive wheels, each said drive wheel having a separate motor means for driving a said drive wheel forwardly or backwardly independently of the other of said drive wheels;
drive wheel mounting means mounting said drive wheels beneath said seat portion;
means for operating said drive wheels either simultaneously in the same direction, or one of them in one direction, or simultaneously in opposite directions;
stabilizer wheels mounted beneath said seat portion, and extending outwardly from around said drive wheels, whereby to stabilize said wheel chair, and,
slidable mounting means on said column means, said stabilizer wheels being attached to said slidable mounting means, and being slidable relative to said column means, and spring means urging said stabilizer wheels downwardly against a surface beneath said wheel chair.

5,445,234

DUAL DRIVE TRANSMISSION

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1994, Ser. No. 197,036
Int. Cl.[6] B62D *11/04*
U.S. Cl. 180—6.28 **16 Claims**



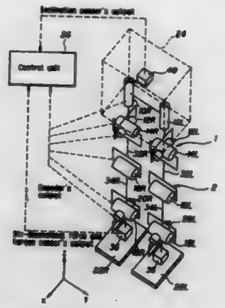
1. A dual-drive electric transmission comprising:
a generator;
means to operate said generator;
left and right motor networks powered by said generator;
speed control means independently to operate each said left and right motor networks at selected speeds;
left and right combining differential means associated with said respective motor networks;
each said combining differential means having a sun gear, a ring gear and a plurality of planetary gears meshing with said sun and ring gears;
an output carrier supporting said planetary gears;
means for operatively driving said sun gear in said left and right combining differential means with said left and right motor networks, respectively;
means to conjoin said ring gears for unitary rotation in order to provide a mechanical regenerative path between said combining differential means; and,
transfer differential means interacting between said sun gear in said left and right combining differential means to serve as a mechanical regenerative path until one of said left and right motor networks reverse rotates under the load applied to said output carrier.

5,445,235

LEGGED MOBILE ROBOT EQUIPPED WITH IMPACT ABSORBER

Hiroshi Gomi; Masao Nishikawa; Masato Hirose; Hideaki Takahashi, and Takashi Matsumoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,314
Claims priority, application Japan, May 26, 1992, 4-158730
Int. Cl.[6] B25J *19/00*
U.S. Cl. 180—8.6 **25 Claims**



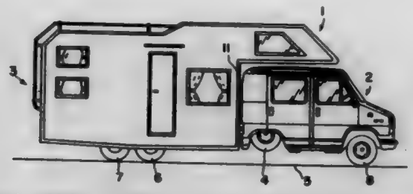
1. A mobile robot comprising:
a body;
legs attached to the body; and
an impact absorber on the robot having a member displaceable from an initial position when a force other than a ground reaction force acts on the robot, to absorb impact.

5,445,236

VEHICLE

Sieghart Kuhn, Eschlohner Str. 36, D-4286 Südlohn, Germany, assignor to Sieghart Kuhn and Bernhard Hotzel, both of Germany

PCT No. PCT/EP91/01559, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO92/04205, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 16, 1991, Ser. No. 987,269
Claims priority, application Germany, Aug. 30, 1990, 40 27 480.2
Int. Cl.[6] B62D *53/04, 61/12*
U.S. Cl. 180—14.1 **24 Claims**



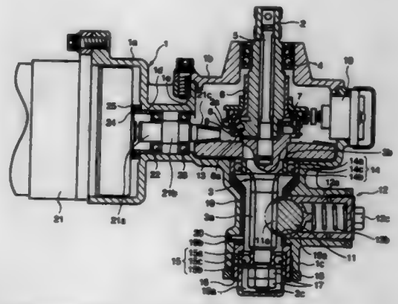
1. A vehicle comprising a traction vehicle (2) having driven front wheels (8), rear wheels, and a brake circuit, which by way of a coupling assembly which includes at least one coupling jaw (14) fixedly mounted on the traction vehicle, is adapted to be rigidly coupled in an operative connection with at least one coupling arm (13) one a trailer (3) having at least two wheels and a brake circuit wherein in the coupled state the rear wheels of the traction vehicle which are suspended from suspension links (19a, 19b) are lifted off the road surface and the operative connection between the at least one coupling jaw (14) and the at least one coupling arm (13) is locked automatically upon coupling, and the rear wheels (4) of the traction vehicle (2) are lifted by a swivel drive common to both suspension links (19a, 19b) when the coupling operation has been completed, the operative connection comprising electrical contacts integrated in the at least one coupling jaw (14) and the at least one coupling arm (13) for automatically making an electrical connection between the traction vehicle and the trailer upon coupling thereof, upon coupling of the at least one coupling jaw and the at least one coupling arm an operating connection is provided between the brake circuit of the traction vehicle and the brake circuit of the trailer (3), and the lifting of the rear wheels (4) of the traction vehicle after completion of the coupling operation is automatically performed by the swivel drive (25).

5,445,237

ELECTRIC POWER STEERING APPARATUS

Hiroshi Eda; Kenji Someya, and Izuzu Chikuma, all of Maebashi, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,337
Claims priority, application Japan, Dec. 27, 1993, 5-069757 U; Jul. 13, 1994, 6-161028; Jul. 22, 1994, 6-171227
Int. Cl.[6] B62D *5/04*
U.S. Cl. 180—79.1 **3 Claims**



1. An electric power steering apparatus, comprising
a housing;
means for detecting steering torque to detect the steering torque generated in a steering system;
an electric motor provided with a rotational shaft for generating a rotational power according to the result of detection by said means for detecting steering torque; and
a transmission mechanism to transmit the rotational power of said electric motor to the steering system, said transmission mechanism including a bevel gear mechanism in which a small gear coupled to the rotational shaft of said electric motor is allowed to engage with a large gear coupled to the output shaft of said steering system whose axis is not in parallel with that of the small gear, wherein
said rotational shaft having said small gear coupled thereto is rotatively supported by said housing, but not enabled to move in the axial direction;
said large gear is coupled to the output shaft of said steering system so that it can move in the rotational and axial directions together with said output shaft;
said output shaft is rotatively supported by a first bearing and a second bearing with respect to said housing;
each of said bearings comprises an outer ring and an inner ring, and rolling elements pinched by said rings, respectively, and the outer ring of said first bearing is supported movably in the axial direction with respect to said housing, while the inner ring of said first bearing is installed on the output shaft so that its movement is restricted at least in the direction away from said second bearing, and the inner ring of said second bearing is supported movably in the axial direction with respect to said output shaft, and
there are further provided a first shifting member to drive

the outer ring of said first bearing to move it correlatively in the axial direction with respect to said housing, and a second shifting member which drives the inner ring of said second bearing to move it correlatively in the axial direction with respect to said output shaft;

said output shaft moves in the axial direction by the drive of said first shifting member through the outer ring, rolling elements, and inner ring of said first bearing, hence allowing the tooth face of said small gear and that of said large gear to approach closely; and

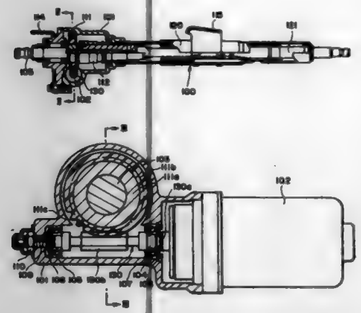
by the drive of said second shifting member, the outer ring of said second bearing abuts upon said first shifting member, and then, in a state that said first and second bearings are prevented from shifting in the direction of the outer rings approaching themselves closely, the inner rings of said first and second bearings are caused to shift themselves further in the approaching direction, hence removing the play to be generated in said first and second bearings.

5,445,238

ELECTRIC POWER STEERING APPARATUS

Izumu Chikuma, and Toshiyuki Iwano, both of Maebashi, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,010
Claims priority, application Japan, Feb. 4, 1994, 6-012560
Int. Cl.[6] B62D *5/00*
U.S. Cl. 180—79.1 **1 Claim**



1. An electric power steering apparatus which includes:

a housing;

a motor fixed to said housing and having a rotary shaft;

a driving gear connected to said rotary shaft of said motor;

an output shaft rotatably supported by said housing; and

a driven gear comprising an outer ring portion made of an elastic material and formed with teeth engaging said driving shaft and a metallic cylindrical core portion connected to said output shaft, for supporting said outer ring portion, said metallic cylindrical core portion having substantially the same coefficient of linear thermal expansion as said driving gear; and wherein the following equation is satisfied:

$$t=k_h+CD.(k_4-k_1)/(k_2-k_1)$$

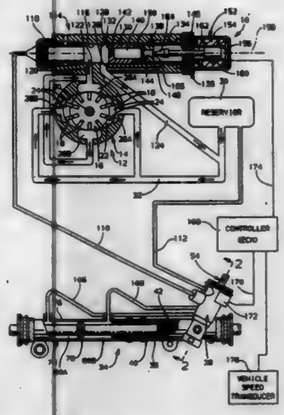
where t is a thickness of said center ring portion, k_1 is said coefficient of linear thermal expansion of said driving gear and said metallic cylindrical core portion, k_2 is a coefficient of linear thermal expansion of said outer ring portion, h_k is addendum of said driven gear, k_4 is a coefficient of linear thermal expansion of said housing, and CD is a center distance between said driving gear and said driven gear.

5,445,239

MOTOR VEHICLE POWER STEERING SYSTEM

Randy S. Miller, Frankenmuth, and Brian J. Magnus, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1994, Ser. No. 283,373
Int. Cl.[6] B62D *5/08*
U.S. Cl. 180—132 **7 Claims**



1. A motor vehicle power steering system comprising:

an engine-drive hydraulic pump discharging fluid through a high pressure port of said pump at a flow rate varying with engine speed,

a steering gear having a first rotatable member connected to a manual steering wheel whereat a steering wheel torque is applied and a second rotatable member connected to a pair of steered wheels,

a fluid motor connected to said pair of steered wheels having a first working chamber,

means defining a high pressure conduit between said high pressure port and said first working chamber,

means defining a recirculation conduit connected to an inlet port of said pump and intersecting said high pressure conduit at an exhaust port,

a valve spool in said high pressure conduit cooperating with said exhaust port in defining a variable flow area throttling orifice between said high pressure conduit and said recirculation conduit and shiftable in a first pressure reducing direction in response to a fluid pressure force on a first side of said valve spool induced by a fluid pressure in said high pressure conduit and in a second pressure increasing direction,

an electronic solenoid having a duty cycle varying between a maximum and a minimum and an armature subjected to a magnetic bias force having a magnitude proportional to said duty cycle of said solenoid,

an actuator means between said valve spool and said armature of said solenoid operative to exert on said valve spool a regulating force in said second pressure increasing direction having a magnitude proportional to said magnitude of said magnetic bias force on said armature so that a fluid boost pressure is regulated in said high pressure conduit proportional to said magnetic bias force, and

an open-loop control means for said electronic solenoid including a first transducer connected to said first rotatable element of said steering gear providing an electronic signal indicative of the magnitude and the direction of said steering wheel torque, and

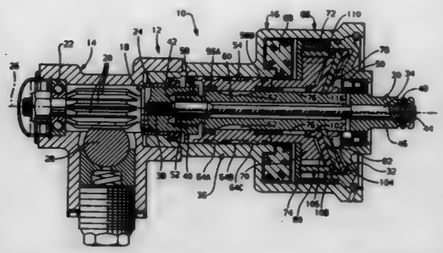
an electronic control module connected to said first transducer and to said electronic solenoid operative to schedule a predetermined duty cycle of said solenoid in accordance with an internal schedule based on said electronic signal from said first transducer so that said valve spool regulates a fluid boost pressure in said high pressure conduit based on the magnitude of said steering wheel torque sensed by said first transducer.

5,445,240

PERMANENT MAGNET ASSEMBLY

Cunningham. Edward V., 5040 McCarty Rd., Saginaw, Mich. 48603, and Joel E. Biraching, 5833 Bay Park, Unionville, Mich. 48767

Filed Aug. 4, 1994, Ser. No. 285,682
Int. Cl.[6] B62D *5/08*
U.S. Cl. 180—132 **3 Claims**



1. A permanent magnet assembly for an electromagnetic mechanism in a motor vehicle power steering gear comprising:

a cylindrical metal ring having an annular end wall in a plane perpendicular to a longitudinal centerline of said ring and an internal annular shoulder facing in a direction opposite said annular end wall,

means defining a plurality of V-shaped notches in said annular end wall of said metal ring each having a pair of flat sides separated by a first angle and converging at a linear junction tipped back from said plane of said annular end wall at a second angle, and

a plastic retaining hub molded around a portion of said cylindrical metal ring so that an annular shoulder on said retaining hub is juxtaposed said annular end wall on said metal ring and a lip on said retaining hub is juxtaposed said internal annular shoulder on said metal ring and a plurality of integral V-shaped lugs on said retaining hub are each seated in a corresponding one of said V-shaped notches in said metal ring,

dimensional shrinkage of the plastic from which said retaining hub is formed which occurs as such plastic cures being operative to axially clamp said metal ring between said annular shoulder and said lip on said retaining hub and to wedge each of said V-shaped lugs into said corresponding one of said V-shaped notches.

5,445,241

EXHAUST GAS PIPE ASSEMBLY FOR AN AUTOMOTIVE ENGINE

Yoshitaka Nakamura, Higashihiroshima; Keiji Araki, Hiroshima; Kazumi Okamura, Hiroshima, and Koji Mizuno, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 183,256, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 831,924, Feb. 6, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 354,744
Claims priority, application Japan, Mar. 25, 1991, 3-017917; Mar. 25, 1991, 3-060126
Int. Cl.[6] B60K *13/04*
U.S. Cl. 180—296 **22 Claims**

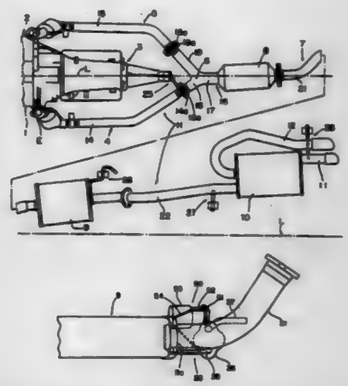
1. An exhaust gas pipe assembly for discharging exhaust gases issued from an automotive engine disposed longitudinally of a vehicle body, said exhaust gas pipe assembly extending generally rearwardly from the engine and comprising:

a plurality of exhaust gas pipes;

at least one chamber formed intermediately of the exhaust gas pipe assembly;

a first support member, disposed in the proximity of the engine, for supporting the exhaust gas pipe assembly;

at least one second support member, disposed in the proximity of said chamber, for supporting the exhaust gas pipe assembly; and



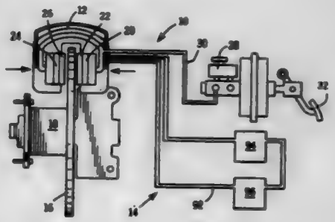
a dynamic damper for reducing vibration of the exhaust gas pipe assembly in directions generally perpendicular to the longitudinal direction of the vehicle body, said dynamic damper having one end connected to said exhaust gas pipe assembly and said dynamic damper having a weight disposed for displacing in a direction perpendicular to the longitudinal direction of said vehicle body.

5,445,242

DISC BRAKE CALIPER WITH AUXILIARY SYSTEM TO COOL BRAKE FLUID

Thomas J. Pogorzelski, S88 W26040 Edgewood Ave., and Kevin B. Sinnett, W273 S8555 Hillview Dr., both of Mukwonago, Wis. 53149

Filed Aug. 27, 1993, Ser. No. 112,606
Int. Cl.[6] F16D *65/853*
U.S. Cl. 188—71.6 **9 Claims**



1. A disc brake caliper for use in an automobile having a rotor which is simultaneously rotated with a wheel hub, the caliper comprising:

(a) a housing defined by an outside boundary and wherein the housing has an opening which includes a first inwardly facing surface and a second inwardly facing surface, and wherein the housing is secured on the automobile such that the rotor is positioned in the opening, and the first inwardly facing surface and the second inwardly facing surface axially oppose each other relative to the rotation

of the rotor, and wherein the housing further has a first bore located on the first inwardly facing surface and a second bore located on the second inwardly facing surface, each of the bores being adapted to receive a piston which may be activated simultaneous with the piston in the other bore to press a friction pad against the rotor and thereby clamp the rotor therebetween to provide a braking action against the rotor;

(b) a first conduit for conveying an actuating fluid to the first and the second bores, and wherein the pistons are activated upon flow of the actuating fluid directed through the first conduit; and

(c) a second conduit which conveys a coolant through the housing to a region proximal the first conduit, and wherein heat is conducted away from the actuating fluid upon flow of the coolant directed through the second conduit, and wherein the second conduit includes a groove formed in the outside boundary of the housing and a plate which fits over the groove.

5,445,243

ARROW LUBRICATION SYSTEM

B. Howard Coffey, LaGrange, and Gary L. Coffey, Glendale, both of Ky., assignors to Coffey Marketing Corporation, Crestwood, Ky.

Filed Nov. 19, 1993, Ser. No. 154,930
Int. Cl.[6] F01M *1/00*
U.S. Cl. 184—102 **3 Claims**



1. A portable lubricant system to facilitate lubrication of an arrow tip and shaft including:

casing means having an open end;

resilient absorbent pad means to be received within said casing means so said arrow tip and shaft can be inserted into said absorbent pad means;

liquid lubricant received by said absorbent pad means;

lid means having septum means therein so that said arrow tip and shaft can be inserted therethrough into said absorbent pad means and removed therethrough for removal of excess lubricant from said arrow tip and shaft.

5,445,244

SYSTEM FOR FORMING THE JAMBS FOR THE LANDING DOORS OF AN ELEVATOR

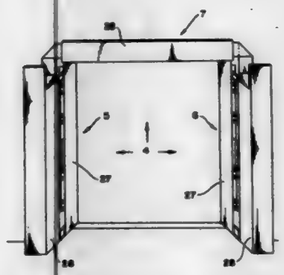
Ari Ketonen, Hyvinkää , Finland, assignor to Kone Oy, Helsinki, Finland

Filed Apr. 19, 1994, Ser. No. 229,774
Claims priority, application Finland, Apr. 23, 1993, 931859
Int. Cl.[6] B66B *13/00*
U.S. Cl. 187—325 **8 Claims**

1. A jamb assembly for the landing doors of an elevator in an opening (3) in a wall between the elevator shaft and the landing, comprising

a skeletal structure (15,16,17) attachable to the wall (2) and including first means for distance adjustment (10) to allow the skeletal structure to be fitted in place in the opening (3) in the direction of the plane of the wall (2),

a surface structure (27,28) attachable to the skeletal structure (15, 16, 17) and including second means for distance adjustment thereof in the direction of the thickness of the wall (2).

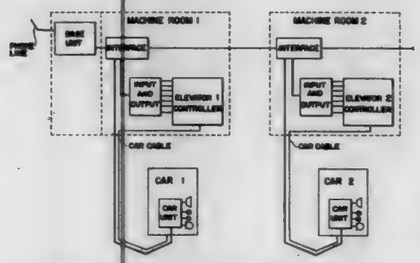


5,445,245

SYSTEM FOR REMOTE CONTROL OF ELEVATOR EQUIPMENT

Seppo Ketoviita, Hyvinkää, Finland, assignor to Kone Oy, Helsinki, Finland

Filed Dec. 13, 1993, Ser. No. 165,597
Claims priority, application Finland, Dec. 22, 1992, F1925842
Int. Cl.[6] B66B *3/00*
U.S. Cl. 187—391 **15 Claims**



1. A modular system for regional and local supervision and monitoring of elevator equipment, comprising:

service equipment at a service center;

site equipment including a base unit at a site including means for operatively connecting the base unit to one to eight elevator cars;

means for communicating between the service and site equipment including a phone number list from which a phone number of the service center containing the service equipment is selected;

an elevator car unit operatively connected to the base unit for supplying audio and data communication; and

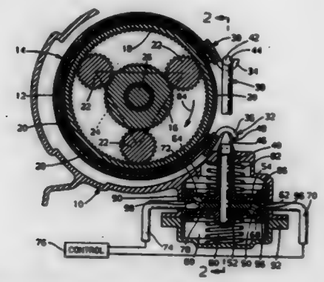
a machine room for each elevator, said machine room containing an input and output device for a single elevator with each input and output device connected to a single common base unit.

5,445,246

BRAKE BAND MECHANISM

Raymond J. Haka, and Michael C. Sefcik, both of Brighton, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1994, Ser. No. 287,020
Int. Cl.[6] F16D *51/00*
U.S. Cl. 188—77 R **6 Claims**



1. A brake band mechanism comprising:

a brake drum;

a brake band encircling at least a portion of the drum and presenting first and second spaced ends each having an anchor section;

rod means for engaging said spaced ends;

first apply piston means including said rod means operatively connected with the anchor section of the first spaced end to selectively independently enforce engagement of the brake band with the brake drum; and

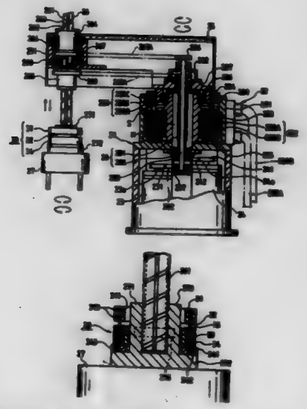
second apply piston means including said rod means and being disposed coaxial with the first apply piston means and operatively connected with the anchor section of the second spaced end to selectively independently enforce engagement of the brake band with the brake drum.

5,445,247

DAMPING UNIT

Hideyuki Sato, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,715
Claims priority, application Japan, Mar. 30, 1993, 5-071929
Int. Cl.[6] B23Q *11/00*
U.S. Cl. 188—266 **6 Claims**



1. A damping unit comprising:

a base member (341) secured relative to a working head which is mounted on a end of an operating shaft (261) thereof;

a mass body (31) supported at a position close to the end of said operating shaft so as to be movable in a direction orthogonal to an axis of said operating shaft;

a wirelike resilient member (32) fixed on said base member for supporting said mass body, said wirelike resilient member being extended in parallel with the axis of said operating shaft; and

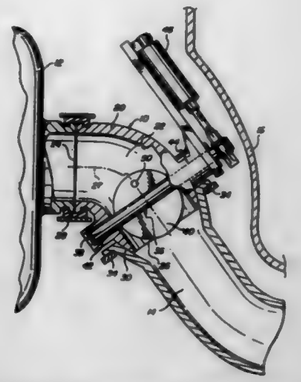
a fluid charged member (34,331) having a fluid chamber (33, 33A) into which a high-viscosity fluid (35) is charged, said wirelike resilient member passing through the fluid chamber.

5,445,248

EXHAUST BRAKE

John M. C. Clarke, and Dennis J. Marander, both of Burnaby, Canada, assignors to Jenara Enterprises Ltd., Surrey, Canada

Filed Mar. 7, 1994, Ser. No. 207,828
Int. Cl.[6] F02D *9/06*
U.S. Cl. 188—273 **14 Claims**



1. An exhaust brake system for use with a diesel powered engine having an exhaust system for directing a flow of exhaust gases, comprising:

a housing with a curved exhaust gas passage therein and connectors at either end thereof, said housing having an aperture therein, said curved exhaust gas passage having a centerline;

a restricter valve member mounted for rotation within said housing between closed and open positions, said restricter valve member including a rotatable shaft extending through said aperture of said housing and across said curved exhaust gas passage of said housing, a restricter shield mounted on said rotatable shaft, said restricter shield having at least one major surface which is positioned perpendicular to said centerline of said curved exhaust gas passage for restricting the flow of exhaust gases when said restricter valve member is in its closed position, said restricter shield in the open position of said restricter valve member has its at least one major surface positioned parallel to said centerline so as to only minimally impede the flow of exhaust gases, said restricter shield is dimensionally sized with respect to said curved exhaust gas passage of said housing so that a gap is formed between said restricter shield and said housing when said restricter valve member is in its closed position;

an actuator for moving said restricter valve member between its closed and open positions; and

passive sealing means between said restricting means and said housing to prevent leakage of exhaust gases from said housing, said passive sealing means having at least one seal

ring surrounding said rotatable shaft to prevent leakage of exhaust gases from said housing, said housing having a bypass port from said aperture to said exhaust gas passage downstream of said aperture, whereby exhaust gases are directed through said bypass port back to said exhaust gas passage from said aperture.

5,445,249

DYNAMIC VIBRATION ABSORBER

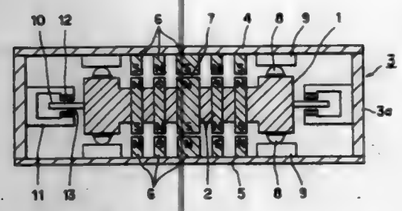
Yasuhiko Aida, Yokohama; Hiroshi Miyano, Kamakura; Kiyoshi Hattori, Yokohama; Yoshiyuki Sakurai, Yokohama; Eiji Masome, Yokohama, and Toshiaki Nasuda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 18, 1994, Ser. No. 198,269

Claims priority, application Japan, Feb. 18, 1993, 5-029199; Feb. 25, 1993, 5-035980

Int. Cl.[6] F16F *7/12*

U.S. Cl. 188—378 **9 Claims**



1. A dynamic absorber comprising:
- a movable weight portion serving as a dynamic vibration absorber;
- a movable portion magnet means provided for the movable weight portion, said movable portion magnet means comprising a magnet train including a plurality of cylindrical magnets disposed coaxially in such a manner that adjacent poles of adjacent magnets are different;
- a fixed portion provided in opposed relation to the movable weight portion; and
- a fixed portion magnet train provided on the fixed portion and comprising a plurality of magnets disposed to respectively oppose corresponding cylindrical magnets of the movable portion magnet means with a predetermined gap therebetween, the plurality of magnets of the fixed portion magnet train having magnetic poles different, in a stationary state, from magnetic poles of respective opposing cylindrical magnets of the movable portion magnet means;

wherein said movable weight portion is horizontally supported by a magnetic force which acts between the movable weight portion and the fixed portion.

5,445,250

BRAKE SHOE MOUNTING WITH BALL BEARINGS FOR SWIVELLING

Hubert B. Koschinat, Hösbach, Germany, assignor to Otto Sauer Achsenfabrik Kellberg, Bessenbach-Kellberg, Germany

Continuation of Ser. No. 782,364, Oct. 24, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 145,298

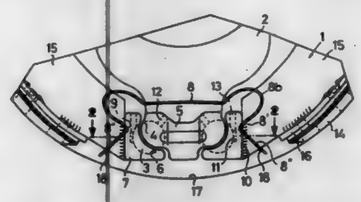
Claims priority, application Germany, Oct. 24, 1990, 40 33 738.3

Int. Cl.[5] F16D *65/09*

U.S. Cl. 188—328 **23 Claims**

1. In a brake shoe mounting arrangement for a vehicle drum brake, wherein first ends of a pair of brake shoes are hingedly mounted to a brake support by mounting means, the improvement wherein said mounting means comprises:

ball bearing means, operatively associated with said brake support and with said first end of each said brake shoe, for enabling each said brake shoe to swivel around a respective first axis extending substantially parallel to an axis of a drum of said drum brake and also to swivel around a



respective second axis extending perpendicular to said first axis.

5,445,251

BINDER OR PORTFOLIO

Richard Redwood, Union, Mo., assignor to American Trading & Production Corporation, Baltimore, Mass.

Filed Aug. 2, 1993, Ser. No. 100,608

Int. Cl.[6] A45C *3/00*

U.S. Cl. 190—109 **3 Claims**



3. A portfolio comprising:
- (a) a first panel including means for receiving and storing at least one accessory,
- (b) a second panel attached to said first panel in foldable relation to provide a cover for the accessories stored on said first panel,
- (c) a third panel attached in foldable relation to one of said first and second panels, and
- (d) a fourth panel attached to said third panel in foldable relation,
- (e) said third and fourth panels being of substantially equal width and wider than said first and second panels, and said first panel receiving and storing means and said second panel being about half the width of said third and fourth panels.

5,445,252

CHARGE CORD AND RETRACTION SYSTEM FOR ELECTRIC VEHICLE

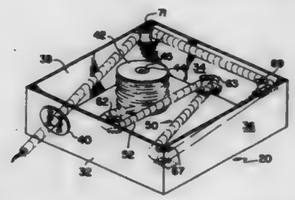
Thomas S. McKee, Dublin, Ohio, and Takeshi Sakurai, Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 279,896

Int. Cl.[6] H02G *11/02*

U.S. Cl. 191—12 R **19 Claims**

1. A charging cord for supplying electric current to an electric power storing device of an electric vehicle comprising:
- an electrical cable having a first end and a second end, said first end being operatively connected to said electric power storing device and said second end being adapted to be connected to an electrical power supply; and
- a housing for supporting said electrical cable along a predetermined length thereof, said housing includes a plurality of section members pivotally connected relative to each other for permitting limited lateral motion in a single plane to maintain the charging cord a predetermined distance above the ground surface and said housing being adapted



to allow said electrical cable to be withdrawn therefrom during use.

5,445,253

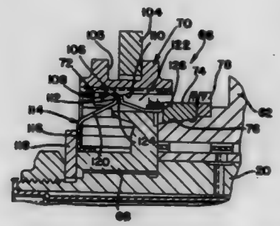
SHIFT CONTROL MECHANISM FOR A MULTI-SPEED COUNTERSHAFT TRANSMISSION

Carlos C. Reyes, Sterling Heights, Mich., assignor to Saturn Corporation, Troy, Mich.

Filed Feb. 16, 1994, Ser. No. 197,094

Int. Cl.[6] B60K *41/26*; F16H *3/38*

U.S. Cl. 192—4 C **3 Claims**



1. A brake actuator in combination with a transmission for retarding rotation of an input shaft during a shift maneuver from neutral to reverse comprising:
- a synchronizer means for connecting a forward ratio gear means in torque transmitting relation between the input shaft and another shaft,
- said synchronizer means including a selectively operable friction cone clutch and a shift collar operable upon movement in a first direction to operate said synchronizer means to establish the forward ratio and movable in a second direction during a neutral to reverse shift; and
- a spring disposed between said shift collar and said friction cone clutch and cooperating with said shift collar for engaging said friction cone clutch with said forward ratio gear means to retard said input shaft during a portion of the neutral to reverse shift and for releasing said friction cone clutch upon completion of neutral to reverse shift, the spring comprising an annular portion abutting an axially stationary member on said input shaft and a plurality of axially extending arms each having an operating end disposed in abutment with said cone clutch and an actuating portion intermediate the annular portion and the operating ends disposed for engagement by an inner surface of the shift collar.

5,445,254

TENSIONING MECHANISM FOR VEHICLE AUXILIARY SEAT

Harlan W. Charles, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 994,156, Dec. 21, 1992. This application Apr. 28, 1994, Ser. No. 234,029

Int. Cl.[6] F16D *67/02*

U.S. Cl. 192—17 R **1 Claim**



1. A tensioning mechanism for a vehicle auxiliary seat which includes a sheet connected on a roll comprising:
- an output gear for providing a torsional output to the roll;
- an input gear for providing a torsional input to the output gear;
- a unidirectional torsional lock to prevent rotation of the input gear in an opposite direction to a first rotational direction;
- a normally disengaged clutch to operatively connect the output gear with the input gear; and
- a ratchet arm having a rotatively-mounted cam to engage the clutch and the ratchet arm allowing impartation of torsional movement to the input gear.

5,445,255

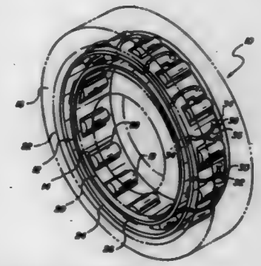
SPRAG ONE-WAY CLUTCH WITH INERTIA RESISTANCE MEMBERS

Russell J. Rutke, Palos Heights, and Gregory J. Malecha, Naperville, both of Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jul. 8, 1993, Ser. No. 88,694

Int. Cl.[6] F16D *41/07*

U.S. Cl. 192—45.1 **9 Claims**



1. A one-way clutch comprising:
- an outer race having an annular inner surface, an inner race having an annular outer surface and disposed coaxially with said outer race;
- a plurality of sprags spaced circumferentially at a predetermined interval between said inner surface and said outer surface, and engageable with said inner surface and said outer surface by tilting in a peripheral direction relative of said surfaces to transmit a torque between said two races;

a sprag holder for holding said sprags in an annular space between said annular surfaces; and

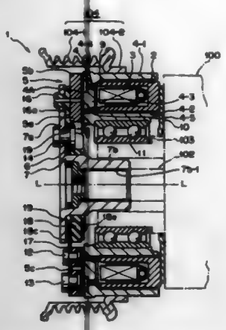
a plurality of elongated wireform metallic elements having an arcuately conforming engagement surface mounted about said sprag holder, said engagement surface being in engagement with one of said inner and outer surfaces to provide torque or inertia resistant drag between said sprag holder and one of said inner and outer surfaces, said wireform elements having first and second ends for mounting said elements in an axial disposition on said sprag holder, said wireform elements having an engaging portion defining said engagement surface between said ends.

5,445,256

ELECTROMAGNETIC CLUTCH

Yasuo Tabuchi, Anjyo; Masashi Tobeyama, Obu; Junichi Ohguchi, Toyoake, and Akira Kishibechi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 10, 1994, Ser. No. 194,287
Claims priority, application Japan, Apr. 26, 1993, 5-021840 U
Int. Cl.[6] F16D *27/10, 27/14*
U.S. Cl. 192—84 C **17 Claims**



1. An electromagnetic clutch, comprising:

a stationary electromagnetic coil which generates an electromagnetic force when energized;

a rotor for receiving a rotating movement from a rotating movement source;

an armature which, upon the electromagnetic force from the coil, is urged into contacting engagement with the rotor;

a rotating driven member which rotates together with the armature;

plate spring members arranged between the armature and the rotating driven member for causing the armature and the rotor to be spaced from each other when the electromagnetic coil is not energized;

the electromagnetic force causing the armature to be moved toward the rotor against the force of the plate springs for causing them to contact each other;

arms extending integrally and inwardly from corresponding plate springs;

an elastic member; and

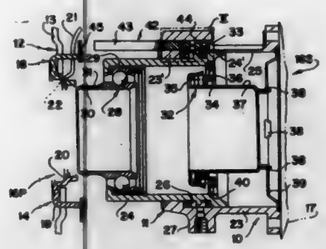
a retainer member for retaining the elastic member between the retainer member and the arms connected to the rotating driven member at a location radially inside the armature.

5,445,257

DECLUTCHING DEVICE HAVING A HYDRAULIC ACTUATOR FOR SNAP-FITTING ON-TO A PULL-OFF TYPE CLUTCH

Thomas Grabis, Kirchardt, Germany, assignor to Valeo, Paris, France

Filed Jan. 21, 1994, Ser. No. 184,187
Claims priority, application France, Jan. 20, 1993, 92 00522
Int. Cl.[6] F16D *25/08, 23/14*
U.S. Cl. 192—85 CA **9 Claims**



1. A declutching device for a pull-off type clutch, for snap-fitting engagement with the latter, said declutching device comprising: a hydraulic actuator having a fixed member and a movable member which together define a cylindrical interface surface having an axis, one of said fixed and movable members being mounted within the other for sliding movement of the movable member with respect to the fixed member along said interface surface said fixed and movable members further defining a control chamber between them; and preloading means engaged with said movable member for biassing the latter permanently towards a retracted position in which the movable member is retracted into the fixed member, with one of said fixed and movable members defining retaining means for retaining the movable member in a withdrawn position with respect to the fixed member, wherein the declutching device further includes a feeler, and means in one of said fixed and movable members mounting said feeler therein so that the feeler projects outwardly therefrom for engagement with an associated said clutch when relative axial movement brings the clutch and the actuator together during assembly, and for movement of said feeler in said mounting means between a fitting position and an operating position, the feeler and retaining means being so arranged that in said fitting position the feeler allows the retaining means to retain the movable member in its said withdrawn position, and so that in said operating position the feeler neutralizes the retaining means whereby to release the movable member for movement with respect to the fixed member.

5,445,258

PULSE ACTUATED HUB LOCKS AND CONTROL ARRANGEMENT

Jon A. Bigley, Milwaukie, Oreg.; Thomas W. Giacomini, Hartland, Mich.; Raymond S. Alvey, Utica, Mich.; Christopher J. Grieco, Farmington Hills, Mich.; Patrick W. Gibson, Northville, Mich.; Dale O. Stoilsteimer, W. Bloomfield, Mich.; James C. Kilgore, Detroit, Mich., and Karl W. Wojcik, Sterling Heights, Mich., assignors to Warn Industries, Inc., Milwaukie, Oreg.

Filed Feb. 22, 1994, Ser. No. 200,181
Int. Cl.[6] F16D *43/28, 25/12*
U.S. Cl. 192—85 V **16 Claims**

1. A clutch mechanism and control arrangement providing selected coupling and decoupling of a vehicle wheel relative to a vehicle drive line, the clutch mechanism and control arrangement comprising:

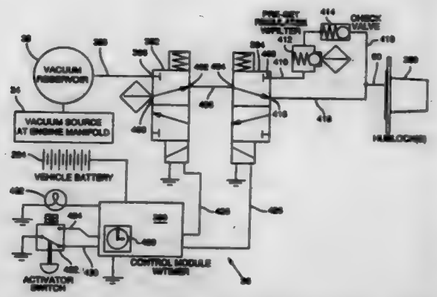
at least one pulse actuated clutch attachable to said vehicle drive line and to said vehicle wheel, said pulse actuated clutch operable in a first state coupling said drive line and said wheel when attached thereto and operable in a second state decoupling said drive line and said wheel when attached thereto, said pulse actuated clutch being driven between said first and second states by application of a selected control condition for a given interval;

a driver operable mode switch indicating a desired mode of vehicle operation and specifying operation of said pulse actuated clutch in one of said first and second states;

a timer element; and

a control element responsive to said mode switch and causing application of said selected control condition, said control element actuating said timer element as representation that completion of said given interval is pending, said control element interrogating said timer element prior to initiating application of said selected control condition and delaying application of said selected control condition when said timer indicates that completion of said given interval is pending.

13. A method of controlling a pulse actuated clutch mechanism, the pulse actuated clutch mechanism being operable in a



first state coupling a vehicle drive line to a wheel and operable in a second state decoupling the vehicle drive line from the wheel, said pulse actuated clutch mechanism being driven between said first and second states by application of a selected first control condition for a first time interval and application of a second control condition for a second time interval, the method of controlling comprising the steps:

monitoring a driver operable mode switch specifying operation of said pulse actuated switch in one of said first and second states and detecting change in said mode switch; and

in response to detected change in said mode switch, interrogating a timer element indicating that completion of at least one of said first and second time intervals is pending and delaying further state transition control until completion of said at least one of said first and second time intervals, setting said timer to measure said first time interval and subsequently applying said first control condition until expiration of said timer, setting said timer to measure said second time interval and subsequently applying said second control condition to accomplish transition of said pulse actuated clutch to one of said first and second states.

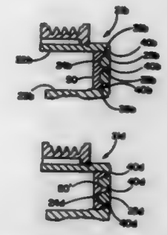
5,445,259

HIGH STRENGTH ELECTROMAGNETIC COUPLING DISC

Dennis J. Nelson, Rockford, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 30, 1993, Ser. No. 114,320
Int. Cl.[6] F16D *27/112, 27/14*
U.S. Cl. 192—107 R **24 Claims**

1. A multiple pole coupling disc for an electromagnetic coupling, said disc comprising a disc member having a central axis and being made of a single piece of low magnetic reluctance material, said disc member having a working face and an opposite non-working face and having inner and outer peripheries, said working face being adapted to engage another coupling disc of the electromagnetic coupling, radially spaced, circular and concentric rows of slots formed in said disc member between said inner and outer peripheries and extending from said non-working face toward said working face, each of said slots being defined by opposing walls, a ring of high magnetic reluctance material disposed in and substantially filling each slot and joined intimately to the walls thereof, each ring being exposed at the working face of said disc member, radially spaced and concentric annular grooves formed in the working face of said disc member and aligned substantially with said rings, and a radially extending annulus of said high magnetic reluctance material joined intimately to the non-working face of said disc member, said annulus being integral with said rings and serving to join the rings to one another adjacent the non-working face of the disc member.



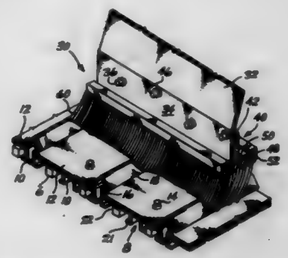
15. A multiple pole coupling disc for an electromagnetic coupling, said disc comprising a disc member having a central axis and being made of a single piece of low magnetic reluctance material, said disc member having a working face and an opposite non-working face and having inner and outer peripheries, said working face being adapted to engage another coupling disc of the electromagnetic coupling, radially spaced and concentric rings of slots formed in said disc member between said inner and outer peripheries and extending from said non-working face toward said working face, each of said slots being defined by opposing walls, each of said walls being formed with at least one generally right-angled step, each slot being radially wider at the non-working face of said disc member than at the working face thereof, and a ring of high magnetic reluctance material disposed in and substantially filling each slot and joined intimately to the walls thereof.

5,445,260

EDGE SEAL FOR RECIPROCATING CONVEYOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741
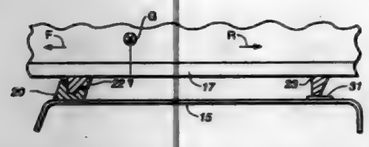
Filed Sep. 14, 1994, Ser. No. 306,125
Int. Cl.[6] B65G *25/04*
U.S. Cl. 198—750 **10 Claims**



1. In a reciprocating floor conveyor having a plurality of side-by-side slats that reciprocate longitudinally of the conveyor, an edge seal comprising:

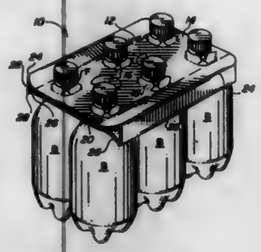
each said slat having a front end that reciprocates longitudinally between first and second positions as said slat reciprocates;
a front shield extending across an end portion of the conveyor above said slats;
a multiplicity of bristles carried by said shield and depending downwardly therefrom, said bristles having lower ends that contact a top surface of said slats rearwardly of said first and second positions, and said bristles being bent by contact with said top surface to preload them into such contact and maintain them in such contact as the slats reciprocate, to prevent particles of material and debris from passing under said shield.

5,445,261
MECHANISM FOR ATTACHING TROUGH TO VIBRATING FEEDER
Takashi Kimura, Shiga, Japan, assignor to Ishida Co., Ltd., Japan
Continuation of Ser. No. 309,517, Sep. 20, 1994, abandoned, which is a continuation of Ser. No. 94,097, Jul. 29, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 380,451
Claims priority, application Japan, Feb. 3, 1992, 4-010880 U
Int. Cl.[6] B65G 27/08
U.S. Cl. 198—763 **15 Claims**



1. In a vibratory feeder having a base which has an upper surface and is adapted to be vibrated in a specified direction of vibration having a horizontal component, a mechanism for attaching to said base a trough for receiving articles and transporting said received articles forward thereon, said trough having a lower surface which is opposite and parallel to said upper surface of said base, said mechanism comprising:
a first coupler attached to said upper surface of said base; and
a second coupler attached to said lower surface of said trough and being in a tightly engaged relationship with said first coupler by the weight of said trough, either one of said first and second couplers having an indentation in a specified coupling direction and the other of said first and second couplers having a protrusion also in said coupling direction and adapted to be inserted in said coupling direction into said indentation to thereby establish said engaged relationship between said first and second couplers, said coupling direction being transverse to said direction of vibration and oblique to the plane of said upper and lower surfaces, vibratory acceleration of said base applying a first force on said second coupler and the load from said trough applying a second force on said second coupler, said coupling direction being such that the vector sum of said first and second forces always has along said coupling direction a downward component which tends to keep said first and second couplers in said engaged relationship independent of the magnitude of said first force and to prevent said first and second couplers from sliding with respect to each other in said direction of vibration, wherein vibrations of said base are efficiently propagated to said trough.

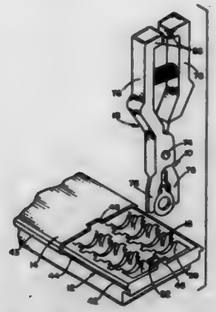
5,445,262
BOTTLE CARRIER
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Jun. 29, 1993, Ser. No. 84,670
Int. Cl.[6] B65D 71/00
U.S. Cl. 206—148 **13 Claims**



1. A carrier package, comprising:
two rows of bottles, each bottle having a neck portion extending up from a wider body portion, the neck portion including an outwardly projecting shoulder;
opposite side panels having upper and lower edges;
an upper support panel having a width extending between opposite side edges, the upper support panel being connected along fold lines at said opposite side edges to the upper edges of the side panels;
a lower support panel flap connected along a fold line to the lower edge of each side panel;
the upper support panel and the lower support panel flaps containing openings through which the necks of the bottles extend, the wider portion of the bottles contacting the edges of the openings in the lower support panel flaps;
a plurality of support tabs connected to the upper support panel by fold lines extending along portions of the periphery of each bottle opening, the support tabs having edges for engaging the underside of the bottle shoulders; and
the portions of the upper support panel between the openings therein and the side panels being upwardly angled with respect to the portion of the upper support panel between the rows of bottles and the portion of each lower support panel flap between the openings therein and the associated side panel being downwardly angled with respect to the portion of the upper support panel between the rows of bottles, the lower support panel flaps having end portions in contact with the upper support panel between the rows of bottles, whereby the side panels and adjacent portions of the upper panel and the lower support panel flaps function as reinforcing ribs.

5,445,263
GASKET CONTAINER AND ASSEMBLY TOOL
Michael J. Mohlenkamp, University Heights; Gerald A. Babuder; Peter A. Jobling, both of Mentor, and Charles E. Conover, Middlefield, all of Ohio, assignors to Cajon Company, Macedonia, Ohio
Filed Sep. 14, 1994, Ser. No. 306,270
Int. Cl.[6] B65D 85/02
U.S. Cl. 206—303 **13 Claims**

1. In combination:
a container having a plurality of upwardly open slots formed therein and supporting disk-like gasket members with opposed seal faces joined by a relatively narrow peripheral edge, the slots being only slightly wider than the peripheral edge of the gasket members to support the gasket members in a position with diametrically opposed portions of the peripheral edges exposed;
a manually operable gripping tool having opposed jaws selectively movable toward and away from one another and having contoured portions to allow gripping engagement of the exposed diametrically opposed portions of the peripheral edges of the gaskets without engagement of the jaws with the opposed seal faces; and,



spaced guide surfaces formed in the container in association with the slots for engaging the jaws of the gripping tool and guiding the contoured portions of the jaws into engagement with the exposed diametrically opposed portions of the edges.

5,445,264
FLOPPY DISK ACCOMMODATION DEVICE
Hiromichi Uchida, Tokyo, Japan, assignor to Toyo Chemical Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1994, Ser. No. 228,879
Int. Cl.[6] B65D 85/57, 69/00
U.S. Cl. 206—307 **8 Claims**

1. A disk accommodation device, comprising:
a sheet member having at least one disk accommodation recess therein, said sheet member having a top surface, and each one of said at least one disk accommodation recess comprising an opening in said sheet defined by a plurality of edges on said top surface of said sheet member and a recess surface in said opening below said top surface of said sheet member, each one of said at least one floppy disk accommodation recess having an upper portion and a lower portion;
a film member for each one of said at least one disk accommodation recess, said film member having a plurality of edges including an upper open edge and said plurality of edges of each said film member being bonded to said edges of said sheet member at said lower portion of a respective one of said at least one disk accommodation recess except for an upper open edge of said film member so as to form a disk accommodation section having an upper open end;
a stopper on said recess surface at said upper portion thereof located above said upper open end of said disk accommodation section for contacting an upper end of a disk when a disk is accommodated in said disk accommodation recess and said disk accommodation section for preventing accidental removal of the disk therefrom; and
a ridge on said recess surface between said upper open end of said disk accommodation section and said stopper for providing a gap between the back surface of an upper portion of a disk when a disk is accommodated in said disk accommodation recess and said disk accommodation section and said recess surface.

5,445,265
STORAGE CONTAINER FOR INFORMATION-BEARING DISC DEVICES HAVING PRINTED MATTER RETRIEVAL MEANS
Arthur G. F. Herr, New York, N.Y.; Robert W. Johnson, Naperville, Ill., and Toby S. Welles, Redding, Conn., assignors to Reynard CVC, Inc., Englewood Cliffs, N.J.
Filed Feb. 7, 1994, Ser. No. 192,926
Int. Cl.[6] B65D 85/57
U.S. Cl. 206—308.1 **21 Claims**



1. A storage container for information-bearing disc devices comprising:
a) a drawer member comprising a top segment having a lid portion upon an upper surface thereof, a bottom segment configured and adapted for receiving an information-bearing disc device and a flexible hinge formed integral with said top and bottom segments and connecting said top segment to said bottom segment, said hinge adapted to permit rotation of said top segment relative to said bottom segment;
b) an outer shell adapted for storing said drawer member, said shell comprising a front face defining a cut-out portion along an upper surface thereof, a rear face oppositely disposed and parallel to said front face, two opposed side walls and a bottom member, wherein said front and rear faces are joined to said side walls along side edges of said front and rear faces and to said bottom member along bottom edges of said front and rear faces, wherein said shell form a generally rectangular structure closed at lower end and open at a top end thereof, said shell configured and adapted to permit insertion and reciprocal back and forth motion of said drawer member into and out of, respectively, the top end of said shell, wherein the top end is closed by said lid portion when the drawer member is fully inserted therein; and
c) retrieval means formed integral with the lid portion of said drawer member for selectively retrieving printed matter from said shell when said storage container is opened, wherein at least a portion of said retrieval means is configured for passage through said cut-out portion in said shell front face for contacting and withdrawing printed matter out of said shell when said drawer member is pulled outwardly from the shell.

20. A storage container for information-bearing disc devices comprising:
a) a shell having an open top end;
b) a drawer member slideably retained within said shell and comprising a top segment, a bottom segment attached to the top segment by a flexible hinge, and a lid portion integral with an upper surface of the top segment for closing the shell top end, wherein said drawer member is

configured and adapted for receiving an information-bearing disc device; and

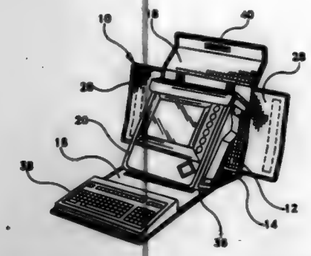
c) retrieval means formed integral with the lid portion of said drawer member for selectively contacting and withdrawing printed matter from said shell when said storage container is opened.

5,445,266

CARRYING CASE AND VARIABLE-ANGLE SUPPORT STAND FOR PORTABLE COMPUTER

Richard Prete, 3 University Pl., Lake Success, N.Y. 11020, and Pablo V. Vialera, 5404 W. 22 Ct., Hialeah, Fla. 33016

Filed Nov. 16, 1993, Ser. No. 153,679
Int. Cl.[6] A45C *11/00, 13/00*
U.S. Cl. 206—320 **25 Claims**



1. A carrying case for a portable computer, said carrying case providing ready access to said computer to allow hand-held use and also providing a variable-angle support stand for said computer during non hand-held use, comprising:

front, back and bottom portions, said bottom portion extending between and interconnecting said front and back portions, said portions articulable with respect to each other between a closed position and an open position;

first securing means positioned on one of said portions to releasably secure a first edge of a triangular support plane when said case is in said open position; and

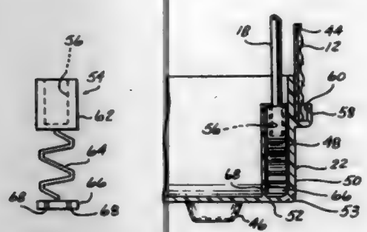
second securing means positioned on another of said portions to releasably secure a second edge of said support plane whereby said support plane and said case form a triangular support structure.

5,445,267

GOLF BAG

John J. Biafore, Jr., Shelby Township, Utica County, Mich., assignor to Focus Golf Systems, Inc., Clinton Township, Macomb County, Mich.

Filed Jul. 15, 1994, Ser. No. 275,517
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.8 **11 Claims**



1. A lightweight golf bag comprising:

a tubular body made of lightweight material;

a top member constructed of molded material and mounted in the top of the tubular body, said top member having an opening for the passage of golf clubs;

a base constructed of molded material and mounted in the bottom of the body, said base having an integral portion defining a cavity;

a tensioning means installed in the cavity of the base, said tensioning means comprising a one piece device made of molded material and comprising a body at one end having an aperture therein, a footed base at a distal end, and a compression spring disposed between said body and footed base;

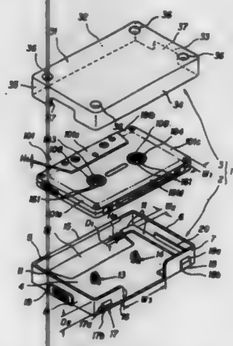
a reinforcing means for supporting the tubular body and extending along the longitudinal body, said reinforcing means secured at said top member at one end and secured in the tensioning means at said base, wherein said aperture in the tensioning means receives one end of the reinforcing means.

5,445,268

CASE FOR A TAPE CASSETTE

Hisao Suzuki, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 11, 1994, Ser. No. 273,434
Claims priority, application Japan, Jul. 20, 1993, 5-179229
Int. Cl.[6] B65D *85/575*
U.S. Cl. 206—387.1 **17 Claims**



1. A case for a cassette tape provided with a pair of reel hubs and front openings, which comprises:

a lower case member formed of a rectangular plate-like portion and a plurality of continuous side walls extending upright from along the four sides of the rectangular plate-like portion, either one of two opposing side walls formed along the longer sides of the plate-like portion being provided, at the upper edge thereof, with a tape operating section for allowing a portion of a tape-shaped recording medium projecting from the tape cassette to be withdrawn into the latter; and

an upper case member formed of a rectangular plate-like portion and a plurality of continuous side walls extending upright from along the four sides of the plate-like portion,

whereby said lower case member is closed by said upper case member when the latter is placed over the former.

6. A case for a tape cassette, which comprises:

a lower case member including a first rectangular plate-like portion and a plurality of continuous side walls extending upright from along the sides of the first rectangular plate-like portion; and

an upper case member including a second rectangular plate-like portion and a plurality of continuous side walls extending upright from along the sides of said second rectangular plate-like portion,

wherein said lower case is provided with at least a first projection on the outer surface of any of said continuous side walls thereof at a position adjacent the first plate-like portion so as to engage the inner surface of any of the side walls of said upper case member such that when said upper case member is placed over said lower case member to cover the latter, said lower case member is prevented from separating from said upper case member due to the existence of said projection, and

wherein said lower case member is provided with a plurality of second projections on the opposing two side walls extending along the shorter sides of the first rectangular plate-like portion thereof at positions adjacent the corners of the first plate-like portion.

9. A case for a tape cassette, which comprises:

a lower case member including a first rectangular plate-like portion and a plurality of continuous side walls extending upright from along the sides of said first rectangular plate-like portion, said first rectangular plate-like portion being provided with support means projecting therefrom so as to support a plurality of support areas of the tape cassette; and

an upper case member including a second rectangular plate-like portion and a plurality of continuous side walls extending upright from along the sides of said second plate-like portion,

whereby when said upper case member is placed over said lower case member to cover the latter, said lower case member is closed by said upper case member, and

wherein said support means comprises:

first and second support portions running parallel to each other along the shorter sides of the first rectangular plate-like portion of said lower case member, and

a third support portion formed along either one of the longer sides of said first rectangular plate-like portion of said lower case member.

12. A case for a tape cassette having a pair of reel hubs, said case comprises:

a lower case member comprising a first rectangular plate-like portion and a plurality of continuous side wall portions extending upright from along the sides of said first plate-like portion, said lower case member being provided, on a first wall of said plurality of side walls, with a first recess ranging from the upper edge of said said first wall down to the first plate-like portion, and a plurality of circular operating sections formed in a second wall of said plurality of side walls, said second wall being located opposite said first wall, said plurality of circular operating sections being formed so as to correspond to a head insert opening and pinch roller insert openings of a tape cassette which is received in said case, said circular opening sections each being so shaped as to smoothly displace any magnetic tape which projects out of the head insert opening or pinch roller openings, back toward said tape cassette as the tape cassette is pressed down into said low case member; and

an upper case member comprising a second rectangular plate-like portion and a plurality of side walls extending upright from along the sides of said second rectangular plate-like portion;

wherein said lower case member is closed by said upper case member when the latter is placed over the former.

17. A case for a tape cassette having a pair of reel hubs, said case comprises:

a lower case member comprising a first rectangular plate-like portion and a plurality of continuous side wall portions extending upright from along the sides of said first plate-like portion, said lower case member being provided, on a first wall of said plurality of side walls, with a first recess ranging from the upper edge of said first wall down to the first plate-like portion; and

an upper case member comprising a second rectangular plate-like portion and a plurality of side walls extending upright from along the sides of said second rectangular plate-like portion;

wherein said lower case member is closed by said upper case member when the latter is placed over the former; and

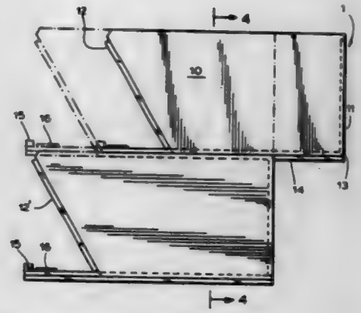
wherein said lower case member is provided, on the outer surface of any of said the plurality of side walls thereof, with at least a projection at a position adjacent to the first rectangular plate-like portion thereof such that when said upper case member is placed over said lower case member to cover the latter, said projection engages the corresponding inner surface of the side wall of said outer case member to thrust the latter outward thereby preventing the lower case member from separating from said upper case member.

5,445,269

MEDIA STORAGE BIN

Arthur Williams, New York, N.Y., assignor to Charles L. Freedman, New York; Mark Polyocan, Great Nock and Arthur J. Williams, New York, all of N.Y.

Filed Oct. 12, 1993, Ser. No. 134,618
Int. Cl.[6] B65D *85/00, 85/30, 85/62*
U.S. Cl. 206—425 **2 Claims**



1. A media storage bin comprising

a rectangular base having two sides, a front, a rear, a longitudinal axis along a center line running from said front to said rear, and an upper surface;

two parallel spaced side walls extending upwardly from opposite sides of said base and having bottom edges proximate said base, top edges distal from said base, and interior planar surfaces;

a rear wall extending upwardly from the rear of said base and transversely spanning said side walls;

an inclined front wall extending upwardly and forwardly from the front of said base and transversely spanning said side walls;

said side walls extending upwardly beyond at least one of the top edges of said front and rear walls, and

projection means extending downwardly from the base beyond the bottom edges of said side walls and having side edges coextensive with the interior surfaces of said side walls, said projection means extending beyond the front of said base and comprising a handle for grasping said bin.

5,445,270

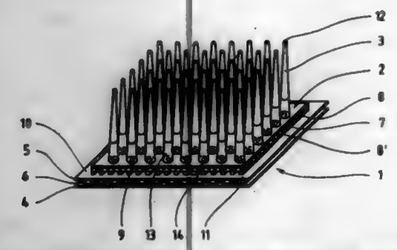
PACKAGING UNIT FOR PIPETTE TIPS

Werner Dratz, Karlsruhe, Germany, assignor to Carl Roth GmbH Co., Karlsruhe, Germany

Filed Jul. 7, 1994, Ser. No. 271,677
Claims priority, application Germany, Jul. 9, 1993, 9310258 U
Int. Cl.[6] B65D *73/00, 85/20;* B01L *9/00*
U.S. Cl. 206—443 **4 Claims**

1. A packaging unit for pipette tips that have at their back ends a push-on sleeve having an annular edge, comprising a

planar, plate-shaped, rectangular, thin carrier having a top side carrying a layer of a pressure adhesive, the pipette tips being releasably glued by their annular edges to the carrier in equidistant rows and columns, said layer including a thin sheet



comprising an upper film and a lower film of the pressure adhesive, and said lower film of the pressure adhesive being formed of a plurality of narrow, spaced strips disposed parallel to one another.

5,445,271

RESIN-MADE BASKET FOR THIN SHEETS

Takeyoshi Kakizaki; Kenji Ikeda, and Tetsuya Shiozaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Kakizaki Seisakusho, Tokyo, Japan

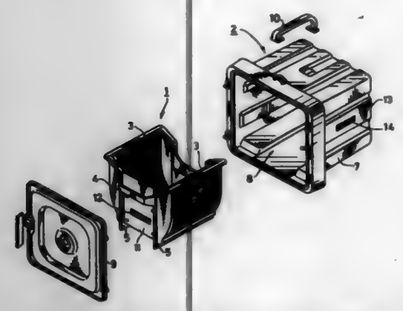
PCT No. PCT/JP93/01674, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO94/11274, PCT Pub. Date May 26, 1994

PCT Filed Nov. 16, 1993, Ser. No. 244,752

Claims priority, application Japan, Nov. 17, 1992, 4-307088

Int. Cl.[6] B65D *73/00*

U.S. Cl. 206—459.5 **13 Claims**



1. A resin-made basket for holding a plurality of thin sheets for operations including conveying, storing, and processing, the basket comprising:

a basket body-having an outer surface and being formed of resin material made up of any one of polyproylene(PP), polybutylene telephtalate(PBT), polycarbonate(PC), polyetherimide(PEI), polyetheretherketone(PEEK), and polyester elastomer each containing a catalytic substance; and

a bar code having a white-black bar code pattern for processing histories and control the white-black bar code pattern being integrally formed as a part of the basket body on the outer surface by radiating a laser beam onto the outer surface along the bar code pattern.

5,445,272

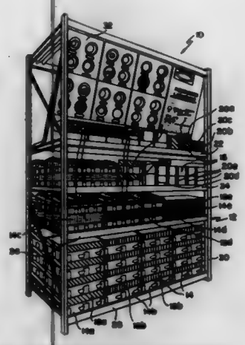
COLOR CODED PAKAGING DISPLAY SYSTEM

Kelvin E. Crisp, Hampoke, Va., assignor to Hubbell Incorporated, Orange, Conn.

Filed Jul. 27, 1994, Ser. No. 280,996

Int. Cl.[6] B65D *85/42, 73/00*

U.S. Cl. 206—459.5 **14 Claims**



1. A packaging display system comprising:

a display rack including a plurality of shelves;

a first set of cartons on at least one of said shelves packaging a first group of products, said first set and said first group being divided into respective first subsets and first subgroups;

a second set of cartons on at least one of said shelves packaging a second group of products, said second set and said second group being divided into respective second subsets and second sub-groups, said products of said first group being selectively matable with said products of said second group wherein only some of said products of first sub-groups properly mate with only some of said products of said second sub-groups and do not properly mate with other products of said second sub-groups; and

color coding means on said cartons for indicating which products of said first sub-groups properly mate with which products of said second sub-groups, said color coding means including patches of different colors with a same color patch appearing on said cartons of said first and second subsets packaging products of said first and second subgroups, respectively, which properly mate.

5,445,273

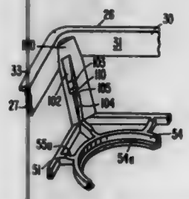
LOW DEPTH NESTABLE TRAY FOR CANS OR THE LIKE

William P. Apps, Anaheim, Calif., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 963,678, Oct. 20, 1992, Pat. No. 5,305,884. This application Mar. 3, 1993, Ser. No. 25,746

Int. Cl.[6] B65D *21/032, 21/04, 85/62*

U.S. Cl. 206—505 **20 Claims**



2. A low depth nestable tray for containers, said tray adapted to be nested with other trays when empty of the containers and stacked with other trays when loaded with the containers, said tray having a low depth wall structure comprising a substantially flat band extending around the periphery of said tray for preventing the containers from tipping during transport, said wall structure comprising side walls and end walls; a floor structure comprising a floor top surface, a floor bottom surface; a corner post at each corner of said wall structure connecting said floor structure to said band; and a plurality of columns along each side of said wall structure interconnecting said band and said floor structure, said plurality of columns being substantially flat along the inside of said tray so as to not interfere with containers or multi-packs of containers in said tray and being configured to nest deeply with columns of another tray;

wherein the improvements comprise:

a plurality of support areas on said floor top surface, said support areas having means for supporting containers spaced apart from said wall structure to prevent damage to the containers from excessive contact with said wall structure;

each said corner post comprising an exterior corner rib extending vertically downward and outward from said corner post such that the bottom of said corner rib is substantially flush with said floor bottom surface;

each said corner post further comprising an interior corner rib, substantially equal in height to said exterior corner rib, extending vertically upward and inward from said floor top surface opposite said exterior corner rib;

each said corner post further comprising a vertical corner slot indented into said corner post above said interior corner rib, wherein the top of said interior corner rib and the bottom of said vertical corner slot form a corner nesting ledge and said vertical corner slot is adapted to matingly receive the exterior corner rib of another tray nested thereabove so that the bottom of the exterior corner rib rests on said corner nesting ledge of said tray when empty and nested with another tray thereabove;

wherein said exterior corner ribs are adapted to be supported by the corner nesting ledges of another tray when the low depth tray is empty and nested with another tray therebeneath, and said corner nesting ledges are adapted to support the weight of any trays nested above the low depth tray, to thereby prevent spreading and fraying of said wall structure of the low depth tray.

therein, said panels being sealed together about longitudinal and transverse peripheral edges thereof to define a fillable chamber therebetween, a pocket formed on one exterior surface of one of said panels, and a self-sealable valve accessing said chamber, thereby enabling placement of an article in said pocket, rolling up of said panels around said article, and charging of said chamber with a filler medium;

in which said panels are further sealed together by additional seals at a plurality of locations, at least one of which said locations is coincident with said longitudinal fold, between said longitudinal and transverse peripheral edges and extending in a direction substantially parallel to said transverse peripheral edges to define a plurality of communicating compartments and to define a plurality of fold lines therebetween that are substantially coincident with said additional seals and extend in a direction parallel to said transverse peripheral edges to facilitate folding in a longitudinal direction of said communicating compartments around said article, at least two of said fold lines being spaced apart from each other a distance corresponding to the distance between two edges of the matching outer container.

5,445,274

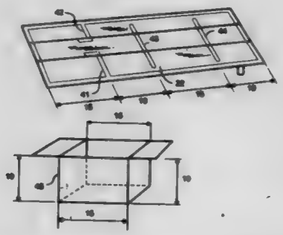
INFLATABLE PACKAGE INSERT

Daniel A. Pharo, c/o Air Packaging Technologies, Inc., 25620 Rye Canyon Rd., Valencia, Calif. 91355

Continuation of Ser. No. 805,860, Dec. 10, 1991, abandoned. This application Jun. 10, 1994, Ser. No. 257,941

Int. Cl.[6] B65D *81/03*

U.S. Cl. 206—522 **3 Claims**



1. A packaging system formed of an inflatable device and a matching outer container, the outer container having a plurality of outer panels meeting one another at respective edges, and the inflatable device comprising overlying flexible first and second panels, one of said panels being larger than the other in at least one dimension and having at least one longitudinal fold

5,445,275

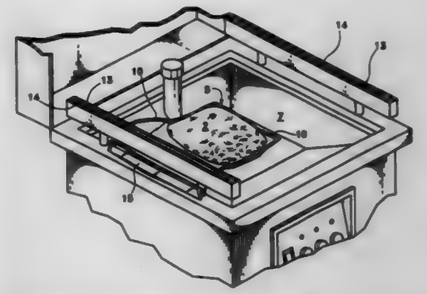
FULL RECOVERY REDUCED-VOLUME PACKAGING SYSTEM

Dennis M. Curley, Brea, and Chris M. Boos, Studio City, both of Calif., assignors to Lazy Pet Products, Inc. and Southern California Foam, Inc., Brea, Calif.

Filed Jun. 8, 1994, Ser. No. 255,483

Int. Cl.[6] B65D *85/00*

U.S. Cl. 206—525 **18 Claims**



1. A foam pet product package comprising:

a) a foam pet product having an initial volume wherein the foam pet product is established in a reduced volume state of at least about 80% of said initial volume and having substantially no compressible open cell foam having a density than 1.2 pounds per cubic foot,

b) a flexible impermeable encasing substantially surrounding the foam pet product,

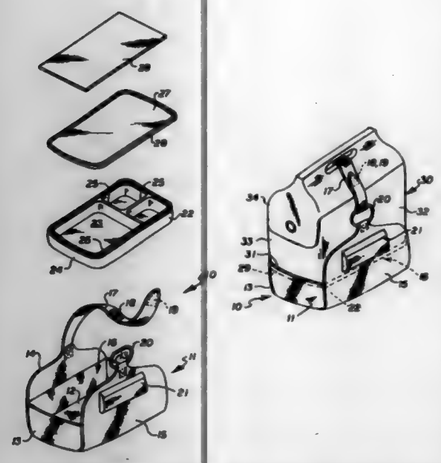
c) a seal to which the flexible impermeable encasing is responsive and which acts to hold the compressible item in its reduced-volume state through interaction between said impermeable encasing and the ambient pressure environment.

5,445,276

FOOD CONTAINER ATTACHMENT FOR LUNCH PAILS AND COOLERS

Delbert L. Gordon, 233 Laurel St., Lake Jackson, Tex. 77566

Continuation-in-part of Ser. No. 18,353, Feb. 17, 1993, Pat. No. 5,325,969. This application Jul. 5, 1994, Ser. No. 270,734
Int. Cl.[6] B65D *81/38*
U.S. Cl. 206—545 18 Claims



1. A food container attachment for removable installation on lunch pails and small coolers which have a bottom wall, side walls and a top, to form a secondary compartment for carrying different types of lunches and other articles comprising:

a sling member formed of flexible material having a bottom wall and opposed end portions and opposed side portions extending upwardly therefrom to define a generally rectangular compartment sized be received beneath the bottom wall of the pail or cooler and to enclose a food container;

a generally rectangular thermally insulated cover member removably received within said sling compartment between the bottom of the pail or cooler and the top of the food container to enclose said compartment and insulate the food container enclosed within said compartment;

an elongate strap member connected to one of said opposed side portions and being of sufficient length to pass over the top of the pail or cooler; and

releasable fastener means connected with said strap member and with the other one of said opposed side portions for releasably securing said strap member over the top of the pail or cooler; whereby

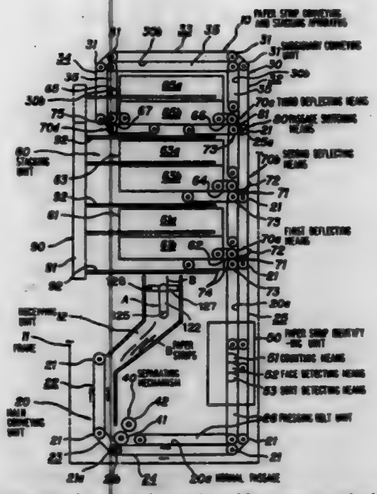
a food container containing food and other articles of one type is releasably secured beneath the bottom of the pail or cooler and is conveniently carried with the pail or cooler as a single unit and isolated from food, beverages and other articles of another type contained in the pail or cooler.

5,445,277

PAPER STRIP CONVEYING AND STACKING APPARATUS

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP92/00887, § 371 Date Jan. 11, 1994, § 102(e) Date Jan. 11, 1994, PCT Pub. No. WO93/01117, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 10, 1992, Ser. No. 178,292
Claims priority, application Japan, Jul. 11, 1991, 3-170949
Int. Cl.[6] B07C *5/00*
U.S. Cl. 209—534 15 Claims



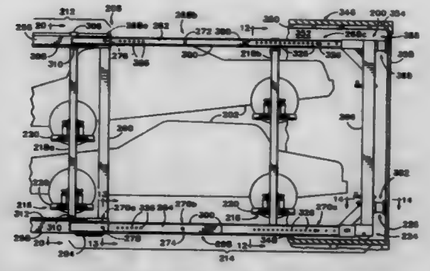
1. A paper strip conveying and stacking apparatus including a receiving unit for receiving loaded paper strips and for discharging them, a conveying unit for conveying the paper strips discharged from said receiving unit and a stacking unit for sorting and stacking the conveyed paper strips therein, wherein: said stacking unit comprises: a lower bin for accepting the conveyed paper strips; an upper bin for accommodating and storing the conveyed paper strips accepted by said lower bin; and a lifting mechanism for lifting the paper strips from the lower bin to the upper bin; said lower bin having main and subsidiary entrances on one end and the other end sides, respectively; and said conveying unit comprises: a main conveying unit having a normal passage for conveying the paper strips received at the receiving unit to said main entrance; a subsidiary conveying unit having a reversing passage, said subsidiary conveying unit for passing the paper strips introduced from said normal passage around said stacking unit via said reversing passage to reverse the faces of the paper strips and to convey them to the subsidiary entrance; a first loading means for loading the paper strips from the normal passage into the stacking unit, introducing them through the main entrance into the lower bin of the stacking unit; a second loading means for loading the paper strips from the reversing passage into the stacking unit, introducing them through the subsidiary entrance into the lower bin of the stacking unit; face detecting means located at a position along the length of said normal passage for detecting the faces of the paper strips; and a passage switching means for introducing the paper strips passing through said normal passage to said reversing passage in response to a signal from said face detecting means, which is indicative of a result of the detection.

5,445,278

ADJUSTABLE VEHICLE-CARRYING FRAME FOR INSERTION INTO DIFFERENTLY-SIZED CONTAINERS

Peter Gearin, Portland; Terence Halpin, Oregon City; James D. Pileggi, Beaverton, all of Oreg.; Michael P. J. Browne, Vancouver, Wash., and William C. Bentler, Portland, Oreg., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 143,873, Oct. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 871,288, Apr. 20, 1992, which is a continuation-in-part of Ser. No. 720,893, Jun. 25, 1991, Pat. No. 5,105,951, which is a continuation of Ser. No. 500,476, Mar. 28, 1990, Pat. No. 5,040,938, which is a continuation of Ser. No. 261,504, Oct. 24, 1988, Pat. No. 4,963,067, which is a continuation-in-part of Ser. No. 943,688, Dec. 18, 1986, Pat. No. 4,797,049. This application Dec. 22, 1993, Ser. No. 173,677
Int. Cl.[6] B60P *1/64*
U.S. Cl. 211—13 23 Claims



1. An elongate vehicle-supporting frame comprising:

(a) a pair of transversely spaced elongate upright sides capable of supporting a vehicle transversely between said sides, said pair of sides defining a forward end and a rearward end longitudinally separated from each other;

(b) a movement mechanism underlying said sides enabling movement of said frame while said frame is in transit inside a transport enclosure: and

(c) a door-protecting mechanism on said frame arranged so as to be aligned opposite the door of said transport enclosure while said frame is inside said transport enclosure, said door-protecting mechanism including a shock-absorbing mechanism to reduce the peak level of any shock force generated between said frame and said door in response to an abrupt shift in the rate of movement of said transport enclosure.

5,445,279

FOLDABLE AUTOMOBILE HARDTOP ROOF STORAGE CART

Thomas R. Warner, Troy, Mich., assignor to Advanced Thermoforming, Inc., Sterling Heights, Mich.

Filed Sep. 17, 1993, Ser. No. 122,687
Int. Cl.[6] A47G *7/00*
U.S. Cl. 211—195 27 Claims

1. A foldable storage rack for storing a removable vehicle rooftop while the rooftop is not on the vehicle, comprising:

a generally planar base;

a first abutment disposed on said base; and

first and second generally planar support panels, said first panel being hingedly connected to said base adjacent a lower edge on said first panel such that an inward surface on said first panel faces said base, said second panel engaging said first abutment adjacent a lower edge on said second panel, said lower panel edges being generally parallel, said panels non-hingedly engaging each other adjacent a distal panel edge on one of said panels, said base and said panels forming a triangle in a upright supporting position to support a vehicle rooftop, said storage rack being foldable by moving said second panel and folding



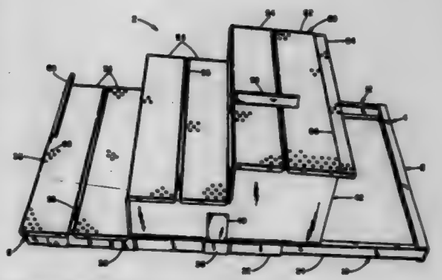
said first panel about said hinged connection to lie generally flat on said planar base.

5,445,280

MODULAR DISPLAY RACK

Carl H. Rahn, 2329 E. 10th Ave., Apartment 203, North St. Paul, Minn. 55109

Filed Nov. 1, 1993, Ser. No. 143,631
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—186 19 Claims



1. Product display apparatus comprising:

a) a base including a plurality of couplers;

b) a plurality of sidewall panels, wherein said sidewall panels include a plurality of rails and a plurality of fasteners, which fasteners interlock with said couplers;

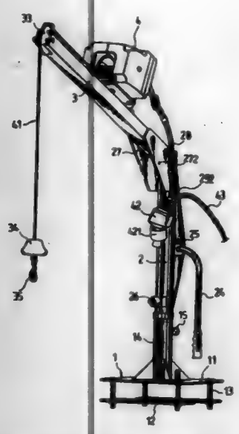
c) a product support track, wherein said support track includes a plurality of track sections, wherein each of said track sections includes a plurality of hinge pins and a plurality of bored sleeves secured to peripheral edges of each track section, wherein said pins interlock with the bores of said sleeves to pivotally secure said track sections to one another, such that the length of the support track can be varied upon removing or adding track sections, and wherein each of said track sections includes a plurality of slots at a bottom surface, which slots interlock with said rails.

5,445,281

LIGHT-DUTY ELECTRIC CRANE

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Sep. 29, 1994, Ser. No. 314,683
Int. Cl.[6] B66C *23/18*
U.S. Cl. 212—179 8 Claims



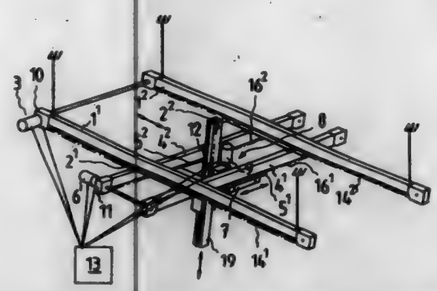
1. A light-duty electric crane comprising:
a base mountable at a position of utilization, said base having fixed thereto and extending upwardly therefrom a holding pipe having therethrough a hole;
a hollow supporting mast having a lower portion fitting into said holding pipe with said mast extending upwardly therefrom, said mast having therethrough a plurality of holes selectively alignable with said hole in said holding pipe;
a manually operable lever pivotally mounted on said mast at a middle portion thereof and operable, upon being grasped by an operator, to enable said mast to be turned relative to said holding pipe to align a selected hole in said mast with said hole in said holding pipe;
a bearing on a bottom end of said mast to facilitate turning of said mast relative to said holding pipe;
a latch pin selectively insertable through said hole in said holding pipe and through a selected said hole in said mast aligned therewith, thus securing said mast to said holding pipe;
a boom support at a top portion of said mast, said boom support comprising two spaced side walls non-adjustably fixed to said mast and extending therefrom in directions slightly inclined upwardly, said two side walls having therein aligned plural holes;
a movable boom having a first end portion provided with plural holes selectively alignable with respective said holes in said two side walls, a center portion of said boom having thereon a support platform;
latch pins selectively insertable through corresponding aligned said holes in said boom and said two side walls, thereby enabling selective adjustment of an angle of extension of said boom relative to said mast;
a pulley mounted on a second end portion of said boom; and
a winch removably mounted on said support platform, said winch having a hoisting cable feedable over said pulley with a weight block and a hoisting hook connected to a free end of said cable, and said winch including external wiring and a remote control unit to enable remote control operation.

5,445,282

TRANSPORT MEANS FOR TRANSPORTING PIECES THREE-DIMENSIONALLY

Jouni Erikkilä, Espoo, Finland, assignor to Erikkila Ky, Espoo, Finland

Continuation of Ser. No. 743,368, Aug. 19, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 44,381
Claims priority, application Finland, Feb. 17, 1989, 890788
Int. Cl.[6] B66C *17/00*; B65G *25/04*
U.S. Cl. 212—312 2 Claims



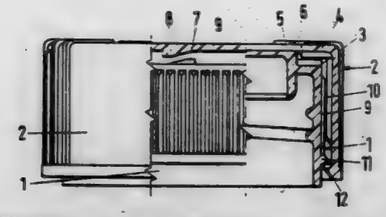
1. A transport means for transporting objects, comprising:
a pair of side-by-side parallel and horizontal bridge sections, said bridge sections being of a box-type configuration;
a pair of bridge carriages including first power means connected thereto for movement thereof, said bridge carriages being carried by said bridge sections and movable thereon;
a pair of side-by-side parallel and horizontal transport sections being substantially at right angles with respect to said pair of bridge sections, said transport sections being carried by said pair of bridge carriages, said transport sections having a box-type configuration;
a pair of transport carriages having second power means connected thereto for movement thereof, said transport carriages being mounted on said pair of transport sections and being movable thereon;
a lifting frame carried by said transport carriages;
a lifting means for lifting objects including third power means, said lifting means being mounted on said lifting frame for vertically moving objects;
an elongated traction member mounted on each of said bridge sections and operatively connected to said bridge carriages for moving said transport sections and an elongated traction member mounted on each of said transport sections and connected to said transport carriages for moving each transport carriage and the lifting frame, a respective elongated traction member being disposed along a substantial part of a respective length of said transport and bridge sections;
return sheaves placed in pairs on each of said bridge sections and each of said transport sections at a fixed spacing;
said first and second power means being respectively connected to one of said pairs of return sheaves to move said traction member and in response thereto, their respective bridge and transport carriages;
tension adjusting means mounted on each of said bridge and transport carriages, intermediate said return sheaves, for adjusting the tension of the respective elongated traction members; and
each traction member extending from said tension adjusting means over said pair of return sheaves and being operatively connected to a respective bridge and transport carriage such that each traction member forms a separate loop.

5,445,283

CHILD-PROOF SCREW CAP

Günter J. Krautkrämer, Budenheim, Germany, assignor to Jacob Berg GmbH & Co. KG, Budenheim, Germany

Continuation of Ser. No. 238,633, May 5, 1994, abandoned. This application Nov. 17, 1994, Ser. No. 340,813
Claims priority, application Germany, May 5, 1993, 43 14 754.2
Int. Cl.[6] B65D *55/02*
U.S. Cl. 215—218 12 Claims



1. Plastics screw cap for child-proof container tops, with an inner cap, with an internal thread which can be screwed onto the neck or connecting piece of a container for receiving a closure, and with an outer cap which can be freely rotated with respect to the inner cap, at least in the direction of opening, wherein on the outer cover surface of the inner cap and the inner cover surface of the outer cap, serrations are provided for opening said screw cap, wherein the smallest internal diameter of the outer cap in the area of the serrations is larger than the largest external diameter of the inner cap including the serrations thereof and wherein said serrations can only be engaged by interference fitting by exertion of a radial force in addition to the tangential force effecting the opening moment, characterised in that the bases of the inner cap and outer cap fit into one another by means of a cylindrical projection which is arranged concentrically with respect to the axis of the closure on one of the bases and a cylindrical recess which is also arranged concentrically to the axis of the closure on the other base, wherein the recess has a slightly larger diameter than the projection.

5,445,284

CONTAINER CLOSURES

John H. Guest, West Midlands, United Kingdom, assignor to MCG Closures Limited, United Kingdom

Continuation of Ser. No. 754,646, Sep. 4, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 979,402
Claims priority, application United Kingdom, Sep. 5, 1990, 9019359
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—252 9 Claims



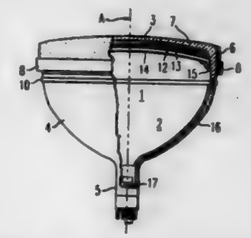
1. A tamper-evident container closure system, comprising
(a) a container, including
(1) a neck portion extending about a central axis of said container and defining a container mouth and an external screw thread adjacent said mouth;
(2) an annular outward projection spaced below said screw thread and having a nose-shaped cross-sectional configuration, said projection having a lower surface disposed at a first angle with respect to a plane normal to the container central axis and having an upper surface arranged at a second angle with respect to the said normal plane, said upper and lower surfaces meeting at an edge; and
(3) said container including an annular groove below said projection; and
(b) a roll-on metal closure, including
(1) a top;
(2) a skirt depending from said top and having a lower edge portion;
(3) a unitary tamper-evident ring integral with said skirt and having an upper edge portion, said skirt lower edge portion and said ring upper edge portion jointly defining a radially outwardly facing rib; and
(4) a plurality of frangible bridges formed in a wall of said rib and connecting said ring upper edge portion with said skirt lower edge portion, said bridges being spaced from said container projection in a direction toward said closure top and being radially spaced from an outer surface of said container, said bridges being located intermediate an axial length of said rib to define upper and lower surfaces of said rib, said skirt deformed into engagement with said screw thread such that said ring is deformed into contact with said projection and into said groove below said projection, whereby said deformed ring forms an annular fulcrum in conjunction with said projection, said ring being pivotable at respective contacting surfaces of said ring and said projection such that a sufficient radially outward force applied to a bottom edge portion of said ring causes said bridges and a portion of said ring above the contacting surfaces of said ring and said projection to deform radially inwardly, a base portion of said rib lower surface constituting said contacting surface of said ring.

5,445,285

GLASS BULB FOR A CATHODE RAY TUBE

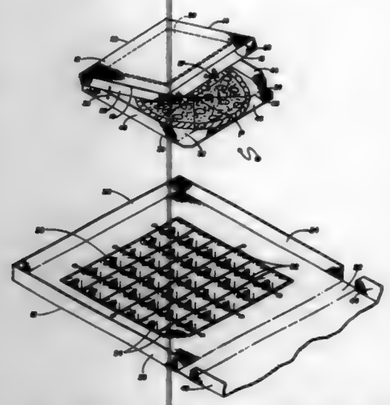
Tsunehiko Sugawara, Osaka; Toshihide Murakami, Funabashi, and Yusuke Kobayashi, Funabashi, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 268,792
Claims priority, application Japan, Jun. 30, 1993, 5-187268
Int. Cl.[6] H01J *29/86*
U.S. Cl. 220—2.1 A 29 Claims



1. A glass bulb for a cathode ray tube which comprises:
a panel portion having a substantially rectangular panel face portion; a funnel portion, and a neck portion, wherein a physically strengthened compression layer having a compressive stress σ_{KC} is formed in at least the panel portion of the glass bulb, and the compressive stress σ_{KC} has a relation of $1<3\sigma_{VTmax}/\sigma_{SG}|-(\sigma_{KC}/\sigma_{SG})\leq 1.60$ to the fracture strength σ_{SG} of the glass bulb and the maximum tensile vacuum stress σ_{VTmax} which is the maximum value of tensile stress generated in the surface of the glass bulb vacuumed onto which an atmospheric pressure is applied.

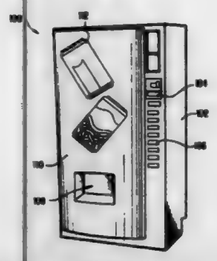
5,445,286
BOX HAVING HEAT-RETAINING CAPABILITY
Henry L. Guimarin, Longwood, Fla., assignor to Carol Stemper Wingo, Longwood, Fla.
Filed Jun. 16, 1994, Ser. No. 261,105
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—427 18 Claims



1. A flat, comparatively shallow box containing means for keeping a comparatively flat food item warm in its interior for a protracted length of time, said box having rectangularly-shaped top and bottom members of approximately equal size, which top and bottom members are hingedly secured together by hinge means disposed along an edge common to both members, said top member having an underside and also having side members disposed along each of its other three side edges, said bottom member likewise having three other edges and having a flap disposed on the side edge opposite said hinge means, such that closure of said box can be effected after a comparatively flat food item has been inserted into the interior of said box, said means for keeping a food item warm being a container for a heat-retaining substance, said container being disposed in the interior of said box, affixed to said underside of said top member, said container thus being disposed close to the food item when said box has been closed, the heat-retaining substance, having been brought up to a selected raised temperature, serving by the substance being relatively close to the food item when said top member has been closed, to keep the food item warm.

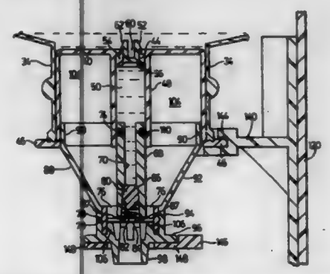
5,445,287
CO-DISPENSING SNACK FOOD PRODUCTS AND BEVERAGES FROM A VENDING MACHINE
John L. Center, and James W. Stalder, both of Dallas, Tex., assignors to Recot, Inc., Wilmington, Del.
Filed Aug. 12, 1994, Ser. No. 289,537
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—1 7 Claims

1. A process for dispensing beverages and snack food products from a single vending machine, the process comprising steps of:
providing a vending machine having a storage portion for storing containers which have a predetermined size and shape so as to be receivable in the storage portion of said vending machine;
placing a plurality of containers filled with a beverage in the storage portion of said vending machine, each of the filled beverage containers having substantially the same size and shape; and
placing a plurality of containers filled with a snack food product in the storage portion of said vending machine, each of the filled snack food containers having a size and shape that are substantially the same as the size and shape of the filled beverage containers;



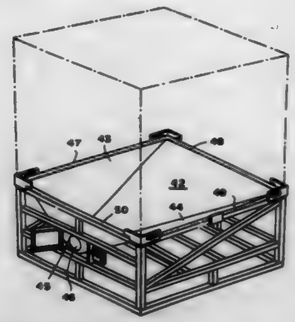
whereby said vending machine is capable of dispensing both a filled beverage container and a filled snack food container when operated by a user.

5,445,288
LIQUID DISPENSER FOR DISPENSING FOAM
Stewart Banks, Brantford, Canada, assignor to Sprintvest Corporation NV, Curacao, Netherlands Antilles
Filed Apr. 5, 1994, Ser. No. 223,148
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—95 18 Claims



1. A device for producing and dispensing foam, comprising:
a) a container having an interior; and
b) pump means being attachable to said container, the pump means including an air chamber having an air inlet and air outlet, the pump means including a fluid chamber provided with a fluid outlet positioned with respect to the air outlet so that liquid exiting the fluid outlet communicates with the air outlet, the fluid chamber having a liquid inlet being in flow communication with the container interior and including a liquid inlet valve, the liquid inlet valve being movable between an open position to allow liquid from the container to enter the fluid chamber and a closed position, a liquid outlet valve located in the fluid chamber spaced from the liquid inlet valve, the liquid outlet valve being biased in the closed position, said pump means including a porous member for generating turbulence in fluid passing therethrough positioned to receive air and fluid from said air and fluid chamber outlets, said pump means including means for pressurizing the air chamber and the fluid chamber whereby when the fluid chamber is sufficiently pressurized the liquid inlet valve closes and the liquid outlet valve opens thereby forcing liquid through the fluid chamber outlet to commingle with air being simultaneously expelled through the air chamber outlet to form a liquid-air mixture which is forced through said porous member.

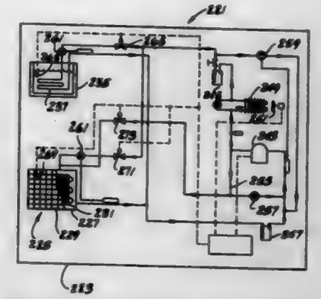
5,445,289
BULK CONTAINER WITH REMOVABLE TRAY
Donald R. S. Owen, West Sussex, Great Britain, assignor to Flomotion Limited, West Grinstead Horsham, Great Britain
Filed Dec. 17, 1993, Ser. No. 168,238
Claims priority, application United Kingdom, Dec. 17, 1992, 9226264
Int. Cl.[6] B65D *35/56*
U.S. Cl. 222—105 11 Claims



1. A container assembly comprising:
a collapsible bulk container having side, front and rear panels;
a base having front, rear and side members, and means to detachably receive the side, front and rear panels of the container;
a gate carried by said base; and
a tray, the tray having means for removably supporting the tray within the base, said means for removably supporting including flanges provided along an upper edge of the tray, the flanges projecting outwardly of the tray and, in use, rest on the front, rear and side members of the base, the tray further having a floor portion which slopes downwardly from the rear panel of the container towards said gate and sidle portions which slope down from the side panels of the container towards the gate.

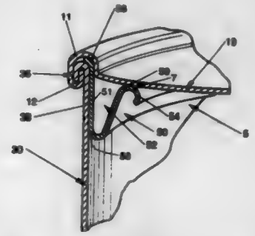
5,445,290
STAND-ALONE COMBINATION ICE MAKER AND BEVERAGE DISPENSER
David P. Forsythe, Fenton, and Dean A. Martin, Maryland Heights, both of Mo., assignors to Multiplex Company, Inc., St. Louis, Mo.
Division of Ser. No. 90,806, Jul. 12, 1993, Pat. No. 5,363,671. This application Jul. 19, 1994, Ser. No. 277,157
Int. Cl.[6] B67D *5/62*
U.S. Cl. 222—129.1 4 Claims

4. A stand-alone combination ice maker and beverage dispenser, comprising
a housing,
an ice making device having a series of compartments in which water is adapted to be frozen to form ice cubes, and an evaporator in the housing for freezing water in the compartments to form ice therein,
a beverage cooling and dispensing system comprising a tank in the housing for holding a liquid, an evaporator in the tank for chilling said liquid, at least one beverage conduit positioned in the tank for exposure to chilled liquid to cool beverage flowing through the conduit, and at least one dispensing head connected to said at least one beverage conduit for dispensing beverage supplied via said beverage conduit to said dispensing head,
a single compressor in the housing,
refrigerant conduit means in the housing connecting said single compressor and the evaporators of said ice maker and said beverage cooling and dispensing system for flow of refrigerant from the compressor through said evaporators and then back to said compressor to effect a refrigeration cycle, and
a sensor in said tank adjacent the evaporator sensing the



build-up of ice on the evaporator and generating a signal in the event such build-up exceeds a predetermined amount, and valve means which operates solely in response to said signal to shut off the flow of refrigerant to said evaporator.

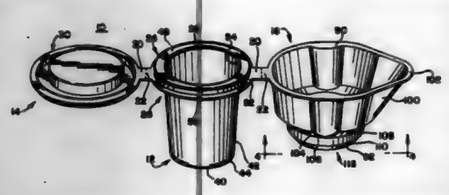
5,445,291
PRESSURIZED PACKAGE FOR A PARTICULATE MATERIAL EMPLOYING A VENTING MEMBER
Wade K. Daniel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 957,570, Oct. 7, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,553
Int. Cl.[6] B65D *1/40, 51/16*
U.S. Cl. 220—366.1 35 Claims



1. A package containing a particulate product under pressure, said package automatically releasing said pressure upon opening while substantially preventing the escape of said particulate product, said package comprising:
a) a container having a closed top, a closed bottom and a body having an enclosed perimeter between said top and said bottom, said body, said top and said bottom together define an interior chamber, said interior chamber containing a particulate product under pressure; and
b) a venting member disposed within said container substantially continuously along said body's entire perimeter adjacent said top, said member having first and second ends, said first end abutting against said body of said container along substantially its entire perimeter, said second end abutting substantially continuously against said top of said container, said venting member defining a channel above said venting member, adjacent said top of said package, said venting member disposed within said container such that said particulate product is substantially prevented from entering said channel prior to initial opening of said package, said venting member being so disposed within said container that when said package is

initially opened with a can opener, said top is punctured in an area superposed upon said channel, whereby pressure is released from said container into said channel and out of said package while said particulate product is substantially prevented from escaping from said package.

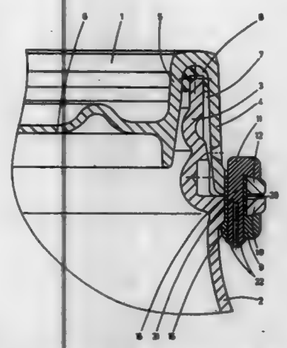
5,445,292
SEALABLE THERMOFORMED CONTAINER FOR LIQUIDS
Douglas B. Slomski, Batavia, and Todd O. Buck, Elburn, both of Ill., assignors to Plastoflex Industries, Inc., Wheaton, Ill.
Filed Sep. 9, 1993, Ser. No. 118,926
Int. Cl.[5] B65D *41/16*
U.S. Cl. 220—306 **13 Claims**



1. A sealable thermoformed container for containing liquids comprising:
- a cup portion adapted to contain liquid and having an open upper end;
- a lid portion;
- a cup sealing formation disposed on said cup and a lid sealing formation disposed on said lid for forming a releasably leak resistant seal between said cup portion and said lid portion when said cup portion and said lid portion are operatively coupled, said lid sealing formation including a substantially planar top peripheral lid edge circumscribing said open end of said cup, a recess base vertically displaced from the peripheral lid edge, an annular lid side wall joining said recess base to said peripheral lid edge, a lid skirt depending from said lid peripheral edge and being substantially parallel to said lid side wall, and a lid flange radially projecting from said lid skirt and being substantially parallel to said peripheral lid edge; and
- means for integrally attaching said cup portion to said lid portion to form a unitary container when said cup sealing formation and said lid sealing formation are completely uncoupled.

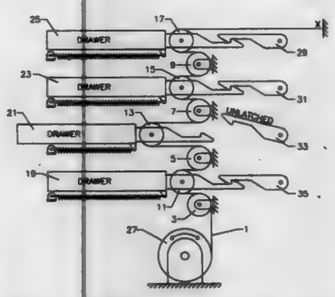
5,445,293
LID SEAL FOR WIDE-MOUTHED BARRELS OF SYNTHETIC RESIN
Udo Schutz, Ruckersteg 4, D-5418 Selters, Germany
Division of Ser. No. 992,434, Dec. 17, 1992, Pat. No. 5,368,182.
This application Jul. 29, 1994, Ser. No. 282,459
Claims priority, application Germany, Dec. 23, 1991, 41 42 737.8
Int. Cl.[5] B65D *45/32*
U.S. Cl. 220—319 **4 Claims**

1. A sealing lid and wide-mouthed barrel of synthetic resin, said lid having a central panel surrounded by an outer rim encompassing a neck of said blow-molded plastic barrel and an inner rim dipping into the barrel neck and projecting beyond said panel below the barrel opening, as well as a gasket extending into an annular space between the outer lid rim and the inner lid rim, said gasket being clamped against an opening rim of the barrel neck by clamping together a molded flange on a lower end of the outer lid rim, against a flange radially outwardly projecting from the barrel side wall at a spacing below the barrel opening; the improvement comprising a clamping ring (9) in contact with the underside of the barrel flange (10), a counter ring (11) resting on the lid flange (12), and clamping elements penetrating bores (15, 16) in the barrel flange (10) and in the lid flange (12) and clamping the clamping ring and the counter ring (9, 11) together, said clamping elements comprising locking sleeves (20) molded on the clamping ring (9) in contact with the barrel flange (10) and distributed about the clamping ring circumference, said sleeves engaging in corresponding aligned bores (15, 16) in the barrel flange (10) and in



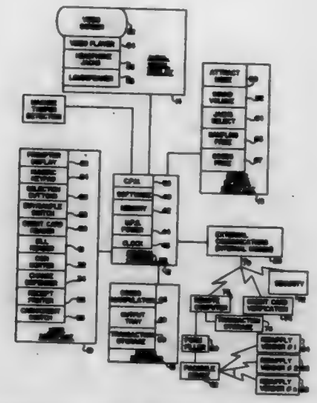
the lid flange (12), and clamping bolts (21) formed on the counter ring (11) resting on the lid flange (12), said bolts being disposed in the locking sleeves (20) and being locked in shapemating fashion together with the clamping ring (9) that contacts the barrel flange (10).

5,445,294
METHOD FOR AUTOMATIC DISPENSING OF ARTICLES STORED IN A CAHINET
John F. Gardner, Penfield, N.Y.; Jane F. Laycock, West Chester, Pa.; Eric C. Norlin, Coatesville, Pa.; Shelly I. Slogoff, Chester Springs, Pa.; E. Ford Williams, Bryn Mawr, Pa., and Tobin H. Williams, Radnor, Pa., assignors to Lionville Systems, Inc., Exton, Pa.
Division of Ser. No. 63,662, May 20, 1993, Pat. No. 5,392,951.
This application Aug. 9, 1994, Ser. No. 287,807
Int. Cl.[6] G07F *11/18*
U.S. Cl. 221—1 **16 Claims**



1. A method of dispensing articles stored in drawers of a cabinet, the method comprising the steps of:
- a) accepting a request for dispensing a desired article,
- b) selecting one of the drawers in the cabinet which contains the desired article,
- c) determining a location within said selected drawer at which the desired article is contained,
- d) automatically opening the selected drawer to a distance such that the desired article is exposed to an operator and such that no other article is exposed, the automatic opening step being performed by moving the drawer until the location determined in step (c) becomes exposed to the operator, and
- e) making a record of the distance to which the drawer was opened in step (d).

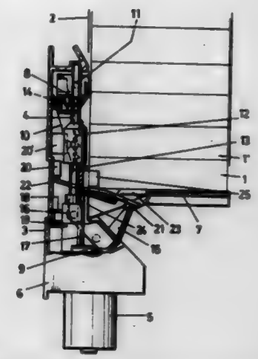
5,445,295
AUTOMATED VENDING MACHINE SYSTEM FOR RECORDED GOODS
Graham Brown, P.O. Box 12634, Scottsdale, Ariz. 85267
Filed Jan. 17, 1992, Ser. No. 822,546
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—3 **15 Claims**



1. A machine for automatically vending articles containing recordings, comprising:
- (a) storage means for storing within the machine a plurality of types of vended articles, each type separated from the others;
- (b) sampling means for displaying at least a portion of a recording associated with at least one of the articles;
- (c) means for controlling the type and nature of the display generated by the sampling means;
- (d) means for barring access to those controlling means to customers;
- (e) selection means for permitting a customer to select at least one desired article;
- (f) means for accepting payment from the customer; and
- (g) dispensing means, coupled to the article storage means, for releasing from the machine selected articles upon receipt of sufficient payment.

5,445,296
AUTOMATIC COLUMNS DISPENSING PRODUCTS
Jose L. P. Insausti, and Jesus E. Ibarrola, both of Peralta, Spain, assignors to Azkoyen Industrial, S.A., Peralta, Spain
Filed Dec. 17, 1993, Ser. No. 168,241
Claims priority, application Spain, Dec. 29, 1992, 9202632
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—7 **4 Claims**

1. A mechanism for automatically dispensing products located in a pile forming a column comprising:
- a rotatable bottom platform supporting a pile of the products, rotation of the rotatable bottom platform allowing a bottom product to be expelled while others of said products are held until the rotatable bottom platform recovers its horizontal position and again supports the pile of the products after the bottom product has been expelled;
- an electric micromotor;
- an output shaft;
- a gear through which said electric micromotor drives said output shaft;
- cams provided on said output shaft for rotating the bottom platform and checking the products, excepting the bottom product;
- said output shaft extending substantially both downwards and upwards of the bottom product in the column, a top end area of said output shaft having one of the cams, said one of the cams and being located substantially above penultimate product;
- a fixed column structure forming a support;
- a grip, mounted for rotation upon the fixed column structure;



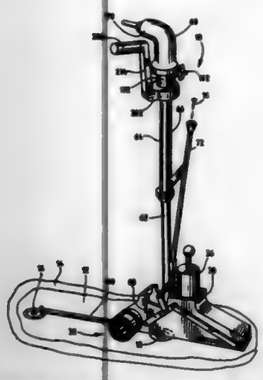
- a cross shaft through which the grip is rotatably mounted upon the fixed column structure;
- resilient means, formed by a pair of springs, for permanently biasing the grip for rotation against the penultimate product;
- said grip including small cogs that enhance its bite;
- the grip having arms, each of the arms of the grip having a right-angled bend acting as a thruster on the bottom product and to hold the penultimate product when the grip is released by the one of the cams and driven towards the pile of the products by the springs.

5,445,297
ROOFING WASHER-DISPENSER
John R. Beach, Elmhurst; Sigismund G. Paul, Park Ridge; Daniel J. Kenny, Itasca; Syed Riaz-Ul Hasan, Palatine, and James E. Doherty, Barrington, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Division of Ser. No. 51,056, Apr. 21, 1993, Pat. No. 5,347,707.
This application Jul. 27, 1994, Ser. No. 281,358
Int. Cl.[6] B65G *59/06*; B65H *3/24*
U.S. Cl. 221—257 **8 Claims**

1. In a washer-dispensing machine for dispensing stackable roofing washers individually from a stack of similar washers, a combination comprising:
- (a) a base;
- (b) a shuttle mounted movably to the base, movable to a washer-releasing position relative to the base and to a washer-engaging position relative thereto, biased to the washer-releasing position, and adapted to displace a lowermost washer from the stack and to cause movement of the lowermost washer to a separated position by positive engagement of the shuttle with the lowermost washer when moved from the washer-engaging position to the washer-releasing position;
- (c) means actuatable by a user and deactuated normally for moving the shuttle from the washer-releasing position to the washer-engaging position when actuated and for permitting the shuttle to move from the washer-engaging

position to the washer-releasing position when deactuated, and

(d) means for restraining the washer overlying the lowermost washer against being displaced with the lowermost washer when the shuttle is moved from the washer-engaging position to the washer-releasing position, the washer-restraining means including a gate movable vertically toward and away from a lower position wherein the gate provides sufficient clearance for the lowermost washer from the stack to pass beneath the gate to the separated position but insufficient clearance for any overlying washer also to pass beneath the gate, the gate being biased toward the lower position, further including a pawl mounted pivotally to the gate so as to be pivotally movable through a range of positions including upper, inoperative positions wherein the pawl provides sufficient clearance for the lowermost washer being displaced from the stack to pass beneath the pawl to the separated position and a lower, operative position wherein the pawl is disposed to prevent a washer displaced from the stack to the separated position from moving with the shuttle when the shuttle next moves from the washer-releasing position, by engaging an edge of the displaced washer if the displaced washer has a sufficiently small size to permit the pawl to pivot to the operative position when the shuttle moves to the washer-engaging position, the pawl being biased to the operative position, the gate constituting means for preventing a washer displaced from the stack to the separated position from moving with the shuttle when the shuttle next moves from the washer-releasing position if the washer has a larger size preventing the pawl from pivoting to the operative position.



5,445,298

BOTTLE VALVE ASSEMBLY WITH SECURITY SEAL

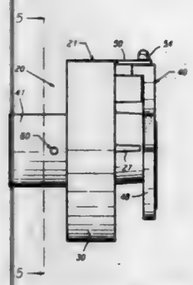
Bernard Strong, Tarzana, Calif., assignor to Propak-California Corp., La Puente, Calif.

Filed Nov. 12, 1993, Ser. No. 151,725
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.14 17 Claims

7. A dispensing apparatus for a container comprising

a push-pull type valve having an outer sleeve and an axially moveable inner stem concentrically positioned therein;

a connector plug radially positioned between the outer sleeve and the inner stem for resisting relative axial movement therebetween, wherein the connector plug is formed by inserting a heated rod externally through the outer sleeve and into the inner stem for melting a portion of the plastics in the outer sleeve and the inner stem together.

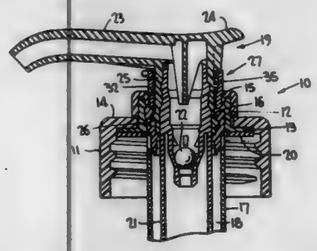


5,445,299

TAMPER EVIDENT LOCK FOR LIQUID PUMP DISPENSER

Ron E. Harriman, Montebello, Calif., assignor to Calmar Inc., City of Industry, Calif.

Filed May 2, 1994, Ser. No. 236,040
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.13 7 Claims



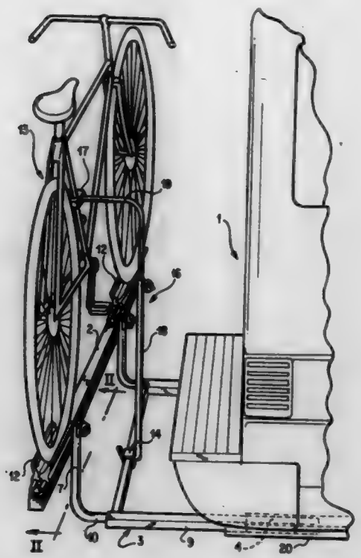
1. A manually operated dispensing pump having a plunger including a stem reciprocable through a collar of the pump and normally rotatable about the longitudinal axis of the plunger, rotary means on said plunger cooperating with means on said collar for releasably locking said plunger in a fully depressed position upon rotation of said plunger in a predetermined direction, the improvement comprising a removable tamper evident lock means for holding said plunger against unlocking rotation from its fully depressed locked position, said lock means comprising an arcuate strip partially surrounding said stem and having opposed, spaced apart free ends, a laterally extending pull tab at one of said free ends, said strip having at least one external tooth in engagement with at least one internal toothed provided on an inner surface of said collar, and said strip having an internal axial groove receiving an external axial rib provided on said stem.

5,445,300

LOAD CARRIER FOR VEHICLES

Konrad Eipper, Ammerbuch, and Lothar Böttcher, Magstadt, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Continuation of Ser. No. 49,850, Apr. 20, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 388,989
Claims priority, application Germany, Apr. 22, 1992, 42 13 216.9
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—496 13 Claims



1. A load carrier for transporting bulky articles on vehicles, comprising:

at least two beams connected by at least a first cross-strut, the first cross-strut having means for securing a load to be carried;

holding tubes securable to a rear of a vehicle and extending in a longitudinal direction of the vehicle, the beams being insertable into the holding tubes and having a longitudinal axis;

wherein each beam has a first section slidably displaceable in a respective holding tube and a second section having a first end mounted on said first section so as to be pivotable about a longitudinal axis of the first section wherein said beams are displaceable in said holding tubes by a defined amount in the longitudinal direction in the holding tubes between a storage position in which the beams are under the vehicle and a use position in which the beams project beyond a rear of the vehicle,

wherein each second section includes an opposite end extending normal to said first section and swivellably articulated on the first cross-strut and fixable thereto;

wherein the beams project beyond the rear of the vehicle and the opposite ends of the second sections of the beams are swivelled upwards when in the use position,

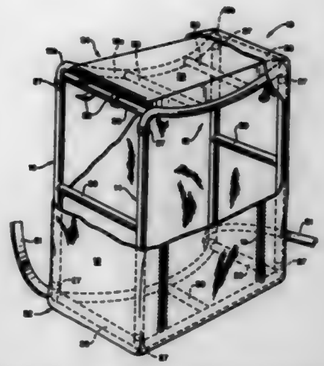
wherein in the rest position, the ends of the second ends of the beams are swivelled into a plane defined by the holding tubes and the beams are inserted into the holding tubes to such an extent that a rear edge of the cross-strut is underneath the rear end of the vehicle.

5,445,301

COMBINATION BACKPACK AND STOOL

Eric C. Biedenharn, Jr., P.O. Box 669, Vicksburg, Miss. 39181-0669

Filed Jan. 10, 1994, Ser. No. 179,199
Int. Cl.[6] A45F *3/04, 4/02*
U.S. Cl. 224—155 11 Claims



1. A combination backpack and stool compriting:

a frame having a downwardly curved upper seat potion and including front and rear opposed frame panels and a number of cross supports which rigidly join said front and rear frame panels one to another;

a fabric cover member covering said frame and including an access opening which allows access through the fabric cover member and into an interior of said frame;

a cushion member interposed between said upper seat portion of said frame and a corresponding portion of said fabric cover member; and

a pair of shoulder straps connected to one of said frame and fabric cover member to allow the frame to be carried upon a person's back.

5,445,302

PET PACK

Karol Mae V. Holtorf, 621 N. Bishop, San Angelo, Tex. 76901

Filed Oct. 17, 1994, Ser. No. 323,766
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—209 3 Claims

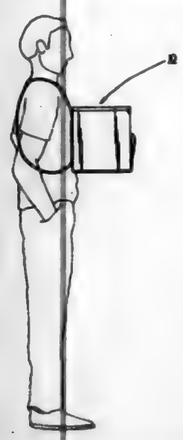
2. A new and improved pet pack for providing a back-pack style carrier for domestic animals comprising:

a rectangular compartment having an open top, a closed bottom, two side walls, a rear wall, and an open front, a plastic grid secured to the open front;

a lid hingedly secured to a back portion of the open top of the rectangular compartment; and

two adjustable shoulder straps, each of the two adjustable shoulder straps secured to the rear wall of the rectangular compartment, an adjustment means for adjusting the lengths of said shoulder straps secured to the two shoulder straps, a support bar secured across the open front and over the plastic grid; and an H-shaped support strap having a first support end, a second support end, and a middle support therebetween, a fastening means secured to the H-shaped support strap inward of the first support end,

the first support end slipping under and over the support bar and being secured thereto by means of said fastening



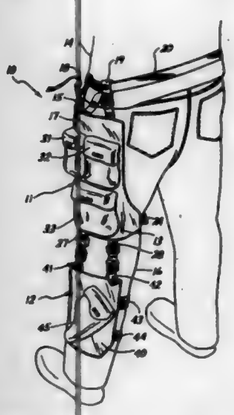
means and the second support end secured to the rear wall of the rectangular compartment.

5,445,303

MODULAR PACK SYSTEM

Sidney C. Cawlle, Jr., 25589 Calabria Dr., Moreno Valley, Calif. 92553

Filed Feb. 3, 1994, Ser. No. 191,037
Int. Cl.[6] A45F *3/50*
U.S. Cl. 224—222 3 Claims



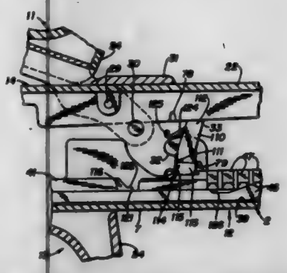
1. A pack, comprising
a first pack having a size and shape suitable for lying along an outer thigh portion of a leg of a user intermediate a waist of the user and a knee of the leg without extending beyond the knee, the first pack having an upper portion, a lower portion, and means in the form of at least one pocket for holding at least one item;
waist securing means for securing the upper portion of the first pack to the waist of the user;
leg securing means in the form of at least one strap attached to the lower portion of the first pack for securing the lower portion of the first pack to the leg of the user above the knee of the leg;
auxiliary pack attachment means in the form of at least one quick-release buckle component for removably attaching a second pack to the lower portion of the first pack; and
at least one second pack having a size and shape suitable for lying along the leg of the user intermediate the knee of the leg of the user and an ankle region of the leg, the second pack having a first edge and means in the form of at least one pocket for holding at least one other item;
the second pack having means in the form of at least one other quick-release buckle component that mates with the quick-release buckle component of the auxiliary pack attachment means on the first pack for removably attaching the second pack to the lower portion of the first pack so that the second pack lies below the lower portion of the first pack and intermediate the knee and the ankle region of the leg; and
the second pack having means in the form of at least one strap for securing the second pack to the leg of the user intermediate the knee and the ankle of the leg.

5,445,304

SAFETY DEVICE FOR A SURGICAL STAPLER CARTRIDGE

Alan K. Plyley, Santa Barbara, Calif.; Floyd L. Foslien, Hudson, Wis.; John M. Barker, Ventura, Calif., and Robert W. Petrich, Woodbury, Minn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 629,597, Dec. 18, 1990, abandoned.
This application Jul. 5, 1994, Ser. No. 270,397
Int. Cl.[6] A61B *17/072*
U.S. Cl. 227—176 18 Claims



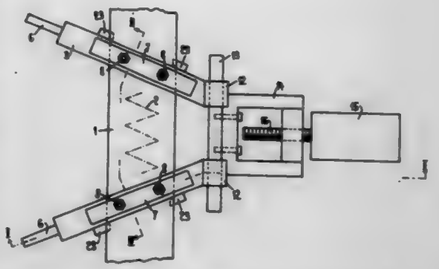
1. A staple cartridge assembly adapted for use in a surgical stapler having first and second structural members each being elongate in a first direction, said first structural member having a handle part having first and second ends, said second structural member having a base portion having first and second ends, and each of said first and second structural members having a jaw part projecting from their first ends, said jaw parts having proximal ends adjacent the first ends of said structural members and distal ends spaced from said proximal ends,
said handle part and said base portion having pivot means at said second ends adapted for free engagement and disengagement for affording, when engaged, relative pivotal movement of said structural members in said plane between a closed position with said jaw parts in closely spaced relationship, and an open position with said jaw parts spaced farther from each other than in said closed position, said handle part of said first structural member and said base portion of said second structural member in said closed position defining a space between said structural members when said structural members are in said closed position;
an elongate locking member having first and second ends, a locking member handle part and a pivot point closely adjacent the first end of the locking member, the pivot point of said locking member being mounted on said second structural member adjacent the first end of said second structural member for pivotal movement of said locking member between a locking position generally aligned with the base portion of said second structural member, and a release position with the second end of said locking member spaced from the second end of said second structural member, said first end of said locking member and said first end of said first structural member having surfaces adapted, when said pivot means are engaged with said first and second structural members in said open position, for engagement during movement of said locking member from said release position to said locking position to forcefully move said structural members to said closed position,
and means adapted for releasable engagement between said elongate locking member and said second structural member for holding said locking member in said locking position;
said first structural member being adapted to receive said staple cartridge assembly and said jaw part of said second structural member being adapted to receive an anvil;
said second structural member having a safety stop surface adjacent the proximal end of its jaw part;
wherein said staple cartridge assembly comprises:
a cartridge housing for enclosing a plurality of staples,
a pusher for sequentially presing said plurality of staples within said cartridge housing against said anvil to engage and close the plurality of staples in tissues between said jaw parts when said structural members are in said closed position, said pusher being movable in said first direction between a retracted position with said plurality of staples enclosed within said cartridge housing and an extended position with said plurality of staples closed within tissue,
manually actuatable means within said space between said handle part of said first structural member and said base portion of said second structural member for moving said pusher from said retracted to said extended position, and
a safety arm having first and second ends, said safety arm having a base portion adjacent said first end and an abutment surface adjacent said second end adapted to abut said safety stop surface,
pivotal mounting means for mounting said first end of said safety arm on said cartridge housing for pivotal movement of said safety arm between a pre-fired position for affording movement of said structural members between said closed and open position and a fired position with said abutment surface of said safety arm adapted to be in engagement with said safety stop surface,
biasing means for biasing said safety arm toward said fired position,
latch means adapted for releasable engagement between said safety arm and said cartridge housing for retaining said safety arm in said pre-fired position when said pusher is in said retracted position and
release means for releasing said latch means to afford movement of said safety arm from said pre-fired to said fired position when said pusher is moved from said retracted to said extended position,
wherein after said pusher has been moved from said retracted to said extended position, said latch means has been released, said biasing means has moved said safety arm from said pre-fired position to said fired position, and said first and second structural members are moved from said closed to said open position, said abutment surface will be in a position to prevent said first and second members from being engaged to thereby prevent accidental tissue trauma.

5,445,305

METHOD AND DEVICE FOR FEEDING A BAND OR STRIP ALONG A STRAIGHT OR ZIG-ZAG COURSE TO A MACHINE SUCH AS ONE FOR CUTTING OUT OF BLANKS

Hans Jöhr, Kehrsatz, and Roland Krebs, Fraubrunnen, both of Switzerland, assignors to Styner & Biess AG, Niederwangen, Switzerland

Continuation of Ser. No. 794,917, Nov. 20, 1991, abandoned.
This application Jan. 13, 1994, Ser. No. 181,880
Claims priority, application Switzerland, Nov. 23, 1990, 03709/90
Int. Cl.[6] B65H *20/24*; B26D *3/00*; B65G *23/00*
U.S. Cl. 226—112 14 Claims



1. A device for feeding a web in a forward feed direction, comprising;
first and second moveable grip means for alternately engaging and advancing the web in said forward feed direction, wherein said first and second grip means move in opposing directions relative to one another such that as one grip means moves in the forward feed direction the other grip means moves in a direction opposite the forward feed direction, each grip means engaging the web during movement in the forward feed direction and releasing the web during movement in the direction opposing said forward feed direction;
first and second guide means for respectively guiding the movement of said first and second grip means; and
a reciprocating driving means for driving said first and second moveable grip means in opposing directions relative to one another along their respective guide means for advancing said web when said first and second moveable grip means alternately engage said web;
wherein said driving means comprises a coupling member operatively connected to said first and second grip means and a means for driving said coupling member in a direction transverse to said forward feed direction to impart movement to said first and second grip means along said first and second guide means, respectively.

5,445,306

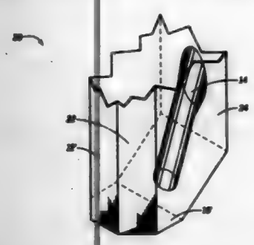
WEDGE WIRE BONDING TOOL TIP

Wyatt A. Huddleston, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1994, Ser. No. 251,500
Int. Cl.[6] H01L *21/607*; B23K *20/10*
U.S. Cl. 228—1.1 15 Claims

1. A wedge wire bonding tool tip, for bonding electronic interconnects to bonding pads of a semiconductor device, having a width of a first dimension, a front face having a second dimension which is smaller than the first dimension, a side face, a chamfered face at a predetermined angle connecting the front face to the side face, a tool foot at a bottom surface of the wedge wire bonding tool tip for making contact with a wire, and a bore through an upper portion of the wedge

wire bonding tool tip above the tool foot for feeding the wire through the bore such that a portion of the wire may be interposed between the tool foot and the bonding pad of the semiconductor device.

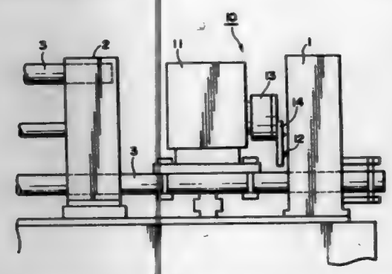


5,445,307

METHOD OF CORRECTING THE PARTIALLY WORN DIE MOUNTING SURFACES OF THE PLATENS OF A DIE CASTING MACHINE

Koji Sakamoto, Nagoya, Japan, assignor to Tokushu Denkyoku Company Ltd., Hyogo, Japan

Filed Apr. 8, 1994, Ser. No. 224,976
Int. Cl.[6] B23P *6/00*
U.S. Cl. 228—119 **6 Claims**



1. A method of correcting the partially worn die mounting surfaces of the stationary and the movable platen of a die casting machine, said method comprising steps of:

padding welding areas including partially worn areas and areas surrounding the partially worn areas in the die mounting surfaces of the platens on the die casting machine by build-up welding;

disposing a compact, portable face cutting machine near the platens; and

cutting the padded areas by the face cutting machine to finish the die mounting surfaces of the platens in a desired flatness.

5,445,308

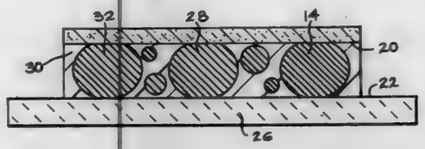
THERMALLY CONDUCTIVE CONNECTION WITH MATRIX MATERIAL AND RANDOMLY DISPERSED FILLER CONTAINING LIQUID METAL

Richard D. Nelson, 1509 Cliffside Dr., Austin, Tex. 78704; Thomas P. Dolbear, 4009 Eton La., Austin, Tex. 78727, and Robert W. Froehlich, 9005 Middlebie Dr., Austin, Tex. 78750

Continuation-in-part of Ser. No. 38,420, Mar. 29, 1993, Pat. No. 5,328,087. This application Jun. 22, 1994, Ser. No. 263,623
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[6] B23K *35/26*
U.S. Cl. 228—121 **39 Claims**

1. A method of providing a thermally conductive connection between spaced surfaces, comprising the steps of:

(a) mixing a thermally conductive filler containing a liquid metal into an unhardened matrix material; and



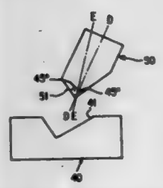
(b) contacting said unhardened matrix material and randomly dispersed, separate spaced non-solidified regions of said filler within said unhardened matrix material to said surfaces.

5,445,309

METHOD FOR MAKING A JOINT BETWEEN A MAIN PIPE AND A BRANCH PIPE AND APPARATUS FOR USE IN THE METHOD

Yonekazu Yamada, Sakado; Yutaka Yoshino, Otsu; Mitsuhira Kitada, Tokorozawa, and Kazuo Seki, Kawagoe, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 10, 1992, Ser. No. 988,891
Claims priority, application Japan, Dec. 10, 1991, 3-325636; Feb. 18, 1992, 4-030579; Jul. 17, 1992, 4-190731; Sep. 16, 1992, 4-246263; Sep. 22, 1992, 4-252572; Sep. 22, 1992, 4-252573
Int. Cl.[6] B23K *101/04, 20/00;* B29C *65/02*
U.S. Cl. 228—170 **9 Claims**



1. A method for making a joint between a main pipe and a branch pipe by:

cutting a main pipe to have a hole in the pipe wall so that two V-shaped edges of a right angle are formed in the diametrical positions on the periphery of said main pipe;

cutting a branch pipe to have facets in the pipe opening so that two peaked edges of a right angle are formed in the diametrical positions on the periphery of said branch pipe;

fusing the facets of said V-shaped edges of said hole of said main pipe and said peaked edges of said opening of said branch pipe by heating; and

butt-welding said fused facets together after said fusing step by application of pressure after said fusing step of said V-shaped edges of said hole of said main pipe and said peaked edges of said opening of said branch pipe to form a joint,

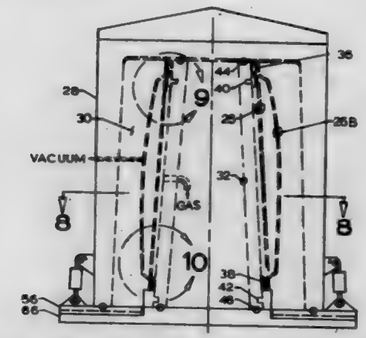
wherein said step of butt-welding is carried out under equal application of pressure in the direction of the center of said V-shaped edges of said hole of said main pipe at an angle of 45° from either side of said V-shaped edges.

5,445,310

METHOD FOR SHEET METAL AND THERMOPLASTIC ADHESIVE BONDED ASSEMBLIES AND BRAZED BONDED ASSEMBLIES IN 360° SHAPES

Carroll W. Folmer, 29781 Pebble Beach Dr., Sun City, Calif. 92586

Filed Jul. 21, 1993, Ser. No. 95,108
Int. Cl.[6] B23K *37/04, 20/00, 101/02;* B32B *31/12*
U.S. Cl. 228—173.6 **5 Claims**



1. A method for forming sheet metal and thermoplastic adhesive bonding assemblies and brazed bonded assemblies in 360° degree shapes comprising the steps of:

a) taking a 360 degree multi-purpose holder having a bottom surface and securing said bottom surface to a base;

b) taking a 360 degree inner skin that has been previously formed from a preform in die assembly A and installing it over said multi-purpose holder;

c) taking a 360 degree outer skin that has been previously formed from a preform in a die assembly B and trimming its perimeter in a predetermined manner, said outer skin having an outer surface and an inner surface;

d) taking proper honeycomb core members and applying adhesive to them and to the inner surface of said outer skin and fitting said honeycomb core members to the inner surface of said outer skin;

e) installing said outer skin over said inner skin into a predetermined position;

f) closing die assembly B around said outer skin thus allowing die assembly B to become a bonding tool and said inner skin to become a pressure vessel;

g) installing a case over said dies and securing it to said base;

h) applying heat and pressure to said inner skin which is in contact with the honeycomb core members laid up on said outer skin to effect an adhesive bonded assembly;

i) cooling the bonded assembly under pressure to relieve internal stresses; and

j) trimming the bonded assembly.

5,445,311

ELECTRICAL INTERCONNECTION SUBSTRATE WITH BOTH WIRE BOND AND SOLDER CONTACTS, AND FABRICATION METHOD

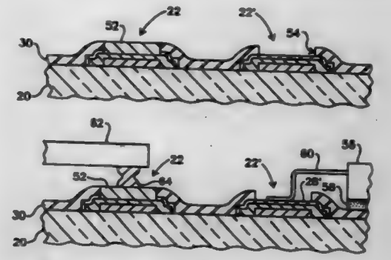
Philip A. Trask, Laguna Hills; Vincent A. Pillai, Irvine, and Thomas J. Gierhart, Fountain Valley, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 187,023, Jan. 27, 1994, abandoned, which is a division of Ser. No. 906,637, Jun. 30, 1992, Pat. No. 5,311,404. This application Oct. 13, 1994, Ser. No. 324,271
Int. Cl.[6] B23K *31/00;* H01L *21/02*
U.S. Cl. 228—175 **19 Claims**

1. A method of preparing an electrical interconnection substrate to receive electrical circuit elements by both wire bonded and soldered connections, the substrate having a plurality of wire bond contact pads formed with a layer of conductive wire bonding material, comprising:

forming a solder mask over said substrate, with openings in said mask exposing the contact pads for which soldered connections are desired,

exposing said substrate to a molten solder alloy to dissolve the wire bonding material from the exposed contact pads



into the molten solder, and to deposit a layer of solder onto said mask and into said mask openings, the solder deposited into said mask openings forming solderable contact pads,

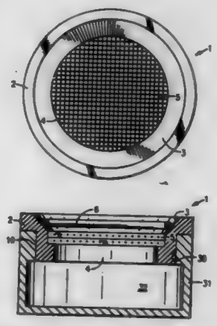
removing solder from said mask between said openings, and exposing through said solder mask the wire bond contact pads for which wire bonding is desired.

5,445,312

HEAT ACTIVATED CLOSURE

Steven D. Francis, 3 E. Yellowstone Dr., Londonderry, N.H. 03053

Filed Apr. 26, 1994, Ser. No. 223,511
Int. Cl.[6] B23K *1/008;* H01J *7/22*
U.S. Cl. 228—221 **14 Claims**

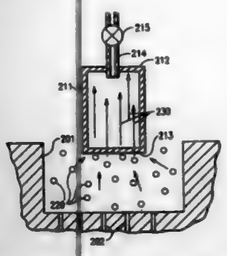


1. A closure for hermetically sealing a cavity in a workpiece comprising:

at least one capillary passing through a wall of the workpiece to connect the cavity with an environment exterior to the cavity and a meltable filler material placed adjacent said at least one capillary opening such that, when melted, the filler material enters said at least one capillary under capillary action to completely close, by virtue of its surface tension, said at least one capillary thereby hermetically sealing the cavity when cooled; and

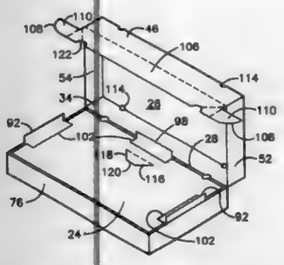
wherein a screen defines interstices forming said at least one capillary opening.

5,445,313
SOLDER PARTICLE DEPOSITION
Alexander Boyd, Largs; William French, Bearsden; Stuart P. Lees, Gourock; Kenneth S. Murray, Inverkep, and Briand L. Robertson, Gourock, all of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 29, 1993, Ser. No. 99,689
Claims priority, application United Kingdom, Aug. 4, 1992, 9216526
Int. Cl.[6] H05K 3/34
U.S. Cl. 228—248.1 23 Claims



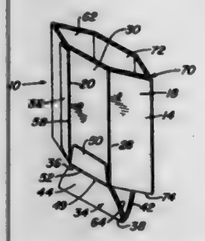
1. A method of depositing particles onto a surface, comprising the steps:
conducting gas upward through a reservoir to maintain particles in the reservoir in a fluidized form;
simultaneously picking up a multitude of particles from the reservoir in an arrangement corresponding to a predetermined arrangement of positions on the surface;
positioning the particles adjacent the surface;
aligning the particles with the positions; and
releasing the particles onto the surface.

5,445,314
SPACE SAVER PIZZA BOX AND METHOD OF USE
Reginald W. Newsome, 216 Philray Rd., Richmond, Va. 23236
Filed Aug. 6, 1993, Ser. No. 103,295
Int. Cl.[6] B65D 25/04
U.S. Cl. 229—120.21 5 Claims



1. An elongated box for carrying two separated and spaced apart halves of a flat food product stacked one over the other wherein said box is approximately twice as long as it is wide comprising:
a bottom compartment for carrying a first half of said flat food product having a bottom floor panel, a bottom front wall, a bottom rear wall and two bottom side walls, said bottom compartment being approximately twice as long as it is wide and of a height greater than the thickness of said flat food product and approximately one-half the height of said box;
a top compartment for carrying a second half of said flat food product overlying and coextensive with said bottom compartment having a top cover panel, a top rear wall, a top front wall and two top side walls with at least one of said top walls being of approximately one-half the height of said box and said top compartment being of substantially the same size as said bottom compartment;
a single panel separating said top compartment from said bottom compartment that is a integrally hinged to the top of a bottom wall of said bottom compartment with said single panel being approximately twice as long as it is wide and covering said bottom compartment and providing the floor for said top compartment; and
an integral hinge forming a tear line joining the top of one of said bottom walls of said bottom compartment to the bottom of said one of said top walls of said top compartment which is approximately one-half the height of said box so that said top cover and said four top walls of said top cover can be separated by tearing from said bottom compartment.

5,445,315
INSULATED BEVERAGE RECEPTACLE HOLDER
Charles B. Shelby, 7228 Craig St., Fort Worth, Tex. 76112, assignor to John R. Sexton, Trophy Club; Michael L. Morton, Dallas and Charles B. Shelby, Fort Worth, all of Tex.
Filed Apr. 1, 1994, Ser. No. 222,550
Int. Cl.[6] B65D 5/36
U.S. Cl. 229—117.06 11 Claims

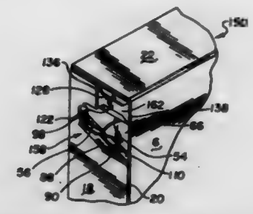


1. A collapsible beverage holder for a beverage container, the beverage holder comprising:
a body portion formed from a single paperboard sheet, the body portion having an upper end and a lower end and having opposite lateral side edges which are joined together to form a sleeve having an inner surface, the body portion having longitudinally extending creases which extend between the upper and lower ends and are laterally spaced apart at equal distances from each other along the body portion, the longitudinally extending creases dividing the body portion into at least six panels having substantially equal widths, the panels being foldable about the longitudinally extending creases so that the sleeve is foldable between a first configuration in which the sleeve is substantially flat and a second configuration in which the sleeve is expanded to form a single compartment having an upper opening for receiving the beverage container and a lower opening, each panel being located in a separate plane; and
a single layer of polymeric foam insulation material which is bonded to the inner surface of the sleeve, the insulation material being sufficiently thin so that the beverage holder is substantially flat when the body portion is folded to the first configuration.

5,445,316
SIFT PROOF AND TAMPER EVIDENT POURING SPOUT
Harry I. Roccaforte, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.
Filed May 23, 1994, Ser. No. 247,648
Int. Cl.[6] B65D 5/74
U.S. Cl. 229—215 33 Claims

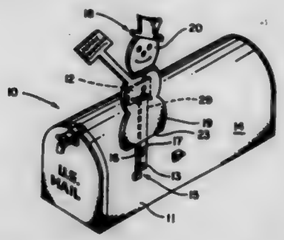
1. A carton comprising:
a carton body;

a movable pouring spout associated with said body;
a first delamination region in said carton body adjacent to the spout; and



a second delamination region in said carton body adjacent to the spout.

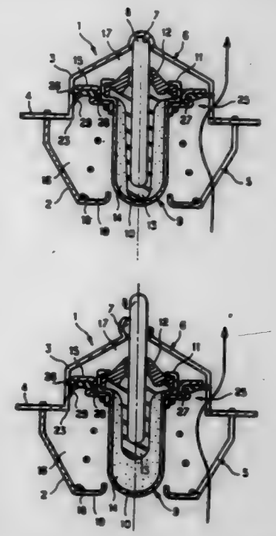
5,445,317
MAILBOX FLAG STRUCTURE
Dennis W. Sokolowski, 294 Forest Dr., Crystal Lake, Ill. 60014
Filed Mar. 4, 1994, Ser. No. 206,017
Int. Cl.[6] B65D 91/00
U.S. Cl. 232—34 7 Claims



1. A decorative device for attachment to a mailbox flag with a flag stem movable on a mailbox from a down position to an up position comprising a mail signaling figurine having a decorated front side and a back side, the mail signaling figurine having means attached to its backside for attaching and securing the mail signaling figurine to the mailbox flag and to maintain its attachment to the mailbox flag as the mailbox flag is manually moved back and forth from the down position to the up position, said means comprises a pair of side-by-side pegs positioned between upper and lower ends of the mail signaling figurine, means securing the pegs to the backside of the mail signaling figurine, retaining grooves provided on said pegs and being positioned adjacent outer ends thereof, and a retaining means secured in said grooves of said pegs in a retained assembly, the retaining means, the pegs, and the backside of said mail signaling figurine defining a flag stem retaining enclosure for receiving the flag stem to secure the mail signaling figurine to the mailbox flag.

5,445,318
THERMOSTATIC SAFETY VALVE FOR A HYDRAULIC COOLING CIRCUIT
Félix Michel, Paris, France, assignor to Nicolas Pinilla, Buenos Aires, Argentina, a part interest
Division of Ser. No. 80,527, Jun. 24, 1993, Pat. No. 5,381,951.
This application Oct. 19, 1994, Ser. No. 325,876
Int. Cl.[6] F01P 7/16
U.S. Cl. 236—34.5 4 Claims

1. A thermostatic safety valve for a cooling circuit of an internal combustion engine comprising:
a cage insertable in said cooling circuit;
an upstream chamber in said cage;
a downstream chamber in said cage;
a coolant flow opening in said cage communicating with said downstream chamber;
a coolant flow opening in said cage communicating with said upstream chamber;
a fixed valve seat on said cage at a position between said upstream and downstream chambers;
a thermostatic capsule movably mounted in said cage for movement between an open position for said valve and a closed position for said valve;
thrust means between said thermostatic capsule and said cage;
a valve member comprising a first part mounted on said thermostatic capsule for movement therewith, a peripheral seal mounted on said first part, and a deformable seal lip on said seal for sealingly engaging with said fixed valve seat in said closed position for preventing coolant flow between said chambers and disengageable from said fixed valve seat in said open position to facilitate coolant flow between said chambers, said seal lip moving in one direction towards said open position without deformation and



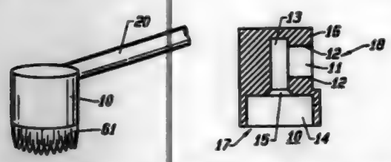
moving in the opposite direction for disengagement from said valve seat by deforming and sliding engagement with said cage in said downstream chamber;
spring means between said cage and said valve member for resiliently urging said valve member toward said closed position into engagement with said fixed valve seat; and
thermally expandable material within said thermostatic capsule in cooperating relationship with said thrust member for moving said capsule and said valve member from said closed position at a coolant temperature below a predetermined temperature to said open position at a coolant temperature above said predetermined temperature against the force of said spring means;
so that said valve member is a double-acting valve member disengageable from said fixed valve seat by movement in said one direction towards said open position due to expansion of said thermally expandable material at said predetermined temperature and by movement in said opposite direction due to said spring means in the event of leaking of said thermally expandable material from said capsule and/or breaking of said thrust means.

5,445,319

TORCH FOR MANUFACTURE OF OPTICAL FIBER COUPLERS AND METHOD OF MANUFACTURE

Jing-Jong Pan; Ming Shih, both of Milpitas; Zhong M. Mao, San Jose; Frank Y. F. Liang, San Jose, and Kung Shih, San Jose, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed Jan. 15, 1993, Ser. No. 4,041
Int. Cl.[6] G02B *6/26*; C03B *37/15*
U.S. Cl. 239—1 **7 Claims**



5. A method of manufacturing optical fiber couplers comprising

providing a gas torch, said torch having a ceramic nozzle for discharging a flammable gas through a gas outlet;

supplying said flammable gas through a channel connected to said gas outlet of said nozzle to that gas pressure from said outlet is reduced;

igniting said gas from said nozzle to create a flame from said nozzle;

applying said flame to a first plurality of optic fibers aligned in close proximity to each other such that the first plurality of optic fiber fuse to each other;

maintaining said torch in an ignited state for a next fusion operation; and

applying said flame to at least a second plurality of optic fibers aligned in close proximity such that each plurality of optic fibers fuse;

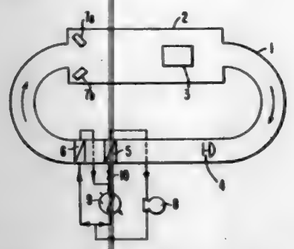
whereby said torch is maintained in a steady-state condition and a plurality of optical fiber couplers can be manufactured reliably and reproducibly.

5,445,320

METHOD OF AND EQUIPMENT FOR SNOW PRODUCTION

Jean M. F. Berthelier, La Barre, France, assignor to Technip, Courbevoie, France

Filed Jan. 25, 1994, Ser. No. 187,192
Claims priority, application France, Jan. 26, 1993, 93 00741
Int. Cl.[6] F25C *3/04*; B05B *1/24*
U.S. Cl. 239—2.2 **17 Claims**



1. In a method of production of snow in a confined space, which method comprises the steps of passing a gaseous fluid from a snow collecting section successively through a section for cooling said gaseous fluid to being its temperature below −2° C., a section for reheating said gaseous fluid, said reheating being conducted such that the temperature of the gaseous fluid remains below 0° C. after said reheating, and a section for injecting water into the gaseous fluid to form the snow collected in the snow collecting section, the improvement comprising the steps of:

transferring a portion of thermal energy taken from the gaseous fluid in the cooling section to the gaseous fluid in the reheating section;

cooling the gaseous fluid in said cooling section to a temperature between about −5° C. and about −50° C.;

heating the gaseous fluid in said reheating section to a temperature that remains below about −2° C. and greater than the temperature to which the gaseous fluid is cooled by at least 2° C.; and

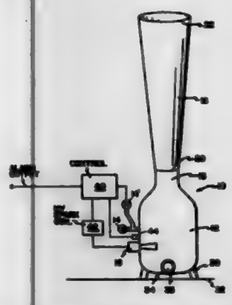
wherein the gaseous fluid is air.

5,445,321

ANTI-HAIL SHOCK WAVE GENERATOR

Gérald Ollivier, 1625 Lincoln Avenue, #1901, Montreal, Canada H3H 2T5

Filed Oct. 18, 1993, Ser. No. 138,589
Int. Cl.[6] A01G *15/00*
U.S. Cl. 239—14.1 **1 Claim**



1. An anti-hail shock wave generator comprising:

a combustion chamber having an upper orifice, a conical barrel having a small diameter lower end connected to the upper orifice, and a large diameter upper end;

injection means for periodically providing gaseous fuel in the chamber according to two different fuel pressures, the fuel being injected at both pressures during a substantially identical injection time, the pressures being such that the fuel injected at the higher fuel pressure is substantially twice the amount of fuel injected at the lower fuel pressure;

ignition means for igniting the fuel in the chamber following an injection of fuel;

detection means comprising dual pressure sensors for generating a first or a second signal after an ignition of the fuel, the first signal being generated upon measure of a pressure in the chamber equal or less than a threshold pressure corresponding to a weak explosion, and the second signal being generated upon measure of a pressure in the chamber higher than the threshold pressure;

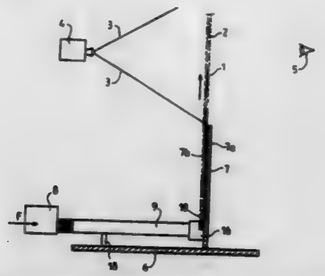
control means connected to the detection means and responsive to the first or second signal, the control means further comprising computer means for counting subsequent cycles, each cycle being defined by an injection followed by an ignition, the control means being connected to the injection means so that fuel pressure is changed from the lower fuel pressure to the higher fuel pressure upon reception of the first signal by the control means, and changed from the higher fuel pressure to the lower fuel pressure only after a minimum number of subsequent cycles during which the control means receives the second signal.

5,445,322

APPARATUS FOR PROJECTING WATER TO FORM AN INSUBSTANTIAL SCREEN FOR RECEIVING IMAGES

Dominique Formhals, Furdenheim, and Yves Pepin, Neuilly sur Seine, both of France, assignors to Aquatique U.S.A., Baltimore, Md.

Continuation of Ser. No. 57,369, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 736,570, Jul. 26, 1991, abandoned. This application Oct. 21, 1994, Ser. No. 327,446
Claims priority, application France, Jul. 30, 1990, 90 09704
Int. Cl.[6] B05B *17/08*'*1/04*, *1/26*
U.S. Cl. 239—18 **21 Claims**



1. A combination of a projector of moving or still images and an apparatus for projecting water under pressure to form a screen, made up of transparent droplets that are capable of reflecting light rays striking the screen by back-projection from the projector, thus making the screen a receiver of the moving or still images,

which apparatus includes a substantially vertical dispersal plate that is disposed on the trajectory of the water driven by way of a high-pressure pump in a substantially horizontal cylindrical conduit, an end of which, being mechanically joined to said dispersal plate, defines with said plate an upper opening constituting an outlet for a vertically oriented sheet of water.

5,445,323

HIGH PRESSURE FUEL INJECTOR INCLUDING A TRAPPED VOLUME SPILL PORT

Julius P. Perr; Arpad Pataki, and Thomas L. Szarvas, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

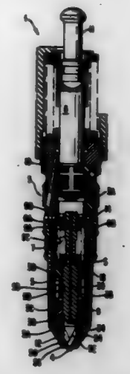
Continuation of Ser. No. 110,252, Aug. 23, 1993, abandoned. This application Nov. 7, 1994, Ser. No. 339,222
Int. Cl.[6] F02M *55/00*
U.S. Cl. 239—91 **16 Claims**

1. An open nozzle unit fuel injector for an internal combustion engine comprising:

an injector body having a cup at an end thereof and an axial bore terminating within said cup and at least one injection orifice passing through a tip of said cup through which fuel is injected;

a plunger assembly disposed within said axial bore for reciprocating movement in said axial bore between a retracted position opening said at least one injection orifice and an advanced position closing said at least one injection orifice, said plunger assembly including a major diameter section in slidable engagement with said axial bore and a minor diameter section that extends into said cup;

a fuel metering means for metering a variable quantity of fuel to said axial bore to be injected through said injection orifice on a cyclic basis, said fuel metering means including a fuel supply orifice opening to said axial bore; and



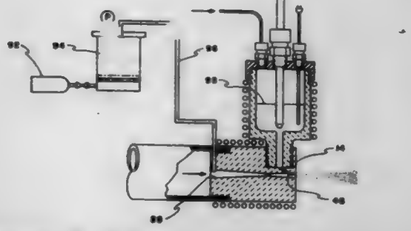
a venting means for venting a trapped volume of fuel trapped in said axial bore and cup to a drain of the unit fuel injector as said injection orifice is closed.

5,445,324

PRESSURIZED FEED-INJECTION SPRAY-FORMING APPARATUS

Ray A. Berry; James R. Fincke, and Kevin M. McHugh, all of Idaho Falls, Id., assignors to United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 10,089, Jan. 27, 1993, abandoned. This application Jan. 28, 1994, Ser. No. 188,351
Int. Cl.[6] B05B *1/24*
U.S. Cl. 239—99 **18 Claims**



1. Apparatus for injecting a pressurized liquid metal into a pressurized high subsonic through supersonic gas flow, comprising:

a. heated nozzle having a longitudinal geometry with an inlet and an outlet;

b. a source of first pressurized, heated gas at the heated nozzle inlet;

c. means for directing the gas to flow in a first predetermined direction to provide a first predetermined gas flow within the nozzle;

d. a heated liquid reservoir and a second pressurized gas to control the temperature and pressure respectively of the liquid metal to within predetermined values;

e. conduit means in fluid communication with said liquid reservoir for injecting said pressurized liquid metal into said first predetermined gas flow at a predetermined liquid metal feed port in the nozzle and the conduit means being in a second predetermined direction in the range from an acute angle to said first predetermined direction through

90° to said first predetermined direction to provide for atomizing said liquid metal with said first gas within the nozzle for deposit of said atomized liquid metal after exiting the nozzle; and

f. thereby controlling metal droplet size, droplet velocity and droplet heat content to uniformly deposit said metal.

5,445,325

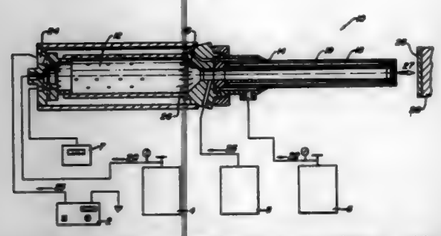
TUNEABLE HIGH VELOCITY THERMAL SPRAY GUN

Randall R. White, 105 Pecan Dr., Kennedale, Tex. 76060

Continuation-in-part of Ser. No. 7,264, Jan. 2, 1993. This application Jul. 16, 1993, Ser. No. 92,698

Int. Cl.[6] B05B 7/20

U.S. Cl. 239—132.5 **7 Claims**



1. In a thermal spray gun for coating a substrate with a coating material transported to said substrate in a high energy flowstream, and having a combustion chamber for burning at least part of a fuel therein to generate at least part of a high temperature pressurized gas, said combustion chamber having a chamber sidewall, a chamber upstream end and a chamber downstream end, a fuel feed port at said chamber upstream end for passing said fuel therethrough and into said combustion chamber, at least one chamber intake port at said chamber upstream end for passing an oxygen source into said combustion chamber for mixing with and burning said fuel, a coating material for inserting into said high temperature pressurized gas to form said high energy flowstream, and a flow nozzle at said chamber downstream end for directing said high temperature pressurized gas towards said substrate, an improvement comprising:

an outer sleeve surrounding said chamber sidewall, defining an annular flow passage, said annular flow passage having an inlet adjacent said chamber downstream end through which said oxygen source enters and flows around said chamber sidewall as it flows to said chamber intake port; and

said chamber sidewall having a plurality of cooling ports passing laterally therethrough downstream of said chamber intake port for passing a portion of said oxygen source flowing through the annular flow passage directly into said combustion chamber to cool a plurality of sections of said combustion chamber sidewall along which said fuel is burned.

5,445,326

EMERGENCY TRUNK INTERIOR RELEASE LATCH

Joseph Ferro, and Lisamarie Marchioli, both of 1431 Wolf St., Philadelphia, Pa. 19145

Filed Dec. 21, 1993, Ser. No. 170,826

Int. Cl.[6] E05B 63/20

U.S. Cl. 292—336 **1 Claim**

1. An emergency trunk interior release latch comprising:

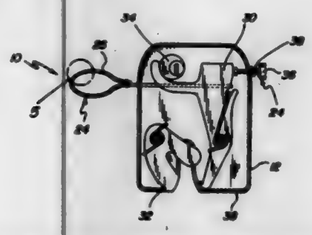
a housing having an aperture therethrough;

a latching lever pivotally mounted to said housing for receiving and capturing a catch;

a detent lever pivotally mounted to said housing for releasably securing said latching lever upon reception of said catch by said latching lever; and,

a release assembly means operatively engaged with said detent lever for facilitating a release of said catch from said latching lever by a person from within a trunk compartment;

said release assembly means comprising a cable formed into a loop positioned exteriorly of said housing, a portion of



said cable extending through said aperture in said housing and being operatively engaged with said detent lever, whereby said latching lever may be pivoted by pulling on said loop to release said detent lever; and,

a luminescent coating on said loop.

5,445,327

PROCESS FOR PREPARING COMPOSITE STRUCTURES

Robert D. Creehan, Arlington, Mass., assignor to Hyperion Catalysis International, Inc., Cambridge, Mass.

Continuation of Ser. No. 386,912, Jul. 27, 1989. This application Jun. 10, 1992, Ser. No. 896,317

Int. Cl.[6] B02C 17/00, 19/12

U.S. Cl. 241—22 **22 Claims**

1. A compounding process for preparing a composite comprising the steps of

introducing one or more fillers and a matrix material into a stirred ball mill; and

subjecting said fillers and said matrix material to a combination of shear and impact forces under reaction conditions including reaction time sufficient to reduce the size of agglomerates formed by said fillers to a value no greater than 1000 times the size of said filler to disperse said fillers throughout said matrix material.

5,445,328

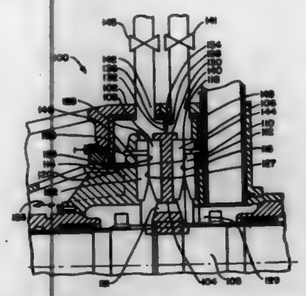
DUAL ZONE REFINER WITH SEPARATED DISCHARGE FLOW CONTROL

Ronald L. Musselman, Lewisburg, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Aug. 25, 1993, Ser. No. 111,632

Int. Cl.[6] B02C 25/00, 07/14

U.S. Cl. 241—37 **23 Claims**



1. In an apparatus for refining a low consistency fibrous slurry, which includes means for introducing a fibrous slurry into a plurality of fiber refining zones within a casing, the improvement comprising:

a unique discharge flow path from each fiber refining zone to a respective unique discharge line out of the casing; and

means in the discharge lines for differentially adjusting the flow rate in each discharge line while maintaining the total flow rate of all discharge lines equal to a predetermined value.

5,445,329

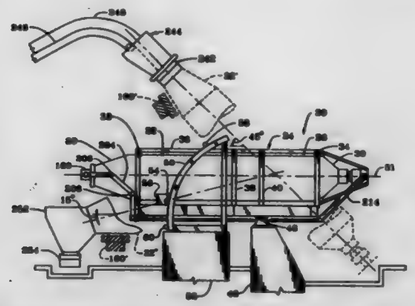
APPARATUS, SYSTEM FOR TREATING PROCESS MATERIAL SUCH AS WASTE MATERIAL

Joseph Anderson, 323 Stockbridge Ave., Atherton, Calif. 94027

Filed Nov. 10, 1993, Ser. No. 149,786

Int. Cl.[6] B02C 11/08

U.S. Cl. 241—65 **24 Claims**



1. Apparatus for treating process material through the use of heat and pressure, comprising a hollow vessel having a longitudinal axis and an interior for receiving process material to be treated, said vessel having an opening communicating with the interior of the vessel for allowing introduction of process material to be treated into the interior of the vessel, said vessel having at least one material contacting member secured to and extending inwardly from an inner surface of the vessel for contacting and mixing process material disposed in the interior of the vessel, a cantilevered shaft positioned centrally within the interior of the vessel, said cantilevered shaft having at least one fin extending therefrom for contacting and mixing process material in the interior of the vessel, drive means for rotating the vessel in opposite directions about the longitudinal axis to cause the vessel and the material contacting member to rotate relative to the cantilevered shaft to impart a shearing force to process material in the vessel in order to assist in breaking down the process material, and means for introducing steam into the interior of the vessel to heat and impart moisture to process material in the vessel.

5,445,330

MOBILE CRUSHING PLANT

Mohamed M. Shokry Rashwan, and Barry Burrows, both of Edmonton, Canada, assignors to Integrated Construction Engineering Systems Inc., Edmonton, Canada

Filed May 3, 1994, Ser. No. 237,157

Int. Cl.[6] B02C 21/02, 23/08

U.S. Cl. 241—78 **1 Claim**

1. A mobile crushing plant, comprising:

a. a trailer having a deck;

b. a crusher support frame secured to the deck;

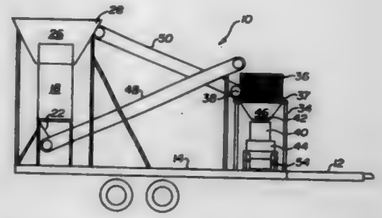
c. a primary crusher mounted on the crusher support frame in an elevated position above the deck, the primary crusher having an inlet and an outlet;

d. a feed hopper assembly mounted to the deck, the feed hopper having an inlet and an outlet, a feed conveyor extending from the outlet of the feed hopper to the inlet of the primary crusher, thereby providing a continuous supply of waste material to the inlet of the primary crusher;

e. a screening assembly support frame secured to the deck;

f. a secondary crusher mounted to the deck adjacent the screening assembly support frame, the secondary crusher having an inlet and an outlet;

g. a top screen and a bottom screen mounted on the screening assembly support frame in an elevated position above the deck, the top screen and bottom screen being arranged with the top screen positioned directly above the bottom screen such that small pieces of waste material pass through both top and bottom screens, the top and bottom screens being disposed at an angle such that pieces of concrete too large to pass through the top screen roll down the angled top screen to a drop off area, and pieces of waste material small enough to pass through the top



screen but too large to pass through the bottom screen roll down the angled bottom screen to the inlet for the secondary crusher thereby receiving secondary processing;

h. a first conveyor extending from the outlet of the primary crusher to above the top screen, whereby crushed pieces of waste material exiting through the outlet of the primary crusher are conveyed to the top screen;

i. a second conveyor extending from the drop off area to the inlet of the feed hopper, whereby pieces of concrete too large to pass through the top screen are reprocessed through the primary crusher; and

j. an output conveyor disposed below the bottom screen and below the outlet of the secondary crusher, whereby waste materials that pass through the bottom screen or that pass through the secondary crusher are conveyed to a collection area.

5,445,331

DEVICE FOR PROCESSING PLASTIC PARTICLES OF ELONGATED SHAPE, AND AN INSTALLATION USING THE DEVICE FOR THE SELECTIVE RECOVERY OF PLASTICS

Jacques Berhaut-Streel, Hoorn, Netherlands, assignor to Draka Polva B.V., Amsterdam, Netherlands

Filed Dec. 23, 1993, Ser. No. 171,474

Claims priority, application Belgium, Sep. 8, 1993, 09300932

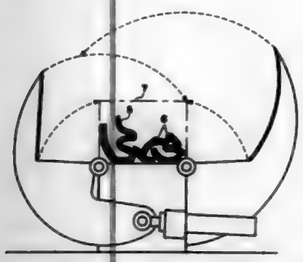
Int. Cl.[6] B02C 23/10, 1/06

U.S. Cl. 241—79.1 **11 Claims**

1. A device for processing plastic articles, comprising:

a side-acting press having a longitudinal axis, and having a plurality of jaws each extending along an entire length of said press parallel to the longitudinal axis, said jaws being

movable for squashing the plastic articles in a direction substantially perpendicular to the longitudinal axis; and



at least one cutter operatively connected in series and subsequent to said press and movable in a plane substantially perpendicular to the longitudinal axis.

5,445,332

FOOD PROCESSOR

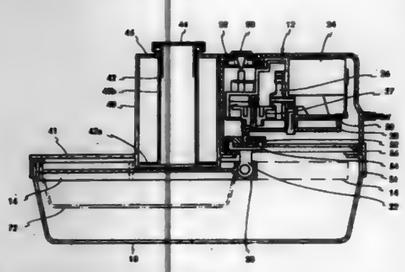
Tetsuhiko Shimizu, and Tomomi Koiwai, both of Matsumoto, Japan, assignors to Kabushiki Kaisha Izumi Seiki Seisakusho, Matsumoto, Japan

Filed Aug. 29, 1994, Ser. No. 298,451

Claims priority, application Japan, Sep. 2, 1993, 5-218264; Dec. 28, 1993, 5-335910

Int. Cl.[6] A47J *43/06, 44/00;* B26D *3/26;* B02C *19/12*

U.S. Cl. 241—100 20 Claims



1. A food processor, comprising:

a tray being capable of accommodating processed food, an upper face of said tray being opened;

a cutter plate being provided to an upper section of said tray, said cutter plate being capable of reciprocatively moving along the upper face of said tray so as to process food materials;

guiding means for supporting said cutter plate and guiding the reciprocative movement of said cutter plate, said guiding means being provided on an inner face of said tray;

a cover being provided above said cutter plate and attached to said tray, said cover having a cylindrical member into which the food materials are put; and

a drive section having driving means for reciprocatively moving said cutter plate and connecting means for mutually connecting said driving means and said cutter plate, said drive section being capable of attaching to the upper section of said tray, wherein said connecting means mutually connects said driving means and said cutter plate when said drive section is attached to said tray.

5,445,333

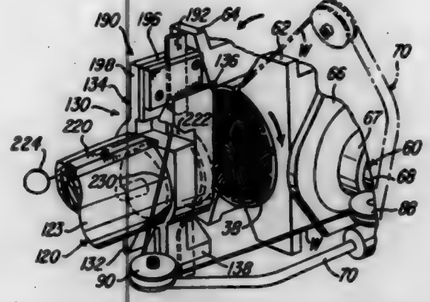
ARMATURE WINDING METHOD AND APPARATUS

John W. Bradfute, Xenia, Ohio, assignor to Globe Products Inc., Huber Heights, Ohio

Filed Apr. 21, 1993, Ser. No. 51,022

Int. Cl.[6] H02K *15/04;* B23P *19/00*

U.S. Cl. 242—7.05 B 5 Claims



1. In a method of machine winding an armature of the type having a commutator with commutator bars having lead-receiving slots utilizing an armature winding machine having a rotatable flier, a flier drive, and wire guide tooling, said flier drive being capable of rotating said flier in a forward direction to wind coils and positioning said flier at different forward stop positions and also being capable of rotating said flier in a reverse direction to at least one reverse stop position, said tooling having first wire guide surfaces for camming wire being wound into coils away from the commutator when said flier is rotating in the forward direction to wind a coil and second wire guide surfaces for directing the wire into a commutator slot when said flier is rotated in the reverse direction, the steps of:

with the flier located in said reverse stop position, clamping the wire segment extending from the flier against said tooling by moving a linearly movable clamp rod which clamps said wire segment by pressing said wire segment against said tooling so that said wire segment is pinched between the tooling and said clamp rod, said clamp rod having a wire-loop receiving finger extending into the path taken by the wire upon forward rotation of said flier from said reverse stop position when said wire segment is clamped to said tooling,

locating an armature in the winding machine with a first one of said lead-receiving slots in position to receive a start wire guided by said second surface portions upon forward rotation of said flier from said reverse stop position,

rotating said flier in the forward direction to extend said wire segment around said finger and into alignment with said first slot;

wedging said wire segment into said first slot;

severing said wire segment at said first slot by rotating said armature to stretch said wire segment whereupon a remnant piece of wire is looped around said finger;

moving said clamp rod away from said tooling with said loop of wire carried by said finger; and

camming said loop of wire off said finger while said clamp rod is being moved away from said tooling.

5,445,334

COP CHANGING MECHANISM FOR A WINDING UNIT

Isamu Matsui, Kyoto; Yoshiyasu Maeda, Yamatokooriyama; Yuji Todo, Nagaokakyo; Masaharu Kiriake, and Takashi Nakao, both of Uji, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

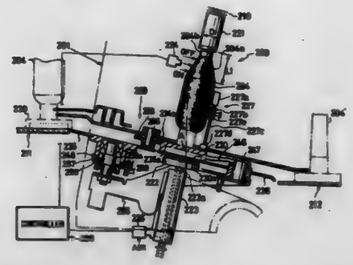
Division of Ser. No. 6,830, Jan. 21, 1993, Pat. No. 5,374,000.

This application Jan. 5, 1994, Ser. No. 177,449

Claims priority, application Japan, Jan. 30, 1992, 4-9532; Feb. 7, 1992, 4-56739

Int. Cl.[6] B65H *54/20, 67/02*

U.S. Cl. 242—35.5 A 4 Claims



1. An unwinding assisting device for an automatic winder, the automatic winder defining a winding position at which a cop of yarn is unwound from a take-up tube supported on a tray, the cop defining an outside diameter and the take-up tube defining an outside diameter, the unwinding assisting device comprising:

a lifting mechanism for raising the tray at the winding position as the cop of yarn is unwound from the take-up tube,

a tubular member for receiving the take-up tube therein, the tubular member having an inside diameter that is smaller than the outside diameter of the cop and larger than the outside diameter the take-up tube, wherein the cop defines a chase and wherein the lifting mechanism comprises:

a cylinder actuator having a rod,

a disk attached to the rod of the cylinder actuator and disposed to raise a tray having a cop thereon at the winding position so that the take-up tube is directed toward the interior of the tubular member,

a sensor for detecting the chase of the cop, and

a controller connected with the sensor and the cylinder actuator.

5,445,335

COIL CARRIER COMPRESSIBLE IN AXIAL DIRECTION

Franz Hallmann, Würselen, and Albert Keusch, Übach-Palenberg, both of Germany, assignors to Jos. Zimmermann GmbH & Co. KG, Aachen, Germany

Filed Jun. 16, 1993, Ser. No. 78,982

Claims priority, application Germany, Jun. 17, 1992, 42 19 844.5

Int. Cl.[6] B65H *75/20*

U.S. Cl. 242—118.1 33 Claims

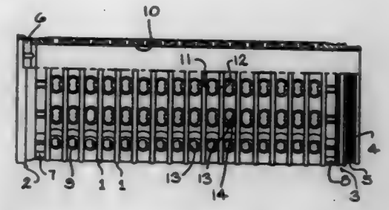
1. An axially compressible carrier for supporting threads or yams, said carrier having a winding surface with a cylindrical or frustum shape, said carrier comprising

a pair of end rings,

a plurality of carrier rings having first and second sides, said carrier rings being positioned and supported between said end rings,

struts connected to said first and second sides of said carrier rings and connecting said carrier rings to adjacent ones of said carrier rings,

first facing limiting stops provided on said carrier rings, each of said first facing limiting stops having a facing surface, second facing limiting stops provided on said carrier rings, each of said second limiting stops having a facing surface, said first and second facing limiting stops being so configured, positioned and supported on said carrier rings that said facing surfaces thereof are operable, when the carrier



is compressed in an axial direction, to engage facing surfaces on adjacent carrier rings, are operable to prevent further compression and, when so engaged, are operable to prevent relative movement between adjacent carrier rings.

5,445,336

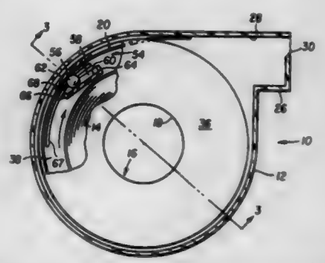
INTERNAL FILM DRIVE FOR THRUSTING FILM CARTRIDGE

Daniel M. Pagano, Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1994, Ser. No. 189,011

Int. Cl.[6] G03B *17/26*

U.S. Cl. 242—348.3 10 Claims



1. A film cartridge including a roll of photographic film contained in a shell having an exit port, the film including outermost convolutions, characterized in that:

the film is extended through the exit port by a one-way clutch including a ball captured in a ramped cage inside said shell, said one-way clutch engaging the film at said outermost convolutions and pulling the film from the roll.

5,445,337

TAPE RECORDER HAVING INTEGRAL TENSION POLE AND IMPEDANCE ROLLER

Seog Ha Kwon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 23, 1993, Ser. No. 172,075

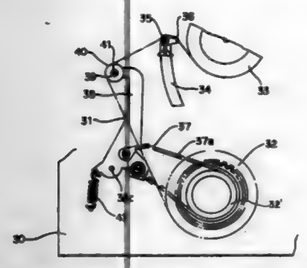
Claims priority, application Rep. of Korea, Feb. 26, 1993, 1993-2745

Int. Cl.[6] B65H *23/16*

U.S. Cl. 242—334.6 2 Claims

1. A traveling apparatus of a tape recorder for controlling change of tension of a tape transferred from a tape reel mounted on a reel base along a predetermined travel-path an a deck thereof, adjusting speed variation of said tape, and eliminating noise caused by vibration of a tape-reel, comprising: a tension arm pivotally mounted on an upper portion of said deck and having at one end a tension band wrapped around

said reel base for applying a braking load to the reel base in accordance with the pivotal movement of the tension arm, a tension pole mounted at a second end of said tension arm, an impedance roller rotatably mounted on said tension pole for contacting said tape being supplied from said tape reel, said



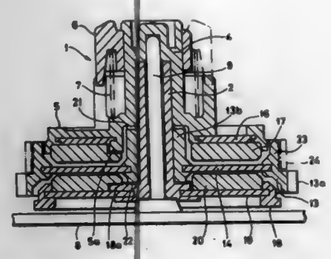
tension arm being resiliently biased to rotate in a direction to engage said roller against said tape and to increase the braking load such that an increase in tension in said tape results in a pivotal movement of said tension arm in an opposite direction to decrease said braking load.

5,445,338

TAPE DRIVER

Hideo Nakase, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 148,343
Claims priority, application Japan, Nov. 9, 1992, 4-298651
Int. Cl.[6] G11B *15/30*
U.S. Cl. 242—349 11 Claims



1. A torque limiting device for a reel turntable that rotates a tape reel on which a tape is wound, comprising:

a reel turntable being provided so as to be freely rotatable about a shaft;

a limiting gear having a magnetic plate and a gear portion supplied with a drive force and being disposed so as to be freely rotatable about said shaft;

a first magnet attached to said reel turntable so as to be freely rotatable about said shaft and opposing an upper surface of said magnetic plate; and

a second magnet disposed about said shaft so as to be freely rotatable about said shaft in unison with said reel turntable and opposing a lower surface of said magnetic plate,

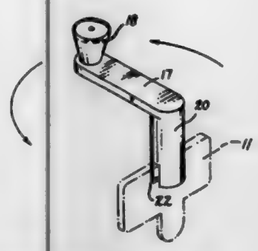
wherein a drive force transmitted to said gear portion is transmitted to said reel turntable by a magnetic coupling between said magnetic plate and said pair of first and second magnets opposing the upper and lower surfaces of said magnetic plate.

5,445,339

CASSETTE WINDER TOOL

Terry J. Reazer, 3300 Saxony Rd., Springfield, Ill. 62703, and William J. Reazer, Jr., 55 Nottingham Dr., Chatham, Ill. 62629

Filed Mar. 1, 1993, Ser. No. 24,282
Int. Cl.[6] B65H *18/10*
U.S. Cl. 242—350 1 Claim



1. A cassette winder tool, comprising,

a central plate, the central plate including a top edge spaced from and parallel to a bottom edge, a top leg integrally and medially mounted to the top edge, and a bottom leg integrally and medially mounted to the bottom edge, the top leg having a first width, and the bottom leg having a second width, wherein the second width is greater than the first width, and

the central plate, the top leg, and the bottom leg are coplanar, and

a crank handle, the crank handle including a handle plate, the handle plate including a first end spaced from a second end, and a grasp knob orthogonally and rotatably mounted to a top surface of the handle plate about a knob axle, wherein the knob axle is orthogonally and fixedly mounted to the handle plate adjacent the first end, and a crank axle fixedly mounted to a bottom surface of the handle plate adjacent the second end, wherein the crank axle and the knob axle are parallel, and the crank axle including a crank axle axis, and the crank axle including a bottom wall orthogonally oriented relative to the crank axle axis and parallel to the handle plate, and the bottom wall including a slot directed through the crank axle and the bottom wall, and the slot including a slot recess contained within the crank axle and orthogonally oriented relative to the slot, wherein the slot recess selectively receives the top leg or the bottom leg therewithin to permit rotation of the central plate when the top leg and bottom leg are selectively received within the slot and slot recess.

5,445,340

FILM FEEDING DEVICE FOR CAMERA

Tsutomu Wakabayashi, Tokyo; Koichi Daitoku, Sagamihara, and Akira Ezawa, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 236,152, May 2, 1994, abandoned, which is a continuation of Ser. No. 144,618, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 620,614, Dec. 3, 1990, abandoned. This application Nov. 30, 1994, Ser. No. 351,146
Claims priority, application Japan, Dec. 4, 1989, 1-313496; Jan. 30, 1990, 2-17876
Int. Cl.[6] G03B *1/18*; B65H *20/00*
U.S. Cl. 242—356 6 Claims

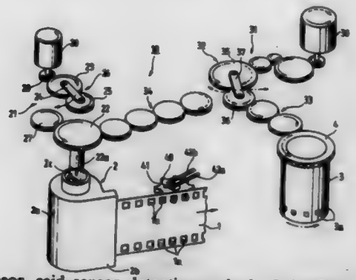
6. A film feeding device into which is loaded a film cartridge having a spool rotatable in a supply direction for driving a leading end of film of the cartridge outwardly through a supply outlet of the cartridge, comprising:

an electric motor rotated in a first direction for driving said spool shaft to rotate in the supply direction for supplying the film;

a torque transmission gear train which transmits torque produced by said electric motor;

a film drive gear located as a final stage of said torque transmission gear train to receive the torque transmitted from said electric motor, and having a torque transmission part engaged with said spool shaft to rotate said spool shaft in said supply direction;

a winding spool part, said winding spool part including a winding spool for attachment thereto of the film supplied from said cartridge and then taking up the film in the supply direction upon winding rotation; and



a sensor, said sensor detecting arrival of the film to said winding spool and then stopping rotation of said electric motor;

wherein said torque transmission gear train has a planetary gear train comprising a sun gear driven by a motor driven gear and a planet gear, and

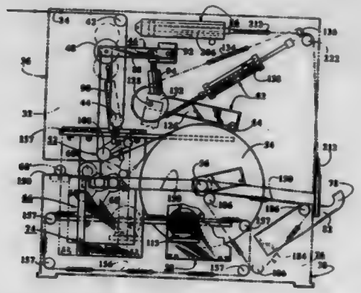
said planet gear is supported to be angularly moved to come into mesh with a driven gear for driving said film drive gear responsive to the torque transmitted from said motor, and to be angularly moved to come out of mesh with said driven gear responsive to relative rotation produced between said film drive gear and said motor driven gear, when the film is taken up by said winding spool.

5,445,341

FLYING PASTER CORE WINDING METHOD AND APPARATUS

John R. Martin, Rockford; Roger Cederholm, Roscoe, both of Ill.; Kendall E. Schlittler, Brodhead, and Ronald Wenzel, Menasha, both of Wis., assignors to Martin Automatic, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 136,609, Oct. 15, 1993, Pat. No. 5,337,969, which is a continuation of Ser. No. 935,859, Aug. 26, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 160,586
Int. Cl.[6] B65H *19/26*, *19/30*
U.S. Cl. 242—527.3 14 Claims



9. An improved flying paster core winding apparatus for winding a running web of material, where the running web is initially being wound onto the center core shaft of a first roll; where after the first roll has had a determined amount of web wound thereon, the running web is to be spliced and thereafter is to be wound about the center core shaft of a second roll; and where the running web is run at a preselected speed while the running web is being wound about the first roll, while the running web is being spliced and while the running web is being wound about the second roll, the improved apparatus including:

means for disposing the first roll in an operating position;

a fixed drive assembly for driving the center core shaft of the first roll, when disposed in its operating position, so that the running web runs onto and about the first roll at the preselected speed;

means for disposing the central core shaft of the second roll in a splicing position, which is adjacent to the operating position of the first roll;

an assembly for causing the running web to run so that a portion of it passes adjacent to the center core shaft of the second roll before it is wound onto and about the first roll;

a movable drive assembly for driving the center core shaft of the second roll, while the center core shaft of the second roll is in its splicing position, so that the surface speed of the center core shaft of the second roll matches the preselected speed of the running web;

an assembly for pressing an adjacent portion of the running web into surface to surface contact with the outer peripheral surface of the center core shaft of the second roll such that the portion will adhere to the outer peripheral surface of the center core shaft of the second roll when it is pressed against the center core shaft;

an assembly for cutting the running web, downstream of the adjacent portion of the running web, so that the running web will then begin to wind about the center core shaft of the second roll;

means for disconnecting the center core shaft of the first roll from the fixed drive assembly means;

means for moving the first roll from its operating position; and

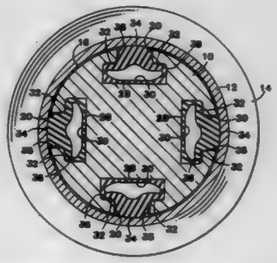
an assembly for moving the second roll, and the movable drive means, along a substantially straight line path, from the splicing position to the operating position.

5,445,342

EXPANSIBLE SHAFT FOR ROLL CORE

William R. Miller, Portland, Oreg., and Timothy J. Becker, Vancouver, Wash., assignors to Tidland Corporation, Camas, Wash.

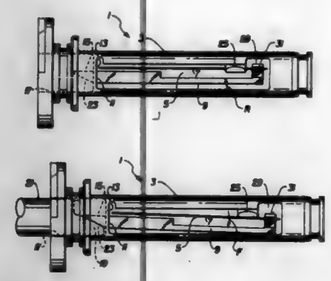
Continuation of Ser. No. 78,762, Jun. 15, 1993, Pat. No. 5,372,331. This application Oct. 5, 1994, Ser. No. 318,072
The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—571.2 6 Claims



1. An expansible shaft assembly for insertion into a core, comprising:

(a) a shaft having a longitudinally-extending peripheral surface and a longitudinal axis, said surface defining multiple longitudinally-extending separate slots;
(b) each of said slots containing a respective elongate resilient separate bladder expandable under fluid pressure to create frictional engagement with said core;
(c) the respective separate slots and bladders extending longitudinally along said shaft in a substantially helically intertwined relationship with each other, said slots being T-shaped in cross section, and said bladders being T-shaped in cross section both when expanded under said fluid pressure and when not expanded under said fluid pressure.

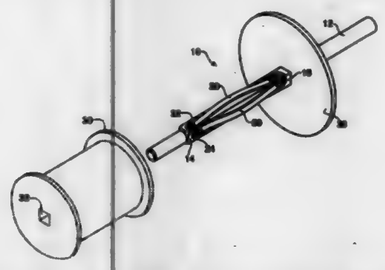
5,445,343
FILM SPOOL WITH INTEGRAL CANTILEVER TO ENGAGE AND RELEASE FILM END
Stephen M. Reinke, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 14, 1994, Ser. No. 182,255
Int. Cl.[5] B65H *75/28*
U.S. Cl. 242—587.1 **6 Claims**



5. A film spool comprising:
a spool core having a slot for receiving a film end;
a projecting beam located inside said slot;
resilient support means connecting said spool core and said projecting beam substantially adjacent one end of said slot to prevent movement of said beam along said slot, but being flexible to allow the beam to be swung laterally within the slot in a forward direction and being biased,to return the beam in a reverse direction;
film engagement means jutting from said spool core to protrude into said slot for engaging a film end within the slot; and
film positioning and stripping means jutting out from said projecting beam to protrude into said slot for positioning a film end in engagement with said film engagement means when the beam is returned in the reverse direction and for removing the film end from the film engagement means when the beam is swung in the forward direction.

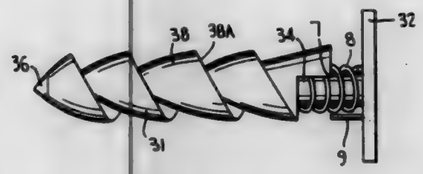
5,445,344
REEL-LOCKING DEVICE
Peter R. Seger, and Michael J. Fanelli, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 14, 1993, Ser. No. 91,502
Int. Cl.[5] B65H *75/24*
U.S. Cl. 242—597.3 **3 Claims**

1. A reel-locking device comprising:
a spindle shaft having a square cross section forming four flat surfaces including at least one recessed surface along one of the four flat surfaces; and
two or more leaf springs mounted 90° to each other in respective recessed surfaces, each of said two or more leaf springs affixed at one end to said recessed surface for



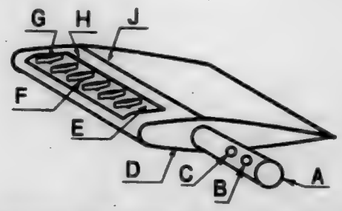
exerting a force against a reel inserted onto said spindle shaft.

5,445,345
ANTI-THEFT DISPENSERS FOR ROLL MATERIALS
Jean-Louis Neveu, Lery, France; Rudolph W. Schutz, Walnut Creek, and George Lipp, San Francisco, both of Calif., assignors to Kayserberg, S.A., France
Division of Ser. No. 828,295, Jan. 30, 1992, Pat. No. 5,323,980.
This application Mar. 21, 1994, Ser. No. 215,469
Int. Cl.[6] B65H *19/00*
U.S. Cl. 242—597.6 **2 Claims**



1. Anti-theft dispenser for a roll of material comprising a substantially planar support; a shaft having a longitudinal axis rigidly and perpendicularly connected to said support at a first end and having at a second end a stop head attached thereto; an anti-extraction means for preventing a roll of material which is mounted on said anti-extraction means from being withdrawn from said anti-extraction means in a direction away from said support; said anti-extraction means rotatably mounted axially on said shaft and being held on said shaft by said stop head, said anti-extraction means including a stop on one end of said anti-extraction means which faces said support, and said anti-extraction means having an exterior diameter larger than an inner diameter of said roll and an exterior shape in the shape of a helically extending blade angled relative to the axis, the edge of said blade facing said planar support and defining said exterior diameter; a spring means positioned on said shaft between said support and the one end of said anti-extraction means facing said support for resiliently biasing said anti-extraction means away from said support and against said stop head, said spring means allowing for movement of said anti-extraction means in relation to said shaft towards said support; and a stud which is perpendicularly affixed to said support and facing said stop, such that said anti-extraction means is freely rotatable on said shaft when said anti-extraction means is biased against said stop head and such that said stop abuts against said stud to prevent free rotation of said anti-extraction means when said anti-extraction means is moved away from said stop head and towards said support.

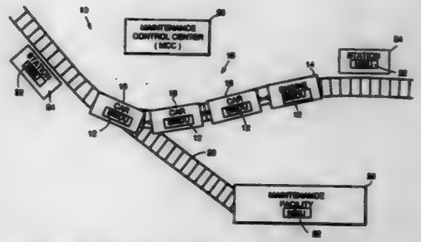
5,445,346
AIRCRAFT TAIL SURFACE SPOILERS
Raymond D. Gilbert, 6501 Inwood Dr., Springfield, Va. 22150
Continuation-in-part of Ser. No. 589,038, Sep. 27, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 935,284
Int. Cl.[5] G05D *1/00*
U.S. Cl. 244—197 **10 Claims**



1. An apparatus, in combination with an aircraft, comprising
a fuselage with a cockpit,
wings on left and right side of said fuselage,
a left-side tail-elevator and a right side tail elevator having forward portions with symmetrical top and bottom airfoils, from leading edge to maximum thickness, and
rear portions, with tapered airfoils from maximum thickness to an aft edge,
a cantilever shaft, connecting and supporting the forward portion of left-side and the forward portion of right-side tail elevators,
a powered elevator actuator system attached rigidly within the aircraft fuselage and rotationally to the forward-surface actuating cantilever shaft, and
a pitch-changing communication means between the cockpit and each powered elevator tail surface actuator apparatus;
the combination further comprises:
a first spoiler device mounted on the top symmetric surface of the forward portion of the left side tail elevator and
a second spoiler device mounted on the top symmetric surface of the forward portion of the right side tail elevator, and
a third spoiler device located on the bottom symmetric surface of the forward portion of the left side tail elevator, and
a fourth spoiler device located on the bottom symmetric surface of the forward portion of the right side tail elevator, and
a spoiler actuation means for each spoiler device, and an independent communication means between the cockpit and each said spoiler actuator means;
said spoiler devices comprising a plurality of rotatable spoiler elements;
wherein independent communication from the aircraft cockpit drives the actuator means to rotate said spoiler elements into contact with each other to form a single-line air barrier that disables laminar airflow and disengages pressure-reduction mechanism of the Bernoulli effect.

5,445,347
AUTOMATED WIRELESS PREVENTIVE MAINTENANCE MONITORING SYSTEM FOR MAGNETIC LEVITATION (MAGLEV) TRAINS AND OTHER VEHICLES
Joseph S. Ng, Montebello, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 13, 1993, Ser. No. 62,862
Int. Cl.[6] B61L *1/00*
U.S. Cl. 246—169 R **20 Claims**

1. An automated maintenance system for a vehicle, comprising:
a mobile unit provided in the vehicle for sensing the operational condition of the vehicle and transmitting electrical data signals corresponding thereto;
a fixed receiver unit for automatically receiving said data signals when the vehicle passes proximate thereto; and
a base unit for processing said data signals received by the receiver unit to determine said operational condition, and



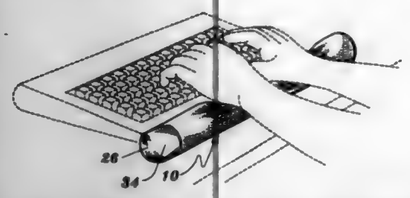
to predict subsequent operational problems associated with said condition, said base unit comprising a prognostic unit for determining said operational condition and for predicting the problems in said conditions and a diagnostic unit for scheduling preventive maintenance action for the vehicle in accordance with said operational condition and said predicted problems.

5,445,348
AUXILIARY CABLE ATTACHMENT
William D. Caldwell, Bessemer, and Wei-Chung Lin, Birmingham, both of Ala., assignors to Reliable Bethea Power Products, Inc., Pelham, Ala.
Filed Sep. 12, 1994, Ser. No. 304,401
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.1 **13 Claims**

1. In combination with a cable support pole having a pair of parallel fasteners extending through the pole at different heights, a first strand clamp mounted by a lower fastener of said pair to the pole and a first communication cable strand secured by the first strand clamp, a support bar secured at one end to said lower fastener and extending horizontally from said pole, a second strand clamp affixed to said support bar at a point laterally spaced from said first clamp and adapted to secure a second communication supporting strand in place, and a brace extending diagonally between an upper fastener of said pair and a lower end attached to said support bar distal said pole, the improvement comprising:
(a) an extension member extending above said support bar and outwardly from said pole from a connection point intermediate said pole and said lower end to a point outwardly of said support bar, said extension member connected to said support bar at said connection point without disengaging said support bar or said first and second supporting strand; and
(b) a third strand clamp adapted to secure a third communi-

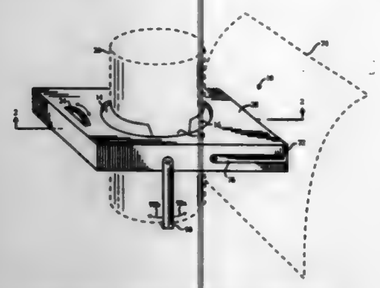
cation cable supporting strand in place laterally spaced from and above said second communication cable supporting strand such that said first and third clamps are aligned in a vertical plane at equal-distant radial measure from a superjacent conductor with said second strand being equal-distant from said first and second strand.

5,445,349
WRIST SUPPORT SYSTEM
Sandra A. Hart, 3713 Morse Ave. #12, Sacramento, Calif. 95821
Filed Apr. 26, 1994, Ser. No. 233,921
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **25 Claims**



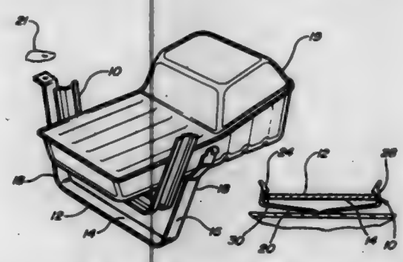
1. Apparatus for supporting the wrists of a person performing activities requiring repetitive movement of the person's fingers and for relieving physical stress occasioned by such activities, said apparatus comprising, in combination:
an elongated, flexible container constructed of flexible sheet material and including a generally tubular-shaped segment and ends closing said generally tubular-shaped segment and defining therewith an elongated, closed interior; and
particulate material comprised of a plurality of discrete particulate elements disposed within the elongated, closed interior of said elongated, flexible container in the generally tubular-shaped segment thereof, said discrete particulate elements within said elongated, closed interior being relatively movable within said elongated, flexible container upon application of outside pressure to said generally tubular-shaped segment by a user's wrists to generally conform it in shape to the user's wrists and to provide support therefore while the user is performing activities requiring finger movement, and
said apparatus cooperating with said wrists to gently massage said wrists during said finger movement.

5,445,350
ADJUSTABLE CONTAINER HOLDER
Kenneth D. Rigsby, 7911 Dunberton, Los Angeles, Calif. 90045
Continuation-in-part of Ser. No. 88,223, Jul. 6, 1993, abandoned.
This application Jun. 30, 1994, Ser. No. 268,284
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—313 **12 Claims**



1. An adjustable container holder comprising:
(a) a fixed and a movable jaw, the jaws having mutually opposed arcuate surfaces that define an adjustable aperture, the fixed jaw having a pair of spaced apart holes therethrough, in the movable jaw having a pair of spaced apart threaded holes therethrough;
(b) a pair of rods, the rods each having a threaded portion that threadingly engages the threaded holes in the movable jaw, and a smooth portion that is rotably mounted in the holes of the fixed jaw;
(c) an adjusting knob engaging the rods via adjusting means so that when the adjusting knob is adjusted in one direction, the movable jaw moves towards the fixed jaw, and when the adjusting knob is adjusted in the opposing direction, the movable jaw moves apart from the fixed jaw, so that the adjustable aperture defined by the arcuate jaw surfaces can be adjusted to grasp containers of differing sizes.

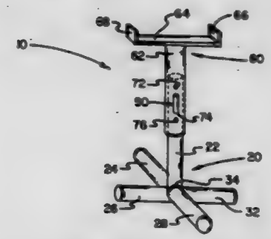
5,445,351
COVER FOR A FUEL TANK SUPPORT STRAP
Larry Foster, Chelsea, Mich., assignor to Pilot Industries, Inc., Dexter, Mich.
Filed Feb. 17, 1994, Ser. No. 199,046
Int. Cl.[6] A47B *95/00*
U.S. Cl. 248—345.1 **14 Claims**



1. A cover for an elongated fuel tank support strap, said strap having a top, a bottom and two spaced apart and parallel sides, said strap being constructed of a metallic material, said cover comprising:
an elongated top wall constructed of a flexible, non-metallic material, said top wall having a top, a bottom and two spaced apart and parallel sides, said top wall being dimensioned so that a bottom of said top wall overlies the top of the tank strap,
a pair of side walls, one side wall extending outwardly from each side of said top wall,
an inwardly facing channel formed on each side wall, each channel adapted to lockingly ,engage one side of the tank strap,
means for varying the spacing between said channels,
wherein said top wall comprises first and second longitudinally extending and laterally adjacent sections which obliquely intercept each other along a peak which extends longitudinally along said top wall.

5,445,352
PORTABLE TELESCOPING STAND FOR TRUCK CAMPER TOPS
Jesse L. Long, Rte. #2, Box 1390, Elizabethton, Tenn. 37643
Filed Jan. 10, 1994, Ser. No. 179,315
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—354.5 **3 Claims**

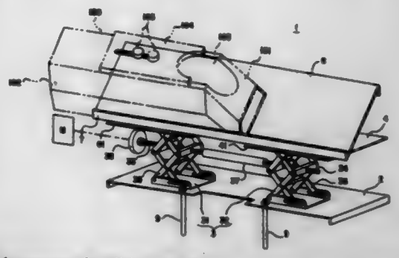
1. A new and improved portable telescoping stand for truck camper tops for facilitating easy one-person removal of a camper top from a pickup truck by supporting, in combination with other like stands, the camper top in an elevated position relative to the truck bed after the top has been raised free of the truck bed by jacking whereby the truck may be driven out from under the elevated camper top, the portable telescoping stand for truck camper tops comprising:
a lower support structure having a first hollow column supported in an upright position by a base, the base having a plurality of spaced apart generally cylindrical shaped support legs fixedly radially connected at one end to the lower end of the first column, the support legs extending from the first column at right angles to the column, the legs being equally spaced around the column to provide stability for the column whereby tipping caused by slightly off-center loads is precluded, the first column also having a plurality of spaced apart lateral holes therethrough, the lateral holes lying on parallel axes to each other at right angles to and intersecting the axis of the hollow first column;
an upper support structure having a hollow second column telescopically operationally disposed over the first column whereby the overall height of the stand may be increased or decreased, the second column having a bifurcated yoke with upstanding ears fixedly connected to the upper end, the ears being positioned perpendicular to the yoke, the second column also having a plurality of spaced apart



lateral holes therethrough, the lateral holes having essentially the same diameter as the holes of the first column, the lateral holes lying on parallel axes to each other at right angles to and intersecting the axis of the hollow second column so when the upper support structure is telescopically longitudinally moved with respect to the lower support structure holes in the second column may be made to line up with holes in the first column; and
pin means whereby the overall height of the stand may be locked at any one of a plurality of discrete steps by inserting the pin through coincident holes of the first and second columns nearest a desired stand height, the pin means comprising:
a rod formed from shear-resistant material such as steel, the rod being formed in a linear generally cylindrical configuration and having a length substantially longer than the diameter of the second column, the rod also having a diameter essentially the same as the diameter of the holes of the first and second columns, the rod additionally having handle means whereby the rod may be easily grasped by a user, the rod extending through a hole in the second column, the rod also extending through a hole in the first column.

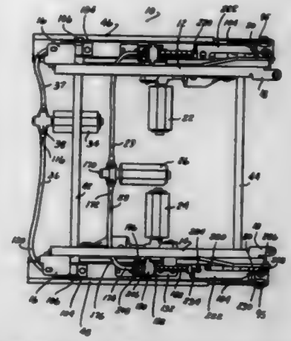
5,445,353
SUPPORT DEVICE FOR ANIMAL CLAMP
Yuji Sakamoto, Kobe, Japan, assignor to Senju Seiyaku Kabushiki Kaisha, Osaka, Japan
PCT No. PCT/JP92/00151, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO93/15689, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 13, 1992, Ser. No. 129,171
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—421 **20 Claims**

1. A support device for an animal clamp for supposing the animal clamp fixing a small laboratory animal at a specified position with respect to a testing apparatus, comprising:
a base board fitted to the testing apparatus either directly or indirectly,
an elevating board disposed above the base board,
elevating means for lifting or lowering the elevating board, being installed between the base board and elevating board,
a clamp mounting board disposed on the elevating board for mounting the animal clamp on, with the front edge pivoted to the elevating board,



tilting means for tilting the clamp mounting board about the front edge, being installed between the elevating board and the clamp mounting board,
clamp slip preventive means to prevent the animal from slipping off the clamp mount board; and
wherein the tilting means is composed of a jack, and a sliding member inserted between the jack and the clamp mounting board.

5,445,354
TRACK ASSEMBLY FOR VEHICLE POWER SEAT ADJUSTER
Derek K. Gauger, Ann Arbor, and Max O. Hoesch, Brooklyn, both of Mich., assignors to ITT Corporation, New York, N.Y.
Filed Dec. 15, 1993, Ser. No. 167,744
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—429 **10 Claims**



1. A seat track apparatus for automotive seats comprising:
first and second elongated tracks slidably engaged for relative longitudinal movement therebetween;
the first track having first and second spaced pairs of flanges, one first flange and one second flange extending outward from one of a pair of spaced side walls on the first track;
each of the flanges of the first pair of flanges formed with a first abutment surface;
the second track having third and fourth pairs of flanges, one third flange and one fourth flange extending inwardly from one of a pair of spaced side walls on the second track;
each of the flanges of the third pair of flanges formed with a

second abutment surface normally spaced from the first abutment surface on the first track;

the fourth pair of flanges being spaced from the third flanges to form a channel therebetween, one of the second flanges of the first track disposed in the channel for guiding sliding movement of the first track with respect to the second track; and wherein

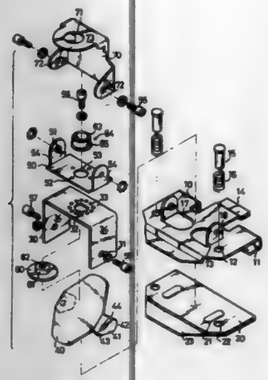
the first, second, third and fourth pairs of flanges and at least certain of the side legs of the first and second tracks are deformable under forces tending to separate the first track from the second track to bring the first, second, third and fourth pairs of flanges into self-cinching engagement with each other to resist such separation.

5,445,355

ANTENNA-MOUNTING DEVICE

Hung-ming Chen, 3Fl., No. 22, Lane 167, Jenyi St., Shanchung City, Taipei Hsien, Taiwan

Filed May 17, 1994, Ser. No. 245,221
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—514 **3 Claims**



1. An antenna-mounting device comprising:

a mount to which an antenna is attached;

a clip which is joined with the mount and comprises:

a first member comprising a first margin and a second margin which is curved so as to form a lower jaw, two spaces defined therein and two tabs which perpendicularly project from the first member so that the spaces are between the tabs;

a second member comprising a margin disposed above the lower jaw, and having an upper jaw;

a pad comprising a first portion adhered to the first margin of the first member and a second portion adhered to the second member;

a buckle comprising two tabs which perpendicularly project from the buckle and each define a pivot point which is linked to one of the tabs of the first member, a first edge and a second edge, so that a distance between the first edge and the pivot point is less than a distance between the second edge and the pivot point;

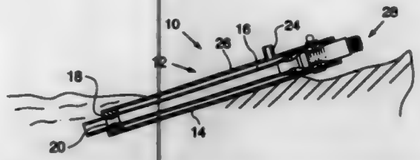
whereby the buckle is switched between a released position and locked position, in the released position, the upper jaw is released from the lower jaw in order to receive a trunk lid, in the locked position, the second edges of the tabs of the buckle abut against the second member through the spaces of the first member so as to push the upper jaw towards the lower jaw, so that the trunk lid is compressed between the upper jaw and the lower jaw.

5,445,356

NON-FREEZING LIQUID SUPPLY SYSTEM

Roger C. Walsh, 34 A Victoria Park Ave., Toronto, Ontario, Canada M4E 3R9 , and Douglas W. Eggins, 129 Daphine Crescent, Barrie, Ontario, Canada L4M 2Y7

Filed Mar. 11, 1994, Ser. No. 209,981
Int. Cl.[6] F16K *7/07*
U.S. Cl. 251—5 **26 Claims**



1. A liquid supply system for the transfer of a liquid between two locations in spaced apart relation, comprising liquid pressurizing means located at a first said location; a pipeline connecting the pressurizing means to liquid receiving means located at said second location through an intervening space subject to freezing temperatures; said pipeline having a first, laterally compressible hose portion for the transfer of said liquid therethrough; a second hose portion coextensive with said first hose portion and forming a sealed gas enclosure with said first hose portion; gas admission means connected in sealing relation with said gas enclosure; and end sealing means securing the ends of said first hose portion in sealing relation with the respective ends of said second hose portion to seal said gas enclosure therebetween, each said end sealing means including a tubular fitting having an outer end, an inner end of reduced diameter located within an end of said first hose portion; said second hose portion enclosing said first hose end portion in compressive, sandwiched relation with said tubular fitting; and load distributing means located between said first and said second hose end portions to accomodate cyclic loading of the pipeline in the expanding of said first hose portion upon the operation of said liquid pressurizing means, and the emptying thereof upon termination of said pressurizing, by the application of pressure gas in transverse collapsing relation therewith.

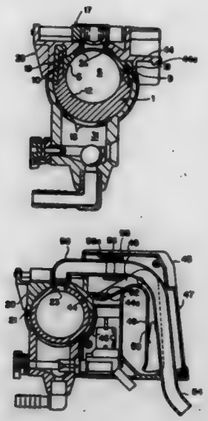
5,445,357

PIPE CONNECTING STRUCTURE TO BE USED FOR A MILK DELIVERY PIPE

Kevin L. Torgerson, Holmen; Kevin M. Keefe, LaCrosse; David A. Schultz, Holmen, all of Wis., and Minoru Matsuzawa, Nagano, Japan, assignors to Orion-Babson Co., Ltd., Nagano, Japan

Filed Mar. 15, 1994, Ser. No. 212,895
Claims priority, application Japan, Mar. 31, 1993, 5-021336 U; Mar. 31, 1993, 5-021337 U; Mar. 31, 1993, 5-097125
Int. Cl.[6] F16K *51/00*
U.S. Cl. 251—146 **7 Claims**

1. A pipe connecting structure constituted by a milk tap having an aperture to be aligned with a corresponding opening arranged at the top of a milk delivery pipe and a slide valve for opening and closing said aperture and a plug-in metal fitting removably fitted to said milk tap and including an elbow pipe, characterized in that said slide valve has an aperture to be aligned with the opening at the top of the milk delivery pipe and comprises a slide valve carriage having a substantially circular valve sliding hold disposed at the lower center and transversal collar insertion holes bored from a side toward the other side thereof and disposed along the lateral sides of the valve sliding hole, a pair of guide pins projecting outwardly from the bottoms of the respective collar insertion holes, a pair of guides projecting outwardly from said other side in a direction opposite to that of said guide pins, a pair of holders disposed oppositely and adjacent to the aperture of the milk tap for slidably holding said guides and guide pins and collars fitted to the respective guide pins of the valve carriage, coil springs being respectively arranged between the collars and the bottoms of the collar insertion holes, the leading ends of said collars disposed close to the carriage being tapered, a



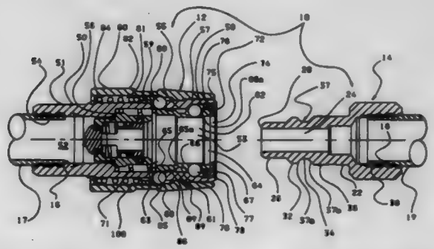
cylindrical valve being inserted into said valve sliding hole, said valve being provided with lugs at opposite sides thereof, the highest points of said collars fitted to said guide pins being located above the lowest points of the respective lugs, said lugs disposed at opposite sides of said cylindrical valve abutting the respective collars fitted to said guide pins when moved horizontally with the carriage.

5,445,358

EXHAUST TYPE QUICK ACTION COUPLER

Keith J. Anderson, Maple Grove, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 16, 1994, Ser. No. 358,216
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 **27 Claims**



9. A coupler socket for a nipple, the coupler socket comprising:

i) a coupler body having an inner wall surface defining an axial bore and an open end to receive the nipple, said coupler body also including a first set of coupling members disposed about the coupler body and movable in a radial direction, and a recess formed in the inner wall surface proximate the open end of the body,

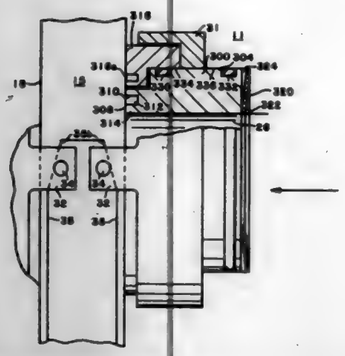
ii) an inner sleeve disposed in the axial bore of said coupler body and biased axially outward toward the open end of the coupler body, said inner sleeve having an inner wall surface defining a nipple cavity dimensioned to receive the nipple, and an outer wall surface with a pair of recesses of different radial depths, and including a second set of coupling members disposed about the inner sleeve and movable in a radial direction, said inner sleeve normally being axially disposed relative to said coupler body such that said second set of coupling members can move radially outward into the recess in said coupler body, the inner sleeve moving axially away from the open end of the coupler body into a coupled position when the nipple is inserted into the open end of the coupler socket, thereby driving said second set of coupling members radially inward into engaging relation with the nipple,

iii) an outer sleeve surrounding the coupler body and being axially movable with respect thereto,

iv) a valve member mounted within the coupler body and normally biased to a closed position to block a fluid flow path through the coupler socket, said valve member being engaged by the nipple and moved into an open position when the nipple is inserted into the open end of the coupler socket to open the fluid flow path through the coupler socket, and

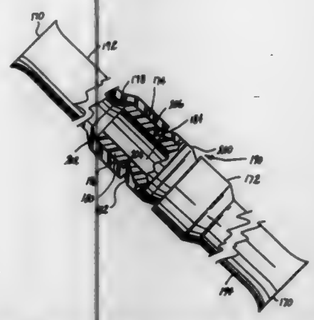
v) a locking mechanism disposed between said outer sleeve and said coupler body, said locking mechanism biasing said first set of coupling members radially inward into engagement with a first of said pair of recesses in the outer surface of said inner sleeve when the nipple is inserted into the open end of the coupler body and the inner sleeve moves away from the open end to a) retain said first set of coupling members in said first recess, b) retain said inner sleeve in the coupled position, and c) retain the nipple within the coupler socket, said outer sleeve having an inner surface configuration which engages and moves said locking mechanism out of engagement with said first set of coupling members when said outer sleeve is moved in a first axial direction such that said first set of coupling members move radially outward a predetermined distance out of said first of said pair of recesses such that a) said inner sleeve is biased a predetermined distance axially outward toward the open end of the coupler body, b) said valve member moves into the closed position, and c) said first set of coupling members are retained in engagement with said second of said pair of recesses on the outer surface of said inner sleeve, said inner surface of said outer sleeve also having a configuration which allows said first set of coupling members to move further radially outward when said outer sleeve is moved in a second axial direction, opposite from said first axial direction, to a) allow said first set of coupling members to move out of engagement with said second of said pair of recesses on the outer surface of the inner sleeve, b) allow the inner sleeve to be biased further axially outward toward the open end of the coupler body, and c) allow the second set of coupling members to move radially outward into the recess in the inner wall surface of the coupler body to thereby release the nipple and allow the nipple to be disconnected from the coupler socket.

5,445,359
GATE VALVE
John Beson, 10938 Leaning Ash, Houston, Tex. 77079
Continuation of Ser. No. 755,018, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,512, Apr. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 493,045, Mar. 12, 1990, abandoned, which is a continuation of Ser. No. 343,474, Apr. 26, 1989, abandoned, which is a continuation of Ser. No. 189,574, May 3, 1988, abandoned, which is a continuation of Ser. No. 49,231, May 13, 1987, abandoned, which is a continuation of Ser. No. 659,614, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 551,589, Nov. 14, 1983, Pat. No. 4,566,671. This application Jan. 3, 1994, Ser. No. 176,741
Int. Cl.[6] F16K *25/00*
U.S. Cl. 251—159 27 Claims



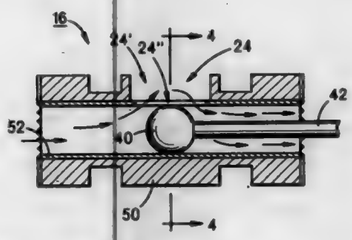
1. A gate valve, comprising:
(a) a valve body having a valve chamber therewithin and a pair of flow passages through said valve body aligned at opposite sides of said valve chamber, said valve body further having a recess around the end of each of said aligned flow passages facing said valve chamber, one of said flow passages being an upstream passage and the other of said flow passages being a downstream passage;
(b) a ring-shaped seat member disposed in each recess around the end of said flow passages facing said valve chamber;
(c) a gate in said chamber having an imperforate section for preventing fluid flow in a closed position of said gate and a section with a flow passage there through for permitting fluid flow in an open position of said gate, said gate forming a primary seal with the ring-shaped seat member in said upstream flow passage;
(d) a secondary seal member disposed around the ring-shaped seat member in said upstream flow passage and adapted to reciprocate on said ring-shaped seat member, said secondary seal member comprising a ring-shaped support element including at least one extended portion extending to and juxtaposed with a side of said gate and a seal mounted in said support element facing said gate;
(e) cooperating cam means associated with said gate and said ring-shaped support element for moving said ring-shaped support element toward said gate when said gate is moved toward the closed position to form contact between the secondary seal member and the gate;
(f) urging means supported by said valve body for moving said ring-shaped seat toward said gate to form a primary seal between said gate and said seat; and
(g) second seal means between said ring-shaped seat and said secondary seal members and between said ring-shaped seat and said valve body for sealing said ring-shaped seat with said secondary seal member and said valve body.

5,445,360
THERMOSETTING ELASTOMERIC HOSE HAVING AN INTERNAL SOCKET FORMED THEREIN
H. Steven Rody, McHenry, Mich., assignor to Cadillac Rubber & Plastics, Inc., Cadillac, Mich.
Filed Oct. 12, 1993, Ser. No. 134,047
Int. Cl.[6] F16K *51/00*
U.S. Cl. 251—148 8 Claims



1. A cured thermosetting elastomeric hose comprising:
a body portion having an interior surface with an internal diameter;
an end portion having an interior surface;
a socket portion having an interior surface with an internal diameter, the socket portion being formed intermediate the end and body portions and the socket portion internal diameter being greater than the body portion internal diameter;
an internal surface formed between the interior surface of the socket portion and the interior surface of the body portion;
a retaining surface extending radially inwardly between the interior surface of the socket portion and the interior surface of the end portion; and
a conical guiding ramp surface in the end portion extending radially inwardly and axially toward the socket portion and terminating at the retaining surface;
wherein the retaining surface is adapted to retain within the socket portion a member having an external diameter substantially the same as the diameter of the internal surface of the socket portion.

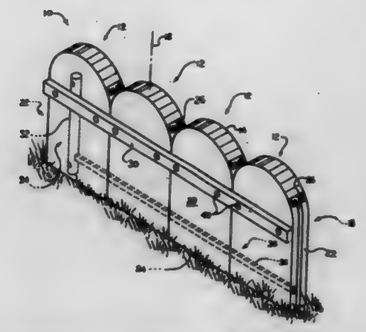
5,445,361
FLUID FLOW VALVE
Robert R. Hellman, Sr., 35 Hawley Rd., Oxford, Conn. 06483, assignor to Robert R. Hellman, Sr., Oxford, Conn.
Filed Apr. 19, 1994, Ser. No. 229,765
Int. Cl.[6] F16K *1/52*
U.S. Cl. 251—205 12 Claims



1. A fluid flow valve, comprising:
(a) an elongate body having an axially extending cavity

defined therethrough and having fluid inlet and outlet ports;
(b) a hollow seat assembly disposed in said body for the passage therethrough of a fluid;
(c) a shaped first aperture defined through a wall portion of said seat assembly; and
(d) plug means selectively axially moveable in said hollow seat assembly and along said shaped first aperture such that said fluid flows into said hollow seat assembly, upwards along a surface of said plug means into said first aperture, through said first aperture, downwards along a surface of said plug means, and out of said hollow said seat assembly, the position said plug means along said aperture determining the rate of flow of said fluid through said valve.

5,445,362
FENCE ASSEMBLY
Francis J. Reppert, 18 Elizabeth La., Collegeville, Pa. 19426
Filed Feb. 25, 1994, Ser. No. 202,259
Int. Cl.[6] A01G *1/08*
U.S. Cl. 256—24 8 Claims



1. A modular fence assembly comprising:
a plurality of fence modules each having a longitudinal axis, a front side face, a rear side face, two end faces each having means defining a vertical slot open at the top formed therein, and a bottom surface, at least two of said plurality of fence modules each further having means defining a vertical fence post bore open at said bottom surface;
a plurality of clamps dimensioned and configured to slide into and cooperate with two said vertical slots formed in abutting said end faces when two of said fence modules are positioned in operative, abutting relationship to one another;
at least two fence poles comprising a shaft portion corresponding to said vertical bore, and a stake portion having a stud insertable into said shaft portion and a pointed stake;
at least one first horizontal reinforcing rail spanning at least two said modules and detachably attachable to said fence modules; and
at least one lower, second horizontal reinforcing rail spanning at least two said fence modules, each of said fence modules including means defining a reinforcing bore alignable with other reinforcing bores, each of said at least one lower, second horizontal reinforcing rail having a cross sectional configuration corresponding to each said reinforcing bore, each of said at least one lower, second horizontal reinforcing rail being removably and slidably insertable into said reinforcing bores.

5,445,363
APPARATUS FOR THE PNEUMATIC TRANSPORT OF LARGE IRON-BEARING PARTICLES
Jorge O. Becerra-Novoa; Ricardo Viramontes-Brown; Marco A. Flores-Verdugo, and Jose J. Garza-Ondarza, all of Nuevo Leon, Mexico, assignors to Hylsa S.A. de C.V., San Nicolas de los Garza, Mexico
Continuation-in-part of Ser. No. 526,189, May 18, 1990, Pat. No. 5,296,015. This application Jan. 9, 1993, Ser. No. 71,756
Claims priority, application Mexico, Jan. 9, 1990, 19059
Int. Cl.[6] F27B *3/18, 3/19*
U.S. Cl. 266—182 9 Claims



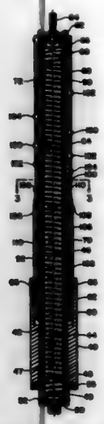
1. Apparatus for reducing iron ore particles to sponge iron particles by means of a reducing gas, comprising:
a vertical shaft moving bed reduction reactor with a reduction zone and a discharge zone;
a support structure therefore;
charging means for effecting introduction of iron ore into said reduction zone;
discharging means for effecting removal of reduced iron ore in the form of sponge iron particles from said discharge zone;
at least one of said charging means and said discharging means being a particulate solids pneumatic pipe conveyor with a particle handling bin laterally remote from and nonaligned vertically with respect to said reactor and said support structure; and
said charging means and said discharging means both being separate pneumatic conveyors and including respective pressure lock bins arranged to alternately communicate with said reactor and an atmosphere at a different pressure by means of gas sealing valves, and both bins being nonaligned vertically with the reactor with a substantially horizontal overlap whereby the height of the reactor support structure is on the order of the height of the reactor.

5,445,364
LOAD COUNTERBALANCING COILED WIRE SPRING ASSEMBLY
Edward C. Tibbals, Jr., Jamestown, N.C., assignor to William Calvin Johnston, High Point, N.C.
Filed Jul. 6, 1994, Ser. No. 281,062
Int. Cl.[6] E05F *5/00*
U.S. Cl. 267—74 13 Claims

1. A load counterbalancing coiled wire spring assembly comprising:
a nonrotatable base member,
a coiled wire spring having a first end secured to said nonrotatable base member and a second endremote therefrom displaceable longitudinally of the coiled wire spring axis through a predetermined distance intermediate a fully retracted and fully extended position in response to the magnitude of an external load applied thereto, said load induced longitudinal displacement of said second end creating shear stresses in the coiled wire spring of progressively increasing magnitude proportional to the degree of longitudinal displacement of said second end intermediate said fully extended and fully retracted positions thereof,
a first nonrotatable sleeve member connected to said base

member and disposed in surrounding coaxial spaced relation with said coiled wire spring,

a second sleeve member disposed intermediate said coiled wire spring and said first sleeve member and secured to second end of said coiled wire spring to render said second sleeve member longitudinally and rotatably displaceable in conjunction therewith,



displacement means responsive to the magnitude of external load-induced longitudinal displacement of said second end of said coiled wire spring and said second sleeve member secured thereto for rotatably displacing said second end of said coiled wire spring to selectively provide reactive torsional bending stresses in said coiled wire spring of a magnitude sufficient to maintain said external load in any selected equilibrium position intermediate said fully retracted and fully extended positions thereof.

5,445,365

ANTI-VIBRATION ELEMENT

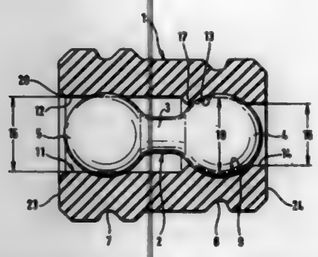
Karl Förderer, Schwalkheim, Germany, assignor to Firma Andreas Stihl, Waiblingen, Germany

Filed Mar. 18, 1994, Ser. No. 210,888

Claims priority, application Germany, Mar. 18, 1993, 43 08 641.1

Int. Cl.[6] F16F *1/36*

U.S. Cl. 267—137 **7 Claims**



1. An anti-vibration element for connecting two parts in a vibration damping manner, said anti-vibration element comprising:

a tubular elastic base body with a first and a second end, said tubular elastic body having an inner wall with an inner diameter;

a dumbbell-shaped bolt comprised of a connecting element and a first and a second clamping element connected to opposite ends of said connecting element;

said dumbbell-shaped bolt inserted into said base body such that said first clamping element is substantially axially fixed relative to a longitudinal axis of said base body and said second clamping element is axially displaceable relative to said longitudinal axis of said base body;

said first end of said base body has a circumferential outer groove for receiving therein one of the two parts to be connected and said second end of said base body has a circumferential outer groove for receiving therein the other of the two parts to be connected;

said first and said second clamping elements rest at said inner wall of said base body in an area of said circumferential outer grooves; and

each of said clamping elements has a diameter that is greater than said inner diameter of said base body.

5,445,366

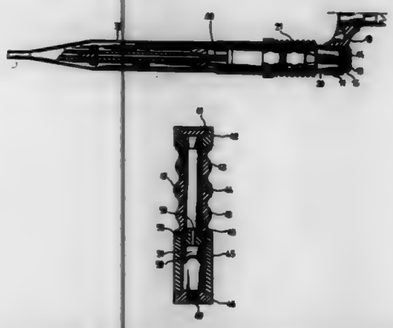
HYDRAULIC SHOCK ABSORBING DEVICE FOR A BICYCLE FRONT FORK

Ruey-Sheng Shih; Kevin J. Yeh; Show-Shyang Chow; Jui-Chi Hung, and Shi-Shiow Chen, all of Hsin Chu, Taiwan, assignors to Industrial Technology Research Corporation, Hsin Chu Hsien, Taiwan

Filed Jun. 8, 1994, Ser. No. 257,010

Int. Cl.[6] F16M *5/00*

U.S. Cl. 267—140.13 **8 Claims**



1. A hydraulic shock absorbing device fastened inside either blade of a bicycle front fork to absorb shock, the device comprising;

at least one damping liquid chamber molded from elastic material to hold a damping liquid, said damping liquid chamber having a top end mounted with an annular cap holder flange and sealed by a cap and at least one collar around the outside surface of the periphery wall of the said damping liquid chamber thereof;

a partition plate fastened to a bottom end of the said damping liquid chamber and having at least one liquid passage;

a damping liquid cell made from an elastic material and connected to the said partition plate at the bottom for flowing of the said damping liquid between the said damping liquid chamber and said damping liquid cell through said at least one liquid passage to absorb shock upon compression of the said damping liquid chamber; and

a barrel having a top end fixed to the said partition plate and a bottom end fastened with a locating plate installed inside the bicycle front fork to hold the said damping liquid cell.

5,445,367

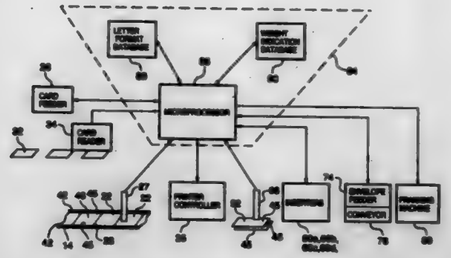
SYSTEM AND METHOD FOR PREPARING LETTERS FOR MAILING

John A. Long, 41 Lamont Avenue, Scarborough, Ontario, Canada M1S 1A8

Filed Apr. 19, 1993, Ser. No. 47,285

Int. Cl.[6] B65B *61/20, 61/02*; B65H *39/14*

U.S. Cl. 270—1.1 **19 Claims**



1. A system for preparing letters for mailing comprising the following:

a letter data database;

a source of data records comprising a plurality of data cards, each having a data record;

means for conveying a web of paper in a downstream direction along a first path;

a high speed printer in said first path for printing upon said web;

control means operatively connected to said letter data database and responsive to said data records source for, repetitively, reading a data record from a card of said plurality of data cards and, responsive to said read data record, reading data from said letter data database and, responsive to said read data record and read data from said letter data database, controlling said printer to print on a section of said web;

a separator at the downstream end of said first path for separating a letter sheet from each printed section of said web of paper;

a letter sheet conveyor for conveying letter sheets separated by said separator in a downstream direction along a second path;

a plurality of insert feeders adjacent said second path, each for feeding inserts to letter sheets travelling along said second path;

means for, repetitively, tracking a web section printed in accordance with a given data record and the resulting letter sheet and selectively activating said insert feeders in accordance with said given data record when said resulting letter sheet is at said insert feeders;

an envelope conveyor for conveying envelopes in a downstream direction along a third path merging with said second path downstream of said insert feeders such that letter sheets with insert s conveyed along said second path are stuffed into envelopes conveyed along said third path;

a card feeder arranged to feed said data cards in a downstream direction along a fourth path merging with said first path such that each data card is inserted onto one said section of said web; and

said control means comprising a card reader in said fourth path and timing means so that a given data card is inserted onto a section of said web which is printed in response to data read from said given data card.

5,445,368

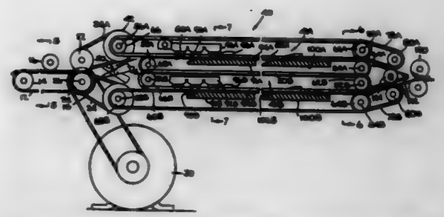
APPARATUS AND METHOD FOR FORMING COLLATIONS OF TWO DIFFERENT SIZE DOCUMENTS

Malcolm F. Lester, Braintree, United Kingdom, and William J. Wright, Killingworth, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 27, 1993, Ser. No. 141,763

Int. Cl.[6] B65H *43/00, 9/04*

U.S. Cl. 270—59 **6 Claims**



1. A method of forming a collation of at least two different size documents comprising the steps of:

feeding at least one smaller size document into a collating apparatus;

holding said smaller size document in said collating apparatus lead edge justified;

feeding at least one larger size document into said collating apparatus;

holding said larger size document in said collating machine superposed on said smaller document with lead edge justified to form a collation; and

feeding said collation out of said collating apparatus lead edge first for further processing while maintaining the justified lead edge of said collation.

5,445,369

METHOD OF AND APPARATUS FOR MOVING DOCUMENTS

Roman M. Golicz, 26 Indian Dr., Clinton, Conn. 06413, and Mark K. Lohrs, 482 Main St., Old Saybrook, Conn. 06475

Filed May 18, 1993, Ser. No. 63,446

Int. Cl.[6] B65H *5/00, 29/00*

U.S. Cl. 271—3.23 **20 Claims**



1. A paper transport for imparting motion to indicia bearing documents, the transport defining a paper path, means being situated along the paper path for scanning moving documents, said transport comprising:

a plurality of conveyor modules arranged end-to-end, said conveyor modules each having a plurality of parallel endless conveyor belts, gaps being present between adjacent of said conveyor modules;

means for imparting motion to the belts of said conveyor modules;

means for causing air to flow into said modules between said belts to thereby generate a low pressure differential across any document supported on said belts, the pressure differ-

ential holding the document against the belts during transport thereof;

means for ensuring movement of documents across the gaps between adjacent of said conveyor modules, the scanning means being situated for scanning a document which is traversing a said gap; and

means for accelerating the motion of documents moving along the paper path, said accelerating means including a further conveyor module which spans the gap between an adjacent pair of said conveyor modules, said further conveyor module being inverted and partly overlapping the adjacent upstream and downstream ends of the conveyor modules of said pair whereby a document travelling on a conveyor module upstream of the spanned gap will be caused to move away from said upstream conveyor module and be engaged and transported by the inverted module and the document will be released by the inverted module onto the conveyor module at the downstream side of the spanned gap, the belt speed of the inverted and downstream conveyor modules being greater than the belt speed of the conveyor module located upstream of the spanned gap.

5,445,370

SHEET FEEDING DEVICE

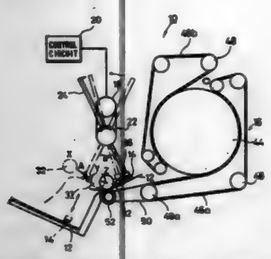
Norikazu Soga, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 800,111, Nov. 29, 1991, abandoned. This application Oct. 6, 1994, Ser. No. 319,091

Claims priority, application Japan, Dec. 14, 1990, 2-402469; Dec. 14, 1990, 2-402471

Int. Cl.[6] B65H *5/08*

U.S. Cl. 271—12 **5 Claims**



1. A sheet feeding device for feeding sheets, one by one, from a stack of sheets, said device comprising:

sheet separating means for attracting and holding an uppermost sheet of a stack of sheets, thereby withdrawing said uppermost sheet from the stacked sheets, said sheet separating means being swingable through a given angular range;

delivering means for receiving said uppermost sheet from said sheet separating means and for delivering said uppermost sheet to a succeeding station, said delivering means comprising a drum, a first belt and a second belt each in contact with said drum and drive means for driving said drum, wherein said drum and said first and second belts rotate in a first direction to roll in said sheet therebetween, and then said drum and said second belt rotate in a second direction to roll out said sheet to deliver said sheet to the succeeding station;

a drive source for activating said delivering means;

control means having a memory for storing data relating to a plurality of nominal sheet conveying speeds of said succeeding station, and a control circuit coupled to said drive source so as to control the rotational speed of said drive source; and

means for selecting said stored nominal sheet conveying speeds from said memory.

5,445,371

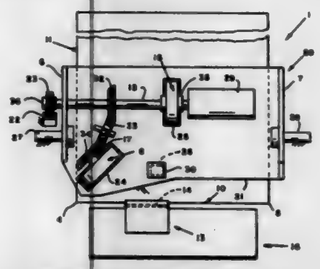
APPARATUS AND METHOD FOR BUCKLING A SHEET

Joseph H. Marzullo, Brookfield, and Brian S. Thompson, Milford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 14, 1994, Ser. No. 227,826

Int. Cl.[6] B65H *3/30*

U.S. Cl. 271—21 **7 Claims**



1. A corner buckle feeder, which comprises:

sheet supply means for storing a plurality of sheets;

singulation roller means positioned in rolling contact with a top sheet for driving an edge adjacent to a leading edge of the top sheet inwards to create a buckle in the leading edge of the top sheet, whereby the axis of the singulation roller means and the adjacent edge of the top sheet form an acute angle;

sensing means operatively positioned with respect to the top sheet for sensing the buckled edge portion of the top sheet;

feed roller means responsive to the sensing means for feeding the top sheet in singular sequence from the sheet supply means when the sensing means senses the buckle; and

a separator proximate to the leading edge for separating the buckled edge of the top sheet from the plurality of sheets as the top sheet is fed forward.

5,445,372

DEVICE FOR DEPOSITING PRINTED SHEETS ON A SHEET PILE

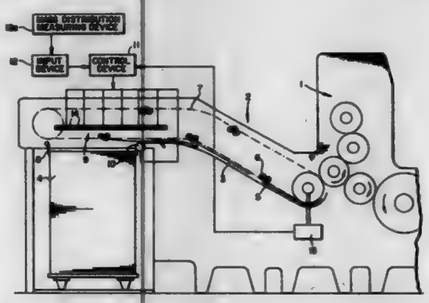
Peter T. Blaser, Dielheim; Dieter Hauck, Eberbach, and Karl-Hermann Miltner, Dossenheim, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 7,051, Jan. 21, 1993, abandoned. This application Apr. 14, 1994, Ser. No. 227,497

Claims priority, application Germany, Jan. 21, 1992, 42 01 490.8

Int. Cl.[6] B65H *29/54*

U.S. Cl. 271—309 **7 Claims**



1. Device for depositing printed sheets on a sheet pile, comprising at least one pair of mechanical grippers for seizing the printed sheets at a respective leading edge thereof, the gripper pair being movable over the sheet pile and being controllable for releasing the printed sheets at a given instant of time, an air-blowing device for applying varying pressure to defined regions over a depositing surface of the respective printed sheets for decelerating the sheets before contact with a mechanical stop, a suction device supporting said air-blowing device disposed at the side of said sheet pile, suction control means for controlling said suction device, a control device for controlling the air-blowing device having at least one input and an output, said control device being connected via said output thereof to the air-blowing device, an input device for receiving sheet-specific and process-specific data being connected to said control device via said input thereof, a mass distribution measuring device for measuring said sheet-specific and process-specific data connected to said input device, said sheet-specific and process-specific data including data regarding two-dimensional mass distribution of the respective printed sheet, the air-blowing device being controllable by said control device so as to produce a pressure distribution on the depositing surface of the respective printed sheet which is correlated with said mass distribution of the respective printed sheet; wherein said air-blowing device includes means for varying air quantity and acting direction of blowing air depending upon location and velocity of the respective sheets for an elemental area of the depositing surface of the printed sheet, said depositing surface being divided in a matrix-like manner.

5,445,373

NIGHT GOLF SYSTEM

Randy Franks, Lake Oswego, Oreg., assignor to Night Golf, Inc.

Filed Jun. 3, 1993, Ser. No. 72,788

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—32 R **16 Claims**



1. A method of playing golf at night on a golf course comprising:

providing a glow-in-the-dark golf ball having a high illumination contrast with a dark exterior light level; illuminating only predetermined spot locations on the golf course and various hazards of each golf hole on the golf course;

providing illumination units each having a light beam for illuminating said spot locations;

maintaining the golf course, other than the illuminated predetermined spot locations, substantially unlit, so that substantially the entire fairway on each golf course hole remains unlit with a dark sky backdrop and a dark ground level, wherein each fairway extends from a tee location along a central axis to an associated golf green;

illuminating said spot locations with the illumination units while the light beams are directed away from the fairway central axis; and

playing golf with the glow-in-the-dark golf ball while only the spot locations around the perimeter of the golf course exist in an illuminated state thereby allowing the golfer to identify discontinuities and hazards in the golf course while at the same time maintaining a constant sharp illumination contrast between the glow-in-the-dark golf ball and the exterior light level along a standard flight trajectory and landing path for various locations on the fairway.

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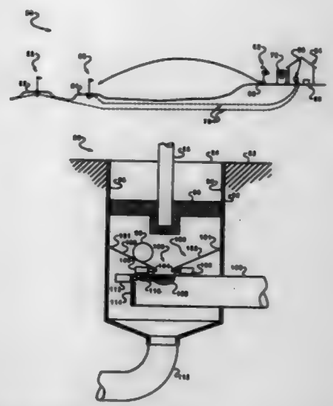
GOLF DRIVING RANGE, SYSTEM AND METHOD FOR RETRIEVING BALLS FROM TARGET CUP

Herbert P. Clark, Jr., P.O. Box 2155, Concord, N.H. 03302

Filed Aug. 25, 1994, Ser. No. 295,937

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—34 A **20 Claims**



1. A golf driving range comprising:

a conduit for transporting a golf ball, said conduit having a first end and a second end;

a golf green having a flag cup therein for receiving a golf ball;

a flag cup aperture, disposed within said flag cup, wherein said flag cup aperture is coupled to a first opening in said first end of said conduit;

a movably mounted door located at said flag cup aperture for selectively opening and closing said flag cup aperture;

an actuator coupled to said door for moving said door for selectively opening and closing said flag cup aperture;

a ball receptacle coupled to said second end of said conduit; and

a vacuum pump connected to said conduit at said second end for moving air through said conduit, wherein said golf ball may enter said flag cup, pass through said flag cup aperture when said door opens, move through said conduit when said vacuum pump moves air through said conduit, and be received in said ball receptacle.

5,445,375

GOTCHA BALL TOY

John R. Sweeny, 4828 Berridge, Dallas, Tex. 75227

Continuation of Ser. No. 996,063, Dec. 23, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,334

Int. Cl.[6] A63B *43/00*

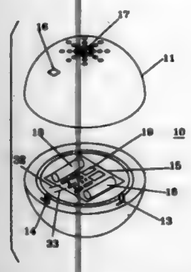
U.S. Cl. 273—58 E **15 Claims**

1. A ball toy device, comprising:

a hollow spherical housing;

an electronic module inside said housing for producing an audio signal selected from a randomly selected number and the word "gotcha",

a randomly self-selective time interval timer for activating said audio signal independent of any external input;



a switch for initiating the randomly self-selective time interval; and

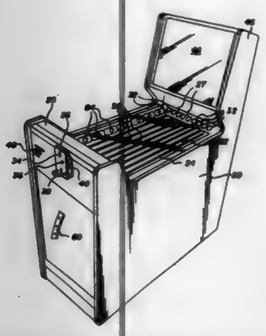
a circuit in said electronic module for turning off power to said electronic module after the audio signal has been activated.

5,445,376

CONVEYOR PLAYING SURFACE GAME

Lauran Bromley, Chicago, Ill., assignor to Bromley Incorporated, Northbrook, Ill.

Filed Jan. 14, 1994, Ser. No. 181,418
Int. Cl.[6] A63F *7/02*
U.S. Cl. 273—109 **20 Claims**



1. A game having a moving playing surface comprising:

(a) a housing having a player end and a target end and a transparent cover;

(b) a movable conveyor playing surface formed by an endless conveyor belt disposed between said player end and said target end and visible through said transparent cover said endless conveyor belt supported by at least two rollers and movable between said at least two rollers;

(c) an object chute for depositing an object at a selected location along the width of said movable conveyor playing surface;

(d) a target disposed at said target end of said movable conveyor playing surface; and

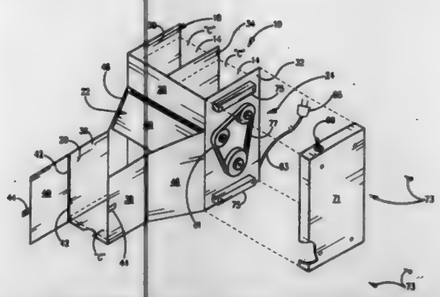
(e) microprocessor means for operating said game and awarding rewards based upon the level of difficulty in striking said target.

5,445,377

CARD SHUFFLER APPARATUS

James R. Steinbach, 9776 Orangewood Dr., Denver, Colo. 80221

Filed Mar. 22, 1994, Ser. No. 215,933
Int. Cl.[6] A63F *1/12*
U.S. Cl. 273—149 R **22 Claims**



1. A card shuffler apparatus adapted to be placed on a horizontal support surface and operative to combine a plurality of stacks of unshuffled cards into a single stack of shuffled cards, each stack of unshuffled cards having at least two cards, comprising:

(a) a card feeder compartment sized to accommodate the plurality of stacks of unshuffled cards in a juxtaposed relationship;

(b) a card receiver compartment sized to accommodate the single stack of shuffled cards and disposed below said card feeder compartment, said card receiver compartment including a pair of vertical receiver sidewalls spaced apart from one another in a parallel relationship and a card retainer structure extending transversely relative to said pair of receiver sidewalls;

(c) a deflector structure defining a chute disposed between and in communication with said card feeder compartment and said card receiver compartment, said deflector structure including a pair of deflector sidewalls converging from said card feeder compartment toward said card receiver compartment; and

(d) a card ejector mechanism associated with said card feeder compartment and operative to eject at least a single card in each stack of unshuffled cards disposed in said card feeder compartment into said chute so that ejected ones of the cards deflect into and descend in said card receiver compartment to accumulate therein until all cards are ejected from said card feeder compartment and are retained in said card receiver compartment, thereby forming the single stack of shuffled cards.

5,445,378

PLAYING CARD HOLDER

Frances M. Cook, 8301 Morgan Dr., Sarasota, Fla. 34238

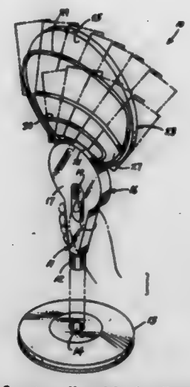
Filed Dec. 27, 1994, Ser. No. 364,735
Int. Cl.[6] A63F *1/10*
U.S. Cl. 273—150 **7 Claims**

1. A playing card holder comprising,

a rigid handle, the handle having a front wall spaced from a rear wall, and a handle lowermost end, and the handle extending into a support head spaced from the lowermost end, and the support head having a head front wall coplanar with the handle front wall, and the support head having a head rear wall coplanar with the handle rear wall, and the head having a head top wall spaced from the handle lowermost end, and the head top wall having fixedly secured thereto a support plate, the support plate having a support plate rear wall spaced from a support plate front wall, and the support plate front wall is spaced from the handle front wall, and

an axis symmetrically directed through the handle and the support head, and the axis spaced from the support plate front wall, and

a pocket member secured fixedly to the support plate front wall, the pocket having a pocket front wall spaced from the support plate front wall and spaced from the handle front wall, and a first spring means arranged to engage the



support plate front wall, with the first spring means secured to the support head top wall, and

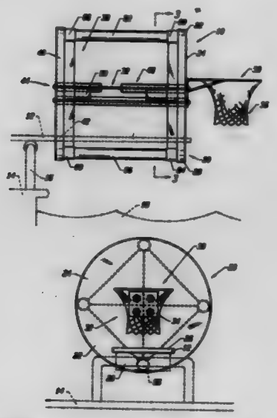
a second spring means secured to the support head top wall arranged for bias engagement of the pocket front wall, and wherein the first spring means defines a first spring wire support member, and the second spring means defines a second spring wire support member.

5,445,379

GAME ACCESSORY FOR A DIVING BOARD

Francis R. Recore, P.O. Box 959, Yuba City, Calif. 95991

Filed Jun. 27, 1994, Ser. No. 266,215
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—1.5 R **6 Claims**



1. A game accessory used in combination with a diving board associated with a pool, comprising:

a. a support including at least a first plate having an aperture therethrough for encompassing a diving board and supporting said plate to the diving board, said plate including a surface oriented substantially vertically relative to the diving board;

b. a hoop affixed to the vertical surface of the first plate to extend outwardly from the diving board; and

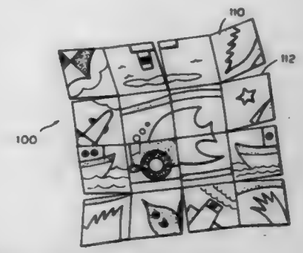
c. brace means for maintaining said plate in a vertical orientation, said brace adapted to be connected to the diving board.

5,445,380

FOLDING PICTURE PUZZLE

Nathan Polsky, 8020 Muirhead Cir., Boynton Beach, Fla. 33437

Filed Jun. 8, 1994, Ser. No. 257,107
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—155 **25 Claims**



1. A folding picture puzzle comprising:

a rectangular base sheet having two playing sides, at least one of said playing sides being provided with indicia,

said base sheet being completely divided into at least sixteen squares of equal and uniform size by a combination of horizontally and vertically oriented hinge lines and cuts,

said squares being held together as a contiguous piece by said hinge lines with said hinge lines joining at least one side of each square to an adjacent square, at least some of said hinge lines being oriented vertically and at least some of said hinge lines being capable of hinging in both directions,

said cuts, at least some beginning at an edge of said base sheet and extending a distance measured as a discrete multiple of square length toward an opposite edge of said base sheet, completely separating adjacent squares and facilitating bi-directional folding of said squares along said hinge lines whereby two or more of said squares provided with indicia cooperate to form an assembled image on one of said playing sides, at least some of said cuts being oriented horizontally,

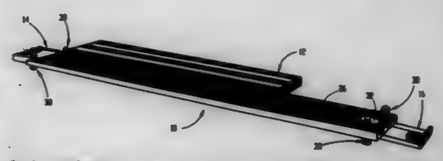
said squares cooperating in combinations to form one or more assembled images on at least one of said playing sides.

5,445,381

ALL SEASON PUTTING SYSTEM

Floyd Van Ert, 1401 SW. 7th St., Atlantic, Iowa 50022

Filed Nov. 29, 1994, Ser. No. 345,993
Int. Cl.[6] A63B *67/02*
U.S. Cl. 273—176 H **18 Claims**

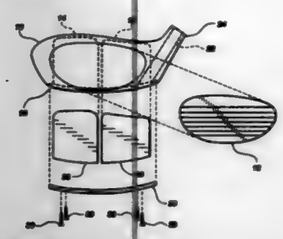


1. A putting green for use in putting golf balls, comprising:

an elongated plank having a top wall and a plurality of depending, longitudinally extending ribs;

a putting surface supported on the top wall and presenting four corners;
a hole extending through both the putting surface and the top wall and being sized for receipt of the golf balls; and
leg means for independently adjusting the height of the putting surface at each corner,
wherein the ribs stiffen the top wall against sagging along the length of the plank while allowing the top wall to twist under the weight of the plank to accommodate adjustment of the leg means.

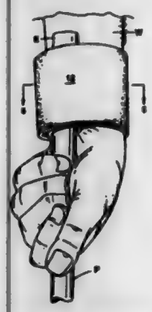
5,445,382
GOLF CLUB HEAD OF ENTANGLED FIBER REINFORCED PLASTIC
Terry V. Pearce, Sandy, and Tony M. Pearce, Alpine, both of Utah, assignors to Edo Sports, Inc., Salt Lake City, Utah
Filed Jan. 26, 1993, Ser. No. 9,450
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—167 R **23 Claims**



14. A golf club head comprising:
a shell having a hollow interior portion and a face plate portion, the shell fabricated substantially in the exterior shape of golf club head from a thermoplastic material, the shell having a striking surface which receives the force of a golf ball when struck by the golf club head when the golf club head is swung;
means for receiving a golf club shaft;
means for receiving a sole plate;
means for receiving a face plate;
a sole plate;
a first plurality of reinforcement fibers dispersed within the thermoplastic material, each one of the first plurality of reinforcement fibers having a length of at least about four millimeters, the first plurality of reinforcement fibers being oriented in a first direction, the first direction being substantially perpendicular to the striking surface; and
a second plurality of reinforcement fibers dispersed within the thermoplastic material, each one of the second plurality of reinforcement fibers having a length of at least about four millimeters, the second plurality of reinforcement fibers being oriented in directions which are substantially nonperpendicular to the first direction and at least some of the reinforcement fibers of the first plurality of reinforcement fibers and the second plurality of reinforcement fibers being entangled with each other.

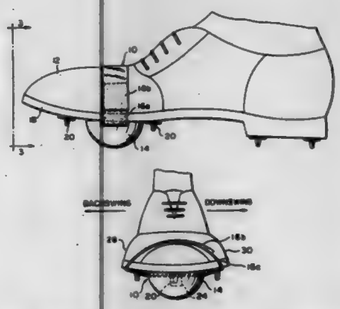
5,445,383
PUTTING STROKE STABILIZING DEVICE
Richard F. Gleason, Jr., 67 Stadium Way, Allston, Mass. 02134
Filed Jan. 21, 1994, Ser. No. 185,116
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—187.2 **2 Claims**

1. A device for stabilizing the putting stroke of a golfer, comprising:
a non-extensible strap made of double sided loop material said strap having a first end defining a fixedly formed sleeve for receiving a golf club handle and a second free end, said strap having a length adequate to extend about a golfer's wrist; and



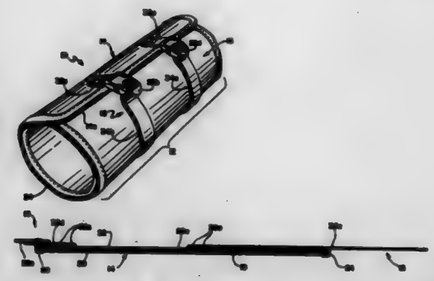
hook means on said second free end for securing said second free end to said loop material and stabilizing the wrist of a golfer's first hand placed about the golf club handle.

5,445,384
GOLF TRAINING DEVICE
Drew A. Yancey, Scottsdale, Ariz., assignor to Southwest AES Inc., Scottsdale, Ariz.
Filed Oct. 26, 1993, Ser. No. 141,080
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—188 A **7 Claims**



1. A golf training device for creating proper transfer of weight from the forward foot closest to the target to the rear foot during the backswing and back to the forward foot during the downswing, comprising:
a body at least one part of which is generally hemispherical and has a diameter, and a further, generally opposite part which is generally flat, said flat part being coextensive in dimension with said diameter of said hemispherical part, said flat part being adapted to engage the shoe sole of a user of the device intermediate the sides of the shoe and generally in the region of the ball of the forward foot of the user, the hemispherical part of said device adapted to engage the ground and provide a curved surface which can roll over the ground during the backswing and downswing so as to magnify the feeling of weight shift from and back to the forward foot during the swing;
strap means attached to said body, said strap means being of sufficient length to extend upwardly over the top of the shoe and be pulled taut to firmly secure said body in its mounted position; and
securing means provided on said strap means for maintaining said strap means in taut condition firmly securing the body in place.

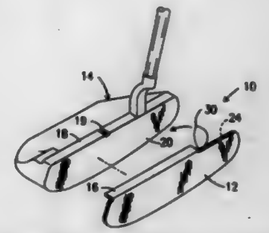
5,445,385
GOLF TRAINING DEVICE
Gary A. Brooks, P.O. Box 58, Twin Lakes, Wis. 53181
Filed May 9, 1994, Ser. No. 239,594
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—189 A **4 Claims**



1. A golf training device comprising: a generally rectangular laminated body, said body having a length dimension so as to define a generally rectilinear upper portion adapted to be disposed above a user's elbow and a generally rectilinear lower portion generally coplanar with said upper portion and adapted to be disposed below the user's elbow, said body having a width dimension sufficient to enable the body to completely encircle the user's arm and said body being generally uniformly flexible so as to permit said body to be formed into a contractable tubular sleeve without pronounced hinge points and adapted to fit over the user's arm with opposite side margins of said body in overlapped relationship relative to one another; first and second strap means on the outer surface of said body and associated and generally parallel with the upper and lower portions of said body, respectively, for constricting the diameter of said tubular sleeve to dispose and maintain the interior thereof in close fitting conformity with the golfers arm disposed therein, said first and second strap means being independently adjustable whereby said upper and lower portions of said body can be constricted differing amounts to accommodate arm portions of varying and different dimensions; and said laminated body including an inner cushion layer adapted to be disposed adjacent to the user's arm and a rigidifying layer for maintaining said body in the form of said tubular sleeve to minimize bending of the user's elbow during a golf stroke, said layers being generally coextensive with said body and extending from one side margin of said body to the other and from said upper body portion to said lower body portion.

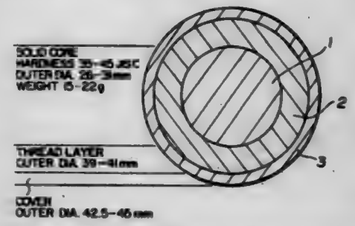
5,445,386
DEVICE FOR CHANGING HARDNESS OF PUTTER STRIKING FACE
Perry C. Marshall, 103 Granada Ct. North, Plant City, Fla. 33566
Filed Sep. 21, 1994, Ser. No. 310,128
Int. Cl.[6] A63B *69/36, 53/04*
U.S. Cl. 273—194 A **6 Claims**

1. A device that changes the characteristics of the striking face of a putter, comprising:
a first part of flat construction, said first part made of a preselected material having a hardness different from a hardness of a putter, and said first part having a front surface and a rear surface;
alignment means for aligning said first part with a striking surface of a putter so that said first part is placed into overlying relation to said striking surface;
said alignment means having a second part of flat construction, said second part made of the same preselected material as said first part and said second part being formed integrally with said first part;
said second part being bent at a ninety degree angle relative to a plane containing said first part;
said second part having a depth sufficient to overlie a top edge of a putter; and



means for attaching said rear surface of said first part to a striking surface of a putter;
whereby the characteristics of a striking face are changed upon attachment of a device to said putter.

5,445,387
THREAD-WOUND GOLF BALL
Takashi Maruko, Yokohama, and Toshio Chikaraishi, Akishima, both of Japan, assignors to Bridgestone Sports, Co., Ltd. of 45, Tokyo, Japan
Filed Dec. 17, 1993, Ser. No. 168,145
Claims priority, application Japan, Dec. 21, 1992, 4-356342
Int. Cl.[6] A63B *37/06*
U.S. Cl. 273—216 **5 Claims**



1. A thread-wound golf ball comprising; a generally spherical solid center, a thread rubber layer enclosing the center, and a cover thereon, wherein:
said solid center has a single structure having a center portion and an outer surface portion and is gradually increased in hardness from the center portion to the outer surface portion, the difference in hardness between the center and 2 mm inside the outer surface being at least 4 in JIS C scale hardness, said solid center at the center has a hardness of 35 to 45 on JIS C scale.

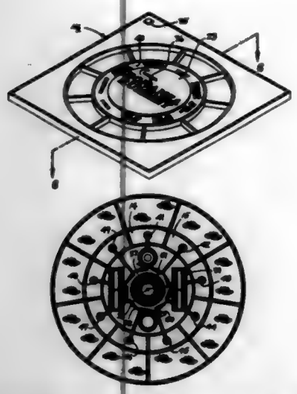
5,445,388
ILLUMINATED PLAYING CARD BOARD GAME APPARATUS
William R. Mitchell, 321 Oak Leaf Cir., Lake Mary, Fla. 32746
Filed Oct. 4, 1993, Ser. No. 130,688
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—237 **1 Claim**

1. A playing card board game apparatus for use by a plurality of players in combination with a deck of playing cards, said playing cards arranged for distribution to said players, wherein said apparatus comprises,
a game board, the game board having a game board wall spaced from a game board bottom wall, and
an annular array of playing spaces on said top wall, to in-

clude at least a first and a second playing space, with a central playing space medially of said annular array of said playing spaces, wherein the first and second playing spaces indicate instructions in play of a game to include said playing cards, and a plurality of chips arranged for distribution to said players, said playing spaces receiving at least one of said chips from said players, and

a plurality of recessed pockets in annular array exteriorly of said annular array of playing spaces is positioned within said game board through said top wall, with a first pocket adjacent said first playing space and a second pocket adjacent said second playing space, and

an on/off switch directed through said top wall in electrical communication with at least one battery mounted in adjacency to said bottom wall, and a rotary cylindrical switch plate positioned medially and coaxially of said central playing space medially of said annular array of playing spaces with said switch plate in electrical communication with said at least one battery through said on/off switch,



with said switch plate having an annular array of teeth about a periphery of the switch plate, and a spring leg operatively associated with said game board in biased continuous contiguous communication with at least one of said teeth, and said annular array of playing spaces include a continuous translucent panel, a contact leg secured to the switch plate in electrical communication with said at least one battery through said on/off switch, with a first illumination bulb positioned adjacent said first playing space adjacent said game board bottom wall, and a second illumination bulb positioned adjacent said second playing space adjacent said bottom wall, wherein said rotary cylindrical switch plate includes a shaft extending fixedly to said switch plate coaxially thereof and through said top wall in rotary relationship such that upon rotating said rotary shaft and said switch plate effects displacement of said contact leg relative to and in electrical communication with said first and second illumination bulbs selectively to effect selective illumination of said first and second illumination bulb.

5,445,389

FUTURISTIC BOARD GAME

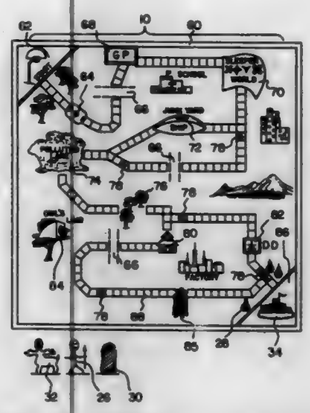
Walter C. Jeffreyes, Jr., 2412 W. Presbury St., Baltimore, Md. 21216

Filed Sep. 16, 1994, Ser. No. 307,191
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—243 **1 Claim**

1. A futuristic board game for allowing players to unite against and attempt to defeat an alien dimensional traveler comprising, in combination:

a story page and rule book combination with the story page providing a fictional backdrop and the rule book providing rules of play;

twenty two game pieces including a group of five hero game pieces and seventeen villain game pieces, the hero game pieces identified as Offshoots with each hero game piece in the group identified as Changin, Geodesic, Hoop, Laptop and Sleeper and with Changin representing a female who has the ability to assume other forms and who loves fashions, Geodesic representing a female who is able to find the shortest route between two points, Hoop representing a living basketball that can deflate and expand to a finite Size, Laptop representing a male who has a powerful computer arm and possesses martial arts abilities, and Sleeper representing a male who is able to enter and navigate a dream world, and with each hero game piece further representing a player, the villain game pieces including four Rasper game pieces representing semi-gaseous creatures, one Hero-crusher game piece representing an entity who can revive during a course of a game if previously destroyed, ten Phantom Soldier game pieces representing soldiers, one Sinklow game piece representing an alien dimensional traveler, and one Starship Castle game piece representing the home of the Sinklow game piece, and with the Rasper, Hero-Crusher, and Phantom Soldier game pieces serving as minions to the Sinklow game piece;



an essentially rectangular and planar game board bearing a starting space depicted as a basketball goal positioned at an upper left corner of the game board and representing an initiation of a journey for each player, a Playground situation space depicted as a basketball court positioned on an upper left quadrant of the game board, a plurality of Time Door situation spaces depicted as a pair of parallel dashed lines positioned on a central portion of the game board, a Game Preserve situation space depicted as a rectangular box with letters GP located therein and positioned on a central upper extent of the game board, a Sleeper's World situation space depicted as an enclosed curve with word SLEEPER WORLD located therein and positioned on an upper right quadrant of the game board, a Junkyard/Ship situation space depicted as a spaceship and positioned on the central extent of the game board, a Polluted Lake situation space depicted as a lake and positioned in the upper left quadrant of the game board, a City Park situation space depicted as a plurality of trees and positioned within the central extent of the game board, a plurality of Attack situation spaces each depicted with a 5 or a 6 and positioned within a lower central extent and a lower right quadrant of the game board, a Question House situation space depicted as a house and positioned within a central extent of the game board, a Danger Door situation space depicted as a set of doors and positioned within the lower right quadrant of the game board, an Owl's Lair situation space depicted as a nest within a tree and positioned within the lower left quadrant of the game board, a Hero-Crusher situation space depicted as a silhouette of a caped man and positioned within the lower central extent of the game board, a Starship situation space depicted as a triangle and positioned within a lower right corner of the game board and representing a conclusion of the journey for each player, and a plurality of rectangular blank traveling spaces interconnected between the situation spaces, and wherein movement and actions of a hero game piece upon reaching a situation space is set forth by the rules of play within the story page and rule book combination;

five dice each having a box shape with six faces, the faces of each die bearing dotted indicia from 1 to 6 respectively and with the dice rollable for controlling movement of the game pieces upon the game board; and

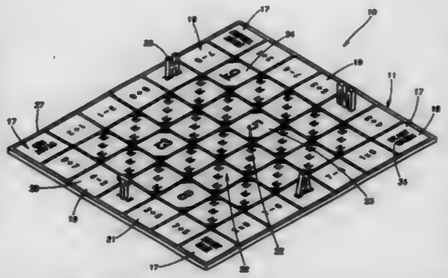
forty-eight playing cards separated into five stacks with the first stack having thirteen Sinklow cards and with each Sinklow card supplying an instruction to move one of the game pieces to another space on the game board, the second stack having eleven Question House cards and with each Question House card posing a geographical-type question or supplying an instruction to move one of the game pieces to another space on the game board, the third stack having ten Game Preserve cards and with each Game Preserve card supplying an instruction to roll the dice or an instruction to move one of the game pieces to another space on the game board or a geographical fact, the fourth stack having eight Visit the Owl cards and with each Visit the Owl card supplying a geographical fact, and the fifth stack having six Junkyard/Ship cards and with each Junkyard/Ship card supplying an instruction to move one of the game pieces to another space on the game board or directing that one of the players receives extra rolls of the dice or commanding that one of the players fights some of the villains.

5,445,390

MATHEMATICAL BOARD GAME APPARATUS

Kris R. Dutton, 22721 NE. Halsey, #109 N., Troutdale, Oreg. 97060, and Linda C. Rothlisberger, 1460 N. 62nd St., Mesa, Ariz. 85205

Filed Jan. 3, 1995, Ser. No. 368,025
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—243 **17 Claims**



1. A mathematical Board Game for a plurality of players comprising:

(a) a rectangular game board having a plurality of card stations arranged in a matrix of horizontal and vertical rows;

(b) the plurality of card stations comprising:

a start card station in each corner of the board;

a plurality of problem card stations in a perimeter of the board between the start card stations; and

a plurality of answer card stations on the board;

(c) a start card removably placed in each of the start card stations;

(d) a first indicia surface on the start card;

(e) each start card being of a different color;

(f) a problem card removably placed in each one the problem card stations;

(g) a second indicia surface on the problem card;

(h) a mathematical problem on the second indicia surface of each problem card;

(i) an answer card removably placed in each one of the answer card stations;

(j) a third indicia surface on the answer card;

(k) a mathematical answer, on the third indicia surface, to one of the mathematical problems on the second indicia surface of one of the problem cards;

(l) a plurality of position tokens removably and selectively placed on the start cards and on the problem cards; and

(m) a set of dice to randomly select which player of the plurality of players will move one of the position tokens before another player moves another one of the position tokens.

5,445,391

MULTI-INDICIA PLAYING CARDS

Richard F. Gleason, Jr., 67 Stadium Way, Allston, Mass. 02134

Continuation-in-part of Ser. No. 770,580, Oct. 3, 1991, Pat. No. 5,280,916. This application Nov. 24, 1993, Ser. No. 157,835
Int. Cl.[6] A63F *1/04, 3/06*
U.S. Cl. 273—304 **8 Claims**



5. A deck or representation of a deck of playing cards, each of said cards being of generally the same rectangular size and having visually-similar rear faces, the face indicia of each card comprising:

first indicia representative of the suit and rank of a standard playing card denomination;

second indicia chosen independently of said first indicia, the second indicia of each card being different from the first and second indicia of all other cards of said deck.

5,445,392

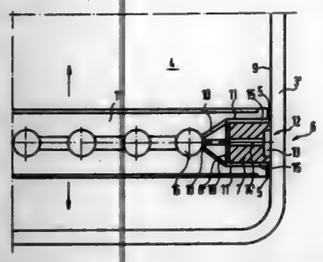
APPARATUS FOR SEALING A CLEARANCE

Gerhard Brückner, München, Germany, assignor to MTU Motoren- Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Nov. 23, 1992, Ser. No. 980,193
Claims priority, application Germany, Nov. 26, 1991, 41 38 784.8
Int. Cl.[6] F16J *15/16*
U.S. Cl. 277—27 **20 Claims**

1. Apparatus comprising first and second components in relative movement with respect to one another, and having a clearance therebetween, and a sealing strip arranged between the two components to be movable in a direction transverse to the direction of relative movement to bear against a sealing face of the first component to seal the clearance, wherein the sealing strip is allowed to float in a groove in the second component on a fluid flowing all around between the groove and

the sealing strip and is urged by the fluid against the first component without any mechanical devices acting on the sealing strip in a direction toward the first component, wherein



the fluid is channeled into the groove through feed ducts in the second component, and wherein the operating pressure of the fluid exceeds the ambient pressure surrounding the components.

5,445,393

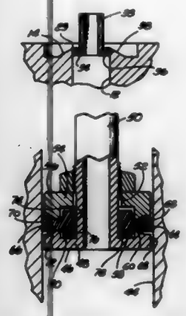
PENETRATION LIMITING GLAND AND METAL GASKET

Fred G. Ramberg, Villa Park, Calif., assignor to Bostec Engineering, Palos Verdes Peninsula, Calif.

Division of Ser. No. 190,727, Feb. 2, 1994, which is a continuation of Ser. No. 951,360, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 698,011, May 9, 1991, abandoned. This application Oct. 27, 1994, Ser. No. 330,519

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—167.5 **5 Claims**



1. A sealing device for engaging a gasket in a fluid path to prevent leakage of fluid past said gasket, comprising:

a gasket comprising an annular disk formed with a central opening and with an annular flange thicker than said disk, integral with the central opening edge of said disk and extending from both sides of said disk; and

a pair of bases, each in the form of an annulus, the circumferences thereof defining cylindrical surfaces, each base having an integral annular ridge on a face surface adjacent its cylindrical surface, at least one of said ridges defining in cross-section an acute angle terminating in a sharp edge formed to penetrate a surface of said gasket;

the respective ridges and face surfaces of said bases being directly opposite each other in confronting relationship whereby to define a receptacle for enclosing opposite sides of the flange of said gasket whereby to limit and control the extent of penetration by said ridges while enabling radially outward disk portions of said gasket to extend beyond the circumferences of the bases.

5,445,394

SEALING MEANS BETWEEN A PRESSURIZED CHAMBER AND A LUBRICATED CHAMBER

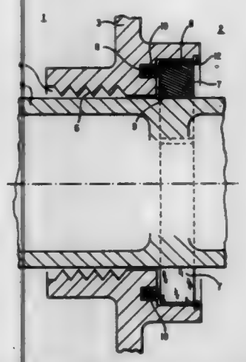
Guy F. P. Dusserre-Telmon, Sivry-Courtry, and Daniel G. Ploua, Vulaines sur Seine, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation (SNECMA), Paris, France

Filed Mar. 2, 1993, Ser. No. 24,775

Claims priority, application France, Mar. 4, 1992, 92 02578

Int. Cl.[6] F16J *9/24*

U.S. Cl. 277—173 **15 Claims**



1. Sealing means (7,22) located between a pressurized chamber (2) and a lubricated chamber (1) and around a shaft (5) extending into the pressurized and the lubricated chambers and through a wall (3,20) separating the two chambers, a clearance between the pressurized and the lubricated chambers being provided between the wall and the shaft, characterized in that a seal is fitted so as to slide on the shaft between two abutment positions, springs (10,13,28) being provided for forcing back the seal towards the pressurized chamber in such a way that when pressurization in the pressurized chamber reaches a predetermined value the seal occupies a first abutment position, where it partly obstructs the clearance and that the seal occupies the second abutment position when the pressurization is below the predetermined value creating a larger clearance being left between the pressurized and the lubricated chambers.

5,445,395

SEALING DEVICE FOR A QUICK-CONNECTION COUPLING HAVING CLAWS OR A CLAMP

Yves Combot-Courrau, Thorigne Fouillard; Benoît Le Saint, Rennes; Jean-Noël Musellec, Rennes, and Philippe Le Quere, Rennes, all of France, assignors to Legris S.A., Rennes, France

Filed Mar. 18, 1994, Ser. No. 210,389

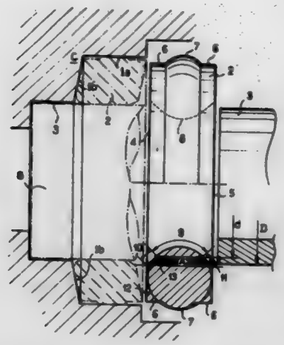
Claims priority, application France, Mar. 19, 1993, 93 03197

Int. Cl.[6] F16J *15/24*

U.S. Cl. 277—201A **4 Claims**

1. A sealing device for a tube housed in a bore of a body, in particular a quick-connection coupling, said bore including a cylindrical bearing surface and a shoulder, and the device comprising a gasket extending between the tube and the cylindrical bearing surface and having a cylindrical annular body defined by two parallel radial faces, an outer cylindrical surface and an inner surface wherein said outer cylindrical surface is surmounted by a partially toroidal bulge centered on a mid-

plane of the gasket parallel to said radial faces, and wherein said inner surface has a central toroidal portion centered on the



midplane which is connected to each of the radial faces via a respective chamfer-forming conical surface.

5,445,396

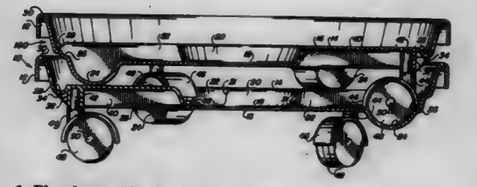
NESTABLE DOLLY CONSTRUCTION

Pavel Sebor, Transvall, South Africa, assignor to Gale Group, Inc., Apopka, Fla.

Filed Aug. 9, 1993, Ser. No. 104,220

Int. Cl.[6] B62B *3/16*

U.S. Cl. 280—33.998 **16 Claims**



1. Plural nestable dollies, each dolly comprising:

a platform having opposing first and second surfaces;

plural wheel assemblies, each wheel assembly fitted with the second surface and spaced from the other wheel assemblies so as to permit the platform to receive an article on the first surface and to be rolled about;

each platform having plural wheel wells spaced laterally between adjacent wheel assemblies across the first surface; and

the wheels and wheel wells being spaced and dimensioned so that when an upper dolly and a lower dolly are nested together, the wheel wells of the upper dolly rest upon the first surface of the lower dolly and the wheels of each assembly of the upper dolly extend into, and are removably affixed within a corresponding wheel well of the lower dolly.

5,445,397

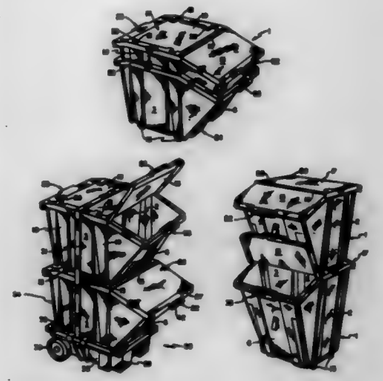
STACKABLE REFUSE CONTAINER SYSTEM

David Evans, Acton, Mass., assignor to Tucker Homewares, Inc., Leominster, Mass.

Continuation of Ser. No. 159,043, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 997,104, Dec. 24, 1992, abandoned, which is a continuation of Ser. No. 535,850, Jun. 11, 1990, abandoned. This application May 2, 1994, Ser. No. 236,238

Int. Cl.[6] B62B *1/12, 1/16*

U.S. Cl. 280—47.18 **13 Claims**



1. A stackable container adapted to nest in, stack on top of, and stack below another similarly constructed container comprising:

a container body having a bottom and front, back and side walls and an open top, said side walls each having an inner periphery and a top edge, the front wall of the container being angled downwardly and inwardly relative to the other walls of the container body, and the top edge of a front portion of each of the side walls sloping downwardly, the container walls sloped inwardly to permit said nesting of the container in said other container;

a continuous flange forming a border around the open top;

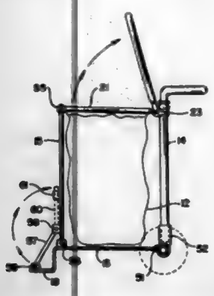
mating means on said container walls for stacking said other container thereon, said mating means comprising at least one socket on at least one of said walls of the container and formed as part of the inner periphery of the wall, said at least one socket being sized to accept from the other container at least one foot of the same size and comparable shape, said foot extending downwardly from at least one wall of the other container;

at least one handle including a first forwardly extending portion with a vertical projection of generally U-shaped cross-section spaced away from the container body for gripping; and

a removable lid having back, side and front edges, and sized to fit the open top and having a mating flange defining a periphery thereof along the lid back and side edges, the mating flange having a recess sized to accept the continuous flange of the container body therein, the lid further having a front portion hingedly attached to the lid front edge, the flange on the container front having an outwardly extending lip and said lid front portion having a forwardly extending portion, and an opening sized to accept the flange lip therein for locking the lid to the container;

whereby access into the container, when said other container is stacked thereon, is provided at the container body open top, along the downwardly inwardly sloping front wall, and between the side wall front portions of the container and adjacent the downwardly inwardly sloping front wall of the other container.

5,445,398
UTILITY CART WITH VACUUM ADAPTOR
Patrick S. Pierce, 510 Woodsgrove Rd., Marietta, Ga. 30067
Filed Mar. 2, 1994, Ser. No. 205,591
Int. Cl.[6] B62B *1/06*
U.S. Cl. 280—47.26 5 Claims



1. A device for holding and transporting bags, the device comprising:
(a) a support ring, the support ring being circular shaped and being of a size and shape such that a rim of a bag can be lapped over the support ring when the bag is inserted into the ring, the ring being pivotally connected to a frame for supporting the support ring in a horizontal position above the ground;
(b) a ring clamp for clamping the rim of the bag to the support ring, the ring clamp being circular shaped and having a "C" shaped cross section to clamp over the ring and therefore clamp the rim of the bag to the support ring, the ring clamp being pivotally connected to the frame; anti wherein the frame comprises a main column, a bottom support shelf pivotally connected to the main column, a vertical support pivotally connected to the support ring and the bottom support shelf, two wheels rotatably connected to the main column, and a support leg for supporting the frame in a rest position on the ground and preventing unwanted motion;
(c) a brace which locks the frame in an operating position wherein the support ring and bottom support shelf are in a horizontal position, the brace being unlocked to allow the frame to be folded in a storage position wherein the support ring and bottom support shelf are in a generally vertical position; and
(e) a handle connected to the frame which can be rotated in a horizontal plane for storage.

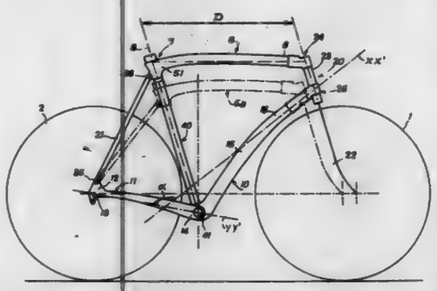
5,445,399
RETRACTABLE HAND TRUCK HAVING POSITIVE LEG LOCK
Frank S. Salvucci, Sr., 13714 Garden Rd., Pearland, Tex. 77581
Filed Aug. 17, 1993, Ser. No. 107,003
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—47.27 13 Claims

1. A hand truck comprising:
a retractable leg having a proximal end and a distal end,
main body means including a frame, at least one wheel attached to said frame, and a load platform attached to said frame, said retractable leg being pivotally attached to said frame at said proximal end, and
retractable leg securement means for locking said retractable leg in a deployed condition, said securement means further comprising a slide attached to said main body, and a tab attached to said retractable leg, said tab including means defining an aperture therein, said slide including rod means disposed within said aperture and captively retaining said tab, said aperture constraining said rod means against lateral movement therebeyond,
said slide extending in a substantially horizontal direction when said retractable leg is in a deployed condition, and said slide pivoting to extend in a substantially vertical direction when being moved to a stowed condition, both said directions being defined when said hand truck is supported in an upright orientation on a horizontal surface,
said slide defining an enclosed space including a trapezoidal



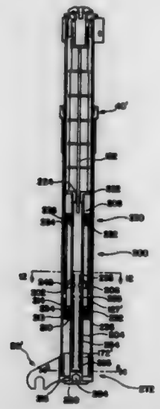
latching end having a front end facing said retractable leg and a rear end facing said main body means, said front end disposed at an inclination with respect to a vertical direction, said rear end disposed at an inclination with respect to a vertical direction opposite said front end, whereby said slide, when dropping by gravity through said aperture, engages said tab in a camming action and pushes said retractable leg to a deployed condition.

5,445,400
CYCLE FRAME
Pierre A. Martin, Quartier les Roches, 26270 Loriol; Christian Pascaud, 8, rue Jules Ferry, 07250 Le Pouzin, and Jean-Marie Riffard, 7, les Charmilles, 26250 Livron, all of France
Filed Mar. 15, 1994, Ser. No. 212,847
Claims priority, application France, Mar. 16, 1993, 93 03235
Int. Cl.[6] B62K *19/16, 19/30*
U.S. Cl. 280—281.1 14 Claims



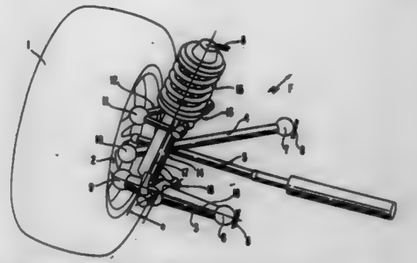
1. A cycle frame having adjustable desired length and height comprising:
a molded top member including a front terminal portion and a rear assembly portion, said rear assembly portion constituting a socket for receiving a saddle tube, said front terminal portion having an associated length that evinces a constant, polygonal-shaped cross-section;
a unitary molded bottom member including a rear fork provided with rear terminal portions defining beating slots for receiving an axle of a rear wheel, a crown section spaced from said rear terminal portions, and a sloping member that extends up from said crown section, said sloping member including a front terminal portion, remote from said crown section, having an associated length that evinces a constant, polygonal-shaped cross-section;
a first lug including a first sleeve portion, said first sleeve portion being adapted to receive the front terminal portion of said top member;
a second lug including a second sleeve portion, said second sleeve portion being adapted to receive the front terminal portion of said sloping member;
a tubular member having an associated length, said tubular member interconnecting said first and second lugs and constituting a steering swivel socket of said cycle frame;
a pair of stays interconnecting the rear assembly portion of said top member and the rear terminal portions of said rear fork;
a crank socket located at the crown section of said bottom member; and
a spacer member extending between the rear assembly portion of said top member and the crown section of said bottom member, wherein the desired length of said cycle frame can be readily altered by cutting the front terminal portions of said top and bottom members and the desired height of said cycle frame can be readily altered by cutting said pair of stays, said tubular member and said spacer member.

5,445,401
SUSPENSION FORK FOR BICYCLES
E. Douglas Bradbury, Colorado Springs, Colo., assignor to Manitou Mountain Bikes, Inc., Colorado Springs, Colo.
Continuation-in-part of Ser. No. 116,683, Sep. 7, 1993. This application May 10, 1994, Ser. No. 241,050
Int. Cl.[6] B62K *25/08*
U.S. Cl. 280—276 42 Claims



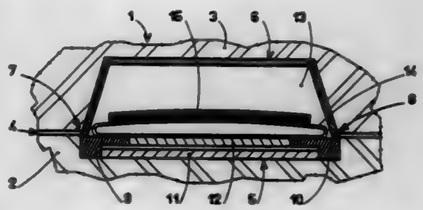
39. A bicycle fork for interconnecting a bicycle wheel to a bicycle frame, said bicycle fork comprising:
at least one leg assembly comprising first and second leg members slidably engaged with each other, said at least one leg assembly being compressible by relative movement of said first and second leg members toward each other, and being expandable by relative movement of said first and second leg members away from each other;
biasing means for providing a biasing force when said at least one leg assembly compresses, said biasing means including at least one elastomer;
damping valve means for providing a damping force to resist relative movement between said first and second leg members.

5,445,402
VEHICLE WHEEL SUSPENSION HAVING DISPLACED DAMPER-LINK CORRECTION
Wolfgang Matschinsky, Munich, Germany, assignor to Bayerische Motoren Werke AG, Germany
Filed Sep. 12, 1994, Ser. No. 302,984
Claims priority, application Germany, Sep. 15, 1993, 43 31 366.3
Int. Cl.[6] B60G *3/18, 15/06*
U.S. Cl. 280—667 4 Claims



1. Vehicle wheel suspension system comprising:
a wheel carrier supporting a vehicle wheel,
a transverse link connecting a lower area of the wheel carrier and a vehicle body,
an A-arm connecting an upper area of the wheel carrier to a damper with a substantially horizontally extending pivot axes between the damper and the A-arm,
said damper supporting at its upper end the vehicle body in an articulated manner, said damper being connected at its lower end to the transverse link so as to be pivotable about a substantially longitudinally extending damper-link connection axis,
and a bearing spring surrounding and supported on the damper,
said damper having a center axis extending longitudinally of the damper,
wherein the damper-link connection axis is displaced toward the vehicle center with respect to the damper center axis.

5,445,403
SKI STRUCTURE FORMED BY INJECTION PROCESS
Jean-Mary Cazaillon, Cran Gevrier, and Bernard Chatellard, Veyrier du Lac, both of France, assignors to Salomon S.A., Metz-Tessy, France
Continuation of Ser. No. 875,645, Apr. 29, 1992, abandoned, which is a division of Ser. No. 607,356, Oct. 31, 1990, Pat. No. 5,273,696. This application Oct. 22, 1993, Ser. No. 139,867
Claims priority, application France, Nov. 22, 1989, 89 15665
Int. Cl.[6] A63C *5/00, 5/14*
U.S. Cl. 280—610 19 Claims



1. A ski having a composite structure comprising at least one lower element and at least one upper element affixed to one another by a core of cellular foam, wherein a distinct adhesive deformable and stretchable polymer membrane is positioned at

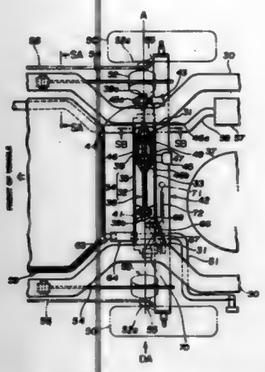
an interface between said cellular foam and at least the upper element, said upper element having an inverted U-shaped section having upper and side walls and comprising an upper mechanical reinforcement element forming at least partially on the lower surface of said upper element, said distinct adhesive polymer membrane at least partially defining a foam containment area and adhering to surfaces along said upper wall and downwardly along said side walls of said inverted U-shaped section of said upper element, said foam containment area comprising means for completely containing the foam within said area.

5,445,404

AXLE BEAM TYPE SUSPENSION ARRANGEMENT FOR AUTOMOTIVE VEHICLE

Kazuki Shida, Atsugi, and Yuji Onda, Isehara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1993, Ser. No. 103,537
Claims priority, application Japan, Sep. 11, 1992, 4-243589
Int. Cl.[6] B60G *21/00*
U.S. Cl. 280—689 **7 Claims**



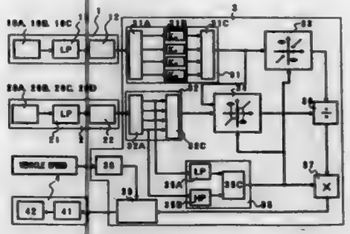
1. An axle beam suspension arrangement for an automotive vehicle comprising:
an axle beam supporting right and left rear wheels;
a vehicle body member of an inverted triangular shape, constituting part of a vehicle superstructure, arranged between a pair of rear frame side members extending longitudinally of the vehicle, said vehicle body member including a portion projecting toward said axle beam;
a panhard rod having first and second ends, said panhard rod being attached at the first end to said vehicle body member and at the second end to said axle beam, a connection between said panhard rod and said vehicle body member being located within a preselected range around a central portion of the vehicle in a transverse direction thereof and also within a range defined by lines extending in a longitudinal direction of the vehicle through a periphery of a spare pan provided behind said axle beam for storing therein a spare tire;
an assist link connected at one end thereof to a portion of said panhard rod between the first and second ends and the other end thereof to said axle beam;
absorbing means, interposed between the second end of said panhard rod and said axle beam, for absorbing relative displacement between said panhard rod and said axle beam in a lengthwise direction of said panhard rod; and
right and left struts which are attached at upper ends thereof to upper ends of right and left strut housings formed on a floor pan and which are secured at lower ends thereof to said axle beam, a connection between said panhard rod and said vehicle body member being transversely aligned with both connections between the upper ends of said struts and said strut housings.

5,445,405

SUSPENSION CONTROL APPARATUS

Satoru Onozawa, Anjo; Naoki Yamada, Aichi; Shigetaka Isogai, Chiryu, and Kazuo Ogawa, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Apr. 19, 1994, Ser. No. 229,747
Claims priority, application Japan, Apr. 20, 1993, 5-117741
Int. Cl.[6] B60G *17/015*
U.S. Cl. 280—707 **25 Claims**



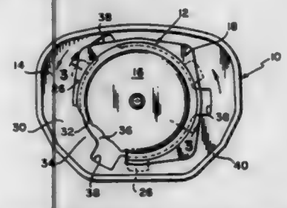
1. A suspension control apparatus, which is disposed between a wheel support member and a vehicle body, for controlling a damping force corresponding to a drive quantity by a drive mechanism, comprising:
a sprung velocity measuring means for measuring a sprung velocity;
a relative velocity measuring means for measuring a relative velocity between sprung and unsprung velocities; and
a controller having a first dead zone setting circuit for setting a dead zone by changing over a control value when at least the polarity of an input signal representative of said relative velocity is inverted at a first time, and a circuit for calculating a velocity ratio between said sprung velocity and the relative velocity when said dead zone is set.

5,445,406

MECHANICAL LOCK ASSEMBLY FOR A DRIVER SIDE INFLATOR

David V. Jones, South Weber, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Mar. 11, 1994, Ser. No. 212,628
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **7 Claims**



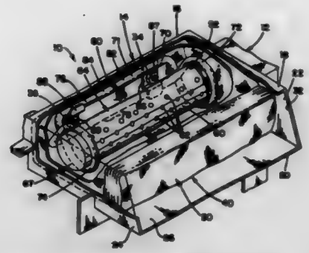
1. An air bag inflator module assembly comprising:
an air bag inflator comprising a top section having a substantially circular cross section, a side edge, and a base plate extending radially outward from the side edge of said air bag inflator top section; and a bottom section having a substantially circular cross section, a side edge, and a plurality of flanges having a leading edge and a trailing edge, said flanges attached to and extending radially outward from said bottom section side edge, wherein said flanges are in spaced relationship from said base plate and wherein at least one of said plurality of flanges is tapered from said leading edge to said trailing edge;
a module housing comprising a mounting edge, a body defining a plane, said body having a top surface and a bottom surface, and an inflator-side edge which corresponds substantially to the circular cross section of the inflator bottom section, and a plurality of slots radially outward and continuous from said inflator-side edge;
wherein said inflator is placed on said module housing and rotated such that said flanges pass through said slots of said module housing and said flanges engage with said module housing wherein said module housing body adjacent said inflator-side edge is held between said flanges and said base plate.

5,445,407

AIR BAG MODULE

John A. Lotspih, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1994, Ser. No. 248,125
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **14 Claims**



1. An air bag module in a vehicle comprising:
a module retainer comprising a single rod bent to form the module retainer, the rod including integral, axially spaced apart first and second end loop segments, the rod including at least one integral elongated rod portion extending axially between the first and second end loop segments and having two ends, one end connected to the first end loop segment and the other end connected to the second end loop segment, the rod mounted to the vehicle;
an air bag operatively connected to the rod; and
an inflator captured within the first and second end loop segments of the rod and held in position relative to the vehicle by the rod, the inflator for generating gas to inflate the air bag.

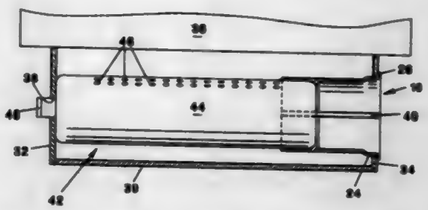
5,445,408

SPLIT RING INFLATOR ADAPTER

G. Dean Mossi, Roy, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Aug. 2, 1994, Ser. No. 284,348
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **12 Claims**

1. In a motor vehicle airbag module assembly including a reaction canister, an inflator housing adjoining said reaction canister having a first end defining a keyway and a second end having an outer and an inner surface defining a substantially circular mounting opening, and a substantially cylindrical inflator within said housing having a first end carrying a key supported in said keyway and a substantially circular second end, the improvement comprising:
a tubular, substantially cylindrical, adapter having
(a) a base end seated within said mounting opening and a flange extending radially outwardly from said base end against said outer surface;
(b) a socket end surrounding and gripping the second end of said inflator;
(c) an inwardly extending circumferential rib positioned to bear against the second end of said inflator; and



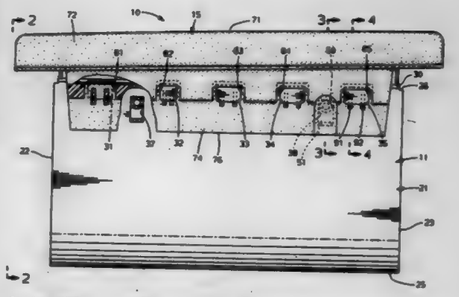
(d) a slot extending longitudinally through said adapter to allow radial expansion thereof.

5,445,409

PASSENGER AIRBAG SNAP-ON DEPLOYMENT DOOR

William M. Abramczyk, Rochester Hills, Mich., and Kimberly L. Ikirt, Springboro, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 17, 1994, Ser. No. 323,991
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **5 Claims**
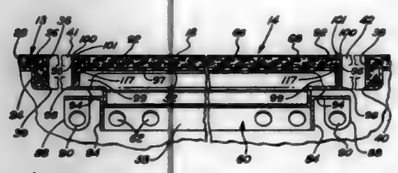


1. An airbag module comprising:
a deployment door including a pair of extending opposed legs each leg having a number of slots and including an inner surface, each inner surface including a tab; and
a container having a tab opening and including a number of hooks formed as one piece with the container corresponding to the number of slots in the deployment door, wherein each hook is positionable through one of the slots in the deployment door providing engagement between the deployment door and the container and wherein the hooks bias the tab into the tab opening in the container to removably secure the deployment door onto the container.

5,445,410

INSTRUMENT PANEL ASSEMBLY HAVING HIDDEN AIR BAG DOOR DISPOSED LATERALLY BETWEEN VENTS

Adelbert T. Czapp, Huntington Woods; Mark A. Huber, Ann Arbor; Bradley C. Bos, Livonia; William F. Dies, Shelby Township, and David E. Thomas, North Branch, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 13, 1994, Ser. No. 259,094
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.3 **10 Claims**



1. An instrument panel assembly for an automotive vehicle comprising:
(a) an instrument panel having a wall provided with an opening,
(b) said wall having a closure normally closing said opening and concealing a stored air bag before it is deployed through the opening in a crash,
(c) said closure comprising a door having opposite side edge portions and a flexible, laterally extending hinge of one piece with the door,
(d) said wall having a decorative cover layer provided with an extension covering said door, said extension being of one piece with the cover layer,
(e) said door being capable of swinging open on said hinge in response to the force of impact of the air bag thereagainst when the air bag inflates so that the inflating air bag may deploy through the opening,
(f) a pair of laterally spaced apart air vent apertures in said wall disposed respectively on opposite sides of said door,
(g) said apertures having laterally inner edges defined by the side edge portions of said door so that there is no space between said laterally inner edges of the apertures and the side edge portions of the door,
(h) an air outlet distributor in each said aperture, said air outlet distributors having laterally inner edges in juxtaposed, substantially abutting, flush relationship with the side edge portions of the door, and
(i) the extension of said decorative layer covering said door and said air outlet distributors being made of materials that are different from one another and contrasting in appearance.

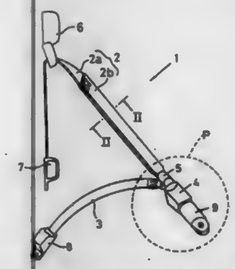
5,445,411

INFLATABLE SEAT BELT APPARATUS

Mizuo Kamiyama, and Kazuo Zeze, both of Hikone, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,320
Claims priority, application Japan, Oct. 21, 1991, 3-272601
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[6] B60R *21/18*
U.S. Cl. 280—733 **4 Claims**

1. An inflatable seat belt apparatus, comprising:
generating means for generating a gas upon being actuated at the time of an emergency;
a webbing having at least part of a portion that comes into contact with a passenger formed into a bag-shape, wherein said webbing is maintained in a belt-shape form during ordinary conditions and said bag-shape portion is inflated by the gas from said gas generating means at the time of an emergency;
a tongue connected to said bag-shaped portion of the webbing;
a buckle device into which said tongue is insertable and lockable in an unfastenable manner;
said gas generating means being connected to said buckle device;
said buckle device having a first gas flow hole communicating with said gas generating means;
said tongue having a second gas flow hole communicating with the interior of said bag-shaped portion;
wherein when said tongue is inserted into and locked with said buckle device, said first gas flow hole and said second gas flow hole are communicated to form a gas flow passageway communicating said gas generating means and said bag-shaped portion of the webbing;
wherein said webbing includes a shoulder belt and a lap belt each formed independently of each other and each being connected to said tongue, and said bag-shaped portion of the webbing includes at least a portion of said shoulder belt and at least a portion of said lap belt; and
said second gas-flow hole in said tongue is bifurcated from a first path which communicates with said first gas-flow



hole in said buckle device into one path which communicates with said portion of said shoulder belt and into another path which communicates with said portion of said lap belt;
said buckle device includes a first tubular member, said first gas flow hole extending along an axis in a lengthwise direction of said tubular member, and wherein said tongue device includes a second tubular member having a generally Y-shape, said second gas-flow hole being bifurcated in said second tubular member;
each of said first and second tubular members are generally cylindrical; and
said buckle device is provided with a buckle side cap which is constructed to close said first gas flow hole during said ordinary conditions and which is constructed to open said first gas flow hole in said time of an emergency after being ruptured by gas released from said gas generating means, and further said tongue is provided with a tongue side cap which is constructed to close said second gas flow hole during said ordinary conditions and which is constructed to open said second gas flow hole in said time of an emergency after being ruptured by said gas.

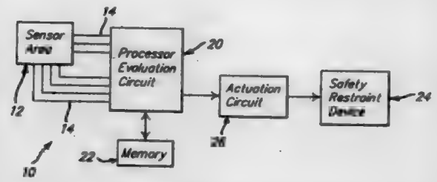
5,445,412

VEHICLE IMPACT DETECTION SYSTEM

Edward J. Gillis, Canton; Tony Gioutsos, Brighton, and Dennis E. Palmer, South Lyon, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Mar. 7, 1994, Ser. No. 207,279
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—735 **9 Claims**

1. A system for controlling actuation of a vehicle occupant safety restraint device in response to an impact with an outer surface of the vehicle comprising:
a sensor means affixed to the outer surface of the vehicle for generating a continuous, two dimensional analog output signal representative of a condition of the outer surface; and
a processor means for monitoring the two dimensional sensor output signal, said processor means further comprising:
means for performing signal analysis on said continuous output signal to generate data representative of at least



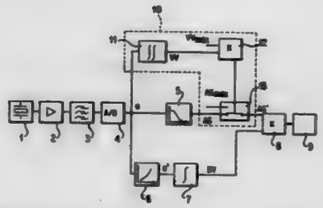
one criterion indicative of an impact with the outer surface;
means for determining whether said generated data indicates an impact of sufficient severity to require actuation of the safety restraint device; and
means controlled by said determining means for actuating the occupant safety restraint device in response to an impact of sufficient severity.

5,445,413

METHOD FOR RELEASING AN AIRBAG IN A MOTOR VEHICLE

Harald Rudolf, Tuebingen; Guido Wetzel, Neuburg/Donau, and Manfred Mueller, Deizisau, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Sep. 9, 1994, Ser. No. 304,659
Claims priority, application Germany, Sep. 9, 1993, 43 30 486.9
Int. Cl.[6] B60R *21/32*; G01P *15/00*; G01D *1/04*
U.S. Cl. 280—735 **8 Claims**



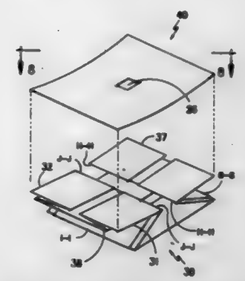
1. Method for releasing an airbag in a motor vehicle, in which for the formation of a release decision a plurality of state variables are derived in parallel from an acceleration signal and the airbag is released when a first state variable exceeds a threshold value, influenced by a second state variable, the threshold value being lowered as soon as the second state variable indicates an impact of the vehicle, wherein the threshold value is also influenced by a third state variable derived from the acceleration signal and corresponding to the forward displacement of the occupant, by increasing the threshold value as the forward displacement increases.

5,445,414

INFLATABLE OCCUPANT RESTRAINT CUSHION

Edgar H. Pittman, Spartanburg, and Mark A. Horsang, Inman, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 20, 1994, Ser. No. 277,618
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.1 **33 Claims**



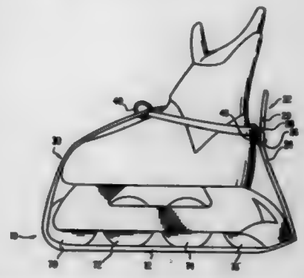
1. An occupant restraint cushion for inflation in a vehicle transporting at least one person, the occupant restraint cushion comprising:
a first section of material having a center and a perimeter including a plurality of perimeter edges, said first section of material including at least one "Z" profile lap structure comprising a first fold formed along a first fold line disposed in opposing relation to a first perimeter edge, and a second fold reverse in direction to said first fold disposed along a second fold line located between said first fold line and said first perimeter edge such that a portion of the material between said center and said first perimeter edge of said first section of material comprises a layered structure including a plurality of overlapping interior layers and an attachment margin disposed outboard of said overlapping interior layers;
a second section of material in opposed mating relation to said first section of material; and
means for attaching said first section of material to said second section of material around the perimeter of said first section of material within said attachment margin to form an enclosure between said first and second sections of material.

5,445,415

IN-LINE ROLLER SKATE WHEELS COVER

Greg Campbell, 2313 32nd St., Los Angeles, Calif. 90405

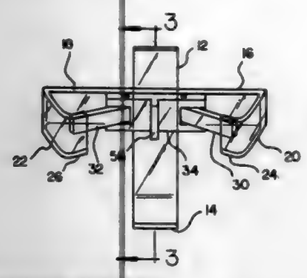
Filed Dec. 14, 1994, Ser. No. 355,472
Int. Cl.[6] A63C *3/12*
U.S. Cl. 280—825 **3 Claims**



1. A flexible cover for releasable attachment over the wheels of an in-line roller skate, said cover comprising:

a) an elongated holding channel having a leading end and a trailing end and a base having side walls for receiving a plurality of wheels of said in-line skate;
b) said leading end of said elongated holding channel having a first strap extension extending therefrom, said first strap extension having at least one eyelet contained therein;
c) said trailing end of said elongated holding channel having a second strap extension extending therefrom, said second strap extension having a loop means attached to the end of said second strap extension; and
d) a hook means attached to said second strap extension for engagement with said at least one eyelet on said first strap extension;
e) said elongated holding channel and said first and second strap extensions being of a flexible, one piece construction.

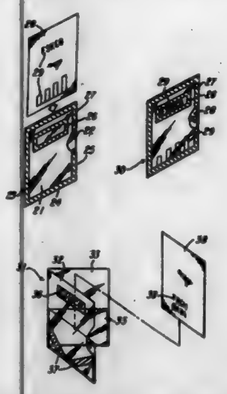
5,445,416
BOOK HOLDER
Mark A. Zarock, 3014 S. Olathe Way, Aurora, Colo. 80013
Filed Sep. 28, 1994, Ser. No. 313,802
Int. Cl.[6] B42D *9/00*
U.S. Cl. 281—42 **6 Claims**



1. A book holder comprising:
a main support member having an upper end and a lower end;
a first lateral extension projecting from said main support member in a first direction, said first lateral extension including an outer distal end from which a first arm projects, said first arm extending away from said first lateral extension and bending inward towards said main support member to define a first flange;
a second lateral extension projecting from said main support member in a second direction, said second lateral extension including an outer distal end from which a second arm projects, said second arm extending away from said second lateral extension and bending inward towards said main support member to define a second flange;
support lever means for biasing pages of a book against said first and second flanges.

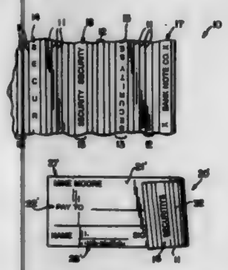
5,445,417
PRESENTATION FOLDER AND METHOD OF MAKING
Carl B. Bromer, Dayton, and David B. Schindler, Kettering, both of Ohio, assignors to Esko, Inc., Dayton, Ohio
Continuation of Ser. No. 90,235, Jul. 12, 1993, abandoned. This application May 6, 1994, Ser. No. 239,289
Int. Cl.[6] B42F *7/06*; B42D *3/12*; B42C *7/00*
U.S. Cl. 281—46 **20 Claims**

1. A combination of a presentation folder and at least one information sheet placed therein comprising a folder comprising a transparent or translucent plastic cover sheet having a predetermined dimensions and having pocket means attached thereto for retaining and protecting the at least one information sheet, said cover sheet having graphics applied to selected areas on a surface thereof, said applied graphics causing only said selected areas being opaque while the remaining areas of the surface of said cover sheet being transparent or translucent, said information sheet having substantially the same predetermined dimensions as of said cover sheet and being adapted for repeated insertion into and removal from said pocket means and having information indicia printed thereon, said transparent or translucent areas of said cover sheet revealing all of said information indicia therethrough, said graphics on said cover sheet and said information indicia on said information sheet



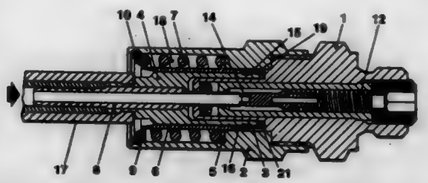
being simultaneously visible to provide visual correlation between said graphics and said information indicia being displayed through said transparent or translucent areas of said cover sheet, said correlation jointly creating a harmonious design and a customizing effect to said combination when said information sheet is inserted in said pocket means of said folder.

5,445,418
SECURITY PAPER/DOCUMENT CONSTRUCTION
Theodore Blend, Buckhannon, W. Va., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Sep. 8, 1993, Ser. No. 117,599
Int. Cl.[6] B42D *15/10*
U.S. Cl. 283—58 **24 Claims**



1. A security document having first and second faces, a length, and a width;
at least one of said faces having a plurality of parallel lines having a substantially uniform first spacing between two adjacent lines, irregularly interrupted by a plurality of stripes each having a width defining a second spacing significantly greater than said first spacing; and
at least the other of said faces having readable alphanumeric indicia appropriate for a security document imaged thereon along said width or length; and
wherein said parallel lines irregularly interrupted by said stripes are disposed in a pattern that does not repeat within said length or width, and are disposed over substantially the entire of said at least one of said faces.

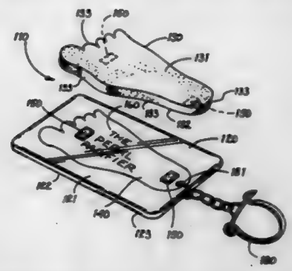
5,445,419
SPLIT-RING BREAKAWAY CONNECTOR
Peter J. Thuerig, Brampton, Canada, assignor to Foolmaker Corporation, Toronto, Canada
Filed Oct. 1, 1993, Ser. No. 80,011
Int. Cl.[6] F16L *37/084*
U.S. Cl. 285—1 **4 Claims**



1. A tension activated connector having a male portion and a female portion, the male portion being provided with a plug having engagement means on its surface, the female portion providing a housing containing:
(1) an expansion chamber;
(2) a containment chamber adjacent to and aligned with said expansion chamber;
(3) a release chamber adjacent to and aligned with said containment chamber;
(4) a tension sleeve located within the release chamber and biased by tension spring means to advance towards a stop surface at the end of the release chamber adjacent the containment chamber; and
(5) a cylindrical expandable locking means located within the expansion chamber and re-locatable by displacement to fit within the containment chamber, said locking means being provided with an inner surface shaped for displaceable inter-engagement with the engagement means on the plug, locking engagement with said plug occurring when the expandable locking means is constrained from expanding, and dischargement therefrom occurring when said locking means becomes expanded,
wherein the plug, on manual insertion into the housing will penetrate and advance within the expandable locking means until the inner surface of the locking means engages with the engagement means on the plug and thereafter, upon initial, partial withdrawal of the plug, carry the expandable locking means into the containment chamber wherein it is contained against expansion and abuts against the tension sleeve without disengagement from said plug, and wherein upon further application of tension between the male and female portions, the tension spring means will compress, allowing the expandable locking means to advance into the release chamber whereby such locking means expands to release the plug for withdrawal from the coupling.

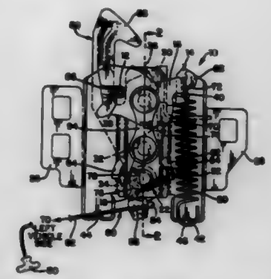
5,445,420
FOOTPRINT CONFIGURATION SPONGE AND BASE NOVELTY DEVICE
Arley G. Lairmore, 1623 W. Denton La. #102, Phoenix, Ariz. 85015, and Lisa M. Lairmore, 11248 N. Biltmore Dr. #111, Phoenix, Ariz. 85029
Filed Jan. 10, 1994, Ser. No. 179,531
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—117 **19 Claims**

1. A novelty device which comprises:
a base having a front surface, a back surface, and a footprint: configuration displayed on the front surface;
a sponge having a front surface, a back surface and side edges having the same shape as the footprint configuration displayed on the front surface of the base; and
attachment means between the sponge and base for releaseably attaching the sponge to the base so that the sponge



generally overlies the footprint configuration displayed on the front surface of the base.

5,445,421
DUAL THROAT LATCH ASSEMBLY
Randy Ferrara, Clinton Township, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1993, Ser. No. 130,356
Int. Cl.[6] E05C *3/16*
U.S. Cl. 292—216 **14 Claims**



2. In a latch assembly for latching and unlatching a pivotally movable closure panel carrying a striker, the latch assembly having a forkbolt lever pivotally supported on a housing via a first pivot means for movement between a latched position for capturing the striker and an unlatched position for releasing the striker, and a detent lever pivotally supported on the housing via a second pivot means for selectively engaging the forkbolt lever in the latched position, the improvement comprising:
the first pivot means spaced vertically apart from the second pivot means,
the housing having a vertical axis intersecting the pivot axes of the first and second pivot means,
the housing having first and second throats for alternately receiving the striker, the first and second throats spaced equidistant on opposite sides of the vertical axis,
the forkbolt lever being mountable for rotation in a first forkbolt direction to capture the striker in the first throat and alternately mountable for rotation in a second forkbolt direction to capture the striker in the second throat,
and the detent lever being mountable for rotation in a first detent direction to engage the forkbolt lever for capturing the striker in the first throat and alternately mountable for rotation in a second detent direction to engage the forkbolt lever for capturing the striker in the second throat,
whereby the latch assembly may be alternately assembled to capture the striker in either one of the first or second throats to latch the closure panel.

5,445,422

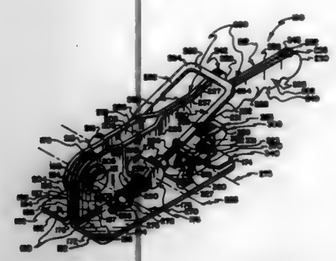
HANDLE OPERATED DRAW LATCH WITH SAFETY CATCH

Lee S. Weiaerman, Medina, and Arthur J. Kuminski, Parma, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 65,283, May 21, 1993, abandoned, and a continuation-in-part of Ser. No. 8,629, May 21, 1993, abandoned. This application Jul. 20, 1994, Ser. No. 278,068

Int. Cl.[6] E05C *19/14*

U.S. Cl. 292—247 52 Claims



1. In a toggle type draw latch assembly that has a base, an elongate operating handle pivotally connected to the base near one end region thereof for moving between an open position and a closed position wherein a portion of the handle is situated relatively near to the base, having a hand grip formed near the opposite end region thereof, having a drawbar pivotally connected to the handle at a location that is nearer to the one end region of the handle than to the hand grip, with the drawbar being pivotally movable relative to the handle between an extended position and a retracted position wherein a portion of the drawbar is situated relatively near to the hand grip, the improvement comprising:

a) means for adjusting the effective length of the drawbar within a given range of adjustment, with such adjustment affecting the nearness of the drawbar to the hand grip when the drawbar is in its retracted position;

b) first stop formation means connected to the handle for defining drawbar engaging surface means at a location near the hand grip for being engaged by the drawbar when the drawbar is in its retracted position;

c) with the drawbar engaging surface means including a surface that extends for a sufficient distance along the length of the handle at said location near the hand grip for being engaged by the drawbar when the drawbar is in its retracted position regardless of where within said given range of adjustment the means for adjusting the effective length of the drawbar is set; and,

d) with the drawbar engaging surface being configured to ensure that the retracted position of the drawbar is held at a sufficiently far distance away from the location of the hand grip to ensure that, regardless of where within said given range of adjustment the means for adjusting the effective length of the drawbar is set, the retracted drawbar will not so closely approach the hand grip as to endanger portions of a hand that is gripping the hand grip being contacted by the retracted drawbar.

5,445,423

BREAKAWAY LEVER CLUTCH

Gerald E. Mader, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed Jul. 1, 1993, Ser. No. 84,102

Int. Cl.[6] E05B *3/00*

U.S. Cl. 292—336.3 20 Claims

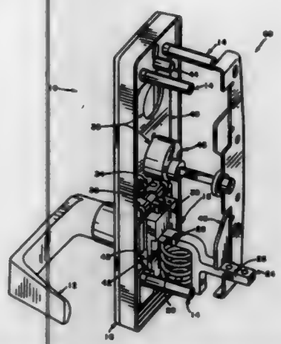
1. A lever assembly for disengaging a door latch of a door latch assembly having an unlocked and a locked position, vertical rods which are removable to release a door latch when said door latch assembly is in an unlocked position, and a blocking slide movable to locked position to prevent movement of the vertical rods and the door latch connected thereto, the lever assembly comprising:

a lever handle rotatably connected to a trim housing;

a cam operably connected to the lever handle and positioned to rotate in response to rotation of the lever handle;

a slider movable in response to rotation of the cam;

a lift arm connected to the vertical rods of the door latch assembly; and



an over-ride spring connected between the slider and the lift arm, with the over-ride spring transmitting motion of the slider to the lift arm to lift the lift arm and the connected vertical rods when the door latch assembly is in its unlocked position, and with the over-ride spring compressing in response to slider movement when the blocking slide is positioned to block movement of the lift arm when the door latch assembly is in its locked position.

5,445,424

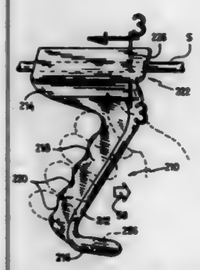
AUTOMATIC ARROW EXTRACTOR

Daniel Binette, 1953 chemin Curé Godbout, Rainville (Québec), Canada J2N 2P9

Filed Oct. 18, 1994, Ser. No. 323,679

Int. Cl.[6] B66C *1/44*

U.S. Cl. 294—1.1 4 Claims



1. An arrow extractor for extracting arrows from a target, said arrow defining a cylindrical elongated shaft, said arrow extractor comprising:

a) a frame adapted to frictionally engage said arrow shaft; and

b) a handle member defining a main segment and a first and a second parallel segments, said segments being coplanar and being adapted to intersect a plane extending through the longitudinal axis of said arrow shaft, said first and second parallel segments projecting integrally from the two extremities of said main segment and forming a large acute angle therewith;

said first parallel segment being fixedly anchored to said frame and being adapted to be parallel to said arrow shaft; wherein said frame defines:

a) a relatively flat base having an upper and lower surface, said first segment of said handle being fixedly anchored to said lower surface of said flat base;

b) two spaced apart wall member othogonally and fixedly anchored on said upper surface of said base, said wall members being angled with respect to each other and thus forming a convergent main channel;

c) two gripping elements positioned intermediate said wall members and movable in said main channel, said gripping elements defining inner surfaces facing one another, said inner surfaces having a groove so as to define an arcuately shaped channel adapted to receive an arrow shaft; and

d) two adherent, elastically deformable and soft gripping surfaces, one of which is fixedly anchored to each of said grooves of said inner surfaces of said gripping elements, said gripping surfaces having upper flanges protruding at least inwardly, relative to said arcuately shaped channel, from said gripping elements;

said gripping elements being adapted to move in a first divergent direction along said wall members when said upper flanges of said gripping surfaces transversely bear on said shaft and when said frame is simultaneously axially translated therealong, so as to form an opening for said arrow shaft into said arcuately shaped channel, said gripping elements then being adapted to move into a convergent direction to come into a gripping relationship with said arrow shaft, said gripping surfaces axially and frictionally engaging said arrow shaft.

5,445,425

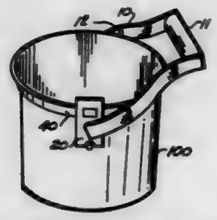
OFFSET HANDLE APPARATUS FOR PAINT BUCKETS

David J. Lyver, 18610 - 17th St. E., Sumner, Wash. 98390

Continuation-in-part of Ser. No. 891,046, Jul. 10, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 139,271

Int. Cl.[6] B65D *25/32*

U.S. Cl. 294—31.2 6 Claims



1. An offset handle bracket apparatus for use on a paint bucket in securely maintaining a handle offset from vertical when the handle lifts the bucket thereby providing improved access to the bucket contents while the bucket is being lifted by the handle, comprising

a handle including first and second ends and further comprising two pins extending from each handle end, the first pin being a handle pivot pin nearest the handle end and the second pin being a set pin spaced apart a distance, R, from the pivot pin,

a pair of brackets each having a bracket body with an upper side, a bottom side, an outer side, an inner side, a left side and a right side, each bracket further having two holes wholly within the bracket body matching the two handle pins, respectively, of each handle for receiving a handle arm which remains securely offset from vertical when lifted when the bracket is mounted to a paint bucket such that when the bucket is lifted by the handle, the paint bucket hangs from the bracket apparatus while the handle is in an off-vertical orientation through the means of the two spaced-apart handle pins lifting upward in concert against bracket surfaces circumscribing the respective matching pin holes,

means for securing the handle pins in the respective bracket pin holes,

means for securely mounting the brackets opposite each other on a paint bucket.

5,445,426

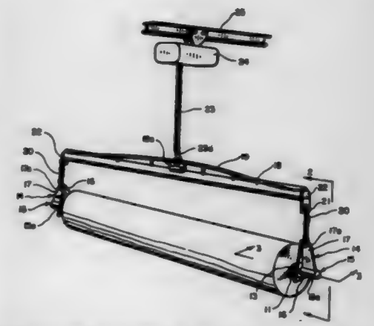
METHOD AND APPARATUS FOR LIFTING ROLLS OF CARPET OR THE LIKE

Brad A. Sorensen, 253 W. 200 North, Vernal, Utah 84078

Filed Aug. 22, 1994, Ser. No. 293,662

Int. Cl.[6] B66C *1/16, 1/66*

U.S. Cl. 294—67.3 4 Claims



1. In apparatus for lifting heavy rolls of carpet or the like, which apparatus comprises a structural, roll-load-bearing, roll-insert tube having a length substantially equal to that of a roll of carpet or the like to be lifted and of a diameter permitting lengthwise insertion thereof into and along an axial opening in said roll of carpet or the like; a roll-carrying length of structural material whose length is substantially equivalent to that of said roll-insert tube; a pair of relatively short, telescopic inserts for opposite ends, respectively, of said roll-insert tube, each of which inserts has inner and outer end portions; a pair of first load-supporting suspension means for hanging said telescopic inserts, by means of the outer end portions thereof, from opposite ends, respectively, of said roll-carrying length; and second load-supporting suspension means for hanging said roll-carrying length from an overhead hoist, the improvement wherein the outer end portion of each telescopic insert is provided with a rigidly interconnected assembly of operationally upstanding, rigid, connection structure rigidly attached thereto for attachment of one of said first load-supporting suspension means;

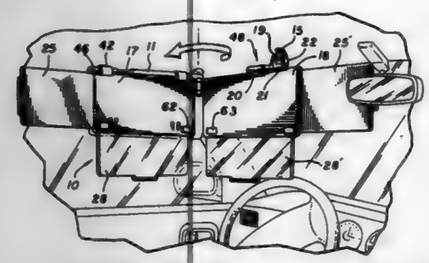
wherein each said assembly of rigid connection structure comprises a plate member secured to the outer end portion of the corresponding telescopic insert transversely thereof, and an operationally upstanding gusset plate member extending along and rigidly secured to the outer end portion of the corresponding telescopic insert;

wherein the pair of first load-supporting suspension means are respective link chains;

wherein the upper end of said gusset plate of each assembly of connection structure is provided with means for attaching a link of the corresponding link chain; and

wherein means are provided adjacent to opposite ends of said roll-carrying length of structural material for attachment of links of said link chains, respectively.

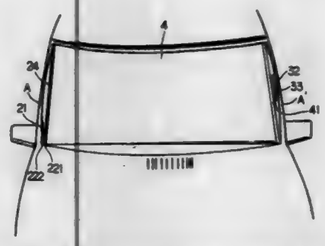
5,445,427
PIVOTABLE SUN VISOR ATTACHMENT
Craig A. Vandagriff, 25637 Gardenstone La., West Hills, Calif. 91307
Filed Dec. 6, 1993, Ser. No. 162,856
Int. Cl.[6] B60J 3/02
U.S. Cl. 296—97.6 4 Claims



1. A sun visor attachment adapted to be secured to a preexisting sun visor of a vehicle, said sun visor attachment (10) comprising:
- a main body portion (17) having attachment means for removably securing said main body portion (17) to said preexisting sun visor, and having a plurality of generally planar extendable panels (25, 28) sandwiched therewithin and movable with respect to one another;
- multi-axis pivoting means (41) mounted to said main body portion (17) at a corner thereof; and
- a wing body portion (18) connected to said main body portion (17) by said pivoting means (41) to allow said wing body portion (18) to be swung from a closed position adjacent said main body portion (17) to an open position away from said main body portion (17), said wing body portion (18) having support means for stably maintaining said wing body portion (18) in said open position, and having a plurality of generally planar extendable panels (25', 28') sandwiched therewithin and movable with respect to one another, said pivoting means (41) comprising:
- a pivot block (57*a*) having a radially toothed engaging surface (59) formed in a lower end of a vertical surface thereof;
- a discrete rotator member (55*a*) having a pivot block anchor (47*a*) and a rotator toothed surface movably mating with said pivot block radially toothed engaging surface (59); and
- a right angle hinge pin (54*a*) having a vertical leg (69) disposed longitudinally adjacent said main body portion (17) and turnably held within a hinge pin receiver anchoring member (29*a*) projecting therefrom, said anchoring member (29*a*) fixedly mounted within said main body portion (17) and said right angle hinge pin (54*a*) having a horizontal leg (70) turnably held within said pivot block (57).

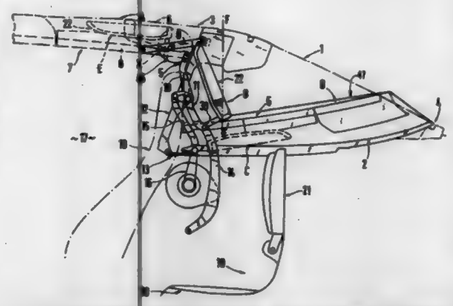
5,445,428
ADJUSTABLE SUNSHADE
Chuang Yung-Sung, No. 16, Ming Sheng Road, Hsinchu, Taiwan
Filed Dec. 8, 1993, Ser. No. 162,767
Int. Cl.[6] B60J 3/00
U.S. Cl. 296—97.7 9 Claims

5. An adjustable sunshade, comprising:
- a sunshade holder which includes a mounting frame attachable to a car at a first side of a windscreen of the car; a supporting rod having a top end and a bottom end, wherein the bottom end is connected to a connecting plate; a first swivel joint having a first end connected to said connecting plate and a second end connected to the mounting frame of the sunshade holder; a bracket having a top end connected to the top end of the supporting rod; a screen mounted on the bracket, the screen having a retainer on a lead end thereof; and a second swivel joint having a first end connected with a first rod attached to the supporting rod and a second end connected with a second rod, wherein the second rod is slidably connected to the bracket; and



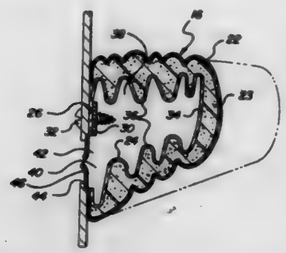
- a locating device which includes a mounting frame attachable to the car at a second side of the windscreen; and a locating rod including at least one retaining notch for holding the retainer of the screen.

5,445,429
CONVERTIBLE WIND PROTECTION DEVICE
Harald Koehler, Ditzingen; Dieter Raisch, Rutesheim, and Bodo Homann, Helmsheim, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany
Filed Apr. 4, 1994, Ser. No. 222,271
Claims priority, application Germany, Apr. 2, 1993, 43 10 881.4
Int. Cl.[6] B60J 7/22
U.S. Cl. 296—107 20 Claims



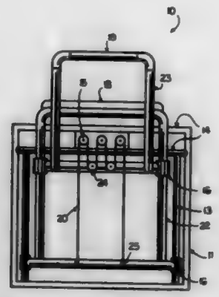
1. A convertible wind protection device arranged behind a row of Seats so as to extend upwardly beyond the row along a transverse width of an interior of a convertible and configured and arranged to be swivellable from an inoperative position into an upright operative position, wherein a lower portion of the wind protection device is articulated on a folding top of the convertible such that, in an open position of the folding top with the interior of the convertible top exposed to the surrounding environment, the wind protection device is movable into the operative position and vehicle occupants are protected from drafts moving from the rear of the convertible toward the front of the convertible.

5,445,430
COLLAPSING ARM REST CONSTRUCTION
Lawrence R. Nichols, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Filed Nov. 8, 1993, Ser. No. 148,570
Int. Cl.[6] B60N 2/46
U.S. Cl. 296—153 11 Claims



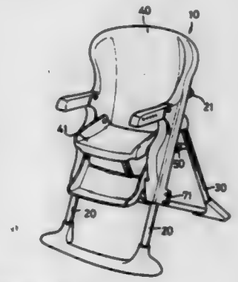
9. A collapsible arm rest for a passenger compartment of a motor vehicle comprising:
- a flexible skin or covering, a layer of semi-rigid foam material underlying the flexible skin to provide a cushion and soft feel for the collapsible arm rest, an insert embedded in the foam layer for supporting the arm rest under normal arm loads, the insert comprising a hollow shell that is shaped so that the shell collapses in the lateral direction when the arm rest is subjected to a side load of the type experienced in a side impact automobile collision, the shell at least partly defining an empty chamber that communicates with ambient air via a vent when the shell collapses in the lateral direction to avoid pneumatic delay in the lateral collapse of the shell.

5,445,431
SEAT UPLIFT APPARATUS
Gary Johnston, P.O. Box 183, Cowarts, Ala. 36321
Continuation-in-part of Ser. No. 759,233, Sep. 13, 1991, Pat. No. 5,303,892. This application Nov. 1, 1993, Ser. No. 144,034
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[6] A47C 3/32
U.S. Cl. 297—339 8 Claims



1. A seat uplift apparatus comprising:
- a frame;
- a seat mounted to a first member, said first member being movable in a substantially vertical direction with respect to said frame;
- a hand engagement handle mounted to a second member for receiving a downward force from a user, said second member being movable independently of said first member in the substantially vertical direction with respect to said frame; and
- a power translating mechanism operatively connected between said first member, said second member, and said frame for translating the downward force applied by the user on said hand engagement handle into an upward force on the seat, thereby assisting the user into a raised position.

5,445,432
HEIGHT ADJUSTING MEANS FOR A CHAIR
Jui-Lung Chien, Taichung City, Taiwan, assignor to Jina Manufacturer Thai Co., Ltd., Thailand
Filed Jul. 21, 1994, Ser. No. 278,241
Int. Cl.[6] A47C 1/00, 1/02, 1/06
U.S. Cl. 297—344.18 3 Claims

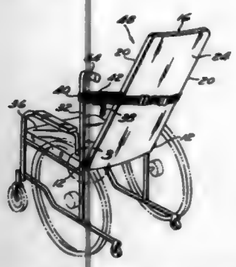


1. A chair comprising:
- a seat and a back, said back comprising a pair of parallel guide plates protruding from a rear surface thereof, each guide plate having a longitudinal groove;
- first and second front legs and first and second rear legs for supporting the seat and back, said back being slidably mounted on said first and second front legs, at least said first front leg including a plurality of recesses;
- a transverse part extending between the first and second front legs, said transverse part including a top head portion having two guide tips respectively slidably received in the longitudinal grooves in the guide plates; and
- height adjusting means for adjusting a height of the seat and back, comprising at least one casing slidably mounted on said first front leg, said casing having an operating element including a protrusion adapted to engage the recesses in said first front leg.

5,445,433
KIT FOR A RECLINING CHAIR-BACK THORACIC-LUMBAR-SACRAL CORRECTIVE ORTHOSIS WHEELCHAIR
Eli Avihod, Studio City, Calif., assignor to Medisol U.S.A. Inc., South El Monte, Calif.
Filed Sep. 1, 1993, Ser. No. 116,240
Int. Cl.[6] A47C 1/024
U.S. Cl. 297—380 14 Claims

1. A kit for converting a non-reclining wheelchair having two side frames, a seat portion, and a back support portion, into a reclining wheelchair with a thoracic-lumbar-sacral correcting orthosis ("TLSO") corrective back supporting chair back, comprising:
- a TLSO chair back portion, said TLSO chair back portion having a top edge, a bottom edge, side edges, a front surface aligned to face the patient's back, and a rear surface;
- hinge means affixed to said TLSO chair back portion in the vicinity of its lower side edges, said hinge means providing a means to pivotably attach said TLSO chair back portion to the wheelchair; and

a chair back portion recline adjustment and fixation means comprising straps fixed at one end to said TLSO chair back portion and loopable around the side frames of the wheelchair and detachably fixable at its other end to the TLSO chair back portion, at least one of said straps and said TLSO chair back portion carrying a means to adjust the working length of the straps as measured from the sides of the chair back portion to the side frames of the wheelchair, wherein in the use of the kit to convert a non-reclining wheelchair to a reclining wheelchair with



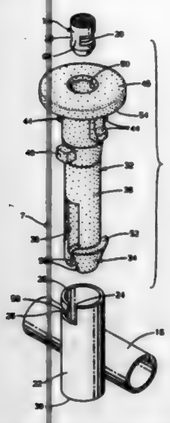
said TLSO chair back portion, the back support portion of the non-reclining wheelchair is removed and is replaced with said TLSO chair back portion, by fixably attaching said hinge means to lower rear portions of the two side frames near the seat portion, to thereby hingeably affix the TLSO chair back portion to the wheelchair, and said adjustable straps of the chair back portion are looped around the side frames of the wheelchair and their working length is adjusted to select the desired degree of recline of the TLSO chair back portion.

5,445,434

HEAD RESTRAINT MOUNTING ARRANGEMENT

Thomas P. Kohut, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1993, Ser. No. 172,360
Int. Cl.[6] A47C *7/38*
U.S. Cl. 297—391 **1 Claim**



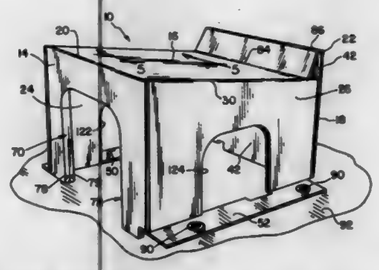
1. An arrangement for releasably mounting a head restraint to a vehicle seat back comprising:
a post connected with a head restraint, the post having at least one notch;
a guide having an aperture for receiving the post, the guide having at least one compliant finger for interlocking in the notch of the post upon a predetermined angular positioning of the guide, the guide also having a head on its end generally opposite the head restraint and also having a projection; and
a tube fixably connected with a seat back for mounting the guide, the tube having an L-shaped groove with a horizontal leg for capturing the guide projection, and the tube permitting the guide to be simply rotated between a position allowing removal of the post and a position wherein the post is interlocked by the finger of the guide being within the notch, and additionally the tube having a surface for interaction with the head of the guide, preventing removal of the guide from the tube after insertion of the guide into the tube.

5,445,435

CORRUGATED TEMPORARY SEAT

Harold Sheckles, Fremont, Ind., assignor to Kelly Box & Packaging Corporation, Fort Wayne, Ind.

Filed Jan. 5, 1994, Ser. No. 177,461
Int. Cl.[6] A47C *7/16*
U.S. Cl. 297—440.12 **17 Claims**



1. A seat, comprising:
a first sheet of material having panels defined by fold lines, said first sheet forming a front panel, a top panel, a first rear panel and at least two side panels, each panel having an attachment portion to which at least one other panel attaches, said panels together forming a substantially box shape, said front panel opposing said rear panel, each said side panel opposing the other said side panel;
two integral post members adjacent said front panel, said integral post members formed from cutouts of said front panel folded toward side edges of said front panel;
a backrest support disposed between said top panel and said rear panel; and
a second sheet of material formed into a prismatic tube, said tube attached to said top panel and a pair of opposing said panels whereby the weight bearing ability of the seat is enhanced.

5,445,436

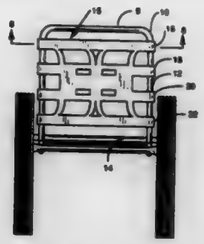
BACKING OR SEATING FOR SEATING TYPE FURNITURE AND MEANS FOR SECURING BACKING OR SEATING TO A FRAME

Glen D. Kennitz, Gallatin, Tenn., assignor to Sunbeam Corporation, Fort Lauderdale, Fla.

Filed Oct. 15, 1992, Ser. No. 962,495
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.53 **25 Claims**

1. An article of seating-type furniture, comprising:
a frame forming a back and/or a seat for said furniture, and having slot means, and
at least one strap means forming a backing and/or seating panel for said furniture,
said at least one strap means having a main body and opposite ends adjacent to said main body, said strap means opposite ends each having a tang portion with a top surface and a bottom surface,

each of said tang portions having integrally molded tab means on one of said tang portion surfaces for insertion into and engagement in said slot means of said frame,
said tab means having an inclined surface and a rear wall wherein said inclined surface extends from said one of said surfaces of said tang portion having said tab means and is



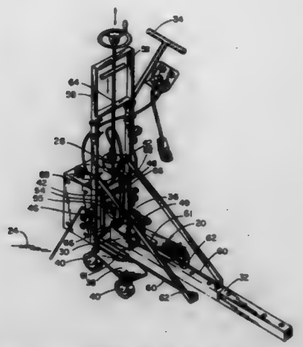
at an angle relative to the other of said tang portion surfaces directly opposite said tab means, said inclined surface terminating inwardly of said strap means opposite ends at said rear wall, said rear wall extending substantially perpendicular from said one of said tang portion surfaces, said tab means being solid and continuous with said strap means.

5,445,437

CONCRETE GROOVING APPARATUS AND METHOD

Darrel M. Adamson, 918 Plum Tree La., Sarasota, Fla. 34243

Filed Apr. 25, 1994, Ser. No. 231,776
Int. Cl.[6] E01C *23/09*
U.S. Cl. 299—39 **15 Claims**



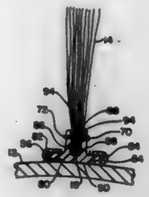
13. A method of decoratively grooving a hardened concrete surface comprising the steps of
a) mounting a cutting wheel having a non-square profile to a rotary cutter,
b) attaching the cutter to a cart comprising means holding the cutting wheel in operative contact with the surface,
c) mounting to the cart a terrain-following wheel raising and lowering the cutter responsive to the motion of the cart across the surface,
d) attaching the cart to guidance means comprising an elongate connecting arm attached at a first end thereof to the cart, the connecting arm attached at a second end thereof to a linear sliding member, the linear sliding member mounted for linear sliding motion only to a linear slide bar rigidly mounted parallel to the surface and
e) moving the cart across the surface under the control of the guidance means.

5,445,438

STRIP BRUSH FOR MOUNTING ON A ROTARY DRUM

Arthur E. Drumm, 14808 Hillview Rd., Marysville, Ohio 43040

Continuation-in-part of Ser. No. 167,083, Dec. 16, 1993, Pat. No. 5,358,312, which is a continuation-in-part of Ser. No. 132,099, Oct. 5, 1993, Pat. No. 5,358,311, which is a division of Ser. No. 958,799, Oct. 9, 1992, Pat. No. 5,251,355, which is a continuation-in-part of Ser. No. 777,905, Oct. 17, 1991, Pat. No. 5,160,187. This application Sep. 6, 1994, Ser. No. 300,842
Int. Cl.[6] A46D *3/00*
U.S. Cl. 300—21 **11 Claims**



1. A bristle strip comprising an elongated continuous mat of bristles formed into a U-shape having a closed lower end and an open upper end, said mat having its lower end confined between upstanding flanges extending co-extensively with said elongated mat,
said flanges terminating at upper edges,
a retaining cord being clamped at a centerline within the U-shape of said elongated mat, said cord being located below the upper edges of said flanges,
a bristle holding strip being formed of thermoplastic resin of a U-shape forming a trough between said flanges to enclose the lower end of the mat of bristles and including transversely extending guide and retaining ears,
said flanges converging toward said mat in an upward direction away from a centerline of said elongated mat to a location above said retaining cord,
means for securing said flanges in place to prevent spreading of said flanges which would allow said mat to pop out of said trough.

5,445,439

CYCLE, TENSIONED SPOKED WHEEL ASSEMBLY AND RIM THEREFOR

Rolf Dietrich, 42193 Clemens Dr., Plymouth, Mich. 48170

Continuation-in-part of Ser. No. 813,436, Dec. 24, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,504
Int. Cl.[6] B60B *1/02*
U.S. Cl. 301—55 **10 Claims**

1. A bicycle comprising a bicycle frame, a rear wheel mounted on the frame and a front wheel mounted on the frame, said front wheel having a center plane and comprising:
a bicycle wheel hub for supporting the wheel relative to an axle rotatably supported therein, said hub having first and second hub flanges axially displaced from one another, each on the opposite side of the wheel center plane from the other,
a rim,
a given number of pairs of first and second spokes, each of said spokes having a first and a second end connected to one of said hub flanges and to said rim, respectively, so that tension is applied by said first spokes between the first hub flange and a first plurality of points which are circumferentially spaced substantially evenly around the rim and so that tension is applied by said second spokes between the second hub flange and a second plurality of points on said rim each of which is substantially circumferentially coincident with one of said first plurality of points,
adjustable threaded means for adjusting the tension in said spokes, independently of any adjustment to the tension in another spoke,

wherein each of said pairs of first and second spokes is sufficiently close to a plane which is parallel to said axle in said wheel hub so that the bicycle has improved resistance to speed shimmy or wobble by comparison with a bicycle with a conventional front wheel comprising

a bicycle wheel hub having first and second hub flanges axially displaced from one another, each on the opposite side of the wheel center plane from the other,

a rim and



the given number of pairs of first and second spokes each having a first and a second end connected to one of the hub flanges and to the rim, respectively, so that tension is applied by the first spokes between the first hub flange and a first plurality of points which are circumferentially spaced substantially evenly around the rim and so that tension is applied by the second spokes between the second hub flange and a second plurality of points on the rim each of which is positioned halfway between adjacent first points.

5,445,440

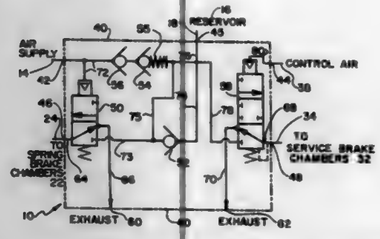
FULL-FUNCTION VALVE FOR HEAVY DUTY SEMI-TRAILER BRAKE SYSTEMS

Ronald S. Plantan, Charlotte, N.C., assignor to Echlin Inc., Branford, Conn.

Filed Mar. 15, 1994, Ser. No. 213,164

Int. Cl.[6] B60T *13/00*

U.S. Cl. 303—7 **4 Claims**



1. A unitary full-function valve for use in controlling the operation of a service brake system and a spring brake system in a vehicle, said valve comprising:

a valve body with multiple ports, including separate ports for providing fluid communication to at least one spring brake chamber, at least one service brake chamber, a fluid reservoir and an exhaust port; said valve body further including ports for receiving a pressurized supply fluid and a control fluid, said control fluid actuating said service brake system on demand and said supply fluid inhibiting the activation of said spring brake system so that said spring brake system is activated in the absence of said supply fluid;

a biased one-way pressure protection valve housed within said valve body for isolating fluid in said service brake system from fluid in said spring brake system when the pressure in said service brake system falls below a threshold pressure level; and

a passageway within said valve body for connecting the fluid in said spring brake system with said biased one-way pressure protection valve to increase said threshold pressure level in proportion to the pressure level in said spring brake system.

5,445,441

FLUID PRESSURE BOOSTING TYPE BRAKE SYSTEM

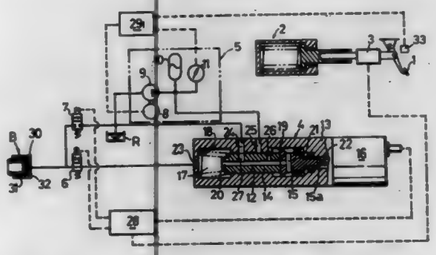
Shinichi Inagawa, and Shohei Matsuda, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 208,263

Claims priority, application Japan, Apr. 14, 1993, 5-087609

Int. Cl.[6] B60T *13/16*

U.S. Cl. 303—10 **3 Claims**



1. A fluid pressure boosting type brake system comprising a fluid pressure source including a fluid pump and a pressure tank connected to said pump, and a control valve capable of controlling an output pressure from said fluid pressure source to a fluid pressure corresponding to a degree of brake operation to output the same, wherein

said system further includes

a brake operation detecting means for detecting a brake operation, and

a consumed-pressure correspondence driving means for outputting a driving signal indicative of a command to drive the fluid pump for each preset time for a predetermined period, while the degree of brake operation is detected by said brake operation detecting means.

5,445,442

DRIVE-SLIP CONTROL SYSTEM

Günter Barth, Korntal, and Rolf Maier, Kernen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 38,915, Mar. 29, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,694

Claims priority, application Germany, Sep. 29, 1990, 40 30 881

Int. Cl.[5] B60K *28/16*; B60T *8/32*

U.S. Cl. 303—141 **10 Claims**

1. Drive slip control system for a motor vehicle having right and left driven wheels which exhibit respective wheel speeds ω_R and ω_L, and an engine exhibiting an engine speed ω_m, said system comprising

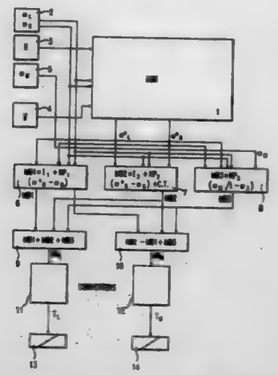
means for determining driven wheel speeds ω_R and ω_L,

means for determining desired driven wheel speeds ω^*_L and ω^*_R,

a first controller which determines a braking torque value MB1 which depends on ω_D and ω^*_{D1} where $\omega^*_D=\omega^*_R-\omega^*_L$, and $\omega_D=\omega_R-\omega_L$,

a second controller which determines a braking torque value MB2 which depends on ω_S and ω^*_S, where $\omega^*_S=\omega^*_R+\omega^*_L$, and $\omega_S=\omega_R+\omega_L$,

means for forming a desired left braking torque MB_L by forming the sum MB1+MB2,



means for forming a desired right braking torque MB_R by forming the difference MB2−MB1,

means for converting the desired braking torques MB_L and MB_R to respective control times T_L and T_R, and

left and right brake pressure control valves which permit build-up of brake pressure at left and right driven wheels for respective control times T_L and T_R, in order to obtain the desired braking torques MB_L and MB_R.

5,445,443

MOTORCYCLE ABS USING HORIZONTAL AND VERTICAL ACCELERATION SENSORS

Berthold Hauser, Frauenneuharting; Heinz F. Ohm, Welterstadt, and Georg Roll, Heusenstamm, all of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Filed Dec. 23, 1993, Ser. No. 172,225

Claims priority, application Germany, Dec. 24, 1992, 42 44 112.9

Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—137 **13 Claims**



1. Antilock braking system for a motorcycle having front and rear wheels, comprising:

wheel sensors that output signals;

a monitoring circuit coupled to the wheel sensors to receive the sensor output signals, and which detects overbraking states from the sensor output signals and generates corresponding control signals;

A pressure modulator coupled to the monitoring circuit which adjusts brake pressures at the two wheels in response to the control signals;

A curve pressure control, coupled to the monitoring circuit, that recognizes travel on curves and controllable regulated braking on curves, said curve pressure control having two acceleration sensors to determine the tilt angle Φ of the vehicle and, if this angle exceeds a critical threshold Φ krit, said curve pressure control causes the monitoring circuit to maintain, via the control signals, the brake pressure at the front wheel before an anticipated lockup pressure is reached; and

wherein the acceleration sensors are mounted on the motorcycle such that a first one of the acceleration sensors detects horizontal vehicle acceleration perpendicular to a direction of travel and perpendicular to a vertical axis of the motorcycle, while a second one of the acceleration sensors measures vertical acceleration of the motorcycle at right angles thereto.

5,445,444

AUTOMATIC BRAKING PROCEDURE FOR MOTOR VEHICLES WITH AN ABS

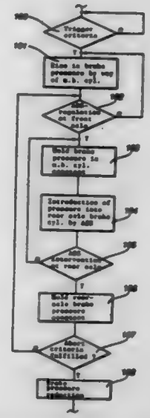
Siegfried Rump, Weinstadt, and Manfred Steiner, Winnenden, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Apr. 8, 1994, Ser. No. 225,068

Claims priority, application Germany, Nov. 8, 1993, 43 38 066.2

Int. Cl.[6] B60T *8/64*

U.S. Cl. 303—125 **11 Claims**



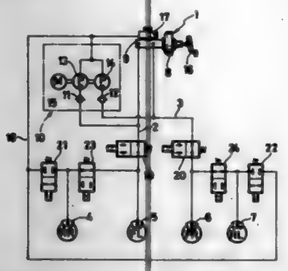
1. A method for automatic braking of a motor vehicle with an anti-lock system, comprising the steps of carrying out an automatic braking procedure on fulfillment of a trigger criterion, producing a higher pressure than that which corresponds to the position of a brake pedal during the automatic braking procedure individually at each axle of the vehicle until at least one wheel of each axle reaches an associated locking limit detected by the anti-lock system, and ending the automatic braking procedure in which higher pressure is produced at individual axles on fulfillment of an abort criterion wherein brake pressure increase is effected via a master brake cylinder until the locking limit of an axle which locks up first is reached and, for further increase of the brake pressure at least at one other axle, there is at least one pressure source for the braking medium of the vehicle, with the brake pressure produced at the at least one other axle being regulated by at least one control valve.

5,445,445

ANTISKID BRAKE SYSTEM HAVING REAR BRAKE APPORTIONING CONTROL

Hosoya Yukio, Shizuoka, Japan, assignor to Nissinbo Industries, Inc., Chuo, Japan

Continuation of Ser. No. 972,872, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 620,428, Nov. 29, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 200,929
Claims priority, application Japan, Nov. 29, 1989, 1-307629
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—113.5 **6 Claims**



1. An antiskid control device, comprising:
two pressure-mediating circuits provided in two lines from a master cylinder, each circuit being first connected to a front wheel brake and then connected to the diagonal rear wheel brake and then connected to a reservoir;
an inlet valve interposed in each pressure-mediating circuit between the master cylinder and the front wheel brake;
an outlet valve interposed in each circuit between the rear wheel brake and the reservoir wherein the inlet and outlet valves are controlled based on wheel speed;
a normally open opening/closing valve interposed in each pressure-mediating circuit between the line which connects the inlet valve and the front wheel brake, and the line which connects the outlet valve and the rear wheel brake, said opening/closing valve being controlled based on wheel speed so as to close and permit the pressure on the front wheel brake to be held and the pressure on the rear wheel brake to be bled off through the outlet valve thereby maintaining the pressure on each rear wheel brake at a pressure equal to or less than the pressure on each front wheel brake;
an auxiliary pressure source interposed between the reservoir and the inlet valve which pressure source provides auxiliary pressure to the two pressure-mediating circuits; and
a control circuit which controls opening and closing of said opening/closing valve in a manner such that, while pressure is applied to both a front wheel and the rear wheel on the same circuit, by closing the opening/closing valve the pressure on the front wheel is increased independently of the pressure on the rear wheel and the pressure on the rear wheel is decreased independently of the pressure on the front wheel.

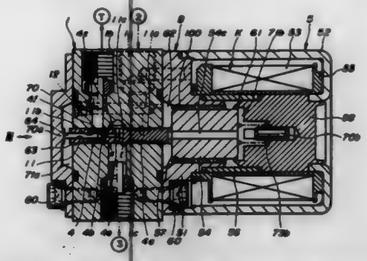
5,445,446

FLUID PRESSURE CONTROL VALVE

Shigeaki Yamamuro, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa, Japan

Filed Sep. 20, 1993, Ser. No. 122,959
Claims priority, application Japan, Sep. 21, 1992, 4-251138; Oct. 19, 1992, 4-279836
Int. Cl.[6] B60T *8/40*
U.S. Cl. 303—117.1 **6 Claims**

1. A fluid pressure control valve, comprising:
a valve housing slidably accommodating therein a valve spool;
said valve spool responsive to an incoming fluid pressure introduced from a fluid pressure source into the pressure control valve, for producing a controlled fluid pressure output therefrom depending on an axial position of said valve spool;
a biasing means disposed in said valve housing, for biasing said valve spool in a pressure buildup direction in which said controlled fluid pressure is increased;
a reaction piston arranged to extend in an axial direction of said spool and slidably disposed in an axial bore of one end of said valve spool so that one projecting end of said reaction piston is in contact with a stopper attached to said valve housing and so that another end of said reaction



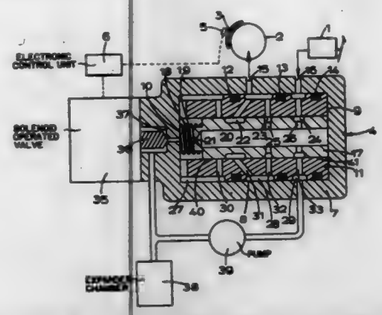
piston receives said controlled fluid pressure; said reaction piston generating a reaction force acting on said valve spool by abutment between said one protecting end of said reaction piston and said stopper to apply said reaction force to said valve spool in a pressure reduction direction in which said controlled fluid pressure is reduced; and
an electromagnetic solenoid including an axially slidable solenoid plunger having an outer diameter greater than said valve spool, said solenoid plunger engaging said valve spool to move said valve spool in said pressure reduction direction by attraction of said solenoid.

5,445,447

HYDRAULIC ANTI-LOCKING SYSTEMS FOR VEHICLES

Glyn P. R. Farr, Leek Wootton, and Philip W. Sheriff, Studley, both of England, assignors to Lucas Industries public limited company, England

Continuation of Ser. No. 969,152, Feb. 10, 1993, abandoned. This application Sep. 26, 1994, Ser. No. 311,901
Claims priority, application United Kingdom, Sep. 28, 1990, 9021231; Mar. 13, 1991, 9105324
Int. Cl.[6] B60T *8/42, 8/50*
U.S. Cl. 303—117.1 **11 Claims**



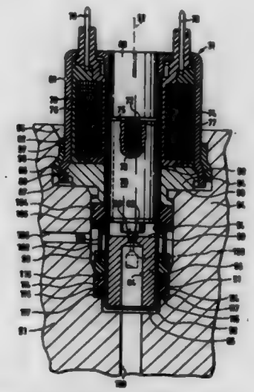
1. A hydraulic anti-lock braking system for a vehicle, said braking system comprising means for controlling a pressure applied to a brake associated with a wheel in response to control signals from an electrical control unit, means responsive to signals from a speed sensor associated with said wheel for causing said control unit to provide said control signals, a flow valve coupled to operate a single solenoid-operated valve, said flow valve incorporating a spool working in a bore in a housing with a fluid flow to the brake directed through a longitudinal passage passing substantially through a central axis of said spool, first means defining a plurality of external annular grooves in the spool, a wall in said spool preventing fluid communication between a first one of said annular grooves and said longitudinal passage, radial passages providing communication between the remainder of said external annular grooves and said longitudinal passage, a fixed orifice located at an adjacent one end of said spool where a portion of said bore at said end of said spool defines a chamber for a control spring, a variable orifice between a port in said housing and a metering edge on an input side of one of said remainder of said external annular grooves in said spool, second means defining a by-pass dump path for fluid from said brake to said chamber, said second means comprising a connection between said brake and said first annular groove, and means for providing fluid communication between said first annular groove and said chamber at least when said spool is advanced in said bore in opposition to a bias of said control spring, wherein said fluid is dumped from said brake via said first annular groove in said spool.

5,445,448

ELECTROMAGNETICALLY ACTUATABLE VALVE

Guenter Wolff, Schwieberdingen; Klaus Mueller, Tamm; Norbert Alaze, Markgroeningen; Michael Friedow, Tamm, and Juergen Gruber, Frickenhausen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1994, Ser. No. 293,272
Claims priority, application Germany, Sep. 8, 1993, 43 30 325.0
Int. Cl.[6] B60T *8/36*; F16K *31/06*
U.S. Cl. 303—119.2 **5 Claims**



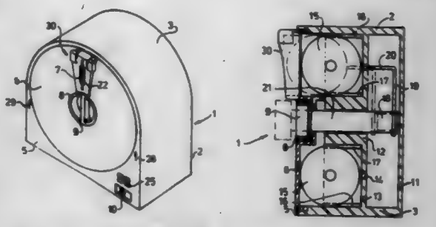
1. An electromagnetically actuatable valve in combination with a throttle opening for an antilock-equipped hydraulic brake system for motor vehicles, said electromagnetically actuatable valve having a tubular housing sleeve (50); a valve seat body (56) disposed in said tubular housing sleeve, said valve seat body including a fixed valve seat (62) concentric with said valve seat body, a continuous, unrestricted, stepped flow opening extends from said valve seat to a lower end face (66) of said valve seat body with a small diameter portion extending to said valve seat and a greater diameter portion extending to said lower end of said valve seat body; a valve closing member (68) which is movable relative to the valve seat, an armature (70) and a magnet coil (76) which actuates said valve closing member; at least one sealing ring that encompasses the housing sleeve, and, adjoining the sealing ring, a single small area, in cross section, radial through opening (102) is made in the housing sleeve, in which the housing sleeve (50) and said small area radial through opening (102) are embodied as said throttle opening, and said throttle opening has a smaller area in cross section than that of said small diameter portion of said flow opening that extends to said valve seat.

5,445,449

STORAGE DEVICE

Tom Bokstijn, Volendam, Netherlands, assignor to Tombo Trading International B.V., Volendam, Netherlands

Continuation-in-part of Ser. No. 859,404, May 27, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,327
Int. Cl.[6] A47F *1/04*
U.S. Cl. 312—9.31 **13 Claims**



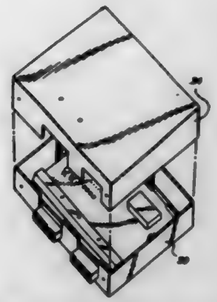
1. A storage device for thin, flat objects, comprising:
housing means for supporting the device on a support surface;
a stationary magazine non-rotatably mounted in said housing, said stationary magazine having a plurality of radially oriented storage spaces;
wall means for retaining said objects in said storage spaces, said wall means including a wall having an opening, said wall being at least partially rotatable relative to said storage spaces so as to selectively align said opening with a desired storage space for insertion and removal of an object; and
removal means attached to said wall for removing objects from said storage spaces through said opening.

5,445,450

CIRCUIT BOARD SUPPORT

William J. Hayes; Andrew M. Forehand, both of Kokomo; Adrian A. Archuleta, Peru; Paul R. Hinkle, Kokomo; Jerry A. Mundell, Forest, and Mark A. Lacterhand, Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Oct. 12, 1993, Ser. No. 133,923
Int. Cl.[6] A47B *77/08*
U.S. Cl. 312—223.2 **4 Claims**



2. A support structure for minimizing vibration and bending in a circuit board arrangement to which are soldered electrical

articles of various shapes and dimensions, said support structure being received in a housing means for at least partially encapsulating said circuit board, said structure comprising:

a first edge support means for supporting said circuit board along a first edge thereof within said housing means, said first edge support means comprising projections which define a planar groove adapted to receive said first edge;

lateral support means for supporting said circuit board along at least a second edge, including a leg member cantilevered from said first edge support means, and a surface support means for engaging a surface of said circuit board; and

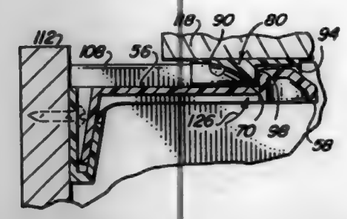
stanchion means for stabilizing said support structure.

5,445,451

CABINET AND DRAWER LATCH

Richard C. Harmony, 10824 Little Lake Rd., Downey, Calif. 90241

Filed May 17, 1994, Ser. No. 245,254
Int. Cl.[6] A47B *88/16*
U.S. Cl. 312—333 **10 Claims**



1. A latch for limiting movement of one element with respect to another element, said latch comprising in combination:

a) a prong assembly secured to one of the elements, said prong assembly including a pair of flexible spaced apart prongs and a bracket supporting each prong of said pair of prongs each prong of said pair of prongs including a terminal end;

b) an anchor assembly secured to another of the elements for capturing each terminal end of said pair of prongs, said anchor assembly including a pair of receivers to receive and capture said terminal ends to limit movement of the one element with respect to the other element; and

c) corresponding surfaces disposed upon each respective receiver of said pair of receivers for retaining said terminal ends with said anchor assembly upon capture of said terminal ends by said pair of receivers and for releasing said terminal ends from said pair of receivers upon simultaneous flexing of said pair of prongs and disengaging said pair of prongs from said anchor assembly to permit movement of the one element with respect to the other element.

5,445,452

REFRIGERATOR ADJUSTABLE UTILITY COMPARTMENT/SLIDING SHELF

Michael S. Kauffman, Lincoln Township, Berrien County, Mich.; Patrick A. Braun, Ohio Township, Warrick County, Ind.; Donna J. Heacock, Henderson, Ky., and Jeffrey A. DeBoer, Ann Arbor, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

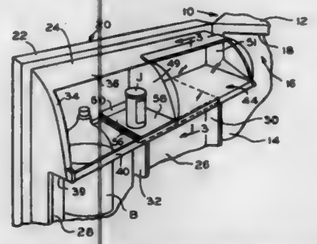
Filed May 23, 1994, Ser. No. 247,376
Int. Cl.[6] F25D *11/00*
U.S. Cl. 312—405.1 **11 Claims**

1. In a refrigeration apparatus cabinet defining a storage space and having a door providing selective access to said space, a door shelf support system comprising:

an inner door panel including a rear wall extending between opposite vertical sidewalls;

a shelf trim piece extending between said sidewalls and spaced forwardly of said panel rear wall;

a storage shelf of a length shorter than a distance between said sidewalls; and



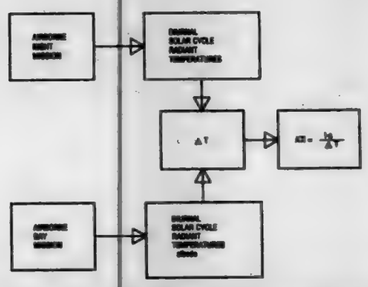
support means operatively associated with said door panel and said trim piece for supporting said storage shelf therebetween for slidable movement between said sidewalls.

5,445,453

METHOD FOR AIRBORNE SURVEYING WHICH INCLUDES THE DETERMINATION OF THE APPARENT THERMAL INERTIA OF THE MATERIAL BEING SURVEYED

Alfredo E. Prelat, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 950,519, Sep. 25, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,044
Int. Cl.[6] G01N *25/20, 25/00*; G01V *8/02*
U.S. Cl. 374—43 **3 Claims**



1. A method for airborne surveying to acquire, process and calculate the apparent thermal inertia of earth surface materials during flight and post-flight surveys comprising the steps of:

conducting first and second airborne surveys of the materials to measure maximum and minimum radiant temperatures respectively.

determining the albedo of the materials from the data obtained in one of the surveys;

calculating the apparent thermal inertia of the materials using the albedo and a comparison between the two airborne flight surveys; and

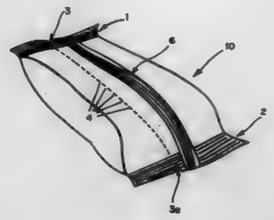
using differential global positioning means to obtain the respective ground positions along the materials being surveyed for each pixel of the two surveys.

5,445,454

TUBULAR BAG PACKAGING

Gerald Barkhorn, Beiersdorf, Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Germany

PCT No. PCT/EP92/00397, § 371 Date Oct. 21, 1993, § 102(e) Date Oct. 21, 1993, PCT Pub. No. WO92/16431, PCT Pub. Date Oct. 1, 1992
PCT Filed Feb. 26, 1992, Ser. No. 122,434
Claims priority, application Germany, Mar. 23, 1991, 41 09 605.3
Int. Cl.[6] B65D *65/28*
U.S. Cl. 383—207 **2 Claims**



1. A tubular bag package for medicinal supply articles comprising:

a film web for forming a package having a first longitudinal border, a second spaced longitudinal border, a first transverse border, a second spaced transverse border, and a composite construction including:

(i) a cover layer made of polyethylene,

(ii) a middle layer made of polyamide,

(iii) an inner layer made of a sealing material comprising one sided drawn LPDE;

whereby said middle layer has a tensile strength greater than said cover and inner layers;

a longitudinal seam formed by bonding said first and second longitudinal borders together to create a tube for enveloping the medicinal supply articles;

a first transverse seam formed by sealing said first transverse border together when said tube is formed from said film web;

a second transverse seam formed by sealing said second transverse border together when said tube is formed from said film web, said second seam being in spaced parallel relation with said first transverse seam;

at least one incision disposed in one of said transverse seams, said incision providing a controllable weakening in said transverse seam to aid in opening the tubular bag; and

a tearing aid comprising a weakening line disposed in said middle layer and extending across said package parallel to said longitudinal seam from said at least one incision to the opposite transverse seam, said weakening line comprising one of intermittent incisions, perforations, thermal brittleness and an impression, wherein at least said cover layer is imperforate.

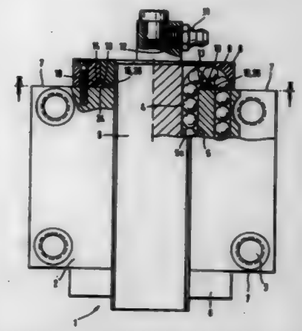
5,445,455

ROLLING BEARING FOR LINEAR MOVEMENT

Friedrich Holweg, Herolsberg, Germany, assignor to Ina Walzlager Schaeffler KG, Germany

PCT No. PCT/EP93/00219, § 371 Date Apr. 29, 1994, § 102(e) Date Apr. 29, 1994, PCT Pub. No. WO93/20363, PCT Pub. Date Oct. 14, 1993
PCT Filed Jan. 30, 1993, Ser. No. 232,298
Claims priority, application Germany, Mar. 28, 1992, 42 10 299.5
Int. Cl.[6] F16C *29/06, 33/66*
U.S. Cl. 384—45 **8 Claims**

1. A rolling bearing (1) for linear movement of a carrier (2) along a guide rail (6), said rolling bearing (1) comprising pairs of rolling element circuits supported on raceways (5,5a) on the carrier (2) and the guide rail (6), a head piece (8) comprising a region (9) for deflecting the rolling elements (4) being arranged at each front end (7) of the carrier (2), and at least one of said head pieces (8) comprising a canal (10) for feeding lubricant to the rolling elements (4) wherein a separate lubricant duct (13)



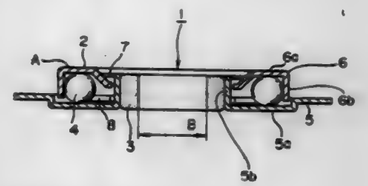
made of an elastic polymeric material or any other elastic material and comprising radial openings (16,21,23) for lubricant exit is inserted into the canal (10) of the head piece (8) wherein the radial openings (14) of the lubricant duct (13) are made in the form of slits (21).

5,445,456

BEARING ASSEMBLY

Mitsuharu Isoda, Tokyo, and Takashi Mizusawa, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 149,362
Claims priority, application Japan, Nov. 26, 1992, 4-317115
Int. Cl.[6] F16C *17/00*
U.S. Cl. 384—126 **14 Claims**



1. A bearing assembly comprising:

balls;

a thrust bearing in the form of a ball support member supporting said balls in such a manner that said balls may move freely in the radial direction within said ball support member and are restricted from movement in the thrust direction; and

a plain radial bearing arranged at the inner periphery of said ball support member.

5,445,457

ELECTRICALLY INSULATED SELF ADJUSTING BEARING

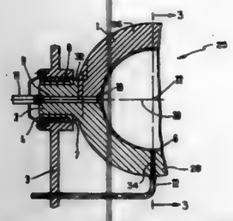
Christian Schliephack, Coppenbrugge, Germany, assignor to Renk Aktiengesellschaft, Augsburg, Germany

Continuation of Ser. No. 63,441, May 18, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,140

Claims priority, application Germany, May 18, 1992, 42 16 406.7

Int. Cl.[6] F16C *17/12*

U.S. Cl. 384—277 **9 Claims**



1. An electrically insulated self adjusting bearing assembly comprising a bearing having a bearing cap, a bearing base and a cylindrical bore extending through the cap and the base, the cylindrical bore having a bore axis, the bearing being configured for carrying a rotating shaft having a shaft axis and for withstanding torque and heat loads generated by the shaft, a pair of means for supporting the bearing and means for accommodating deviations between the bearing axis and the shaft axis, the means for accommodating deviations between the bearing axis and the shaft axis including means interconnecting each supporting means and the bearing, the interconnecting means being positioned remote from the shaft and the bearing and elevated temperatures resulting from the heat loads, the interconnecting means including means permitting movement between the bearing axis and the supporting means about a pivot axis, the pivot axis intersecting and being transverse to the bearing axis, the means for accommodating deviations between the bearing axis and the shaft axis further including a pivot bearing carried in each supporting means and a pair of journal means, each journal means projecting from the bearing, each journal means being coaxial with the pivot axis, each pivot bearing being coaxial with the pivot axis, the bearing assembly further including means for electrically isolating the bearing from the supporting means, the isolating means comprising a cylindrical insulating bushing registered with the journal means and coaxial with the pivot axis, the cylindrical insulating bushing being positioned between the pivot bearing and the supporting means the pivot bearing being subject only to pivot torque loads, whereby the cylindrical insulating bushing may be formed of material incapable of withstanding elevated temperatures.

5,445,458

AUTOMATIC PLATEN GAP ADJUSTING APPARATUS

Yukihiro Uchiyama, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

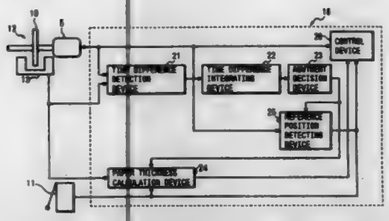
Filed Mar. 10, 1994, Ser. No. 208,375

Claims priority, application Japan, Mar. 12, 1993, 5-078986

Int. Cl.[6] B41J *11/20*

U.S. Cl. 400—55 **12 Claims**

1. An automatic platen gap adjusting apparatus comprising:
- a stepping motor for moving a carriage provided with a recording head in a direction of a platen;
- a movement detection means for outputting pulse signals proportional in number to an extent of movement of the carriage;
- an abutment decision means for integrating a time difference between each driving pulse from said stepping motor and the pulse signals produced by said movement detection means in response to moving the carriage from a reference position in the direction of the platen, and for detecting whether an integrated time difference value has reached a predetermined value;
- a paper thickness calculation means for calculating a thickness of recording paper, on the basis of the movement of



the carriage from the reference position, when a signal is produced from said abutment decision means; and
- a control means for adjusting a relative gap between the carriage and the platen by driving said stepping motor in accordance with data output by said paper thickness calculation means.

5,445,459

PRINTING APPARATUS HAVING DATA MEMORY AND METHOD THEREFOR

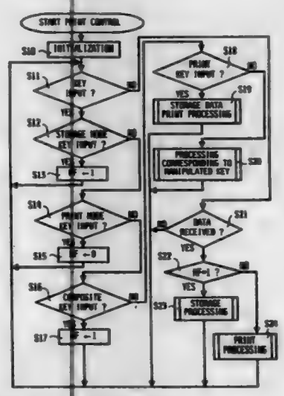
Ichiro Sasaki, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 25, 1994, Ser. No. 202,022

Claims priority, application Japan, Mar. 25, 1993, 5-092152

Int. Cl.[6] B41J *5/30*

U.S. Cl. 400—76 **19 Claims**



1. A printing apparatus including:
- a print data receiving interface;
- operation mode storing means for storing plural print control programs having different command systems for print control;
- data processing means for receiving print data received through said interface, for analyzing a control code in the print data to determine the print control program whose command system is suitable for the control code, and for processing the print data using the determined print control program;
- printing means for receiving data from said data processing means and printing characters and images on a print medium;
- data conversion means for receiving the data from said data processing means to convert the data to common pattern data that is printable by the printing apparatus without print control program processing;
- data storing means for receiving the common pattern data from said data conversion means and for storing the common pattern data;
- data read-out means for allowing said printing means to print the common pattern data stored in said data storing means; and
- setting means for selectively setting a printing operation of the print data supplied from said interface, an outputting operation of the stored common pattern data to said printing means, and a storing operation of the print data supplied from said interface into said data storing means.

5,445,460

PRESSURE-CONTACT DEVICE FOR APPLYING PRINT HEAD ONTO PLATEN OF PRINTER

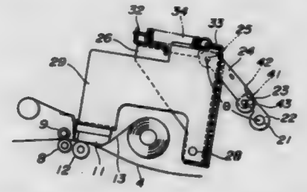
Takeshi Nakajima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,878

Claims priority, application Japan, Feb. 26, 1993, 5-038784

Int. Cl.[6] B41J *2/335*

U.S. Cl. 400—120.16 **10 Claims**



1. A print head pressure-contact device for applying a print head onto a platen of a printer, said head pressure-contact device comprising:
- a print head pressure-contact means which supports the print head thereon, said head pressure-contact means being pivotally supported so as to be pivotal in a manner which moves the print head into pressure contact with the platen;
- a first shaft in drive connection with a motor;
- a first lever, said first lever having a first end and a second end, said first lever being rigidly connected to said first shaft at the first end thereof;
- a second shaft attached to the second end of said first lever;
- a second lever, said second lever having a first end and a second end, the first end of said second lever being formed with an elongate groove in which said second shaft is slidably and rotatably received;
- a third shaft which pivotally interconnects the second end of said second lever with said head pressure-contact means;
- a cam provided on the second end of said first lever;
- a cam follower provided at the first end of said second lever, said cam follower engaging said cam and producing a force which causes said print head pressure contact means to pivot and press the print head into contact with the platen when an angle between said first and second levers is within a predetermined angle range including an angle of 180° at which the two levers are aligned to each other.

5,445,461

DETACHABLE CARRIAGE DRIVE

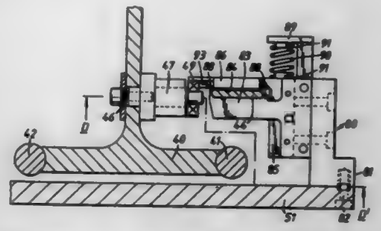
Jozef De Roeck; Eduard V. Vaeck, both of c/o Agfa-Gevaert N.V., Sepestraat 27; Marc Sillis, 46, c/o Agfa-Gevaert N.V., Septestraat 27; Michel Merckx, and Paul Van Hecke, both of c/o Agfa-Gevaert N.V., Septestraat 27, all of B 2640 Mortsel, Belgium

Filed Dec. 14, 1993, Ser. No. 165,820

Claims priority, application European Pat. Off., Jan. 8, 1993, 93200042

Int. Cl.[6] B41J *19/18*

U.S. Cl. 400—322 **7 Claims**



1. A detachable carriage drive comprises a carriage movable in a linear path along a supporting rail, a driving belt for driving said carriage along said path, said driving belt having teeth on one side thereof, motor means for advancing said driving belt in opposite directions along said path, and clamping means carried by said carriage for deteachably attaching said carriage to said driving belt, said clamping means comprising a belt support plate fixed on said carriage and carrying a belt contacting surface proximate to one side of said belt, a pressure plate mounted on said belt support plate generally opposite and parallel to said belt contacting surface to define a slot therebetween for reception of said belt, said pressure plate being supported for bodily movement toward and away from said belt contacting surface and having teeth thereon for mating with the driving belt teeth, and means normally biasing said pressure plate toward said supporting plate for clamping engagement of the driving belt therebetween with the plate teeth meshing with the driving belt teeth to thereby attach the carriage to said belt, said pressure plate being movable against said biasing means to disengage the teeth thereon from said driving belt teeth to detach said carriage from said driving belt.

5,445,462

LIQUID APPLICATOR

Douglas P. Johnson, Leawood, and A. Joseph Brandmeyer, Prairie Village, both of Kans., assignors to Medi-Flex Hospital Products, Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 101,581, Aug. 3, 1993, abandoned. This application Apr. 18, 1994, Ser. No. 228,737

Int. Cl.[6] A61M *35/00;* **A47L** *13/17*

U.S. Cl. 401—132 **16 Claims**

1. A liquid applicator comprising:
- an elongated hollow body having opposed first and second open ends in fluid communication with one another through the body;
- a tip attached to the first open end of the body and including a porous material for permitting liquid within the body to be applied through the tip;
- a closed, frangible ampul supported within the second open end of the body and containing a liquid to be dispensed;
- a cap supported on the body at the second open end of the body, the cap being movable axially relative to the body between a storage position and a use position;
- a locking means for retaining the cap on the body and locking the cap against movement from either of the storage or use positions in a direction toward the second open end of the body,

the locking means including a pair of axially spaced locking surfaces formed on the body adjacent the second open end, an engagement surface provided on the cap, and a biasing means for biasing the engagement surface toward the locking surfaces,

the engagement surface being movable relative to the locking surfaces when the cap is moved toward the use position and engaging the locking surfaces to lock the cap against movement from either of the storage or use positions in a direction toward the second open end of the body; and

a fracturing means for fracturing the ampul when the cap is moved from the storage position to the use position to permit the liquid in the ampul to flow through the body to the tip.

5,445,463

COMBINATION INK OR DYE RIBBON FOR NONIMPACT PRINTING

Suresh C. Paranjpe, 5625 Summit Dr., West Linn, Oreg. 97068

Filed Mar. 30, 1993, Ser. No. 39,871

Int. Cl.[6] B41J *33/00*

U.S. Cl. 400—240 **4 Claims**



1. An image transfer medium comprising:

an elongate foundation having a beginning end, a terminal end, and oppositely facing sides;

a first panel group comprised of first transfer materials carried on the foundation for transferring an image from the foundation to a substrate; and

at least a second panel group comprised of second transfer materials carried on the foundation for transferring an image from the foundation to a substrate; wherein

the first transfer materials comprise, in combination, an ink, means for releasing the ink, and means for adhering the ink to the substrate in a thermal transfer process;

the second transfer materials comprise dye diffusion type of transfer materials different from the first transfer materials different from the first transfer materials for transferring the image to the substrate using a sublimation transfer process; and

said first and at least second panel groups are disposed on one of said sides of said foundation to respective predetermined lengths thereon.

5,445,464

INK RIBBON USAGE IN A MULTICOLOR IMAGE RECORDING APPARATUS

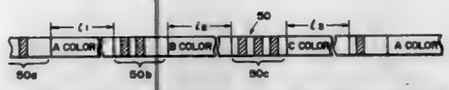
Osamu Asakura, Tokyo; Yoshio Uchikata, Yokohama; Kenji Kawazoe, and Yuji Kanome, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,760, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 16,177, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 555,819, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 160,292, Feb. 25, 1988, abandoned. This application Nov. 18, 1994, Ser. No. 345,355

Claims priority, application Japan, Feb. 27, 1987, 62-043085; Feb. 27, 1987, 62-043086; Feb. 27, 1987, 62-043087; Feb. 27, 1987, 62-043088; Feb. 27, 1987, 62-043089; Feb. 27, 1987, 62-043091; Feb. 27, 1987, 62-043092

Int. Cl.[6] B41J *33/54, 35/16*

U.S. Cl. 400—249 **19 Claims**



1. An image recording apparatus for recording a multi-colored image on a recording medium by using a multi-colored ink ribbon having a plurality of color frames, said apparatus comprising:

memory means for storing a recording color and a recording amount of a finally recorded color remaining in a given said color frame on said ink ribbon at a final recording in a remaining portion; and

controlling means for causing the ink ribbon to record images using a portion of the finally recorded color of the ink ribbon in said given color frame, and for controlling a recording color to be initially recorded in the next remaining portion so that it is the same color as the finally recorded color stored in said memory means when the finally recorded color of the ink ribbon has a remaining amount of color after recording in the remaining portion, wherein said controlling means uses the ink ribbon to record images from a portion of the finally recorded color of the ink ribbon in said color frame regardless of whether the remaining amount of the finally recorded color is less than a recording amount required to record in the next remaining portion.

5,445,465

DISPENSING CONTAINER

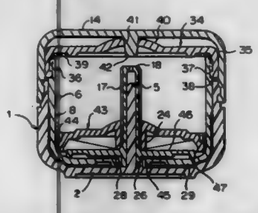
Ennio Cardia, No. 18, Via Durazzo, 00195 Roma, Italy

Continuation of Ser. No. 917,669, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 457,538, Mar. 9, 1990, abandoned. This application Nov. 14, 1994, Ser. No. 340,437

Claims priority, application Italy, Mar. 10, 1989, 47736A/89

Int. Cl.[6] A45D *40/06, 40/04*

U.S. Cl. 401—175 **3 Claims**



1. In a dispensing container for a dispensable product, of the kind comprising:

a) an outer tubular body with an inner surface of a circular section and having an open top end and a closed bottom end, from which a central element upwardly projects;

b) connection means rigidly connecting said closed bottom end with a threaded rod extending along a central axis of said outer body;

c) an inner tubular body arranged within said outer body, and having an inner smooth surface;

d) axial constraint means integrally formed on said threaded rod for precluding axial movement of said inner tubular body relative to said outer tubular body and allowing a rotary movement of said outer tubular body around said inner tubular body in a sliding contact between their respective inner and outer smooth surfaces;

e) a driving member supporting said product and capable of a rotational-translationaly motion within said inner tubular body through a threading engagement with said threaded rod;

f) a removable cover engageable with the upper end of said outer tubular body;

g) perimetrical friction means provided on the outer surface of said driving member and contacting the inner surface of said inner tubular body for providing a fluid-tight seal between said outer surface and said inner surface and preventing said driving member from rotating with respect to the inner tubular body;

h) the improvement wherein said outer body, including the closed bottom and the upwardly projecting central element is moulded as unitary structure of an inelastic plastic material and said connection means consist of a recess axially extending within said threaded rod, said upwardly projecting element being irremovably forced into said recess of said threaded rod to form a single unit therewith and wherein the perimetrical friction means consist of flaring edges and annular flanges projecting from the outer wall of the driving member and exerting elastically a pressure on the inner smooth surface of the inner body.

5,445,466

LIQUID APPLICATOR WITH SCREW LOCK

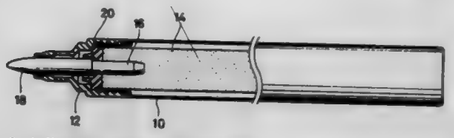
Tadashi Mukunoki, Toyonaka, Japan, assignor to Kabushiki Kaisha Sakura Kurepasu, Osaka, Japan

Filed Oct. 22, 1992, Ser. No. 964,866

Claims priority, application Japan, Oct. 30, 1991, 3-089291 U

Int. Cl.[6] B43K *3/00, 8/02*

U.S. Cl. 401—199 **7 Claims**



1. A liquid applicator comprising:

a tubular casing having an external thread formed on an outer circumferential surface thereof;

a hollow lead portion having an internal thread formed on an inner circumferential surface thereof, the lead portion being mountable on the casing by spirally engaging the external and internal threads;

an engaging projected portion formed in a specified position on each of the outer circumferential surface of the casing and the inner circumferential surface of the lead portion, the specified positions corresponding to each other in a state where the external and internal threads are completely spirally engaged with each other, these engaging projected portions being formed such that one engaging projected portion is allowed to move over the other in a spiral rotating direction, but is not allowed to move over the other in a direction opposite to the spiral rotating direction; and

a restricting projected portion formed adjacent to the other of said engaging projected portions so as to form, in combination with the other engaging projected portion, a groove for holding the one engaging projected portion from moving in both said spiral rotating direction and a rotating direction opposite said spiral rotating direction,

wherein a space is defined between the outer circumferential surface of said casing and the inner circumferential surface of said lead portion,

wherein the height of each of said engaging projected portions and said restricting projected portion is less than or equal to the distance between the outer circumferential surface of said casing and the inner circumferential surface of said lead portion, and

wherein a seal member is provided between the casing and the lead portion in a state where the external and internal threads are completely spirally engaged with each other.

5,445,467

BINDING FILE

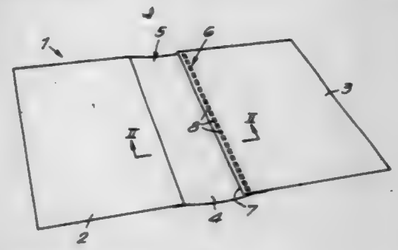
Guido Peleman, Antwerpen, Belgium, assignor to Sisan SA, Lugano, Switzerland

Filed Nov. 4, 1993, Ser. No. 145,613

Claims priority, application Belgium, Nov. 4, 1992, 09200953; Dec. 2, 1992, 09201054

Int. Cl.[6] B42F *3/06*

U.S. Cl. 402—57 **18 Claims**



1. A binding file comprising:

a front sheet;

a rear sheet;

a back having opposed, longitudinally extending edge portions attached to said front and rear sheets respectively;

a single binding connection part provided at one of said opposed edge portions of said back, said binding connection part including a free end that extends longitudinally between said front and rear sheets, said binding connection part being provided with a row of longitudinally spaced perforations adjacent said free end; and

a binding element, upon which it plurality of sheets can be bundled interchangeably including a plurality of longitudinally spaced, ring-shaped closed binding rings, each of said binding rings being attached to one of said front sheet, rear sheet and back of said binding file solely by each of said binding rings extending through a respective one of said perforations.

5,445,468

TWO-PIECE PRESENTATION FOLDER

Peter L. Pacione, 755/20 The Queensway East, Mississauga, Ontario, Canada L4Y4C5

Filed Oct. 29, 1993, Ser. No. 142,962

Claims priority, application Canada, Nov. 5, 1992, 2082251

Int. Cl.[6] B42F *13/38*

U.S. Cl. 402—75 **17 Claims**

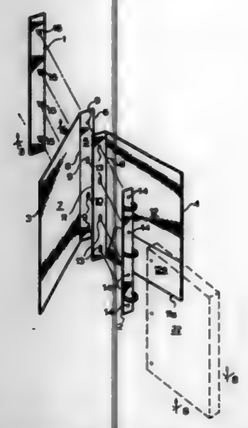
1. A kit for assembly into a portfolio folder comprising:

a separate first panel comprising a first rectangular sheet having a first elongate spline portion along a first side edge thereof delineated, from a remaining first rectangular portion of the first panel, by a hinge-forming scoreline

parallel to the first side edge, the first spline portion having a longitudinally spaced plurality of first openings;

a separate second panel comprising a second rectangular sheet having a second elongate spline portion along a second side edge thereof delineated, from a remaining second rectangular portion of the second panel, by a hinge-forming scoreline parallel to the second side edge, the second spline portion having a longitudinally spaced plurality of second openings;

elongate inner binding means for retaining one side edge of bound sheet material in an assembled portfolio between



the first and second panels, the binding means having a longitudinally spaced plurality of inner detent means; and

an elongate outer spline member having a longitudinally spaced plurality of outer detent means engagable with a plurality of said inner detent means, said first and second openings being spaced to align when said first and second spline portions are in mutually overlapping relation with said inner and outer detent means engagable through pairs of aligned first and second openings, the inner binding means and outer spline member being engaged respectively inward and outward of both said first and second spline portions.

5,445,469

SLIDING JOINT ASSEMBLY FOR TWO PARTS SUBJECTED TO LARGE MECHANICAL AND THERMAL STRESSES

André Huck, St Just, and Dominique Indersie, Vernon, both of France, assignors to Societe Europeenne De Propulsion, Suresnes, France

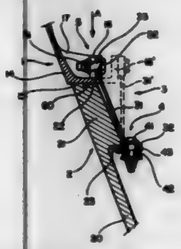
Filed Dec. 15, 1993, Ser. No. 166,918

Claims priority, application France, Dec. 30, 1992, 92 15956

Int. Cl.[6] F16B *2/02*

U.S. Cl. 403—30 **11 Claims**

1. A sliding joint assembly comprising a first part and a second part that have different expansion coefficients and that are subject to large mechanical and thermal stresses, the assembly including at least one substantially radial contact interface which is located between the first and second parts, a sealing gasket disposed at said contact interface, mechanical fastening means between the first and second parts, and a plurality of radially acting spring blades each having first and second ends, said spring blades being connected firstly via said first ends thereof to the first part only in a vicinity of said contact interface, and secondly via said second ends thereof to the second part only in a zone that is axially remote from said contact interface, said contact interface constituting a sliding contact surface between the first and second parts, while the second ends of the spring blades are connected to the second part via said mechanical fastening means constituted by detachable screw-and-nut type assemblies provided with spring washers



for damping forces exerted in an axial direction which is substantially perpendicular to said radial contact interface.

5,445,470

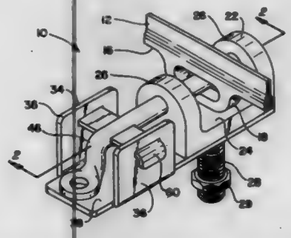
TAB LOCKED PIN ATTACHMENT MECHANISM

Gary A. Schirtzinger, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1993, Ser. No. 172,959

Int. Cl.[6] F16B *19/00*

U.S. Cl. 403—79 **8 Claims**



1. An attachment mechanism for fastening a first component to a second component in a confined and blind area, the second component having an attachment means, the second component attachment means having a second component passageway therethrough, which comprises:

a clevis pivotally mounted on the first component, the clevis having a clevis surface with at least two knuckles extending therefrom, the clevis accepting the second component, the clevis knuckles interfitting with the second component attachment means, the clevis knuckles having a clevis knuckle passageway therethrough coaxially aligned with the second component passageway;

a pin having a shaft and a head, the shaft extending from the head, the shaft having a pin passageway therethrough, the pin passes through the clevis knuckle passageway and the second component passageway, so that the first component and the second component are fastened together by the pin;

a U-shaped bracket adjacent and pivotally secured to the clevis, the U-shaped bracket having two sidewalls extending therefrom, the sidewalls each having an outside sidewall surface, the bracket sidewalls having a sidewall passageway therethrough, being coaxially aligned with the pin passageway;

a locking member placed through the U-shaped bracket sidewall passageway and the pin passageway so that the locking member prevents axial displacement of the pin relative to the clevis.

5,445,471

PLASTIC JOINT FOR ARTICULATING TWO COMPONENTS

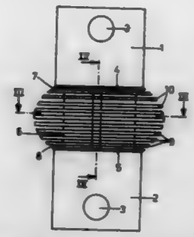
Eugen Wexler, and Thomas Stopp, both of Lauf, Germany, assignors to EsWe Eugen Wexler GmbH, Lauf, Germany

Filed Jul. 12, 1993, Ser. No. 90,414

Claims priority, application Germany, Jul. 25, 1992, 42 24 699.7

Int. Cl.[6] F16B *1/00*

U.S. Cl. 403—220 **6 Claims**



1. A plastic joint for articulating two components comprising two inherently stable fastening elements (1, 2) made of a plastic material and serving for connecting the plastic joint with the corresponding component and

a joint element (6) arranged between the fastening elements (1, 2), which joint element (6) defines at least one joint axis for deflecting the plastic joint between a straight position and a deflected position,

wherein the joint element (6) is formed as a moulded part which is directly injection-moulded with its ends (7, 8) to the fastening elements (1, 2), which moulded part is made of a more flexible plastics material than that of the fastening elements (1, 2) and, wherein the joint element (6) is provided with a reinforcement core (11) connecting the fastening elements (1, 2), which reinforcement core (11) is formed in one piece with the fastening elements (1, 2) and which is made of the same material.

5,445,472

JOINT ASSEMBLY

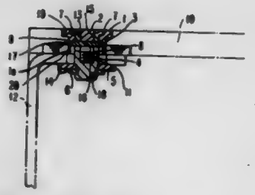
Terumasa Onkouchi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,808

Claims priority, application Japan, Feb. 23, 1993, 5-057795

Int. Cl.[6] F16B *7/00*

U.S. Cl. 403—348 **3 Claims**



1. A joint assembly, comprising:

a stationary body (1) fixedly embedded in one object (10) of two objects (10, 12) so as to have a stationary body surface be flush with a surface of said one object (10), said objects (10, 12) being connected with each other;

a rotary shaft (7) rotatably embedded in said stationary body (1) so as to have a rotary shaft front-end surface be flush with a front-end surface of said stationary body (1);

a holding-member plate (5) fixedly mounted on a lower-end portion of said rotary shaft (7);

a compression coil spring (4) axially inserted in a central cavity portion (15) of said rotary shaft (7);

a locking shaft (2) inserted in an upper-end portion of said central cavity portion (15) and having a locking shaft front-end surface be flush with said front-end surface of said rotary shaft (7);

a lock pin (3) which passes through an axially-elongated through-hole (17) of said rotary shaft (7) and is inserted into a through-hole (16) of said locking shaft (2), said axially-elongated through hole (17) extending in a diametrical direction of said rotary shaft (7), said through-hole (16) extending in a diametrical direction of said locking shaft (2);

a notch portion (8) provided in an inner peripheral surface of said stationary body (1) to permit an end portion of said lock pin (3) to be movable when said locking shaft (2) is rotatably driven, said notch portion (8) being provided with an axially-extending locking groove (9) in an end portion of a notch portion bottom surface, said locking groove (9) being engaged with said end portion of said lock pin (3); and

a receiving hole (11) provided in the other one object (12) of said object (10, 12), said receiving hole (11) permitting both said holding-member plate (5) and a front-end portion of said rotary shaft (7) to pass therethrough;

whereby said lock pin (3) is engaged with said locking groove (9) when said rotary shaft (7) is rotated so that said holding-member plate (5) is crossed with said receiving hole (11) of the other one (12) of said objects (10, 12) at an angle of 90° behind the receiving hole (11).

5,445,473

CRACK ANTI-RISE SYSTEM INSERTED BETWEEN THE STRUCTURAL LAYER AND THE ROAD CARPET OF A CARRIAGEWAY AND PROCESS FOR PRODUCING SUCH A SYSTEM

Pierre Chaverot, rue Salvador Allende, and Emile Lopez, Impasse Sainte Blandine, both of France, assignors to Koch Materials Company, Wichita, Kans.

PCT No. PCT/FR93/00690, § 371 Date Apr. 25, 1994, § 102(e) Date Apr. 25, 1994, PCT Pub. No. WO94/01623, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 5, 1993, Ser. No. 204,178

Claims priority, application France, Jul. 7, 1992, 92 08366

Int. Cl.[6] E01C *7/00*

U.S. Cl. 404—75 **28 Claims**

1. Crack anti-rise system inserted between the structural layer and the road carpet of a carriageway, of the type containing a layer of a geotextile impregnated with a first bituminous binder, which it also includes a layer of aggregates coated with a second bituminous binder, which is joined to the layer of geotextile impregnated with the first bituminous binder wherein between the structural layer and the road carpet of the carriageway, the layer of aggregates coated with the second bituminous binder lies on the structural layer of the carriageway, and whereas the layer of geotextile coated with the first bituminous binder is covered by the road carpet.

5,445,474

PULSING REMEDIATION METHOD

Paul D. Lundegard, Fullerton; Carl E. Filat, and Brent F. Chaffee, both of Yorba Linda, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 27, 1994, Ser. No. 189,152

Int. Cl.[6] B09B *3/00*; F02D *3/00*

U.S. Cl. 405—128 **27 Claims**

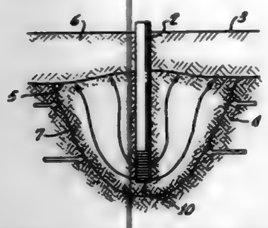
1. A process for bioremediating a contaminated zone by pulsing air into an underground formation containing an in-situ fluid, said process comprising:

drilling and completing a well which penetrates said contaminated zone;

injecting an air pulse through said well into said contami-

nated zone at a flowrate of at least about 0.25 SCFM for a first period of time lasting no more than 720 hours at a first average air flowrate;

substantially reducing said average air flowrate to a second average air flowrate during a second recovery period of time following said first period, said second recovery period lasting from about 1 to 720 hours; and



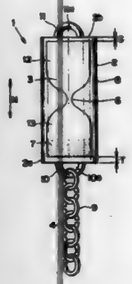
injecting another air pulse at a third average air flowrate greater than said second average flowrate into said contaminated zone for a third period of time following said second recovery period, said third period lasting no more than 720 hours.

5,445,475

FLOATING UP GUIDE DEVICE

Tadanobu Fujino, 824-4 Matsukawa 1-Chome Minami-ku, Yokohama-shi, Japan

Filed Nov. 5, 1993, Ser. No. 147,318
Claims priority, application Japan, Jul. 6, 1993, 5-191973
Int. Cl.[6] B63C *11/02*
U.S. Cl. 405—186 **5 Claims**



1. A floating up guide device comprising:

an external wall portion forming a floating up guide device body having a first end and a second end and a hollow interior defined within said external wall;

wherein said external wall portion forming said floating up guide device body is formed of a inflexible material which does not vary the volume of said hollow interior portion;

wherein said hollow interior portion is sealed and enclosed by said external wall portion; and

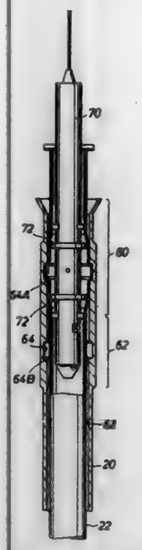
wherein a balancing member variable in weight is detachably attached on said first end of said external wall portion.

5,445,476

REUSABLE OFFSHORE PLATFORM JACKET

George E. Sgouros, New Orleans, and Dale M. Gallaher, Metairie, both of La., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1993, Ser. No. 129,829
Int. Cl.[6] E02D *29/09*; E02B *17/00*
U.S. Cl. 405—224 **11 Claims**



1. A reusable jacket base for an offshore platform of a configuration suitable to secure to an ocean floor upon installation with a plurality of piles, the jacket base comprising:

a plurality of jacket legs;

framework interconnecting the jacket legs; and

a plurality of pile sleeves connected to the jacket legs, the pile sleeves comprising:

a vertically extended, open-ended cylindrical member having a second stage sleeve which is connected to the jacket leg and a first stage sleeve projecting coaxially from the second stage sleeve;

a first stage locking profile inside the first stage sleeve; and

a second stage locking profile inside the second stage sleeve.

7. A method for connecting a pile to a pile sleeve in the foundation of an offshore platform jacket, comprising:

setting the pile into an ocean floor through the pile sleeve;

isolating a first stage of a pile-to-pile sleeve interconnection which is presented in an extension of the pile sleeve from a second stage of the pile sleeve suitable to secure a pile-to-pile sleeve interconnection; and

securing the pile to the pile sleeve at the first stage during a first deployment of the offshore platform jacket;

whereby the second stage is reserved and conveniently available for a pile-to-pile sleeve interconnection should the offshore platform jacket be salvaged and redeployed;

retrieving the offshore platform jacket upon depletion of hydrocarbon reserves at the initial site, comprising;

cutting the concentric pile and pile sleeve anal removing the extension of the pile sleeve containing the first stage of pile-to-pile sleeve interconnection; and

raising the offshore platform jacket and rigging for transport; and

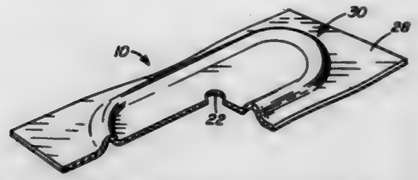
redeploying the offshore platform jacket.

5,445,477

BEARING PLATE WITH A CONTINUOUS ELLIPTICAL EMBOSSMENT

Frank Calandra, Jr., Pittsburgh, Pa., assignor to Jeanmar Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 893,557, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 674,799, Mar. 25, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,470
Int. Cl.[6] F16B *43/00*; E21D *21/00*
U.S. Cl. 405—259.1 **9 Claims**



9. A bearing plate for supporting a generally flat planar surface comprising,

a plate having a bearing surface and an opposite surface,

a pair of side walls and a pair of end walls defining a perimeter of a polygonal bearing plate having a length greater than a width,

said bearing plate having a longitudinal axis intersecting a transverse axis at a midpoint of said bearing plate,

a continuous embossment extending a preselected distance outwardly from said opposite surface,

said continuous embossment being positioned closer to said perimeter than to said bearing plate midpoint to provide increased rigidity to said bearing plate and divide said bearing plate into an inner portion and an outer portion,

said inner and outer portions of said plate being in the same plane with said outer portion limited to an area closely adjacent to said perimeter,

said continuous embossment including curved segments and linear segments, and

said curved segments closely spaced from said end walls to reinforce said perimeter along said end walls and said linear segments closely spaced from said side walls to reinforce said perimeter along said side walls and form said continuous embossment to withstand stresses along said perimeter by transmitting stresses on said plate end walls from said curved segments to said linear segments due to the continuous configuration of said embossment along said perimeter.

5,445,478

HAND-HELD APPARATUS FOR MACHINING OF CYLINDER HEAD VALVE GUIDE HOLES

Joseph Ordogh, and Frank Ordogh, both of Thornhill, Canada, assignors to Parts Manufacturing Co. Ltd., Concord, Canada

Filed Apr. 12, 1994, Ser. No. 225,992
Int. Cl.[6] B23B *35/00*, *41/12*
U.S. Cl. 408—1 R **20 Claims**

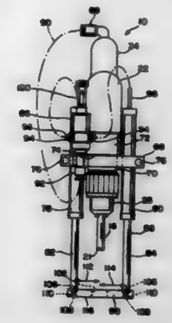
18. A method for aligning tooling having a pilot portion for machining of a cylinder head valve guide hole by a hand-held tool, the method comprising the steps of:

a. applying to the tooling a collar which has a shape to engage a least worn portion of a valve seat associated with the value guide hole around a circumference thereof without engaging more worn portions of the valve seat;

b. providing a bracket in a position to bear on the collar;

c. inserting the tooling into the valve guide hole while operating the tool; and

d. applying force to the bracket to hold the collar in engagement with the valve seat whereby to align, in combination



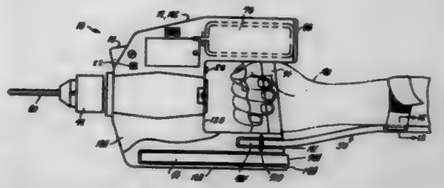
with the tooling pilot portion, the tooling in the valve guide hole.

5,445,479

ERGONOMICALLY DESIGNED, ELECTRICALLY ENERGIZED HAND DRILL HAVING A HOUSING, LONGITUDINALLY ALIGNED WITH A HAND, WRIST AND FOREARM SUPPORT

George Hillinger, 129 N. LeDoux Rd., Beverly Hills, Calif. 90211

Filed Aug. 17, 1994, Ser. No. 292,425
Int. Cl.[6] B23B *45/00*
U.S. Cl. 408—16 **22 Claims**



1. An ergonomically designed, electrically energized hand drill comprising:

a) a drill housing having a front side, a rear side, and a lower side, where said housing encloses an electric motor that is activated by an enclosed electric circuit, and where from the rear side of said housing extends a handle that when gripped by a user's hand, the longitudinal axis of the hand is in substantial alignment with the longitudinal axis of a drill bit inserted into a drill chuck protruding from the front side of said housing and that is activated by said electric motor, and

b) a hand, wrist ad forearm support means, that is extendable from the rear side of said drill housing, where when said support is extended, the wrist and forearm are in substantial alignment with the longitudinal axes of the hand and the drill bit while said hand drill is being used.

5,445,480

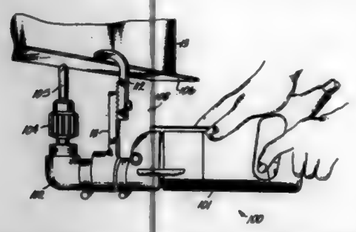
POWER DRILL ACCESSORY

Denys J. Merriman, 13359 Rimview Ct., Yucaipa, Calif. 92399

Division of Ser. No. 934,796, Aug. 24, 1992, Pat. No. 5,359,821. This application Aug. 11, 1994, Ser. No. 288,929
Int. Cl.[6] B23B *45/14*
U.S. Cl. 408—87 **7 Claims**

1. A drilling tool useful in low height clearance environments for drilling holes in substantially horizontal lower

flanges of structural members, the tool comprising a power drill having a body and an output shaft, a right angle drive assembly connected to the drill output shaft and having a driven output element rotatable about an axis normal to the drill output shaft and a bit chuck coupled to the output element



for rotation therewith, and a fulcrum arm assembly connected to a sleeve located between the drill body and the angle drive assembly and defining a fixed fulcrum point at a selected location displaced from said axis toward the drill body a selected distance laterally from the drill output shaft and adjacent to the bit chuck.

5,445,481

DRESSING APPARATUS FOR AN ELECTRODE TIP

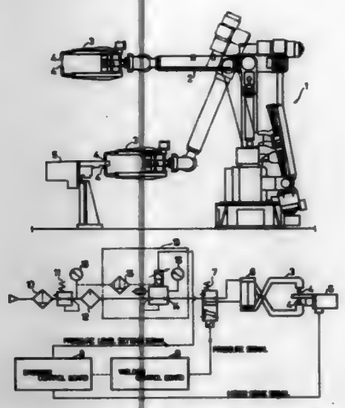
Toshiharu Nakajima, Yokkaichi; Tadashi Goto, Mie, and Shinji Hoshino, Suzuka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,800

Claims priority, application Japan, Jul. 31, 1992, 4-204701

Int. Cl.[6] B23C *3/12*

U.S. Cl. 409—140 **9 Claims**



1. A dressing apparatus for reforming an electrode tip by a rotating cutting blade comprising:

a blade holder;

a first blade disposed on said blade holder;

a second blade disposed on said blade holder;

a pressure control means for controlling a pressure applied on said electrode tip against said blade holder; whereby said electrode tip being pressed at setting of said electrode tip with a first force relatively smaller than a force applied at welding,

said electrode tip being pressed when being machined with a second force slightly greater than said first force, and after a predetermined time period with a further smaller force.

5,445,482

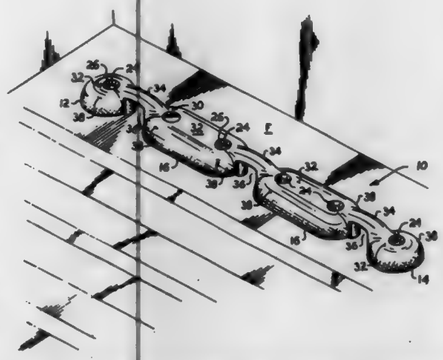
CARGO TIEDOWN

Jim B. Davis, 10350 56th St., Mira Loma, Calif. 91752

Continuation-in-part of Ser. No. 76,760, Jun. 15, 1993, Pat. No. 5,302,064. This application Nov. 18, 1993, Ser. No. 154,085

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—115 **15 Claims**



1. A cargo tiedown providing for permanent attachment to a floor in a cargo area of a vehicle, said cargo tiedown comprising:

a unitary, monolithic unit including a first base portion, a second base portion, and at least one intermediate base portion between said first base portion and said second base portion;

each said base portion being interconnected to at least one other said base portion by an elongate tiedown bridge extending therebetween, with each said base portion and each said tiedown bridge being disposed in a linear array;

each said at least one intermediate base portion comprises a substantially oval planform having opposed ends, with one said tiedown bridge extending from said opposed ends of each said at least one intermediate base portion;

each said at least one intermediate base portion includes two fastener holes therethrough, with one of said fastener holes respectively disposed adjacent each of said opposed ends thereof and adjacent each said tiedown bridge;

each said base portion having a flat, planar lower surface, with each said base portion's lower surface being coplanar with another said base portion's lower surface to provide for mating attachment to a flat surface;

each said base portion including at least one fastener hole therethrough providing for the attachment of said cargo tiedown to an underlying cargo floor;

said first base portion and said second base portion each comprise a substantially round planform with one said fastener hole respectively disposed centrally through said first base portion and said second base portion; and

each said tiedown bridge having an opening thereunder extending to each said lower surface of each said base portion, with each said opening comprising a cargo tiedown line passage means, whereby;

said cargo tiedown may be permanently installed to the vehicle's cargo area floor and cargo may be secured immediately adjacent the cargo area floor by means of said tiedown bridges.

5,445,483

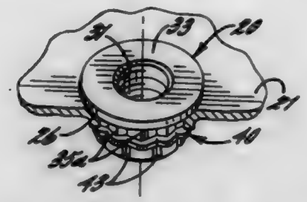
FEMALE CLINCH FASTENER WITH COLD-FORMED LOCKING FLANGE AND ASSOCIATED INSTALLATION METHOD

Robb M. Fultz, Huntington, Ind., assignor to Emhart Inc., Newark, Del.

Filed Aug. 23, 1993, Ser. No. 110,451

Int. Cl.[6] F16B *37/04*; B23P *11/00*

U.S. Cl. 411—181 **58 Claims**



1. A combination of a female clinch fastener secured to a sheet, the sheet having an opening with edge portions of said sheet adjacent the opening being deformed to define a pilot depending from said sheet, said clinch fastener comprising:

a generally tubular body;

first and second laterally extending flanges connected to said tubular body in longitudinally spaced relation and cooperating to secure said tubular body within said pilot of said sheet, said first flange connected to a first end of said tubular body, said second flange connected to a medial portion of said tubular body and abutting outer end portions of said pilot, said second flange comprising a plurality of radially outwardly extending protrusions longitudinally aligned with respective splines; and

a plurality of circumferentially distributed splines connected to a first portion of said tubular body and extending longitudinally between said first and second flanges, said splines in engagement with said pilot to prevent rotation of said clinch fastener within said pilot, said splines having peripheral portions defining an imaginary circle having a predetermined diameter;

said tubular body having a second portion extending longitudinally outward from said second flange, said second portion having a transverse cross-sectional diameter less than said predetermined splines.

5,445,484

VACUUM PROCESSING SYSTEM

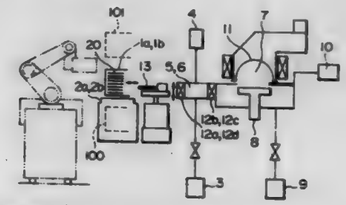
Shigekazu Kato; Naoyuki Tamura, both of Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 796,672, Nov. 25, 1991, abandoned. This application Oct. 4, 1993, Ser. No. 131,911

Claims priority, application Japan, Nov. 26, 1990, 2-317810

Int. Cl.[6] B65G *49/05*

U.S. Cl. 414—217 **5 Claims**



1. A wafer processing system comprising:

two cassettes each having a plurality of wafers stored at respective locations therein;

first and second cassette stands for supporting respective ones of said two cassettes in horizontally spaced relation without a separator at a boundary therebetween;

means for moving respective ones of each of said first and second cassette stands between first and second vertically spaced positions;

a vacuum processing chamber for processing said wafers in a vacuum condition therein;

wafer transfer means located between said cassette stands and said vacuum processing chamber for transferring said wafers between each cassette, when its associated cassette stand is held in its first position, and said vacuum processing chamber; and

cassette supply and take-out means for supplying and taking out a cassette to and from one of said first and second cassette stands in its first position when the other of said first and second cassette stands is in its second position.

5,445,485

APPARATUS FOR HANDLING ROLLING PALLETS, PARTICULARLY IN RACK STORAGE FACILITIES

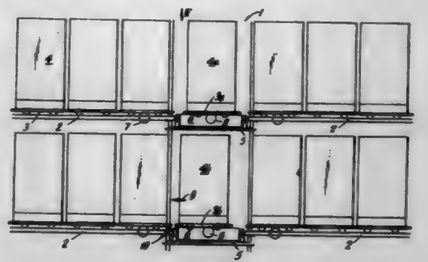
Jean C. Poutet, Stuttgart, Germany, assignor to Zöblin-Systemtechnik GmbH für Lager-und Transportanlagen, Stuttgart, Germany

Filed Jul. 22, 1993, Ser. No. 96,035

Claims priority, application Germany, Jul. 22, 1992, 42 24 168.5

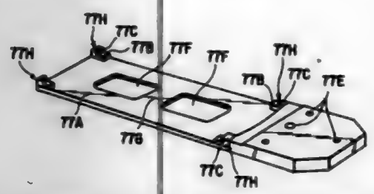
Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—280 **19 Claims**



1. An apparatus for handling rolling pallets which are mechanically coupled with one another in rack channels, comprising: a displacement carriage which is movable in a rack access lane perpendicular to the rack channels; a working ram connected to the displacement carriage so as to be outwardly movable perpendicularly to the rack access lane and underneath a pallet, the working ram at the displacement carriage having at least one swivelable driver for engaging a rolling pallet after being partially driven underneath the pallet; mechanical couplings of the individual rolling pallets outfitted with engagement members substantially located in a horizontal plane; control means for offsetting the displacement carriage in a rack access lane direction by a coupling distance required for coupling and uncoupling the engagement members and for moving the working ram; and after-running safety means arranged in a first/last location of a rack channel facing the displacement carriage for arresting movement of the rolling pallets in the rack channel, every rolling pallet being outfitted on its center axis at an end side with one of the mechanical couplings, each of the mechanical couplings having at least one engagement pawl and a corresponding engagement recess which are symmetrical to one another, the engagement pawl having side flanks that converge toward a rounded free end, the corresponding engagement recess having side flanks that converge toward a rounded base of the recess, and the side flanks having a geometrical angle of inclination that is less than a friction angle inherent to the pawl material.

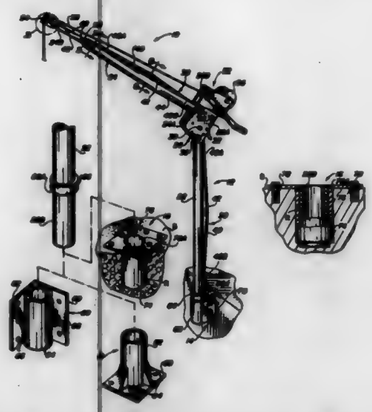
5,445,486
SUBSTRATE TRANSFERRING APPARATUS
Hirofumi Kitayama, Kanagawa; Hiroyuki Iwai, Sagamihara; Shinichi Wada, Sagamihara, and Tetsu Ooeswa, Sagamihara, all of Japan, assignors to Tokyo Electron Sagami Limited, Kanagawa, Japan
Continuation of Ser. No. 38,644, Mar. 29, 1993, abandoned. This application Jan. 17, 1994, Ser. No. 263,216
Claims priority, application Japan, Mar. 29, 1992, 4-102153
Int. Cl.[6] B65G 65/00
U.S. Cl. 414—416 9 Claims



1. A substrate transferring apparatus for transferring substrates from a substrate transport container containing a plurality of substrates to be treated to a substrate holder for holding a plurality of substrates to be treated or vice versa, said apparatus comprising:
arms for supporting the substrates, each of said arms having a free end and a fixed end; and
drive means for driving the arms;
wherein each of said arms includes:
a plate-shaped arm main body having a thin portion and a connecting section provided on the fixed end for connecting the arm to said drive means;
supporting sections having a thickness greater than that of the thin portion of the arm main body for supporting corresponding peripheral areas of the substrate; and
stoppers having a thickness greater than that of the supporting sections for abutting lateral sides of the substrate to hold the substrate;
wherein each of said arm main bodies has a hole formed at a central area thereof such that an amount of electric charge on said arms is decreased, each of said arm main bodies also having a dividing section for dividing said hole.

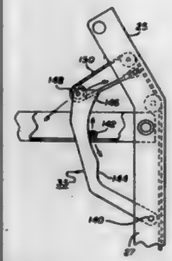
5,445,487
BOOM LIFT APPARATUS MOUNTABLE TO DIFFERENT SUPPORT STRUCTURES
Stanley Kosciuski, Jr., 5009 Old Middleburg Rd., Jacksonville, Fla. 32210
Filed Dec. 7, 1993, Ser. No. 163,289
Int. Cl.[6] B60P 1/54
U.S. Cl. 414—543 14 Claims

1. A boom lift apparatus, comprising:
(a) a boom assembly having an elongated lower mast member, an elongated upper boom member and a coupler member connected to a lower end of said upper boom member and an upper end of said lower mast member such that said upper boom member extends in a cantilevered inclined relationship to said lower mast member; and
(b) a plurality of different mounting members, each being adapted to mount said boom assembly at a lower end of said lower mast member to different one of a plurality of different support structures, said different mounting members including
(i) a vertical surface-mountable anchor bracket having a tube adapted to receive and seat said lower end of said lower mast member, and a flat plate being attached to said tube between opposite ends and along a side of said tube, said flat plate being adapted for attachment to a vertical surface of a support structure, and
(ii) a recess-mountable anchor bracket having a tube adapted to extend into a recess defined in a surface of a support structure and to receive and seat said lower end of said lower mast member in said tube, and a flat plate having a central opening and being attached about the central opening to a receiving end of the tube, said flat plate being adapted for attachment to the surface of the support structure;



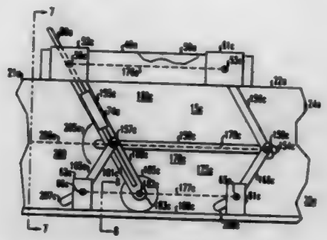
(c) said lower end of said lower mast member when received and seated into either one of said tubes of said respective anchor brackets defining a mounting relationship therewith permitting said boom assembly to be rotated relative to said respective anchor bracket.

5,445,488
LOCKING WHEELCHAIR LIFT
Stanton D. Saucier, Tarzana, Calif.; Pierre Savaria, St-Eustache, Canada; Jules Tremblay, Sunland, and Nelson Tremblay, Woodland Hills, both of Calif., assignors to Ricon Corporation, Pacoima, Calif.
Continuation-in-part of Ser. No. 920,796, Jul. 28, 1992, Pat. No. 5,308,215. This application Aug. 31, 1993, Ser. No. 114,774
Int. Cl.[6] B60P 1/44
U.S. Cl. 414—546 15 Claims



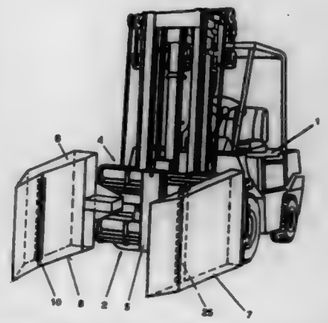
1. A wheelchair lift for transporting a passenger in relation to a vehicle and including motion patterns between a loading position, an entry position and a stowed position, said lift comprising:
a platform structure for carrying a passenger;
a pivotal mechanism attached to said platform structure and adapted to be affixed to said vehicle for moving said platform structure between said loading position, said entry position and said stowed position; and
a bridge structure affixed to said platform structure for bridging a space between said platform structure in said entry position and said vehicle and locking said platform structure to said vehicle in said stowed position.

5,445,489
HEAVY LOAD TRANSPORTER WITH IMPROVED JACKS
Glen A. Evans, Garwood, N.J., and Ruloff F. Kip, Jr., New Castle, N.Y., assignors to AT&T IPM Corp., Coral Gables, Fla.
Filed Oct. 14, 1994, Ser. No. 324,065
Int. Cl.[6] B60P 3/00
U.S. Cl. 414—458 5 Claims



1. A transporter for loads comprising dolly means comprising, first and second laterally spaced horizontal support beams longitudinally extending between relatively forward and rearward portions thereof, forward and rearward wheels underneath each beam to make said dolly means rollable over a floor, and rigid elongated tie means extending between and secured to said beams to form therewith an articulated frame bordering an opening therein for accommodating within said frame a lower part of a load seated on said floor and bounded on laterally opposite sides thereof by said beams, said transporter further comprising; first and second shoes respectively carried by said first and second beams to be movable relative thereto between up and down positions, said shoes having respective lower portions which, when said shoes are down, are lodgeable beneath laterally opposite sides of said seated load for lifting it by upward movement of said shoes, and said shoes extending from said lower portions upwardly by and said beams to have respective longitudinally extending horizontal tops disposed vertically above said beams, and a first and second hand actuated jack respectively carried by said first and second beams and coupled with said first and second shoes, at said tops thereof, said two jack means being responsive to respective exertions thereon of manually applied forces to jack their corresponding shoes from their down to their up positions so as to lift said load to a raised position above said floor, at which time said load is transportable over said floor by rolling thereover an assembly of such transporter and said raised load, at lest said first jack comprising a compound parallelogram linkage comprising, a longitudinally extending yoke bar disposed between, and vertically spaced from each of the shoe top and the beam respective to that first jack, forward and rearward longitudinally horizontally spaced upper links extending between, and coupled at opposite ends to, respectively said yoke bar and such shoe top to be movable at said opposite ends about pivots carried by, respectively, such bar and shoe top so as to form therewith an upper simple parallelogram linkage shiftable over a range of angular configurations therefor, forward and rearward longitudinally horizontally spaced lower links extending between, and coupled at opposite ends to, respectively, said bar and such beam to be movable at such opposite ends about pivots carried by, respectively, said bar and such beam so as to form therewith a lower simple parallelogram linkage shiftable over a range of angular configurations therefor, the respective configurations of said upper and lower simple linkages together providing a changeable configuration for said compound linkage; and said yoke bar coupling together said upper and lower simple parallelogram linkages to maintain constant a angular position of said bar relative to each of the shoe top and beam coupled by said links to said bar, hand actuated drive means motion coupled to said compound linkage to change the configuration thereof so as to raise the corresponding shoe from said down to said up position therefor, and linkage guiding means cooperable with said compound linkage as such shoe is so raised to cause said changing in said configuration of said compound linkage to be produced by respective shiftings which occur in the configurations of said two simple linkages, and which are coordinated together to maintain the top of such shoe fixed in horizontal translational position relative to such beam as such shoe is raised.

5,445,490
BALE-CARRYING DEVICE
Roger Whitehead, Euskirchen, Germany, assignor to Sulzer Papertec Euskirchen GmbH, Germany
PCT No. PCT/DE93/00239, § 371 Date May 11, 1994, § 102(e) Date May 11, 1994, PCT Pub. No. WO93/19001, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 11, 1993, Ser. No. 240,728
Claims priority, application Germany, Mar. 19, 1992, 42 08 902.6
Int. Cl.[6] B66F 9/18
U.S. Cl. 414—607 16 Claims



1. A bale-carrying device comprising a mounting frame adapted to be attached to a vehicle, a lifting device constructed and arranged for moving up and down on the mounting frame, two retaining arms carried by and extending from the lifting device in the direction of vehicle travel, said retaining arms being fitted with opposing bale engaging bearing surfaces arranged substantially vertically and parallel to each other and being mounted on the lifting device for movement towards and away from each other in a lateral direction relative to the direction of vehicle travel and at least one of said two retaining arms (6) carrying a cutting device (10) extending substantially the entire height of its bearing surface (8) in order to sever a binding wire (11) horizontally encircling a bale (3) disposed between said opposing bearing surfaces.

5,445,491
METHOD FOR MULTICHAMBER SHEET-AFTER-SHEET TYPE TREATMENT
Yoshinori Nakagawa; Shinichi Mitani, both of Numazu; Takehiko Kobayashi, Mishima, and Takaaki Honda, Yokohama, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 26, 1992, Ser. No. 935,287
Claims priority, application Japan, Aug. 27, 1991, 3-215576
Int. Cl.[6] B65G 49/07
U.S. Cl. 414—786 3 Claims

1. A sheet-after-sheet type treating method utilizing a multichamber sheet-after-sheet type treating apparatus including an inlet/outlet port capable of communicating with surrounding

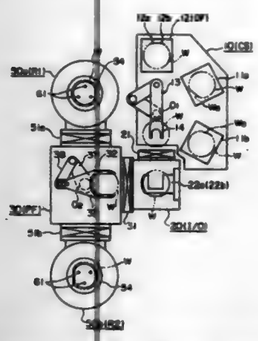
air through a first inlet/outlet port gate valve, which is independently controllable to maintain said inlet/outlet port at a predetermined pressure or at a pressure of said surrounding air; a platform connected to said inlet/outlet port via a second inlet/outlet port gate valve, which is independently controllable to maintain said platform at said predetermined pressure; a plurality of treating chambers respectively connected to said platform through corresponding treating chamber gate valves, which are independently controllable to maintain said treating chambers at said predetermined pressure; and a robot installed in said platform for exchanging materials to be treated between said inlet/outlet port and said respective treating chambers; said method comprising:

a first exchanging step for exchanging a first treated material in a first treating chamber with a first untreated material in said inlet/outlet port while said treating chambers other than said first treating chamber are treating corresponding materials, said first exchanging step comprising the steps of:

making substantially equal said pressure in said inlet/outlet port to said predetermined pressure of said platform;

opening a first treating chamber gate valve interconnecting said first treating chamber and said platform after completion of treatment in said first treating chamber and while said first inlet/outlet port gate valve is closed;

opening said second inlet/outlet port gate valve;



removing said first treated material from said first treating chamber and placing said first treated material in said inlet/outlet port;

removing said first untreated material from said inlet/outlet port and placing said first untreated material in said first treating chamber;

closing said first treating chamber gate valve; and

closing said second inlet/outlet port gate valve;

a second exchanging step for exchanging said first treated material in said inlet/outlet port with a second untreated material from said surrounding air, said second exchanging step comprising the steps of:

making substantially equal said pressure in said inlet/outlet port to said surrounding air;

opening said first inlet/outlet port gate valve;

removing said first treated material from said inlet/outlet port and placing said first treated material in said surrounding air;

removing a second untreated material from said surrounding air and placing said second untreated material in said inlet/outlet port; and

closing said first inlet/outlet port gate valve; and

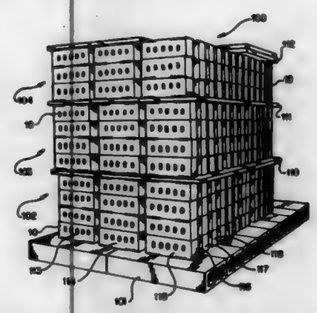
repeating said first and second exchanging steps for each of said plurality of treating chambers for sequentially treating said corresponding materials in said plurality of treating chambers.

5,445,492

STRAIGHT SETTING PATTERN FOR CLAY BRICKS

Christophe Aubertot, 2792 S. Knoxville Way, Denver, Colo. 80227

Filed Apr. 5, 1994, Ser. No. 223,337
Int. Cl.[6] B65G *57/00*
U.S. Cl. 414—786 6 Claims



1. A method of stacking bricks in individual stacks at least two bricks high on a conventional support base so that the surface area of the bricks are exposed to uniform air circulation and heat treatment comprising the following steps:

a) placing a first series of uniform height stacks of bricks on top of the conventional support base; wherein, the stacks of bricks are arranged into equally spaced parallel rows of bricks to form a column;

b) aligning a plurality of said columns in a parallel relationship to one another, wherein each of the columns are spaced from one another to create a first tier of bricks; and

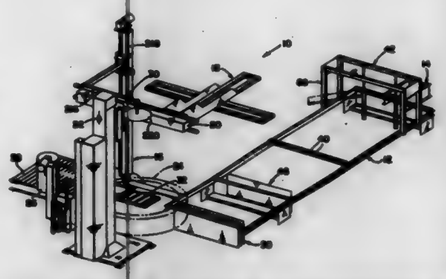
c) placing at least one enlarged generally flat rectangular stabilizing plate in contact with the top surface of said first tier of bricks.

5,445,493

APPARATUS FOR PALLETIZING/UNITIZING EASILY COMPRESSIBLE PRODUCTS

Ray A. Yourgalite, Hoopeston; Kenneth F. Becicka, Alvin, both of Ill.; Jay A. Dark, West Lafayette, Ind.; Alan R. Reece, and Robert J. Kleber, both of Hoopeston, Ill., assignors to Simplimatic Engineering Company, Lynchburg, Va.

Filed Apr. 22, 1993, Ser. No. 52,345
Int. Cl.[6] B65G *57/24*
U.S. Cl. 414—791.6 28 Claims



24. An apparatus for automatically stacking individual articles of an easily compressible product which comprises:

(a) a palletizer having a turntable, a Y-axis member for supporting a hand assembly and means for transporting the hand assembly between a first position adjacent the palletizer and a second position adjacent the turntable;

(b) a station conveyor for transporting the articles from a production line to the first position adjacent the palletizer, the station conveyor including

a plurality of rollers defining a path for the articles;

diverter means for selectively directing each article to one of a plurality of longitudinal positions along the path;

turner means for selectively orienting each article transversely to the path;

layer accumulation stop means for holding each article in position along the path while the articles are combined into a single layer having a preselected orientation; and

means for maintaining the articles in the preselected orientation while the layer is formed;

(c) the hand assembly including

a plurality of palms of sufficient size to grasp at least two layers of articles, the layers of articles defining a stack of articles;

carriage means for movably connecting each palm to the Y-axis member; and

means for selectively moving the carriage means to thereby open and close the palms;

(d) platen means for maintaining the integrity of the stack of articles on the turntable after the stack has been transported by the means for transporting to the turntable and released by the hand assembly; and

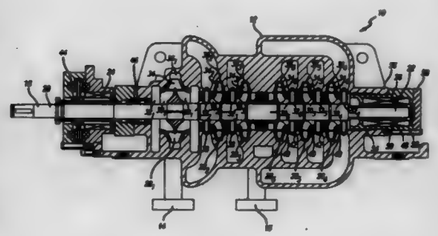
wherein each palm comprises a plurality of spaced apart, horizontal tubes defining openings into which a portion of the articles may slightly extend when the palms are closed to thereby prevent the articles from slipping out of the hand assembly.

5,445,494

MULTI-STAGE CENTRIFUGAL PUMP WITH CANNED MAGNETIC BEARING

Lloyd D. Hanson, Los Angeles, Calif., assignor to BW/IP International, Inc., Long Beach, Calif.

Filed Nov. 8, 1993, Ser. No. 148,951
Int. Cl.[6] F01D *3/00*
U.S. Cl. 415—107 10 Claims



1. A multistage centrifugal pump for pumping a fluid, comprising:

a casing having a first end and a second end and defining an interior bore, an inlet port for providing the pumped fluid into the bore, an outlet port for discharging the pumped fluid from the bore, and a bearing chamber at the second end of the casing;

a rotatable impeller shaft having a drive end at the first end of the casing and an outboard end located in the bearing chamber at the second end of the casing;

a plurality of impellers mounted on the impeller shaft between the drive end and the outboard end of the impeller shaft, a first set of at least one of the plurality of impellers oriented to direct the pumped fluid generally in a first direction and a second set of at least another one of the plurality of impellets oriented to direct the pumped fluid generally in a second, opposite direction;

a seal mounted between the casing and the impeller shaft at the drive end of the impeller shaft;

a bearing mounted around the drive end of the impeller shaft, rotatably supporting the drive end of the impeller shaft; and

a canned magnetic radial bearing mounted around the outboard end of the impeller shaft within the bearing chamber of the casing, rotatably supporting the outboard end of the impeller shaft;

wherein the bearing chamber is pressurized with pumped fluid during operation of the pump.

5,445,495

Patent Not Issued For This Number

5,445,496

CENTIFUGAL COMPRESSOR WITH PIPE DIFFUSER AND COLLECTOR

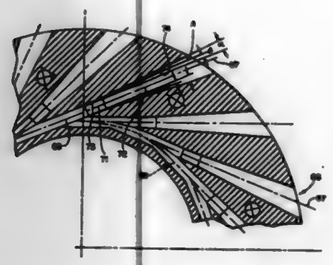
Joost J. Brasz, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 605,620, Oct. 30, 1990. This application Feb. 27, 1992, Ser. No. 845,512
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[6] F04D *29/44*
U.S. Cl. 415—208.3 2 Claims

1. An improved centrifugal compressor of the type having an impeller for imparting kinetic energy to a refrigerant gas to be compressed, a diffuser for converting a portion of said kinetic energy to potential energy, and a discharge chamber for receiving a flow of refrigerant from the diffuser, wherein the improvement comprises:

said diffuser having a plurality of circumferentially spaced, generally radially extending, flared channel means with exit and inlet openings having cross sectional areas such that the ratio of exit area to inlet area is greater than 5 to 1 so as to enable the removal of substantially all of the

kinetic energy from a refrigerant gas being received from said impeller and wherein said channels each comprise two serially connected sections, with a first radially inward section having diverging opposed walls angled at one angle, and a second radially outward section having diverging opposed walls angled at a larger second angle; and



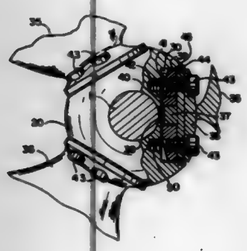
said discharge chamber being of a collector type wherein a radial cross sectional area thereof is substantially circumferentially uniform.

5,445,497

VARIABLE PITCH PROPELLERS

George H. Seemar, 3563 Aquetong Rd., Carversville, Pa. 18913-9700

Filed Dec. 27, 1993, Ser. No. 173,072
Int. Cl.[6] B63H *3/00*
U.S. Cl. 416—131 2 Claims



1. An automatically variable pitch propeller for boats which comprises

a hub for mounting to a rotatable variable speed output shaft at least two blades of helicoidal shape

spaced recesses in said hub for mounting said blades,

said recesses having bearing surfaces,

mounting means for mounting said blades in said recesses,

said mounting means including bearings for engagement and free rotation in said recesses

said blades having bosses thereon which are detachably secured to said bearings and,

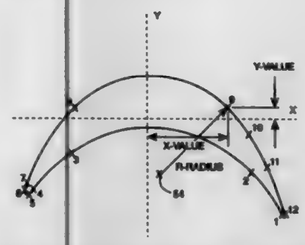
removable retaining means to retain said bearing in said recess but which permit free rotation of said blades as determined by the speed of said output shaft.

5,445,498

BUCKET FOR NEXT-TO-THE-LAST STAGE OF A TURBINE

John C. Williams, Schenectady, and Stephen G. Ruggles, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 10, 1994, Ser. No. 258,042
Int. Cl.[6] F01D *5/14*
U.S. Cl. 416—191 9 Claims



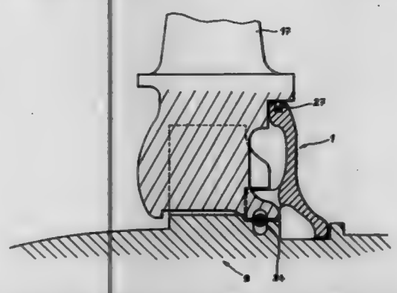
1. A bucket for a steam turbine having a profile in accordance with Table I inclusive as set forth in the specification.

5,445,499

RETAINING AND SEALING SYSTEM FOR ROTOR BLADES

Jean-Louis Charbonnel, Boissise le Roi, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "Snecma", Paris, France

Filed Jan. 13, 1994, Ser. No. 181,104
Claims priority, application France, Jan. 27, 1993, 93 00768
Int. Cl.[6] F01D *5/32*
U.S. Cl. 416—220 WR 5 Claims



1. A system for retaining and sealing vanes having vane feet engaged in axial broachings of a rotor disk, the system comprising:

a circular sealing flange mounted on the disk and in front of one face of the broachings so as to cover the vane feet, said flange including one internal sealing lip housed in a circular recess of the disk and one outer sealing lip applied to a bearing surface of the vane feet;

wherein:

said flange and said vane feet each comprise imbricated tabs such that when the tabs are adjacently positioned, the tabs define a first throat which is radially open inwardly with respect to the disk;

the disk comprises a second throat which is radially open outwardly with respect to the disk and is positioned radially below the first throat so as to face the first throat;

an elastic joint is positioned at least in the first throat while being able to be driven fully into the second throat; and

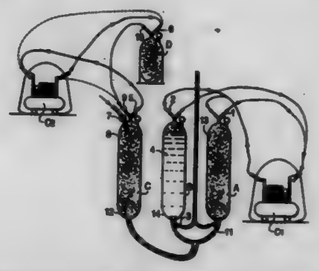
the flange is divided into sectors of a circle, each of the sectors being provided with a respective tab which touches a projection on the disk via its radially external face, one of said sectors being adapted to be installed via a radial and longitudinal movement between other sectors, wherein the tabs of the sectors have an angular extension smaller than spaces between the projections of the disk.

5,445,500

METHOD OF TRANSFERRING FLUENT MATERIAL WITH COMPRESSED GAS

Akira Taguchi, Osaka, Japan, assignor to Mori-Gumi Co., Ltd., Osaka, Japan, a part interest

Continuation of Ser. No. 965,781, Oct. 23, 1992, abandoned.
This application Oct. 18, 1993, Ser. No. 137,217
Claims priority, application Japan, Oct. 25, 1991, 3-280118
Int. Cl.[6] F04E *1/06*
U.S. Cl. 417—54 15 Claims



1. A method of transferring fluent material, comprising the steps of:

a) transferring fluent material from a first pressure tank to a fluent material transfer destination by supplying compressed gas to the first pressure tank through a compressor;

b) retaining compressed gas in the first pressure tank;

c) drawing fluent material into a second pressure tank; and

d) transferring the fluent material in the second pressure tank to the fluent material transfer destination by supplying the compressed gas from the first pressure tank to the second pressure tank through the compressor;

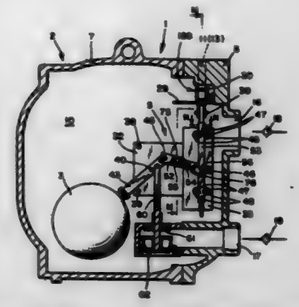
wherein said step c) occurs at the same time as said step a), and wherein the compressor draws gas from the second pressure tank to draw the fluent material into the second pressure tank and supplies the gas to the first tank as the compressed gas.

5,445,501

SNAP ACTION FLOAT VALVE ASSEMBLY FOR LIQUID FEEDING DEVICE

Hideaki Yuasoto, Kakogawa, Japan, assignor to TLV Co., Ltd., Kakogawa, Japan

Filed Mar. 7, 1994, Ser. No. 206,772
Claims priority, application Japan, Mar. 17, 1993, 5-084090; Sep. 14, 1993, 5-252607
Int. Cl.[6] F04B *9/123*; F16K *31/26, 31/56*
U.S. Cl. 417—133 2 Claims



1. A device for feeding liquid under pressure compriaing:

a vessel having an operating fluid inlet, an operating fluid outlet, an inlet opening for the liquid to be fed under pressure and an outlet opening for the liquid to be fed under pressure,

a float disposed within said vessel,

a change-over valve for alternately switching between operations of opening and closing the operating fluid inlet and outlet in response to a movement of said float, and

a link mechanism which comprises a valve; operating rod connected to said change-over valve and a compression spring, said compression spring being supported at one end by said valve operating rod and at another end by a lever, said compresaion spring being adapted not to cross any point of connection in said link mechanism during operating of said compression spring, said lever swinging in a direction opposite the movement of said float, said compression spring being compressed between said lever and said valve operating rod for tensioning said lever and said link mechanism operating to move said valve operating rod in a snap motion in response to the movement of said float;

said compression spring being supported by said valve operating rod so that a vector of action of said compression spring passes onto a point connecting said compression spring with said valve operating rod.

5,445,502

VACUUM PUMP HAVING PARALLEL KINETIC PUMP INLET SECTION

Daisuke Itou, Yao, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 6,500, Jan. 21, 1993, Pat. No. 5,352,097.
This application Jul. 6, 1994, Ser. No. 269,905
Claims priority, application Japan, Jan. 23, 1992, 4-9736
Int. Cl.[6] F04C *25/02*
U.S. Cl. 417—203 5 Claims

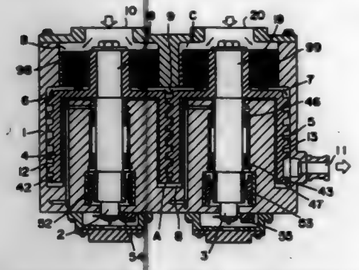
1. A vacuum pump comprising:

a housing;

a plurality of rotors accommodated in said housing and having a plurality of rotary shafts, respectively;

a plurality of bearings for supporting said rotary shafts, respectively;

a fluid-sucking opening and a fluid-discharge opening formed in the housing;
a plurality of motors for driving said rotors, respectively;
a plurality of control means for respectively controlling said motors so that the rotors rotate synchronously, whereby fluid is sucked and discharged by utilizing change in the volume of a space formed by the rotors and the housing;



a positive displacement vacuum pump structure section disposed on a discharge side of each rotor;
a plurality of kinetic vacuum pump structure sections disposed on suction sides of said rotors, respectively; and
wherein one of the kinetic vacuum pump structure sections comprises a turbine blade which constitutes a means for imparting momentum to gas molecules.

5,445,503

FUEL PUMP MOUNTING BRACKET

Timothy M. Kmiec, Rochester Hills; Joseph J. Melotik, White Lake, and Glenn P. Vangelderen, Steven G. Smith, both of West Bloomfield; Robert Thompson, Red Fond, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 130,829
Int. Cl.[6] F04B *35/04*; F16M *13/00*
U.S. Cl. 417—360 **8 Claims**



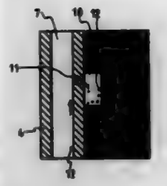
1. A fuel pump mounting apparatus for mounting a fuel pump within a fuel tank of an automobile having a top and a bottom, comprising:
a flange sealably covering an opening in the top of said fuel tank; and
a bracket fixably attached to said flange and to said fuel pump, said bracket having at least one side member with at least one oblong slot having elongated ends aligned parallel to a vertical axis between said top and said bottom, said at least one slot positioned on said at least one side member such that said bracket absorbs energy from a load, said load generally originating from said bottom of said tank toward said top of said tank, to prevent said energy from transferring to said flange so that said flange remains co-planar with said top of said tank.

5,445,504

SEALED COMPRESSOR WITH DUST RESERVOIR

Shinji Iwamura; Shigeru Muramatsu, and Sadayuki Yamada, all of Kusatsu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 116,187
Claims priority, application Japan, Sep. 4, 1992, 4-236798
Int. Cl.[6] F01C *21/04*; F01M *3/00*; F04C *27/00*
U.S. Cl. 417—368 **6 Claims**



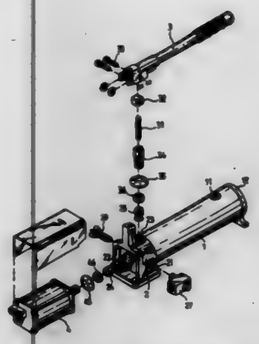
1. A sealed compressor comprising:
a casing which houses an electrically driving portion having a rotor which includes a rotor core, and having a driving shaft which has a through hole bored therein for letting the lubricating oil therethrough;
a compression portion provided over and driven by the electrically driving portion, and connected to the driving shaft which transmits driving force thereto;
an oil basin located under the electrically driving portion; and
a non-annular dust reservoir having a single small opening, located in a central portion of the rotor of the electrically driving portion and connected to the through hole of the driving shaft at the small opening through a thin horizontal hole bored in the driving shaft for receiving dust through the horizontal hole and storing the received dust which is contained in the lubricating oil and moves via the through hole of the driving shaft by centrifugal force.

5,445,505

MANUAL/PNEUMATIC DUAL-CONTROL OIL PUMP

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed May 3, 1994, Ser. No. 238,019
Int. Cl.[6] F04B *9/14*
U.S. Cl. 417—374 **1 Claim**



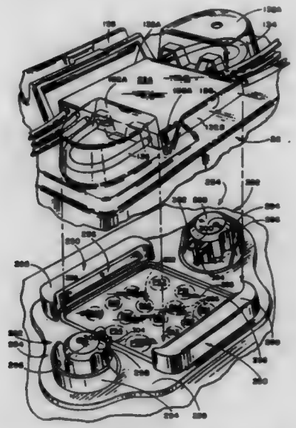
1. A manual/pneumatic dual-control oil pump comprising: an oil reservoir; a pneumatic motor; a housing to which said oil reservoir and said pneumatic motor are connected, said housing defining an oil conduit communicating with said oil reservoir, a pair of chambers communicating with said conduit, said chambers having outlets, respectively, and a delivering conduit at which the outlets of said chambers join together; a manually operatable lever connected to said housing; a first plunger connected to said lever and extending into one of said chambers in the housing so as to reciprocate in said one of the chambers as said lever is being manually operated; a second plunger connected to said pneumatic motor and extending into the other of said chambers in the housing so as to reciprocate in said other of said chambers as said pneumatic motor is being operated; a respective modular check valve disposed in each of said chambers in the housing; and a hose connector connected to said delivering conduit.

5,445,506

SELF LOADING PERISTALTIC PUMP TUBE CASSETTE

Richard L. Afflerbaugh, Libertyville; Richard L. West, Lake Villa; Timothy J. Patno, Mundelein, all of Ill., and Arthur S. Chapman, Solvang, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 22, 1993, Ser. No. 172,130
Int. Cl.[6] F04B *43/08*
U.S. Cl. 417—477.2 **7 Claims**



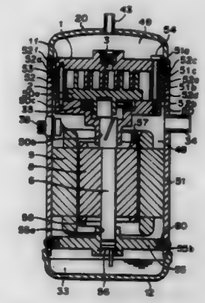
1. A peristaltic pumping apparatus compriaing
a peristaltic pumping element including a pump race for receiving a tubing loop, a pump rotor carrying a roller, and a drive mechanism for rotating the rotor within the pump race,
a loading assembly for the peristaltic pumping element comprising
a roller locating mechanism that moves the pump roller between a retracted position free of contact with the received tubing loop and an extended position at least partially within the pump race for operative contact with the received tubing loop,
at least one tubing guide means carried by the rotor and extending from the rotor at least partially into the pump race, the tubing guide means being operative, during rotation of the rotor with the roller in its retracted position, for contacting the received tubing loop to orient the tubing loop within the pump race, and
a control mechanism coupled to the drive mechanism and the roller locating mechanism, the control mechanism being operative
(i) in a loading mode for actuating the drive mechanism to rotate the rotor while actuating the roller locating mechanism to maintain the roller into its retracted position so that contact between the guide means and the received tubing loop moves the tubing loop into a desired orientation within the pump race, and
(ii) in a pumping mode for actuating the drive mechanism while actuating the roller locating mechanism to maintain the roller into its extended position so that contact between rotating roller and the tubing loop within the race pumps fluid through the tubing loop.

5,445,507

SCROLL TYPE COMPRESSOR HAVING A SPACER COUPLING THE FIXED SCROLL TO THE FRAMES

Toshiyuki Nakamura; Takashi Yamamoto; Hiroshi Ogawa; Norihide Kobayashi; Fumiaki Sano; Masahiko Oide; Katsuyoshi Wada, and Minoru Ishii, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 248,545, May 24, 1994, Pat. No. 5,382,143, which is a continuation of Ser. No. 984,690, Dec. 2, 1992, abandoned, which is a division of Ser. No. 721,140, Jun. 26, 1991, Pat. No. 5,188,520. This application Jun. 8, 1994, Ser. No. 257,185
Claims priority, application Japan, Jul. 13, 1990, 2-186181
Int. Cl.[6] F04C *18/04*
U.S. Cl. 418—55.1 **19 Claims**



1. A scroll type compressor comprising:
a fixed scroll and an orbiting scroll which have their base plates having planar end faces provided with wraps thereon, the wraps being combined to form a compression chamber therebetween;
a crankshaft having an electric motor rotor, for orbiting the orbiting scroll;
a frame for supporting the orbiting scroll, and rotatably supporting the crankshaft;
a cylindrical spacer. which is arranged between the planar end surface of the fixed scroll base plate and the frame around the orbiting scroll, and which is coupled together with the fixed scroll and the frame;
a center shell which is engaged with an electric motor stator and the spacer to fix the electric motor stator and spacer; and
a first end shell including a discharge chamber, and a second end shell, said first and second end shells covering opposite ends of the center shell, the discharge chamber being provided with a discharge pipe.

5,445,508

VULCANIZING MOLD SETTING APPARATUS

Kenji Kubo; Katsumi Ichikawa; Kashiro Ureshino; Toshio Kurosaki, all of Takasago, and Shigeru Kaneko, Kodaira, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

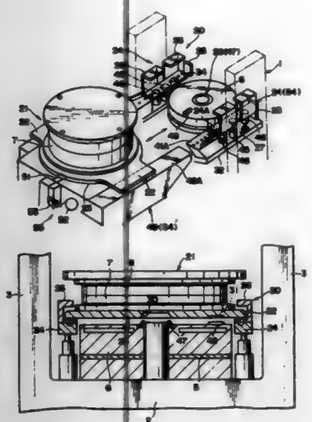
Continuation of Ser. No. 99,649, Jul. 30, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,331
Claims priority, application Japan, Aug. 6, 1992, 4-210392; Jul. 12, 1993, 5-171869
Int. Cl.[6] H60N *33/30*
U.S. Cl. 425—28.1 **10 Claims**

1. A vulcanizing mold setting apparatus for setting a vulcanizing mold assembly including a fixed mold and a movable

mold on a platen of a tire vulcanizing machine, said vulcanizing mold setting apparatus comprising:

a mold transfer mechanism for supporting the vulcanizing mold assembly in a horizontal position and for horizontally moving the vulcanizing mold assembly toward and away from the tire vulcanizing machine;

a centering mechanism which centers the vulcanizing mold assembly on the platen as a result of the vulcanizing mold assembly being lowered onto the platen;



lifting mechanisms for vertically moving the vulcanizing mold assembly above the platen and lowering the vulcanizing mold assembly onto the platen; and

clamping members for fastening the fixed mold of the vulcanizing mold assembly onto the platen when the vulcanizing mold assembly is lowered onto the platen by the lifting mechanisms and centered on the platen by the centering mechanism.

5,445,509

MELTBLOWING DIE

Martin A. Allen, Dawsonville, and John T. Fetcko, Dawsonville, both of Ga., assignors to J & M Laboratories, Inc., Dawsonville, Ga.

Continuation of Ser. No. 136,778, Oct. 14, 1993, abandoned, which is a division of Ser. No. 934,870, Aug. 24, 1992, Pat. No. 5,269,670, which is a division of Ser. No. 599,006, Oct. 17, 1990, Pat. No. 5,145,689. This application Feb. 14, 1994, Ser. No. 195,612

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[6] B29C *47/12*; D01D *5/00*

U.S. Cl. 425—72.2 **8 Claims**

1. Apparatus for meltblowing polymeric adhesive onto a substrate which comprises:

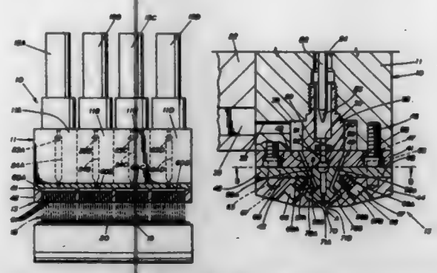
(a) an elongate die body having a mounting surface, a plurality of polymer flow passages formed side-by-side therein in spaced apart relation, and each polymer flow passage having an inlet and an outlet;

(b) an elongate die tip assembly having

(i) an elongate base mounted on the mounting surface and defining a plurality of elongate polymer header chambers arranged in end-to-end and closely spaced relationship and extending in a line along the length of the base, each header chamber being in fluid communication with one of the outlets of the polymer flow passages of the die body, whereby polymer melt received by the header chambers is distributed along the length of the base;

(ii) an elongate die tip having a nosepiece projecting outwardly from the base and terminating in an elongate apex which extends parallel to the aligned elongate header chambers and having means at the apex for receiving polymer melt from each header chamber and extruding said polymer melt in a row substantially coextensive with the length of its associated header chamber;

(iii) elongate air plates mounted in flanking relationship on the die tip and in combination with the nosepiece defining elongate converging air slits which terminate at or near the apex;



(c) means for delivering air to the air slits whereby air flows through the air slits discharging on opposite sides of the apex as converging air sheets;

(d) means for feeding a polymeric adhesive melt to each inlet of the polymer flow passages in the body, whereby the polymeric adhesive melt flows in parallel streams through the die body flow passages, the header chambers, discharging at the apex into the converging air sheets; and

(e) valve means for selectively opening and closing each of the polymer flow passages.

5,445,510

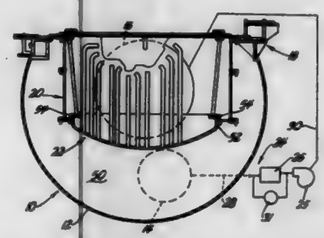
MOLD HEATING APPARATUS

Kenneth L. Jackson, Jr., Farmington, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Oct. 28, 1993, Ser. No. 144,694

Int. Cl.[6] B29C *41/18, 41/46*

U.S. Cl. 425—182 **4 Claims**



1. An air distribution system for directing heating and cooling fluid to the underside of a mold having a heated surface thereon adapted to receive thermoplastic material and for sequentially fusing plastic materials together on the heated surface of the mold and for cooling the fused thermoplastic material to form a shell conforming to the shape of the heated surface of the mold comprising:

a mold box having at least one cavity; a plenum having an inlet and an outlet; a module holder adapted to hold a tube/mold module in a readily removable manner in said cavity;

a plurality of interchangeable tube/mold modules adapted to be held by said module holder in said cavity;

each said tube/mold module having a first plate portion and a second plate portion, said second plate portion having an inner surface and an outer surface; said first plate portion adapted to be supported by said module holder to thereby support said module in said cavity; a mold fixed to said first plate portion; said mold having an inner surface and an outer surface; a plurality of tubes fixed to said second plate portion; each of said tubes having an inlet at said outer surface of said second plate portion; each of said tubes having an outlet located adjacent said outer surface of said mold for directing fluid from said plenum inlet for jet flow against said mold and for return flow of said jet flow through said mold box and out said plenum outlet; rigid support structure separate and distinct from said mold box interconnecting said first and second plate portions and supporting said tubes in fixed relation with respect to said mold independently of said mold box; a first seal portion engageable with said mold box for sealing against fluid leakage between said module and said mold box at said first plate portion; a second seal portion engageable with said mold box for sealing against fluid leakage between said module and said mold box at said second plate portion and for sealing said mold box cavity from said plenum inlet;

said mold and fluid flow through said tubes in each said module having a heat balanced flow relationship that is different from that in the other of said modules; and

each of said modules being insertable in and removable from said cavity in said mold box for permitting interchangeability of said modules within said mold box without changing the heat balanced flow relationship between said molds and fluid flow through the tubes associated with said molds.

5,445,511

CORE PUSH-OUT APPARATUS

Susumu Ito; Katsuyuki Yamazaka, both of Oshino; Akira Kouketsu, Komaki, and Kazunori Ijima, Oshino, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

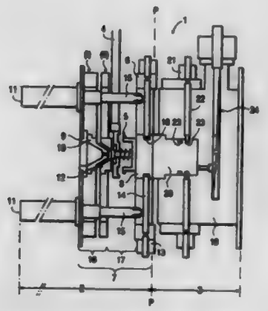
PCT No. PCT/JP93/00775, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994, PCT Pub. No. WO93/25363, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 10, 1993, Ser. No. 196,119

Claims priority, application Japan, Jun. 18, 1992, 4-184331

Int. Cl.[6] B29C *33/30, 45/36*

U.S. Cl. 425—183 **5 Claims**



5. A core push-out apparatus for a molding machine comprising core change type dies, said core push-out apparatus comprising:

a stationary die; and

a movable die;

said stationary die comprising a stationary mother mold and a stationary core detachably assembled with said stationary mother mold,

said movable die comprising a movable mother mold and a movable core detachably assembled with said movable mother mold;

said stationary mother mold comprising:

a main body; and

an intermediate plate,

said intermediate plate serving as an intermediate supporting member which is disposed confronting the main body of the mother mold and capable of being driven in a forward direction toward the main body and a backward direction away from the main body; and

said intermediate plate having a hole into which the stationary core is freely inserted, and an engaging and disengaging mechanism which engages with the stationary core inserted into said hole in order to fix said stationary core to said intermediate plate;

said movable mother mold of said movable die comprising:

a core ejector and

a movable core engaging and discharging mechanism,

said core ejector pushing out a movable core inserted into the movable mother mold toward the stationary die, and

said movable core engaging and disengaging mechanism engaging with the movable core to fix the movable core at one of a first selected position where an edge surface of the movable core is flush with a selected surface of the movable mother mold and a second selected position which is offset from said first selected position in a direction toward said stationary die;

said molding machine being provided with an arm actuating mechanism for causing a distal end of an arm to be one of placed in and retracted from a space formed between said intermediate plate and the main body of the stationary mother mold when said intermediate plate is driven in the backward direction, toward the movable die;

a core push-out device connected to said distal end of said arm, said core push-out device having a first side abutting the main body of the stationary mother mold of said stationary die and a second side, opposing said first side, abutting the movable core inserted in the hole of the intermediate plate, thereby occupying a predetermined width in a direction of shifting of the movable die; and

a core holding device provided for holding the stationary core and the movable core which abut each other and driving the stationary core and the movable core together in a backward direction toward the movable die, said stationary core being pushed out from the intermediate plate toward the movable die by the core push-out device when held to the movable core.

5,445,512

SEGMENTED PISTON FACE PLATE ASSEMBLY FOR PATTY FORMING APPARATUS

Gary W. Bradley, Overland Park, and Ronald D. Chapman, Lake Quivira, both of Kans., assignors to Marion Research Corporation, Overland Park, Kans.

Filed Jan. 27, 1994, Ser. No. 186,849

Int. Cl.[6] A22C *7/00*; B29C *33/46*

U.S. Cl. 425—193 **7 Claims**

1. A patty forming piston apparatus, comprising:

a reciprocable piston presenting a lower piston face;

a segmented piston face plate assembly having a piston-engaging face and a patty-engaging face opposite thereto;

means for releasably attaching said face plate assembly to said piston with said piston-engaging face in abutting, face-to-face relationship with said piston lower face,

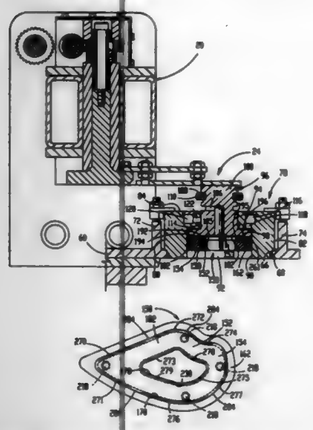
said face plate assembly including

outer member having a circumscribing sidewall presenting respective opposed inner and outer sidewall surfaces, and

at least one inner member nested within said outer member and presenting an outboard sidewall surface in substantial mating relationship with said inner sidewall

surface of said outer member to define a sidewall interface between the outer and inner members,

said inner sidewall surface and outboard sidewall surface being cooperatively configured to present structure at said sidewall interface defining a plurality of elongated, spaced apart air passageways between the outer and inner members, and elongated zones of interfit contact between said inner sidewall surface and said outboard



sidewall surface for maintaining the nested configuration of the outer and inner members during reciprocation of said piston and use of the patty-forming apparatus while permitting ready

denesting of the outer and inner members when the face late assembly is detached from said piston; and

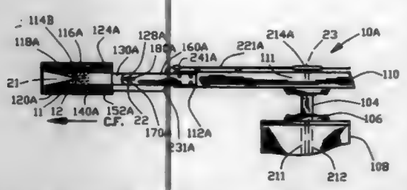
means carried by said piston for directing bursts of pressurized air through said passageways for separating a formed patty from said face plate assembly.

5,445,513

APPARATUS FOR ENHANCING CONCENTRATION

David L. Siggers, Camden, Ark., assignor to Hitech Holding, Inc., East Camden, Ark.

Filed Jan. 10, 1994, Ser. No. 179,333
Int. Cl.[6] B28B *1/20*; B01F *9/12*
U.S. Cl. 425—200 11 Claims



9. An apparatus of forming a first material into a preselected geometric shape with an enhanced concentration of a second material within a first material, comprising:

a base for rotatably mounting a rotation member shaft;

said rotatable member shaft being disposed in a substantially vertical orientation;

a rotatable member having a central region and a peripheral region with said central region being secured to said rotational member shaft for rotation therewith;

a container defining an opening with said container communicating with a mold cavity of a preselected geometric shape defined within an interior of said container;

a riser located proximate to said opening in said container for enabling the introduction of the first and second materials to fill said mold cavity of said container to at least partially fill said riser;

a pivot pivotably securing said container to said peripheral region of said rotational member;

said pivot having a pivot axis aligned generally perpendicular to said rotational member shaft; and

heating means for heating said container and said riser for maintaining the first material in a liquid state;

means for rotating said rotatable member shaft to generate a centrifugal force for enabling said centrifugal force to pivot said container along said pivot axis for facilitating the migration of the second material through the first material to enhance the concentration of the second material within the first material in said container relative to the concentration of the second material within the first material in said riser;

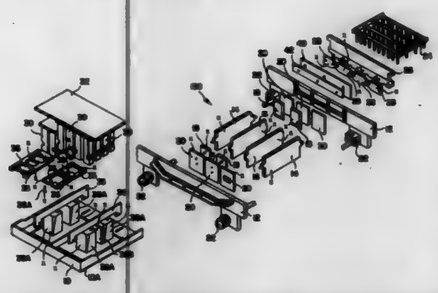
cooling means for cooling said container and said riser for solidifying the first material within said container and said riser with the enhanced concentration of the second material being located within said preselected geometric shape defined within said interior of said container relative to the concentration of the second material within said riser.

5,445,514

REFRACTORY MATERIAL COATED METAL SURFACES ADAPTED FOR CONTINUOUS MOLDING OF CONCRETE BLOCKS

Lance A. Heitz, 5461 Bay Shore Dr., Presque Isle, Mich. 49777

Filed Sep. 22, 1993, Ser. No. 124,698
Int. Cl.[6] B28B *1/08, 7/36*
U.S. Cl. 425—255 18 Claims



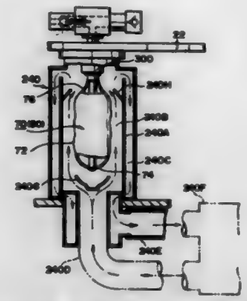
1. In an apparatus for continuous molding of concrete blocks of the kind having a frame, a vibratable open bottom mold supported on and in contact with the frame, a pallet support beneath the mold, a pallet carried on the pallet support, motion transmission means connected to the pallet support for raising the pallet toward the mold a distance sufficient to seat the pallet against the bottom of the mold, vibration means for vibrating the mold and a stripper head for removing the block from the mold by pushing the block towards the pallet, the improvement which comprises providing metal wear surfaces of at least some of the parts of the apparatus which come into contact with the blocks or which come into contact with each other during the molding with a coating, which comprises a flame sprayed metal refractory material admixed with a binder and covered with a polymer.

5,445,515

APPARATUS FOR FORMING A HEAT-RESISTANT CONTAINER

Hiroyuki Orimoto, Ueda; Katsumasa Yokota, Nagano; Fumiya Amari, Komoro, and Saburo Suzuki, Ueda, all of Japan, assignors to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Oct. 12, 1993, Ser. No. 134,799
Claims priority, application Japan, Oct. 14, 1992, 4-302927; Oct. 14, 1992, 4-302928; Oct. 14, 1992, 4-302929; Oct. 14, 1992, 4-302930
Int. Cl.[6] B29C *49/64*
U.S. Cl. 425—526 13 Claims



1. An apparatus for forming a heat-resistant container by thermally shrinking in a heating furnace a primary blow molded article formed by primary blow molding and then secondary blow molding,

wherein said heating furnace includes a hot air source for blowing hot air at a given wind speed, whose temperature is such as to facilitate crystallization of the primary blow molded article, a first air blow guide member for locating a barrel portion of the primary blow molded article therein and extending longitudinally of the primary blow molded article, and an air supply port for supplying the hot air from said hot air source inwardly of said first air blow guide member from the side of one end thereof, whereby the primary blow molded article is thermally shrunk by being blown by the hot air at a given wind speed longitudinally along the primary blow molded article while exposing the entire circumferential surface of a barrel portion of the primary blow molded article to the hot air and then guiding the hot air through the first air blow guide member.

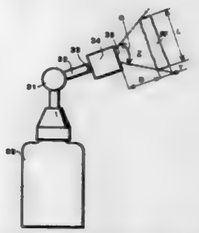
5,445,516

BURNER METHOD AND APPARATUS HAVING LOW EMISSIONS

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 50,385, May 12, 1993, Pat. No. 5,383,781, Ser. No. 77,197, Jun. 16, 1993, abandoned, and Ser. No. 216,522, Mar. 23, 1994, said Ser. No. 50,385, is a continuation-in-part of Ser. No. 710,024, Jun. 6, 1991, Pat. No. 5,149,263. This application Jun. 15, 1994, Ser. No. 260,441
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 28 Claims

1. A gas burner for heating objects having a supply of gas under pressure which is to be mixed to achieve a combustible mixture, gas flow line connecting to said burner to said supply, a burner means for mixing air with said fluid fuel to achieve said combustible mixture, characterized by said burner means includes one or more jet forming means for issuing one or more jets of said gas having a given cross-sectional area and sweeping said one or more jets of gas in ambient air downstream of said burner means to mix air with said gas and achieve said combustible mixture a distance spaced from any physical structure of said burner means whereby a flame front of burning



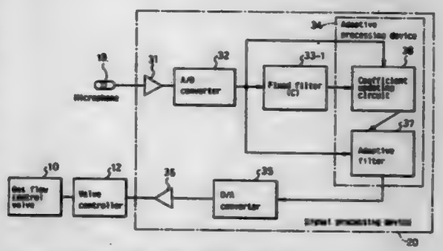
combustible mixture has a broad shape and is spaced a predetermined distance from said burner.

5,445,517

ADAPTIVE NOISE SILENCING SYSTEM OF COMBUSTION APPARATUS

Masamitsu Kondou, Katano; Yasuhiro Umekage, Osaka, and Kunio Nakamura, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 13, 1993, Ser. No. 135,494
Claims priority, application Japan, Oct. 14, 1992, 4-275649; Oct. 14, 1992, 4-275653; Feb. 3, 1993, 5-016070; Feb. 4, 1993, 5-017180
Int. Cl.[6] F23N *1/00*; F23C *11/04*
U.S. Cl. 431—18 7 Claims



1. A combustion apparatus comprising:

a fuel control means for controlling an amount of fuel supply;

a pressure detector for detecting pressure variations substantially caused by combustion of said fuel; and

a feedback type control system wherein an anti-phase signal is produced based on a signal received from said pressure detector and wherein said anti-phase signal is applied to said fuel control means to cancel said pressure variations by phase interference, said feedback control system comprising:

pressure propagation characteristic correction means for correcting an influence of a pressure propagation characteristic for a path from said fuel control means to said pressure detector during combustion;

adaptive processing means for computing, based on an adaptive control rule, an anti-phase signal used to obtain substantially anti-phase pressure variations at said pressure detector in accordance with both said signal output by said pressure detector and said signal output by said pressure detector which has passed through said pressure propagation characteristic correction means; and

means for applying said anti-phase signal of said adaptive processing means to said fuel control means.

5,445,518

SELECTIVELY ACTUATABLE LIGHTER

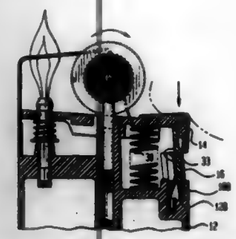
James M. McDonough, Guilford; Chris A. Barone, Trumbull, both of Conn., and Michel Doucet, Bains/S/Ouet Redon, France, assignors to BIC Corporation, Milford, Conn.

Continuation-in-part of Ser. No. 723,989, Jul. 1, 1991, and a continuation-in-part of Ser. No. 912,421, Jul. 10, 1992, which is a continuation of Ser. No. 609,668, Nov. 6, 1990, abandoned, Ser. No. 723,989, Nov. 6, 1990, which is a continuation-in-part of Ser. No. 609,668, Nov. 6, 1990, which is a continuation of Ser. No. 239,734, Sep. 2, 1988, Pat. No. 5,002,482. This application Oct. 23, 1992, Ser. No. 965,831

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[6] F23D *11/36*

U.S. Cl. 431—153 **51 Claims**



9. A flame producing lighter which comprises:

a housing defining a reservoir for containing a combustible gaseous medium under pressure;

valve means for releasing the combustible gaseous medium from said reservoir;

valve actuation means operatively engaged with said valve means for actuating said valve means from a closed position to an open position such that when said valve actuation means is depressed along a longitudinal axis of said housing the gaseous medium is released through said valve means, said valve actuation means including a cavity formed therein;

means for igniting said gaseous medium;

a latch having a finger actuatable portion and a tip portion connected thereto, said latch being positioned so as to interfere with tho movement of said valve actuation means along the longitudinal axis of the housing for preventing actuation of said valve means to the open position, said finger actuatable portion being movable inward toward the longitudinal axis of said housing so as to move said tip portion out of interference with said valve actuation means and into alignment with said cavity; and

spring means for retaining said tip portion in said out of interference position.

5,445,519

JET BURNER CONSTRUCTION HEATING APPARATUS UTILIZING THE JET BURNER CONSTRUCTION AND METHODS OF MAKING THE SAME

Kent K. Sigler, Youngwood, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

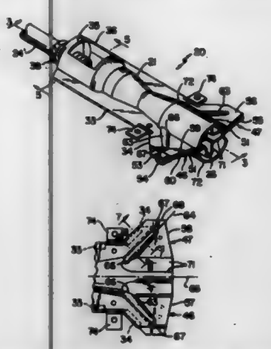
Division of Ser. No. 12,884, Feb. 3, 1993, Pat. No. 5,318,439. This application Apr. 22, 1994, Ser. No. 231,393

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] F22D *14/58*

U.S. Cl. 431—286 **18 Claims**

1. In a jet burner construction comprising a burner body means having a chamber means therein and having an inlet means leading to said chamber means for directing fuel from a fuel source therein and an outlet means leading from said chamber means and defining an outlet opening means through which said fuel is adapted to issue from said chamber means to burn externally to said burner body means, said chamber means of said burner body means having a longitudinal axis extending from said inlet means to said outlet means and having a maximum height at said longitudinal axis thereof, said burner body means having wing-like extensions respectively disposed on opposite sides thereof for respectively interconnecting with adjacent wing-like extensions of adjacent burner constructions, said wing-like extensions each having a side edge means and an elongated outlet slot means extending along said side edge means thereof and interconnecting with said outlet opening means and through which fuel is adapted to issue so as to burn external to said wing-like extensions, each said slot means having a certain height throughout the elongated length thereof that is less than said maximum height of said chamber means, each said wing-like extensions having a chamber therein that has a portion thereof of a certain length that has opposed ends and interconnects with said chamber means of



said body means throughout the entire said certain length of said portion and is adapted to feed fuel from said chamber means to the respective said slot means thereof along a major portion of said elongated length thereof, each said chamber having a height throughout the entire area thereof that is substantially the same as said certain height of its respective slot means except for a section thereof that has a height thereof that is greater than said certain height and less than said maximum height of said chamber means, the improvement wherein each said section has opposed ends one of which is interconnected to said chamber means at only a minor part of said certain length of said portion and at only one of said opposed ends of said portion and the other of which terminates short of its respective slot means, each said section being laterally surrounded by its respective chamber except at said one of said opposed ends thereof.

5,445,520

OIL LIGHTER

Makoto Ichikawa, Sakurashinmachi, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan

Filed May 5, 1994, Ser. No. 238,721

Claims priority, application Japan, Oct. 26, 1993, 5-062091

Int. Cl.[6] F23D *3/18*

U.S. Cl. 431—321 **2 Claims**

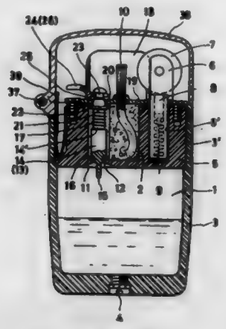
1. An oil lighter comprising:

a primary chamber having an oil filler aperture in its lower portion;

a secondary chamber having an upper hole therein, and which contains part of a wick that draws oil up, said secondary chamber being located above the primary chamber and having in its base portion an aperture that communicates with the primary chamber;

a valve that opens and closes the communicating aperture and is comprised of a spindle supported in the secondary chamber so as to be vertically slidable and having at its lower end a shaft that passes through the communicating aperture between the primary and secondary chambers and protrudes into the primary chamber and at its upper end a neck portion that protrudes out of the secondary chamber through the upper hole thereof;

biasing means that normally urges the spindle downward



and has at its upper end sealing means that normally seals the upper hole of the secondary chamber; and

operating means constituted of a lever that has a fulcrum abutting against a portion of the secondary chamber in the vicinity of the upper hole and an open bracket holding the neck portion of the spindle for raising the spindle against the force of the biasing means.

5,445,521

HEAT TREATING METHOD AND DEVICE

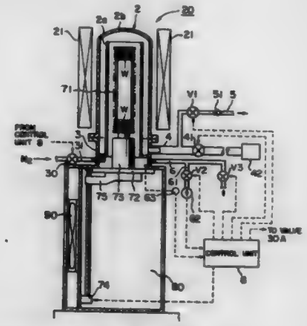
Eiji Yamaguchi; Kaoru Fujihara, both of Yamanashi; Takenobu Matsuo, Kofu, and Hirofumi Kitayama, Kanagawa, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tohoku Kabushiki Kaisha, both of Japan

Filed May 27, 1994, Ser. No. 250,379

Claims priority, application Japan, May 31, 1993, 5-152995; Jun. 11, 1993, 5-166471

Int. Cl.[6] F27D *5/00*

U.S. Cl. 432—5 **4 Claims**



1. A heat treating method comprising:

loading into a heat processing furnace a number of objects to be treated mounted on holding means and heat treating the objects;

introducing an inert gas into the heat processing furnace after a heat treatment;

detecting a pressure inside the heat processing furnace by first pressure detecting means, and generating an output signal from the first pressure detecting means when a pressure inside the heat processing furnace exceeds a first set pressure near-atmospheric pressure outside of the heat processing furnace;

opening a first valve and a second valve in response to the output signal of the first pressure detecting means, the first valve being disposed in an air release pipe for releasing gas from inside the heat processing furnace;

detecting a differential pressure between a pressure inside the heat processing furnace and atmospheric pressure outside the heat processing furnace with a differential second pressure detecting means disposed in a region isolatable from the heat processing furnace by the second valve; and

opening a cap of the heat processing furnace when the differential pressure detected by the second pressure detecting means falls below a second set pressure.

5,445,522

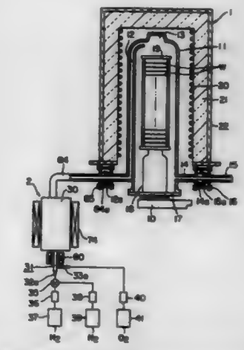
COMBUSTION DEVICE

Katsushin Miyagi, Sagamihara; Hiroyuki Mitsuhashi, and Kazuo Akimoto, both of Yokohama, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tohoku Kabushiki Kaisha, both of Japan

Filed Apr. 26, 1993, Ser. No. 51,945

Int. Cl.[6] F27B *14/00*

U.S. Cl. 432—156 **3 Claims**



1. An oxidation furnace for treating semiconductor wafers, said furnace having a combustion device for feeding hydrogen gas and oxygen gas, while heating the same, through a hydrogen gas feed pipe and an oxygen gas feed pipe and combusting the gases to generate water vapor, said combustion device comprising:

an elongate combustion vessel having a first end portion and a second end portion located opposite to said first end portion;

a hydrogen gas injection nozzle located centrally in said first end portion and provided on a forward end of said hydrogen gas feed pipe for axially feeding hydrogen gas into said first end of said elongate combustion vessel, said hydrogen injection nozzle having an injection port;

a plurality of oxygen gas injection nozzles each having an injection port, said oxygen gas injection nozzles being located concentrically around said hydrogen injection nozzle, said oxygen gas injection nozzles being provided on a forward end of said oxygen gas feed pipe for axially feeding oxygen gas into said first end portion of said elongate combustion vessel,

said oxygen gas injection ports being located further forward toward said second end portion in said elongate combustion vessel beyond said injection port of said hydrogen gas injection nozzle,

said combustion vessel having a water vapor outlet located at said second end of said elongate combustion vessel.

5,445,523

SYRINGE APPARATUS AND METHODS FOR DISPENSING VISCOUS MATERIALS

Dan E. Fischer, and David V. Fischer, both of Sandy, Utah, assignors to Ultradent Products, Inc., South Jordan, Utah

Filed Sep. 3, 1993, Ser. No. 117,398
Int. Cl.[6] A61C 5/04
U.S. Cl. 433—90 16 Claims



1. A syringe assembly for use in dispensing viscous materials, said syringe assembly comprising:

a syringe body member forming a first syringe barrel,

said syringe body member having a passageway passing through the length thereof, and

said syringe body member having a discharge port smaller in diameter than said passageway and communicating with the passageway at a distal end;

an adapter member forming a secondary syringe barrel that is nested essentially completely within said first syringe barrel so as to extend within the first syringe barrel substantially through the entire length of the first syringe barrel to said distal end,

said adapter member having a bore passing through the length thereof for receiving a viscous material to be dispensed,

said bore communicating with the discharge portion of the syringe body member of the first syringe barrel,

said bore of the adapter member having a diameter substantially the same as the diameter of said discharge port of the first syringe barrel and said adapter member extending to and contacting without obstruction the first syringe barrel at the location where the discharge port of the first syringe barrel communicates with the bore of the adapter member; and

a plunger member situated within the bore of the adapter member for ejecting viscous material contained within said bore through the discharge port of the syringe body member.

5,445,524

GEOGRAPHIC LOCATION IDENTIFICATION SYSTEM

John A. Jones, P.O. Box 144, Alvin, Tex. 77512

Filed May 3, 1994, Ser. No. 238,012
Int. Cl.[6] G09B 29/10
U.S. Cl. 434—153 8 Claims

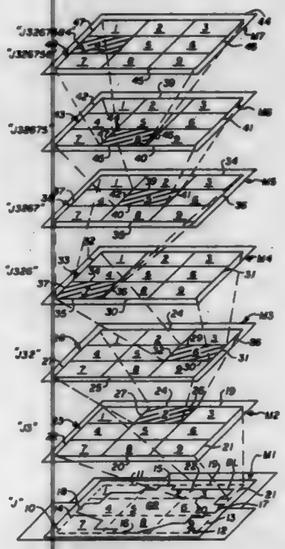
1. A method of identifying and accurately locating a specific location within a geographical region comprising the steps of:

circumscribing a geographical region with a first rectangular parallelogram having 90° included angles, the four sides of said first parallelogram intersecting the outermost top, bottom, left, and right points of the geographical region and assigning at least one prefix to identify the circumscribed geographical region;

dividing said first parallelogram into an equal number of rows and columns to define a first series of adjacent smaller rectangular cells of equal size each circumscribing a section of said geographical region and assigning a different whole number from 1 to 9 to each said section representing its position relative to the others, and identifying each said section by the combination of said prefix followed by the whole number assigned to it;

dividing each said smaller rectangular cell into the same number of rows and columns used previously to define a second series of adjacent smaller rectangular cells of equal size each circumscribing a subsection of the previous section and assigning a different whole number from 1 to 9 to each said subsection representing its location relative to the others, and identifying each said subsection by said prefix followed in sequence by the whole number assigned to the previous section followed by the whole number assigned to said subsection;

repeating the steps of dividing each said smaller rectangular cell into the same number of rows and column used previously to define successive series of adjacent smaller rectangular cells of equal size each circumscribing successively smaller subsections of the previous subsection and at each step assigning a different whole number from 1 to 9 to each said successively smaller subsection representing



its location relative to the others, and at each step identifying each said successively smaller subsection by said prefix followed in sequence by the whole number assigned to the previous said section followed by the whole number assigned to the previous said subsection followed by the whole number assigned to said successively smaller subsections; whereby

each series of cells is identified by said prefix followed by one or more whole numbers, each said whole number identifying a particular section of said geographical region and the numerical value of each said whole number identifying the location of each particular section and subsection relative to the others; and

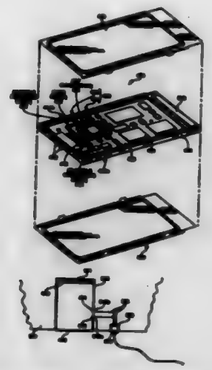
the order in which each said whole number is disposed in said sequence corresponding to the size of the particular section identified by said whole number with the first said whole number in the sequence following said prefix corresponding to the largest section of said geographical region and the following said whole numbers corresponding to sequentially smaller subsections of said geographical region.

5,445,525

INTERCONNECTION SCHEME FOR INTEGRATED CIRCUIT CARD WITH AUXILIARY CONTACTS

Neal E. Broadbent, El Dorado Hills, and Duncan D. MacGregor, Shingle Springs, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 12, 1994, Ser. No. 241,722
Int. Cl.[6] H05K 7/10
U.S. Cl. 439—64 6 Claims



1. A removably insertable integrated circuit (IC) card for use in a computer system, comprising:

an integrated circuit (IC) board, said IC board comprising an external I/O interface for transferring a first set of signals between said IC board and an external device;

a frame for holding said IC board, said frame comprising:

a first I/O receptacle located along a first frame edge for providing a signal path for said first set of signals between said external device and said external I/O interface of said circuit board; and

an auxiliary I/O receptacle located along a second frame edge for providing an alternate signal path for at least one of said first set of signals between said IC board and said external device; and

a flexible conducting strip coupled to said auxiliary I/O receptacle and said first I/O receptacle such that said alternate signal path is formed and passes through said flexible conducting strip and through said auxiliary I/O receptacle.

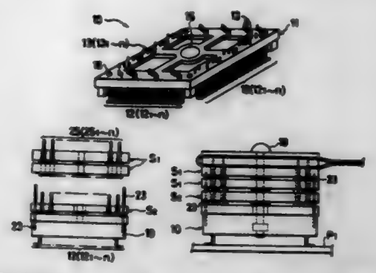
5,445,526

MUTLIPLE-PIN TERMINAL ADAPTOR

Masayoshi Hoshino, and Masakazu Yayoshi, both of Tokyo, Japan, assignors to JC Electronics Corporation and Toshiba Chemical Corporation, Japan

Continuation of Ser. No. 976,944, Nov. 16, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,670
Claims priority, application Japan, Dec. 25, 1991, 3-357312
Int. Cl.[6] H01R 9/09, 13/20
U.S. Cl. 439—69 4 Claims

1. A multiple-pin terminal adapter for electrical connection to printed circuit boards, the terminal adapter comprising: a generally rectangular substrate made of insulating material; a first group of a multiplicity of contact pins extending downwardly from said substrate; and a second group of a multiplicity of contact pins extending upwardly from said substrate, said first and second groups of contact pins being equal in number to each other and connected electrically with each other, said first group of contact pins being disposed linearly in closely spaced relation for electrical connection to corresponding leads on a flat-packaged integrated circuit, said first group of contact pins having substantially the same shape and geometry as the integrated circuit to be electrically connected thereto, and said second group of contact pins being disposed at a larger pin-to-pin spacing than and said first group of contact pins, and the contact pins of said second group being disposed



out of axial alignment with the contact pins of said first group for electrical connection to leading wires or external componenta.

5,445,527

PRESS FIT PINLESS LATCHING SHROUD

Edward G. Martin, Plano, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Continuation of Ser. No. 5,487, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 644,892, Jan. 23, 1991, Pat. No. 5,180,312. This application Nov. 29, 1993, Ser. No. 160,355
Int. Cl.[6] H01R 23/72
U.S. Cl. 439—78 3 Claims

1. A shroud for retaining at least one connector, each connector containing a plurality of sockets, the sockets mating with a plurality of pins protruding from a surface, the connector having a length and a width, the pins part of a continuous pinfield formed of pins regularly spaced along the length of the pinfield, the pinfield having a length and a width, each of said shrouds further comprising:

a base member for securely mounting said shroud on a portion of said pinfield, said base member having a length and a width, said base member formed to receive said connector even if said connector has a length greater than said length of said base member, said base member mountable on said pinfield even if said length of said pinfield is larger than said length of said base member and mountable over different combinations of said pins along the length of said continuous pinfield;

a first arm attached to a first longitudinal edge of the base member and having a first wedged shoulder on a distal end of the first arm;

a second arm attached to a second longitudinal edge of the

base member and having a second wedged shoulder on a distal end of the second arm;

the first arm and the second arm being urged towards each other so that when the connector is inserted into the shroud to the point where the wedged shoulder of each arm reaches a connector shoulder on the connector, the first wedged shoulder and second wedged shoulder move over the connector shoulder and thereby releasably secure the connector to the shroud; and

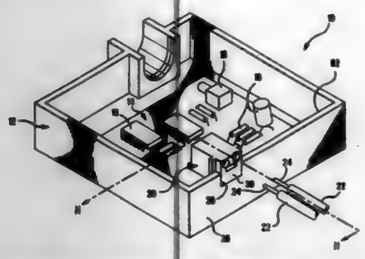
wherein the plurality of pins of the pinfield are arranged in rows, and further comprising a thin end member attached to a lateral edge of the base member for assisting with alignment of the shroud with respect to a desired row of the pinfield.

5,445,528

ELECTRICAL CONNECTOR WITH IMPROVED MOUNTING

Robert H. Frantz, Newville, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed May 31, 1994, Ser. No. 251,060
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—79 **16 Claims**



1. An electrical connector for mounting to a circuit board within an electrical component and interconnecting a conductor with circuitry on said circuit board, wherein said component includes a panel having an opening therethrough for receiving an end of said connector, said connector comprising:

an insulating housing having a first end for extending into said panel opening of said panel, a cavity formed in said housing, an electrical contact in said cavity having a tail for electrically engaging said circuitry on said circuit board, a first opening through said first end of said housing in communication with said cavity, said first opening and said contact arranged so that when a conductor is inserted into said first opening said contact deflects and electrically engages said conductor, said connector including securing means for securing said housing to said circuit board, and protective means for engaging said panel adjacent said panel opening when said connector is mounted to said circuit board to prevent inadvertent movement of said first end relative to said circuit board of said housing further into or through said panel opening from one side of said panel for preventing damage to said electrical contact.

5,445,529

CONNECTOR APPARATUS

Nobumasa Yamamoto, Yokohama, Japan, assignor to Berg Technology, Inc., Reno, Nev.

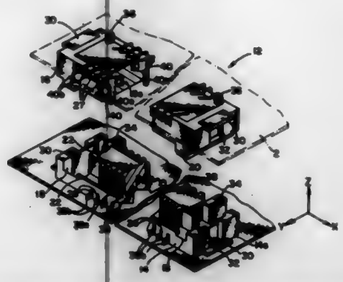
Filed Nov. 9, 1993, Ser. No. 149,308
Claims priority, application Japan, Nov. 9, 1992, 4-077087
Int. Cl.[6] H01R *9/09, 4/48*
U.S. Cl. 439—81 **11 Claims**

1. A connector apparatus for connecting together first and second boards, comprising:

a first housing mountable on the first board and made of an insulating material;

a plurality of first contact terminals arranged at a first predetermined pitch in a first parallel array in the first housing, each of the first contact terminal including a single surface defining a first contact portion for establishing an electrical connection with the first board, the first contact portion being angled with respect to a direction of the first pitch;

a second housing mountable on the second board and made of an insulating material, the second housing being fitted into the first housing; and



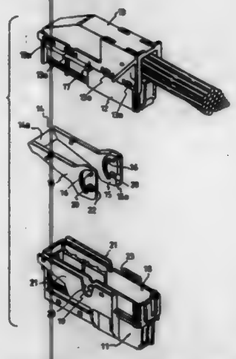
a plurality of second contact terminals arranged at a second predetermined pitch in a second parallel array in the second housing, each of the second contact terminals including a single surface defining a second contact portion for establishing an electrical connection to the defining second board, the second contact portion being angled with respect to a direction of the second pitch, wherein the first and second housings having a predetermined range of transverse movement with respect to each other while maintaining the first and second contact terminals substantially in contact.

5,445,530

LEVER-TYPE CONNECTOR

Nori Inoue; Hitoshi Okumura; Youichi Nankoh, and Hiroyuki Nakata, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Mie, Japan

Filed Dec. 22, 1993, Ser. No. 172,230
Claims priority, application Japan, Dec. 24, 1992, 4-093156 U
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **10 Claims**



2. A lever-type connector, wherein a lever having cam grooves is pivotally mounted between a first connector housing and a second connector housing, the second connector housing including at least one cam follower projection, the first connector housing comprising:

a rectangular hood disposed substantially about said first connector housing;

at least one lever support shaft projecting laterally from said rectangular hood, said lever being mounted on said at least one lever support shaft;

outer walls spaced from and outside of lateral walls of said first connector, said lever being mounted between said outer walls and said lateral walls; and

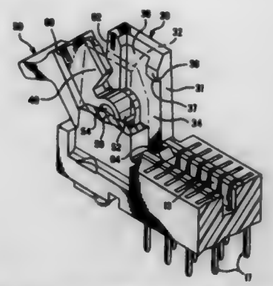
means for preventing said at least one lever support shaft from engaging a respective one of said cam grooves.

5,445,531

CARD EDGE CONNECTOR WITH SHIM LOCK AND EXTRACTOR MECHANISM

Timothy B. Billman, King, and Roger L. Thrush, Clemmons, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 23, 1994, Ser. No. 294,695
Int. Cl.[6] H01R *13/629*
U.S. Cl. 439—160 **20 Claims**



1. A socket for electrically connecting a circuit card to a substrate, comprising:

a housing which defines an elongated slot extending along an elongation axis and dimensioned for receiving an edge portion of the circuit card;

a plurality of contacts extending into the slot for electrically engaging respective contact pads on the circuit card, leads of the contacts extending to an exterior of the housing for electrically engaging respective circuit traces on the substrate;

a card guide at one end of the slot, the card guide including first and second spaced apart walls arrayed on respective opposite sides of the elongation axis, a space between the walls being greater than a thickness of the circuit card, the first wall being substantially rigid and having a projection extending into the space in a fixed position and arranged to reside above a ledge of the circuit card when the circuit card is disposed in the slot, a gap between a tip of the projection and the second wall having a dimension at least as great as the thickness of the circuit card, whereby the circuit card is insertable into the socket with a portion of the circuit card passing through the gap until the ledge is relatively below the projection, the ledge is displaceable to a position beneath the projection upon relative lateral movement of the circuit card, and whereby a clearance exists between the circuit card and the second wall when the circuit card is disposed in the slot and the projection resides above the ledge; and,

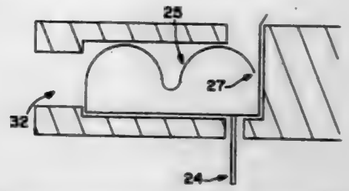
a shim member insertable in the clearance and dimensioned to restrict lateral movement of the circuit card sufficiently to prevent displacement of the ledge beyond the tip of the projection, whereby the circuit card is locked in the socket.

5,445,532

REUSABLE VIBRATION RESISTANT INTEGRATED CIRCUIT MOUNTING SOCKET

Craig N. Evans, Irwin, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1993, Ser. No. 136,069
Int. Cl.[6] H01R *13/20*
U.S. Cl. 439—161 **2 Claims**



2. A reusable shock and vibration resistant integrated-circuit mounting socket comprising:

a body thin in one dimension and of generally rectangular shape in the other two dimensions and having two large rectangular sides and at least two corresponding elongated narrow sides, said body being fabricated from a non-conducting material with a plurality of recesses on a first large rectangular side which recesses are configured to receive reusable shock and vibration resistant contacts, said recesses communicating through small openings to the second rectangular side in such a way that a contact extension can pass through to make electrical connection to balance-of-circuit components; a plurality of bimetallic reusable shock and vibration resistant electrical contacts located in said recesses, each of said bimetallic contacts having a barbed end, fabricated with a contact shape such that the barb end protracts with increasing temperature and retracts with decreasing temperature, said barb end pointing toward the direction of insertion of an integrated circuit lead so as to prevent by mechanical force of the barb end against said circuit lead the pulling out of the lead from the contact when the barb end is protracted and said retracting with decreasing temperature being sufficient to disengage the barbed end from the integrated circuit lead below a designated removal temperature, and each said contact having a contact extension passing through to the second rectangular side of the body; and

a plurality of cooling vents in the elongated narrow sides of the body adjacent to each of said contacts so as to allow cooling gas or liquid to come in contact with said electrical contacts.

5,445,533

ELECTRICAL CONNECTOR

Paul M. Rosciszewski, Eagle; Russell J. Lenz, and Todd K. Knapp, both of Waukesha, all of Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 943,442, Sep. 10, 1992, Pat. No. 5,277,605. This application Oct. 1, 1993, Ser. No. 130,651
Int. Cl.[6] H01R *13/53*
U.S. Cl. 439—184 **14 Claims**

1. A connector for connecting or disconnecting an energized high voltage circuit by engagement or disengagement with another connector having a contact member, comprising:

a sleeve of an electrically conductive material having an axial passage therethrough;

a contact element disposed within said passage for engaging the contact member;

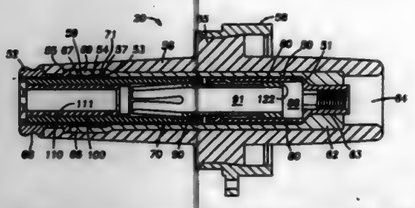
guide means attached to one end of said contact element for guiding the contact member toward said contact element and for evolving an arc-quenching gas in response to an

arc being struck between the contact member and said contact element;

said contact element including a cylindrical piston means responsive to such evolved gas for jointly displacing within said passage said guide means and said contact element toward the contact member;

a conductive cylinder fixedly secured within said sleeve for reciprocably supporting said piston means within said passage of said sleeve;

said piston means having an outer reduced diameter portion forming an annular stop shoulder;



an inhibitor member projecting inwardly from said conductive cylinder into said reduced diameter portion and adapted for engaging said annular stop shoulder to limit the reciprocation of said piston means toward the contact member;

a stop member on said conductive cylinder and adapted for engaging said annular stop shoulder should said stop shoulder pass said inhibitor member;

said inhibitor member and stop member inhibiting the movement of said piston means within said sleeve until a predetermined pressure is achieved by the arc-quenching gas.

5,445,534

DOUBLE LOCK MALE/FEMALE TYPE CONNECTOR

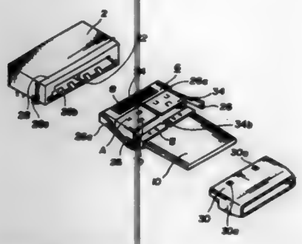
Hironori Ishizuka; Wataru Maruoka, and Arifumi Tomikawa, all of Kanagawa, Japan, assignors to Oki Densen Kabushiki Kaisha, Japan

Division of Ser. No. 80,450, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 681,745, Apr. 8, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 127,595

Claims priority, application Japan, Apr. 13, 1990, 2-39595 U; Apr. 13, 1990, 2-39596 U; Jul. 4, 1990, 2-71303 U

Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—352 **8 Claims**



1. A connector comprising:

a male component having a leading end;

a female housing into which said male component is insertable, said female housing having a rectangular configuration and an elongate opening formed therein through which said male component can be inserted;

a rib which extends into the elongate opening, said rib being arranged to engage in a slot formed in the leading end of said male component;

a resilient member on said male component, said resilient member having first and second ends, the first end being connected to said male component;

a shoulder portion on said resilient member for engagement with a side edge portion of the female housing;

a slide member which is slidably mounted on said male component and arranged to be selectively movable under said resilient member between a first non-locking position and a second locking position wherein flexure of the resilient member inwardly toward the male component is prevented by engagement between said resilient member and said slide member when said slide member is at said second locking position;

a first metallic cover member disposed about the elongate opening of said female housing, said first metallic cover being adapted for connection to an electrical ground, and wherein said male component comprises:

a main body which is operatively connected with a cable; and

a second metallic cover, said second metallic cover having a first portion which is adapted to be wrapped about the main body, and a second portion which is adapted to be wrapped about the cable, the first and second metallic covers being arranged to engage one another in a manner which establishes an electrical connection therebetween when the male component is inserted into the female housing.

5,445,535

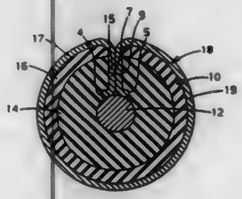
INSULATION DISPLACEMENT TERMINAL

William T. Phillips, Jr., Boardman; Michael J. Bezusko, and George E. Finn, both of Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 2, 1994, Ser. No. 235,957

Int. Cl.[6] H01R *9/05*

U.S. Cl. 439—394 **6 Claims**



1. An insulation displacement terminal for use with a conductor having insulation and a prepared slit in the insulation comprising:

a crimp barrel portion having a pair of insulation displacement tabs with blunt leading edges crimped into the prepared slit and smooth surfaces contacting the conductor establishing electrical connection therewith without disfiguring the conductor.

5,445,536

QUICK MOUNTING BULB SOCKET

Jeng-Chih Chen, No. 32, Lane 568, Chung Shan Rd., Sec. 2, Chung Ho City, Taipei Hsien,

Filed Sep. 13, 1994, Ser. No. 305,362

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—419 **17 Claims**

1. A bulb socket for quick mounting a wire or wires, comprising:

a socket body having at least one electrically conducting pin, wherein the socket body includes two lugs at a top periphery thereof with a cavity adjacent thereto; wherein a cylindrical projection is disposed at the top of said socket body and between said lugs, and four arcuate recesses are disposed on a peripheral edge of said cylindrical projection, such that the arcuate recesses are located at crosswise positions; wherein a central opening is defined at a center of said cylindrical projection;

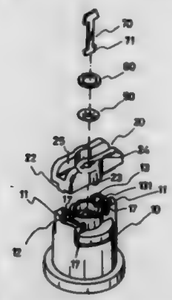
means for locating at least one wire in the socket body, wherein the means for locating includes at least one wire retaining groove located adjacent to said cylindrical projection;

electrical conductor means including a pair of conducting pins each having a sharply pointed piercing end, wherein each conducting pin is led through a fixing slot defined in said socket body; and

means for causing the conducting pins to penetrate a wire or wires located in the socket body and to move the wire or wires into contact with the electrical conductor means;

wherein integral bulb securing threads are disposed on said socket body for mounting a bulb to the socket body; a conducting pin insertion groove is defined adjacent to said bulb securing threads for securing one of said conducting pins;

wherein the means for causing includes a pressing knob having a pair of urging protrusions and positioning protrusions disposed thereunder and a pair of retaining projection spots which are selectively engaged with said arcuate



recesses; and a receiving groove is disposed on a top of said pressing knob for housing a washer and a resilient plate; wherein a connection pin having a T-shaped end is passed through said washer, through said resilient plate and into a through hole defined in said pressing knob; said pressing knob being rotatably mounted onto said socket body; and said connection pin being further passed to said central opening of said socket body; said pressing knob being turned through 90 degrees with said T-shaped end of said connecting pin engaged with two grooves on said socket body so as to move said socket body and said pressing knob together with one another; said conducting pins being led through said fixing slots respectively, wherein said conducting pins include two legs adjacent to said pointed piercing end thereof, said legs being horizontally bent so as to fix the conducting pin to said socket body; said at least one wire being disposed in said wire retaining grooves and engaged with said conducting pin which can penetrate a skin of the at least one wire as said at least one wire is being forced toward the conducting pin.

5,445,537

STRAIN RELIEF COUPLING ASSEMBLY FOR AN ELECTRODE

Alex Ahyzov, Brookline, Mass., assignor to SRC Associates, Inc., Marblehead, Mass.

Filed Oct. 31, 1994, Ser. No. 332,395

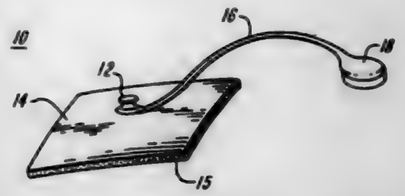
Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—449 **13 Claims**

1. A strain relief (SR) coupling assembly for an electrode having an electrode connector element affixed to one end thereof, comprising:

A. a first sheet element being electrically non-conductive and having top and bottom surfaces and having an adhesive layer on said bottom surface,

B. a pad connector element affixed to said top surface, said pad connector element being reversibly engageable with



said electrode connector element, and said pad connector element being electrically isolated from said bottom surface, and C. an elongated flexible electrically conductive element connected at one end to said pad connector element and at its opposite end to a SR connector element.

5,445,538

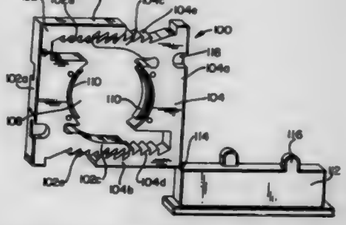
ELECTRICAL CONNECTOR STRAIN RELIEF

Julio F. Rodrigues, Collierville; Paul J. Bartholomew; Timothy S. Bowman, both of Memphis, all of Tenn., and Gary L. Lowery, Southaven, Miss., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Nov. 17, 1993, Ser. No. 153,710

Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—460 **14 Claims**



1. An electrical connector for terminating jacketed multiconductor cable comprising:

a connector housing for accommodating said cable, said housing defining a first bounded opening for permitting passage of said cable therethrough;

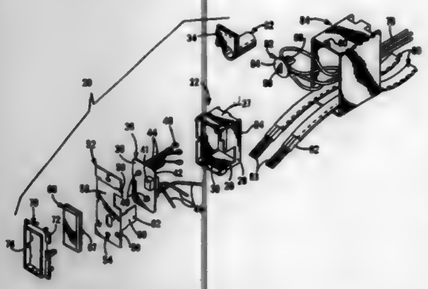
a cable strain relief device positioned adjacent said first bounded opening Of said housing for securing said cable thereat, said cable strain relief device including first and second interengageable strain relief members, said first strain relief member fixedly positioned within said housing adjacent said first bounded opening and said second strain relief member movably supported by said first strain relief member adjacent said first bounded opening, said first and second strain relief members each comprising a pair of spaced legs, one leg having outwardly directed engagement elements and the opposing leg having inwardly directed engagement elements, the outwardly directed engagement elements on a leg of one strain relief member engaging the inwardly directed engagement elements on a leg of the other strain relief member, said first and second strain relief members defining a second bounded opening adjacent to said first bounded opening, said second strain relief member being movable with respect to said first strain relief member to reduce the size of said second opening and for frictionally securing said cable thereat.

5,445,539

ELECTRICAL WIRING DEVICE FOR POWER CONTROL WITH LOW VOLTAGE INPUT

James L. Dale, Lawrenceville, Ga., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 9, 1994, Ser. No. 303,911
Int. Cl.[6] H01R *13/70*
U.S. Cl. 439—535 **12 Claims**



1. A electrical wiring device including:
a first electrical connection element for interconnection to conductors in a first group, the first group comprising power limited Class 2 or Class 3 conductors;
a second electrical connection element for interconnection to conductors in a second group, the second group comprising electric light, power, Class 1, or nonpower-limited fire protection signaling conductors;
a mounting strap for mounting the wiring device in an electrical device box having an opening extending through the rear face of the electrical device box;
a housing, the first electrical connection element being located in the housing;
a tubular projection mountable on the housing to extend through the opening in the electrical device box when the wiring device is mounted in the electrical device box, the tubular projection communicating with the first electrical connection element so that the conductors in the first group can be fed through the tubular projection from the first electrical connection element to the exterior of the electrical device box, the second electrical connection element being on the exterior of the tubular projection so that the tubular projection separates the conductors in the first group from the conductors in the second group.

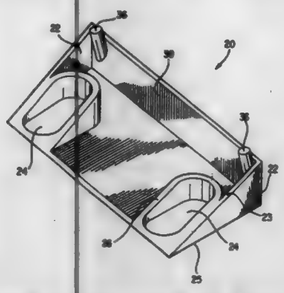
5,445,540

ATTACHMENT MEMBER FOR LAMP SOCKET AND METHOD

Kerwood Barrand, Vienna, Va., assignor to Vision Lighting, Inc., Rockville, Md.

Filed May 31, 1994, Ser. No. 253,241
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—573 **16 Claims**

1. An attachment member attachable to a compact fluorescent lamp socket housing a compact fluorescent lamp, said compact fluorescent lamp being coupled to a ballast, the attachment member comprising a fixture engaging surface and an inclined surface engageable with an attachment surface of said compact fluorescent lamp socket, said inclined surface being inclined at an angle such that at least a portion of said compact fluorescent lamp is spaced from said ballast relative to a plane parallel to said fixture engaging surface when said attachment member is attached to said compact fluorescent lamp socket, wherein said attachment surface of said compact fluorescent lamp socket comprises at least one first fixture engagement aperture adapted to receive first fixing means for fixing said compact fluorescent lamp socket to a fixture, said attachment member further comprising a corresponding at least one placement aperture adapted to receive said fixing means, said at least one placement aperture being delimited by



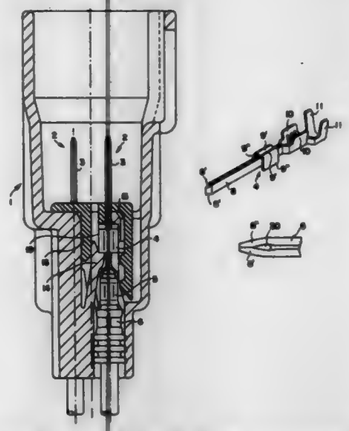
a ridge extending in a plane substantially parallel to said inclined surface.

5,445,541

BLADE CONTACT FOR ELECTRIC PLUGS

Guntram May, Altdorf, and Helmut Steinhardt, Nürnberg, both of Germany, assignors to Framatome Connectors International, Paris La Defense, France

PCT No. PCT/EP92/02954, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO93/13572, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 18, 1992, Ser. No. 107,752
Claims priority, application Germany, Jan. 4, 1992, 42 00 109.9
Int. Cl.[6] H01R *13/422*
U.S. Cl. 439—595 **12 Claims**



1. Blade contact for electric plug connectors, said blade contact comprising:
(a) a strip-shaped contact part (3) formed from a plane metal sheet (7) having a substantially rectangular section (8) across portions of a length of said sheet, said contact part (3) comprising a folded segment forming a supporting body (4) to be held between latching surfaces within a plug housing so as to fix said contact in said plug housing;
(b) two tabs (9) respectively projecting from each of two sides of said segment, said tabs being bent outwardly to form said supporting body (4);
(c) additional tabs (10, 11) arranged on said sheet forming crimp attachments (5, 6) for fixing an electrical conductor and insulating jacket of said conductor;

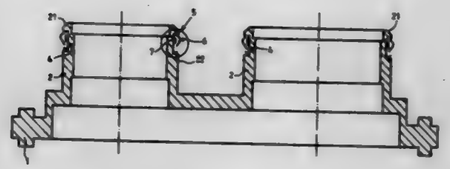
(d) said rectangular section forming said contact part (3) and each said two tabs (9) being folded downwardly by 90° across a substantially axial partial length along a fold line (12) disposed along an axis of said sheet (7), so that portions of said two tabs extend alongside each side of the folded contact part.

5,445,542

SHIELDING BAND FOR ELECTRICAL CONNECTORS AND CONNECTOR FITTED WITH SAME

Dominique Serizay, Saulx sur Huysnes, France, assignor to Framatome Connectors France, Versailles, France

Continuation of Ser. No. 983,016, Nov. 30, 1992, abandoned. This application May 19, 1994, Ser. No. 245,825
Claims priority, application France, Nov. 29, 1991, 91 14796
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—609 **18 Claims**



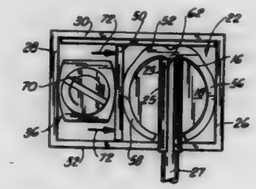
1. A shielding band for electrical connectors of the type used in housings and comprising:
a plurality of discrete, spring metal, contact blades located in side-by-side relationship in a seat extending along a housing, said discrete contact blades being independent from each other and forming elastically deformable open loops, said loop of each said discrete contact blades comprising a rectilinear main core that mates with said seat completely across said seat in a direction transverse to the direction of extension of said seat, said loop further comprising an elastically deformable, main contact branch overlying said main core, said main core being joined at one end by a first end of said main contact branch, said main contact branch facing said main core and having a second end which is able to move freely relative to said first end of said contact main branch,
said shielding band also comprising holding means accommodated inside said loop 5 for holding said discrete contact blades in said seat.

5,445,543

SLIP LUG ADAPTOR APPARATUS

Paul R. Williams, P.O. Box 15201, Hattiesburg, Miss. 39404-5201

Filed Jan. 30, 1995, Ser. No. 380,648
Int. Cl.[6] H01R *4/30*
U.S. Cl. 439—727 **10 Claims**



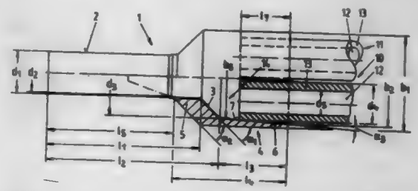
1. A terminal lug adaptor positionable on a corroded compressor terminal, comprising:
a) a lug adaptor housing positionable around the corroded terminal and defining an opening between the terminal wall and a wall of the lug adaptor housing;
b) a connector member, further comprising a sleeve slidable over the terminal, the sleeve also including a spade connector portion thereon;
c) a rotatable lug member, positioned within a portion of the lug adaptor housing, for engaging the sleeve positioned around the terminal from a first uncrimped position to a second crimped position around the terminal when the lug member is rotated; and
d) a wall means between the lug nut and the sleeve for engaging against the sleeve and crimping the sleeve around the terminal between the wall means and the wall of the lug adaptor housing.

5,445,544

WIRE END FERRULE

Bruno Weiland, Wangen; Herbert Leonhardt, deceased, late of Kisslegg by Charlotte A. Leonhardt, heiress ; Claus Geier, Kisslegg, and Hans Froehlich, Wangen, all of Germany, assignors to GLW- Elektrotechnische Bauteile-Kunststoffverarbeitung GmbH, Kisslegg and Zoller & Froehlich GmbH, Wangen, both of Germany

PCT No. PCT/DE92/00331, § 371 Date Jun. 10, 1994, § 102(e) Date Jun. 10, 1994, PCT Pub. No. WO92/20118, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 24, 1992, Ser. No. 146,020
Claims priority, application Germany, May 8, 1991, 41 15 020.1
Int. Cl.[6] H01R *4/10*
U.S. Cl. 439—879 **2 Claims**



1. Wire end ferrule for accommodating finely stranded conductors which form a crimp connection with the wire end ferrule, having a front cylindrical metal sleeve for accommodating a stripped conductor part and having, connected thereto, a rear plastic collar as insulating sleeve for accommodating the conductor with an insulating wrapper, characterized in that for the purpose of simultaneously accommodating two conductors (10, 11) in a wire end ferrule (1) the circular inner cross-section (diameter d_2) of the metal sleeve (2) is dimensioned in such a way that it accommodates the two stripped conductor litz wires (12) of the conductors (10, 11), and in that the plastic collar (4) adjoining the metal sleeve (2) has an approximately oval or rectangular inner cross-section (4), whose longer width b_2 is dimensioned in such a way that at least two juxtaposed conductors (10, 11) can be inserted together with their insulating wrapper (13).

5,445,545

SHROUDED ELECTRIC OUTBOARD MOTOR

Randal K. Draper, P.O. Box 10123, Lahaina, HI. 96761

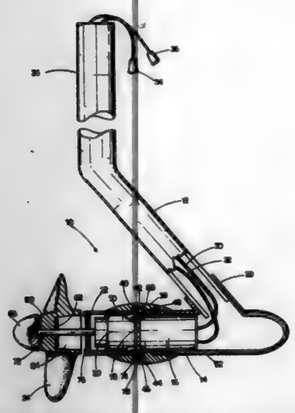
Filed Oct. 11, 1994, Ser. No. 320,939
Int. Cl.[6] B60L *11/02*
U.S. Cl. 440—6 **16 Claims**

1. A modular aquatic propulsion assembly comprising:
a cylindrical motor housing including,
a first opening leading to an interior cavity of said motor housing, and
a second opening for receiving power supply conductors;
a motor-gearbox assembly including,

a self-contained electric motor having a proximal end and a distal end, said proximal end including a shaft and said distal end including terminals for connecting to the power supply conductors,

a self-contained gearbox having a first end connectable to said electric motor and a second end having a propeller shaft protruding therefrom, and

connection means for attaching said self-contained motor to said self-contained gearbox, said motor-gearbox assembly removably inserted into said motor housing through said first opening;



a gearbox housing separable from said motor-gearbox assembly, said gearbox housing having a shaft opening to allow said propeller shaft to pass therethrough;

attachment means for sealingly securing said gearbox housing to said motor housing, whereby said motor-gearbox assembly is fully enclosed by said motor housing and said gearbox housing; and

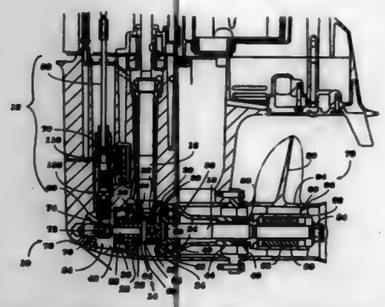
a propeller attached to said propeller shaft.

5,445,546

SHIFT ASSISTOR FOR OUTBOARD DRIVE SHIFTING MECHANISM

Daisuke Nakamura, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jan. 24, 1994, Ser. No. 185,542
Claims priority, application Japan, Jan. 22, 1993, 5-027385
Int. Cl.[6] B63H *23/08*
U.S. Cl. 440—75 **24 Claims**



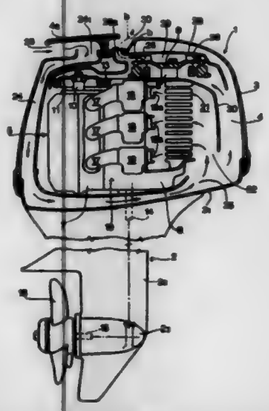
1. A shift assistor for a shifting mechanism of a watercraft outboard drive which selectively establishes at least a first, second and third drive condition of a transmission, said shift assistor comprising a first member and a second member, said first member being coupled to said transmission and being movable from a first position, in which the transmission is in the first drive condition, to either a second position, in which the transmission is in the second drive condition, or a third position in which the transmission is in the third drive condition, and said second member being movable from a first position to either a second position or a third position, said second member being interposed between a pair of biasing members which are contained within said first member, a detent coupling directly operable between said first member and said second member to releasably couple said first and second members together, and a detent mechanism being releasably coupled to said first member to releasably retain said first member in one of said positions, said second member being movable from said first position to either said second or third positions to load one of said biasing members and to urge said first member to release from said detent mechanism, one of said biasing members urging said first member from its first position to either its second or third positions in which said detent coupling couples said first and second members together.

5,445,547

OUTBOARD MOTOR

Akiyoshi Furukawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 887,027, May 22, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,243
Int. Cl.[6] B63H *21/26*
U.S. Cl. 440—77 **6 Claims**



1. An outboard motor, including an engine compartment formed in a top portion of said motor and covered by an engine cover, and an engine disposed within said engine compartment with its crankshaft directed in the vertical direction, said outboard motor comprising:

a suction chamber communicating with an intake section of said engine and disposed on a surface other than a top surface of said engine and on a lower front portion of said engine within said engine compartment;

an air intake port provided in said engine cover at an upper rear portion of said engine within said engine compartment;

an air exhaust port provided in said engine cover; and

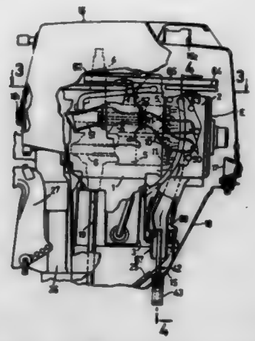
an air duct provided within said engine compartment for providing a continuous, unbroken air passageway from said air intake port to said suction chamber along a path passing around a lower portion of said engine toward a front portion of said engine.

5,445,548

EXHAUST GAS SAMPLING DEVICE FOR OUTBOARD MOTOR

Koji Koishikawa, and Motoyoshi Shishido, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,495
Claims priority, application Japan, Sep. 16, 1993, 5-229940
Int. Cl.[6] B63H *21/32*
U.S. Cl. 440—89 **1 Claim**



1. An exhaust gas sampling device for an outboard motor comprising an engine, a body case rotatably supporting a propeller driven by said engine and which defines an exhaust gas passage for permitting an exhaust gas from said engine to be passed therethrough into water, an exhaust pipe having an exhaust port opened downwardly into said body case, an exhaust gas sampling pipe extending through said body case, and a cap for closing an outer end of the exhaust gas sampling pipe, wherein

an outer wall surface of said body case opposed to said exhaust port in said exhaust pipe is provided with a seat surface, and an inner end of the exhaust gas sampling pipe, mounted to said seat surface, is loosely fitted into said exhaust port in said exhaust pipe below said engine.

5,445,549

WATER SPORTING EQUIPMENT

David Lekhtman, Morin Heights, Canada, assignor to Damar Leisure Products Inc., Montreal, Canada

Filed Nov. 22, 1993, Ser. No. 156,310
Int. Cl.[6] B63H *16/08*
U.S. Cl. 440—17 **5 Claims**



1. Water sporting equipment comprising, in combination:

A) a device for floating on the surface of a body of water and for supporting at least one user thereon, said device comprising;

i) at least two spaced, parallel pontoons;

ii) a frame, connected to said pontoons, and extending above the space between said pontoons, the frame mounting a seat for the user;

B) a pair of elongated members pivoted with respect to the frame, forward of the seat, about an axis at right angle to the pontoons, the elongated members each including an independent footwear fixedly mounted to the bottom end of the respective elongated member for arcuate reciprocating movement relative to the device for engaging the water and for propelling the device through the water in a direction parallel to the pontoons, said footwear comprising;

i) a foot receiving portion having a foot receiving surface and a second surface opposite to said foot receiving surface;

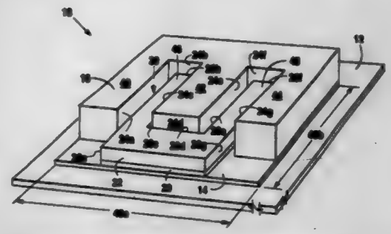
ii) fin means movably connected to the footwear whereby the fins will close when the footwear is moving forward in the water relative to the device and will open when the footwear is moved rearwardly relative to the device to provide propulsion to the device.

5,445,550

LATERAL FIELD EMITTER DEVICE AND METHOD OF MANUFACTURING SAME

Chenggang Xie, 415 Cripple Creek Rd., Cedar Park, Tex. 78613, and Nalin Kumar, 12116 Scribe Dr., Austin, Tex. 78727

Filed Dec. 22, 1993, Ser. No. 173,739
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **15 Claims**



1. A method of manufacturing a lateral field emitter device, comprising the following steps:

(a) providing a substantially flat substrate;

(b) disposing a conductive layer on the substrate;

(c) disposing an anode material on the conductive layer;

(d) positioning an etch mask with an opening therethrough above the anode material such that the anode material beneath the opening is exposed whereas the anode material beneath the mask is covered;

(e) etching the anode material beneath the opening wherein the etching undercuts the anode material beneath the mask thereby forming an anode sidewall beneath the mask, exposing the conductive layer beneath the opening and exposing the conductive layer beneath the mask adjacent the anode sidewall;

(f) depositing an insulative film the conductive layer beneath the opening without depositing the insulative film on the anode sidewall thereby forming an insulative film sidewall defined by the opening;

(g) depositing a cathode material on the insulative film beneath the opening without depositing the cathode material on the anode sidewall thereby forming a cathode sidewall defined by the opening and a substantially uniform gap between the anode sidewall and the cathode sidewall wherein the cathode material has a bottom surface between a top and bottom surface of the anode material; and

(h) removing the mask.

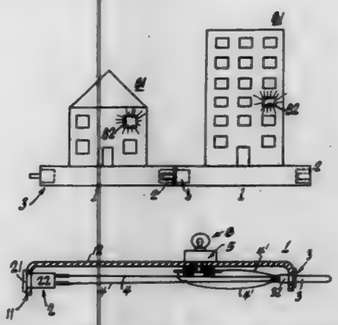
5,445,551
WILD GAME CALL
Daniel D. Ady, 417 S. KCID Rd., Caldwell, Id. 83605
Filed Jan. 28, 1994, Ser. No. 188,254
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—209 3 Claims



1. A wild game call comprising:
a generally tubular body with generally cylindrical outer surfaces and a hollow inside volume, said tubular body having an inlet end and an outlet end;
a generally rectangular, slightly curved lip member, with lateral edges and a front edge, said lip member extending outwardly from the inlet end of the tubular body's cylindrical outer surface to form a slightly curved plate, said plate transitioning into the cylindrical outer surface of the call near the center of the inlet end;
a curved, inside surface of said slightly curved plate, with a distal end and a proximal end, the inside surface having a depression beginning at near its distal end and continuing to its proximal end, the depression being deeper and more pronounced at the proximal end of said curved plate;
notched entrance into the inside hollow volume of the call located at where the center of the proximal end of said curved, inside surface of the plate meets the inlet end of said tubular body; and
an elastic, plastic sleeve inserted over the lateral edges of the lip, and covering the inside surface of the curved plate, but not touching the depression surface at the proximal end of the plate.

5,445,552
ELECTRICALLY AND/OR MECHANICALLY INTERCONNECTABLE MINIATURE BASE
John Hine, Aldershot, England, assignor to John Hine Limited, United Kingdom
Continuation of Ser. No. 996,543, Dec. 24, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 184,765
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—477 7 Claims

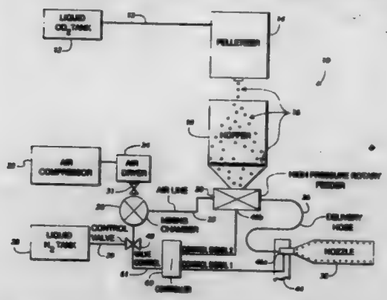
1. An arrangement of miniature buildings including:
a) a power supply;
b) a first end unit including a plug connector;
c) a second end unit including a socket connector;
d) at least one interconnectable base assembly adapted to accommodate a miniature building including:
i) a support plate, said support plate including a top portion and a peripheral wall portion defining a cavity, said peripheral wall having a lower edge surface located opposite said support plate, said lower edge surface defining a substantially flat plane such that said interconnectable base assembly may stably rest on a flat surface;
ii) a socket, said socket adapted to accept a plug whereby an electrical connection and a mechanical connection may be formed;
iii) a plug, said plug,
adapted to fit into a socket whereby an electrical connection and a mechanical connection may be formed, wherein said mechanical connection permits the interconnectable base assembly to be rotated about an axis defined by said plug, and
projecting beyond an outside surface of said peripheral wall;



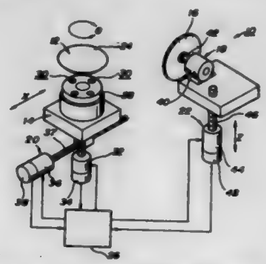
iv) means for electrical conduction, said means for electrical conduction electrically connecting said socket and said plug;
v) a lamp housing assembly, said lamp housing assembly connected to said top portion of said support plate; and
vi) second means for electrical conduction, said second means for electrical conduction electrically connecting said lamp housing with said plug; and
e) a miniature building, said miniature building resting on said support plate of said at least one interconnectable base assembly and surrounding said lamp housing assembly,
wherein, a number of said at least one interconnectable base assemblies are connected, in any order, between said first end unit and said second end unit and to said power supply.

5,445,553
METHOD AND SYSTEM FOR CLEANING A SURFACE WITH CO_2 PELLETS THAT ARE DELIVERED THROUGH A TEMPERATURE CONTROLLED CONDUIT
Michael A. Cryer, Byron; William D. Danielson, Decatur, and Robert A. Babb, Warner Robins, all of Ga., assignors to The Corporation of Mercer University, Macon, Ga.
Filed Jan. 22, 1993, Ser. No. 7,518
Int. Cl.[6] B24B *49/14*; B24C *3/12*
U.S. Cl. 451—7 27 Claims

1. A system for cleaning a surface, comprising:
means for forming frozen pellets for use as blasting media;
means for delivering said pellets against a surface to be cleaned; and
means for controlling the temperature within at least a portion of said delivery means to a temperature below the sublimation point of frozen pellets comprising:
means for monitoring the temperature in a conduit in said delivering means,
means responsive to signals from said temperature monitoring means for controlling a coolant injection valve, and
a source of coolant connected to said coolant injection valve, whereby when the temperature in said conduit exceeds a predetermined temperature of about −120° F., said coolant injection valve opens to introduce coolant into said conduit to maintain the temperature below the sublimation point of said frozen pellets.

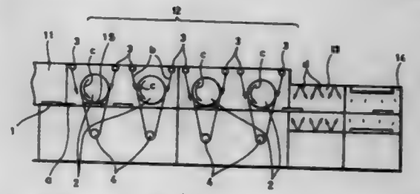


5,445,554
METHOD FOR CHAMFERING NOTCH OF WAFER AND APPARATUS THEREFOR
Kaoru Hosokawa, Saitama, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 897,288, Jun. 11, 1992, abandoned.
This application Mar. 8, 1994, Ser. No. 215,046
Claims priority, application Japan, Jun. 12, 1991, 3-167752
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 2 Claims



1. A method for chamfering a surface and edges of a notch in a wafer, said wafer having substantially parallel planar surfaces which are perpendicular to a central axis of the wafer, said wafer having a peripheral edge surface, said wafer having a notch with a vertex, said notch being at the peripheral edge surface of the wafer, said notch having a first surface extending between said parallel planar surfaces, first and second edges of said notch being formed at junctures of said first surface and said parallel planar surfaces, which method comprises the steps of:
positioning relative to a wafer to be ground a rotating thin grindstone in the shape of a disk and having an edge portion and substantially parallel planar surfaces so that one of the planar surfaces of the grindstone intersects one of said planar surfaces of said wafer at a first edge of the notch,
chamfering said wafer along said first edge of said notch by relatively moving said rotating grindstone and said wafer parallel toward or away from each other in a direction parallel to one of said wafer planar surfaces and at the same time rotating said wafer a small prescribed angle around its central axis perpendicular to said planar surfaces of said wafer, thereby to chamfer said first edge of said notch,
chamfering said wafer along said first surface of said notch by relatively moving said rotating grindstone and said wafer toward or away from each other in a direction parallel to said parallel planar surfaces of the wafer, and chamfering said wafer along said second edge of said notch by relatively moving said rotating grindstone and said wafer toward or away from each other in a direction parallel to one of said parallel planar surfaces while at the same time rotating said wafer a prescribed angle around its central axis perpendicular to said planar surfaces of said wafer, thereby to chamfer said second edge of said notch.

5,445,555
RESIN MATERIAL RECLAIMED FROM OPTICAL RECORDING DISK AND METHOD OF RECLAIMING SAME
Kunihiko Tokura, and Masaru Uryu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
PCT. No. PCT/JP92/01582, § 371 Date Aug. 5, 1993, 102(e) Date Aug. 5, 1993, PCT Pub. No. WO93/11533, PCT Pub. Date June. 10, 1993
PCT Filed Dec. 3, 1992, Ser. No. 98,263
Claims priority, application Japan, Dec. 5, 1991, 3-321812; Oct. 22, 1992, 4-284558
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 5 Claims

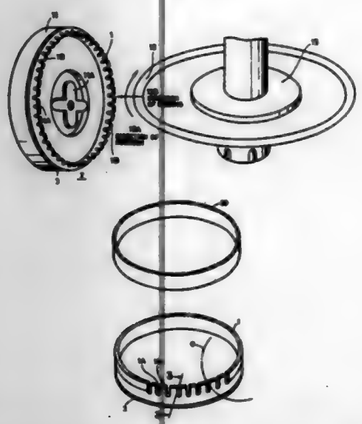


1. A method of reclaiming resin material from an optical recording disk comprising:
providing an optical recording disk whose resin material is to be reclaimed, said optical recording disk including a base resin layer having a multi-layer recording medium defined on an upper major surface thereof; and
removing the multi-layer recording medium from the upper major surface of the base resin layer by passing the optical recording disk through a polishing station in a single direction at a rate of from about 1 to about 2 meters per minute and contacting the upper surface in the polishing station with at least one rotating cylindrical polishing member while spraying the upper surface and polishing member with water, said cylindrical polishing member including a polishing surface defined by abrasive grains having an abrasive grain size of between about #320 to about #1000 and an adhesive agent hot pressed onto the surface of the polishing member, said cylindrical polishing member being rotated at a rotational speed of from about 1,500 to about 3,000 r.p.m., said optical recording disk being polished in said polishing station under conditions selected to remove substantially all of the multi-layer recording medium from said upper surface without melting the base resin layer.

5,445,556
VIBRATION MOTOR AND METHOD OF MACHINING A VIBRATION MEMBER THEREOF
Mitsuru Miura, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 979,473, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 648,058, Jan. 30, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,103
Claims priority, application Japan, Jan. 31, 1990, 2-20711
Int. Cl.[6] B24B *19/02*
U.S. Cl. 451—28 17 Claims

1. A method of machining a groove into a vibration member of a vibration motor, the vibration member having a contact portion into which the groove is machined and against which

a contact member is contactable and relatively movable by a vibration wave produced in the vibration member, said method comprising the step of machining the vibration member so that



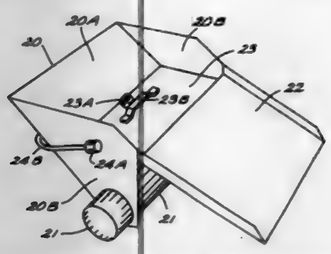
the bottom of the groove of the vibration member, in a direction perpendicular to a direction of the vibration wave, has a curvature with a center of radius located on a contact side of said contact portion.

5,445,557

ABRASIVE BLASTING FLOOR RECOVERY SYSTEM WHICH IS RESISTANT TO CLOGGING

John A. Gramm, and Gerald L. Overby, both of Tucson, Ariz., assignors to Stripping Technologies, Inc., Tucson, Ariz.

Filed Sep. 27, 1993, Ser. No. 127,777
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—75 **14 Claims**



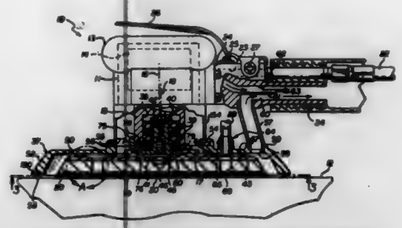
1. A clog resistant floor recovery system comprising:
a) a hopper having,
1) at least one side portion,
2) a bottom portion, and,
3) at least one outlet opening in to said bottom portion; and,
b) a substantially horizontal conveying channel for conveying media from said hopper, said conveying channel having at least one inlet opening for communicating material from said hopper and at a location on said conveying channel means below an uppermost inner surface of said conveying channel.

5,445,558

WET SANDER

Donald H. Hutchins, Sierra Madre, Calif., assignor to Hutchins Manufacturing Company, Pasadena, Calif.

Filed Jul. 20, 1994, Ser. No. 277,758
Int. Cl.[6] B24B *23/02*
U.S. Cl. 451—344 **19 Claims**



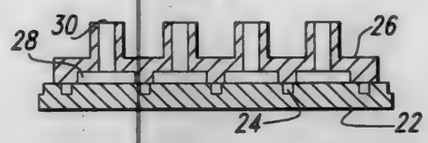
1. A portable abrading or polishing tool comprising:
a tool body to be held and manipulated by a user;
a motor carried by said body;
a head movable relative to said body by said motor and adapted to carry an element for abrading or polishing a work surface;
a shroud carried by said body and disposed about said head;
means for delivering water through the interior of said shroud and then through passage means in said head to said work surface;
sais shroud being constructed to confine a suction induced flow of air, water and abraded particles from the location of said work surface; and
two generally concentric and generally annular seals between the shroud and head confining the flow of water to the head between said seals, and confining said flow of air, water and abraded particles radially outwardly of an outer one of said seals.

5,445,559

WAFER-LIKE PROCESSING AFTER SAWING DMDS

Richard O. Gale, Richardson, and Michael A. Mignardi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 24, 1993, Ser. No. 82,183
Int. Cl.[6] B24B *41/06*
U.S. Cl. 451—388 **6 Claims**



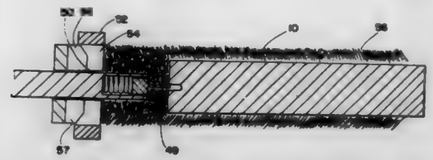
1. A fixture for protecting a wafer comprised of at least two micromechanical devices, each micromechanical device comprised of at least one fragile portion, the fixture comprising:
a surface for contacting the wafer, the surface comprised of a plurality of recessed regions for preventing contact between the surface and the wafer, such that when the surface of the fixture is in contact with the wafer, each recessed region of the surface forms a headspace above the fragile portion of one of the micromechanical devices;
at least one vacuum port connected to the headspaces to allow evacuation of the headspaces; and
the surface of the fixture forming a seal around each micromechanical device, thereby allowing each headspace to be evacuated through the vacuum port connected to the headspace.

5,445,560

HYBRID END CLOSURE FOR SHIRRED FOOD CASING

Douglas K. Meeker, Catlin, Ill.; Scott J. Rossi, Braschaat, Belgium, and Keith A. Watts, Oak Brook, Ill., assignors to Teepak, Inc., Westchester, Ill.

Filed Feb. 9, 1994, Ser. No. 193,974
Int. Cl.[6] A22C *13/00*
U.S. Cl. 452—39 **4 Claims**



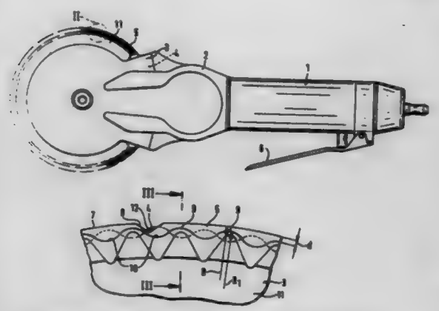
1. A shirred food casing strand comprising tubular film food casing compressed along a longitudinal axis of the tubular film to form a compressed pleated strand, said strand having an internal longitudinal bore defined by sidewalls formed from said compressed tubular film, said bore having a first open end and the strand being provided with an end closure proximate a second end of the bore and which closes said bore proximate said second end, the end closure comprising a portion of said tubular film compressed within said-bore proximate said second end and said compressed film portion having a vent therethrough, the compressed film portion tightly circumferentially contacting the walls of said bore at the location of the end closure and the compressed film portion being hollow at one end and having an essentially flat surface at another end of the compressed film portion opposite the hollow end, said flat surface facing the first open end of said bore.

5,445,561

REVOLVING BLADE SKINNING DEVICE AND REVOLVING BLADE THEREOF

Stefan Elmer, Ötisheim, Germany, assignor to Schmid & Wezel GmbH & Co., Maulbronn, Germany

Filed Jun. 15, 1994, Ser. No. 261,906
Claims priority, application Germany, Jun. 16, 1993, 43 19 949.6
Int. Cl.[6] A22B *5/16*
U.S. Cl. 452—133 **10 Claims**



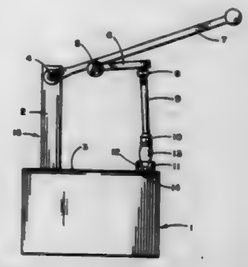
1. A revolving blade skinning device, comprising:
a handle;
pair of covers mounted to the handle;
revolving blade mounted between said pair of covers; and
means for rotating the revolving blade, wherein:
the revolving blade includes alternating cutting edge areas and notches;
the cutting edge areas have a cutting edge radius that is equal to the radius of the revolving blade was inserted therefor.
the cutting edges are sharpened on both sides and each extend over an angle of 25° to 35°;
the center of the revolving blade and those of the cutting edges coincide;
the notches are V-shaped and each extend over an angle of 10° to 20° and
the revolving blade projects past the covers to a maximal extent of 1.5 mm.

5,445,562

POULTRY PRESS

Richard F. Brunell, and Patricia W. Brunell, both of 306 Pine Shadow La., Lake Mary, Fla. 32746

Filed Mar. 29, 1994, Ser. No. 219,484
Int. Cl.[6] A22C *17/00, 21/00*
U.S. Cl. 452—138 **3 Claims**



1. A device for preparing poultry wings and drumsticks, such as chicken and other meats, so that meat on a bone is gathered at one end with the exposed bone at the other, the device comprising:
base portion having at least two side walls;
a support plate mounted on the base portion between the two side walls to leave an open area below the support plate between the two walls, said support plate having an aperture at one end for inserting the bone end of a meat product;
a support column mounted on the support plate at the end opposite to the aperture;
a press portion comprising a handle pivotally connected at one end thereof to the support column and extending over the support plate to a point over the aperture;
a press boom pivotally connected at one end thereof to the handle at a position proximate the pivotal connection of the handle to the support column; and
a downwardly extending press shaft mounted at the opposite end thereof to the press boom, said shaft further having a plunger-shaped press cup on a lower end for holding the meat so when the handle is pressed downwardly the bone is pushed through the aperture and the meat is pushed upwardly, leaving the bone exposed at one end with all of the meat compressed at the other end of the bone.

5,445,563

AXIAL FLOW COMBINE HAVING A CONCENTRIC THRESHING SECTION AND AN ECCENTRIC SEPARATING SECTION

Mark F. Stickler, Silvis, Ill.; Klaus A. Braunhardt, Bettendorf, Iowa, and Merle R. Gerber, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 86,774, Jul. 1, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,319
Int. Cl.[6] A01F *12/18*
U.S. Cl. 460—69 **10 Claims**

1. An axial flow combine for harvesting, threshing and separating crop material comprising:
a supporting structure;
ground engaging means extending from the suppporting

structure for transparenting the supporting structure around a field;

a rotor housing located inside the support structure, the rotor housing is provided with a threshing section in which crop material is threshed and a separating section in which threshed grain is separated from threshed crop material, the threshing grain is separated a threshing axis and the separating section defining a separating axis, the threshing section is generally cylindrical having a gener-



ally circular cross section and the separating section is a tube having a generally oblong cross section;

a rotor located in the rotor housing having a rotor axis, the rotor is provided with crop engaging assemblies for engaging crop material passing through the rotor housing, whereby the threshing section of the rotor housing is arranged so that the threshing axis is substantially concentric with respect to the rotor axis and the separating section of the rotor housing is arranged so that the separating axis is eccentric with respect to the rotor axis.

5,445,564

FUNFAIR RIDE

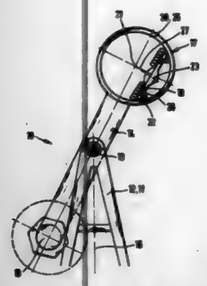
Helmut Kastner, Goldene Aue 23, D-28329 Bremen, Germany

Filed Sep. 30, 1993, Ser. No. 128,700

Claims priority, application Germany, Oct. 1, 1992, 42 32 932.9

Int. Cl.[6] A63G *31/00*

U.S. Cl. 472—31 **5 Claims**



1. A funfair ride comprising a longitudinally extending cantilever arm, which is rotatable about a horizontal axis of rotation, and at least one passenger receptacle which is arranged at a free end of the cantilever arm and is movable by the cantilever arm on a first circular path of the cantilever arm, said funfair ride further comprising means for separately driving said cantilever arm (14) and said passenger receptacle (17,32) in such a way that said passenger receptacle, in a region of said free end of said cantilever arm, is driven on at least one additional circular path having a central axis (21), which extends parallel to said horizontal axis (13) of rotation of the cantilever arm, so as to move said passenger receptacle (17,32) on an approximately cycloidal path.

5,445,565

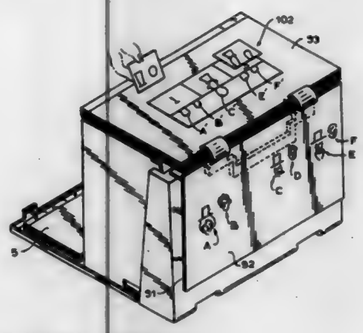
TABLE TOP MAGIC THEATER SET

Mark Setteducati, 210 E. 17 St., New York City, N.Y. 10003

Filed Feb. 18, 1994, Ser. No. 182,935

Int. Cl.[6] A63J *21/00*

U.S. Cl. 472—57 **20 Claims**



1. A magic set comprising:

a series of props providing indicia;

a series of sheets having faces marked with indicia illustrating ones of scenes and trick elements of a magic show; wherein the indicia of the sheets are complimentary and interactive with the indicia of the series of props in forming one of a trick and story line of the show;

means supporting the sheets pivotally bound together along one of their corresponding edges as an elevated stack so that the individual, outermost sheets can be turned over successively from the stack by a magician to reveal said faces successively to an audience for performance of related tricks in conjunction with selected of the props.

5,445,566

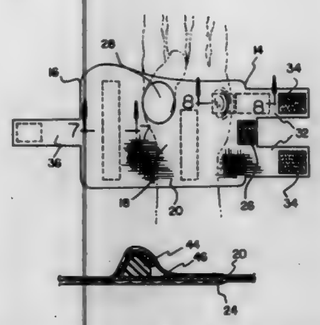
BOWLING WRIST AND HAND SUPPORT

Lonnie Hayes, 6471 Sunset La., Indianapolis, Ind. 46260

Filed Sep. 29, 1994, Ser. No. 314,796

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—62 **1 Claim**



1. A new and improved bowling wrist and hand support device for maintaining the wrist and hand in the proper position when delivering a bowling ball comprising, in combination:

a wrist and hand support having a first end, a second end, an intermediate extent therebetween, a front surface, and a back surface, the front surface having a Velcro square patch theresecured inward of the first end, an appendage aperture formed through the intermediate extent, the

appendage aperture serving to receive a user's thumb therethrough, the back surface having an oblong Velcro patch theresecured inward of the second end, two spaced apart straps integral with the first end, a front surface of the two spaced apart straps having a pair of Velcro square patches theresecured, the pair of Velcro square patches corresponding with the oblong Velcro patch to help secure the support to the user, a strap integral with the second end, the back surface of the strap having a Velcro square patch theresecured, the Velcro square patch corresponding with the Velcro square patch of the front surface to help secure the support to the user's wrist and hand;

a first metal strip secured within an inner portion of the wrist and hand support, the first metal strip positioned at a point between the first end and the appendage aperture, the first metal strip functioning to prevent the user's wrist from bending forward;

a second metal strip secured within an inner portion of the wrist and hand support, the second metal strip positioned at a point between the second end and the appendage aperture of the wrist and hand support, the second metal strip functioning to prevent the user's wrist from bending backwards;

a rubber wedge secured within an inner portion of the wrist and hand support, the rubber wedge secured therein by a third metal strip, the third metal strip formed around the rubber wedge, the third metal strip and the rubber wedge extending outwardly of the inner portion of the wrist and hand support, the rubber wedge positioned inward of the first end of the wrist and hand support and diametrically opposed from the appendage aperture thereof, the rubber wedge positioned below a little finger of a user when the wrist and hand support is secured to the user's wrist and hand, the rubber wedge functioning to balance a bowling bowl in the user's hand.

5,445,567

AUTOMATIC TRANSMISSION FOR A MULTI-SPEED BICYCLE

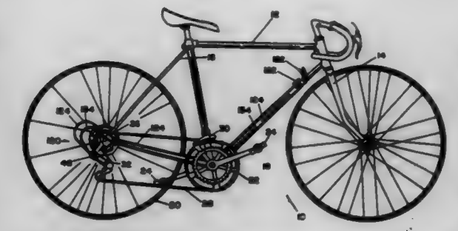
Jessie R. Chattin, Tampa, Fla., assignor to Trans-Chattin, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 977,270, Nov. 16, 1992, Pat. No. 5,295,916, which is a continuation-in-part of Ser. No. 806,866, Dec. 12, 1991, Pat. No. 5,163,881. This application Mar. 22, 1994, Ser. No. 216,144

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.[6] F16H *59/00*

U.S. Cl. 474—78 **22 Claims**



1. A derailer for derailing a drive chain from one sprocket to an adjacent sprocket of a multi-stage sprocket assembly of a wheel, comprising in combination:

a base member having a longitudinal axis;

means for coupling said base member relative to the multi-stage sprocket assembly;

a chain guide assembly for moving the drive chain to derail the drive chain from one sprocket to an adjacent sprocket of the multi-stage sprocket assembly;

means for pivotably linking said chain guide assembly to said base member allowing said chain guide assembly to move;

a shaft rotatably journalled through said base member at said longitudinal axis;

means for rotating said shaft such that said shaft is rotated upon rotation of the wheel;

a centrifugal weight; and

means for interconnecting said centrifugal weight with said shaft and said chain guide assembly such that said centrifugal weight is moved in response to the rotational speed of said shaft and upon movement of said centrifugal weight, said chain guide assembly is moved.

5,445,568

CHAIN GUIDE STRUCTURE

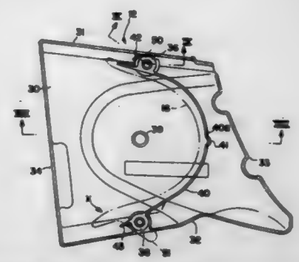
Sumiko Fukuzawa; Shinichi Nakano, and Hiroshi Yamaura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,890

Claims priority, application Japan, Aug. 30, 1993, 5-051669 U

Int. Cl.[6] B62J *13/00*

U.S. Cl. 474—144 **30 Claims**



1. A chain guide structure for guiding a chain wound around a driving sprocket supported on a sidewall of a crankcase and mounted within a cover attached to the sidewall, said chain guide structure comprising:

an elastic chain guide member having a substantially semicircular shape with an open end opening towards a direction of rotation of the chain and supported on an inner surface of the cover so as to extend along the chain; and

at least two ribs formed on an inner surface of the cover so as to hold the chain guide member firmly by elastically deforming the chain guide member so that a width of the open end of the chain guide member is changed.

5,445,569

POWER TRANSMISSION CHAIN

Gunter Blase, Bergisch Gladbach, Germany, assignor to Igus Spritzgussteile fur die Industrie GmbH, Köln, Germany

PCT No. PCT/DE93/00296, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO93/20366, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 150,134

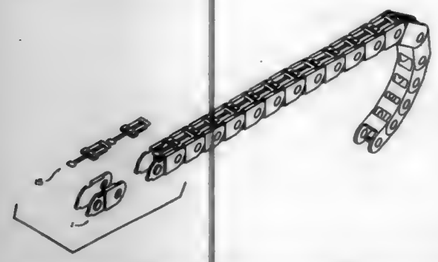
Claims priority, application Germany, Apr. 1, 1992, 42 10 674.5

Int. Cl.[6] F16G *13/16*

U.S. Cl. 474—145 **20 Claims**

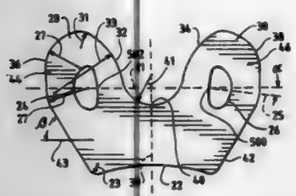
1. Power transmission chain, each link of which displays two side walls and a stabilising element joining these at their longitudinal edges, as well as a cover which connects the two side walls and can be snapped onto one and/or both pairs of longitudinal edges, where the consecutive links are joined in pivoting fashion, the covers can be fixed on the corresponding longitudinal edges of the side walls in a detachable fashion, and the covers of consecutive links can be connected together, characterised in that

the cover (15) has a connecting strap (17) on one of its face ends,
the cover (15) has a sliding chamber (18) to accommodate a connecting strap (17) of an adjacent cover (15),
the connecting strap (17) of the adjacent cover (15) can be displaced longitudinally in the sliding chamber (18),
the sliding chamber (18) has communicating openings (22, 23) on the outward-facing side of the cover (15) and on the face end pointing away from the connecting strap (17),



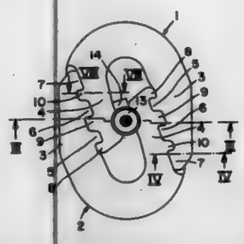
the openings (22, 23) in the sliding chamber (18) are adapted to the shape of the connecting strap (17) in such a way that the connecting strap (17) of the adjacent cover (15) can be inserted into and withdrawn from them in one position, being held captive by the limits of the sliding chamber (18) following longitudinal displacement into any other position.

5,445,570
CHAIN GUIDE LINK
David C. White, Dryden, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Feb. 15, 1994, Ser. No. 196,310
Int. Cl.[6] F16G *13/00*
U.S. Cl. 474—213 29 Claims



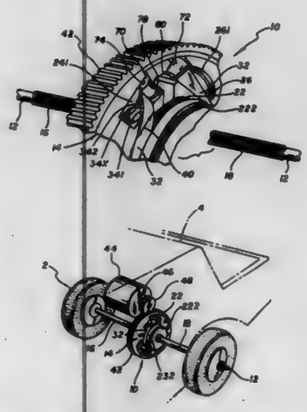
1. A power transmission chain having a plurality of chain links with each chain link comprising:
a. two guide links, each having a thickness and a hardness, a pair of spaced apertures, and a pair of spaced toes surrounding the apertures and having an outside flank and an inside flank with the inside flank joined by a rounded crotch with the root of the crotch depending below the uppermost portion of the apertures;
b. a plurality of inner links with at least a portion of the inner links disposed between the guide links, each of the inner links having a pair of spaced apertures and a thickness and hardness; and,
c. pivot members connecting the guide links, with a pivot member received in opposing apertures of each of the guide links and passing through at least one aperture of each of the inner links, wherein each guide link has both a thickness and a hardness less than the thickness and hardness of the inner links so that the guide links have a yield load less than the yield load of the inner links.

5,445,571
CHAIN LOCK
Dieter Maute, Aalen, and Hans-Jürgen Scherle, Neresheim, all of Germany, assignors to RUD-Kettenfabrik Rieger & Dietz GmbH. u Co., Aalen-Unterkochen, Germany
Filed Sep. 23, 1994, Ser. No. 311,548
Claims priority, application Germany, Sep. 27, 1993, 43 33 261.7
Int. Cl.[6] F16G *13/00*
U.S. Cl. 474—219 20 Claims



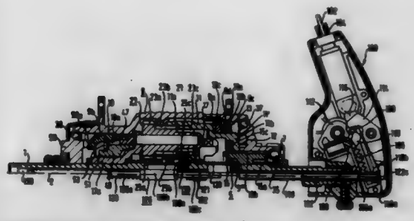
1. A chain lock for link chains, which comprises at least two lock parts which, in a closed position, engage with one another by means of projections and are secured by at least one locking element, wherein, in a region of the transition from their feet into a main body (16) of the respective lock part (1, 2), at least some of the projections (5–10) are plastically deformed with the aid of a pressing or percussion tool for the purpose of surface strain-hardening.

5,445,572
LOW COST, LIGHTWEIGHT DIFFERENTIAL
Bruce H. Parker, 26038 Charing Cross Rd., Valencia, Calif. 91355
Continuation-in-part of Ser. No. 878,846, May 5, 1992, abandoned, and Ser. No. 17,238, Feb. 16, 1993, Pat. No. 5,390,753, each is a continuation-in-part of Ser. No. 642,225, Jan. 15, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 130,301
Int. Cl.[6] F16H *1/28, 7/00*
U.S. Cl. 475—182 16 Claims



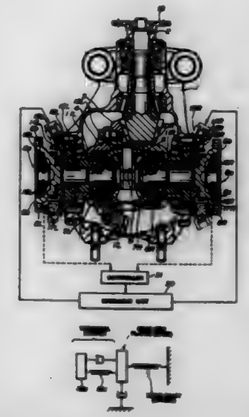
1. A differential assembly comprising a central shaft, a carrier rotatable on said central shaft, first and second tubular gear shafts journaled on said central shaft on opposite sides of said carrier, first and second toothed gears mounted to said gear shafts, first and second idlers mounted on said carrier transverse to the plane of rotation of said first and second toothed gears, means linking said first and second gears for differential rotation including a toothed endless belt disposed along a path having a length, said belt having longitudinal portions on said first and second gears and transverse portions on said idlers, said path length providing full width and depth mating interfitment of the teeth on said belt synchronously with the teeth on said first and second gears, said idlers being peripherally shaped to turn said belt flat to said first and second gears in transition from transverse to longitudinal disposition, and retaining rollers in rolling engagement with said belt to retain said belt on said idlers.

5,445,573
MULTI-SPEED GEAR HUB
Günter Nürnberger, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Aug. 31, 1993, Ser. No. 114,908
Claims priority, application Germany, Mar. 10, 1993, 93 03 507 U
Int. Cl.[6] F16H *3/44; B62M 11/16*
U.S. Cl. 475—298 14 Claims



1. Multi-speed gear hub for bicycles, comprising:
a hub shaft (1) mountable on a bicycle frame;
a driver (7) rotatable about an axis of rotation (2) on the hub shaft (1);
a hub sleeve (9) rotatable on the hub shaft (1);
a hub gearshift mechanism (21) surrounded by the hub sleeve (9);
a shifting means (100) for the hub gearshift mechanism (21) mounted to the hub shaft (1);
wherein the hub gearshift mechanism (21) comprises at least one claw clutch with a projecting claw part (15c; 130) on a first gear element (7; 1), the projecting claw part (15c; 130) being movable between at least two clutch positions in which it cooperates with a counterprojecting claw part on an additional gear element (17, 11; 23a, 23b, 23c) for rotationally fixed coupling of the first gear element (7; 1) with the additional gear element (17, 11; 23a, 23b, 23c),
wherein the claw clutch comprises a driving member (5; 126) which is movable on the hub shaft, which cooperates with the projecting claw part (15c; 130), which is movable between gearshift positions associated with clutch positions of the projecting claw part (15c; 130), and which is preloaded by a first preloading spring (120; 128) in a first preloading direction in an initial gearshift position,
wherein the claw clutch comprises a second preloading spring (15a; 132) which preloads the projecting claw part (15c; 130) in a second preloading direction opposite to the first preloading direction, with less force than the first preloading spring (120; 128), for direct or indirect abutment of the driving member (5; 126), which driving member (5; 126) is displaceable from the projecting claw part (15c; 130) in a direction parallel to the second preloading direction, against the force of the first preloading spring (120; 128), into all directionally following gearshift positions,
wherein the driving member comprises a stepped bolt (126) which is axially displaceable within the hub shaft (1) and which has an enlarged-diameter central section (126b) and axially opposite end sections (126a; 126c), one axial end of the stepped bolt (126) supporting the first preloading spring (128), another axial end of the stepped bolt (126) supporting the projecting claw part (130), and
wherein the second preloading spring (132) engages the projecting claw part (130) on a side away from the central section (126b).

5,445,574
MULTIPLE-DISC CLUTCH TYPE ELECTRONICALLY CONTROLLED DIFFERENTIAL LIMITING DEVICE WITH A TORSIONAL DAMPER FOR EACH DRIVER SHAFT
Shinichi Sekiguchi, Zama; Hirotaka Kasukawa, Nagoya, and Kenichi Tobita, Zama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 14, 1994, Ser. No. 227,823
Claims priority, application Japan, May 12, 1993, 5-110394
Int. Cl.[6] F16F *15/02*
U.S. Cl. 475—346 5 Claims



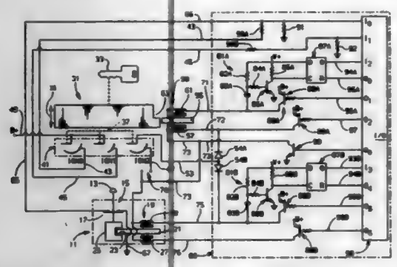
1. A multiple-disc clutch type electronically controlled differential limiting device, comprising:
a differential gear arranged between wheel axles for permitting a right driven wheel to turn at a different wheel speed than a left driven wheel while transmitting an output torque of an engine from right and left drive shafts to the axles;
a hydraulically actuated multiple-disc clutch operably disposed between a differential case and a differential side gear to produce a differential limiting torque by engagement of the clutch;
a pair of wheel speed sensors arranged for monitoring a wheel speed of each driven wheel; and
means for deriving a wheel-speed difference between the right and left driven wheels based on the two detected wheel speeds and for hydraulically controlling an engaging force of said clutch to increasingly compensate said engaging force in accordance with an increase in the derived wheel-speed difference;
wherein each drive shaft has a torsional damper, a resonance frequency of said torsional damper being set to be equal to a resonance frequency of a torsional vibration system which is constructed by a peripheral member of said differential gear acting as a mass moment of inertia with respect to an axis of the associated drive shaft and each drive shaft acting as a torsional spring.

5,445,575

IGNITION LOCK CYLINDER AND GEAR SHIFT LEVER INTERLOCK

Arthur R. Sundeen, 4405 Wagonwheel, Lansing, Mich. 48917

Filed May 2, 1994, Ser. No. 236,051
Int. Cl.[6] F16H *41/06*
U.S. Cl. 477—99 **7 Claims**



1. In a motor vehicle having an ignition lock cylinder with a lock position, run position and an intermediate position therebetween, and a gear shift lever with a park position and a plurality of selectable gear positions, an ignition lock cylinder and gear shift lever interlock system comprising in combination:

ignition lock cylinder lock-out means having a lock inhibit state for preventing the lock cylinder from entering the lock position and a lock enable state for allowing the lock cylinder to enter the lock position;

gear shift lever lock-out means having a shift inhibit state for preventing the gear shift lever from exiting the park position and a shift enable state for allowing the gear shift lever to exit the park position;

means responsive to the ignition lock cylinder in the run position for commanding the ignition lock cylinder lock-out means to the lock inhibit state and the gear shift lever lock-out means to the shift enable state;

means responsive to the ignition lock cylinder in the intermediate position for commanding the gear shift lever lock-out means to the shift inhibit state and the ignition lock cylinder lock-out means to the lock enable state.

5,445,576

ENGINE TORQUE MANAGEMENT DURING COAST DOWNSHIFTING OF AN AUTOMATIC SHIFT TRANSMISSION

Nader Motamedi, Rochester Hills, and Larry T. Nitz, Rochester, both of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Jun. 16, 1993, Ser. No. 77,155
Int. Cl.[6] F16H *59/50*
U.S. Cl. 477—105 **8 Claims**

1. In a motor vehicle having an engine coupled through a transmission input shaft to supply torque to a multiple speed ratio transmission in accordance with operator demand, the transmission being downshifted from a first speed ratio to a second speed ratio by releasing an off-going fluid pressure supplied to a first friction element associated with said first speed ratio and supplying an on-coming fluid pressure to a second friction element associated with said second speed ratio, a method of downshifting the transmission from said first speed ratio to said second speed ratio during vehicle coast, comprising the steps of:

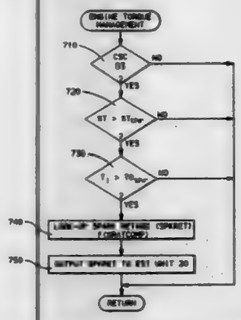
releasing said off-going fluid pressure to initiate a neutral phase;

estimating the torque supplied by said engine upon initiation of said neutral phase and thereafter until completion of said shift;

supplying on-coming fluid pressure to said second friction element in accordance with a predetermined pressure schedule based on said torque estimation and time;

during said neutral phase, monitoring the operator demand and detecting the occurrence of a specified operating condition which is likely to result in speed flare of the transmission input shaft beyond a predetermined synchronization speed;

during said neutral phase, monitoring the operator demand



and detecting the occurrence of a specified operating condition which results in speed flare of the transmission input shaft beyond a predetermined synchronization speed; and

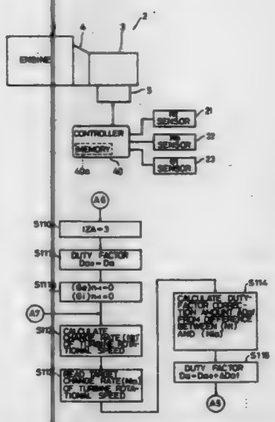
controlling engine torque in response to the detection of said operating condition so as to limit the torque supplied by said engine, thereby to prevent potential speed flare and arrest actual speed flare of the transmission input shaft during said downshift due to operator demand.

5,445,577

METHOD AND APPARATUS FOR SPEED CHANGE CONTROL OF AN AUTOMATIC TRANSMISSION

Kenjiro Fujita, Kusatsu; Katsutoshi Usuki, Kyoto, and Katsuhiro Hatta, Uji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,714
Claims priority, application Japan, Apr. 15, 1992, 4-095510
Int. Cl.[6] F16H *59/48*
U.S. Cl. 477—120 **28 Claims**



1. In an automotive automatic transmission including a first frictional engaging element for establishing a first gear stage, a

second frictional engaging element for establishing a second gear stage, a first electromagnetic valve for controlling an operating oil pressure supplied to the first frictional engaging element, and a second electromagnetic valve for controlling an operating oil pressure supplied to the second frictional engaging element, a speed change control apparatus for controlling the first and second electromagnetic valves such that the first frictional engaging element, which has been engaged, is released, and the second frictional engaging element, which has been released, is engaged, to carry out a shift from the first gear stage to the second gear stage, said speed change control apparatus comprising:

operating state detecting means for detecting an operating state quantity of the automatic transmission; and

feedback controller, said feedback controller including,

feedback target value setting means for setting first and second feedback target values;

first feedback control means for feedback-controlling the first electromagnetic valve such that the operation state quantity detected by the operating state detecting means converges to the first feedback target value; and

second feedback control means for feedback-controlling the second electromagnetic valve such that the operation state quantity detected by the operating state detecting means converges to the second feedback target value, the first feedback target value being set to be greater than or equal to the second feedback target value, whereby said shift from the first gear stage to the second gear stage is carried out utilizing feedback-control of both the first and second electromagnetic valves.

5. A speed change control method for an automotive automatic transmission in which a first frictional engaging element, which has been engaged, is released, and a second frictional engaging element, which has been released, is engaged, to carry out a shift from a first gear stage to a second gear stage, said speed change control method comprising the steps of:

(a) setting a first feedback target value;

(b) setting a second feedback target value smaller than the first feedback target value;

(c) detecting an operating state quantity indicative of an operating state of the automatic transmission; and

(d) feedback-controlling a transmission torque through a first electromagnetic valve connected to the first frictional engaging element such that the detected operation state quantity converges to the first feedback target value;

(e) feedback-controlling a transmission torque through a second electromagnetic valve connected to the second frictional engaging element such that the detected operation state quantity converges to the second feedback target value.

5,445,578

HYDRAULIC CONTROL FOR A POWER TRANSMISSION WITH A MANUAL OVERRIDE

Melissa M. Koenig, Ann Arbor, and William J. Vukovich, Ypsilanti, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1993, Ser. No. 169,784
Int. Cl.[6] B60K *41/06*
U.S. Cl. 477—142 **2 Claims**

1. A hydraulic control for a transmission comprising:

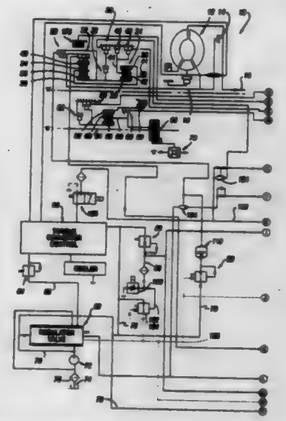
a source of fluid pressure;

means for automatically changing ratios in a transmission sequentially through a plurality of at least four ratios from a low ratio to a high ratio including electrically operated control means;

shift valves normally controlled by said electrically operated control means to establish shifted and unshifted positions to establish said ratios;

manual valve means for selectively directing pressure from the source to the shift valves; and

a power interruption valve for selectively directing fluid pressure to the shift valves from said manual valve means when electrical power to the electrically operated control means is interrupted for selectively controlling the shift valves to establish shifted and unshifted positions to permit manual selection of individual ones of the plurality of ratios.

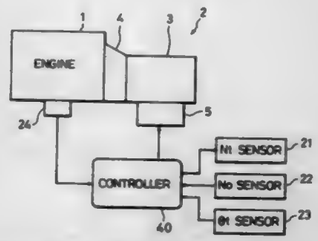


5,445,579

SPEED CHANGE CONTROL APPARATUS AND METHOD FOR AN AUTOMATIC TRANSMISSION IN A VEHICLE

Kenjiro Fujita, Kusatsu, and Katsutoshi Usuki, Kyoto, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,171
Claims priority, application Japan, Aug. 14, 1992, 4-216962
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—156 **10 Claims**



1. A speed change control apparatus for an automatic transmission in a vehicle, the transmission having a first friction-engaging device for establishing a first gear position, a second friction-engaging device for establishing a second gear position, a first oil pressure control device for controlling an oil pressure applied to the first friction-engaging device, and a second oil pressure control device for controlling an oil pressure applied to the second friction-engaging device, the speed change control apparatus performing duty control of at least the first oil pressure control device, so as to effect a shift from the first gear position to the second gear position by disengaging the first friction-engaging device which has been in an engaged state and by engaging the second friction-engaging device which has been in a disengaged state, the speed change control apparatus comprising:

duty ratio determining means for determining a duty ratio for the duty control of at least the first oil pressure control device;

limit value determining means for setting a limit value for the determined duty ratio in such a manner that the oil pressure supplied to the first oil pressure control device is prevented from exceeding a predetermined value; and

driving means for driving at least the first oil pressure control means according to a limited duty ratio, determined from the determined duty ratio and the set limit value.

5,445,580

STEPLESS TRANSMISSION

Julian Parraga Garcia, C/-Agustin Querol no. 8, 28014 Madrid, Spain

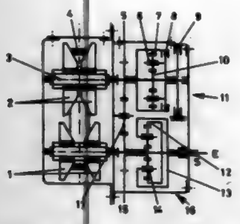
PCT No. PCT/ES92/00044, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO92/21896, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 961,700

Claims priority, application Spain, May 31, 1991, 9101327

Int. Cl.[6] F16H *9/26*

U.S. Cl. 477—211 **9 Claims**



1. A stepless transmission for use with a continuously variable transmission (CVT) and a gear box operatively engaged with an engine of a motor vehicle, said gearbox having a first input shaft for receiving power from a first output shaft of the engine and a first output shaft from the gear box for driving a second input shaft of the gear box, said CVT having two pulleys, and said CVT operatively connected to the stepless transmission having a first sun-and-planet gear wherein said first pulley is driven by the first input shaft which drives a selected first crown gear or a satellite-carrier gear of the sun-and-planet gear, said selected gear being rotatable by said second pulley, and means for selectively rotating a first sun gear of the sun-and-planet gear in either of two directions of rotation;

wherein said first input shaft is simultaneously operatively engaged for rotation with either said first pulley or said second pulley of the CVT, and said input shaft of said gearbox; and

wherein said selected first pulley or said second pulley transmits to said stepless transmission a maximum torque having a maximum torque no greater than a maximum torque produced by said engine.

5,445,581

EXERCISE DEVICE

Dennis Ferber, 1884 N. El Camino Real, Suite 47, San Clemente, Calif. 92672

Filed Jun. 27, 1994, Ser. No. 267,063

Int. Cl.[6] A63B *23/14, 21/015*

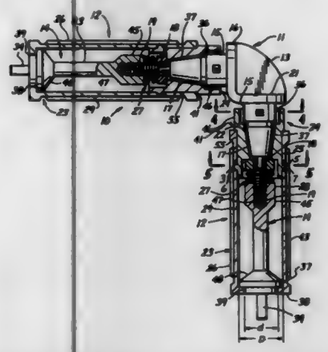
U.S. Cl. 482—46 **10 Claims**

1. An exercise device comprising:

a coupling assembly having a shoulder and a symmetrical pair of elongated arms mounted on said shoulder at right angles to each other, each one of said pair of arms having an integral body portion, a conical member disposed distally thereto, an integral anti-rotation boss disposed distally in relation to said conical member and an integral threaded rod disposed distally to said boss;

a pair of elongated handles, each one of which is mounted on one of said elongated arms for reversible rotation about the longitudinal axis thereof, each one of said handles having a tubular housing, said housing including a distal wall and a side wall wherein said distal wall has a coaxial opening formed therein, and said side wall has at least one longitudinal groove on the inside thereof and at least one opening formed therein;

a tubular member having a collar at its proximal end and a body portion at its distal end, said collar including a recess for receipt therein of said conical member for rotational movement thereabout and said body portion having at least one key mounted longitudinally on the exterior wall thereof and at least one locking nub protruding radially therefrom, wherein said key is held in registration with said tubular housing longitudinal groove for cooperative rotational movement of said socket member when said tubular housing is rotated and said at least one locking nub frictionally engages said at least one side wall receptacle to prevent inadvertent disassembly of said exercise device;



an anti-rotation disc fixed to said boss, said disc being received within said socket member distal end body portion;

an elongated nut disposed coaxially within said tubular housing, said nut having a threaded recess at its proximal end for threaded engagement with said threaded rod and a flange at its distal end, said flange having a diameter greater than the diameter of said housing distal wall opening, said elongated nut further having a finger engagable blade extending through said distal wall opening;

spring means coaxially disposed between said elongated nut and said anti-rotation disc for frictional engagement therewith; and

a frustoconical bushing disposed between said conical member and said socket member for frictional rotational movement therebetween.

5,445,582

HAND EXERCISER DEVICE

Gary L. Brown, 7607 Mosewood, Houston, Tex. 77040

Filed Jan. 1, 1994, Ser. No. 177,254

Int. Cl.[6] A63B *23/16, 21/02*

U.S. Cl. 482—48 **15 Claims**

1. An exerciser device comprising:

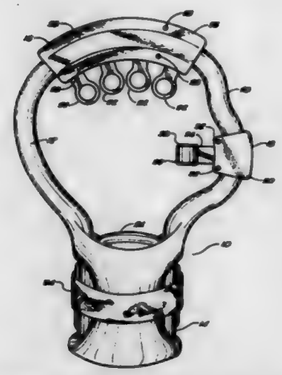
a band;

a wrist securing means connected to said band such that said band extends outwardly of said wrist securing means, said wrist securing means being adapted for removable attachment around a human wrist; and

a finger engagement member affixed to said band at a position generally opposed to said wrist securing means, said finger engagement member extending inwardly of said band, said finger engagement member comprising:

a slide member extending around an exterior of said band; and

a plurality of finger receptacles extending from said slide member in a direction generally facing said wrist securing means, said slide member having an interior slide area for receiving said band, said finger receptacles



attached to an elongated body member and extending outwardly therefrom, said body member received within said slide area of said slide member.

5,445,583

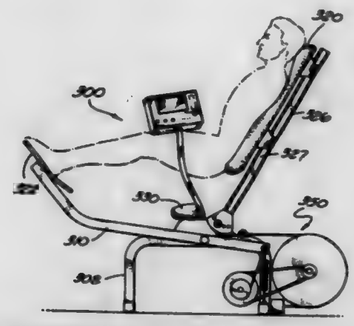
FLOATING BACK PAD LEG EXERCISER

Theodore G. Habing, Long Beach, Calif., assignor to Pacific Fitness Corporation, Cypress, Calif.

Continuation of Ser. No. 97,756, Jul. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 838,158, Feb. 18, 1992, Pat. No. 5,254,067, which is a continuation-in-part of Ser. No. 541,919, Jun. 21, 1990, abandoned. This application Jan. 12, 1995, Ser. No. 371,586

Int. Cl.[6] A63B *22/04*

U.S. Cl. 482—52 **21 Claims**



1. An exercise apparatus comprising:

a frame;

a support for supporting a user of said apparatus in a generally semi-recumbent posture;

a pair of pedals independently movably coupled to the frame for movement between an elevated position and a depressed position, each pedal having a footpad for engagement by a respective foot of the user; and

resistance means coupled to the pair of pedals for resisting a downstroke of each pedal to the depressed position and for assisting return of each pedal to the elevated position;

wherein said support is freely movable from a lower rest position to a range of elevated positions during the user's operation of the pedals at a rate sufficient to prevent the pedals from descending to their respective depressed positions and wherein the apparatus lacks means for restricting movement of the support within the range of elevated positions.

19. A method of performing a lower body exercise comprising the steps of:

(a) providing an exercise apparatus having:

(i) a frame;

(ii) a support movably coupled to the frame for supporting a user of the apparatus in a generally semi-recumbent posture, said support being freely movable between a rest position and a range of elevated positions;

(iii) a pair of pedals movably coupled to the frame for movement between an elevated position and a depressed position, each pedal having a footpad for engagement by a respective foot of the user;

(iv) means coupled to the pair of pedals for resisting a downstroke of each pedal to the depressed position and for assisting return of each pedal to the elevated position;

(b) positioning a posterior portion of the user's body on the support;

(c) positioning the user's feet on respective ones of the footpads;

(d) the user striding alternately against the footpads at a rate sufficient to maintain the user's body and support within the range of elevated positions.

5,445,584

Patent Not Issued For This Number

5,445,585

SPRING HOUSING AND SPREADER ASSEMBLY

Paul K. Meeker, Hiram, Ohio, assignor to Lisco, Inc., Tampa, Fla.

Filed Dec. 7, 1993, Ser. No. 164,250

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—69 **4 Claims**



1. A doorway exerciser comprising

clamping means adapted to fit above a doorway framework;

strap means secured to said clamping means at one end thereof;

a substantially rigid tube having a reduced opening at one end thereof;

a compression spring within said tube, said spring having an outer diameter greater than the diameter of said reduced opening at said one end of said tube;

a slotted plate abutting the end of said spring opposite said reduced opening;

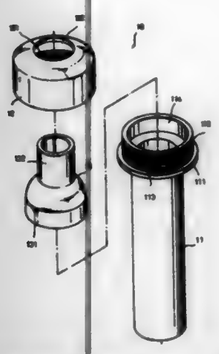
the other end of said strap means passing into said reduced opening of said tubing, through said spring and said slots in said slotted plate and secured to itself;

a seat support means;

a cylindrical member frictionally mounted about said rigid tube;

three substantially equally spaced ears integral with an extending outwardly from said cylindrical member;
a separate flexible strap removably secured at one end to each of said ears; and
means for removably securing the other end of each of said flexible straps to said seat support means.

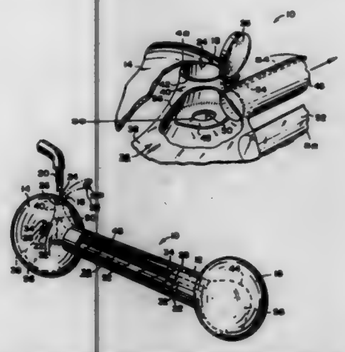
5,445,586
STRUCTURE OF JUMP ROPE
Chen L. Yun, Suite 1, 11F. No. 95-8 Chang Ping Rd. Sec. 1, Taichung, Taiwan
Filed Sep. 13, 1994, Ser. No. 304,925
Int. Cl.[6] A63B *5/20*
U.S. Cl. 482—82 **1 Claim**



1. A jump rope comprising a cord assembly flexibly joined with a pair of handle assemblies wherein:
each said handle assembly comprising:
a hollow cylinder handle having a large diameter flange formed at one end and integral with a large diameter annular member extending outward therefrom, said annular member having a circular wall with threaded outer periphery, which defines stepped circular, space therein;
a cap member fastened to said annular member of said cylinder handle, said cap member having a threaded inner periphery in registry with said threaded outer periphery of said annular member and a circular hole centrally formed on the back portion thereof;
a funnel shaped adaptor intermediately retained by said cap member into said circular space therein, said adaptor having a hollow hemispherical portion with an outer diameter slightly less than the inner diameter of said annular member, and a central tubular portion extending from the bottom and in communication with said hemispherical portion, said tubular portion having an outer diameter slightly less than said circular hole of said cap member;
said cord assembly comprising a cord connected at each end with a hoop member respectively;
whereby the two ends of said cord assembly are flexibly coupled with said two handle assemblies respectively.

5,445,587
LIQUID FILLABLE DUMBELL
Lori Brown, 26-19 141st St., Flushing, N.Y. 11354
Filed Feb. 22, 1994, Ser. No. 199,744
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—108 **7 Claims**

1. An improved barbell which comprises:
a) a hollow elongated handle;
b) a pair of hollow bulbous enclosures fluidly connected to opposite ends of said hollow elongated handle;
c) means for filling said hollow bulbous enclosures and said hollow elongated handle with a liquid to increase the weight thereof, so that a person can properly exercise to promote physical fitness and after exercising the liquid may be poured out of said filling means leaving said hollow elongated handle and said hollow bulbous enclosures in a lightweight condition to be easily handled, transported and stored, said filling means including said first hollow bulbous enclosure having an aperture to allow the liquid to enter and exit therefrom, and a fill plug to seal close said aperture;
d) means for visually indicating the amount of liquid being filled therein, so that the person can see how to vary the weight by putting in the correct amount of liquid, said visually indicating means including a first weight calibrated sight window built into said hollow elongated handle, and a second weight calibrated sight window built into said first hollow bulbous enclosure, said first and said second weight calibrated sight windows each including a curved transparent plate, so as to see the liquid therebehind, and a weight scale adjacent to said curved transparent plate to indicate the weight amount of the liquid retained therein; and



e) means within said hollow elongated handle and said hollow bulbous enclosures for evenly distributing the liquid therethrough when being filled, said liquid evenly distributing means including a first bladder with a neck portion having a fill plug seal carried within said first hollow bulbous enclosure, so that said fill plug seal will fit into said aperture, a second bladder carried within said second hollow bulbous enclosure, a fill tube carried within said hollow elongated handle and fluidly connected between one side of said neck portion of said first bladder and said second bladder, a partition having a restricted fill orifice extending across said neck portion of said first bladder below the connection of said fill tube, a liquid equalization tube carried within said hollow elongated handle below said fill tube and fluidly connected between said first bladder under said partition and said second bladder, and a fill vent tube carried within said fill tube fluidly connected at one end to said second bladder, while other end extends into said neck portion of said first bladder and up to said fill plug seal.

5,445,588
PRINTING ROLLER
Nobuyuki Ishibashi, Nagareyama; Tsurumatsu Takano, Chiba, and Yoshio Mori, Tokyo, all of Japan, assignors to Kinyosha Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1993, Ser. No. 174,203
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—31 **2 Claims**

1. A printing roller comprising a metal core and a surface layer covering the metal core, wherein the surface layer is roughened by forming a plurality of lattice-shaped grooves such that a large number of diamond-shaped configurations are

defined by the grooves, each diamond-shaped configuration including two diagonally facing corners each having an angle of 20° to 160°, or by forming a number of parallel grooves each



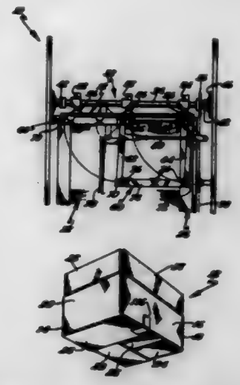
forming an angle of 10° to 80° with the axis of the core, so as to form a continuous groove, said grooves having irregular widths and depths, and said surface layer having a 10 point average surface roughness R_z of 10 to 200 μm.

5,445,589
COLD ROLLING WORK ROLL
Shigeki Shimizu, Fujisawa, Japan, assignor to Kanto Special Steel Works, Ltd., Kanagawa, Japan
Filed Jun. 1, 1994, Ser. No. 251,943
Claims priority, application Japan, Dec. 27, 1993, 5-330960
Int. Cl.[6] B21B *27/02*
U.S. Cl. 492—58 **13 Claims**

1. A cold rolling, forged steel work roll having high grindability, the work roll having a steel composition that consists, by weight, essentially of:
C: 0.70–1.20%,
Si: 0.15–1.00%,
Mn: 0.15–1.00%,
Cr: 1.5–5.5%,
Mo: not more than 0.60%,
Ti: 0.0030–0.0100%,
Ni: 0–1.0%,
V: 0–0.20%,
Fe and incidental impurities: balance
wherein carbides comprising the microstructure have a maximum particle size not greater than 1.50 μm.

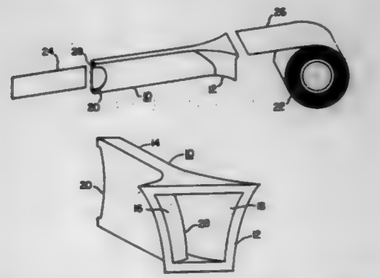
5,445,590
COLLAPSED, TUBULAR CARTON ERECTING APPARATUS
Irvan L. Pazderak, Alexandria, Minn., assignor to Douglas Machine Limited Liability Company, Alexandria, Minn.
Filed Feb. 12, 1993, Ser. No. 17,480
Int. Cl.[6] B31B *1/80*
U.S. Cl. 493—317 **20 Claims**

1. Device for erecting a collapsed carton, with the carton including first, second, and third panels connected together about hinge connections, with the second panel located intermediate the first and third panels, comprising, in combination: a frame for supporting the third panel and including means for removable securement to the third panel; means for moving the frame from an attachment position and an open position, with the frame in the attachment position being vertically above and horizontally offset from the open position, with the frame being horizontally orientated in the attachment and open positions and intermediate the attachment and open positions; and means for placing the carton at an operative position with the first and second panels in a linear arrangement and the third panel located vertically below and underlying at least the second panel and with the frame in the attachment position abutting the third panel, with the placing means holding the first panel at an operative position above and generally parallel



to the frame while the frame moves from the attachment position to the open position.

5,445,591
FOLDING TOOL
Joseph K. Fougere, P.O. Box 159, Sunset, Me. 04683
Filed Jun. 24, 1994, Ser. No. 264,958
Int. Cl.[6] B65H *45/22, 45/09*
U.S. Cl. 493—439 **1 Claim**



1. A tool for folding a drywall paper strip on a longitudinal fold line parallel to the strip side edges, said tool comprising:
a rigid elongated tool body (10) having a longitudinal passageway extending there through;
said passageway having an intake end and a discharge end;
said longitudinal passageway having a flat roof surface, floor surface (30) parallel to said roof surface, and two side surfaces (16, 18) extending between said roof surface and said floor surface;
said flat roof surface intersecting each side surface to form two upper internal corners extending along the passageway;
said floor surface intersecting each side surface to form two lower internal corners extending along the passageway;
said passageway having a longitudinal axis, and a longitudinal vertical midplane coincident with said axis;
said longitudinal passageway comprising an upstream passage section and a downstream passage section, wherein the surfaces thereof merge smoothly together to form a continuous uninterrupted passageway;
the side surfaces of the upstream passage section being convexly curved in vertical planes normal to the longitudinal vertical midplane;

the side surfaces of the upstream passage section being convexly curved in horizontal planes parallel to the passageway longitudinal axis;

the side surface curvatures being such that the upstream passage section is convergent from the intake end of the passageway to the downstream passage section;

the side surfaces of the upstream passage section being convergent from the roof surface to the floor surface, whereby the upper internal corners of the upstream passage section are spaced further apart than the lower internal corners of the upstream passage section, measured in planes normal to the longitudinal axis; and

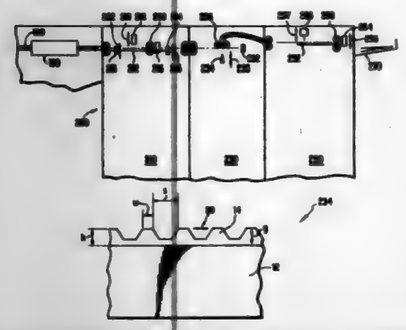
the upper and lower internal corners of the upsteam passage section being curved, and the upper and lower internal corners of the downstream passage section being straight and parallel, whereby when a paper strip is pulled through the passageway the curved side surfaces of the upstream passage section bias the paper strip so that its longitudinal side edges ride against the upper internal corners of the passageway.

5,445,592

SIGNATURE BOOKLET MAKER WITH A MODIFIED FOLD BLADE AND A TRIM WASTE ELIMINATION DEVICE

Paul N. Richards, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 57,802, May 7, 1993, Pat. No. 5,377,569.
This application Sep. 9, 1994, Ser. No. 304,040
Int. Cl.[6] B65H *45/18*
U.S. Cl. 493—444 **6 Claims**



1. A fold blade for a folding unit adapted to drive a plurality of pages stitched together by spaced stitches, said fold blade comprising:

a base member having a predetermined thickness and a predetermined hardness; and

a plurality of teeth integral with said base member, said teeth being spaced apart by a pitch substantially corresponding to a pitch of said stitches so as to prevent contact between the teeth and the stitches, wherein said teeth have a predetermined contact surface width.

5,445,593

METHOD AND APPARATUS FOR THE CONTINUOUS CONDITIONING OF A CELL SUSPENSION

Wolfgang Biesel, Ottweiler; Bernd Mathies, and Wolfram Weber, both of Spiesen-Elversberg, all of Germany, assignors to Fresenius AG, Bad Homburg, Germany

Filed Jul. 16, 1993, Ser. No. 93,491
Claims priority, application Germany, Aug. 14, 1992, 42 26 974.1
Int. Cl.[6] B04B *7/08*
U.S. Cl. 494—43 **11 Claims**

1. A centrifuge separation apparatus for treating a cell suspension in order to produce a highly purified cell concentrate comprising:

at least one substantially annular separation chamber, said chamber being subdivided into first, second and third zones,

said first zone for separation of the cell suspension and including an inlet located at a first end of said chamber for receiving the cell suspension,

said second zone for resuspension of the cells and including an inlet for a washing solution,



said third zone for separation of the resuspended cells and including an outlet for the cell concentrate located at a second end of said chamber,

wherein the outlet for the cell concentrate is arranged on a same radial surface of said chamber as the inlet for the washing solution, and

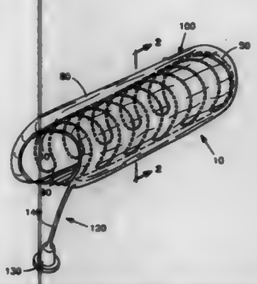
wherein at least one further outlet is arranged on a radial surface of said chamber opposite that of said same radial surface.

5,445,594

IMPLANT FOR EXPANDING PENILE GIRTH AND LENGTH

James J. Elist, 9301 Wilshire Blvd., Suite 401, Beverly Hills, Calif. 90210

Filed Apr. 5, 1994, Ser. No. 223,045
Int. Cl.[6] A61F *2/26, 5/00*
U.S. Cl. 600—38 **14 Claims**



1. An implant device for expanding penile girth comprising:

a soft, flexible body for implanting about a penile shaft beneath a penile skin between the shaft and the skin, the body formed into a shape of an elongated partial cylinder, first and second end edges defining a length of the body, and spaced apart side edges defining a circumferential limits of the cylinder and defining a space therebetween, and including an outer, relatively elastic sheet member of stretchable material, joined along the side and end edges to an inner, relatively inelastic sheet member, to form a principally closed sack, the inner sheet member having embedded therein, a series of spaced apart, spring-like ribs, the ribs maintaining the partial cylindrical shape of the body while permitting the body to flex, between linear and arcuate shapes; and

a pressurizing means for delivering a fluid to the body between the outer and inner sheet members for expanding the outer sheet, the fluid being restricted to flow therebetween, the ribs providing rigidizing of the inner sheet for maintaining the partial cylindrical shape;

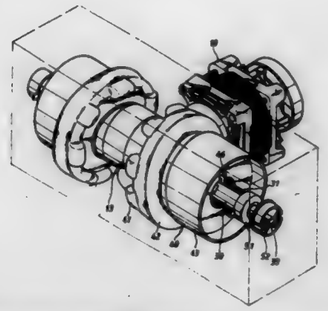
whereby pressurizing of the closed sack by the fluid causes the outer sheet to expand diametrically to enhance the girth of the penile skin.

5,445,595

MASSAGING MACHINE

Jen-Chung Chou, No. 141-1, Ho Ping Rd., Lu Chou Hsiang, Taipei Hsien, Taiwan

Filed Mar. 30, 1994, Ser. No. 220,694
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—118 **1 Claim**



1. A massaging machine comprising:

a motor-driven hollow shaft having two opposite ends each defining a slot;

a shaft being located within the hollow shaft and having a right-hand thread portion and a left-hand thread portion;

a first distance-adjusting member having an external surface on which a T-flange is formed and an internal surface on which a right-hand thread is formed engaging the right-hand thread portion on the shaft, the T-flange thereof slidably received in the slot defined in one of the opposite ends of the hollow shaft;

a second distance-adjusting member having an external surface on which a T-flange is formed and an internal surface on which a left-hand thread is formed engaging the left-hand thread portion on the shaft, the T-flange thereof slidably received in the slot defined in the remaining one of the opposite ends of the hollow shaft;

two cylinders slidably mounted on the hollow shaft, each having an end with an inclined face and a T-slot formed in an internal surface engaging a corresponding one of the T-flanges;

two sleeves each secured in a corresponding one of the cylinders and mounted on a corresponding one of the opposite ends of the hollow shaft;

two wheels each mounted on a corresponding one of the two sleeves in an inclined manner by means of a bearing and each comprising a first surface and a second surface, the first surface of each of the wheels used for engagement with the inclined surface of each of the cylinders for axial movement of the wheels; and

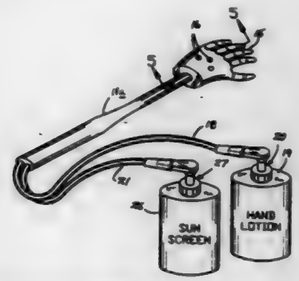
a plurality of elastic bosses attached to the second surface of each of the wheels so that the elastic bosses attached to one of the wheels face the elastic bosses attached to the remaining one of the wheels.

5,445,596

LOTION APPLICATOR AND MASSAGE DEVICE

James M. Grace, 3206 X Ave., Elberon, Iowa 52225

Filed Jul. 8, 1994, Ser. No. 271,896
Int. Cl.[6] A65D *34/00*; A61H *7/00*
U.S. Cl. 601—154 **2 Claims**



1. A massage device, comprising,

an elongate rigid shaft, the rigid shaft having a first end mounting a hand member thereon, the hand member having a first side to include a palm surface and a second side to include a back surface with the first side opposed to the second side, with the shaft having a primary conduit extending through the shaft in fluid communication with the hand member, such that the hand member includes a plurality of outlet ports extending from the hand member through the back surface, and

a flexible delivery conduit extending from the shaft second end,

a reservoir, the reservoir having a pump member, and the reservoir in fluid communication with the flexible delivery conduit, whereupon actuation of the pump member effects fluid flow through the primary conduit and the outlet ports, the hand member including a plurality of finger members extending from the hand member past the palm surface, and

a secondary conduit through the elongate shaft, with the secondary conduit in fluid communication with the fingers members, with each of the finger members having a secondary outlet port in fluid communication with the secondary conduit, with each said secondary conduit outlet port directed through the second side of the hand member, and a secondary delivery conduit in fluid communication with the secondary conduit, and a secondary reservoir, the secondary reservoir having a secondary pump, with the secondary pump in fluid communication with the secondary delivery conduit.

5,445,597

WOUND CLOSURE MEANS USING FLOWABLE ADHESIVE

Jeffrey G. Clark, Raleigh, N.C.; Douglas M. Spranger; Paul J. Mulhauser, both of New York, N.Y., and Paul R. Lacotta, Oradell, N.J., assignors to Tri-Point Medical L.P., Raleigh, N.C.

Division of Ser. No. 752,019, Aug. 29, 1991, Pat. No. 5,259,835.
This application Sep. 30, 1993, Ser. No. 128,713
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—48 **6 Claims**

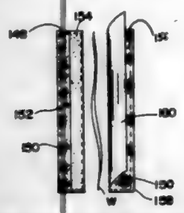
1. A wound closure device for attachment to the skin of a patient on opposite margins of a wound, comprising:

a first member adapted to be placed adjacent one margin of a wound, said first member including a first porous bonding portion for bonding said first member to one margin of a wound;

a second member adapted to be placed adjacent an opposite wound margin substantially opposite said one wound margin, said second member including a second porous

bonding portion for bonding said second member to said opposite wound margin;

said first and second porous bonding portions having a porosity for allowing a flowable adhesive to permeate through the porous bonding portions to bond the porous bonding portions to opposite margins of a wound;



wound apposition means on the first member;

means on the second member for engaging the wound apposition means; and

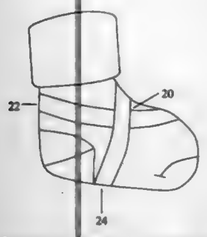
a supply of a flowable adhesive for application to said first and second porous bonding portions.

5,445,598

BRACE FOR INFANT FOOTWEAR, NAMELY, SOCKS, SOFT SHOES, BOOTIES AND/OR MOCCASINS

Khôi Nguyen-Senderowicz, Berkeley Main 2000 Allston Way, Berkeley, Calif. 94704

Filed Jun. 21, 1993, Ser. No. 79,648
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—65 **2 Claims**



1. An infant footwear brace in combination with infant footwear, said brace used to keep said footwear intact when being worn, said brace comprising:

(a) a single endless flat narrow strap of elastic formed in a Möbius band and with said strap having a width of about half an inch and a length greater than about 8 inches and less than about 24 inches,

(b) said strap having a first portion wrapping in a flat untwisted manner around the ankle portion of said footwear,

(c) said strap having a second portion wrapping in a flat untwisted manner around the arch portion of said footwear,

each of said first and second portions merging to crisscross centrally at the front of the ankle portion of said footwear.

5,445,599

WARP-KNIT CASTING BANDAGE FABRIC, WARP-KNIT CASTING BANDAGE AND METHOD FOR MAKING BANDAGE

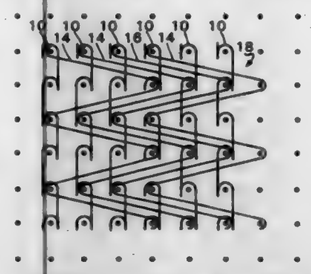
Martin Edenbaum, Princeton Junction, N.J., assignor to Carapace, Inc., Broken Arrow, Okla.

Filed Jul. 28, 1993, Ser. No. 98,535
Int. Cl.[6] B32B *7/00*
U.S. Cl. 602—76 **17 Claims**

1. A warp-knit casting bandage fabric, comprising:

(a) a first group of a plurality of individual continuous multifilament fiberglass yarns forming lengthwise extending chains of spaced-apart loops; and

(b) a second group of a plurality of individual continuous multifilament fiberglass yarns separately interspersed with a plurality of individual continuous thermoplastic yarns



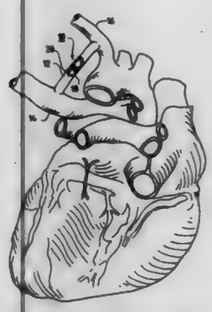
forming a widthwise extending and lengthwise spaced apart inlay interlaced with said lengthwise extending chains of spaced-apart loops such that the continuous thermoplastic yarns comprise from about 50% to about 100% of the total number of individual yarns forming said inlay and such that an open-knit construction is formed.

5,445,600

FLOW CONTROL SYSTEMIC TO PULMONARY ARTERIAL SHUNT

Ra-id Abdulla, 1507 W. Harrison, Chicago, Ill. 60607

Filed Apr. 29, 1994, Ser. No. 235,440
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—9 **12 Claims**



1. A tube assembly particularly adopted for use in a modified Blalock-Taussig shunt procedure providing fluid flow control comprising:

an elongated tube of body compatible material, said tube having an inner wall surface which defines a first predetermined generally uniform fluid flow opening throughout its length, said tube having first and second ends, and

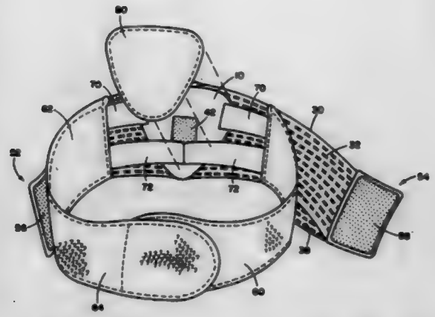
a means secured to said inner wall surface of said tube and located along the length of said elongated tube between said first and second ends of said tube, providing a second predetermined restricted fluid flow opening which is smaller than said first predetermined flow opening, said first and second flow openings having a common central axis, said means when subjected to a predetermined force being altered such that it no longer provides said second predetermined flow opening, whereby the flow opening over the entire length of said tube is essentially said first predetermined flow opening.

5,445,601

BACK SUPPORT DEVICE HAVING BANDS SECURING THE SUPPORT PLATE

Robert R. Harlow, Humble, Tex., assignor to TBC Orthopedics, Inc., Humble, Tex.

Filed Apr. 26, 1994, Ser. No. 233,293
Int. Cl.[6] A61F *5/00*; A61G *15/00*
U.S. Cl. 602—19 **1 Claim**



1. A lower back support device for treating lumbar vertebrae of a spine located in a back of a human body, comprising:

a firm plastic support plate having a predetermined radius of curvature and having an upper portion and a lower portion on vertically opposite ends of an intermediate portion such that said upper and lower portions are adapted to be positioned facing rearwardly with the intermediate portion adjacent the lumbar region of said human back and further having a plurality of elongate vertical slots formed therethrough for attaching bands to said plate;

a pair of foam fabric inner bands adapted to extend around the body of the wearer and each band having a distal body side, a portion of which is covered with loop fastening means, and a proximal body side, a portion of which is covered with a smooth material, and having a first and a second end, said first end of said distal body side comprising a plurality of elastic bands terminating in hook fastening means and said second end of said proximal body side of one piece of each inner band having hook fastening means, and each inner band being attachable to said support plate in response to threading said elastic bands of each inner band through said slots of said support plate, wherein said terminating hook fastening means of said first end attach to said loop fastening means of said distal body side; and

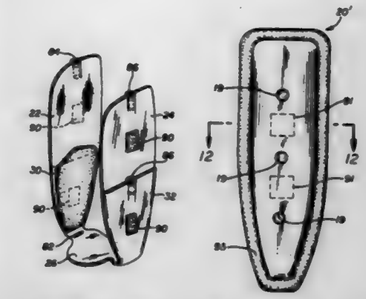
a one-piece resilient semi-flexible outer band adapted to extend at least partially, under tension comfortable to the wearer, around the body of the wearer, and having a first and a second end, each terminating in hook fastening means facing toward the body of the wearer, and being attachable to said support plate by hook and loop fastening means being connected to the proximate center of said outer band, wherein said fastening means is adapted to encircle a portion of said support plate extending between a pair of elongate vertical slots of said support plate, and said outer band adjustably attachable to each inner band by contacting said hook fastening means of said outer band ends to said loop fastening means of said distal body sides of each inner band to provide comfortable tension to urge said support plate against the back of the wearer.

5,445,602

FLEXIBLE ANKLE BRACE

Tracy E. Grim, Broken Arrow, Ok'a.; William K. Arnold, Longmeadow, Mass., and Joseph M. Iglesias, Agoura, Calif., assignors to Royce Medical Company, Westlake Village, Calif.

Filed Jul. 29, 1993, Ser. No. 99,237
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **21 Claims**



21. An improved ankle brace for insertion into a shoe, for restraining the ankle against inversion and eversion, while allowing for plantar flexion and dorsiflexion, comprising:

at least one substantially rigid side support for fitting about at least a portion of the lower leg and having upper and lower portions, the side support oriented in a configuration to support the affected side of the ankle;

flexible resilient material contoured to mechanically interfit with and substantially covering at least a portion of outer edges of said side support;

an inflatable main bladder mounted on an inner surface of said side support;

an additional shorter bladder mounted on said main bladder; and

a foot pump operationally connected to said shorter bladder to increase a pressurization of said shorter bladder in response to a walking or running activity.

5,445,603

THERAPEUTIC ANKLE ORTHOSIS

Gary B. Wilkerson, 1104 Bacon Blvd., Madisonville, Ky. 42431

Filed Dec. 17, 1993, Ser. No. 169,149
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **29 Claims**

1. A therapeutic ankle orthosis comprising

a) an extended lateral shell having an aperture adapted to receive the fibular malleolus and having a lower end portion extending downwardly beneath that aperture,

b) a crescent-shaped medial shell adapted to fit beneath and upwardly about the tibial malleolus,

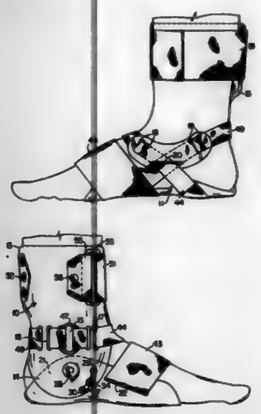
c) a foot shell adapted to underlie the rear foot and having an upper lateral side portion extending upwardly to overlap the lower end portion of the lateral shell,

d) pivot means connecting the lower end portion of the lateral shell to the side portion of the foot shell permitting angular movement of the foot shell relative to the lateral shell about an axis substantially coincident with the functional axis of the talocrual joint,

e) locking means for selectively preventing angular movement of the foot shell relative to the lateral shell,

f) securing means for holding together the overlapping lower end portion of the lateral shell and the side portion

of the foot shell forwardly of the pivot means to resist ankle inversion and eversion, and



g) adjustable strap means for holding the shells in operative position on the leg and ankle and foot.

5,445,604

WOUND DRESSING WITH CONFORMABLE ELASTOMERIC WOUND CONTACT LAYER

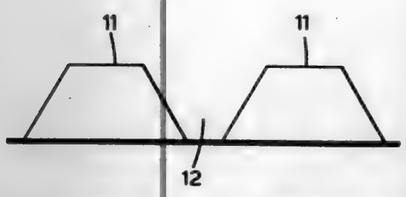
Stephen M. Lang, Near Saffron Walden, United Kingdom, assignor to Smith & Nephew Associated Companies, Ltd., United Kingdom

Continuation of Ser. No. 998,635, Dec. 31, 1992, abandoned, which is a continuation of Ser. No. 882,356, May 7, 1992, abandoned, which is a continuation of Ser. No. 432,808, Oct. 18, 1989, abandoned, which is a continuation of Ser. No. 791,720, Oct. 25, 1985, abandoned, which is a continuation of Ser. No. 345,488, Feb. 3, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 138,610

Claims priority, application United Kingdom, May 22, 1980, 8115742; Feb. 13, 1981, 8104568

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—47 **12 Claims**



1. A conformable low adherency wound dressing which comprises

(a) a low adherency wound facing layer 0.05 to 2.5 mm thick which is a conformable elastomeric apertured net;

(b) an absorbent layer comprising a conformable hydrophilic foam 0.5 to 20 mm thick; and

(c) a continuous conformable moisture vapour permeable outer film layer which acts as a bacterial barrier and has a moisture vapour transmission rate of from 300 to 5000 grams/square meter/24 hours at 37° C. at 100% to 10% relative humidity difference, said wound facing layer and said outer layer being laminated to opposing faces of said absorbent layer over the operative area of the dressing.

5,445,605

TAMPON WITH HOLDER

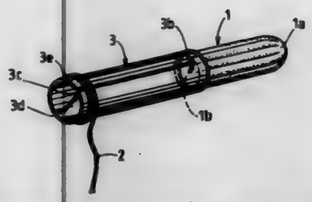
Bruno Pilles, Schwalbenweg 10, CH-4310 Rheinfelden, Switzerland

Filed Jan. 3, 1994, Ser. No. 176,462

Claims priority, application Switzerland, Jan. 5, 1993, 22/93

Int. Cl.[6] A61F *13/20*

U.S. Cl. 604—13 **3 Claims**



1. A holder for a tampon having a withdrawing thread attached at one end, said holder comprising:

a rigid, cylindrical sheath for encasing a tampon and having one open end through which the tampon can be expulsed from said sheath and an opposite end provided with notches, said sheath having a hole near said one open end through which the withdrawing thread of the tampon is passed wherein by pulling the thread through the hole the tampon can be guided through said one open end to a partially expulsed position and secured temporarily in the partially expulsed position by pulling the withdrawing thread through said notches.

5,445,606

INDICATOR FOR IONTOPHORESIS SYSTEM

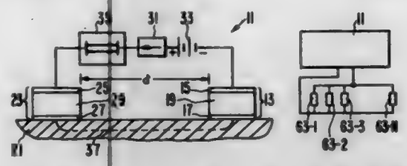
Ronald P. Haak, San Jose; Felix Theeuwes, Los Altos, both of Calif., and David K. Roe, Portland, Oreg., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 806,055, Dec. 11, 1991, Pat. No. 5,246,417. This application May 28, 1993, Ser. No. 69,061

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **33 Claims**



1. Iontophoresis apparatus that provides an indication of the cumulative amount of a therapeutic agent delivered through a body surface of a patient, the apparatus comprising:

a first electrode assembly containing a therapeutic agent to be delivered and adapted to be placed in agent transmitting relation with a body surface of a patient;

a second electrode assembly, adapted to be placed in ion transmitting relation with the body surface at a location spaced apart from the first electrode assembly;

an electrical current source, electrically connected to the first and second electrode assemblies;

a means for measuring the cumulative amount of electrical charge transferred during operation of the apparatus over a given time period which cumulative charge transferred is a measurement of cumulative amount of agent delivered; and

means for displaying a visually perceptible output of the cumulative amount of agent delivered, said display means

being electrically connected in parallel with the current source.

5,445,607

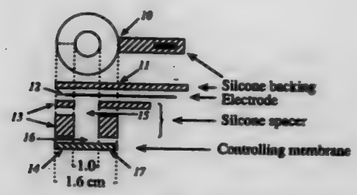
IONTOPHORESIS DEVICE AND METHOD USING A RATE-CONTROLLING ELECTRICALLY SENSITIVE MEMBRANE

Srinivasan Venkateshwaran, and Daniel C. H. Cheng, both of Salt Lake City, Utah, assignors to TheraTech, Inc., Salt Lake City, Utah

Continuation of Ser. No. 427,069, Oct. 23, 1989, abandoned. This application Oct. 15, 1992, Ser. No. 962,030

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **3 Claims**



1. A device for administering a drug transdermally through a predetermined area of skin in a therapeutically effective regimen, said drug being one that will not permeate passively through said area of skin at a therapeutically effective level comprising:

(a) a reservoir containing the drug adapted to be placed in communication with the area of skin;

(b) means for enhancing the permeability of the area of skin to the drug to a level at which the skin is substantially permeable to the drug;

(c) a stimulus-sensitive membrane interposed between the reservoir and the skin, said membrane having a hydrophobic surface and being substantially impermeable to the drug when not subjected to said stimulus and permeable to the drug when subjected to the stimulus said stimulus not affecting the form of the drug; and

(d) means for applying said stimulus to said membrane, whereby said regimen is dependent on the presence, absence, or magnitude characteristics of said stimulus.

5,445,608

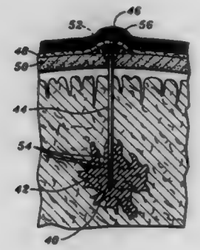
METHOD AND APPARATUS FOR PROVIDING LIGHT-ACTIVATED THERAPY

James C. Chen, 2011-87th Pl. N.E., Bellevue, Wash. 98004, and Elric W. Saxaki, Bothell, Wash., assignors to James C. Chen, Bellevue, Wash.

Filed Aug. 16, 1993, Ser. No. 107,276

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **61 Claims**



1. A method for photodynamic treatment at an internal, in vivo treatment site, to cause a desired therapeutic change, comprising the steps of:

(a) applying a photoreactive agent to the internal, in vivo treatment site, said photoreactive agent being selected for one or more characteristic wavelengths or wavebands of light absorption;

(b) positioning a light source that directly generates light internally within a patient's body, said light source being transcutaneously delivered to the in vivo treatment site and left implanted within the patient's body during the photodynamic treatment, the light emitted by the light source having one or more emission wavelengths or wavebands substantially equal to a wavelength or waveband of absorption of the photoreactive agent; and

(c) administering the light emitted from the light source to the internal, in vivo treatment site, said light being absorbed by the photoreactive agent, which then causes the desired therapeutic change at the treatment site.

5,445,609

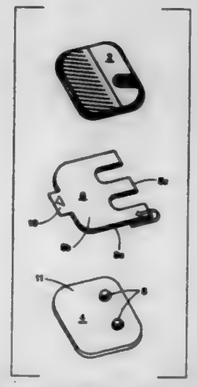
ELECTROTRANSPORT AGENT DELIVERY DEVICE HAVING A DISPOSABLE COMPONENT AND A REMOVABLE LINER

Gary A. Lattin, Forest Lake; Dale A. Dickson, Fridley, and Michael J. Grace, Coon Rapids, all of Minn., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 28, 1993, Ser. No. 69,270

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **33 Claims**



1. An electrotransport device for delivering an agent through a body surface, comprising:

(a) a reusable component containing electronic circuitry for performing at least one of (i) generating and (ii) controlling electric current applied by the device, the reusable component having a mating surface;

(b) a disposable component containing the agent to be delivered and having a mating surface adapted to mate to said reusable component mating surface, the mating surfaces being capable of adhering to one another in a plurality of orientations, at least one of which is a desired mating orientation;

(c) means, on at least one of the reusable component and the disposable component, for aligning said reusable component into said desired mating orientation with said disposable component; and

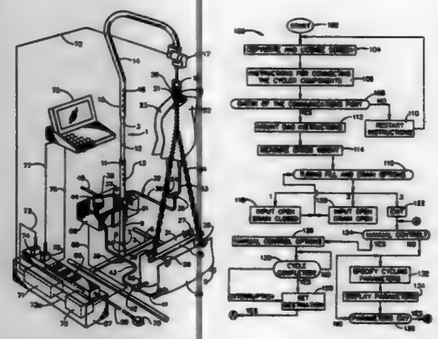
(d) at least one removable liner interposed between said component mating surfaces during component alignment, said liner preventing said mating surfaces from adhering to one another during component alignment, said liner being removable from between the aligned mating surfaces without disturbing said desired mating orientation.

5,445,610

PORTABLE PERITONEAL DIALYSIS CYCLER

Carl F. Evert, Cincinnati, Ohio, assignor to University of Cincinnati, Cincinnati, Ohio

Filed Jan. 15, 1993, Ser. No. 5,904
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—29 13 Claims



1. A peritoneal dialysis cycler of the gravity type for use with a patient, comprising:

(a) a stand having a base portion and an upstanding vertical portion;

(b) a single load cell attached to and supported by said stand;

(c) at least one fluid exchange bag supported by said load cell;

(d) at least one fluid drain bag supported by said load cell;

(e) a fill control valve;

(f) a drain control valve;

(g) a first electrical power supply and interface circuit electrically connected to said fill and drain control valves to convert low voltage signals into higher voltage or current signals to operate said fill and drain control valves;

(h) a second electrical power supply and interface circuit electrically connected to said load cell to convert low voltage signals generated by said load cell into data signals;

(i) computing means for controlling the operation of said fill and drain control valves via said first electrical power supply and interface circuit, and for receiving data signals from said second electrical power supply and interface circuit, said data signals being representative of the weight that is being measured by said load cell;

(j) a set of tubing for transferring liquids, said set of tubing comprising:

(1) a first length of tubing having a first end connected to said at least one fluid exchange bag and a second free end;

(2) a second length of tubing having a first end connected to said at least one fluid drain bag and a second free end;

(3) a third length of tubing having a first end operatively connected to said patient's peritoneal space and a second free end;

(4) fitting means for interconnecting said free ends of said first, second and third lengths of tubing;

(k) said fill control valve being associated with said first length of tubing; and

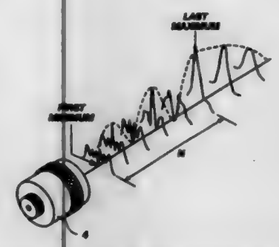
(l) said drain control valve being associated with said second length of tubing.

5,445,611

ENHANCEMENT OF TRANSDERMAL DELIVERY WITH ULTRASOUND AND CHEMICAL ENHANCERS

Jonathan A. Eppstein, Atlanta, Ga., and Deborah A. Eppstein, Salt Lake City, Utah, assignors to Non-Invasive Monitoring Company (NIMCO), Atlanta, Ga.

Filed Dec. 8, 1993, Ser. No. 152,174
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—49 33 Claims



1. In a method for enhancing the transdermal flux rate of an active permeant into a selected area of an individual's body surface comprising the steps of (a) contacting the selected area with a composition comprising an effective amount of said permeant; and (b) enhancing the permeability of the selected area to the permeant by means of applying ultrasound to said selected area for a time and at an intensity and a frequency effective to enhance the transdermal flux rate into the body;

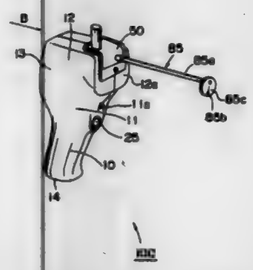
the improvement comprising; modulating said applied ultrasound by means of a member selected from the group consisting of frequency modulation, amplitude modulation, phase modulation and combinations thereof.

5,445,612

POWDERED MEDICAMENT-MIXED GAS INJECTING APPARATUS AND POWDERED MEDICAMENT-MIXED GAS INJECTING NOZZLE TO BE CONNECTED TO THE SAME

Seiji Terakura, Ikoma, and Toyoyuki Maeda, Kawachinagano, both of Japan, assignors to Kaigen Co., Ltd., Osaka, Japan

Filed Sep. 29, 1994, Ser. No. 313,589
Claims priority, application Japan, Oct. 4, 1993, 5-247826
Int. Cl.[6] A61M *13/00*
U.S. Cl. 604—58 19 Claims



1. A powdered medicament-mixed gas injecting apparatus comprising:

a first passage having at one end thereof a gas supply opening for supplying gas;

a second passage having at one end thereof a container-fitting end portion for fitting thereto a container opening of a powdered medicament container in which powdered medicament is accommodated and which has one end closed and the other end provided with the container opening, the other end of the second passage being coupled with the other end of the first passage, the second passage serving for introducing supply gas fed from the gas supply opening of the first passage to the powdered medicament container and for introducing powdered medicament-mixed gas which has been formed by mixing the supply gas with the powdered medicament, in a direction opposite to a direction in which the supply gas is fed, and the second passage allowing gas to pass bidirectionally therethrough; and

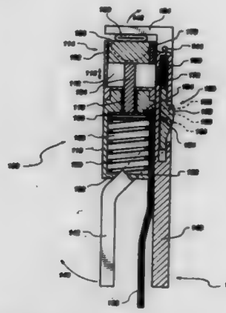
a third passage having one end thereof coupled with a coupling portion at which the respective other ends of the first and second passages are coupled with each other, where the third passage is branched from the coupling portion, the third passage having at the other end thereof a third passage opening for jetting out the powdered medicament-mixed gas to introducing the powdered medicament-mixed gas.

5,445,613

CONDITION DETECTION SYSTEM AND CLAMP

Jeffrey L. Orth, Salt Lake City, Utah, assignor to Rocky Mountain Research, Inc., Salt Lake City, Utah

Filed Jul. 16, 1993, Ser. No. 93,369
Int. Cl.[6] A61M *31/00, 5/00;* F16K *7/04, 31/00*
U.S. Cl. 604—66 31 Claims



1. A clamping device for obstructing the flow of fluid through a tube comprising:

selectively movable clamping means for laterally compressing a tube;

mechanical compression means associated with said clamping means for providing selective movement to said clamping means;

power means for providing force to said compression means; and

condition detection means structured for connection to a tube for detecting a condition therewith, said condition detection means being adapted to provide an actuation signal to said power means upon detection of a condition in the tube.

5,445,614

PHARMACEUTICAL STORAGE AND MIXING SYRINGE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Oct. 20, 1993, Ser. No. 140,287
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—89 11 Claims

1. A unitary syringe assembly for the isolated storage and transport of two substances with intermixed injection of said two substances comprising:

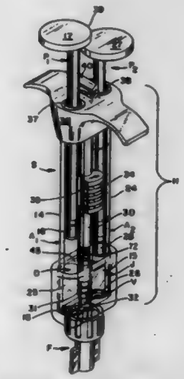
a first syringe assembly for containing a first of said two substances, said syringe assembly including a cylinder, cylinder outlet, and sealing piston for sealing said first substance within said first syringe assembly;

first plunger means for displacing said sealing piston of said first syringe to cause substances in said first syringe to be likewise displaced out said cylinder outlet;

a second syringe assembly for containing a second of said two substances, said syringe assembly including a cylinder, cylinder outlet, and sealing piston for sealing said second substance within said second syringe assembly;

second plunger means for displacing said sealing piston of said second syringe to cause substances in said second syringe to be likewise displaced out said cylinder outlet;

said first and second syringe assemblies being mounted relative to one another in a common housing;



an isolation valve having a housing for permitting communication between said first and second syringes at said cylinder outlets, said isolation valve having first and second relatively moving members, said first and second relatively moving members when in a first relative position preventing communication between said syringes and said first and second members when in a second relative position permitting communication between said syringes;

means for preventing a chosen one of the sealing pistons from moving away from the cylinder outlet when said one of the sealing pistons has been moved to a position near the respective cylinder outlet; and

a fitting for mounting of a dispensing head communicated to at least one of said syringes for enabling dispensing of the contents of said communicated syringe through said dispensing head responsive to movement of at least one of said means for displacing.

5,445,615

SURGICAL INSTRUMENT STABILIZER

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

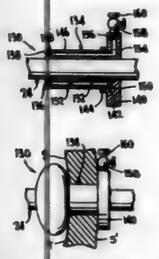
Continuation of Ser. No. 788,143, Nov. 6, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 170,620
Int. Cl.[6] A61M *29/00, 5/32*
U.S. Cl. 604—96 13 Claims

6. In combination, a portal sleeve and a stabilizer for stabilizing the portal sleeve comprising

a portal sleeve for being positioned to extend through an opening in an anatomical cavity wall and having a distal end for being positioned in the anatomical cavity, a proximal end for being positioned externally of the anatomical cavity and a longitudinal axis; and

a stabilizer including body means having a distal end, said body means, including said distal end, being disposed on said portal sleeve for being moved longitudinally, distally along said portal sleeve and into the opening; an expand-

able portion carried by said body means for movement with said body means along said portal sleeve and into the opening, said expandable portion including a distal portion and a proximal portion, said expandable portion having a length to position said expandable portion distal portion adjacent an internal surface of the cavity wall and said expandable portion proximal portion adjacent an external surface of the cavity wall, said expandable portion being movable from a contracted position wherein said expandable portion is disposed close to said portal sleeve to facilitate insertion of said body means in and



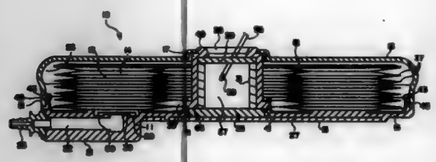
withdrawal of said body means from the opening and being movable, while positioned in the opening, from said contracted position to an expanded position wherein said expandable portion is disposed further away from said portal sleeve to engage the cavity wall, said expandable portion expanding radially in said expanded position along the length of said expandable portion to engage the anatomical cavity wall along the thickness thereof between the internal and external surfaces; and means carried by said body means for moving said expandable portion between said contracted and expanded positions.

5,445,616

MEDICATION DELIVERY DEVICE AND METHOD OF CONSTRUCTION

Paul S. Kratoska, Brooklyn Park, and Raymond F. McMullen, Shorewood, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 29, 1994, Ser. No. 235,038
Int. Cl.[6] A61M *5/152*
U.S. Cl. 604—141 **18 Claims**



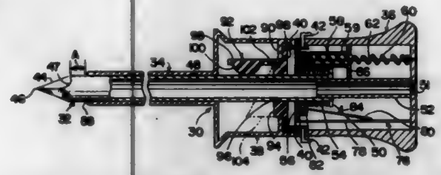
1. A medication delivery device comprising:
a housing,
a reservoir within said housing,
a reservoir refill port in fluid communication with said reservoir and positioned such that said reservoir refill port is laterally adjacent to said reservoir and substantially surrounded by said reservoir,
an outlet port, and
means connected between said reservoir and said outlet port for dispensing medication from said reservoir through said outlet port.

5,445,617

AUTOMATIC RETRACTABLE SAFETY PENETRATING INSTRUMENT FOR PORTAL SLEEVE INTRODUCTION AND METHOD OF USE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 800,507, Nov. 27, 1991, abandoned. This application Mar. 10, 1992, Ser. No. 848,838
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—165 **56 Claims**



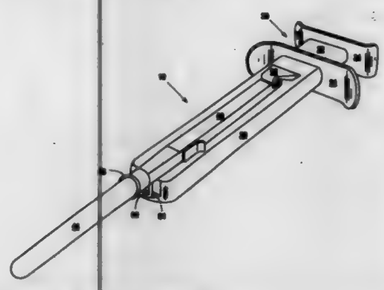
1. An automatic retractable safety penetrating instrument for forming a portal communicating with an anatomical cavity for introduction of instruments therethrough comprising
a portal sleeve having a distal end, a proximal end and a lumen extending between said sleeve distal and proximal ends;
a penetrating member having a sharp distal end for penetrating tissue and being slidably disposed in said sleeve lumen;
retracting means for moving said penetrating member from an extended position wherein said penetrating member distal end protrudes beyond said sleeve distal end to a retracted position wherein said penetrating member distal end is disposed within said sleeve lumen;
said penetrating member having an operative position between said retracted and extended positions wherein said penetrating member distal end is aligned with said portal sleeve distal end;
operating means movable distally with said penetrating member between said operative position and said extended position when said sleeve distal end enters an anatomical cavity; and
trigger means for automatically actuating said retracting means in response to distal movement of said operating means to move said penetrating member to said retracted position whereby said penetrating member distal end is automatically retracted within said sleeve lumen when said sleeve distal end enters an anatomical cavity.

5,445,618

SAFETY SYRINGE WITH NON-LINEAR NEEDLE

Ricardo N. Adobbati, 615 Palo Verde, Brownsville, Tex. 78520

Filed Jan. 18, 1994, Ser. No. 183,038
Int. Cl.[6] A61M *5/32, 5/31, 5/00*
U.S. Cl. 604—192 **3 Claims**



1. A safety syringe comprising:
a cylinder having an interior chamber for containing a fluid;

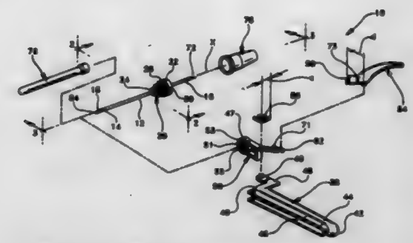
a plunger slidably mounted within the interior chamber of the cylinder for displacing the fluid within the cylinder;
a needle guard removably coupled to a side of said cylinder, said needle guard having an interior chamber and having distal and proximal ends;
an elongate needle assembly, including a needle housing, and an elongate and nonlinear hollow needle, slidably mounted within the interior chamber of said needle guard, said needle assembly movable between extended and irreversibly retracted positions;
means for fluidly coupling said needle to said cylinder when said needle assembly is in the extended position and for fluidly separating said needle from said cylinder when said needle assembly is in the irreversibly retracted position;
said coupling means comprising lock means for locking said needle assembly in the extended position, said lock means being a lock pin and said needle housing having a notch adapted to receive said lock pin; a coil spring slidably located within the interior chamber of said needle guard and between said distal needle section and proximal ends of said needle guard, said coil spring biasing said needle assembly to the irreversibly retracted position; and manual release means for manually unlocking said lock means from the extended position and allowing said needle assembly to move to the irreversibly retracted position, said manual release means comprising a release tab pivotally attached to said needle guard and secured to said locking pin; whereby said needle assembly is maintained in said extended position when said locking pin is received in said notch overcoming the force of said coil spring, and said needle assembly can be moved into said irreversibly retracted position when a user presses said release tab raising said locking pin and removing said locking pin from said notch of said needle housing allowing said coil spring to move said needle assembly into said irreversibly retracted position.

5,445,619

SHIELDED NEEDLE ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 23, 1994, Ser. No. 311,695
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 **20 Claims**



1. A shielded needle assembly comprising:
an elongate needle having a pointed distal end, a proximal end and a passageway therethrough;
a hub having an axial opening therethrough for receiving said needle so that said distal end of said needle projects outwardly therefrom, said hub further including means for releasably mounting said hub on a fluid handling device;
a shield having an open end, a closed end, a sidewall having a slot extending from said open end toward said closed end, and an arm extending radially outwardly at said open end opposite said slot, said shield having a first position at which said needle is exposed for use and having a second position at which said shield substantially obstructs access to said needle, said slot being sufficient to provide clearance for said needle;
a mounting for rotatably holding said shield onto said hub, said mounting having a first pivot for pivotally attaching said shield to said mounting at said arm, said mounting including a second pivot; and
activating means pivotally attached to said mounting at said second pivot for interacting with said arm so that movement of said activating means about said second pivot causes movement of said shield from said first position toward said second position.

5,445,620

DISPOSABLE SAFETY SYRINGE WITH RETRACTABLE SHUTTLE FOR WYETH MEDICATION CARTRIDGE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corp., Laguna Hills, Calif.

Filed Sep. 17, 1993, Ser. No. 123,362
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—232 **5 Claims**



1. A combination disposable syringe and cartridge assembly, the cartridge assembly including an ampoule and a needle carrier secured to the ampoule, the ampoule having a main body portion, a dispensing end and an opposite end, a piston housed within the main body for expelling the contents of the ampoule, said combination comprising:
a main housing having a wall portion with an interior volume, said wall portion having a guide slot with a tab support portion and a tab lock portion;
a needle shuttle having a needle carrier attachment portion and a guide tab engageable in said guide slot;
said needle shuttle supporting an attached needle assembly in a first extended position when the needle shuttle guide tab is located in the tab support portion of said guide slot and maintaining an attached needle assembly within said interior volume of said main housing when the needle shuttle guide tab is located in the tab lock portion of said guide slot, the needle shuttle guide tab including:
a pair of axially extending, circumferentially flexible leg portions; and
a laterally spaced, radially extending tab portion formed on each of said flexible leg portions;
a bushing and rod assembly insertable in said interior volume of said main housing and including:
means for translating the ampoule piston towards the dispensing end of the ampoule to expel the contents; and
a rod member having an end portion engageable with the ampoule piston;
said bushing and rod assembly including a rod-member-guiding bushing member having a longitudinally extending bore, an outer wall surface of a first diameter and a periph-

eral portion of a second diameter, said first diameter being smaller than the inner diameter of said interior volume, said second diameter being larger than said inner diameter of said interior volume; and

said bushing member being provided with a longitudinally extending cut-away for enabling said rod member to be laterally press-fitted into said bore.

5,445,621

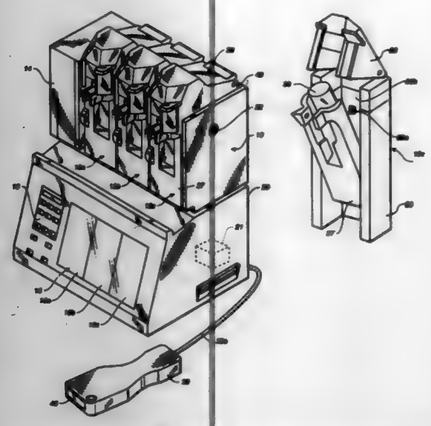
DRUG IDENTIFICATION AND SECURITY APPARATUS FOR INFUSION AND PUMPING SYSTEMS

Robert G. Poli, Campbell; Noel L. Johnson, San Jose; Robert R. Burnside; Leland D. Chambers, both of Mountain View; J. Terry Huang, Sunnyvale, and V. Stanton Thomas, Palo Alto, all of Calif., assignors to Abbott Laboratories, Mountain View, Calif.

Continuation-in-part of Ser. No. 811,516, Dec. 20, 1991, abandoned. This application Nov. 9, 1993, Ser. No. 149,248

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—246 **30 Claims**



1. An electronic drug delivery system comprising at least one pump mechanism having upper and lower doors, a pump cassette assembly disposable in said pump mechanism, said upper and lower doors to open to enable installation of the cassette assembly therein, and a drug identification and security apparatus usable with said drug delivery system, said apparatus including:

a pivotable structure operatively disposed between the upper and lower doors to effect conjoint opening and closing thereof;

a latching portion provided in the pivotable structure;

a pivotable locking bale, movable between a lock position in which the upper and lower doors are closed and the bale engages the latching portion of the pivotable structure to hold the doors closed, and an unlock position, in which the bale disengages the latching portion of the pivotable structure to enable opening of the doors;

an interrupt mechanism electronically connected to the pump mechanism and interposed between the locking bale and the pump mechanism to selectively interrupt operation of the pump mechanism when the bale moved from the lock to the unlock position; and

a key lock associated with the pivotable bale to move said bale between said lock and unlock positions.

5,445,622

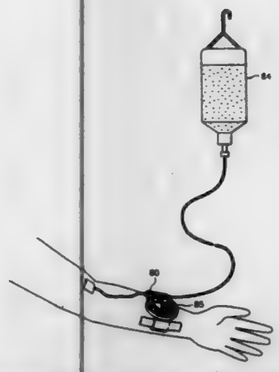
FLOW SWITCH DEVICE FOR MEDICAL APPLICATIONS

Eric W. Brown, 98 Baycrest Ct., Newport Beach, Calif. 92660

Filed Dec. 20, 1994, Ser. No. 360,994

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—246 **10 Claims**



1. An intravenous system for conducting an intravenous fluid, the system comprising:

a flow indicator switch, including a fluid conductor having a transparent conical wall enclosing a fluid space extending between spaced apart proximal and distal annular shoulders, defining, respectively, inlet and outlet fluid orifices engaging the conductor, and, within the fluid space, an opaque movable stem body with a stem body biasing means providing a restoring force urging the stem body against the proximal shoulder, and further, a light emitter and a light sensor positioned in opposition lateral to the stem body and external to the fluid conductor, and further still, an opaque mask positioned between the light emitter and the light sensor, defining a narrow path for light to move from the light emitter, across the inlet fluid orifice to the light sensor; such that with no fluid flow, the stem body abutting the proximal shoulder, light transfer to the sensor is fully blocked by the stem body, while with a fluid flow, the stem body is moved away from the proximal shoulder, light transfer to the sensor is enabled, the sensor providing a sensor electrical signal identifying start and stop of fluid flow in the conductor.

5,445,623

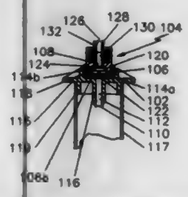
DRIP CHAMBER WITH LUER FITTING

Frank M. Richmond, 205 A Grant St., Harvard, Ill. 60033

Filed Jul. 28, 1993, Ser. No. 98,499

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—251 **13 Claims**



1. A drip chamber for use with a source of fluid, comprising: a transparent container defining an elongated hollow chamber, the container having an open proximal end and a distal end; and

a fitting attached to the container near the distal end of the container, the fitting including:

an annular male element having a dull distal end and a passageway in fluid communication with the chamber, the element being positioned with the dull distal end of the element protruding away from the distal end of the container; and

an annular cap engaged with the male element in a surrounding relationship therewith, the cap having a threaded inner surface facing the male element and spaced therefrom for threadably engaging a complementarily threaded surface associated with the source of fluid, wherein fluid from the source of fluid can flow through the chamber from the distal end of the container through the open proximal end thereof, to thereby permit the flow of the fluid from the distal end to the proximal end to be visually monitored.

5,445,624

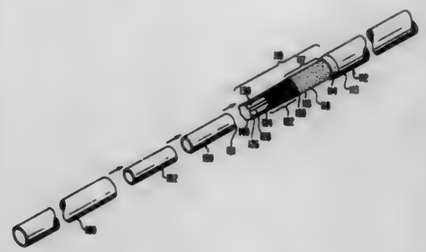
CATHETER WITH PROGRESSIVELY COMPLIANT TIP

Oscar Jimenez, Coral Gables, Fla., assignor to Exonix Research Corporation, Miami, Fla.

Filed Jan. 21, 1994, Ser. No. 184,266

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—280 **33 Claims**



1. An intravascular catheter having a progressively compliant distal end region comprising:

an elongated catheter body made of a high temperature thermoplastic having a low coefficient of friction and having an overcoat of low temperature thermoplastic thereon, said overcoat having a first softness characteristic, said catheter having a distal end region defined by:

an endmost, low temperature, thermoplastic tubular section having a second softness characteristic that is significantly greater than said first softness;

another low temperature, thermoplastic tubular section having a third softness characteristic that is medium with respect to said first and second softness, said other tubular section disposed between said endmost section and said overcoat; and,

blended tubular regions formed by heated diffusion of said endmost section with said other tubular section and said other tubular section with said overcoat, each said blended region having respective incrementally increasing intermediate softness characteristics over predetermined lengths thereof.

5,445,625

ANGIOPLASTY GUIDE CATHETER

Jan Voda, 1404 Camden Way, Oklahoma City, Okla. 73116

Continuation of Ser. No. 969,891, Oct. 30, 1992, abandoned, Continuation-in-part of Ser. No. 622,873, Jan. 23, 1991, abandoned. This application Jun. 14, 1994, Ser. No. 259,567

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—281 **7 Claims**



1. A femoral approach angioplasty guide catheter adapted for selective catheterization of a left main coronary artery within a cardiovascular system comprising:

an elongate flexible tubular member in a relaxed state prior to insertion in the cardiovascular system further comprising in consecutive arrangement:

a first straight proximal portion extending distally from a proximal end of the tubular member;

a second straight portion joined to the first straight portion and having a length of about 1.5 to 2.5 centimeters;

a tertiary curved portion defining a junction of the first straight portion and the second straight portion and defining a vertex of an obtuse angle of 130° to 150° between the first and second straight portions;

a secondary curved portion joined to the second straight portion and having an arcuate curvature of about 150° to 180° and a radius of curvature of about 1 centimeter;

a third straight portion joined to the secondary curved portion;

a fourth straight portion joined to the third straight portion and having a distal end defining a terminal distal tip of the tubular member; and

a primary curved portion a junction of the third straight portion and the fourth straight portion and defining a vertex of an obtuse angle of 140° to 160° between the third and fourth straight portions,

wherein the interiors of the tertiary curved portion and every curve portion distal thereof, including the secondary curved portion and the primary curved portion, all generally face each other,

wherein the first straight portion, second straight portion, third straight portion, and fourth straight portion all lie in generally the same plane, the third straight portion and the fourth straight portion extending slightly out of plane to the extent that the fourth straight portion overlaps the first straight portion, and

wherein the length of the fourth straight portion is approximately equal to the sum of the length of the third straight portion and the radius of curvature of the secondary curved portion.

5,445,626

VALVE OPERATED CATHETER FOR URINARY INCONTINENCE AND RETENTION

Luigi Gigante, Via Rioclarelli, 157, I-44100 Aguscello, Italy

PCT No. PCT/IT92/00051, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994, PCT Pub. No. WO93/10845, PCT Pub. Date Jun. 10, 1993

PCT Filed May 15, 1992, Ser. No. 244,541

Claims priority, application Italy, Dec. 5, 1991, BO901A459

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—349 **8 Claims**

1. A valve operated catheter for urinary incontinence and retention comprising a flexible duct (2) for insertion into a

patient's urethra and having a spiral shaped distal portion (12) for insertion inside a bladder, said distal portion provided with a plurality of holes (16) for the outflow of urine from the bladder to said duct, said catheter comprising:

a seat (21) provided at an end of the catheter that remains outside of a penis;

an elastically deformable valve (20) provided with a slit (22)



that is normally closed, said valve (20) being housed inside said seat (21);

two winglets (25) fixed at the end of the duct (2), the winglets placed outside of the penis for resting against the top of the glans, such that the patient pressing on the winglets causes the deformation of the part of said duct (2) correspondent to said seat (21), and of said valve (20) until the slit (22) opens.

5,445,627

SANITARY NAPKIN

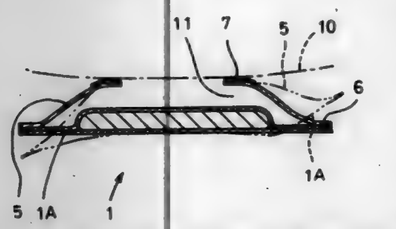
Satoshi Mizutani, and Masahiro Kashiwagi, both of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Aug. 3, 1994, Ser. No. 285,470

Claims priority, application Japan, Aug. 6, 1993, 5-043336 U

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **3 Claims**



1. A sanitary napkin comprising a basic body of the napkin comprising a liquid-permeable topsheet, a liquid-resistant backsheet and a liquid-absorbent core sandwiched between said sheets, and elastically stretchable flaps longitudinally provided adjacent transversely opposite side edges of said basic body and rising from said topsheet, characterized by that said flaps comprise elastically stretchable straps bonded in their stretched state to said basic body and applied on their top surfaces with adhesives.

5,445,628

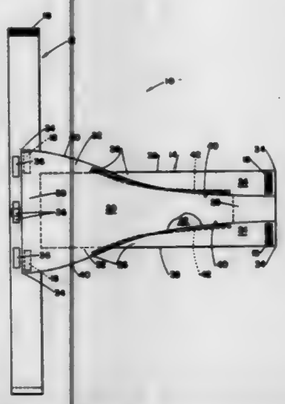
DISPOSABLE ASSEMBLY FOR DETACHABLE TWO PIECE ABSORBENT GARMENT

William P. Gipson; Michael W. Mason, both of Cincinnati, and Thomas A. Hensler, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 73,253, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 821,260, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 561,767, Aug. 2, 1990, abandoned, which is a division of Ser. No. 382,157, Jul. 18, 1989, Pat. No. 4,964,860. This application Aug. 10, 1994, Ser. No. 288,641

Int. Cl.[6] A61F *13/15, 13/20*

U.S. Cl. 604—392 **11 Claims**



1. A disposable assembly for use in an absorbent garment in which absorbent garment said disposable assembly is refastenably detachable to a belt, said disposable assembly having a body-facing side, a garment-facing side, a front waist margin, and a rear waist margin, said disposable assembly comprising: a liquid pervious topsheet; a liquid impervious backsheet joined to said topsheet; an absorbent core positioned between said top sheet and said backsheet; two longitudinally oriented flaps wherein said flaps overlay said top sheet in said front waist margin and extend outward from said absorbent core in said rear waist margin, and a patch of hook type material disposed on each of said flaps, and each patch of hook type material is adapted to be refastenably attached to loop type material on said belt, so that the belt and said disposable assembly are detachable from each other.

5,445,629

BLOOD STORAGE CONTAINER AND METHODS OF USING SAME

Jack Debrauwere, Halle; Jean-Claude Bernes, Faimes, and Jean-Marie Mathieu, Lillois, all of Belgium, assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 21, 1993, Ser. No. 171,084

Int. Cl.[6] A61M *37/00*; A61B *19/00*

U.S. Cl. 604—403 **25 Claims**

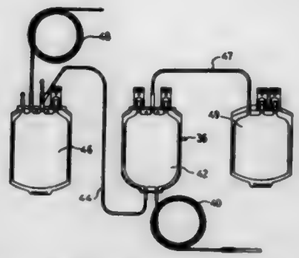
1. A method for storing blood comprising the steps of:

providing a container having a body, an interior chamber, means for receiving blood, an elongated tube coupled to the body, the tube including an interior having a fluid therein and means for allowing selective fluid communication between the interior of the tube and the interior chamber;

providing fluid communication between the interior of the tube and the interior chamber;

causing the fluid to flow into the interior of the container;

passing the blood through the means for receiving blood into the container;



expressing a portion of the blood into the elongated tube; and

severing the elongated tube from the body of the container.

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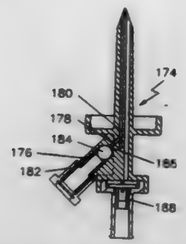
SPIKE WITH LUER FITTING

Frank M. Richmond, 205 A Grant St., Harvard, Ill. 60033

Filed Jul. 28, 1993, Ser. No. 98,629

Int. Cl.[6] A61B *19/00*

U.S. Cl. 604—411 **24 Claims**



1. A spike assembly for establishing fluid flow to and from an IV fluid container having a membrane, comprising:

a hollow pointed puncturing element having a distal end configured for puncturing the membrane of the IV fluid container and an open proximal end, wherein the open proximal end is configured as a first luer fitting for engaging a complementarily-shaped second luer fitting; and

a valve disposed in the proximal end of the puncturing element, the valve including a resilient valve member defining an outer periphery that is uninterrupted within the periphery and deformable to an open configuration, wherein a pathway for fluid communication is established around the periphery and through the spike when the second luer fitting is engaged with the first, the valve member being biased to a closed configuration, wherein a pathway for fluid communication is not established through the spike when the second luer fitting is not engaged with the first.

5,445,631

FLUID DELIVERY SYSTEM

Tadatoshi Uchida, Tokorozawa, Japan, assignor to Suntory Limited and Nissho Corporation, both of Osaka, Japan

Filed Feb. 4, 1994, Ser. No. 192,282

Claims priority, application Japan, Feb. 5, 1993, 5-042041

Int. Cl.[6] A61B *19/00*; A61M *5/32*

U.S. Cl. 604—412 **18 Claims**

1. A fluid delivery system comprising:

a vial having an opening for containing therein a substance which can be dissolved by a liquid;

a container having an opening for containing therein the liquid;

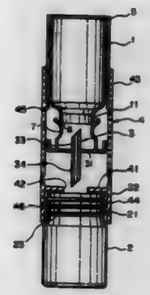
pierceable plug members for hermetically sealing the openings of the vial and the container, respectively;

a cylindrical capsule having first and second open ends;

a sliding member slidably disposed in the capsule and provided with a double-pointed cannula having upper and lower needles;

the vial being detachably and fixedly connected to the first open end of the capsule;

the container being slidably inserted into the capsule from the second open end thereof;



the upper and lower needles of the cannula piercing and being inserted into the plugs of the container and the vial, respectively, so that the vial and the container are communicated to each other through the cannula, when the container is pushed toward the vial;

the container having a cylindrical wall portion and a bottom; and

an auxiliary cover member tightly covering the cylindrical wall portion and the bottom of the container, the cover member being frictionally, slidably and air tightly fit within the capsule when the cover member is inserted into the capsule.

5,445,632

ARTERIAL CUFF GRAFT EVERSION INSTRUMENT

Kenneth R. Blake, Brooklyn Park, Minn., and Kazi Mobin-Uddin, Worthington, Ohio, assignors to Scanlan International, Inc., St. Paul, Minn.

Filed Oct. 8, 1993, Ser. No. 133,608

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—1 **6 Claims**



1. An arterial cuff graft eversion instrument comprising:

a handle with a proximal and a distal end; and

a single wire, having a longitudinally straight portion extending distally from only the handle distal end, said wire configured at a distal end of the instrument into a single loop of a circular configuration, such that a free distal end of the wire terminates immediately after slightly crossing over and overlapping the longitudinally straight portion of the wire;

so that the instrument is adapted for performing an arterial cuff graft eversion by:

inserting the instrument into a lumen of an arterial cuff graft and extending the instrument to a distal end of the graft;

locating the loop on an edge of the distal end of the graft, so that the distal end of the graft is engaged between the free distal end of the wire and the straight longitudinal portion of the wire, while stabilizing a proximal portion of the graft;

slightly rotating and retracting the instrument, until the distal end of the graft is engaged within the loop, and then drawing the engaged distal portion of the graft inward through the lumen as the instrument is retracted proximally, and;

continuing to retract the instrument proximally, while urging a proximal portion of the graft distally, thereby reversing the graft.

5,445,633

ABLATION APPARATUS FOR ABLATING A CORNEA BY LASER BEAM

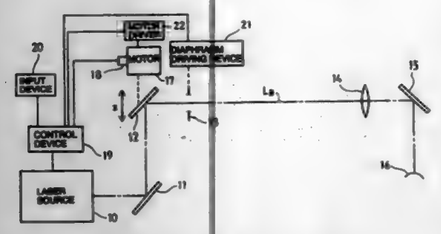
Takao Nakamura, and Toshifumi Sumiya, both of Aichi, Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Continuation of Ser. No. 15,924, Feb. 10, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 329,673

Claims priority, application Japan, Nov. 7, 1992, 4-322387; Nov. 7, 1992, 4-337929

Int. Cl.[6] A61B *17/00*; A61N *5/06*

U.S. Cl. 606—5 **11 Claims**



11. An ablation apparatus for ablating a surface of a cornea by laser beam comprising:

a laser source for emitting a laser beam;

an ablation optical system for ablating the surface of the cornea by the laser beam emitted from said laser source;

ablation area changing means for changing an ablation area on the cornea;

cornea shape forming means for forming a shape of an optical zone of the cornea, the radius of curvature of the shape of the optical zone being larger than the pre-operation cornea, by superposing the laser beam through said ablation optical system;

input means for inputting data related to a transition zone, the transition zone to have a shape for smoothly connecting said optical zone with a non-ablation area; and

control means for determining the shape of said transition zone, based on the data and based on a curvature of a pre-operation cornea and a desired post operation cornea, and for controlling movement of said ablation area changing means to achieve the shape of the transition zone, wherein the transition zone has a sectional form comprising two circles having a radius, R_T, such that:

$$R_T=(s_T-S)R_1R_2/(S_TR_2-SR_1),$$

where R_1 is the radius of the pre-ablation zone, R_2 is the radius of a post-ablation zone, S is the width of the optical zone, and S_T is the width of the transition zone.

5,445,634

METHOD OF LASER COSMETIC SURGERY

Gregory S. Keller, 2323 De La Vina, Ste. #105, Santa Barbara, Calif. 93105

Division of Ser. No. 102,851, Aug. 2, 1993, Pat. No. 5,370,642, which is a continuation of Ser. No. 766,638, Sep. 25, 1991, abandoned. This application Sep. 29, 1994, Ser. No. 314,659

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—9 **6 Claims**



1. A method of cosmetic surgery for the elevation of the temple and lateral brow comprising:

marking on the skin incision lines, the supraorbital nerve course, and a vertical line extending from the lateral canthus;

performing at least one small incision in the skin above the hair line to allow insertion of a laser transmitting means and surgical instruments beneath the skin;

developing the deep temporal fascia using at least one of the group consisting of hooks and retractors;

inserting a laser transmitting means beneath the skin;

directing the laser energy from the laser transmitting means to:

develop the supragaleal plane,

divide the fusion layer of fascia below the brow in a supraperiosteal plane,

incise the frontalis muscle above the brow and medial to the vertical line from the lateral canthus;

placing a suture in an area immediately below the brow to the temporalis fascia to achieve elevation; and

closing the incision.

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REGULATED-CURRENT POWER SUPPLY AND METHODS FOR RESISTIVELY-HEATED SURGICAL INSTRUMENTS

Dennis J. Densen, and Albert E. Weller, both of Columbus, Ohio, assignors to Hemostatic Surgery Corporation, Grand Cayman, Cayman Islands

Continuation of Ser. No. 877,454, May 1, 1992, abandoned. This application Jul. 6, 1994, Ser. No. 271,388

Int. Cl.[6] A61B *17/36*; H05B *1/02*

U.S. Cl. 606—27 **17 Claims**

1. Apparatus for performing surgery comprising:

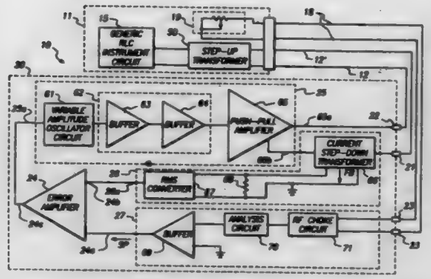
a surgical instrument having a resistively-heated heating element;

a power supply for supplying an alternating current to the heating element, the power supply comprising:

a current supply circuit having a control terminal for accepting a control signal and having a first current supply circuit output terminal and a second current supply circuit output terminal for supplying the alternating current to the heating element coupled therebetween, the current supply circuit supplying the alternating current to the heating element in response to the control signal;

a current feedback circuit coupled between the second current supply circuit output terminal and the heating element for monitoring the alternating current as it is supplied by the current supply circuit, the current feedback circuit having a current feedback terminal for supplying a current feedback signal indicative of a magnitude of the alternating current as it is monitored by the current feedback circuit;

an error amplifier having a first error amplifier input for accepting a set-point signal, a second error amplifier input for accepting the current feedback signal, and an



error amplifier output terminal for coupling the control signal, indicative of a difference between the set-point signal and the current feedback signal, to the control terminal of the current supply circuit, the error amplifier output terminal being coupled to the control terminal of the current supply circuit; and

means for generating the set-point signal, the means for generating the set-point signal having a set-point output terminal coupled to the first error amplifier input, wherein the set-point signal is indicative of a predetermined magnitude of the alternating current corresponding to a predetermined heating element operating temperature and so that the alternating current supplied to the heating element is regulated to the predetermined magnitude set by the set-point generating means.

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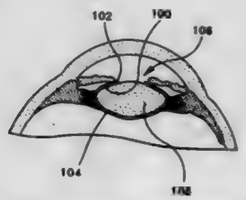
METHOD AND APPARATUS FOR PREVENTING POSTERIOR CAPSULAR OPACIFICATION

Randolph H. Bretton, Maryland Heights, Mo., assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 6, 1993, Ser. No. 162,688

Int. Cl.[6] A61B *17/20, 17/28*

U.S. Cl. 606—41 **14 Claims**



1. A method for destroying residual lens epithelial cells within an eye following extracapsular cataract extraction, said method comprising the steps of:

providing a first probe having a distal end portion configured for insertion into a lens capsule of said eye, said first probe having a capacity to emit energy outwardly from said distal end portion to residual lens epithelial cells on said lens capsule of said eye;

inserting said first probe into said eye following extracapsular cataract extraction such that said distal end portion of said first probe is positioned within said lens capsule;

delivering energy to said distal end portion of said first probe such that energy is emitted outwardly from said distal end portion of said first probe at a level sufficient to destroy residual lens epithelial cells on said lens capsule without causing damage to said lens capsule;

ceasing the emission of energy from said distal end portion of said first probe; and

removing said first probe from said eye.

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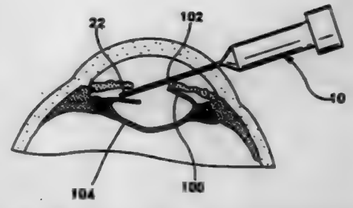
METHOD AND APPARATUS FOR PREVENTING POSTERIOR CAPSULAR OPACIFICATION

Randolph H. Bretton, Maryland Heights, Mo., assignor to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 162,688, Dec. 6, 1993. This application Sep. 7, 1994, Ser. No. 301,465

Int. Cl.[6] A61B *17/20, 17/28*

U.S. Cl. 606—41 **14 Claims**



1. A method for destroying residual lens epithelial cells in a lens capsule of an eye, said method comprising the steps of:

providing an iris shield constructed of a material capable of preventing the transmission energy therethrough at levels potentially harmful to an iris of said eye;

placing said iris shield between said lens capsule and said iris;

providing a probe having a distal end portion configured for insertion into an eye, said probe having a capacity to emit energy outwardly from said distal end portion;

inserting said first probe into a posterior chamber of said eye;

delivering energy to said distal end portion of said first probe such that energy is emitted outwardly from said distal end portion of said first probe at a level sufficient to destroy residual lens epithelial cells on said lens capsule;

ceasing the emission of energy from said distal end portion of said first probe;

removing said first probe from said eye; and

removing said iris shield from said eye.

5,445,638

BIPOLAR COAGULATION AND CUTTING FORCEPS

Mark A. Rydell, Golden Valley, and Joseph A. O'Brien, Fridley, both of Minn., assignors to Everest Medical Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 28,897, Mar. 8, 1993, abandoned. This application Jul. 16, 1993, Ser. No. 92,558

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—51 **23 Claims**

1. A bipolar electrosurgical device for coagulating and cutting tissue, said device comprising;

(a) an elongated tubular member having a proximal end, a distal end and a lumen extending therethrough;

(b) a first moveable forceps jaw and a second moveable forceps jaw extending from said distal end of said tubular member;

(c) a means for opening and closing said first and second moveable forceps jaws relative to one another;
(d) a first electrode on said first moveable forceps jaw and a second electrode on said second moveable forceps jaw;
(e) means for applying a RF voltage across said first and second electrodes for coagulating tissue contained between said first and second moveable forceps jaws;



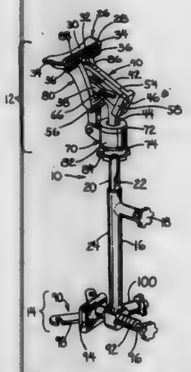
(f) a cutting instrument extending from said distal end of said tubular member; and
(g) a reciprocating means for advancing and retracting said cutting instrument through said tissue when contained between said jaws.

5,445,639
INTERVERTEBRAL REAMER CONSTRUCTION
Stephen D. Kuslich, Maplewood, and James D. Corin, Minneapolis, both of Minn., assignors to Spine-Tech, Inc., Minneapolis, Minn.
Continuation of Ser. No. 390,050, May 10, 1989, Pat. No. 5,062,845. This application Aug. 13, 1991, Ser. No. 744,528
Int. Cl.[6] A61B *17/56, 17/70*
U.S. Cl. 606—80 **7 Claims**



1. A surgical tool for use in spinal stabilization in a mammal spine having contiguous vertebrae, each vertebra including a body portion, said body portions being of generally predetermined dimension and spaced apart by a layer of tissue of generally predetermined dimension, said tool comprising:
a tool body including a distal end and an operator engaging end;
said distal end having external dimensions sized for said distal end to be inserted within an animal body and located against said layer;
cutting means carried on said distal end for cutting at least a portion of said layer and at least a portion of said body portions to form a chamber within said contiguous vertebrae and layer, and said chamber being sized greater than said external dimensions;
control means for controlling a depth of cut of said cutting means and including means for setting said cutting means at a first position wherein said cutting means are retained within said external dimensions and at least a second position wherein said cutting means are extended beyond said external dimensions to form said chamber;
said control means including a grip disposed on said operator engaging end of said body and mounted for rotational movement relative to said body;
connecting means for connecting said cutting means to said control means to move said cutting means between said first and said second positions upon rotation of said grip.

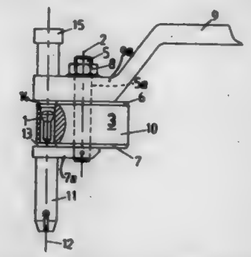
5,445,640
TIBIAL RESECTOR GUIDE
Todd S. Johnson; Richard A. Lane, both of Fort Wayne, Ind.; Thomas D. Petersen, San Diego, Calif.; Chuck Nichols, and John R. Howard, both of Addison, Ill., assignors to Zimmer, Inc., Warsaw, Ind.
Continuation of Ser. No. 805,696, Dec. 10, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 30,954
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—86 **5 Claims**



1. An adjustable head for an orthopaedic resector guide comprising an elongated fixed body, a slide carried by said elongated fixed body and a cutting guide pivotally connected to said fixed body and operatively associated with said slide, said slide being shiftable along said fixed body between first and second longitudinal positions relative to said fixed body, said cutting guide engaged with said slide so as to pivot relative to said fixed body as said slide is shifted between its first and second longitudinal positions.

5,445,641
STORAGE AND DISPENSING DEVICE FOR OSTEOSYNTHETIC FIXATION ELEMENTS
Robert Frigg, Davos-Dorf, and Rudolf Ambuhl, Filisur, both of Switzerland, assignors to Synthes, Paoli, Pa.
Continuation of Ser. No. 873,810, Apr. 27, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,166
Claims priority, application Switzerland, May 10, 1991, 01405/91
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—86 **9 Claims**

1. Apparatus for the storage and presentation of bone screws and like osteosynthesis elements comprising a housing having an upper plate and a lower plate, a shaft, a drum having a peripheral wall rotatably mounted on said shaft in said housing between said upper and lower plates, a plurality of substantially cylindrical storage holes peripherally arranged in said drum inside said peripheral wall, a plurality of substantially cylindrical guide holes having a diameter different from the diameter of said storage holes peripherally arranged about said drum inside said wall, and at least one hole in each of said upper and lower plates positioned so that by rotating said drum about said shaft one of said storage holes or one of said guide

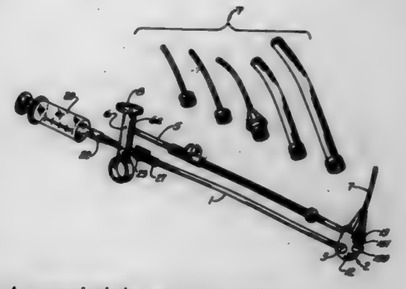


holes may be selectively and separated brought into alignment with said upper and lower plate holes.

5,445,642
METHOD FOR INSTALLING A FEMORAL COMPONENT
Donald E. McNulty, Warsaw; David C. Kelman, Winona Lake, both of Ind.; John R. Moreland, Pacific Palisades, Calif., and John E. Hamm, Warsaw, Ind., assignors to DePuy Inc., Warsaw, Ind.
Filed Sep. 1, 1992, Ser. No. 937,704
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—88 **19 Claims**

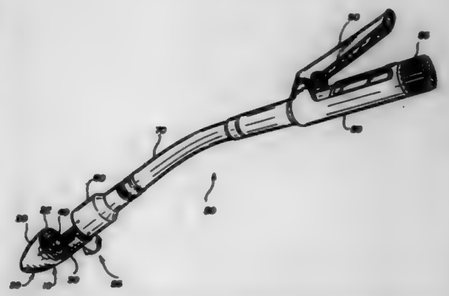
1. A method for reconstructing a femoral portion of a knee in a total knee replacement of both the medial and lateral condyles to locate the intercondylar notch and distal patellar groove of the reconstructed knee in a position generally coinciding with the natural intercondylar notch and distal patellar groove, said method comprising the steps of:
locating the position of the intercondylar notch;
resecting the distal medial and lateral condyles along a plane to form a resected distal surface with reference to the intercondylar notch wherein the distance from the resected surface of the distal end of the original lateral condyle is less than the distance from the resected surface of the distal end of the original medial condyle;
selecting a femoral component sized to place the lateral condyle of the femoral component at a distal position approximately equal to the distal position of the original lateral condyle; and
installing the selected femoral component on the resected distal surface whereby the installed femoral component has an intercondylar notch and distal patellar groove at the same general distal position as the original natural intercondylar notch and distal patellar groove being replaced.

5,445,643
CONNECTION MECHANISMS FOR UTERINE MOBILIZER
Konstantin L. Vaitchev, 43 Cosmic Drive, Don Mills, Toronto, Ontario, Canada M3B 3G1
Continuation of Ser. No. 31,375, Mar. 9, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 321,062
Int. Cl.[6] A61B *17/42*; A61M *29/00*
U.S. Cl. 606—119 **8 Claims**



1. A gynecologic instrument comprising:
a) a tube having a proximal end and a distal end;
b) a tube holder fitted in a releasable manner to the distal end of said tube;
c) a journal having an end attached to the proximal end of said tube, said journal comprising a pin; and
d) a head comprising an opening along a pivotal axis of the head with respect to said tube for receiving said journal and a groove for receiving said pin, said journal being pivotally fitted in said opening and said pin engaging said groove to pivotally connect said tube in a pivotally releasable manner to said head.

5,445,644
PYLOROPLASTY/PYLORECTOMY SHIELD
Joseph J. Pietrafitta, Minnetonka, Minn., and Ronald D. Adams, Cincinnati, Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Continuation of Ser. No. 869,981, Apr. 16, 1992, Pat. No. 5,355,897. This application Mar. 30, 1994, Ser. No. 220,074
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—151 **12 Claims**



1. A pyloroplasty/pylorectomy shield for a circular stapler comprising:
a base member having a proximal end and a distal end said proximal end having an arcuate outer periphery;
anvil means mounted to the proximal end of said member interior to said arcuate outer periphery;
attachment means mounted to the proximal end of said member for engagement with a circular stapler;

a shield member extending axially from a section of the arcuate outer periphery of the proximal end of said member; and

dilation means extending from the distal end of said member.

5,445,645

APPARATUS FOR LOCATING A BREAST MASS

Elie Debbas, 900 Southern Ave., SE., Suite 407, Washington, D.C. 20032

Division of Ser. No. 948,320, Sep. 22, 1992, Pat. No. 5,301,682, which is a division of Ser. No. 604,892, Oct. 29, 1990, Pat. No. 5,183,463, which is a continuation-in-part of Ser. No. 305,965, Feb. 3, 1989, Pat. No. 4,966,583. This application Jan. 14, 1994, Ser. No. 181,026

The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—192 15 Claims



1. A medical apparatus comprising:

a tubing having an open proximal end and an open distal end;

an expandable balloon portion positioned at a distalmost portion of said distal end of said tubing, said balloon portion being expandable around said tubing at said distalmost portion of said tubing and being inflatable to have a diameter of about 2 to 5 cm at a mass located deeply in the body tissue; and

a hollow needle having proximal and distal ends, said distal end being sharp, said needle being insertable through said proximal end of said tubing so that said distal end of said needle extends beyond said distal end of said tubing, with means for preventing the distal end of said needle from extending more than slightly beyond said distal end of said tubing.

5,445,646

SINGLE LAYER HYDRAULIC SHEATH STENT DELIVERY APPARATUS AND METHOD

Charles L. Euteneuer, St. Michael; Phlayne M. Fraser, Plymouth; Paul H. Burmeister, Maple Grove, and Dean A. Peterson, Minneapolis, both of Minn., assignors to Scimed Lifesystems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 141,269, Oct. 22, 1993. This application May 19, 1994, Ser. No. 245,919

Int. Cl.[6] A61M *25/00*

U.S. Cl. 606—198 10 Claims



1. A delivery system for implantation of a stent in a vessel, comprising:

elongate flexible catheter means having proximal and distal ends for delivering a self-expanding stent to a predetermined location in a vessel;

a self-expanding stent having proximal and distal ends, the stent surrounding the flexible catheter near the flexible catheter,s distal end, the stent being in a delivery configuration where the stent has a reduced radius along its entire axial length;

stent retaining and release means for retaining the stent in the delivery configuration and for deploying the stent, the stent retaining and release means comprising single layer sheath retaining means surrounding the stent for retaining the stent in its delivery configuration, and slipping sleeve means for releasing the stent to self-expand, the slipping sleeve means attached to the single layer sheath retaining means, the slipping sleeve means being formed of a double walled section of material folded over onto itself, and further including inflation means for inflating the slipping sleeve means with fluid, wherein increased fluid pressure in the slipping sleeve means causes the slipping sleeve means to move axially away from the stent, retracting the single layer sheath retaining means, thereby releasing the stent to self-expand.

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SPINAL ACUPRESSURE DEVICE

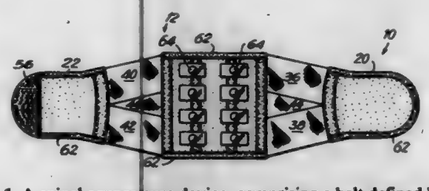
Daniel S. J. Choy, 892 River Bank Rd., Stamford, Conn. 06903

Continuation of Ser. No. 179,913, Jan. 11, 1994, abandoned, which is a continuation of Ser. No. 676,745, Mar. 28, 1991, Pat. No. 5,290,307. This application Jul. 25, 1994, Ser. No. 279,825

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[6] A61H *15/00*

U.S. Cl. 606—204 3 Claims



1. A spinal acupressure device, comprising a belt defined by a central panel adapted to be positionable against the lower back of the wearer overlying the L1–L4 spinous processes; elastic band elements affixed at their first ends to the opposed vertical margins of said central panel and terminating at their second ends in a pair of mutually-engageable end panels and a pair of elastic cinch elements having their first ends affixed to the opposed vertical margins of said central panel and having engagement means at their second ends thereof for retaining said cinch elements in a stretched and extended configuration when the belt is about the wearer, and a plurality of eight pressure-point generating means removably mounted to said central panels for applying acupressure to the L1 through L4 acupressure points of the wearer, each of said pressure-point generating means comprising a hemispheric projection.

5,445,648

STAPLES

Melvin Cook, 8 Saddle Ridge Rd., Hoboken, N.J. 07423

Continuation of Ser. No. 24,501, Mar. 2, 1993, Pat. No. 5,342,396. This application Apr. 15, 1994, Ser. No. 228,058

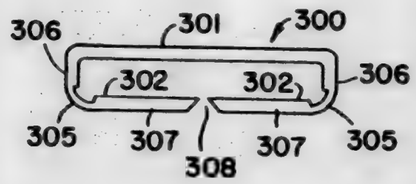
Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—219 2 Claims

1. An apparatus for internal surgery comprising:

a staple having a crown and two legs, each leg being substantially perpendicular to said crown, each leg including a tip and having a length, each leg having an elongated deformation zone, said elongated deformation zone being a region having a beginning and an end and extending along the length of said leg, said elongated deformation zone being sufficiently long that when said leg at said elongated deformation zone is deformed to a right angle said beginning and said end do not touch one another, said deformation zone also being more susceptible to bending than other regions of said less adjacent to said elongated deformation zone when said tips of said legs are forced toward each other;

staple pusher means for pressing against the crown and thereby pushing said legs of said staples into biological tissue; and



anvil means for exerting said forces on said tips of said legs parallel to said crown and in the direction of the other of said legs said force arising when said staple pusher means pushes said staple such that the tips of said legs penetrate through said biological tissue and against said anvil means in order to form a substantially right angle at said elongated deformation zones.

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Patent Not Issued For This Number

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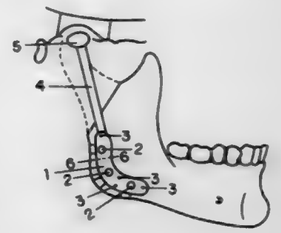
TEMPOROMANDIBULAR JOINT PROSTHESIS

Michael F. Nealis, 2829 Babcock Rd., Suite 607, San Antonio, Tex. 78229

Continuation-in-part of Ser. No. 673,971, Mar. 21, 1991, abandoned. This application May 20, 1993, Ser. No. 863,570

Int. Cl.[6] A61F *2/30*

U.S. Cl. 623—18 8 Claims



1. A temporomandibular prosthesis for replacement of the mandibular condyle of the temporomandibular joint having lateral and inferior aspects comprising:

an elongated plate configured and having openings therein for attachment to the mandible, said plate being shaped in such a manner that the lateral and inferior edges of said plate, when attached to the mandible, are aligned substantially parallel to the lateral and inferior aspects of the mandible, and wherein the openings interface only with the lateral surface of the mandible; and

an artificial condyle attached to an elongated neck portion, said neck portion extending from the upper end of said plate.

5,445,651

DETERGENT COMPOSITIONS INHIBITING DYE TRANSFER IN WASHING

Christiaan A. J. K. Thoen, Haasdonk; Adhemaracur Fredj, Brussels, and James P. Johnston, Overijse, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/00625, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO89/09813, PCT Pub. Date Oct. 19, 1989

PCT Filed Jan. 22, 1993, Ser. No. 256,595

Claims priority, application European Pat. Off., Jan. 31, 1992, 92870018

Int. Cl.[6] C11D *3/28, 3/30, 3/386, 3/395*

U.S. Cl. 8—111 24 Claims

1. A dye transfer inhibiting composition comprising:

A. a metallo catalyst present in an amount to provide from about 10^{-8} molar to 10^{-3} molar in a wash liquor, said metallo catalyst selected from

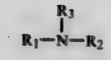
a) metallo porphin and water-soluble or water-dispersible derivatives thereof;

b) metallo porphyrin and water-soluble or water-dispersible derivatives thereof;

c) metallo phthalocyanine and water-soluble or water-dispersible derivatives thereof;

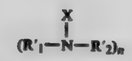
B. from about 0.0005 to about 10%, by weight of total composition, of an enzyme oxidation scavenger, wherein said enzyme oxidation scavenger is more readily oxidized than enzyme (D) but less readily oxidized than a dye present is said wash liquor, said enzyme oxidation scavenger is selected from the group consisting of

i) amines having the formula



wherein R_1, R_2, R_3 are either C_1–C_18 alkoxy groups, aryl groups, alkyl alcohols or aromatic compounds or where R_1, R_2, R_3 can be part of an aliphatic or aromatic rings structure containing nitrogen; and

ii) polyamines having the formula



wherein R'_1, R'_2 are either alkyl groups, aryl groups, alkoxy or alcohols, $n<1$ and X is alkyl, alkoxy, aryl,

C. an enzymatic system capable of generating hydrogen peroxide at a concentration of from 0.005 to 10 ppm/min in said wash liquor; and

D. a cleaning effective amount of an enzyme selected from the group consisting of protease lipase, amylase, cellulase, and mixtures thereof; provided that the residual activity of said enzyme (D) in the presence of said enzyme oxidation scavenger (C) is at least 60%.

20. A process for inhibiting dye transfer between fabrics during laundering operations involving colored fabrics, said process comprising contacting said fabrics with a laundering solution containing a dye transfer inhibition composition according to claim 1.

5,445,652

METHOD FOR THE TREATMENT OF CELLULOSIC FIBRES WITH AMINO FUNCTIONAL AND SILICONE POLYMERS

David L. Connell, Derby; Kenneth M. Huddlestone, Nottingham, and Anthony Sapala, Derby, all of England, assignors to Precision Processes Textiles, Derby, United Kingdom

Continuation of Ser. No. 803,898, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 442,268, Nov. 28, 1989, abandoned. This application Apr. 12, 1993, Ser. No. 45,314

Claims priority, application United Kingdom, Dec. 6, 1988, 8828414

Int. Cl.[6] D06M *13/325*

U.S. Cl. 8—196 10 Claims

1. A method for imparting a durable soft handle to cellulosic fibres which comprises treating the fibres with

(1) an amino functional polymer containing reactive groupings, and

(2) a silicone polymer bearing amino, thiol or epoxy functional groups capable of reacting with the reactive groupings of the amino functional polymer, said polymers (1) and (2) being applied as aqueous solutions or dispersions and either in the same step or in successive steps, wherein said amino functional polymer has been produced in a prior step by reacting

(a) a precursor amine-containing polymer selected from the group consisting of (i) amino amides produced by reacting a di- or polyfunctional acid with a polyamine containing three or more amino groups, (ii) condensation polymers produced by reacting dicyandiamide and a polyamine containing three or more amino groups, (iii) polyethylene imine, and (iv) addition polymers, prepared from ethylene oxide, acrylic acid, and acrylonitrile, into which amino functional groups have been introduced by subsequent reaction or by copolymerisation of a suitable comonomer already bearing an amino functional group; with

(b) a di or polyfunctional reactive species selected from the group consisting of epichlorohydrin, di- or polyepoxy compounds, polyhalogenated hydrocarbons, and short chain amine/epichlorohydrin prepolymers,

such that the cellulosic fibres have a softer handle than untreated fibres.

5,445,653

METHOD OF DYEING NYLON TO PRODUCE COLORFAST FIBER WHICH RESISTS FURTHER DYEING

Robert R. Hixson, Roswille, Ga.; Randy J. Rawlston, Hixson, and Hobert C. Sweatman, Soddy, both of Tenn., assignors to Roswille Yarn, Inc., Roswille, Ga.

Filed Mar. 28, 1994, Ser. No. 218,753

Int. Cl.[6] D06P *3/10, 3/82;* C09B *62/00*

U.S. Cl. 8—531 10 Claims

1. A method of dyeing cationic dyeable Type 6 and 66 nylon and light dyeable Type 66 nylon, so that the dyed fiber will resist taking on further dye and will have a high degree of wash and bleed fastness when the dyed fiber is subjected to a further high temperature aqueous dyebath, the method comprising the steps of:

providing a bifunctional fiber reactive dye solution capable of forming both ionic and covalent bonds with the amine groups of tile fiber, the dye solution having a pH no higher than 1.5,

applying the dye to the fiber with a degree of wet pick up exceeding 100% by weight of the fiber, contacting the fiber with an alkaline solution, and thereafter autoclaving the fiber.

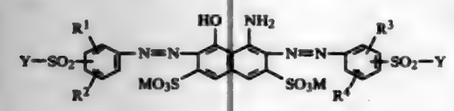
5,445,654

BLACK DYE MIXTURES OF FIBER-REACTIVE AZO DYES AND USE THEREOF FOR DYEING HYDROXY- AND/OR CARBOXAMIDO-CONTAINING FIBER MATERIAL

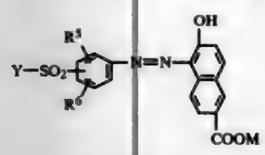
Kurt Hussong, Bad Soden am Taunus; Werner H. Russ, Flörsheim am Main, and Karl Krieger, Hünstetten, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 24, 1993, Ser. No. 157,679
Claims priority, application Germany, Nov. 28, 1992, 42 40 069.4; Jan. 16, 1993, 43 01 025.3
Int. Cl.[6] C09B 67/22, 67/24; D06P 1/384, 3/10
U.S. Cl. 8—546 10 Claims

1. A dye mixture for preparing black dyeings comprising one or more disazo dyes conforming to the formula (1) and one or more monoazo dyes conforming to the formula (2)



(1)



(2)

where

R^1, R^2, R^3, R^4, R^5 and R^6, identical to or different from each other, are each hydrogen, methyl, ethyl, methoxy, ethoxy, sulfo or carboxy,

Y is in each instance independently of the others vinyl, β-chloroethyl, β-thiosulfatoethyl or β-sulfatoethyl, and

M is hydrogen or an alkali metal, said mixture comprising an amount of from 50 to 95% by weight in respect of the disazo dye(s) of the formula (1) and of from 5 to 50% by weight in respect of the dye(s) of the formula (2).

5,445,655

AUXILIARY FOR TEXTILE WET FINISHING PROCESSES

Martin Kuhn, Dornach, Switzerland, and Philippe Ouziel, Altkirch, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 24, 1994, Ser. No. 200,981
Claims priority, application Switzerland, Mar. 2, 1993, 628/93
Int. Cl.[6] D06M 15/00; D06B 1/00; C09B 67/00
U.S. Cl. 8—555 9 Claims

1. A process for dyeing textile fiber material, which comprises dyeing said textile fiber material by an exhaust process using a dye liquor containing an anticrease agent, which anticrease agent is an acrylamide copolymer consisting essentially of 75 to 90 weight percent acrylamide monomer and 10 to 25 weight percent acrylic acid monomer, and which anticrease agent is present in an amount of less than 0.04 grams per liter of the dye liquor.

5,445,656

DIESEL FUEL EMULSION

Ernesto Marelli, Via Frisia 29, 22053 Merate (Province of Como), Italy

Continuation of Ser. No. 807,661, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 442,881, Nov. 29, 1989, abandoned. This application Sep. 16, 1993, Ser. No. 121,834
Claims priority, application Italy, Dec. 5, 1988, 22589/88
Int. Cl.[6] C10L 1/12
U.S. Cl. 44—301 1 Claim

1. A method of preparing a diesel fuel composition in the form of a stable emulsion, comprising the steps of:

a. preparing a mixture of an amount of diesel fuel, an amount of water equal to from 10 to 42% by weight of said amount of fuel, and an amount of lubricating antifreeze activator equal to from 0.5 to 2.0% by weight of said amount of fuel, by pouring the water and the activator in the diesel fuel, said lubricating antifreeze activator being selected from the group consisting in sorbitol mono-oleate, sorbitan mono-oleate and their mixtures;

b. passing said mixture through a turbine transducer which provides an electro-magneto-mechanical action by subjecting said mixture, in succession, to positive-pressure actions alternated with negative-pressure actions at high frequency, thereby obtaining a stable emulsion.

5,445,657

POLYFUNCTIONAL POLYISOBUTENES, THEIR PREPARATION, THEIR FORMULATION AND THEIR USE

Jean-Pierre Durand, Chatou; Daniel Binet, Rueil Malmaison; Patrick Gateau, Maurepas, and Roger Bregeat, Oiville sur Montcient, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 16, 1994, Ser. No. 261,910
Claims priority, application France, Jun. 16, 1993, 93 07354
Int. Cl.[6] C10L 1/18
U.S. Cl. 44—459 12 Claims

1. Isobutene-maleic anhydride-polyisobutene terpolymer composition free of chlorine and soluble in liquid hydrocarbon medium, characterized in that it is obtained by radical terpolymerization of isobutene, maleic anhydride, and polyisobutene having an average content of end double bonds of at least 50% and an average molecular weight in number between 400 and 10000.

5,445,658

GASIFICATION APPARATUS FOR A FINELY DIVIDED COMBUSTIBLE MATERIAL

Rainer Dürrfeld, Essen; Johannes Kowoll, Bochum; Eberhard Kuske; Hans Niermann, both of Essen; Gerhard Wilmer, Hattingen, and Joachim Wolff, Essen, all of Germany, assignors to Krupp Koppers GmbH, Essen, Germany

Filed Feb. 24, 1994, Ser. No. 201,365
Claims priority, application European Pat. Off., Mar. 16, 1993, 93104290
Int. Cl.[6] C01J 3/48, 3/52, 3/84, 3/86
U.S. Cl. 48—62 R 10 Claims

1. Gasification apparatus for gasification of a finely divided combustible material under pressure to make a product gas in a single operation, the gasification apparatus comprising

a gasification reactor having an outlet section from which a crude gas issues during a gasification of the finely divided combustible material;

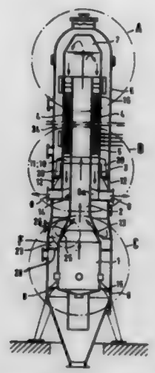
a quenching pipe positioned above the gasification reactor for receiving the crude gas issuing from the gasification reactor and for guiding a gas flow including the crude gas, the quenching pipe having an inlet section for receiving the crude gas;

a convection-heated boiler including a boiler housing and convection-heated surface elements for receiving heat transferred from the gas flow, the convection-heated surface elements being supported by the quenching pipe and the boiler housing and the convection-heated surface elements and the boiler housing surrounding the quenching pipe;

a pressurized vessel containing the gasification reactor, the quenching pipe and the convection-heated boiler, the preasurized vessel surrounding concentrically the quenching pipe and the gasification reactor being supported at anchoring points in a lower portion of the pressurized vessel so as to be coaxial to the quenching pipe;

gas flow guide means for conducting said gas flow into the convection-heated boiler from the quenching pipe, the gas flow guide means being accommodated in a portion of the boiler housing extending above the quenching pipe and the gas flow guide means connecting said quenching pipe and said convection-heated boiler so that the gas flow is conducted through the convection-heated boiler from the quenching pipe by the gas flow guide means;

a gas outlet device located between the gasification reactor



and the convection-heated boiler, through which the gas flow is conducted from said boiler housing and from said pressurized vessel;

load bearing members above the gas outlet device on which the quenching pipe and the boiler housing are supported, the load bearing members being provided with gas conducting openings and being supported at other anchoring points on the pressurized vessel; and

quenching gas guide means for conducting a quenching gas into said quenching pipe to form the gas flow including the crude gas and the quenching gas, the quenching gas guide means including a circumferential quenching gas inlet gap between the outlet section of the gasification reactor and the inlet section of the quenching pipe dimensioned to provide a circumferential thermal expansion compensating gap, so that a portion of the quenching pipe under the load bearing members and a portion of the gasification reactor above the anchoring points of the gasification reactor can have different thermal expansion properties.

5,445,659

PARTIAL OXIDATION OF PRODUCTS OF LIQUEFACTION OF PLASTIC MATERIALS

Motazimur R. Khan, Wappingers Falls; Christine C. Albert, Peekskill, and Stephen J. DeCanio, Montgomery, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 4, 1993, Ser. No. 130,922
Int. Cl.[6] C10J 3/46
U.S. Cl. 48—197 R 13 Claims

1. A partial oxidation process consisting essentially of:

1) granulating solid carbonaceous plastic material;

2) mixing about 25 to 48 parts by wt. of the granulated solid carbonaceous plastic material from (1) with about 4 to 50 parts by wt. of a pumpable liquid hydrocarbonaceous solvent, and about 5 to 48 parts by wt. of granulated solid carbonaceous fuel to produce a plastic-containing sludge having a solids content in the range of about 45 to 96 wt. %;

3) liquefying the plastic-containing sludge from (1) in a closed autoclave at a temperature in the range of about 500° F. to 1500° F. and a pressure in the range of 150 psig to 2700 psig while said plastic-containing sludge is in contact with hydrogen gas in the amount of about 0.1 to 1.0 parts by wt. of hydrogen gas per part by weight of plastic-containing sludge; wherein said reaction is continued until a pumpable slurry is produced comprising the following materials in weight percent at room temperature and pressure:

a) a slurry comprising solubilized plastic, solubilized solid carbonaceous fuel and hydrocarbonaceous liquid solvent	50 to 95
b) unconverted organic and inorganic material	5 to 50

4) separating a gas mixture comprising H_2, CO, CO_2, C_1–C_6 gases, H_2O, and a trace of H_2S from the autoclave in (3), thereby leaving a pumpable slurry;

5) fractionating the degassed pumpable slurry from (4) in a distillation zone to produce:

a) a hydrocarbonaceous distillate comprising a mixture of C_5 to C_{30} compounds selected from the group consisting of naphthenes, paraffins, aromatics, olefins, and mixtures thereof, and wherein said distillate has an initial atmospheric boiling point in the range of about 130° F. to 500° F., a viscosity in the range of about 100 to 1500 centipoise at room temperature, and a specific gravity of about 0.7 to 1.1;

b) a bottoms stream comprising aromatic and paraffinic hydrocarbonaceous materials containing C_{30} or higher compounds in admixture with inorganic material from said plastic and solid carbonaceous fuel; wherein said bottoms stream has an initial boiling point in the range of about 300° F. to 1500° F., a viscosity in the range of about 1500 to 15,000 cP at room temperature, a solids content in the range of about 60 to 90 wt. %, a specific gravity of about 0.9–1.3; and

6) reacting by partial oxidation in a free-flow partial oxidation gasifier with a free-oxygen containing gas in the presence of a temperature moderator said bottoms stream (5) (b) to produce raw synthesis gas, fuel gas or reducing gas and nonhazardous slag.

5,445,660

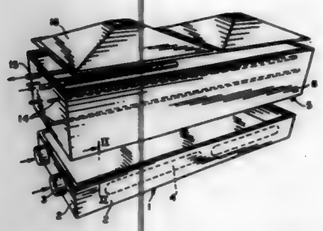
APPARATUS FOR CLEANING GASES WITH THE AID OF ORGANIC FILTRATION MATERIAL

Boano Koers, Amersfoort, Netherlands, assignor to N.V. Vuilafvoer Maatschappij Vam, Amsterdam, Netherlands

Filed Feb. 23, 1994, Ser. No. 200,157
Claims priority, application Netherlands, Mar. 3, 1993, 9300385
Int. Cl.[6] B01D 53/00
U.S. Cl. 55—222 9 Claims

1. Apparatus for cleaning gases comprising a chamber positioned moveably on top of an air supply room, said air supply room having a bottom, four walls extending from the bottom, each of said air supply room walls having a top edge and a bottom edge, said chamber having four walls, each of said chamber walls having a bottom edge and a top edge, said chamber positioned on top of the air supply room such that the top edges of the air supply room meet the bottom edges of the chamber, a grating floor located inside the chamber, a layer of a gravel on said grating floor, a layer of organic biofiltration material on top of said gravel, a plurality of tubes extending through at least one vertical wall of the chamber, said tubes

extending from the inside to the outside of the chamber such that each said tube extends to the outside of the chamber for connection to a water supply, wherein at least one tube is situated above the biofiltration material and at least one tube is situated at a location that is within the biofiltration material, each of said tubes having a nozzle located inside the chamber



for discharging water into the chamber, a means for introducing the gases from outside the air supply room into the air supply room, a means for preheating the gases to be cleaned comprising tubing extending from the chamber to the air supply room and a means for discharging the cleansed gas from the chamber.

5,445,661

MELTING END FOR GLASS MELTING FURNACES WITH SOLDIER BLOCKS AND OPERATING PROCESS THEREFOR

Adolf Knauer, Lohr am Main, Germany, assignor to Beteiligungen Sorg GmbH & Co. KG, Lohr am Main, Germany

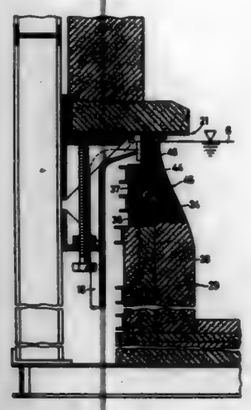
PCT No. PCT/EP91/02260, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO92/10434, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 29, 1991, Ser. No. 50,442

Claims priority, application Germany, Dec. 12, 1990, 40 39 601.0

Int. Cl.[6] C03B *5/44*

U.S. Cl. 65—17.1 **16 Claims**



1. In a glass melting furnace, the combination comprising: a tank having an end chamber for containing a glass melt having an established level line, said tank having a wall and a tank bottom, said tank having soldier blocks arranged side by side which are of a refractory, mineral material and form said wall of the end chamber, said soldier blocks having an inner side facing inwardly of the end chamber and an outer side facing outwardly of the end chamber, and said soldier blocks having a rectangular cross section at least in a bottom region thereof at the tank bottom, and said soldier blocks reaching upwardly above said established level line of the glass melt, and said combination including a plurality of cooling air nozzles which are directed in a direction of the outer side of a plurality of the soldier blocks, said soldier blocks individually having on their outer side recesses diminishing a thickness cross section in thickness direction, as corrosion of soldier blocks progresses refractory supplementary elements being insertable into said recesses, wherein each of said recesses is disposed at an upper end of each of said soldier blocks and each of said soldier blocks is step-shaped with at least two steps with a horizontal cross section of the soldier blocks being reduced abruptly in an upwardly direction, and said combination including said supplementary elements for steps of said soldier blocks, said supplementary elements being complementary to portions of said recesses and being disposed successively in said portions of said recesses, and said supplementary elements being of a material corrosion-resistant to glass.

5,445,662

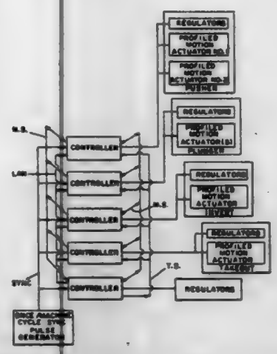
GLASS CONTAINER FORMING MACHINE WITH A CONTROLLER FOR CONTROLLING CONTROLLERS

George T. Peterson, Bristol; Timothy J. Liska, West Simsbury, both of Conn.; Can Nguyen, Longmeadow, Mass.; John W. McDevitt, Vernon, Conn.; Kevin N. O'Connor, Belchertown, Mass., and George J. Collins, Somers, Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Continuation of Ser. No. 992,717, Dec. 18, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,677

Int. Cl.[6] C03B *9/40*

U.S. Cl. 65—158 **10 Claims**



1. A machine for forming glass containers comprising

a plurality of peripherals, and

a plurality of controllers each controlling at least one of said peripherals, each of said controllers including

a library of machine states in which controlled peripherals can be operated, and

means for operating in a machine state selected from said library,

one of said controllers additionally including

means for selecting the machine state of said library which is to operate in each of the other controllers, and

means for advising each of said other controllers that operation is going to be switched from one machine state in said library to a second machine state in said library, and

each of said other controllers further including means, responsive to said advising means, for informing said one controller whether or not operation can be shifted from said one machine state to said second machine state.

5,445,663

FERTILIZER COMPOSITION COMPRISING DISPERSIONS OR SOLUTIONS OF NUTRIENT COMPOUNDS AND METHOD FOR ITS MANUFACTURE

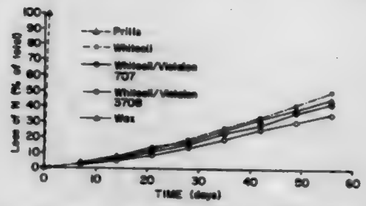
Arne Carlsen, Skien; Erik C. Nygaard, Porsgrunn; Erik Syrstad, Neshru, all of Norway, and Tom Consoli, Lafayette, Calif., assignors to Norsk Hydro a.s., Oslo, Norway

Continuation of Ser. No. 855,790, Mar. 23, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 95,993

Claims priority, application Norway, Feb. 28, 1992, 920788

Int. Cl.[6] C05C *1/00, 4/00, 11/00*

U.S. Cl. 71—28 **11 Claims**



1. A slow release fertilizer composition comprising a solution or dispersion of nutrient compounds selected from the group consisting of urea, complex fertilizer (NPK), nitrates, phosphates, and mixtures thereof, characterized in that the solution/dispersion constitutes the discontinuous phase of a stable emulsion and that the volume phase ratio, discontinuous phase: total volume is in the range of 0.80–0.95, and that the fertilizer composition additionally may contain 0–60 weight % solid nutrient selected from the group consisting of urea, complex fertilizer (NPK), nitrates, phosphates, and mixtures thereof, that the continuous phase is an oil or hydrocarbon component which consists essentially of mineral, vegetable or animal oils, wax or mixture of these, and that the emulsion comprises at least one agronomically and environmentally acceptable w-i-o emulsifier.

5,445,664

Patent Not Issued For This Number

5,445,665

MACHINABLE BRASS COMPOSITIONS

Paul E. Matthews, Lawrenceville, N.J., and Thomas W. Pelletiers, II, Bethlehem, Pa., assignors to United States Bronze Powders, Incorporated, Flemington, N.J.

PCT No. PCT/GB92/00154, § 371 Date Sep. 29, 1993, § 102(e) Date Sep. 29, 1993, PCT Pub. No. WO92/13110, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 28, 1992, Ser. No. 94,017

Claims priority, application United Kingdom, Jan. 29, 1991, 9101828

Int. Cl.[6] C22C *9/04*

U.S. Cl. 75—255 **19 Claims**

1. A brass powder composition consisting essentially of:

(a) 10–30% wt. zinc;

(b) 70–90% wt. copper;

(c) 0.1–1.5% wt. graphite; and

(d) 0.1–2.4% wt. bismuth pre-alloys selected from the group consisting of bismuth-tin and bismuth-copper, wherein bismuth is present in an amount of up to 2% wt. on an elemental basis,

provided that said brass powder composition contains less than 2% wt. lead.

5,445,666

METHOD FOR PRODUCING SMALL METAL BALLS APPROXIMATELY EQUAL IN DIAMETER

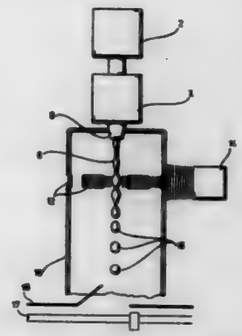
Walter Peschka, Sindelfingen; Constantin Carpetis, Wolfschlugen, and Gottfried Schneider, Stuttgart, all of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, Germany

Filed Dec. 14, 1993, Ser. No. 169,966

Claims priority, application Germany, Dec. 17, 1992, 42 42 645.6

Int. Cl.[6] B29B *9/00*; B22F *9/00*

U.S. Cl. 75—335 **13 Claims**



1. A method for producing at least approximately ball-shaped metallic particles at least almost equal in diameter, comprising the steps of:

generating a continuous stream of liquid metal surrounded by a gas atmosphere;

exciting compressional vibrations in said gas atmosphere such that said compressional vibrations act locally on said stream of liquid metal, whereby cross-sectional constrictions are formed in said stream at a distance from each other in a longitudinal direction of said stream, said constrictions leading to the dissection of said stream into segments, said segments of said dissected stream adopting a ball shape due to the surface tension of said liquid metal; and

cooling said segments in order to solidify said liquid metal.

5,445,667

METHOD FOR REDUCING MATERIAL CONTAINING METAL OXIDE IN SOLID PHASE

Rolf Malmström, Helsinki, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/FI93/00020, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/15232, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 21, 1993, Ser. No. 256,575

Claims priority, application Finland, Jan. 24, 1992, 920310

Int. Cl.[6] C21B *13/02*

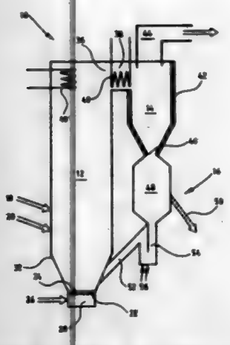
U.S. Cl. 75—448 **20 Claims**

1. A method of reducing material containing metal oxide in solid phase in a circulating fluidized bed reactor having a fluidization chamber with an upper part and a lower part, comprising the steps of:

(a) introducing oxygen-containing gas, fluidizing gas, material containing metal oxide, and an excess of coal or coke for the reduction of the material containing metal oxide, into the fluidized bed reactor fluidization chamber so as to generate heat to maintain a temperature of greater than 850° C. in the fluidization chamber;

(b) exhausting flue gases with entrained pre-reduced material particles containing metal oxide and coke through a gas outlet in the upper part of the fluidization chamber;

(c) separating the particles from the exhausted flue gases;
(d) exposing the separated particles from step (c) to conditions favorable for the formation of carbide, so that carbide does form;



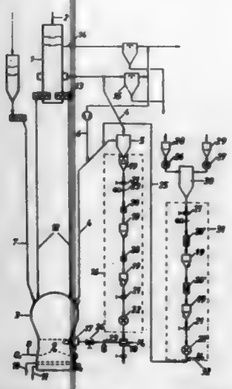
(e) prior to step (d), cooling the particles to a temperature equal to or less than 850° C.; and
(f) after step (d), returning the separated particles, with formed carbide, to the lower part of the fluidization chamber.

5,445,668

METHOD OF PRODUCING MOLTEN PIG IRON OR MOLTEN STEEL PRE-PRODUCTS

Leopold W. Kepplinger, Leonding; Panajiotis Matzawrakos; Johannes Schenk, both of Linz, and Dieter Siuka, Neuhofen, all of Austria, assignors to Voest-Alpine Industrieanlagenbau G.m.H, Linz, Austria

Filed May 20, 1993, Ser. No. 66,505
Claims priority, application Austria, May 21, 1992, 1054/92
Int. Cl.[6] C22B *7/02*
U.S. Cl. 75—491 **14 Claims**



1. In a method of producing molten pig iron or molten steel pre-products from a charge of lumpy, iron-ore-containing substances, wherein said substances are reduced by means of a reducing gas in a reduction shaft furnace having a reduction zone so as to obtain reduced iron particles, wherein said reduced iron particles are melted in a melter gasifier under supply of coal and oxygen-containing gas under simultaneous formation of a reducing gas, and wherein said reducing gas is supplied to the reduction zone of the shaft furnace, the improvement comprising charging at least one of fine ore and ore dust additionally to said charge of substances, said at least one of said fine ore and ore dust being supplied with solid carbon carriers to at least one dust burner coupled to said melter gasifier and being reacted in a substoichiometric combustion reaction favorable to the formation of CO.

5,445,669

MEMBRANE FOR THE SEPARATION OF CARBON DIOXIDE

Makoto Nakabayashi; Kazuhiro Okabe; Takayuki Mishima; Hiroshi Mano, all of Osaka, and Kenji Haraya, Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd.; Director-General of Agency of Industrial Science and Technology and Research Institute of Innovative Technology for the Earth

Filed Aug. 9, 1994, Ser. No. 288,196
Claims priority, application Japan, Aug. 12, 1993, 5-220651; Oct. 19, 1993, 5-284436
Int. Cl.[6] B01D *53/22, 69/08*
U.S. Cl. 96—5 **11 Claims**

1. A membrane for the separation of carbon dioxide, comprising a hydrogel film of a cross-linked copolymer of vinyl alcohol with acrylic acid and/or a salt thereof, said copolymer being impregnated with an aqueous solution containing a carbon dioxide carrier dissolved therein.

5,445,670

ABRASIVE-CONTAINING SURFACE-FINISH COMPOSITION

Thomas C. Each, Orange, and Mohammad Nilchian, Woodland Hills, both of Calif., assignors to Blue Coral, Inc., Cleveland, Ohio

Filed Jun. 8, 1994, Ser. No. 255,782
Int. Cl.[6] C09G *1/02, 1/16*
U.S. Cl. 106—3 **21 Claims**

1. A surface-finish composition, comprising: at least one acrylic polymer and an effective amount of abrasive particulates to provide said composition with enhanced non-slip characteristics, said abrasive particulates having an average particle size of up to about 100 microns.

5,445,671

OFFSET PRINTING INK

Gerhard Herget, Ober-Ramstadt; Wolfgang Hechler, Lautertal; Brigitte Husseini, Darmstadt; Heinz Mohr, Speyer, and Rudiger Smolka, Bensheim, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

Filed May 24, 1994, Ser. No. 248,014
Claims priority, application Germany, Jul. 9, 1993, 43 22 997.2
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—20 R **14 Claims**

1. In an offset printing ink comprising a binder, a pigment and optionally additives, the improvement wherein the ink contains 5–20% by weight of a pearlescent pigment, and has a viscosity of <12 Pas at 25° C.

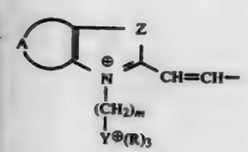
5,445,672

LAKED TRIS- OR TETRACATIONIC POLYMETHINE DYES

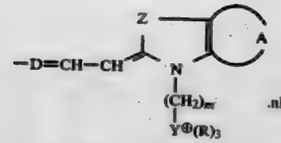
Friedrich Closs, Frankenthal; Bernhard Albert, Maxdorf, and Henning Wiesmüd, Neulussheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 7, 1994, Ser. No. 224,297
Claims priority, application Germany, Apr. 8, 1993, 43 11 723.6; Aug. 11, 1993, 43 26 889.7
Int. Cl.[6] C09B *63/00*
U.S. Cl. 106—402 **5 Claims**

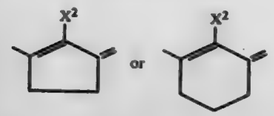
1. Laked tris- or tetracationic polymethine dyes of the general formula I



I



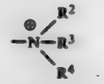
where the variables have the following meanings:
A is the radical of a fused-on benzene or naphthalene nucleus, which may carry up to three of the following substituents: C_1–C_{12}-alkyl groups, whose carbon chain may be interrupted by oxygen atoms in ether function, C_1–C_{12}-alkoxy, phenyl, phenoxy, phenylthio, cyano, amino, mono(C_1–C_{12}-alkyl)amino, di(C_1–C_{12}-alkyl)amino, hydroxyl or halogen,
Y is nitrogen or phosphorus,
$(R)_3$ is three identical or different members of the following set of radicals: C_1–C_{18}-alkyl groups, whose carbon chain may be interrupted by oxygen atoms in ether function and which may carry up to three of the following substituents: carboxyl, C_1–C_4-alkanoyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkanoylamino, C_1–C_4-alkoxycarbonylamino, acryloyloxy, methacryloyloxy, phenyl, amino, cyano, hydroxyl or halogen, and phenyl or C_5–C_7-cycloalkyl groups, which may each carry up to three of the following substituents: C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen,
Z is $-NR^1-$, $-O-$, $-S-$, $-C(CH_3)_2-$ or $-CH=CH-$, where R^1 is an alkyl, phenyl or C_5–C_7-cycloalkyl radical as defined for R,
D is $-CX^1=$, $-CH=CX^1-CH=$,



where the variables have the following meanings:
X^1 is hydrogen, chlorine, bromine or C_1–C_6-alkyl,
X^2 is chlorine, cyano, C_1–C_{12}-alkoxy or C_1–C_{12}-alkylthio; aryloxy or arylthio, which may each carry up to five of the following substituents: amino, halogen, nitro, cyano, isocyanato, isothiocyanato, hydroxyl, carboxyl, acryloyloxy, methacryloyloxy, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_1–C_{12}-alkoxy, C_1–C_{12}-alkanoyl, C_1–C_{12}-alkanoyloxy, C_1–C_{12}-alkoxycarbonyl, C_1–C_{12}-alkoxycarbonyloxy, mono(C_1–C_{12}-alkyl)amino or di(C_1–C_{12}-alkyl)amino, wherein the carbon chain of the alkyl radicals may be interrupted by oxygen atoms in ether function and the alkyl radicals of the amino groups may be substituted by hydroxyl;
an amino group



or ammonio group



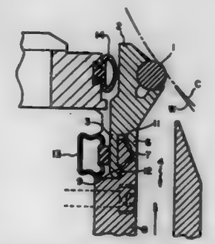
where R^2, R^3 and R^4 are independently of one another C_1–C_{12}-alkyl, whose carbon chain may be interrupted by oxygen atoms in ether function, or aryl, one of the radicals may in each case also be hydrogen, and R^2 and R^3 may also be joined together to form a 5- or 6-membered ring containing the nitrogen atom with or without further heteroatoms,
$Het^{\ominus}$ is the equivalent of a heteropolyacid anion,
m is from 1 to 10, and
n is 3 or 4.

5,445,673

DOSING SYSTEM

Richard Bernert, Giengen, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany

Filed Jul. 8, 1994, Ser. No. 273,030
Claims priority, application Germany, Jul. 10, 1993, 43 23 166.7; Aug. 16, 1993, 43 27 544.3
Int. Cl.[6] B05C *11/02*
U.S. Cl. 118—123 **7 Claims**



1. A dosing system for applying coating mixture to material webs which are passed over at least one roll, compriaing:
a doctor element coordinated with the roll;
a bed supporting the doctor element;
a holder supporting the bed, said holder having two sides and having a bounding surface at one of said sides;
a mounting wall on which one side of the holder is held, said mounting wall being configured such that a portion of said mounting wall defines a bounding surface of a mouth channel for the coating mixture;
the other side of said holder being disposed opposite the mounting wall, and including on an end of said other side a clamping or mounting surface, said one side of the holder being configured such that a protuberance is formed on said one side thereof, said protuberance having two surfaces, one of said surfaces being generally flush with said holder bounding surface and said mounting wall bounding surface.

5,445,674

DEVICE FOR DISPENSING THIXOTROPIC SAUCE ONTO PIZZA CRUSTS

Jimmy A. DeMars, Hugo, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

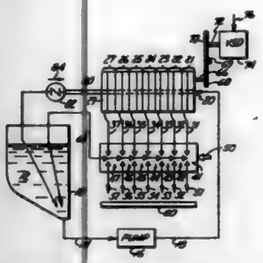
Continuation of Ser. No. 847,944, Mar. 6, 1992, abandoned. This application Jun. 16, 1994, Ser. No. 260,555
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—669 **14 Claims**

1. Apparatus for dispensing a thixotropic sauce onto a plurality of pizza crusts arranged to move under a dispensing position and to assure continuous motion of the sauce to prevent

flow change due to the thixotropic property of the sauce comprising:

positive displacement pump means connected to a supply of sauce to move the sauce therefrom to a first output;

valve means having "on" and "off" conditions and an input connected to the first output to receive the sauce, the valve having a dispersing port located at the dispensing position to deposit sauce onto a pizza crust thereunder when the valve is in the "on" condition and the valve having a first return port connected to return sauce to the supply when the valve is in the "off" condition to assure continuous sauce motion and a second return port connected between the output and the supply to constantly return sauce to the supply independently from the first return means when the valves are in both the "on" condition and "off" condition to further assure continuous sauce motion, wherein the second return port includes flow restriction means to provide a back pressure to assure continuous flow to the valve means;



conveyor means operable to move the crust to the dispensing position;

position sensing means operable to produce a signal indicative of the position of the crust with respect to the dispensing position;

computer means to receive the signal indicative of position and operable to control the "on" condition of the valve means in accordance therewith;

connecting means to connect the conveyor means to the computer means so that the speed of the conveyor means is controlled by the computer means;

speed sensing means to produce an output signal indicative of the speed of the conveyor means and to supply the output signal to the computer means; and

crust and sauce sensing means for supplying an output signal indicative of the number of pizza crusts and the quantity of sauce and connecting it to the computer means.

5,445,675

SEMICONDUCTOR PROCESSING APPARATUS

Masao Kuboderu; Shigeru Kasai, and Hatsuo Ozada, all of Yamanashi, Japan, assignors to Tel-Varian Limited, Nirasaki, Japan

Filed Jul. 9, 1993, Ser. No. 87,873

Claims priority, application Japan, Jul. 9, 1992, 4-205908; Jan. 22, 1993, 5-027404

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **17 Claims**

1. A semiconductor processing apparatus for processing a substrate while being optically heated, said substrate having a main surface to be processed and a rear surface reverse to said main surface, comprising:

a processing chamber;

supporting means, provided in said processing chamber, for supporting said substrate;

means for substantially partitioning an interior of said processing chamber into first and second spaces, said main surface of said substrate being exposed in said first space;

means for introducing a process gas for processing said main surface of said substrate into said first space;

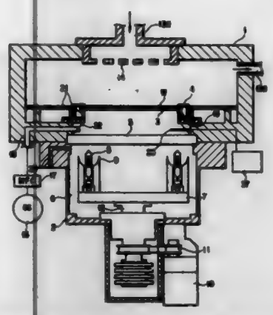
exhausting means, connected to said first space, for setting said processing chamber to a vacuum atmosphere;

means for supplying inactive gas to said second space such that said second space has a pressure higher than that of said first space;

a light source, provided outside said processing chamber so as to be opposite to said rear surface of said substrate, for emitting light for heating said substrate, said light source comprising a plurality of lamps arranged on a rotatable table;

a power supply for supplying electrical power to said light source so as to emit said light;

a window plate, provided to be opposite to said light source, and forming a part of a wall of said processing chamber,



said window plate transmitting said light emitted from said light source to pass therethrough;

detecting means for detecting energy of transmitted light having passed through said window plate, said detecting means having a detection terminal provided between said window plate and said substrate in said second space;

comparing means for comparing an observed value of energy of said transmitted light detected by said detecting means with a reference value representing energy of said transmitted light in an initial state of said window plate; and

controlling means for estimating a state of said window plate from a comparative result between the observed value and the reference value obtained by said comparing means, and selectively stopping the power supply to said light source from said power source.

5,445,676

METHOD AND APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICES

Mikio Takagi, Kanagawa, Japan, assignor to F.T.L. Co., Ltd., Kanagawa, Japan

Division of Ser. No. 964,609, Oct. 22, 1992, Pat. No. 5,387,557. This application Oct. 12, 1994, Ser. No. 321,745

Claims priority, application Japan, Oct. 23, 1991, 3-302718; Feb. 2, 1992, 4-059319; Sep. 7, 1992, 4-264183.

Int. Cl.[6] C23C *16/00*

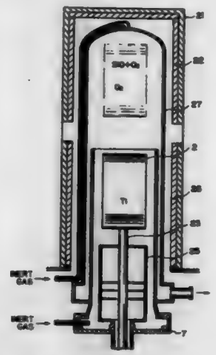
U.S. Cl. 118—719 **22 Claims**

1. An apparatus for manufacturing semiconductor devices for processing one or more semiconductor wafers therein comprising:

a reactor body having an inner space and having a cylindrical outer surface portion, said outer portion extending vertically, said reactor body having an open bottom end portion;

a first electric heating means for establishing a first region of the vertical thermal reactor, said first region extending over a predetermined distance;

a second electric heating means for establishing a second region of the vertical thermal reactor, second region situated above the first region, extending over a predetermined distance and having a second temperature higher than the first temperature;



means for moving the wafer or wafers from the first to second regions and then from the second to first regions and holding the wafer or wafers in these regions for processing; and,

a gas-inlet for introducing reaction gas or inert into said inner space of the body.

5,445,677

APPARATUS FOR MANUFACTURING SEMICONDUCTOR AND METHOD OF MANUFACTURING SEMICONDUCTOR

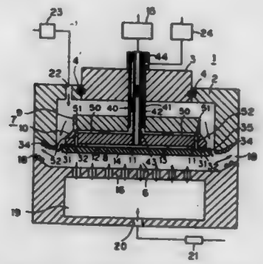
Yoshinobu Kawata, and Toshinobu Banjo, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1994, Ser. No. 241,572

Claims priority, application Japan, May 21, 1993, 5-120009

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—724 **13 Claims**



1. An apparatus for manufacturing semiconductor, in which a predetermined treatment is performed to a major treatment surface of a semiconductor substrate by feeding reactive gas, comprising:

(a) a reaction container for defining therein a reaction chamber which is capable of containing said semiconductor substrate, and further defining a reactive gas inlet hole which opens toward said reaction chamber to feed said reactive gas into said reaction chamber, an evacuation hole which opens toward said reaction chamber to evacuate gas used for reaction from said reaction chamber;

(b) substrate holding means fixed in said reaction container, for defining a substrate holding surface to hold said semiconductor substrate within said reaction chamber by getting in contact with a reverse major surface of said major treatment surface of said semiconductor substrate, a pocket surrounded by said substrate holding surface to hold said semiconductor substrate by suction force, and also defining an inert gas jetting hole in a region surrounding said pocket to jet inert gas out;

(c) reactive gas feeding means conducting to said reactive gas inlet hole, for feeding said reactive gas to said reactive gas inlet hole;

(d) pressure reducing means conducting to said pocket, for reducing pressure in said pocket;

(e) inert gas feeding means conducting to said inert gas jetting hole, for feeding said inert gas to said inert gas jetting hole; and

(f) heating means fixedly coupled to said substrate holding means, for heating said substrate holding means,

wherein said substrate holding means and said heating means define respective contact faces and are in contact with each other on said contact faces, wherein said substrate holding means defines therein a first inert gas jetting passage for connecting said inert gas feeding means and said inert gas jetting hole, and wherein a second inert gas jetting passage conducting to said first inert gas jetting passage for connecting said inert gas feeding means and said inert gas jetting hole is provided between said contact faces.

5,445,678

SUBGRANULAR CRYSTALLINE STARCH AS FAT SUBSTITUTE

Roy L. Whistler, 320 Laurel Dr., West Lafayette, Ind. 47906

Continuation of Ser. No. 706,894, May 29, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 86,227

Int. Cl.[6] C08B *30/12;* **A23L** *1/05*

U.S. Cl. 127—67 **7 Claims**

1. A method for preparing a starch composition useful as a fat substitute in reduced calorie foods, said method comprising the steps of partially hydrolyzing granular starch to form microporous starch granules, chemically modifying the starch to cross-link it by reacting it with a bifunctional starch reactive cross-linking agent selected from the group consisting of sodium trimetaphosphate, dicarboxylic acid derivatives, particularly C_2–C_6 dicarboxylic acids including maleic and glutaric acid, phosphorus oxychloride, epichlorohydrin and β,β-dichlorodiethyl ether, or to modify its surface characteristics by adsorption of surface modifying agents selected from the group consisting of methylcellulose, polyvinyl alcohol, poly-N-vinyl-2-pyrrolidone, polyacrylamide, carboxymethylcellulose, and carrageenan, or by reaction of the starch with a starch reactive etherifying or esterifying agent which forms a covalent bond with the starch, and disintegrating the microporous starch granules to form subgranular fragments of crystalline starch having an average particle size of about 0.1 to about 10 microns.

5,445,679

CLEANING OF POLYCRYSTALLINE SILICON FOR CHARGING INTO A CZOCHRALSKI GROWING PROCESS

Richard L. Hansen, and Mohsen Banan, both of St. Louis, Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Dec. 23, 1992, Ser. No. 996,037

Int. Cl.[6] B08B *7/00*

U.S. Cl. 134—1 **21 Claims**

1. A process for cleaning polycrystalline silicon which has been stored or shipped in a container comprising an organic compound, comprising:

removing the polycrystalline silicon from the container,

exposing the polycrystalline silicon which has been removed from the container to an oxidizing medium to oxidize

organic compounds which are on the surface of the polycrystalline silicon, and

carrying the oxidized compounds away from the polycrystalline silicon surface.

5,445,680

METHOD OF DECORATING METAL SURFACES

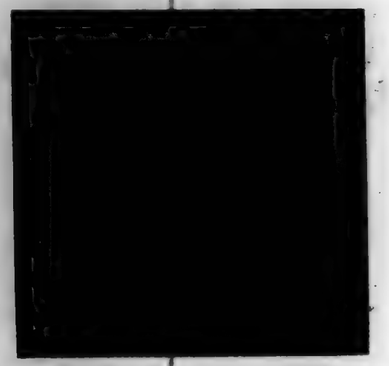
C. Richard Hamilton, Arvada, Colo., assignor to Golden Technologies Company, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 849,424, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 624,140, Dec. 7, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,239

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[6] B08B *3/08*; B05D *3/06*

U.S. Cl. 134—26 19 Claims



1. A method for decorating a metal surface comprising:

a) contacting a metal surface having oils thereon with a substantially neutral pH finishing agent to remove substantially all oils from said metal surface, where in said terpene-containing finishing agent does not substantially each said metal surface;

b) applying a coating to said metal surface, whereby the amount of said coating necessary to coat said metal surface is reduced by at least about 18% as compared to the amount of coating necessary to coat a metal surface contacted with a finishing agent that does not have a substantially neutral pH.

5,445,681

SUPERCONDUCTOR AND PROCESS OF MANUFACTURE

James Wong, Wayland; Mark K. Rudziak, Westminister, and Terence Wong, Wayland, all of Mass., assignors to Composite Materials Technology, Inc., Shrewsbury, Mass.

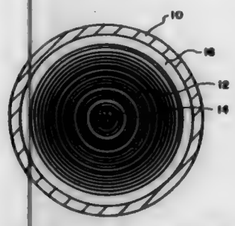
Continuation-in-part of Ser. No. 586,263, Sep. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 480,236, Feb. 15, 1990, Pat. No. 5,158,620, Ser. No. 540,193, Jun. 19, 1990, Pat. No. 5,160,794, and Ser. No. 560,163, Jul. 31, 1990, Pat. No. 5,160,556, said Ser. No. 480,236, is a continuation-in-part of Ser. No. 363,634, Jun. 8, 1989, Pat. No. 4,925,741, said Ser. No. 540,193, is a continuation-in-part of Ser. No. 480,236, Jun. 8, 1989, said Ser. No. 560,163, is a continuation-in-part of Ser. No. 480,236, Jun. 8, 1989, and Ser. No. 540,193, Jun. 8, 1989. This application Jan. 24, 1994, Ser. No. 185,471

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[6] H01B *12/02*; H01L *39/12, 39/24*

U.S. Cl. 148—98 5 Claims

1. A method for producing a superconductor, which is optimally superconducting at a high field on the order of 5–9 T, comprising the steps of combining a plurality of metal bodies to form a composite structure, said metal bodies being selected from the groups consisting of the transition metals niobium, tantalum, titanium, zirconium and vanadium, alternate bodies being formed of different transition metals to form pairs, reacting the transition metals to cause diffusion of at least one metal into the other metal to form a ductile alloy as a result of this diffusion, limiting the extent of the reaction to less than the amount necessary to produce an optimal superconducting alloy in said pair of transition metals mechanically reducing the



composite structure and providing further diffusion to produce in each said pair an optimal superconducting layer in contact with a layer which is non superconducting at said high field, each said layer being less than 1000 Angstroms thick; the diffusion process being conducted in multiple steps interspersed with mechanical reduction steps, each diffusion step being limited in time and temperature to avoid unwanted grain growth and grain boundary diffusion in each transition metal zone.

5,445,682

METHOD OF APPLYING SURFACE HYDROPHILIC TREATMENT TO HEAT-TRANSFER TUBE

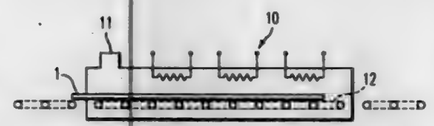
Naoyuki Hasegawa, Hatano; Seiji Ishida, Tokyo, and Hisanori Shiraishi, Hatano, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 7, 1994, Ser. No. 271,636

Claims priority, application Japan, Jul. 7, 1993, 5-192801; Jul. 7, 1993, 5-192802

Int. Cl.[6] C21D *3/02*; F28F *21/08*

U.S. Cl. 148—241 2 Claims



1. A method of applying a surface hydrophilic treatment to a copper or copper alloy heat-transfer tube, comprising the steps of:

heating a copper or copper alloy heat-transfer tube for 5 to 10 minutes at a temperature ranging from 250° to 350° C. in an atmosphere mainly containing an inert gas to separate residual organic matter; and

applying corona discharge or plasma discharge to said copper or copper alloy heat-transfer tube to convert hydrophobic groups of any remaining organic matter to hydrophilic groups and to produce an inactive porous copper oxide.

5,445,683

NICKEL ALLOY PRODUCTS WITH THEIR SURFACES NITRIDED AND HARDENED

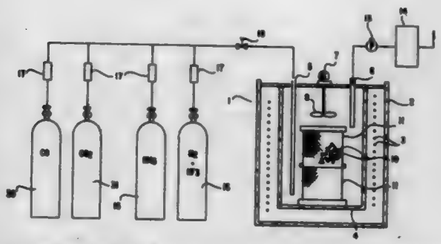
Masaaki Tahara; Haruo Senbokuya; Kenzo Kitano; Tadashi Hayashida, and Teruo Minato, all of Osaka, Japan, assignors to Daidousanso Co., Ltd., Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,567

Claims priority, application Japan, May 13, 1992, 4-120345

Int. Cl.[6] C21D *1/06*

U.S. Cl. 148—317 4 Claims



1. A nickel alloy article comprising a nickel alloy containing 25–82 wt % Ni, 6–48 wt. % Fe, and at least one element selected from the group consisting of Cr and Mo in an amount of 3–20 wt. % and having a hardness of 280 to 380 Hv, said nickel alloy having a nitride layer on a surface, the nitride layer having a hardness of 800–1100 Hv.

5,445,684

SLIDE SURFACE CONSTRUCTION HAVING ORIENTATION SPECIFIC B.C.C. METAL LAYER

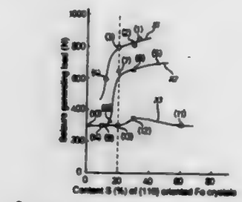
Takahiro Gunji; Yoshikazu Fujisawa; Kazuhisa Okamoto; Masamune Tabata, and Kenji Hirose, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

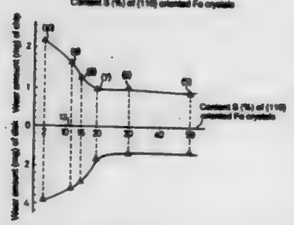
Filed Dec. 3, 1993, Ser. No. 162,520

Claims priority, application Japan, Dec. 3, 1992, 4-350299; Dec. 7, 1992, 4-351329; Dec. 7, 1992, 4-351333

Int. Cl.[6] F16C *17/00, 25/00, 33/00*

U.S. Cl. 148—320 11 Claims





1. A slide surface construction, which is formed of an aggregate of metal crystals having a body-centered cubic structure, said aggregate including (hhh) oriented metal crystals with their (hhh) planes by Miller indices oriented toward the slide surface, the content S of said (hhh) oriented metal crystals being in a range represented by $S \geqq 20\%$.

5,445,685

TRANSFORMATION PROCESS FOR PRODUCTION OF ULTRAHIGH CARBON STEELS AND NEW ALLOYS

Michael J. Strum, Pleasanton; Alfred Goldberg, Livermore; Oleg D. Sherby, Palo Alto, and Richard L. Landingham, Livermore, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 17, 1993, Ser. No. 34,430

Int. Cl.[6] C22C *38/18*; C21D *6/00*

U.S. Cl. 148—324 23 Claims



1. In a method for processing an ultrahigh carbon steel employing a divorced eutectoid transformation process in which the steel containing ferrite and carbide phases is heated to a soaking temperature approximately 50° C. above the A_1 transformation temperature and then soaked at a temperature above the A_1 temperature for a sufficient time that the major portion of the carbides dissolve into the austentite matrix, the step comprising:

thereafter cooling the steel in a controlled manner within limits of cooling rate dictated by the transformation rate and temperature whereby there is obtained a steel having substantially spheroidal carbides;

wherein the controlled cooling comprises cooling the steel to a second soaking temperature below the A_1 transformation temperature and above a lower temperature and holding at that temperature for a period of time sufficient for the substantial completion of the transformation, and further cooling the steel to room temperature.

5,445,686

FE-CU ALLOY SHEET HAVING AN ALLOY STRUCTURE OF HIGH UNIFORMITY

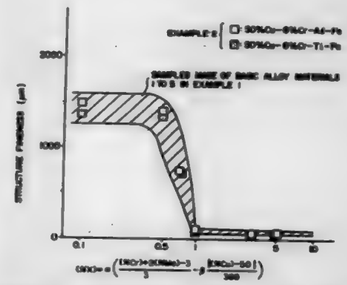
Yoshiyuki Ueshima; Toshiaki Mizoguchi; Kenichi Miyazawa, all of Kimitsu, and Satoshi Nishimura, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Japan

Continuation-in-part of Ser. No. 778,074, Dec. 9, 1991, abandoned. This application Jun. 1, 1994, Ser. No. 252,424

Claims priority, application Japan, Apr. 9, 1990, 2-93440

Int. Cl.[6] C22C *9/00, 38/20*

U.S. Cl. 148—330 3 Claims



3. An Fe—Cu alloy sheet manufactured by a thin plate continuous casting method, said alloy sheet having a thickness

not greater than 10 mm and alloy structure of high uniformity which consists essentially of, by weight, 20 to 90% Cu, 1 to 10% Cu, 0.01 to 10% Mo,

one or more of alloying elements selected from the group consisting of Al, Sc, Y, La, and Hf whose amount or total amounts expressed as % X are not less than a calculation value % X_o of the following equation 1 and not more than 10%, and

boron and/or carbon whose amount or total amounts expressed as % X have a lower limit value % X_o of the following equation 2, and have an upper limit value which is 1% when only boron is present and when both boron and carbon are present and which is 3% when only carbon is present, the balance being essentially Fe,

the Equation 1:

$$\% X_o = \left(\frac{(\% Cr) + 2(\% Mo) - 3}{3} - \beta \frac{|(\% Cu) - 50|}{300} \right)$$

and wherein when the calculation value % X_o of the equation 1 is less than 0.01, % X is about 0.01,

$\beta = 51 - (\% Cu)$ (in the case where Cu=20 to 50),

$\beta = -19 + 0.4$ (% Cu) (in the case where Cu=50 to 90%); and

the Equation 2:

$$\% X_o = 0.01 \left(\frac{(\% Cr) + 2(\% Mo) - 3}{3} - \beta \frac{|(\% Cu) - 50|}{300} \right)$$

and wherein when the calculation value % X_o of the equation 1 is less than 0.0001 then % X is about 0.0001,

$\beta = 51 - (\% Cu)$ (in the case where Cu=20 to 50%),

$\beta = -19 + 0.4$ (% Cu) (in the case where Cu+50 to 90%).

5,445,687

HOT WORKING MATERIAL OF CORROSION RESISTANT COPPER-BASED ALLOY

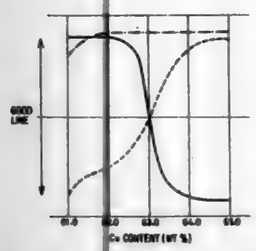
Tosuke Sukegawa; Yoshihito Shimoda, both of Nagano; Hisashi Tan, Osaka; Takahiro Tsuji, Osaka, and Keiichiro Oishi, Osaka, all of Japan, assignors to Toyo Valve Co., Ltd., Tokyo and Sanbo Shindo Kogyo Co., Ltd., Osaka, both of Japan

Continuation-in-part of Ser. No. 909,202, Jul. 6, 1992, abandoned. This application Mar. 17, 1994, Ser. No. 214,095

Claims priority, application Japan, Nov. 14, 1991, 3-327047

Int. Cl.[6] C22C *9/08*

U.S. Cl. 148—433 **7 Claims**



1. In a hot working material of corrosion resistant copper-based alloy having a metal composition comprising lead, tin, nickel, iron, antimony, phosphorus and at least 63% copper, with the balance composed of zinc and inevitable accompanying impurities, the improvement wherein the composition comprises 61.0 weight percent to less than 63.0 weight percent copper, 1.0 weight percent to 3.5 weight percent lead, 0.7 weight percent to 1.2 weight percent tin, 0.2 weight percent to 0.7 weight percent nickel, 0.03 weight percent to 0.4 weight percent iron, 0.02 weight percent to 0.10 weight percent antimony, and 0.04 weight percent to 0.15 weight percent phosphorus, with the balance compose of zinc and inevitable accompanying impurities, produced by the process of subjecting the alloy to hot working and subsequent heat treatment at temperatures of from 500° C. to 600° C. for 30 minutes to 3 hours wherein the alloy has an α single-phase structure, and addition elements are dispersed uniformly in the entire structure, and whereby the mechanical and corrosion resistance properties of the alloy are maintained and the hot forging properties are improved.

5,445,688

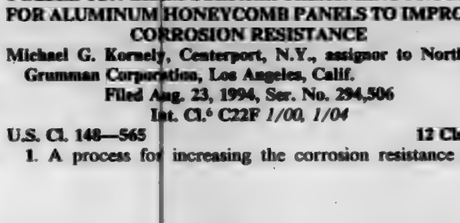
METHOD OF MAKING ALLOY STANDARDS HAVING CONTROLLED INCLUSIONS

Michael F. X. Gigliotti, Jr., Scotia; Robert S. Gilmore, Burnt Hills, and Lee C. Perocchi, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1994, Ser. No. 205,235

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—527 **11 Claims**



1. A method for forming a titanium alloy preform having a reference surface and containing at least one metallic inclusion having a predetermined composition, shape and size and also having a predetermined orientation to and location from the reference surface, comprising the steps of:

selecting a first titanium alloy preform and a second titanium alloy preform each having a predetermined composition of alloying constituents and a bonding surface, wherein at least one of the first alloy preform and the second alloy preform have at least one reference surface;

forming at least one cavity having a predetermined size and shape in the first titanium alloy preform;

placing an inclusion material selected from the group consisting of a nitride, oxide, or carbide of titanium, or any combination thereof, and having a predetermined composition into the cavity;

placing the bonding surfaces of the first titanium alloy preform and the second titanium alloy preform in touching contact; and

applying a means for heating and a means for pressing to the first titanium alloy preform the second titanium alloy preform and the inclusion material together for a time sufficient to form an inclusion and a metallurgical bond between the inclusion and the first titanium alloy preform and between the bonding surfaces of the first titanium alloy preform and the second titanium alloy preform wherein the inclusion has a predetermined orientation to and distance from the at least one reference surface.

5,445,689

PULSED ION BEAM SURFACE TREATMENT PROCESS FOR ALUMINUM HONEYCOMB PANELS TO IMPROVE CORROSION RESISTANCE

Michael G. Kornely, Centerport, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

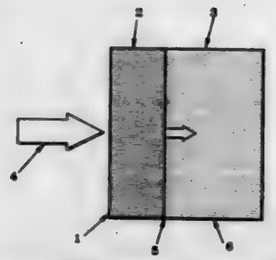
Filed Aug. 23, 1994, Ser. No. 294,506

Int. Cl.[6] C22F *1/00, 1/04*

U.S. Cl. 148—565 **12 Claims**

1. A process for increasing the corrosion resistance and hardness of honeycomb core panel construction, said construction having two outer skin layers bonded to opposite sides of a honeycomb-shaped core, the process comprising the steps of:

providing a core metal for a honeycomb-shaped core which is fabricated from a metal of aluminum or one of its alloys;



then melting at least one surface of said core metal using a pulsed ion beam, said melting producing a layer of metallic glass on the surface of said metal having increased hardness and corrosion resistance properties; and then

deforming said core metal into a honeycomb-shaped structure so as to form the honeycomb-shaped core.

5,445,690

ENVIRONMENTALLY NEUTRAL REFORMULATION OF MILITARY EXPLOSIVES AND PROPELLANTS

David S. Wulfman, Mill Village, Canada, assignor to D. S. Wulfman & Associates, Inc., Rolla, Mo.

Filed Mar. 29, 1993, Ser. No. 38,850

Int. Cl.[6] C06B *21/00*

U.S. Cl. 149—109.6 **11 Claims**

1. A process for reformulating a military explosive or propellant which comprises the steps of:

(a) selecting an oxygen deficient polymer or wax bound military explosive or propellant;

(b) determining the empirical formula of the explosive or propellant;

(c) selecting an oxidizing agent;

(d) determining the amount of oxidizing agent necessary to oxygen balance the explosive or propellant including the polymer or wax;

(e) dividing the polymer bound or wax bound explosive into particles; and,

(f) adding the amount of oxidizing agent determined in step (d) to the particles of the polymer or wax bound explosive or propellant whereby the energetic potential of the explosive or propellant is maximized and the production of toxic fumes minimized when the reformulated mixture is detonated.

5,445,691

PRECURE TREAD FOR TIRE INCLUDING SURFACE AND REAR GROOVES

Shohachiro Nakayama, Tachikawa; Toyomi Iwata, Sayama; Masahiro Kuroda, Higashimurayama; Naoyuki Goto; Hiroshi Ueda, both of Kodaira, and Michio Ishii, Higashimurayama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

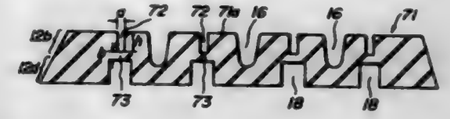
Division of Ser. No. 329,476, Mar. 28, 1989, Pat. No. 5,275,218. This application Sep. 14, 1993, Ser. No. 120,544

Claims priority, application Japan, Mar. 29, 1988, 63-77548; Feb. 9, 1989, 1-28678

Int. Cl.[6] B60C *11/00*

U.S. Cl. 152—209 R **5 Claims**

1. A precure tread strip for a tire to be bonded to a crown portion of a base tire comprising; a ground contacting tread portion and a rear portion located opposite thereto, plural surface openings formed in the ground contacting portion including tread defining grooves, plural rear grooves formed in the rear portion, said rear grooves each aligned with a surface opening, said rear grooves having a volume larger than a volume of an aligned surface opening, and a partition wall in



said precure tread strip isolating said rear groove from communication with said ground contact portion.

5,445,692

PROCESS FOR REINFORCING A SEMICONDUCTOR WAFER

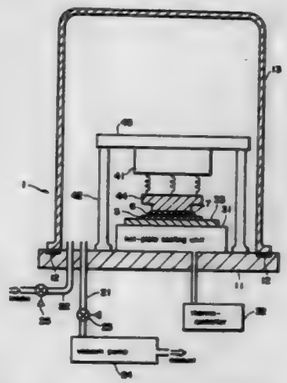
Toshiyuki Nitta, Konohana, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 156,920

Claims priority, application Japan, Nov. 26, 1992, 4-317388; May 19, 1993, 5-117173; Sep. 7, 1993, 5-222459

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—87 **12 Claims**



1. A process for reinforcing a semiconductor wafer, comprising:

a first step of enforcing said semiconductor wafer by adhering one face of said semiconductor wafer to a reinforcing member having a flat face using a hot-melt adhesive which is softened by heating, and pressurizing the other face of such semiconductor wafer with a weight which produces a load thereon;

a second step of deaerating said hot-melt adhesive by exposing said reinforced semiconductor wafer to a lower ambient pressure than atmospheric pressure for a predetermined period of time while said hot-melt adhesive remains softened;

a third step of increasing the lower ambient pressure to a second pressure greater than the lower ambient pressure but less than atmospheric pressure; and

a fourth step of hardening said hot-melt adhesive by cooling said reinforced semiconductor wafer while maintaining said second pressure of said third step.

5,445,693

METHOD OF PRODUCING A FORMABLE COMPOSITE MATERIAL

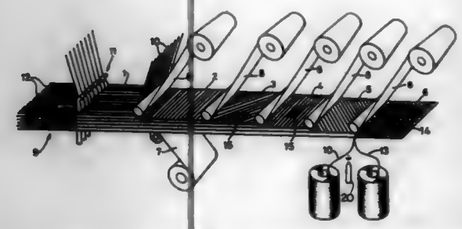
Jeffrey A. Vane, 12 Cleveland Grove, Northcourt Park, Newbury, Berkshire RG13 1XF, England

Continuation of Ser. No. 938,521, Sep. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 666,589, Mar. 8, 1991, abandoned, which is a continuation of Ser. No. 411,363, Sep. 25, 1989, abandoned. This application Apr. 14, 1994, Ser. No. 227,474

Claims priority, application United Kingdom, Sep. 26, 1989, 8922521

Int. Cl.[6] B32B *7/08, 31/16, 31/26*

U.S. Cl. 156—93 16 Claims



1. A method of producing a rigid thermoplastic composite article comprising the steps of:

(a) simultaneously laying monofilaments or tows of a reinforcing material from first supply means side-by-side with monofilaments or tows of thermoplastic material from second supply means to form a first layer consisting of interspersed unidirectional nonbonded and nonwoven monofilaments or tows of reinforcing material and thermoplastic material in substantially parallel relationship;

(b) simultaneously laying monofilaments or tows of a reinforcing material from third supply means side-by-side with monofilaments or tows of thermoplastic material from fourth supply means to form a second layer consisting of interspersed unidirectional nonbonded and nonwoven monofilaments or tows of reinforcing material and thermoplastic material in substantially parallel relationship;

(c) superimposing said second layer upon said first layer with the monofilaments or tows in said second layer extending in a different direction to the monofilaments or tows in said first layer;

(d) thereafter stitching said layers together using knitted stitches to hold said monofilaments or tows in said first and second layers in fixed relation to one another;

(e) forming said stitched layers into a retainable complex shape at room temperature;

(f) retaining said complex shape, and heating and cooling the same to harden said thermoplastic material to produce said rigid thermoplastic composite article; and

(f) at some time during the process agitating the monofilaments or tows of reinforcing material and thermoplastic material in each layer to effect an intimate and substantially uniform mixing of the filaments of reinforcing material and thermoplastic material in each layer.

5,445,694

METHOD FOR THE PRODUCTION OF A HEATED COMPOSITE GLASS SHEET WITH METAL WIRES ARRANGED IN THE THERMOPLASTIC INTERMEDIATE LAYER

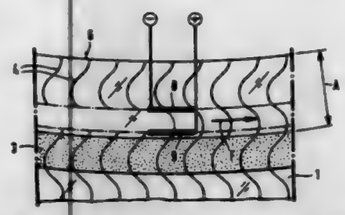
Manfred Gillaer; Karl-Heinz Mueller, both of Aachen; Siegfried Pikhard, Roetgen; Juergen Engels, Stolberg; Gerd Sauer, Stolberg-Venwegen; Bernhard Reul; Klaus Henn, both of Aachen, all of Germany; Helmut Maeuser, Simpelveld, Netherlands; Stefan Immerschitt, Herzogenrath, and Dieter Neumann, Stolberg, both of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Feb. 28, 1994, Ser. No. 202,488

Claims priority, application Germany, Feb. 27, 1993, 43 06 122.2; May 21, 1993, 43 16 964.3

Int. Cl.[6] B32B *31/12, 17/00;* H05B *6/40;* H05K *3/02*

U.S. Cl. 156—106 14 Claims



1. A method for the production of a composite glass sheet, comprising the steps of:

forming a first glass sheet;

forming a thermoplastic film;

depositing and fixing one or more metal wires on said thermoplastic film;

severing a portion of said one or more metal wires on the film by applying energy to said one or more metal wires which is only absorbed by the metal wires without damage to said thermoplastic film, said energy heating said metal wires to a fusion temperature of the metal of the wires;

placing said thermoplastic film on said first glass sheet with the application of heat and pressure; and

placing a second glass sheet on said thermoplastic film with the application of heat and pressure.

5,445,695

BAND FORMING METHOD

Chiaki Ozawa, and Motoaki Hosono, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,068

Claims priority, application Japan, Dec. 28, 1992, 4-358735

Int. Cl.[6] B60C *15/02*

U.S. Cl. 156—131 1 Claim

1. A method of forming a ring-like band having folded portions where beads are wrapped at both edges comprising:

contracting in diameter a forming drum capable of being changed in diameter, and disposing a ring-like band around said forming drum;

expanding said forming drum to an intermediate diameter, and supporting said band around said forming drum such that edge portions of said band project from ends of said forming drum;

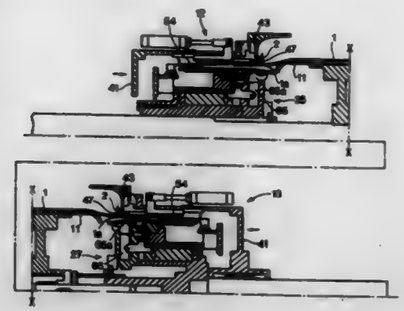
positioning bead lock segments capable of being changed in diameter at axial positions on inner sides of said edge portions;

positioning fingers, which are disposed circumferentially around the forming drum and can be expanded/contracted, at positions outside said edge portions in an expanded state;

contracting said fingers for reducing the diameters of said edge portions from the intermediate diameter of said forming drum to a diameter substantially equal to the diameter of the beads;

positioning the beads at positions outside said edge portions and corresponding to said bead lock segments;

expanding said bead lock segments to support said beads together with said edge portions from the inner sides, thereby assembling said beads and said band;



expanding said forming drum to a maximum diameter, and simultaneously moving said bead lock segments toward said forming drum while supporting said beads; and

swelling a folding bladder and folding said edge portions over an outer peripheral surface of said band, thereby wrapping said bead.

5,445,696

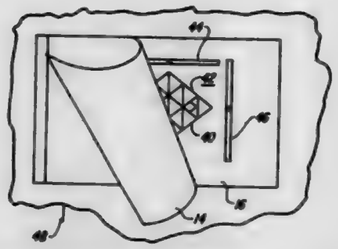
PACKAGING ARRANGEMENTS FOR ITEMS TO BE SUBSEQUENTLY MOUNTED

Margaret M. Krawczyk, 2380 N. Riverside Dr., Melbourne, Fla. 32903

Division of Ser. No. 550,180, Jul. 9, 1990, Pat. No. 5,252,166. This application Jul. 26, 1993, Ser. No. 97,512

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—230 40 Claims



1. A packaged mosaic design comprising:

a plurality of separate elements arranged in a form of a mosaic design,

a first thin plastic sheet, larger in size than said mosaic design, having one side that includes a readily detachable adhesive layer that extends over at least a portion of the one side of said sheet and that is larger than the size of the mosaic design and that a portion of said layer adheres to one side of said mosaic design, and

a second thin plastic sheet, larger in size than said mosaic design that adheres to a portion of said adhesive layer not adhering to the mosaic design, whereby said mosaic design is captured between the two sheets.

5,445,697

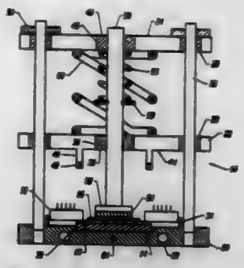
FIXTURE AND METHOD FOR ATTACHING COMPONENTS

John S. Fitch, Newark, and William R. Hamburgen, Palo Alto, Both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 722,972, Jun. 28, 1991, Pat. No. 5,240,549. This application Jun. 30, 1993, Ser. No. 85,558

Int. Cl.[6] H01L *21/447, 21/603;* B32B *31/20*

U.S. Cl. 156—295 11 Claims



1. A method for bonding multiple electronic components together at one time, which comprises the steps of:

positioning the electronic components for assembly with an adhesive material that becomes fluid with application of heat between the components,

applying a first pressure in a linear direction to urge a first set of at least two of the components together,

applying a second pressure, independent of the first pressure, said second pressure applied annularly about said first pressure and in said linear direction, to urge a second set of at least two of the components together, and

heating the components to a sufficient temperature to make the adhesive material fluid while the first and second pressures are applied.

5,445,698

METHOD OF FABRICATING AN INTERNAL COMPOSITE LAYER COMPOSED OF AN ELECTRICALLY INSULATING SUBSTRATE WITH A COPPER LAYER FORMED THEREON AND A FILM OF A COUPLING AGENT COVERING THE COPPER LAYER FOR A MULTILAYER CIRCUIT BOARD

Hidekazu Takano; Tokio Yoshimitsu; Akinori Hibino, all of Kouriyama; Yoshihide Sawa, Yamatotakada; Motoyuki Toki, Kyoto; Yang Wu, Kyoto; Yuen C. Tak, Kyoto, and Tadao Obuchi, Kyoto, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 24, 1993, Ser. No. 22,027

Claims priority, application Japan, Feb. 25, 1992, 4-036867

Int. Cl.[6] B32B *31/12*

U.S. Cl. 156—307.7 14 Claims

1. A method of fabricating an internal composite layer for a multilayer circuit board, said internal composite layer composed of an electrically insulating substrate with a copper layer formed thereon and a film of a coupling agent covering said copper layer, said method comprising the steps of:

treating said copper layer on said substrate with a base to supply hydroxyl groups thereto in the form of Cu—OH and make the surface of said copper layer replete with said hydroxyl groups;

coating a coupling agent on said surface of the copper layer, said coupling agent being selected from the group consisting of a silane coupling agent, a titanate coupling agent and a zirconate coupling agent; and

drying said coupling agent to form said film on said copper layer, thereby preparing said internal composite layer in which the coupling agent is chemically bonded to the surface of said copper layer by the reaction of the hydroxyl groups with the coupling agent.

5,445,699

PROCESSING APPARATUS WITH A GAS DISTRIBUTOR HAVING BACK AND FORTH PARALLEL MOVEMENT RELATIVE TO A WORKPIECE SUPPORT SURFACE

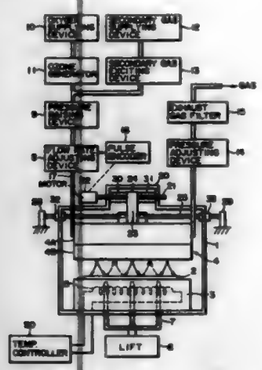
Yuuji Kamikawa, Uto; Kimiharu Matsumura, Kumamoto; Masafumi Nomura, Kumamoto, and Junichi Nagata, Kumamoto, all of Japan, assignors to Tokyo Electron Kyushu Limited, Kumamoto, Japan

Continuation of Ser. No. 902,535, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 538,711, Jun. 15, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 145,663

Claims priority, application Japan, Jun. 16, 1989, 1-154117; Aug. 28, 1989, 1-220969; Aug. 29, 1989, 1-222467

Int. Cl.[6] C23C *16/52*

U.S. Cl. 156—345 14 Claims



1. A processing apparatus for removing an organic surface layer from a workpiece by ashing the surface layer with an ashing reaction gas, said apparatus comprising:

a reaction chamber;

a workpiece-supporting section located in said reaction chamber, said workpiece supporting section having a workpiece supporting surface for supporting a workpiece;

a gas distributor located in said reaction chamber and facing said workpiece-supporting section, for distributing a reaction gas for removing the surface layer of the workpiece that faces the gas distributor;

a gas-supply means for supplying said reaction gas into said reaction chamber through said gas distributor; and

driving means for producing back and forth relative movement between said gas distributor and said workpiece-supporting section, in a direction parallel to the supporting surface of said workpiece-supporting section to uniformly supply said reaction gas to the surface layer of said workpiece,

wherein said gas distributor has a gas distributor surface opposing the supporting surface of the workpiece supporting section, said gas distributor surface has a first plurality of parallel slits for distributing the ashing reaction gas, each of said first plurality of parallel slits extending in a first direction, said gas distributor surface has a second plurality of parallel slits for exhausting gas, each of said second plurality of parallel slits extending in the first direction, wherein the first plurality of parallel slits are parallel to the second plurality of parallel slits, and slits of the first and second pluralities are alternately provided along a direction that is perpendicular to the first direction;

wherein said direction of relative movement is perpendicular to said first direction;

wherein said driving means is capable of providing said back and forth relative movement so that the ashing reaction gas is uniformly distributed to the entirety of said organic surface layer.

5,445,700

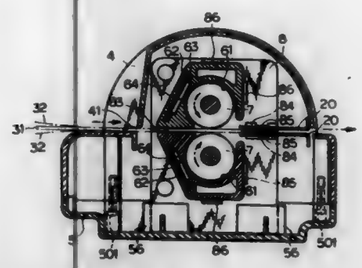
LAMINATOR

M. S. Uang, Chung City, Taiwan, assignor to Favpem Enterprise Co., Ltd., San Chung City, Taiwan

Filed Nov. 2, 1994, Ser. No. 332,801

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—359 1 Claim



1. A laminator comprising:

a base having two projecting frame portions located at two ends thereof, a central fixing sink, a small hole formed on a front wall of said base for receiving an LED indicator, a front notch for receiving a power switch and a rear notch for receiving a power connector;

an upper cover having a front entrance slit and associated with said base;

a left and a right supports fitted in said projecting frame portions of said base respectively, each of said supports having an upper and a lower shaft holes, two slant slots, a front projection, three rows of rear projections and four engaging blocks located along a periphery of each support, one of said supports having two lateral lug portions formed with thread holes;

an upper and a lower heat conductors fixedly supported by said left and right supports, each of said heat conductors containing a silicone roller and a mica heating plate;

a reduced motor having a rotary shaft;

a first gear connected with said rotary shaft of said motor and a second gear meshing with said first gear, said first and second gears being engaged with said two silicone rollers respectively;

two clamping plates disposed between said left and right supports for guiding a laminated picture or photograph out of said laminator; and

a temperature controller having two opposite terminals and a spring disposed in said fixing sink of said base, a top surface of said temperature controller contacting with a bottom surface of one of said heat conductors, said laminator being characterized in that said heat conductor is made of an aluminum alloy having good heat conductivity and includes a roller channel receiving said silicone roller and a slant heating tunnel spaced from said roller channel by a thin wall, a mica heating plate being disposed in said heating tunnel and a very small clearance existing between inner wall surface of said roller channel and said roller, power wires being connected with two ends of each heating plate and extending therefrom through said slant slots of said left and right supports, said fixing sink having two opposite axial notches and two circumferential slots located under and beside and communicated with said notches, one end of each of said circumferential slots having an upper window, whereby the two terminals of said temperature controller is first vertically placed into said axial notches and then rotated through said slots toward said windows and said spring thus upward pushes said temperature controller, making said terminals thereof enter said windows and locked therein.

5,445,701

APPARATUS OF MANUFACTURING A SHEET-PREPREG REINFORCED WITH FIBERS

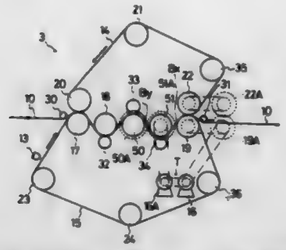
Tomohito Kobe; Toshiyuki Nakakura, both of Yokohama; Hideo Sakai, Ebina; Satoru Kishi, Yokosuka, and Chiaki Maruko, Kamakura, all of Japan, assignors to Research Association for New Technology Development of High Performance Polymer, Tokyo, Japan

Continuation of Ser. No. 13,435, Feb. 4, 1993, abandoned, which is a division of Ser. No. 841,204, Feb. 27, 1992, Pat. No. 5,201,979, which is a continuation of Ser. No. 535,153, Jun. 8, 1990, abandoned, which is a continuation of Ser. No. 189,955, May 3, 1988, abandoned. This application Jun. 30, 1994, Ser. No. 268,718

Claims priority, application Japan, May 8, 1987, 62-112045; Aug. 24, 1987, 62-210610; Aug. 28, 1987, 62-216251; Aug. 28, 1987, 62-216253

Int. Cl.[6] B29C *70/16, 70/20;* B29D *9/00;* B29K *105/10*

U.S. Cl. 156—441 17 Claims



1. An apparatus for manufacturing a thermoplastic resin sheet-prepreg reinforced with fibers comprising means for feeding a sheet of fibers, a pair of facing band belts heated higher than a softening point of the thermoplastic resin and supported by inlet rollers, outlet rollers and intermediate rollers so that the pair of facing band belts defines a non-linear path, a resin-impregnating section comprising extruder means and die means for coating a film of the thermoplastic resin on at least one of the band belts, a first resin impregnating promoting roller adjacent an inlet roller, a second resin impregnating promoting roller positioned in confronting relation to an intermediate roller and in contact with one of the bed belts, a third resin impregnating promoting roller adjacent an outlet roller, means for adjusting a tension of the band belts, means for controlling meandering of the belts, means for adjusting the tension of the band belt passing over the roller next to an outlet roller, means for cooling the thermoplastic resin impregnated sheet and winding means for winding the thermoplastic resin impregnated sheet of fibers that has passed through the resin-impregnating section and between the band belts, the pair of facing band belts preventing the thermoplastic resin from adhering to the rollers and preventing deterioration and oxidation of the thermoplastic resin.

5,445,702

APPARATUS FOR PRODUCING LAMINATE BOARDS

Wolfgang Götz, Krefeld-Fischeln, Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Germany

Continuation-in-part of Ser. No. 774,962, Oct. 9, 1991, abandoned. This application Jan. 14, 1994, Ser. No. 181,568

Claims priority, application Germany, Oct. 12, 1990, 40 32 400.1

Int. Cl.[6] B32B *31/08, 31/10, 31/20*

U.S. Cl. 156—537 3 Claims

1. An apparatus for producing decorative laminated boards, comprising:

a single-level platen press;

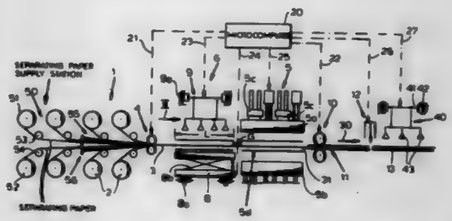
a core paper supply station upstream of said press and provided with a plurality of coils of kraft paper adapted to form cores of said boards and means for feeding respective webs of the kraft paper from said coils along a transport path to said press;

a first set of clamping rolls along said path between said core paper supply station and said press for engaging all of said webs and pressing said webs together to form a band extending continuously from said first set of clamping rolls through said press;

a cover foil applying station along said path between said first set of clamping rolls and said press for applying to at least one surface of said band a decorative cover foil sheet adapted to form a facing layer of a board fabricated in the apparatus, whereby successive boards with said decorative cover sheets thereon are formed along said band with the webs of the band constituting cores of said boards and said boards being interconnected by, supported by and entrained as parts of said band;

a second set of clamping rolls downstream of said press engaging said band with said boards formed as parts thereof for generating a tension in said band and advancing said band through said press;

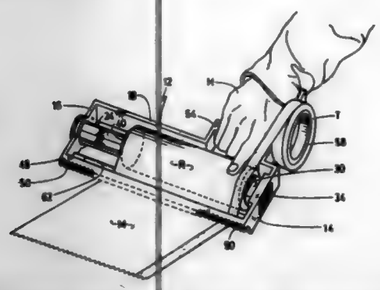
cutting means downstream of said second set of clamping rolls for trimming said boards and severing said boards transversely from said band to recover a succession of separate boards individually from said band with said kraft paper webs forming the cores of said boards and said decorative cover foil sheets forming facing layers of said boards;



at least one separating paper supply station, including a supply of separating paper, upstream of said core paper supply station and separate from said core paper supply station for selectively feeding into said band between upper webs of said kraft paper and lower webs of said kraft paper from said separating paper supply at least one separating paper web synchronously with the feed of said kraft paper webs into said band and under said tension so that said at least one separating paper web contributes to support and displacement of said band and two boards are formed simultaneously on opposite sides of said separating paper web at each cycle of said press; and

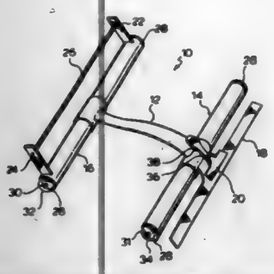
a station downstream of said cutting means for separating the two boards formed simultaneously at each cycle of said press said separating paper web upon severing of said boards from said band when said separating paper web is disposed between said upper and lower webs, a single board being separated at each severing of the band when no separating paper web is interposed between said upper and lower webs, said cover foil applying station being provided with means for applying said decorative cover sheets to upper and lower surfaces of said band, including at least one carriage displaceable transversely to said transport path for withdrawing decorative cover sheets from a magazine and depositing said cover sheets on said band.

5,445,703
MASKING TOOL
Lester A. Steeves, 463 Fralicks Beach Road, Port Perry, Ontario, Canada L9L 1B6, and Brian E. Steeves, 36 Delta Crescent, Holland Landing, Ontario, Canada L0G 1H0
Continuation-in-part of Ser. No. 986,934, Dec. 8, 1992. This application Dec. 27, 1993, Ser. No. 173,003
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—544 20 Claims



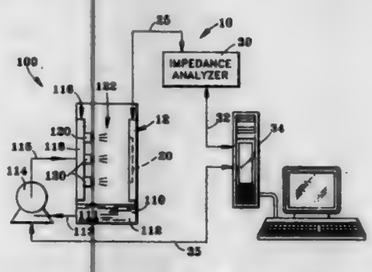
1. A manual appliance for forming masking from masking tape and masking paper separately stored on rolls and applying said masking to a surface with equal facility in opposed directions, said appliance comprising
a generally rectangular frame defined by a rear wall, a front wall and a pair of side walls;
a masking paper roll holder having an axis therealong extending between said pair of side walls within said frame;
masking severing means associated with said front wall;
handle means associated with said rear wall, said handle means including a handle having an axis therealong;
said paper roll holder axis, and said handle axis being disposed in a plane passing through said masking severing means along the length thereof; and
a masking tape roll holder, and means for supporting said masking tape roll holder from said frame.

5,445,704
WALLPAPER APPLICATOR
Cipriano Dizon, 161 Springhead Gardens, Richmond Hill, Ontario, Canada L4C 5G2
Filed Jan. 18, 1994, Ser. No. 182,329
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—574 11 Claims



1. A wallpaper applicator comprising a handle having a forward end and an opposite end, said forward end having a trimmer guide and a retainer means for releasably retaining an end of a strip of wallpaper, and said opposite end having a guide rod, said handle having at least two parallel cushioned rollers rotatably mounted thereon for rolling said applicator along, a forward one of said cushioned rollers being mounted at said forward end and an opposite one being mounted at said opposite end, said trimmer guide having a straight edge extending substantially parallel to and forward of said forward one of said cushioned rollers, said applicator being pivotable about said forward one of said cushioned rollers for applying said trimmer guide to a corner between a ceiling and wall aligning said applicator in a generally vertical condition and pivotable in an opposite sense for spacing said trimmer guide from a surface upon which said cushioned rollers roll along,
whereby wallpaper is threadable over said guide rod, about said cushioned rollers, about said trimmer guide and said retaining means releasably retains said end of a strip of wallpaper aligning said trimmer guide with a predetermined location on said wallpaper.

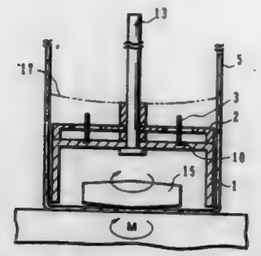
5,445,705
METHOD AND APPARATUS FOR CONTACTLESS REAL-TIME IN-SITU MONITORING OF A CHEMICAL ETCHING PROCESS
Steven G. Barbee, Dover Plains; Madhav Datta, Yorktown Heights; Tony F. Heinz, Chappaqua; Leping Li, Poughkeepsie; Eugene H. Ratzlaff, Hopewell Junction, and Ravindra V. Shenoy, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 30, 1994, Ser. No. 269,865
Int. Cl.[6] H01L *21/306*
U.S. Cl. 156—627.1 10 Claims



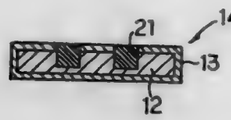
1. A contactless method for in-situ chemical etch monitoring of an etching process during etching of a workpiece with a wet chemical etchant, the workpiece characterized by a workpiece surface to be etched with side edge portions along an outer perimeter thereof, said method comprising the steps of:
a) providing a base member having a reference surface;
b) releasably securing the workpiece to said base member, wherein the workpiece surface is substantially flush with the reference surface;
c) providing at least two sensors disposed on said base member to be proximate to but not in contact with the outer perimeter of the workpiece surface, said at least two sensors further being substantially flush with the reference surface and positioned on opposite side edge portions of the workpiece surface; and
d) monitoring an electrical characteristic between said at least two sensors, wherein a change in the electrical characteristic is indicative of a condition of the etching process.

5,445,706
WET TREATMENT ADAPTED FOR MIRROR ETCHING ZNSE
Yasuo Okuno; Hitoshi Tamura, both of Yokohama, and Tsuyoshi Maruyama, Kawasaki, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo and Kanagawa Academy of Science and Technology, Kawasaki, both of Japan
Filed Apr. 11, 1994, Ser. No. 226,281
Claims priority, application Japan, Apr. 14, 1993, 5-087244; Mar. 22, 1994, 6-050351
Int. Cl.[6] B44C *1/22*; H01L *21/306*
U.S. Cl. 156—637.1 22 Claims

6. A crystal treatment method of etching a crystal workpiece made off group II-VI compound semiconductor crystal containing Zn as group II element or mixed crystal containing said compound semiconductor crystal by an etchant of H_2SO_4 aqueous solution dissolved with potassium permanganate $KMnO_4$.



5,445,707
METHOD OF MANUFACTURING ARTICLE HAVING MAGNETIC PATTERNS
Kiyoshi Toyama, and Masayuki Togawa, both of Gifu, Japan, assignors to Teijin Seiko Co., Ltd., Osaka, Japan
Division of Ser. No. 33,373, Mar. 18, 1993, which is a division of Ser. No. 784,538, Oct. 29, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,911
Claims priority, application Japan, Nov. 5, 1990, 2-300653
Int. Cl.[6] B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 216—22 9 Claims



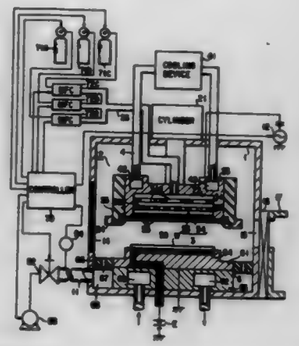
1. A method of manufacturing an article with magnetized magnetic substances arranged according to patterns, comprising the steps of:
oxidizing a substrate made of silicon or silicon containing impurities in such a manner that a passivating layer of silicon dioxide is formed on an outer surface of the oxidized substrate;
coating a photoresist on said passivating layer formed on said outer surface of said oxidized substrate;
exposing said photoresist through a photomask having said patterns so that it is formed with said patterns;
removing the exposed or unexposed parts of said photoresist from said oxidized substrate by dissolving it in a developer in such a manner that said passivating layer is partially uncovered;
etching the uncovered portions of sid passivating layer from said oxidized substrate in such a manner that windows are formed in said passivating layer;
anisotropically etching said oxidized substrate through said windows so as to form grooves in said oxidized substrate;
burying said magnetic substances into said grooves; and
magnetizing said magnetic substances.

5,445,708
METHOD FOR PREPARING ULTRATHIN PIEZOELECTRIC RESONATOR PLATES
Osamu Ishii, Kouza, Japan, assignor to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan
Filed Mar. 21, 1994, Ser. No. 210,941
Claims priority, application Japan, Mar. 22, 1993, 5-108735; Mar. 2, 1994, 6-058115
Int. Cl.[6] B23P *15/00*
U.S. Cl. 216—17 4 Claims



1. A method for preparing ultrathin piezoelectric resonator plates having an ultrathin vibrating portion enclosed by a thick periphery portion, comprising forming a plurality of depression in one side of a wafer of a piezoelectric material to form ultrathin vibrating portions as a bottom wall of each depression and trimming a thickness of each vibrating portion by etching to adjust the resonance frequency, characterized by
bonding a thick plate having a thickness substantially thicker than said wafer with a plurality of holes formed at the positions corresponding to the depressions in the wafer to the depressed side of the wafer, and
putting an etching liquid into the depressions through the holes in the thick plate.

5,445,709
ANISOTROPIC ETCHING METHOD AND APPARATUS
Masayuki Kojima, Kokubunji; Yoshikazu Ito, Yamanashi; Kazuhei Tomita, Kawaguchi; Shigeki Tozawa, Hirasaki; Shunichi Iimuro, Yamanashi; Masashi Arasawa, Enzan, and Eiichi Nishimura, Yamanashi, all of Japan, assignors to Hitachi, Ltd.; Tokyo Electron Limited, both of Tokyo and Tokyo Electron Yamanashi Limited, Hirasaki, all of Japan
Filed Nov. 19, 1993, Ser. No. 154,566
Claims priority, application Japan, Nov. 19, 1992, 4-310279
Int. Cl.[6] H01L *21/06*
U.S. Cl. 216—71 15 Claims



1. An anisotropic etching method using a plasma etching apparatus including
a process chamber,
a first electrode arranged in said process chamber, said first

electrode having a support portion for supporting a substrate to be processed,

a second electrode arranged in said process chamber, said second electrode having an opposing portion opposite to said support portion of said first electrode,

a power supply for applying an RF voltage across said first and second electrodes,

exhausting means for exhausting said process chamber,

supplying means for supplying a process gas into said process chamber, said supplying means having a shower region defined by a plurality of holes formed in said opposing portion of said second electrode, and the process gas being supplied onto said substrate supported by said first electrode through the holes, and

cooling means for cooling said second electrode having said opposing portion whose temperature gradient is defined such that a temperature at a peripheral portion of said opposing portion is lower than a temperature at a central portion of said opposing portion,

said method comprising:

selecting a size of said shower region, the size of said shower region being selected to be smaller than a size of said substrate such that degradation of planar uniformity of a degree of etching anisotropy on said substrate caused by the temperature gradient of said opposing portion is compensated for;

setting said apparatus on the basis of the selected size of said shower region, said shower region being arranged such that the center of said shower region is substantially aligned with the center of said substrate when said substrate is supported by said first electrode;

arranging said substrate on said support portion of said first electrode;

exhausting said process chamber;

supplying the process gas through the holes of said shower region;

applying an RF voltage from said power supply across said first and second electrodes to make the process gas into a plasma; and

anisotropically etching said substrate using the plasma;

wherein a temperature difference between the central and peripheral portions of said opposing portion is set to be 2° to 30° C., and the size of said shower region is smaller than the size of said substrate by 5 to 25%.

5,445,710

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Masaru Hori, Aichi; Hiroyuki Yano, Yokohama; Keiji Horioka, Kawasaki; Hisataka Hayashi, Urayasu; Sadayuki Jimbo, Yokohama; Haruo Okano; Kazuhiro Tomioka, both of Tokyo; Yasuhiro Ito, and Haruki Mori, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 20,193, Feb. 19, 1993, Pat. No. 5,302,240, which is a continuation-in-part of Ser. No. 824,095, Jan. 22, 1992, Pat. No. 5,240,554. This application Feb. 25, 1994, Ser. No. 202,372

Claims priority, application Japan, Jan. 22, 1991, 3-21569; Jul. 30, 1991, 3-211302; Jan. 13, 1992, 4-4197; Jan. 13, 1992, 4-4198; Feb. 19, 1992, 4-32060; Jul. 17, 1992, 4-191076

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[6] H01L *21/306*; C23C *15/00*; B44C *1/22*; C23F *1/00*

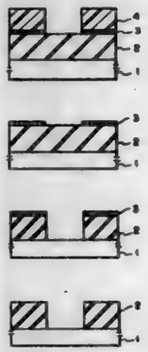
U.S. Cl. 156—643.1 18 Claims

1. A dry-etching method comprising the steps of:

forming a carbon thin film on a substrate to be etched;

forming a resist pattern on said carbon thin film;

selectively etching said carbon film using said resist pattern as a mask by a plasma of a gas mixture of a gas containing fluorine atoms and a gas containing oxygen atoms so as to form a carbon film pattern; and



selectively etching said substrate to be etched using said carbon film pattern as a mask or said resist pattern and said carbon film pattern as masks.

5,445,711

LOW RESISTANCE, THERMALLY STABLE ELECTRODE STRUCTURE FOR ELECTROLUMINESCENT DISPLAYS

William J. Tanski, Glastonbury; Roger Carroll, Willimantic, and Emilio J. Brancaforte, Cromwell, all of Conn., assignors to Westinghouse Norden Systems, Norwalk, Conn.

Division of Ser. No. 897,201, Jun. 11, 1992. This application May 31, 1994, Ser. No. 250,969

Int. Cl.[6] B44C *1/22*; C23F *1/02*

U.S. Cl. 216—13 24 Claims



1. A method of making an electroluminescent display that includes a transparent electrode, comprising:

forming a metal assist structure over the transparent electrode, wherein the metal assist structure comprises a first refractory metal layer, a primary conductor layer formed on the first refractory metal layer, and a second refractory metal layer formed on the primary conductor layer such that the first and second refractory metal layers are capable of protecting the primary conductor layer from oxidation when the electroluminescent display is annealed to activate a phosphor layer.

5,445,712

DRY ETCHING METHOD

Toshiharu Yanagida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

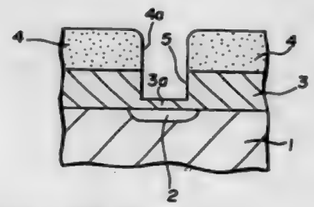
Filed Mar. 11, 1993, Ser. No. 29,534

Claims priority, application Japan, Mar. 25, 1992, 4-067111

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—662 19 Claims

1. A dry etching method comprising plasma etching a silicon compound layer by using an initial etching gas containing a mixture of fluorocarbon compound and a halogen compound having a molecule formed of a halogen atom and at least one



kind of functional group selected from the group consisting of carbonyl, thionyl, sulfuryl, nitrosyl, and nitryl.

5,445,713

APPARATUS FOR USE IN MAKING MULTILAYERED PAPER

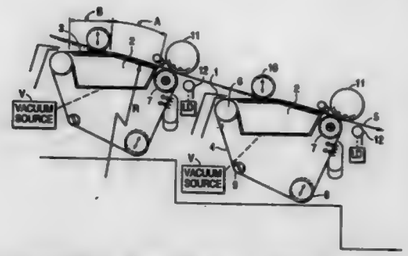
Kazuo Kunihisa; Hiroto Shimazu; Takashi Bando, all of Hiroshima, and Masatoru Tokuno, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and SK Engineering Co., Ltd., both of Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,331

Claims priority, application Japan, Jan. 14, 1993, 5-020823

Int. Cl.[6] D21F *1/00*

U.S. Cl. 162—304 3 Claims



1. Apparatus for use in forming multilayered paper, said apparatus comprising: an endless loop of felt; a plurality of short wire units disposed beneath said endless loop of felt and spaced from one another in a direction in which the endless loop travels in the apparatus, each of said short wire units including a short wire, a fixed dehydrator, and a drive roll disposed at a downstream end of the fixed dehydrator and over which drive roll the short wire runs, the fixed dehydrator including a forming shoe having an upper surface over which the short wire runs, at least part of said upper surface being curved; means for ejecting stock onto the short wire of each of said short wire units; guide means for guiding said endless loop of felt into pressing engagement with the curved part of each of the upper surfaces of the forming shoes of the fixed dehydrators such that said endless loop of felt coacts with each of said short wires running over said curved parts to dehydrate the stock ejected onto the short wire units in a downward direction only, said guide means including a respective forming roll disposed within the endless loop of felt across from respective ones of said short wire units and a couch roll in a coacting relation with said drive roll, each said forming roll and said couch roll biasing the endless loop of felt into engagement with the short wire of a respective one of said short wire units, each said forming roll and said couch roll being supported so as to be vertically movable; a felt roll disposed downstream of each of the short wire units having said vertically movable forming and couch rolls, each said felt roll being disposed beneath said endless loop of felt; and a lifting device operatively connected to said felt roll so as to raise said felt roll into engagement with said endless loop of felt and raise said endless loop at a location downstream of the respective short wire unit, said endless loop of felt being movable out of coacting engagement with said respective short wire unit by raising said felt roll with said lifting device and moving said couch and said forming rolls of the respective short wire unit vertically.

5,445,714

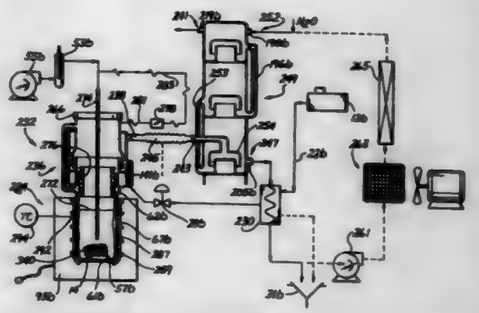
WASTE MATERIALS CONCENTRATOR

Henry S. Myers, Irvine, Calif., assignor to Eco Stills, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 648,908, Jan. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 544,587, Jun. 27, 1990, abandoned. This application Jun. 20, 1991, Ser. No. 719,328

Int. Cl.[6] B01D *3/00*; C02F *1/04*

U.S. Cl. 202—176 22 Claims



1. A concentrator for reducing the volume of a mixture including a solvent, comprising:

means forming a chamber to receive the mixture;

means coupled to the chamber for applying heat to the mixture within the chamber, the heat being provided at a temperature sufficient to form a vapor having a first temperature;

a condenser coupled to receive the vapor from the chamber, the condenser including a first stage and a second stage;

directing means included in each of the first stage and the second stage of the condenser for receiving the vapor and for directing vapor along a torturous path including at least one reversal of direction;

means for cooling the second stage of the condenser but not the first stage in order to facilitate condensation of the vapor in the second stage but not in the first stage of the condenser;

means included in the cooling means for introducing a condensing liquid into the second stage of the condenser at a second temperature less than the first temperature of the vapor, the condensing liquid drawing heat from the vapor to condense the vapor and to increase the temperature of the condensing liquid to a third temperature greater than the second temperature; and

heat exchange means receiving the mixture and receiving the condensing liquid at the third temperature, for preheating the mixture and for precooling the condensing liquid from the third temperature to the second temperature.

20. A concentrator for reducing the volume of the mixture including a solvent and dissolved and undissolved solids, including:

a container defined by rigid walls and being sized and configured to receive the mixture;

a flexible bag disposed in sealing relationship with the container and forming a first cavity in the bag and a second cavity between the bag and the walls of the container;

means for introducing the mixture into the first cavity thereby increasing the volume of the first cavity while decreasing the volume of the second cavity;

means for venting the second cavity to facilitate a contacting relationship between the bag and the walls of the container;
means for heating the mixture in the bag to vaporize at least a portion of the solvent and form a solvent vapor;
a first condensing stage receiving the solvent vapor from the first cavity and for condensing at least a portion of the solvent vapor;
a second condensing stage receiving the solvent vapor from the first condensing stage and for condensing an additional portion of the solvent vapor; and
means for introducing a condensing fluid into the second condensing stage but not the first condensing stage to facilitate condensation of the solvent vapor in the second condensing stage.

5,445,715

SEPARATION OF M-XYLENE FROM XYLENES BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Mar. 27, 1990, Ser. No. 411,215
Int. Cl.[6] B01D *3/36*; C07C *7/06*
U.S. Cl. 203—50 **2 Claims**

1. A method for recovering m-xylene from a mixture of m-xylene and p-xylene which comprises distilling a mixture of m-xylene and p-xylene in the presence of an azeotrope forming agent, recovering the m-xylene and the azeotrope forming agent as overhead product and obtaining the p-xylene as bottoms product, wherein said azeotrope forming agent consists of tetra ethyl ortho silicate.

5,445,716

SEPARATION OF ETHANOL FROM ISOPROPANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Oct. 18, 1994, Ser. No. 323,715
The portion of the term of this patent subsequent to Sep. 20, 2011, has been disclaimed.
Int. Cl.[6] B01D *3/40*; C07C *29/84*
U.S. Cl. 203—57 **1 Claim**

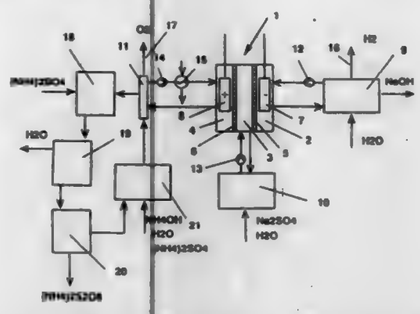
1. A method for recovering ethanol from a mixture of ethanol and isopropanol which comprises distilling a mixture of ethanol and isopropanol in the presence of about one part by weight of an extractive agent per part of ethanol-isopropanol mixture, recovering the ethanol as overhead product and obtaining the isopropanol and the extractive agent a bottoms product, wherein said extractive agent consists of one material selected from the group consisting of alpha-pinene, beta-pinene, limonene, alpha-phellandrene, alpha-terpinene, myrcene, carane, p-mentha-1,5-diene, butyl ether, 1-methoxy-2-propanol, n-butyl acetate, n-amyl acetate, benzyl acetate, ethylene glycol ethyl ether acetate, methyl acetoacetate, ethylene glycol diacetate, 2-butoxyethyl acetate, methyl butyrate, ethyl propionate, ethyl n-valerate, butyl benzoate, ethyl benzoate, pyridine, N,N-dimethyl aniline, o-sec.butyl phenol, 3-isopropyl phenol, 2,6-dimethyl phenol, o-tert.butyl phenol, 4-ethyl phenol, diethyl phthalate, diisooctyl phthalate, dimethyl adipate, glycerine triacetate, diethyl malonate, dimethyl glutarate, tetrahydro furan, ethylene glycol phenyl ether, dipropylene glycol methyl ether acetate, diethylene glycol hexyl ether, propoxypropanol, butoxypropanol, p-xylene glycol dimethyl ether, diethylene glycol t-butyl ether methyl ether, triethylene glycol diacetate, anisole, phenetole, phenyl ether, 1,2-methylenedioxybenzene, isophorone, ethyl-3-ethoxypropionate, tetraethylorthosilicate, 2-hydroxyacetophenone, 1,1,1-trichloroethane, tetrachloroethylene, 2,2,2-trichloroethanol, m-dichlorebenzene, chlorobenzene, 2,6-dichlorotoluene and 1-chlorohexane.

5,445,717

METHOD FOR SIMULTANEOUS PRODUCTION OF ALKALI METAL OR AMMONIUM PEROXODISULPHATE SALTS AND ALKALI METAL HYDROXIDE

Ari M. O. Kärki; Matti J. Lindström, both of Lappeenranta, and Heikki T. Pajaril, Helsinki, all of Finland, assignors to Kemira Oy, Espoo, Finland

Filed Aug. 8, 1994, Ser. No. 287,139
Claims priority, application Finland, Aug. 17, 1993, 933623
Int. Cl.[6] C25B *1/28, 1/16*
U.S. Cl. 204—82 **12 Claims**



1. A method for the simultaneous, continuous-action production of alkali metal or ammonium peroxodisulphate salts and an alkali metal hydroxide, the method comprising the steps of:
conducting an alkali metal sulphate into a middle space of a three space electrolytic cell comprising an anode having an anode space and a cathode having a cathode space wherein the anode is separated from the middle space by an anion exchange membrane and the cathode is separated from the middle space by a cation exchange membrane;
conducting an anolyte comprising a salt selected from the group consisting of: ammonium sulphate, alkali metal sulphate and a mixture thereof, sulfuric acid and an additive into the anode space;
conducting a catholyte selected from the group consisting of: water, diluted alkali metal hydroxide and a mixture thereof, into the cathode space; and
passing an electric current between the anode and cathode causing sulphate ions to pass from the middle space to the anode space where the sulphate ions are oxidized into peroxodisulphate ions to produce an alkali metal or ammonium peroxodisulphate and alkali ions to pass from the middle space to the cathode space to form an alkali metal hydroxide.

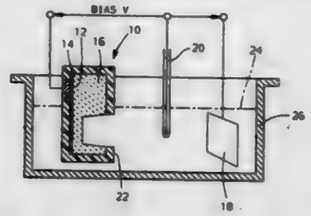
5,445,718

ELECTROCHEMICAL ETCH-STOP ON N-TYPE SILICON BY INJECTING HOLES FROM A SHALLOW P-TYPE LAYER

Su-Chee S. Wang, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 24, 1994, Ser. No. 185,084
Int. Cl.[6] C25F *3/12*
U.S. Cl. 204—129.1 **10 Claims**

1. A method of selectively etching a body of semiconductor material comprising:
providing a silicon wafer as a working electrode including an n-type region and a shallow boron implanted p-type layer wherein the n-type region and p-type layer met to form a p/n junction;
providing a counterelectrode;
etching a portion of the n-type region by placing the working electrode and counterelectrode in a liquid etchant and making the working electrode electrically positive and the counterelectrode electrically negative to produce a forward biased p/n junction;
applying voltage pulses greater than 2 V between the working electrode and the counterelectrode so that holes are



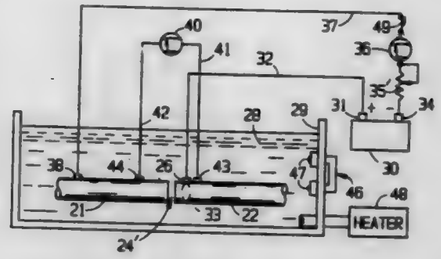
injected into the n-type region from the p-type layer and to stop etching a distance away from the p/n junction and provide a n-type membrane having a thickness ranging from 0.4 μm to 10.0 μm which is controlled by the amplitude of the pulse.

5,445,719

CORROSION CONTROL OF DISSIMILAR METALS

Robert S. Bolko, P.O. Box 544, Northbrook, Ill. 60065-0544

Division of Ser. No. 8,070, Jan. 22, 1993, Pat. No. 5,342,493, which is a continuation of Ser. No. 506,690, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 326,361, Mar. 21, 1989, abandoned. This application May 25, 1994, Ser. No. 249,228
Int. Cl.[6] G01N *27/26*; C23F *13/00*
U.S. Cl. 204—153.1 **6 Claims**



1. A method for determining the value of neutralizing current that is required to inhibit the flow of corrosion current between first and second dissimilar metal portions which when joined at a junction area form a metal structure which is contacted by an electrolyte and for protecting said structure, said method comprising: monitoring the amplitude of corrosion current flowing between the first and second dissimilar metal portions using a first current measuring means, said metal portions being spaced apart, locating an anode electrode in the electrolyte adjacent to but spaced apart from a less noble metal portion of the dissimilar metal portions, connecting a cathode electrode to a more noble metal portion of the dissimilar metal portions remote from the junction area, applying a potential difference across the junction area of the dissimilar metal portions by connecting the anode electrode and the cathode electrode to positive and negative outputs respectively of a source of non-pulsating direct current to cause a neutralizing current to flow between the first and second metal portions, monitoring the amplitude of the neutralizing current flowing between the first and second metal portions using a second current measuring means, increasing the potential difference across the junction area of the dissimilar metal portions to increase the amplitude of the neutralizing current until the amplitude of the corrosion current measured by the first current measuring means is decreased to zero to determine the value of neutralizing current required to inhibit flow of corrosion current, then connecting said metal portions to form the metal structure and applying neutralizing current at said value to the metal structure.

5,445,720

SUBSTRATES, BELTS AND ELECTROSTATOGRAPHIC IMAGING MEMBERS, AND METHODS OF MAKING

Donald S. Sypula; Joseph Mammino, both of Penfield, and Bela Richter, Honeoye Falls, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 574,082, Aug. 29, 1990, abandoned. This application Mar. 2, 1993, Ser. No. 24,974
Int. Cl.[6] C25D *13/04*
U.S. Cl. 204—181.1 **18 Claims**

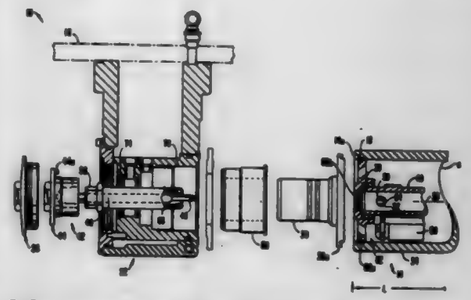
1. A process for fabricating a substrate comprising the steps of:
a) immersing a molding article having an electrically conductive molding surface in an electro-deposition liquid comprising polymer particles and nucleating material;
b) electrodepositing a coating on said molding surface;
c) coalescing said coating to form the substrate containing said nucleating material; and;
d) exposing said substrate to an electroless metal plating bath.

5,445,721

ROTATABLE MAGNETRON INCLUDING A REPLACEMENT TARGET STRUCTURE

John H. Bower, Livermore, Calif., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Aug. 25, 1994, Ser. No. 296,237
Int. Cl.[6] C23C *14/35*
U.S. Cl. 204—192.12 **15 Claims**



9. In a magnetron of a type having: (1) a target structure including a target surface formed on an outside of a target cylinder, the target cylinder being rotatable about a central axis thereof and having first and second target ends which define a target length therebetween, (2) first and second support structures which are capable of providing support for first and second target ends, respectively, (3) first and second spindles carried by the first and second support structures, respectively, which are capable of engaging the first and second target ends, respectively, and (4) a magnet structure disposed within the target structure and extending substantially along the target length, the target structure being rotatable with respect to the magnet structure, a method of replacing the target structure with a replacement target structure having a replacement magnet structure therein, comprising the following steps:
(a) disengaging said first and second spindles from the first and second target ends, respectively;
(b) retracting at least one of said disengaged spindles with respect to one of the first and second support structures that is closest thereto from one of the first and second target ends that is closest thereto;
(c) removing the target structure from the magnetron; and

(d) engaging first and second target ends of the replacement target structure with said first and second spindles, respectively.

5,445,722

METHOD AND DEVICE FOR PRODUCING ELECTROLYTIC WATER

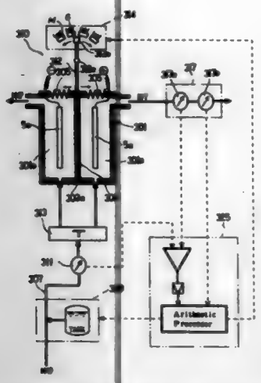
Shuji Yamaguti, Kawagoe; Masayuki Ukon, Ohmiya; Shiroji Minawa, Kawagoe, and Masakazu Arisaka, Yokohama, all of Japan, assignors to Nippon Intek Co., Ltd., Saitama, Japan

Filed Feb. 22, 1994, Ser. No. 199,840

Claims priority, application Japan, Feb. 22, 1993, 5-031970; Feb. 22, 1993, 5-031971; Feb. 22, 1993, 5-031972; Feb. 22, 1993, 5-031973; Feb. 22, 1993, 5-031974; Feb. 24, 1993, 5-035487

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—229 **3 Claims**



1. A device for producing electrolytic water having an electrolytic degree, comprising:

an electrolyzer having at least one anode chamber with an anode electrode and at least one cathode chamber with a cathode electrode, said chambers partitioned from one another by at least one ion-permeable barrier membrane;

a raw water supply passage for supplying raw water into said electrolyzer;

at least one flow control mechanism provided on said raw water supply passage;

means for injecting an electrolyte solution to said raw water flowing through said raw water supply passage;

discharge passages connected to said respective anode and cathode chambers;

at least one flow control mechanism provided on at least one of said discharge passages;

sensor means provided on at least one of said raw water supply passage and discharge passages for detecting an electrolytic degree of at least one of said raw water and said electrolytic water; and

a control unit for controlling at least one of said electrolyzer, a supply flow quantity of said raw water, and a discharge flow quantity of said electrolytic water responsive to at least one output signal of said sensor means;

wherein said barrier membrane is movable to move responsive to the electrolytic degree of the electrolytic water discharged from said electrolyzer, to correlatively vary a capacity of each of said anode and cathode chambers.

5,445,723

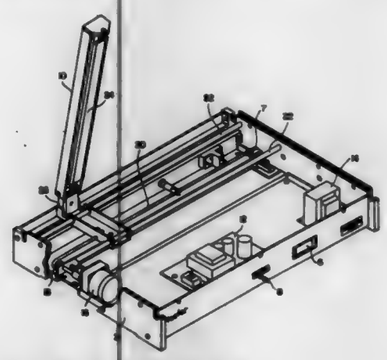
BLOTTING APPARATUS

Joseph Camacho, San Francisco, Calif., assignor to Hoefer Scientific Instruments, San Francisco, Calif.

Filed May 31, 1994, Ser. No. 252,571

Int. Cl.[6] G01N *27/28*

U.S. Cl. 204—299 R **12 Claims**



1. A blotting apparatus comprising:

a first electrode;

a carrier arm;

a second electrode resiliently mounted on said arm wherein said first electrode has a first surface area, and said second electrode is spaced from and facing said first electrode and said second electrode has a second surface area which is smaller than said first surface area.

5,445,724

PHOSPHONIUM SALTS AND USE THEREOF AS BRIGHTENERS FOR AQUEOUS ACIDIC ELECTRONICKELIZATION BATHS

Bernd Burkhart, Mutterstadt; Alfred Oftring, Bad Durkheim; Volker Schwendemann, Neustadt, and Klaus Glaser, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/00695, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20087, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 23, 1993, Ser. No. 307,788

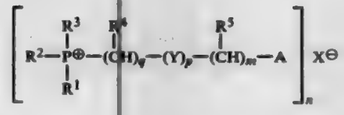
Claims priority, application Germany, Apr. 3, 1992, 42 11 140.4

Int. Cl.[6] C25D *3/12, 3/16*

U.S. Cl. 205—259 **11 Claims**

1. A process for producing nickelized shaped articles by electrodeposition of nickel from aqueous acidic baths containing as essential constituents one or more nickel salts, one or more inorganic acids and one or more brighteners, which comprises using as brighteners phosphonium salts of the general formula I

(I)



where

R^1 to R^3 are each C_1–C_{18}-alkyl, which may be carboxyl-, C_1–C_4-alkoxycarbonyl- or cyano-substituted, C_2–C_{12}-alkenyl, C_2–C_{12}-alkynyl, C_5–C_8-cycloalkyl, C_7–C_{12}-phenylalkyl, phenyl, which may be substituted by one or two substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, hydroxyl, phenyl and C_1–C_4-alkoxycarbonyl, or mono- or di(C_1–C_4-alkyl-)amino,

R^4 and R^5 are each hydrogen or C_1–C_4-alkyl,

A is hydrogen or a group of the formula —CO—H, —CO—R^6, —CO—OH, —CO—OR^6, —CO—CH$_2$—CO—OR^6, —O—CO—H, —O—CO—R^6, —OR^6, —SO_2—R^6, —SO_2—OH, —SO_2—OR^6, —$PO(OH)_2$, —PO(OH)(OR^6), —$PO(OR^6)_2$, —$OPO(OH)_2$, —OPO(OH)(OR^6) or —$OPO(OR^6)_2$, where

R^6 is C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_2–C_{12}-alkynyl, C_5–C_8-cycloalkyl, C_7–C_{12}-phenylalkyl or phenyl, which may be substituted by one or two substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, hydroxyl, phenyl and C_1–C_4-alkoxycarbonyl,

Y is —CH=CH— or —C≡C—,

m is from 0 to 10,

n is from 1 to 4,

p is 0 or 1,

q is from 0 to 10, and

$X^{\ominus}$ is an n-valent inorganic or organic anion that promotes solubility in water.

5,445,725

SENSOR PROBE FOR MEASURING HYDROGEN CONCENTRATION IN MOLTEN METAL AND METHOD FOR MEASURING HYDROGEN CONCENTRATION

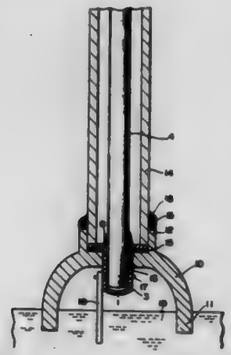
Kunihiro Koide, Nagoya, and Tamotsu Yajima, Gifu, both of Japan, assignors to Tokyo Yogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 981,873, Nov. 25, 1992. This application Sep. 8, 1994, Ser. No. 302,604

Claims priority, application Japan, Nov. 26, 1991, 3-310984; Dec. 27, 1991, 3-347383; Dec. 27, 1991, 3-347384; Dec. 27, 1991, 3-347385; Dec. 27, 1991, 3-347386; Dec. 27, 1991, 3-347387; Dec. 27, 1991, 3-347388; Jan. 28, 1992, 4-013468; Jan. 28, 1992, 4-013469; Jan. 28, 1992, 4-013470

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—153.1 **2 Claims**



1. A method for measuring hydrogen concentration in molten metal employing a sensor probe comprising:

a tubular sensor element made of proton conductive solid electrolyte having a perovskite structure having an inner surface, an outer surface and enclosed at one end,

a reference electrode constituted of a porous material formed on the inner surface of said sensor element,

a measuring electrode constituted of a porous material formed on the outer surface of said sensor element,

sealing material separating and preventing gas communication between said reference electrode and said measuring electrode, and

a ceramic sleeve fixed on the outer surface of said sensor element which creates a gas space in the sleeve between the molten metal and the measuring electrode, when the sleeve is immersed in the molten metal which results in the location of at least a part of said measuring electrode on the outer surface of said sensor element in the gas space comprising the steps of:

dipping said sleeve of said sensor probe into molten metal by facing said sleeve's opened part downwards, thereby enclosing a gas space which contacts said molten metal in said sleeve thereby generating a galvanic electromotive force, and

measuring the hydrogen concentration of the gas in said space using the galvanic electromotive force generated between said reference electrode and said measuring electrode of said sensor probe after the hydrogen concentration in the gas atmosphere nearly reaches equilibrium with the hydrogen concentration in said molten metal.

5,445,726

PROCESS AND DEVICE FOR PROLONGING THE USAGE THE TIME AND REDUCING THE TEMPERATURE DEPENDENCE OF ION-SELECTIVE POLYMER MEMBRANE ELECTRODES

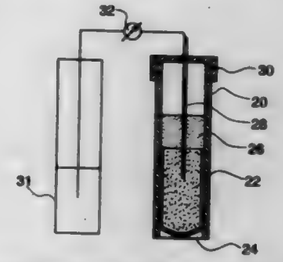
Karl Cammann, Münster, Germany, assignor to Daimler-Benz Aerospace AG, Munich, Germany

Filed Jan. 27, 1994, Ser. No. 187,192

Claims priority, application Germany, Apr. 10, 1992, 42 12 149.3

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—153.22 **21 Claims**



14. Process for prolonging the effective usage time and for minimizing temperature effects in an ion-selective polymer membrane electrode measuring chain, comprising

providing an ion-selective polymer membrane electrode having an ion-selective membrane defining an outer side and an inner side, which membrane contains a plasticizing agent and an electroactive compound which tend to bleed out therefrom, electrically connected with a constant potential reference electrode via a millivoltmeter to form a complete potentiometric measuring cell defining a measuring chain,

providing an outer aqueous measured solution immediately adjacent the outer side of the membrane and an inner aqueous potential drain solution immediately adjacent the inner side of the membrane,

supplying the plasticizing agent and electroactive compound to the outer solution and inner solution for saturating such solutions therewith, and

shifting an isotherm intersection of an ion selective measuring chain into a middle of a measuring range, said middle corresponding approximately to 0 mV, with a redox drain element.

5,445,727

PRODUCTION OF NICKELIZED SHAPED ARTICLES

Volker Schwendemann, Neustadt; Klaus Glaser, Mannheim; Chung-Ji Tschang, Bad Duerkheim; Bernd Burkhart, Mutterstadt; Alfred Oftring, Bad Duerkheim, and Bernhard Dung, Gruenstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/00063, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/15241, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 14, 1993, Ser. No. 256,374

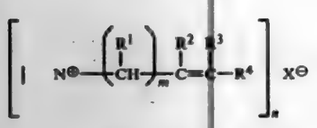
Claims priority, application Germany, Jan. 25, 1992, 42 02 003.4

Int. Cl.[6] C25D *3/16, 3/18*

U.S. Cl. 205—271 5 Claims

1. A process for producing nickelized shaped articles by electrodeposition of nickel from aqueous acidic baths containing as essential constituents one or more nickel salts, one or more inorganic acids and at least two brighteners, which comprises using as brighteners a mixture of

A) from 2 to 98% by weight of one or more cyclic N-allylammonium or N-vinylammonium compounds of the general formula I



(I)

where the nitrogen atom is part of a pyridine, quinoline or isoquinoline ring system which may additionally carry one or two C_1- to C_4-alkyl substituents or halogen atoms,
R^1, R^3 and R^4 are each hydrogen or C_1- to C_4-alkyl,
R^2 is hydrogen or methyl,
m is from 0 to 4,
n is from 1 to 4, and
$X^{\ominus}$ is an n-valent inorganic or organic anion which promotes solubility in water, and

B) from 98 to 2% by weight of one or more acetylenically unsaturated compounds of the general formula II

$$R^4—C{\equiv}C—R^5 \qquad (II)$$

where R^4 and R^5 are identical or different and each is C_1- to C_4-alkyl substituted by hydroxyl, sulfo, amino, C_1- to C_4-alkylamino or di(C_1- to C_4-alkyl)amino, although hydroxyl groups may have been reacted with from 1 to 10 mol of a C_2- to C_4-alkylene oxide or a mixture of such alkylene oxides and one of the radicals R^4 and R^5 may also be hydrogen or C_1-to C_4-alkyl.

5,445,728

METHOD FOR THE REACTIVATION OF SPENT ALUMINA-SUPPORTED HYDROTREATING CATALYSTS

David E. Sherwood, Jr., Beaumont, Tex., and Johnnie R. Hardee, Jr., Arkadelphia, Ark., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 75,946, Jun. 14, 1993, abandoned, which is a division of Ser. No. 702,480, May 20, 1991, Pat. No. 5,254,513. This application Jul. 18, 1994, Ser. No. 276,142

Int. Cl.[6] B01J *36/66*

U.S. Cl. 208—216 R 16 Claims

1. A hydrodesulfurization process for the production of low-boiling range, low-sulfur product streams from a petroleum residuum feedstock having a metals content more than 50 p.p.m. and having a sulfur content in excess of 2.0 weight percent where the residuum is passed upwardly through a first reaction zone and through a second reaction zone in succession under isothermal conditions in the presence of hydrogen and under hydrodesulfurization conditions, wherein the temperature in each reaction zone ranges from 650° F. to 850° F.; the pressure in each reaction zone ranges from 1000 to 3500 psia; wherein hydrogen gas is admitted to the first reaction zone in amount of 2000 to 10,000 SCFB and wherein the petroleum residuum is passed through the first reaction zone at a LHSV of 0.16 to 3.0 hr^{-1}; both of the said zones containing a particulate alumina-supported catalyst which is placed in ebullation in the liquid phase environment by the upflow of said residuum and hydrogen and the internal recycle of reactor liquid products, the improvement which comprises:

(a) in the final reaction zone introducing a fresh, particulate, high activity alumina-supported hydrotreating catalyst containing one or more metals of hydrotreating activity selected from the group consisting of cobalt, molybdenum, tungsten, phosphorus, nickel and vanadium,

(b) withdrawing spent catalyst from the final reaction zone, said spent catalyst being partially deactivated by metals deposited thereon in the final reaction zone,

(c) reactivating the spent catalyst by

(A) stripping process oil from the spent catalyst by washing with a hydrocarbon solvent and drying the washed catalyst thus obtaining free-flowing spent catalyst,

(B) contacting the free-flowing spent alumina-supported catalyst with steam at a temperature of 1000° to about 1250° F. in a steam treating zone,

(C) recovering a reactivated alumina supported catalyst from the steam treating zone;

(d) passing the entire effluent from the first reaction zone to the subsequent final reaction zone;

(e) passing the reactivated catalyst from the final reaction zone to the first reaction zone,

(f) withdrawing from the final reaction zone a liquid hydrocarbon stream which can be fractionated to recover the unconverted residuum stream with a boiling range of greater than or equal to 1000° F. and a sulfur content of about 2–3 weight percent which is suitable for blending to a low sulfur fuel oil product.

5,445,729

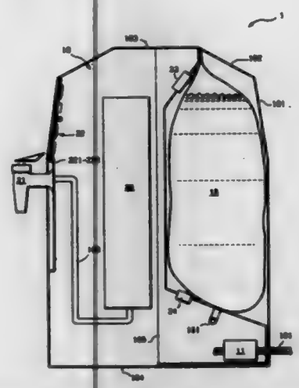
COUNTER TOP REVERSE OSMOSIS SYSTEM

Jerry B. Monroe, Peoria; Wayne T. Widenburg, Phoenix; Jon S. Ford, Phoenix, and James A. Monroe, Phoenix, all of Ariz., assignors to Premier Manufactured Systems, Inc., Phoenix, Ariz.

Filed Oct. 7, 1993, Ser. No. 132,786

Int. Cl.[6] B01D *17/12*

U.S. Cl. 210—86 11 Claims



1. A counter top reverse osmosis unit configured and arranged for use in a fluid flow path between and among

an inlet source of pressurized water,

an outlet drain for accepting at atmospheric pressure waste water produced by the reverse osmosis unit, and

an outlet port for dispensing of pressurized purified water produced by the reverse osmosis unit, the counter top reverse osmosis unit comprising;

a housing in the form of a hollow body suitably sized so as to sit upon a counter top without toppling and suitably shaped so as to sit upon a level surface of the counter top without sliding or tilting, the housing presenting and permitting flow connections to each of the inlet source, the outlet drain and the outlet port, the housing in the form of a hollow body having and defining

a first compartment.

a second compartment, and

a partition separating the first compartment from the second compartment;

a filter means, located within the housing's first compartment and flow-connected through the housing to the inlet source of pressurized water, for filtering the pressurized water to produce filtered pressurized water;

an ultraviolet light means, located within the housing's first compartment and flow-connected to the filter means, for sterilizing with ultraviolet light radiation the filtered pressurized water received from the filter means to produce pressurized sterilized filtered water;

an osmotic membrane means, located within the housing's first compartment and flow-connected to the ultraviolet light means, for separating pressurized sterilized filtered water received from the ultraviolet light means into (i) waste water that is pressurized to a waste-water pressure that is sufficiently higher than atmospheric pressure so as to be suitable to expel the waste water into an environment that is at atmospheric pressure, and (ii) purified water that is pressurized to a purified-water pressure that is also higher than atmospheric pressure but that is not sufficiently higher so as to permit reliable dispensing of the purified water directly into the environment that is at atmospheric pressure;

conduit means, located within the housing's first compartment and flow-connected to the osmotic membrane means for receipt of the waste water therefrom, for flow conducting the waste water that is pressurized to the waste-water pressure that is higher than atmospheric pressure through the housing to the outlet drain that is at atmospheric pressure;

a collapsible storage bag reservoir means, located within the housing's second compartment and flow-connected to the osmotic membrane means for receipt of the purified water therefrom, for receiving and for storing the purified water; and

a pump means, located within the housing's second compartment and flow connected to the collapsible storage bag reservoir means, for pumping under pressure purified water received from the collapsible storage bag reservoir means out the outlet port under an enhanced purified-water pressure that is adequate for the dispensing of the purified water into the environment that is at atmospheric pressure;

wherein the filter means, the ultraviolet light means, the osmotic membrane means, and the conduit means are located in the housing's first compartment, whereas the collapsible storage bag reservoir means and the pump means are located within the housing's second compartment;

wherein the pump means is flow-connected in line to a flow of purified water between the osmotic membrane means and the environment that is at atmospheric pressure.

2. The counter top reverse osmosis unit according to claim 1 further comprising:

an electrical switch located between the interior of the second compartment of the housing and the collapsible bag storage reservoir means contained therein for producing an electrical signal in response to a sensed fill level of the collapsible bag storage reservoir means.

5,445,730

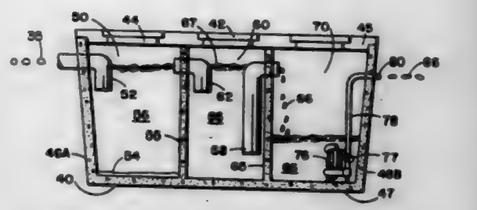
GREASE/OIL/WATER SEPARATOR DEVICE FOR VEHICLE WASH SYSTEM

Harley J. Pattee, 10143 Allenby Ct., Orlando, Fla. 32821

Division of Ser. No. 41,767, Apr. 2, 1993, Pat. No. 5,374,352. This application Jun. 9, 1994, Ser. No. 257,169

Int. Cl.[6] B01D *21/00, 36/04*; C02F *9/00*

U.S. Cl. 210—167 6 Claims



1. A grease/oil/water separator device, comprising:

a precast, one piece structure having a first end and a second end which are connected by a bottom, and a first baffle and a second baffle connected to said bottom;

a settling tank is defined by said first end, said first baffle and said bottom;

a trap tank is defined by said first baffle, said second baffle and said bottom;

a pump tank is defined by said second baffle, said second end and said bottom;

a first pipe, for allowing water to enter said settling tank, is positioned at a top corner of said settling tank and extends through said first end;

a second pipe is positioned at a top corner of said settling tank diagonally across from said first pipe and extends through said first baffle, said second pipe having an entrance in the top portion of the settling tank at the same level as said first pipe and an exit in the top portion of said trap tank such that water at the top of said settling tank enters said second pipe and flows into said trap tank;

a third pipe positioned diagonally across from said second pipe having an entrance located proximate to the bottom of said trap tank and extending through said second baffle, said third pipe having an exit in the upper portion of the pump tank such that water from the bottom of said trap tank flows into said pumping tank at a level corresponding to a water surface level in said trap tank; and

water discharge means connected to said pumping tank for removing water from said pumping tank.

5,445,731

PERVAPORATION VESSEL

David Taobey, New Hamburg; Craig R. Bartels, Wappingers Falls, and Vatsal M. Shah, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1993, Ser. No. 117,812

Int. Cl.[6] B01D *3/10, 63/04*

U.S. Cl. 202—173 11 Claims

1. Apparatus for the pervaporation of an organic aqueous liquid having at least one vaporizable component, which includes a vessel,

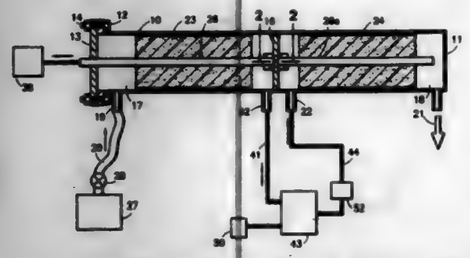
liquid inlet and outlet as well as a vapor outlet means communicated with said vessel,

at least one baffle plate assembly in said vessel defining a plurality of filter compartments,

a pervaporation member in each of said plurality of filter compartments for contacting said organic aqueous liquid, and for passing only the vaporizable component therethrough,

bypass means communicating said plurality of filtering compartments for conducting residual liquid sequentially therethrough,

heat exchange means associated with said bypass means for regulating the temperature of residual liquid therein and,



vacuum means communicated with said respective filter compartments for maintaining a reduced pressure therein whereby to evacuate said vaporizable component from said vessel.

5,445,732

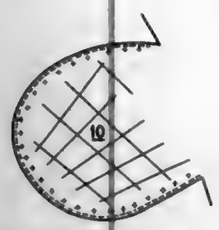
PASSIVATED POROUS POLYMER SUPPORTS AND METHODS FOR THE PREPARATION AND USE OF SAME

Pierre Girot, Paris, and Egisto Boschetti, Croissy sur Seine, both of France, assignors to Sepracor Inc., Marlborough, Mass.

Continuation of Ser. No. 955,935, Oct. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 901,326, Jun. 19, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,625

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **36 Claims**



1. A passivated chromatographic media comprising (i) a porous polymeric substrate matrix having interior and exterior surfaces and innate hydrophobic groups that render said substrate matrix susceptible to undesirable non-specific interaction with one or more biological molecules, and (ii) a three-dimensional, pore-filling gel network derived from polymerization of a main monomer, a passivating monomer different from said main monomer having one or more hydrophobic functional group(s) and one or more reactive functional group(s) and a crosslinking agent, wherein said monomers and said crosslinking agent have first been allowed to come into intimate contact with said surfaces of said substrate matrix before said polymerization to form said gel network,

wherein said hydrophobic functional groups of said passivating monomers are substantially adjacent to and adsorb upon said innate groups of said substrate matrix, and said reactive functional groups of said passivating monomers when polymerized are covalently linked to said main monomers,

wherein said gel network has become associated with said surfaces of said porous substrate matrix by means of hydrophobic-hydrophobic interactions between said innate groups and said passivating monomer, and said gel network extends into and throughout the porous volume of said substrate matrix to substantially completely fill said porous volume,

and wherein said innate groups of said substrate matrix have become deactivated, resulting in the substantial elimination of said undesirable non-specific interaction.

5,445,733

PLATE FILTER

Richard Van Egdon, Nörvenich, and Rudolf Geiss, Niederzier, both of Germany, assignors to Eberhard Hoesch & Söhne GmbH, Verfahrens-und Anlagentechnik, Düren, Germany

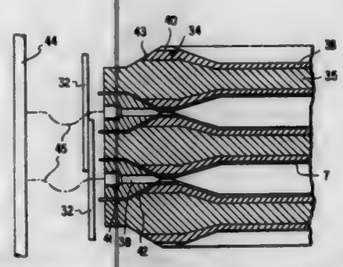
PCT No. PCT/EP92/01022, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/20424, PCT Pub. Date Nov. 26, 1992

PCT Filed May 9, 1992, Ser. No. 30,370

Claims priority, application Germany, May 23, 1991, 41 16 874.7

Int. Cl.[6] B01D *25/133*

U.S. Cl. 210—229 **5 Claims**



1. In a plate filter press including a plurality of face-to-face arranged filter plates, any two adjoining filter plates together defining a filter chamber bounded by a continuous, raised sealing edge carried on each of said two adjoining filter plates, a separate heavy liquid intake member being in fluid communication with each filter said chamber, a pressing membrane provided on each of said two adjoining filter plates and positioned to traverse the filter chamber, each said membrane defining a said raised sealing edge, a filter element positioned to traverse each filter chamber, means for movably supporting the filter plates, closing means for moving the filter plates toward one another into a mutually contacting, closed condition and for moving the filter plates away from one another into a separated, open position, spacer means stringing the heavy liquid intake members to one another for supporting the heavy liquid intake members in said open position, wherein the improvement comprises:

each said liquid intake member is a tubular body;

adjacent ones of said sealing edges define a respective wedge shaped recess extending in a longitudinal direction of the sealing edges;

the tubular bodies extending in said longitudinal direction and being sealingly received in the respective recesses in said closed position;

each said tubular body having a plurality of liquid discharge openings spaced apart from one another in said longitudinal direction and facing said recess;

each said sealing edge being further provided with a plurality of transverse grooves situated between said recess and a respective said filter chamber;

said transverse grooves being oriented transversely to said longitudinal direction and being in fluid communication with respective ones of said liquid discharge openings of a respective said tubular body seated in a respective said recess for maintaining fluid communication between the tubular body and the filter chamber.

5,445,734

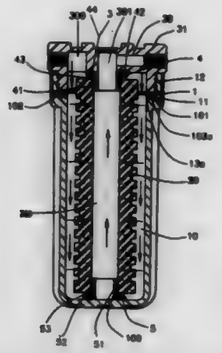
WATER FILTER

Ching-Wen Chen, No. 249-14, Lane 39, Hou Chuang, Ho Hsing Village, Chung Pu Hsiang, Chia I Hsien,

Filed Nov. 18, 1994, Ser. No. 344,713

Int. Cl.[6] B01D *27/08, 35/31, 35/30*

U.S. Cl. 210—232 **2 Claims**



1. A water filter comprising a cylindrical casing having a bottom wall and a top opening, a filter element received inside said cylindrical casing and having a top end, a bottom end and a longitudinal center through hole extending from said top end to said bottom end, a top cover fastened to said cylindrical casing to hold down said filter element, said cover having a water inlet port for guiding water into said cylindrical casing to the filter element and a water outlet for guiding filtered water out of said cylindrical casing from the filter element, said water outlet comprising a water outlet pipe which projects downwardly from the cover into said longitudinal center through hole at said top end of said filter element, said cylindrical casing including a stub pipe extending from said bottom wall upwardly into said longitudinal center through hole at the bottom end of said filter element, a packing ring sealed in an annular groove in said cylindrical casing between said cylindrical casing and said top cover, a first water sealing device sealed between said cylindrical casing and said bottom end of said filter element, and a second water sealing device sealed between said top cover and said top end of said filter element, wherein said packing ring comprises a downwardly extending annular longitudinal flange integrally formed with an annular horizontal flange wherein said horizontal flange includes a plurality of downward projecting strips respectively fitted into a plurality of notches inside said cylindrical casing to stop said packing ring from rotary motion relative to said cylindrical casing; said second water sealing device comprises a tube portion sleeved onto said water outlet pipe of said top cover and having a first tube portion end abutting the top cover and an opposite tube portion end extending into the top end of the longitudinal center through hole of said filter element, said second water seal device further comprising an outward ring flange integrally formed with said first tube portion end and stopped between said top cover and said filter element, and a downwardly extending annular flange raised from the outward ring flange of said second water sealing device and engaging the top end of said filter element; said first water sealing device comprises a tube portion sleeved onto said stub tube inside said cylindrical casing at said bottom wall and having a first tube portion end abutting the bottom wall and an opposite tube portion end extending into the bottom end of the longitudinal center through hole of said filter element, said first water sealing device further comprises an outward ring flange integrally formed with said first tube portion end of said first water seal device and stopped between said bottom wall of said cylindrical casing and said bottom end of the filter element, and an upwardly extending annular flange raised from the outward ring flange of said first water sealing device and engaging the bottom end of said filter element.

5,445,735

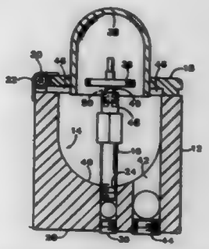
COMBINATION FILTER BLOCK AND EFFLUENT FLOW DEFLECTOR

John W. Kaskinen, 4131 N. Overlook Ter., Portland, Oreg. 97217

Continuation-in-part of Ser. No. 200,827, Feb. 23, 1994, abandoned. This application Jan. 19, 1995, Ser. No. 376,020

Int. Cl.[6] B01D *35/00*

U.S. Cl. 210—247 **3 Claims**



1. A combination particulate filter holder and pressurized effluent flow deflector comprising:

(a) a housing;

(b) at least one effluent inlet in said housing constructed and arranged for receiving a particulate-containing liquid effluent that is under pressure;

(c) at least one filter holder constructed and arranged to withstand the pressure of pressurized liquid effluent and having an inlet and an outlet, said inlet and said outlet being in fluid communication with said at least one effluent inlet and constructed and arranged to hold at least one particulate filtering means;

(d) at least one particulate filtering means constructed and arranged to withstand the pressure of pressurized liquid effluent;

(e) a filtrate flow deflector for deflecting filtrate that has passed through said at least one particulate filtering means, said filtrate flow deflector substantially surrounding the outlet of said at least one filter holder;

(f) a basin in said housing for receiving filtrate from the outlet of said at least one particulate filtering means and filtrate deflected by said filtrate flow deflector; and

(g) an outlet in said housing in fluid communication with said basin.

5,445,736

DEVICE AND FILTER ELEMENT FOR PROCESSING BLOOD FOR HUMAN TRANSFUSION

David B. Pall; Thomas C. Gsell, both of Glen Cove, and Brian T. Mueller, Rockville Centre, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 933,309, Aug. 21, 1992, Pat. No. 5,316,674, which is a continuation of Ser. No. 609,574, Nov. 6, 1990, Pat. No. 5,152,905, which is a continuation-in-part of Ser. No. 405,977, Sep. 12, 1989, abandoned. This application Apr. 25, 1994, Ser. No. 231,914

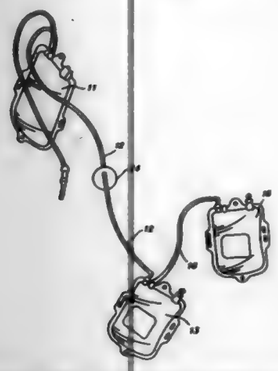
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[6] B01D *29/00, 35/00*

U.S. Cl. 210—257.1 **14 Claims**

1. A device for the collection and processing of a blood product comprising a first container and at least one second container connected thereto, wherein a porous medium barring passage of red blood cells is interposed between the first

container and the second container, the porous medium permitting platelets to pass therethrough until red blood cells



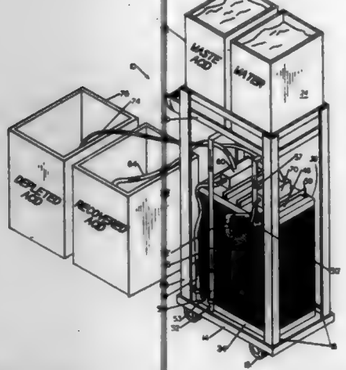
block the porous medium, said porous medium having a negative zeta potential at a pH of 7.3.

5,445,737

APPARATUS FOR DIFFUSION DIALYSIS

Edwin P. Ondrick, Westfield, Mass., assignor to Poly-Plating, Inc., Chicopee, Mass.

Continuation of Ser. No. 3,273, Jan. 12, 1993, abandoned, which is a continuation of Ser. No. 906,762, Jun. 30, 1992, Pat. No. 5,217,612. This application Jul. 15, 1993, Ser. No. 92,674
Int. Cl.[6] B01D *61/28*
U.S. Cl. 210—321.71 8 Claims



8. A diffusion dialysis system for the decontamination of an acid used in metal coating processes and which has been contaminated with metallic ions, the system comprising:

a plurality of horizontally disposed anionic exchange cells arranged in superimposed edge-to-edge and vertically stacked relationship for purifying the acid by removing the metallic ions therefrom, each cell including at least one anionic exchange membrane having an upper side and a lower side;

means defining a first chamber disposed on the upper side of the membrane and a second chamber disposed on the lower side of the membrane;

means for providing a counter-flow of water and the acid including input conduits to direct the water and the acid to opposite vertical ends of the stack of cells and channels disposed within each of the cells to direct the water flow through the first chamber on the upper side of the membrane and the acid flow through the second chamber on the lower side of the membrane, and

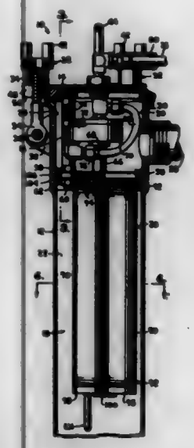
means for providing a uniform flow rate including means including a vacuum pump for drawing the water and the acid through the stack of cells.

5,445,738

VIBRATING FILTER

Darrel D. Fry, 203 S. Mississippi, Nowata, Nowata County, Okla. 74048; William R. Wells, 4261 E. 102 S., Tulsa, Tulsa County, Okla. 74137, and Malcolm R. McDonald, 5303 S. Louisville, Tulsa, Tulsa County, Okla. 74135

Filed Aug. 19, 1993, Ser. No. 108,246
Int. Cl.[6] B01D *33/03*
U.S. Cl. 210—384 15 Claims



1. A vibrating filter comprising:

a housing defining an outlet chamber and a filter chamber;

a separation chamber secured within the housing to separate the outlet chamber and the filter chamber, the separation member having at least one hole for receiving filtered liquid;

a filter secured within the filter chamber to the separation member, the filter having an outlet in fluid communication with the outlet chamber;

a vibrator; and

a rigid rod fixedly secured to said separation member at a proximal end and to said vibrator at a distal end, said vibrator coupled solely with said separation member and imparting generally horizontal vibration to said separation member through said rod to thereby directly vibrate only said filter.

7. A vibrating filter comprising:

housing having an inside wall defining an open top;

filtration unit secured within the housing for filtering liquid entering through an inlet, the filtration unit comprising:

a cover for covering and sealing the open top of the housing, the cover having means for removably securing it to the housing:

a separation member coupled with the cover in spaced apart relation such that the housing is separated into an outlet chamber formed between the cover and the separation member, and a filter chamber formed below the separation member when the cover is secured to the housing, the separation member being supported by the cover within the housing so that the separation member abuts the inside wall of the housing, the separation member further having a bottom surface exposed to the filter chamber;

a sealing means secured adjacent the bottom surface of the separation member for sealing the abutment of the separation member to the inside wall of the housing;

a filter secured to the separation member within the filter chamber, the filter being in fluid communication with the outlet chamber;

a vibrator; and

a rigid rod fixedly secured to said separation member at one end and to said vibrator at the opposite end, said vibrator rigidly secured only to said separation member and disposed within the outlet chamber, the vibrator directly vibrating only the filter in a generally horizontal direction through said rod.

5,445,739

COMPOSITE MEMBRANE THAT INCLUDES A SEPARATION MEMBRANE

Hiroyoshi Fujimoto, Okayama, and Mari Sakai, Kagoshima, both of Japan, assignors to Japan Gore-Tex, Inc., Tokyo, Japan

Continuation of Ser. No. 830,100, Feb. 3, 1992, abandoned. This application Aug. 13, 1992, Ser. No. 928,571
Claims priority, application Japan, Feb. 4, 1991, 3-035702
Int. Cl.[6] B01D *71/32*
U.S. Cl. 210—490 8 Claims

1. A composite membrane comprising:

(a) a separation membrane adhered to

(b) a hydrophilic porous fluoropolymer support membrane;

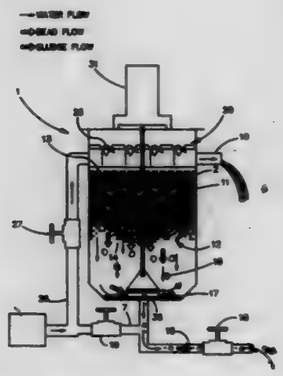
said porous fluoropolymer support membrane having continuous pores through the membrane, in which at least a portion of the interior of the membrane is coated with a hydrophilic fluorine-containing copolymer comprising (i) units of a fluorine-containing monomer and (ii) units of a non-fluorinated vinyl monomer containing a hydrophilic functional group; wherein the amount of the copolymer present is sufficient to impart hydrophilicity to the fluoropolymer support membrane.

5,445,740

FLOATING MEDIA BIOFILTER

Ronald F. Malone, 2017 General Lee Ave., Baton Rouge, La. 70810

Filed Jan. 13, 1994, Ser. No. 182,791
Int. Cl.[6] C02F *3/00*
U.S. Cl. 210—618 15 Claims



1. A biofilter, comprising:

(a) a tank having a bottom and a sidewall, said sidewall having a lower portion sloping toward said bottom, and an upper portion;

(b) floating media means in said tank for forming a floating media pack when said tank is filled with liquid, said media means being covered with a biofloc film;

(c) an upper screen, positioned in said upper portion of said tank above said media means, having openings sized to prevent said media means from passing therethrough;

(d) rotating circulation means, wherein said circulation means rotates at a speed of less than 200 rpm such that the volume of said media means remains substantially constant and excessive damage does not occur to said biofloc film during backwashing operations;

(e) an inlet line in fluid communication with said tank below said media means;

(f) a sludge line in fluid communication with said bottom of said tank; and

(g) an outlet line in fluid communication with said tank above said upper screen.

9. In a biofilter, comprising:

a tank containing floating media means for forming a floating media pack when said tank is filled with liquid, said media being covered with a biofloc film;

an upper screen, positioned in said tank above said media means, having openings sized to prevent said media means from passing therethrough;

rotating means attached to said tank for circulating said media means during backwashing operations;

an inlet line in fluid communication with said tank below said media means;

a sludge line in fluid communication with said tank below said media means; and

an outlet line in fluid communication with said tank above said upper screen;

a method for backwashing said biofilter, comprising the steps of:

(a) operating said rotating circulation means at a speed of less than 200 rpm such that the volume of said media means remains substantially constant and excessive damage does not occur to said biofloc film;

(b) collecting said filtered matter in said tank below said media means; and

(c) removing said filtered matter from said tank through said sludge line.

5,445,741

PROCESS FOR TREATING WASTE WATER

Wolfgang Dilla; Helmut Dillenburg; Michael Klumpe; Hans-Georg Krebber; Horst Linke, all of Rheinberg; Detlef Ornol, Gladbeck, and Erich Ploenissen, Rheinberg, all of Germany, assignors to Solvay Deutschland GmbH, Hanover, Germany

Filed Dec. 23, 1993, Ser. No. 172,207
Claims priority, application Germany, Dec. 30, 1992, 42 44 482.9
Int. Cl.[6] C02F *1/76, 1/78*
U.S. Cl. 210—631 37 Claims

1. A process for decreasing the content of organic substances in alkaline waste water from the production of a substance selected from the group consisting of halohydrins, polyols and vinyl chloride, said waste water having a COD content, by chemical oxidation comprising the steps of:

treating the waste water in a reaction vessel at a temperature of more than 15° C. for a period of at least 0.25 hours with a sufficient amount of a chlorine-releasing substance to release at least 1 g of chlorine per g COD initially contained in the water and in the presence of a molar ratio of OH^- to chlorine of more than 1.5 and maintaining a pH value of ≥ 5, whereby hypochlorite forms in said waste water and organic compounds initially present in the water are at least partially oxidized, and

subjecting the waste water to a thermal treatment under alkaline conditions at a temperature of 65° to 200° C. for a period of from 0.25 to 8 hours, whereby the thermal treatment may either precede or follow the treatment with the chlorine-releasing substance; and

thereafter subjecting the water to at least one further treatment selected from the group consisting of oxidative treatment with ozone or hydrogen peroxide, adsorptive

treatment with activated carbon, and catalytic treatment with hydrogen in the presence of a noble metal catalyst.

5,445,742

PROCESS FOR PURIFYING HALOSILANES

Catherine L. Bothe Almquist, West Chester, Ohio; Michael A. Diaz, Louisville, Ky.; Roland L. Halm, Midland, Mich.; James R. Hasler, Jr., Madison, Ind., and James S. Smith, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 23, 1994, Ser. No. 247,812
Int. Cl.[6] C02F *1/42*; B01J *8/02*
U.S. Cl. 210—670 **15 Claims**

1. A process for reducing hydrocarbon content of halosilanes, the process comprising: contacting a liquid mixture comprising a halosilane and a hydrocarbon with an adsorbent selective for the hydrocarbon, thereby reducing the hydrocarbon content of the mixture.

5,445,743

METHACRYLATE POLYMERS AS ANTIFOULANTS IN QUENCH WATER SYSTEMS

Carl T. Rowe, Missouri City, and Sherri L. Fisher, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Feb. 10, 1994, Ser. No. 194,768
Int. Cl.[6] C02F *5/10*
U.S. Cl. 210—701 **2 Claims**

1. A method for dispersing polymeric foulants in a quench water used to quench cracked gases in an ethylene water quench tower, the method comprising the step of: introducing a deposit inhibiting amount of an oil-soluble dispersant into said quench water, the dispersant comprising a copolymer of a first monomer and a second monomer, the first monomer being selected from the group consisting of butyl methacrylate, lauryl methacrylate, stearyl methacrylate, and decyl methacrylate-2-ethylhexyl methacrylate, the second monomer being selected from the group consisting of diethylaminoethyl methacrylate, dimethylaminoethyl methacrylate, phenyl aminoethyl methacrylate, butyl aminoethyl methacrylate, and propyl aminoethyl methacrylate wherein said polymer contains from about 0.1% to 3.5% by weight of basic amino nitrogen, to disperse said polymeric foulants and prevent deposition of said polymeric foulants in said quench tower.

5,445,744

METHOD AND A DEVICE FOR THE COLLECTION OF OIL SLICKS ON A WATER SURFACE

Odd Pettersen, N-4640 Sogne, Norway

PCT No. PCT/NO92/00041, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO/9215481, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 6, 1992, Ser. No. 117,021
Claims priority, application Norway, Mar. 8, 1991, 910920
Int. Cl.[6] E02B *15/04*
U.S. Cl. 210—776 **17 Claims**



1. A method for collecting oil from an oil slick floating on a body of water, comprising;

(a) providing a barge having a receiving bow section, a floating boom extending from said receiving bow section and oriented to capture the floating oil slick and to channel the floating oil slick towards said receiving bow section, a rotatable paddle wheel having an outer surface, a transverse threshold disposed adjacent a receiving end of said boom at a position above a surface of said body of water and above an upper extent of said paddle wheel, and an on-board oil collection container disposed to receive oil and water flowing from said body of water, over said transverse threshold;

(b) orienting the barge relative to the body of water so as to cause said floating oil slick, and immediately underlying water of said body of water, being channeled by said floating boom, to progressively approach said transverse threshold; and

(c) acting on said floating oil slick by rotating said paddle wheel such that a forwardly facing portion of said outer surface of said paddle wheel provides an upwardly moving surface that entrains the water immediately underlying said oil slick and thereby forces temporally successive increments of said floating oil slick and said immediately underlying water upwards from the surface of said body of water and then said upper extent of said paddle wheel and over said transverse threshold and into said on-board oil collection container.

5,445,745

FILTERING METHOD FOR FILTERING LIQUIDS

Thomas Handtmann, Hugo-Haring-Strasse-60, D-88396 Biberach, Germany 88400

PCT No. PCT/EP92/01436, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO93/00146, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 25, 1992, Ser. No. 170,304
Claims priority, application Germany, Jun. 25, 1991, 41 20 971.0
Int. Cl.[6] B01D *37/02*
U.S. Cl. 210—777 **8 Claims**



1. A process for filtering liquids comprising the steps of:

depositing a filtration aid on substantially flat filter carriers (2) to form filters (3) on the filter carriers (2) at a deposition station (1) without adding binding agents to the filtration aid or filters (3);

then, removing the filter carriers (2) and the deposited filters (3) from the deposition station (1);

then, introducing the filter carriers (2) and the deposited filters (3) into a filter station (4) and stacking them in a vertical tower;

then, pressing the stacked filter carriers (2) and filters (3) together;

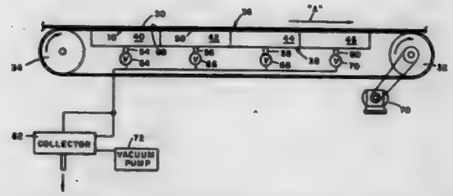
thereafter, supplying a liquid to be filtered to the filters (3) which are on the filter carriers (2) in the filter station (4), wherein said liquid flows through an inlet in a sidewall of a respective carrier above the filter, through the filter, and out through an outlet in a sidewall of said respective carrier below the filter; and then, removing a filtrate from the filter station (4).

5,445,746

METHOD FOR DEWATERING A POROUS WET WEB

Charles A. Lee, Knoxville, Tenn., assignor to Cer-Wat Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 937,365, Aug. 28, 1992, Pat. No. 5,256,288, and a continuation-in-part of Ser. No. 937,988, Aug. 28, 1992, Pat. No. 5,292,438, and a continuation-in-part of Ser. No. 937,512, Aug. 28, 1992, Pat. No. 5,259,952. This application Oct. 20, 1993, Ser. No. 139,541
Int. Cl.[6] B01D *33/04*
U.S. Cl. 210—783 **11 Claims**



1. A method for the removal of liquid from a porous web containing said liquid comprising the steps of

providing a filtration medium in position to receive thereon a porous web containing a liquid disposed within said pores of said web, said filtration medium including a first layer made up of a thin porous membrane having pores extending through the thickness thereof and a porous substrate layer supporting said membrane, said substrate including a plurality of reservoirs defined therein and which are in fluid communication with said pores in said membrane, said reservoirs having an average volume which is several times greater than the average volume of said pores through said membrane,

disposing said web on that surface of said filtration medium defined by said membrane in flat supported relationship thereon, to thereby establish fluid communication between said liquid in said web and the pores of said membrane,

selecting the size, number and/or distribution of said pores over the area of said membrane to be sufficient to effect capillary transfer of liquid from said web into said pores of said membrane but which will preclude the unaided reverse flow of liquid from said pores of said membrane to said web, irrespective of the period of time over which said liquid is present in said pores of said membrane and/or within said reservoirs defined in said substrate,

providing a reduced pressure on that surface of said filtration medium opposite the surface thereof on which said web is supported to produce a pressure differential across the thickness of said web and said filtration medium,

adjusting the value of said pressure differential across said web and filtration medium to a value which results in the removal of liquid from said reservoirs of said substrate as said liquid is transferred to said reservoirs from said pores of said membrane,

collecting or disposing of said liquid which is withdrawn from said reservoirs.

5,445,747

CELLULASE FABRIC-CONDITIONING COMPOSITIONS

Lisa L. Kvietok, Wilmington; Toan Trinh, Maineville, and Judith A. Hollingshead, Batavia, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 5, 1994, Ser. No. 286,729
Int. Cl.[6] D06M *16/00*, *13/46*
U.S. Cl. 252—86 **20 Claims**

1. A fabric conditioning composition for the treatment of fabrics comprising:

(a) from about 1% to about 90% of one or more cationic fabric softening agents, nonionic fabric softening agents, or mixtures thereof;

(b) from about 0.1 to about 125 CEVU/gram of cellulase; and

(c) an effective amount of perfume material selected to cover off-odor associated with said treatment of fabrics with said composition comprising components (a) and (b).

5,445,748

SOLID LUBRICANT COMPOSITION

Rudiger Holinski, Munich, Germany, assignor to Dow Corning GmbH, Wiesbaden, Germany

Filed Dec. 30, 1993, Ser. No. 175,453
Claims priority, application Germany, Jan. 11, 1993, 43 00 464.4
Int. Cl.[6] C10M *103/00*
U.S. Cl. 252—30 **7 Claims**

1. A solid lubricant composition comprising (I) 30 to 70 parts by weight of graphite, (II) 70 to 30 parts by weight of a mixture of at least two components selected from the group consisting of (a) sodium molybdate, (b) sodium sulphate, (c) barium sulphate and (d) sodium phosphate, the ratio of the two components being in the range of from 0.5/1 to 20/1.

5,445,749

THIOCARBAMATES FOR METAL/CERAMIC LUBRICATION

Hyun-Soo Hong, Moreland Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 12,076, Feb. 1, 1993, abandoned. This application Aug. 23, 1994, Ser. No. 294,295
Int. Cl.[6] C10M *135/18*
U.S. Cl. 252—33.6 **31 Claims**

1. A method for lubricating a metal-ceramic interface, comprising supplying to said interface a composition comprising:

(a) a carrier fluid, and

(b) a copper, cobalt, nickel, tungsten, titanium, manganese, molybdenum, iron, chromium, vanadium, or rare earth element thiocarbamate compound in an amount suitable to impart improved wear performance to said interface.

5,445,750

LUBRICATING OIL COMPOSITION CONTAINING THE REACTION PRODUCT OF AN ALKENYLSUCCINIMIDE WITH A BIS(HYDROXYAROMATIC) SUBSTITUTED CARBOXYLIC ACID

Harry Chafetz, Hyde Park; Christopher S. Liu, Poughkeepsie; Brian L. Papke, Wappingers Falls, and Thomas A. Kennedy, New Windsor, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 3, 1993, Ser. No. 115,838
Int. Cl.[6] C10M *159/12*
U.S. Cl. 252—49.6 **8 Claims**

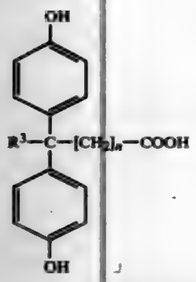
1. A lubricating oil composition comprising

(1) a major portion of a lubricating oil, and

(2) a minor portion of an antioxidant-dispersant lubricating additive prepared by the process comprising:

(a) reacting a polyethyleneamine with an alkenylsuccinic acid anhydride to form a mono- and/or bis-alkenylsuccinimide;

(b) acylating said mono- and/or bis-alkenylsuccinimide with a bis(hydroxyaromatic) substituted carboxylic acid of the formula



in which R^3 is H or selected from alkyl, alkenyl, alkoxyl, aralkyl or alkaryl having 1 to 24 carbon atoms, wherein the group $(CH_2)_n$ may be substituted with an alkyl, alkenyl, alkoxyl, aralkyl or alkaryl group; and, optionally, another acylating agent to form an acylated mono- and/or bis-alkenylsuccinimide; and

(c) recovering said acylated mono- and/or bis-alkenylsuccinimide.

5,445,751

FLUOROSILICONE LUBRICANT COMPOSITIONS

Yasue Kanzaki; Hideki Kobayashi; Toru Maestomi, and Ichiro Murakami, all of Chiba, Japan, assignors to Dow Corning Toray Silicon Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 187,241

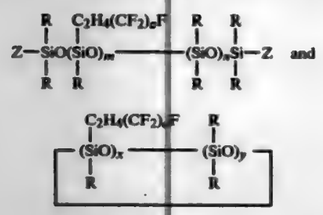
Claims priority, application Japan, Mar. 3, 1993, 5-067535; Mar. 8, 1993, 5-073003

Int. Cl.[6] C10M *107/50*

U.S. Cl. 252—49.6 **3 Claims**

1. A fluorosilicone lubricant composition comprising

(A) 100 parts by weight of a fluorosilicone oil exhibiting a general formula selected from the group consisting of



where R represents a monovalent hydrocarbon radical, Z represents a monovalent hydrocarbon radical or a perfluoroalkylethyl radical with the general formula $-C_2H_4(CF_2)_eF$, a is an integer with a value of at least 4, m is zero or a positive integer, n is zero or a positive integer, and the sum of m+n is from zero to 1,000, with the proviso that when m is zero, at least one of the Z groups represents said perfluoroalkylethyl radical, x is a positive integer, y is zero or a positive integer, and the sum of x+y is at least 3; and

(B) as a heat stabilizer, 0.01 to 10 weight parts of a compound selected from the group consisting of 1) reaction products of a cerium compound and an alkali metal silanolate containing at least three organosiloxane units, and (2) organopolysiloxanes containing in each molecule at least one anilinophenoxy or naphthylaminophenoxy group.

5,445,752

HIGH PERFORMANCE GREASES FROM METHYLFLUOROALKYLSILOXANES

Gerardo Caporiccio, Milan, Italy, assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 7, 1994, Ser. No. 206,369

Claims priority, application Italy, Sep. 13, 1993, MI93A01964

Int. Cl.[6] C10M *123/04, 139/04*

U.S. Cl. 252—49.6 **16 Claims**

1. A grease composition comprising:

between 55 and 90 weight percent of methylnonafluorohexylsiloxane having a viscosity in the range of from 0.0001 to 0.015 square meters/second; and

between 10 and 45 weight percent of a solid thickener comprising a fluorinated polymer.

5,445,753

LUBRICANT FOR REFRIGERATION COMPRESSORS

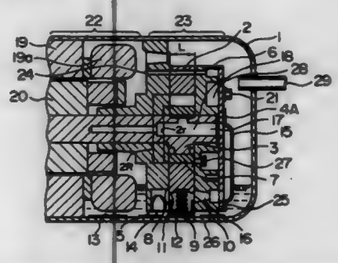
Katsumi Fukuda, Tochigi; Tadashi Iizuka, Ashikaga; Reishi Naka, Tochigi; Hiroaki Hata, Tochigi; Masahiko Gonmori, Tochigi, and Yoshiharu Honma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 762,601, Sep. 19, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,661

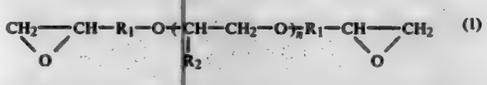
Claims priority, application Japan, Jan. 30, 1991, 3-009721; Apr. 30, 1991, 3-096845

Int. Cl.[6] C10M *129/18*

U.S. Cl. 252—52 R **11 Claims**



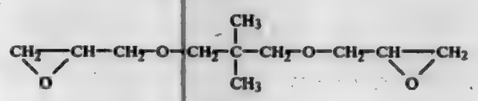
1. A lubricant composition comprising as a base oil at least one member selected from the group consisting of ester oils, alkylbenzene oils and mineral oils, and an epoxy compound having at least two epoxy groups, said epoxy compound being at least one member selected from the group consisting of an alkylene glycol diglycidyl ether and an alicyclic epoxy compound; the alkylene glycol diglycidyl ether being at least one member selected from the group consisting of compounds of the formula:



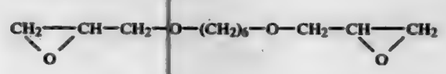
(1)

wherein R_1 is an alkylene group; R_2 is a hydrogen atom or an alkyl group; and n is an integer of 1 to 22,

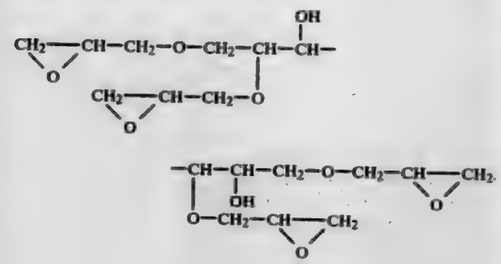
a compound of the formula:



a compound of the formula:



and a compound of the formula:



5,445,754

WATER-BASED, THERMAL PAINT

Neil R. Nelson, Inverness, Fla., assignor to P.S.A.M.S., Inc., Inverness, Fla.

Filed Mar. 28, 1994, Ser. No. 218,758

Int. Cl.[6] C09D *5/02*

U.S. Cl. 252—62 **10 Claims**

1. A water-based, insulative paint comprising an emulsified aqueous mixture which contains the following components:

A) A vinyl acetate–dibutyl maleate film forming agent present in an amount from about 40 to 60 parts by weight;

B) An amount of water sufficient to assist in mixing other components of the paint and to assist in keeping the paint in a state suitable for application;

C) A pigment present in an amount from about 3 to 12 parts by weight and having a refractive index of at least about 1.5 and an extender present in an amount from about 3 to 18 parts by weight;

D) A mildewicide/corrosion inhibitor present in an amount of from about 2 to 10 parts by weight;

E) A perlitic insulative agent present in an amount of from about 1 to 10 parts by weight;

F) A dialkyl ester plasticizing/coalescing agent and an ester alcohol plasticizing/coalescing agent, present in an amount from about 0.8 to 8 parts by weight;

G) A polyalkene flexibilizing agent present in an amount from about 0.5 to 5 parts by weight;

H) A surfactant to include a wetting agent and an anionic dispersant, present in an amount from about 0.3 to 4 parts by weight;

I) A defoaming agent present in an amount from about 0.3 to 4 parts by weight; and

J) A glycol freeze/thaw stabilizer present in an amount from about 0.2 to 2 parts by weight.

5,445,755

DETERGENT COMPOSITIONS CONTAINING A PEROXIDASE/ACCELERATOR SYSTEM WITHOUT LINEAR ALKYLBENZENESULFONATE

Andre C. Convents, Diegem; Alfred Busch, Londerzeel; Isabelle M. C. De Groote, Strombeek-Bever, all of Belgium, and Don K. K. Liu, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1994, Ser. No. 251,071

Int. Cl.[6] C11D *3/28, 3/395*

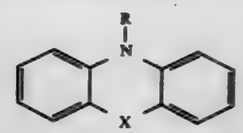
U.S. Cl. 252—102 **6 Claims**

1. A detergent composition for use in a wash liquid, comprising:

a) an enzyme exhibiting peroxidase activity in an amount sufficient to yield 0.01–100 mg of enzyme per liter of wash liquid;

b) a hydrogen peroxide source selected from the group consisting of a hydrogen peroxide, hydrogen peroxide precursor, and an enzymatic system capable of generating hydrogen peroxide, wherein said hydrogen peroxide source is present in an amount sufficient to produce hydrogen peroxide in an amount of from about 0.001–5 mM;

c) an accelerator for accelerating said peroxidase activity of said enzyme wherein said accelerator is present in an amount from about 0.1 uM to about 500 uM and wherein said accelerator consists of a phenothiazine or a phenoxazine having the formula



wherein X is S or O, and R is $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_2NH_2$ or $-CH_2CH_2COOH$; and

d) from about 1 to 95 % by weight of the detergent composition of a surfactant system wherein said surfactant is selected from the group consisting of anionic, cationic, nonionic, ampholytic, zwitterionic, semi-polar agents or mixtures thereof and wherein said surfactant system is free of linear alkylbenzenesulfonate.

5,445,756

STABLE LIQUID DETERGENT COMPOSITIONS CONTAINING PEROXYGEN BLEACH SUSPENDED BY A HYDROPHOLIC SILICA

Gazeau Didier, le Renouveau, France, and Christiaan A. Thoen, Hasselonk, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US91/07607, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO92/07057, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 39,034

Claims priority, application European Pat. Off., Oct. 22, 1990, 90870196

Int. Cl.[6] C11D *3/12, 3/395, 3/43, 17/08*

U.S. Cl. 252—104 **11 Claims**

1. A stable liquid detergent composition having a pH of at least 8 and less than about 11, comprising: a solid, water-soluble peroxygen compound having a particle size of from about 0.5 to about 20 micrometers, suspended in a liquid phase containing water and at least one water-miscible organic solvent, provided that the water:solvent ratio is from about 8:1 to about 1:3; and that less than one tenth of the total amount of peroxygen compound is dissolved in the liquid phase, and that the amount of the solid water-soluble peroxygen compound being such that the amount of available oxygen provided by said peroxygen compound is from 0.5% to 3%; surfactant; from about 5% to about 40% builder: and silica, characterized in that the silica is a hydrophobic silica with an average primary particle size of less than 40 nm and a specific surface area of less than 200 m^2/g, and further characterized in that the amount of silica present is in a range of from 0.5% to 5% of the composition by weight.

5,445,757

COMPOSITIONS COMPRISING PENTAFLUOROBUTANE AND USE OF THESE COMPOSITIONS

Pascal Pennetreau, Rixensart, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Mar. 21, 1994, Ser. No. 215,479

Claims priority, application Belgium, Mar. 31, 1993, 09300313

Int. Cl.[6] C11D *7/30, 7/50; C09K 3/18; C23G 5/032*

U.S. Cl. 252—171 **8 Claims**

1. An azeotropic or pseudoazeotropic composition consisting essentially of a binary mixture of 1,1,1,3,3-pentafluorobutane and ethanol, said composition consisting essentially of 0.25 to 7.5 g of ethanol per 100 g of 1,1,1,3,3-pentafluorobutane and

having a boiling point of 39.2°±0.5° C. at a pressure of 995 mbar.

5,445,758

COPOLYMERS OF ETHYLENICALLY UNSATURATED AND POLYETHYLENE-GLYCOL MONOMETHACRYLATE MONOMERIC REPEAT UNITS USEFUL AS SCALE CONTROL AGENTS IN BOILER SYSTEMS

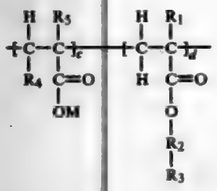
Fu Chen, Newtown; Keith A. Bair, Horsham, both of Pa., and Scott M. Boyette, Wilmington, Del., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 53,579, Apr. 27, 1993, Pat. No. 5,350,538, which is a division of Ser. No. 832,547, Feb. 7, 1992, Pat. No. 5,242,599. This application Jun. 7, 1994, Ser. No. 255,217

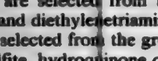
Int. Cl.[6] C02F *5/10*

U.S. Cl. 252—180 **3 Claims**

1. A composition comprised of (a) a water soluble polymer having the structure



wherein R_1 is H or lower (C_1–C_4) alkyl, R_2 is $(CH_2\text{-}CH_2\text{-}O)_m$,



or a mixture of both, n is an integer of from about 1 to about 40, R_3 is H, lower (C_1–C_4) alkyl or an acetate, R_4 is H or COOM, R_5 is H or lower (C_1–C_4) alkyl and M is H or a water soluble cation, c is from 0–95 molar percent, d is from 100-5 molar percent with the proviso that c and d add up to 100 percent and (b) at least one topping agent selected from the group consisting of chelating agents and oxygen scavengers, wherein the chelating agents are selected from the group consisting of ethylenediamine and diethylenetriamine and wherein the oxygen scavenger is selected from the group consisting of hydrazine, sulfite, bisulfite, hydroquinone carbohydrazide, alkylhydroxylamines, alkylamine, ascorbic acid and its analogs or salt forms thereof.

5,445,759

PREPARATION OF ELECTRORHEOLOGICAL FLUIDS USING FULLERENES AND OTHER CRYSTALS HAVING FULLERENE-LIKE ANISOTROPIC ELECTRICAL PROPERTIES

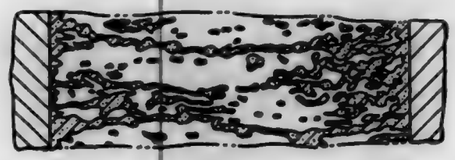
Bob R. Powell, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 841,174, Feb. 25, 1992, abandoned. This application May 10, 1993, Ser. No. 58,815

Int. Cl.[6] C10M *171/00, 169/04*

U.S. Cl. 252—73 **13 Claims**

1. A method of changing the viscosity of an electrorheological composition comprising the step of applying an electric field across an electrorheological composition wherein said composition comprises particles comprising carbon atom rings arranged in a geodesic dome pattern having high electrical conduction along and around the surface of the particle and high electrical resistance radially through the particle so that said particles polarize without shorting, said step of applying an electric field being effective to produce an electrorheological response, said particles being present in an amount ranging from about 5 to about 50 percent by volume of the composition, and suspended in a liquid phase comprising a dielectric, said dielectric comprising about 5 to about 95 percent by volume of the composition.



5,445,760

POLYSACCHARIDE COATED ELECTRORHEOLOGICAL PARTICLES

Robert A. Pollack, Highland Heights, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 14, 1994, Ser. No. 227,770

Int. Cl.[6] C10M *171/00*; C09K *3/00*

U.S. Cl. 252—73 **24 Claims**

1. An electrorheological fluid comprising a hydrophobic liquid phase and, dispersed therein, electrorheologically active particles comprising an electrorheologically active core particle and a coating of at least one polysaccharide which is dispersible in a protic medium.

5,445,761

PERCARBONATE BASED CLEANER FOR COSMETIC AND PHARMACEUTICAL MANUFACTURING FACILITIES

Sadiq Shah, St. Louis, and Fred Kirchner, St. Charles, both of Mo., assignors to E.R. Squibb and Sons, Inc., Princeton, N.J.

Filed Sep. 24, 1993, Ser. No. 126,937

Int. Cl.[6] C11D *3/40*

U.S. Cl. 252—94 **28 Claims**

1. A cleansing formulation free of organic solvents comprising:

(a) 40–99.99 weight percent of a percarbonate salt;

(b) 0.01–20 weight percent of an ethylene oxide/propylene oxide block copolymer surfactant; and

(c) 0–60 weight percent of a bicarbonate salt.

5,445,762

STABILIZED COMPLEX LIGANDS AND THEIR USE IN LIQUID CRYSTAL DISPLAYS

Javier Manero, and Norbert Röch, both of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP92/01895, § 371 Date Jan. 18, 1994, § 102(e) Date Jan. 18, 1994, PCT Pub. No. WO93/04142, PCT Pub. Date Mar. 4, 1993

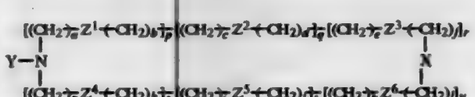
PCT Filed Aug. 19, 1992, Ser. No. 185,943

Claims priority, application Germany, Aug. 21, 1991, 41 27 658.2

Int. Cl.[6] C09K *19/52, 19/56*; C07D *273/00*

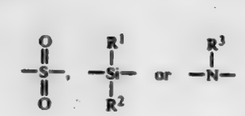
U.S. Cl. 252—299.01 **10 Claims**

1. A compound of the formula I



in which

Z^1, Z^2, Z^3, Z^4, Z^5 and Z^6 are identical or different and are the —O—,



groups,

or are a single bond, but where at least 3 of the Z groups must be present in the formula I,

and where R^1 and R^2 are identical or different and are C_1–C_{18}alkyl or phenyl, which may be substituted by 1 to 3 C_1–C_4—alkyl or -alkoxy groups, or R^1 and R^2 together are $—(CH_2)_5—$ or $—(CH_2)_6—$, and R^3 is hydrogen or C_1–C_4-alkyl,

Y is the $B—(CH_2)_m—A—$ group, in which



A is

B is the



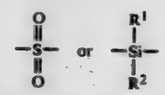
group,

where R^9, R^{10} and R^{11} are identical or different and are branched or unbranched alkyl having 1 to 6 carbon atoms, or together with the carrying carbon atom form a cyclic or polycyclic system having 2 to 12 rings,

m is the number 0 or 1,

X is N-Y, —O— or Z^1 to Z^6,

a, b, c, d, e, f, g, h, i, j, k and l are a number from 0 to 3, where the sum of a+b+c+d+e+f+g+h+i+j+k-+corresponds to from 8 to 16 carbon atoms, with the proviso that if a, f, g and/or l are the number zero only the



groups are bonded directly to N or X, and that Z^1, Z^2 and Z^3, and Z^4, Z^5 and Z^6 are not directly adjacent, and

p, q, r, s, t and u are the number 0 or 1, where the sum of p, q, r, s, t and u is from 3 to a, b, c, d, e, f, g, h, i, j, k, l and p, q, r, s, t and u must be selected so that ring sizes of from 12 to 24, arise.

5,445,763

3-FLUOROPYRIDINES, PROCESS FOR THEIR PREPARATION, AND THEIR USE IN LIQUID-CRYSTAL MIXTURES

Hubert Schlosser, Glashuetten/Taunus, and Anke Kaltbeitzel, Roesselsheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

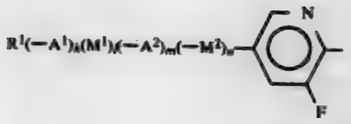
Filed Jun. 7, 1993, Ser. No. 72,929

Claims priority, application Germany, Jun. 9, 1992, 42 18 873.3

Int. Cl.[6] C09K *19/34*; C07D *213/61*; G02F *1/13*

U.S. Cl. 252—299.61 **8 Claims**

1. A 3-fluoropyridine compound of the formula (I)



in which the symbols have the following meanings:

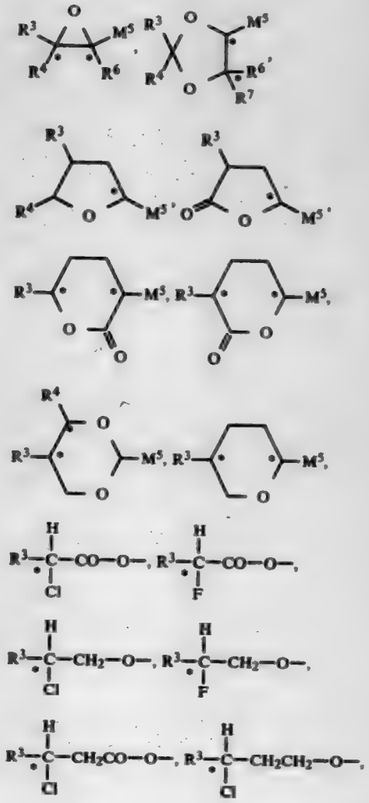
R^1 and R^2, are identical or different and are —H, —F, —Cl, —CN, $—CF_3$, $—OCF_3$, $—OCHF_2$ or straight-chain or branched (with or without an asymmetric carbon atom) alkyl having 1 to 16 carbon atoms, it also being possible for one or two non-adjacent $—CH_2—$ groups to be replaced by

—O—, —S—, —CO—, —CO—O—, —O—CO—,

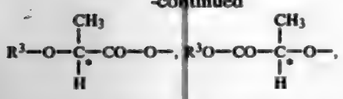
—O—CO—O—, —CH=CH—, —C≡C—,

or $—Si(CH_3)_2—$,

and it also being possible for one or more hydrogen atoms in the alkyl radical to be substituted by —F, —Cl, or —CN, or are one of the following chiral groups:



-continued



A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, pyrazine-2,5-diyl, pyridazine-3,6-diyl, pyridine-2,5-diyl, pyrimidine-2,5-diyl, where one or two hydrogen atoms can be replaced by F, trans-1,4-cyclohexylene, in which one or two hydrogen atoms can in each case be replaced by CN, 1,3,4-thiadiazole-2,5-diyl, 1,3-dioxane-2,5-diyl, naphthalene-2,6-diyl;

M^1, M^2, M^3 and M^4 are identical or different and are —CO—O—, —O—CO—, —O—CO—O—, —CH$_2$—O—, —O—CH$_2$—, —CH$_2$—CH$_2$—, or —C≡C—;

R^3, R^4, R^6 and R^7 are identical or different and are H or straight-chain or branched alkyl having 1 to 16 carbon atoms, or R^3 and R^4 together are alternatively —(CH$_2$)$_4$— or —(CH$_2$)$_5$— if bonded as substituents to a dioxolane system;

M^5 is —CH$_2$—O—, —CO—O—, —O—CH$_2$—, —O—CO— or a single bond;

k, l, m, n, o, p, q and r are zero or one, with the proviso that the sum k+m+p+r is less than 4 and greater than zero.

5,445,764

CYCLOBUTANE BENZENE DERIVATIVES

Eike Poetsch, Mühltal; Werner Binder, Dieburg; Volker Meyer, Gross-Zimmern; Ulrich Finkenzeller, Plankstadt, and Bernhard Rieger, Münster, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP93/03112, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO94/12455, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 8, 1993, Ser. No. 256,684

Claims priority, application Germany, Nov. 21, 1992, 42 39 169.5

Int. Cl.^{6} C09K *19/30, 19/34;* C07C *25/18;* G02F *1/13*

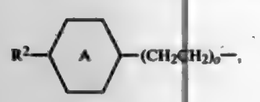
U.S. Cl. 252—299.63 **12 Claims**

1. A cyclobutane benzene compound of formula I

(I)

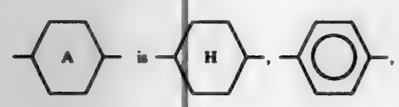
in which

R^1 is alkyl or alkenyl having 1 to 16 carbon atoms, in which additionally one or more CH$_2$ groups may be replaced by —O—, or is a group of the formula

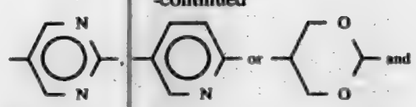


in which

R^2 is alkyl or alkenyl having 1 to 16 carbon atoms,



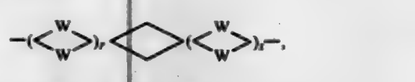
-continued



o is 0 or 1,

V and W are each CH_2 or CH_2CH_2, and when V is CH_2CH_2 m is 1, 2 or 3 and W is CH_2,

A^1 is each independently 1,4-phenylene which is unsubstituted or substituted by 1 to 2 fluorine atoms, in which, in addition, one or two CH groups may be replaced by N, or is 1,4-cyclohexylene which is unsubstituted or substituted by a cyano group, and in which, in addition, one or two CH_2 groups may be replaced by O or S, or is thiadiazole-2,5-diyl, 1,4-bicyclo[2.2.2]octylene, or a radical of the formula



in which r and s are each 0, 1, 2 or 3,

L^1 and L^2 are each F,

Z^1 is —CO—O, —O—CO—, —CH$_2$O—, —OCH$_2$—, —CH$_2$CH$_2$—, —C≡C— or a single bond,

Y is NCS, halogen or an alkyl, alkoxy, alkenyl or alkenyloxy group having 1 to 8 carbon atoms which is substituted by at least one fluorine and/or chlorine atom, and, if m=1, 2 or 3, is CN, or alkyl or alkenyl having up to 16 carbon atoms, in which, in addition, 1 or more CH_2 groups may be replaced by —O—,

m is 0, 1, 2 or 3, and

n is 0, 1 or 2.

5,445,765

PETROLEUM EMULSION BREAKERS

Guenther Elfers, Birkenau; Wilfried Sager, Mutterstadt; Hans-Heaning Vogel, Frankenthal, and Knut Oppenlaender, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 4, 1992, Ser. No. 971,201

Claims priority, application Germany, Nov. 7, 1991, 41 36 661.1

Int. Cl.^{6} B01D *17/04*

U.S. Cl. 252—344 **6 Claims**

1. A petroleum emulsion breaker based on alkoxylated polyethyleneimines, which is obtained by alkoxylation of polyethyleneimines with a molecular weight M_w of 16,000–19,000 with about 26 moles of propylene oxide and about 31.7 moles of ethylene oxide per ethyleneimine unit in the polyethyleneimine.

5,445,766

SUPERCONDUCTIVE CONJUGATE PHOTOCONDUCTIVE SUBSTANCES OF THE BI-SRCA(LAY)-CU-O SYSTEM, A METHOD FOR PRODUCING THE SAME AND SUPERCONDUCTIVE OPTOELECTRONIC DEVICES USING THE SAME

Taizo Masumi, Yokohama, Japan, assignor to The University of Tokyo, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,431

Claims priority, application Japan, Jul. 16, 1991, 3-199922

Int. Cl.^{6} H01B *1/00, 1/06, 1/08, 12/00*

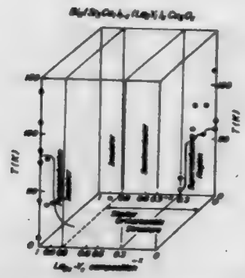
U.S. Cl. 252—518 **1 Claim**

1. A superconductive-conjugate photoconductive substance of a Bi-SrCa(LaY)-Cu-O oxide with a composition having a general chemical formula of

$$Bi_2\text{-}(Sr_2Ca_1)_{1-x}(La_2Y_1)_x\text{-}Cu_y\text{-}O_z$$

where $0.4 \leq x \leq 1$, $y=2$ and $z=9–10.5$,

wherein, when said substance is at a temperature below the critical temperature of a Bi-SrCa(LaY)-Cu-O superconductor, said substance is (A) a conductor when exposed to



light, said conductor having a photoconductivity Q(λ,T) conjugate with superconductivity of the Bi-SrCa(LaY)-Cu-O superconductor at photoexcitation in an optical wavelength range λ) of 420–670 nm, and (B) an insulator or a semiconductor when not exposed to light.

5,445,767

OPTICAL SWITCHES

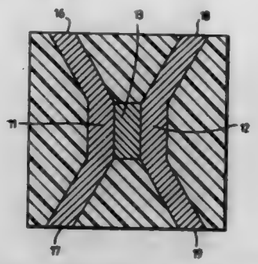
Christoper S. Winter, Ipswich; Stephen N. Oliver, Felixstowe; James D. Ruh, Ipswich, all of England; Allan E. Underhill, Bangor, and Callum A. S. Hill, Penisarwaun, both of Wales, assignors to British Telecommunications Public Limited Company, England

Continuation of Ser. No. 930,609, Oct. 1, 1992, abandoned. This application Jul. 12, 1994, Ser. No. 273,616

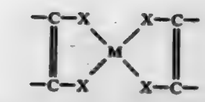
Claims priority, application United Kingdom, Feb. 6, 1990, 9002626

Int. Cl.^{6} F21V *9/04*

U.S. Cl. 252—587 **14 Claims**



1. An optical switch for switching signal radiation at a first wavelength, said switch being controlled by actuating radiation at a second wavelength which differs from said first wavelength, wherein said switch comprises one or more path regions and at least one critical region operatively associated with at least one of said path regions, wherein said switch also comprises means for providing said actuating radiation into said critical region whereby the refractive index of said critical region is changed to provide the controlled transfer of optical energy out of the path region, wherein each of said critical regions is formed of an active composition comprised of an active ingredient and a host, wherein the active ingredient contains one or more dithiolene groupings having the following formula:



wherein the M atoms, any two of which may be the same or different, are selected from Ni, Pt, Pd and Cu, and

wherein the X groups, any two of which may be the same or different, are selected from S and Se.

5,445,768

METHOD AND DEVICE FOR MANUFACTURING A SPUN FLEECE

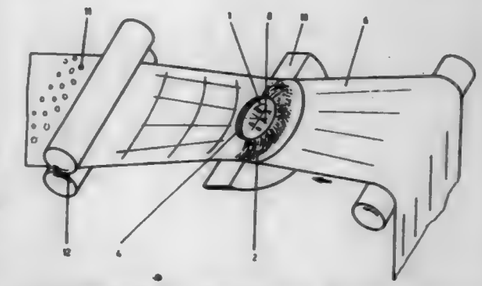
Michael Hauber, Weinheim; Ulrich Freudenberg, Sinsheim; Christoph Josefiak, Rimbach; Peter Barth, Birkenau, and Bernd Dietrich, Aachern, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Dec. 10, 1993, Ser. No. 165,229

Claims priority, application Germany, Dec. 10, 1992, 42 41 517.9

Int. Cl.^{6} B29B *9/06*

U.S. Cl. 264—6 **10 Claims**



5. An apparatus for manufacturing a flat textile structure, comprising:

a spinning rotor displaceable in a rotary motion around its axis, said spinning rotor having outlet openings in the vicinity of its circumferential surface, said rotor having at least two separated groups of peripheral regions for receiving at least two separate melts, each region having its own outlets;

first auxiliary means, movable parallel to the axis, for continuously capturing fibers emerging from the outlet openings;

a disk-shaped distributor device arranged concentrically inside and relatively nonrotatably with respect to the spinning rotor for feeding the melts into outlet openings arranged in different radial planes surrounding the axis, wherein the distributor device has groove-shaped depressions in the vicinity of its axial boundary surfaces, said depressions opening axially and radially in the direction of the spinning rotor; and

a needling device located adjacent to the first auxiliary means.

5,445,769

SPINNER HEAD FOR FLASH FLOW PROCESSING

William F. Ruthkowski, Arlington; Garry L. Myers, Reston, and B. Arlie Bogue, Broad Run, all of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Filed Jun. 27, 1994, Ser. No. 266,234

Int. Cl.^{6} B29C *67/00*

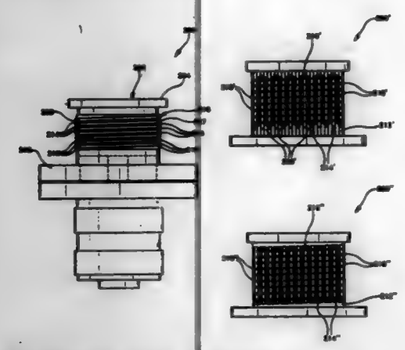
U.S. Cl. 264—8 **21 Claims**

1. A spinner head for flash flow processing, said head comprising:

a closed base;

a top having an opening for introducing feedstock to said head; and

a wall having an inner surface and an outer surface and extending between said closed base and said top to provide a chamber for flash flow processing, said outer surface provided with relief formed to accommodate fixation of an external heating element for the uniform supply of surface heat to said inner surface whereby flash heat conditions and shear are induced in feedstock contacting said inner surface, said wall further including a plurality of openings extending from said inner to said outer surface, each of said openings forming a substantially non-tortuous path for passage of product therethrough and unimpeded just beyond said openings.



15. A flash flow process, comprising:

subjecting a feedstock capable of undergoing flash flow processing to heat and shear force in a spinner head having a closed base and a top and a wall extending between said base and said top to provide a chamber for flash flow processing, said wall having an inner surface and an outer surface, said outer surface provided with relief to accommodate the fixation of an external heating element for providing uniform heat to said inner surface whereby flash heat is induced in said feedstock, said wall further including a plurality of openings extending through said wall from said inner to said outer surface, each of said openings forming a substantially non-tortuous path for the passage of product therethrough at said openings unimpeded just beyond said heating element.

5,445,770

METHOD OF MANUFACTURING ORTHODONTIC APPLIANCE HAVING REINFORCING FIBER PREFORM

Randall E. Adam, Temple City; James D. Cleary, Glendora; Jerold S. Horn, Los Angeles, and Said Pazirandeh, Glendora, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 903,569, Jun. 24, 1992. This application Feb. 14, 1994, Ser. No. 195,530

Int. Cl.[6] A61C *7/00*

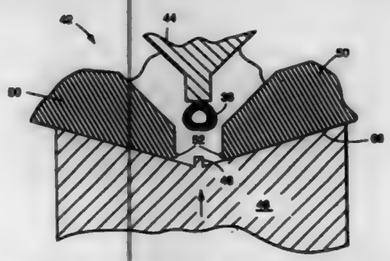
U.S. Cl. 264—16 **12 Claims**

1. A method for making an orthodontic bracket comprising the steps of:

forming a fiber preform having a central axis with an overall length at least generally equivalent to the mesial-distal length of the resultant bracket;

placing a quantity of polymeric material and the fiber preform in a cavity of a mold assembly in a position wherein the central axis of the preform is parallel to an axis of the mold cavity that corresponds to an axis extending between mesial and distal sides of the resultant bracket;

causing at least one filament of the preform to move along a reference plane generally perpendicular to the central axis and to an orientation at least partially about a lateral pe-



riphery of an archwire slot of the bracket as the mold assembly is closed; and

curing the polymeric material to make the bracket.

5,445,771

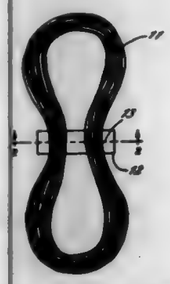
PROCESS FOR PREPARING HOLLOW FIBER SEPARATORY DEVICES

Peter J. Degen, Huntington, N.Y., assignor to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 845,018, Mar. 3, 1992, Pat. No. 5,228,992. This application Jul. 19, 1993, Ser. No. 92,813

Int. Cl.[6] B01D *63/02*

U.S. Cl. 264—22 **20 Claims**



1. A process for preparing a hollow fiber separatory device comprising:

configuring thermoplastic hollow fibers into a multi-noded configuration having no more than two nodes, each node defining a loop;

embedding a portion of the two-loop configuration into a potting compound that softens and melts when exposed to heat, including injection molding the potting compound among the fibers in a portion of the two-loop configuration between the two nodes and forming a single potted section such that one loop extends from each of two different faces of the potted section;

cooling the potting compound such that the fibers are secured and sealed in the potting compound; and

cutting the embedded fibers of the two-loop configuration to form two modules.

5,445,772

METHOD OF PRODUCING PATTERNED SHAPED ARTICLE

Hiroshi Uchida, Ashikaga; Mitsuhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

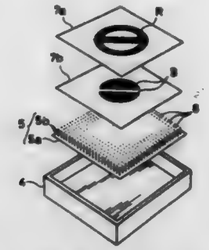
Filed May 22, 1992, Ser. No. 886,842

Claims priority, application Japan, May 23, 1991, 3-146555; Jul. 29, 1991, 3-210467; Feb. 26, 1992, 4-073022; Feb. 26, 1992, 4-073023

The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.

Int. Cl.[6] B28B *7/34*; B29C *39/12*; C04B *35/00*; E04B *1/16*

U.S. Cl. 264—32 **36 Claims**



1. A method for producing a patterned shaped article, comprising:

disposing, at a prescribed position within a main form of a predetermined height for molding the patterned shaped article, a projection-bristing form having a support member and a plurality of projections of a height not greater than said predetermined height of said main form; said projections standing upright from the support member at a prescribed density per unit area and having spaces formed therebetween;

charging a prescribed amount of dry pattern-course material for forming a pattern course of the patterned shaped particle into a plurality of the spaces defined by a prescribed number of the projections of the projection-bristling form;

charging a base-course material for forming a base course of the patterned shaped article into the main form including remaining spaces of the projection-bristling form not filled with the pattern-course material;

removing the projection-bristling form;

causing the charged pattern-course material and charged base-course material to set into the patterned shaped article; and

removing the patterned shaped article from the main form.

5,445,773

METHOD FOR DETECTING ABNORMALITY IN HYDRAULIC SYSTEM OF MOLDING MACHINE AND APPARATUS THEREFOR

Tsuyoshi Arai, Hanishina, Japan, assignor to Nissei Plastic Industrial Co., Ltd., Nagano, Japan

Filed Aug. 18, 1994, Ser. No. 297,908

Claims priority, application Japan, Sep. 8, 1993, 5-223522

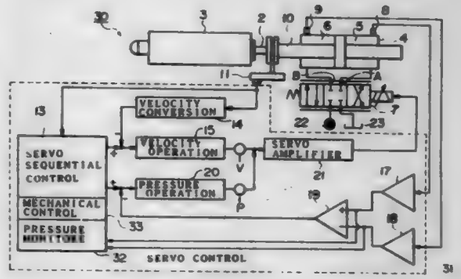
Int. Cl.[6] B29C *45/82, 33/24*

U.S. Cl. 264—40.1 **10 Claims**

1. A method for detecting an abnormality of a hydraulic system in a molding machine which comprises a hydraulic cylinder for reciprocating a movable member of the molding machine, a valve for controlling a hydraulic fluid which is supplied into the hydraulic cylinder, and a pair of pressure sensors which are provided on the hydraulic cylinder, for detecting the pressures in a pair of pressure chambers of the hydraulic cylinder; comprising the steps of:

holding the valve at a neutral position;

judging whether each of the pressures in said pair of pressure chambers is in a preset range of pressure on the basis of detecting signals from said pair of pressure sensors, when said movable member is inoperative; and



outputting an abnormality signal when at least one of the pressures in said pair of pressure chambers is out of said preset range of pressure.

5,445,774

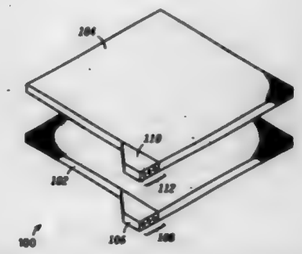
METHOD FOR DETECTING MOLD PLATE INFORMATION AND PLATE MOLD MATCHING SYSTEM

Cliff J. Scribner, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1993, Ser. No. 148,478

Int. Cl.[6] B29C *45/80, 33/30*

U.S. Cl. 264—40.5 **7 Claims**



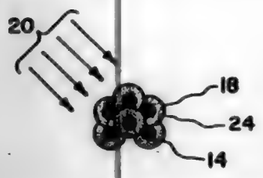
1. A method for matching mold plates comprising the steps of: positioning a first mold plate in a mold press; electrically detecting first information relating to the first mold plate;

positioning a second mold plate in the mold press: electrically detecting second information relating to the second mold plate;

determining, in response to the first information and the second information, whether the first mold plate and the second mold plate are properly matching mold plates: and

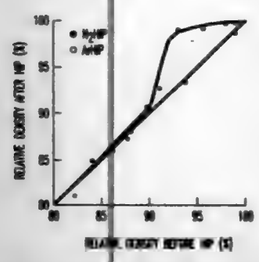
closing the mold press in response to determining that the first mold plate and the second mold plate are properly matching mold plates.

5,445,775
METHOD OF FORMING U.V. STABILIZED POROUS PIPE
Thomas N. Prassas, Glendale, and Shannon Bard, Scottsdale, both of Ariz., assignors to Aquapore Moisture Systems, Inc., Phoenix, Ariz.
Division of Ser. No. 930,345, Aug. 14, 1992, Pat. No. 5,299,885. This application Nov. 1, 1993, Ser. No. 144,316
Int. Cl.[6] B29C *47/88*
U.S. Cl. 264—41 13 Claims



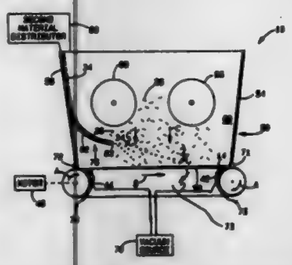
1. A method of forming porous pipe comprising the steps of:
forming a mixture of a thermoplastic binder resin selected from a polyolefin resin or a vinyl resin containing a dispersion of 60% to 80% by weight of vulcanized elastomer particles and said binder resin containing 0.1 to 10% by weight of an ultraviolet stabilizer based on the weight of the pipe in an amount effective to substantially reduce degradation of the binder resin due to ultraviolet radiation;
extruding the mixture through a heated pipe die; and
cooling the extruded pipe in a cooling trough.

5,445,776
METHOD FOR PRODUCING HIGH DENSITY SINTERED SILICON NITRIDE (Si_3N_4)
Katsuhiko Honma, Akashi; Tsuneo Tatsuno, Kobe; Hiroshi Okada, Amagasaki; Masato Moritoki, Miki, and Takao Fujikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Continuation of Ser. No. 251,052, Sep. 26, 1988, which is a continuation of Ser. No. 312,727, Oct. 19, 1981, abandoned. This application Dec. 31, 1991, Ser. No. 814,806
Claims priority, application Japan, Oct. 20, 1980, 55-146581; Dec. 2, 1980, 55-170155; Jan. 27, 1981, 56-11180; Jun. 17, 1991, 56-94385
Int. Cl.[6] C04B *35/58*
U.S. Cl. 264—65 19 Claims



1. A method for producing high density sintered silicon nitride (Si_3N_4) having a relative density of at least 98%, said method comprising:
forming silicon nitride powder into a desired shape to obtain a silicon nitride green compact;
presintering said green compact under a nitrogen gas atmosphere ranging in pressure from 1 to 30 atmospheres at an elevated temperature into a presintered body having a relative density of at least 92%;
removing the presintered body at a temperature of at least 500° C. from the presintering furnace;
cooling the heated presintered body to room temperature;
charging the cooled presintered body into a hot isostatic pressing furnace which has been preheated to 500° C. or higher;
subjecting said presintered body to hot isostatic pressing without being confined by a capsule in an inert gas atmosphere of a temperature in the range of 1500°–2100° C. and of a nitrogen gas partial pressure of at least 500 atm until the relative density of at least 98% is reached; and
upon completion of the hot isostatic pressing, discharging the sintered body from the hot isostatic pressing furnace at a temperature of at least 500° C.

5,445,777
AIR LAYING FORMING STATION WITH BAFFLE MEMBER FOR PRODUCING NONWOVEN MATERIALS
John R. Noel, Cincinnati; Mark R. Richards, Middletown, and Edward H. Krauttes, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 8, 1994, Ser. No. 353,650
Int. Cl.[6] B27N *3/04, 3/02*
U.S. Cl. 264—113 20 Claims



1. An air laying forming station (ALFS) for forming a nonwoven substrate from a first material and a second material having at least one physical characteristic substantially different from said first material, comprising:
a forming chamber;
forming means, moving relative to said forming chamber, for receiving deposit of said first and second materials;
first distributing means for supplying said first material; flow means for providing an air flow which deposits said first material onto said forming means; and
second distributing means for delivering said second material, independently from said first material between said first distributing means and said forming means, by gravity along a baffle member.

5,445,778
METHOD FOR THE PRODUCTION OF ALIPHATIC COPOLYESTER FILM
Dae W. Ihm; Dae J. Kim; Young J. Kim, all of Seoul; Myung S. Lee, Suwon, and Chang S. Lee, Anyang, all of Rep. of Korea, assignors to Cheil Synthetics Inc., Kyungsan, Rep. of Korea
Filed Oct. 12, 1994, Ser. No. 321,513
Claims priority, application Rep. of Korea, Nov. 3, 1993, 93-23173
Int. Cl.[6] B29C *47/00*
U.S. Cl. 264—176.1 3 Claims

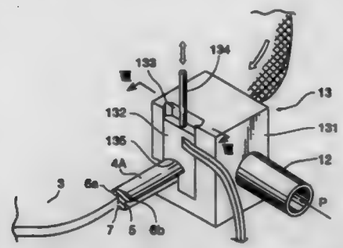
1. A method of the production of aliphatic polyester film, comprising the steps of:
applying esterification or ester-interchange at below 220° C. to a reaction mixture of
at least one acid component selected from the group consisting of succinic acid, succinic anhydride and succinic acid ester,
1,4-butanediol as a main diol component,
2,2-dimethyl-1,3-propanediol of 1 to 30% by mole based on the mole of the acid component

multifunctional compound of 0.01 to 1% by mole based on the mole of the acid component, multifunctional compound have more than three functional group of hydroxy group or carboxy group;
polycondensing the oligomer into an aliphatic copolyester at a temperature of 240° to 260° C. under reduced pressures of not more than 1 mmHg in the presence of a catalyst; and
melt-extruding the aliphatic copolyester using T die.

5,445,779
PROCESS FOR THE DRYING AND HEAT-TREATMENT OF POLYBENZAZOLE FILMS
Peter E. Pierini, Midland, Mich., and Myung H. Cho, Daejeon, Rep. of Korea, assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 14, 1994, Ser. No. 182,818
Int. Cl.[6] B29C *47/00, 55/08, 71/02*
U.S. Cl. 264—210.5 9 Claims

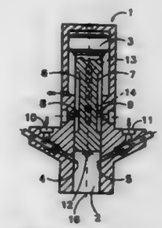
1. A process for the preparation of a polybenzazole film which comprises (1) extruding a polybenzazole dope film in a machine direction, (2) stretching the film in a direction which is approximately transverse to the machine direction, (3) coagulating the film, and (4) drying the film while it is constrained in only the machine direction.

5,445,780
ASSEMBY OF A WINDSHIELD GLASS AND A WEATHER STRIP HAVING A PARTLY MODIFIED CROSS SECTION AND METHOD OF MANUFACTURING SAME
Yukihiko Yada, and Toshikazu Ito, both of Obu, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Japan
Filed Aug. 20, 1993, Ser. No. 109,449
Claims priority, application Japan, Aug. 26, 1992, 4-250545; Jul. 20, 1993, 5-179324
Int. Cl.[6] B29C *47/02*
U.S. Cl. 264—259 3 Claims



1. A method of manufacturing an assembly of a windshield glass and a weather strip, the weather strip being extruded onto the peripheral edge of the windshield glass and having different cross sections at the upper edge of the windshield glass and at a pair of side edges of the windshield glass, the weather strip including a projection extending toward the center of the windshield glass at the outboard side thereof, wherein the projection is in contact with the windshield glass at the upper edge of the windshield glass, and wherein the projection is apart from the windshield glass at the pair of side edges of the windshield glass to define a groove between the windshield glass and the projection, said method comprising:
a step of inserting the peripheral edge of the windshield glass into an orifice of a fixed die having a slot through which the peripheral edge of the windshield glass is inserted;
a step of moving the windshield glass with respect to said fixed die along the peripheral edge of the windshield glass from one of the side portions through the upper portion to the other of the side portions of the peripheral edge of the windshield glass;
a step of moving a movable die with respect to said fixed die, the movable die having an orifice comprising a portion aligned with the orifice of the fixed die and a wider portion extending laterally from the portion aligned with the orifice of the fixed die, the movable die having a supplementary passage communicating with the wider portion for supplying molding material to the wider portion of the orifice of the movable die, the movement of the movable die being performed between a position where the wider portion is in contact with the windshield glass and a position where the wider portion is apart from the windshield glass to vary the height of the projection to be formed by the wider portion without restriction of the movement of the windshield glass; and
a step of extruding and discharging molding material from the orifice of the fixed die and from the wider portion of the orifice of the movable die,
wherein the steps of moving the windshield glass, moving the movable die, supplying molding material through the supplementary passage and extruding and discharging molding material are performed simultaneously.

5,445,781
PROCESS FOR THE INJECTION MOLDING OF NON-PRECATALYZED POLYMERIZABLE RESINS AT HIGH-PRESSURE AND FLOW
Antonio Addeo, Novara; Francesco D'Oria, and Roberto Bonari, both of Milano, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Italy
Continuation-in-part of Ser. No. 934,425, Aug. 24, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 167,555
Claims priority, application Italy, Aug. 28, 1991, MI91A2306
Int. Cl.[6] B29B *7/76*; B29C *67/24*
U.S. Cl. 264—328.6 7 Claims



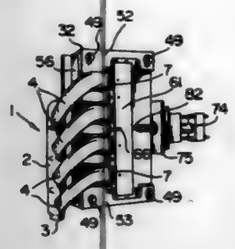
SECTION A–A

1. In a process for the injection molding of at least one non-precatalyzed, polymerizable monocomponent or hybrid resin at high pressure and flow which comprises the steps of:
a) providing a mixing head comprising a cylindrical mixing chamber having a closed end and an ejectment end, and a self-cleaning molding piston;
b) withdrawing from a storage tank at least one flow comprising a non-precatalyzed polymerizable monocomponent or hybrid resin;
c) withdrawing from a storage tank at least one flow comprising at least one catalyst;
d) injecting each flow at high pressure into the mixing chamber through at least one catalyst injection nozzle and at least one resin injection nozzle;
e) discharging the resulting polymer from the mixing chamber with the self-cleaning molding piston;
wherein the improvement comprises:
(i) positioning the resin nozzles disposed closer to the ejectment end than the catalyst injection nozzles;
(ii) injecting the catalyst through the catalyst injection nozzles angled towards the ejectment end; and
(iii) injecting the resin through the resin injection nozzles angled towards the ejectment end of the mixing chamber.

5,445,782
METHOD OF MOLDING MANIFOLD FOR AUTOMOTIVE VEHICLE

Changjae Sodr, Toronto, Canada, assignor to ABC Group, Rexdale, Canada

Continuation of Ser. No. 877,150, May 1, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 216,242
Int. Cl.[6] B29C *49/20*
U.S. Cl. 264—513 6 Claims



1. A method of molding an air intake manifold for an internal combustion engine, wherein the manifold includes an elongated hollow body, a plurality of pipes extending outwardly from one side of said body, said pipes having open outer ends, a mounting flange on the outer open ends of said pipes, the flange including a sleeve on the outer end of each said pipe and an elongated planar body integral with and extending between the sleeves, the planar body surrounding the open ends of the sleeves for mounting the manifold on an engine, the method comprising the steps of blow molding the hollow body and pipes from a plastic parison in a first mold, the pipes having closed outer ends following the blow molding step; opening the closed ends of the pipes; placing the pipes in an open second mold including (i) first and second mold halves containing recesses for defining a mold cavity around the free ends of all of the pipes, in the area between the free ends and beyond the free end of each said pipe, (ii) a slide and (iii) projections on said slide for receiving the open ends of said pipes; moving the slide to a closed position; inserting the projections into the open ends of the pipes to center the pipes in the mold; and closing the second mold by moving the mold halves together, whereby the mold halves and the slide define the mold cavity around the free ends of the pipes; injecting a plastic compatible with the plastic of the manifold into the mold cavity to form a continuous flange around and adhering to the pipes; and opening the mold by moving said mold halves apart and sliding said slide to an open position allowing removal of the thus completed manifold from the second mold.

5,445,783
BLOW MOLDING METHOD

Truly R. Irish, Oak Park, and Daniel J. Kmiecik, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

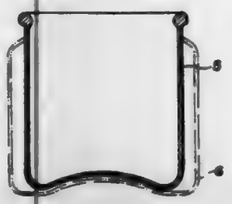
Filed Jul. 6, 1993, Ser. No. 86,068
Int. Cl.[6] B29C *49/20*
U.S. Cl. 264—515 1 Claim

1. A method of securing a member having a dove-tail cross-section recessed attaching surface to the interior of a blow-molded article comprising:
extruding a pliable tubular parison having interior and exterior surfaces between two mold walls, at least one said wall having projections extending toward said exterior parison surface;
attaching said member to a movable blow-pin, said blow-pin positioning said member within said parison;
moving said blow-pin toward said interior parison surface and contacting said exterior parison surface with said projections, said projections mating with said recessed attaching surface, whereby said interior parison surface is urged against said recessed attaching surface by said projections and said member is mechanically secured to said attaching surface by means of an interlocking dove-tail fit; and
inflating said parison to form said blow-molded article.

5,445,784
METHOD OF BLOW-MOLDING BIAXIALLY ORIENTED POLYETHYLENE TEREPHTHALATE RESIN BOTTLE-SHAPED CONTAINER

Hiroaki Sugiura, Koto; Fuminori Tanaka, Matsudo, and Daisuke Uesugi, Koto, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 49,512, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 845,802, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 684,506, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 311,373, Feb. 16, 1989, abandoned, which is a continuation of Ser. No. 897,035, Aug. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 701,352, Feb. 13, 1985, abandoned. This application Oct. 24, 1994, Ser. No. 327,894
Claims priority, application Japan, Feb. 15, 1984, 59-26802
Int. Cl.[6] B29C *49/18, 49/64*
U.S. Cl. 264—521 45 Claims



1. A method for blow-molding a biaxially oriented polyethylene terephthalate resin bottle-shaped container having substantially no residual stress and having high heat resistance, comprising the steps of:
providing a preform with a neck and a body;
first biaxial-orientation blow-molding the preform in a first mold which is at a first temperature to biaxially stretch the preform to form a primary intermediate molded bottle-shaped piece, the biaxial stretching creating residual stress in the primary intermediate molded bottle-shaped piece;
causing thermal contraction of the primary intermediate molded bottle-shaped piece by heating said primary intermediate molded bottle-shaped piece to a temperature higher than the first temperature to form a secondary intermediate molded bottle-shaped piece and to eliminate residual stress caused by the first blow-molding; and
second blow molding the secondary intermediate molded bottle-shaped piece in a second mold to form the bottle-shaped container, wherein orientation magnification of the secondary intermediate molded bottle-shaped piece is small and substantially no stress is created during the second blow-molding.

5,445,785
METHOD OF PREPARING A NONWOVEN WEB OF POLY(VINYL ALCOHOL) FIBERS

Hannong Rhim, Roswell, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 810,670, Dec. 19, 1991, abandoned. This application Dec. 22, 1993, Ser. No. 172,513
Int. Cl.[6] D01D *5/04;* D01F *6/14*
U.S. Cl. 264—555 13 Claims

1. A method of preparing a significantly improved nonwoven web comprised of substantially continuous poly(vinyl alcohol) fibers which comprises the steps of:
A. preparing an aqueous polymer solution which comprises from about 10 to about 75 percent by weight of a poly(vinyl alcohol) having a molecular weight of from about 30,000 to about 186,000 and a degree of hydrolysis of from about 71 to about 99 percent;
B. extruding the resulting polymer solution at a temperature of from about 20° C. to about 180° C. and a viscosity of from about 3 to about 50 Pa sec through a die having a plurality of orifices to form a plurality of threadlines, which orifices have diameters in the range of from about 0.20 to about 1.2 mm;
C. attenuating the resulting threadlines with a primary gaseous source under conditions sufficient to permit the viscosity of each threadline, as it leaves a die orifice and for a distance of no more than about 8 cm, to incrementally increase with increasing distance from the die, while substantially maintaining uniformity of viscosity in the radial direction, at a rate which is sufficient to provide fibers having the desired attenuation and mean fiber diameter, in which said primary gaseous source has a relative humidity of from about 70 to 100 percent, a temperature of from about 20° C. to about 100° C., a velocity of from about 150 to about 400 m/s, a horizontal angle of incidence of from about 70° to about 110°, and a vertical angle of incidence of no more than about 90°;
D. drying the threadlines to form fibers with a secondary gaseous source at a temperature of from about 140° C. to about 320° C. and having a velocity of from about 60 to about 125 m/s, which secondary gaseous source has a horizontal angle of incidence of from about 70° to about 110°, and a vertical angle of incidence of no more than about 90°; and
E. depositing the fibers randomly on a moving foraminous surface to form a substantially uniform web on a scale of from about 0.4 to about 1.9 cm^2, said moving foraminous surface being from about 10 to about 60 cm from the opening from which the last gaseous source to contact the threadlines emerges, which fibers have a mean fiber diameter in the range of from about 0.1 to about 10 μm and are substantially free of shot;
in which said attenuating and drying steps are carried out under conditions of controlled macro scale turbulence and said fibers are of a length such that they can be regarded as continuous in comparison with their diameters.

5,445,786
HEAT-RESISTANT METAL MONOLITH AND MANUFACTURING METHOD THEREFOR

Takashi Harada, Nagoya; Hirohige Mizuno, Tajimi; Fumio Abe, Handa, and Tsuneaki Ohashi, Okazaki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 118,771, Sep. 10, 1993, abandoned, which is a division of Ser. No. 955,247, Oct. 1, 1992, Pat. No. 5,292,485, which is a continuation of Ser. No. 545,488, Jun. 29, 1990, abandoned. This application Dec. 9, 1994, Ser. No. 354,889
Claims priority, application Japan, Apr. 3, 1990, 2-88955
Int. Cl.[6] B22F *3/12*
U.S. Cl. 419—2 13 Claims

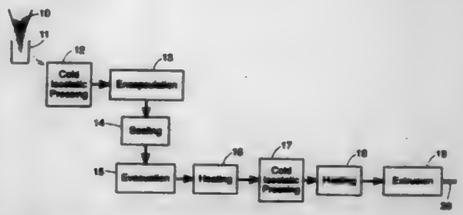


1. A method of manufacturing a heat-resistant metallic monolith, comprising the steps of:
forming a mixture comprising organic binder, water and a metal powder mixture which consists essentially of 2.5 to 30% by weight Al, 0 to 40% by weight Cr and a balance of Fe;
forming said mixture into a honeycomb body having a plurality of cell walls which define cells;
sintering said honeycomb body in a non-oxidizing atmosphere at a temperature between 1,000° and 1,450° C. to form a porous sintered honeycomb body; and
forming a heat-resistant metal oxide comprised of α-alumina on said cell walls and in pores of said porous sintered honeycomb body.

5,445,787
METHOD OF EXTRUDING REFRACTORY METALS AND ALLOYS AND AN EXTRUDED PRODUCT MADE THEREBY

Ira Friedman, 10 Bingham Hill Ctr., Rumson, N.J. 07760, and Christer Aslund, Bravallavagen 11 644 36, Torshalla, Sweden

Filed Nov. 2, 1993, Ser. No. 146,788
Int. Cl.[6] B22F *3/16*
U.S. Cl. 419—38 18 Claims



1. A process comprising the steps of
placing a charge of powdered metal having a density in the range of 40 percent in a container, said metal being selected from the group consisting of tantalum or niobium;
cold isostatically pressing the charge at a predetermined pressure to a density sufficient to form a green compact with sufficient strength to be handled outside the container;
placing the green compact in a metal capsule;
thereafter sealing the capsule;
heating the capsule to a predetermined temperature and for a time sufficient to effect annealing of the green compact;

thereafter cold isostatically pressing the capsule and encapsulated compact at a predetermined pressure of at least 200 Mpa.

thereafter heating the pressed capsule and encapsulated compact; and

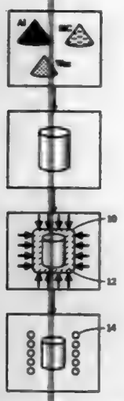
extruding the heated capsule and encapsulated compact to form an extruded product.

5,445,788

METHOD OF PRODUCING ELEMENTS FROM POWDERS

Sylvain Turenne, St-Bruno, and Paul-Émile Mongeon, Fabreville, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Dec. 1, 1993, Ser. No. 159,553
Int. Cl.[6] B22F *1/00, 3/00*
U.S. Cl. 419—42 **14 Claims**



1. A method of separating at least partly a binder from a mixture thereof with a powder or a plurality of powders, the method comprising:

a) molding the mixture into an element having a desired shape,

b) surrounding the molded element with a contiguous layer of a particulate material which can absorb the binder,

c) subjecting the molded element to an isostatic pressure through the surrounding particulate material layer in conditions sufficient to effect the absorption of at least a part of the binder by the particulate material, and

d) separating the surrounding layer from the molded element.

5,445,789

METHOD AND APPARATUS FOR DEGREASING AND COMPACTING ELECTRICALLY CONDUCTIVE MATERIAL

Erwin Wanetzky, Grosskotzenburg, and Franz Hugo, Aschaffenburg, both of Germany, assignors to Leybold Durferrit GmbH, Cologne, Germany

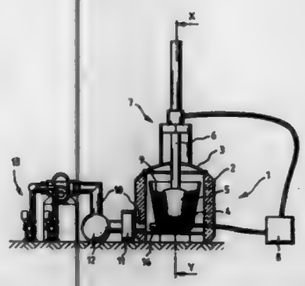
Filed Mar. 16, 1994, Ser. No. 213,645
Claims priority, application Germany, Jun. 9, 1993, 43 19 166.5
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—52 **16 Claims**

1. Method for cleaning electrically conductive material, comprising

placing contaminated electrically conductive material to be compacted in a trough in a vacuum chamber,

evacuating said vacuum chamber,

moving a plunger into said trough to compact said material, and



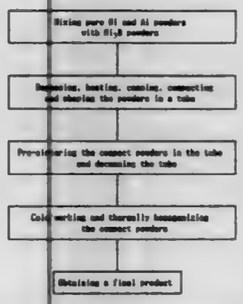
charging said plunger as an electrode and said trough as a counter-electrode in order to pass a direct current through said material, thereby heating said material.

5,445,790

PROCESS FOR DENSIFYING POWDER METALLURGICAL PRODUCT

Chen-Ti Hu, Taipei, and Wen-Chih Chiou, Miaoli, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 5, 1994, Ser. No. 238,716
Int. Cl.[6] B32F *3/12*
U.S. Cl. 419—44 **42 Claims**



1. A process for manufacturing a densified powder metallurgic product comprising steps of:

(a) preparing a powdery starting material;

(b) pre-sintering said powdery starting material at a temperature below a melting point of said powdery starting material to obtain a semi-product;

(c) executing a pore-eliminating process for eliminating pores resulting from said step (b) on said semi-product to obtain a pore-eliminated semi-product; and

(d) sintering said pore eliminated semi-product at a temperature higher than a melting point of said semi-product.

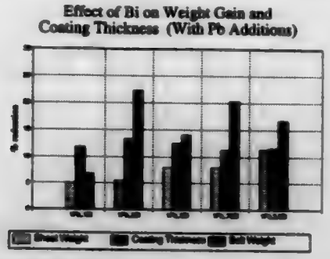
5,445,791

ALLOY FOR AFTER-FABRICATION HOT-DIP GALVANIZING

Martin Gagné, Westmount, Canada, assignor to Noranda, Inc., Toronto, Canada

Filed Mar. 30, 1994, Ser. No. 220,143
Claims priority, application Canada, Jun. 4, 1993, 2097784
Int. Cl.[6] C22C *18/00*
U.S. Cl. 420—514 **3 Claims**

1. A zinc alloy for after-fabrication hot-dip galvanizing consisting of effective amounts of bismuth and aluminum to improve drainage of the zinc alloy, wherein the concentration of bismuth is not more than 4 wt % and the concentration of



aluminum is 20 to 70 ppm, and the concentration of lead is not more than 1.4 wt %, and a balance of zinc.

5,445,792

OPTIMUM HYDROGEN PEROXIDE VAPOR STERLIZATION METHOD

James R. Rickloff, Cary; Donald C. Upchurch, Apex, and Robert W. Childers, Garner, all of N.C., assignors to American Sterilizer Company, Erie, Pa.

Continuation of Ser. No. 851,179, Mar. 13, 1992, abandoned. This application May 2, 1994, Ser. No. 237,406
Int. Cl.[6] A61L *2/00, 2/16*
U.S. Cl. 422—28 **17 Claims**

1. A method of sterilization which comprises the steps of:

a. predetermining the relative humidity, pressure and temperature of a carrier gas;

b. sensing a characteristic in a sterilization chamber during a sterilization cycle, said characteristic selected from the group consisting of pressure and temperature;

c. injecting sterilant vapor into a flow of the carrier gas;

d. regulating the rate of sterilant vapor injection into the carrier gas to maintain a predetermined percentage of the instantaneous saturation limit for the sterilant vapor in the chamber, wherein the rate of sterilant vapor injection is responsive to the sensed characteristic in the chamber and the predetermined relative humidity, pressure and temperature of the carrier gas;

e. flowing the sterilant vapor and carrier gas into, through and out of the chamber; and

f. repeating steps a. through e. until sterilization is achieved.

5,445,793

METHOD AND APPARATUS FOR STERILIZING CARTONS AND BREAKING CARTON SCORE LINES

Ronald Tuckner, White Bear Lake, Minn., and David Persells, Twin Lakes, Wis., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

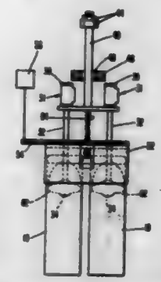
Division of Ser. No. 973,300, Nov. 9, 1992, Pat. No. 5,350,568. This application Jun. 21, 1994, Ser. No. 262,929
Int. Cl.[6] A61L *2/20*; B65B *55/04*
U.S. Cl. 422—28 **12 Claims**

1. Method of sterilizing and breaking score lines on a carton, comprising:

advancing to a sterilizing and score line breaking station a carton having a preformed bottom and upstanding walls that define an interior, and score lines on the upstanding walls;

spraying sterilizing solution into the interior of said carton while said carton is located at said sterilizing and score line breaking station; and

urging upper portions of the upstanding walls of said carton inwardly to break at least some of the score lines on said carton while said carton is located at the same station as where sterilizing solution is sprayed into the interior of the



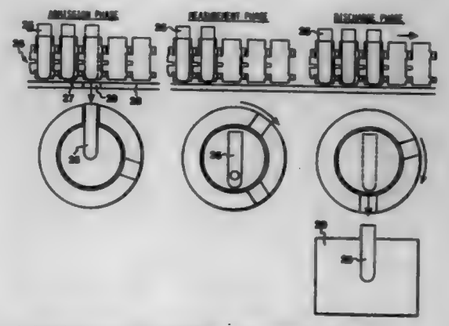
carton so that the advancement of the carton between the spraying and urging steps is avoided.

5,445,794

LUMINESCENCE MEASURING SYSTEM AND LUMINOMETER DEVICE

Nils Wihlborg, Helsingborg, Sweden, assignor to Perstorp Analytical AB, Helsingborg, Sweden

PCT No. PCT/SE92/00749, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/09420, PCT Pub. Date May 13, 1993
PCT Filed Oct. 29, 1992, Ser. No. 232,049
Claims priority, application Sweden, Oct. 29, 1991, 9103150-0
Int. Cl.[6] G01N *21/13*
U.S. Cl. 422—63 **16 Claims**



1. A luminescence measuring system comprising:

a conveyor for delivering containers of samples for luminescence measurements, including a translationally drivable chain of vertically disposed tubular sleeves, each sleeve for carrying a container, and a fixed bottom provided with a hole, said chain of sleeves being displaceable relative to the bottom above the hole to align the tubular sleeves with the hole so that a container exits an aligned tubular sleeve through said hole under the action of gravity; and

a luminometer disposed below the bottom of the conveyor to receive the containers from the conveyor through the hole, the luminometer comprising two cup-shaped components, each having at least a peripheral shell and a base side, the components being relatively displaceable and disposed so that the peripheral shells mutually engage, an interior measuring chamber in one of the components being enclosed by the shells and outer facing base sides;

wherein each shell has an admission hole and an exit hole communicating with the measuring chamber, the components having a first relative position wherein the admission holes are positioned vertically above the measuring chamber and aligned with the hole in the bottom of the conveyor, and a second relative position wherein the exit

holes are aligned in a position vertically below the measuring chamber; and

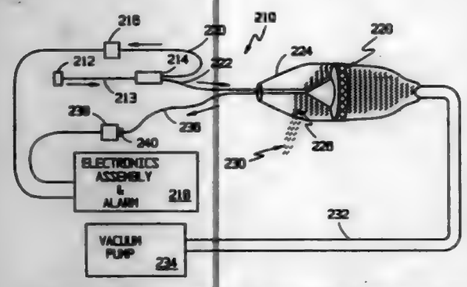
wherein alignment of the admission holes and the hole in the bottom allows a container to move from the conveyor into the measuring chamber by action of gravity and alignment of the exit holes allows the container to exit the measuring chamber by action of gravity.

5,445,795

VOLATILE ORGANIC COMPOUND SENSING DEVICES

Gregory D. Lancaster; Glenn A. Moore; Mark L. Stone, all of Idaho Falls, Id., and William K. Reagen, Stillwater, Minn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 17, 1993, Ser. No. 153,448
Int. Cl.[6] G01N *21/01*; G01J *1/48*
U.S. Cl. 422—86 **15 Claims**



1. Apparatus for detecting a volatile organic compound (VOC) comprising:

a vapochromic sensor responsive to the presence of the VOC, wherein said vapochromic sensor undergoes a color change when in contact with the VOC;

a sensor chamber containing said vapochromic sensor;

a light source, a first light carrying optical fiber having at least three ends, a first end coupled, to said sensor chamber for providing a reference light beam and for directing said reference light beam into said sensor chamber and onto said vapochromic sensor;

a second light carrying optical fiber having a first end coupled, to said sensor chamber, wherein said first end of said second light carrying optical fiber is responsive to light reflected from said vapochromic sensor;

a means for displacing a medium containing the VOC through said sensor chamber; and

detection means coupled to a second end of said first light carrying optical fiber and to a second end of said second light carrying optical fiber for comparing said reference light beam and the light reflected from said vapochromic sensor for determining a color change in said vapochromic sensor arising from the presence of the VOC, wherein a third end of said first light carrying optical fiber is coupled to said light source.

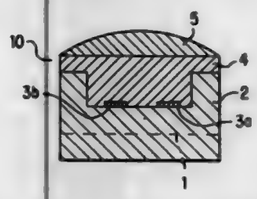
5,445,796

OXYGEN CONCENTRATION SENSOR WITH HEAT RESISTANT COATING

Rentaro Mori, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 24, 1994, Ser. No. 185,010
Claims priority, application Japan, Feb. 10, 1993, 5-022690
Int. Cl.[6] G01N *27/00*
U.S. Cl. 422—98 **19 Claims**

1. An oxygen concentration sensor comprising a sensor body and a porous ceramic coating layer carrying a catalyst for equilibrating an unburnt gas, the porous ceramic coating layer being formed on the sensor body, wherein said porous ceramic coating layer is made of a material formed by firing a mixture of alpha alumina powder having an average particle size of four microns with 0.05 to 8% by weight of a thermal stability improving agent powder that inhibits grain growth in the



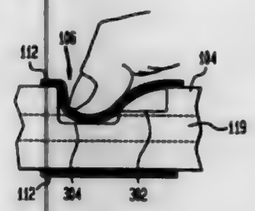
porous ceramic coating layer, the thermal stability improving agent having an average particle size of 0.1 microns.

5,445,797

MICRO-PIPETTOR ASSEMBLY

Robert W. Flesher, 611 E. Seminary Ave., Baltimore, Md. 21286

Filed Jun. 14, 1994, Ser. No. 260,689
Int. Cl.[6] B09L *3/02*
U.S. Cl. 422—100 **10 Claims**



1. A pipettor comprising:

(a) an elongated tubular body having a hollow central bore, said central bore being sealed at a first end of said body and being open at a second end of said body, said second end being configured to mate with a pipette tip;

(b) a cutout in a side of said body, said cutout penetrating a wall of said body to expose said central bore, said cutout defining a pick-up stop and a dispense stop; and

(c) a resilient, flexible member sealably covering said cutout portion, wherein said pick-up stop limits the depth to which said flexible member can be depressed into said cutout to a first depth and said dispense stop limits the depth to which said flexible member can be depressed into cutout to a second depth, said second depth being greater than said first depth.

5,445,798

MICROBE PROPAGATION PREVENTING APPARATUS AND MICROBE PROPAGATION PREVENTING METHOD

Akira Ikeda; Yasuhiro Tanimura; Naoki Nakatsugawa; Masaaki Tanaka, all of Hyogo; Hiroshige Konishi, Shizuoka; Toshie Hiraoka, Shizuoka; Shinji Nishio, Shizuoka, and Hiroto Kawahira, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 156,419
Claims priority, application Japan, Nov. 24, 1992, 4-334960; Aug. 31, 1993, 5-216602; Aug. 31, 1993, 5-283762
Int. Cl.[6] A62B *7/08*
U.S. Cl. 422—121 **30 Claims**

1. A microbe propagation preventing apparatus comprising:

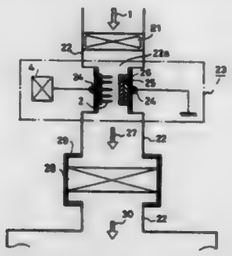
a wind blower for drawing a gas;

an air duct for passing said gas from an upstream position of said air duct to a downstream position of said air duct;

an ionization chamber disposed in said air duct, downstream from said wind blower, for generating ions in said gas;

an ozone decomposing chamber disposed in said air duct, downstream from said ionization chamber, for decomposing ozone in said ionized gas,

wherein said ozone decomposing chamber being mounted to be is electrically insulated from said air duct;



an enclosed area for housing an object in which microbes can propagate; and

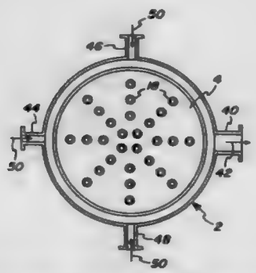
an ion supplying outlet disposed in said air duct, downstream from said ozone decomposing chamber, and coupled to said enclosed area for supplying said ionized gas without ozone to said enclosed area.

5,445,799

APPARATUS AND METHOD FOR THERMOCRACKING A FLUID

Malcolm T. McCants, 2400 Augusta, Suite 260, Houston, Tex. 77057

Filed Oct. 20, 1993, Ser. No. 138,114
Int. Cl.[6] F27B *15/14*
U.S. Cl. 422—146 **19 Claims**



1. A thermocracking reactor, said reactor adapted to confine all thermocracking of a fluid to within the interior of the reactor comprising:

a) a housing comprising a heat exchange chamber, an upper header chamber and a lower header chamber, said upper and lower header chambers being positioned at opposite ends of said heat exchange chamber and separated from fluid contact with said heat exchange chamber;

b) a plurality of upwardly extending riser tubes for conveying a fluid to be thermocracked, each of said tubes provided with an inlet and an outlet, said riser tubes extending through said heat exchange chamber for contacting with a heat exchange medium sufficient to thermocrack the fluid in said riser tubes, said riser tube inlets positioned within said lower header chamber and said riser tube outlets positioned within said upper header chamber;

c) fluid outlet means associated with said upper header chamber for discharging the fluid from said reactor;

d) quench means, including multiple fluid inlets positioned about the perimeter of said upper header chamber and forming openings thereinto, for simultaneously distributing a quench liquid throughout said upper header chamber sufficient to immediately quench any thermocracking vapor and liquid leaving said riser tube outlets; and

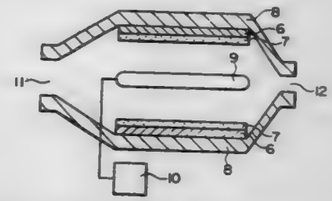
e) means, associated with said fluid outlet means, for thoroughly internixing all fluid in said upper header chamber prior to discharge from said reactor.

5,445,800

REACTION CONTROL METHOD AND APPARATUS USING CARBON SOOT MOLECULES AND ORGANOMETALLIC COMPLEXES IN EXCITED STATE

Satoru Isoda; Toshiyuki Kamiya; Yoshio Hanazato, and Akira Ikeda, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,087, Oct. 26, 1993. This application Oct. 19, 1994, Ser. No. 325,497
Claims priority, application Japan, Apr. 23, 1993, 5-097886
Int. Cl.[6] C01B *13/11*; C02F *1/78*; B01D *53/32*
U.S. Cl. 422—186.3 **9 Claims**



1. A reaction apparatus comprising:

a container having a port for introducing a substance to be allowed to react and a port for letting out (discharging) said substance to be allowed to react;

one or more compounds selected from a group consisting of carbon soot molecules, metal porphyrin complexes and metal phthalocyanin complexes; and

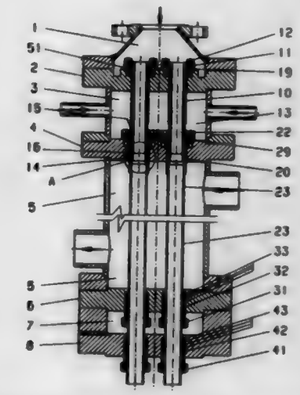
exciting means for bringing said compounds into an excited state.

5,445,801

MULTITUBE FALLING-FILM REACTOR

Carlo Pisoni, Busto Arsizio, Italy, assignor to Meccaniche Moderne S.r.l. Chemical Plants Division, Busto Arsizio, Italy

Filed May 18, 1993, Ser. No. 63,250
Claims priority, application Italy, May 19, 1992, MI92A1198
Int. Cl.[6] B01J *10/02*
U.S. Cl. 422—197 **5 Claims**



1. A multitube falling-film reactor for the continuous sulfonation and sulfation of a liquid organic substance by reaction

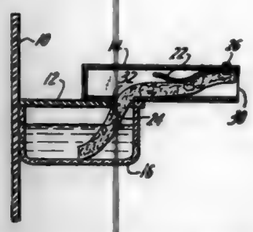
with gaseous sulphuric anhydride SO_3, consisting essentially of a plurality of tubular elements means for feeding said liquid organic substance, each tubular element consisting essentially of a nozzle (10) fitted in a first top plate (2); said nozzle comprising a lower part (13), a sleeve (20) fitted in a second top plate (4), said lower part of said nozzle fitting into said sleeve; a reaction tube (23) fixed to said sleeve (20) and projecting under said second top plate (4); said sleeve having an internal surface and a lower part, said reaction tube having a lower end and an internal surface and being placed in such a way as to cause its internal surface to be flush with said internal surface of said sleeve (20), said lower end of said reaction tube fitting into a double plate system comprising plates (6) and (8), said means for feeding said liquid organic substance is provided with a first distribution chamber (3) placed between said first and second top plates (2) and (4) for feeding said liquid organic substance, said lower part of said nozzle is provided with longitudinal channels (15), defined by said lower part of said nozzle and said internal surface of said sleeve, said liquid organic substance flows through said longitudinal channels (15), collects in a cavity (16), said nozzle (10) has a lower end piece (14), said lower end piece having an external wall, a cylindrical crown-shaped opening (18) being provided between said inner wall of said lower part of said sleeve (20) and said external wall of said lower end piece (14), said opening (18) having constant width and a lower end, said liquid organic substance then flowing down from said cylindrical-crown-shaped opening (18), forming a fluid film which flows down along said internal walls of said reaction tube (23), where it reacts with said gaseous SO_3 which moves concurrently thereto, a second distribution chamber (1) being placed upon said first top plate (2) and under a top cap for introducing SO_3 at the level of said lower end of said opening (18), wherein said longitudinal channels (15) are defined by a toothed profile radial section of the lower part of said nozzle and said nozzle is adapted to slide within said sleeve (20) and may be placed at different heights.

5,445,802

DISINFECTION RACK

Martin E. Wendelken, P.O. Box 176, New Milford, N.J. 07407

Filed Feb. 23, 1993, Ser. No. 21,048
Int. Cl.[6] A61L *2/18*; A47B *73/00*; G03D *5/06*
U.S. Cl. 422—302 1 Claim



1. A disinfection rack for organizing, displaying, and sterilizing vials comprising:

a disinfection chamber having a plurality of slots, each of which are shaped to accommodate the top and neck of a vial, and having an opening on a bottom surface for receiving a first end of a wick,

a reservoir containing sterilization fluid and having an opening on a superior surface for receiving a second end of a wick, a portion of which reservoir superior surface is attached to a bottom surface portion of the disinfection chamber,

a wick engaging a surface of a top of a vial within the disinfection chamber and said sterilization fluid travelling from said reservoir through said wick and to said vial top surface,

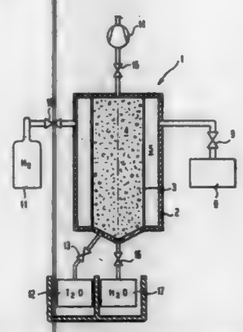
and means for providing pressure to hold said wick against said vial top surface during sterilization.

5,445,803

METHOD AND A DEVICE FOR DECOMPOSING TRITIATED WATER AND FOR RECOVERING ELEMENTARY TRITIUM

Heinz Dworschak, Cardano Di Besozzo, and Giovanni Modica, Milan, both of Italy, assignors to European Atomic Energy Community (Euratom), Plateau de Kirchberg, Luxembourg

Filed Feb. 23, 1994, Ser. No. 199,232
Claims priority, application Luxembourg, Aug. 27, 1991, 87994
Int. Cl.[6] C01B *4/00, 3/10*
U.S. Cl. 423—657 7 Claims



1. A method for decomposing tritiated water and recovering elementary hydrogen and its isotopes, said method comprising the steps of:

injecting tritiated water into a chamber having a wall which is selectively penneable to hydrogen and its isotopes;

reacting said tritiated water with a metal contained within said chamber at a temperature sufficient to oxidize said metal, thus releasing elemental hydrogen and its isotopes;

withdrawing hydrogen and its isotopes through said chamber wall;

absorbing such withdrawn hydrogen and isotopes; and

periodically interrupting the injection of tritiated water into said chamber and regenerating said metal by introducing hydrogen and/or deuterium into said chamber and extracting water formed during such regeneration from said chamber.

5,445,804

PROCESS FOR THE MANUFACTURE OF PURE AMORPHOUS SILICA FROM ROCKS

Alexander Iosef, Arad, Israel, assignor to Rotem Fertilizers Ltd., Israel

Filed Jan. 21, 1994, Ser. No. 184,593
Claims priority, application Israel, Feb. 2, 1993, 104584; Feb. 14, 1993, 104722
Int. Cl.[6] C01B *33/193*
U.S. Cl. 423—339 13 Claims

13. A continuous process for the manufacture of pure amorphous silica from rocks containing non-crystalline silica SiO_2, and Na_2O, which comprises the steps of:

(a) dissolving said rock in an alkaline solution comprising sodium hydroxide, sodium carbonate and calcium carbonate, obtaining a solution containing sodium silicate, the concentration of sodium hydroxide in said alkaline solution being between 3% to 20% by weight, the weight ratio between the silica in said rock expressed as SiO_2 and the alkalinity in said alkaline solution expressed as Na_2O being between 0.5 and 3.0;

(b) adding sodium bicarbonate to said sodium silicate containing solution to produce a solution containing sodium carbonate and a pure amorphous silica precipitate;

(c) separating the pure amorphous silica from the solution

produced in step (b), leaving a solution containing sodium carbonate;

(d) washing said pure amorphous silica precipitate with water and then with a dilute solution of hydrochloric acid which will remove completely any metal constituents contained in said precipitate;

(e) adding gaseous carbon dioxide and sodium chloride to the sodium carbonate solution to transform the sodium carbonate into crystalline sodium bicarbonate, the sodium carbonate in said sodium carbonate containing solution reacting with said gaseous carbon dioxide to produce a sodium bicarbonate containing solution and the sodium bicarbonate in said sodium bicarbonate containing solution reacting with said sodium chloride to produce said crystalline sodium bicarbonate; and

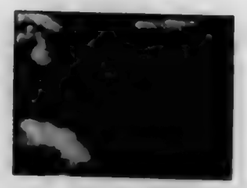
(f) recycling said crystalline sodium bicarbonate to step (b) of said process.

5,445,805

LARGE POTASSIUM BICARBONATE CRYSTALS AND PROCESS FOR THE PREPARATION THEREOF

William Zaccarello, Allentown; Andrew D. Kurtz, Belle Mead; Lawrence Kirschner, Flanders, and Herman Marder, Princeton, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 6, 1993, Ser. No. 58,579
Int. Cl.[6] C01D *7/40*; A61K *33/00*
U.S. Cl. 423—422 3 Claims



1. A crystalline potassium bicarbonate product suitable for application as an active ingredient in oral pharmaceutical dosage forms, comprising unagglomerated, blocky-shaped crystals having a weight mean particle size of at least 350 microns and a specific B.E.T. surface area less than 0.02 m^2/gram.

5,445,806

PROCESS FOR PREPARING FINE POWDER OF PEROVSKITE-TYPE COMPOUND

Masanori Kinugasa, Tatsuno; Naoto Tsubomoto, and Osamu Kobayashi, both of Osaka, all of Japan, assignors to Tayca Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 684,917, Apr. 19, 1991, abandoned. This application Mar. 4, 1992, Ser. No. 845,670
Claims priority, application Japan, Aug. 21, 1989, 1-215198
Int. Cl.[6] C01G *23/00, 25/00*; C01F *11/00, 5/00*
U.S. Cl. 423—598 12 Claims



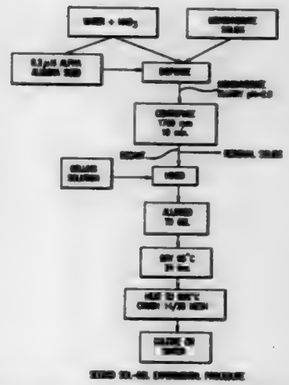
1. A process for preparing a fine powder of tetragonal crystalline barium titanate having an average particle size of at most 0.3 μm, which comprises reacting an aqueous solution of a mixture of a compound containing Ba and a compound containing Ti in a Ba/Ti atomic ratio of 1.02–1.40, obtaining a powdery reaction product of barium titanate, calcining the powder reaction product having a Ba/Ti atomic ration of 1.02–1.40 at a temperature of 1,000° to 1,100° C., and removing excess Ba element from a resulting calcined product.

5,445,807

PRODUCTION OF ALUMINUM COMPOUND

Alan Pearson, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 781,208, Sep. 30, 1985, Pat. No. 5,194,243, which is a continuation of Ser. No. 534,665, Sep. 22, 1983, abandoned. This application Jan. 9, 1990, Ser. No. 462,409
Int. Cl.[6] C01F *7/20*
U.S. Cl. 423—625 12 Claims



1. A method of making a microcrystalline boehmite product comprising heating under autogenous pressure a mixture including boehmite alumina precursor in an aqueous medium having an acidic or basic pH, in the presence of seed effective for boehmite growth, and adding before said heating submicron seed effective to promote alpha alumina growth upon sintering to provide a colloidal seed suspension, wherein said seed effective for boehmite growth is present in an amount of at least 5% by weight of the precursor alumina, each calculated as Al_2O_3, and said heating is carried out at a high temperature for a time sufficient to convert said boehmite alumina precursor to microcrystalline boehmite whereby a colloidal microcrystalline boehmite product is obtained.

5,445,808

PROCESS FOR PREPARING ULTRA-WHITE ALUMINA TRIHYDRATE

Bernard F. Armbrust, Jr., Benton, Ark., assignor to Reynolds Metal Company, Richmond, Va.

Division of Ser. No. 926,268, Aug. 5, 1992, Pat. No. 5,342,485. This application Jun. 27, 1994, Ser. No. 267,070
Int. Cl.[6] C01F *7/02*
U.S. Cl. 423—629 9 Claims

1. A process for preparing a powdered alumina trihydrate having improved whiteness, said process comprising the steps of:

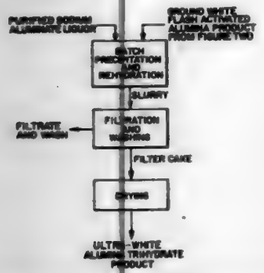
(a) providing a dry, white, initial alumina trihydrate;

(b) flash activating the initial alumina trihydrate to provide activated alumina capable of being rehydrated to an alumina trihydrate;

(c) reducing the particle size of the activated alumina to provide an activated alumina seed;

(d) rehydrating the activated alumina seed by admixing with a purified sodium aluminate liquor while simultaneously precipitating alumina trihydrate to provide an alumina

slurry containing rehydrated and precipitated alumina trihydrate solids;
(e) agitating the alumina slurry;



(f) separating the rehydrated and precipitated alumina trihydrate solids from the slurry, washing the solids; and
(g) drying the separated solids from step (f) to a moisture level of about 1%.

5,445,809
PRODUCTION OF TAXOL FROM THE YEW TREE
Gary A. Strobel, Bozeman, and Andrea A. Stierle, Butte, both of Mont., assignors to Research and Development Institute at Montana State University, Bozeman, Mont.
Continuation-in-part of Ser. No. 845,097, Mar. 3, 1992. This application Nov. 3, 1992, Ser. No. 970,887
Int. Cl.[6] A61K *31/00*; C07D *305/00*
U.S. Cl. 424—1.81 22 Claims

1. A method for the production of taxol from a Yew tree which comprises:
(a) providing a taxol source from a portion of a Yew tree;
(b) contacting said portion of Yew tree with an aqueous reactor solution comprising a taxol precursor comprising phenylalanine and a steroid inhibitor comprising chlorocholine chloride; said solution being maintained at a pH of about 6.0 to 8.0 at a temperature of about 25°–30° C. and under a reducing environment; and
(c) maintaining contact of said taxol source with said reactor solution for a sufficient time to produce taxol.

5,445,810
INJECTABLE OPACIFYING COMPOSITION CONTAINING LIPOSOMES OF HIGH ENCAPSULATING CAPACITY FOR X-RAY EXAMINATIONS
Michel Schneider, Troinex; Hervé Tournier, Valleiry, and Bernard Lamy, Carouge, all of Switzerland, assignors to Bracco International B.V., Netherlands
Continuation of Ser. No. 302,690, Jan. 19, 1989, Pat. No. 5,312,615. This application Sep. 29, 1993, Ser. No. 128,206
Claims priority, application Switzerland, May 22, 1987, 199/87-3
Int. Cl.[6] A61K *49/04*
U.S. Cl. 424—9.4 6 Claims

1. An injectable aqueous composition, developed for opacifying organs for X-ray examination, formed of a suspension in a physically tolerable aqueous medium of liposomic vesicles having a lipidic membrane containing encapsulated in these vesicles, at least one iodinated organic compound opaque to X-rays in aqueous solution, wherein the vesicles of the liposomes have a mean size which is between 0.15 and 3 μm, and that the ratio of the weight of the iodine encapsulated in the liposomic vesicles to the weight of the lipids of the said membrane is from 1.75–6):1.

5,445,811
ORGAN SPECIFIC EMULSION
Björn Norrlind, and Arvid Wretlind, both of Stockholm, Sweden, assignors to Pharmacia AB, Sweden
PCT No. PCT/SE92/00261, § 371 Date Dec. 7, 1993, § 102(e) Date Dec. 7, 1993, PCT Pub. No. WO92/18169, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 22, 1992, Ser. No. 137,061
Claims priority, application Sweden, Apr. 23, 1991, 9101214
Int. Cl.[6] A61K *49/04*
U.S. Cl. 424—9.4 19 Claims

1. A parental emulsion for x-ray contrast of the liver and spleen comprising at least one of each of the following:
a) an iodized and/or brominated lipophilic substance,
b) an emulsifier, and
c) a cyclopenta-phenanthrene derivative
wherein the mean droplet size of said emulsion is below 1μ and the weight ratio between said emulsifier and said cyclopenta-phenanthrene derivative is between 10:1 to 1:2.

5,445,812
ANGIOGRAPHIC ADJUVANT
Yasuyuki Gotou, Fuchu, Japan, assignor to The Green Cross Corporation and Taisho Pharmaceutical Co., Ltd., both of Japan
Continuation of Ser. No. 547,076, Jul. 3, 1990, abandoned. This application Oct. 19, 1994, Ser. No. 325,648
Claims priority, application Japan, Jul. 5, 1989, 1-173709
Int. Cl.[6] A01N *25/02*, *37/08*; A61K *49/00*, *49/04*
U.S. Cl. 424—9.4 8 Claims

1. A human angiographic method employing the following steps:
administering, intravenously or intraarterially an angiographic effective amount of an angiographic adjuvant including a fat emulsion and a principal active agent being PGE;
observing a flow of angiographic contrast medium.

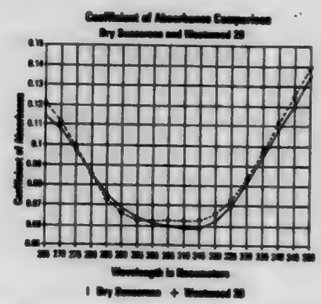
5,445,813
STABLE MICROBUBBLE SUSPENSIONS AS ENHANCEMENT AGENTS FOR ULTRASOUND ECHOGRAPHY
Michel Schneider, Troinex, Switzerland; Jean Brochot, Feigeres; Jérôme Puginier, Le Chable-Beaumont, both of France, and Feng Yan, Meyrin/Geneva, Switzerland, assignors to Bracco International B.V., Amsterdam, Netherlands
Filed Oct. 12, 1993, Ser. No. 134,671
Claims priority, application European Pat. Off., Nov. 2, 1992, 92810837
Int. Cl.[6] A61K *49/00*
U.S. Cl. 424—9.51 12 Claims

1. A method of making a suspension of air or gas filled microbubbles, said method comprising the steps of:
selecting at least one film forming surfactant;
converting said surfactant into a powder;
contacting said powder with air or another gas;
admixing said powder surfactant with an aqueous liquid carrier to form a suspension of air or gas filled microbubbles;
introducing said suspension into a container;
forming a layer of said microbubbles in an upper part of said container;
separating said layer of microbubbles; and
washing said separated microbubbles with an aqueous solution saturated with the microbubble gas.

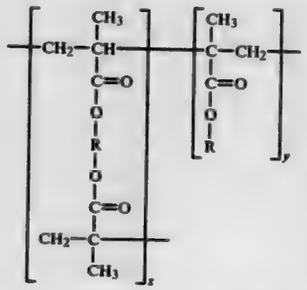
5,445,814
METHODS FOR MAKING ORAL COMPOSITIONS
Nong Liang, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 900,640, Jun. 18, 1992, Pat. No. 5,290,541. This application Dec. 29, 1993, Ser. No. 175,029
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[6] A61K *7/16*, *7/18*, *7/26*, *9/113*
U.S. Cl. 424—52 8 Claims

1. Aqueous oral toothpaste compositions comprising a soluble fluoride ion source, a non-cationic, water-insoluble antibacterial agent, a solvent for said agent, a surfactant and water and wherein said antibacterial agent is in the form of a microemulsion and wherein said composition is substantially free of potassium ions.

5,445,815
DRY SUNSCREEN COMPOSITION
Robert W. Siegfried, 3628 Charlotte St., Kansas City, Mo. 64109
Filed Nov. 22, 1993, Ser. No. 155,600
Int. Cl.[6] A61K *7/42*, *7/44*, *9/10*
U.S. Cl. 424—59 5 Claims



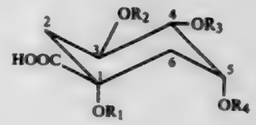
1. A dry sunscreen composition, consisting essentially of about 7.50 weight percent octyl methoxycinnamate, about 5.00 weight percent octyl salicylate, about 15.00 weight percent homosalate, about 5.00 weight percent menthyl anthranilate, about 10.00 weight percent octocrylene, about 6.00 weight percent benzophenone-3, about 0.05 weight percent propylparaben, about 0.05 weight percent BHT, about 4.49 weight percent PVP/eicosene copolymer, about 5.75 weight percent octyldodecyl neopentanoate, about 5.75 weight percent C12–15 alcohols benzoate, about 10.00 weight percent titanium dioxide, about 0.15 weight percent coloring agent, and about 25.26 weight percent acrylates copolymer, said acrylates copolymer having a formula with the following structure:



wherein R is alkyl, and x and y are repeating units.

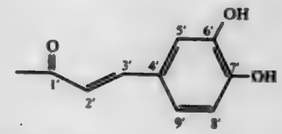
5,445,816
DEPIGMENTING COSMETIC AND/OR DERMATOLOGICAL COMPOSITION CONTAINING A DI- OR TRI-CAFFEOYLQUNINIC ACID, OR A MIXTURE THEREOF
Ming Li, Gif sur Yvette; Thierry Sevenet, Paris; Hubert Schaller, Selestat; Hamid Abdul Hadi, Gif sur Yvette; Daniel Guenard, Montrouge; Pierre Potier, and Eric Pilleux, both of Paris, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 83,376, Jun. 29, 1993, Pat. No. 5,395,624. This application Dec. 2, 1994, Ser. No. 352,206
Claims priority, application France, Jul. 1, 1992, 92 08091
Int. Cl.[6] A61K *7/00*, *9/127*
U.S. Cl. 424—62 6 Claims

1. A method of providing a depigmenting effect to the skin of a subject in need thereof, comprising topically applying to the subject at least one di- or tri-caffeoylquinic acid corresponding to the general formula (I):



(I)

in which:
R_1, R_2, R_3, and R_4 represent a hydrogen atom or the CAF radical corresponding to the formula:



(II)

provided that at least two, and at most three, of the R_1, R_2, R_3, and R_4 radicals represent the CAF radical, but excluding R_1 and R_4 as both simultaneously representing the CAF radical and R_2 and R_3 as both simultaneously representing a hydrogen atom, or a mixture of said caffeoylquinic acids in an effective amount to achieve said depigmenting effect.

5,445,817
PERTUSSIS TOXIN USED AS A CARRIER PROTEIN WITH NON-CHARGED SACCHARIDES IN CONJUGATE VACCINES
Rachel Schneerson, Bethesda, Md.; Lily Levi, Haifa, Israel, and John B. Robbins, Chevy Chase, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Aug. 21, 1992, Ser. No. 932,960
Int. Cl.[6] A61K *39/385*, *39/09*, *39/10*
U.S. Cl. 424—194.1 11 Claims

1. A method for preparing a pertussis toxin carrier protein and polysaccharide conjugate compound, comprising the steps of:
(a) providing:
(i) said pertussis toxin carrier protein, and
(ii) a neutral or non-charged capsular polysaccharide;
(b) derivatizing said capsular polysaccharide with a linker molecule;
(c) solubilizing said pertussis toxin protein and said derivatized capsular polysaccharide at a pH of about 3.5 to about 4; and
(d) coupling said pertussis toxin protein and said polysaccharide from step (c) with carbodiimide at a reaction pH of about 3.5 to about 4, resulting in the covalent coupling of said pertussis toxin protein and said polysaccharide to form said carrier protein and capsular polysaccharide conjugate compound.

5,445,818

SYNTHETIC PSEUDOMONAS AERUGINOSA PILIN PEPTIDE VACCINE AND METHOD OF USE

Robert S. Hodges; William Paranchych; Kok K. Lee; Sastry A. Parimi, all of Edmonton; Randall T. Irvin, Mississauga, and Peter C. Doig, Toronto, all of Canada, assignors to The Governors of the University of Alberta, Alberta, Canada

Continuation of Ser. No. 344,565, Apr. 28, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 927,797

Int. Cl.[6] A61K *39/02, 39/38, 38/10*; C07K *1/00*

U.S. Cl. 424—184.1 2 Claims

1. A method of producing immunity in a mammalian subject against infection by *Pseudomonas aeruginosa*, comprising

vaccinating the subject with an immunogenically active peptide composition composed of

(A) a pilin peptide consisting of amino acid residues 128-144 of a Pseudomonas pilin protein, including one of the sequences:

(i) C T S D Q D E Q F I P K G C,

(ii) C K S T Q D P M F T P K G C,

(iii) C T S T Q E E M F I P K G C,

(iv) C A T T V D A K F R P N G C,

(v) C T S N A D N K Y L P K T C,

where the two cysteine residues (C) in the peptide are cross-linked;

(B) an immunogenic carrier to which the peptide is attached; and

(C) a pharmaceutically acceptable diluent.

5,445,819

BIOLOGICAL CONTROL OF MOLE CRICKETS (*SCAPTERISCUS SPP.*)

Grover C. Smart, Jr., and Nguyen B. Khuong, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Continuation of Ser. No. 957,771, Oct. 7, 1992, abandoned, which is a division of Ser. No. 453,806, Dec. 20, 1989, Pat. No. 5,165,930, which is a continuation-in-part of Ser. No. 406,825, Sep. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 895,385, Aug. 11, 1986, abandoned. This application Feb. 16, 1994, Ser. No. 199,348

Int. Cl.[6] A01N *63/00*; C12N *5/06*

U.S. Cl. 424—93.1 3 Claims

1. A composition for the biological control of pest insects in the order Orthoptera comprising the infective third stage of a purified culture of *Steinernema scapterisci* nematodes having ATCC Deposit No. 75197 produced by passage of a first infective third stage of said nematodes through mole crickets to produce an infective third stage of said nematodes having a greater degree of insecticidal activity than said first infective third stage and an inert carrier therefor.

5,445,820

STREPTOLYSIN O PEPTIDE ANTIGENS AND METHODS FOR THE DETERMINATION OF STREPTOLYSIN ANTIBODIES

Christoph Seidel, Weilheim; Geoffrey Burns, Munich, and Wolf-Dieter Engel, Feldafing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Nov. 29, 1993, Ser. No. 158,351

Claims priority, application Germany, Nov. 28, 1992, 42 40 056.2

Int. Cl.[6] A61K *39/02, 39/09, 37/02*; C07K *7/00, 17/00*

U.S. Cl. 424—237.1 7 Claims

1. A streptolysin O peptide antigen comprising at least a part of one of the amino acid sequences selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4 and SEQ ID NO: 5, wherein said part of the amino acid sequences is at least 4 amino acids in length and wherein said antigen has a negative band between 190 and 200 nm in the CD spectrum.

5,445,821

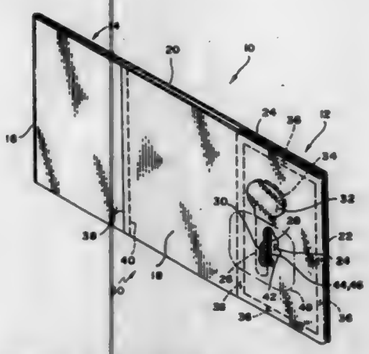
FRAGRANCE SAMPLER AND APPLICATOR WITH SIMULATED CONTAINER AND REMOVABLE CAP

Hubert F. Brown, Hixson, and Paul J. A. French, Signal Mountain, both of Tenn., assignors to Arcade, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 821,014, Jan. 15, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 138,251

Int. Cl.[6] A61K *7/00, 9/50*

U.S. Cl. 424—401 14 Claims



1. A fragrance sampler comprising:

a single sheet folded along a first transverse line to form a top and a bottom layer, said top layer being folded inwardly along a second transverse line to form a middle layer between the top and bottom layers;

an applicator strip cut from said middle layer and removably disposed between the top and bottom layers of said single sheet, said strip having a mixture of fragrance-containing, gelatin-walled microcapsules and an inert diluent powder deposited on a face of said strip;

said mixture being adhered to said face solely by the adhesive properties of the gelatin in the walls of said microcapsules when deposited from an aqueous slurry, and said mixture being in contact with but substantially unbonded to an opposing surface of said top layer; and

means for grasping said strip.

5,445,822

COSMETIC COMPOSITIONS CONTAINING FATTY ACID TRIGLYCERIDE MIXTURES

Umberto Bracco, Vevey, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Apr. 28, 1994, Ser. No. 234,271

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 13 Claims

1. A topical cosmetic composition contains a cosmetic carrier and a mixture of fatty acid triglycerides, wherein the fatty acids of the triglycerides comprise 40% to 70% by weight oleic acid, 30% to 50% by weight polyunsaturated acids, 0.2% to 1.0% by weight gamma-linolenic acid, 1% to 5% by weight alpha-linolenic acid, and wherein the ratio by weight of n-6 fatty acids to n-3 fatty acids with a degree of unsaturation of 3 or more in the triglycerides is 10:1 to 30:1.

5,445,823

DERMATOLOGICAL COMPOSITIONS AND METHOD OF TREATMENT OF SKIN LESIONS THEREWITH

Bonnie J. Hall, Mason; Julie A. Baur, Fairfield, and George E. Deckner, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 20, 1994, Ser. No. 326,446

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 9 Claims

1. A dermatological composition for treating skin lesions comprising:

(a). from about 0.1% to about 20% of benzoyl peroxide,

(b). from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide selected from the group consisting of panthenol, pantothenic acid, pantetheine, pantethine, C1–C30 alkyl esters of pantothenic acid, C1–C30 carboxylic acid esters of panthenol, C1–C30 alkyl ethers of panthenol, allantoin, zinc oxide, and mixtures thereof, and

(c). a topical carrier.

7. A method of treating skin lesions in humans comprising topically applying to a human in need of treatment a safe and effective amount of a composition comprising:

(a). from about 0.1T to about 20% of benzoyl peroxide,

(b). from about 0.05% to about 20% of a compound for reducing the skin irritation associated with the benzoyl peroxide selected from the group consisting of panthenol, pantothenic acid, pantetheine, pantethine, C1–C30 alkyl esters of panthothenic acid, C1–C30 carboxylic acid esters of panthenol, C1–C30 carboxylic acid ethers of panthenol, zinc oxide, and mixtures thereof, and

(c). a topical carrier.

5,445,824

PHYSIOLOGICAL ACTIVATING MATERIAL EXTRACTED FROM CORAL SAND

Nobuo Someya, Tokyo, Japan, assignor to Marine Bio Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1993, Ser. No. 101,065

Int. Cl.[6] A61K *35/56, 33.14, 47/00, 33/06*

U.S. Cl. 424—520 4 Claims

1. In the art of extracting physiological activating substances from coral sand, the improvement which comprises the steps of:

obtaining calcium, magnesium, sodium, potassium, iron, phosphorus, lipides, carbohydrates, amino acids, silicon, fluorine, chlorine, sulfur, iodine, copper, zinc, manganese, selenium boron, and bromine according to a process selected from the group consisting of:

(a) applying a vacuum extraction method to the coral sand to separate the physiological activating substances therefrom;

(b) applying a solvent extraction method to the coral sand to separate the physiological activating substances therefrom; and

(c) heating the coral sand under reduced pressure to separate the physiological activating substances therefrom.

5,445,825

DISPOSABLE PERSONAL DENTAL HYGIENE ASSEMBLY

Phoebe Copelan, Rancho Mirage, and James B. Copelan, Pasadena, Calif., assignors to The Copelan Family Trust, Rancho Mirage and James B. Copelan Family Trust, Pasadena, both of Calif., a part interest

Division of Ser. No. 593,590, Oct. 2, 1990, Pat. No. 5,133,971, which is a continuation of Ser. No. 284,945, Dec. 14, 1988, abandoned. This application Jul. 20, 1992, Ser. No. 916,964

The portion of the term of this patent subsequent to Jul. 29, 2009, has been disclaimed.

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 5 Claims



1. A disposable personal dental hygiene assembly comprising: a flexible sheet form dentifrice carrier of a size sufficient for at least a portion thereof to enter the mouth and having surface portions engageable with the distal and proximal tooth surfaces; said carrier being substantially dry and being impregnated with a substantially dry mixture of a tooth cleanser and an expectorant;

including additionally a rupturable moisture impervious pouch enclosing said carrier to maintain said carrier clean until use and for disposable after use.

5,445,826

DELIVERY SYSTEM CONTAINING A GEL-FORMING DIETARY FIBER AND A DRUG

Eric H. Kuhrts, Santa Barbara, Calif., assignor to CIBUS Pharmaceutical, Inc., Redwood City, Calif.

Continuation of Ser. No. 850,942, Mar. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 440,656, Nov. 22, 1989, Pat. No. 5,118,510, and a continuation-in-part of Ser. No. 440,730, Nov. 22, 1989, Pat. No. 5,096,714, and a continuation-in-part of Ser. No. 440,728, Nov. 22, 1989, Pat. No. 5,023,245, which is a continuation-in-part of Ser. No. 212,715, Jun. 28, 1988, Pat. No. 4,965,252. This application Dec. 14, 1993, Ser. No. 167,325

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—451 10 Claims

1. A solid prolonged release oral unit dosage composition for oral administration and ingestion in solid form, and intended to be swallowed as such, which consists essentially of a solid admixture of an effective dose of particles of a biologically-absorbable therapeutic agent or drug, gel-forming dietary matrix particles, a mineral salt of carbonate or bicarbonate which releases a physiologically-acceptable gas upon ingestion, and a physiologically-acceptable acid, the combination of the fiber and mineral salt providing amounts thereof which effect prolonged but effective release of the drug or therapeutic agent upon oral ingestion and exposure of the solid composition to biological fluids, wherein the gel-forming dietary fiber comprises about 35% to about 50% by weight, the mineral salt comprises about 5% to about 75% by weight, the physiologically-acceptable acid comprises 0% to about 50% by weight, and the ratio of the weight of the gel-forming fiber to the weight of the drug or therapeutic agent is between about 1,000:0.5 and 1:1.5, the gel-forming dietary fiber particles being coated with a hydrocolloid film and the therapeutic agent or drug particles being optionally coated with a film of the same or a different hydrocolloid.

5,445,827

EFFERVESCENT IBUPROFEN PREPARATIONS

Christian Fritsch, Odenthal, and Werner Gräwingholt, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 876,704, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 431,585, Nov. 3, 1989, abandoned. This application Jul. 7, 1993, Ser. No. 88,472
Claims priority, application Germany, Nov. 12, 1988, 38 38 431.0
Int. Cl.[6] A61K *9/46, 9/20*
U.S. Cl. 424—466 4 Claims

1. An effervescent ibuprofen preparation comprising

a) basic granules consisting essentially of 1 part by weight of ibuprofen sodium salt; 6.1 parts by weight of sodium hydrogen-carbonate; 0.54 parts by weight of polyvinylpyrrolidone; 0.45 parts by weight of sodium carbonate; and

b) 1.79 parts by weight of citric acid; about 2.2 parts of said preparation in 100 parts of water in about 1 minute forming a clear solution of about pH 6.7.

5,445,828

PROGRAMMED RELEASE ORAL SOLID PHARMACEUTICAL DOSAGE FORM

Franco Pozzi, Como, and Pia Furlani, Milan, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Division of Ser. No. 15,669, Feb. 9, 1993, Pat. No. 5,310,558, which is a continuation of Ser. No. 724,930, Jul. 2, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 179,227
Claims priority, application Italy, Jul. 4, 1990, 20849/90; Dec. 19, 1990, 22442/90
Int. Cl.[6] A61K *9/42, 9/56*
U.S. Cl. 424—476 6 Claims

1. A programmed release solid pharmaceutical composition in the form of an orally administrable tablet comprising a prompt release core, containing the active ingredient, coated by a layer Comprising a mixture of a hydrophobic material selected from the group consisting of esters of higher fatty acids with higher alcohols, higher alcohols, higher fatty acids, salts of higher fatty acids, esters of glycerine with higher fatty acids, esters of higher fatty acids with polyethyleneglycol, wax, paraffin oil and mixtures thereby having a melting point between 50° C. and 90° C. and a non-ionic surfactant having a HLB value between 10 and 16, the amount of the surfactant being from 5 to 20% by weight with respect to the hydrophobic material, and optionally a pharmaceutically acceptable water-soluble film forming material in an amount of from 5 to 30% by weight with respect to the hydrophobic material and further coated by an outer prompt release layer containing the same or another active ingredient.

5,445,829

EXTENDED RELEASE HARMACEUTICAL FORMULATIONS

George N. Paradissis, St. Louis; James A. Garegnani, Ballwin, and Roy S. Whaley, St. Louis, all of Mo., assignors to KV Pharmaceutical Company, St. Louis, Mo.

Division of Ser. No. 469,210, Jan. 24, 1990, Pat. No. 5,133,974, which is a continuation-in-part of Ser. No. 349,533, May 5, 1989, Pat. No. 5,122,384. This application Jun. 15, 1992, Ser. No. 898,539
Int. Cl.[6] A61K *9/56, 9/30*
U.S. Cl. 424—480 68 Claims

1. A process for preparing an extended release pharmaceutical formulation for oral administration which comprises:

a) forming a core material by spraying a solvent containing about 0.5% to about 4% by weight of a dissolved binder onto a mixture of a therapeutically effective amount of at least one drug and about 15% to 40% by weight inert particles;

b) drying the resulting mixture to form a core material and coating the core material with about 4% to about 20% by weight talc; to form immediate release particles;

c) coating the immediate release particles by spraying the immediate release particles particles with about 2% to about 35% by weight of a dissolution modifying system containing about 0.01% to 5% of plasticizer and film forming agent to form an extended release pharmaceutical formulation; and

d) recovering the formed extended release pharmaceutical formulation having sizes from −10+60 mesh, U.S. Standard sieve size;

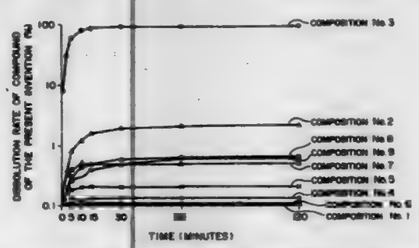
wherein all percentages are based on the total weight of the pharmaceutical formulation.

5,445,830

HIGHLY ABSORBABLE PHARMACEUTICAL COMPOSITION

Yoshihiro Ishizue; Kozo Ishida; Masaaki Odomi; Toru Nishibayashi, and Kazuyo Koshino, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 742,432, Aug. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,875, Jul. 20, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,443
Claims priority, application Japan, Jul. 25, 1989, 1-192413
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—484 6 Claims



1. A highly absorbable pharmaceutical composition obtained by mixing together in an organic solvent, as a first component thereof, methyl 3-phenyl-2-(E)-propenyl 1,4-dihydro-2,6-dimethyl-4-(3-nitrophenyl)pyridine-3,5-dicarboxylate and, as a second component thereof, at least one pH-dependent copolymer of methacrylic acid selected from pH-dependent trimethylammonium salts of copolymers of acrylic acid and methacrylic acid; pH-dependent copolymers of methacrylic acid and methyl acrylate; pH-dependent copolymers of methacrylic acid and methyl methacrylate; pH-dependent copolymers of ethyl acrylate and methyl methacrylate; or pH-dependent copolymers of butyl methacrylate, dimethylaminoethyl methacrylate and methyl methacrylate, said organic solvent being selected from acetone, methanol, ethanol, isopropanol, methylene chloride, chlordform or mixtures thereof and being present in an amount sufficient to completely dissolve both of said first and second components, wherein the ratio of the amount of the first component to the amount of the second component is from 10 to 2,000 parts by weight of the second component per 100 parts by weight of the first component and thereafter removing the solvent to obtain said composition, the first component of the composition being present in the amorphous state.

5,445,831

PSYLLIUM-CONTAINING PRODUCTS

Paul D. Leis, Jr, Hamilton; Larry E. Burns, Goshen, and Karen R. Hafer, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 931,629, Aug. 18, 1992, abandoned, which is a division of Ser. No. 657,619, Feb. 20, 1991, Pat. No. 5,149,541, which is a continuation of Ser. No. 252,848, Oct. 3, 1988, abandoned. This application Oct. 21, 1993, Ser. No. 140,718
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[6] A61K *35/78, 9/16, 9/14, 31/725*
U.S. Cl. 424—489 16 Claims

1. A dry, powdered psyllium-containing drink mix composition comprising:

(a) from about 10% to about 99% of psyllium husk having particle size distribution comprising less than about 15% of psyllium husk larger than about 80 mesh and less than about 40% of psyllium husk smaller than about 200 mesh; and

(b) from about 1% to about 90% of carrier materials;

wherein said carrier materials are selected from the group consisting of sugar, maltodextrin, citric acid, flavoring agents, coloring agents, and combinations thereof, and wherein further said composition is in a form dispersible in an aqueous liquid.

5,445,832

PROCESS FOR THE PREPARATION OF MICROSPHERES MADE OF A BIODEGRADABLE POLYMERIC MATERIAL

Piero Orsolini, and Frédéric Heimgartner, both of Martigny, Switzerland, assignors to Debio Recherche Pharmaceutique S.A., Martigny, Switzerland

Filed Jul. 16, 1992, Ser. No. 915,478
Claims priority, application Switzerland, Jul. 22, 1991, 02178/91
Int. Cl.[6] A61K *38/00*
U.S. Cl. 424—491 7 Claims

1. A process for preparing a composition for the sustained and controlled release of a medicamentous peptide substance, said medicamentous peptide substance being a natural or synthetic poly peptide comprising from about 3 to about 45 amino acids, said composition being obtained in the form of microspheres of a biodegradable polymeric organic material incorporating said medicamentous substance, comprising the steps of:

(a) converting a water soluble peptide or peptide salt into a corresponding water-insoluble peptide salt selected from the group consisting of the pamoate, stearate, and palmitate of said peptide;

(b) suspending said water-insoluble peptide salt in an organic solvent containing a dissolved biodegradable polymeric organic material to form a suspension;

(c) dispersing said organic suspension in an aqueous medium to form an aqueous emulsion, where the aqueous medium forms the continuous phase of the emulsion;

(d) transferring said emulsion into an excess of an aqueous medium, and separating microspheres from the liquid phase.

5,445,833

TENDON OR LIGAMENT GRAFT FOR PROMOTING AUTOGENOUS TISSUE GROWTH

Stephen F. Badylak; Leslie A. Geddes, both of West Lafayette; K. Donald Shelbourne, Indianapolis; Gary C. Lantz, Lafayette, and Arthur C. Coffey, Indianapolis, all of Ind., assignors to Purdue Research Foundation, West Lafayette and Methodist Hospital of Indiana, Inc., Indianapolis, both of Ind.

Continuation of Ser. No. 764,818, Sep. 24, 1991, Pat. No. 5,281,422. This application Dec. 15, 1993, Ser. No. 167,579
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[6] A61K *35/38*
U.S. Cl. 424—551 14 Claims

1. A tendon or ligament graft construct for use as connective tissue substitute, said graft formed from a segment of intestinal tissue of a warm-blooded vertebrate, said segment comprising the tunica submucosa and basilar tissue of the tunica mucosa, said tunica submucosa and basilar mucosa tissue being delaminated from the tunica muscularis and the luminal portion of the tunica mucosa of said segment of intestinal tissue, said graft construct having an intermediate portion and opposite end portions, said end portions being formed to present multiple segment layers for providing reinforcement for attachment of the graft construct to existing physiological structures, said graft construct further being conditioned for its use as a connective tissue substitute by stretching so that the graft construct is longer than the segment of intestinal tissue from which it is formed.

5,445,834

GREEN CHEWING GUM BASE

Jacob C. Burger, Hoevelaken; Petrus J. J. M. Sijtsema, Bussum; Jan D. Lakeman, Zaandam, and Frederick W. Cain, Voorburg, all of Netherlands, assignors to Loders Croklaan B.V., Wormerveer, Netherlands

Continuation of Ser. No. 37,189, Mar. 26, 1993. This application Aug. 29, 1994, Ser. No. 294,843
Claims priority, application European Pat. Off., Mar. 26, 1992, 92200859
Int. Cl.[6] A23G *3/30*
U.S. Cl. 426—3 5 Claims

1. In a chewing gum base comprising at least one member of the group consisting of natural and synthetic elastomeric and resinous components, the improvement wherein the base also comprises at least 15 wt. %, on the total base, of a triglyceride composition that displays a solid fat index, not stabilized, at 35° C. measured by NMR pulse of at least 40, the triglyceride composition comprising 40–100 wt. % $C_{16}+C_{18}$ saturated fatty acids; 0–60 wt. % $C_{18:1}$ fatty acid, at least 35 wt. % $C_{12}+C_{14}+C_{16}$ saturated fatty acids and 0–40 wt. % $C_{12}+C_{14}$ saturated fatty acids, said gum base containing a maximum of 0.5 wt. % of paraffins and said triglyceride composition comprising a palm oil or hardened palm oil fraction.

5,445,835

METHOD OF PRODUCING A YOGURT PRODUCT CONTAINING BACTERIOCIN PA-1

Ebenezer R. Vedamuthu, Bradenton, Fla., assignor to Quest International Flavors & Food Ingredients Company, division of Indopco, Inc., Bridgewater, N.J.

Continuation of Ser. No. 898,543, Jun. 15, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,960
Int. Cl.[6] A23C *9/12*
U.S. Cl. 426—9 12 Claims

1. A method for producing a yogurt product which comprises:

(a) fermenting a milk based medium by growth of a bacteriocin producing *Pediococcus acidilactici* to produce a first fermentate containing the bacteriocin wherein the milk based medium contains between about 0.1 and 5 percent by weight of milk solids;

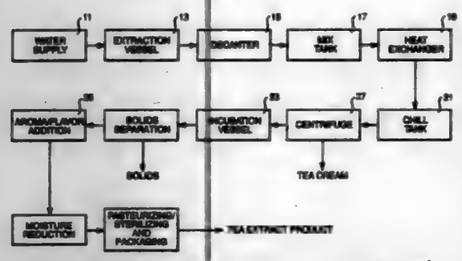
(b) adding milk powder to the first fermentate; and
(c) heating the milk based medium with the added milk powder to terminate the growth of the *Pediococcus acidilactici;*
(d) fermenting the first fermentate containing the added milk powder after the heating with a yogurt culture containing *Lactobacillus bulgaricus* and *Streptococcus theremophilus* to produce the yogurt product containing the bacteriocin in an amount which provides inhibition of undesirable bacterial growth in the yogurt product.

5,445,836

ENZYMATIC CLARIFICATION OF TEA EXTRACTS

Francis Agbo, Warwick, and Joseph E. Spradlin, Monroe, both of N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed May 12, 1994, Ser. No. 241,832
Int. Cl.[6] A23F *3/20*
U.S. Cl. 426—52 **21 Claims**



1. A process for producing a tea extract which forms a reduced amount of haze when stored under refrigeration comprising the steps of:
(a) adding oxidase glucose and tannase to a decreamed aqueous tea extract, the amount of added glucose oxidase being from 1500 to 3750 activity units per gram of soluble tea solids in the aqueous tea extract, and the amount of added tannase being from 0.25 to 25 activity units per gram of soluble tea solids in the aqueous tea extract;
(b) incubating the extract; and
(c) separating insoluble solids from the incubated extract to provide a tea extract product, the incubating step being carried out for a time sufficient to reduce the formation of haze caused by storing the tea extract product under refrigeration, the reduction in haze being substantially greater than that achievable by incubation with tannase alone.

5,445,837

SWEETENER SUPPLEMENT FORTIFIED WITH A CONCENTRATED BIOAVAILABLE CALCIUM SOURCE AND PROCESS OF MAKING

Alice L. Burkes, Cincinnati, and Mary M. Fox, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 964,239, Oct. 21, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,742
The portion of the term of this patent subsequent to Feb. 14, 2012, has been disclaimed.
Int. Cl.[6] A23L *1/304*
U.S. Cl. 426—74 **26 Claims**

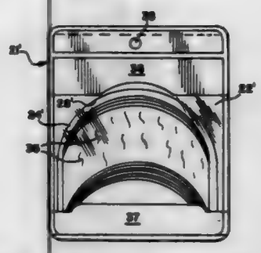
1. A concentrated calcium citrate malate sweetener supplement composition consisting essentially of:
(a) from about 1% to about 7%, by weight, soluble calcium;
(b) from about 2% to about 47%, by weight, of an edible acid component comprising a mixture of citric acid and malic acid wherein the ratio of citric equivalents and malic equivalents to calcium is from about 1.5:1 to about 2:1 and the ratio of citric equivalents to malic equivalents is from about 3:97 to about 93:7;
(c) from about 5% to about 80% sugar, on a dry weight basis, wherein at least 5% of said sugar is fructose and the ratio of said sugar to water is from about 5:1 to about 1:3; and
(d) from about 5% to about 92%, by weight, water; and wherein said sweetener composition is clear and stable from calcium precipitation for at least about 4 hours at temperatures of at least about 85° F. (29° C.).

5,445,838

PEELABLE AND RESEALABLE PACKAGE FOR THINLY SLICED MEATS AND THE LIKE

Jeffrey M. Lipinski, Waunakee, and Brian P. Lawless, Madison, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation of Ser. No. 876,594, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,327, Apr. 30, 1991, Pat. No. 5,396,632, which is a continuation of Ser. No. 505,329, Apr. 5, 1990, abandoned. This application Jul. 21, 1993, Ser. No. 95,806
The portion of the term of this patent subsequent to Mar. 7, 2012, has been disclaimed.
Int. Cl.[6] B65D *85/00*
U.S. Cl. 426—129 **30 Claims**



1. A packaged food product wherein thin proteinaceous products are hermetically sealed between generally opposing panels, comprising:
a non-planar panel member having a generally bulbous-shaped enclosure cavity and a peripheral flange area which peripherally defines an access opening of said generally bulbous-shaped enclosure cavity, the enclosure cavity being of varying depth, the depth in at least one portion of the cavity being deeper than the depth in at least one end thereof to define a deep end portion and a shallow end portion, respectively, and to further define an inclined surface therebetween;
a substantially planar panel member overlying said peripheral flange area and said access opening of the generally bulbous-shaped enclosure cavity in order to thereby close said cavity, said inclined surface of said non-planar panel member being opposite of and inclined with respect to said substantially planar panel member;
means for sealing said substantially planar panel member to said peripheral flange of the non-planar panel member, said sealing means including a peelable and resealable system having a thin contact layer generally enclosing a pressure sensitive adhesive, said thin contact layer being an inside surface of said non-planar panel, said substantially planar panel or both, said inside surface being in engagement with an inside surface of another of said panels;
a stack of thin slices of proteinaceous products hermetically sealed within a compartment defined by said generally bulbous-shaped enclosure cavity and said substantially planar panel member, said slices in said stack each having substantially-the same width and length, at least some of said slices being offset so as to be shingled relative to other slices in the stack and along a longitudinal axis whereby the stack is longer in a direction parallel to said axis than transverse to said axis, an entire face of the outermost slice on each side of the stack is exposed and an edge face of each of the shingled slices on each longitudinal end and on each side of the stack is also exposed, and the edge faces at one longitudinal end of said stack are folded over onto the shingled stack toward the edge faces at the other longitudinal end and in a direction parallel to said longitudinal axis to present a bulbous configuration and to shorten the length of and support the stack in said cavity, but to still simultaneously present the exposed edge faces at at least one longitudinal end and one side of the shingled stack together with a large portion of the exposed face of the outermost slice on said one side, said longitudinal axis extending between said deep end and shallow end portions of said cavity;
said compartment having said generally bulbous-shaped enclosure cavity is substantially complementary in shape, is larger in size, and engages both sides of said folded-over shingled stack of thin slices of proteinaceous products, one of said stack sides being in engagement with said substantially planar panel member, the other of said stack sides being in engagement with said inclined surface, and the folded over bulbous configuration of said stack being positioned in said deep end portion of the cavity, at least portion of at least one of said panel members being transparent to permit viewing simultaneously of said presented edge faces and large portion of the exposed face on said one side of the stack, whereby at least a portion of the proteinaceous product is displayed and whereby the slices are supported between the substantially planar-panel member and the inclined surface so as to not shift uncontrollably during commercial handling; and
said package compartment is gas flushed and hermetically sealed.

5,445,839

POWDERS OF PLANT GREEN JUICE AND PROCESS FOR THEIR PRODUCTION

Yoshihide Hagiwara, and Hideaki Hagiwara, both of Takarazuka, Japan, assignors to Japan Natural Food Co., Ltd., Osaka, Japan

Continuation of Ser. No. 676,336, Mar. 28, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 83,871
Int. Cl.[6] A23B *7/02*
U.S. Cl. 426—270 **7 Claims**

1. Powders of plant green juice which are storable having an improved stability and tastiness, said powders comprising:
(a) dry powders of plant green juice of fresh raw edible green plants selected from the group consisting of barley, wheat, naked barley, oat and Italian rye grass, and
(b) a water-soluble alkaline extract of an ashed product of seaweeds, dispersed uniformly in said dry powders (a), and
when the powders comprised of (a) and (b) are dispersed in water, the pH of the resulting dispersion falls into a range of 6.5–8.5.

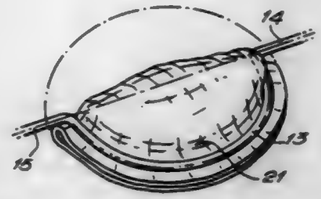
5,445,840

FOLDING OF FOOD PIECES

Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Mar. 11, 1991, Ser. No. 667,027
Claims priority, application European Pat. Off., Apr. 21, 1990, 90107605
Int. Cl.[6] A21D *8/02*; A21C *9/08*
U.S. Cl. 426—297 **11 Claims**

1. A process for preparing folded food pieces comprising intermittently advancing a conveyor surface beneath a rotatable bar which has a perimeter shape which conforms to a half portion perimeter shape of a food piece to be folded and which is initially positioned above the conveyor surface to extend parallel to the conveyor surface, depositing a food piece onto the conveyor surface and onto the bar to obtain a deposited food piece on the conveyor surface and bar and then rotating the bar in an arc about an axis of rotation so that the bar lifts up



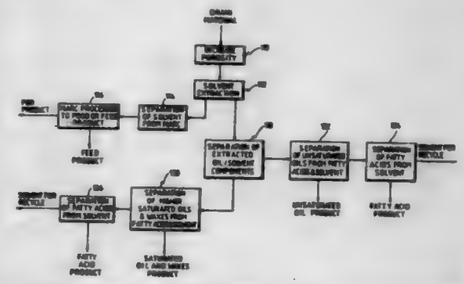
and folds a half portion perimeter shape of the deposited food piece over onto the other half portion perimeter shape of the deposited food piece on the conveyor surface, rotating the bar to return the bar to its initial position and advancing the conveyor surface to transport the folded food piece.

5,445,841

METHOD FOR THE EXTRACTION OF OILS FROM GRAIN MATERIALS AND GRAIN-BASED FOOD PRODUCTS

Phillip S. Arendt, Chaska, Minn., and Charles E. Langley, Jennings, La., assignors to Food Sciences, Inc., Jennings, La.

Continuation-in-part of Ser. No. 901,350, Jun. 19, 1992, abandoned. This application Feb. 1, 1993, Ser. No. 12,118
Int. Cl.[6] C11B *1/00*
U.S. Cl. 426—312 **4 Claims**



1. A method for extracting oil from oil-bearing grain materials or grain products which comprises:
preparing a vapor of a solvent for the oil which is not a solvent for protein in the grain materials or grain products;
introducing the vapor into a container below a horizontal bed of oil-bearing grain material or grain product from which substantially no oil has been extracted while the bed of rice bran is being moved horizontally;
passing the vapor through a horizontally moving bed of oil-bearing grain material or grain product so that the vapor contacts the grain material;
the pressure and temperature of the vapor and the grain material or grain product being such that at least a portion of the vapor condenses upon contact with the grain material and extracts oil from the grain material or grain product, forming a solvent/oil solution and a marc from which oil has been extracted; and
thereafter, while continuing to move the bed of grain material or grain product horizontally, passing a gas downwardly through the bed of grain material or grain product at a velocity sufficient to substantially separate the solution from the grain material or grain product.

5,445,842
QUERCETIN-CONTAINING COLORING
Takemi Tanaka; Hitoshi Okamoto, and Nobuhiro Kuwahara, all of Yokohama, Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Yokohama, Japan
Filed Nov. 22, 1993, Ser. No. 156,805
Claims priority, application Japan, Feb. 25, 1993, 5-059421
Int. Cl.[6] A23L 1/275
U.S. Cl. 426—540 9 Claims

1. A method of coloring a food product by adding to the food product an effective food coloring amount of a colorant comprising quercetin included in a cyclodextrin.

5,445,843
CHOCOLATE SHAPE RETENTION
Stephen T. Beckett, York, England, assignor to Nestec S.A., Vevey, Switzerland
Filed Jul. 8, 1994, Ser. No. 272,136
Claims priority, application United Kingdom, Aug. 4, 1993, 9316145
Int. Cl.[6] A23G 1/00
U.S. Cl. 426—548 10 Claims

1. A process for improving the shape retention of chocolate or chocolate type products so that they have a reduced tendency to deform at elevated temperatures which comprises mixing an encapsulated product in particulate form comprising capsules of a polyol enclosed within an edible lipid with a flowable mixture of chocolate type ingredients, the encapsulated product being added in an amount to achieve a polyol content of from 0.2 to 5% by weight based on the total amount of the resultant chocolate.

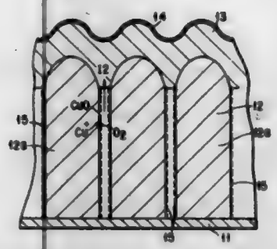
5,445,844
FORMULATED FOOD CONTAINING A FREEZE CONCENTRATED LIQUID DAIRY PRODUCT
Herbert D. Woolf, Apalchin, N.Y., and Kamendu C. Vasavada, Palatine, Ill., assignors to Electric Power Research Institute, Palo Alto, Calif.
Filed Aug. 19, 1993, Ser. No. 108,223
Int. Cl.[6] A23C 1/08
U.S. Cl. 426—580 14 Claims

1. In a formulated food containing a dairy product and having a significant dairy flavor, the improvement wherein the dairy product is at least in part one physical form of freeze concentrated liquid dairy product selected from the group consisting of milk, cream, buttermilk, and milk solids in sufficient amount so as to improve at least the dairy flavor of a formulated food selected from the group consisting of ice cream, ice milk, soft serve ice milk, yogurt, sour cream, cream cheese, white sauce, cream-style soup, milk chocolate and dairy-style salad dressing and mixtures thereof.

5,445,845
CHEESE MAKING PROCESS
Nana Y. Farkye, Atascadero, and B. Bhanu Prasad, San Luis Obispo, both of Calif., assignors to California Polytechnic State University Foundation, San Luis Obispo, Calif.
Filed Nov. 12, 1993, Ser. No. 152,457
Int. Cl.[6] A23C 19/00
U.S. Cl. 426—582 5 Claims

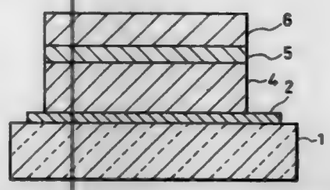
1. A process for making cheese comprising:
adding calcium chloride to milk;
heating the milk slowly to about 85° C.;
holding the milk at 85° C. for about 30 minutes;
adding food-grade organic at a temperature of about 79° C. to the heated milk at about 85° C. to reduce the pH of said milk to about 4.4 to form a curd and whey;
removing the whey; and
cooling the curd rapidly to about 8° C.

5,445,846
X-RAY IMAGING TUBE
Atsuya Yoshida, Oetawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 886,824, May 22, 1992, Pat. No. 5,338,926. This application Feb. 28, 1994, Ser. No. 202,466
Claims priority, application Japan, May 24, 1991, 3-120178; May 13, 1992, 4-120775
Int. Cl.[6] B05D 5/06
U.S. Cl. 427—65 13 Claims



1. A method of manufacturing an X-ray imaging tube, comprising the steps of:
forming a discontinuous phosphor layer on a substrate, said discontinuous phosphor layer containing a substance for absorbing light emitted from phosphor upon incidence of an X-ray and being constituted by a large number of columnar crystals separated from each other so that a gap between adjacent side surfaces of said columnar crystals falls within a range of 0.1 to 40 μm;
forming a continuous phosphor layer on said discontinuous phosphor layer; and
heat-treating said continuous and discontinuous phosphor layers at 60° C. to 380° C. in an atmosphere of one of oxygen and nitrogen to form light-absorbing layers comprising one of an oxygen layer and nitride layer on said adjacent side surfaces of said columnar crystals, said light-absorbing layers containing a compound of said substance and having a concentration of said substance higher on outer surfaces thereof than that in interiors thereof.

5,445,847
METHOD FOR PREPARING CHALCOPYRITE-TYPE COMPOUND
Takahiro Wada, Katano; Mikihiko Nishitani, Nara, and Takayuki Negami, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 61,708, May 17, 1993, abandoned. This application May 27, 1994, Ser. No. 249,999
Claims priority, application Japan, May 19, 1992, 4-125848
Int. Cl.[6] B05D 1/36
U.S. Cl. 427—74 17 Claims



1. A method for preparing a Group I/III/VI chalcopyrite compound, which comprises: treating a Group I/III oxide composition, containing at least one of the Group Ib element and at least one of the Group IIIb element, with heat under a reducing atmosphere containing at least one gaseous compound of the Group VIb element or under an atmosphere containing a gaseous reducing compound of at least one of the Group VIb element, thereby converting said oxide composition into a Group I/III/VI chalcopyrite compound.

5,445,848
TAPE FOR REINFORCING PRESSURE-SUPPORTING HOLLOW BODIES AND A METHOD FOR REPAIRING DETERIORATED PIPES
Stefano Venzi, Rome, and Adalberto Colombo, Paullo, both of Italy, assignors to SNAM S.p.A., Milan, Italy
Division of Ser. No. 62,546, May 18, 1993, Pat. No. 5,348,801. This application Apr. 15, 1994, Ser. No. 228,377
Claims priority, application Italy, May 22, 1992, MI92A1243
Int. Cl.[6] B05C 13/00; B41N 1/24
U.S. Cl. 427—142 4 Claims



1. A method for preparing a multi-layer tape for reinforcing pressure-supporting hollow bodies, said multi-layer tape formed of:
(a) a first layer of profiled strips composed of continuous unidirectional fibers embedded in a thermoplastic resin, said fibers having a softening point exceeding that of the thermoplastic resin;
(b) a second adhesive layer comprising rubber based compositions;
(c) a third layer comprising a thermoplastic polymer composition; and
(d) a fourth adhesive layer comprising rubber based compositions, the second, third and fourth layers forming a corrosion protecting web, and said method comprising:
passing said first layer (a) and said corrosion protecting web constituted of layers (b), (c) arid (d) through a group of roller pipe formers, thereby coupling layer (a) to the corrosion protecting web.

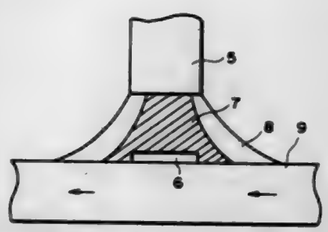
5,445,849
PROCESS FOR THE MANUFACTURE OF SAFE AND EASY-TO-TRANSPORT PELLETS OF CHRYSOTILE ASBESTOS
Pierre Delvaux, Bromptonville; Pierre Legaut, Sherbrooke; Normand Lesmerises, Rock Forest, and Eric Beerli, Sherbrooke, all of Canada, assignors to Ceram SNA Inc., Sherbrooke, Canada
Filed Nov. 16, 1993, Ser. No. 152,386
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—215 10 Claims

1. A process for manufacturing of coated pellets of chrysotile asbestos fibers, comprising the steps of:
A) forming said pellets of asbestos fibers by:
i) pelletizing chrysotile asbestos fibers exclusively with from 5 to 20% by weight of water, thereby forming wet pellets; and
ii) drying said wet pellets to obtain dry pellets having residual water content of 0 to 1% by weight; and
B) applying a selection protective coating onto the dry pellets obtained in step (A) by:
iii) spraying onto the dry pellets from 5 to 20% by weight based on the weight of said dry pellets, of an aqueous solution or suspension of a substance compatible with the intended use of the pellets that are being so manufactured; and
iv) drying the pellets that have been sprayed, so as to reduce their residual water content from 0 to 1% by weight.

5,445,850
AMINOPLAST CURED ACID ETCH RESISTANT COATING WITH GOOD DURABILITY
Suryya K. Das, Pittsburgh; Soner Kilic, Gibsonia; Michael A. Mayo, Pittsburgh, and Andrew J. Lauer, Lower Burrell, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Feb. 18, 1994, Ser. No. 198,718
Int. Cl.[6] B05D 7/16, 1/36
U.S. Cl. 427—407.1 9 Claims

1. A method for applying a composite coating to a substrate which comprises applying to the substrate a colored film-forming composition to form a base coat and applying to said base coat a clear curable film-forming composition to form a transparent clear coat over the base coat characterized in that the clear curable film-forming composition comprises (1) about 70 to 85 percent by weight based on total resin solids weight of a hydroxyl-containing acrylic solution polymer which is the reaction product of about 40 to about 90 percent by weight of a cycloaliphatic ester of (meth)acrylic acid selected from the group consisting of cyclohexyl methacrylate and t-butyl-cyclohexyl methacrylate based on total weight of monomers used in preparing the hydroxyl-containing acrylic solution polymer and about 6 to about 25 percent by weight, based on total weight of monomers used in preparing the hydroxyl-containing acrylic solution polymer, of a hydroxyl functional acrylic monomer selected from the group consisting of hydroxypropyl acrylate, hydroxypropyl methacrylate, 2-hydroxybutyl acrylate, 4-hydroxybutyl acrylate, 2-hydroxybutyl methacrylate, and 4-hydroxybutyl methacrylate; and (2) about 15 to 30 percent by weight based on total resin solids weight of an aminoplast crosslinking agent.

5,445,851
METHOD FOR FORMING TABULAR DIAMOND CRYSTALS
Keiji Hirabayashi, Tokyo, and Yoichi Hirose, Saitama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 35,624, Mar. 23, 1993, abandoned. This application Aug. 29, 1994, Ser. No. 297,901
Claims priority, application Japan, Mar. 26, 1992, 4-068680
Int. Cl.[6] B05D 1/08, 3/06
U.S. Cl. 427—450 6 Claims



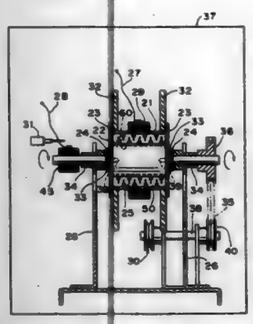
1. A method for forming diamond crystal comprising forming a diamond tabular crystal by combustion flame method carried out using oxygen and acetylene gas as a main starting material gas, wherein the oxygen and acetylene gas in the main starting material gas are controlled to be in a molar ratio of $0.9 \leq O_2/C_2H_2 \leq 1$, and the nucleation density of the diamond formed on a substrate is controlled to be 10^2 to 1×10^5 cm^{-2}.

5,445,852

METHOD OF COATING A SUBSTRATE WITH A COATING MATERIAL BY VIBRATING CHARGED PARTICLES WITH A ELECTRIC FIELD

Isao Sugai, 13-9, Enoki-cho, Tokorozawa-shi, Saitama-ken, Japan

Filed Nov. 4, 1993, Ser. No. 145,521
Claims priority, application Japan, Nov. 18, 1992, 4-308091
Int. Cl.[6] B05D *1/04, 7/22, 3/02*
U.S. Cl. 427—474 13 Claims



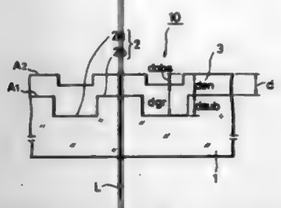
1. A method of coating an anode substrate and a cathode substrate with a coating material, comprising the steps of:
(a) separating said anode substrate and said cathode substrate via an insulating member to form an enclosed space therebetween;
(b) dispersing particles of said coating material on said anode substrate or said cathode substrate;
(c) evacuating atmosphere from said space via a vacuum pump; and
(d) applying a voltage to said anode substrate and said cathode substrate to generate an electric field therebetween which causes vibration of said particles and thereby coats said anode substrate and said cathode substrate with said particles of said coating material.

5,445,853

OPTICAL DATA STORAGE MEDIA

Yoko Hayashi; Shin-Ichiro Tamura, both of Kanagawa; Takao Murooka, and Yoshitake Yanagisawa, both of Shizuoka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,410
Claims priority, application Japan, Jan. 9, 1992, 4-002441; Jun. 29, 1992, 4-170977; Oct. 9, 1992, 4-296623
Int. Cl.[6] B23B *3/00*
U.S. Cl. 428—64.4 9 Claims



1. An optical data storage medium comprising:
a substrate in which concave and convex portions corresponding to an information signal are formed; and
a reflecting layer formed on said substrate, wherein said reflecting layer is formed of a dye containing layer having a reflectivity of 15 to 25% and a signal modulation degree of an information signal recorded by forming said concave and convex portions falls within a range of from 0.3 to 0.6.

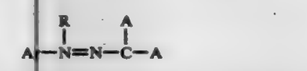
5,445,854

NONLINEAR OPTICAL EPOXY-CONTAINING COMPOSITIONS AND CROSSLINKED NONLINEAR OPTICAL POLYMERIC COMPOSITION THEREFROM

Mark D. Newsham; Muthiah N. Inbasekaran, and Michael N. Mang, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 29, 1993, Ser. No. 329,374
Int. Cl.[6] C08G *59/00, 65/08, 65/14*
U.S. Cl. 428—1 22 Claims

1. A crosslinked oriented polymeric composition comprising a reaction product of a compound of Formula (I)



(I)

wherein Ar is an aromatic hydrocarbyl or heterocylic radical containing up to 30 non-hydrogen atoms, substituted with at least one electron withdrawing group, and optionally substituted with an OR′ group; A is independently at each occurrence either R or a $C_{5\text{-}30}$ aromatic hydrocarbyl or heterocylic radical optionally substituted with an OR′ group, wherein R′ is an epoxy or an alkylepoxy group, and R is a hydrogen or a C_1–C_{20} hydrocarbyl radical; provided there are at least two aromatic OR′ groups in the compound; with a curing agent.

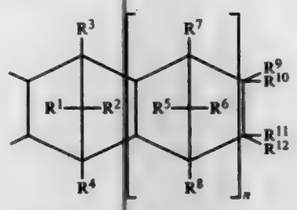
5,445,855

ACTIVE ENERGY RAY-CURABLE COMPOSITION AND OPTICAL RECORDING MEDIUM HAVING CURED PRODUCT OF THE COMPOSITION

Suguru Tokita, Yamaguchi; Kenji Yamane, Ohtake; Hajime Inagaki, Iwakuni, and Masayoshi Kurisu, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 931,428, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 280,588, Dec. 6, 1988, abandoned.
This application Aug. 5, 1993, Ser. No. 102,500
Claims priority, application Japan, Dec. 8, 1987, 62-308724; Dec. 9, 1987, 62-309428; Aug. 25, 1988, 63-211084
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[6] B32B *3/02, 9/04, 27/32;* C08F *2/50*
U.S. Cl. 428—65.1 6 Claims

1. An optical recording medium comprising
(I) optical disc substrates made of an ethylene/cycloolefin copolymer consisting substantially of
(1) units represented by the following formula (1)



(1)

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, and R^{12}, independently from each other, represent a hydrogen atom, a halogen atom or an alkyl group having 1 to 20 carbon atoms, R^9 may be bonded to R^{11} or R^{12} to form a 3- to 6-membered ring, R^{10} may be bonded to R^{11} or R^{12} to form a 3- to 6-membered ring, n is a positive integer, and when n is at least 2, two or more R^5, R^6, R^7 or R^8 groups each may be identical or different and
(2) units represented by the formula

$$—CH_2CH_2—$$ (2)

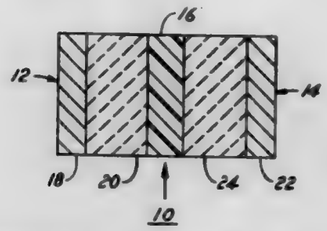
and
(II) an adhesive layer of a composition comprising as a primary ingredient (A) an epoxy resin, (B) a compound selected from the group consisting of sulfonium salts and cyclopentadienyl iron compounds, (C) a compound selected from the group consisting of acrylates, methacrylates and oligomers thereof, and (D) an organic peroxide.

5,445,856

PROTECTIVE MULTILAYER LAMINATE FOR COVERING AN ELECTROCHEMICAL DEVICE

Benjamin Chaloner-Gill, 520 Mansion Ct., Santa Clara, Calif. 95054

Filed Nov. 10, 1993, Ser. No. 150,634
Int. Cl.[6] B32B *1/08;* H01M *2/00*
U.S. Cl. 428—35.9 18 Claims



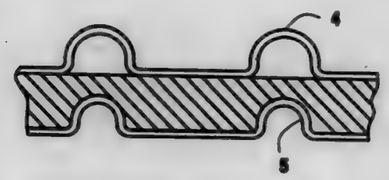
1. A laminate, for use as a protective, insulating covering or wrap for an electrochemical battery or cell, the laminate capable of inhibiting transport of electricity, oxygen, and water therethrough which comprises:
a. a first layer which is a polymeric metal-containing ionomeric cross-linked ethylene-acrylic copolymer, said layer forming a heat seal when two portions of the laminate are heat sealed together to form said covering or wrap;
b. a second layer which is a metal foil layer;
c. a third layer which is a polymeric layer of a polymeric amide or a polyester;
d. a fourth layer which is a polymeric adhesive polyethylene layer between the metal foil layer and the third layer;
e. each of said polymeric layers being essentially devoid of hydroxide pendent groups;
f. an oxygen scavenger incorporated in one of said polymeric layers or disposed between layers of the laminate; and
g. said first layer being on one side of said second layer and said third layer being on the other side of said second layer.

5,445,857

TEXTURED VACUUM INSULATION PANEL

Jeffert J. Nowobilski, Orchard Park, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 28, 1992, Ser. No. 997,438
Int. Cl.[6] B32B *3/28*
U.S. Cl. 428—69 9 Claims



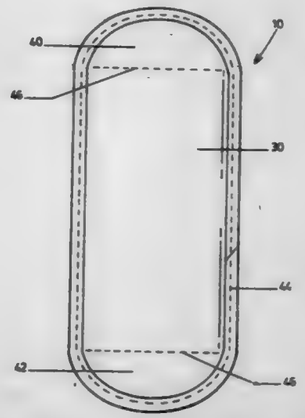
1. An improved insulation panel comprising:
(a) a top cover portion;
(b) a bottom cover portion;
(c) load bearing insulation means positioned in the space between the top cover and said bottom cover; and
(d) texturizing means throughout the insulation panel, so as to move thermal strain relief for the panel from the edge of the panel to the surfaces thereof so that thermal strain can be relieved on a continuous basis over the entire surface of said insulation panel, and to localize thermal expansion of the top cover portion, the bottom cover portion, or said insulation means, said texturizing means comprising a series of expansion joints positioned along the edge and across said top cover portion and said bottom cover portion, on the outer or inner sides thereof, in a pattern such that each individual expansion joint extends for only a short distance before intersecting at an angle, and terminating at, another expansion joint of said series, such a pattern being repeated over the entire surface of the panel, said expansion joints being adapted to allow expansion movement of the cover material adjacent thereto by deformation of the shape of said expansion joint, said movement serving to relieve the thermal stress in the area between the expansion joints of said pattern and along the length of said expansion joints, thereby precluding the build up of large thermal stress along the length of the expansion joints and relieving thermal strains that would otherwise occur across the entire surface of the insulation panel upon it being subjected to large temperature differences in the top cover and the bottom cover portion of the insulation panel, whereby the insulation panel is capable of use, in cyclic thermal operations under such large temperature differences, without cracking or warping.

5,445,858

ATTENUATING PAD

Luck I. Nwoko, 4262 E. Capitol St., NE #40, Washington, D.C. 20019

Filed Jun. 11, 1993, Ser. No. 74,498
Int. Cl.[6] B32B *1/04*
U.S. Cl. 428—71 29 Claims



1. A gel-encapsulating, load-supporting pad construction, comprising:
an elongated, relatively wide, sealed, gel-encapsulating insert member having an upper and lower layer of elastomeric material, including an intermediate, gel shock-absorbing material, said elastomeric layers encapsulating said intermediate gel shock-absorbing material and said layers being sealed together along a continuous peripheral seam thus forming a sealed, gel-encapsulating, shock-absorbing member, said gel shock absorbing material comprises a gel having a cone penetration between 100

and 350 (10^{-1} mm) and a minimum elongation of at least 100 percent;

a pliant, strong, substantially elongated, generally broad and circumferentially secured outer sheath, said sheath having top and bottom layers which longitudinally encases said shock-absorbing member, said sheath having extended longitudinal ends, said extended longitudinal ends being flanges and being posteriorly provided with longitudinally delimiting transverse seams along the longitudinal ends of the encased shock-absorbing member;

said flanges provided with extended straps which are attached to a load-bearing article, said strap elements are secured to the flanges by rectangular stitches.

5,445,859

MULTIPOLAR ELECTRODE LEAD

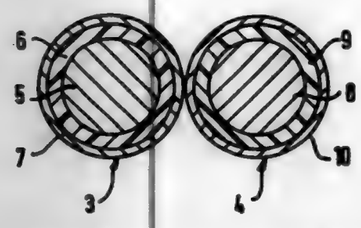
Ulf Lindegren, Enskede, Sweden; Helmut Freller, Roethenbach, and Peter Lorenz, Schwarzenbruck, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 12, 1993, Ser. No. 105,158

Claims priority, application Sweden, Aug. 14, 1992, 9202351; Sep. 30, 1992, 9202824

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—76 **18 Claims**



1. A multipolar electrode lead for a medical apparatus for administering electrotherapy to living tissue, comprising:

an insulating sheath;

a first coiled electrical conductor and a second coiled electrical conductor contained in said insulating sheath; and

at least one of said first and second conductors having a coating directly thereon inside said insulating sheath, said coating completely and individually covering said at least one of said first and second conductors, and said coating being formed by at least one material which is highly-electrically resistant and abrasion-resistant.

5,445,860

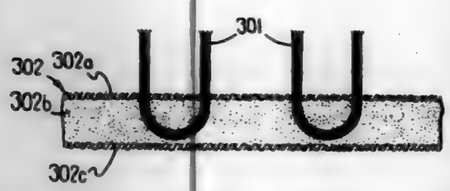
TUFTED PRODUCT HAVING AN IMPROVED BACKING

Patrick Bova, LaGrange, Ga., assignor to GFF Holding Company, LaGrange, Ga.

Continuation-in-part of Ser. No. 997,895, Dec. 29, 1992, abandoned. This application Jun. 22, 1994, Ser. No. 264,008

Int. Cl.[6] B32B *3/02*

U.S. Cl. 428—87 **23 Claims**



1. A tufting backing adapted for tufting pile yarn fibers therethrough, said tufting backing comprising:

(a) a primary backing; and

(b) an elastomer affixed to a first side of said primary backing, wherein said elastomer is affixed to said primary backing in non-contiguous portions which create at least one void on said first side of said primary backing.

5,445,861

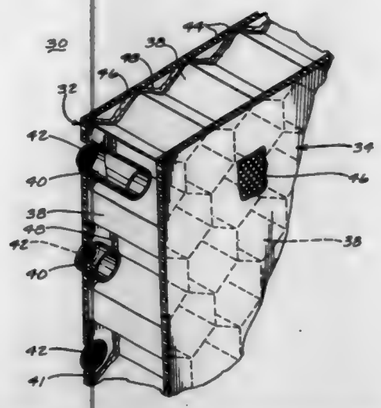
LIGHTWEIGHT HONEYCOMB PANEL STRUCTURE

Jefferson F. Newton, Seattle; Thomas D. Martin; Willard N. Westre, both of Bellevue; David J. Carbery, Vashon Island, and Roy Ikegami, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 4, 1992, Ser. No. 940,501

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 **23 Claims**



1. A lightweight honeycomb structure that absorbs acoustic energy in a range of frequencies comprising:

a first panel comprising a first top skin, a first bottom skin and a first spacing layer disposed between the first top skin and the first bottom skin;

a second panel comprising a second top skin, a second bottom skin and a second spacing layer disposed between the second top skin and the second bottom skin;

a middle honeycomb layer sandwiched between the first and second panels, wherein the middle honeycomb layer includes a plurality of tuned cells, each of which resonates at a frequency within the range of frequencies;

a layer of viscoelastic material disposed between the second panel and the middle honeycomb layer; and

a septum layer overlaying the layer of viscoelastic material such that the septum layer is disposed between the layer of viscoelastic material and the middle honeycomb layer, said septum layer preventing engagement of the viscoelastic layer by the middle honeycomb layer but being bonded therebetween for dissipating sheer energy transmitted from the first panel through the middle honeycomb layer.

5,445,862

POROUS FILM AND PROCESS FOR PRODUCTION THEREOF

Shingo Kaneko, Hofu; Yoshio Murakami, and Yoshinari Yamashita, both of Tokuyama, all of Japan, assignors to Tokuyama Corporation, Yamaguchi, Japan

Filed Dec. 22, 1994, Ser. No. 361,556

Claims priority, application Japan, Dec. 24, 1993, 5-327017

Int. Cl.[6] B41M *3/12*; D02J *1/06*

U.S. Cl. 428—148 **38 Claims**

1. A porous film having a number of throughholes extending from one side to the other side, obtained by processing into a sheet form a resin composition comprising an ethylene-α-olefin copolymer, a thermoplastic elastomer and an inorganic filler and then subjecting the sheet to orientation, in which

(a) the ethylene-α-olefin copolymer has a density of 0.86–0.90 g/cm^3 and a molecular weight distribution represented by Mw/Mn, of 3 or less and melting point of 60°–100° C., and is contained in an amount of 65–90% by weight based on the total resin weight,

(b) the thermoplastic elastomer is at least one elastomer selected from the group consisting of a styrene-based elastomer, a polyester elastomer and a polyurethane elastomer and is contained in an amount of 35–10% by weight based on the total resin weight,

(c) the inorganic filler is contained in an amount of 50–300 parts by weight per 100 parts by weight of the total of the ethylene-α-olefin copolymer and the thermoplastic elastomer, and

the moisture permeability of the porous film is 2,000 g/m^2.24 hr or more.

5,445,863

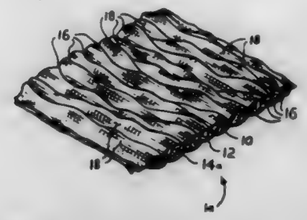
CAMOUFLAGE MATERIAL

Timothy P. Slagle, Rte. 1, Box 249 A, Lexington, Va. 24450, and Keith J. Siale, Rte. 4, Box 325A, Lexington, Va. 24450

Filed May 3, 1994, Ser. No. 237,048

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—156 **16 Claims**



1. Camouflage material resembling the three dimensional texture of tree bark on the trunk of a tree, comprising:

a first layer and a second layer of pliable sheet material with a resilient core material sandwiched therebetween to provide a compressible core, and;

said first layer and said second layer of pliable sheet material being secured together along spaced apart plural irregular seams formed through said first layer, said second layer, and said resilient core, with said resilient core being compressed along said irregular seams and being uncompressed between said irregular seams to provide irregular generally elongate protruding ridges of material between said irregular seams, with said irregular seams being relatively depressed between said protruding ridges of material to provide a three dimensional texture resembling the irregular ridges and depressions of tree bark.

5,445,864

METHOD OF MANUFACTURING GLASS REINFORCED CONCRETE BUILDING PRODUCTS

Steven B. Neu, Victoria, Australia, assignor to ACI Australia Limited, Victoria, Australia

Division of Ser. No. 835,943, Feb. 18, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,927

Claims priority, application Australia, Sep. 4, 1989, PJ6123

Int. Cl.[6] B28B *7/22*

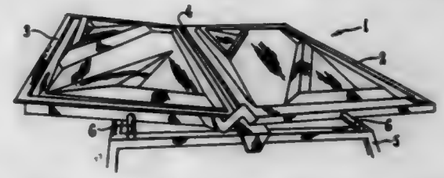
U.S. Cl. 428—192 **2 Claims**

1. A mould for manufacturing a glass reinforced concrete building product, comprising:

a first part and a second part, each of the first and second parts having a moulding surface, the first and second parts being hinged together about a hinge between an open orientation and a closed orientation in which a mould cavity having an internal surface is defined between the first and second parts;

wherein the hinge forms part of the first part moulding surface and the second part moulding surface and the internal surface of the mould cavity; and

such that a layer of glass reinforced concrete being applied continuously across the first part moulding surface and the



second part moulding surface before the first and second parts are folded together from the open orientation into the closed orientation forms a continuous glass reinforced concrete building product.

5,445,865

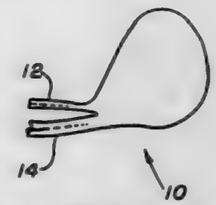
FREE EDGE-SEALED FILM ARTICLES

Burdette W. Miller, Freeland; John O. McCree, Bay City, and William D. Price, Midland, all of Mich., assignors to Dowbrands, Indianapolis, Ind.

Division of Ser. No. 994,605, Dec. 21, 1992, Pat. No. 5,292,392, which is a continuation of Ser. No. 513,537, Apr. 23, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 173,281

Int. Cl.[6] B32B *3/02, 27/08, 27/32*; B65D *30/08*

U.S. Cl. 428—192 **22 Claims**



1. A free edge-sealed film article comprising two film portions and containing a free edge-seal between said film portions, wherein at least one of said free edge-sealed film portions consists essentially of a plurality of layers of diverse thermoplastic materials, said plurality of layers being ordered so that on sealing said film portions together, said layered film portion curls toward the other of said two film portions along at least a portion of the free-edge seal.

5,445,866

WATER-BASED TRANSPARENT IMAGE RECORDING SHEET

Robert E. Martinson, West St. Paul; John J. Stofko, St. Paul, both of Minn.; Manisha Sarkar, Austin, Tex.; Steven T. Hedrick, Cottage Grove, and Wayne K. Larson, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1993, Ser. No. 139,100

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **16 Claims**

1. A transparent recording sheet coated with a transparent water-based image-receptive coating composition coated onto at least one major surface of a transparent substrate wherein the coating composition comprises:

(1) from about 5 parts by weight to about 95 parts by weight of an oligomer comprising at least one addition product of at least two reactants wherein one reactant is 3-glycidoxypropylalkoxysilane and the second reactant is at least one secondary amine and the addition product has the formula:

wherein

at least one of R^1 or R^2 is a hydroxyalkyl group having 2–8 carbon atoms, and further R^1 and R^2 can each be different or the same;

R^3 is an alkoxy group having 1–4 carbon atoms; and

R^4 and R^5 can each be an alkyl group having 1–4 carbon atoms and/or an alkoxy group having 1 to 4 carbon atoms; and

(b) from about 5 parts by weight to 95 parts by weight of a colloidal dispersion having a pH greater than 7.

5,445,867

THERMAL TRANSFER RECORDING SHEETS AND BACK COATING COMPOSITIONS THEREFOR

Masahiko Ogawa, Takasaki, and Shinji Irifune, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

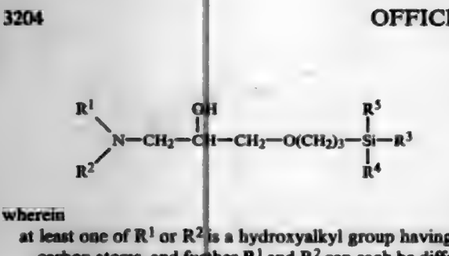
Continuation-in-part of Ser. No. 968,128, Oct. 29, 1992, abandoned. This application May 2, 1994, Ser. No. 236,854
Claims priority, application Japan, Oct. 30, 1991, 3-311995
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **15 Claims**

1. A thermal transfer recording sheet comprising:

a plastic base film having two major surfaces,

a colorant layer on one major surface of said film, and

a silicone layer on the other major surface of said film comprised of a radiation-curable silicone composition in cured state, wherein said radiation-curable silicone composition is predominantly comprised of an acryloxy or methacryloxy group-containing organopolysiloxane of the following formula (1):

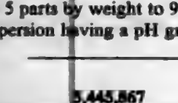


(1)

wherein

R^1 is a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, or a phenyl group;

R^2 is as defined for R^1 or a group of the formula (2):



(2)

wherein

R is a hydrogen atom or methyl group and n is a number of from 1 to 3;

letters a^1, a^2 and a^3 are 0 or positive numbers and $a^1+a^2+a^3$ is in the range of 10 to 200;

letter b is 0 or a positive number of 1 to 3; and 3 to 30 mol % of the total of R^1 and R^2 groups attached to silicon atoms in a molecule being an R^2 group of formula (2).

5,445,868

RECORDING SHEET AND RECORD

Mamiko Harasawa; Katsutoshi Misuda; Toshiya Matsubara, and Toshihiro Tazuma, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Mar. 10, 1994, Ser. No. 208,292
Claims priority, application Japan, Mar. 10, 1993, 5-076207; Mar. 31, 1993, 5-096965; Mar. 31, 1993, 5-096966
Int. Cl.[6] B41M *5/00*
U.S. Cl. 428—206 **16 Claims**

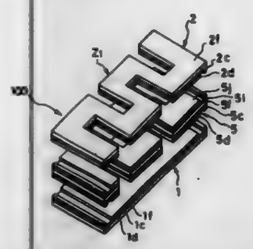
1. A recording sheet comprising a substrate and a colorant absorbing layer which has a structure having porous inorganic oxide particles bonded by a binder which is present in an amount of from 5 to 50 wt. % based on the porous inorganic oxide, formed on the substrate, wherein said colorant absorbing layer contains an organic acid with the first acid dissociation exponent of at most 5, which has an aromatic nucleus or at least two carboxyl groups.

5,445,869

COMPOSITE FLEXIBLE SUBSTRATE

Takayuki Ishikawa, Amagasaki, and Kouichi Santo, Obama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 21, 1994, Ser. No. 184,106
Claims priority, application Japan, Jan. 21, 1993, 5-008094
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 **2 Claims**



1. A composite flexible substrate comprising:

a first flexible substrate having a first base member, a first printed circuit and a first insulating member, said first base member having a first connecting part at one end part and a second connecting part at the other end part, said first printed circuit being formed on said first base member and substantially covered with said first insulating member, and

a second flexible substrate having a second base member, a second printed circuit and a second insulating member, said second base member having a third connecting part at one end part and a fourth connecting part at the other end part, said second printed circuit being formed on said second base member and substantially covered with said second insulating member,

said second flexible substrate being fixed over said first flexible substrate by fixing together said first connecting part and said second connecting part to said third connecting part and said fourth connecting part, respectively,

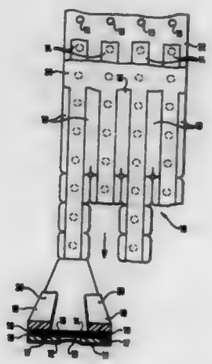
said second flexible substrate having a zigzag-shaped central portion which is constructed and arranged to deform and extend said second flexible substrate in overall length between the third and fourth connecting parts to prevent irregular deformation of said first flexible substrate when said composite flexible substrate is longitudinally bent in a direction to stretch said zigzag-shaped portion.

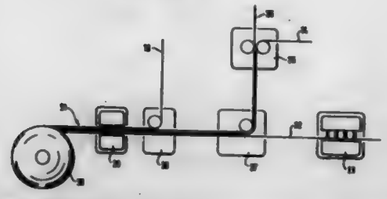
5,445,870

METHOD OF PRODUCING OVERPRESSURE VALVE FOR PACKAGING CONTAINERS

Norbert Buchner, Winnenden; Klaus Domke, Ditzingen; Manfred Reichert, Remshalden; Herbert Stockiewitz, Bietigheim-Bissingen; Bernd Wilke, Leutenbach; Sabine Zimmermann, Kornwestheim; Kuno Lemke, Bietigheim-Bissingen, and Guenther Voegele, Schoenaich, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 130,493, Oct. 1, 1993. This application Aug. 24, 1994, Ser. No. 295,192
Claims priority, application Germany, Dec. 18, 1992, 42 43 020.8
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—214 **4 Claims**





1. A method for producing overpressure valves as a composite web (31) and rolling said web into a roll including at least one row of overpressure valves, which comprises directing a base strip (22) through a punching station with said base strip being coated on an underside with an adhesive (11), continuously punching at least one equally spaced row of holes along a length of said base strip, applying an adhesive onto an underside of a diaphragm strip (26) with the adhesive forming at least spaced parallel rows of adhesive strips (17) onto the lower surface of said diaphragm strip, applying the diaphragm strip (26) having said parallel rows of adhesive strips (17) onto said base strip thereby covering the at least one row of holes and with said parallel adhesive strips (17) along opposite edges of said linearly spaced holes, applying spaced strips (19) provided on the underside with adhesive (18) to the diaphragm strip (26) with each spaced strip (19) coinciding with the rows of adhesive strips (17) on the lower surface of said diaphragm strip, forming the top side (20) of the spacing strips (19) with an adhesive-repelling surface; punching out separately formed overpressure valves of said at least one row which are secured to each other in one piece, rolling said at least one separate row of overpressure valves formed from said composite web (31) to form at least one rolls (30) with the underside of the base strip (22) of each roll that is coated with adhesive (11) directly on the adhesive-repelling top side (20) of the spacing strips (19) with the overpressure valves (10, 10a) connected to one another in one piece and in at least one row.

5,445,871

SURFACE-MODIFIED PLASTIC PLATE

Heihachi Murase; Tsutomu Norimatsu; Masao Ogawa, and Naoya Haruta, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 874,703, Apr. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 798,115, Nov. 26, 1991, abandoned, and Ser. No. 783,905, Oct. 29, 1991, abandoned. This application Jul. 22, 1994, Ser. No. 279,066
Claims priority, application Japan, Oct. 30, 1990, 2-292703; Nov. 29, 1990, 2-331394; Nov. 29, 1990, 2-331395
Int. Cl.[6] B32B *7/02*
U.S. Cl. 428—215 **16 Claims**

1. A surface-modified plastic plate, which is a laminate consisting of: a plastic substrate; a cured film of an actinic ray-curable primer composition comprising a binder component consisting of 30 to 100 parts by weight of (a) polymerizable unsaturated double bond-containing silicone resin having at least two polymerizable unsaturated double bond-containing groups, said component (a) having a number average molecular weight of 200 to 20,000 and having 0.1 to 10 moles of polymerizable unsaturated double bond-containing groups per 1 kg of said component (a); and, 0 to 70 parts by weight of (b) a polymerizable unsaturated monomer copolymerizable with said component (a), a total amount of said component (a) and said component (b) being 100 parts by weight, said cured film being formed onto a surface of the plastic substrate in a film thickness of 0.1 to 10 μm; and an inorganic material layer formed onto the cured film by a physical deposition using an inorganic material selected from the group consisting of SiO, SiO_2, ZrO_2, Al_2O_3, TiO_2, Ti_2O_3, Y_2O_3, Yb_2O_3, MgO, Ta_2O_5, CeO_2 and HfO_2, at a forming speed of the inorganic material layer in the range of 0.05 to 2.0 nm/sec., and having a thickness of 0.1 to 0.8 μm.

5,445,872

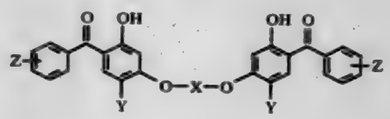
LAMINATED THERMOPLASTICS STABILIZED WITH BISBENZOPHENONES

Joseph Subadolnik, Yorktown Heights, N.Y.; James H. Botkin, Passaic, N.J., and Carmen Hendricks, White Plains, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 29,211, Mar. 10, 1993, Pat. No. 5,306,456. This application Feb. 3, 1994, Ser. No. 191,573
Int. Cl.[6] B32B *27/18*
U.S. Cl. 428—215 **12 Claims**

1. A stabilized multi-layered, thermoplastic article, prepared by a coextrusion process which process comprises

coextruding a thermoplastic resin or mixture of thermoplastic resins to give a multi-layered thermoplastic article having an outer UV absorbing thermoplastic layer 0.1 to 10 mil (0.00254 to 0.254 mm) thick, which said outer UV absorbing layer contains 0.1 to 20% by weight of a bisbenzophenone UV absorber of the formula



wherein

X is a straight or branched chain alkylene of 1 to 16 carbon atoms, o-, m- or p-xylylene or an oxa-alkanediyl of the formula $—CH_2CH_2[OCH_2CH_2]_n—$, $—CH_2CH(CH_3)[OCH_2CH(CH_3)]_n—$ or $—CH_2CH_2CH_2CH_2[OCH_2CH_2CH_2CH_2]_n—$ where n is 1–4,

Y is hydrogen, straight or branched chain alkyl of 1–18 carbon atoms, and

Z is hydrogen, chloro, straight or branched chain alkyl of 1 to 18 carbon atoms or alkoxy of 1 to 18 carbon atoms.

5,445,873
ROOM TEMPERATURE CURABLE SOLVENTLESS SILICONE COATING COMPOSITIONS
Atsushi Yagisawa, Annaka, Japan; Nobuyuki Hasebe, Rancho Palos Verdes, Calif.; Tadao Kimura, Annaka, and Masatoshi Arai, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 143,956, Nov. 1, 1993, abandoned. This application Jul. 13, 1994, Ser. No. 274,380
Int. Cl.[6] B32B *33/00*
U.S. Cl. 428—220 15 Claims

1. A method of protecting a circuit board having electric and electronic chips mounted thereon from a severe ambient environment comprising coating a room temperature curable solventless silicone coating composition on the circuit board in a thickness of 1 to 5 mils, and curing the coating composition in the presence of moisture-containing air, said coating composition comprising

(A) an organopolysiloxane end-blocked with a hydroxyl radical,

(B) a silane of the formula (1):

$$(R^2O)_2SiR_{4-m}^1 \quad (1)$$

wherein R^1 is a substituted or unsubstituted monovalent hydrocarbon radical, R^2 is a substituted or unsubstituted monovalent hydrocarbon radical or an α,β-substituted vinyl radical, and letter m is equal to 3 or 4, or a partial hydrolyzate thereof, and

(C) at least one curing catalyst selected from the group consisting of an organic carboxylate of a heavy metal, a guanidyl-substituted alkoxysilane, and an organic compound having a guanidyl radical containing a siloxane,

said coating composition having a viscosity of 20 to 500 centipoise at 25° C.

5,445,874
WATERPROOF, BLOOD-PROOF AND VIRUS-PROOF BREATHABLE LAMINATES
Hussein A. Shehata, Lawrenceville, N.J., assignor to Fabrite Scientific Corp., Wood-Ridge, N.J.
Filed May 10, 1993, Ser. No. 59,916
Int. Cl.[6] B32B *7/00*
U.S. Cl. 428—252 5 Claims

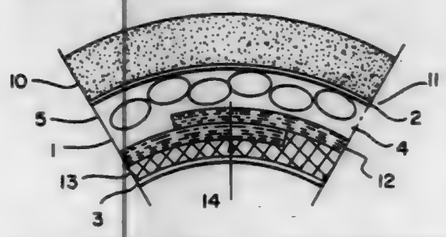
1. A protective laminate comprising (i) a woven or non-woven fabric and (ii) an extruded film of a hard segment of from 60 to 70% butylene terephthalate units and the balance a soft segment of polyetherdiol terephthalate, a first layer of said fabric and a second layer of said fabric said film being laminated between said first and second layers of fabric.

5,445,875
LAMINATE COMPRISING A CORROSIVE-RESISTANT PLASTIC FILM, A LAYER OF CUT FIBERS, A LAYER OF CONTINUOUS FIBERS AND A REINFORCEMENT LAYER, THE FIBROUS LAYER BEING IMPREGNATED WITH A CURABLE RESIN
Börje Persson, Vilhelmina, Sweden, assignor to Inpipe Sweden AB, Vilhelmina, Sweden
PCT No. PCT/SE92/00102, § 371 Date Sep. 16, 1993, § 102(e) Date Sep. 16, 1993, PCT Pub. No. WO92/14606, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 20, 1992, Ser. No. 104,156
Claims priority, application Sweden, Feb. 22, 1991, 9100525
Int. Cl.[6] B32B *17/02, 5/06;* D04H *1/16*
U.S. Cl. 428—228 12 Claims

1. A laminate for lining passages entirely or partially surrounded by walls on or under the ground which comprises:

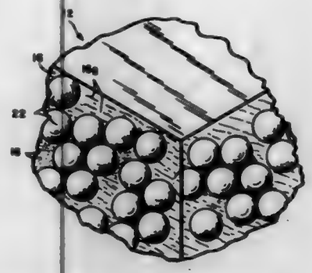
an inner film comprising plastic foil or plastic film;

a combination fabric layer formed on the outer surface of said inner film, said combination fabric comprising an inner layer of cut fibers adjacent to said inner film and an outer mat layer of fibers, wherein said combination fabric layer absorbs curable resin introduced therein; and



at least a reinforcement layer comprising continuous fibers and curable resin, whereby an inner surface of said laminate is resistant to corrosion.

5,445,876
VAPOR EXCHANGE MEDIUM
Christopher J. Kyrikos, 8 Short St., Cohasset, Mass. 02025
Filed May 28, 1993, Ser. No. 69,282
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—283 19 Claims



18. A vapor exchange element comprising

a fibrous carrier, and

a solid material impregnating said carrier,

said solid material comprising

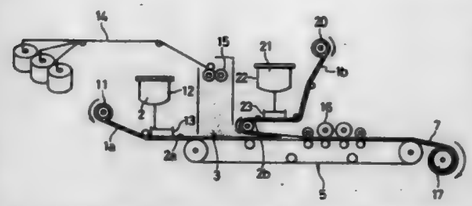
a multiplicity of porous zeolite particles having an SiO_2 to Al_2O_3 ratio on an atomic basis of 3.2:1 to 4.5:1 and a mean pore size of 7–8 Å, and

a binder consisting of covalently bonded, generally spherical silica particles 50 to 500 Å in diameter derived from a silica sol and encaging said dessicant particles in the spaces between the carrier fibers

wherein said silica particles are small enough to ensure sufficient covalent bonding of the silica particles to maintain the structural integrity of the vapor exchange element, yet large enough relative to the pore size of the dessicant particles such that the silica particles do not adversely affect the adsorption properties of the dessicant particles and

wherein the vapor exchange element has an isotherm separation factor of 0.07 to 0.1.

5,445,877
UNSATURATED POLYESTER RESIN COMPOSITION AND SHEET-FORM MOLDING MATERIAL USING THE SAME
Hiroyuki Kawakami; Masaaki Yasuda, and Shoichi Sasaki, all of Hitachi, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 159,959, Dec. 1, 1993, Pat. No. 5,408,013, which is a continuation-in-part of Ser. No. 918,289, Jul. 22, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 317,203
Claims priority, application Japan, Aug. 12, 1991, 3-202004; Feb. 18, 1992, 4-030582
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—283 3 Claims



1. A sheet-form molding material having an unsaturated polyester resin composition comprising:

(a) a saturated polyester obtained by reacting 100% by mol of adipic acid with a saturated glycol component, said saturated polyester having a number average molecular weight of 4,000 or more and an acid value of 2 to 8 KOH mg/g;

(b) an unsaturated polyester; and,

(c) an ethylenic unsaturated monomer, said saturated

(c) an ethylenic unsaturated monomer, said saturated polyester, said unsaturated polyester and said ethylenic unsaturated monomer blended, at room temperature, to form said unsaturated polyester resin composition, together with a fiber reinforcing material placed between two films.

5,445,878
HIGH TEAR STRENGTH GLASS MAT UREA-FORMALEHYDE RESINS FOR HYDROXYETHYL CELLULOSE WHITE WATER
George E. Mirous, Tacoma, Wash., assignor to Georgia-Pacific Resins, Inc., Atlanta, Ga.
Filed Sep. 20, 1993, Ser. No. 123,094
Int. Cl.[6] D04H *1/64*
U.S. Cl. 428—288 8 Claims

1. A glass fiber mat made by the process comprising:

dispersing glass fibers in an aqueous medium containing hydroxyethyl cellulose to form a slurry,

passing the slurry through a mat forming screen to form a wet glass fiber mat,

applying a binder comprising a urea-formaldehyde resin and a water-insoluble, unneutralized anionic phosphate ester C_8 to C_{16} of a fatty alcohol to said wet glass fiber mat, and

curing the binder applied to said wet glass fiber mat.

5,445,879
PROCESS FOR THE PREPARATION OF COMPOSITE BODIES
Ulrich Limas, Langenfeld; Dirk Wegener, Monheim, and Hartwig Grammes, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
PCT No. PCT/EP93/01325, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/25597, PCT Pub. Date Dec. 23, 1993
PCT Filed May 26, 1993, Ser. No. 347,442
Claims priority, application Germany, Jun. 9, 1992, 42 18 840.7
Int. Cl.[6] B32B *3/26*
U.S. Cl. 428—304.4 5 Claims

1. In the process for the preparation of composite bodies by back-foaming a plastics sheet as top layer with a reaction mixture which reacts fully to a soft or semi-rigid polyurethane foam, wherein said reaction mixture comprises

a) a polyisocyanate component,

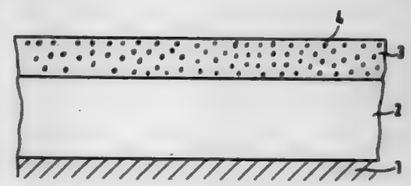
b) a polyol component free of salt groups,

c) at least one blowing agent,

d) alkali salts of hydroxycarboxylic acids as catalysts, and optionally

e) further auxiliary substances and additives taken from polyurethane chemistry, the improvement wherein component d) is an alkali metal salt of a reaction product of (i) at least trivalent alcohols having molecular weights of from 92 to 1,000 and (ii) intramolecular carboxylic acid anhydrides, wherein said reaction products contain a statistical average per molecule at least 2 alcoholic hydroxyl groups and at least 0.5 alkali carboxylate groups, and wherein said component d) is present in a quantity of from 0.1 to 10 wt-%, bound on the weight of component b).

5,445,880
COVERING WITH IMPROVED OPTICAL QUALITIES
Frank Martiny, Mittlere Dorfstr. 2, D-8911, Eresing, Germany
Continuation of Ser. No. 900,125, Jun. 18, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,200
Claims priority, application Germany, Jun. 24, 1991, 41 20 764.5
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—323 4 Claims



1. A floor covering comprising a mixture, the mixture including:

binder;

aggregates; and

decorative components of mirror-coated glass.

5,445,881

HIGH RECORDING DENSITY MAGNETIC TAPE AND PROCESS FOR THE PRODUCTION THEREOF

Shinichi Irie, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 22, 1994, Ser. No. 263,478
Claims priority, application Japan, Sep. 10, 1993, 5-225742
Int. Cl.[6] G11B *5/00*
U.S. Cl. 428—328 15 Claims

1. A magnetic recording tape with a magnetic layer comprising magnetic particles, binder, curing agent and high molecular weight fatty acid, provided on a non-magnetic substrate, wherein the Ra value of the surface of the magnetic layer is 10 nm or less, and its Z value represented by the following equation is 3.2 or more:

$$Z=C1/(C2+C3)$$

wherein

C1 is the spectral integral intensity, measured by X-ray photoelectric spectral analysis, of carbon atoms which are single-bonded between carbon-carbon atoms

C2 is the spectral integral intensity, measured by ESCA, of a carbon atom which is single-bonded with an atom having an electronegativity higher than that of a carbon atom, and

C3 is the spectral integral intensity, measured by ESCA, of a carbon atom which is double-bonded between carbon-oxygen atoms, wherein the surface of the magnetic layer has been abraded by a back and forth contact slide motion against a roll having a surface Ra of 0.04 μm or less.

5,445,882

SUPPORT SHEET FOR PHOTOGRAPHIC PRINTING SHEET

Yasushi Kobayashi, Ichikawa; Masahiro Kamiya, Tokyo, and Toshifumi Fujii, Iwaki, all of Japan, assignors to New OJI Paper Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 360,098
Claims priority, application Japan, Dec. 28, 1993, 5-335084
Int. Cl.[6] B32B *5/16*; G03C *1/76*, *1/815*
U.S. Cl. 428—329 13 Claims

1. A support sheet for photographic printing sheet, comprising:

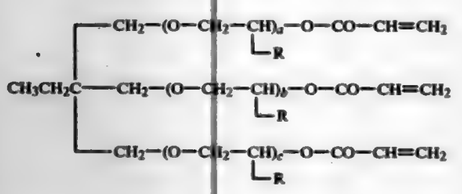
a substrate paper sheet;

a front surface coating layer formed on a front surface of the substrate paper sheet and comprising an electron-beam-cured resin product of at least one unsaturated organic compound which is curable by an electron-beam irradiation; and

a back surface coating layer formed on a back surface of the substrate paper sheet and comprising a film-forming synthetic resin,

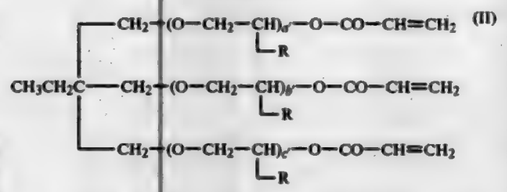
said front surface coating layer having a laminate structure which comprises an inside cured resin layer located adjacent to the substrate paper sheet and an outermost cured resin layer located in an outermost front surface side of the support sheet, and

the outermost cured resin layer comprising an electron-beam-cured resin product derived from a coating composition which comprises (A) at least one unsaturated organic compound of the formula (I) and (B) at least one unsaturated organic compound of the formula (II):



(I)

-continued



(II)

in which formula (I) and (II), R represents a member selected from a group consisting of a hydrogen atom and a methyl group, a, b and c respectively and independently from each other represent zero or an integer of 1 to 4, the sum of a, b and c is 1 to 4, a', b' and c' respectively and independently from each other represent zero or an integer of 1 to 8 and the sum of a', b' and c' is 5 to 8, in a weight ratio of the compound (A) of the formula (I) to the compound (B) of the formula (II) of 30/70 to 90/10.

5,445,883

LAMINATE

Seizo Kobayashi; Takashi Mizoe; Yoshinsu Iwanami; Shigeki Yokoyama, all of Yokohama, and Keizi Jimbo, Yokosuka, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 973,571, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 516,926, Apr. 30, 1990, abandoned. This application Jul. 11, 1994, Ser. No. 272,629
Claims priority, application Japan, May 8, 1989, 1-113675
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—355 36 Claims

1. A laminate comprising

(A) an orientated polyethylene layer obtained by orientating an ultra-high-molecular-weight polyethylene sheet having an intrinsic viscosity of 5 to 50 dl/g in decalin at 135° C., at a temperature lower than the melting point of said polyethylene, and wherein said ultra-high-molecular-weight polyethylene sheet is prepared by a process consisting essentially of compression molding said ultra-high-molecular weight polyethylene at a temperature below the melting point of said ultra-high-molecular weight polyethylene, and

(B) an adhesive layer containing a resin obtained by modifying an olefin polymer with an unsaturated carboxylic acid and/or its derivative, and at least one additional layer of said ultra-high-molecular-weight polyethylene sheet (A).

5,445,884

MULTI-LOBAL COMPOSITE FILAMENTS WITH REDUCED STAINABILITY

Matthew B. Hoyt, Arden, and Phillip E. Wilson, Asheville, both of N.C., assignors to BASF Corporation, Mount Olive, N.J.

Continuation-in-part of Ser. No. 900,629, Jun. 18, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,201
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—370 12 Claims

1. A multi-lobal composite filament with reduced stainability comprising a polyamide core having an amine end group content of from about 5 to about 45 meq/kg, and a hydrophobic polymer sheath surrounding said core, said hydrophobic polymer being selected from the group consisting of aromatic polyesters, aliphatic polyesters, polyethylene, polymethylpentene, polybutene, and polymethyl butene, and wherein the weight ratio between said core and said sheath is from about 2:1 to about 10:1.

5,445,885

Patent Not Issued For This Number

5,445,886

STRUCTURE HAVING A SURFACE COVERED WITH A MONOMOLECULAR FILM

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 781,673, Oct. 24, 1991, Pat. No. 5,209,976, which is a continuation of Ser. No. 373,186, Jun. 29, 1989, abandoned. This application Feb. 24, 1993, Ser. No. 21,910
Claims priority, application Japan, Jul. 4, 1988, 63-166128; Jul. 4, 1988, 63-166130
Int. Cl.[6] B32B *15/02*, *21/02*
U.S. Cl. 428—403 16 Claims



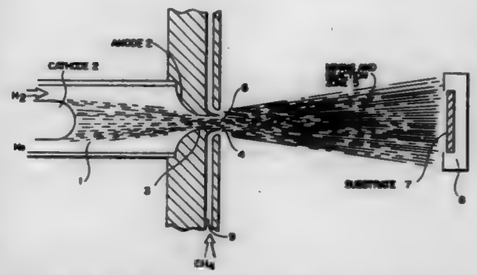
1. A metal or metal oxide fine particle having a surface covered with a monomolecular film, having an outward arrangement of hydrophobic groups wherein a monomolecular film of a chlorosilane surface agent having at least one chlorosilyl group therein is formed on the surface of a metal or metal oxide fine particle containing OH groups on its surface by a chemical adsorption reaction between the chlorosilyl group of the chlorosilane surface active agent and the OH groups of the metal or metal oxide fine particle, the monomolecular film being chemically adsorbed directly to the surface of the metal or metal oxide fine particle so that the resultant monomolecular film has an outward arrangement of hydrophobic groups.

5,445,887

DIAMOND COATED MICROCOMPOSITE SINTERED BODY

Thomas E. Casti, 2808 Fawkes Dr., Wilmington, Del. 19808

Continuation of Ser. No. 816,356, Dec. 27, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 147,103
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—408 9 Claims



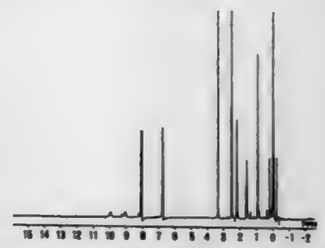
1. A diamond coated article comprising a substrate, said substrate comprising at least one transition metal silicide-containing composition comprising M_xSi_y+SiC, wherein M is a transition metal and x and y are each integers, and a diamond film at least partially coating said substrate.

5,445,888

HYDRAZINE COMPOUND, PROCESS FOR THE PREPARATION OF THE SAME, AND NONLINEAR OPTICAL ORGANIC MATERIAL

Tsuneaki Koike; Hideo Hama, and Tooru Yamanaka, all of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 924,970, Aug. 5, 1992, abandoned. This application Jan. 5, 1994, Ser. No. 177,713
Claims priority, application Japan, Aug. 6, 1991, 3-196871
Int. Cl.[6] B32B *9/04*
U.S. Cl. 428—411.1 36 Claims



1. A nonlinear optical organic material composite which comprises a transparent polymer and a hydrazine compound represented by the formula (I):

(I)

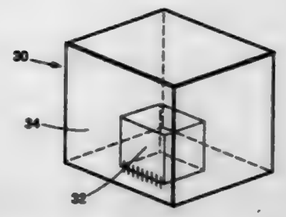
wherein Φ_1 is a 5 or 6-, member heterocyclic ring; R_1 to R_3 are each independently a hydrogen atom or a group selected from the group consisting of an alkyl group, an aryl group, an aralkyl group and an alkyloxy group; R_4 is a hydrogen atom or a group selected from the group consisting of an alkyl group, an alkenyl group and a phenyl group; when R_4 is an alkyl group or an alkenyl group, the alkyl group or the alkenyl group may have an hydroxyl group and/or a halogen atom, and a divalent hetero atom or a divalent group containing a hetero atom may be present between adjacent two carbon atoms of the alkyl group or the alkenyl group; and Z is a single bond or is oxygen.

5,445,889

LOW-TEMPERATURE CURING RESIN SYSTEM

Florian J. Zukas, Torrance, and Nancy J. Condon, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 922,884, Jul. 31, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,381
Int. Cl.[6] B32B *27/38*
U.S. Cl. 428—413 6 Claims



1. An embedded structure, comprising:

a matrix produced by reacting together 100 parts by weight of an epoxy resin and from about ¼ to about 10 parts by

weight of a liquid imidazole curing agent, and without any piperidine present; and
an article embedded in the matrix.

5,445,890
BULLET RESISTANT GLASS/GLASS, GLASS/PLASTIC, AND PLASTIC/PLASTIC LAMINATE COMPOSITES
Charles E. Bayha, and H. Arne Sadlow, both of Collierville, Tenn., assignors to Resikast Corporation, Collierville, Tenn.
Division of Ser. No. 916,714, Jun. 22, 1992, Pat. No. 5,318,853. This application Jun. 6, 1994, Ser. No. 254,879
Int. Cl.[6] B32B *17/00*
U.S. Cl. 428—431 12 Claims

1. A glass laminate composite, comprising:
at least two parallel sheets of glass joined by a layer of adhesive polyester prepared by cross-linking a pre-polymer, said pre-polymer prepared by preparing a linear polyester oligomer by reacting a mixture comprising at least one dibasic acid selected from the group consisting of adipic acid, phthalic anhydride, anhydride and maleic anhydride with at least one diol selected from the group consisting of dipropylene glycol and 2-methyl-1,3-propanediol to obtain a linear polyester oligomer having a molecular weight between about 900 and 1,200 measured by gel permeation chromatography;
adjusting the refractive index of said linear polyester oligomer to the refractive index of float glass by adding propylene glycol to said mixture of said dibasic acid and said diol;
and thinning said linear polyester oligomer with at least one monomer capable of cross-linking said linear polyester, said at least one monomer containing at least 60% by weight of t-butyl styrene, to obtain an adhesive polyester pre-polymer.

5,445,891
CURABLE ORGANOPOLYSILOXANE COMPOSITION CONTAINING NOVEL ADHESION PROMOTER
Akira Kasuya, Chiba Prefecture, Japan, assignor to Dow Corning Toray SiliconCo., Ltd., Tokyo, Japan
Filed Nov. 14, 1994, Ser. No. 338,913
Claims priority, application Japan, Nov. 17, 1993, 5-311263; Nov. 17, 1993, 5-311264
Int. Cl.[6] B32B *15/08*
U.S. Cl. 428—450 12 Claims

1. A curable organopolysiloxane composition comprising:
(A) 100 parts by weight of an organopolysiloxane that contains at least 2 alkenyl groups in each molecule; and
(B) an organopolysiloxane that contains at least 2 silicon-bonded hydrogen atoms in each molecule, in a quantity sufficient to provide 0.3 to 5.0 moles of silicon-bonded hydrogen in said component (B) per 1 mole of total alkenyl groups in the composition;
(C) 0.3 to 10 parts by weight of an adhesion promoter which is a reaction product of
(a) an amine compound having the general formula

$$R_nNH_{(3-n)}$$

wherein R denotes a monovalent hydrocarbon group and n is 1 or 2, and
(b) an aliphatically unsaturated epoxy compound; and
(D) a catalytic quantity of a hydrosilylation catalyst.

5,445,892
OBJECT HAVING A ROSY PINK COLORING
Robert Riedl, Unterkulm, and Jean-Paul Randin, Cortaillod, both of Switzerland, assignors to Eta SA Fabriques d'Ebauches, Granges, Switzerland
Filed Dec. 10, 1993, Ser. No. 164,542
Claims priority, application France, Dec. 23, 1992, 92 15816
Int. Cl.[6] B32B *15/04*
U.S. Cl. 428—469 10 Claims

1. An object having a rosy pink colored coating thereon, comprising:
(A) a substrate forming a body of the object;
(B) a first layer on the substrate, said first hard layer comprising, (a) a nitride of at least one of the elements selected from the group consisting of Ti, Zr, and Hf, and (b) at least one of the elements selected from the group consisting of Al, C, group Vb and VIb elements; and
(C) a second layer on the first layer, said second layer comprising a mixture of palladium and indium wherein said object exhibits a clarity value of at least 70.

5,445,893
PH CONTROL POLYMER
Walter B. Mueller, Inman, S.C.; Cynthia L. Ebner, New Market, and William P. Roberts, Columbia, both of Md., assignors to W.R. Grace & Co.-Conn, Duncan, S.C.
Continuation-in-part of Ser. No. 828,319, Jan. 30, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 44,850
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—500 4 Claims



1. In a film comprising a vinyl carboxylate copolymer layer, the improvement comprising the inclusion in said layer of an effective amount of an ionomer wherein between about 60% and 100% of the acid groups of the ionomer are neutralized.

5,445,894
CERAMIC COATINGS
Loren A. Haluska, and Keith W. Michael, both of Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Apr. 22, 1991, Ser. No. 688,233
Int. Cl.[6] B22F *7/08*; C08K *5/07*
U.S. Cl. 428—557 20 Claims

1. A method of forming a ceramic coating on a substrate comprising:
depositing a preceramic coating comprising hydrogen silsesquioxane resin, a material containing Si—Si bonds which forms volatile SiH compounds, and a catalyst selected from the group consisting of platinum catalysts and copper catalysts; and
pyrolyzing the preceramic coating in an inert atmosphere to a temperature sufficient for ceramification.

5,445,895
MATERIAL FOR ELECTRIC CONTACTS OF SILVER WITH CARBON
Volker Behrens, Brettes; Carl L. Meyer; Karl Saeger, both of Pforzheim; Thomas Honig, Tiefenbronn, and Roland Michal, Pforzheim, all of Germany, assignors to Doduco GmbH & Co. Dr. Eugen Dürrwächter, Pforzheim, Germany
PCT No. PCT/EP92/00804, § 371 Date Feb. 14, 1994, § 102(e) Date Feb. 14, 1994, PCT Pub. No. WO92/18995, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1992, Ser. No. 129,200
Claims priority, application Germany, Apr. 10, 1991, 41 11 683.6
Int. Cl.[6] B22F *7/08*
U.S. Cl. 428—567 20 Claims

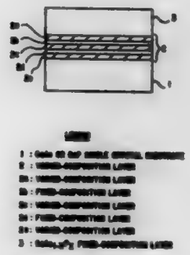
1. A composite material for electric contacts, consisting of silver or a silver-containing alloy or a silver-containing composite material as a metal component and of 0.5 to 10% by weight carbon, characterized in that carbon powder in combination with carbon fibers in a mass ratio from 10:1 to 1:10 are powder-metallurgically processed together with the pulverulent metal component to form a material in which the average length of the carbon fibers is more than twice the average diameter of the carbon powder particles.

5,445,896
SLIDING BEARING MATERIAL INCLUDING OVERLAY HAVING EXCELLENT ANTI-SEIZURE PROPERTY
Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya, and Hideyuki Kidokoro, Komaki, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan
Continuation of Ser. No. 118,187, Sep. 9, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 305,982
Claims priority, application Japan, Sep. 28, 1992, 4-257087
Int. Cl.[6] F16C *33/12*
U.S. Cl. 428—647 12 Claims

1. A sliding bearing material comprising a back steel layer, a bearing alloy layer selected from the group consisting of a Cu-20 to 35% Pb-0 to 2% Sn alloy, a Cu-5 to 25% Pb-2 to 12% Sn alloy, an Al-5 to 60% Sn-2 to 8% Si-0.2 to 2% Cu-0 to 2% Pb alloy, an Al-5 to 20% Pb-2 to 10% Sn-0.2 to 2% Cu-0 to 4% Si-0 to 1 Mn alloy, and an Al-4% Zn-5% Si-1% Cu-1% Pb alloy, and an overlay formed by sputtering and having a thickness of 5 to 30 μm, said overlay having an excellent anti-seizure property, and said overlay consisting of, by weight, 10–80% Sn, 0.1–5% Cu, 0.05–3% Sb, and the balance Al and incidental impurities.

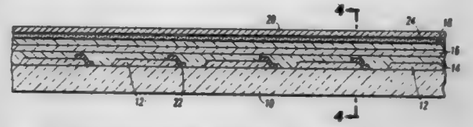
5,445,897
EPITAXIAL WAFER AND PROCESS FOR PRODUCING THE SAME
Tadashige Satoh, and Hisanori Fujita, both of Ushiku, Japan, assignors to Mitsubishi Kasei Polytec Company and Mitsubishi Kasei Corporation, both of Tokyo, Japan
Continuation-in-part of Ser. No. 616,266, Nov. 20, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 69,672
Claims priority, application Japan, Nov. 22, 1989, 1-303677
Int. Cl.[6] H01L *21/20, 33/00*
U.S. Cl. 428—688 1 Claim

1. An epitaxial wafer comprising:
a GaAs or GaP single crystal substrate;
a $GaAs_{1-x}P_x$ fixed-composition layer that is crystally grown over said GaAs or GaP single crystal substrate; and
a varied-composition region that is formed between said substrate and said fixed-composition layer, said varied-composition region comprising at least two varied-composition layer portions and at least one fixed-composition layer portion with a thickness of 1 μm or more formed between said two varied-composition layer portions, at least one of said varied-composition layer portions being formed such that the rate of change in the composition Δx per μm satisfies the following condition:



about $0.02 \leq \Delta x \leq$ about 0.08

5,445,898
SUNLIGHT VIEWABLE THIN FILM ELECTROLUMINESCENT DISPLAY
Russell A. Budzilek, Bridgeport; Dominic L. Monarchie, Norwalk; Myroslaw Podoba, Wallingford, and Richard R. Swatson, Trumbull, all of Conn., assignors to Westinghouse Norden Systems, Norwalk, Conn.
Filed Dec. 16, 1992, Ser. No. 990,991
Int. Cl.[6] H05B *33/02*
U.S. Cl. 428—690 32 Claims



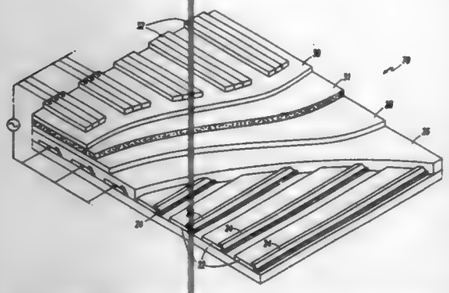
1. A sunlight viewable electroluminescent display panel, comprising:
a glass substrate;
a plurality of parallel transparent electrodes deposited on said glass substrate, each of said transparent electrodes having a metal assist structure formed on, and in electrical contact over, a portion of said transparent electrodes wherein each of said metal assist structures comprises a first refractory metal layer, a primary conductor layer formed on said first refractory layer, and a second refractory metal layer formed on said primary conductor layer;
a layer of phosphor material deposited on said first dielectric layer;
a second dielectric layer deposited on said layer of phosphor material;
a layer of light absorbing dark material, deposited on said second dielectric layer, for reducing reflected light; and
a plurality of metal electrodes each deposited in parallel over said layer of light absorbing dark material.

5,445,899

COLOR THIN FILM ELECTROLUMINESCENT DISPLAY

Russell A. Budzilek, Bridgeport; Dominick L. Monarchie, Norwalk; Myroslaw Podobed, Wallingford, all of Conn.; Elliott Schlam, Wayside, N.J., and Richard R. Swatson, Trumbull, Conn., assignors to Westinghouse Norden Systems Corp., Norwalk, Conn.

Continuation-in-part of Ser. No. 990,991, Dec. 16, 1992. This application May 17, 1993, Ser. No. 62,869
Int. Cl.[6] H05B *33/02*
U.S. Cl. 428—690 20 Claims



1. A sunlight viewable multi-color electroluminescent display panel, comprising:
a glass substrate;
a plurality of parallel transparent electrodes deposited on said glass substrate, each of said transparent electrodes having a metal assist structure formed on and in electrical contact over a portion of said transparent electrodes;
a first dielectric layer deposited on said plurality of transparent electrodes;
a layer of phosphor material deposited on said first dielectric layer having a preselected activator and a preselected co-activator implanted therein to provide color luminescent material;
a second dielectric layer deposited on said layer of phosphor material;
a layer of light absorbing dark material, deposited on said second dielectric layer for reducing reflected light; and
a plurality of metal electrodes each deposited in parallel over said layer of light absorbing dark material.

5,445,900

ELECTRONIC DEVICE HAVING A REMOVABLE BATTERY PACK ASSEMBLY

Kenneth Miller, Jr., Devault, and William J. Duffy, Jr., Downington, both of Pa., assignors to Invisible Fence Company, Inc., Malvern, Pa.

Filed Aug. 18, 1993, Ser. No. 107,868
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—1 26 Claims

1. A battery pack for supplying power to an electronic receiver comprising:
(a) a battery holder shaped for receiving a battery having first and second terminals, the battery holder having an opening at one end and a generally closed base at the other end;
(b) a contactor having a spring located inside the battery holder between the base of the battery holder and the battery for biasing the battery toward the opening of the battery holder and a contact for electrical connection with the first terminal of the battery, the contact extending outside the opening of the battery holder for electrical connection with the electronic receiver;
(c) a retainer at the opening of the battery holder for retaining the battery within the holder against the bias of the spring with the second terminal of the battery being exposed at the opening of the battery holder for electrical connection with the electronic receiver; and



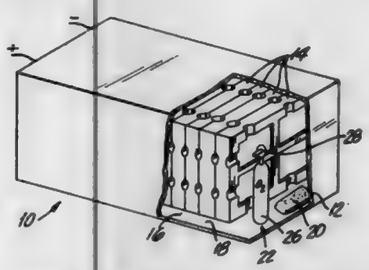
(d) a mounting connector on the battery holder for removably mounting the battery pack onto the electronic receiver.

5,445,901

ZINC-OXYGEN BATTERY

Menachem Korall; Yehuda Harats; Boris Dechovich, and Jonathan Goldstein, all of Jerusalem, Israel, assignors to Electric Fuel (E.F.L.) Ltd., Jerusalem, Israel

Continuation-in-part of Ser. No. 213,674, Mar. 15, 1994, Pat. No. 5,366,822. This application Aug. 5, 1994, Ser. No. 286,539
The portion of the term of this patent subsequent to Nov. 22, 2011, has been disclaimed.
Int. Cl.[6] H01M *12/06*
U.S. Cl. 429—27 11 Claims



1. A multi-cell, sealed, zinc-oxygen battery, comprising a container containing:
(a) a plurality of bi-cells, each cell having a housing provided with two major surfaces and accommodating a pair of oppositely-disposed, spaced-apart, air-permeable, liquid-impermeable cathodes in the form of oxygen-reduction electrodes, and defining between themselves a cavity configured to accommodate an anode of said battery and electrolyte, substantial portions of the major surfaces of said housing being removed, thus exposing major portions of said oxygen electrodes, and wherein said two major surfaces are partly recessed in such a way as to form, in conjunction with a similarly-recessed outer surface of a major wall of an adjacent cell housing, an inter-cathode gas space between adjacent cells with a plurality of oxygen access openings leading thereto;
(b) a dead space volume between inner surfaces of said housing and said plurality of bi-cells; and
(c) pressurized oxygen supply means for feeding oxygen to said dead space volume, for consumption in said inter-cathode gas spaces.

5,445,902

METHOD FOR OPERATING A POWER GENERATOR

Takao Soma, Nishikamo; Tomonori Takahashi, Chita; Shinji Kawasaki, Nagoya, and Katsuki Yoshioka, Himeji, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Oct. 12, 1993, Ser. No. 133,872
Claims priority, application Japan, Oct. 14, 1992, 4-275952
Int. Cl.[6] H01M *8/02*
U.S. Cl. 429—30 9 Claims

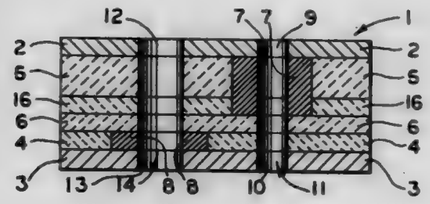
1. A method for operating a power generator in which a solid oxide fuel cell is used as a power-generating element and an air electrode of said solid oxide fuel cell is composed of lanthanum manganite, said method comprising the step of setting a heating rate and a cooling rate at least in a temperature range of 600° C. to 1,000° C. at not less than 3° C./min. when the fuel cell is heated up to an operating temperature at the time of starting the power generator and when the fuel cell is cooled from the operating temperature at the time of stopping the power generator.

5,445,903

ELECTROCHEMICAL APPARATUS

Thomas L. Cable, Newbury, and Michael A. Petrik, Highland Hts., both of Ohio, assignors to Technology Management, Inc., Cleveland, Ohio

Filed Sep. 9, 1993, Ser. No. 118,524
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—33 22 Claims



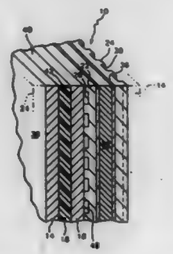
1. An electrochemical apparatus having a solid electrolyte disposed between an oxygen electrode and a fuel electrode, at least one separator contacting the surface of one of the electrodes opposite the electrolyte, and a reactive microslip zone disposed between the electrolyte and at least one electrode, wherein the reactive microslip zone has interconnected pores of a lesser average diameter than the pores of the adjacent electrode.

5,445,904

METHODS OF MAKING OXYGEN DISTRIBUTION MEMBERS FOR FUEL CELLS

Arthur Kaufman, West Orange, N.J., assignor to H-Power Corporation, Belleville, N.J.

Division of Ser. No. 929,627, Aug. 13, 1992, Pat. No. 5,292,600. This application Mar. 4, 1994, Ser. No. 206,213
Int. Cl.[6] H01M *2/14, 2/00*
U.S. Cl. 429—34 5 Claims



1. A method of producing an oxygen-distribution member for an ion-exchange membrane electrolyte, water-producing, fuel cell, wherein said oxygen distribution member is electrically conductive and pervious to water and has oxygen-distribution passages for supply of oxygen to a cathode, said method comprising:
i) chemically surface-treating a graphitic member to be hydrophilic, mechanically strong and electrically conductive said chemical surface treatment comprising high-temperature deposition of a carbonaceous layer on said surface structure of said fibrous graphitic member by deposition of carbon black derived from a material selected from the group consisting of liquid hydrocarbons, alcohols and gaseous hydrocarbons at a temperature above about 800° C. in an inert atmosphere or a sub-stoichiometric-oxygen-containing atmosphere; and
ii) forming oxygen-distribution passages in said graphitic member;
wherein said hydrophilic treatment is effective for transport of water through said graphitic oxygen-distribution member away from a cathode to which said oxygen distribution member is adjacent in said fuel cell.

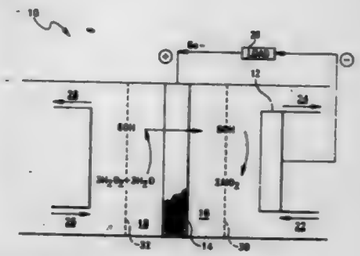
3. An oxygen-distribution member for an ion-exchange membrane electrolyte, water-producing, fuel cell, wherein said oxygen-distribution member is the product of a method according to claim 1.

5,445,905

DUAL FLOW ALUMINUM HYDROGEN PEROXIDE BATTERY

Catherine L. Marsh, Exeter, R.I.; Stuart L. Licht, Charlton City, Mass., and Donna E. Matthews, Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1993, Ser. No. 168,789
Int. Cl.[6] H01M *4/36*
U.S. Cl. 429—105 17 Claims



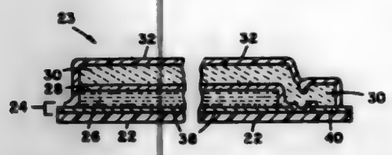
1. An electrical storage cell comprising:
a housing;
an aqueous hydrogen peroxide catholyte within said housing;
an aqueous anolyte within said housing;
a porous solid electrocatalyst positioned to separate said anolyte from said catholyte and formed of a material capable of converting hydrogen peroxide to hydroxide ion; and
an aluminum anode positioned within said anolyte.

5,445,906

METHOD AND SYSTEM FOR CONSTRUCTING A RECHARGEABLE BATTERY AND BATTERY STRUCTURES FORMED WITH THE METHOD

David O. Hobson, Oak Ridge, and William B. Snyder, Jr., Knoxville, both of Tenn., assignors to Martin marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Aug. 3, 1994, Ser. No. 285,166
Int. Cl.[6] H01M 6/12, 6/46
U.S. Cl. 429—162 23 Claims



1. A method for building up thin-film battery components in a layup arrangement wherein the layup includes a cathode film, an electrolyte film and a lithium anode film, the method comprising the steps of:

moving the surface of a substrate through one station at which a cathode material is deposited in a thin film upon the surface as the substrate is moved through the one station;

moving the substrate surface through another station at which an electrolyte material is deposited in a thin film over the cathode film as the substrate is moved through the another station; and

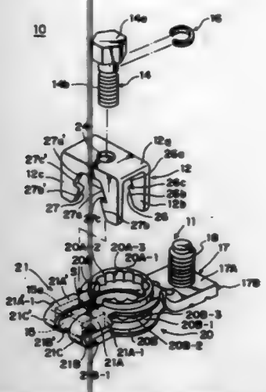
then moving the substrate surface through yet another station at which lithium is deposited in a thin film over the electrolyte film as the substrate is moved through the yet another station.

5,445,907

BATTERY TERMINAL

Hikaru Ito, and Masakuni Kasugai, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Feb. 7, 1994, Ser. No. 193,414
Claims priority, application Japan, Mar. 9, 1993, 5-009836 U
Int. Cl.[6] H01M 2/30
U.S. Cl. 429—178 14 Claims



1. A battery terminal for tightly clamping a battery post, said battery post having an outer circumferential surface, said battery terminal comprising:

a folded element having top and bottom ring-shaped post fitting members, said ring-shaped post fitting members formed with a post fitting opening and each of said ring-shaped members having an inner circumferential surface, and a gap for defining two folded arms, said two folded arms having an angled portion extending at an angle with respect to an angled portion on the other folded arm;

a clamping member having tapered sides;

urging means for urging said two folded arms into said clamping member for sliding said angled portions along said tapered sides to close said two folded arms; and

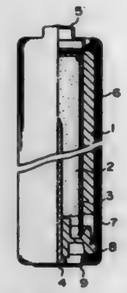
notches having pointed tips projecting from the inner circumferential surface of at least one of said ring-shaped post fitting members for biting into the outer circumferential surface of the battery post.

5,445,908

ALKALINE DRY CELL

Koichi Inoue, Hirakata; Kazutoshi Okubo, Nara; Kohei Kitagawa, Toyonaka; Keisuke Tanaka, Hirakata, and Tomoya Watanabe, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 958,717
Claims priority, application Japan, Oct. 17, 1991, 3-269218; Oct. 17, 1991, 3-269226; Mar. 23, 1992, 4-064577; Jul. 7, 1992, 4-179588
Int. Cl.[6] H01M 4/66
U.S. Cl. 429—229 2 Claims



1. An alkaline dry cell which has a negative electrode comprising zinc alloy powders free of mercury as a negative electrode active material and provided in a center portion of the cell, a positive electrode provided around an outer surface of the negative electrode with a separator provided therebetween and a current collector comprising copper or a copper alloy and inserted in the negative electrode wherein the surface of said current collector is of subjected to an electroless plating with a metal containing at least one member selected from the group consisting of Sn, Pb and Cu.

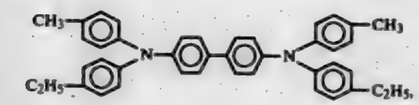
5,445,909

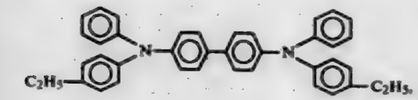
ELECTROPHOTOGRAPHIC PHOTORECEPTOR

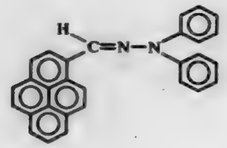
Yutaka Akasaki; Katsuhiro Sato, and Katsumi Nukada, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 767,797, Sep. 30, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 88,577
Claims priority, application Japan, Oct. 19, 1990, 2-283111
Int. Cl.[6] G03G 15/02
U.S. Cl. 430—58 7 Claims

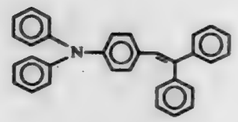
1. An electrophotographic photoreceptor comprising an electroconductive substrate having thereon a photoconductive layer comprising a charge generating layer comprising a charge generating material and a charge transporting layer comprising a charge transporting material, wherein the ionization potential of said charge generating material is lower than the ionization potential of said charge transporting material, the difference between the ionization potentials is 0.35 eV or less, and the difference the ionization potential of said charge generating layer and the ionization potential of said charge transporting layer is within the range of −0.1 to ±0.1 eV, and wherein said charge transporting material is:

(a)


(b)


(c)


OR

(d)


5,445,910

DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGE COMPRISING A TONER CONTAINING COLORANT PARTICLES HAVING ORGANIC PARTICLES EXTERNALLY ADDED THERETO

Michiaki Ishikawa; Keiko Ogawa; Meizo Shirose, and Hiroyuki Takagiwa, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,697
Claims priority, application Japan, Feb. 25, 1993, 5-059302
Int. Cl.[6] G03G 9/083, 9/09
U.S. Cl. 430—106.6 10 Claims

1. A developer comprising a toner containing colorant particles and organic fine particles which are externally added to said colorant particles, wherein said organic fine particles are a fluoro-containing acrylate homopolymer or a copolymer thereof, each having a cross-linked structure.

5,445,911

CHELATING POSITIVE CHARGE DIRECTOR FOR LIQUID ELECTROGRAPHIC TONER

Dale D. Russell, and James G. Bearss, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 28, 1993, Ser. No. 99,020
Int. Cl.[6] G03G 9/135
U.S. Cl. 430—115 20 Claims

1. A positive charge director for liquid electrographic toner comprising:

a toner particle comprising a pigment component and a resinous carrier;

a very strongly chelating meso or macro-cyclic or open chain chelating group having three or more donor atoms, said chelating group being covalently bonded to said resinous carrier or to said pigment component or an intrinsic part of said pigment component; and

a metal, ammonium or organic cation being chelated by said strongly chelating group so that the ratio, K_f(chelate) / K_f(associate), is greater than 10^3.

5,445,912

LITHOGRAPHIC BASE AND A METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE THEREWITH

Guido Hauquier, Nijlen; Willem Cartens, Boolechot; Paul Coppens, Turnhout; Joan Vermeersch, Deinze; Erik Mostaert, Boechout, and Eric Verschueren, Merksplas, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 9, 1994, Ser. No. 207,712
Claims priority, application European Pat. Off., Apr. 5, 1993, 93200960
Int. Cl.[6] G03C 1/93; G03F 7/016
U.S. Cl. 430—159 10 Claims

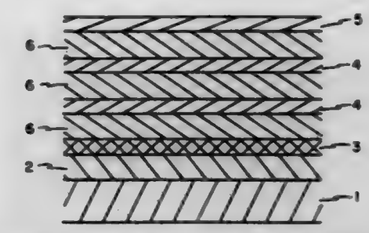
1. A lithographic base comprising on a hydrophobic support a subbing layer contiguous to a hydrophilic layer containing a hydrophilic (co)polymer or (co)polymer mixture and being hardened with a hydrolysed tetraalkyl orthosilicate crosslinking agent characterized in that said subbing layer contains a hydrophilic binder and silica and is applied at a solids content of less than 750 mg per m^2.

5,445,913

PROCESS FOR THE FORMATION OF HEAT IMAGE SEPARATION ELEMENTS OF IMPROVED SENSITOMETRY

David S. Bailey, Rochester, and Richard L. Parton, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1994, Ser. No. 202,309
Int. Cl.[6] G03C 8/40, 8/10, 1/015
U.S. Cl. 403—203 44 Claims



1. A process for forming a chromogenic photographic heat-transferable non-aqueous dye-diffusion-transfer photographic element comprising the steps of:

providing, separately, a melt comprising a spectrally dye-sensitized silver halide emulsion, and a dry diffusion transfer facilitating thermal solvent;

mixing said spectrally dye-sensitized silver halide emulsion melt and said dry diffusion transfer facilitating thermal solvent with a mixing means to create a mixed melt, wherein said mixing means comprises a means for pumping separate flows of liquefied photographic emulsion containing melt and the thermal solvent at a predetermined rate to a common junction at which the flows intermix into a common flow upon coming into contact;

providing a coating substrate;

coating said mixed melt on said substrate to form a coated photographic element, wherein said coating takes place less than about 10 minutes after mixing.

5,445,914

METHOD FOR MAKING A LITHOGRAPHIC OFFSET PLATE BY THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; Augustin Meisters, Gentbrugge, and Ludovicus Vervloet, Kessel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 1, 1994, Ser. No. 189,702

Claims priority, application European Pat. Off., Feb. 9, 1993, 93200339.5

Int. Cl.[6] G03C *5/395, 8/32;* G03F *7/07*

U.S. Cl. 430—204 **7 Claims**

1. A method for making an offset printing plate according to the silver salt diffusion transfer process comprising the steps of:

information-wise exposing an imaging element comprising in the order given (i) a hydrophilic base, (ii) an image receiving layer containing physical development nuclei and (iii) a silver halide emulsion layer,

developing said information-wise exposed imaging element using an aqueous alkaline processing solution in the presence of at least one developing agent and at least one silver halide solvent to obtain a silver image on said hydrophilic support and

removing said silver halide emulsion layer and any optional layer on top of said silver image to expose said silver image by means of washing with rinsing water, characterized in that said rinsing water is obtained by adding to fresh rinsing water processing solution in an amount between 2% and 9% by volume of said fresh rinsing water, said rinsing water thereby obtaining a pH between 10.5 to 13.

5,445,915

IMAGING ELEMENT AND METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Jos Vaes, Beteikom, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jan. 11, 1995, Ser. No. 371,568

Claims priority, application European Pat. Off., Feb. 17, 1994, 94200404

Int. Cl.[6] G03C *8/06, 8/28, 8/52;* G03F *7/07*

U.S. Cl. 430—204 **5 Claims**

1. An imaging element comprising on a support in the order given a base layer containing a matting agent having a number average diameter between 0.4 and 1 times the thickness of said base layer, a spectrally sensitized silver halide emulsion layer and a receiving layer containing physical development nuclei having an average diameter less than 6 nm and wherein the number of nuclei having a diameter larger than 4.5 nm is less than 15% of the total number of nuclei contained in said receiving layer and wherein substantially no matting agent is present in said receiving layer, silver halide emulsion layer or any other layer optionally being present between said receiving layer and silver halide emulsion layer.

5,445,916

PHOTOSENSITIVE COMPOSITIONS

John Curtis, Princeton, N.J., assignor to Ulano Corporation, Brooklyn, N.Y.

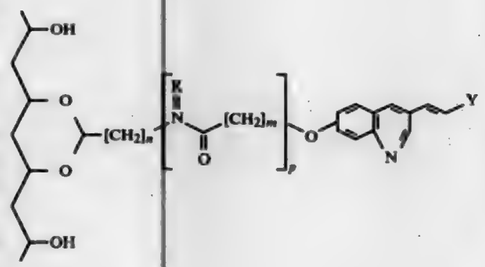
Division of Ser. No. 889,933, Jun. 2, 1992, abandoned. This application Apr. 5, 1993, Ser. No. 42,683

The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.

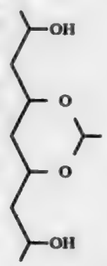
Int. Cl.[6] G03C *1/492*

U.S. Cl. 430—270 **6 Claims**

1. A composition containing at least 2 photosensitive polymers of the structure



where



represents a polyvinyl alcohol unit,

n is an integer from 1 to 3,

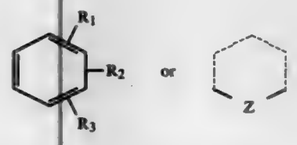
R is alkyl or substituted alkyl,

m is an integer from 1 to 3,

m is an integer from 1 to 3,

p is either zero or 1, and

Y is



where R_1, R_2, and R_3 are hydrogen, alkyl, alkenyl, alkoxy, aralkyl, substituted alkyl, substituted alkoxy, carboxy, carboxy ester, amino, substituted amino, amido, substituted amido, cyano, hydroxy, nitro, isocyanato, sulphonyl halide, sulphonic acid, and halide and may be the same or different and



is a 5 or 6-membered ring structure with Z selected from the group consisting of oxygen and sulfur.

5,445,917

IMAGING MEDIUM

Jurgen M. Grasshoff, Hudson; John L. Marshall, Somerville; Richard A. Minns, Arlington; Mark R. Mischke, Arlington; Anthony J. Puttick, Arlington; Lloyd D. Taylor, Lexington, and Stephen J. Telfer, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 141,860, Oct. 22, 1993, Pat. No. 5,395,736, which is a continuation-in-part of Ser. No. 965,162, Oct. 23, 1992, Pat. No. 5,334,489. This application Oct. 7, 1994, Ser. No. 319,925

Int. Cl.[6] G03C *1/492, 1/494, 1/76*

U.S. Cl. 430—270 **12 Claims**

1. An imaging medium comprising:

a superacid precursor capable of generating a superacid upon exposure to actinic radiation; and

a secondary acid generator capable of undergoing thermal decomposition to produce a secondary acid, the thermal decomposition of the secondary acid generator being catalyzed by the superacid,

the secondary acid generator being selected from the group consisting of:

(a) a 3,4-disubstituted-cyclobut-3-ene-1,2-dione in which at least one of the 3- and 4-substituents consists of an oxygen atom bonded to the squaric acid ring, and an alkyl or alkylene group, a partially hydrogenated aryl or arylene group, or an aralkyl group, bonded to said oxygen atom, said 3,4-disubstituted-cyclobut-3-ene-1,2-dione being capable of decomposing so as to cause replacement of the or each original alkoxy, alkyleneoxy, aryloxy, aryleneoxy or aralkyloxy group of the derivative with a hydroxyl group, thereby producing squaric acid or an acidic squaric acid derivative having one hydroxyl group; and

(b) an oxalic acid diester capable of thermal decomposition to form oxalic acid or an oxalic acid monoester having one carboxyl group.

5,445,918

PHOTOPOLYMERISABLE COMPOSITIONS

Takahisa Doba, and Bunya Watanabe, both of Ibaraki, Japan, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 827,046, Jan. 29, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 208,789

Claims priority, application Japan, Jan. 29, 1991, 3-009309

Int. Cl.[6] G03C *1/725;* G03F *7/028;* C08F *2/48;* C08J *3/28*

U.S. Cl. 430—285 **11 Claims**

1. A photopolymerisable composition comprising a polymerisable ethylenically unsaturated compound and a photoinitiator composition consisting essentially of a titanocene compound and N-phenylglycine or a ring-substituted N-phenylglycine wherein the ring substitution is selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, amino, nitro, cyano and halogen.

5,445,919

PHOTOPOLYMERIZABLE COMPOSITION

Yuichi Wakata; Masayuki Iwasaki, and Koji Inoue, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 10, 1994, Ser. No. 258,488

Claims priority, application Japan, Jun. 14, 1993, 5-142278

Int. Cl.[6] G03C *1/73*

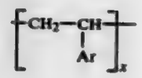
U.S. Cl. 430—287 **12 Claims**

1. A photopolymerizable composition which comprises:

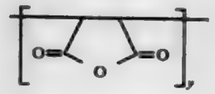
(1) a photopolymerization initiator or a photopolymerization initiator system,

(2) an addition-polymerizable monomer having an ethylenically unsaturated double bond, and

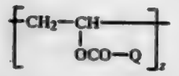
(3) a resin produced by reaction of an anhydride-containing copolymer having a number average molecular weight of 500 to 30,000 which contains repeating units represented by at least formulas (I), (II) and (III), respectively, with a primary amine represented by formula (IV) with the ratio of the primary amine to the copolymer being 0.1 to 1.0 equivalent per equivalent of the anhydride in the copolymer:



(I)



(II)



(III)

wherein Ar represents a phenyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, an aryl group having 6 to 10 carbon atoms, an aralkyl group having 8 to 12 carbon atoms, a halogen atom or a combination of two or more thereof; Q represents a saturated or unsaturated alkyl group having 1 to 20 carbon atoms which may be substituted by a halogen atom, or an aryl group having 6 to 10 carbon atoms which may be substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms or a halogen atom; x, y and z each represents a molar fraction of the repeating units; x=0.15 to 0.70; y=0.15 to 0.70; and z=0.01 to 0.70;

$$R\text{—}NH_2 \quad \text{(IV)}$$

wherein R represents an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 14 carbon atoms, an aryl group having 6 to 18 carbon atoms or an alkoxyalkyl group having 2 to 14 carbon atoms.

5,445,920

FABRICATION PROCESS OF BIOSENSOR

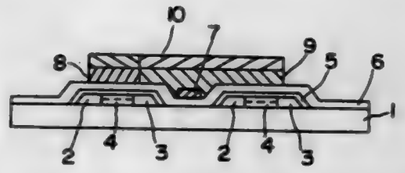
Atsushi Saito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 190,371

Claims priority, application Japan, Feb. 18, 1993, 5-028348

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—311 **16 Claims**

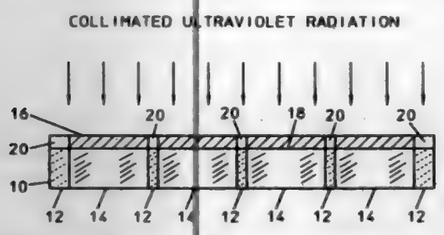


1. A process for the fabrication of plural biosensors having uniform response characteristics and a wide response range, each of said biosensors having at least two pairs of electrochemical transducer devices and a pseudo-reference electrode located substantially at a midpoint between said at least two pairs of electrochemical transducer devices, said devices and said electrode being both formed on one side of a wafer, and also an enzyme-immobilized membrane and a permeation-restricted membrane, both arranged over said devices and said electrode, which comprises:

1) covering said wafer with a first photoresist coating film except for surfaces of one of said devices and of said electrode;

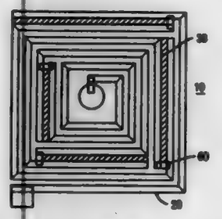
2) spin-coating said surfaces with an enzyme-free liquid coating formulation of an enzyme-immobilizing crosslinkable polymer;
3) spin-coating the resulting structure further with a first permeation-restricted-membrane-forming liquid coating formulation of a crosslinkable polymer;
4) causing said enzyme-free liquid coating formulation and said first permeation-restricted-membrane-forming liquid coating formulation to gel, whereby first and second gelled membranes are formed in a stacked form;
5) dissolving said first photoresist coating film with portions of said first and second gelled membranes which have been formed on said first photoresist coating film, whereby said first and second gelled membranes remain in the stacked form only on said surfaces of said one device and said electrode and a partly coated wafer is obtained;
6) covering a surface of the partly-coated wafer with a second photoresist coating film except for a surface of the other device;
7) spin-coating said surface of said other device with an enzyme-containing liquid coating formulation of an enzyme-immobilizing crosslinkable polymer;
8) spin-coating the spin-coated surface of said other device further with a second permeation-restricted-membrane-forming liquid coating formulation of a crosslinkable polymer;
9) causing said enzyme-containing liquid coating formulation and said second permeation-restricted-membrane-forming liquid coating formulation to gel, whereby third and fourth gelled membranes are formed in a stacked form;
10) dissolving said second photoresist coating film with said third and fourth gelled membranes which have been formed on said second photoresist coating into solvent, whereby a structure is obtained wherein said third and fourth gelled membranes remain only on said surface of said other device; and then
11) cutting the structure into pieces so that each piece includes parts of said paired electrochemical transducer devices and a part of said pseudo-reference electrode, with said electrode being located substantially at the midpoint between the parts.

5,445,921
METHOD OF CONSTRUCTING LOW CROSSTALK FACEPLATES
Donald P. Palmer, Ronks, Pa., assignor to Burle Technologies, Inc., Wilmington, Del.
Filed Apr. 8, 1994, Ser. No. 225,336
Int. Cl.[6] G03F *7/00*
U.S. Cl. 430—311 **1 Claim**



1. A method of constructing a multiple section photomultiplier faceplate consisting essentially of:
forming a faceplate of transparent glass which reacts to ultraviolet radiation and subsequent heat treatment by becoming opaque in the locations exposed to ultraviolet radiation;
forming a mask which is opaque to ultraviolet radiation and which includes openings through the mask which correspond to the locations of the faceplate which are desired to be opaque;
positioning the mask adjacent to a surface of the faceplate;
exposing the mask and faceplate to collimated ultraviolet radiation sufficient to activate the reaction of the glass to ultraviolet radiation; and
heating the faceplate to a temperature and for a time sufficient to convert the portions of the faceplate exposed to ultraviolet radiation to an opaque material.

5,445,922
BROADBAND PRINTED SPIRAL
Marshall Maple, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 523,066, May 14, 1990, Pat. No. 5,215,866, which is a division of Ser. No. 319,459, Aug. 9, 1989, Pat. No. 4,926,292. This application Nov. 19, 1992, Ser. No. 978,813
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[6] G03F *7/26*; H05K *1/16*
U.S. Cl. 430—314 **9 Claims**

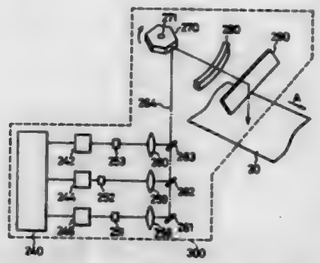


1. A method of forming a thin film printed circuit inductive element comprising the steps of:
(a) forming a layer of conducting material on a planar surface of an insulating substrate in a noncontinuous spiral path having an input and an output which are not electrically coupled to one another through the layer; and
(b) forming on the planar surface a plurality of resistive links which connect adjacent turns of and are in series with the spiral path for electrically coupling the input to the output.

5,445,923
LASER BEAM ABSORBING RESIN COMPOSITION AND LASER BEAM MARKING METHOD
Jun Takahashi; Akira Yasuda, both of Soka, and Hideo Ochi, Miesto, all of Japan, assignors to Somar Corporation, Japan
Filed Sep. 24, 1993, Ser. No. 125,798
Claims priority, application Japan, Sep. 30, 1992, 4-285099; Dec. 29, 1992, 4-361167; Jan. 29, 1993, 5-034577
Int. Cl.[6] G03C *1/725*
U.S. Cl. 430—340 **29 Claims**

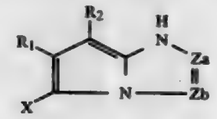
1. A composition for marking by irradiation with a carbon dioxide or YAG laser beam, said composition comprising 100 parts by weight of a thermosetting resin, a colorant capable of discoloring upon being heated at a temperature of 250° C. or more, and at least 10 parts by weight of a particulate, laser beam absorbing substance which has an average particle size of 50 μm or less and which is at least one member selected from cordierite and zeolite; and wherein said colorant comprises a first, white substance which is converted into a second, white substance different from said first substance upon being heated at a temperature of 250° C. or more, said composition further comprising an auxiliary colorant which is inert to laser beam irradiation and which has a color other than white.

5,445,924
LASER COLOR IMAGING METHOD USING A CYAN DYE COUPLER
Kiyoshi Kawai, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 19, 1993, Ser. No. 19,905
Claims priority, application Japan, Feb. 21, 1992, 4-072711
Int. Cl.[6] G03C *1/035, 1/40, 7/36, 7/384*
U.S. Cl. 430—363 **20 Claims**

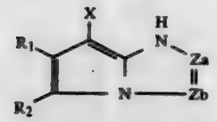


1. A method for forming a color image using a silver halide color photographic material having on a support at least three silver halide photosensitive layers that are different in color sensitivity and that contain respectively a coupler capable of forming a color of yellow, magenta, or cyan, comprising, in at least one photosensitive layer containing a cyan color-forming coupler of the said silver halide color photographic material, at least one cyan dye-forming coupler represented by the following formula (I) or (II), wherein the photosensitive layer containing the at least one cyan dye-forming coupler represented by formula (I) or (II) has a spectral sensitivity maximum by 560 nm or more, and said photographic material is exposed to a laser light by a scanning exposure system wherein an exposure time per picture element is less than 10^{-4} sec, and then is subjected to color development processing in a color developing solution comprising a color developing agent:

formula(I)



formula(II)



wherein Za and Zb each represent —C(R3)= or —N=, provided that one of Za and Zb represents —N= and the other represents —C(R3)=, R1 and R2 each represent an electron-attracting group, wherein the Hammett substituent constant σ_p value is 0.20 or over, with the sum of the σ_p values of R1 and R2 being 0.65 or over, R3 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a cyano group, a hydrozyl group, a nitro group, a carboxyl group, a sulfo group, an amino group, an alkoxy group, an aryloxy group, an acylamino group, an alkylamino group, an anilino group, a ureido group, a sulfamoylamino group, an alkylthio group, an arylthio group, an alkoxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a sulfonyl group, an alkoxycarbonyl group, a heterocyclic-oxy group, an azo group, an acyloxy group, a carbamoyloxy group, a silyloxy group, an aryloxycarbonylamino group, an imido group, a heterocyclic thio group, a sulfinyl group, a phosphonyl group, an aryloxycarbonyl group, an acyl group or an azolyl group, and X represents a hydrogen atom or a group capable of being released upon coupling reaction with the oxidized product of an aromatic primary amine color-developing agent, provided that R1, R2, R3, or X may be a divalent group, to form a dimer or higher polymer, or to bond to a polymer chain to form a homopolymer or copolymer.

5,445,925
METHOD OF FORMING A PHOTOGRAPHIC COLOR IMAGE
Peter D. Marsden, North Harrow, and Gareth B. Evans, Potten End, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 7, 1994, Ser. No. 224,222
Claims priority, application United Kingdom, Apr. 13, 1993, 9307502.6
Int. Cl.[6] G03C *7/00, 7/407, 7/42*
U.S. Cl. 430—393 **17 Claims**

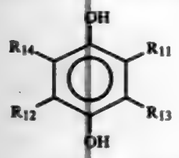
1. A method of forming a photographic color image from an imagewise exposed photographic silver halide material containing at least one dye image-forming color coupler, said method comprising the following steps, in order:
A) treating said imagewise exposed photographic silver halide material with a first color developing agent,
B) bleaching with a rehalogenating bleaching solution, and
C) treating said bleached photographic silver halide material with a second color developing agent whereby the rehalogenated silver halide formed in step B is developed,
steps B and C both being carried out one or more times, in sequence, after the initial step A,
provided that:
1) when said imagewise exposed photographic silver halide material contains a silver bromide or silver bromoiodide emulsion, said rehalogenating bleaching solution contains chloride as the rehalogenating agent,
2) said photographic silver halide material is treated with a fixing solution comprising a sulfite fixing agent between steps A and B, or
3) said bleached photographic silver halide material is fogged using light or a chemical fogging agent between steps B and C.

5,445,926
METHOD OF FORMING SILVER HALIDE COLOR PHOTOGRAPHIC IMAGES
Kazunori Hasebe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 23, 1992, Ser. No. 965,028
Claims priority, application Japan, Oct. 23, 1991, 3-302662
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[6] G03C *1/34, 1/815, 5/31, 7/32*
U.S. Cl. 430—399 **38 Claims**

1. A method of producing silver halide color photographic images comprising the step of, color developing a silver halide color photographic material which has a total gelatin coverage of at most 7.5 g/m^2 and which comprises a reflecting support and provided thereon three light sensitive silver halide emulsion layers each having a light sensitivity to a different wavelength region, including a light sensitive silver halide emulsion layer which has a gelatin coverage of below 1.3 g/m^2 and containing a yellow dye forming coupler, a light sensitive silver halide layer containing a magenta dye forming coupler, and a light sensitive layer containing a cyan dye forming coupler,
wherein said photographic material contains at least one magenta coupler which is a pyrazolotriazole coupler in which the 2-, 3- or 6-position of the pyrazolotriazole ring is substituted by a branched alkyl group in the magenta coupler-containing silver halide emulsion layer, and the cyan coupler-containing silver halide emulsion layer is situated in a position more distant from the support than

the magenta coupler-containing silver halide emulsion layer, and

wherein (a) a hydrophilic light-insensitive layer containing a compound represented by the following general formula (I) in the substantial absence of any ultraviolet absorbent is provided at a position underneath the cyan coupler-containing silver halide emulsion layer, (b) a hydrophilic light-insensitive layer containing an ultraviolet absorbent in the substantial absence of any compound represented by the following general formula (I) is provided above the cyan coupler-containing silver halide emulsion layer, and (c) silver halide grains contained in every emulsion layer have an average chloride content of at least 90 mol %; and wherein said color development is performed continuously with a color developing solution at a replenishment rate of at most 80 ml of replenisher per m^2 of silver halide color photographic material processed thereby;



(I)

(wherein R_{11} and R_{12} may be the same or different and each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, an acyl group, a cycloalkyl group, a sulfonic acid group, a halogen atom or a heterocyclic group; R_{13} and R_{14} may be the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a cycloalkyl group, an alkoxy group, an aryloxy group, an arylthio group, an acyl group, an alkylacylamino group, an arylacylamino group, an alkyl-carbamoyl group, an arylcarbamoyl group, an alkylsulfonamido group, an arylsulfonamido group, an alkylsulfamoyl group, an arylsulfamoyl group, an alkylsulfonyl group, an arylsulfonyl group, a nitro group, a cyano group, an alkyloxycarbonyl group, an aryloxycarbonyl group, an alkylacyloxy group or an arylacyloxy group; provided that at least one among R_{11}, R_{12}, R_{13} and R_{14} is not a hydrogen atom).

5,445,927

SILVER HALIDE PHOTOGRAPHIC INDUSTRIAL RADIOGRAPHY SUITABLE FOR VARIOUS PROCESSING APPLICATIONS

Raymond Florens, Edegem, and Pieter Perdieus, O.L.V.Waver, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 14, 1994, Ser. No. 227,629

Claims priority, application European Pat. Off., Apr. 27, 1993, 93201223

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—502 **7 Claims**

1. A photographic silver halide material for industrial radiography comprising a film support and on one or both sides thereof at least one emulsion layer containing non-spectrally, chemically sensitized silver chloride and at least one non-sensitive protective antistress coating characterised in that said at least one emulsion layer containing silver chloride further comprises at least one non-spectrally, chemically sensitized silver bromide and/or silver bromoiodide emulsion mixed with the said emulsion(s) containing chloride and/or has contiguous thereto at least one adjacent layer comprising silver bromide and/or bromoiodide emulsion crystals, the total amount by weight of the non-chloride containing emulsions, expressed as silver nitrate, corresponding to less than 75% of the totally coated amount of silver halide and in that the total ratio by weight of colloidal binder to silver halide (expressed as silver nitrate) of the silver halide emulsion layer(s) is from 3:10 to 6:10, the total amount of silver halide corresponds to from 6 g to 20 g of silver nitrate per square meter and per side and that the material has been forehardened to an extent such that when it is immersed in demineralised water of 25° C. for 3 minutes there is absorbed less than 2.5 g of water per gram of colloid binder.

5,445,928

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Arno Schmuck, Leichlingen; Edgar Draber, Odenthal, and Michael Miasfeldt, Bergisch Gladbach, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Jan. 6, 1994, Ser. No. 177,992

Claims priority, application Germany, Jan. 18, 1993, 43 01 105.5

Int. Cl.[6] G03C *1/08*

U.S. Cl. 430—508 **19 Claims**

1. A color photographic material comprising on a support, at least one red sensitive layer containing a cyan coupler and a red sensitizer, at least one green sensitive layer containing a magenta coupler and a green sensitizer and at least one blue sensitive layer containing a yellow coupler and a blue sensitizer characterized in that a silver halide emulsion is provided in a coupler-free layer sensitized with another spectral sensitizer (a gap sensitizer) of which the sensitization maximum lies between the sensitization maxima of the red- and green-sensitive layers or the green- and blue-sensitive layers.

5,445,929

VARIABLE CONTRAST BLACK AND WHITE PHOTOGRAPHIC SYSTEM

Vincent R. Brown, Rochester, and John R. Burdsall, II, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 828,332, Jan. 30, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,685

Int. Cl.[6] G03C *1/815*

U.S. Cl. 430—511 **7 Claims**

1. A variable contrast black and white photographic system comprising:

a) a photographic element comprising a support bearing a silver halide emulsion layer comprising grains having native sensitivity to the region of the spectrum between about 350 and 420 nm, at least some of the grains being spectrally sensitized to the region of the spectrum between about 490 and 550 nm, and

b) a yellow filter comprising a supported dye layer that transmits less than 1% of incident radiation in the region of the spectrum below about 454 nm.

5,445,930

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toru Harada, and Isuo Fujiwara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

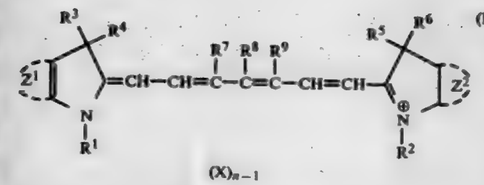
Continuation of Ser. No. 93,616, Jul. 20, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 329,672

Claims priority, application Japan, Jul. 22, 1992, 4-215702

Int. Cl.[6] G03C *1/12*

U.S. Cl. 430—588 **3 Claims**

1. A silver halide photographic material comprising a silver halide emulsion layer and a hydrophilic colloidal layer containing at least one dye represented by the following formula (III):



(III)

wherein Z^1 and Z^2 each represents a nonmetallic atom group necessary for forming a benzo condensed or naphtho condensed ring;

R^1, R^2, R^3, R^4, R^5 and R^6 each represents an alkyl group;

R^7 and R^9 each represents a hydrogen atom or a nonmetallic atom group necessary for forming a 5- or 6-membered ring by connecting to each other;

R^8 represents $—OR^{12}$, $—N(R^{12})(R^{13})$, or $—CH(R^{14})(R^{15})$; in which R^{12} represents an alkyl or aryl group substituted by an acidic substituent, R^{13} represents a hydrogen atom or an alkyl or aryl group substituted by an acidic substituent, and R^{14} and R^{15} each represents a cyano group, a carboxylic acid group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, a sulfonyl group or a sulfamoyl group, with the proviso that at least one of R^{14} and R^{15} contains an acidic substituent;

X represents an anion; and n represents an integer 1 or 2, with the proviso that when the dye forms an intramolecular salt, n is 1; and

wherein the dye contains at least four acidic substituents.

5,445,931

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Junichi Yamanouchi; Yutaka Tamura, and Yasuyuki Takagi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 66,199, May 25, 1993, abandoned. This application Aug. 3, 1994, Ser. No. 283,763

Claims priority, application Japan, May 26, 1992, 4-133922

Int. Cl.[6] G03C *1/047*

U.S. Cl. 430—627 **13 Claims**

1. A silver halide photographic material comprising, on a support, at least one silver halide layer and at least one hydrophilic colloid layer, wherein the hydrophilic colloid layer consists essentially of gelatin and a water-soluble polymer comprising at least one COOH-containing monomer or a salt thereof which is water-insoluble at a pH≦6 and water-soluble at a pH≧10,

wherein a polymer ratio of said water-soluble polymer to gelatin coated on one surface of said support, which has a value of 0.01 to 0.3, is represented by the following equation:

Polymer ratio = (amount of water-soluble polymer coated)/

(amount of water-soluble polymer coated + amount of gelatin coated).

5,445,932

METHOD FOR DETECTION OF A NEW MARKER ASSOCIATED WITH HEPATITIS DELTA VIRUS INFECTION

Howard A. Fields, Marietta; Yuri Khudyakov, and Michael Favorov, both of Atlanta, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Nov. 17, 1992, Ser. No. 976,358

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **7 Claims**

1. A method of predicting the clinical outcome of hepatitis delta virus (HDV) hepatitis, comprising detecting the presence of anti-HDAg' antibodies in a biological sample from a patient having HDV infection, wherein the presence of anti-HDAg' antibodies predicts a shortened lifespan in said patient.

5,445,933

STRAND DISPLACEMENT ASSAY AND COMPLEX USEFUL THEREFOR

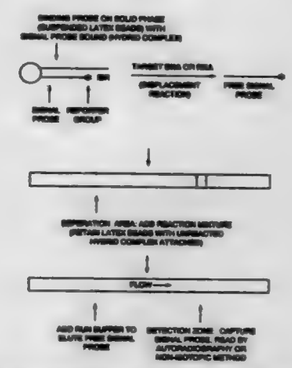
James S. Eadie, Indianapolis; Neil G. Balgobin, Carmel, both of Ind., and Harvey Buck, Weilheim, Germany, assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Sep. 15, 1992, Ser. No. 945,156

The portion of the term of this patent subsequent to Feb. 14, 2012, has been disclaimed.

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **7 Claims**



1. Method for determining presence of *Neisseria gonorrhea* in a sample, by detecting a target nucleotide sequence which is unique to *Neisseria gonorrhea* comprising: contacting said sample with a complex of

(a) a probe nucleotide sequence selected from the group consisting of SEQ ID NO: 4, the sequence complementary to SEQ ID NO:4, SEQ ID NO: 5, the sequence complementary to SEQ ID NO: 5, SEQ ID NO: 6, and the sequence complementary to SEQ ID NO: 6 said probe nucleotide sequence comprising a target binding region and

(b) a labelled nucleotide sequence, wherein said labelled nucleotide sequence is hybridized to at least a portion of said target binding region,

wherein said target nucleotide sequence unique to *Neisseria gonorrhea* binds to said probe nucleotide sequence to displace said labelled nucleotide sequence therefrom, and

(c) wherein the presence of displaced labelled nucleotide sequence in said sample is indicative of *Neisseria gonorrhea* in said sample.

5,445,934

ARRAY OF OLIGONUCLEOTIDES ON A SOLID SUBSTRATE

Stephen P. A. Fodor, Palo Alto, Calif.; Michael C. Pirrung, Durham, N.C.; J. Leighton Read, Palo Alto, and Lubert Stryer, Stanford, both of Calif., assignors to Affymax Technologies N.V., Curacao, Netherlands Antilles

Division of Ser. No. 850,356, Mar. 12, 1992, which is a division of Ser. No. 492,462, Mar. 7, 1990, Pat. No. 5,143,854, which is a continuation-in-part of Ser. No. 362,901, Jun. 7, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,646

Int. Cl.[6] C12Q *1/68*; G01N *33/543*

U.S. Cl. 435—6 10 Claims

1. A substrate with a surface comprising 10^3 or more groups of oligonucleotides with different, known sequences covalently attached to the surface in discrete known regions, said 10^3 or more groups of oligonucleotides occupying a total area of less than 1 cm^2 on said substrate, said groups of oligonucleotides having different nucleotide sequences.

5,445,935

QUANTITATIVE DETECTION OF MACROMOLECULES WITH FLUORESCENT OLIGONUCLEOTIDES

Catherine A. Royer, 424 Hillington Way, Madison, Wis. 53705

Filed Nov. 23, 1992, Ser. No. 980,283

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 10 Claims

1. A method for measuring the binding of a polynucleotide to a macromolecule to form a complex which comprises:

i) labelling said polynucleotide with a fluorescent label;

ii) obtaining a first measurement of the polarization of the fluorescent emission from said label;

iii) contacting said labelled polynucleotide with said macromolecule, under conditions such that the concentration of said labelled polynucleotide ranges from 10 picomolar to 1 nanomolar;

iv) obtaining a second measurement of the polarization of the fluorescent emission from said label;

v) comparing said first measurement with said second measurement; and

vi) detecting formation of said complex by observing an increase in the polarization measured in step (iv) compared to the polarization measured in step (ii);

wherein said measurements of fluorescence polarization are made using an apparatus having a component selected from the group consisting of an apparatus having a Xenon arc lamp light source and a UV grade film polarizer, an apparatus having a Xenon arc lamp light source coupled by a fiber optic cable to a sample compartment and a UV grade film polarizer mounted directly on the sample compartment, and an apparatus having a laser light source.

5,445,936

METHOD FOR NON-COMPETITIVE BINDING ASSAYS

Uri Piran, Sharon; William J. Riordan, Boston, and Laurie A. Livshin, Sharon, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Sep. 15, 1993, Ser. No. 121,806

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 11 Claims

1. A binding assay procedure for determination of an analyte, such procedure being conducted in one container, by

a. mixing the solution containing the analyte with a labeled specific binder which binds to a first binding site on the analyte to form an analyte-labeled specific binder complex,

b. contacting the solution from step a with one or more materials which comprise

1. a reagent which contains an insoluble material to which is attached an analyte derivative or an analyte mimic that binds the labeled specific binder that had not bound analyte to form an insoluble material—labeled specific binder complex and

2. a reagent that contains a second binder which binds to one portion of the analyte-labeled specific binder complex, such second binder being bound to a solid phase, such that the insoluble material, by binding to the labeled specific binder that had not bound analyte, inhibits the binding of the unreacted labeled specific binder to the solid phase,

c. measuring the label associated with the solid phase wherein said label is measured: (i) after separation of said solid phase from said insoluble material and the liquid components of the reaction mixture, (ii) without separation of said solid phase from said insoluble material and the liquid components of the reaction mixture in the case of a pseudohomogeneous assay format, or (iii) without separation of said solid phase from said insoluble material and the liquid components of the reaction mixture in the case of a sensor assay format and

d. determining the amount of analyte by comparing the amount of said label measured to that in a reference solution.

5,445,937

DETECTION OF ALZHEIMER'S DISEASE AND OTHER DISEASES USING AN IMPROVED PHOTOAFFINITY LABELING METHOD

Boyd E. Haley, Nicholasville, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Continuation-in-part of Ser. No. 812,826, Dec. 24, 1991, Pat. No. 5,272,055. This application Oct. 20, 1993, Ser. No. 138,109

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 21 Claims

1. A method for aiding in the diagnosis of Alzheimer's disease in a mammal, comprising:

a) contacting in the presence of micromolar levels of Mn^{2+} ion a cerebrospinal fluid sample which contains a nucleotide binding protein having an apparent M_r of about 42,000 daltons, wherein said protein is glutamine synthetase, with an effective amount of a labeled ATP- or GTP-analog photoaffinity-labeling reagent which specifically binds said nucleotide binding protein at the nucleotide binding site to photoaffinity label said nucleotide binding protein;

b) fractionating said cerebrospinal fluid sample to separate the photoaffinity-labeled nucleotide binding protein;

c) detecting the presence of the separated photoaffinity-labeled nucleotide protein; and

d) correlating the presence of the photoaffinity-labeled nucleotide binding protein to the presence of Alzheimer's disease.

5,445,938

ANTI-DCC GENE PRODUCT SPECIFIC MONOCLONAL ANTIBODY

Nobuo Hanai, Kanagawa; Shozo Baba, Shizuoka, and Tadashika Ozawa, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,809

Claims priority, application Japan, Jun. 25, 1992, 4-167101

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 1 Claim

1. A method of screening for the presence of cancer cells in a large bowel tissue sample comprising

contacting said sample with monoclonal antibodies, or binding fragments thereof, which are specifically reactive with a peptide encoded by a tumor suppressor gene DCC, wherein said antibodies are mouse monoclonal antibodies KM890 belonging to the IgG3 subclass, wherein said contacting is effected under conditions such that said monoclonal antibodies can bind to the peptide product of the tumor suppressor gene DCC present in said sample, elevated levels of the peptide product of the tumor suppressor gene DCC being associated with the presence of carcinoma of the large bowel, whereby a complex is formed, and

detecting the presence of said complex, the presence of said complex being indicative of the presence of cancer cells in said sample.

5,445,939

METHOD FOR ASSESSMENT OF THE MONONUCLEAR LEUKOCYTE IMMUNE SYSTEM

Jeffrey E. Anderson, 213 Farnwood Ln., LaPorte, Ind. 46350

Continuation of Ser. No. 751,620, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 415,905, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 895,754, Aug. 8, 1986, abandoned. This application Sep. 9, 1993, Ser. No. 144,481

Int. Cl.[6] C12Q *1/02*; G01N *33/50*

U.S. Cl. 435—7.24 30 Claims

1. A method for monitoring in vivo effect of an immunomodulating agent on a mammal comprising:

(a) culturing a sample of peripheral mononuclear cells from said mammal who has received said immunomodulating agent with a standard stimulus for up to 24 hours without the in vitro addition of an immunomodulating agent;

(b) measuring an aliquot of said cultured sample for the percentage of at least one subclass of mononuclear cells expressing activation antigen in vitro; and

(c) comparing said percentage with a predetermined level of said percentage as an indicator of said in-vivo effect of said immunomodulating agent on said mammal.

5,445,940

METHODS AND COMPOSITIONS FOR DETECTING AND TREATING A SUBSET OF HUMAN PATIENTS HAVING AN AUTOIMMUNE DISEASE

Michael B. Brenner, Sherborn, and Harout Der Simonian, Watertown, both of Mass., assignors to Brigham & Women's Hospital and Dana-Farber Cancer Institute, both of Boston, Mass.

Continuation-in-part of Ser. No. 750,906, Aug. 28, 1991, abandoned. This application Aug. 26, 1992, Ser. No. 936,267

Int. Cl.[6] C12Q *1/68*; G01N *33/564, 33/577*

U.S. Cl. 435—7.24 19 Claims

1. A method for detecting a subset of patients having adult rheumatoid arthritis, comprising the steps of:

(A) contacting a sample containing T lymphocytes obtained from a subject suspected of having rheumatoid arthritis with a Vα2.1-specific antibody, or fragment or derivative thereof reactive with an epitope of the gene product of the Vα12.1 variable region of the alpha chain of the T cell receptor for antigen so as to form a detectable complex between the Vα12.1-specific antibody, fragment or derivative and the Vα12.1+ T lymphocytes;

(B) contacting the sample with an anti-CD8 antibody that binds to a CD8 cell surface antigen, so as to form a detectable complex between the CD8+ T lymphocytes and the anti-CD8 antibody;

(C) detecting the binding of the Vα12.1 antibody, fragment, or derivative to the Vα12.1 gene product and detecting the binding of the anti-CD8 antibody to the CD8 cell surface antigen and determining the number of CD8+ T lymphocytes expressing Vα12.1; and

(D) comparing the number of CD8+ T lymphocytes determined in step (C) expressing the Vα12.1 gene product with the number of CD8+ T cells expressing the Vα12.1 gene product in a suitable base line sample,

wherein an increased percentage of CD8+ T lymphocytes expressing the Vα12.1 gene product (a Vα12.1 expansion) is diagnostic for rheumatoid arthritis (RA).

5,445,941

METHOD FOR SCREENING ANTI-OSTEOPOROSIS AGENTS

Na N. Yang, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 21, 1993, Ser. No. 81,610

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 5 Claims

1. A method of screening a multiplicity of compounds to identify a compound having potential as an anti-osteoporosis agent, the method comprising identifying a compound of the multiplicity that is capable of inducing transcription from a raloxifene responsive element of a mammalian promoter, that is not a non-specific transcription inducer, is not capable of inducing transcription from an estrogen-responsive element of a mammalian promoter and that is an anti-estrogenic or non-estrogenic compound, the method comprising the steps of:

(a) assaying for the ability of the compound to induce transcription from a raloxifene responsive element of the mammalian promoter;

(b) assaying for the inability of the compound to induce transcription from a mammalian promoter not having a raloxifene responsive element;

(c) assaying for the inability of the compound to induce transcription from an estrogen responsive mammalian promoter; and

(d) assaying for the ability of the compound to inhibit estrogen induction of transcription from an estrogen responsive mammalian promoter in the presence of estrogen.

5,445,942

AMPLIFICATION ASSAY FOR HYDROLASE ENZYMES

Brian R. Rabin, Potters Bar; Stuart Harbron, Berkhamsted; Hendrikus J. Eggelte, Brunswick Square; Michael R. Holloway, deceased, late of Brunswick Square, and Ann Holloway, legal representative, Surrey, all of United Kingdom, assignors to London Biotechnology Limited, London, Great Britain

Continuation of Ser. No. 646,711, Feb. 1, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 15,287

Claims priority, application United Kingdom, Aug. 2, 1988, 8818336; Mar. 8, 1989, 8905347

Int. Cl.[6] C12Q *1/34, 1/28*; C07H *19/06*

U.S. Cl. 435—18 25 Claims

1. A method of detecting a hydrolase enzyme which comprises combining a sample suspected of containing said hydrolase enzyme with a flavin adenine dinucleotide (FAD) substituted with a substituent or an analog of an FAD substituted with a substituent to hydrolytically remove said substituent to form an FAD or FAD analog when said hydrolase enzyme is present in said sample, combining said FAD or FAD analog with an apoenzyme to form a holoenzyme, and combining said holoenzyme with a substrate for said holoenzyme to produce a detectable product.

5,445,943

METHOD FOR THE COLORIMETRIC DETERMINATION OF AN ANALYTE BY MEANS OF BENZYL ALCOHOL DEHYDROGENASE AND A CHROMOGENIC REDOX INDICATOR

Joachim Hoenes, Zwingenberg, Germany, assignor to Boehringer Manheim GmbH, Mannheim, Germany

Filed Apr. 8, 1994, Ser. No. 225,722

Claims priority, application Germany, Apr. 8, 1993, 43 11 460.1

Int. Cl.[6] C12Q *1/26*

U.S. Cl. 435—26 26 Claims

1. A method for the colorimetric determination of NAD(P)H or an analyte which forms NAD(P)H, comprising the steps of

a) reacting NAD(P)H with benzyl alcohol dehydrogenase in the presence of a nitrosoaniline compound of the formula I:



I

wherein said nitrosoaniline compound is an electron acceptor,

b) enzymatically reducing the nitrosoaniline compound to a colored quinone diimiine, and

c) measuring any color produced as an indication of the amount of NAD(P)H,

wherein

R^1 is selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, alkylthio or arylthio, an alkyl or alkylene which is unsubstituted or substituted by carboxy, PO_3H_2, dialkylphosphinyl or SO_3H, and an amino which is unsubstituted or substituted once or twice by an alkyl which in turn can be unsubstituted or substituted by hydroxy, PO_3H_2, SO_3H or carboxy, and

R is a residue which produces a color by electron conjugation with a quinone diimiine system.

5,445,944

METHODS FOR DETERMINING PEROXIDATELY ACTIVE SUBSTANCES

Edwin F. Ullman, Atherton, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 923,080, Jul. 31, 1992, Pat. No. 5,332,662. This application Apr. 22, 1994, Ser. No. 231,079

Int. Cl.[6] C12Q *1/28*; G01N *33/542, 33/536*

U.S. Cl. 435—28 **15 Claims**

1. A method for determining a peroxidatively active substance (PAS) in a sample or medium suspected of containing said PAS which comprises the step of detecting a fluorescent signal produced upon cleavage of a compound of the formula F-L-Q, wherein F is a fluorescer capable of producing said signal, and is contained in a moiety selected from the group consisting of fluorescein, rhodamine, acridine, rosamine, naphthylamine, coumarin, benzoxazole, benzoxdiazole, anthracene, merocyanine, and perylene moieties; Q is a quencher capable of quenching said signal when linked to F, and is contained in a moiety selected from the group consisting of aniline, phenol, and thiophenol moieties; and L is a bond, or a linking group having a bond, and is contained in a functional group selected from the group consisting of ethers, thioethers, disulfides, esters, amides, and carbonates; wherein said bond is capable of being cleaved by an oxidation-reduction reaction of said PAS with a substrate of said PAS and a hydrogen donor wherein said cleavage of said bond substantially reduces said quenching.

5,445,945

METHODS OF REGENERATING METALWORKING FLUIDS WITH CHELATING AGENTS

Peter H. Drechsler, New Britain, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Feb. 28, 1994, Ser. No. 203,154

Int. Cl.[6] B21B *45/02*; C12Q *1/02*

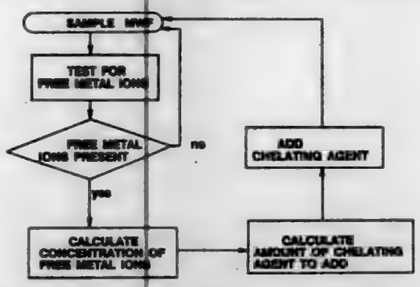
U.S. Cl. 435—29 **35 Claims**

1. A method for reducing the presence of at least one detrimental microbe in a metalworking fluid (MWF), comprising:

(A) testing a metalworking fluid for the presence of said at least one microbe and the presence of at least one type of free metal ion in solution;

(B) determining the concentration of said free metal ion in solution in said metalworking fluid; and

(C) when said at least one microbe and said at least one metal ion are both present, adding to said metalworking fluid an



amount of a chelating agent effective to sequester said free metal ion.

5,445,946

INTRAVACUOLAR STAINS FOR YEAST AND OTHER FUNGI

Bruce L. Roth, Corvallis; Paul J. Millard, Eugene; Stephen T. Yue, Eugene, and Richard P. Haugland, Eugene, all of Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Continuation-in-part of Ser. No. 90,890, Jul. 12, 1993, which is a continuation-in-part of Ser. No. 47,683, Apr. 13, 1993, abandoned. This application Mar. 3, 1994, Ser. No. 206,081

Int. Cl.[6] C12Q *1/04, 1/02, 1/68*; C07H *17/00*

U.S. Cl. 435—34 **35 Claims**

1. A method of forming distinctive intravacuolar structures in fungal cells comprising:

a) combining a sample that contains fungal cells with a staining solution comprising a dye of the formula

wherein

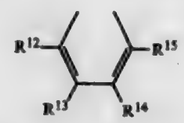
each R^1 is independently H; or an alkyl group having from 1–6 carbons; or a trifluoromethyl; or a halogen; or —OR^6, —SR^6 or —NR^6R^7 where R^6 and R^7, which can be the same or different, are independently H; or alkyl groups having 1–6 carbons; or 1–2 alicyclic, heteroalicyclic, aromatic or heteroaromatic rings, containing 1–6 heteroatoms, wherein the heteroatoms are O, N or S; or R^6 and R7 taken in combination are —$(CH_2)_2$—M—$(CH_2)_2$— where

M=a single bond, —O—, —CH_2—, or —NR^8—where R^8 is H or an alkyl group having 1–6 carbons; and t=1–4;

R^2 is an alkyl group having 1–6 carbons;

X is O, S, Se or NR^9, where R^9 is H or an alkyl group having 1–6 carbons; or X is $CR^{10}R^{11}$ where R^{10} and R^{11}, which may be the same or different, are independently alkyl groups having 1–6 carbons, or R^{10} and R^{11} taken in combination complete a five or six membered saturated ring;

R^3, R^4 and R^5, which may be the same or different, are independently H; or an alkyl, alkenyl, polyalkenyl, alkynyl or polyalkynyl group having 1–6 carbons; or a halogen; or —OR^6, —SR^6 or —(NR^6R^7); or R^4 and R^5, taken in combination, have the formula



forming a quinolinium ring system; wherein

R^{12}, R^{13}, R^{14} and R^{15} are independently H; or an alkyl, alkenyl, polyalkenyl, alkynyl or polyalkynyl group having 1–6 carbons; or a halogen; or —OR^6, —SR^6 or —(NR^6R^7);

Z^- is a biologically compatible counterion;

L is Cl, Br, I, F, or —OSO_2R^{16} where R^{16} is alkyl having 1–6 carbons, or perfluoroalkyl having 1–6 carbons, or aryl; and

OMEGA is a cyclic substituent that has a total of 2–16 ring carbon atoms in 1–2 alicyclic, heteroalicyclic, aromatic, or heteroaromatic rings, containing 1–4 heteroatoms wherein the heteroatoms are O, N or S, that is unsubstituted or optionally substituted one or more times, independently, by halogen, alkyl, perfluoroalkyl, amino, alkylamino, dialkylamino, or alkoxy, having 1–6 carbons;

where the dye is present in an amount sufficient to give a distinctive intravacuolar structure or structures; and

b) allowing sufficient time for the dye to combine with one or more cells in the sample and form the distinctive intravacuolar structure or structures.

5,445,947

JOJOBA WAX BIOSYNTHESIS GENE

James G. Metz, Davis; Kathryn D. Lardizabal, Woodland, and Michael W. Lassner, Davis, all of Calif., assignors to Calgene Inc., Davis, Calif.

Continuation-in-part of Ser. No. 796,256, Nov. 20, 1991, abandoned, and a continuation-in-part of Ser. No. 933,411, Aug. 21, 1992, abandoned. This application May 20, 1993, Ser. No. 66,299

Int. Cl.[6] C12P *1/04, 7/64*; A01M *1/00*; C12N *15/05*

U.S. Cl. 435—69.1 **10 Claims**

1. A recombinant DNA construct comprising a nucleic acid sequence which encodes the protein sequence provided in FIG. 2 (SEQ ID NO: 10) or 3 (SEQ ID NO: 11) and a heterologous DNA sequence not naturally associated with said protein encoding sequence.

5,445,948

PROCESS FOR CULTURING RECOMBINANT CELLS

Norio Shimizu; Shinichi Fukuzono, both of Hitachi; Nobuko Nishimura, Katsuta; Kiyoshi Fujimori, and Yoji Odawara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 918,337, Oct. 14, 1986, abandoned. This application Sep. 21, 1993, Ser. No. 124,075

Claims priority, application Japan, Oct. 14, 1985, 60-226785

Int. Cl.[6] C12P *21/00*; C12N *15/71, 15/03*

U.S. Cl. 435—69.7 **4 Claims**

1. A process for producing a desired protein by culturing a transformed *E. coli*, containing exogenous DNA comprising a trp promotor which regulates expression of an exogenous gene encoding a desired protein wherein expression of said gene is inhibited by acetic acid, which comprises the sequential steps of:

(a) growing the transformed *E. coli* in a culture broth without inducing expression of the exogenous gene encoding the desired protein, monitoring acetic acid concentration and allowing acetic acid to accumulate to less than 17 g/l;

(b) maintaining the concentration of acetic acid during the growing step at less than 17 g/l by removing acetic acid from the culture broth or diluting the culture broth to an acetic acid concentration of less than 17 g/l;

(c) reducing the concentration of acetic acid to less than 3 g/l by removing acetic acid from the culture broth or diluting the culture medium, to below the acetic acid concentration maintained above;

(d) adding both an agent inducing expression of the gene encoding the desired protein, and, nutrient into the culture broth to produce the desired protein;

(e) maintaining the concentration of acetic acid in step (c) above in the culture broth at less than 3 g/l; and

(f) recovering the desired protein.

5,445,949

LARGE SCALE SEPARATION AND PURIFICATION OF FERMENTATION PRODUCT

Frans Koster, Delft, and Jos J. P. Webbers, Maasluis, both of Netherlands, assignors to Gist-Brocades N.V., Netherlands

Continuation-in-part of Ser. No. 64,719, May 18, 1993. This application Oct. 20, 1994, Ser. No. 326,315

Claims priority, application European Pat. Off., May 19, 1992, 92201435

Int. Cl.[6] C12N *9/30, 9/00*; C12P *21/06*

U.S. Cl. 435—71.1 **19 Claims**

1. A method of separating a hydrophobic fermentation product selected from the group consisting of lipase, esterase, endoxylanase and an antibiotic from a mixture comprising said product and contaminants which method comprises adding to the mixture sequentially

(1) 0.5 to 15% (w/v) of a nonionic surfactant,

(2) 0.5 to 60 mg of a flocculating agent per gram of said mixture,

(3) 1 to 20% (w/v) of an extra nonionic surfactant,

(4) a suitable K, Na, NH_4 or Mg salt selected from the group consisting of chlorides, sulfates, acetates, carbonates or phosphates, whereby the concentration of the salt is chosen so as to have the surfactant layer on top and is between 2 and 30%;

to obtain a three phase product mixture, separating the product mixture into liquid-liquid-solid fractions and recovering the hydrophobic fermentation product.

5,445,950

METHOD OF USING α-AMYLASE TO PREPARE SLIGHTLY DECOMPOSED STARCH GRANULES HAVING LOW VISCOSITY

Shoichi Kobayashi, Tsuchiura; Shoji Miwa, and Wakako Tsuzuki, both of Tsukuba, all of Japan, assignors to Director of National Food Research Institute Ministry of Agriculture, Forestry and Fisheries, Tsukuba, Japan

Continuation of Ser. No. 122,135, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 936,892, Aug. 27, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 349,478

Claims priority, application Japan, Oct. 31, 1991, 3-311509

Int. Cl.[6] C12P *19/14, 19/04*

U.S. Cl. 435—99 **7 Claims**

1. A method of producing corn starch granules having a decomposition percentage of 0.1 to 1.0% which comprises contacting corn raw starch granules with an α-amylase in water or a buffer solution at a temperature of 10° to 65° C. for 1 to 4 hours, to obtain said starch granules having said decomposition percentage.

5,445,951

REGIOSELECTIVE ENZYMATIC DEACYLATION OF SUCROSE ESTERS IN ANHYDROUS ORGANIC MEDIA

David C. Palmer, Clinton, N.J., and Fernand Terradas, Evian-les-Bians, France, assignors to McNeil-PPC, Inc., Milltown, N.J.

Continuation-in-part of Ser. No. 12,182, Feb. 2, 1993, abandoned. This application Oct. 7, 1993, Ser. No. 133,725
Int. Cl.[6] C12P *19/12*
U.S. Cl. 435—100 35 Claims

1. A process for the preparation of partially acylated derivatives of sucrose by the enzyme catalyzed deacylation of sucrose esters having at least 6 ester groups, wherein said process comprises treating a sucrose ester selected from the group consisting of sucrose octaacylate, sucrose heptaacylate and sucrose hexaacylate in a reaction medium comprising an organic solvent capable of dissolving the sucrose ester, with a hydrolytic enzyme or combination of hydrolytic enzymes capable of catalyzing the deacylation of said sucrose ester to produce a partially deacylated sucrose derivative having at least one more free hydroxyl group than the starting sucrose ester in a preselected position or positions, and recovering the resulting partially deacylated sucrose derivative, wherein, excluding water bound to said enzyme, said reaction medium contains not more than about 1 volume percent water, based on the volume of said organic solvent, provided that when said organic solvent is a water-immiscible compound, said reaction medium is monophasic.

5,445,952

METHOD TO PRODUCE BIOTIN

John W. Campbell; Alex Cheung, both of Fort Collins, and Christina K. Eddy, Loveland, all of Colo., assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 22, 1993, Ser. No. 7,559
Int. Cl.[6] C12P *17/10, 21/06;* C12N *1/20;* C07H *19/00*
U.S. Cl. 435—121 3 Claims

2. A method to produce biotin comprising:

(a) transforming an *Escherichia coli* cell with an *Escherichia coli* fabD gene, an *Escherichia coli* bioA gene, an *Escherichia coli* bioB gene, an *Escherichia coli* bioC gene, an *Escherichia coli* bioD gene, an *Escherichia coli* bioE gene, and an *Escherichia coli* bioF gene;

(b) culturing said transformed cell in an effective medium; and

(c) recovering biotin produced thereby.

5,445,953

DIRECT MOLECULAR CLONING OF A MODIFIED *POXVIRUS GENOME*

Friedrich Dorner, Vienna; Friedrich Scheiflinger, Orth/Donau, and Falko G. Falkner, Mannsdorf, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

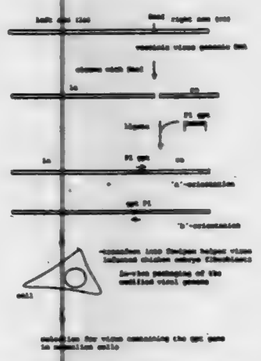
Filed Aug. 26, 1991, Ser. No. 750,080
Int. Cl.[6] C12N *15/09, 7/01, 15/64, 15/86*
U.S. Cl. 435—172.3 26 Claims

1. A method for producing a modified chordopoxvirus by direct molecular cloning of a modified chordopox viral genome, wherein said method comprises the steps of

(I) modifying under extracellular conditions a purified DNA molecule comprising a first genome of a first chordopoxvirus to produce a modified DNA molecule comprising said modified viral genome;

(II) infecting a first host cell with a second chordopoxvirus that is not from the same genus as said first chordopoxvirus, said second chordopoxvirus comprising a second viral genome which is expressed to package said modified first viral genome into infectious virions;

(III) introducing said modified DNA molecule into said first host cell, which packages said modified viral genome into infectious virions; and



(IV) recovering from said first host cell infectious virions comprised of said modified viral genome.

5,445,954

SYSTEM FOR AUTOMATIC GENE AMPLIFICATION AND EXPRESSION

Ru C. Huang, and Paul E. Giza, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 356,299, May 24, 1989, abandoned. This application Feb. 11, 1993, Ser. No. 16,188
Int. Cl.[6] C12N *15/70, 15/74, 15/69*
U.S. Cl. 435—252.33 4 Claims

1. A genetic expression system comprising:

a first independently replicating element which includes

a site for insertion of a gene to be expressed wherein expression of said gene is under the control of a negatively regulated promoter, and

a selectable marker for maintenance of said first independently replicating element in a host cell,

wherein said first element exhibits a runaway-replication phenotype that is suppressed by a diffusible factor; and

a second independently replicating element which includes

a gene that expresses said diffusible factor that suppresses said runaway-replication phenotype of said first element, and

a selectable marker for maintenance of said second element in said host cell that is different from said marker of said first element; and

a gene that expresses a repressor of said negatively regulated promoter, said repressor gene being located on a genome other than said first element

wherein said first independently replicating element is selected from the two plasmids pPGtrpRopAp or pPGtrpRopTc, wherein said site for insertion of a gene that is included in the said first element contains a gene to be expressed, and

wherein said second independently replicating element is the other of said two plasmids, pPGtrpRopAp or pPGtrpRopTc, selected as said first independently replicating element wherein the Rop encoding gene is intact.

5,445,955

IMMOBILIZATION OF LIPASE ON A POLYMER CARRIER CONTAINING EPOXY AND TERTIARY AMINO GROUPS

Yuzo Ikuta, Yokosuka; Satoshi Tashiro, Yokohama; Yoshiyuki Hatano, Yokohama; Tadasu Fujita, Yokohama; Noboru Andoh, Yokohama; Sachio Asaoka, Yokohama; Haruto Kobayashi, Yokohama, and Takeshi Minami, Yokohama, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo and Chiyoda Corporation, Yokohama, both of Japan

Filed May 24, 1993, Ser. No. 65,496
Claims priority, application Japan, May 25, 1992, 4-132475
Int. Cl.[6] C12N *11/08, 11/06, 9/20;* C12P *7/64*
U.S. Cl. 435—180 15 Claims

1. An immobilized lipase for transesterification of a fat which comprises a lipase from a microorganism genus selected from the group consisting of Rhizopus, Mucor, Alcaligenes and Candida and immobilized on the surface of a carrier comprising a hydrophobic, insoluble organic polymer having pores of an average diameter of 10 nm or larger, and tertiary amino groups and epoxy groups on the surface thereof.

6. An immobilized lipase that comprises phospholipase A_2 or a lipase from a microorganism genus selected from the group consisting of Rhizopus, Mucor, Alcaligenes and Candida, which has been immobilized on the surface of a polymer carrier in an aqueous solution, wherein said polymer carrier has an epoxy group and a tertiary amino group on the surface thereof.

5,445,956

RECOMBINANT SOLUBLE EPOXIDE HYDROLASE

Bruce D. Hammock; David F. Grant, and Jeffrey K. Beetham, all of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 13, 1993, Ser. No. 106,761
Int. Cl.[6] C12N *9/14, 15/55*
U.S. Cl. 435—195 22 Claims

1. An isolated DNA sequence encoding a human soluble epoxide hydrolase of about 62,640 daltons, wherein said human soluble epoxide hydrolase catalyzes the hydrolysis of an epoxide, said sequence specifically hybridizing to Seq. ID No.: 1 and its corresponding gene under stringent conditions, said hybridization taking place in the presence of a human DNA sequence library.

5,445,957

ENZYME FOOD SUPPLEMENT COMPOSITION CONTAINING BETA-FRUCTOFURANOSIDASE, CELLULASE AND HEMICELLULASE

Rodger R. Rohde, Jr., Wayne, N.J.; Edward F. Schuler, Keewick, Va., and Richard A. Haudel, Ridgewood, N.J., assignors to Triarco Industries, Inc., Paterson, N.J.

Division of Ser. No. 194,712, Feb. 10, 1994, abandoned. This application Dec. 5, 1994, Ser. No. 352,703
Int. Cl.[6] C12N *9/24, 9/42, 9/20, 9/62*
U.S. Cl. 435—200 10 Claims

1. An enzyme food supplement composition, which alleviates gastrointestinal distress caused by ingested food containing oligosaccharides, said composition comprising at least about 25,000 Sumner units per gram of said composition of a beta-fructofuranosidase, at least about 12,000 Filter Paper Units per gram of said composition of a cellulase and at least about 250 Hemicellulase Units per gram of said composition of a hemicellulase.

5,445,958

PROCESS FOR PURIFYING BLOOD CLOTTING FACTORS

Peter A. Feldman, Oxford, England, assignor to National Blood Authority, Hertfordshire, England

Continuation of Ser. No. 476,454, Jul. 20, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 24,113
Claims priority, application United Kingdom, Dec. 22, 1987, 8729822
Int. Cl.[6] C12N *9/74;* C07K *14/745, 1/18*
U.S. Cl. 435—214 20 Claims

1. A method for producing a composition enriched in a vitamin K-dependent blood clotting factor from a non-enriched composition containing at least one such factor, which comprises contacting said non-enriched composition to adsorb said non-enriched composition onto a copper chelate adsorbent comprising an inert support carrying Cu^{2+} ions chelated with iminiodiacetic acid groups attached to the support via spacer chains, said spacer chains being carbohydrate chains or linear hydrocarbon chains and optionally substituted with hydroxyl groups and having up to two oxygen atoms in the chain, said spacer chains having up to 16 atoms in the chain between the inert support and the iminodiacetic acid group, and eluting to recover an adsorbed fraction from said copper chelate adsorbed which is enriched in said vitamin K-dependent factor.

5,445,959

ENZYME FROM MICROBIAL SOURCE: PHTHALYL AMIDASE

Barbara S. Briggs, Indianapolis, and Milton J. Zmijewski, Jr., Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 15, 1994, Ser. No. 275,488
Int. Cl.[6] C12N *9/78, 9/80*
U.S. Cl. 435—228 5 Claims

1. An isolated phthalyl amidase enzyme that has the following properties:

a) Reactivity: said enzyme catalyzes the removal of the phthalyl group from phthalyl amides generating phthalate and an amine;

b) Substrate specificity: said enzyme hydrolyzes phthalylated amino acids, peptides, beta-lactams, aromatic and aliphatic amines; substitutions allowed on the phthalyl group include 6—F, 6—NH_2, 3—OH, and a nitrogen in the aromatic ring ortho to the carboxyl group attached to the amine;

c) Reactive pH range: 5.5 to 9.0, with optimum pH of 8.0±0.4;

d) Reactive temperature range: 10° to 50° C., with optimum temperature of 30° C.±4° C. at pH 8.0;

e) Temperature stability: At 200 mM buffer, 80% of enzyme activity retained at 35° C. for 48 hours;

f) Influence of effectors: Iodoacetate, p-HMB, and Cu^{++} exert inhibitory activity;

g) Molecular weight: approximately 49,900 daltons;

h) Subunits: one;

i) K_m: 0.9 mM in 50 mM potassium phosphate buffer, 30° C., pH 8.0, when phthalamido carbacephem is the substrate.

5,445,960

MONOCLONAL ANTIBODIES SPECIFIC FOR HIV AND HYBRIDOMAS FOR THEIR PRODUCTION

Yasuhiko Masuho, Tokyo, Japan; Toru Sugano, Tokyo, Japan; Yoh-Ichi Matsumoto, Tokyo, Japan; Evan M. Herah, Tucson, Ariz.; Eskild A. Petersen, Tucson, Ariz.; Douglas Lake, Tucson, Ariz., and Takashi Kawamura, Tokyo, Japan, assignors to The Arizona Board of Regents on behalf of the University of Arizona, Tucson, Ariz. and Teijin Limited, Osaka, Japan

Continuation of Ser. No. 342,899, Apr. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 176,159, Mar. 31, 1988, Pat. No. 5,296,419. This application May 24, 1993, Ser. No. 65,522

Int. Cl.[6] C12N *5/24*; C07K *15/28*

U.S. Cl. 435—240.27 3 Claims

1. A hybridoma having all of the identifying characteristics of ATCC accession no. HB10074.

5,445,961

ISOLATED MICROSCOPE AND ANTHER CULTURE OF MAIZE

Anthony D. Genovesi, Sycamore, and Richard A. Yingling, DeKalb, both of Ill., assignors to DeKalb Genetics Corporation, DeKalb, Ill.

Continuation-in-part of Ser. No. 543,957, Jun. 26, 1990, abandoned. This application Dec. 18, 1992, Ser. No. 992,637

The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.

Int. Cl.[6] A01H *4/00*

U.S. Cl. 435—240.5 14 Claims

1. A method for producing a corn plant, said method comprising the steps of:

(a) preculturing a corn plant composition that contains microspores at a temperature of from about 8° C. to about 14° C. in a preculture medium comprising a sugar alcohol and colchicine;

(b) isolating the microspores in an isolating medium to produce isolated, viable microspores;

(c) placing said microspores on a porous support situated on the surface of an embryoid/callus promoting medium that contains maltose to obtain embryoids or calli; and

(d) regenerating a plant from the embryoids or calli.

11. A method for producing a corn plant, said method comprising the steps of:

(a) preculturing a corn plant composition that contains anthers in a preculture medium under conditions that include a temperature of from 8° C. to about 14° C., a sugar alcohol in the preculture medium, and colchicine in the preculture medium;

(b) culturing the anthers in a callus/embryoid promoting medium that contains maltose to obtain embryoids or calli; and

(c) regenerating a plant from the embryoids or calli.

5,445,962

NEW MICROORGANISMS

Yousef H. Atallah, 411 Helena Ave., Mt. Prospect, Ill. 60056; Robert G. Butz, 280 Springhill Dr. - Apt. 212, Roselle, Ill. 60172, and James P. Krueger, 14527 S. Clifton Park, Midlothian, Ill. 60445

Filed Aug. 5, 1988, Ser. No. 229,035

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.1 4 Claims

1. A biologically pure culture of at least one bacterial microorganism characterized by appearing as short rounded rods and capable of growing in sterile aqueous media in the presence of 3,6-dichloro-o-anisic acid as essentially the sole carbon source and being selected from the group consisting of ATCC 53539, ATCC 53540, ATCC 53541 and mutants thereof.

5,445,963

ALCOHOL-ESTER SEPARATION BY RECRYSTALLIZATION

Neil W. Boaz, Waterloo, N.Y., assignor to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 501,570, Mar. 30, 1990, abandoned. This application Feb. 26, 1991, Ser. No. 660,830

Int. Cl.[6] C12P *41/00*

U.S. Cl. 435—280 8 Claims

1. A process for the separation of an enantiomerically enriched 1-tosyloxy-2-acyloxy-3-butene and an enantiomerically enriched 1-tosyloxy-2-hydroxy-3-butene from a first mixture containing both compounds, said process including the steps of:

(a) forming a solution of said mixture in an organic solvent;

(b) bringing the solution formed in (a) to a temperature wherein most of the enantiomerically enriched 1-tosyloxy-2-hydroxy-3-butene precipitates, leaving in solution most of the enantiomerically enriched 1-tosyloxy-2-acyloxy-3-butene; and

(c) separating the precipitate formed in (b) from said solution.

5,445,964

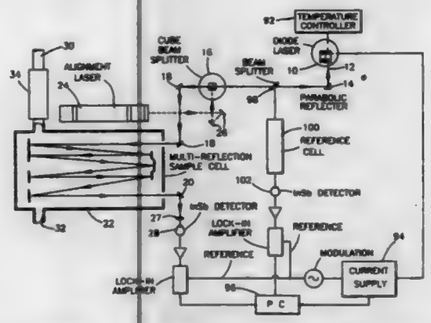
DYNAMIC ENGINE OIL AND FUEL CONSUMPTION MEASUREMENTS USING TUNABLE DIODE LASER SPECTROSCOPY

Peter S. Lee, 1590 Martinique Dr., Troy, Mich. 48084; Joseph A. Vitale, Jr., 52500 Southdown, Shelby Township, Macomb County, Mich. 48316, and Richard F. Majkowski, 155 N. Harbor Dr., Chicago, Ill. 60601

Filed May 11, 1994, Ser. No. 241,421

Int. Cl.[6] G01N *21/61*

U.S. Cl. 436—60 12 Claims



1. A method for evaluating fuel and engine oil consumption on a near real-time basis in an internal combustion engine, the method comprising the steps of:

treating the fuel or engine oil with a nonradioactive tracer compound either in its natural isotopic abundance or enriched, the nonradioactive tracer compound being one or more compounds selected from the group consisting of organobromine compounds and organochlorine compounds, such that the exhaust gas of the internal combustion engine contains a tracer compound comprising a tracer isotopic specie;

continuously flowing an exhaust gas sample from the internal combustion engine through a sample line in which the exhaust gas sample is rapidly expanded so as to attain a reduced pressure and in which the exhaust gas sample is heated so as to substantially prevent water vapor present in the exhaust gas from condensing while the exhaust gas is at the reduced pressure;

maintaining the exhaust gas sample at the reduced pressure within a sample cell downstream of the sample line, the sample line causing the dew point of the exhaust gas sample to be sufficiently low so as to allow the sample cell to be operated at approximately room temperature and so as to enable the tracer compound and water vapor to coexist within the sample cell, such that a distinction between an absorption line of the tracer isotopic specie and the absorption lines of related isotopic species is discernible; and

transmitting monochromatic radiation through the exhaust gas sample in the sample cell at the frequency of an absorption line for the tracer isotopic specie, while concurrently detecting the intensity of a spectral line for the tracer isotopic specie so as to determine fuel and engine oil consumption in the internal combustion engine on a near real-time basis.

5,445,965

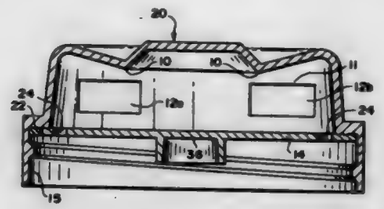
PROCESS AND APPARATUS FOR TESTING FOR SUBSTANCES IN LIQUIDS

Marcia J. Stone, Wellesley, Mass., assignor to Hybrivet Systems, Inc., Natick, Mass.

Continuation of Ser. No. 2,834, Jan. 15, 1993, abandoned. This application Jun. 8, 1994, Ser. No. 257,430

Int. Cl.[6] G01N *33/20*

U.S. Cl. 436—81 26 Claims



23. A method of detecting a substance in a sample, comprising the steps of:

placing a sample in a container;

providing in a cap for the container a crushable capsule containing a reagent that forms a visible reaction when exposed to the substance;

providing a solution which is not dissolvable in the sample and in which the reagent will dissolve in a second crushable capsule in the cap of the container, and dissolving the reagent in the solution so as to concentrate the reagent in a bubble of the solution within the sample;

closing the container with the cap; and

exposing the reagent to the sample by crushing the capsules after the cap is put on the container; and

observing the bubble for an indication of a reaction between the reagent and the substance.

5,445,966

EXTRACTIVE HYDROGENATION FOR CHEMICAL ANALYSES

Roger W. Giese, Quincy, and Mohammed S. Itani, Winthrop, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Apr. 20, 1993, Ser. No. 49,278

Int. Cl.[6] G01N *30/00*

U.S. Cl. 436—159 26 Claims

1. A process for chemical analysis of organic matter comprising the steps of:

providing an aqueous sample containing organic matter;

thoroughly decomposing said aqueous sample in a hydrogenation reaction in the presence of a hydrogenation catalyst, which catalyst comprises palladium metal on a solid nonpolar adsorbent material into products, said products comprising polar products and nonpolar products, said solid nonpolar adsorbent material adsorbing at least one of said nonpolar products;

recovering said solid nonpolar adsorbent material containing said at least one adsorbed nonpolar product;

extracting said at least one adsorbed nonpolar product from said nonpolar solid adsorbent material;

recovering said at least one adsorbed nonpolar product separately from the bulk of the nonadsorbed products; and

detecting said at least one adsorbed nonpolar product.

5,445,967

METHOD FOR ANALYZING A COMPONENT OF A LIQUID SAMPLE

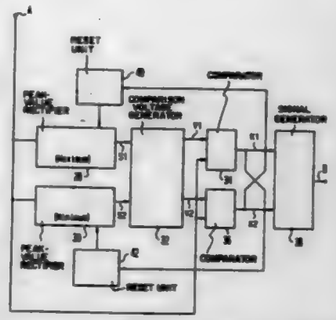
Klaus Deuter, Freising, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 889,334, May 28, 1992, abandoned. This application Oct. 7, 1994, Ser. No. 319,477

Claims priority, application Germany, May 31, 1991, 41 17 847.5

Int. Cl.[6] G01N *21/00, 21/75, 31/22*

U.S. Cl. 436—164 19 Claims



16. A test-strip analyzer for analyzing a component of a liquid sample, said test-strip analyzer comprising:

a test-strip containing reagents which react with said component of the liquid sample, the reaction between the reagents and the component resulting in a physically detectable change;

a code substrate including a binary valuation code having bright and dark zones along at least one track thereof and arrayed according to a predetermined symbols code;

a valuation device for detecting the physically detectable change, analyzing the component of the liquid sample of the test-strip and for reading the code substrate, said valuation device including a test-strip seat to position the test-strip into a measurement position to thereby measure the physically detectable change, and to generate a measurement signal, said valuation device comprising

a code reader to read the valuation code contained on the code substrate, and computation means to compute an analytical result from the measurement signal;

an optical-electrical transducer for generating a binary signal as a result of a relative motion between the code substrate and the transducer;

circuit means for providing an output voltage from the optical transducer to a maximum peak voltage rectifier and to a minimum peak voltage rectifier, said circuit means thereby determining the respective maximum peak voltage of the output voltage when reading a bright zone and the respective minimum peak voltage when reading a dark zone, said circuit means providing the peak voltages to a comparison voltage generator thereof, said comparison voltage generator generating first and second comparison voltages from the difference between successive maximum and minimum voltages and providing said first and second comparison voltages to first and second comparators disposed therein, said first and second comparators comparing

the first and second comparison voltages with the output voltage, and generating a binary signal as a function of the comparison,

wherein the binary signal contains the information to be analyzed, and wherein the first comparison voltage is less by a predetermined first fraction of the difference than the maximum peak voltage and the second comparison voltage is larger by a predetermined second fraction of the difference than the minimum peak voltage, said circuit means providing a first and second reset component to reset the maximum and minimum peak voltages to a present value of the output voltage as a function of the binary signal output from the second and first comparators, respectively.

5,445,968

PURIFICATION OF HUMAN CHORIONIC GONADOTROPIN β-CORE MOLECULE AND PREPARATION OF ANTIBODIES WITH SPECIFICITY FOR SAME

Diana Blithe, Silver Spring, Md.; Robert E. Wehmann, Brooklyn, N.Y., and Bruce C. Nisula, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 292,985, Jan. 3, 1989, abandoned. This application Nov. 12, 1991, Ser. No. 789,835

Int. Cl.[6] C07K *16/26*; G01N *33/531*

U.S. Cl. 436—510 **19 Claims**

7. A method for detecting chorionic gonadotropin β-core molecules in a biological sample comprising the steps of:

(i) contacting said sample with an antibody capable of binding to said β-core molecule and not substantially cross-reactive with chorionic gonadotropin and the β-subunit thereof under conditions such that complexation between said β-core molecules and said antibody occurs; and

(ii) detecting the presence of said complex between said antibody and said β-core molecules.

5,445,969

METHOD TO USE FLUORESCENT POLYMER PARTICLES AS MARKERS IN IMMUNOASSAY

Chao-Huei J. Wang, Libertyville, and Dinesh O. Shah, Vernon Hills, both of Ill., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 451,274, Dec. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 337,513, May 30, 1989, abandoned, which is a division of Ser. No. 113,294, Oct. 26, 1987, abandoned. This application Nov. 17, 1993, Ser. No. 153,839

Int. Cl.[6] G01N *33/553*, *33/546*

U.S. Cl. 436—526 **4 Claims**



1. A process to determine the presence or concentration of an analyte in a fluid specimen comprising:

(a) contacting a solution of monodispersed fluorescent magnetic particles having an average diameter from about 1 micron to about 100 microns, a uniform size distribution and magnetic content, comprising an inner fluorescent core polymer particle able to absorb a monomer, and a coating on said inner fluorescent core polymer particle wherein said coating evenly covers said inner fluorescent core polymer particle, said coating comprising magnetic metal oxide particles of about 1 micron or less in diameter and selected from the group consisting of supermagnetic, paramagnetic and ferromagnetic metal oxide particles and a polymer, wherein said polymer is prepared from monomers which are adsorbable by the inner fluorescent core particle, said fluorescent magnetic particles having a ligand which specifically binds said analyte attached to said fluorescent magnetic particles, with said fluid specimen to form a suspension;

(b) incubating said suspension until sufficient analyte has reacted with said ligand which specifically binds said analyte;

(c) separating said magnetic particles from said suspension;

(d) adding a second labeled ligand which specifically binds said analyte to said separated magnetic particles;

(e) incubating said suspension until sufficient analyte has reacted with said second labeled ligand which specifically binds said analyte;

(f) separating said magnetic particles from said suspension;

(g) detecting or measuring duplex formation on said magnetic particles by means of said label; and

(h) relating the amount of labeled ligand measured with the amount of analyte measured for a control sample also, said control sample having been evaluated by the same process as the fluid specimen, wherein said fluorescent magnetic particles are used to monitor the number of particles present during said process, wherein the number of said particles is monitored by measuring the fluorescene intensity of fluorescent particles prior to contacting said particles with said fluid specimen and by measuring the fluorescent intensity of fluorescent particles after measuring the amount of labeled ligand associated with said fluorescent magnetic particles.

5,445,970

MAGNETICALLY ASSISTED BINDING ASSAYS USING MAGNETICALLY LABELED BINDING MEMBERS

Thomas E. Rohr, Ferndale, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 161,105, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,151, Mar. 20, 1992, abandoned. This application Dec. 1, 1994, Ser. No. 348,503

Int. Cl.[6] G01N *33/546*, *33/553*

U.S. Cl. 436—526 **8 Claims**

1. A method for determining the presence or amount of analyte in a test sample, the method comprising the steps of:

(a) contacting said test sample with

(i) a solid-phase reagent comprising a first binding member immobilized on a solid phase, wherein said first binding member specifically binds said analyte, and

(ii) a magnetically-labelled reagent, comprising a second binding member attached to a magnetically-attractable label, wherein said second binding member

specifically binds said analyte, thereby producing unbound magnetically-labeled reagent and magnetically-labeled reagent bound to said solid-phase reagent in relation to the amount of analyte present in said test sample;

(b) partitioning said unbound magnetically-labeled reagent and said bound magnetically-labeled reagent with a separation means;

(c) applying a magnetic field to either or both of said bound and unbound magnetically-labeled reagents with a magnetic field generator means; and

(d) assessing the effect of said magnetic field on said magnetically-labeled reagent or reagents as a measure of the presence or amount of the analyte in the the sample with a measurement means comprising a balance.

5,445,971

MAGNETICALLY ASSISTED BINDING ASSAYS USING MAGNETICALLY LABELED BINDING MEMBERS

Thomas E. Rohr, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 161,376, Dec. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,151, Mar. 20, 1992, abandoned. This application Dec. 1, 1994, Ser. No. 348,780

Int. Cl.[6] G01N *33/546*, *33/553*

U.S. Cl. 436—526 **2 Claims**

1. An assay device for determining the presence or amount of an analyte in a test sample, said device comprises:

(a) a reaction vessel wherein unbound and immobilized magnetically-labeled reagent are produced in relation to the amount of said analyte in said test sample;

(b) a separation means, operatively positioned with respect to said reaction vessel, for partitioning said immobilized magnetically-labeled reagent and said unbound magnetically-labeled reagent;

(c) a magnetic filed generator means, operatively positioned with respect to said reaction vessel, for the application of a magnetic field to said magnetically-labeled reagent in said reaction vessel; and

(d) a measurement means comprising a balance, operatively positioned with respect to said reaction vessel, to assess the effect of said magnetic field on said magnetically-labeled reagent as a measure of the presence or amount of said analyte in said test sample.

5,445,972

RAMAN LABEL AND ITS CONJUGATE IN A LIGAND-BINDING ASSAY FOR A TEST SAMPLE ANALYTE

Peter J. Tarcha, Lake Villa; Thomas E. Rohr, Gurnee, both of Ill.; Therese Cotton, Ames, Iowa, and Gary E. Winter, Hanover Park, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 790,106, Nov. 7, 1991, Pat. No. 5,266,498, which is a continuation of Ser. No. 428,230, Oct. 27, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 95,888

Int. Cl.[6] G01N *33/532*, *33/533*

U.S. Cl. 436—544 **4 Claims**

1. A conjugate comprising a Raman label capable of providing a detectable Raman scattering signal for use in a ligand-binding assay for an analyte in a test sample when said label is subjected to radiation capable of inducing a Raman scattering effect wherein said label comprises a Raman active molecule or molecules, wherein said Raman label is attached to a specific binding member.

5,445,973

METHOD FOR MANUFACTURING SOLAR CELLS

Jonas Hedström, Stockholm, Sweden, assignor to IM Institute For Mikroelektronik, Sweden

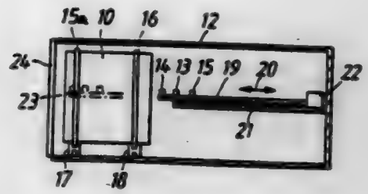
PCT No. PCT/SE92/00262, § 371 Date Oct. 22, 1993, § 102(e) Date Oct. 22, 1993, PCT Pub. No. WO92/20103, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 22, 1992, Ser. No. 137,156

Claims priority, application Sweden, Apr. 24, 1991, 9101246

Int. Cl.[6] H01L *31/18*, *31/0264*

U.S. Cl. 437—5 **9 Claims**



1. A method for manufacturing thin film solar cells including a substrate plate on which a multi-layer film of several substances is deposited by vacuum deposition, said method comprising:

a. providing a generally tubular, rotatable substrate carrier having a longitudinal axis and an inner peripheral surface for supporting substrate materials to be substantially uniformly coated with a thin film of the several substances;

b. positioning a plural of plates formed from the substrate material on the inner peripheral surface of the tubular substrate carrier;

c. providing a plurality of substance sources containing substances to be deposited on the substrate plates, wherein the substance sources are spaced from each other along a line that extends in the direction of the substrate carrier longitudinal axis, to provide a desired composition gradient of the respective substances in the film thickness direction, the composition gradient being substantially uniform over the coated surface of the substrate;

d. heating the substrate materials and the substance sources;

e. moving the tubular substrate carrier and the substance sources relative to each other in a single movement in a single, axial direction during a deposition operation to being the substance sources within the inner peripheral surface of the tubular substrate carrier; and

f. rotating the tubular substrate carrier and the substance sources relative to each other to deposit substance source material on an inwardly facing surface of the substrate in a substantially uniform layer.

5,445,974

METHOD OF FABRICATING A HIGH-VOLTAGE, VERTICAL-TRENCH SEMICONDUCTOR DEVICE

David Whitney, San Jose, Calif., assignor to Siemens Components, Inc., Iselin, N.J.

Division of Ser. No. 40,830, Mar. 31, 1993, abandoned. This application Sep. 10, 1993, Ser. No. 120,147

Int. Cl.[6] H01L *49/00*, *21/461*

U.S. Cl. 437—6 **10 Claims**

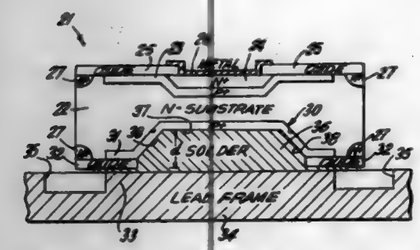
7. A method of fabricating a semiconductor device, comprising:

(a) providing a semiconductor substrate having first and second opposed surfaces, the second surface being configured with a recessed area;

(b) forming a cathode layer in the first surface of said semiconductor substrate immediately opposite the recessed area of the second surface of said semiconductor substrate;

(c) fixing a cathode contact to said cathode layer;

(d) forming an anode layer in the surface of said recessed area; and
(e) placing an anode contact in said recessed area in contact



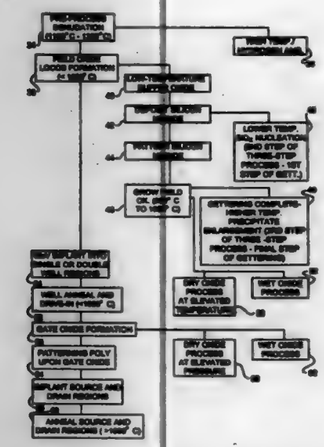
with said anode layer, the depth of said recessed area being selected to obtain an operating characteristic of the device by defining a spacing between the anode layer and the cathode layer.

5,445,975

SEMICONDUCTOR WAFER WITH ENHANCED PRE-PROCESS DENUDATION AND PROCESS-INDUCED GETTERING

Mark I. Gardner, Cedar Creek; H. Jim Fulford, Jr., and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 7, 1994, Ser. No. 206,977
Int. Cl.[6] H01L *21/324*
U.S. Cl. 437—10 **1 Claim**



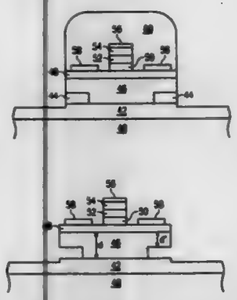
1. A method for minimizing flux of oxygen atoms and interstitial silicon atoms toward a front side surface of a silicon substrate during and after denudation and before a polysilicon layer is placed upon a gate oxide, said method comprising the steps of:
prior to processing a silicon substrate, denuding by heating to a temperature exceeding 1100° C. in the presence of a hydrogen ambient a plurality of oxygen atoms from a surface area within said silicon substrate;
prior to placing polysilicon upon said silicon substrate, processing said silicon substrate at temperatures less than 1000° C. (i) to minimize formation of and movement of oxygen atoms and interstitial silicon atoms from the silicon substrate to the surface of the substrate, and (ii) to form a patterned field oxide upon said substrate, MeV implanted well regions underlying spaces between said patterned field oxide and a gate oxide upon the well regions; and
depositing polysilicon upon said gate oxide and thereafter continuing processing said silicon substrate at temperatures above 1000° C. to provide gettering sites within said substrate.

5,445,976

METHOD FOR PRODUCING BIPOLAR TRANSISTOR HAVING REDUCED BASE-COLLECTOR CAPACITANCE

Timothy S. Henderson, Richardson, and Darrell G. Hill, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 9, 1994, Ser. No. 287,741
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **14 Claims**



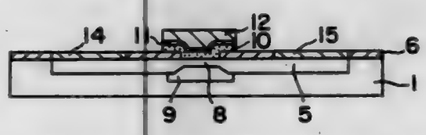
1. A method of fabricating an electronic device comprising the steps of:
a. providing a material structure comprising:
a first layer; and
a second layer adjacent to said first layer;
b. removing portions of said second layer to expose said first layer and to form an opening in said second layer;
c. forming a third layer which fills said opening;
d. forming a fourth layer over said third layer;
e. removing portions of said second, third, and fourth layers to expose an edge of said second layer;
f. removing remaining portions of said second layer, whereby a capacitance between said fourth layer and said first layer is reduced by the removal of said second layer.

5,445,977

METHOD OF FABRICATING A SCHOTTKY FIELD EFFECT TRANSISTOR

Kazuhisa Fujimoto, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 53,047, Apr. 23, 1993, abandoned. This application Jan. 11, 1994, Ser. No. 180,224
Claims priority, application Japan, Apr. 24, 1992, 4-106330
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—40 **6 Claims**



4. A method of fabricating a field effect transistor, comprising the steps of:
forming a high density n-type region in a portion of a semiconductor substrate by ion implantation;

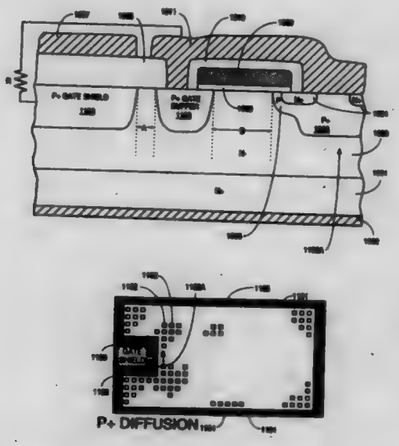
forming an insulating layer on the surface of the semiconductor substrate;
forming a window in a portion of said insulating layer;
forming a) an n-type active region directly under the window formed in said portion of said insulating layer by ion implanting a p-type impurity on the surface of the semiconductor substrate with the insulating layer used as a mask, and b) a p-type region under said n-type active region and in contact with said n-type active region by compensating the high density n-type region;
forming a high melting point metal layer to make a Schottky gate electrode on the surface of the semiconductor substrate;
annealing the semiconductor substrate with the insulating layer and the high melting point metal layer used as an annealing cap;
removing a portion of the high melting point metal layer by means of a photolithographic technique and forming a Schottky gate electrode on the n-type active region exposed in the window;
forming at least one low specific resistance metal layer on said Schottky gate electrode; and
forming a source electrode and a drain electrode on the high density n-type region and in respective portions of the insulating layer.

5,445,978

METHOD OF MAKING POWER DEVICE WITH BUFFERED GATE SHIELD REGION

Hamza Yilmaz, Saratoga, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Division of Ser. No. 873,423, Apr. 23, 1992. This application May 13, 1994, Ser. No. 242,519
Int. Cl.[6] H01L *29/10, 29/78*
U.S. Cl. 437—41 **6 Claims**



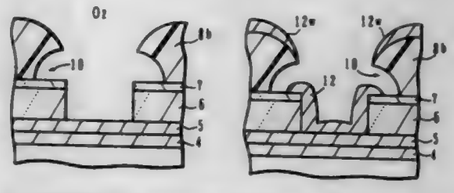
1. A method of preventing failure of active cells adjacent a gate shield region, said gate shield region extending into a semiconductor body from an upper surface of said semiconductor body, said gate shield region being disposed at least partly underneath a gate pad and having insulation between said gate pad and said gate shield region, comprising:
forming a gate buffer region such that said gate buffer region exists between said active cells and said gate shield region, said gate buffer region extending into said semiconductor body from said upper surface of said semiconductor body, said gate buffer region being laterally spaced from both said gate shield region and said active cells.

5,445,979

METHOD OF MAKING FIELD EFFECT COMPOUND SEMICONDUCTOR DEVICE WITH EAVES ELECTRODE

Hidenori Hirano, Yamanashi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1994, Ser. No. 330,583
Claims priority, application Japan, Dec. 28, 1993, 5-337536
Int. Cl.[6] H01L *21/265, 21/28*
U.S. Cl. 437—41 **5 Claims**



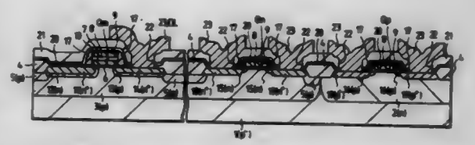
1. A method of manufacturing a semiconductor device comprising steps of:
epitaxially growing an active layer of compound semiconductor for allowing carriers to travel therein, on an underlying crystal body;
forming a protection layer disposed on said active layer and comprising an undoped compound semiconductor layer, for protecting a surface of said active layer;
forming a resist film on said protection layer;
exposing and developing said resist film to form an aperture;
curing a surface of said resist film anisotropically;
etching said undoped compound semiconductor layer anisotropically using said resist film as a mask, thereby exposing said active layer;
subjecting said resist film to oxygen plasma treatment, to partially remove the resist film;
forming an electrode layer to cover said exposed active layer; and
removing said resist film and lifting off the electrode layer formed thereon.

5,445,980

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE

Kazuhiro Komori, Higashikurume; Satoshi Meguro, Hisode; Toshiaki Nishimoto, Tama; Hitoshi Kume, Musashino, and Hideaki Yamamoto, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

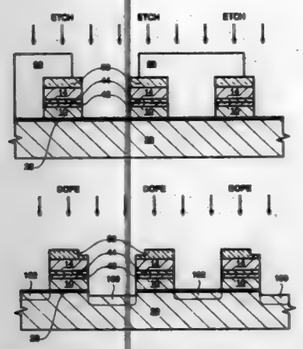
Continuation of Ser. No. 914,542, Jul. 16, 1992, abandoned, which is a division of Ser. No. 794,648, Nov. 18, 1991, Pat. No. 5,153,144, which is a continuation of Ser. No. 349,221, May 8, 1989, abandoned. This application Nov. 4, 1993, Ser. No. 147,037
Claims priority, application Japan, May 10, 1988, 63-114420; Jun. 20, 1988, 63-152747
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **20 Claims**



1. A method of manufacturing a memory cell having a MISFET, comprising the steps of:
forming a first insulator film on a front surface of a semiconductor substrate;
forming a first conductor film on said first insulator film;
forming a second insulator film on said first conductor film;

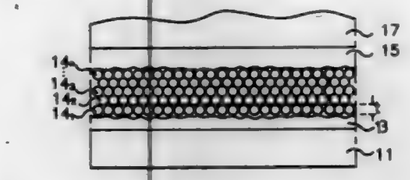
forming a second conductor film on said second insulator film;
patterning said second conductor film, said second insulator film, and said first conductor film, whereby to form a floating gate electrode and a control gate electrode over said floating gate electrode of said MISFET, wherein a part of said first insulator film under said floating gate electrode is left as a gate insulator film of said MISFET forming a third insulator film on parts of the semiconductor substrate surface corresponding to both ends of each of said floating gate electrode and control gate electrode as viewed in a channel direction of said MISFET;
ion-implanting an n-type impurity into a region of the semiconductor substrate surface for forming an n-type semiconductor region in said semiconductor substrate, through said third insulator film, in self-alignment with said control and floating gate electrodes, wherein said n-type semiconductor region extends to a position under said floating gate electrode, wherein a film thickness of said gate insulator film is such that electrons stored in said floating gate electrode are emitted into said n-type semiconductor region by tunneling through said gate insulator film;
after said ion-implanting step, removing said third insulator film;
after said removing step, oxidizing the semiconductor substrate surface, to form an oxide film on said region for forming said n-type semiconductor region, wherein said oxidizing step is performed so as to thicken the film thickness of a portion of said gate insulator film, corresponding to ends of said floating gate electrode, rather than the film thickness of another portion of said gate insulator film;
after said oxidizing step, forming an insulating film so as to cover the front surface of the semiconductor substrate by deposition; and
forming side wall spacers on side surfaces of said control and floating gate electrodes, by etching said insulating film, in self-alignment with said control and floating gate electrodes.

5,445,981
METHOD OF MAKING SHALLOW TRENCH SOURCE EPROM CELL
Roger Lee, 3351 Raindrop Dr., Boise, Id. 83706
Division of Ser. No. 976,226, Nov. 12, 1992, Pat. No. 5,297,082.
This application Mar. 8, 1994, Ser. No. 208,753
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **19 Claims**



1. A process for manufacturing a programmable read-only memory device, comprising the following steps:
a) forming a first insulation layer over a semiconductor substrate;
b) forming a first conductor layer having a sidewall over said first insulation layer;
c) forming a second insulation layer over said first conductor layer;
d) forming a second conductor layer having a sidewall over said second insulation layer;
e) forming a mask layer over said substrate leaving source regions of the programmable read-only memory device unmasked by said mask layer;
f) etching said unmasked source regions of said substrate to form a trench in said substrate, said trench having a bottom and a sidewall, said etch resulting in a discontinuous substrate, said first conductor layer sidewall, said second conductor layer sidewall, and said trench sidewall aligning vertically; and
g) doping said source regions of the programmable read-only memory device to form a source-side injector.

5,445,982
METHOD OF FABRICATING NONVOLATILE SEMICONDUCTOR MEMORY DEVICE
Hyun S. Hwang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea
Filed Mar. 17, 1994, Ser. No. 214,975
Claims priority, application Rep. of Korea, Feb. 23, 1994, 3198/1994
Int. Cl.[6] H01L *21/8247, 21/205*
U.S. Cl. 437—43 **6 Claims**

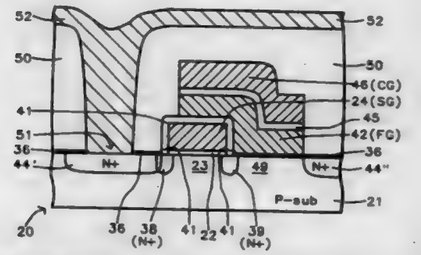


1. A method of fabricating a nonvolatile semiconductor memory device, comprising the steps of:
forming a tunneling oxide layer on a substrate; and
forming a floating gate comprising a plurality of silicon layers which are formed through a repeated cyclical process under temperatures of around 550 degrees C.;
wherein the plurality of silicon layers are formed by repeating a process which includes the steps of depositing a silicon layer with a thickness of 100 to 500 Angstroms at temperatures of about 550 degrees C. and then purging using N_2.

5,445,983
METHOD OF MANUFACTURING EEPROM MEMORY DEVICE WITH A SELECT GATE
Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Oct. 11, 1994, Ser. No. 320,896
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **20 Claims**

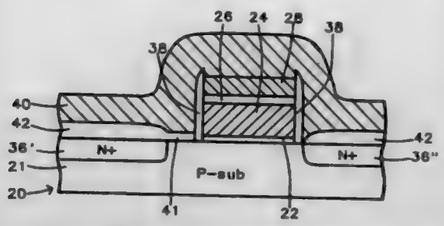
1. A method of fabricating an EEPROM on a lightly doped semiconductor substrate comprising,
forming a first dielectric layer on said substrate,
patterning said first dielectric layer with a select gate channel opening therein,
forming sacrificial spacer structures adjacent to the edges of said channel opening in said first dielectric layer so that said substrate is exposed between said sacrificial spacer structures,
forming a gate oxide on the exposed substrate of said channel opening,
forming a select gate for a select transistor over said gate oxide between said spacer structures in said channel opening,

removing said sacrificial spacer structures exposing the surface of said substrate thereby forming trenches between said first dielectric layer and said select gate,
ion implanting source/drain regions for said select transistor in said substrate to define the select transistor channel using said select gate and said first dielectric layer as a mask,
removing said first dielectric layer exposing the surface of said substrate surrounding said select gate,
forming a silicon dioxide layer over said select gate and said substrate,



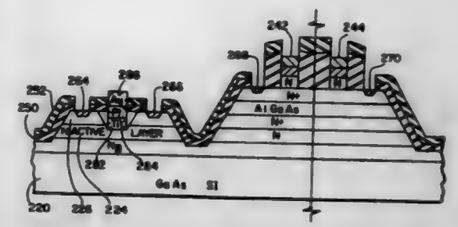
forming a floating gate over said silicon dioxide layer so that said floating gate is over a portion of said select gate and over a portion of said substrate,
forming an interconductor dielectric layer over said floating gate,
forming a control gate over said interconductor dielectric layer so that a stacked gate is formed from said floating gate, said interconductor dielectric layer and said control gate, and
ion implanting source/drain regions for said stacked gate in said substrate using said stacked gate and said silicon dioxide layer over said select gate as a mask.

5,445,984
METHOD OF MAKING A SPLIT GATE FLASH MEMORY CELL
Gary Hong, and Hwi-Huang Chen, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Nov. 28, 1994, Ser. No. 345,126
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **22 Claims**



1. A method of fabricating an EPROM device on a lightly doped semiconductor substrate comprising,
forming a first dielectric layer on said substrate,
forming a floating gate layer over said first dielectric layer,
forming a first intergate dielectric layer over said floating gate layer,
forming an intermediate control gate layer over said intergate dielectric layer,
forming an isolating layer over said intermediate control gate layer,
forming a floating gate mask on said isolating layer, etching, by using said floating gate mask, said floating gate layer, said first intergate dielectric layer, said intermediate control gate layer and said isolating layer to form a stacked structure,
removing said floating gate mask, forming a split gate mask on a portion of said isolating layer and on a portion of said first dielectric layer,
ion implanting dopant into source/drain regions in said substrate adjacent to said split gate mask with one of said source/drain regions being self aligned with said stacked structure and the other source/drain region being spaced away from the other side of said stacked structure by said split gate mask,
removing said split gate mask,
forming a second intergate dielectric layer on the resultant structure after removing said split gate mask,
performing an etch back of said second intergate dielectric layer to form sidewalls adjacent to said stack thereby exposing portions of said first dielectric layer,
etching away said exposed portions of said first dielectric layer,
forming a second dielectric layer on said substrate and said source/drain regions,
removing said isolating layer over said intermediate control gate layer,
forming a blanket top control gate layer over the resultant structure after removing said isolating layer,
forming a control gate mask on said top control gate layer whereby portions of said top control gate layer are unprotected,
patterning top control gate layer by etching portions of said top control gate layer unprotected by said control gate mask, and
removing said control gate mask.

5,445,985
METHOD OF FORMING INTEGRATED LIMITER AND AMPLIFYING DEVICES
Joseph A. Calviello, Kings Park, and John A. Pierro, East Meadow, both of N.Y., assignors to AIL Systems, Inc., Deer Park, N.Y.
Division of Ser. No. 608,219, Nov. 2, 1990, Pat. No. 5,341,114.
This application Aug. 18, 1994, Ser. No. 292,521
Int. Cl.[6] H01L *21/70, 27/00*
U.S. Cl. 437—51 **30 Claims**



1. A method for making a limiter for an amplifier comprising providing a semi-insulating substrate, epitaxially growing one or more semiconductor layers on said substrate, etching said one or more semiconductor layers to form a mesa, depositing a first set of one or more metal layers on said substrate, including said mesa, for forming Schottky contacts with one of said semiconductor layers therebelow, locating areas on said mesa for Schottky diodes, etching said first set of one or more metal layers and leaving metallization providing Schottky contacts at said areas, depositing one or more insulating layers on said substrate, including said mesa and said Schottky contacts, etching a first set of holes in said one or more insulating layers to expose said one or more semiconductor layers on said mesa, depositing a second set of one or more metal layers in said first set of holes, to form ohmic contacts with said one or more semiconductor layers, etching a second set of holes in said one

or more insulating layers to expose said Schottky contacts, depositing a series of layers of metals and oxides on said substrate, including said mesa and including in said first and second sets of holes, etching said series of layers to form a capacitor provided by an oxide layer between metal layers of said series and to form an inductor by a metal layer of said series and to form conductors electrically contacting said ohmic contacts and said Schottky contacts, such that said Schottky diodes form an anti-parallel array of Schottky diodes monolithically integrated on said substrate and comprising first and second Schottky diodes arranged in parallel and in reverse polarity relative to each other between a first input node and a first output node, one of said conductors of said series having a first end providing a limiter input for receiving a signal and a second end providing a limiter output for connection to said low noise amplifier, said first input node being coupled to said conductor intermediate said first and second ends of said conductor, said first output node being coupled to a ground reference.

5,445,986

METHOD OF FORMING A ROUGHENED SURFACE CAPACITOR WITH TWO ETCHING STEPS

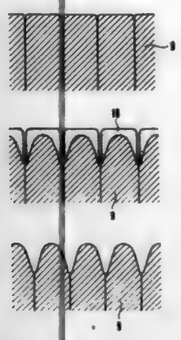
Toshiyuki Hirota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 299,405

Claims priority, application Japan, Sep. 3, 1993, 5-219370

Int. Cl.[6] H01L *21/70, 27/00*

U.S. Cl. 437—60 **9 Claims**



1. A method of manufacturing a semiconductor device having a capacitor constituted by a lower electrode, an upper electrode, and a dielectric film arranged between said lower and upper electrodes, wherein said lower electrode is formed by comprising:

the step of forming a polysilicon film containing a Group V element as an impurity;

the first etching step of forming an uneven portion on a surface of said polysilicon film; and

the second etching step of forming an uneven portion on the surface of said polysilicon film, and the second etching step having an etch rate whose impurity concentration dependency is different from an impurity concentration dependency of an etch rate of the first etching step,

thereby forming the uneven portion on the surface of said polysilicon film.

5,445,987

METHOD OF MANUFACTURING A NONVOLATILE MEMORY INCLUDING A MEMORY CELL HAVING A MISFET

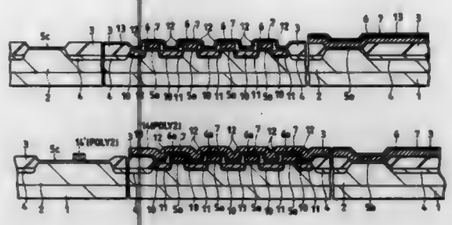
Kenichi Kuroda, Tachikawa; Masaaki Terasawa, Akishima, and Kiyoshi Matsubara, Higashimurayama, all of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,779

Claims priority, application Japan, Aug. 5, 1992, 4-208337

Int. Cl.[6] H01L *21/266, 21/8247*

U.S. Cl. 437—43 **13 Claims**



1. A method of manufacturing a nonvolatile memory including a memory cell having a single MISFET, comprising the steps of:

forming a first gate insulating film over a principal surface of a semiconductor substrate;

forming a first conductor layer over said first gate insulating film;

forming a second gate insulating film over said first conductor layer;

forming a damage preventing film over said second gate insulating film;

patterning said damage preventing film, said second gate insulating film and said first conductor layer in a stripe shape to extend in a first direction;

forming semiconductor regions, in self-alignment with said first conductor layer in a stripe shape, extending in said first direction, in said semiconductor substrate, at both sides of the damage preventing film, second gate insulating film and first conductor layer patterned in the stripe shape, by ion implantation of ions of a first impurity, by using said stripe-shaped damage preventing film as a mask, wherein said damage preventing film acts to prevent said second gate insulating film from being implanted with said first impurity;

after forming the semiconductor regions, removing said damage preventing film, without removing said second gate insulating film;

forming a second conductor layer over said second gate insulating film and over said principal surface after said damage preventing film has been removed; and

forming the control gate electrode and floating gate electrode of said MISFET by etching said second conductor layer, said second gate insulating film and said first conductor layer selectively,

wherein one of said semiconductor regions acts as a first data line and is formed integrally with the source or drain region of said MISFET.

5,445,988

METHOD FOR MANUFACTURING A TRENCH IN A SUBSTRATE FOR USE IN SMART-POWER TECHNOLOGY

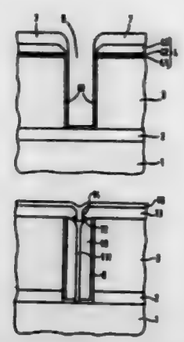
Udo Schwalke, Heidenstein, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 11, 1994, Ser. No. 272,591

Claims priority, application Germany, Jul. 13, 1993, 43 23 423.2

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—67 **13 Claims**



1. Method for manufacturing a trench in a substrate, said substrate having at least one first silicon layer oriented at the surface of said substrate, an insulating layer oriented therebelow, and a second silicon layer oriented under said insulating layer, said method comprising the steps of:

providing said substrate with a trench mask having a horizontal surface;

conducting a first trench etching by performing an anisotropic dry-etching process through said trench mask down to the surface of said insulating layer to form a trench having sidewalls and a bottom;

non-conformally depositing a reinforcing protective layer surface-wide on said substrate to a greater thickness on said horizontal surface of said trench mask than at said sidewalls and bottom of said trench;

conducting a second trench etching through said trench mask down to the surface of said second silicon layer such that said first silicon layer is not attacked;

setting said thickness of said protective layer on said horizontal surface of said trench mask so that an etch-through of said insulating layer and a removal of said protective layer and said trench mask on said horizontal surface are essentially simultaneously achieved in said second trench etching;

providing said sidewalls of said trench with an insulation structure; and

filling said trench with a silicon fill of doped silicon.

5,445,989

METHOD OF FORMING DEVICE ISOLATION REGIONS

Water Lur, Taipei, and Po-Wen Yen, Hsinchu, both of Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Aug. 23, 1994, Ser. No. 294,371

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—67 **16 Claims**

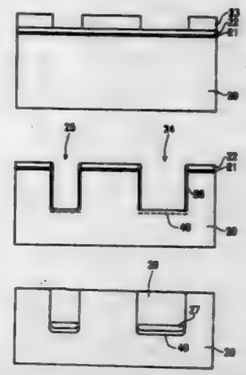
1. A method of forming device isolation regions on a silicon substrate, comprising the following steps:

forming a silicon nitride layer over said silicon substrate;

etching through portions of said silicon nitride layer not covered by a mask pattern into said silicon substrate so as to provide a plurality of trenches, at least one of said trenches having a width which is different from that of another of said trenches in said silicon substrate, said plurality of trenches defining said device isolation regions;

forming silicon nitride spacers on the sidewalls of said trenches;

growing a first field oxide layer on bottoms of said trenches by using thermal oxidation and wherein a silicon dioxide layer is also formed on said silicon nitride layer;



removing said silicon dioxide layer and said silicon nitride layer; and

forming a second field oxide layer overlying said first field oxide layer by using liquid phase deposition so as to fill said trenches with field oxide.

5,445,990

METHOD FOR FORMING A FIELD OXIDE FILM IN A SEMICONDUCTOR DEVICE

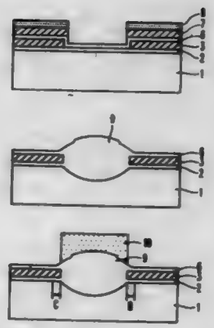
Hyung S. Yook; Sang H. Park, both of Kyungki; Hyun C. Baek, Seoul; Young C. Lee, Daejeon; Sang I. Kim, and Dong W. Baik, both of Seoul, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Seoul, Rep. of Korea

Filed May 19, 1994, Ser. No. 247,153

Claims priority, application Rep. of Korea, May 21, 1993, 93-8717

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—69 **2 Claims**



1. A method for forming a field oxide film in a semiconductor device comprising the steps of:

sequentially forming a pad oxide film and a first buffer silicon nitride film on a silicon substrate, and then forming a first patterned mask on said first buffer silicon nitride film;

etching the resulting exposed part of said first buffer silicon nitride film to expose a portion of the pad oxide film, and then removing said first patterned mask;

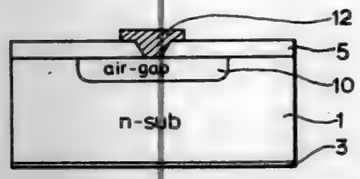
forming a buffer oxide film on the resulting exposed part of said pad oxide film and said etched first buffer silicon nitride film;
sequentially forming a second buffer silicon nitride film, and a second patterned mask on said buffer oxide film, and then etching the resulting exposed part of said second buffer silicon nitride film;
removing said second patterned mask, and then forming a field oxide film by thermal oxidation of the resulting structure, and then removing said second buffer silicon nitride film;
forming a bird's beak removal mask on said field oxide film, and then removing a portion of a bird's beak; and
sequentially removing said bird's beak removal mask, said first buffer silicon nitride film, and said pad oxide film.

5,445,991

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE USING A POROUS SILICON REGION

Jong H. Lee, Taegu, Rep. of Korea, assignor to Kyungdook National University Sensor Technology Research Center, Taegu and Mando Machinery Corporation, Kyungki-do, both of Rep. of Korea, a part interest

Filed Dec. 23, 1994, Ser. No. 371,271
Claims priority, application Rep. of Korea, Dec. 24, 1993, 93-29499
Int. Cl.[6] H01L *21/20*
U.S. Cl. 216—2 **2 Claims**



1. A method for manufacturing a silicon diaphragm using a porous silicon, the method comprising the steps of:
preparing an n-type silicon substrate;
diffusing n^+ impurities in the silicon substrate to form an n^+ diffusion region in a part of the upper wall thereof;
growing an n-type silicon epitaxial layer thereon;
forming a through-hole in the n-type silicon epitaxial layer to expose a part of the n^+ diffusion region;
performing an anodic reaction in an HF solution to make the n^+ diffusion region a porous silicon layer;
etching the porous silicon layer to form an air-gap; and,
sealing the through-hole.

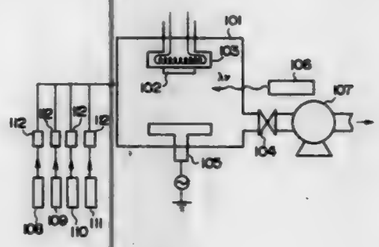
5,445,992

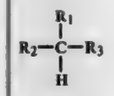
PROCESS FOR FORMING A SILICON CARBIDE FILM

Hiroyuki Tokunaga, Fujisawa, and Tadashi Atoji, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

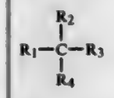
Filed May 5, 1994, Ser. No. 238,725
Claims priority, application Japan, May 10, 1993, 5-107973; Apr. 22, 1994, 6-084580
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—100 **11 Claims**

1. A chemical vapor deposition process for forming a semiconductor film containing silicon carbide, which comprises subjecting a silicon-containing raw material gas and a hydrocarbon as a carbon raw material to a decomposition reaction, the carbon raw material comprising at least one member selected from the group consisting of hydrocarbons comprising tertiary or quaternary carbon atom represented by the following general formulae (I) and (II):





(I)



(II)

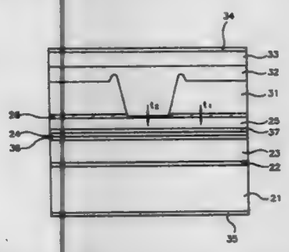
wherein R_1 to R_4 represent hydrocarbon groups selected from the group consisting of alkyl groups, aryl groups and aromatic groups.

5,445,993

SEMICONDUCTOR LASER DIODE AND METHOD FOR MANUFACTURING THE SAME

Hyung S. Ahn, Kyungki; Min S. No, Seoul; Sang K. Si, Kyungki; Won T. Choi, Seoul; Joo O. Seo, Seoul; Jin H. Lim, Seoul, and Min Yang, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 27, 1993, Ser. No. 67,834
Claims priority, application Rep. of Korea, May 27, 1992, 9056/1992; Feb. 8, 1993, 1691/1993
Int. Cl.[6] H01L *21/20*
U.S. Cl. 431—129 **20 Claims**



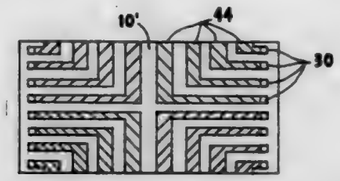
1. A method for manufacturing a semiconductor laser diode, comprising the steps of:
a) growing a double hereto structure on a substrate, said double hetero structure including a first clad layer, an active, and a second clad layer;
b) growing a quantum well layer on said double hereto structure;
c) selectively growing a current confinement layer to form a current injection groove on said quantum well layer;
d) growing a third clad layer on said current confinement layer and an exposed surface of said quantum well layer by LPE, thereby melting back said quantum well layer into said third clad layer;
e) growing a cap layer on said third clad layer; and
f) forming electrodes both side on said cap layer and said substrate.

5,445,994

METHOD FOR FORMING CUSTOM PLANAR METAL BONDING PAD CONNECTORS FOR SEMICONDUCTOR DICE

Terry L. Gilton, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 11, 1994, Ser. No. 225,651
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—183 **18 Claims**



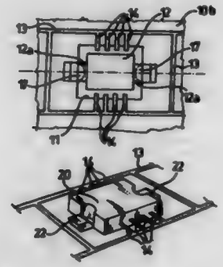
1. A method for forming planar metal connectors to bonding pads electrically connected to integrated circuits on a semiconductor die comprising:
depositing a passivation layer over the die and bonding pads;
depositing a patterning layer over the passivation layer said patterning layer deposited with a thickness "t";
etching the patterning layer and the passivation layer to form a pattern of openings through the passivation layer and through the patterning layer to the bonding pads;
etching the patterning layer to form a mold for the connectors, said mold having openings aligned with the openings to the bonding pads and formed in a desired pattern;
depositing a metal layer over the patterning layer and into the etched mold and the openings to the bonding pads; and then
planarizing the metal layer to an endpoint of the patterning layer to form the connectors in the desired pattern and with the thickness "t".

5,445,995

METHOD FOR MANUFACTURING PLASTIC-ENCAPSULATED SEMICONDUCTOR DEVICES WITH EXPOSED METAL HEAT SINK

Paolo Casati, Sesto San Giovanni, and Pierangelo Magni, Villasanta, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Dec. 21, 1992, Ser. No. 994,421
Claims priority, application Italy, Dec. 20, 1991, MI91A3440
Int. Cl.[6] H01L *21/56*
U.S. Cl. 437—211 **20 Claims**



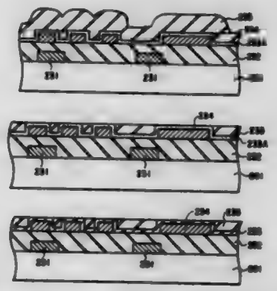
1. A method for manufacturing packaged integrated circuit devices, comprising the steps of:
(a.) providing a heat sink plate;
(b.) affixing an integrated circuit to a first surface of said heat sink plate;
(c.) bonding said integrated circuit to multiple leads of a lead frame;
(d.) placing said heat sink plate, said integrated circuit, and portions of said leads within a mold, and closing said mold;
(i.) wherein said mold includes multiple pushing elements which press against known locations of said first surface of said plate at opposite ends thereof when said mold is closed;
(ii.) wherein said mold further includes cavities adjacent to said known locations at opposite ends of said plate;
(e.) injecting resin into said mold, and thereby forming a body encapsulating said integrated circuit, and also thereby forming projections adhering to edges of said plate adjacent to said known locations; and
(f.) trimming said projections from the edges of said plate, to leave clean metal surfaces exposed.

5,445,996

METHOD FOR PLANARIZING A SEMICONDUCTOR DEVICE HAVING A AMORPHOUS LAYER

Masako Kodera, Kawasaki, Japan; Hiroyuki Yano, Wappingers Falls, N.Y.; Atsushi Shigeta, Yamato, Japan; Riichirou Aoki, Tokyo, Japan; Hiromi Yajima, Yokohama, Japan, and Haruo Okano, Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 25, 1993, Ser. No. 66,375
Claims priority, application Japan, May 26, 1992, 4-132978; Sep. 25, 1992, 4-256889; Oct. 20, 1992, 4-281194; Nov. 30, 1992, 4-319175; Dec. 11, 1992, 4-331945
Int. Cl.[6] H01L *21/302, 21/463*
U.S. Cl. 437—225 **1 Claim**



1. A method of planarizing a semiconductor device comprising the steps of:
forming a first insulating film on a semiconductor substrate;
forming selectively a wiring portion on the first insulating film;
forming an amorphous silicon film on the wiring portion, the amorphous silicon film being treated at a later step to become a second insulating film;
forming a third insulating film on the amorphous silicon film to a thickness at least greater than a height of the wiring portion;
polishing said third insulating film and said amorphous silicon film to planarize these films with a polishing slurry containing cerium oxide while using said amorphous silicon film as a stopper layer; and
transforming said amorphous silicon film to said second insulating film.

5,445,997

PATTERNING METHOD

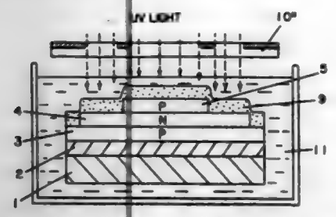
Akira Fujishima, 710-5, Nakamaruko, Nakahara-ku, Kawasaki-shi, and Shigeo Kondo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Akira Fujishima, Kanagawa, both of Japan

Continuation of Ser. No. 725,506, Jul. 3, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 134,470

Claims priority, application Japan, Jul. 6, 1990, 2-180054

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—228 4 Claims



1. A patterning method for manufacturing a field effect transistor to form an etching pattern on a ceramic insulating substrate comprising the steps of:

forming a conductive metal layer and a first p-type silicon layer on the ceramic insulating substrate in this order;

forming an n-type silicon layer on the first p-type silicon layer;

forming a second p-type silicon layer on the n-type silicon layer;

forming a photosensitive inorganic semiconductor layer on the second p-type silicon layer;

irradiating a portion of the photosensitive inorganic semiconductor layer, which is kept in contact with an electrolyte, with light having energy greater than the band gap of the photosensitive inorganic semiconductor layer thereby causing the light-irradiated portion of the photosensitive inorganic semiconductor layer to dissolve into the electrolyte by optoelectrochemical reaction, to form a pattern;

forming a source electrode and a drain electrode, both being made of conductive metal, on the n-type silicon layer using said pattern, the second p-type silicon layer being interposed between the source electrode and the drain electrode;

removing a remaining portion of the photosensitive inorganic semiconductor layer with an alkaline cleaning solution; and

disposing a gate electrode made of conductive metal on the second p-type silicon layer,

wherein the photosensitive inorganic semiconductor layer is selected from the group consisting of tungsten oxide and zinc oxide.

5,445,998

METHOD FOR THE GLOBAL PLANARIZATION OF SURFACES OF SEMICONDUCTOR INTEGRATED CIRCUITS

Hans-Guenter Zimmer, Deutzlingen, Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Nov. 17, 1993, Ser. No. 154,670

Claims priority, application Germany, Nov. 20, 1992, 42 39 075.3

Int. Cl.[6] H01L *21/465*

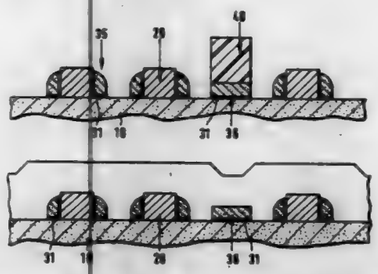
U.S. Cl. 437—228 9 Claims

1. A method for the global planarization of a surface of a semiconductor integrated circuit comprising the steps of:

forming a pattern of conductive tracks (20) on the surface of a substrate (10);

disposing a dielectric layer (30) of thickness d over the surface of the substrate (10);

selectively disposing a photoresist layer over the dielectric layer (30) and patterning the photoresist layer to form a photoresist mask (40) in those areas between the conductive tracks (20) where the spacing between adjacent tracks is a multiple greater than the thickness, d, of the dielectric layer (30), taking into account alignment tolerances and optical resolution;



selectively and anisotropically etching the dielectric layer (30) to uncover the conductive tracks (20) and the surface of the substrate (10) with spacers (35) being formed at the sides of the conductive tracks (20);

stripping the photoresist without removing spacers (35); and

planarizing the surface of the semiconductor integrated circuit.

5,445,999

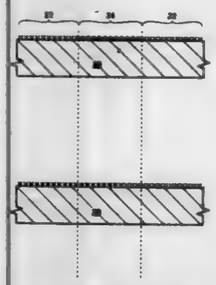
ADVANCED TECHNIQUE TO IMPROVE THE BONDING ARRANGEMENT ON SILICON SURFACES TO PROMOTE UNIFORM NITRIDATION

Randhir P. S. Thakur, and Viju K. Mathews, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 13, 1992, Ser. No. 975,767

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—242 18 Claims



17. A rapid thermal processing method for fabricating thin film dielectrics, comprising the steps of:

a) providing a substrate having a conductive material within chamber, said substrate comprising silicon material, said first conductive material comprising molecular clusters and dangling bonds;

b) destabilizing said molecular clusters to form a uniform dangling bond configuration by introducing in situ reactive gas at a temperature greater than 1000° C. continuously for approximately 10 to 60 seconds, at a vacuum pressure in the range of 10^{-10} Torr to atmospheric pressure, said reactive gas comprises at least one of Ar-H_2, H_2, GeH_4, and NF_3 diluted with Ar-H_2, thereby providing said conductive material with a uniform dangling bond configuration;

c) growing a first thin dielectric layer having a thickness of less than 30 Å superjacent said conductive material by introducing in situ NH_3 at a temperature greater than 1000° C. continuously for approximately 10 to 60 seconds, at a vacuum pressure range of 10^{-10} Torr to atmospheric pressure;

d) depositing a second thin dielectric layer dielectric superjacent said first thin dielectric layer, thereby forming a composite dielectric layer having an overall thickness in the range of approximately 40 to 100 Å; and

e) re-oxidizing said composite dielectric layer, thereby forming a silicon dioxide layer superjacent said second thin dielectric layer, thereby reducing leakage within said composite dielectric layer.

5,446,000

TREATMENT FOR VIRGIN PHOSPHOROUS/VANADIUM OXIDATION CATALYSTS

Arie Bortinger, Ridgewood, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 24,320, Mar. 1, 1993, Pat. No. 5,348,927. This application Mar. 14, 1994, Ser. No. 209,407

Int. Cl.[6] B01J *20/34*

U.S. Cl. 502—38 11 Claims

1. A method of removing chloride from phosphorus/vanadium/oxygen mixed oxide oxidation catalysts comprising treating a chloride containing virgin catalyst wherein said chloride is introduced into said catalyst by using HCl as a reducing agent during the preparation of said catalyst and comprising phosphorus, vanadium, oxygen and up to 2.0 wt % chloride with a stream of gas comprising 0.1 to 15 vol % oxygen, 0.5 to 80 vol % steam and 0.1 to 80 vol % of an inert gas selected from the group consisting of nitrogen, helium, argon and mixtures thereof at flow rate and temperature and for a period of time to remove over 50% of chloride in the catalyst.

5,446,001

PROCESS FOR THE PREPARATION OF ALKYLALUMINOXANES ON INERT SUPPORT MATERIALS

Stefan Gurtzgen, Wuppertal, Germany, assignor to Witco GmbH, Bergkamen, Germany

Filed Mar. 16, 1994, Ser. No. 213,946

Claims priority, application Germany, Oct. 27, 1993, 43 36 659.7

Int. Cl.[6] C08F *4/44*

U.S. Cl. 502—151 20 Claims

1. A process for the preparation of an alkylaluminoxane immobilized on an inert support material comprising hydrolyzing at least one trialkylaluminum compound dissolved in a hydrocarbon solvent by metering said water into a jet loop reactor, such that the volume flow ratio of said water to said trialkylaluminum solution is in the range of between 1:2,000 and 1:40,000 to provide a molar ratio of said water to said trialkylaluminum compound in the range of between 0.8:1 and 1.3:1, whereby an alkylaluminoxane lyophilic dispersion is formed; and contacting said dispersion with an inert support material.

5,446,002

RESID HYDROPROCESSING CATALYST

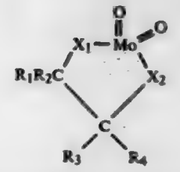
Simon G. Kukes, Naperville, Ill.; Thomas J. Karol, Norwalk, Conn., and Joseph T. Joseph, Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 8, 1994, Ser. No. 255,643

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—155 20 Claims

1. A catalyst useful for hydroprocessing hydrocarbonaceous feed materials comprising the composition:



where X_1 and X_2 are selected from the group consisting of O, S or NH, and wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen or an alkyl, aryl or alkyl/aryl hydrocarbon group containing from 1 to 40 carbon atoms or heteroatom-substituted variants thereof in which one or more hydrogen atoms have been substituted for by one or more oxygen-, sulfur- or nitrogen-containing functional groups.

5,446,003

PRODUCTION OF SUPPORTED PARTICULATE CATALYST SUITABLE FOR USE IN A VAPOR PHASE REACTOR

Robert L. Augustine, Livingston, and Setrak K. Tanielyan, South Orange, both of N.J., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 12, 1993, Ser. No. 3,397

Int. Cl.[6] B01J *35/04, 31/28;* A24D *3/00*

U.S. Cl. 502—159 22 Claims



1. A process for forming a supported particulate catalyst suitable for use in a vapor phase reactor comprising:

(a) applying a layer of an adhesive to at least a portion of the surface of a solid paper support,

(b) dispersing solid particles of a preformed catalyst on the outer surface of said layer of adhesive present on said solid support whereby a portion of the surfaces of said solid preformed catalytic particles is embedded in said layer of adhesive while a portion of the surfaces of said solid preformed catalytic particles remains exposed to the ambient atmosphere without any substantial loss of catalytic activity, and

(c) solidifying said adhesive layer through the utilization of conditions which do not substantially alter the catalytic activity of said exposed surfaces of said preformed solid particles and cause said adhesive to secure said preformed solid catalytic particles to said solid support while maintaining the exposure of a portion of the surfaces of said solid preformed catalytic particles to the ambient atmosphere.

5,446,004

MULTIMETAL OXIDE COMPOSITIONS

Andreas Tenten, Neustadt, and Peter Weidlich, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 28, 1994, Ser. No. 187,494

Claims priority, application Germany, Feb. 3, 1993, 43 02 991.4

Int. Cl.[6] B01J *23/22, 23/30*

U.S. Cl. 502—312 8 Claims

1. A multimetal oxide composition which comprises, as basic constituents, the elements Mo, V, W, Cu and Ni in oxidic form,

with the proviso that the following molar ratios exist between the various elemental constituents:
Mo:V=12:1 to 2:1,
Mo:W=60:1 to 3:1,
Mo:Cu=24:1 to 2:1, and
Cu:Ni=5:1 to 1:3,
which conforms to the empirical formula I

$$Mo_{12}V_aW_bCu_cNi_dX^1_eX^2_fX^3_gX^4_hX^5_iO_n$$

where
X^1 is one or more alkali metals,
X^2 is one or more alkaline earth metals,
X^3 is chromium, manganese, cerium and/or niobium,
X^4 is antimony and/or bismuth,
X^5 is silicon, aluminum, titanium and/or zirconium,
a is from 1 to 6,
b is from 0.2 to 4,
c is from 0.5 to 6,
d is from 0.2 to 6,
c:d is from 5:1 to 1:3,
e is from 0 to 2,
f is from 0 to 3,
g is from 0 to 5,
h is from 0 to 40,
i is from 0 to 40 and
n is a number which is determined by the valency and occurrence of the elements in formula I other than oxygen.

6. A process for the preparation of a multimetal oxide composition which comprises, as basic constituents, the elements Mo, V, W, Cu and Ni in oxidic form, with the proviso that the following molar ratios exist between the various elemental constituents:
Mo:V=12:1 to 2:1,
Mo:W=60:1 to 3:1,
Mo:Cu=24:1 to 2:1, and
Cu:Ni=5:1 to 1:3,
which comprises producing an intimate dry mix of starting compounds which contain the elemental multimetal oxide constituents, and calcining said dry mix at from 100° to 500° C.

5,446,005

PITCH-BASED ACTIVATED CARBON FIBER

Morinobu Endo, 615, Kitahara-cho, Suzaka-shi, Nagano-ken, Japan

Filed Jun. 22, 1993, Ser. No. 79,819
Claims priority, application Japan, Jun. 25, 1992, 4-167166
Int. Cl.[6] B01J *20/20*
U.S. Cl. 502—433 **2 Claims**

1. A porous optically isotropic pitch-based activated carbon fiber having a pore size distribution such that from 70 to 92% of the pores having a pore diameter of 4 nm or smaller are ultramicropores having a pore diameter of 0.5 nm or smaller.

5,446,006

MONOLITHIC CATALYST WITH A METAL CARRIER

Rainer Domesle, Alzenau; Bernd Engler, and Egbert Lox, both of Hanau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 4, 1993, Ser. No. 130,132
Claims priority, application Germany, Oct. 5, 1992, 42 33 404.7
Int. Cl.[6] B01J *21/00*
U.S. Cl. 502—439 **38 Claims**

1. A monolithic catalyst comprising:
a matrix comprised of one or more metal strips arranged in at least one stack and having adjoining metal strip sections; and
a jacket tube having an interior surface,
said one or more metal strips having a coating of catalytic material and said one or more metal strips being joined to the interior surface of said jacket tube with welds or soldering joints, and the coating on said one or more metal strips being free from an increased accumulation of coating material along lines of contact between said adjoining metal strip sections based on an application of the coating of catalytic material on said one or more metal strips prior to said one or more metal strips being joined to said jacket tube.

27. A method of forming a monolithic catalyst, comprising:
folding at least one flat and/or corrugated metal strip, previously coated with a catalytic coating, in a zigzag manner so as to form a matrix with gas passages;
inserting said matrix into a jacket tube; and affixing said coated matrix to said jacket tube by welding or soldering said at least one metal strip to an interior surface of said jacket tube at points or lines of contact between said strips and interior surface.

5,446,007

BROWN CONTRAST ENHANCEMENT GLASS

David G. Krashkevich, Dallas, and Sally Pucilowski, Luzerne, both of Pa., assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed May 10, 1994, Ser. No. 240,418
Int. Cl.[6] C03C *3/085, 3/091, 3/095*
U.S. Cl. 501—64 **25 Claims**

1. A glass composition consisting essentially of:

Oxide	Wt. %
SiO_2	40–72
B_2O_3	0–13
Al_2O_3	0.5–3
Li_2O	0–3
Na_2O	8–15
K_2O	1–10
TiO_2	4.2–10.2
CeO_2	0.5–3.5
Nd_2O_3	5.0–16.5
Fe_2O_3	2.5–4.0
CoO	0.00–0.02
NiO	0.06–0.33
ZnO	0.0–7.0
Er_2O_3	0–2
Cr_2O_3	0.0–0.2
V_2O_5	0.0–0.2
CuO	0.00–0.10
MnO_2	0.0–2.0
having the following properties:	
% $T_{v,c}$ (1.8 mm)	14–30
a	−0.1 to +6.0
b	+18.0 to +26.0
% T (380 nm; 1.8 mm)	0.0
% T (400 nm; 1.8 mm)	≦1.5

meeting the D_{6500} (1.8 mm) and Traffic Signal (1.8 mm) specifications of ANSI Z80.3-1986, and
wherein the amount of Fe^{+2} in the glass is selected sufficiently low that said "a" and Traffic Signal properties are achieved.

5,446,008

TRANSPARENT OR TRANSLUCENT INORGANIC MATERIAL WITH HIGH TRANSMISSION IN THE 2700–3300 NM WAVELENGTH RANGE

Georg Krolls; Paul Kissl; Peter Nass, all of Mainz, and Kurt Schaupert, Hofheim, all of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Dec. 14, 1993, Ser. No. 165,877
Claims priority, application Germany, Jun. 26, 1993, 43 21 373.1
Int. Cl.[6] C03C *3/083*
U.S. Cl. 501—68 **7 Claims**

1. A transparent or translucent inorganic material with an average thermal longitudinal expansion coefficient α of from -1×10^{-6} to $+2\times10^{-6}$ K^{-1} at a temperature range of from −50° C. to 700° C., with a composition, in weight percent, of:
Li_2O, 2.5–6.0; Na_2O, 0–4.0, K_2O, 0–4.0; Na_2O+K_2O, 0.2–4.0;
MgO, 0–3.0; ZnO, 0–3.0; BaO, 0–3.5; CaO, 0–1.0; SrO, 0–1.0;
Al_2O_3, 18–28; SiO_2, 50–70, TiO_2, 1.0–7.0; ZrO_2 0–3.5; TiO_2+ZrO_2 1.0–7.0; and P_2O_5, 0–8.0,
optionally with coloring components, in weight percent:
V_2O_5, 0–2.0; Cr_2O_3, 0–2.0; MnO_2, 0–2.0; Fe_2O_3, 0–2.0, CoO, 0–2.0; and NiO, 0–2.0,
optionally with high quartz and/or keatite mixed crystals and, optionally, with conventional refining agents, wherein the inorganic material has a water content of less than 0.03 mol/l and wherein the transmission through a component of the material having a thickness of 3 mm is more than 10% in the entire wavelength range between 2700–3300 nm.

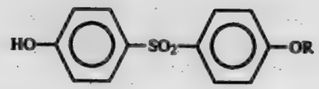
5,446,009

THERMAL RECORDING SHEET

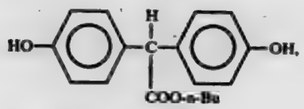
Toshiaki Minami, and Tadakazu Fukuchi, both of Tokyo, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

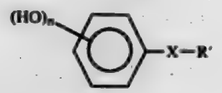
Filed Nov. 17, 1993, Ser. No. 153,162
Claims priority, application Japan, Nov. 20, 1992, 4-310665
Int. Cl.[6] B41M *5/40*
U.S. Cl. 503—204 **22 Claims**

1. A thermal recording sheet comprising an intermediate layer, and a thermal color developing layer containing a leuco dye chromogenic component containing a leuco dye and an organic color developer as main ingredients and a metal chelate chromogenic component containing an electron acceptor and an electron donor as main ingredients, stacked on a substrate, wherein said intermediate layer contains a pigment having an oil absorption of 100 ml/100 g or less measured according to JIS K 5101, and said thermal color developing layer contains at least one of compounds of Formula (I) and Formula (II) as an organic color developer, a metal double salt of higher fatty acid having 16 to 35 carbon atoms as an electron acceptor, and a polyhydric hydroxy aromatic compound of Formula (III) as an electron donor, said Formulas I, II and III compounds being represented by the following

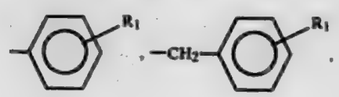
(I)


wherein R is propyl, isopropyl, or butyl,

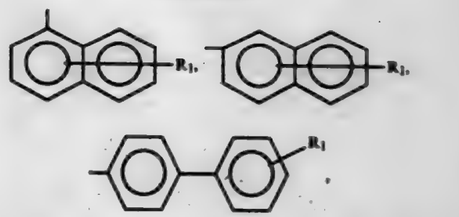
(II)


(III)


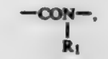
wherein R' is an alkyl of C_{18} to C_{35},



-continued



n is an integer of 2 or 3, X is —CH_2—, —CO_2—, —CO—, —O—, —CONH—,



—SO_2—, —SO_3, or —SO_2NH—, and R^1 is san alkyl of C_{18} to C_{35}.

5,446,010

THERMOSENSITIVE RECORDING MATERIAL

Kunitaka Toyofuku, Sakura, and Akiko Iwasaki, Urawa, both of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 229,332
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] B41M *5/30*
U.S. Cl. 503—208 **7 Claims**

1. A thermosensitive recording material comprising:
a substrate sheet; and
a thermosensitive colored image-forming layer formed on a surface of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to thereby develop a color, and a binder, the color-developing agent comprising at least one aromatic compound having, per molecule thereof, at least one arylsulfonylureido group of the formula (I):

$$R^1—SO_2NHCNH— \quad (I)$$
$$\qquad\qquad\quad \| \quad O$$

wherein R^1 represents a member selected from the group consisting of unsubstituted aromatic groups and aromatic groups substituted with at least one member selected from the group consisting of lower alkyl groups, lower alkoxyl groups and halogen atoms, and
the thermosensitive colored image-forming layer further containing a sensitizing additive comprising at least one aromatic amide compound of the formula (II):

$$Ar^1—CNH—Ar^2 \quad (II)$$
$$\qquad\quad \| \quad O$$

wherein Ar^1 and Ar^2 respectively and independently from each other represent a member selected from the group consisting of unsubstituted phenyl and naphthyl groups and substituted phenyl and naphthyl groups each having 1 to 3 substituents selected from the group consisting of aryl groups, aryloxy groups, aralkyl groups, alkyl groups, alkoxyl groups, trihalogenomethyl groups, a nitro group, halogen atoms and alkylamino groups.

5,446,011

THERMOSENSITIVE RECORDING MATERIAL

Kunio Hayakawa, Gotenba, and Masafumi Torii, Shizuoka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 29, 1994, Ser. No. 235,638

Claims priority, application Japan, Apr. 30, 1993, 5-128100; Sep. 2, 1993, 5-242069; Nov. 8, 1993, 5-302414; Apr. 8, 1994, 6-095553

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—209 14 Claims

1. A thermosensitive recording material capable of being imagewise colored when heated comprising: a support, and a thermosensitive recording layer formed thereon which comprises:

(i) an N-substituted indole or an aromatic polyhydroxy compound,

(ii) a carbonyl compound, and

(iii) an acid material other than (i).

5,446,012

SHEET CAPABLE OF RELEASING A THERMAL TRANSFER IMAGE-RECEIVING LAYER, A METHOD FOR TRANSFERRING A THERMAL TRNASFER IMAGE-RECEIVING LAYER FROM THE SHEET AND A METHOD FOR FORMING IMAGES

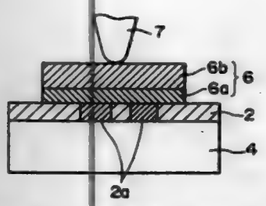
Kengo Ito, Miyagi; Kaori Iseji, Chiba; Yoshio Fujiwara, Tochigi; Mitsuhiro Isogai, and Masanobu Hida, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,418

Claims priority, application Japan, May 19, 1993, 5-141585

Int. Cl.[6] B41M *5/035, 5/38*

U.S. Cl. 503—227 10 Claims



5. A method for transferring a thermal transfer image-receiving layer from an image transfer sheet to a substrate comprising the steps of: providing a transfer sheet of the type including a release base sheet and a thermal transfer image-receiving layer formed on the release base sheet, said image-receiving layer being a dispersion including a resin binder and a dye-fixing amount of a layer compound capable of fixing cationic dyes through ion exchange reaction therewith, superposing the image transfer sheet on a substrate, on which a thermal transfer image is to be formed in such a way that said image-receiving layer is in face-to-face relation with the substrate, and peeling off the release base sheet from the image transfer sheet.

5,446,013

2-ALKYL-OR-ARYL-SUBSTITUTED-2-(PYRIMIDINYL-OR-TRAIZINYL-OXY(OR-THIO))-ACOTIC ACID DERIVATIVES, PROCESS FOR PREPARATION, AND USE AS HERBICIDES OR PLANT-GROWTH REGULATORS

Frank Zarmühlen, Frankfurt am Main; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

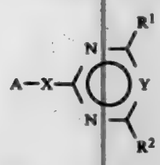
Continuation of Ser. No. 988,904, Nov. 5, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 168,981

Claims priority, application Germany, Nov. 7, 1991, 41 36 569.0

Int. Cl.[6] A01N *43/54;* C07D *239/42, 239/60*

U.S. Cl. 504—242 8 Claims

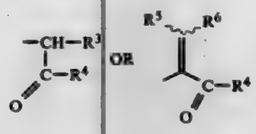
1. A compound of the formula (I)



(I)

in which

A is a radical formula



X is O or S,

Y is CH,

R^1, R^2 independently of one another are C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, C_1–C_4-haloalkoxy, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)amino,

R^3 is isopropyl, tert-butyl or cyclopentyl,

R^4 is a C_1–C_4-alkoxy radical which is substituted by C_2–C_4-alkenyloxy, C_2–C_4-alkinyloxy, cyclohexyloxy, cyclohexenyloxy, cyclopentyloxy, cyclopentenyloxy, benzyloxy, benzylthio, $(R^*)_3Si$ or $(R^*)_3SiO$, in which the radicals R^* independently of one another are C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkinyl or phenyl, or by cyano, nitro, (C_1–C_4-alkyl)-carbonyl, C_1–C_4-alkylsulfonyl, C_1–C_4-alkylsulfinyl, di-(C_1–C_4-alkyl)-phosphoryl, di-(C_1–C_4-alkyl)-phosphonyl, di-(C_1–C_4-alkyl)-phosphinyl or pyridyl, or is a radical of a 5- or 6-membered cyclic lactone bonded through the carbon in the α-position relative to the carbonyl group, or, R^4 is a radical of the formula

$$—D^7—CR^{15}R^{16}—L$$

in which

D^7 is O, S, NH, methylamino or ethylamino,

R^{15}, R^{16} independently of one another are hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkinyl, phenyl or benzyl,

L is an acid derivative radical of the formula

$$—CO—O—R^{17}$$

$$—CO—S—R^{18}$$

$$—CO—NR^{19}R^{20}$$

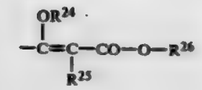
$$—CO—O—N=CR^{21}R^{22}$$

$$—CO—N=CR^{21}R^{22}$$

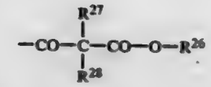
$$—O—CO—R^{23}$$

$$—S—CO—R^{23}$$

$$—NR^{14}—CO—R^{23}$$



or



R^{17} is hydrogen, C_2–C_4-alkenyl or C_2–C_4-alkinyl, cyclohexyl, cyclopentyl, cyclohexenyl, cyclopentenyl, benzyl, phenyl or phenyl substituted by one or more radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, nitro and cyano, R^{18} is hydrogen , C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkinyl, cyclohexyl, cyclopentyl, cyclohexenyl, cyclopentenyl, benzyl, phenyl or phenyl substituted by one or more radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, nitro and cyano,

R^{19}, R^{20} independently of one another are hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkinyl, cyclohexyl, cyclopentyl, benzyl, phenyl or phenyl substituted by one or more radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, nitro and cyano, or together with the nitrogen atom linking them, are a heterocyclic 5- or 6-membered ring,

R^{21}, R^{22} independently of one another are C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkinyl or together with the carbon atom linking them, a carbocyclic 5- or 6- membered ring,

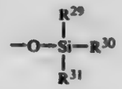
R^{23} is hydrogen, C_1–C_4-alkyl, cyclohexyl, cyclopentyl, phenyl or phenyl substituted by one or more radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, nitro and cyano,

R^{24} is C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkinyl, where the last-mentioned 3 radicals are unsubstituted or substituted by one or more radicals from the group consisting of halogen or C_1–C_4-alkoxy, or is C_1–C_4-alkanoyl, (C_1–C_4-alkoxy)-carbonyl, benzyl, benzoxycarbonyl, phenyl or benzoyl, where the last-membered 4 radicals are unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or nitro,

R^{25} hydrogen or C_1–C_4-alkyl,

R^{26} is hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkinyl, where the last-mentioned 3 radicals are unsubstituted or substituted by one or more halogen atoms

R^{27}, R^{28} independently of one another are hydrogen or C_1–C_4-alkyl, or R^4 is a radical of the formula



where R^{29}, R^{30}, R^{31} independently of one another are C_1–C_4-alkyl, C_2–C_4-alkenyl C_2–C_4-alkinyl, phenyl or phenyl substituted by one or more radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, nitro and cyano,

R^5 is C_1–C_4-alkyl, C_2–C_4-alkenyl or C_2–C_4-alkinyl, cyclohexyl, cyclopentyl, phenyl, pyridyl or thienyl, where the 3 last-mentioned radicals are unsubstituted or substituted by 1 to 3 radicals Z,

R^6 is hydrogen or C_1–C_4-alkyl, and

Z is halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino or nitro.

5,446,014

CATIONIC COMPOUND/XANTHAN GUM AQUEOUS COMPOSITIONS

Jean-Luc Schuppiser, Claye Souilly, and Magali Knipper, Paris, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 373,182, Jun. 29, 1989, abandoned, which is a continuation of Ser. No. 158,721, Feb. 23, 1988, abandoned. This application Jul. 26, 1991, Ser. No. 737,901

Claims priority, application France, Feb. 23, 1987, 87 02294

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[6] A01N *43/40, 33/12, 25/00*

U.S. Cl. 504—250 2 Claims

1. A precipitate-free solution, in water, consisting essentially of water, 0.01 to 0.2% by weight of paraquat and 0.005 to 0.05% by weight of a xanthan gum which has an intrinsic viscosity of less than 3,500 cm^3/g, measured in a distilled water 0.1M NaCl solution at 23° C.

5,446,015

SUPERCONDUCTING DEVICE HAVING A REDUCED THICKNESS OF OXIDE SUPERCONDUCTING LAYER

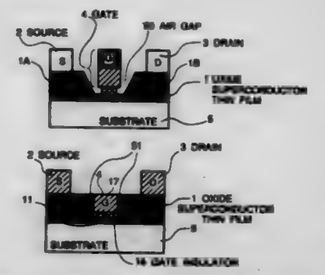
Takao Nakamura; Hiroshi Inada, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 761,047, Sep. 18, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,631

Claims priority, application Japan, Sep. 19, 1990, 2-249547; Sep. 28, 1990, 2-259159

Int. Cl.[6] H01L *39/00, 39/14*

U.S. Cl. 505—193 28 Claims



1. A superconducting device comprising a substrate having a principal surface, first and second oxide superconducting regions formed on the principal surface of the substrate and separated from each other, and a third oxide superconducting region of an extremely thin thickness formed on the principal surface of the substrate between the first and second oxide superconducting regions to bridge the first and second oxide superconducting regions and to form a superconducting channel between the first and second oxide superconducting regions, the first and second oxide superconducting regions being thick relative to the thickness of the third oxide superconducting region, a source electrode and a drain electrode provided on the first and second oxide superconducting regions, respectively, so that a superconducting current can flow through the superconducting channel between the source electrode and the drain electrode, a gate electrode formed through a gate insulator on the third oxide superconducting region for controlling superconducting current flow through

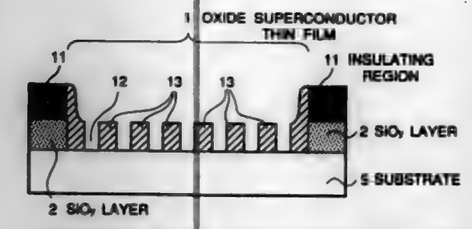
the superconducting channel, and a side electrically insulating region formed to completely cover each of opposite side surfaces of the gate electrode, the first, second and third oxide superconducting regions being formed of a same c-axis oriented, single crystal oxide superconductor thin film, and the gate electrode being surrounded by the oxide superconductor thin film but electrically isolated from the oxide superconductor thin film by the gate insulator and the side electrically insulating region.

5,446,016

METHOD FOR FORMING A PATTERNED OXIDE SUPERCONDUCTOR THIN FILM

So Tanaka; Takao Nakamura, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 15, 1994, Ser. No. 196,541
Claims priority, application Japan, Feb. 15, 1993, 5-048618; Apr. 26, 1993, 5-121966; Oct. 12, 1993, 5-279091
Int. Cl.[6] H01L *39/24*
U.S. Cl. 505—329 **17 Claims**



1. A method for forming a patterned oxide superconductor thin film on a substrate comprising the steps of:

forming a metal or semi-metal layer on a first portion of the substrate, on which portion of the substrate an oxide superconductor thin film will be formed,

forming a layer of a material containing silicon on a second portion of the substrate, on which portion of the substrate an insulating layer will be formed, wherein the second portion is surrounding the first portion of the substrate,

removing the metal or semi-metal layer and depositing the oxide superconductor thin film over the whole substrate.

5,446,017

SUPERCONDUCTIVE COPPER-CONTAINING OXIDE MATERIALS OF THE FORMULA $A_pB_qCu_2O_{4\pm r}$

Takeshi Sakurai, Yono; Nobuyuki Sugii, Tokyo; Seiji Adachi, Urayasu; Michiharu Ichikawa, Yokosuka; Yuji Yaegashi, Sendai; Hisao Yamauchi, Nagareyama; Masahiko Shimada, and Hirotsugu Takizawa, both of Sendai, all of Japan, assignors to Central Research Institute of Electric Power Industry; Tohoku Electric Power Co., Inc. and International Superconductivity Technology Center, all of Japan

Filed Apr. 12, 1993, Ser. No. 45,077
Claims priority, application Japan, Aug. 31, 1992, 4-257174
Int. Cl.[6] H01B *12/00*; H01L *39/12*
U.S. Cl. 505—125 **5 Claims**

1. A superconductive oxide material having the following formula:

$$A_pB_qCu_2O_{r\pm r}$$

wherein A represents an element selected from the group consisting of elements belonging to Group IIA of the Periodic Table, B is an element different from element A and selected from the group consisting of elements belonging to Group IIA of the Periodic Table, and p, q and r are numbers in the following ranges:

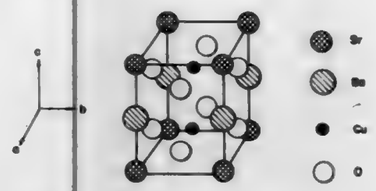
$0.9 \leq p \leq 1.1$

$0.9 \leq q \leq 1.1$

$0 \leq r \leq 0.6$

said oxide material having a crystal structure which belongs to a tetragonal system of P4/mmm and I-123 and which has the following lattice parameters:

$3.8 Å \leq a \leq 4.0 Å$



$7.6 Å \leq c \leq 8.0 Å$

said oxide material having an infinite layer structure composed of the following recurring unit:

CuO_2 plane—single layer cation sites A(1)-CuO_2 plane—single layer cation sites A(2),

wherein said cation sites A(1) are occupied solely by element A and cation sites A(2) are occupied solely by element-B, and wherein the atomic sites of said infinite layer structure are as follows:

Atomic Site	Position of Atoms		
	x	y	z
A(1) 1a	0	0	0
A(2) 1b	0	0	0.5
Cu 2h	0.5	0.5	0.25
O 4i	0	0.5	0.25.

5,446,018

SUPERCONDUCTING BEARING DEVICE

Ryoichi Takahata, Yamatotakada, and Motoaki Shibayama, Takamatsu, both of Japan, assignors to Koyo Seiko Co., Ltd., Takamatsu, Japan

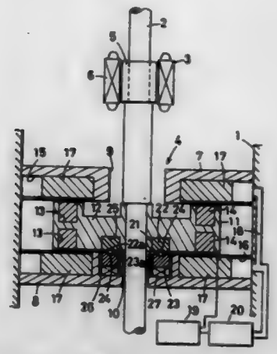
PCT No. PCT/JP92/00302, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO92/16761, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 13, 1992, Ser. No. 117,089
Claims priority, application Japan, Mar. 15, 1991, 3-051429
Int. Cl.[6] B60L *13/04*; H02K *7/09*
U.S. Cl. 310—90.5 **9 Claims**

1. A superconducting bearing device adapted to rotatably support a rotary body in a noncontact state, the rotary body being so disposed as to be movable relative to a fixed portion in the direction of an axis of rotation of said rotary body and in a direction orthogonal to the direction of the axis, the rotary body being rotatable relative to the fixed portion, the superconducting bearing device comprising:

a permanent magnet mounted on the rotary body;

a Type II superconductor attached to the fixed portion and opposed to the magnet, the permanent magnet being so mounted on the rotary body that rotation of the rotary body will not alter magnetic flux distribution around the axis of rotation of the rotary body, the Type II superconductor permitting the penetration of magnetic flux of the permanent magnet thereinto in a temperature environment realizing a Type II superconducting state and being so attached to the fixed portion as to be disposed at a position which is spaced apart from the magnet by a distance permitting a predetermined quantity of magnetic flux thereof to penetrate thereinto and which will not permit the rotation of the rotary body to alter the distribution of penetrating of magnetic flux, opposed portions being provided between the fixed portion and the rotary body; and

an initial position determining mechanism being provided at the opposed portions for positioning the fixed portion and



the rotary body relative to each other so that magnetic flux from the magnet is pinned to the superconductor, the initial position determining mechanism comprising an annular portion provided concentrically with the rotary body and a ring which is movable in the direction of the axis of rotation, the ring disposed on the fixed portion and corresponding to the annular portion, a recessed portion and a ridge portion being so provided between the annular portion and the ring as to be related to each other for determining the position of the fixed portion and the rotary body relative to each other when the ring is moved in the direction of the axis.

5,446,019

BACILLUS THURINGIENSIS TOXIN WITH ACTIVITY AGAINST DIABROTICA SPECIES

Susan Ely, Ithaca, N.Y., and Janet M. Tippett, Ames, Iowa, assignors to Zeneca Limited, London, England

Filed Jan. 6, 1994, Ser. No. 178,554
Claims priority, application United Kingdom, Jan. 6, 1993, 9300124
Int. Cl.[6] A01N *37/18*
U.S. Cl. 514—2 **3 Claims**

1. An insecticidal protein produced by *Bacillus thuringiensis* strain JHCC 5767, said protein being larvacidal to Western Corn Rootworm, approximately 35 to 41 kilodaltons in size and having an N terminal amino acid sequence selected from the group consisting of XTSLTLQTXXES AND XTSLTLQTXXFS.

5,446,020

METHOD OF TREATING DIABETES WITH TISSUE-SELECTIVE INSULIN ANALOGS

Robin J. Andy, Cupertino, Calif., and Eric R. Larson, Mystic, Conn., assignors to Scios Nova Inc., Mountain View, Calif.

Division of Ser. No. 918,953, Jul. 30, 1992, Pat. No. 5,268,453, which is a continuation-in-part of Ser. No. 741,938, Aug. 8, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 81,661
Int. Cl.[6] A61K *37/26*; C07K *7/00*
U.S. Cl. 514—3 **12 Claims**

1. A method of treating diabetes in a human which comprises administering to a human a therapeutically effective amount of an insulin analog wherein position $A12_{Ser}$ is substituted with Gly and the analog is hepatoselective.

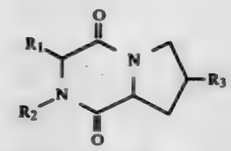
5,446,021

AGRICULTURAL AND HORTICULTURAL COMPOSITIONS INDUCING RESISTANCE IN PLANTS AGAINST SALT- AND WATER-STRESS

Masaharu Kurohashi; Ko Nakamura, and Kazuharu Ienaga, all of Hyogo, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 807,756, Dec. 17, 1991, abandoned, which is a continuation of Ser. No. 632,662, Dec. 27, 1990, abandoned, which is a continuation of Ser. No. 316,620, Feb. 28, 1989, abandoned. This application May 10, 1994, Ser. No. 240,534
Claims priority, application Japan, Mar. 1, 1988, 63-49117
Int. Cl.[6] A61K *38/12*
U.S. Cl. 514—9 **9 Claims**

1. A method of inducing resistance in plants against salt- and water-stress which comprises treating seeds and plants with a cyclic dipeptide of the formula



wherein R_1 is a C_4 alkyl group and R_2 is a hydrogen atom, or R_1 and R_2 are joined to form a pyrrolidine ring which may optionally have at least one hydroxy group substituent, and R_3 is a hydrogen atom or a hydroxy group; or an agriculturally or horticultually acceptable salt thereof.

5,446,022

WF11243 SUBSTANCE

Akihiko Fujie, Tsuchiura; Shigehiro Takase, Ishioka; Michio Yamashita, Tsukuba; Tomoko Sato, Tsukuba; Seiji Hashimoto, Tsukuba, and Masakuni Okuhara, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00586, § 371 Date Nov. 4, 1993, § 102(e) Date Nov. 4, 1993, PCT Pub. No. WO92/19648, PCT Pub. Date Nov. 12, 1992
PCT Filed May 8, 1992, Ser. No. 140,074
Claims priority, application Japan, May 9, 1991, 3-132234; Oct. 21, 1991, 3-299552
Int. Cl.[6] C07K *11/02*; C12P *21/02*; C12N *1/14*; A61K *38/12*
U.S. Cl. 514—11 **7 Claims**

1. WF11243 substance having, as its hydrochloride, the following physico-chemical properties or its salts:

(1) Appearance:
white powder

(2) Melting point:
182° to 187° C.

(3) Specific rotation:
$[\alpha]_D^{23}$ +29° (c=1.5, methanol)

(4) Molecular formula:
$C_{71}H_{116}N_{14}O_{23}.HCl$

(5) Elemental analysis:
Calcd (%): for $C_{71}H_{116}N_{14}O_{23}.HCl.8H_2O$ C 49.74, H 7.82, N 11.44
Found (%): C 49.65, H 7.72, N 11.40

(6) Solubility:
soluble: methanol, water
slightly soluble: acetone
insoluble: n-hexane

(7) Color reaction:
positive: iodine vapor reaction, ceric sulfate reaction, ninhydrin reaction

negative: Molish reaction, Ehrlich reaction

(8) Thin layer chromatography (TLC):

Stationary phase	Developing solvent	Rf value
Silica gel 60 F_{254} (made by E. Merck)	n-butanol/acetic acid/water (4/1/2)	0.42
RP-18 $WF_{254}S$ (made by E. Merck)	45% aqueous acetonitrile (containing 0.5% $NH_4H_2PO_4$)	0.18

(9) Infrared absorption spectrum (FT-IR (KBr)): Significant peaks are

ν_{max}^{KBr}:	3400, 2920, 1730, 1660, 1650, 1635, 1540, 1520, 1460, 1250, 1090 cm^{-1}

(10) High performance liquid chromatography (HPLC):
column: YMC.Pack ODS-AM (AM-303, S-5, 120A, 4.6 mm ID×250 mm; YMC Co., Ltd.)
detection: 210 nm
developing solvent: 45% aqueous acetonitrile (containing 0.5% $NH_4H_2PO_4$)
flow rate: 1 ml/min
retention time (RT): 10.9 min

(11) ^{13}C Nuclear magnetic resonance spectrum (100 MHz, CD_3OD):
FIG. 1 shows the chart.
δc: 176.1 (s), 174.6 (s), 174.0 (s), 173.8 (s), 173.4 (s), 172.8 (s), 172.6 (s), 172.5 (s), 172.4 (s), 172.1 (s), 171.9 (s), 171.8 (s), 171.7 (s), 171.2 (s), 156.1 (s), 131.4 (d) ×2, 128.6 (s), 117.9 (d) ×2, 74.2 (d), 72.0 (d), 70.5 (d), 70.1 (d), 70.0 (d), 69.1 (d), 68.8 (d), 68.3 (d), 67.7 (d), 61.4 (d), 60.9 (d), 60.3 (d), 59.8 (d), 58.2 (d), 57.9 (t), 57.6 (d), 57.2 (d), 56.8 (d), 51.7 (d), 50.8 (d), 46.4 (t), 43.1 (t), 42.9 (t), 40.4 (t), 39.9 (t), 38.9 (t), 37.6 (t), 35.8 (t), 34.7 (t), 33.1 (t), 31.6 (d), 30.8 (t), 30.7 (t), 30.7 (t), 30.7 (t), 30.6 (t), 30.5 (t), 30.4 (t), 30.3 (t), 28.1 (t), 25.9 (t), 24.9 (t), 23.7 (t), 21.2 (q), 20.9 (q), 20.3 (q), 19.2 (q), 18.9 (q), 18.7 (q), 17.2 (q), 14.4 (q).

(12) ^1H Nuclear magnetic resonance spectrum (400 MHz, CD_3OD):
FIG. 2 shows the chart.
δ_H: 7.08 (2H, d, J=8 Hz), 6.98 (2H, d, J=8 Hz), 5.18–5.09 (2H, m), 4.88 (1H, br s), 4.76–4.69 (3H, m), 4.65 (1H, m), 4.48 (1H, m), 4.46 (1H, d, J=5 Hz), 4.41 (1H, d, J=9 Hz), 4.36–4.27 (3H, m), 4.24–4.13 (6H, m), 3.98 (1H, m), 3.92–3.78 (3H, m), 3.70 (1H, dd, J=11 and 4 Hz), 3.58 (1H, br d, J=11 Hz), 3.00–2.93 (3H, m), 2.80 (1H, dd, J=13 and 11 Hz), 2.56 (1H, dd, J=13 and 11 Hz), 2.45 (1H, dd, J=14 and 9 Hz), 2.37 (1H, br d, J=13 Hz), 2.30 (1H, m), 2.21–2.05 (3H, m), 2.03–1.93 (2H, m), 1.89 (1H, m), 1.77 (1H, m), 1.62–1.50 (4H, m), 1.39 (3H, d, J=6 Hz), 1.35 (3H, d, J=6.5 Hz), 1.35 (3H, d, J=6.5 Hz), 1.30 (3H, d, J=6 Hz), 1.28 (22H, m), 1.13 (3H, d, J=6 Hz), 0.89 (3H, t, J=7 Hz), 0.81 (3H, d, J=6.5 Hz), 0.80 (3H, d, J=6.5 Hz)

(13) Molecular formula and FAB-MS:
$C_{71}H_{116}N_{14}O_{23}.HCl$
FAB-MS m/z 1533 $(M+H)^+$;
HRFAB-MS m/z 1555.8240
(calcd for $C_{71}H_{116}N_{14}O_{23}Na$: 1555.8235).

(14) Analysis of amino acids:
Thr (4), Gly (1), Ala (1), Val (1), Tyr (1), Orn (1) (as hydrolyzed in 6N HCl at 110° C. for 20 hours)

(15) Ultraviolet absorption spectrum: Significant peaks are:

$\lambda_{max}^{H_2O}$:	225 (sh), 275 (1200), 280 (sh) nm
$\lambda_{max}^{0.01N\ HCl}$:	225 (sh), 275, 280 (sh) nm
$\lambda_{max}^{0.01N\ NaOH}$:	240, 292 nm

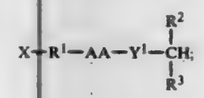
5,446,023

AMPHIPHILIC COMPOUNDS DERIVED FROM AMINO ACIDS OR PEPTIDES, THEIR METHODS OF SYNTHESIS AND THEIR APPLICATION AS DRUG DELIVERY SYSTEMS

Andre A. Pavia, Villeneuve-les-Avignon; Bernard Pucci, Molleges; Jean G. Riess, Falicon; Leila Zarif, St. Laurent du Var, and Camille Guedj, Pont-Saint-Esprit, all of France, assignors to Alliance Pharmaceutical Corporation, San Diego, Calif.

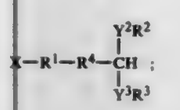
Filed Aug. 2, 1993, Ser. No. 100,688
Claims priority, application France, Aug. 6, 1992, 92 09776
Int. Cl.[6] A61K *37/00*; C07K *9/00*
U.S. Cl. 514—12 **19 Claims**

1. An amphiphilic compound derived from an amino acid or a peptide and having the formula:



(I)

or

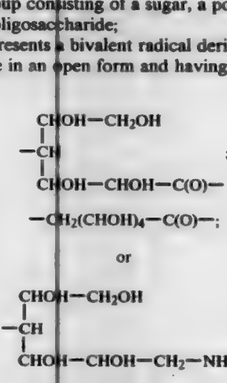


(II)

wherein

a. X is a polyhydroxylated hydrophilic moiety selected from the group consisting of a sugar, a polyol, an aminopolyol or an oligosaccharide;

b. R^1 represents a bivalent radical derived from a monosaccharide in an open form and having the formula:



(III)

(IV)

or

(V)

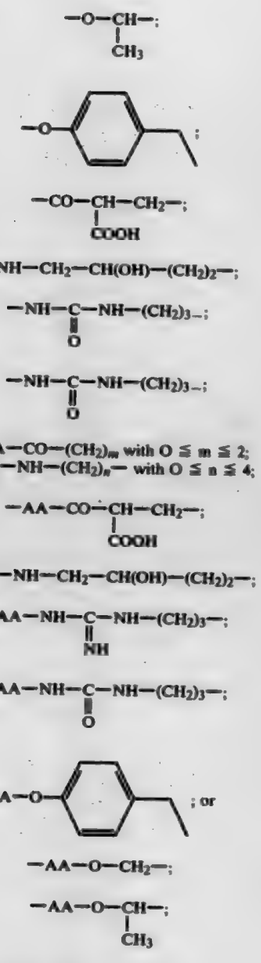
c. AA is an amino acid or peptide moiety;

d. Y^1 is —NH—, —S—, —CO—, —C(O)—$(CH_2)_L$—, wherein L is 1 or 2, or —O—;

e. R^2 and R^3, which can be identical or different, are H; a linear or branched, saturated or unsaturated $C_{5\text{-}20}$ hydrocarbon; or a linear or branched, saturated or unsaturated $C_{5\text{-}20}$ fluorinated hydrocarbon or fluorocarbon radical wherein 50 to 100% of the hydrogen atoms have been replaced by fluorine atoms, said hydrocarbon, fluorinated hydrocarbon or fluorocarbon radical optionally having one or more O and S atoms within the C chain, and optionally having the hydrogen atoms of said radical replaced by one or more chlorine or bromine atoms; and an unsaturated terminal group having the formula: CH═CH_2
—O—CH═CH_2;
—OC(O)CR_5═CH_2;
—C(O)—CR_5═CH_2; or

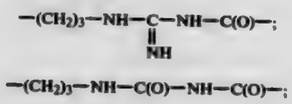
—NHC(O)CR_5═CH_2
in which R^5 is H or CH_3, provided that R^2 and R^3 do not both represent H;

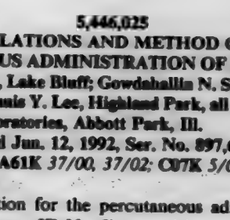
f. R^4 represents
—$CO(CH_2)_m$— with O≦m≦2;
—$NH(CH_2)_n$— with O≦n≦4;
—O—CH_2—;



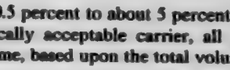
wherein AA is an amino acid or peptide;

g. Y^2 and Y^3, which are different, are
—$(CH_2)_m$C(O)—NH— with O≦m≦2;
—$(CH_2)_m$C(S)—NH— with O≦m≦2;
—$(CH_2)_p$OC(O);
—$(CH_2)2_p$OC(O)— with O≦p≦2;
—(CH_2)S—;
—C(O)O—;
—C(O)S—;
—$(CH_2)_n$NHC(O)— with O≦n≦4;
—$(CH_2)_2$—CH(OH)—CH_2—NH—C(O)—;





—$(CH_2)_nNH$—C(O)—NH— with O ≦ n ≦ 4;
—$(CH_2)_2$—CH(OH)—CH_2—NH—C(O)—NH—;
—$(CH_2)_3$—NH—C(O)—NH—C(O)—NH—; or



provided that at least one of the Y^2 and Y^3 represent —NH—C(O)— or —C(O)—NH—.

5,446,024

PURIFICATION OF INSULIN-LIKE GROWTH FACTOR

Stuart E. Builder, Belmont; John R. Ogez, Redwood City; Charles V. Olson, Pacifica, and David Reifsnyder, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Dec. 17, 1993, Ser. No. 169,688
Int. Cl.[6] A61K *38/08*; C12N *15/18*; C07K *14/00*
U.S. Cl. 514—12 **19 Claims**

1. A process for purifying IGF-I comprising loading a mixture containing IGF-I onto a preparative reversed-phase liquid chromatography column and eluting the IGF-I from the column with a buffer at a pH of about 6–8 containing an alcoholic or polar aprotic solvent at a concentration of about 20–30% (v/v).

5,446,025

FORMULATIONS AND METHOD OF THE PERCUTANEOUS ADMINISTRATION OF LEUPROLIDE

Mou-Ying Fu Lu, Lake Bluff; Gowdahalli N. Subba Rao, Mundelein, and Dennis Y. Lee, Highland Park, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 12, 1992, Ser. No. 897,680
Int. Cl.[6] A61K *37/00, 37/02*; C07K *5/00, 7/00*
U.S. Cl. 514—15 **7 Claims**

1. A composition for the percutaneous administration of leuprolide (Sequence ID No. 2) comprising
a therapeutically effective amount of leuprolide free base;
a cutaneous membrane penetration enhancing component comprising from about 3 percent to about 30 percent of the composition wherein said cutaneous membrane enhancing agent comprises
from about 1 percent to about 15 percent urea,
from 1 percent to about 5 percent menthol,
from about 0.5 percent to about 5 percent methyl salicylate, and
from about 0.5 percent to about 5 percent camphor; and
a pharmaceutically acceptable carrier, all percentages in weight/volume, based upon the total volume of the composition.

5,446,026

POTENT NON-OPIATE ANALGESIC

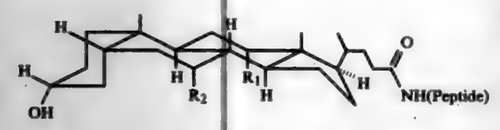
Michael R. Ruff, Potomac; Joanna M. Hill, Gaithersburg; Lawrence D. Kwart, Germantown, and Candace B. Pert, Potomac, all of Md., assignors to Advanced Peptides & Biotechnology Sciences, Sewickley, Pa.

Continuation of Ser. No. 650,141, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 541,199, Jun. 11, 1990, abandoned, which is a continuation of Ser. No. 391,272, Aug. 9, 1989, abandoned. This application Feb. 19, 1993, Ser. No. 19,830

Int. Cl.[6] C07K *7/06, 9/00*

U.S. Cl. 514—15 11 Claims

1. A peptide of the formula



wherein the peptide fragment has the following amino acid sequence Pro-Arg-Thr-Asn-Thr-Gly-Ser-Gly-Thr-Pro-amide and wherein R_1 and R_2 are selected from the group consisting of hydrogen and hydroxyl.

5,446,027

AMIDE DERIVATIVE AND EXTERNAL SKIN CARE PREPARATION CONTAINING THE SAME

Takatoshi Fujimori, Ichikai; Yukihiro Ohashi, and Akira Kawamata, both of Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

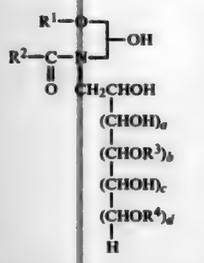
Filed Nov. 2, 1993, Ser. No. 144,411

Claims priority, application Japan, Nov. 2, 1992, 4-294504

Int. Cl.[6] A61K *31/70, 31/16*

U.S. Cl. 514—25 17 Claims

1. An amide represented by the following formula (1):



(1)

wherein R^1 is a linear or branched, saturated or unsaturated hydrocarbon group having 10–26 carbon atoms, R^2 is a linear or branched alkyl group having 10–26 carbon atoms, R^3 and R^4 are individually a hydrocarbon group which has 1–12 carbon atoms and may contain an oxygen atom, and a, b, c and d are individually a number of 0–3, with the proviso that b and d are not 0 at the same time.

5,446,028

ANTI-ACNE METHOD AND COMPOSITION

Robert W. Klein, Fort Washington, and Albert M. Packman, Dresher, both of Pa., assignors to Dermik Laboratories, Inc., Collegeville, Pa.

Continuation of Ser. No. 891,449, May 29, 1992, abandoned, and a continuation-in-part of Ser. No. 243,883, Sep. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 61,951, Jul. 27, 1987, abandoned, which is a continuation of Ser. No. 808,627, Dec. 12, 1985, abandoned. This application Apr. 8, 1994, Ser. No. 225,409

Int. Cl.[6] A61K *31/71, 31/075*

U.S. Cl. 514—43 10 Claims

1. A composition for the topical treatment of acne comprising a peroxide and antibiotic of the lincomycin family, said composition being substantially stable at a temperature of 50° C. for a period of thirty (30) days.

5,446,029

ANTI-RETROVIRAL ACTIVITY OF 2',3'-DIDEOXY-3'-FLUORONUCLEOSIDES

Bertil F. H. Eriksson, Tumba; Karl N. G. Johansson, Enhörna; Göran B. Stening, Södertälje, and Bo F. Oberg, Upsala, all of Sweden, assignors to Medivir AB, Huddinge, Sweden

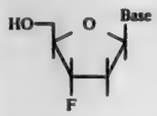
Continuation of Ser. No. 603,215, Oct. 25, 1990, abandoned, which is a division of Ser. No. 319,840, Mar. 7, 1989, which is a continuation of Ser. No. 143,577, Dec. 30, 1987, abandoned. This application Sep. 9, 1993, Ser. No. 118,356

Claims priority, application Sweden, Jul. 4, 1986, 8602981

Int. Cl.[6] A61K *31/505, 31/52*

U.S. Cl. 514—45 3 Claims

1. A method for therapeutic treatment of hepatitis B virus (HBV) infections in man, comprising administering to a patient in need thereof, an effective anti-hepatitis B viral amount of a compound of the formula



wherein Base is selected from the group consisting of thymine, cytosine, adenine and guanine, or a physiologically acceptable salt thereof.

5,446,030

PREVENTION OF HEMOLYSIS

Paul B. Weisz, 3 Delaware Rim Dr., Yardley, Pa. 19067, and Edward J. Macarak, 14 Winding Way, Glen Mills, Pa. 19342

Filed Sep. 19, 1991, Ser. No. 762,606

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[6] A61K *31/56, 31/715;* C07H *1/00;* C08B *37/16*

U.S. Cl. 514—58 10 Claims

1. A method of preventing hemolysis of erythrocytes comprising contacting the erythrocytes with an anionic oligosaccharide.

5,446,031

1-β-D-ARABINOFURANOSYL-(E)-5-(2-HALOGENOVINYL) URACIL DERIVATIVES

Shinji Sakata; Haruhiko Machida; Katsushi Ijichi, and Fumitaka Kano, all of Choshi, Japan, assignors to Yamasa Shuyu Kabushiki Kaisha, Chiba, Japan

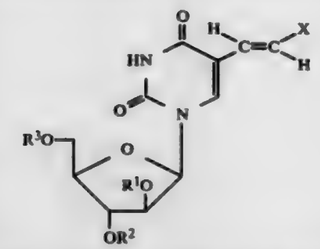
Continuation of Ser. No. 958,115, Dec. 23, 1992, abandoned. This application Oct. 27, 1994, Ser. No. 329,782

Claims priority, application Japan, Apr. 24, 1991, 3-94470

Int. Cl.[6] A61K *31/70;* C07H *19/09*

U.S. Cl. 514—50 3 Claims

1. A 1-β-D-arabinofuranosyl-(E)-5-(2-halogenovinyl)uracil compound represented by the following formula (I):



(I)

wherein X represents a halogen; and wherein R^1 and R^2 are hydrogen and R^3 is alkyl having 1 to 10 carbon atoms.

3. A pharmaceutical composition consisting essentially of, as an active ingredient, the compound of claim 1 with a pharmaceutically acceptable carrier, which is in the form of a preparation suitable for oral administration.

5,446,032

IMIDAZO (4,5-C) PYRIDINE DERIVATIVES AS PAF ANTAGONISTS

Mark Whittaker, and Andrew Miller, both of Oxford, England, assignors to British Biotech Pharmaceuticals Limited, Oxford, United Kingdom

PCT No. PCT/GB92/01370, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/02080, PCT Pub. Date Feb. 4, 1993

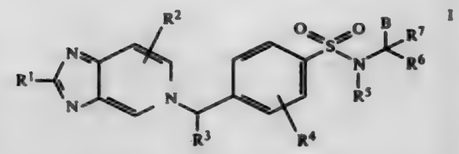
PCT Filed Jul. 24, 1992, Ser. No. 185,815

Claims priority, application United Kingdom, Jul. 24, 1991, 9116056

Int. Cl.[6] A61K *31/435;* C07D *471/04*

U.S. Cl. 514—63 16 Claims

1. A compound of formula I;



I

wherein:

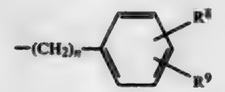
each of R^1 and R^3 independently represents hydrogen or a $—C_1–C_6$ alkyl group;

R^2 represents a group substituted at one or more of the 4, 6 or 7 positions of the imidazo[4,5-c]pyridine heterocycle, said group(s) being independently selected from hydrogen, $—C_1–C_6$ alkyl, $—OC_1–C_6$ alkyl, or halogen;

R^4 represents hydrogen, $—C_1–C_6$ alkyl, $—OC_1–C_6$ alkyl, or a halogen;

R_5 represents hydrogen, $—C_1–C_6$ alkyl, $—C_2–C_6$ alkenyl, $—C_2–C_6$ alkynyl, $—COC_1–C_6$ alkyl, $—CO_2C_1–C_6$ alkyl, $—(COC_1–C_6$ alkyl)phenyl, $—(CO_2C_1–C_6$ alkyl)phenyl, $—(C_1–C_6$ alkyl)$OC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$SC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$CO_2C_1–C_6$ alkyl, $—C_3–C_8$ cycloalkyl, $—C_4–C_8$ cycloalkenyl or a group —D

wherein D represents a group;



wherein n is an integer from 0 to 3, and each of R^8 and R^9 is independently hydrogen, $—C_1–C_6$ alkyl, $—C_2–C_6$ alkenyl, $—C_2–C_6$ alkynyl, halogen, —CN, $—CO_2H$, $—CO_2C_1–C_6$ alkyl, $—CONH_2$, $—CONHC_1–C_6$ alkyl, $—CON(C_1C_6$ alkyl)$_2$, —CHO, $—CH_2OH$, $—CF_3$, $—OC_1–C_6$ alkyl, $—SC_1–C_6$ alkyl, $—SOC_1–C_6$ alkyl, $—SO_2C_1–C_6$ alkyl, $—NH_2$ or —NHCOMe;

each of R^6 and R^7 independently represent hydrogen, halogen, $—C_1–C_6$ alkyl optionally substituted by one or more halogen atoms, $—C_2–C_6$ alkenyl, $—C_2–C_6$ alkynyl, $—(C_1–C_6$ alkyl)$CO_2C_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$SC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$OC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$N(C_1–C_6$ alkyl)$_2$, $—C_3–C_8$ cycloalkyl, $—C_4–C_8$ cycloalkenyl, $—(C_1–C_6$ alkyl)$C_3–C_8$ cycloalkyl, $—(C_1–C_6$ alkyl)$C_4–C_8$ cycloalkenyl, $—(C_1–C_6$ alkyl)$OC_3–C_8$ cycloalkyl, $—(C_1–C_6$ alkyl)$OC_4–C_8$ cycloalkenyl, $—(C_1–C_6$ alkyl)$SC_3–C_8$ cycloalkyl, $—(C_1–C_6$ alkyl)$SC_4–C_8$ cycloalkenyl, a side chain of a naturally occurring amino acid, a group -D, or a $—(C_1–C_6$ alkyl)OD group wherein D is as defined above;

or R^5 together with R^6 or R^7 and the atoms to which they are attached form a 5 to 8 membered nitrogen-containing heterocyclic ring;

or R^6 and R^7 together with the carbon atom to which they are attached form a $C_3–C_8$ cycloalkyl ring;

B represents a) a $-(CH_2)_mA$ group wherein m is an integer from 0 to 1 and the group A represents a 5- or 6-membered heterocyclic ring, which heterocyclic ring may be optionally fused to a benzene ring or to a further 5-, 6- or 7-membered, heterocyclic ring containing one or more nitrogen atoms, wherein at least one, of the said heterocyclic tings may also contain an oxygen or sulphur atom, and wherein any of the rings may be optionally substituted with one or more substituents selected from hydrogen, halogen, $—C_1–C_4$ perfluoroalkyl, hydroxyl, carboxyl, $—CONH_2$, a group —D wherein D is as defined above, $—R^{10}$, $—OR^{10}$, $—SR^{10}$, $—SOR^{10}$, SO_2R^{10}, $—NHR^{10}$, $—NR^{10}R^{10}$, $—CO_2R^{10}$ or $—CONHR^{10}$ wherein R^{10} is $—C_1–C_6$ alkyl, $—C_2–C_6$ alkenyl, $—C_2–C_6$ alkynyl, $—C_3–C_8$ cycloalkyl or $—C_4–C_8$ cycloalkenyl each of which is optionally substituted with one or more substituents selected from halogen, hydroxyl, amino, carboxyl, $—C_1–C_4$ perfluoroalkyl, $—C_1–C_6$ alkyl, $—C_2–C_6$ alkenyl, $—C_2–C_6$ alkynyl, $—C_3–C_8$ cycloalkyl, $—C_4–C_8$ cycloalkenyl, $—OC_1–C_6$ alkyl, $—SC_1–C_6$ alkyl, tetrazol-5-yl, a group —D wherein D is as defined above or a heteroaryl or heteroarylmethyl group;

b) a $—ZR^{11}$ group wherein Z is $—C(=O)—$, $—C(=O)O—$, $—C(=O)S—$, $—(C_1–C_6$ alkyl)$O—$, $—(C_1–C_6$ alkyl)$OC(=O)—$, $—C(=S)—$, $—C(=S)O—$, $—(C_1–C_6$ alkyl)$S—$, $—(C_1–C_6$ alkyl)$OC(=O)C(=O)O—$, $—(C_1–C_6$ alkyl)$OSO_2—$, $—NHC(=O)O—$, $—(C_1–C_6$ alkyl)$OC(=O)NH—$, $—(C_1–C_6$ alkyl)$C(=O)O—$ group, or $—(C_1–C_6$ alkyl)$OSi(C_1–C_6$ alkyl)$_2—$, $—(C_1–C_6$ alkyl)$OSiPh_2$-group and R^{11} is hydrogen, $—C_1–C_{18}$ alkyl, $—C_2–C_{18}$ alkenyl, $—C_2–C_{18}$ alkynyl, $—(C_1–C_6$ alkyl)$OC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$SC_1–C_6$ alkyl, $—(C_1–C_6$ alkyl)$OC(C_1–C_6$ alkyl)$OC_1–C_6$ alkyl, $—C_3–C_8$ cycloalkyl, $—C_4–C_8$ cycloalkenyl, a group D as defined above or a group A as defined above;

c) a $—CH_2NR^{12}R^{13}$ group or a $—CONR^{12}R^{13}$ group wherein each of R^{12} and R^{13} is independently hydrogen, $—C_1–C_6$ alkyl, $—C_3–C_8$ cycloalkyl, pyridyl, a group D as defined above or R^{12} and R^{13} together with the nitrogen atom to which they are attached form a 5 to 8 membered nitrogen-containing heterocyclic ring;

or a pharmaceutically or veterinarily acceptable acid addition salt or hydrate thereof.

5,446,033

STABILIZED HEXADECYLPHOSPHOCHOLINE SOLUTIONS IN GLYCEROL ALKYL ETHERS

Jürgen Engel, Alzenau; Elisabeth Wolf-Heuss, Mosbach; Helmut Orth, Hanau; Burkhard Wichert, Bielefeld, and Dieter Sauerbier, Werther, all of Germany, assignors to Asta Medica AG, Germany

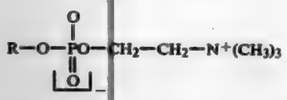
Filed Oct. 19, 1993, Ser. No. 137,964

Claims priority, application Germany, Oct. 23, 1992, 42 35 911.2

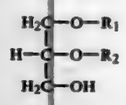
Int. Cl.[6] A61K *31/685*

U.S. Cl. 514—77 **11 Claims**

1. An aqueous solution of at least one alkylphosphocholine having the formula:



in which R is an alkyl group containing 12–20 carbon atoms which may contain a double or triple bond and at least one glycerol ether having the formula:



II

in which one of the groups R_1 and R_2 is an alkyl group containing 2 to 12 carbon atoms and the other of the groups R_1 and R_2 is hydrogen, said solution containing a buffer which maintains the pH in the range 4 and 6.

5,446,034

VITAMIN D ANALOGUES

Claus Aage S. Bretting, Frederiksberg, and Gunnar Grue-Sørensen, Olstykke, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

PCT No. PCT/DK93/00108, § 371 Date Apr. 4, 1994, § 102(e) Date Apr. 4, 1994, PCT Pub. No. WO93/19044, PCT Pub. Date Sep. 30, 1993

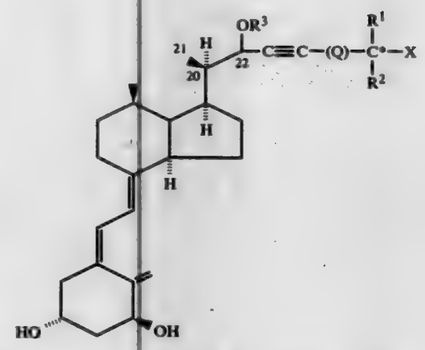
PCT Filed Mar. 23, 1993, Ser. No. 211,420

Claims priority, application United Kingdom, Mar. 26, 1992, 9205648

Int. Cl.[6] C07C *401/00*

U.S. Cl. 514—167 **8 Claims**

1. A compound of the formula I



I

in which formula X is hydrogen or hydroxy; R^1 and R^2 which may be the same or different, stand for hydrogen or a C_1–C_6 hydrocarbyl radical; or R^1 and R^2 taken together with the carbon atom (starred in formula I) bearing the group X, can form a C_3–C_8 carbocyclic ring; R^3 stands for hydrogen or a C_1–C_{10} hydrocarbyl radical or for YR^4 in which Y stands for the radicals —CO—, —CO—O—, —CO—S—, —CS—, —CS—O—, —CS—S—, —SO— or —SO_2—, and R^4 stands for hydrogen or a C_1–C_{10} hydrocarbyl radical; Q is a single bond or a C_1–C_8 hydrocarbylene diradical; R^1, R^2, R^3 and/or Q may be optionally substituted with one or more deuterium or fluorine atoms.

5,446,035

20-METHYL-SUBSTITUTED VITAMIN D DERIVATIVES

Günter Neef; Andreas Steinmeyer; Gerald Kirsch; Katica Schwarz; Ruth Taleroff-Ekerdt; Herbert Wiesinger, and Martin Haberey, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

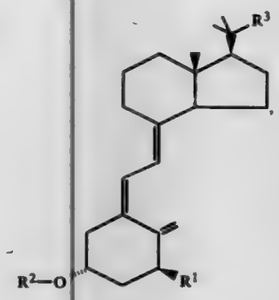
Continuation of Ser. No. 988,262, Dec. 14, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,081

Claims priority, application Germany, Dec. 13, 1991, 41 41 746.1

Int. Cl.[6] C07C *401/00*

U.S. Cl. 514—167 **7 Claims**

1. A 20-Methyl-substituted vitamin D compound of formula I



(I)

wherein

R^1 is a hydrogen atom, a hydroxy group, a C_1–C_{12}-alkanoyloxy group, or a benzoyloxy group;

R^2 is a hydrogen atom, a C_1–C_{12}-alkanoyl group, or a benzoyl group; and

R^3 is a saturated or unsaturated, straight-chain or branched C_1–C_{18}-hydrocarbon group, which group optionally contains a C_{3-10}-cycloalkyl or -cycloalkenyl moiety, said hydrocarbon group optionally being substituted with at least one of hydroxy, oxo, amino or halogen, and in which

at least one carbon atom is optionally replaced by an oxygen, sulfur or nitrogen atom.

5,446,036

13-ALKYL-11BETA-PHENYLGONANES

Stefan Scholz; Eckhard Ottow; Guenter Neef; Walter Elger; Sybille Beier, and Krzysztof Chwalisz, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

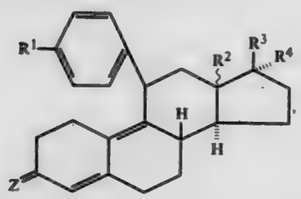
Division of Ser. No. 374,809, Jul. 3, 1989, Pat. No. 5,273,971. This application Nov. 2, 1993, Ser. No. 144,474

Claims priority, application Germany, Jul. 1, 1988, 38 22 770.3

Int. Cl.[6] C07J *19/00, 21/00*; A61K *31/585*

U.S. Cl. 514—175 **10 Claims**

1. 13-alkyl-11beta-phenyl-gonanes of formula I



(I)

in which

Z is an oxygen atom or the hydroxyimino grouping N—OH,

R^1 is

a) cycloalkyl radical, optionally substituted by one or more halogen, optionally protected hydroxy, alkoxy, cyano, oxidized alkylthio, optionally in the form of sulfoxide or sulfone and/or dialkylamino radicals, optionally in the form of the N-oxide,

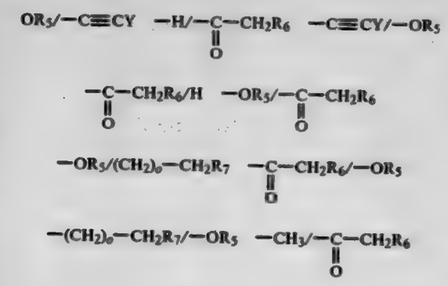
b) a cycloalkenyl radical, optionally substituted by one or more halogen, optionally protected hydroxy, alkoxy, cyano, oxidized alkylthio, optionally in the form of sulfoxide or sulfone and/or dialkylamino radicals, optionally in the form of the N-oxide,

c) an aryl radical, optionally substituted by one or more halogen, optionally protected hydroxy, alkoxy, cyano, oxidized alkylthio, optionally in the form of sulfoxide or sulfone and/or dialkylamino radicals, optionally in the form of the N-oxide, or

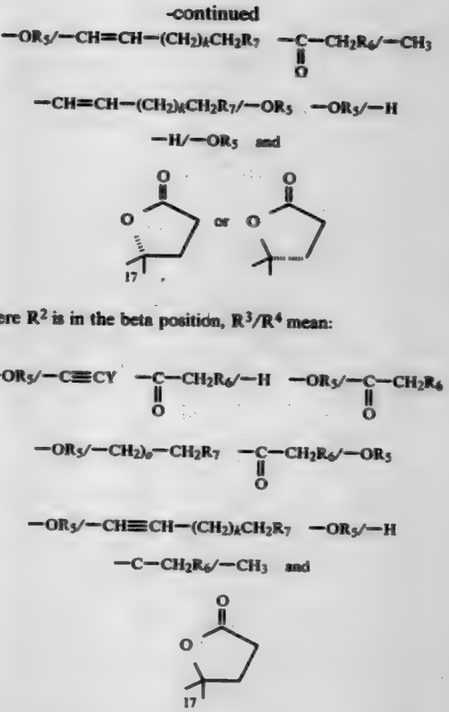
d) an alkenyl radical exhibiting straight-chain or branched, one or more double bonds with 2 to 10 carbon atoms,

R^2 is an alpha- or beta-position methyl or ethyl radical, and if R^2 is in the alpha-position, R^1 additionally stands for a straight-chain or branched alkyl radical with 1 to 10 carbon atoms, and if R^2 is in the beta-position, R^1 additionally stands for an ethyl radical, but R^1 cannot be a dialkylamino substituted aryl radical or the N-oxide of a dialkylamine substituted aryl radical,

where R^2 is in the alpha-position, R^3/R^4 mean:



-continued



where R^2 is in the beta position, R^3/R^4 mean:

where

R_5 is a hydrogen atom or an acyl radical with 1 to 4 carbon atoms,

Y is a hydrogen, chlorine, fluorine, iodine or bromine atom, an alkyl, hydroxyalkyl, alkoxyalkyl or acyloxyalkyl group each with 1 to 4 carbon atoms in the alkyl or acyl radical,

R_6 is a hydrogen atom, a hydroxyl group, an alkyl, O-alkyl, or O-acyl group each with 1 to 4 carbon atoms,

o is 0, 1, 2 or 3,

R_7 is a hydroxy or cyanide radical, an O-alkyl or O-acyl group each with 1 to 4 carbon atoms and

k is 0, 1 or 2.

8. A pharmaceutical antigestagenic preparation comprising a pharmaceutically acceptable carrier and a compound according to claim 1.

5,446,037

2-[(SUBSTITUTED) METHYLENE] CEPHALOSPORIN SULFONES AS ANTIINFLAMMATORY, ANTIDEGENERATIVE AND ANTITHROMBIN AGENTS

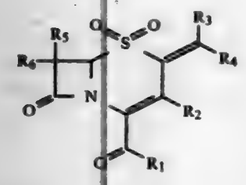
Samarendra Maiti; Charles Fiskpui; A. V. N. Reddy; David Czajkowski; Paul Spevak; Harminder Atwal, all of Edmonton, and Ronald G. Micetich, Sherwood Park, all of Canada, assignors to Synphar Laboratories, Inc., Alberta, Canada

Continuation of Ser. No. 800,914, Dec. 5, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 165,576

Int. Cl.[6] C07D *501/20*; A61K *31/545*

U.S. Cl. 514—201 **30 Claims**

1. A compound of the structural formula I:



(I)

wherein R_1 is OR_a

wherein R_a is selected from the group consisting of an unsubstituted or substituted C_{1-6} alkyl group, an unsubstituted or substituted C_{2-6} alkenyl group, an unsubstituted or substituted C_{2-6} alkynyl, an unsubstituted or substituted C_{3-6} cycloalkyl, a C_{1-6} alkoxy C_{1-6} alkyl group, a C_{1-6} alkanoyl C_{1-6} alkyl group, a C_{1-6} alkanoyloxy C_{1-6} alkyl group, C_{6-10} aryl group, a C_{6-10} aryl C_{1-6} alkyl group, a saturated or unsaturated monocyclic or fused polycyclic 3–8 membered heterocyclic group or heterocyclic C_{1-6} alkyl group containing at least one hetero atom selected from O, S or N; said substituted groups being substituted with chloro, bromo, fluoro, hydroxy, C_{1-6} alkoxy, amino, mercapto, nitro, cyano, carboxy, carboxamide, N-substituted carboxamide, sulfinyl, sulfonyl or C_{1-6} alkoxycarbonyl;

wherein R_2 is:

(1) hydrogen;

(2) chloro, bromo or fluoro; or

(3) a member selected from the group consisting of a C_{1-6} alkyl group, an unsubstituted or substituted C_{2-6} alkenyl group, an unsubstituted or substituted C_{2-6} alkynyl group and a C_{3-8} cycloalkyl group said substituted groups being substituted with chloro, bromo, fluoro, hydroxy, C_{1-6} alkoxy, amino, mercapto, nitro, cyano, carboxy, carboxamide, N-substituted carboxamide, sulfinyl, sulfonyl or C_{1-6} alkoxycarbonyl;

(4) $—OR_d$

wherein R_d is:

(a) hydrogen; or

(b) a member selected from the group consisting of

a C_{1-6} alkyl group, a C_{3-8} cycloalkyl group, a C_{6-10} aryl group;

a C_{6-10} aryl C_{1-6} alkyl group and an aromatic heterocyclic or heterocyclic C_{1-6} alkyl group having

a saturated or unsaturated monocyclic or fused polycyclic 3–8 membered heterocyclic group containing at least one hetero atom selected from O, S or N

(5) $—S(O)_nR_d$

wherein n is 0, 1 or 2 and R_d is as previously defined;

(6) —CHO;

(7) —COOH;

(8) $—C(O)R_d$, wherein R_d is as previously defined;

(9) $—CH_2—O—R_d$, wherein R_d is as previously defined;

(10) $—CH_2—S(O)_n—R_d$, wherein n is 0, 1 or 2 and R_d is as previously defined;

(11) $—CH_2—OC(O)R_d$, wherein R_d is as previously defined;

(12) $—CH_2—SC(O)R_d$, wherein R_d is as previously defined;

(13) $—CH_2OC(O)NH_2$;

(14) $—CH_2NR_dR_e$

wherein R_d is as previously defined and R_e is defined the same as R_d;

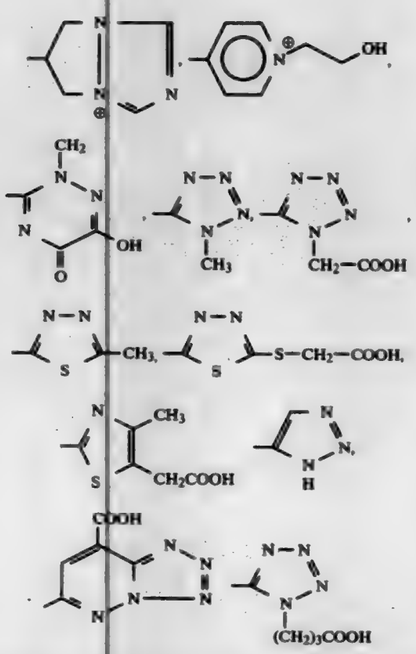
(15) $—CH_2NR_dR_eR_f$

wherein R_d and R_e are as previously defined and R_f is defined the same as R_d;

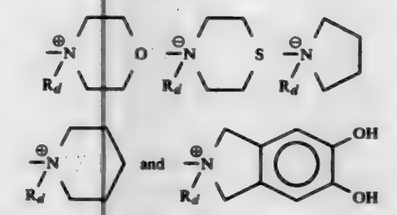
(16) $—CH_2—NH—C(O)R_d$, wherein R_d is as previously defined;

or

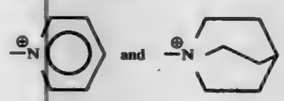
(17) $—CH_2—S(O)_n—Het$, wherein n is 0, 1 or 2 and Het is selected from the group consisting of:



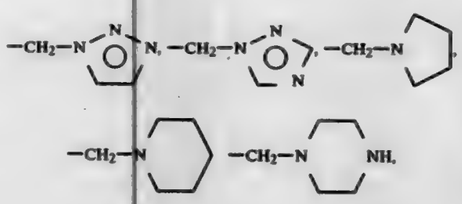
(18) $CH_2NR_dR_eR_f$ wherein R_d, R_e and R_f are defined above and are the same or different, or R_e and R_f together with the nitrogen atom form a heterocyclic ring selected from the group consisting of



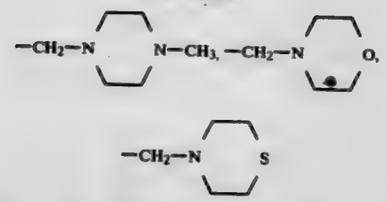
and R_d is as defined above or wherein R_d, R_e and R_f together with the nitrogen atom form a heterocyclic or heteroaromatic ring selected from the group consisting of



(19) a member selected from the group consisting of



-continued



wherein R_3 and R_4, which are the same or different, are:

(1) hydrogen, provided that R_3 and R_4 are not both hydrogen;

(3) a C_{6-10} aryl;

(4) a C_{3-8} cycloalkyl;

(5) a saturated or unsaturated monocyclic or fused polycyclic heterocyclic group with 3 to 8 carbon atoms and containing at least one hetero atom selected from the group consisting of O, S and N;

(6) a halogenated C_{1-6} alkyl;

(7) a hydroxy C_{1-6} alkyl;

(8) $—CH_2COOC_{1-6}$ alkyl; or

(9) $—CH_2COOH$;

wherein R_5 is:

(1) hydrogen;

(2) chloro, fluoro, bromo or iodo;

(3) a C_{1-6} alkyl group;

(4) a C_{2-6} alkenyl group;

(5) —OH

(6) $—OR_g$, wherein R_g is the same as R_d;

(7) $—OC(O)R_g$, wherein R_g is as previously defined;

(8) $—OSO_2R_g$, wherein R_g is as previously defined;

(9) $—NHC(O)R_g$, wherein R_g is as previously defined;

(10) NH—Z, wherein Z is hydrogen or a mono, di- or tripeptide composed of D or L amino acids with a terminal amino group either free or acylated by $—C(O)R_g$ or $—C(O)OR_g$, wherein R_g is as previously defined; or

(11) $—S(O)_nR_g$, wherein n is 0, 1 or 2 and R_g is as previously defined; and

wherein R_6 is:

(1) hydrogen;

(2) chloro or bromo; or

(3) methoxy or methylthio, and pharmaceutically acceptable salts thereof.

5,446,039

S-THIA-1,4-DIAZABICYCLO[4.2.0]OCTANE-3,8-DIOXO ANALOGS OF β-LACTAM, PROCESSES FOR THE PREPARATION THEREOF AND THE USE THEREOF

Mice Kovacevic; Jure J. Herak; Zora Mandlić; Irena Lukic; Mirjana Tomic, and Zinka Brkic, all of Zagreb, Croatia, assignors to PLIVA, farmaceutska, kemijska, prehrambena i kozmeticka industrija dionicko, Croatia

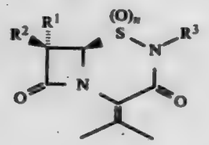
Filed Nov. 12, 1993, Ser. No. 151,673

Claims priority, application Croatia, Nov. 17, 1992, P921292A

Int. Cl.[6] C07D *513/04*

U.S. Cl. 514—210 **14 Claims**

1. 5-Thia-1,4-diazabicyclo[4.2.0]octane-3,8-dioxo β-lactam analogs of the formula I



I

wherein

R^1 is hydrogen or halo;

R^2 is hydrogen, halo, amino, $PhCH_2CONH$, $PhOCH_2CONH$, phthalimido, o-MeNHCO-C_6H_4-CONH, isoxazolylcarboxamido;

R^3 is hydrogen, alkyl, benzyl, or 5-methyl-isoxazole-3-yl, and

n may be 1 or 2.

5,446,039

THERAPEUTIC BENZAZAPINE COMPOUNDS

Marc J. Chapdelaine, Wilmington, Del., and Charles D. McLaren, Landenberg, Pa., assignors to Imperial Chemical Industries, PLC, London, England

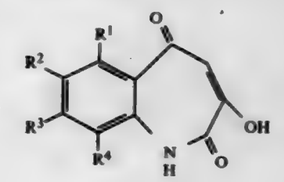
Division of Ser. No. 816,327, Dec. 31, 1991, Pat. No. 5,254,683. This application Jul. 23, 1993, Ser. No. 96,795

Claims priority, application United Kingdom, Jan. 2, 1991, 9102028

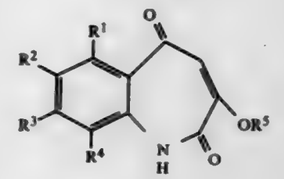
Int. Cl.[6] A61K *31/55*; C07D *223/16*

U.S. Cl. 514—213 **10 Claims**

1. A method for the treatment of neurological disorders, comprising administering to a mammal in need of such treatment an effective amount of a compound of formula I, a pharmaceutically acceptable salt of a compound of formula I, or a compound of formula II,



I



II

wherein:

R^1, R^2, R^3 and R^4 are independently selected from: hydrogen,

(1–3C) perfluoroalkyl,

halo, nitro and cyano; and

R^5 is a (1–5C)alkyl group.

5,446,040

PESTICIDES

Harald Walter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

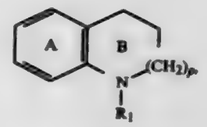
Division of Ser. No. 10,972, Jan. 29, 1993, abandoned. This application Nov. 29, 1993, Ser. No. 159,029

Claims priority, application Switzerland, Feb. 7, 1992, 376/92

Int. Cl.[6] C07D *401/12*; A01N *43/54*

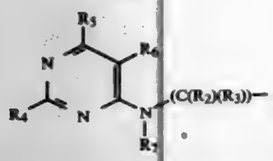
U.S. Cl. 514—213 **13 Claims**

1. A compound of the formula



(I)

wherein one of the (p+6) substitutable ring carbon atoms of the two rings A and B is substituted by a group of formula Ia



(Ia)

and the other (p+5) substitutable ring carbon atoms of the two rings A and B are unsubstituted or one or, independently of one another, two or three of those other (p+5) substitutable ring carbon atoms of the two rings A and B is(are) monosubstituted or, in the case of the saturated ring carbon atoms of the ring B, mono- or, independently of one another, di-substituted, any substituents present at the mentioned (p+5) substitutable ring carbon atoms of the two rings A and B being selected from the group consisting of halogen, C_1–C_8alkyl, halo-C_1–C_8alkyl, C_1–C_4alkoxy-C_1–C_4alkyl, C_3–C_8cycloalkyl, C_1–C_8alkoxy, halo-C_1–C_8alkoxy, C_3–C_8cycloalkoxy, C_1–C_8alkylthio, halo-C_1–C_8alkylthio, cyano, nitro, phenyl, phenoxy and phenylthio, the phenyl groups in phenyl, phenoxy and phenylthio being unsubstituted or substituted by one, two or three substituents selected from the group consisting of halogen, C_1–C_4alkyl and C_1–C_4alkoxy, with the proviso that not more than one of any substituents present at the mentioned (p+5) substitutable ring carbon atoms of the two rings A and B is phenyl that is unsubstituted or substituted as mentioned above, phenoxy that is unsubstituted or substituted as mentioned above or phenylthio that is unsubstituted or substituted as mentioned above; wherein:

R_1 is hydrogen, C_1–C_8alkyl, C_3–C_8cycloalkyl, benzyl, C_1–C_8alkanoyl that is unsubstituted or substituted by halogen or by C_1–C_4alkoxy, benzoyl the phenyl group of which is unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, C_1–C_4alkyl, nitro and cyano; C_1–C_8alkanesulfonyl, halo-C_1–C_8alkanesulfonyl, cyano-C_1–C_8alkanesulfonyl or phenylsulfonyl the phenyl group of which is unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, C_1–C_4alkyl, nitro and cyano;

R_2 and R_3, independently of one another, are hydrogen, C_1–C_8halo-C_1–C_8alkyl, C_1–C_4alkoxy-C_1–C_4alkyl or C_3–C_8cycloalkyl;

R_4 is hydrogen, C_1–C_8alkyl, C_1–C_8alkoxy or C_1–C_8alkylthio;

R_5 is hydrogen, C_1–C_8alkyl, halo-C_1–C_8alkyl, C_1–C_4alkoxy-C_1–C_4alkyl, C_1–C_4alkylthio-C_1–C_4alkyl, C_1–C_8alkanesulfinyl-C_1–C_4alkyl, C_1–C_4alkanesulfonyl-C_1–C_4alkyl, C_2–C_8alkenyl, halo-C_2–C_8alkenyl, C_2–C_8alkynyl, C_3–C_8cycloalkyl, C_1–C_8alkylthio or halogen;

R_6 is hydrogen, hydroxy, C_1–C_8alkyl, halo-C_1–C_8alkyl, C_1–C_4alkoxy-C_1–C_4alkyl, C_1–C_8alkoxy, C_1–C_8alkylthio, C_1–C_8alkanesulfinyl, C_1–C_8alkanesulfonyl, halogen, nitro, cyano, amino, a group of the formula N(H)R_8(Ib), a group of the formula N(R_8)R_9 (Ic) or a group of the formula N=C(R_9)R_{10}(Id);

R_7 is hydrogen, C_1–C_8alkyl, benzyl, C_1–C_8alkanoyl, phenylcarbonyl the phenyl group of which is unsubstituted or substituted by one, two or three substituents selected from the group consisting of halogen and C_1–C_4alkyl; C_1–C_8alkylthio, halo-C_1–C_8alkylthio, cyano-C_1–C_8alkylthio, phenylthio or benzylthio, the phenyl groups in phenylthio and benzylthio being unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, C_1–C_4alkyl, nitro and cyano;

R_8 is C_1–C_8alkyl, benzyl, C_1–C_8alkanoyl, phenylcarbonyl the phenyl group of which is unsubstituted or substituted by one, two or three substituents selected from the group consisting of halogen and C_1–C_4alkyl; C_1–C_8alkylthio, halo-C_1–C_8alkylthio, cyano-C_1–C_8alkylthio, phenylthio or benzylthio, the phenyl groups in phenylthio and benzylthio being unsubstituted or substituted by one or two substituents selected from the group consisting of halogen, C_1–C_4alkyl, nitro and cyano;

R_9 is C_1–C_8alkyl;

R_{10} is hydrogen or C_1–C_8alkyl; and

p is 1 or 2;

or, where appropriate, a tautomer thereof, in each case in free form or in the form of a salt.

5,446,041

INTRAOCULAR PRESSURE REDUCING 11-ACYL PROSTAGLANDINS

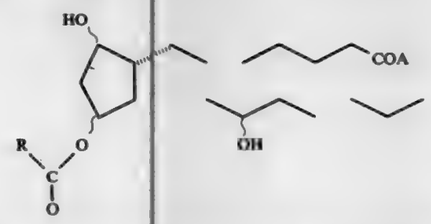
Ming F. Chan, Santa Ana, and David F. Woodward, El Toro, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 386,835, Jul. 27, 1989, abandoned. This application Oct. 10, 1990, Ser. No. 596,430

Int. Cl.[6] A61K *31/215, 31/23, 31/22*

U.S. Cl. 514—530 **14 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye in an ophthalmically acceptable excipient an amount sufficient to treat ocular hypertension of the compound:



where the hydroxyl groups are in either the α or β configuration; the dashed bonds at C-5, C-13 and C-17 represent either a single bond, or a double bond which can be in the cis or trans configuration; A is —OH, or a pharmaceutically acceptable salt thereof or —OR_1 where R_1 is alkyl of 1 to 6 carbon atoms; R is an acyclic hydrocarbon, saturated or unsaturated, having from 1 to 20 carbon atoms, or R is —$(CH_2)_nR_2$ where n is 0–10 and R_2 is an aliphatic ring or an aromatic ring.

5,446,042

HETEROCYCLIC COMPOUND AND CARDIOTONIC AGENT CONTAINING THE SAME AS EFFECTIVE COMPONENT

Hideshi Kobayashi, Tokyo; Kimitomo Yoshioka, Kiyose, and Hiroaki Yamazaki, Fujishiro, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/01548, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO93/11123, PCT Pub. Date Jun. 10, 1993

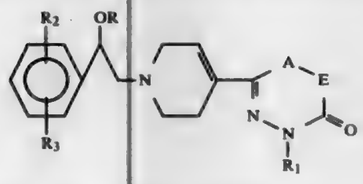
PCT Filed Nov. 27, 1992, Ser. No. 244,195

Claims priority, application Japan, Nov. 29, 1991, 3-340273

Int. Cl.[6] A61K *31/54;* **C07D** *285/16, 253/06, 237/04*

U.S. Cl. 514—222.5 **13 Claims**

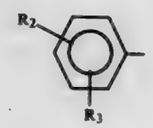
1. A heterocyclic compound represented by the formula (I) or pharmaceutically acceptable acid addition salt thereof:



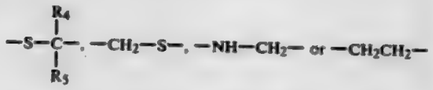
(I)

wherein R and R_1 represent hydrogen atom or lower alkyl group; R_2 and R_3 are independently same or different and

represent hydrogen atom, lower alkyl group, lower alkoxy group, trifluoromethyl group, halogen atom, nitro group, amino group, cyano group or hydroxyl group or R_2 and R_3 are joined to form methylenedioxy group or



forms naphthalene; and A-E represents



wherein R_4 and R_5 represent hydrogen atom or lower alkyl group.

5,446,043

ISOQUINOLYL, QUINOXALINYL AND QUINAZOLINYL DERIVATIVES AS INHIBITORS OF 5-LIPOXYGENASE

Graham C. Crawley, Macclesfield, United Kingdom, and Jean-Marc M. M. Girodeau, Rilly la Montagne, France, assignors to Imperial Chemical Industries Plc, London, England and ICI Pharma, Cergy Cedex, France

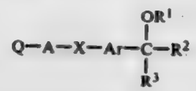
Division of Ser. No. 24,321, Mar. 1, 1993, abandoned, which is a division of Ser. No. 793,330, Nov. 15, 1991, Pat. No. 5,217,977, which is a continuation of Ser. No. 485,492, Feb. 27, 1990, abandoned. This application Jun. 21, 1994, Ser. No. 262,837

Claims priority, application France, Feb. 28, 1989, 89 400559

Int. Cl.[6] A61K *31/495, 31/47;* **C07D** *241/42, 217/02*

U.S. Cl. 514—249 **8 Claims**

1. A heterocyclic cycloalkane of the formula I



I

wherein Q is isoquinolyl, quinazolinyl or quinoxalinyl, or a hydrogenated derivative thereof which may optionally bear one, two or three substituents selected from halogeno, hydroxy, oxo, carboxy, cyano, amino, (1–4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, hydroxy-(1–4C)alkyl, amino-(1–4C)alkyl, (1–4C)alkylamino-(1–4C)alkyl, di-[(1–4C)alkyl]amino-(1–4C)alkyl, amino-(2–4C-)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-[(1–4C)alkyl-]amino-(2–4C)alkoxy and phenyl-(1–4C)alkyl;

wherein A is (1–6C)alkylene, (3–6C)alkenylene, (3–6C)alkynylene or cyclo(3–6C)alkylene;

wherein X is oxy, thio, sulphinyl, sulphonyl or imino;

wherein Ar is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, ureido, carbamoyl, (1–4C)alkyl, (3–4C)alkenyloxy, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl (1–4C)alkoxycarbonyl, N-[(1–4C)alkyl]carbamoyl, N,N-di-[(1–4C)alkyl]-carbamoyl, (2–4C)alkanoylamino, cyano-(1–4C)alkoxy, carbamoyl-(1–4C)alkoxy, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-[(1–4C)alkyl]amino-(2–4C)alkoxy and (1–4C)alkoxycarbonyl-(1–4C)alkoxy;

wherein R^1 is hydrogen, (1–6C)alkyl, (3–6C)alkenyl, (3–6C-)alkynyl, cyano-(1–4C)alkyl or (2–4C)alkanoyl, or R^1 is benzoyl which may optionally bear a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy; and

wherein R^2 and R^3 together from a (3–6C)alkylene group which, together with the carbon atom to which R^2 and R^3 are attached, defines a ring having 4 to 7 ring atoms, and which ring may bear one or two substituents, which may be the same or different, selected from hydroxy, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl and (1–4C)alkylsulphonyl, or which the ring may bear a (1–4C)alkylenedioxy substitutent; or a pharmaceutically-acceptable salt thereof.

5,446,044

7-SUBSTITUTED QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

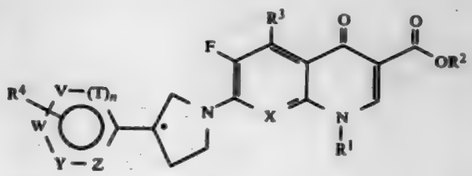
Edgardo Laborde, Canton, and Mel Schroeder, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 221,145, Mar. 30, 1994, Pat. No. 5,384,407, which is a division of Ser. No. 14,286, Feb. 5, 1993, Pat. No. 5,342,844, which is a division of Ser. No. 832,188, Feb. 6, 1992, Pat. No. 5,221,676. This application Sep. 27, 1994, Ser. No. 312,598

Int. Cl.[6] A61K *31/50, 31/505;* **C07D** *241/10, 239/211*

U.S. Cl. 514—252 **11 Claims**

1. A compound of the formula



wherein

* denotes an asymmetric carbon;

X is C—H, C—F, C—Cl, C—OCH_3, C—CF_3, or N;

R^1 is a C_1–C_4-alkyl, C_3–C_6-cycloalkyl, or phenyl substituted by one or more halogen atoms;

R^2 is a hydrogen, alkyl of 1 to 4 carbon atoms, or a cation;

R^3 is hydrogen, amino, or methyl;

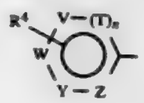
V, W, Y, and Z are each independently C—H, or nitrogen;

T is C—H or nitrogen;

n is 1—;

R^4 is hydrogen or one, two or three substituents independently selected from C_1–C_4-alkyl, halo-substituted C_1–C_4-alkyl, hydroxy-substituted C_1–C_4-alkyl, halogen, hydroxy, C_1–C_4-alkoxy, mercapto, amino, mono-(C_1–C_4-alkyl)amino, di-(C_1–C_4-alkyl)amino, formamido, mono-(C_1–C_4-alkyl)amido, di-(C_1–C_4-alkyl)amido, cyano, nitro, C_1–C_4-alkoxycarbonyl, carboxyl, aminomethyl, mono-(C_1–C_4-alkyl)aminomethyl, di-(C_1–C_4-alkyl) amino-methyl, wherein free hydroxy and amino groups may be protected; with the proviso that when T, V, W, Y, and Z are C—H and n is 1, R_4 is aminomethyl, mono-(C_1–C_4-alkyl)aminomethyl or di-(C_1–C_4-alkyl)aminomethyl,

or a pharmaceutically acceptable acid addition or quaternery ammonium salt thereof;

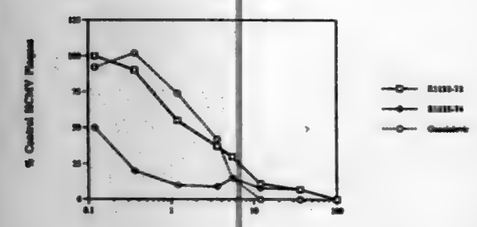


5,446,045

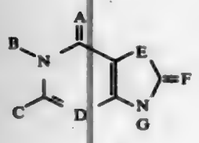
ANTIVIRAL GUANINE ANALOGS

Ganapathi R. Revankar, 180 N. Milltrace Dr., The Woodlands, Tex. 77381; Arthur F. Lewis, 2301 Millbend Dr. #2412, The Woodlands, Tex. 77380; Birendra K. Bhattacharya, 58 E. Stony End Pl., The Woodlands, Tex. 77381; Rodrigo V. Devivar, 26001 Budde Rd., #2003, Spring, Tex. 77380; Robert F. Rando, 35 Dovetail Pl., The Woodlands, Tex. 77381, and Susan M. Fennewald, 2500 Tanglebrush #187, The Woodlands, Tex. 77381

Filed Dec. 20, 1993, Ser. No. 170,559
Int. Cl.[6] A61K *31/505*
U.S. Cl. 514—258 4 Claims



1. A compound for treating a pathophysiological state caused by a virus which is:
an antiviral guanine analog having the structure



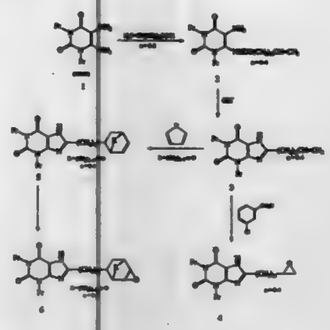
wherein A is O, B is H, C is NH_2, D is N, E is S, F is O, and G is $—CH_2CH=CH—CH_2CH_3$ (cis & trans), and pharmaceutically acceptable salts thereof.

5,446,046

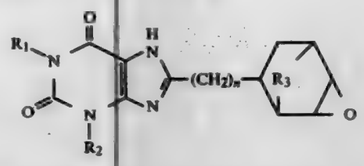
A1 ADENOSINE RECEPTOR AGONISTS AND ANTAGONISTS AS DIURETICS

Luiz Belardinelli, Gainesville; Ray Olsson, Tampa; Stephen Baker, Gainesville, all of Fla., and Peter J. Scammells, Highton, Australia, assignors to University of Florida Research Foundation, Gainesville, Fla.

Filed Oct. 28, 1993, Ser. No. 144,459
Int. Cl.[6] A61K *31/52*; C07D *473/06, 473/08, 519/00*
U.S. Cl. 514—263 3 Claims

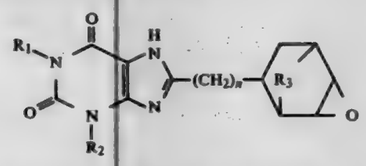


1. A compound having the formula



wherein R_1=R_2=n-propyl, R_3=CH_2, and n=0.

3. A method for producing diuresis in a patient, said method comprising administering to said patient an effective amount of a compound having the formula



wherein R_1=R_2=n-propyl, R_3=CH_2, and n=0.

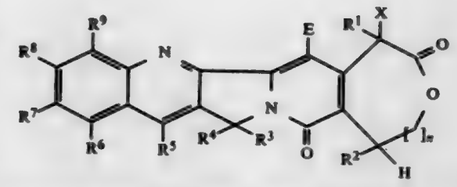
5,446,047

CAMPTOTHECIN ANALOGUES

Samuel J. Danishefsky, New Haven, Conn.; William G. Bornmann, and Wang Shen, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Jul. 23, 1992, Ser. No. 919,188
Int. Cl.[6] A61K *31/435*; C07D *491/22*
U.S. Cl. 514—280 21 Claims

1. A compound having the structure:



wherein E is H, CO_2R, $CONH_2$, CONHR, $CONR_2$ or CN; (a) X and R^1 together are 0, or (b) X is H or OH, and R^1 is H, linear or branched alkyl, linear or branched alkylaryl, hydroxyalkyl or aryl; R^2, R^3, and R^4 are independently the same or different and are H, linear or branched alkyl, linear or branched alkylaryl, hydroxyalkyl or aryl; R^5, R^6, R^7, R^8 and R^9 are independently the same or different and are H, linear or branched alkyl, linear or branched alkylaryl, aryl, CO_2R, alkoxy, aryloxy, hydroxyalkyl, C-glycal, nitro, cyano, aminoalkoxy, Cl, F, Br, I, SR^{10} or $NR^{11}R^{12}$, provided that at least one of R^5, R^6, R^7, R^8, and R^9 is C-glycal; R is H, alkyl, aryl, alkylaryl or hydroxyalkyl; R^{10}, R^{11} and R^{12} are independently the same or different and are H, alkyl, aryl, alkylaryl or acyl; and n is 0 or 1.

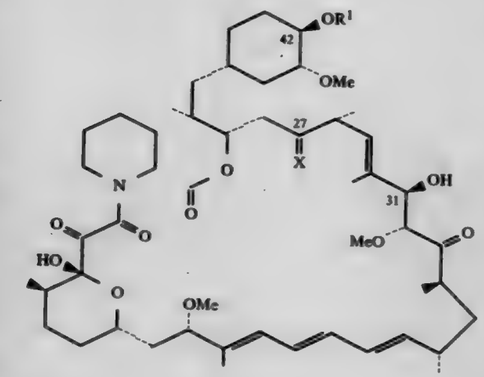
5,446,048

RAPAMYCIN OXIMES

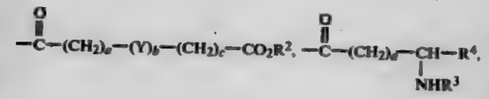
Amedeo A. Failli, Princeton Junction, N.J.; Robert J. Steffan, Langhorne, Pa.; Craig E. Caufield, Princeton Junction, N.J.; David C. Hu, Langhorne, Pa., and Alexander A. Grinfeld, Princeton Junction, N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 134,237, Oct. 8, 1993, Pat. No. 5,373,014.
This application Sep. 21, 1994, Ser. No. 309,816
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—291 1 Claim

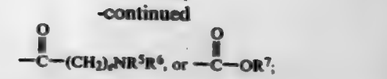
1. A pharmaceutical composition for use as an immunosuppressive agent comprising an immunosuppressive amount of a compound of the structure



wherein
R^1 is



-continued



R^2 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, or Ar;
R^3 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, or $—CO_2R^8$;
R^4 is alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, Ar, aminoalkyl of 1–6 carbon atoms, thioalkyl of 1–6 carbon atoms, alkylthioalkyl of 2–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, or—CO_2R^8;
R^5 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, Ar, or $—CO_2R^8$;
R^6 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, or Ar;
R^7 is alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, or Ar;
R^8 is hydrogen, alkyl of 1–8 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, arylalkyl of 7–10 carbon atoms, fluorenylmethyl, or Ar;
Y is O or S;
X is =N—O—$(CH_2)_f$—Z or =N—O—Ar;
Z is hydrogen, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, fluoro, trifluoromethyl, $—NR^5R^6$, aryloxy, or Ar;
Ar is aryl which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoromethoxy, amine, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;
a=0–4;
b=0–1;
c=0–4;
d=0–6;
e=0–6; and
f=0–6;
or a pharmaceutically acceptable salt thereof, with the proviso that when f is 0, Z is hydrogen and further provided that when R^3 or R^5 is $—CO_2R^8$, R^8 is not hydrogen, and a pharmaceutical carrier.

5,446,049

AZANORADAMANTANES FOR TREATMENT OF CONDITIONS RESPONSIVE TO 5-HT AGONISTS AND/OR ANTAGONISTS

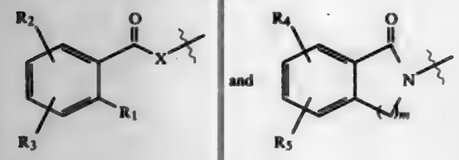
Daniel L. Flynn, Mundelein, and Alan E. Moormann, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 991,028, Dec. 15, 1992, Pat. No. 5,354,757.
This application Jun. 22, 1994, Ser. No. 263,620
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—295 5 Claims

1. A method of treating conditions responsive to 5-HT_4 agonists comprising administering to a mammal in need of such treatment a compound of the formula:



or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of



wherein

R_1 is alkoxy of one to six carbon atoms;

R_2, R_3, R_4 and R_5 are the same or different and are selected from the group consisting of hydrogen, halogen, CF_3, hydroxy, alkoxy of one to six carbon atoms, acyl of two to seven carbon atoms, amino, amino substituted by one or two alkyl groups of one to six carbon atoms, C_2–C_7 acylamino, aminocarbonyl, aminosulfone optionally substituted by one or two alkyl groups of one to six carbon atoms, C_1–C_6 alkylsulfone and nitro;

n is 0, 1 or 2;

m is 0 or 1; and

X is NH.

5,446,050

AZABICYCLO AMIDES AND ESTERS AS 5-HT3 RECEPTOR ANTAGONISTS

Terry J. Rosen, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

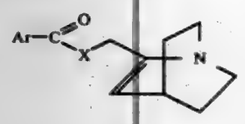
PCT No. PCT/US89/05097, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO91/07402, PCT Pub. Date May 30, 1991

PCT Filed Nov. 17, 1989, Ser. No. 856,978

Int. Cl.[6] A61K *31/435*; C07D *211/70*

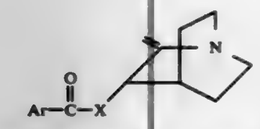
U.S. Cl. 514—305 **11 Claims**

1. A compound of the formulae



(I)

and



(II)

and a pharmaceutically acceptable acid addition salt thereof wherein Ar is phenol, naphthyl, 3-indolyl, 3-indazolyl, 1-methyl-3-indolyl, 2-methoxyphenyl or 2-methoxy-4-amino-5-chlorophenyl; and X is O or NH.

5,446,051

ARYL-SPACED DECAHYDROISOQUINOLINE-3-CARBOXYLIC ACIDS AS EXCITATORY AMINO ACID RECEPTOR ANTAGONISTS

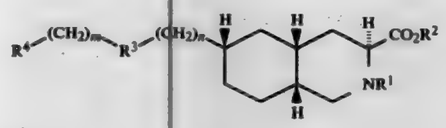
Paul L. Ornstein, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 31, 1994, Ser. No. 251,809

Int. Cl.[6] C07D *217/06*; A61K *31/47*

U.S. Cl. 514—307 **40 Claims**

1. A compound of the formula:



I

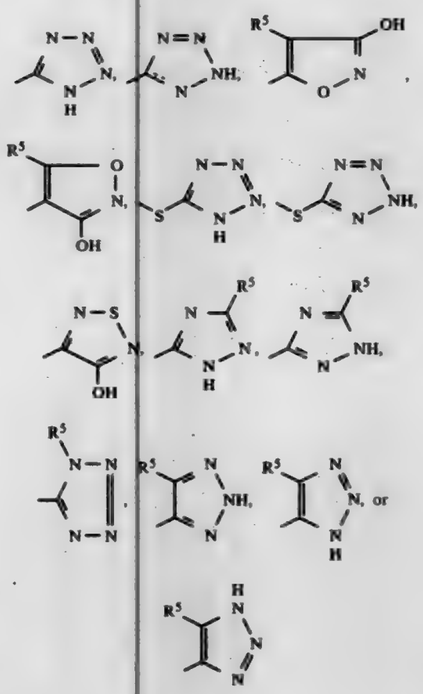
wherein:

wherein R^1 is H, C_1–C_{10} alkyl, arylalkyl, alkoxycarbonyl, aryloxycarbonyl, or acyl;

R^2 is H, C_1–C_6 alkyl, substituted alkyl, C_4–C_7 cycloalkyl, or arylalkyl;

R^3 is aryl, arylalkyl, heterocycle, substituted heterocycle, cycloalkyl or cycloalkenyl;

R^4 is C_2H, S_3H, PO_3H_2, or one of the following cyclic groups:



wherein

R^5 is H, C_1–C_6 alkyl or aryl;

m=0, 1 or 2; and

n=0, 1 or 2;

or a pharmaceutically acceptable salt thereof.

5,446,052

NEW DIALKYLENEPIPERIDINO COMPOUNDS AND THEIR ENANTIOMERS, PROCESS FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Xavier Emonds-Alt, Combaillaux; Isabelle Grossriether, Uzes; Vincenzo Proietto, St. Georges d'Orques, and Didier Van Broeck, Murviel les Montpellier, all of France, assignors to Sanofi, Paris, France

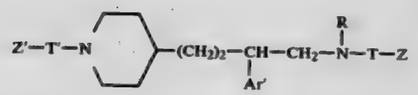
Division of Ser. No. 877,779, May 4, 1992, Pat. No. 5,300,648. This application Feb. 4, 1994, Ser. No. 191,085

Claims priority, application France, May 3, 1991, 91 05489

Int. Cl.[6] A61K *31/445*; C07D *401/02*

U.S. Cl. 514—318 **9 Claims**

1. An aromatic amino derivative of formula:



(I)

in which:

Ar′ represents a phenyl, unsubstituted or substituted one or more times with a halogen atom, a C_1–C_3 alkyl, a trifluoromethyl, a C_1–C_3 alkoxy or with a hydroxyl; a thienyl, pyridyl or naphthyl group, the said groups being unsubstituted or substituted with a halogen an indolyl group or a benzothienyl group;

R represents hydrogen, a methyl group or a group $(CH_2)_n$–L, where n is an integer from 2 to 6 and L is hydrogen or an amino group;

Z and Z′ represents, independently, a hydrogen atom or a group M or OM,

M represents hydrogen or a linear or branched C_1–C_6 alkyl; an α-hydroxylbenzyl, an α-alkylbenzyl or a phenylalkyl in which the alkyl group contains 1 to 3 carbon atoms, unsubstituted, mono- or polysubstituted on the aromatic ring with a halogen, a hydroxyl, an alkoxy of 1 to 4 carbon atoms, an alkyl of 1 to 4 carbon atoms; a pyridylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a naphthylalkyl in which the alkyl group contains 1 to 3 carbon atoms; a pyridylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a styryl; a 1-methyl-2-imidazolylthioalkyl in which the alkyl group contains 1 to 3 carbon atoms; a 1-oxophenyl-3-indan-2-yl; an aromatic or heteroaromatic radical selected from the group consisting of a phenyl which is unsubstituted, mono- or polysubstituted by a halogen, a C_1–C_4 alkyl, a C_1–C_4 alkoxy, CN, NO_2, CF_3 or a hydroxyl; a naphthyl, said naphthyl being unsubstituted, mono- or polysubstituted by a halogen, a C_1–C_4 alkyl or a hydroxyl; a pyridyl, a thienyl, an indolyl or a benzothienyl, said pyridyl, thienyl, indolyl and benzothienyl groups being unsubstituted, mono- or polysubstituted by a C_1–C_4 alkyl or a hydroxyl,

T′ represents a bond, a $—CH_2—$ group, or a —C(O)-group;

T represents a group selected from



and

W being an oxygen or sulphur atom, with the limitation that when Z′ is hydrogen or OM, T′ is other than a bond; and when Z is hydrogen or OM, T is other than a group —C(W)—NH—,

or an inorganic, organic or quaternary ammonium salt thereof.

5,446,053

METHODS OF INHIBITING DYSFUNCTIONAL UTERINE BLEEDING

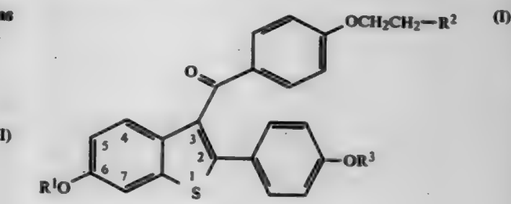
Patrick Keohane, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1993, Ser. No. 171,391

Int. Cl.[6] A61K *31/445, 31/40*

U.S. Cl. 514—324 **3 Claims**

1. A method of inhibiting dysfunctional uterine bleeding comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen,

wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,446,054

PROCESS FOR TRANS-6-[2-(SUBSTITUTED-PYRROL-1-YL)ALKYL]PYRAN-2-ONE INHIBITORS OF CHOLESTEROL SYNTHESIS

Donald E. Butler, Holland; Tung V. Le, Jenison, and Thomas N. Nanninga, Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

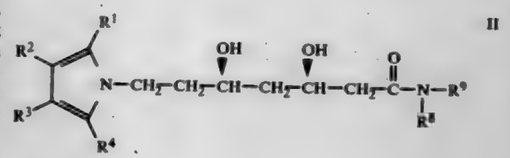
Division of Ser. No. 243,673, May 16, 1994, which is a division of Ser. No. 135,385, Oct. 12, 1993, Pat. No. 5,342,952, which is a division of Ser. No. 25,701, Mar. 3, 1993, Pat. No. 5,298,627.

This application Oct. 14, 1994, Ser. No. 323,291

Int. Cl.[6] A61K *31/40, 31/44, 31/445*; C07D *211/14*

U.S. Cl. 514—326 **9 Claims**

1. A compound of Formula II



II

wherein R^1 is

1-naphthyl,

2-naphthyl,

cyclohexyl,

cyclohexylmethyl,

norbornenyl,

phenyl,

phenyl substituted with

fluorine,

chlorine,

bromine,

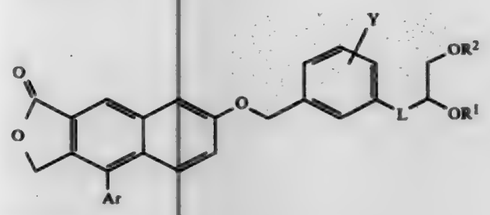
hydroxyl,

trifluoromethyl,

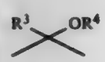
alkyl of from one to four carbon atoms,
alkoxy of from one to four carbon atoms, or
alkanoyloxy of from two to eight carbon atoms,
benzyl,
2-,3-, or 4-pyridinyl, or
2-, 3-, or 4-pyridinyl-N-oxide;
R^2 or R^3 is independently
hydrogen,
alkyl of from one to six carbon atoms,
cyclopropyl,
cyclobutyl,
cyclopentyl,
cyclohexyl,
phenyl,
phenyl substituted with
fluorine,
chlorine,
bromine,
hydroxyl,
trifluoromethyl,
alkyl of from one to four carbon atoms, or
alkoxy of from one to four carbon atoms,
cyano,
trifluoromethyl, or —CONR^{5}R^6 where R^5 and R^6 are independently
hydrogen,
alkyl of from one to six carbon atoms,
phenyl,
phenyl substituted with
fluorine,
chlorine,
bromine,
cyano, or
trifluoromethyl;
R^4 is
alkyl of from one to six carbon atoms,
cyclopropyl,
cyclobutyl,
cyclopentyl,
cyclohexyl, or
trifluoromethyl; and
R^8 or R^9 is independently
alkyl of from one to ten carbon atoms,
cyclopropyl,
cyclobutyl,
cyclopentyl
cyclohexyl,
benzyl or
phenyl or
R^e and R^9 together are
—$(CH_2)_4$—,
—$(CH_2)_5$—,
—$(CH(R^{10})—CH_2)_3$—,
—$(CH(R^{10})—CH_2)_4$—,
—$(CH(R^{10})—(CH_2)_2—CH(R^{10}))$—,
—$(CH(R^{10})—(CH_2)_3—CH(R^{10}))$—,
—$CH_2—CH_2—O—CH_2—CH_2$—,
CH $(R^{10})—CH_2—O—CH_2—CH_2$—,
—$CH(R^{10})—CH_2—O—CH(R^{10})$—,
wherein R^{10} is alkyl of from one to four carbon atoms provided R^8 and R^9 are not both methyl.

5,446,055
POLYETHER NAPHTHALENIC LIGNAN LACTONES AS INHIBITORS OF 5-LIPOXYGENASE
Joseph F. Dellaria, Lindenhurst; James D. Ratajczyk, Waukegan; Clint D. W. Brooks, Libertyville, and Anwer Basha, Lake Forest, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Nov. 23, 1994, Ser. No. 344,443
Int. Cl.^{6} A61K *31/44*; C07D *307/92*
U.S. Cl. 514—337 11 Claims

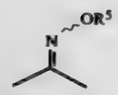
1. A compound or pharmaceutically acceptable salt thereof of formula



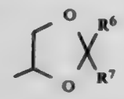
wherein
Ar is selected from the group consisting of
unsubstituted phenyl,
phenyl substituted one or more groups selected from
halogen,
cyano,
alkyl of one to four carbon atoms,
haloalkyl of one to four carbon atoms,
alkoxy of one to six carbon atoms, and
alkoxycarbonyl wherein the alkyl portion is of one to four carbon atoms,
unsubstituted furyl,
furyl substituted with one or more groups selected from
halogen,
alkyl of one to four carbon atoms, and
alkoxy of one to four carbon atoms,
unsubstituted pyridyl,
pyridyl substituted with one or more groups selected from
halogen,
alkyl of one to four carbon atoms, and
alkoxy of one to four carbon atoms,
unsubstituted thienyl, and
thienyl substituted with one or more groups selected from
halogen,
alkyl of one to four carbon atoms, and
alkoxy of one to four carbon atoms;
Y is selected from the group consisting of
hydrogen,
halogen,
cyano,
alkyl of one to four carbon atoms,
haloalkyl of one to four carbon atoms,
alkoxy of one to six carbon atoms, and
alkoxycarbonyl wherein the alkyl portion is of one to four carbon atoms;
L is selected from the group consisting of
(a)



wherein R^3 is hydrogen or alkyl of one to four carbon atoms, and R^4 is alkyl of one to four carbon atoms, and
(b)



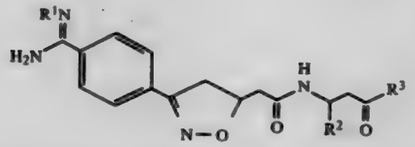
wherein R^5 is hydrogen or alkyl of one to four carbon atoms; and
R^1 and R^2 are independently alkyl of one to four carbon atoms, or taken together with the oxygen atoms to which they are attached define a group of the formula



wherein R^6 and R^7 are independently selected from the group consisting of
hydrogen,
alkyl of one to four carbon atoms,
alkoxy of one to four carbon atoms, and
haloalkyl of one to four carbon atoms, and
the free valence bond is attached to L.

5,446,056
ISOXAZOLINE COMPOUNDS USEFUL AS FIBRINOGEN RECEPTOR ANTAGONISTS
John Wityak, West Grove, Pa., and Thais M. Sielecki-Dzurdz, Newark, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.
Continuation-in-part of Ser. No. 157,851, Nov. 24, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 304,614
Int. Cl.^{6} A61K *31/44*, *31/42*; C07D *261/04*, *413/12*
U.S. Cl. 514—340 20 Claims

1. A compound of Formula I:

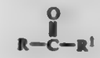


(I)

or a pharmaceutically acceptable salt form thereof wherein:
R^1 and R^{1a} are independently selected from: H C_1–C_{10} alkyl, C_2–C_6 alkenyl, C_3–C_{11} cycloalkyl, C_4–C_{11} cycloalkyalkyl, aryl, aryl-C_1–C_{10} alkyl, C_2–C_7 alkylcarbonyl, arylcarbonyl, C_2–C_{10} alkoxycarbonyl, C_4–C_{11} cycloalkoxycarbonyl, C_7–C_{14} bicycloalkoxycarbonyl, aryloxycarbonyl, or aryl(C_1–C_{10} alkoxy)carbonyl;
R^2 is selected from H or CH_3;
R^3 is selected from hydroxy, C_1 to C_{10} alkyloxy, C_3 to C_{11} cycloalkyloxy, C_6 to C_{10} aryloxy, aryl-C_1 to C_{10} alkyloxy, C_3 to C_{10} alkylcarbonyloxyalkyloxy, C_3 to C_{10} alkoxycarbonyloxalkyloxy, C_2 to C_{10} alkoxycarbonyloxy, C_5 to C_{10} cycloalkylcarbonylocyalkyloxy, C_5 to C_{10} cycloalkoxycarbonyloxyalkyloxy, C_5 to C_{10} cycloalkoxycarbonyloxy, C_7 to C_{11} aryloxycarbonyloxy, C_8 to C_{12} aryloxycarbonyloxyalkyloxy, C_8 to C_{14} arylcarbonyloxyalkyloxy, C_5 to C_{10} alkoxyalkylcarbonyloxyalkyloxy, C_5 to C_{10} (5-alkyl-1,3-dioxa-cyclopenten-2-one-yl)methyloxy, C_{10} to C_{14} (5-aryl-1,3-dioxa-cyclopenten-2-one-yl)methyloxy, C_5–C_{10} alkyldioxolenonylmethoxy, aryldioxolenonylmethoxy, N-morpholinoethoxy, or $(R^{1a})_2$N-C_1–C_{10} alkyloxy.

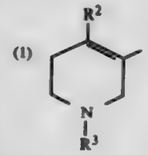
5,446,057
SUBSTITUTED TETRAHYDROPYRIDINE AND PIPERIDINE CARBOXYLIC ACIDS AS MUSCARINIC ANTAGONISTS
Corinne E. Augelli-Szafran, Ypsilanti; Juan C. Jaen, Plymouth; Roy Schwarz, Whitmore Lake, and Anthony J. Thomas, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Sep. 24, 1993, Ser. No. 126,942
Int. Cl.^{6} C07D *211/42*; A61K *31/44*
U.S. Cl. 514—356 5 Claims

2. A method of inhibiting gastric acid release; treating bradycardia; treating bronchoconstriction; treating urinary incontinence; treating atonic conditions of the gut and bladder; treating Parkinson's disease; treating dystonias comprising administering to a host suffering therefrom a therapeutic effective amount of a compound of Formula I



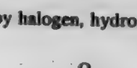
I

wherein
R is:

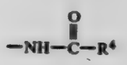


(I)

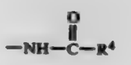
wherein
R^2 is
alkyl of from 1 to 6 carbon atoms,
alkenyl of from 2 to 10 carbon atoms,
cycloalkyl of from 3 to 8 carbon atoms,
aryl,
aryl substituted by halogen, hydroxy, nitro, amino,



wherein
R^4 is
alkyl of from 1 to 4 carbon atoms,
alkyl of from 1 to 4 carbon atoms, or
alkyloxy of from 1 to 4 carbon atoms, or
arylalkyl wherein the alkyl portion is from 1 to 3 carbon atoms and the aryl ring may be unsubstituted or substituted by halogen, hydroxy, nitro, amino,

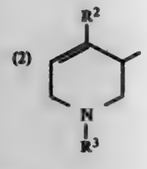


wherein
R^4 is
alkyl of from 1 to 4 carbon atoms,
alkyl of from 1 to 4 carbon atoms, or
alkyloxy of from 1 to 4 carbon atoms,
heteroaryl, or
heteroaryl substituted by halogen, hydroxy, nitro, amino,

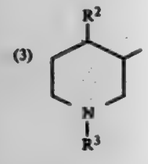


wherein

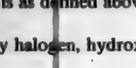
R^4 is
alkyl of from 1 to 4 carbon atoms,
alkyl of from 1 to 4 carbon atoms, or
alkyloxy of from 1 to 4 carbon atoms, and
R^3 is alkyl of from 1 to 3 carbon atoms,

(2) 

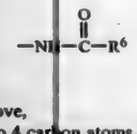
wherein
R^2 and R^3 are as defined above, or

(3) 

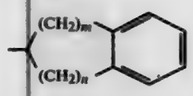
wherein
R^2 and R^3 are as defined above;
R^1 is $-XR^5$ wherein R^5 is
alkyl of from 3 to 10 carbon atoms,
alkenyl of from 2 to 10 carbon atoms,
alkynyl of from 2 to 10 carbon atoms,
cycloalkyl of from 3 to 8 carbon atoms,
cycloalkylalkyl wherein alkyl is from 1 to 10 carbon atoms and cycloalkyl is as defined above,
aryl,
aryl substituted by halogen, hydroxy, nitro, amino,



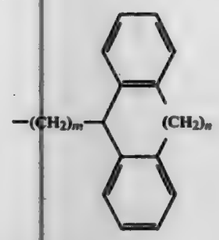
wherein
R^6 is
alkyl of from 1 to 4 carbon atoms,
alkyl of from 1 to 4 carbon atoms, or
alkyloxy of from 1 to 4 carbon atoms,
arylalkyl wherein alkyl is from 1 to 10 carbon atoms and the aryl ring may be unsubstituted or substituted by halogen, hydroxy, nitro, amino,



wherein
R^6 is as defined above,
alkyl of from 1 to 4 carbon atoms, or
alkyloxy of from 1 to 4 carbon atoms,
diarylalkyl wherein alkyl is from 1 to 10 carbon atoms, and the aryl ring is unsubstituted or substituted as defined above,
arylalkenyl wherein alkenyl is from 2 to 10 carbon atoms and the aryl ring is unsubstituted or substituted as defined above,
arylalkynyl wherein alkynyl is from 2 to 10 carbon atoms and the aryl ring is unsubstituted or substituted as defined above,



wherein
m and n are each independently zero or an integer of 1 to 3, or



wherein
m and n are as defined above; and
X is O or S; or a pharmaceutically acceptable salt thereof in unit dosage form.

5,446,058

(FUSED) BENZ (THIO) AMIDES

Masaaki Toda, Osaka; Tumoru Miyamoto, Kyoto, and Yoshinobu Arai, Osaka, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

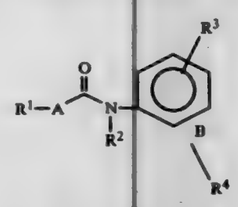
Continuation of Ser. No. 516,892, Apr. 30, 1990, abandoned, which is a division of Ser. No. 332,930, Apr. 4, 1989, Pat. No. 4,939,141, which is a division of Ser. No. 207,994, Jun. 17, 1988, Pat. No. 4,847,275, which is a division of Ser. No. 767,538, Aug. 20, 1985, Pat. No. 4,780,469. This application Nov. 29, 1991, Ser. No. 800,253

Claims priority, application Japan, Aug. 20, 1984, 59-172570; Nov. 20, 1984, 59-143412; Nov. 22, 1984, 59-246363

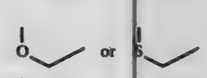
Int. Cl.[6] A61K *31/415*; C07D *265/36*

U.S. Cl. 514—381 37 Claims

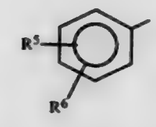
1. A novel (fused) benz(thio)amide of the general formula:



or a non-toxic salt thereof, wherein
A represents a single bond;
B represents a divalent group of the formula



T represents an oxygen atom or a sulphur atom;
R^1 represents a group of the general formula:

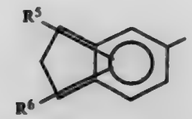


(i)



(ii)

or

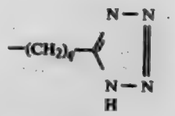


(iii)

wherein R^5 and R^6 independently represent a hydrogen atom; a halogen atom; or a straight or branched alkyl, alkenyl or alkynyl group having from 1 to 20 carbon atoms being unreplaced or having one, two, three, four or five optional carbon atom(s) replaced by oxygen atom(s), sulphur atom(s), halogen atom(s), nitrogen atom(s), benzene ring(s), thiophene ring(s), naphthalene ring(s), carbocyclic ring(s) of from 4 to 7 carbon atom(s), carbonyl group(s), carbonyloxy group(s), hydroxy group(s), carboxy group(s), azido group(s) or nitro group(s);
R^2 represents a hydrogen atom;
R^3 represents a hydrogen atom;
R^4 represents a group of the general formula:

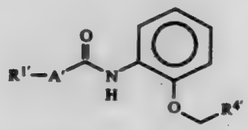
$-(CH_2)_p-COOR^8$

or



wherein
R^8 represents a hydrogen atom or a straight or branched alkyl group of from 1 to 6 carbon atom(s);
p represents an integer from 1 to 10; and
q represents zero or an integer of from 1 to 10;
with the following provisos (A) and (B):
(A) compounds of the general formula (I') and non-toxic salts therefore are excluded:

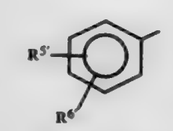
(I')



wherein:
A' represents a single bond,
R^4' represents

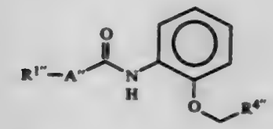
$-(CH_2)_s-COOR^8$

wherein s is an integer of 1 or 2 and R^8 has the same meaning as defined above, and
R^1' represents

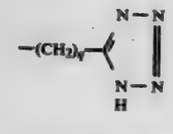


wherein R^5' and R6' each independently represents a hydrogen atom; a hydroxy group; a halogen atom; a straight or branched alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy or acyloxy group having from 1 to 4 carbon atoms; a cycloalkyl group having from 3 to 6 carbon atoms; or a straight or branched alkyl group having from 1 to 20 carbon atoms substituted by at least one halogen atom; and
(B) compounds of the general formula (I") and non-toxic salts thereof are excluded:

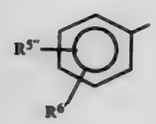
(I")



wherein:
A" represents a single bond,
R^4" represents



wherein q is 0, and
R^1" represents



wherein either (i) R^5" represents a hydrogen atom and R^6" represents a straight or branched alkyl group having from 1 to 4 carbon atoms, a halogen atom or a trifluoromethyl group; or (ii) R^5" and R^6" each represents a halogen atom.

5,446,059

BENZIMIDAZOLE-DERIVED COMPOUNDS, METHOD FOR PREPARING THE SAME, AND THERAPEUTICAL AND COSMETIC USES THEREOF

Jean-Philippe Rocher, Gaillard, and Daniel Carey, Valbonne, both of France, assignors to Centre International de Recherches Dermatologiques Galderma (CIRD Galderma), Valbonne, France

PCT No. PCT/FR92/00482, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO92/21663, PCT Pub. Date Dec. 10, 1992

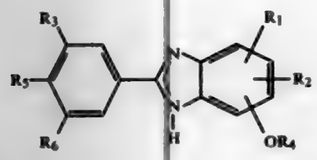
PCT Filed May 29, 1992, Ser. No. 142,464

Claims priority, application France, May 31, 1991, 91 06583

Int. Cl.[6] C07D *235/18*; A61K *31/415*

U.S. Cl. 514—374 16 Claims

1. Benzimidazole derivatives, wherein said benzimidazole derivatives correspond to the following general formula:



(I)

in which:

R_1 and R_2 represent a hydrogen atom, a lower alkyl radical, an OR_4 radical, a lower fluoroalkyl radical or a halogen atom,

R_3 represents a hydrogen atom, a lower alkyl radical, a halogen, a hydroxyl or a lower alkoxy radical having from 1 to 6 carbon atoms,

R_4 represents a hydrogen atom, a lower alkyl radical, a benzyl radical, or a



PO_3H or SO_3H radical or an amino acid residue,

R_7 represents a lower alkyl radical, a lower alkoxy radical having from 1 to 6 carbon atoms, the $-(CH_2)_n-COOH$ radical, n=1 to 6, or the



radical,

r' and r'' representing a hydrogen atom or a lower alkyl radical or r' and r'', taken together, form, with the nitrogen atom, a 5- or 6-membered heterocycle optionally interrupted by a heteroatom,

R_5 and R_6, which are different, represent the OR_8 radical or a mono- or polycyclic cycloalkyl radical having from 5 to 12 carbon atoms, linked to the phenyl ring via a tertiary carbon;

R_8 represents a hydrogen atom, a lower alkyl radical, an acyl radical having from 2 to 7 carbon atoms, a benzyl radical optionally substituted by one or a number of halogen atoms or the benzoyl radical, and the salts of the said compounds obtained by addition of a pharmaceutically acceptable acid or base.

5,446,060

AMINOALKYL THIENYL KETONE DERIVATIVES AND THEIR USE AS PERIPHERAL VASODILATORS

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Continuation of Ser. No. 802,820, Dec. 6, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 183,904

Claims priority, application France, Dec. 12, 1990, 90 15591

Int. Cl.[6] C07D *409/06*; A61K *31/38, 31/40*

U.S. Cl. 514—422 **8 Claims**

1. A compound of the formula:



(I)

in which A is pyrrolidino or pyrrolidino having 1 or 2 substituents selected from the group consisting of C_1–C_3 alkyl and C_1–C_3 hydroxyalkyl, or a pharmaceutically acceptable acid-addition salt thereof.

7. A method for treating a circulation disorder, which comprises administering to a human in need thereof a compound of the formula:



(I)

in which A is pyrrolidino or pyrrolidino having 1 or 2 substituents selected from the group consisting of C_1–C_3 alkyl or C_1–C_3 hydroxyalkyl groups, or a pharmaceutically acceptable acid-addition salt thereof.

5,446,061

METHODS FOR LOWERING SERUM CHOLESTEROL

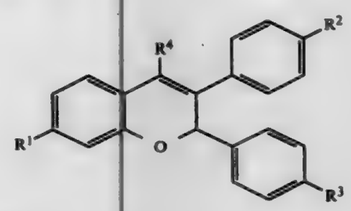
Henry U. Bryant, and Timothy A. Grese, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1993, Ser. No. 148,038

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—456 **19 Claims**

1. A method of lowering serum cholesterol levels, comprising administering an effective amount of a compound of formula (I):

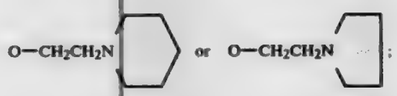


(I)

wherein:

R^1 and R^2 are, independently, —H, —OH, halo, $-OC_1$–C_{17} alkyl, $-OC_3$–C_6 cycloalkyl, $-O(CO)C_1$–C_{17} alkyl, —O(CO) aryl, —O(CO)O aryl, or $-OSO_2$-(n-butyl or n-pentyl);

R^3



and

R^4 is —H, methyl, ethyl, propyl, ethenyl or ethynyl; or a pharmaceutically acceptable salt or solvate thereof, to an animal in need of lower cholesterol levels.

5,446,062

((4-ALKOXYPYRAN-4-YL) SUBSTITUTED) ETHER, ARYLALKYL-, ARYLALKENYL-, AND ARYLALKYNYL)UREA INHIBITORS OF 5-LIPOXYGENASE

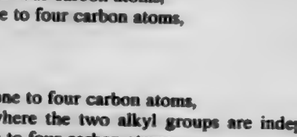
Joseph F. Dellaria, Lindenhurst; Anwer Basha, Lake Forest; Lawrence A. Black, Vernon Hills; Linda J. Chernesky, Arlington Heights, and Wendy Lee, Chicago, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 12, 1993, Ser. No. 152,569

Int. Cl.[6] A61K *31/35*; C07D *309/10, 405/10*

U.S. Cl. 514—459 **6 Claims**

1. A compound having the structure



where Q is as defined above and m=1, 2, or 3;

R^3 is selected from the group consisting of
hydrogen,
alkyl of one to four carbon atoms,
alkenyl of three to six carbon atoms, and
alkynyl of three to six carbon atoms, and

R^4 and R^5 are independently: selected from the group consisting of
hydrogen,
alkyl of one to four carbon atoms,
alkenyl of three to six carbon atoms, and
alkynyl of three to six carbon atoms.

(a) **5,446,063**

ANESTHETIC COMPOSITIONS

Gerald L. Reuter, Plattsburgh, N.Y.; Maureen M. Harrison, and Mark E. Coons, both of St. Albans,, Vt., assignors to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 428,488, Oct. 31, 1989, abandoned, which is a continuation of Ser. No. 925,844, Oct. 30, 1986, abandoned. This application Mar. 8, 1991, Ser. No. 667,234

Int. Cl.[6] A61K *31/24, 31/245, 9/06, 9/10*

(b) **U.S. Cl. 514—535** **7 Claims**

1. A topical anesthetic composition containing high concentrations of benzocaine consisting essentially of 30–90% by weight of water and about 2 to about 20% by weight of benzocaine substantially in micronized form suspended in an admixture of the water and an emollient vehicle, the benzocaine solubility in the emollient vehicle being not greater than 2% by weight of benzocaine and the pH of the composition being in the range of 5 to 7.5.

5,446,064

THERMOPLASTIC ELASTOMER COMPOSITION

Kazuya Hori, and Masahiro Yamasaka, both of Nagoya, Japan, assignors to Mitsubishi Chemical MKV Company, Tokyo, Japan

Filed Mar. 10, 1994, Ser. No. 208,295

Claims priority, application Japan, Mar. 30, 1993, 5-072050; Mar. 30, 1993, 5-072051; Dec. 27, 1993, 5-333244; Dec. 27, 1993, 5-333245

Int. Cl.[6] C08L *23/00*

U.S. Cl. 524—536 **11 Claims**

1. A thermoplastic elastomer composition comprising 100 parts by weight of a crystalline chlorinated polyethylene with a chlorination degree of from 20 to 45% and a heat of crystal fusion of from 5 to 35 cal/g as measured by a DSC method, obtained by chlorinating a polyethylene having a weight average molecular weight of from 100,000 to 750,000, from 1 to 100 parts by weight of a crystalline polyolefin and from 5 to 200 parts by weight of a plasticizer.

5,446,065

SULFONAMIDES OF PHENYLALKYLAMINES OR PHENOXYALKYLAMINES PROCESSES FOR THEIR PREPARATION AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Ernst-Christian Witte, Mannheim; Hansjorg Beckh, Burstadt; Karlheinz Stegmeier, Heppenheim, and Liesel Doerge, Lampertheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP91/02456, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO92/11234, PCT Pub. Date Jul. 9, 1992

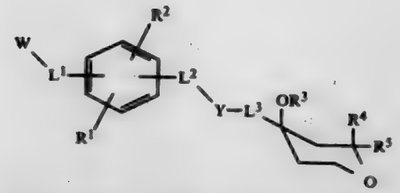
PCT Filed Dec. 19, 1991, Ser. No. 75,489

Claims priority, application Germany, Dec. 24, 1990, 40 41 780.8

Int. Cl.[6] A61K *31/18*

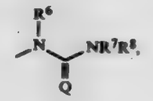
U.S. Cl. 514—604 **15 Claims**

1. A compound of the general formula I

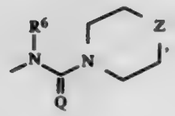


or a pharmaceutically acceptable salt thereof wherein

W is selected from the group consisting of



and



wherein

Q is oxygen,

R^6 and R^7 and R^8 are independently selected from hydrogen and alkyl of one to four carbon atoms, provided that when L^1 is a valence bond, R^6 is alkyl of one to four carbon atoms, and

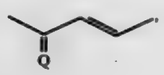
Z is $-CH_2-$, oxygen, sulfur, or $-NR^9$ where R^9 is hydrogen or alkyl of one to four carbon atoms:

L^1 and L^2 are independently selected from a valence bond or alkylene of one to three carbon atoms, propenylene, and propymylene;

R^1 and R^2 are independently selected from the group consisting of
alkyl of one to four carbon atoms,
alkoxy of one to four carbon atoms,
haloalkyl of one to four carbon atoms,
halogen,
cyano,
amino,
alkylamino of one to four carbon atoms,
dialkylamino where the two alkyl groups are independently of one to four carbon atoms,
alkoxycarbonyl of two to four carbon atoms, and
dialkylaminocarbonyl where the alkyl portions are each of one to four carbon atoms;

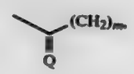
Y is oxygen;

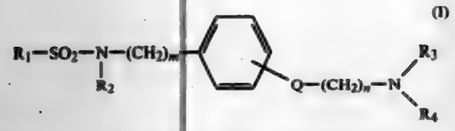
L^3 is selected from the group consisting of
alkylene of one to three carbon atoms,
propenylene,
propynylene,



where

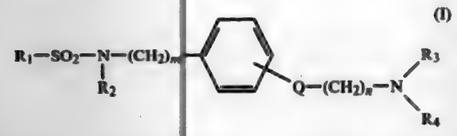
Q is as defined above, and





(I)

in which R_1 is an aryl, aralkyl or an aralkenyl group, the aryl radical of which is unsubstituted or substituted one or more times by halogen, cyano, alkyl, trifluoromethyl, alkoxy, alkylthio, trifluoromethoxy, hydroxyl or carboxyl, m a whole number of 2, n a whole number from 2 to 5, R_2 is hydrogen, Q is a bond or an oxygen atom, R_3 is hydrogen or a C_1–C_4-alkyl group which is unsubstituted or terminally substituted by a carboxyl or a hydroxy group and R_4 is hydrogen, a lower alkyl group with 1–4 C-atoms which is unsubstituted or terminally substituted by carboxyl or hydroxyl, an unsubstituted or substituted phenyl, pyridinyl, pyrimidinyl, cycloalkyl or acyl group or a group



(I)

in which R_5 is a straight-chained or branched alkyl chain with 1–4 C-atoms which is unsubstituted or terminally substituted by carboxyl, alkoxycarbonyl, aminocarbonyl, hydroxyl, mercapto, alkylthio or imidazolyl and Y is a carboxyl, an alkoxycarbonyl, aminocarbonyl or cyano, formyl, hydroxymethyl, aminomethyl or an ortho ester group, wherein R_3 and R_4 can also together form a 5- or 6-membered saturated or unsaturated unsubstituted or substituted heterocycle with 1–4 heteroatoms which is not annellated or is annellated with further ring compounds via one or more bonds, or a physiologically compatible salt, ester or amide thereof with the proviso that R_3 and R_4 are not both lower alkyl groups.

5,446,066

SUBSTITUTED (ARYLALKOXYBENZYL)AMINOPROPANAMIDE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Mario Varasi, Milan, Italy; Philippe Dostert, Paris, France; Paolo Pevarello, Pavia, and Alberto Bonsignori, Milan, both of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Filed Mar. 22, 1994, Ser. No. 215,628

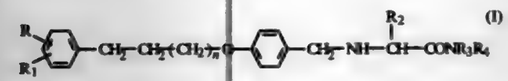
Claims priority, application United Kingdom, Apr. 1, 1993, 9306886

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[6] A61K *31/165;* **C07C** *233/04*

U.S. Cl. 514—620 **8 Claims**

1. A compound of formula (I)



(I)

wherein

n is zero or an integer of 1 to 3;

each of R and R_1, which may be the same or different, is hydrogen, halogen, trifluoromethyl or C_1–C_4 alkoxy;

R_2 is hydrogen or C_1–C_4 alkyl optionally substituted by hydroxy;

each of R_3 and R_4 independently is hydrogen or C_1–C_4 alkyl; or a pharmaceutically acceptable salt thereof; and

wherein when, at the same time, n is zero, 1 or 2, R_2 is hydrogen or unsubstituted C_1–C_4 alkyl and R and R_1 are as defined above, then R_3 and R_4 are both hydrogen; and wherein when, at the same time, R and R_1 are hydrogen, n is zero or 1 and R_2 is methyl, then at least one of R_3 and R_4 is other than hydrogen.

5,446,067

OXIME ETHERS AND FUNGICIDES CONTAINING THEM

Remy Benoit, Ludwigshafen; Hubert Sauter, Mannheim; Reinhard Kirstgen; Gisela Lorenz, both of Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

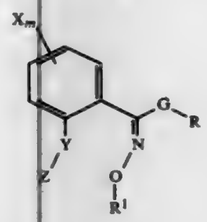
Continuation of Ser. No. 832,722, Feb. 7, 1992, abandoned. This application Jul. 12, 1994, Ser. No. 273,610

Claims priority, application Germany, Feb. 7, 1991, 41 03 695.6

Int. Cl.[6] A01N *33/24;* **C07C** *251/48*

U.S. Cl. 514—640 **22 Claims**

1. Oxime ethers of the formula I



(I)

where

G is C═W or C(V)R^8,

W is oxygen or NR^5,

V is OR^6 or NR^5R^7,

R^5 is hydrogen, hydroxyl, NH_2, C_1–C_8-alkyl, C_1–C_4-aralkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylamino or C_3–C_4-dialkylamino,

R^6,R^7 is hydrogen, C_1–C_8-alkyl or C_1–C_4-alkanoyl,

R^8 is hydrogen or C_1–C_8-alkyl,

R is C_2–C_8-alkenyl, C_2–C_8-alkynyl, phenyl, hetaryl or —$CR^2R^3R^4$,

R_2,R^4 are each hydrogen, C_1–C_8-alkyl, arylalkyl, hetarylalkyl, alkoxyalkyl, aryloxyalkyl, aryl or hetaryl, or

R_2,R^4 together with the carbon atom of which they are substituents form a C_3–C_8-cycloalkyl ring,

R^3 is hydrogen, methyl, cyano, carboxyl or C_1–C_8-alkoxycarbonyl, or

R^2,R^3 together with the carbon atom of which they are substituents form a 5-membered to 8-membered lactone ring,

R^1 is C_1–C_8-alkyl,

X are nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkyl, and

m is an integer of from 0, 1, 2, 3 or 4, where the radicals X may be identical or different when m is >1,

Y is O, $S(O)_n$ (n=0, 1 or 2), —O—CO—, —CO—O—, azo, carbonylamino, aminocarbonyl, aminocarbonyloxy, C_1–C_8-alkylene, C_2–C_8-alkenylene, C_2–C_8-alkynylene, C_1–C_8-alkylenoxy, oxy-C_1–C_4-alkylene, C_1–C_8-thioalkylene, oxycarbonyl-C_1–C_8-alkylene, carbonyloxy-C_1–C_8-alkylene, oxy-C_2–C_8-alkylenoxy, oxy-C_2–C_8-alkenylene, C_1–C_8-alkylamino, carbonyl-C_1–C_8-alkylamino, C_1–C_8-alkylaminocarbonyl, C_1–C_8-alkylaminocarbonyloxy, oxyimino or iminooxyalkylene,

Z is C_1–C_{18}-alkyl, C_1–C_4-alkoxy-C_1–C_{10}-alkyl, C_1–C_{10}-haloalkyl, C_2–C_{18}-alkenyl, C_3–C_8-alkynyl, C_1–C_4-alkoxycarbonyl, aryl, aryl-C_1–C_{10}-alkyl, aryl-C_2–C_{10}-alkenyl, aryloxy-C_1–C_{10}-alkyl or hetaryl,

where the radicals Z may be unsubstituted or substituted by cyano, formyl, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-dialkoxy-C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-haloalkenyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, unsubstituted or substituted C_1–C_{10}-alkoxyimino, C_2–C_{10}-alkenyloxyimino, aralkyloxyimino, unsubstituted or substituted C_2–C_{10}-alkanoyl, unsubstituted or substituted phenyl or phenoxy, or are an unsubstituted or substituted carbon-bonded 5-membered heterocyclic structure which contains from one to four identical or different heteroatoms selected from nitrogen, oxygen or sulfur, in which two adjacent substituents may form an unsubstituted or substituted aromatic or heteroaromatic ring.

5,446,068

1-PHENYL-3-PHENYL-2-PROPYNE-1-ONES AS CALCIUM UPTAKE INHIBITORS

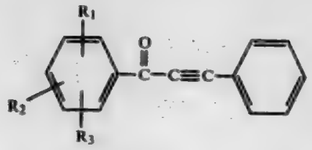
Robert J. Dinerstein, Cincinnati; Jeffrey S. Sabol, Loveland, and Keith A. Diekema, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 66,678, May 24, 1993, abandoned, which is a division of Ser. No. 892,440, Jun. 1, 1992, Pat. No. 5,248,825, which is a continuation of Ser. No. 585,759, Sep. 20, 1990, abandoned. This application Sep. 16, 1994, Ser. No. 307,538

Int. Cl.[6] A61K *31/12, 31/075, 31/13*

U.S. Cl. 514—649 **11 Claims**

1. A method for inhibiting calcium uptake in leukocytes in a patient in need thereof comprising administering to said patient an effective calcium uptake inhibitory amount of a compound of the formula:



wherein: R_1, R_2 and R_3 are each independently hydrogen; C_1–C_6 alkyl; C_1–C_6 alkoxy; halogen; —$N(Y_1)(Y_2)$, wherein Y_1 and Y_2 are each independently hydrogen or C_1–C_6 alkyl; or X_2—(Ar)—$(CH_2)_n$—O—, wherein Ar is phenyl or napthyl, n=0 or 1, X_2=C_1–C_6 alkoxy or —$N(Y_1)(Y_2)$, wherein Y_1 and Y_2 are as previously defined and Z=0, 1, 2; or a pharmaceutically acceptable salt thereof.

5,446,069

BENZOALKANO COMPOUNDS AND THEIR USE FOR TRACTING HYPERPROLIFERATIVE DISEASES

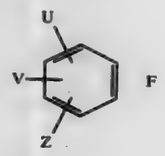
Neng-Yang Shih, North Caldwell, N.J.; Pietro Mangiaracina, Monsey, N.Y.; Michael J. Green, Skillman, and Ashit K. Ganguly, Upper Montclair, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 776,891, Oct. 15, 1991, Pat. No. 5,225,436, which is a continuation of Ser. No. 435,509, Oct. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 51,108, May 15, 1987, abandoned. This application Mar. 29, 1993, Ser. No. 37,865

Int. Cl.[6] A61K *31/385, 31/12;* **C07D** *339/08;* **C07C** *49/88*

U.S. Cl. 514—681 **31 Claims**

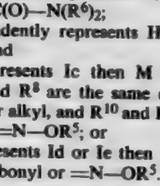
1. A compound of formula



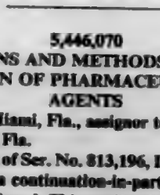
I

wherein F represents:

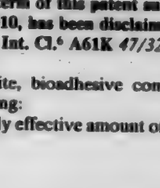
Ic



Id



or



Ie

or a pharmaceutically acceptable salt wherein:

the dotted line (- - -) represents an optional double bond, T being absent in formula Id when the dotted line represents a double bond;

A represents an aryl or an aromatic heterocyclic;

T and W are the same or different and each represents H, alkyl, alkenyl, —OR^5, —S—alkyl, —SQ, —CH_2Q, —C(O)R^6, or —C(O)OR^6;

U, V, and Z are the same or different and each represents a group selected from H, —OR^5, or halo;

Q represents phenyl or substituted phenyl;

R^1 and R^2 are the same or different and each represents alkyl;

each R^5 independently represents H, alkyl, alkanoyl, —C(O)—Q or —C(O)—$N(R^6)_2$;

each R^6 independently represents H, or alkyl as defined herein or Q; and

(1) when F represents Ic then M represents —CR^7R^8, wherein R^7 and R^8 are the same or different and each represents H or alkyl, and R^{10} and R^{11} together represent a carbonyl or =N—OR^5; or

(2) when F represents Id or Ie then R^{10} and R^{11} together represent a carbonyl or =N—OR^5.

5,446,070

COMPOSITIONS AND METHODS FOR TOPICAL ADMINISTRATION OF PHARMACEUTICALLY ACTIVE AGENTS

Juan A. Mantelle, Miami, Fla., assignor to Nover Pharmaceuticals, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 813,196, Dec. 23, 1991, Pat. No. 5,234,957, which is a continuation-in-part of Ser. No. 661,827, Feb. 27, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,330

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[6] A61K *47/32*

U.S. Cl. 514—772.6 **45 Claims**

1. A flexible, finite, bioadhesive composition for topical application comprising:

(a) a therapeutically effective amount of at least one pharma-

ceutically active agent which is in solid form at ambient temperatures and pressures;

(b) a pharmaceutically acceptable solvent for the pharmaceutically active agent, in an amount from about 5 to about 70 weight percent based on the weight of the whole composition, said solvent including about 5 to about 50 weight percent of a plasticizer;

(c) in admixture with the pharmaceutically active agent in the solvent, a pharmaceutically acceptable polysaccharide bioadhesive carrier in an amount from about 20 to about 50 weight percent based on the weight of the whole composition;

wherein the composition is substantially free of water, substantially water insoluble and is a bioadhesive; and wherein the pharmaceutically active agent is present in non-crystallized form in the composition.

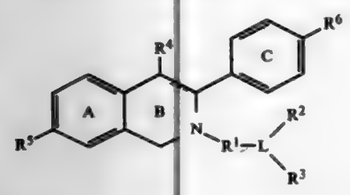
5,446,071

METHODS FOR LOWERING SERUM CHOLESTEROL

Timothy A. Grese, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 18, 1994, Ser. No. 342,181
Int. Cl.[6] A61K *31/00, 31/44*
U.S. Cl. 514—307 **21 Claims**

1. A method for lowering serum cholesterol comprising administering to a mammal in need of treatment a cholesterol lowering amount of a compound of formula I



I

wherein

R^1 is —H or is a bivalent moiety which distances L from the B-ring by 6–8 intervening atoms;

R^2 is —H or selected from the group consisting of hydrogen, a straight or branched, saturated or unsaturated chain having 1–5 carbon atoms, a substituted or unsubstituted cycloalkyl group having 5–7 carbon atoms, a bivalent moiety which joins R^3 and L to form a 5- to 7-membered heterocyclic ring, and halo-substituted derivatives of the foregoing;

R^3 is absent or selected from the group consisting of hydrogen, a straight or branched, saturated or unsaturated chain having 1–5 carbon atoms, a substituted or unsubstituted bivalent moiety which joins R^2 and L to form a 5- to 7-membered heterocyclic ring, and halo-substituted derivatives of the foregoing;

R^4 is hydrogen or lower alkyl;

R^5 and R^6 each are independently hydrogen, hydroxy, or a moiety which is converted to hydroxy in vivo;

L is —CON< or —N<; and

the dotted line in the B-ring is an optional bond; or a pharmaceutically acceptable salt thereof.

5,446,072

EMULSION COMPOSITIONS FOR FLAMEPROOF FOAM SHEET

Tatsuo Mitsutake, and Shizuo Narisawa, both of Ichihara, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Nov. 14, 1994, Ser. No. 339,686
Claims priority, application Japan, Nov. 16, 1993, 5-286611
Int. Cl.[6] C08J *9/32*
U.S. Cl. 521—54 **15 Claims**

1. An emulsion composition for a flameproof foam sheet which comprises the following components (A)–(C) and wherein an amount of component (B) is 5–50 parts by weight per 100 parts by weight of component (A) (based on solid content), and an amount of component (C) is 50–350 parts by weight per 100 parts by weight of component (A) (based on solid content):

(A): an emulsion of an ethylene-vinyl ester copolymer which is composed of 5–35% by weight of (a_1) ethylene and 95–65% by weight of (a_2) vinyl ester and, which has a glass transition temperature in a range from −25° C. to +15° C. and a toluene-insoluble part is 30% or more by weight;

(B): a thermal expansive hollow micro bead; and

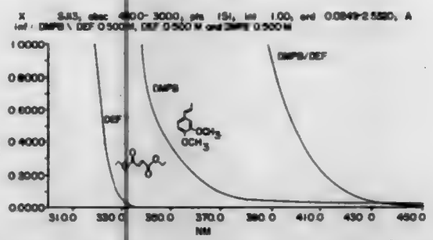
(C): an inorganic filler.

5,446,073

PHOTOPOLYMERIZATION PROCESS EMPLOYING A CHARGE TRANSFER COMPLEX WITHOUT A PHOTOINITIATOR

Sonny Jonsson, Mariefred; Per-Erik G. Sundell, Borlange, both of Sweden, and William R. Schaeffer, Mount Airy, Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Mar. 31, 1993, Ser. No. 41,423
Int. Cl.[6] C08F *2/46, 2/48, 216/12, 222/06*
U.S. Cl. 522—104 **20 Claims**



1. A polymerization process which comprises providing a composition comprising a charge transfer complex wherein said charge transfer complex is at least one member selected from the group consisting of:

1. a bifunctional compound having both an electron donor group and an electron withdrawing group, and polymerizable unsaturated moiety; and

2. a charge transfer complex prepared from

a) at least one unsaturated compound having an electron donor group and a polymerizable unsaturated moiety; and

b) at least one unsaturated compound having an electron acceptor group and a polymerizable unsaturated moiety;

and further provided that said charge transfer complex is capable of absorbing light having a wavelength that is longer than the longest wavelength in the spectrum of light absorbed by the individual donor and withdrawing groups used to form said complex in order that ultraviolet light is absorbed by the complex rather than by individual groups or components forming said complex, and wherein this difference in absorbtivity is sufficient so as to permit the polymerization of said complex to proceed by absorbing light; and wherein said composition is free of photoinitiating and photosensitizing compound;

subjecting said composition to ultraviolet light for a time sufficient to polymerize said complex: and

wherein the peak intensity of said light is at least about 500 milliwatts/cm^2 of surface area of said composition as determined at wavelengths between 300 and 420 nanometers.

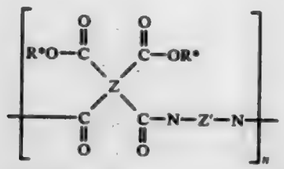
5,446,074

PHOTOSENSITIVE POLYIMIDE PRECURSORS

George Czornyj, Poughkeepsie, N.Y.; Moonbor Ree, Kyongbuk, Rep. of Korea; Willi Volksen, San Jose, Calif., and Dominic C. Yang, Woodbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,801
Int. Cl.[6] G03C *1/52*; C08G *69/26*; C08J *3/28*
U.S. Cl. 522—164 **2 Claims**

1. A photosensitive polyamic acid precursor having the following formula:



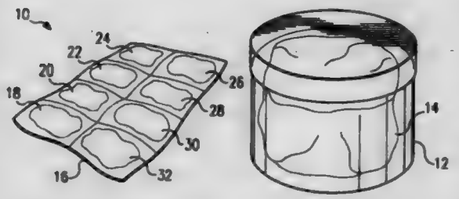
wherein Z is selected from the group consisting of biphenyl, pyromellitic, and benzophenone moieties, wherein Z′ is selected from the group consisting of phenylene, diphenyl ether, and diphenyl methane moieties, and wherein R* is 2-(dimethylamino)ethylazidobenzilate.

5,446,075

MONITOR PUTTY

Robert M. Gibbon, Fort Worth, Tex., assignor to JMK International, Inc., Weatherford, Tex.

Continuation of Ser. No. 111,689, Aug. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 41,081, Apr. 1, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,629
Int. Cl.[6] G21F *1/10*
U.S. Cl. 523—137 **15 Claims**



1. Apparatus for providing manipulative physical therapy to a patient, comprising:

a first mass of putty including a reaction product of a polysiloxane and either a boron- or a tin-containing compound and having a first color, and further including an unreacted, uncured second polydiorganosiloxane gum; and

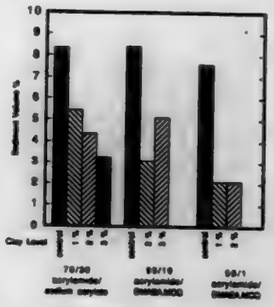
at least one additional mass of putty including (a) a reaction product of polysiloxane and either a boron- or tin-containing compound, (b) an unreacted, uncured polydiorganosiloxane gum, or (c) mixtures of (a) and (b), said additional mass having a second color distinct from the first color, the additional mass adaptable to be manually combined by the patient with the first mass to form a combined mass having a uniform color which is a result of blending the first color and the second colors.

5,446,076

COMPOSITION AND METHOD FOR ENHANCEMENT OF SETTLING STABILITY IN OIL CONTINUOUS LATEX POLYMERS

Anthony G. Sommese, and R. Nagarajan, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 13,894, Feb. 5, 1993, abandoned. This application May 23, 1994, Ser. No. 247,733
Int. Cl.[6] C08K *9/04*
U.S. Cl. 523—200 **9 Claims**



1. A method of stabilizing a suspension of oil-containing latex polymer beads in an oil, the method comprising the steps of:

adding from about 0.01% to 4.0% by weight of an amine-modified organophilic clay to the oil-containing latex polymer beads;

mixing the amine-modified organophilic clay and the oil-containing latex polymer beads to create a homogenous mixture.

5,446,077

OXAZOLIDONE RING-CONTAINING MODIFIED EPOXY RESINS AND CATHODIC ELECTRODEPOSITION PAINTS CONTAINING SAME

Mitsuo Yamada, Suita; Toshiyuki Ishii, Sakai; Hiroyuki Nojiri, and Ichiro Kawakami, both of Takatsuki, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

Filed May 16, 1994, Ser. No. 243,017
Claims priority, application Japan, May 17, 1993, 5-139588; May 17, 1993, 5-139590
Int. Cl.[6] C08K *3/20*; C08L *63/02*
U.S. Cl. 523—415 **14 Claims**

1. A cathodic electric deposition paint comprising (a) a modified epoxy resin having bound thereto at least one blocked isocyanate moiety through an oxazolidone ring formed by the reaction between a portion of the epoxy groups of a polyglycidyl epoxy resin and one isocyanato group of an organic diisocyanate, the other isocyanate group thereof being reversibly or irreversibly blocked, the modified epoxy resin further having introduced thereto at least one cationic group by the ring-opening reaction the remaining epoxy rings with a cationic group-introducing active hydrogen compound; and (b) a crosslinker, dispersed in an aqueous medium containing a neutralizing agent.

5,446,078

BIODEGRADABLE COMPOSITIONS PRODUCED BY REACTIVE BLENDING OF SYNTHETIC AND NATURALLY OCCURRING POLYMERS

Utpal R. Vaidya, Inver Grove Heights, and Mrinal Bhattacharya, Vadnais Heights, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 881,983, May 12, 1992, Pat. No. 5,321,064. This application Mar. 8, 1994, Ser. No. 207,840

Int. Cl.[6] C08L 89/00, 3/00

U.S. Cl. 524—17 21 Claims

1. A biodegradable interpolymer comprising:

(a) a continuous phase, said continuous phase being a major component; and

(b) a dispersed phase, said dispersed phase being a minor component;

wherein the major component and the minor component are physically or chemically bonded at an interface between the continuous phase and the dispersed phase providing a strong interaction between the continuous phase and the dispersed phase; wherein one of said components is a protein compound and the other component is a synthetic polymer having at least one functional group; and wherein said protein compound is present in the interpolymer in an effective biodegradable amount.

5,446,079

ALIPHATIC-AROMATIC COPOLYESTERS AND CELLULOSE ESTER/POLYMER BLENDS

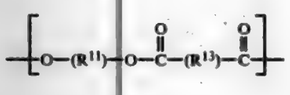
Charles M. Buchanan, Bluff City; Robert M. Gardner, Gray, and Alan W. White, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 797,512, Nov. 21, 1991, Pat. No. 5,292,783, which is a continuation-in-part of Ser. No. 736,262, Jul. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,225, Nov. 30, 1990, abandoned. This application Dec. 7, 1993, Ser. No. 163,441

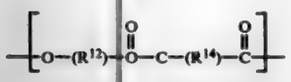
Int. Cl.[6] C08L 1/02, 3/02; C08G 63/183

U.S. Cl. 524—41 14 Claims

1. A linear, random, semicrystalline aliphatic-aromatic copolyester which has an inherent viscosity of about 0.5 to 1.8 deciliters/gram as measured at a temperature of 25° C. for a 0.5 g sample in 100 mL of a 60/40 parts by weight solution of phenol/tetrachloroethane wherein the aliphatic-aromatic copolyester is comprised of repeat units of the following structures:



and



wherein R^{11} and R^{12} are the same and are selected from the groups consisting of C_4 and C_6 alkylene wherein R^{11} and R^{12} are 100% of the diol components; R^{13} is selected from the group consisting of C_3–C_8 alkylene wherein the mole % of R^{13} is from about 40–60% of the dicarboxylic components; and R^{14} is selected from the group consisting of C6–C10 aryl wherein the mole % of R^{14} is from about 60–40% of the dicarboxylic component.

5,446,080

LIQUID ADHESIVE FOR ELECTRONIC PARTS AND PROCESS FOR FORMING INSULATING ADHESIVE LAYER USING THE SAME

Takeshi Shima; Katsuji Nakabe; Masaharu Kobayashi, and Yukinori Sakamoto, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 329,816

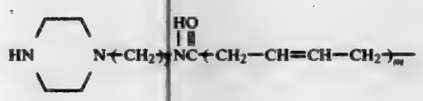
Claims priority, application Japan, Oct. 29, 1993, 5-292474

Int. Cl.[6] C08K 5/3432; B05D 5/12

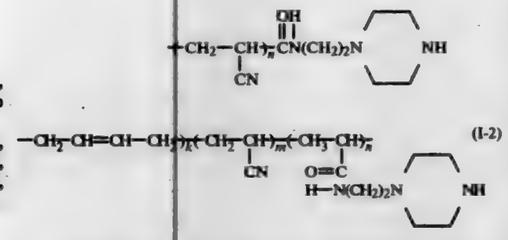
U.S. Cl. 524—99 3 Claims

1. A liquid adhesive for electronic parts which comprises a dispersion obtained by dispersing the following component (b) in a solution of the following component (a) in an organic solvent, wherein the ratio of the component (b) to the component (a) is in a range of 10 to 900 parts by weight based on 100 parts by weight of component (a):

(a) a piperazinylethylaminocarbonyl-containing butadiene-acrylonitrile copolymer having a weight average molecular weight of 1,000–200,000, an acrylonitrile content of 5–50% by weight, and an amino equivalent of 500–10,000, represented by the following formula (I-1) or (I-2):



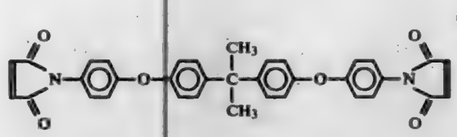
(I-1)



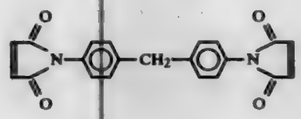
(I-2)

wherein, k, m, and n are molar ratios and taking n as 1, k is a number of 3–175, and m is a number of 0.3 to 93 in an organic solvent;

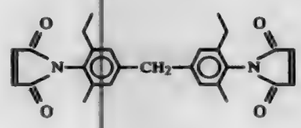
(b) a maleimide compound having at least two maleimide groups selected from the compounds represented by the following formulae (II-1) to (II-6):



(II-1)

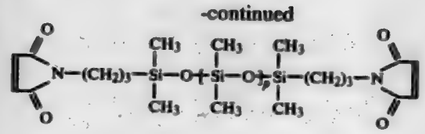


(II-2)

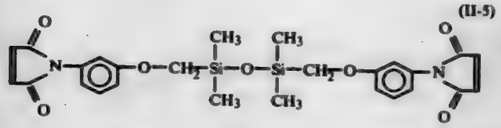


(II-3)

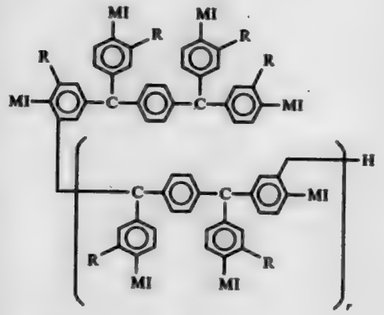
-continued



wherein P represents an integer of from 0 to 7

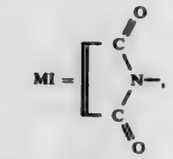


(II-5)



(II-6)

wherein



R=H or CH_3, and r=1–15.

5,446,081

COMPOSITION FOR LOW HARDNESS, FLUORINE-CONTAINING RUBBER

Takehiro Sonoi, Kitaibaraki, Japan, assignor to Nippon Mektron, Limited, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 114,840

Claims priority, application Japan, Oct. 2, 1992, 4-289434

Int. Cl.[6] C08K 3/20

U.S. Cl. 524—251 5 Claims

1. A composition for low hardness, fluorine-containing rubber, which comprises:

(A) a solid fluorine-containing rubber having a weight average molecular weight of about 50,000 to about 300,000, measured by gel permeation chromatography at 40° C. in tetrahydrofuran as a solvent and expressed in terms of polystyrene;

(B) a liquid fluorine-containing rubber having a weight average molecular weight of about 500 to about 10,000 measured by gel permeation chromatography at 40° C. in tetrahydrofuran as a solvent and expressed in terms of polystyrene;

(C) an aliphatic amine having an alkyl group having at least 8 carbon atoms; and

(D) a perfluoropolyether represented by the general formula:

$$F[CF(CF_3)CF_2O]_nCF_2CF_3 \quad \text{(II-4)}$$

wherein n is an integer of 10 to 100.

5,446,082

WATER-DISPERSIBLE POLYESTER COMPOSITION FOR IMAGE RECORDING MEDIUM

Haruo Asai; Mitsuru Kuwahara, and Nobukazu Kotera, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1993, Ser. No. 57,265

Claims priority, application Japan, May 8, 1992, 4-116035; Feb. 12, 1993, 5-024271

Int. Cl.[6] C08J 5/02; C08K 3/20, 5/05; C08L 67/00

U.S. Cl. 524—389 5 Claims

1. A water-dispersible polyester composition for an image recording medium, comprising (1) a polyester having a glass transition temperature of not less than 40° C., a specific gravity of not less than 1.25, a value of SP of 9.5–12.0, and at least one kind of hydrophilic polar group, and which is insoluble in methyl ethyl ketone, toluene, and a mixed solvent thereof, wherein 65% by mole or more of a glycol component constituting the polyester is ethylene glycol, in a proportion of 5–50% by weight, (2) an organic compound compatible with water in a proportion of 0–20% by weight, and (3) water in a proportion of 30–95% by weight, all percentages by weight being based upon the total weight of said composition containing components (1), (2) and (3).

5,446,083

AQUEOUS COATING COMPOSITIONS

Emile J. M. Stevens, Tilburg, Netherlands, and Peter Lear, Cheshire, England, assignors to Zeneca Resins BV, Waalwijk, Netherlands

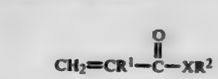
Filed Jun. 5, 1992, Ser. No. 892,818

Claims priority, application United Kingdom, Jun. 5, 1991, 9112141

Int. Cl.[6] C08F 2/16

U.S. Cl. 524—458 17 Claims

1. An aqueous filmogenic coating composition suitable for application to a plastic substrate, said coating composition comprising a stable aqueous dispersion derived from dispersing into water, with the aid of at least one surfactant, an organic solvent solution comprising at least one chlorinated polyolefin, at least one olefinically unsaturated monomer polymerizable to a polymer during coating formation or after coating formation, or both, and at least one filmogenic polymer, the water of said aqueous dispersion being present in an amount of at least 5% by weight of said composition and said at least one olefinically unsaturated monomer comprising at least one (meth)acrylic monomer having the formula



(I)

wherein

R^1 is H or methyl,

X is —O— or —NH— and

R^2 is alkyl or cycloalkyl having 1–20 carbon atoms or a bicyclic terpene group.

5,446,084

SYNTHETIC RESINS

Klaus Huemke, Friedelsheim; Gerhard Hoffmann, Otterstadt, and Dieter Paul, Duerkheim, all of Germany, assignors to BASF Lacke+ Farben AG, Muenster, Germany

Filed Mar. 8, 1993, Ser. No. 27,942
Claims priority, application Germany, Mar. 11, 1992, 42 07 653.6
Int. Cl.[6] C08L 51/00
U.S. Cl. 524—504 5 Claims

1. A cathodic electrocoating bath comprising a pigment paste and an aqueous dispersion containing from 5 to 50% by weight of a synthetic resin consisting essentially of:

A) from 20 to 95% by weight of an epoxy resin binder reacted with a saturated or unsaturated primary and/or secondary amine;

B) from 5 to 80% by weight of an emulsion polymer component which contains a core and one shell, which component is obtained by two-stage emulsion polymerization wherein a monomer mixture (α) of

α_1) from 10 to 90% by weight of at least one conjugated diene,

α_2) from 10 to 90% by weight of at least one vinylaromatic monomer.

α_3) from 0 to 30% by weight of at least one di- or polyethylenically unsaturated monomers having at least one nonconjugated double bond and

α_4) from 0 to 30% by weight of at least one further monomer is prepared by emulsion polymerization in stage (α); and a monomer mixture (β) of

β_1) from 10 to 70% by weight of at least one vinylaromatic monomer,

β_2) from 30 to 90% by weight of a C_1–C_{18}-alkyl methacrylate,

β_3) from 0 to 70% by weight of a C_1–C_{18}-alkyl acrylate,

β_4) from 0 to 30% by weight of a monomer containing at least one nonconjugated double bond and

β_5) from 0 to 30% by weight of at least one further monomer is subsequently subjected to emulsion polymerization in stage (β) in the presence of the polymer obtained in stage (α); the amount by weight of the monomer mixture (α) in the total polymer (B) is from 30 to 95% by weight, and the amount by weight of monomer mixture (β) in the total polymer (B) is from 5 to 70% by weight;

C) from 0 to 50% by weight of one or more crosslinking agents;

D) from 0 to 50% by weight of a pigment formulation consisting of one or more pigments and a resin having surfactant properties; and

E) from 0 to 10% by weight of additives and/or assistants.

5,446,085

POLYMERIC COMPOSITIONS CONTAINING INORGANIC FILLERS AND USE THEREOF

Richard L. Bradshaw, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1993, Ser. No. 76,896
Int. Cl.[6] C08L 75/00, 27/00, 51/00, 69/00
U.S. Cl. 524—507 14 Claims

1. A method of preparing a composition comprising:

A) an inorganic filler having absorption sites selected from the group consisting of unhydrated oxide sites, hydrated oxide sites and mixtures thereof; and

B) a binder component wherein said binder component comprises

1) a glassy polymer having a glass transition temperature of at least about 60° C. and having polar groups that interact with said adsorption sites on the surface of said filler to thereby remain in contact with and to encapsulate said filler; and

2) a rubbery polymer having polar groups and being compatible with said glassy polymer wherein the relative amounts of B)1) and B)2) are about 50% to about 80% by weight of B)1) and correspondingly about 20% to about 50% by weight of B)2) based upon the total weight of B)1) and B)2) in the composition; and wherein said glassy polymer and said rubbery polymer are chlorine free;

and wherein the relative amounts of A) and B) are about 35% to about 60% by volume of A) and correspondingly 65% to about 40% by volume of B) based upon the total volume of A) and B) in the composition;

which comprises forming a premix of the inorganic filler, the glassy polymer and an organic diluent, which contains a volatile polar organic solvent wherein said premix contains about 2 to about 20% by weight of said glassy polymer, and about 20 to about 50% by weight of said filler; and admixing said premix and the rubbery polymer; and providing in the composition a high boiling secondary diluent in an amount to provide a blend of diluent of about 70 to about 90% by weight of said volatile polar organic solvent and correspondingly about 10 to about 30% by weight of said secondary diluent; and wherein said high boiling diluent is a non solvent for said glassy polymer; and thereby causing said glassy polymer to adsorb onto said inorganic filler and interact with adsorption sites on said filler to thereby encapsulate said filler, and to intertwine said rubbery particle within the matrix of said glassy polymer.

5,446,086

POLYOXYMETHYLENE COMPOSITION

Noriyuki Segiyama; Hiroyuki Miyaji; Makoto Kamiya, all of Shizuoka; Arisa Chisoku, Kanagawa, and Kaoru Yamamoto, Shizuoka, all of Japan, assignors to Polyplastics Co., Ltd., Japan

PCT No. PCT/JP93/00901, § 371 Date Mar. 9, 1994, § 102(e) Date Mar. 9, 1994, PCT Pub. No. WO94/00517, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 30, 1993, Ser. No. 199,157
Claims priority, application Japan, Jun. 30, 1992, 4-173291; Sep. 28, 1992, 4-258159; Oct. 28, 1992, 4-290257; Dec. 16, 1992, 4-335868; Jan. 14, 1993, 5-004614; Jun. 23, 1993, 5-151738
Int. Cl.[6] C08L 61/28
U.S. Cl. 524—542 10 Claims

1. A polyoxymethylene composition which comprises a blend of:

(A) a polyoxymethylene;

(B) between 0.01 to 5% by weight, based on the weight of the polyoxymethylene, of an antioxidant; and

(C) between 0.01 to 10% by weight, based on the weight of the polyoxymethylene, of a melamine-formaldehyde polycondensate, wherein

(i) the melamine-formaldehyde polycondensate is the polycondensation reaction product of melamine and formaldehyde and contains 2.0 to 10 moles of melamine units on average per mol of the melamine-formaldehyde polycondensate resin, and wherein

(ii) the melamine-formaldehyde polycondensate has a mean mole number of hydrogen bonded to 3 moles of amino groups contained in 1 mole of melamine of 3.0 moles or above; and wherein

(iii) the melamine-formaldehyde polycondensate is insoluble in warm water and soluble in dimethyl sulfoxide.

5,446,087

CURABLE RELEASE COMPOSITIONS COMPRISING NOVEL SILICONE ADHESION MODIFIER

Francois Chizat, Bron, and Andre Soldat, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Dec. 6, 1993, Ser. No. 161,467
Claims priority, application France, Dec. 4, 1992, 92 14620
Int. Cl.[6] C08L 83/04
U.S. Cl. 524—588 7 Claims

1. An adhesion modifier composition which comprises:

(A) 30 to 70 parts by weight of at least one organopolysiloxane which is in solid form in the dry state, comprising at least two different siloxy structural units $R_3SiO_{1/2}$ (M unit) and SiO_2 (Q unit) and/or $RSiO_{3/2}$ (T unit), and optionally of R_2SiO structural units (D unit), in which the radicals R, which may be identical or different, are each a C_1–C_{18} alkyl or cycloalkyl radical, a C_2–C_{20} alkenyl radical or a (C_3–C_9 alkenyl)oxyalkylene(C_2–C_4) radical, at least 80 mol % of the radicals R being methyl radicals, and said organopolysiloxane containing at least 0.1 mol % of said identical or different alkenyl or alkenyloxyalkylene groups bonded to silicon atoms, with a ratio of the number of (M) units/number of (Q) and/or (T) units ranging from 0.6 to 1, and the number of optional (D) units, when present, ranging from 0.5 to 10 per 100 moles of organopolysiloxane;

(B) 70 to 30 parts by weight of at least one organopolysiloxane which is in solid form in the dry state, comprising at least two different siloxy structural units $R'_3SiO_{1/2}$ (M unit) and SiO_2 (Q unit) and/or $R'SiO_{3/2}$ (T unit), and optionally of R'_2SiO structural units (D unit), in which the radicals R', which may be identical or different, are each a hydrogen atom or a radical R, at least 80 mol % of the radicals R' being methyl radicals, and said polysiloxane containing at least 0.5 mol % of hydrogen atoms bonded directly to silicon, with a ratio of the number of (M) units/number of (Q) and/or (T) units ranging from 0.6 to 1, the number of optional (D) units, when present, ranging from 0.5 to 10 per 100 moles of polysiloxane; with the proviso that said polysiloxanes (A) and (B) contain less than 10 mol % of silanol functional groups; and

(C) at least one solvent or at least one diluent for the mixture of polysiloxanes (A) and (B).

5,446,088

PRECURSOR FOR CERAMIC COATINGS

Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 62,621, May 17, 1993, abandoned. This application Jul. 5, 1994, Ser. No. 270,531
Int. Cl.[6] C08G 77/12
U.S. Cl. 524—588 8 Claims

1. A stable mixture comprising an acidified oxygen-containing polar organic solvent and a soluble resinous co-hydrolysate comprising a polymer having units of the formula $HSi(OH)_x(OR)_yO_{z/2}$ and $Si(OH)_a(OR)_bO_{c/2}$, wherein each R is independently an organic group which, when bonded to silicon through the oxygen atom, forms a hydrolyzable substituent, x=0–2, y=0–2, z=1–3, x+y+z=3, a=0–3, b=0–3, c=1–4, a+b+c=4 and the ratio of $HSi(OH)_x(OR)_yO_{z/2}$ units to $Si(OH)_a(OR)_bO_{c/2}$ units is 1:3 or less.

5,446,089

RESORCINOL-GLUTARALDEHYDE RESIN AS AN ACCELERATOR FOR CURING PHENOL-FORMALDEHYDE RESINS

David W. Shiau; William D. Detlefsen, both of Eugene, and Earl K. Phillips, Springfield, all of Oreg., assignors to Borden, Inc., Columbus, Ohio

Division of Ser. No. 991,208, Dec. 15, 1992, Pat. No. 5,364,902. This application Jun. 30, 1994, Ser. No. 269,111
Int. Cl.[6] C09J 161/12
U.S. Cl. 524—596 3 Claims

1. An adhesive consisting essentially of resorcinolglutaraldehyde resin and water wherein the molar ratio of glutaraldehyde to resorcinol of said resin is in the range of from about 0.5:1 to about 2.5:1 and wherein the solids content of the resin in said mixture is in the range of from about 40% to about 60% by weight.

5,446,090

ISOLATABLE, WATER SOLUBLE, AND HYDROLYTICALLY STABLE ACTIVE SULFONES OF POLY(ETHYLENE GLYCOL) AND RELATED POLYMERS FOR MODIFICATION OF SURFACES AND MOLECULES

J. Milton Harris, Huntsville, Ala., assignor to Shearwater Polymers, Inc., Huntsville, Ala.

Filed Nov. 12, 1993, Ser. No. 151,481
Int. Cl.[6] C07K 3/00; C12N 9/96; C08G 65/32
U.S. Cl. 525—54.1 25 Claims

1. An activated poly(ethylene glycol) derivative having the structure:

$$R—CH_2CH_2—(OCH_2CH_2)_n—Y$$

wherein n equals 5 to 3,000, Y is $—SO_2—CH=CH_2$, and R is selected from the group consisting of HO—, H_3CO—, $X—CH_2—CH_2—SO_2$—, where X is halogen, and $CH_2=CH—SO_2$—.

5,446,091

COLLAGEN-POLYMER CONJUGATES CONTAINING AN ETHER LINKAGE

Woonza Rhee, Palo Alto; Donald G. Wallace, Menlo Park, both of Calif.; Alan S. Michaels, Boston, Mass.; Ramon A. Burns, Jr., Fremont, Calif.; Louis Fries, Los Altos, Calif.; Frank DeLustro, Belmont, Calif., and Hanae Bentz, Newark, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Division of Ser. No. 198,128, Feb. 17, 1994, Pat. No. 5,413,791, which is a division of Ser. No. 922,541, Jun. 30, 1992, Pat. No. 5,328,955, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Jan. 5, 1995, Ser. No. 368,874
Int. Cl.[6] C08G 63/48, 63/91
U.S. Cl. 525—54.1 5 Claims

1. A method for augmenting a tissue in a mammal, comprising the steps of:

providing a collagen-polymer conjugate comprising reconstituted collagen chemically conjugated by a covalent ether bond to a non-immunogenic synthetic hydrophilic polymer;

dehydrating the polymer in order to form a substantially solid material;

grinding the solid material into particles;

forming a suspension by combining the particles with a non-aqueous carrier;

administering the suspension at a site in need of augmentation; and

allowing the non-aqueous carrier to diffuse away and allowing the particles to rehydrate.

5,446,092
THERMOPLASTIC POLYMER COMPOSITION
Makoto Nishikawa, Hasaki; Yoshio Hirayama, Azuma; Shiroh Kishii, Kashima, and Masao Ishii, Kashima, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Apr. 21, 1994, Ser. No. 230,837
Claims priority, application Japan, Apr. 23, 1993, 5-120809
Int. Cl.[6] C08L *53/00, 77/00*
U.S. Cl. 525—66 7 Claims

1. A thermoplastic polymer composition comprising a thermoplastic polyamide (a), and
a modified block copolymer (b) of a block copolymer consisting essentially of units of the structure (B-I)n, (B-I)n-B, [B-(I/B)]n, {B-(I/B)]n-B, wherein n is an integer of 1 to 5, (B-I)-X or [B-(I/B)]-X, wherein X is a 3- to 10-multifunctional coupling agent residue, wherein B, I and (I/B) represent, respectively, a polybutadiene block having a degree of vinylization and a degree of unsaturation of not more than 30%, an isoprene block having a degree of vinylization and a degree of unsaturation of not more than 30%, and a polymer block obtained by polymerizing a mixture of isoprene and butadiene in such a manner that the resulting degree of vinylization and degree of unsaturation is not more than 30%,
said block copolymer having added and reacted therewith a molecular unit containing a carboxyl acid group or derivatives thereof,
the ratio by weight between said component (a) and said component (b), (a)/(b), being in the range of 2/98 to 98/2.

5,446,093
METHOD FOR PRODUCING STATISTICALLY COUPLED ASYMMETRIC RADIAL POLYMERS
Ronald J. Hoxmeier; Bridget A. Spence; Steven S. Chin, all of Houston, and Michael A. Masse, Richmond, all of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Nov. 10, 1993, Ser. No. 150,929
Int. Cl.[6] C08L *53/02*; C08F *297/04*
U.S. Cl. 525—89 5 Claims

1. A process for producing an asymmetric radial block copolymer statistical blend comprised of radial polymers having 6 or 8 arms and comprised of arms of polyisoprene and/or a vinyl aromatic hydrocarbon and arms of a block copolymer of a vinyl aromatic hydrocarbon and isoprene, having a structure as follows:

$$(A_x\text{-}B_m)_z\text{-}Y\text{-}(C)_z$$

wherein A is a vinyl aromatic hydrocarbon polymer block, B and C are polymer blocks of polyisoprene, Y is a multifunctional coupling agent, x and z range from 0 to 6 or 8, x+z is 6 or 8, n and m are 0 or 1 and n+m is at least 1,
wherein the blend contains less than 5% by weight of homopolyisoprene, which comprises:
(a) sequentially anionically polymerizing a vinyl aromatic hydrocarbon and isoprene to create living arms comprised of polyvinyl aromatic hydrocarbon blocks and polyisoprene blocks,
(b) anionically polymerizing isoprene and/or vinyl aromatic hydrocarbon to create living polyisoprene arms and/or vinyl aromatic hydrocarbon arms, and
(c) coupling the arms of (a) and (b) together in one step with a coupling agent
that will couple six or eight arms, wherein the molar ratio of the arms of (a) and (b) is sufficient to produce a statistical blend with less than 5 weight percent homopolyisoprene.

5,446,094
THERMOPLASTIC COUPLING AGENT MIXTURE
Martin Weber, Neustadt; Friedrich Seitz, Friedelsheim; Andreas Jung, Mannheim, and Norbert Guentherberg, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Aug. 17, 1993, Ser. No. 107,373
Claims priority, application Germany, Aug. 21, 1992, 42 27 742.6
Int. Cl.[6] C08L *33/00, 53/00*
U.S. Cl. 525—93 6 Claims

1. A thermoplastic coupling agent mixture (A), containing
a) 5 to 95% by weight of an ethylene copolymer (A_I) having minor amounts of polar comonomers, and
b) 5 to 95% by weight of a copolymer (A_{II}) of aromatic monovinyl comonomers and conjugated dienes having a star-structure obtained by a multiple initiation process wherein the proportion of aromatic monovinyl comonomers is between 25–90% by weight of the copolymer A_{II}.

5,446,095
COMPATIBLE POLYMER BLENDS
Werner Siol, Darmstadt-Eberstadt; Erwin Felger, Darmstadt, and Ulrich Terbrack, Reinheim, all of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Germany
Division of Ser. No. 840,198, Feb. 24, 1992, Pat. No. 5,322,900.
This application Dec. 17, 1993, Ser. No. 168,204
Claims priority, application Germany, Feb. 23, 1991, 41 05 793.7
Int. Cl.[6] C08L *25/06, 25/08, 33/10, 53/02*
U.S. Cl. 525—93 10 Claims

1. A polymer composition comprising:
(I) 40–99 wt. % of a compatible polymer blend PM exhibiting a single glass transition temperature Tg, said polymer blend comprising:
(A) 0.1–99.9 wt. % of a polymer P1 comprising at least 95 wt. % styrene; and
(B) 99.9–0.1 wt. % of a polymer P2 comprising
(a) more than 90 wt. % and up to 100 wt. % of ethyl methacrylate, and
(b) 0 wt. % up to less than 10 wt. % of at least one monomer copolymerizable with ethyl methacrylate, provided that (a) plus (b) add up to 100 wt. %;
and
(II) 60–1 wt. % of another polymer P3, chemically differentiable from said polymer P1 and said polymer P2, which is incompatible with said polymer P1, said polymer P2, and said polymer blend PM;
wherein each of said polymer P1 and said polymer P2 independently has a weight average molecular weight Mw in the range of 2,000 to 5,000,000 Daltons.

5,446,096
MISCIBLE BLENDS OF POLYSULFONES AND AROMATIC ALKYL METHACRYLATE POLYMERS
Michael A. Drzewinski, Princeton Junction, N.J., assignor to Istituto Guido Donegani S.p.A., Novara and Enichem S.p.A., Milan, both of Italy
Continuation of Ser. No. 969,456, Oct. 30, 1992, Pat. No. 5,378,763. This application May 25, 1994, Ser. No. 248,680
Int. Cl.[6] C08L *81/06*
U.S. Cl. 525—189 13 Claims

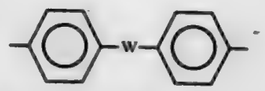
1. A resin composition comprising:
(I) 1 to 80 wt. % of an aromatic polysulfone containing the repeating unit

$$\text{+}X_1\text{—}O\text{—}X_2\text{—}SO_2\text{—}X_3\text{—}O\text{+},$$

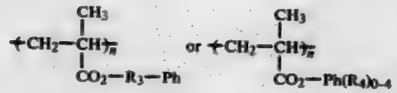
$$\text{+}X_1\text{—}SO_2\text{—}X_2\text{—}O\text{+} \quad \text{or}$$

$$\text{+}X_1\text{—}O\text{—}SO_2\text{—}Ar\text{—}X_3\text{—}O\text{+}$$

where X_1, X_2 and X_3 are substituted or unsubstituted aromatic moieties selected from phenyl, naphthyl, diphenyl or polynuclear divalent radicals of formula:



where W is an aliphatic, cycloaliphatic or arylaliphatic radical containing 0 to 8 carbons, —O—, —S—, —SO_2—, or carbonyl group; Ar is a divalent substituted or unsubstituted aromatic radical selected from biphenylene, terphenylene, napthylene or anthracine; said aromatic substituents are selected from halogen, C_1–C_4-alkyl or C_1–C_4-alkyl groups and
(II) 99 to 20 wt. % of an aromatic alkyl methacrylate block copolymer containing a first block having the repeating unit



where R_3 is a C_1C_4 alkylene radial, R_4 is a C_1–C_4 alkyl group, Ph is a phenyl ring and n is such that the molecular weight of said first block ranges from 12,000 to 85,000 g/mole, and a second block selected from the group consisting of a polydiene, a hydrogenated polydiene, a poly-C_1-C_{10}-alkylacrylate, polystyrene, a poly C_1–C_4-alkylstyrene and a siloxane elastomer, said block having a molecular weight in the range of 10,000 to 150,000.

5,446,097
VULCANIZABLE RUBBER COMPOSITION AND VULCANIZED RUBBER
Shuichi Nonaka; Norihito Ueki, and Takashi Mishima, all of Chiba, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan
Continuation of Ser. No. 896,791, Jun. 9, 1992, abandoned, which is a continuation of Ser. No. 397,470, Aug. 11, 1989, abandoned. This application Sep. 21, 1993, Ser. No. 123,983
Claims priority, application Japan, May 17, 1988, 63-119589
Int. Cl.[6] C08L *23/08, 23/16, 25/08*
U.S. Cl. 525—193 15 Claims

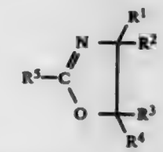
1. A vulcanizable rubber composition which consists essentially of from 5 to 95 parts by weight of a conjugated diene rubber (A), from 95 to 5 parts by weight of an ethylene-alpha-olefin copolymer rubber (B), the combined weight of (A) and (B) being 100 parts, and from 1 to 50 parts by weight, based on 100 parts of the combined weight of the conjugated diene rubber (A) and the ethylene-alpha-olefin copolymer rubber (B), of a styrene oligomer (C) prepared by the copolymerization of at least 80% by weight of at least one styrenic monomer, with 5 to 20% by weight of C₉ petroleum fraction, wherein the styrene oligomer (C) has a number average molecular weight Mn of 400 to 2,000.

5,446,098
COVULCANIZABLE RUBBER COMPOSITION OF PARTIALLY HYDROGENATED NITRILE RUBBER AND CHLORINATED ETHYLENE-PROPYLENE COPOLYMER
Hideo Fukuda, Yokohama; Haruhito Fujita, Yokosuka; Hideyoshi Shimoda, Kamakura, and Shiryu You, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/00386, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO92/17542, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 952,826
Claims priority, application Japan, Mar. 30, 1991, 3-92714
Int. Cl.[6] C08L *23/16, 23/28, 33/20*
U.S. Cl. 525—194 6 Claims

1. A covulcanizable rubber composition comprising a mixture of 90 to 40% by weight of a partially hydrogenated unsaturated nitrile-conjugated diene copolymer having an iodine value not larger than 80 and 10 to 60% by weight of a chlorinated ethylene-propylene copolymer consisting of ethylene and propylene, based on the total weight of the two copolymers, and a vulcanizer.

5,446,099
THERMOSETTING RESIN COMPOSITION
Masaya Yoshida, Takatsuki; Nobuhisa Noda; Ichiro Nasuno, both of Suita, and Kiyoshi Kawamura, Kawanishi, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan
Filed Oct. 21, 1994, Ser. No. 327,285
Claims priority, application Japan, Oct. 22, 1993, 5-265170; Feb. 10, 1994, 6-016302
Int. Cl.[6] C09D *139/04, 135/00*; C08L *39/04, 35/00*
U.S. Cl. 525—204 12 Claims

1. A thermosetting resin composition comprising:
a polymer (A) containing at least one monomer (a) selected from the group consisting of ethylenically unsaturated dicarboxylic anhydride, mono-ester thereof and mono-amide thereof as a repeating unit; and
a polymer (B) containing addition-polymerizable oxazoline (b-1) represented by the following general formula (I) and hydroxyl group-containing monomer (b-2) as repeating units:



(I)

wherein R^1, R^2, R^3 and R^4 are independently hydrogen, halogen, alkyl, aralkyl, cycloalkyl, aryl or substituted aryl, R^5 is alkenyl or cycloalkenyl.

5,446,100
ENVIRONMENTALLY FRIENDLY POLYMERIC WEB COMPOSITIONS
Debra H. Durrance, Lilburn, and Philip A. Sause, Alpharetta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 855,993, Mar. 20, 1992, abandoned, which is a division of Ser. No. 598,277, Oct. 16, 1990, abandoned. This application Apr. 6, 1993, Ser. No. 43,507
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[6] C08L *33/08, 33/02, 23/04*
U.S. Cl. 525—221 21 Claims

1. A composition of matter comprising a blend of from about 50 to about 90 weight percent of a copolymer of a (meth)acry-

late ester and (meth)acrylic acid and from about 10 to about 50 weight percent of a copolymer of ethylene and (meth)acrylic acid.

5,446,101

VINYLIDENE CHLORIDE COPOLYMER COMPOSITION AND MONOLAYER FILM

Noboru Asazawa, and Yoshitaka Shimoda, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 18, 1994, Ser. No. 318,741
Claims priority, application Japan, Mar. 5, 1993, 5-044723
Int. Cl.[6] C08L *27/08*
U.S. Cl. 525—239 3 Claims

1. A composite vinylidene chloride copolymer composition which comprises

a vinylidene chloride copolymer A having a vinylidene chloride content of not less than 50% by weight and not more than 99% by weight and a weight average molecular weight of not less than 50,000 and not more than 300,000 as determined by gel permeation chromatography and

a vinylidene chloride copolymer B having a vinylidene chloride content of not less than 50% by weight and not more than 99% by weight and a weight average molecular weight of not less than 5,000 and not more than the smaller one of either 0.8 times the weight average molecular weight of the vinylidene chloride copolymer A or 80,000 as determined by gel permeation chromatography, and

which contains the copolymer A in an amount of not less than 50% by weight and not more than 98% by weight.

5,446,102

OLEFIN METATHESIS CATALYSTS FOR DEGELLING POLYMERIZATION REACTORS

James Oziomek, Cuyahoga Falls; William L. Hergenrother, Akron, both of Ohio; David R. Hamm, Mountain View, Calif., and Thomas C. Bouton, Akron, Ohio, assignors to Bridgestone, Corporation and Catalytica, both of Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,381
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—245 16 Claims

1. A process for decreasing the molecular weight of a polymer having internal carbon-carbon unsaturation in the polymer backbone comprising:

contacting said polymer with a lower molecular weight olefin in the presence of a metathesis catalyst for a time period sufficient to decrease the molecular weight of said polymer,

wherein said metathesis catalyst is represented by the formula;

$$M(NR_1)(OR_2)_2(CHR_3)$$

wherein M is molybdenum or tungsten;

R_1 and R_2 are independently selected unsubstituted or halo-substituted alkyl, aryl, alkyl groups or silicon-containing analogs thereof; and

R_3 is an alkyl, aryl or aralkyl group or a substituent resulting from the reaction between the $M{=}CHR_3$ moiety of said metathesis catalyst and said lower molecular weight olefin.

5,446,103

MALEIMIDE-MODIFIED HIGH HEAT ABS RESINS

Thomas D. Traugott, Sanford, and Shari L. Workentine, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 127,726, Sep. 27, 1993, Pat. No. 5,412,036. This application Nov. 18, 1994, Ser. No. 341,717
Int. Cl.[6] C08F *279/02*; C08L *51/04*
U.S. Cl. 525—282 9 Claims

1. A rubber-modified monovinylidene aromatic copolymer composition which comprises:

A. a continuous phase matrix copolymer comprising, in polymerized form and on a matrix copolymer weight basis, from about 35 to about 89 weight percent of a monovinylidene aromatic monomer, from about 10 to about 40 weight percent of an ethylenically unsaturated nitrile monomer, and from about 1 to about 25 weight percent of an N-substituted maleimide monomer; and

B. dispersed within said matrix copolymer, discrete particles of a conjugated diene homopolymer or copolymer rubber having grafted thereon and occluded therein a rigid copolymer constituent comprising, in polymerized form and on a rigid copolymer constituent weight basis, from about 25 to about 94 weight percent of a monovinylidene aromatic monomer, from about 5 to about 40 weight percent of an ethylenically unsaturated nitrile monomer, and from about 1 to about 35 weight percent of a N-substituted maleimide monomer; said rubber-modified monovinylidene aromatic copolymer composition being further characterized in that it has a swelling index value of from about 15 to about 25 and in that the difference between the N-substituted maleimide monomer content of the matrix phase copolymer and that of the grafted and occluded rigid copolymer constituent is 9 weight percentage points or less.

8. The aromatic copolymer composition of claim 1 wherein said composition has been prepared by a mass, solution or mass/suspension polymerization process.

9. The aromatic copolymer composition of claim 8 wherein said composition further comprises, on a total composition weight basis, from about 5 to about 40 weight percent of an emulsion graft polymerized rubber concentrate which comprises, on a rubber concentrate weight basis, from about 30 to about 70 weight percent of dispersed rubber particles having grafted thereto a rigid superstrate polymer comprising, in polymerized form, a monovinylidene aromatic monomer, an ethylenically unsaturated nitrile monomer and, optionally, an N-substituted maleimide monomer.

5,446,104

CROSSLINKABLE LOW VISCOSITY STAR POLYMER BLENDS

Dale L. Handlin, Jr., Houston; James R. Erickson, Katy, and David R. Stewart, Richmond, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,852
Int. Cl.[6] C08F *297/04*
U.S. Cl. 525—314 8 Claims

1. A crosslinkable composition having a viscosity of less than 12,000 poise and comprising a star polymer having arms with a peak molecular weight as measured by gel permeation chromatography of from 1,000 to 15,000, said composition being made by anionically polymerizing a conjugated diene and, optionally, a vinyl aromatic hydrocarbon to form living polymer arms and coupling said arms with a coupling agent for star polymers and blending said star polymer with a compatible organic liquid such that the amount of organic liquid in the blend ranges from 5 to 15 percent by weight.

5,446,105

FUNCTIONALIZED COPOLYMER OF HIGHER α-OLEFIN AND UNSATURATED DICARBOXYLIC ACID ESTER AND DERIVATIVES THEREOF

Richard Hombek, Ontario, Canada; Ross C. Opsahl, Geneva, Ill., and Theodore A. Marolewski, New City, N.Y., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Feb. 18, 1994, Ser. No. 198,739
Int. Cl.[6] C08F *222/04*, *222/10*
U.S. Cl. 525—327.6 4 Claims

1. A functionalized copolymer comprising units derived from reacting: (1) a higher α-olefin; and (2) an unsaturated dicarboxylic acid ester; and (3) also comprising imide and polar group functionality.

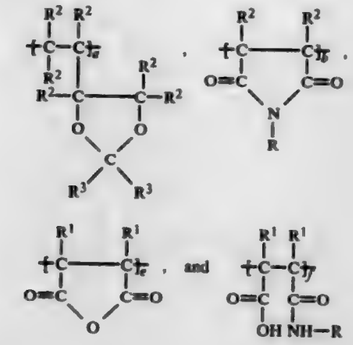
5,446,106

COPOLYMERS OF VINYL DIOXOLANES AND IMIDIZED DERIVATIVES OF MALEIC ANHYDRIDE

Richard W. Blevins, Rochester, and S. Richard Turner, Pittsford, both of N.Y., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 185,331, Jan. 24, 1994, Pat. No. 5,418,294, which is a division of Ser. No. 998,304, Dec. 30, 1992, Pat. No. 5,304,611. This application Jun. 3, 1995, Ser. No. 367,640
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—379 8 Claims

1. A process for preparing a copolymer having repeating units of the formula:



wherein:

R represents hydrogen, alkyl, aryl, substituted aryl, or an alicyclic hydrocarbon having from 1 to about 20 carbon atoms;

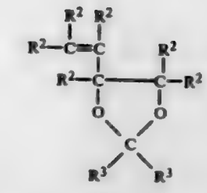
each R^1 independently represents hydrogen, chlorine, bromine, fluorine, cyano or a lower primary or secondary alkyl of 1–4 carbon atoms;

each R^2 independently represents hydrogen or alkyl having 1 to 4 carbon atoms;

each R^3 independently represents hydrogen, alkyl, or aryl having up to about 10 carbon atoms or when taken together represent a cyclic alkyl or arylene group having up to 20 carbon atoms; and

the mole ratio of (a+c+d) : (b+e+f) is approximately equal to 1; e can be 0 to 49 mole percent; b and f taken independently can be 0 to 50 mole percent of the entire polymer provided that both b and f cannot simultaneously be zero which comprises:

(A) contacting (i) a maleic anhydride reactant having up to 12 carbon atoms with (ii) a dioxolane reactant having the formula:



wherein R^2 and R^3 are defined above;

said contacting being in the presence of a free radical initiator, at a temperature within the range of from −10° C. to about 180° C; and

(B) contacting the product of step (A) with a primary amine.

5,446,107

METHOD FOR THE PREPARATION OF CATIONIC, WATER-SOLUBLE POLYMERS AND THEIR USE

Klaus Szablikowski, Walsrode; Wolfgang Koch, Bomlitz; Heinrich Leffers, Walsrode; Hans-Günter Poersch-Panke, Walsrode, and Branislav Boehmer, Walsrode, all of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Jun. 14, 1994, Ser. No. 259,702
Claims priority, application Germany, Jun. 21, 1993, 43 20 433.3
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—385 7 Claims

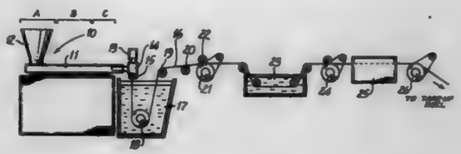
1. A method for the preparation of water-soluble, cationic amine polymers by the continuous or batch-wise reaction of a non-cationic polymer having primary, secondary or tertiary amine functions in its side chain or primary chain as a starting material, characterized in that the reaction is carried out with an epoxide, a glycidyl ether or a mixture of different epoxides and glycidyl ethers in aqueous solution without additional solvent at a temperature of 30° to 90° C. and at a pH of 8 to 14 within 3 to 30 minutes, the epoxides or glycidyl ethers are added as one batch or in portions, and that after adjusting the pH of the aqueous solution of the cationic polymer, which is >13.5 after the reaction with epoxide or glycidyl ether, using a mineral or carboxylic acid, wherein said cationic polymer is obtained in solution without additional work-up steps.

5,446,108

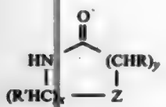
POLYMER DERIVED FROM CYCLIC AMIDE GRAFT COPOLYMER AND MEDICAL DEVICES MANUFACTURED THEREFROM

Ying Jiang, North Haven, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 9,122, Jan. 26, 1993. This application Jun. 9, 1994, Ser. No. 255,692
Int. Cl.[6] C08F *267/10*; C08G *69/14*
U.S. Cl. 528—417 2 Claims



1. A moldable and/or extrudable polymer possessing structural units derived from a cyclic amide monomer of the general formula:



wherein Z is O, S or NR''; each of R, R' and R'' individually is the same or different and is hydrogen or methyl; and, x is 1 to 5, y is 1 to 5 and the sum of x and y is at least 3 to which is grafted a polymer sequence, wherein said polymeric sequence consists of monomers selected from the group consisting of caprolactone, caprolactam, glycolide, glycolic acid, lactide, lactic acid, dioxanone and trimethylene carbonate.

5,446,109

POLYAMIDE/ALIPHATIC POLYESTER BLOCK COPOLYMER, PROCESS FOR THE PRODUCTION THEREOF, AND BLEND CONTAINING THE SAME

Shunichi Matsumura; Takashi Ito, and Takanori Miyoshi, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 23, 1994, Ser. No. 200,454

Claims priority, application Japan, Feb. 23, 1993, 5-033189; Apr. 20, 1993, 5-093028; Jul. 14, 1993, 5-174279; Aug. 26, 1993, 5-211368; Nov. 10, 1993, 5-273483

Int. Cl.[6] C08G *69/44, 81/00;* **C08L** *77/12*

U.S. Cl. 525—420 **8 Claims**

1. A process for the production of a polyamide/aliphatic polyester block polymer comprising melt-reacting under heat

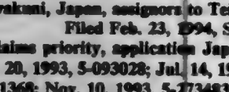
(A) a polyamide composed substantially of at least one recurring unit selected from the group consisting of a recurring unit of the formula (1)



(1)

wherein R_1 is an alkylene group having 4 to 12 carbon atoms,

and a recurring unit of the formula (2)



(2)

wherein R_2 is an alkylene group having 4 to 12 carbon atoms or an alkylene-arylene-alkylene group having 8 to 16 carbon atoms, and R_3 is an alkylene group having 4 to 12 carbon atoms or an arylene group having 6 to 12 carbon atoms, and

(B) at least one member selected from the group consisting of an aliphatic polyester and ϵ-caprolactone,

(C) in the presence of an aromatic monohydroxy compound in an amount of 5 to 100 parts by weight per 100 parts by weight of the total amount of the above components (A) and (B) and in the presence of an ester interchange catalyst, and then distilling off the above aromatic monohydroxy compound.

5,446,110

CARBONATE MODIIED POLYESTER POLYOL

Shinji Nakano, Takatsuki; Takao Morimoto, Matsubara; Shinya Yamada, Sakai; Takaaki Fujiwa, Otake; Hideki Matsui, Otake, and Takeharu Tabuchi, Otake, all of Japan, assignors to Nippon Paint Co., Ltd. and Diacel Chemical Industries, Ltd., both of Osaka, Japan

Division of Ser. No. 159,605, Dec. 1, 1993. This application Dec. 20, 1994, Ser. No. 359,832

Claims priority, application Japan, Dec. 1, 1992, 4-3453333; Oct. 28, 1993, 5-294509

Int. Cl.[6] C08F *8/14*

U.S. Cl. 525—439 **5 Claims**

1. A modified polyester polyol of the formula:



wherein PE is the residue of a polyester polyol with removal of hydroxyl groups, a is an integer of 2–15, b is an integer of 1–6, and c is an integer satisfying the relationship : $O \leqq c < a$.

5,446,111

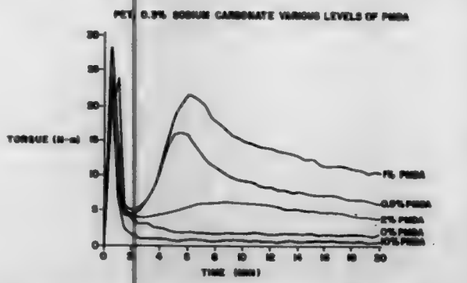
INCREASED THROUGHPUT IN MELT FABRICATION AND FOAMING OF POLYESTER

George E. Rotter, Clarendon Hills; John L. Melquist; Weilong Chiang, both of Naperville; Boh C. Tsai, Inverness, and John J. Kelly, Warrenville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 169,594, Dec. 17, 1993, Pat. No. 5,340,846, which is a division of Ser. No. 10,767, Jan. 29, 1993, Pat. No. 5,288,764. This application May 12, 1994, Ser. No. 241,483

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—444 **4 Claims**



1. A process for melt processing polyester comprising:

(1) forming a molten mixture comprising (i) a major amount of a first polyester resin composition comprising polyester and from 0 up to about 1 wt. % of a polyester branching compound, and (ii) a minor amount of a second polyester resin composition comprising at least about 50 wt. % polyester resin and greater than about 5 wt. % of said branching compound; said molten mixture comprising from about 0.1 wt. % to about 1 wt. % of said branching compound;

(2) melt-processing the resultant molten mixture under conditions of time and temperature sufficient to enhance the melt strength of the mixture; and

(3) directly fabricating the molten mixture into a film, sheet, injection molded article, or blow molded article.

5,446,112

MELT PROCESS FOR THE SYNTHESIS OF TIN(II) TEREPHTHALATE

Douglas G. Hamilton, Mt. Vernon, Ind., and Christopher M. Hawkins, Alexandria, Ohio, assignors to General Electric Company, Pittsfield, Mass.

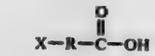
Filed Sep. 22, 1993, Ser. No. 125,099

Int. Cl.[6] C08G *79/00*

U.S. Cl. 528—9 **13 Claims**

1. A melt process for making a poly(metal aromatic ester) resin, comprising:

(a) reacting



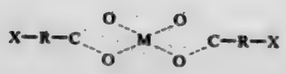
(i)

with

MO

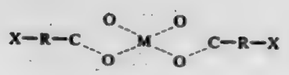
(ii)

to produce



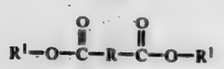
wherein M is a divalent metal selected from, Be, Mg, Ca, Sr, Ba, Ra, Sn, Pb, Ge, Hg, Cd, Zn, CU, Ni, Pd, Pt, Co, Rh, Ir, Fe, Ru, Os, Ti, Zr, Hf, Cr, Mo, W, or Mn and X is selected from the group consisting of hydrogen, halogens, amines, nitros and alkyl radicals,

(b) reacting said



(i)

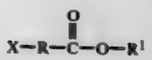
with



(ii)

to produce

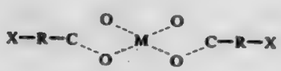




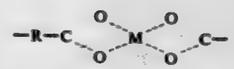
(c) reacting said



with



to produce said poly(metal aromatic esters), said poly(-metal aromatic esters) comprising units of the formula



said R being a divalent aromatic radical, and said R^1 being a monovalent hydrocarbon radical wherein said reactions (a), (b) and (c) and conducted at a temperature sufficient to melt the reactants.

5,446,113

METHOD FOR MAKING HEAT CURABLE ZERO VALENT PLATINUM-VINYLSILANE SILICONE COMPOSITIONS

Larry N. Lewis, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

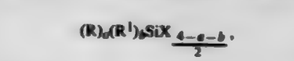
Filed Apr. 28, 1994, Ser. No. 238,892

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—15 **4 Claims**

1. A method for making a platinum catalyzed heat curable organopolysiloxane composition having an enhanced rate of cure comprising forming a mixture comprising by weight,

(A) 100 parts of a mixture incapable of providing a vapor pressure exceeding 0.1 atmosphere at a temperature in the range of 25°–50° C. comprising a vinylsiloxane fluid and a zero valent platinum complex, where the zero valent platinum complex is used in combination with the vinylsiloxane fluid in an amount sufficient to provide from 1 to about 100 ppm of platinum in the resulting mixture and is a complex of a vinylsilane having the formula,



(I)

and a platinum halide, where R is $C_{(2-4)}$ alkenyl radical, or cycloalkenyl radical, R^1 is a $C_{(1-12)}$ monovalent hydrocarbon radical "a" is an integer equal to 1 to 4 inclusive, "b" is a whole number equal to 0 to 3 inclusive, and the sum of a+b is equal to 1 to 4 inclusive, and X is a member selected from the group consisting of a halogen radical, and a $C_{(1-4)}$ alkoxy radical, and,

(B) 1 to 100 parts of silicon hydride siloxane.

5,446,114

FLUORINATED DIMETHICONE COPOLYOLS

Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Filed Dec. 15, 1994, Ser. No. 356,551

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **11 Claims**

1. A polymer which conforms to the following structure:



wherein;

p is an integer ranging from 1 to 2,000;

Me is methyl;

R' is $-(CH_2)_3-O-(EO)_a-(PO)_b-(EO)_c-H$ and

R is $-(CH_2)_2-(CF_2)_s-CF_3$;

s is an integer ranging from 1 to 13;

a, b and c are each independently integers ranging from 0 to 20;

EO is $-(CH_2CH_2-O)-$;

PO is a $-(CH_2CH(CH_3)-O)-$.

5,446,115

SURFACE-TREATMENT COMPOSITION

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicon Co., LTD., Tokyo, Japan

Filed Aug. 9, 1994, Ser. No. 287,998
Claims priority, application Japan, Aug. 26, 1993, 5-234246
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—18 **16 Claims**

1. A composition comprising:

(A) a component selected from the group consisting of a fluorine-containing organosilicon compound having the general formula

$$C_mF_{(2m+1)}-R^2-\underset{\displaystyle R_{(3-a)}{}^1}{\overset{|}{\underset{|}{SiH_a}}}$$

wherein R^1 denotes a monovalent hydrocarbon group, excluding alkenyl groups, R^2 denotes a divalent organic group, a is 2 or 3, and m is an integer having a value of 4 to 12, and a partial hydrolysis and condensation product of said fluorine-containing organosilicon compound; and

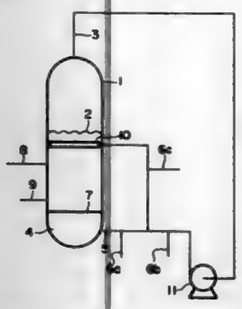
(B) a catalytic quantity of a condensation-reaction catalyst.

5,446,116

PROCESS FOR GAS PHASE POLYMERIZATION

Hiroyuki Ogawa, Singapore, Singapore; Hideo Kusakabe, Chiba, Japan; Ikuhiro Tamaru, Singapore, Singapore; Yoshizumi Sasaki, Chiba, Japan, and Jitsuo Kurokawa, Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 968,460, Oct. 29, 1992, Pat. No. 5,380,494, which is a continuation of Ser. No. 773,500, Oct. 9, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 103,694
Claims priority, application Japan, Nov. 15, 1990, 2-310424
Int. Cl.[6] C08F 2/34
U.S. Cl. 526—68 **4 Claims**



1. A gas phase polymerization process comprising the steps of:

providing a vertically oriented cylindrical polymerization reactor, said reactor having a gas dispersing plate, a gas chamber at the bottom of said reactor, below said gas dispersing plate, and a fluidized bed section therein, wherein said gas dispersing plate partitions said gas chamber and said fluidized bed section is located above said gas dispersing plate;

removing circulating gas from the top of said polymerization reactor;

introducing a portion of said circulating gas or l portion of said circulating gas and fresh feed material through a gas inlet to said gas chamber;

feeding a polymerization catalyst into said polymerization reactor through a catalyst inlet defined above said gas dispersing plate;

introducing another portion of said circulating gas or another portion of said circulating gas and fresh feed material through an upper blowing means into said fluidized bed section of said polymerization reactor at a location distinct from and vertically spaced from polymerization catalyst inlet, wherein at least 5% by volume of the circulating gas introduced at height l is blown generally towards an interior wall of said polymerization reactor, whereby said another portion of said circulating gas is introduced within said polymerization reactor at a height of l which satisfies equations (1), (2) and (3):

$$0<l<L \tag{1}$$

$$0.4 \leqq l/D \leqq 1.8 \tag{2}$$

$$0.7 \leqq L/D \leqq 2.0 \tag{3}$$

wherein L is the height from said gas dispersing plate to the top of said fluidized bed section; D is the inner diameter of said cylindrical polymerization reactor; and l is an arbitrary height from said gas dispersing plate to a location of introduction of said another portion of said circulating gas; and

removing a polymer product from the polymerization reactor.

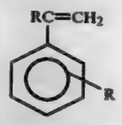
5,446,117

PROCESS FOR PRODUCING AMORPHOUS SYNDIOTACTIC POLYSTYRENE

Michael C. Baird, Kingston; Daniel J. Gillis, Harrowsmith, and Ruhksana Quyoum, Kingston, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Aug. 19, 1993, Ser. No. 108,968
Int. Cl.[6] C08F 4/643, 12/08
U.S. Cl. 526—134 **7 Claims**

1. A process for preparing an amorphous styrene polymer having a stereoregular structure greater than 96% syndiotactic and in a yield of at least 79% which comprises polymerising a styrene monomer having the formula:



wherein each R is independently hydrogen, an aliphatic, cycloaliphatic or aromatic hydrocarbon group having 1–10 carbon atoms in a reaction vessel in the presence of a catalyst comprising $Cp^*M(CH_3)_3$ where M is selected from titanium, zirconium and hafnium and Cp^* is a single η-cyclopentadienyl or an η^5-cyclopentadienyl group optionally covalently bonded to M through a substituent and a co-catalyst comprising $B(C_6F_5)_3$ dissolved in an aromatic solvent under rigorously anhydrous and anaerobic conditions while maintaining the temperature of said reaction vessel in the range −15° C. to +40° C., and wherein the ratio of catalyst: co-catalyst is in the range 1:1 to 1:0.5.

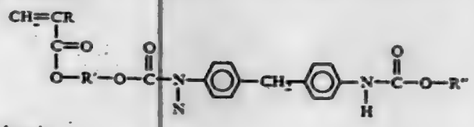
5,446,118

FLUORINATED ACRYLIC MONOMERS CONTAINING URETHANE GROUPS AND THEIR POLYMERS

Ya X. Shea, and Robert Thompson, both of Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 289,159, Aug. 11, 1994, abandoned. This application Sep. 22, 1994, Ser. No. 310,823
Int. Cl.[6] C08F 18/20; C07C 261/00
U.S. Cl. 526—245 **6 Claims**

1. A polymer comprising recurring units of a monomer of the formula



wherein:

R is H or $-CH_3$;

R′ is alkyl of 2–8 carbon atoms; and

R″ is fluorinated alkyl of 8–20 carbon atoms.

5,446,119

ORGANOPOLYSILOXANES CONTAINING ESTER GROUPS

Christian Herzig, Taching am See; Willibald Burger; Bernward Deubzer, both of Burghausen, and Martina Bloechl, Tana, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jul. 25, 1994, Ser. No. 279,382
Claims priority, application Germany, Jul. 28, 1993, 43 25 359.8
Int. Cl.[6] C08G 77/16
U.S. Cl. 528—26 **4 Claims**

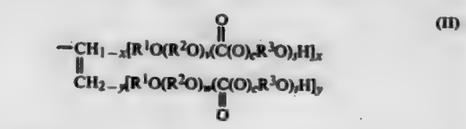
1. An organopolysiloxane which contains ester groups and comprises units of the formula

$$R_2A_bSiO_{\frac{4-a-b}{2}} \tag{I}$$

in which

R is an identical or different monovalent, SiC-bonded hydrocarbon radical having 1 to 18 carbon atoms,

A is an identical or different radical of the formula



(II)

in which

R^1 is an identical or different divalent hydrocarbon radical having 1 to 6 carbon atoms,

R^2 is an identical or different divalent hydrocarbon radical having 2 to 4 carbon atoms,

R^3 is an identical or different divalent hydrocarbon radical having 2 to 6 carbon atoms,

c is 0 or 1,

v is 0 or an integer,

w is 0 or an integer, the sum of v and w being 0 or an integer from 1 to 16,

s is 0 or an integer,

t is 0 or an integer, the sum of s and t being an integer from 1 to 20,

x is 0 or 1,

y is 0 or 1, the sum of x and y being 1 or 2,

a is 0, 1, 2 or 3, and

b is 0, 1 or 2,

with the proviso that the sum of a and b is less than or equal to 3 and the organopolysiloxane contains at least one radical A per molecule.

5,446,120

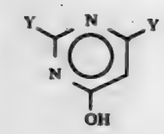
POLYETHERSULFONE OLIGOMERS AND BLENDS

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 223,308, Jul. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 785,364, Oct. 7, 1985, Pat. No. 4,871,475. This application Jan. 3, 1990, Ser. No. 460,396
Int. Cl.[6] C08G 75/23
U.S. Cl. 528—171 **19 Claims**

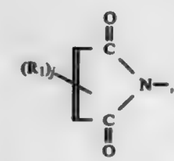
1. An ethersulfone prepreg comprising an ethersulfone, crosslinkable oligomer and a reinforcing additive in fiber of particulate form, the oligomer being the condensation product of the simultaneous reaction of about

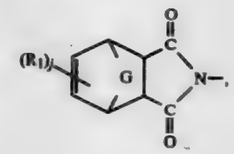
2 moles of an end cap monomer having the formula

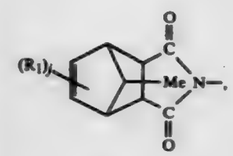


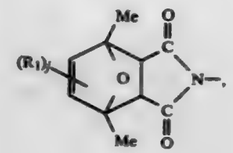
n=1 moles of a dihalogen; and

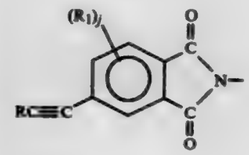
n moles of a diol, wherein Y is selected from the group consisting of:



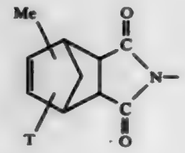








and



$n \geqq 1$;

j=0, 1, or 2;

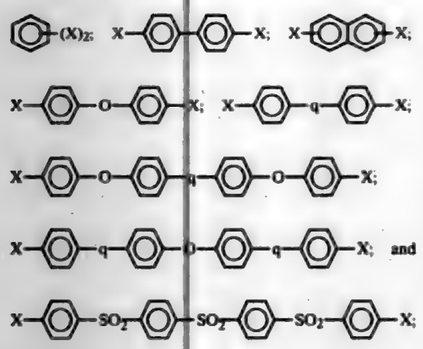
G=$-CH_2-$, $-O-$, $-S-$, $-SO_2-$, $-SO-$, $-CO-$, $-CHR-$, or $-CH_2-$;

T=alkyl or methallyl;

Me=methyl;

R=hydrogen, methyl, or phenyl;

the dihalogen is selected from the group consisting of:



X=halogen; and
q=—S—, —SO_2—, —CO—, —$(CH_3)_2C$—, or —$(CF_3)_2C$—.

5,446,121
PROCESSES FOR PREPARING 1-BUTYL-2-[2'-(2H-TETRAZOL-5-YL) BIPHENYL-4-YLMETHYL]-1H-INDOLE-3-CARBOXYLIC ACID

Robin D. Clark, Palo Alto; Lawrence E. Fisher, Mountain View; Lee A. Flippin, Woodside; Michael G. Martin, San Francisco, and Stephen R. Stabler, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

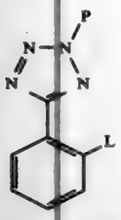
Division of Ser. No. 250,397, May 27, 1994, Pat. No. 5,412,102. This application Jan. 17, 1995, Ser. No. 373,677
Int. Cl.[6] C07D *257/02*
U.S. Cl. 548—253 7 Claims

1. A process for the preparation of 1-butyl-2-[2'-(2H-tetrazol-5-yl)biphenyl-4-ylmethyl]-1H-indole-3-carboxylic acid which process comprises:
(A)
(i) treating a compound of Formula IV:



IV

in which X is halo and R^2 is 1-isopropyl-2-methylpropyliminomethyl or dimethoxymethyl with an organometallic base to give a corresponding para-metalated intermediate,
(ii) optionally treating the para-metalated intermediate with a metal halide to give a para-transmetalated intermediate;
(iii) reacting the para-metalated or para-transmetalated intermediate with a compound of Formula V:



V

in which L is a leaving group and P is a protective group, and acidifying to give protected 2'-(2H-tetrazol-5-yl)biphenyl-4-carbaldehyde,
(iv) reducing the protected 2'-(2H-tetrazol-5-yl)biphenyl-4-carbaldehyde to give protected 2'-(2H-tetrazol-5-yl)biphenyl-4-methanol, and
(v) halogenating the protected 2'-(2H-tetrazol-5-yl)biphenyl-4-methanol to give protected 4-halomethyl-2'-(2H-tetrazol-5-yl)biphenyl;
(B) reacting the protected 4-halomethyl-2'-(2H-tetrazol-5-yl)biphenyl, optionally in the presence of phosphinated nickel or palladium catalyst, with 2-metalated or 2-transmetalated 1-but-1-yl-1H-indole-3-carboxylic acid to give protected 1-butyl-2-[2'-(2H-tetrazol-5-yl)biphenyl-4-ylmethyl]-1H-indole-3-carboxylic acid; and
(C) deprotecting.

5,446,122
PROCESS FOR PREPARING MACROCYCLIC POLYESTERS

Gregory L. Warner, Schenectady; Daniel J. Brunelle, Burnt Hills, and Paul R. Wilson, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

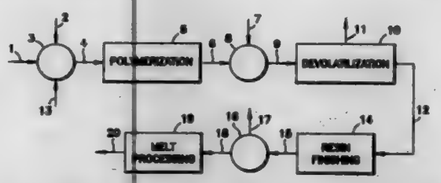
Filed Nov. 30, 1994, Ser. No. 346,998
Int. Cl.[6] C08G *63/82*
U.S. Cl. 528—279 9 Claims

1. A process for producing macrocyclic polyester oligomers and an alkanediol by-product, said process comprises the steps of supplying heat and contacting:
(a) bis-hydroxyalkyl-terminated diesters or oligomers thereof;
(b) high boiling point solvents; and
(c) catalysts.

5,446,123
HYDORXYL-TERMINATED LACTIDE POLYMER COMPOSITION

Patrick R. Gruber, St. Paul; Jeffrey J. Kolstad, Wayzata; Eric S. Hall, Crystal; Robin S. Eichen Conn, Minneapolis, and Christopher M. Ryan, Chisago City, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 955,690, Oct. 2, 1992, Pat. No. 5,338,822. This application Apr. 25, 1994, Ser. No. 233,000
Int. Cl.[6] C08G *63/08*
U.S. Cl. 528—354 16 Claims



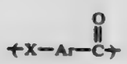
1. An hydroxyl-terminated lactide polymer composition which is sufficiently stable to depolymerization that a devolatilized sample thereof forms less than 2% by weight lactide after heating to 180° C. at atmospheric pressure for 15 minutes.

5,446,124
AROMATIC OLIGOMER AND PROCESS FOR PREPARING THE SAME

Masahiro Niwano; Kenji Manabe; Itaru Nitta, all of Tsukuba; Kuniaki Asai, Tondabayashi; Makoto Namioka, Tsukuba, and Nobuko Nakayama, both of Tsukuba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

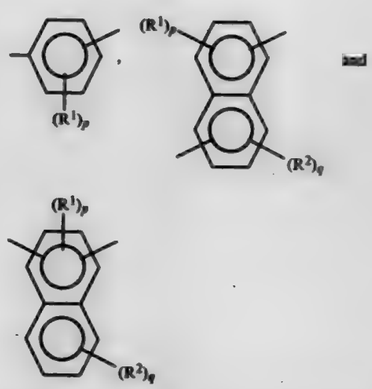
PCT No. PCT/JP90/01593, § 371 Date Aug. 18, 1992, § 102(e) Date Aug. 18, 1992, PCT Pub. No. WO91/12227, PCT Pub. Date Aug. 22, 1991
PCT Filed Dec. 6, 1990, Ser. No. 920,386
Claims priority, application Japan, Feb. 19, 1990, 2-039448; Jun. 4, 1990, 2-14651; Nov. 29, 1990, 2-334273
Int. Cl.[6] C08G *63/06*
U.S. Cl. 528—361 9 Claims

1. An aromatic oligomer comprising repeating structural units represented by the following formula (I), the sum of the monomer content and the dimer content being not greater than 5 % by weight, said oligomer having a number-average degree of polymerization of 3 to 8 and a flow temperature defined below of 100° to 400° C.:



(I)

wherein X is selected from O and S, the structural unit containing at least one member selected from the group consisting of O and S; Ar is selected from



wherein R^1 and R^2 are each selected from alkyl group having 1–3 carbon atoms and phenyl group; and p and q are each an integer of 0 or 2; and wherein the aromatic oligomer has, at one terminal of the molecule, a functional group selected from the group consisting of a carboxyl group, alkylsilyl ether group, silyl halide group, acid anhydride group and unsaturated double bond

flow temperature: the temperature at which the melt viscosity of the oligomer reaches 48,000 poises when the oligomer is melted by heating at a rate of 4° C./min and extruded from a nozzle of 1 mm in inner diameter and 10 mm in length under a load of 100 kg/cm^2.

5,446,125
METHOD FOR REMOVING METAL IMPURITIES FROM RESIST COMPONENTS

Kenji Honda; Edward A. Fitzgerald, both of Barrington, both of R.I., and Lawrence Ferreira, Fall River, Mass., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Continuation-in-part of Ser. No. 678,399, Apr. 1, 1991, abandoned. This application Sep. 3, 1991, Ser. No. 753,488
Int. Cl.[6] C08F *6/08*
U.S. Cl. 528—486 21 Claims

1. A method of removing metal impurities from a resist component comprising the steps of:
(a) dissolving said resist component in a solvent;
(b) contacting said resist component solution with a cation exchange resin and a chelate resin, for a sufficient amount of time to absorb at least a portion of said metal impurities onto said cation exchange resin and said chelate resin, wherein said cation exchange resin and, optionally said chelate resin, are prewashed with a solution of a quaternary ammonium salt compound and wherein the weight ratio of said chelate resin to said cation exchange resin is from about 9:1 to 1:9; and
(c) separating said cation exchange resin and said chelate resin bearing said metal impurities from said resist component solution.

5,446,126
METHOD FOR REMOVING METAL IMPURITIES FROM RESIST COMPONENTS

Kenji Honda, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Continuation-in-part of Ser. No. 678,399, Apr. 1, 1991, abandoned. This application Sep. 3, 1991, Ser. No. 753,533
The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.
Int. Cl.[6] C08F *6/08*
U.S. Cl. 528—482 10 Claims

1. A method of removing metal impurities from a resist component comprising the steps of:
(a) dissolving said resist component in a solvent;
(b) washing a cation exchange resin with a quaternary ammonium compound salt solution;
(c) contacting the prewashed cation exchange resin with the solution of resist component to remove metal impurities from said solution of resist component; and
(d) separating said cation exchange resin bearing said metal impurities from said resist component solution.

5,446,127
NOVEL ANTIPATHOGENIC PEPTIDES AND COMPOSITIONS CONTAINING THE SAME

Francisco Garcia-Olmedo, and Antonio M. Fernandez, both of Madrid, Spain, assignors to Universidad Politecnica de Madrid, Madrid, Spain

Continuation of Ser. No. 965,284, Jan. 25, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,352
Claims priority, application Spain, May 24, 1991, 9101258
Int. Cl.[6] C12P *21/00*; A61K *38/00*; C07K *1/00, 14/00*
U.S. Cl. 530—300 8 Claims

1. An isolated antipathogenic peptide comprising the amino acid sequence (SEQ ID NO: 3)

Ala Ile Thr Cys Gly Gln Val Ser Ser Ala Leu
Gly Pro Cys 14
Ala Ala Tyr Ala Lys Gly Ser Gly Thr Ser Pro
Ser Ala Gly 28
Cys Cys Ser Gly Val Lys Arg Leu Ala Gly Leu
Ala Arg Ser 42
Thr Ala Asp Lys Gln Ala Thr Cys Arg Cys Leu
Lys Ser Val 56
Ala Gly Aly Tyr Asn Ala Gly Arg Ala Ala Gly
Ile Pro Ser 70
Arg Cys Gly Val Ser Val Pro Tyr Thr Ile Ser
Ala Ser Val 84
Asp Cys Ser Lys Ile His 90

or an isolated antipathogenic peptide comprising the amino acid sequence (SEQ ID NO: 5)

Ala Ile Thr Cys Gly Gln Val Ser Ser Ala Leu
Gly Pro Cys 14
Ala Ala Tyr Ala Lys Gly Ala Gly Val Asn Pro
Ser Ala Gly 28
Cys Cys Ser Gly Val Lys Arg Leu Ala Gly Leu
Ala Arg Ser 42
Thr Ala Asp Lys Gln Ala Thr Cys Arg Cys Leu
Lys Ser Val 56
Ala Gly Aly Tyr Asn Ala Gly Arg Ala Ala Gly
Ile Pro Ser 70
Arg Cys Gly Val Ser Val Pro Tyr Thr Ile Ser
Ala Ser Val 84
Asp Cys Ser Lys Ile His 90

or an isolated antipathogenic peptide comprising the amino acid sequence (SEQ ID NO: 4)

Ala Ile Ser Cys Gly Gln Val Ser Ser Ala Leu
Ser Pro Cys 14
Ile Ser Tyr Ala Arg Gly Asn Gly Ala Lys Pro
Pro Ala Ala 28
Cys Cys Ser Gly Val Lys Arg Leu Ala Gly Ala
Ala Gln Ser 42
Thr Ala Asp Lys Gln Ala Ala Cys Lys Cys Ile
Lys Ser Ala 56
Ala Gly Gly Leu Asn Ala Gly Lys Ala Ala Gly
Ile Pro Ser 70
Met Cys Gly Val Ser Val Pro Tyr Ala Ile Ser
Ala Ser Val 84
Asp Cys Ser Lys Ile Arg 90.

5,446,128

ALPHA-HELIX MIMETICS AND METHODS RELATING THERETO

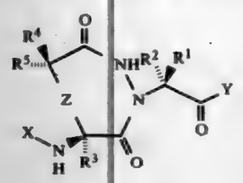
Michael Kahn, Bellevue, Wash., assignor to The Board of Trustees of the University of Illinois, Urbana, Ill.

Continuation of Ser. No. 79,316, Jun. 18, 1993, abandoned. This application May 2, 1994, Ser. No. 236,240

Int. Cl.[6] A61K *38/00*; **C07K** *5/00, 7/00, 17/00*

U.S. Cl. 530—317 **8 Claims**

1. An alpha-helix mimetic having the structure:



wherein Z is an optional methylene moiety; R^1 through R^5 are each selected from hydrogen and methyl; and X and Y are selected from the group consisting of amino acids, alpha-helix mimetics and terminating moieties.

5,446,129

PEPTIDE OR ITS SALT FOR AUTOIMMUNE HYPERTHYROIDISM CONTAINING IT

Toru Mori; Hideo Sagawa, both of Kyoto; Nobutoshi Yamada, and Yoshimichi Ueda, both of Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Continuation of Ser. No. 780,463, Oct. 22, 1991, abandoned. This application Aug. 4, 1994, Ser. No. 285,777

Claims priority, application Japan, Oct. 24, 1990, 2-286802; Nov. 1, 1990, 2-296886

Int. Cl.[6] A61K *38/00*; **C07K** *5/00, 7/00, 14/00*

U.S. Cl. 530—324 **5 Claims**

1. A peptide having the formula:

A—B—C

wherein A is a hydrogen atom, Glu, Phe Glu—, Phe Phe Glu— or the amino acid sequence SEQ ID NO:1 in the Sequence Listing, B is the amino acid sequence SEQ ID NO:2, and C is a hydroxyl group, Glu, —Glu Ile, —Glu Ile Ile or an amino acid sequence selected from the group consisting of SEQ ID NO:3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, and containing from 6 to 25 amino acids; or its salt.

5,446,130

PARATHYROID HORMONE ANTAGONISTS

Tatsuhiko Kanmera, Yokohama; Akihisa Mori; Yoshihide Nakao, both of Machida, and Toshihiko Minegishi, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 988,150, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 684,391, Apr. 12, 1991, Pat. No. 5,229,489. This application Sep. 13, 1994, Ser. No. 305,799

Claims priority, application Japan, Apr. 12, 1990, 2-96952

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[6] C07K *14/635*

U.S. Cl. 530—324 **1 Claim**

1. A peptide derivative which is selected from the group consisting of the compounds having the following formulas:

(1) Ser Glu Ile Gln Leu Met His Ala Leu Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 1);
(2) Ser Glu Ile Gln Leu Met His Gln Leu Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 2);
(3) Phe Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 3);
(4) Leu Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 4);
(5) Myr-Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 5);
(6) Ile Gln Nle Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 6);
(7) Ile Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 7);
(8) Ile Gln Leu Nle His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 8);
(9) Ile Gln Leu Met His Ala Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 9);
(10) Ile Gln Leu Met His Ala Leu Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 10);
(11) Ile Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu Arg His Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 11);
(12) Ile Gln Leu Met His Asp Lys Gly Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His Lys Leu Ile Ala Glu Ile His Thr Ala-NH_2 (SEQ ID No. 12).

5,446,131

THROMBIN RECEPTOR ANTAGONISTS

John M. Maraganore, Concord, Mass., assignor to Biogen, Inc., Cambridge, Mass.

Continuation of Ser. No. 847,561, Mar. 2, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,388

Int. Cl.[6] C07K *7/00, 7/08*; **A61K** *38/00*

U.S. Cl. 530—326 **14 Claims**

1. A thrombin receptor antagonist characterized by a region which binds to the anionic extracellular domain of a thrombin receptor, said antagonist consisting of the sequence: Leu-Val-Arg-X1-X2-X3-His-X4-Arg-X5-Arg-Tyr-X6-Arg-Asn-X7-Glu-Lys-Ile;
wherein:
X1 is Ile or D-Cys;
X2 is Cys or Gly;
X3 is Lys or Orn;
X4 is Set;
X5 is Thr or Cha;
X6 is Glu or Asp; and
X7 is Cys, D-Cys or Ile.

5,446,132

THROMBIN-ACTIVATED PLATELET PROTEIN-2 (TAPP-2)

Guy L. Reed, Winchester, Mass., and Gary R. Matsueda, Princeton, N.J., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 768,043, Oct. 1, 1992, abandoned. This application Oct. 1, 1992, Ser. No. 86,472

Int. Cl.[6] C07K *14/435, 14/46, 14/47, 14/52*

U.S. Cl. 530—350 **2 Claims**

1. A substantially purified protein which is selectively expressed on the surface of thrombin-activated platelets, thrombin-activated platelet protein-2(TAPP-2), said protein having a molecular weight of about 120 kd, and recognized by an antibody having the binding specificity of 12A7.

5,446,133

NITRIC ACID OXIDIZED LIGNOSULFONATES

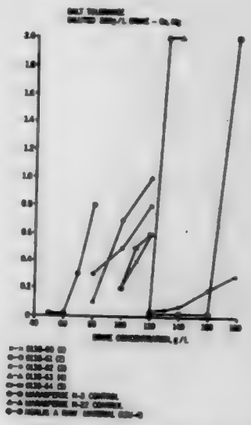
William J. Detroit, Schofield, Wis., assignor to LignoTech USA, Inc., Rothschild, Wis.

Continuation of Ser. No. 911,344, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 578,760, Sep. 6, 1990, abandoned. This application Mar. 2, 1994, Ser. No. 204,881

Int. Cl.[6] C07G *1/00*

U.S. Cl. 530—500 **15 Claims**

1. A process for producing an oxidized lignosulfonate composition consisting essentially of admixing a lignosulfonate and nitric acid to form a reaction mixture by initially providing a source of nitric acid, thereafter adding the lignosulfonate to the nitric acid such that the amount of acid comprises from about 35% to about 100% by weight of dry solids of the lignosulfonate and thereafter reacting said mixture for a time sufficient to form the oxidized lignosulfonate composition.



5,446,134

BIS(PERFLUOROSULFONYL)METHANE SALTS, AND A PROCESS FOR PREPARING SAME

Michel Armand, Saint-Martin-D'Uriage; Djamila Benrabah, Grenoble, and Jean-Yves Sanchez, Saint-Ismier, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France and Hydro Quebec, Montreal, Canada

Filed Jul. 8, 1993, Ser. No. 84,217

Claims priority, application France, Nov. 8, 1991, 91 13789

Int. Cl.[6] C07C *317/24, 317/44, 317/04*; **C07D** *317/34, 207/33, 311/66*

U.S. Cl. 534—558 **22 Claims**

1. A process for the preparation of a compound of the formula

$$[(R_fSO_2)_2C(Y)]_n^-M^{n+}$$

wherein Y is —C≡N or RZ— where Z is carbonyl, sulfonyl or phosphoryl and R is a monovalent organic radical;
M is a metal or an organic radical;
n is the valency of M; and
R_F is perfluoroalkyl or perfluoroaryl, comprising:
i) reacting a compound

$$[(R_fSO_2)_2CH]_n^-M'^{n+}$$

wherein M'^{n+} is a metal or an organic radical, with a compound YX,
where X is a halogen or a pseudohalide when Y is RZ—, and X is a halogen when Y is —CN;
in the presence of a nucleophilic aprotic base.
11. A compound of the formula

$$[(R_fSO_2)_2C(Y)_n^-M^{n+}$$

wherein Y is —C≡N or RZ— where Z is carbonyl, sulfonyl or phosphoryl and R is a monovalent organic radical;
M is an organic radical;
n is the valency of M; and
R_F is perfluoroalkyl or perfluoroaryl.

5,446,135

SULFONYLOXY SUBSTITUTED TRIS-AZOARYL DYES AND COPPER COMPLEX SALTS THEREOF AND POLARIZING FILMS DYED THEREWITH

Tsutami Misawa; Akira Ogiso, both of Yokohama; Rihoko Imai, Tokyo, and Hisato Itoh, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

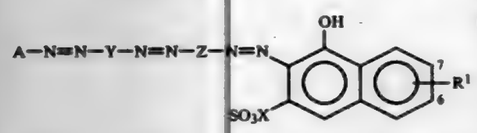
Division of Ser. No. 996,814, Dec. 24, 1992, Pat. No. 5,318,856. This application Mar. 14, 1994, Ser. No. 212,747

Claims priority, application Japan, Dec. 26, 1991, 3-344656; Dec. 26, 1991, 3-344657; Dec. 27, 1991, 3-345907; Dec. 27, 1991, 3-345908

Int. Cl.[6] C09B *31/16, 45/28*

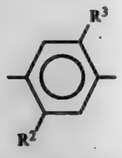
U.S. Cl. 534—714 17 Claims

1. An azo dye represented by the following formula (1):



(1)

wherein A means a benzene or naphthalene ring having a sulfonic acid group or a salt thereof, Y and Z individually denote a group of the following formula (a):



(a)

wherein R^2 is a hydrogen atom, a methyl group, a methoxyl group or an ethoxyl group and R^3 is a methyl, methoxyl or ethoxyl group,

R^1 represents an amino, C_{1-4} alkylamino, or phenylamino group bonded to the 6 or 7 position of the naphthalene ring, and X denotes a hydrogen, sodium, potassium or lithium atom, with the proviso that Y and Z are different but, when both R^2s are hydrogen atoms and both R^3s are methoxyl groups, Y and Z may be the same.

5,446,136

PYRAZOLE AZO DYESTUFFS

Kerstin Pape, and Horst Berneth, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

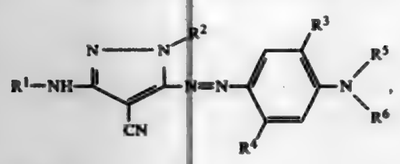
Filed Dec. 13, 1994, Ser. No. 355,365

Claims priority, application Germany, Dec. 20, 1993, 43 43 454.1

Int. Cl.[6] C09B *29/036, 29/09;* D06P *1/18, 3/54*

U.S. Cl. 534—753 6 Claims

1. A pyrazole azo dyestuff of the formula (I)



(I)

in which

R^1 denotes hydrogen or an acyl radical,

R^2 denotes hydrogen, alkyl, alkenyl, cycloalkyl, aralkyl, aryl or a heterocyclic radical which is optionally bonded via alkylene,

R^3 denotes hydrogen, halogen, alkyl or alkoxy,

R^4 denotes hydrogen, halogen, hydroxyl, amino, nitro, cyano, alkyl, alkoxy, acylamino, acyloxy or alkoxycarbonyl,

R^5 and R^6 independently of one another in each case denote hydrogen, alkyl, aralkyl or aryl or

NR^5R^6 together denotes a hydrogenated heterocyclic radical which is bonded via the nitrogen and optionally contains further hetero atoms.

5,446,137

OLIGONUCLEOTIDES CONTAINING 4'-SUBSTITUTED NUCLEOTIDES

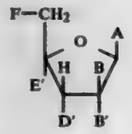
Hans Maag, Menlo Park; Samuel J. Rose, Mountain View, both of Calif., and Beat Schmidt, Baltschieder, Switzerland, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 9, 1993, Ser. No. 164,893

Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—23.1 17 Claims

1. An oligonucleotide which comprises at least one nucleotide having the structure:



wherein:

A is a purine or a pyrimidine;

B and B' are selected from the group consisting of H, OH, F, OCH_3 and SCH_3, provided that at least one is H;

D' is selected from the group consisting of OH, O—P(O)(OH)—OX, O—P(S)(OH)—OX, O—P(S)(SH)—OX and O—P(O)(CH_3)—OX, where X is selected from the group consisting of H, a nucleotide, and a protecting group;

E' is RY, where Y is selected from the group consisting of H and a substituent that renders said nucleotide modifiable, separable or detectable and R is a linking group; and

F is selected from the group consisting of OH and O—P(O)(OH)—OX, where X is selected from the group consisting of H, a nucleotide and a protecting group.

5,446,138

RECOMBINANT DNA CODING FOR A PROTEIN WITH ENDOCHITINASE ACTIVITY

Pierre-Louis Blaiseau, Villejuif; Richard Legoux, Le Faget; Jean-Jacques Legeay, Paris, and Michel Schneider, Toulouse, all of France, assignors to Elf Sanofi, Paris and Societe Nationale Elf Aquitaine, Courbevoie, both of France

Filed Sep. 8, 1992, Ser. No. 939,501

Claims priority, application France, Sep. 6, 1991, 91 11072

Int. Cl.[6] C07H *21/04;* C12N *5/14, 1/15, 1/19, 1/21*

U.S. Cl. 536—23.74 17 Claims

1. A recombinant DNA construct which codes for a protein with endochitinase activity, wherein said protein comprises the following sequence (a1) (SEQ ID NO:1):

Gly Ser Gly Phe Ala Asn Ala Val Tyr Phe Thr Asn Trp Gly Ile
1 5 10 15

Tyr Gly Arg Asn Phe Gln Pro Ala Asp Leu Pro Ala Ser Glu Ile
20 25 30

Thr His Val Leu Tyr Ser Phe Met Asn Val Arg Ala Asp Gly Thr
35 40 45

Ile Phe Ser Gly Asp Thr Tyr Ala Asp Tyr Glu Lys His Tyr Ala
50 55 60

Gly Asp Ser Trp Asn Asp Val Gly Thr Asn Ala Tyr Gly Cys Val
65 70 75

-continued

Lys Gln Leu Tyr Leu Leu Lys Lys Gln Asn Arg Asn Met Lys Val
80 85 90

Met Leu Ser Ile Gly Gly Trp Thr Trp Ser Thr Asn Phe Pro Ala
95 100 105

Ala Ala Ser Ser Ala Ala Thr Arg Lys Thr Phe Ala Gln Ser Ala
110 115 120

Val Gly Phe Met Lys Asp Trp Gly Phe Asp Gly Ile Asp Ile Asp
125 130 135

Trp Glu Tyr Pro Ala Asp Ala Thr Gln Ala Gln Asn Met Val Leu
140 145 150

Leu Leu Gln Ala Val Arg Ser Glu Leu Asp Ser Tyr Ala Ala Gln
155 160 165

Tyr Ala Lys Gly His His Phe Leu Leu Ser Ile Ala Ala Pro Ala
170 175 180

Gly Pro Asp Asn Tyr Asn Lys Leu Lys Phe Ala Glu Leu Gly Lys
185 190 195

Val Leu Asp Tyr Ile Asn Leu Met Ala Tyr Asp Tyr Ala Gly Ser
200 205 210

Trp Ser Asn Tyr Thr Gly His Asp Ala Asn Ile Tyr Ala Asn Pro
215 220 225

Gln Asn Pro Asn Ala Thr Pro Tyr Asn Thr Asp Asp Ala Val Gln
230 235 240

Ala Tyr Ile Asn Gly Gly Val Pro Ala Asn Lys Ile Val Leu Gly
245 250 255

Met Pro Ile Tyr Gly Arg Ser Phe Gln Gln Thr Glu Gly Ile Gly
260 265 270

Lys Pro Tyr Asn Gly Ile Gly Ser Gly Ser Trp Glu Asn Gly Ile
275 280 285

Trp Asp Tyr Lys Ala Leu Pro Lys Ala Gly Ala Thr Val Lys Cys
290 295 300

Asp Asp Thr Ala Lys Gly Cys Tyr Ser Tyr Asp PRo Ser Thr Lys
305 310 315

Glu Leu Ile Ser Phe Asp Thr Pro Ala Met Ile Ser Thr Lys Val
320 325 330

Ser Trp Leu Lys Gly Lys Gly Leu Gly Gly Ser Met Phe Trp Glu
335 340 345

Ala Ser Ala Asp Lys Lys Gly Ser Asp Ser Leu Ile Ser Thr Ser
350 355 360

His Gln gly Leu Gly Ser Gln Asp Ser Thr Gln Asn Tyr Leu Asp
365 370 375

Tyr Pro Asn Ser Lys Tyr Asp Asn Ile Lys Gly Met Asn.
380 385

5,446,139

PURINE ANALOG NUCLEOSIDE AND NUCLEOTIDE COMPOUNDS

Frank Seela; Werner Bourgeois; Rainer Gumbiowski, all of Osnabrück; Angelika Röling, Münster; Helmut Rosemeyer, Osnabrück; Alfred Mertens, Schriesheim; Harald Zilch, Mannheim; Bernhard König, Berg, and Edith Koch, Pouxberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP90/00650, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/01325, PCT Pub. Date Feb. 7, 1991

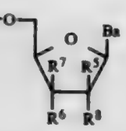
PCT Filed Apr. 23, 1990, Ser. No. 809,506

Claims priority, application Germany, Jul. 13, 1991, 39 24 424.5

Int. Cl.[6] C07H *19/16*

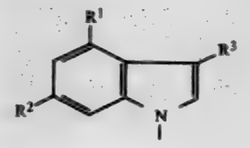
U.S. Cl. 536—26.7 12 Claims

1. Nucleoside derivatives of formula I

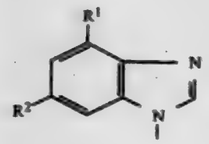


(I)

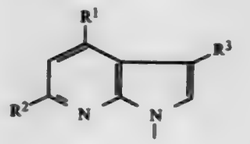
wherein Ba is an indolyl (A), benzimidazolyl (B), pyrrolopyridinyl (C), imidazopyridinyl (D), triazolopyrimidinyl (E), imidazotriazinyl (F) or imidazopyrimidinyl (G) group, of the following formulae, respectively:



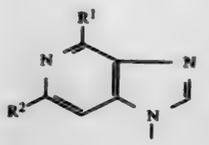
(A)



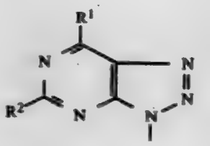
(B)



(C)

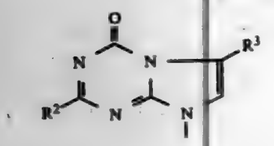


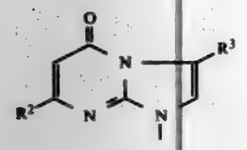
(D)



(E)

-continued





wherein R^1, R^2, R^3, which can be the same or different, are hydrogen, halogen, C_1–C_7-alkyl, C_2–C_7-alkenyl, hydroxy, mercapto, C_1–C_7-alkylthio, C_1–C_7-alkoxy, C_2–C_7-alkenyloxy, aryl-C_1–C_5-alkyl, aryl-C_2–C_5-alkenyl, aryl-C_1–C_5-alkoxy, aryl-C_2–C_5-alkenyloxy, aryloxy, nitro, amino-C_1–C_7-alkyl, C_1–C_7-alkylamino-C_1–C_7-alkyl, di-C_1–C_7-alkylamino-C_1–C_7-alkyl, amino, substituted amino group of the formula —NHR^4 or —$N(R^4)_2$ or an imino group —N=CH—R^4, wherein R^4 is C_1–C_7-alkyl, C_2–C_7-alkenyl, C_3–C_7-cycloalkyl, C_3–C_7-cycloalkyl-C_1–C_7-alkyl, C_3–C_7-cycloalkenyl, C_1–C_7-alkoxy-C_1–C_7-alkyl, halogen-C_1–C_7-alkyl, hydroxy-C_1–C_7-alkyl, aryl-C_1–C_5-alkyl, aryl-C_2–C_5-alkenyl, hetaryl-C_1–C_5-alkyl or hetaryl-C_2–C_5-alkenyl radical, wherein the aryl and hetaryl moieties are unsubstituted or are substituted one, two or three times by C_1–C_6-alkyl, C_2–C_6-alkenyl, C_1–C_6-alkoxy, halogen or hydroxyl, or R^4 is amino-C_1–C_7-alkyl, C_1–C_7-alkylamino-C_1–C_7-alkyl or di-C_1–C_7-alkylamino-C_1–C_7-alkyl and, in the case of the —NHR^4 and —N=CH—R^4 groups, R^4 can additionally be amino, C_1–C_7-alkylamino, di-C_1–C_7-alkylamino or C_1–C_7-alkoxy or, in the case of the —$N(R^4)2$ group, the two nitrogen substituents R^4 together can form a C_1–C_7-alkylidene group which, in turn, can be unsubstituted or substituted by C_1–C_7-alkoxy, C_1–C_7-alkylamino or di-C_1–C_7-alkylamino, wherein said aryl is phenyl or naphthyl and said hetaryl is furanyl, thienyl or pyridyl, R^5, R^6, R^7, and R^8 each are hydrogen, or one or two of R^5, R^6, R^7, and R^8 are hydroxyl, halogen, cyano, azido or a substituted amino group —NHR^4 or —$N(R^4)_2$, or and R^5 and R^7 can together represent a further bond between C-2' and C-3', and Y is hydrogen or C_1–C_7-alkylcarbonyl, monophosphate, diphosphate or triphosphate,

with the provisos that

a) when R^6 is a hydroxyl group, R^8 is other than a hydrogen atom or a hydroxyl group,

b) when Ba is the group (B) , R^6 is other than a halogen, amino or azido group,

c) when Ba is the group (D) and R^2 is hydrogen, R^1 is other than chlorine or amino and R^6 is other than hydrogen or chlorine, and

d) When Ba is the group (E) and R^1 is amino, R^5 and R^7 cannot together represent a bond,

as well as their possible α and β-anomers, , N^7-, N^8- or N^9 regioisomers (purine nomenclature), tautomers and salts, and nucleic acids which contain compounds of the formula I as constructional units.

5,446,140

(F) POLYMER BLEND COMPOSED OF CELLULOSE ACETATE AND STARCH ACETATE AND STARCH USED TO FORM FIBERS, FILMS AND PLASTIC MATERIALS AND A PROCESS TO PREPARE SAID BLEND

Joanne C. Maberas, Charlotte; John B. Hopkins, Jr., Pineville, and Heribert Tarziaff, Charlotte, all of N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 54,706, Apr. 28, 1993, abandoned. This application Jan. 5, 1995, Ser. No. 369,573

Int. Cl.[6] C08B *31/02, 33/02, 35/02*

U.S. Cl. 536—123 4 Claims

(G) 1. A blended alloy capable of being used for the production of film, fiber, fibrets, filaments, moldings, and plastic materials or a combination of these comprising

cellulose acetate having a degree of substitution between 2.0 and 3.0; and

starch acetate having a degree of substitution between 2.55 and 3 having about 25% of linear amylose and about 75% branched amylopectin.

5,446,141

ALKYLPHTHALOCYANINE NEAR-INFRARED ABSORBERS AND RECORDING/DISPLAY MATERIALS USING THE SAME

Hisato Itoh, Yokohama; Katashi Enomoto, Zushi; Takahisa Oguchi, and Tsutomu Nishizawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Yao, both of Japan

Continuation of Ser. No. 660,937, Feb. 26, 1991, which is a division of Ser. No. 593,255, Oct. 1, 1990, Pat. No. 5,024,926, which is a continuation of Ser. No. 331,736, Apr. 3, 1989, abandoned. This application Sep. 17, 1992, Ser. No. 945,897

Claims priority, application Japan, Apr. 1, 1988, 63-078049; Jun. 2, 1988, 63-133446

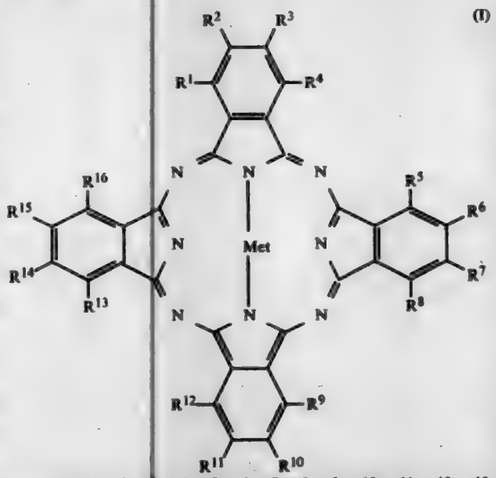
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—139 6 Claims

1. A near-infrared absorber comprising a phthalocyanine derivative of formula (I):

(I)



wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, and R^{16} are independently alkyl, arylmethyl, alkoxymethyl, alkylthiomethyl, alkylaminomethyl, dialkylaminomethyl, aryloxymethyl, arylthiomethyl, arylaminomethyl, diarylaminomethyl, or alkylarylaminomethyl, wherein the total number of carbon, oxygen, nitrogen, and sulfur atoms

present in each of R^1, R^4, R^5, R^8, R^9, R^{12}, R^{13}, and R^{16} is in the range of 5 to 12; and Met is two hydrogen atoms, a divalent metal atom, a monosubstituted trivalent metal atom, a disubstituted tetravalent metal atom or an oxymetal group.

5,446,142

PHTHALOCYANINE AND NAPHTHALOCYANINE LIGHT-ABSORBING COMPOUND AND OPTICAL RECORDING MEDIUM CONTAINING SAME

Hisato Itoh; Takahisa Oguchi; Kenichi Sugimoto; Ryu Oi; Hideki Umehara, and Shin Aihara, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo and Yamamoto Chemicals, Inc., Yao, both of Japan

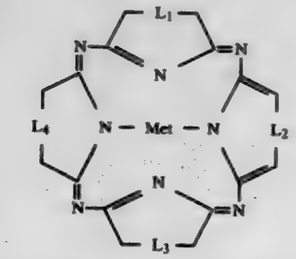
Filed Jun. 11, 1993, Ser. No. 74,537

Claims priority, application Japan, Jun. 12, 1992, 4-153710; Jan. 29, 1993, 5-013507

Int. Cl.[6] C09B *47/04;* C09K *19/58*

U.S. Cl. 540—139 22 Claims

1. A light-absorbing compound represented by the formula (II):



wherein each of L_1, L_2, L_3 and L_4 is a benzene ring or naphthalene ring having 0 to 2 independent OR groups, and at least one of L_1, L_2, L_3 and L_4 has one or two OR groups, wherein OR is (a) a substituted or unsubstituted saturated alkoxy group having 1 to 20 carbon atoms, or (b) a substituted or unsubstituted unsaturated alkoxy group having 2 to 20 carbon atoms, but wherein at least one of all the OR substituents present on L_1, L_2, L_3 and L_4 is a substituted or unsubstituted unsaturated alkoxy group; Met is two hydrogen atoms, a divalent metal atom, a trivalent mono-substituted metal atom, a tetravalent di-substituted metal atom or an oxymetal group.

5,446,143

ADIPOSE-SPECIFIC PROMOTER REGION OF HUMAN AROMATASE CYTOCHROME P450 GENE

Evan R. Simpson, Dallas; Mala S. Mahendroo, and Carole R. Mendelson, both of Arlington, all of Tex., assignors to Board of Regents, the University of Texas System, Austin, Tex.

Filed Sep. 14, 1993, Ser. No. 121,063

Int. Cl.[6] C12N *15/11, 15/09*

U.S. Cl. 536—24.1 1 Claim

1. A nucleic acid segment comprising a sequence including an I.4 promoter of an aromatase cytochrome P450 gene, the promoter being further defined as directing gene expression in adipose tissue and contained in the nucleotide sequence of SEQ ID NO:7.

5,446,144

PIPERIDYL-TRIAZINE DERIVATIVES AND THEIR USE AS POLYMER STABILIZERS

Toshimasa Toda; Satoru Naito; Hisayu Osawa, and Takaaki Yamazaki, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 257,753, Oct. 14, 1988, abandoned. This application Feb. 2, 1990, Ser. No. 474,292

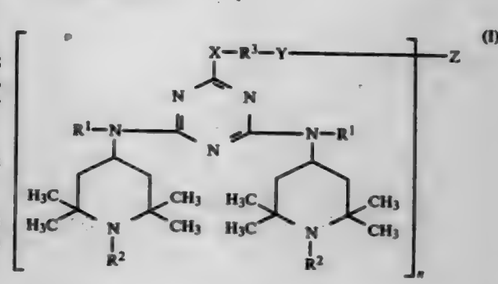
Claims priority, application Japan, Oct. 30, 1987, 62-273138

Int. Cl.[6] C07D *403/00*

U.S. Cl. 544—198 12 Claims

1. A compound of

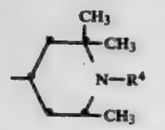
(I)



(II) wherein:

R^1 represents a hydrogen atom, a C_1–C_8 alkyl group, a benzyl group or R^1 is a group of formula (II)

(II)



, in which R^4 represents a hydrogen atom, a methyl group or a benzyl group;

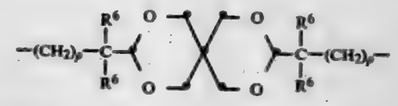
R^2 represents a hydrogen atom, a methyl group or a benzyl group;

R^3 represents a C_1–C_4 alkylene group or a C_1–C_4 alkylene group interrupted by at least one oxygen atom;

X represents an oxygen atom or a group of a formula —NH— or —NCH_3—;

Y represents a group of a formula —OCO—, —CONH—or —COO—; n is 2 and Z represents a C_1–C_{10} alkylene group, a C_1–C_{10} alkylene group interrupted by at least one oxygen atom, or Z is a group of formula (V)

(V)

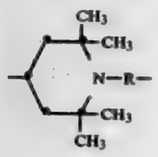


, in which

R^6 represents a hydrogen atom or a methyl group; and p is 1 or 2,

or Z is a group of formula (VI)

(VI)



, in which R represents a C_2 or C_3 alkylene group.

5,446,145

POLYCHELANT COMPOUNDS

David B. Love, Campbell; William C. Dow, Fremont; Richard J. Himmelsbach, Pleasanton; Alan D. Watson, Campbell, and Scott M. Rockinge, Los Gatos, all of Calif., assignors to Nycomed Salutar, Inc., Sunnyvale, Calif.

Division of Ser. No. 468,107, Jan. 19, 1990, Pat. No. 5,281,704. This application Jul. 7, 1993, Ser. No. 86,996

Int. Cl.[6] C07D *225/02*

U.S. Cl. 540—465 13 Claims

1. A dichelant comprising two cyclic polyazaalkane chelant moieties, each capable of complexing a metal ion, said moieties being linked together by an amide or ester moiety, and salts and chelates of said dichelant.

5,446,146

PIPERAZINE DERIVATIVE HAVING SUBSTITUTED PHENYL GROUPS

Mitsuo Masaki, Chiba; Tosio Yamakawa, Kashiwa; Masaru Satoh, Koshigaya; Hiromitsu Takeda, Washimiya; Yasushi Yoshino, Narashino, and Hitoshi Matsukura, Kasukabe, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

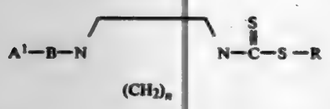
Continuation of Ser. No. 111,774, Aug. 25, 1993, abandoned, which is a continuation of Ser. No. 743,275, Aug. 9, 1991, abandoned, which is a division of Ser. No. 302,552, Jan. 26, 1989, Pat. No. 5,070,089. This application Jun. 7, 1994, Ser. No. 255,120

Claims priority, application Japan, Jan. 26, 1988, 63-13622; Apr. 5, 1988, 63-84459; Apr. 5, 1988, 63-84460; Apr. 5, 1988, 63-84461

Int. Cl.[6] C07D *243/08, 295/194*

U.S. Cl. 540—575 4 Claims

1. A piperazine derivative having the formula:



wherein

A^1 represents a phenyl group which has a least one substituent selected from the group consisting of alkyl, fluoroalkyl, hydroxy, alkoxy, amino, mercapto and alkylthio;

B represents straight chain alkylene group having 1–4 carbon atoms which may have at least one substituent selected from the group consisting of alkyl, aryl, aralkyl, hydroxy and oxo;

R is selected from the group consisting of alkyl and cycloalkyl, and

n is 2 or 3.

5,446,147

FLUORINATED AND IODINATED DOPAMINE AGENTS

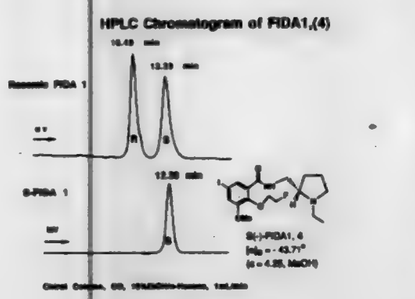
Hank F. Kung, Wynnewood; Sumalee Chumpradit, Bryn Mawr, and Mei Ping Kung, Wynnewood, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Apr. 3, 1992, Ser. No. 862,840

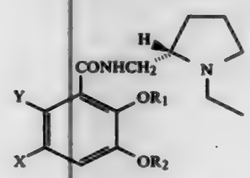
Int. Cl.[6] C07D *223/16, 451/02, 211/56, 207/08*

U.S. Cl. 540—595 35 Claims

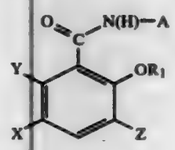
1. A compound selected from the group consisting of compounds of formulas I, II and III:



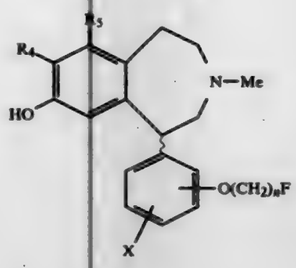
I



II



III



where

X is selected from the group consisting of I, $-(CH_2)_nI$ and $-(CH_2)_qC{=}CHI$;

n is an integer of from one to six;

q is zero or an integer of from one to four;

Y is selected from the group consisting of H and OR_3;

Z is selected from the group consisting of H and OR_2 or Z and OR_1 can be taken together to form a ring



where

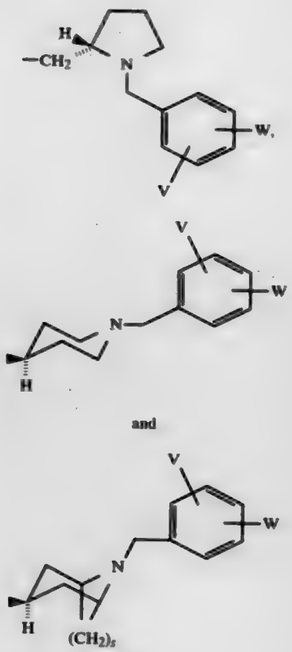
m is an integer of from two to four;

R_1, R_2 and R_3 are independently selected from the group consisting of H, C_1–C_5 alkyl, and $-(CH_2)_nF$; provided that, in compounds of Formula I, at least one of R_1, R_2 and R_3 is $-(CH_2)nF$; and that, in Compounds of Formula II, at least one of $-OR_1$, Y and Z is $-O(CH_2)_nF$;

R_4 is selected from the group consisting of OH, Cl and CH_3;

R_5 is selected from the group consisting of H, Cl and OCH_3, provided that when R_4 is Cl, then R_5 is H or CH_3, and that when R_5 is H or CH_3, then R_4 is Cl;

A is selected from the group consisting of



and

s is an integer of from 1 to 3;

W is selected from the group consisting of F and $(CH_2)_nF$; and

V is selected from the group consisting of H, OH, OCH_3, CH_3 and I.

5,446,148

METHOD FOR THE PRODUCTION OF AZAPHENOTHIAZINES

Bernhard Kutscher, Maintal, and Hans-Reinhold Dieter, Darmstadt, both of Germany, assignors to ASTA Medica Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 198,056, Feb. 18, 1994, abandoned. This application Mar. 9, 1994, Ser. No. 208,120

Claims priority, application Germany, Feb. 19, 1993, 43 05 080.8

Int. Cl.[6] C07D *471/04, 401/12, 213/74*

U.S. Cl. 544—14 4 Claims

1. 6-aza-benzo[b]-phenothiazine.

2. 6-aza-5-(2-dimethylaminopropyl)benzo-[b]phenothiazine.

3. 6-aza-5-(3-dimethylaminopropyl)-benzo-[b]phenopthiazine.

4. 6-aza-5-benzo [b]-phenothiazine.

5,446,149

BRIDGED SPIROXAZINE PHOTOCHROMIC COMPOUNDS

Martin Rickwood, Southport, and Sean D. Marsden, Windle, both of United Kingdom, assignors to Pilkington plc, St. Helens, United Kingdom

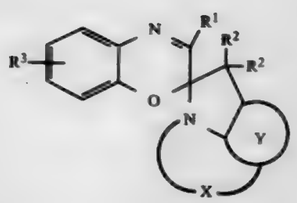
Filed Dec. 2, 1993, Ser. No. 160,169

Claims priority, application United Kingdom, Dec. 3, 1992, 9225348

Int. Cl.[6] C07D *265/14*

U.S. Cl. 544—71 12 Claims

1. Photochromic compounds having the following structure II



in which

R^1 is a group selected from hydrogen, alkyl, alkoxy or amino;

each R^2 is a group selected from branched or linear-chain groups containing from 1 to 10 carbon atoms, a carboxylic group or a heterocyclic group or together form a carboxylic or heterocyclic ring;

R^3 is a group selected from hydrogen, alkyl, alkoxy, alkenyl, alkynyl, imino, azo, amino, carboxy ester, amide, cyano, halogen, trifluoromethyl, nitro, substituted or unsubstituted phenyl, substituted or unsubstituted pyridyl, or a fused carbocyclic or heterocyclic moiety;

Y is a six membered carbocyclic or heterocyclic ring.

X links N as shown to the ring Y to form a fused heterocyclic ring, said x-linkage containing 2 to 4 carbon atoms.

5,446,150

PHOTOCHROMIC SPIROXAZINE COMPOUNDS

Martin Rickwood, Southport; Sean D. Marsden, St. Helens, and Victoria E. Askew, Upminster, all of United Kingdom, assignors to Pilkington plc, St. Helens, United Kingdom

Filed Dec. 2, 1993, Ser. No. 160,173

Claims priority, application United Kingdom, Dec. 3, 1992, 9225346

Int. Cl.[6] C07D *265/14*

U.S. Cl. 544—71 20 Claims

1. Photochromic compounds comprising a structure which includes a spiropyrrolidinebenzoxazine structure comprising a pyrrolidine part and a benzoxazine part and the benzoxazine part includes at least one mesomeric electron donating group chosen from amino and alkoxy moieties, the at least one mesomeric electron donating group being linked to a 6'-position of the benzoxazine part such that said compound is fully conjugated in a ring-opened state and said compound exhibits a green colour in a darkened condition.

5,446,151

PHOTO REACTIVE SPIRO-BENZOXAZINE COMPOUNDS

Martin Rickwood, Southport; John D. Hepworth, Preston; Christopher D. Gabbutt, Blackburn, and Sean D. Marsden, St. Helens, all of United Kingdom, assignors to Pilkington plc, St. Helens, United Kingdom

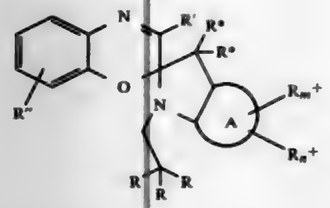
Filed Dec. 2, 1993, Ser. No. 160,184

Claims priority, application United Kingdom, Dec. 3, 1992, 9225347

Int. Cl.[6] C07D *265/14*

U.S. Cl. 544—71 18 Claims

1. A photo reactive material having the following structure:



where

A is a six membered carbocyclic or heterocyclic ring;

in the group $-CH_2-C(R)_3$

(i) each of the R groups is an alkyl or

(ii) one of the R groups is hydrogen and the other R groups are independent of one another and are an alkyl, alkenyl, alkynyl or aryl group, or the two R groups together form part of a carbocyclic or heterocyclic ring;

R° are independent of one another and are a branched or linear C_1–C_{10} alkyl group or a carbocyclic or heterocyclic group or both form part of a carbocyclic or heterocyclic ring;

R_m+ is an alkyl alkoxy, amino, halogen, cyano, nitro, trifluoromethyl or aryl group and m has a value from 0 to 4;

R_n+ is a carbocyclic or heterocyclic group which is fused to A and n has a value from 0 to 2;

R′ is a hydrogen, alkyl, alkoxy, amino, carbocyclic or heterocyclic group;

R″ is a hydrogen atom, alkyl, aryl, heteroaryl, alkenyl, alkynyl, alkoxy, aryloxy, amino, halogen, cyano, nitro, trifluoromethyl, imino, azo, carboxy ester or amide group or is a carbocyclic or heterocyclic group fused to the moiety.

5,446,152

HETEROCYCLIC COMPOUNDS ACTIVE IN GASTRO-INTESTINAL PATHOLOGIES

Claudia Baldazzi; Silvano Piani; Maria Barbanti, and Egidio Marchi, all of Bologna, Italy, assignors to Alfa Wassermann S.p.A., Alanno, Italy

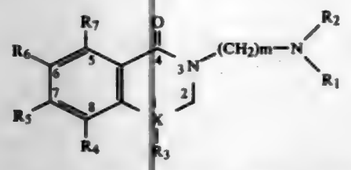
Filed Apr. 6, 1994, Ser. No. 223,697

Claims priority, application Italy, Apr. 16, 1993, BO93A0155

Int. Cl.[6] **C07D** *413/06*

U.S. Cl. 544—123 **12 Claims**

1. A heterocyclic compound with prokinetic and antiemetic activity of formula



and a pharmacologically acceptable salt thereof wherein X is an atom of nitrogen, R_3 is an atom of hydrogen or a branched, linear or cyclic (C_1–C_{10})-alkyl or a benzyl radical, R_1 and R_2, independently, are a (C_1–C_5)-alkyl radical or an atom of hydrogen or taken together with the atom of nitrogen form a heterocyclic ring, m is a whole number between 2 and 3, R_6 is halogen, R_4, R_5 and R_7 are independently an atom of H or a C_1–C_6 alkyl.

5,446,153

INTERMEDIATES FOR IMIDAZO[4,5-C]PYRIDIN-4-AMINES

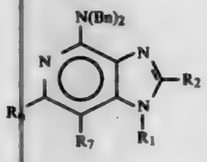
Kyle J. Lindstrom, Houlton, Wis., and Nick Nikolaides, Woodbury, Wash., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 92,002, Jul. 15, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 303,216

Int. Cl.[6] **C07D** *471/04*

U.S. Cl. 544—127 **1 Claim**

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen; CHR_xR_y wherein R_x is hydrogen and R_y is selected from the group consisting of straight chain, branched chain, or cyclic alkyl containing one to about ten carbon atoms, straight chain or branched chain alkenyl containing two to about ten carbon atoms, straight chain or branched chain hydroxyalkyl containing one to about six carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms, and phenylethyl; and $-CH=CR_zR_z$ wherein each R_z is independently straight chain, branched chain, or cyclic alkyl of one to about six carbon atoms;

R_2 is selected from the group consisting of hydrogen, straight chain or branched chain alkyl containing one to about eight carbon atoms, straight chain or branched chain hydroxyalkyl containing one to about six carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms, benzyl, (phenyl-)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by a moiety selected from the group consisting of methyl, methoxy, and halogen; and morpholinoalkyl wherein the alkyl moiety contains one to about four carbon atoms;

R_6 and R_7 are independently selected from the group consisting of hydrogen and alkyl of one to about five carbon atoms, with the proviso that R_6 and R_7 taken together contain no more than six carbon atoms, and with the further proviso that when R_7 is hydrogen then R_6 is other than hydrogen and R_2 is other than hydrogen or morpholinoalkyl, and with the further proviso that when R_6 is hydrogen then R_7 and R_2 are other than hydrogen; and

Bn is a hydrogenolyzable amino substituent.

5,446,154

PROCESS FOR THE PREPARATION OF AMINOTRIAZINE DERIVATIVES

Ernst Beriger, Allschwil, and Haukur Kristinsson, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

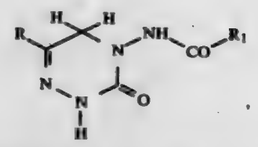
Division of Ser. No. 991,672, Dec. 16, 1992, Pat. No. 5,324,842, which is a continuation-in-part of Ser. No. 612,753, Nov. 13, 1990, abandoned. This application Mar. 31, 1994, Ser. No. 221,303

Claims priority, application Switzerland, Nov. 15, 1989, 4107/89

Int. Cl.[6] **C07D** *253/06*

U.S. Cl. 544—182 **5 Claims**

1. A compound of formula



(III)

wherein R is hydrogen, C_1-C_6alkyl, C_3-C_6cycloalkyl, C_1-C_4alkyl substituted by from 1 to 10 halogen atoms or by from 1 to 3 radicals selected from the group consisting of C_1-C_3alkoxy, C_1-C_3alkylthio and phenyl, phenyl, or phenyl substituted by from 1 to 3 radicals selected from the group consisting of halogen, methyl, ethyl, methoxy, methylthio and nitro, and R_1 is hydrogen, C_1-C_4alkyl, C_3-C_6cycloalkyl, C_1-C_4alkyl substituted by from 1 to 9 chlorine atoms, C_1-C_3alkoxy, C_1-C_3alkylthio, C_1C_3alkylsulfinyl, C_1-C_3alkylsulfonyl, phenyl, phenyl substituted by from 1 to 3 radicals selected from the group consisting of halogen, methyl, ethyl, methoxy, methylthio and nitro, or pyridyl, with the proviso, that R is different from unsubstituted phenyl, if R_1 is methyl, n-butyl or unsubstituted phenyl.

5,446,155

METHOD FOR PREPARING DISUBSTITUTED MONOCHLOROTRIAZINES

Thomas J. Stanley; Sterling B. Brown, both of Schenectady, and Paul E. Howson, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 117,384, Sep. 7, 1993, which is a continuation of Ser. No. 957,111, Oct. 7, 1992, abandoned. This application Aug. 30, 1994, Ser. No. 298,084

Int. Cl.[6] **C07D** *251/26*

U.S. Cl. 544—218 **16 Claims**

1. A method for preparing a disubstituted monochlorotriazine which comprises contacting (A) a monoorganoxy dichloro-1,3,5-triazine wherein the organoxy group is an alkyl radical having about 2–10 carbon atoms or an aromatic radical having about 6–10 carbon atoms in solution in (B) a substantially non-polar organic solvent with (C) at least one aqueous alkali metal hydroxide solution having a concentration in the range of about 20–50% by weight based on total aqueous solution, the molar ratio of alkali metal hydroxide to total triazine moieties being in the range of about 1.0–2.0:1; and adding to the mixture thus produced, at a temperature in the range of about 0°–35° C., (D) a monohydroxyaliphatic compound containing about 2–20 carbon atoms in the presence of (E) at least one hydrophilic phase transfer catalyst, the molar ratio of reagent D to total triazine moieties being in the range of about 1.0–1.8:1, and the proportion of phase transfer catalyst being about 1.0–1.8:1 and them proportion of phase transfer catalyst being about 1–5 mole percent based on total triazine moieties.

5,446,156

PROCESS FOR THE PREPARATION OF DIASTEREOISOMERIC PURE TETRAHYDROFOLATES

Pascal Jéquier, Melide, and Fabrizio Marazza, Sorengo, both of Switzerland, assignors to Sepec S.A. fine chemicals, Switzerland

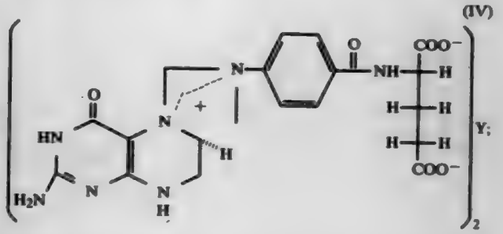
Filed Dec. 21, 1992, Ser. No. 994,308

Claims priority, application Switzerland, Dec. 21, 1991, 03799/91

Int. Cl.[6] **C07D** *487/14, 475/04*

U.S. Cl. 544—251 **19 Claims**

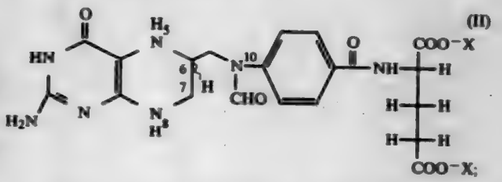
1. A method for the preparation of salts of (6R)-N(5),N(10)-methenyl-5,6,7,8-tetrahydrofolic acid of the following formula (I):



(I)

wherein X is an anion selected from chloride or bromide, or of an acid addition salt of (6R)-N(5),N(10)-methenyl-5,6,7,8 -tetrahydrofolic acid selected from a hydrochloride, hydrobromide, methane sulfonate, formate, oxalate, maleate, trichloroacetate, trifluoroacetate thereof, or of a corresponding inner salt of (6R)-N(5),N(10)-methenyl-5,6,7,8 tetrahydrofolic acid, said method comprising:

(i) mixing at least one acid S_1, wherein S_1 is a lower water-soluble carboxylic acid or a hydrohalic acid, with an aqueous solution having dissolved therein an ammonium- or alkali metal-salt of (6RS)-N(10)-formyl-5,6,7,8-tetrahydrofolic acid of formula (II):



(II)

wherein X of formula (II) is an alkali metal cation or NH_4+, until a pH in the range of about 5.5 to 7.5 is obtained;

(ii) adding a water-soluble alkaline earth metal salt to the mixture obtained from step (i);

(iii) precipitating a hemi-alkaline earth metal salt of N(5),N(10)-methenyl-5,6,7,8-tetrahydrofolic acid as a solid A and isolating said solid;

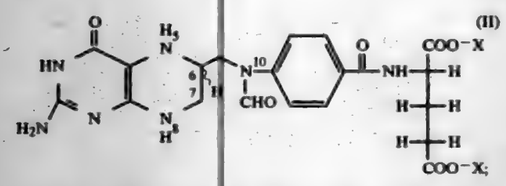
(iv) providing a solid of formula (I) by suspending solid A obtained from step (iii) in water, adding an acid S_2, wherein S_2 is selected from the group consisting of hydrochloric acid, p-toluene-sulfonic acid, methane sulfonic acid, trifluoroacetic acid, and trichloroacetic acid, which will not precipitate with an alkaline earth metal cation, until the pH stabilizes to a value of 1.0 to 2.0, and separating the resulting solid.

16. A process for the preparation of hemialkaline earth metal salts of (6R)-N(5),N(10)-methenyl-5,6,7,8-tetrahydrofolic acid of formula (IV):

(IV)

wherein Y is an alkaline earth metal cation, said process comprising mixing at least one acid S_1, wherein S_1 is a lower water-soluble carboxylic acid or a hydrohalic acid, with an aqueous solution having dissolved therein an ammonium or alkali metal

salt of (6RS)-N(10)-formyl-5,6,7,8-tetrahydrofolic acid of formula (II):



(II)

wherein X is an alkali metal cation or NH_4^+, until a pH of from 5.5 to 7.5 is obtained, adding a water-soluble alkaline earth metal salt to the mixture, and obtaining and isolating a solid of formula (IV).

5,446,157

BORON DIFLUORIDE COMPOUNDS USEFUL IN PHOTODYNAMIC THERAPY AND PRODUCTION OF LASER LIGHT

Lee R. Morgan, 725 Topaz St., New Orleans, La. 70124, and Joseph H. Boyer, 829 Barracks St., New Orleans, La. 70116

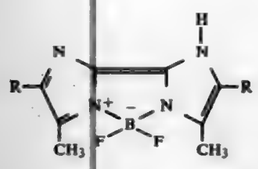
Continuation-in-part of Ser. No. 513,059, Apr. 23, 1990, Pat. No. 5,189,029. This application Feb. 19, 1993, Ser. No. 20,293

Int. Cl.[6] C07F *5/02*

U.S. Cl. 546—13 **6 Claims**

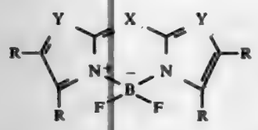
1. A compound selected from the group consisting of:

(a)



wherein R is H or lower alkyl;

(b)



wherein X is CH or N, Y is CH or N, and R is lower alkyl, where at least one of X and Y is N; and

(c) α,α'-dipyridylmethane-BF_2.

5,446,158

PROCESS FOR SYNTHESIS OF FK-506 AND TRICARBONYL INTERMEDIATES

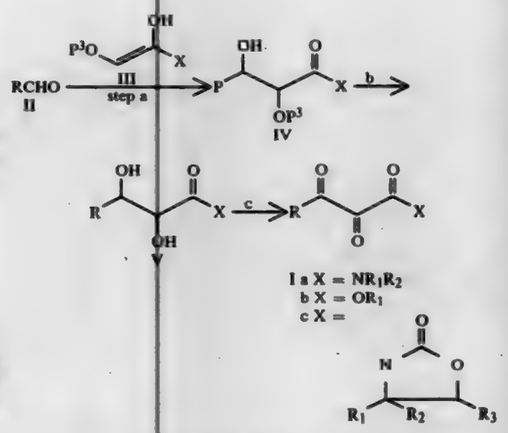
Todd K. Jones, Edison; Sander G. Mills, Woodbridge; David Askin, Edison; Robert A. Reamer, Bloomfield; Richard Desmond, Metuchen; David M. Tschaen, Aberdeen; Ralph P. Volante, East Windsor, and Ichiro Shinkai, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 375,091, Jun. 30, 1989, abandoned, and a continuation-in-part of Ser. No. 295,877, Jan. 11, 1989, abandoned. This application Oct. 12, 1990, Ser. No. 596,847

Int. Cl.[6] C07F *7/18*

U.S. Cl. 546—14 **10 Claims**

1. A process for synthesizing tricarbonyl compounds of structure I, comprising the steps of:

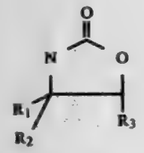


I a X = NR_1R_2
b X = OR_1
c X =

(a) contacting aldehyde II with hydroxyl protected acetate enolate equivalent III under an inert atmosphere in the temperature range of −100° C. to 20° C. in an anhydrous, inert, non-hydroxylic organic solvent for a sufficient time to produce the addition product IV;

(b) deprotecting the 2-hydroxyl function of product IV from step (a) to form V;

(c) treating the hydroxyl-deprotected product V from step (b) in an inert, anhydrous, non-hydroxylic solvent in the presence of both oxalyl chloride and dimethyl sulfoxide under an inert atmosphere at −78° C. to 0° C. followed by triethylamine for a sufficient time to effect formation of the 2,3-diketocarboxylate compound I; wherein: R is substituted or unsubstituted linear or branched C_1–C_{40} alkyl, wherein the substituents can be OH, C_1–C_4 alkoxy, C_6–C_8 phenoxy, SH, C_1–C_4 alkylthio, C_6–C_8 arylthio, NH_2, $N(C_1$–C_4 alkyl$)_2$, the C_{11}–C_{34} carbon framework of FK-506; P^3 is linear or branched C_1–C_{10} alkyl, C_6–C_{10} aryl or benzyl, which can be substituted by halo or C_1–C_4 alkoxy; trihydrocarbosilyl, wherein said hydrocarbosilyl groups are independently chosen from C_1–C_4 linear or branched alkyl, phenyl or benzyl; X is NR_1R_2, OR_1,



pipecolinic acid or ester, where $R_1/R_2/R_3$ are independently chosen from: C_1–C_4 linear or branched alkyl, benzyl, phenyl, which may be substituted with halo or C_1–C_4 alkoxy; and wherein cation M is Li, Na, K, Cs, Ca, Al, Zn, Ti, Sn and B(alkyl)$_2$, wherein the alkyl is C_1–C_4 linear or branched.

5,446,159

PROCESS FOR PREPARING IMIDAZOPYRIDINE DERIVATIVES

Gerhard Stucky, and René Imwinkelried, both of Brig-Glis, Switzerland, assignors to Lonza, Ltd., Gampel/Valais, Switzerland

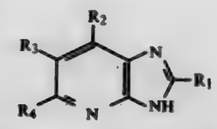
Filed Sep. 19, 1994, Ser. No. 308,431

Claims priority, application Switzerland, Sep. 17, 1993, 2815/93

Int. Cl.[6] C07D *471/02*

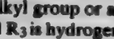
U.S. Cl. 546—118 **13 Claims**

1. Process for preparing an imidazopyridine derivative of formula:



I

wherein R_1 is an alkyl, cycloalkyl, aryl or aralkyl group or is a heterocyclic radical, R_2 and R_4 are identical or different and are hydrogen, a hydroxy, a cyano, alkyl, cycloalkyl, aryl or aralkyl group or are an alkanoyl or an alkoxy-carbonyl group, and R_3 is hydrogen, an alkyl, aryl or aralkyl group or a halogen atom, comprising reacting a nitrile of formula:



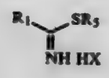
II

wherein R_1 is as defined above, with a thiol of formula:



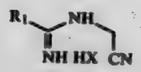
III

wherein R_5 is alkyl, aryl or aralkyl, in the presence of a hydrogen halide to give a thioimidate hydrohalide of formula:



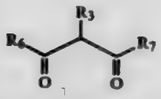
IV

wherein R_1 and R_5 are as defined above and X is a halogen atom, reacting the thioimidate hydrohalide of formula IV with aminoacetonitrile to give an amidine of formula:



V

wherein R_1 and X are as defined above, and finally cyclizing the amidine of formula V in the presence of a base with a 1,3-dicarbonyl compound of formula:



VI

wherein R_3 is as defined above and R_6 and R_7 are identical or different and are hydrogen or alkyl, cyano, cycloalkyl, alkanoyl, aryl, aralkyl, alkoxy or alkoxycarbonyl, to give the final product of formula I.

5,446,160

PROCESS FOR PREPARING IMIDAZOPYRIDINE DERIVATIVES

Gerhard Stucky, and René Imwinkelried, both of Brig-Glis, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

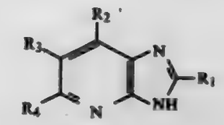
Filed Sep. 19, 1994, Ser. No. 308,448

Claims priority, application Switzerland, Sep. 17, 1993, 02 816/93-8

Int. Cl.[6] C07D *471/04*

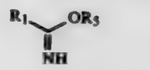
U.S. Cl. 546—118 **9 Claims**

1. A process for preparing an imidazopyridine derivative of the formula:



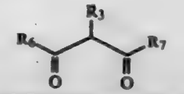
I

wherein R_1 is an alkyl, cycloalkyl, aryl or aralkyl group or is a heterocyclic radical, R_2 and R_4 are identical or different and are hydrogen, a hydroxy, a cyano, alkyl, cycloalkyl, aryl or aralkyl group or are an alkanoyl or an alkoxy-carbonyl group, and R_3 is hydrogen, an alkyl, aryl or aralkyl group or a halogen atom, comprising cyclizing an imidate of the formula:



II

wherein R_1 is as defined above and R_5 is alkyl, aryl or aralkyl, with aminoacetonitrile and a 1,3-dicarbonyl compound of the formula:



III

wherein R_3 is as defined above, and R_6 and R_7 are identical or different and are hydrogen, cyano, cycloalkyl, alkanoyl, alkyl, aryl, aralkyl, alkoxy or alkoxycarbonyl, to give the imidazopyridine derivative of the formula I.

5,446,161

AMINO ACID DERIVATIVES

Balraj K. Handa, Welwyn Garden City; Peter J. Machin, London; Joseph A. Martin, Harpenden; Sally Redshaw, Stevenage, and Gareth J. Thomas, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

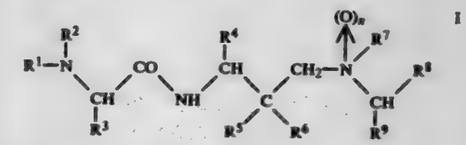
Division of Ser. No. 362,621, Jun. 5, 1989, Pat. No. 5,157,041. This application Jul. 20, 1992, Ser. No. 916,812

Claims priority, application United Kingdom, Jun. 13, 1988, 8813940; Apr. 10, 1989, 8908035

Int. Cl.[6] C07D *211/40, 211/56, 211/36*; A61K *31/445*

U.S. Cl. 546—225 **14 Claims**

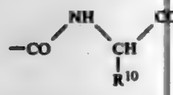
1. A compound of the formula:



I

wherein n is zero or 1; R^1 is alkoxycarbonyl, aralkoxycarbonyl, alkanoyl, cycloalkylcarbonyl, aralkanoyl or aroyl; R^2 is hydrogen R^3 is alkyl, cycloalkyl, aryl, aralkyl, cyanoalkyl, alkylsulphonylalkyl, carbamoylalkyl or alkoxycarbonylalkyl or, when

n is zero, R^3 is additionally alkylthioalkyl or, when n is 1, R^3 can also be alkylsulphonylalkyl; R^4 is alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl; R^5 is hydrogen and R^6 is hydroxy or R^5 and R^6 together are oxo; R^7 and R^8 together are a tetramethylene group which is optionally substituted by hydroxy, alkoxycarbonylamino or acylamino; and R^9 is alkoxycarbonyl, monoalkylcarbamoyl, monoaralkylcarbamoyl, monoarylcarbamoyl or a group of the formula



(b)

wherein R^{10} and R^{11} are alkyl and pharmaceutically acceptable acid addition salts thereof.

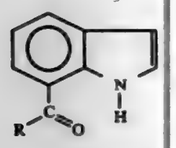
5,446,162

PROCESS FOR THE PRODUCTION OF 7-ACYLINDOLES

Jean-Paul Rodalt, Sierre, and Alain Wellig, Ried-Mörel, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 84,168, Jun. 30, 1993, Pat. No. 5,380,857. This application Jul. 26, 1994, Ser. No. 280,738
Claims priority, application Switzerland, Jul. 2, 1992, 2083/92
Int. Cl.[6] C07D *401/06*
U.S. Cl. 546—273 **5 Claims**

1. A 7-acylindole of formula:



I

wherein R is butyl, 4-tertiarybutyl-phenyl, pyridinyl or thienyl.

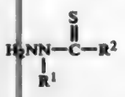
5,446,163

PREPARATION OF HYDRAZONES, DIHYDROTHIADIAZOLES AND TRIAZINONES

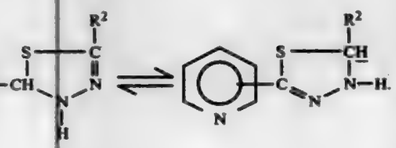
Eric F. V. Scriven, Greenwood; James G. Keay, and Tony Zhang, both of Indianapolis, all of Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.

Filed Oct. 2, 1992, Ser. No. 955,691
Int. Cl.[6] C07D *417/04*
U.S. Cl. 546—277 **10 Claims**

1. A process for preparing a pyridyl-substituted dehydrothiadiazole compound, which comprises a condensation reaction of an iminomethylpyridine of the formula Py—CH=N—R wherein Py is a 2-, 3- or 4-pyridyl radical and R is alkyl, aryl, or aralkyl, with a compound of the formula:



wherein R^1 is H, and R^2 is phenyl which is unsubstituted or is substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl, C_1–C_4alkoxy, C_1–C_4 alkylthio, C_1–C_4 haloalkyl having from 1 to 9 halogen atoms, C_1–C_4 haloalkylthio having from 1 to 9 halogen atoms, halogen, nitro, and cyano, so as to form a compound of the formula:



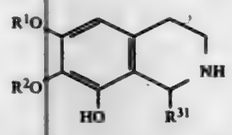
5,446,164

PROCESS FOR PREPARING 6, 7-DIALKOXY-3, 4-DIHYDROISOQUINOLIN- 8 -OL

Kiyofumi Ishikawa, and Takashi Hayama, both of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

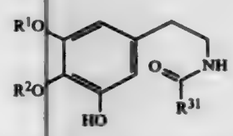
Filed Feb. 22, 1994, Ser. No. 199,691
Claims priority, application Japan, Feb. 25, 1993, 5-060846
Int. Cl.[6] C07D *217/16*
U.S. Cl. 546—139 **2 Claims**

1. A process for preparation of a compound represented by the following formula or a salt thereof



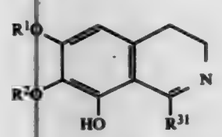
[III]

wherein R^1 and R^2 independently denote a lower alkyl or benzyl group, or are combined together to form a methylene group; and R^{31} denotes a hydrogen atom or a lower alkyl group, denotes a benzyl group wherein 1 to 3, optional hydrogen atom(s) on the benzene ring may be replaced by any substituent(s) selected from the group consisting of a lower alkoxy group, a benzyloxy group, a halogen atom, a nitro group and a lower alkoxycarbonylmethyl group, denotes a phenethyl group wherein 1 to 3, optional hydrogen atom(s) on the benzene ring may be replaced by a lower alkoxy or benzyloxy group, or denotes a heteroarylmethyl or heteroarylethyl group,
which comprises cyclizing a compound represented by the formula



[II]

wherein R^1, R^2 and R^{31} are as defined above, in the presence of a phosphoric acid halide, regioselectively at the ortho position of the phenolic hydroxyl group to form a compound represented by the following formula or a salt thereof



[I-a]

wherein R^1, R^2 and R^{31} are as defined above; and then reducing the compound or salt.

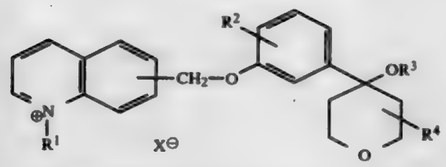
5,446,165

CRYSTALLINE 1-ALKYL-2-QUINOLINIUM SALTS

Jonathan Hutton, Adlington, and David Waterson, Bollington, both of England, assignors to Zeneca Limited, London, England and Zeneca Pharma, Cergy Cedex, France

Division of Ser. No. 802,614, Dec. 5, 1991, Pat. No. 5,260,442. This application Aug. 17, 1993, Ser. No. 107,147
Claims priority, application European Pat. Off., Dec. 14, 1990, 90403609
Int. Cl.[6] C07D *405/12*
U.S. Cl. 546—152 **3 Claims**

1. A crystalline quinolinium salt of the formula I



I

wherein R^1 and R^3 which may be the same or different each is (1–4C)alkyl;
R^2 is hydrogen or fluoro;
R^4 is hydrogen or (1–4C)alkyl; and
$X^\ominus$ is bromide, iodide or (1–4C)alkyl sulphate.

5,446,166

PREPARATION OF PYRROL AND OXAZOLE COMPOUNDS: FORMATION OF PORPHYRINS AND C-ACYL-α-AMINO ACID ESTERS THEREFROM

John Verkade, and Jiansheng Tang, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 142,775, Oct. 26, 1993, Pat. No. 5,367,084. This application Aug. 16, 1994, Ser. No. 291,409
Int. Cl.[6] C07D *263/34*; C07C *227/04*
U.S. Cl. 548—236 **7 Claims**

1. A method of producing an oxazole compound said method comprising a step of reacting:
(a) an isocyanoacetate compound of general structure:

$$CNCH_2CO_2R^7$$

wherein R^7 is a substituent which is non-reactive under conditions of reaction,
(b) a prophosphatrane base; and
(c) a reactant selected from the group consisting of acyl halides and acid anhydrides.

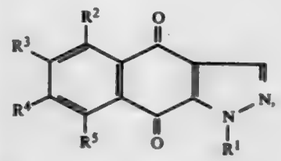
5,446,167

PROCESS FOR SEPARATING ISOMERS OF AZOLYLMETHYLCYCLOPENTANOL DERIVATIVES

Shoichiro Hayashi; Kazuhiko Sunagawa, and Satoru Kunazawa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 321,093
Claims priority, application Japan, Oct. 13, 1993, 5-280103
Int. Cl.[6] C07D *249/08, 233/60*
U.S. Cl. 548—262.2 **4 Claims**

1. A process for separating a cis isomer from a mixture of the cis isomer and a trans isomer of an azolylmethylcyclopentanol derivative of the formula (I):
wherein, R^1 and R^2 each independently represent a hydrogen atom or an alkyl group; each X represents a halogen atom, an alkyl group, a haloalkyl group, a phenyl group, a cyano group or a nitro group; n is an integer of from 0 to 5; A represents a nitrogen atom or a CH group; and each X may be identical or different when n is an integer of from 2 to 5, comprising the steps of dehydrating selectively the trans isomer in the presence of an acid and isolating the cis isomer.



(I)

where
R^1 is C_2–C_{10}-alkyl, C_1–C_{10}-haloalkyl, C_1–C_{10}-hydroxyalkyl, C_2–C_{14}-alkoxyalkyl, C_2–C_{14}-alkylthioalkyl, C_3–C_7-cycloalkyl, C_1–C_4-alkylcarbonyloxy-C_1–C_4-alkyl, phenylaminocarbonyloxy-C_1–C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, phenylsulfonyloxy-C_1–C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl-C_1–C_4-alkyl,hydroxycarbonyl-C_1–C_4-alkyl, aminocarbonyl-C_1–C_4-alkyl, C_1–C_4-alkylaminocarbonyl-C_1–C_4-alkyl, di-(C_1–C_4-alkyl)-aminocarbonyl-C_1–C_4-alkyl, halo-C_3–C_4-alkynyl, unsubstituted or halogen- or C_1–C_4-alkyl-substituted heteroaryl radical with one or two nitrogen atoms, phenyl which is unsubstituted or substituted by halogen, hydroxy, nitro, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-haloalkyl, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio, or unsubstituted or halogen-substituted benzyl, and
R^2, R^3, R^4 and R^5 are identical or different and each denotes hydrogen, halogen, nitro, cyano, hydroxy, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, C_1–C_6-alkyl, C_1–C_5-haloalkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkoxy, C_1–C_5-alkylthio, C_1–C_5-haloalkylthio, C_2–C_{10}-alkoxyalkyl, carboxyl, C_2–C_6-alkoxycarbonyl, C_2–C_6-alkanoyloxy, C_2–C_6-haloalkanoyloxy, C_1–C_4-alkylcarbonylamino, C_1–C_4-alkylaminocarbonyl, di-(C_1–C_4-alkyl-)aminocarbonyl, or phenyl or heteroaryl, each of which is unsubstituted or substituted by halogen, trifluoromethyl, nitro, cyano, amino, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_5-haloalkylthio, and
R^3 and R^4, together with the two carbon atoms of the phenyl ring to which they are attached, form a heterocyclic ring or a benzene or naphthalene ring which is unsubstituted or substituted by halogen, nitro, cyano, amino, hydroxy, trifluoromethyl, C_1–C_5-alkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkylthio, C_1–C_5-haloalkoxy or C_1–C_5-alkylthio.

5,446,168

NAPHTHINDAZOLE-4,9-QUINONES

Klaus Ditrich, Bad Duerkheim; Gerhard Hamprecht, Weinheim; Bruno Wuerzer, Otterstadt; Norbert Meyer, Ladenburg; Karl-Otto Westphalen, Speyer, and Hartmut Laatsch, Goettingen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 567,627, Aug. 15, 1990, Pat. No. 5,117,005, which is a division of Ser. No. 407,318, Sep. 14, 1989, Pat. No. 5,007,954. This application Nov. 22, 1991, Ser. No. 51,320
Claims priority, application Germany, Sep. 15, 1988, 38 31 332.4
Int. Cl.[6] C07D *231/54*
U.S. Cl. 548—359.1 **8 Claims**

1. A naphthindazole-4,9-quinone of the formula

5,446,169

PROCESS FOR THE PREPARATION OF 3(3-CARBOXY-PROPYL)-5-METHOXYINDOLE-2-CARBOXYLIC ACID

Martin Hopf, Gross-Zimmern, Germany, assignor to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Jul. 15, 1994, Ser. No. 275,476
Claims priority, application Germany, Jul. 17, 1993, 43 24 043.7
Int. Cl.[6] C07D 209/42
U.S. Cl. 548—502 4 Claims

4. A process for the preparation of 3-(3-carboxypropyl)-5-methoxyindole-2-carboxylic acid (I), wherein 6-carboethoxy-6-p-methoxyphenylhydrazonohexanoic acid (II) is cyclized using a carboxylic acid which contains 1–3 carbon atoms, the resulting mixture comprising I, the two I monoethyl esters and I diethyl ester is treated with a strong inorganic base, and the resulting salt is converted into the free acid I by treatment with a strong acid.

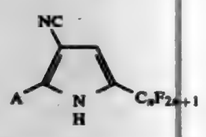
5,446,170

PROCESS FOR THE MANUFACTURE OF INSECTICIDAL ARYLPYRROLES VIA OXAZOLE AMINE INTERMEDIATES

Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Wayne, N.J.

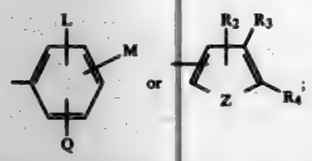
Filed Nov. 22, 1994, Ser. No. 343,147
Int. Cl.[6] C07D 207/30, 405/02, 409/02
U.S. Cl. 548—517 9 Claims

1. A process for the manufacture of an arylpyrrole compound of formula IV



(IV)

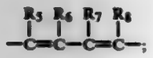
wherein n is an integer of 1, 2, 3, 4, 5, 6, 7 or 8;
and A is



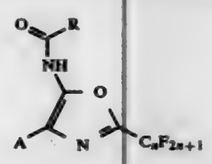
L is hydrogen or halogen;
M and Q are each independently hydrogen, halogen CN, NO_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_1-C_4alkylthio, C_1-C_4alkylsulfinyl or when M and Q are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MQ represents the structure

$$-OCH_2O-,\ -OCF_2O-\ \text{or}\ -CH{=}CH-CH{=}CH-;$$

R_2, R_3 and R_4 are each independently hydrogen, halogen, NO_2, CHO or R_3 and R_4 may be taken together with the atoms to which they are attached to form a ring in which R_3R_4 is represented by the structure



R_5, R_6, R_7 and R_8 are each independently hydrogen, halogen, CN or NO_2; and
Z is O or S which comprises reacting an oxazole amine intermediate of formula I or tautomer thereof



(I)

wherein n and A are described above and
R is C_1-C_6alkyl, C_1-C_6haloalkyl, $COOR_1$, or phenyl optionally substituted with one or more halogen, NO_2, CN, C_1-C_4alkoxy, C_1-C_4alkylthio, C_1-C_4alkyl or C_1-C_4haloalkyl groups;
R_1 is C_1-C_4alkyl or C_1-C_4haloalkyl with at least one molar equivalent of 2-haloacrylonitrile or 2,3-dihalopropionitrile in the presence of a base, optionally in the presence of a solvent.

5,446,171

PREPARATION OF 2-ACETYL-1-PYRROLINE

Philippe Duby, Prilly, and Tuong Huynh-Ba, Pully, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 158,934, Nov. 29, 1993, Pat. No. 5,401,521, which is a division of Ser. No. 979,293, Nov. 20, 1992, Pat. No. 5,280,127. This application Dec. 27, 1994, Ser. No. 364,713
Claims priority, application Switzerland, Dec. 2, 1991, 03529/91
Int. Cl.[6] C07D 207/20
U.S. Cl. 548—540 10 Claims

1. A process for preparing 2-acetyl-1-pyrroline comprising hydrolyzing a 2-(1-alkoxyethenyl)-1-pyrroline compound with an acid to obtain a reaction medium and then adding an equimolar amount of a base to the reaction medium to obtain a neutralized reaction medium containing 2-acetyl-1-pyrroline.

5,446,172

METHOD FOR MAKING TRIARYLSULFONIUM HEXAFLUOROMETAL OR METALLOID SALTS

James V. Crivello, Clifton Park, and Julia L. Lee, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 516,408, Apr. 30, 1990, abandoned. This application Oct. 2, 1991, Ser. No. 769,520
Int. Cl.[6] C07D 333/34
U.S. Cl. 549—62 3 Claims

1. A method for making a diarylthienylsulfonium hexafluorometal or metalloid salt which comprises,
(1) effecting reaction between a diarylsulfoxide and a thiophene in the presence of an effective amount of a solution of phosphorus pentoxide in methanesulfonic acid to produce a diarylthienylsulfonium complex,
(2) effecting the metathesis of the diarylethienylsulfonium complex of (1) with an alkali metal hexafluorometal or metalloid salt, and
(3) recovering a diarylthienylsulfonium hexafluorometal or metalloid salt from the mixture of (2).

5,446,173

CYCLIC SULFIDE COMPOUND, POLYMERIZABLE COMPOSITIONS FOR OPTICAL PRODUCTS AND OPTICAL PRODUCTS FORMED THEREOF

Hiroyuki Kaneoki, Amagasaki; Tetsuyuki Saika, Suita, and Masafumi Mikami, Kurume, all of Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,998
Claims priority, application Japan, Mar. 24, 1992, 4-065525
Int. Cl.[6] C07D 335/00, 327/06, 333/32
U.S. Cl. 549—13 5 Claims

1. A cyclic sulfide compound which is 2,5-bis(mercaptomethyl)tetrahydrothiophene.

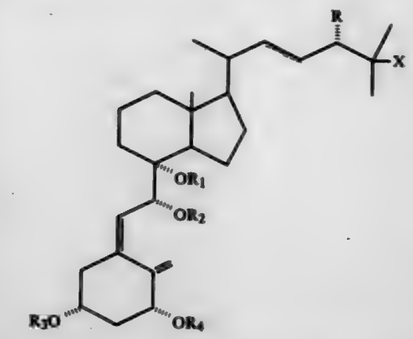
5,446,174

1-β7,8-TRIHYDROXY VITAMIN D_2, 1β7,8-TRIHYDROXY VITAMIN D_3, AND DERIVATIVES THEREOF

Yuji Tahara, Sapporo, Japan, assignor to Hoxan Corporation, Hokkaido, Japan

Division of Ser. No. 879,735, May 6, 1992, Pat. No. 5,283,345, which is a continuation of Ser. No. 571,535, Aug. 29, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 104,565
Claims priority, application Japan, Mar. 9, 1988, 63-55342
Int. Cl.[6] C07D 317/20; C07C 401/00
U.S. Cl. 549—214 1 Claim

1. A chemical compound expressed by the formula



wherein
R represents a hydrogen atom or a methyl group and the dotted line along a side chain represents an optional additional C—C bond only when R is a hydrogen atom;
R_1, R_2, R_3, R_4 independently represent a hydrogen atom or a hydroxy protecting group; and
X represents a hydrogen atom or a hydroxy group.

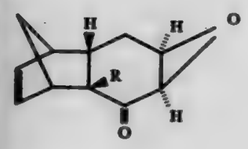
5,446,175

OPTICALLY ACTIVE COMPOUNDS AND A METHOD FOR PRODUCING THEM

Seiichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Chiroo Corporation, Osaka, Japan

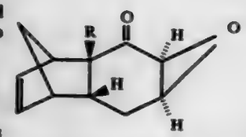
Filed Jul. 19, 1994, Ser. No. 277,006
Claims priority, application Japan, Aug. 17, 1993, 5-222748
Int. Cl.[6] C07D 301/00, 303/32, 49/527
U.S. Cl. 549—544 2 Claims

1. An epoxy derivative represented by the general formula:



(I)

-continued
or



(I')

wherein R is alkyl, a hydrocarbon residue having at least one unsaturated bond, aralkyl or hydrogen.

2. A method for producing an epoxy derivative of claim 1, the method comprising:
epoxidizing optically active tricyclo undeca-4,9-diene-1 -on; and stereo selectively obtaining the epoxy derivative represented by the formula (I) or (I').

5,446,176

PURIFIED 3,4-EPOXYCYCLOHEXYL METHYL (METH)ACRYLATE, A PROCESS FOR THE PREPARATION THEREOF AND A 3,4-EPOXYCYCLOHEXYL METHYL (METH) ACRYLATE COMPOSITION

Akihiro Kuwana, Otake; Kimihide Honda, and Kunio Koga, both of Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 301,234, Sep. 6, 1994, which is a division of Ser. No. 109,320, Aug. 19, 1993, Pat. No. 5,382,676, which is a continuation-in-part of Ser. No. 866,134, Apr. 9, 1992, abandoned. This application Jan. 10, 1995, Ser. No. 370,966
Claims priority, application Japan, Aug. 28, 1991, 3-216798; Dec. 5, 1991, 3-321724
Int. Cl.[6] C07D 301/32, 303/16
U.S. Cl. 549—546 1 Claim

1. 3,4-epoxycyclohexyl methyl (meth)acrylate having a heptane test value of less than 0.1%.

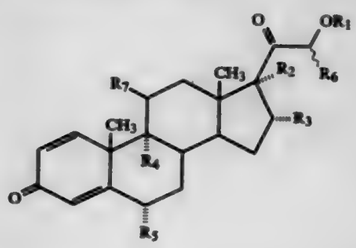
5,446,177

ANTI-INFLAMMATORY COMPOUNDS FOR OPHTHALMIC USE

John J. Boltralik, Ft. Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 31,770, Mar. 15, 1993, abandoned, which is a division of Ser. No. 852,889, Mar. 17, 1992, Pat. No. 5,223,493, which is a continuation of Ser. No. 613,595, Nov. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,997, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 922,810, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 687,278, Dec. 28, 1984, abandoned. This application Mar. 4, 1994, Ser. No. 205,758
Int. Cl.[6] C07J 9/00
U.S. Cl. 552—548 14 Claims

1. A compound of formula:



(I)

wherein
R_1 is selected from substituted or unsubstituted: C_1–C_5 alkyl; C_3–C_6 (ring) and C_1–C_3 (alkyl) cycloalkyl and cycloalky-

lalkyl; aryl and arylalkyl, such as phenyl and benzyl; and C_2–C_5 alkenyl and alkynyl; wherein the substituent or substituents are selected from: C_1–C_6 alkyoxy and alkyl; C_2–C_6 alkoxyalkyl, alkoxyalkoxyalkyl, alkylthioalkyl, hydroxyalkyl, aminoalkyl, nitriloalkyl; C_4–C_8 (beta-carboxyalkoxy)alkyl; and C_2–C_6 alkenoxy and alkynoxy;

R_2 is selected from substituted or unsubstituted: C_1–C_6alkyl, alkenyl and alkynyl; acyl; and hydroxyl; wherein the substituent or substituents are selected from: C_1–C_3 alkyl; hydroxyl; and halogen (F, Cl, and Br);

R_3 is selected from methyl and hydroxyl;

R_4 is selected from hydrogen, fluoro, and chloro;

R_5 is selected from hydrogen, methyl, fluoro, and chloro;

R_6 is selected from hydrogen, methyl, ethyl, and allyl; and

R_7 is selected from hydroxyl, acetate, propionate, and butyrate;

or a pharmaceutically acceptable salt thereof; provided that if $R_2=R_3=R_6=CH_3$, $R_4=R_5=H$, and $R_7=OH$, then $R_1 \neq CH_3$.

5,446,178

PROCESS FOR PREPARING 19,11β-BRIDGED STEROIDS

Eckhard Ottow; Rudolf Wiechert; Gunter Neef; Sybille Beier; Walter Elger, and David A. Henderson, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

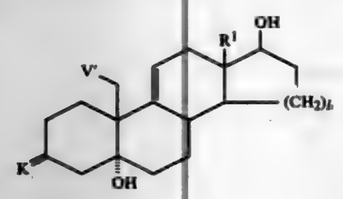
Continuation of Ser. No. 793,880, Nov. 18, 1991, abandoned, which is a division of Ser. No. 283,632, Dec. 9, 1988, Pat. No. 5,095,129, which is a continuation-in-part of Ser. No. 415,359, Sep. 18, 1989, abandoned. This application Aug. 2, 1993, Ser. No. 111,315

Claims priority, application Germany, Mar. 18, 1987, 37 08 542.0

Int. Cl.[6] C07J 63/00

U.S. Cl. 552—510 **35 Claims**

1. A process comprising cyclizing a compound of formula



(II)

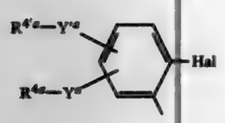
wherein

R^1 is methyl or ethyl,

l is 1 or 2, and

K is a blocked keto group in the form of ketal or thioketal,

V' is a phenyl ring of the formula



wherein

Hal is fluorine, chlorine, bromine or iodine;

R^{4a} and $R^{4'a}$ being the same or different, are each hydrogen, $-OR^{11}$, $-S(O)_kR^{11}$, $-N(O)_nR^{11}R^{12}$, $-O-SO_2R^{13}$, $-P(O)(OR^{14})_2$, $-SiR_3^{14}$ or $-SnR_3^{14}$;

k is 0, 1 or 2;

n is 0 or 1;

R^{11} is hydrogen or C_1–C_8-alkyl;

R^{12} is hydrogen, C_1–C_8 -alkyl, cyanide or C_1–C_{10}-acyl;

R^{13} is perfluorated C_1–C_8-alkyl;

R^{14} is C_1–C_4-alkyl;

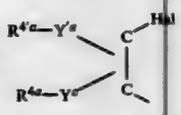
R^{11} and R^{12}, in an $-N(O)_nR^{11}R^{12}$ group, can together be, with the inclusion of N, a 5- or 6-member heterocyclic ring, which can contain another heteroatom N, O or S;

Y^a and Y'^a being the same or different, are each a direct bond, a straight-chain or branched alkylene group, which can contain double or triple bond(s), having up to 20 carbon atoms, which is unsubstituted or substituted by one or more oxo-, C_1–C_{10}-acyloxy-, $-OR^{11}$, $-S(O)_kR^{11}$ and/or $-N(O)_nR^{11}R^{12}$ groups;

R^{4a}-Y^a and $R^{4'a}$-Y'^a together are a saturated, unsaturated or aromatic, 5- or 6-member ring with 0 to 2 oxygen, sulfur atoms and/or NR^{11} groups; or

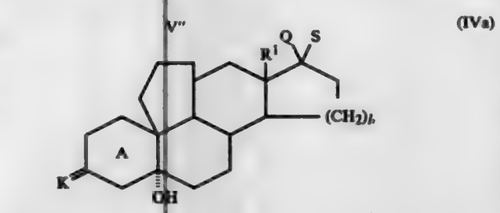
$R^{4'a}$-Y'^a is H and R^{4a}-Y^a is phenyl, naphthyl, 2 -methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 2-tolyl, 3-tolyl, 4-tolyl, furyl-2, furyl-3, thienyl-2, thienyl-3, pyridyl-2, pyridyl-3, pyridyl-4, thiazoyl or imidazolyl;

with the proviso that k and n are each greater than 0 only if their respective R^{11} group is C_1–C_8-alkyl, and wherein any hydroxy, mercapto, amino, oxo and/or terminal acetylene groups are protected; or is a 5- or 6-member heteroaromatic ring with 0 to 2 N, O or S atoms of the formula



wherein

Hal, R^{4a}, $R^{4'a}$, Y^a and Y'^a are as defined above, wherein any hydroxy, mercapto, amino, oxo and/or terminal acetylene groups are protected, to obtain a compound according to formula IVa



(IVa)

wherein

Q is β-hydroxy,

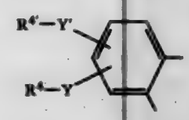
S is α-hydrogen,

K is a blocked keto group in the form of ketal or thioketal,

l is b 1 or 2,

R^1 is methyl or ethyl, and

V'' is a phenyl radical according to the formula



wherein

R^4 and $R^{4'}$ being the same or different, are each hydrogen, $-OR^{11}$, $-S(O)_kR^{11}$, $-N(O)_nR^{11}R^{12}$, $-O-SO_2R^{13}$, $-p(O)(OR^{14})_2$, $-SiR_3^{14}$ or $-SnR_3^{14}$,

k is 0, 1 or 2,

n is 0 or 1,

R^{11} is hydrogen or C_1–C_8 -alkyl,

R^{12} is cyanide or C_1–C_{10}-acyl,

R^{13} is perfluorated C_1–C_4-alkyl,

R^{14} is C_1–C_4-alkyl, or

R^{11} and R^{12}, in an $-N(O)_nR^{11}R^{12}$ group, can also together be, with the inclusion of N, a 5- or 6-member heterocyclic ring, which can contain another heteroatom N, O or S,

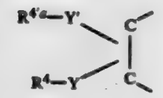
Y and Y', being the same or different, are each a direct bond or a straight-chain or branched alkylene group, which can contain double or triple bond(s), having up to 20 carbon atoms, and which is unsubstituted or substituted by one or more oxo-, C_1–C_{10}-acyloxy-, $-OR^{11}$, $-S(O)_kR^{11}$ and/or $-N(O)_nR^{11}R^{12}$;

R^4-Y and $R^{4'}$-Y' together are a saturated, unsaturated or aromatic, 5- or 6-member ring with 0 to 2 oxygen, sulfur atoms and/or NR^{11}; or

$R^{4'}$-Y' is H and R^4-Y is phenyl, naphthyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 2-tolyl, 3-tolyl, 4-tolyl, furyl-2, furyl-3, thienyl-2, thienyl-3, pyridyl-2, pyridyl-3, pyridyl-4, thiazoyl or imidazolyl;

wherein k and n are each greater than 0 only if their respective R^{11} group is C_1–C_8-alkyl, or

V'' is a five-or six-member heteroaromatic ring with 1 to 2 N, O or S atoms of the formula



wherein

R^4, $R^{4'}$, Y and Y' have the meanings indicated above;

wherein any hydroxy, mercapto, amino, oxo and/or terminal acetylene groups present are protected.

5,446,179

PROCESS FOR THE PREPARATION OF MICRONUTRIENT BLENDS

Jon C. Thunberg, Milford, N.H., assignor to Hampshire Chemical Corp., Lexington, Mass.

Continuation-in-part of Ser. No. 938,376, Oct. 8, 1992, Pat. No. 5,274,151. This application Oct. 14, 1993, Ser. No. 136,342

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[6] C07F 15/00

U.S. Cl. 556—148 **16 Claims**

1. A process for producing metal complexes of alkali metal salts of EDTA, comprising:

a. neutralizing free alkali in an alkali metal salt solution of EDTA with acid;

b. reacting the neutralized alkali metal salt solution with a solution of metals to form a slurry containing alkali metal sulfate;

c. vacuum drying said slurry without the prior separation of said alkali metal sulfate, said reacting and vacuum drying steps being carried out in the same processing equipment.

8. A process for preparing a micronutrient formulation, comprising:

a. preselecting the identity and relative amounts of metals desired in said formulation;

b. preparing a solution of compounds of said preselected metals;

c. neutralizing free alkali in an alkali metal salt solution of EDTA with acid;

d. reacting the neutralized alkali metal salt solution with said preselected metal solution to form a slurry containing alkali metal sulfate;

e. vacuum drying said slurry without the prior separation of said alkali metal sulfate, said reacting and vacuum drying steps being carried out in the same processing equipment.

9. A dry solid composition consisting essentially of blends of alkali metal salts of transition metal EDTA complexes and alkali metal sulfate.

5,446,180

COMPOUNDS CONTAINING 1-AZA-3-OXA-4-SILACYCLOHEX-1-ENYL GROUPS, AND TAUTOMERS OF SAID COMPOUNDS

Mamoru Tachikawa, Kanagawa, Japan, assignor to Dow Corning Asia Ltd., Tokyo, Japan

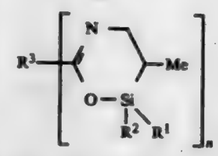
Filed Dec. 16, 1994, Ser. No. 357,829

Claims priority, application Japan, Dec. 28, 1993, 5-338549; Dec. 28, 1993, 5-338550; Dec. 28, 1993, 5-338553

Int. Cl.[6] C07F 7/10

U.S. Cl. 556—408 **11 Claims**

1. A 1-aza-3-oxa-4-silacyclohex-1-ene compound selected from the group consisting of those having the general formula (I) and tautomers thereof



(I)

wherein R^1 and R^2 each independently denotes a monovalent organic group having 1 to 6 carbon atoms selected from the group consisting of saturated hydrocarbon groups and unsaturated hydrocarbon groups, R^3 denotes an organic group having 1 to 30 carbon atoms selected from the group consisting of saturated hydrocarbon groups and unsaturated hydrocarbon groups, said R^3 groups optionally containing a heteroatom selected from the group consisting of oxygen, nitrogen, sulfur, silicon, fluorine, chlorine, bromine and iodine, Me denotes a methyl radical and n is an integer having a value of 1 to 4.

5,446,181

METHOD AND APPARATUS FOR PREPARING 3-[N-(2-AMINOETHYL)AMINOPROPYLALKOXYSILANE

Katsuhiro Uehara; Mikio Endo; Hitoyuki Araki; Takeo Arai, and Yasuhiro Kawase, all of Jonetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1993, Ser. No. 140,955

Claims priority, application Japan, Oct. 26, 1992, 4-310894

Int. Cl.[6] C07F 7/10

U.S. Cl. 556—424 **10 Claims**

1. A method for preparing a 3-[N-(2-aminoethyl)aminopropylalkoxysilane of formula (2):

$$H_2NCH_2CH_2NHCH_2CH_2CH_2SiR_{3-n}^1(OR^2)_n \quad (2)$$

wherein R^1 and R^2 are each independently C_{1-6}-alkyl, and n is 1, 2, or 3, comprising:

reacting a 3-chloropropylalkoxysilane of formula (1):

$$ClCH_2CH_2CH_2SiR_{3-n}^1(OR^2)_n \quad (1)$$

wherein R^1, R^2 and n are as defined above with ethylene diamine, comprising:

charging a distillation pot with ethylene diamine,

heating the pot to at least the boiling point of ethylene diamine to evaporate ethylene diamine,

condensing the ethylene diamine vapor into a liquid in a reflux condenser,

mixing the liquid ethylene diamine with a 3-chloropropylalkoxysilane of formula (1) in a molar ratio of ethylene diamine/3-chloropropylalkoxysilane of at least 12/1,

reacting the mixture of ethylene diamine and 3-chloropropylalkoxysilane in a reactor, thereby forming a 3-[N-(2-aminoethyl)]aminopropylalkoxysilane of formula (2)

feeding a reaction solution containing ethylene diamine and 3-[N-(2-aminoethyl)]aminopropylalkoxysilane from the reactor back to the distillation pot and repeating the

method by again evaporating the unreacted ethylene diamine in the reaction solution, and

condensing the ethylene diamine vapor for use in a next cycle of reaction.

5,446,182

PROCESS OF REMOVING IONS FROM SOLUTIONS USING A COMPLEX WITH SULFUR-CONTAINING HYDROCARBONS ALSO CONTAINING ELECTRON WITHDRAWING GROUPS BONDED TO A SOLID HYDROPHILIC MATRIX

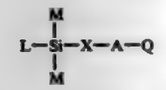
Ronald L. Bruening, Sandy; Bryon J. Tarbet, Highland; Reed M. Izatt, and Jerald S. Bradshaw, both of Provo, all of Utah, assignors to Brigham Young University, Provo, Utah

Division of Ser. No. 1,334, Jan. 7, 1993, which is a division of Ser. No. 895,341, Jun. 8, 1992, Pat. No. 5,190,661. This application Feb. 15, 1994, Ser. No. 197,287

Int. Cl.[6] C07F 7/08, 7/10

U.S. Cl. 556—427 **10 Claims**

1. A compound comprising a sulfur and electron withdrawing group containing ligand-covalently bonded to a silane spacer grouping having the formula:



wherein

(i) L is a member independently selected from the group consisting of Cl, Br, I, alkyl, alkoxy, substituted alkyl or substituted alkoxy;

(ii) M is a member selected from the group consisting of L and -X-A-Q;

(iii) X can be any spacer member selected from the group consisting of (1) groups having the formula:

$$-(CH_2)_a(OCH_2CHR^1CH_2)_b-$$

wherein R^1 is a member selected from the group consisting of H, SH, OH, lower alkyl, and aryl; a is an iteger from 2 to about 10 and b is an integer of 0 or 1, (2) phenyl and (3) methacryl;

(iv) A is a member selected from the group consisting of S, O, NR^2, and CH_2, wherein R^2 is a member selected from the group consisting of H and lower alkyl with the proviso that A must be S when Q does not contain an S atom;

(v) Q is a member selected from the group consisting of Ar and lower alkyl with the provisos that (1) Q must be electron withdrawing when X is other than phenyl (2) must contain an S atom when A does not and (3) wherein Ar is an aromatic group selected from the group consisting of phenyl, thiophenyl, naphthyl, biphenyl, pyridyl, pyrimidinyl, pyrazyl, pyridazinyl, furyl, thienyl, pyrryl, quinolinyl and bipyridyl; and

(vi) with the further proviso that A must be CH_2 when Q is Ar selected from the group consisting of 2-furyl, 2-thienyl and 2-pyrryl.

5,446,183

SILICONE ESTER EMULSIFIERS

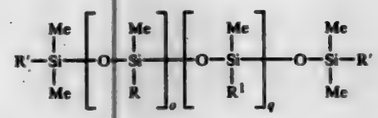
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Filed Feb. 15, 1995, Ser. No. 389,138

Int. Cl.[6] C07F 7/08, 7/18

U.S. Cl. 556—437 **20 Claims**

1. A compound conforming to the following structure:

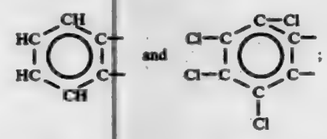


wherein;

Me is methyl;

R and R' are CH_3 or $-(CH_2)_3-O-(EO)_a-(PO)_b-(EO)_c-C(O)-R''-C(O)-R_2$; with the proviso that both R and R' are not CH_3;

R'' is selected from $-CH_2-CH_2-$; $-CH=CH-$; $-CH_2-C(R^7)-H$;



R^7 is alkyl having from 1 to 20 carbon atoms;

R^1 is selected from lower alkyl $CH_3(CH)_n-$ or phenyl;

n is an integer from 0 to 8;

a, b and c are integers independently ranging from 0 to 20;

EO is an ethylene oxide residue $-(CH_2CH_2-O)-$;

PO is a propylene oxide residue $-(CH_2CH(CH_3)-O)-$;

o is an integer ranging from 1 to 100;

q is an integer ranging from 0 to 500;

R^2 is $CH_3-(CH_2)_n-(CH_2CH_2O)_x-CH_2CH(CH_3)O)_y-(CH_2CH_2O)_z-O-$;

n is ranges from 3 to 19;

x, y and z are independently integers ranging from 0 to 20.

5,446,184

GLYCERYL SILICONE ESTER EMULSIFIERS

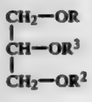
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Filed Mar. 14, 1995, Ser. No. 404,101

Int. Cl.[6] C07F 7/08, 7/18

U.S. Cl. 556—437 **20 Claims**

1. A compound conforming to the following structure:



wherein;

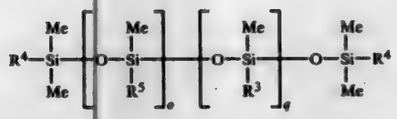
Me is methyl;

R^3 is selected from the group consisting of R or R^2;

R'' is $CH_3-(CH_2)_n-$

n is ranges from 3 to 19;

R^2 is:



wherein;

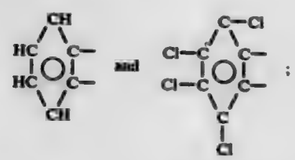
Me is methyl;

R^3 is selected from lower alkyl $CH_3(CH)_n-$ or phenyl;

n is an integer from 0 to 8;

R^5 and R^4 are CH_3 or $-(CH_2)_3-O-(EO)_a-(PO)_b-(EO)_c-C(O)-R''-C(O)-$; with the proviso that both R^5 and R^4 are not CH_3;

R^6 is selected from $-CH_2-CH_2-$; $-CH=CH-$; $-CH_2-C(R^7)-H$;



R^7 is alkyl having from 1 to 20 carbon atoms;

a, b and c are integers independently ranging from 0 to 20;

EO is an ethylene oxide residue $-(CH_2CH_2-O)-$;

PO is a propylene oxide residue $-(CH_2CH(CH_3)-O)-$;

o is an integer ranging from 1 to 100;

q is an integer ranging from 0 to 500.

5,446,185

ALKYLHYDRIDO SILOXANES

Vicky S. Cobb, Elsie; Donald E. Mc Vannel, Hemlock; Ann W. Norris, and Gary E. Legrow, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 14, 1994, Ser. No. 338,940

Int. Cl.[6] C07F 7/08

U.S. Cl. 556—451 **21 Claims**

1. Compounds selected from the group consisting of $(HMe_2SiO)_2-Si(R)-O-Si(R)-(OSiMe_2H)_2$, $RSi[(OSiMe_2)_xOSiMe_2H]_3$, and $[HMe_2SiO(Me_2SiO)_x]2SiRORSi[(OSiMe_2)_xOSiMe_2H]_2$, in which Me is methyl, R is a C_2 to C_{18} straight-chain or branched-chain alkyl substituent, and x has a value of 1-100.

5,446,186

STRUCTURE AND SYNTHESIS OF NITROPHENYL-EGTA, A CAGED CALCIUM, INTERMEDIATES THEREOF AND A METHOD OF PRODUCING A HIGH PHOTOCHEMICAL YIELD OF LIBERATED CALCIUM

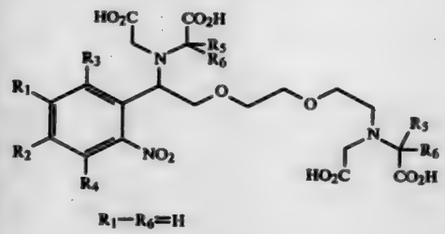
Graham C. R. Ellis-Davies, 3714 Hamilton St., Philadelphia, Pa. 19104, and Jack H. Kaplan, 525 Glenwood Rd., Merion, Pa. 19066

Filed Nov. 9, 1993, Ser. No. 149,417

Int. Cl.[6] C07F 13/00, 3/00; C07C 229/00

U.S. Cl. 556—50 **11 Claims**

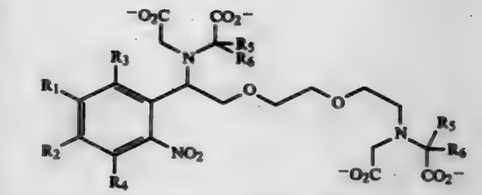
1. A compound of the formula:



R_1-R_6=H

ortho-nitrophenyl-ethylenebis (oxyethylenenitrilo)tetraacetic acid.

2. A solution compriaing a photolabile chelator consisting essentially of an anion having the following structure:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are chosen from the group consisting of hydrogen, methoxy, halogen, methyl, hydroxy, vinyl, nitro, amino, dimethylamine and thioalkyl.

5,446,187

AMINOACYL DERIVATIVES OF GEM-DIPHOSPHONIC ACIDS, A PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Sergio Togneila; Valeria Livi; Ernesto Menta, and Silvano Spinelli, all of Milan, Italy, assignors to Boehringer Mannheim Italia S.p.A., Milan, Italy

PCT No. PCT/EP92/00746, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18512, PCT Pub. Date Oct. 29, 1992

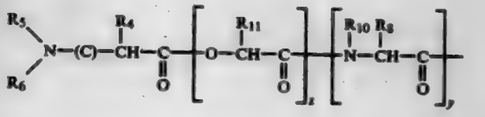
PCT Filed Apr. 3, 1992, Ser. No. 129,098

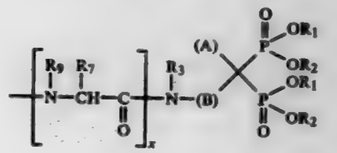
Claims priority, application Italy, Apr. 12, 1991, MI91A1016

Int. Cl.[6] C07F 9/38, 9/40; A61K 31/66

U.S. Cl. 562—13 **10 Claims**

1. Compounds of formula (I):



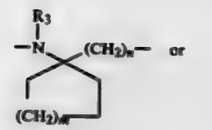


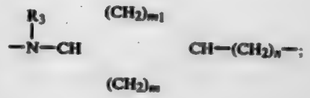
wherein:

R_1 and R_2, which can be the same or different, are hydrogen or C_1–C_4 alkyl;

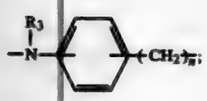
(A) is hydrogen, halogen (chlorine, bromine or iodine), hydroxy, straight or branched C_1–C_{12} alkyl;

(B) is a covalent bond, straight or branched C_1–C_8 alkylene, an alkylene chain containing at least one hetero-atom of formula $-[CH(CH_3)]_p-(CH_2)_{n1}-X-(CH_2)_n-$, or, together with the adjacent nitrogen atom, a group of formula

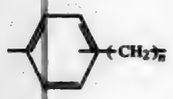




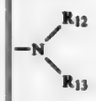
an ortho, meta or para substituted aralkyl of formula



in which;
chain or groups X is O, S, N—CH_3;
m is zero or the integer 1 or 2;
m_1 is the integer 1, 2, 3 or 4;
n and n_1 are an integer from 1 to 5; p is zero or the integer 1;
R_3 is hydrogen, straight or branched C_1–C_{10} alkyl, C_3–C_6 cycloalkyl, benzyl, phenyl, or p-methoxybenzyl;
(C) is straight or branched C_1–C_5 alkylene, phenylene, an aralkyl chain of formula



wherein;
n is as defined above;
R_4 is selected from hydrogen, straight or branched C_1–C_4 alkyl, or R_4 represents a group



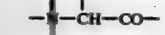
wherein;
R_{12} and R_{13}, which are the same or different, are hydrogen, straight or branched C_1–C_6 alkyl, phenyl, benzyl, para-methoxybenzyl, or one of R_{12} and R_{13} is as defined above and the other one is a group of formula:



wherein;
R_{14} is hydrogen, straight or branched C_1–C_4 alkyl, phenyl, benzyl, para-methoxybenzyl, straight or branched C_1–C_4 alkoxyl, halo-C_1–C_4 alkoxyl;
R_5 and R_6 are haloethyl or R_5 and R_6, taken together with the nitrogen atom to which they are linked, are a 1-azyridinyl group of formula



R_7, R_8, R_9 and R_{10}, which are the same or different, taken together with the



group to which they are linked, are the residue from a D or L amino acid;
R_{11} is hydrogen or straight or branched C_1–C_{12} alkyl chain;
x is zero or the integers 1 and 2;
y and z are zero or the integer 1, with the proviso that x, y and z are not at the same time zero, and the pharmaceutically acceptable acids, enantiomers, diastereoisomers and racemates thereof.

5,446,188

PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED FATTY ALCOHOL SULFATE PASTES

Bert Gruber, Bedburg; Hermann Auzinger, and Guenter Hendricks, both of Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/00544, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993, PCT Pub. No. WO92/16606, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 12, 1992, Ser. No. 119,159
Claims priority, application Germany, Mar. 21, 1991, 41 09 250.3
Int. Cl.[6] C07C *305/06, 305/14*
U.S. Cl. 558—42 17 Claims

1. A process for the production of a highly concentrated fatty alcohol sulfate paste comprising the steps of: (1) forming a crude sulfonation product by reacting a mixture of an inert gas and sulfur trioxide with a mixture comprised of: (a) an unsaturated fatty alcohol of the formula I

$$R^1—OH \quad (I)$$

wherein R^1 is a linear unsaturated hydrocarbon radical having from 16 to 22 carbon atoms and 1, 2 or 3 double bonds, (b) a saturated fatty alcohol of the formula II

$$R^2—OH \quad (II)$$

wherein R^2 is a linear or branched saturated hydrocarbon radical having from 12 to 22 carbon atoms; wherein the molar ratio of sulfur trioxide/fatty alcohol mixture is from 0.95:1 to 1.3:1; (2) neutralizing in one step, at a temperature of from 50° C. to 90° C., said crude sulfonation product with a quantity of aqueous base sufficient to form a water-containing fatty alcohol sulfate paste product having a solids content of from 60% to 70% by weight and a viscosity of less than 10 Pa.s at 60° C.

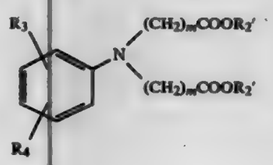
5,446,189

INTERMEDIATES FOR THE PRODUCTION OF N-SUBSTITUTED ANILINES, INHIBITORS OF PHOSPHOLIPASES A_2

Mathew Carson, Nutley; Ru-Jen L. Han, Princeton Junction; Ronald A. LeMahieu, N. Caldwell, and Vincent S. Madison, Mountain Lakes, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 914,825, Jul. 15, 1992, Pat. No. 5,324,747.
This application Mar. 22, 1994, Ser. No. 216,113
Int. Cl.[6] C07C *229/34, 229/36*
U.S. Cl. 560—44 4 Claims

1. A compound of the formula:



wherein
R_2' is lower alkyl or benzyl;
R_3 is $CH_3(CH_2)_nO$—, where n is 9 to 17;
R_4 is $CH_3(CH_2)_nO$—, where n is 9 to 17; and
m is 1 to 3.

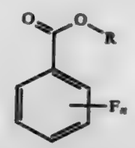
5,446,190

PROCESS FOR THE PREPARATION OF ALKYL FLUOROBENZOATES IN HIGH PURITY AND HIGH YIELD

Gilbert Billeb, Kelkheim, and Wolfgang Tronich, Eppstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

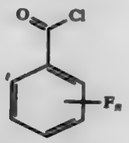
Filed Nov. 15, 1994, Ser. No. 339,761
Claims priority, application Germany, Nov. 17, 1993, 43 39 208.3
Int. Cl.[6] C07C *69/76*
U.S. Cl. 560—103 17 Claims

1. A process for the preparation of alkyl fluorobenzoates of the formula (I)



(I)

in which R is an alkyl radical and F_n is 1 to 4 fluorine atoms which, independently of one another, are bonded to the aromatic ring, which comprises the steps of:
reacting a fluorobenzoyl chloride of the formula (II)



(II)

in which F_n is as defined above, in a mixture with an at least stoichiometric amount of an alkali metal alcoholate ROM, in which R is as defined above and M is an alkali metal from the group consisting of Li, Na and K, in the corresponding alcohol ROH having a boiling point, said reaction being conducted at temperatures from −10° C. to 150° C., and
separating off the alkali metal chloride formed.

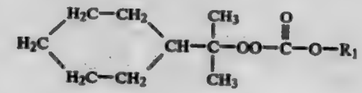
5,446,191

1-CYCLOHEXYL-1-METHYLETHYLPEROXY CARBONATE, METHOD FOR PRODUCTION THEREOF, AND USES THEREFOR

Shuji Suyama; Toora Nishikawa; Masaru Matsushima, all of Aichi, and Hiroshi Okada, Tokoname, all of Japan, assignors to NOF Corporation, Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 190,459
Claims priority, application Japan, Feb. 2, 1993, 5-036248
Int. Cl.[6] C07C *69/74*
U.S. Cl. 560—126 8 Claims

1. A 1-cyclohexyl-1-methylethylperoxy carbonate represented by the formula:



wherein R_1 stands for an alkyl group of up to 14 carbon atoms, an aralkyl group of up to 14 carbon atoms, an alkoxyalkyl group of up to 14 carbon atoms, a cycloalkyl group of up to 14 carbon atoms, or an aryl group of up to 14 carbon atoms.

5,446,192

PROCESS FOR THE PREPARATION OF β-AMINOACRYLIC ACID ESTERS

Helmut Kraus, Köln; Heinz-Ulrich Blank, Odenthal, and Gerhard Marsolph, Köln, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 3, 1993, Ser. No. 25,489
Claims priority, application Germany, Mar. 12, 1992, 42 07 852.0
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—172 18 Claims

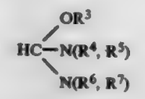
1. A process for the preparation of a β-aminoacrylic acid ester of the formula

$$(R^4,R^5)N—CH=CR^1—COOR^2 \quad (I)$$

by reacting an acetic acid ester of the formula

$$H_2CR^1—COOR^2$$

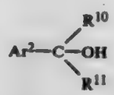
with an aminal ester of the formula



(II)

in which formulae
R^1 is hydrogen, linear or branched C_1—C_8-alkyl, linear or branched C_2—C_8-alkenyl, C_3—C_8-cycloalkyl, C_6—C_{12}-aryl, C_7—C_{10}-aralkyl or a 5- to 8-membered aromatic or non-aromatic heterocyclic ring in which the heteroatoms are 1 or 2 from the group consisting of N, O or S,
R^2 and R^3 independently of one another are linear or branched C_1—C_8-alkyl and
R^4, R^5, R^6 and R^7 independently of one another are linear or branched C_1—C_8-alkyl, linear or branched C_2—C_8-alkenyl, C_2—C_8-alkoxyalkyl, C_3—C_8-alkoxyalkenyl, C_3—C_8-cycloalkyl, C_6—C_{12}-aryl, C_7—C_{10}-aralkyl or a 5- to 8-membered aromatic or non-aromatic heterocyclic ring in which the heteroatoms are 1 or 2 from the group consisting of N, O or S, it further being possible for R^4 and R^5 or R^6 and R^7, together with the N atom which they substitute, to form a 5- to 8-membered aromatic or non-aromatic N-heterocyclic ring which can contain another heteroatom from the group consisting of N, O and S,
wherein the reaction is carried out in the presence of one or more catalysts from the group consisting of aromatic tertiary amines and aromatic carbinols of the formula

$$Ar^1—N(R^8,R^9) \quad (IV)$$



(V)

are used, in which formulae
R^8 and R^9 independently of one another have the range of meanings of R^4 and R^5 mentioned above,
Ar^1 and Ar^2 independently of one another are 5- to 7-membered carbocyclic or heterocyclic aromatic radicals which can also be substituted,
R^{10} has the range of meanings of R^4 and R^{11} has the range of meanings of R^4 or Ar^2, but is independent of R^4 and Ar^2,
at 0.5 to 10 bar, and at 50°–170° C. in an aprotic polar solvent and the aminal ester and the acetic acid ester are used in a molar ratio of 3:1 to 1:10.

5,446,193

FORMAZAN-BASED REACTIVE DYES WITH AT LEAST TWO REACTIVE GROUPS, AND AMINOPHENOLS

Claus Marschner, Speyer, and Manfred Patsch, Wachenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

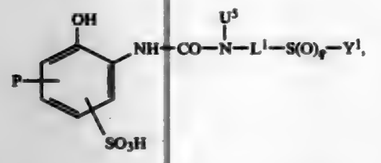
Filed Oct. 15, 1993, Ser. No. 136,131

Claims priority, application Germany, Oct. 16, 1992, 42 34 900.1

Int. Cl.[6] C07C *305/12, 309/29;* C07D *213/02*

U.S. Cl. 558—30 1 Claim

1. A process for preparing aminophenols of the formula II



(II)

where

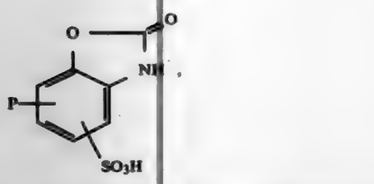
q is 0 or 2,

Y^1 is vinyl or a radical of the formula CH_2CH_2Q', wherein Q^1 is a group that is detachable under alkaline reaction conditions or hydroxyl,

L^1 is C_2-C_6-alkylene, which may be substituted by hydroxyl, chlorine, cyano, carboxyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkanoyloxy or sulfato and may be interrupted by 1 or 2 oxygen atoms in ether function or by imino or C_1-C_4-alkylimino groups,

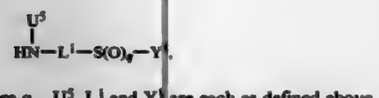
U^5 is hydrogen or C_1-C_6-alkyl, which may be substituted by hydroxyl, C_1-C_4-alkoxy, halogen, cyano, hydroxysulfonyl or a radical of the formula $—SO_2—Y^1$, wherein Y^1 is as defined above, or is unsubstituted phenyl or phenyl substituted with C_1-C_4-alkyl, C_1-C_4-alkoxy, halogen, nitro, C_1-C_4-alkanoyl, C_1-C_4-alkanoylamino, benzoylamino or hydroxysulfonyl, and

P is nitro or amino, which comprises reacting a benzoxazolone of the formula III



(III)

where P is as defined above, with an amine of the formula IV



(IV)

where q, U^5, L^1 and Y^1 are each as defined above.

5,446,194

PHARMACOLOGICALLY ACTIVE CATECHOL DERIVATIVES

Reijo J. Bäckström, Helsinki; Kalevi E. Heinola, Järvenpää; Erkki J. Honkanen, Vantaa; Seppo K. Kaakkola, Helsinki; Pekka J. Kairisalo, Helsinki; Inge-Britt Y. Linden, Helsinki; Pekka I. Männistö, Helsinki; Erkki A. O. Nissinen, Espoo; Pentti Pohto, Helsinki; Aino K. Pippuri, and Jarmo J. Pystynen, both of Espoo, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

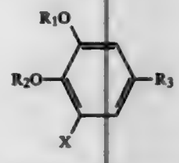
Division of Ser. No. 987,245, Dec. 7, 1992, Pat. No. 5,283,352, which is a continuation of Ser. No. 792,655, Nov. 15, 1991, abandoned, which is a division of Ser. No. 587,791, Sep. 25, 1990, Pat. No. 5,112,861, which is a division of Ser. No. 126,911, Nov. 27, 1987, Pat. No. 4,963,590. This application Sep. 16, 1993, Ser. No. 121,617

Claims priority, application Finland, Nov. 28, 1986, 864875; United Kingdom, May 27, 1987, 8712437

Int. Cl.[6] C07C *205/22, 255/50*

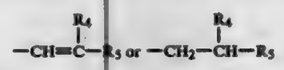
U.S. Cl. 558—401 4 Claims

1. A compound according to formula I



I

wherein R_1 and R_2 independently represent hydrogen, carbamoyl which is substituted by an alkyl of 1 to 4 carbon atoms, alkylcarbonyl of 2 to 5 carbon atoms or phenyl carbonyl, X represents nitro or cyano and R_3 represents



wherein R_4 represents cyano or alkylcarbonyl of 2 to 5 carbon atoms and R_5 represents carbamoyl which is unsubstituted or substituted with alkyl of 1 to 8 carbon atoms or which is substituted with hydroxyalkyl of 1 to 8 carbon atoms or pharmaceutically acceptable esters and salts thereof.

5,446,195

WATER-SOLUBLE ACTIVE METHYLENES AS FORMALDEHYDE SCAVENGERS

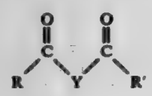
Joseph A. Pacifici, La Grange, Ga., assignor to West Point Pepperell, West Point, Ga.

Division of Ser. No. 713,546, Jun. 7, 1991, Pat. No. 5,194,674, which is a continuation-in-part of Ser. No. 53,606, May 20, 1987, abandoned, Ser. No. 52,842, May 20, 1987, abandoned, Ser. No. 71,032, Jul. 8, 1987, abandoned, and Ser. No. 186,304, May 9, 1988, which is a continuation of Ser. No. 71,033, Jul. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 902,750, Sep. 2, 1986, abandoned, said Ser. No. 53,606, is a continuation of Ser. No. 902,750, Sep. 2, 1986, said Ser. No. 523,842, is a division of Ser. No. 902,750, Sep. 2, 1986, said Ser. No. 71,032, is a continuation-in-part of Ser. No. 902,750, Sep. 2, 1986. This application Nov. 25, 1992, Ser. No. 981,581

Int. Cl.[6] C07C *69/72*

U.S. Cl. 560—178 9 Claims

1. A composition for a formaldehyde scavenger consisting of a water-soluble active methylene compound of the formula:



Wherein R and R' are CH_3, or

$$H[O(CH_2)_m]_nO—$$

and wherein m and n are selected from the group of combinations of m and n consisting of: m=1 and n=1, 3–19; m=2 and n=2–19; or m=3 and n=1–19, Y is $—CH_2—$ or $—CH_2—CO—CH_2—$.

5,446,196

PROCESS FOR THE PRODUCTION OF ISOCYANATES AND FOR THE CONTINUOUS WORKING-UP OF THE RESIDUE

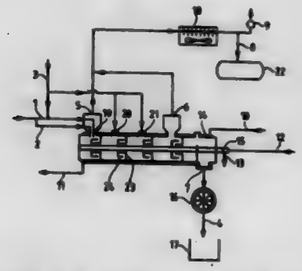
Hermann-Josef Benedix, and Werner Motika, both of Marne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 23, 1994, Ser. No. 247,786

Claims priority, application Germany, May 27, 1993, 43 17 669.0

Int. Cl.[6] C07C *71/00*

U.S. Cl. 560—352 9 Claims



1. A process for recovering a pure isocyanate from an isocyanate-containing residue of a phosgene/amine reaction mixture comprising

a) distilling the reaction mixture to separate it into an isocyanate fraction, a solvent fraction and an isocyanate-containing residue,

b) continuously feeding

(1) the isocyanate-containing residue obtained in a) and

(2) one or more high-boiling hydrocarbons which are inert with respect to the isocyanate-containing residue under distillation conditions in an amount of from about 2 to about 50 weight %, based on the total weight of (1) plus (2)

to a heated, product-agitating vacuum drier with a horizontal shaft,

c) continuously distilling the mixture of b) at a temperature of from about 160° to about 280° C. and a pressure of from about 2 to about 50 mbar to remove isocyanate present in that mixture, and

d) recovering as residue from distillation c) a pourable, non-dusting, granular material.

5,446,197

METHOD OF PURIFYING ACIFLUORFEN

Mark Sandison, Dearborn, Mich.; Ron Eva, Bahama, N.C., and Lawrence E. James, Grosse Ile, Mich., assignors to BASF Corporation, Mount Olive, N.J.

Filed Jun. 17, 1993, Ser. No. 78,993

Int. Cl.[6] C07C *205/00*

U.S. Cl. 562—435 6 Claims

1. A method of purifying acifluorfen using 1,2-dichlorobenzene solvent to achieve a recrystallized acifluorfen product having an acifluorfen purity of at least about 92%, an acifluorfen yield of greater than about 80%, and a ratio of acifluorfen to 2'-NO_2 isomer of at least about 23: 1, said method comprising the steps of:

(a) providing an acifluorfen crude wet cake containing between about 80 to about 85% of acifluorfen crystals on a dry basis;

(b) heating to dissolution a solution comprised of about 15 weight percent of said acifluorfen crude wet cake and 1,2-dichlorobenzene solvent;

(c) cooling said solution until recrystallization of said acifluorfen occurs;

(d) filtering said recrystallized acifluorfen at a temperature within the range of from about 10° to about 20° C.; and

(e) recovering a product containing said recrystallized acifluorfen having an acifluorfen purity of at least about 92%, an acifluorfen yield of greater than about 80%, and a ratio of acifluorfen to 2'-NO_2 isomer of at least 23:1.

5,446,198

4-HYDROXY-2,3,5-TRIFLUOROBENZOIC ACID AND A PROCESS FOR ITS PREPARATION

Ralf Pfirmann, Griesheim, and Rainer Wingen, Hattersheim am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

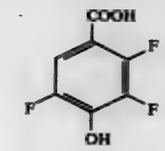
Filed Dec. 15, 1993, Ser. No. 167,428

Claims priority, application Germany, Dec. 17, 1992, 42 42 696.0

Int. Cl.[6] C07C *59/00*

U.S. Cl. 562—465 1 Claim

1. 4-Hydroxy-2,3,5-trifluorobenzoic acid, which has the formula



5,446,199

PREPARATION OF HALOMETHYLBENZOYL CYANIDES AND NOVEL HALOMETHYLBENZOYL CYANIDES

Heinz Isak, Boehl-Iggelheim; Thomas Wettling, Limburgerhof; Michael Keil, Freinsheim; Bernd Wolf, Fussgoenheim, and Reinhard Doetzer, Weinheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 23, 1994, Ser. No. 216,416

Claims priority, application Germany, Apr. 8, 1993, 43 11 722.8

Int. Cl.[6] C07C *253/14*

U.S. Cl. 562—869 4 Claims

1. A process for preparing halomethylbenzoyl cyanides of the formula I

I

where Ph is a phenyl radical which is substituted by chloromethyl or bromomethyl and which, if desired, can additionally carry 1 to 4 further radicals which are inert to the reaction, which comprises reacting a halomethylbenzoyl chloride of the formula II



II

with an aqueous alkali metal cyanide or transition metal cyanide solution in an organic diluent in the presence of a phase transfer catalyst.

5,446,200

PROCESS FOR THE PURIFICATION OF TECHNICAL-GRADE N-ALKYL UREA

Angelo Bordin, Collatte, Italy, assignor to I.P.I.C.I. S.p.A., Milan, Italy

Filed Dec. 24, 1992, Ser. No. 996,614
Claims priority, application Italy, Jan. 15, 1992, T092A0022
Int. Cl.[6] C07C 273/16
U.S. Cl. 564—61 3 Claims

1. A process for the purification of technical-grade N-(C_1–C_3) alkyl urea comprising an alkali metal sulfate, which comprises the steps of:

a. treating the N-(C_1–C_3) alkyl urea With a substantially anhydrous C_1–C_4 alcoholic solvent to cause the selective dissolution of the N-(C_1–C_3) alkyl urea;

b. separating the soluble fraction from the alkali metal sulfate which is insoluble in the alcoholic solvent; and

c. removing the alcoholic solvent from the soluble fraction to recover the N-(C_1–C_3) alkyl urea.

5,446,201

DI(3- (2-CHLOROETHYLSULFONYL)-1-PROPYL)AMINE HYDROCHLORIDE AND A PROCESS FOR ITS PREPARATION

Heinrich Angenendt; Michael Meier, and Wolfram Schams, all of Frankfurt am Main, Germany, assignors to Hoechst AG, Frankfurt, Germany

Filed Nov. 30, 1993, Ser. No. 159,442
Claims priority, application Germany, Dec. 2, 1992, 42 40 421.5
Int. Cl.[6] C07C 321/14
U.S. Cl. 564—500 13 Claims

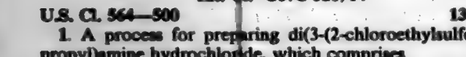
1. A process for preparing di(3-(2-chloroethylsulfonyl)-1-propyl)amine hydrochloride, which comprises

a) reacting each mol of an N,N-diallylcarboxamide of the formula (1)



$$R—CON(CH_2—CH=CH_2)_2 \quad (1)$$

in which R is hydrogen, alkyl(C_1–C_6) or cycloalkyl(C_4–C_8) with about 4 to about 8 mol of mercaptoethanol at temperatures of about 0° to about −70° C. in the presence of an oxygen-containing gas optionally in an organic solvent which is inert to the reactants and the reaction conditions, at atmospheric pressure or superatmospheric pressure to give the carboxamide of the formula (2)



$$R—CON(CH_2—CH_2—CH_2—S—CH_2—CH_2—OH)_2 \quad (2)$$

in which R has the abovementioned meaning,

b) hydrolyzing this carboxamide with an aqueous solution of an alkaline agent at a temperature of about 40° to about 120° C. at a pH of about 10 to about 14, and

c) reacting each mol of the di(3-(2-hydroxyethylthio)-1-propyl)amine thus obtained with about 4 to about 6 mol of chlorine gas in about 2 to about 15% hydrochloric acid at a temperature of about 20° to about 110° C. to give di(3-(2-chloroethylsulfonyl)-1-propyl)amine hydrochloride.

5,446,202

OVER-BASED SULFURIZED ALKALINE EARTH METAL PHENATE AND PROCESS FOR PRODUCING THE SAME

Makoto Nishishita; Masato Goto, and Sanae Ueda, all of Saitama, Japan, assignors to Cosmo Research Institute and Cosmo Oil Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 294,039
Claims priority, application Japan, Aug. 25, 1993, 5-234125; Feb. 25, 1994, 6-053230
Int. Cl.[6] C07C 319/14
U.S. Cl. 568—23 15 Claims

1. A process for producing an over-based sulfurized alkaline earth metal phenate which comprises reacting either a mixture of reaction materials comprising a phenol, a dihydric alcohol, an alkaline earth metal reagent which is an alkaline earth metal oxide or hydroxide or a mixture of both, and sulfur or a mixture of these reaction materials with water, distilling off an excess amount of the dihydric alcohol and at least excess amount of water, and subsequently treating the resulting distillation residue with carbon dioxide, wherein the carbon dioxide treatment is carried out (A) in the presence of 0.001 to 0.7 mol of a fatty acid or a fatty amine per 1 mol of the alkaline earth metal reagent and (B) in the presence of either (i) 0.01 to 0.9 mol of water per 1 mol of the alkaline earth metal reagent or (ii) 0.05 to 5.0 mol of a lower alcohol containing 1 to 4 carbon atoms per 1 mol of the alkaline earth metal reagent or (iii) both of (i) the water and (ii) the lower alcohol.

15. An over-based sulfurized alkaline earth metal phenate having a base number of 250 to 400 mgKOH/g, a viscosity of 40 to 1,000 cSt at 100° C. and a color of L3.0 to 8.0Dil (by ASTM), and contains 0.1 to 50 wt % of the fatty acid or the fatty amine based on the total amount thereof, which is produced by a process which comprises reacting either a mixture of reaction materials comprising a phenol, a dihydric alcohol, an alkaline earth metal reagent which is an alkaline earth metal oxide or hydroxide or a mixture of both, and sulfur or a mixture of these reaction materials with water, distilling off an excess amount of the dihydric alcohol and at least excess amount of water, and subsequently treating the resulting distillation residue with carbon dioxide, wherein the carbon dioxide treatment is carried out (A) in the presence of 0.001 to 0.7 mol of a fatty acid or a fatty amine per 1 mol of the alkaline earth metal reagent and (B) in the presence of either (i) 0.01 to 0.9 mol of water per 1 mol of the alkaline earth metal reagent or (ii) 0.05 to 5.0 mol of a lower alcohol containing 1 to 4 carbon atoms per 1 mol of the alkaline earth metal reagent or (iii) both of (i) the water and (ii) the alcohol.

5,446,203

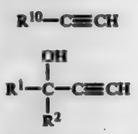
SYNTHESIS OF HALOENONES AND ARYL OR ALKYL SUBSTITUTED ENONES OR ALKENES

Edward McNelis, New Rochelle, N.Y., assignor to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 934,216, Aug. 25, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 98,006
Int. Cl.[6] C07C 45/51
U.S. Cl. 568—322 21 Claims

1. A method for the production of an alkene or enone, comprising the steps of:

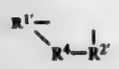
reacting an alkyne or alkynol of the formula (IA) or (IB), respectively,



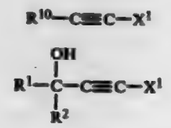
$$R^{10}—C\equiv CH \quad (IA)$$

$$R^1—\underset{\underset{R^2}{|}}{\overset{\overset{OH}{|}}{C}}—C\equiv CH \quad (IB)$$

wherein R^{10} is optionally substituted alkyl or aryl; R^1 is hydrogen or an optionally substituted alkyl or aryl group; and R^2 is an optionally substituted aryl group; or R^1 and R^2 combine to form a cyclic group of the formula



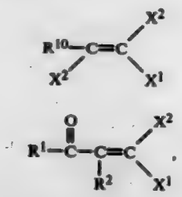
in which $R^{1'}$ is optionally substituted methylene and $R^{2'}$ is methylene and R^8 is alkyl, O, cycloalkyl, cycloaryl, heterocycloalkyl or heterocycloaryl, with N—X^1-succinimide, in which X^1 is bromine or iodine, in the presence of a catalytic amount of silver salt in an appropriate solvent under conditions satisfactory to produce a haloalkyne or haloalkynol of formula (IIA) or (IIB):



$$R^{10}—C\equiv C—X^1 \quad (IIA)$$

$$R^1—\underset{\underset{R^2}{|}}{\overset{\overset{OH}{|}}{C}}—C\equiv C—X^1 \quad (IIB)$$

and then producing a haloalkene or haloenone of formula (IIIA) or (IIIB):



$$R^{10}—C=C\begin{matrix}X^2\\X^1\end{matrix} \quad (IIIA)$$

$$R^1—\overset{\overset{O}{\|}}{C}—C=C\begin{matrix}X^2\\X^1\end{matrix} \quad (IIIB)$$

wherein X^2 is bromine or iodine, by reacting said haloalkyne or haloalkynol of formula (IIA) or (IIB) (a) with N—X^2-succinimide or $(X^2)_2$ in the presence of a catalytic amount of (hydroxy(tosyloxy)iodo)benzene or p-toluene sulfonic acid, or (b) with I_2/I_2O_5, in which case X^2 is iodine, under conditions satisfactory to produce a haloalkene or haloenone of formula (IIIA) or (IIIB).

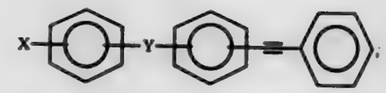
5,446,204

PHENYLETHYNYL REACTIVE DILUENTS

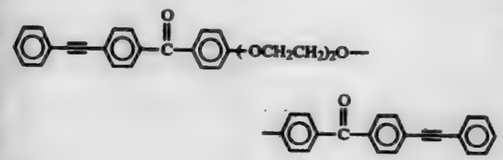
Robert G. Bryant, Poquoson; Brian J. Jensen, Williamsburg, and Paul M. Hergenrother, Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 45,343, Apr. 2, 1993, Pat. No. 5,312,994.
This application May 16, 1994, Ser. No. 245,776
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[6] C07C 49/825
U.S. Cl. 568—333 1 Claim

1. A reactive diluent for decreasing the melt viscosity of a phenylethynyl terminated reactive oligomer prepared from the reaction of a nucleophilic reagent and a composition having the formula

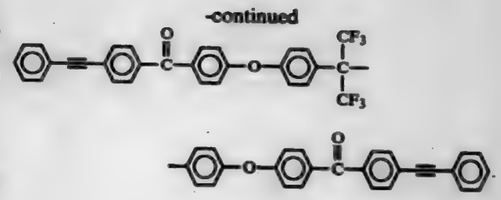


wherein X is selected from the group consisting of F, Cl, and NO, and Y is selected from the group consisting of CO, SO_2, and $C(CF_3)_2$, and for reacting with said phenylethynyl terminated reactive oligomer to provide a thermosetting material of enhanced crosslink density, the reactive diluent being selected from the group consisting of



and

-continued



5,446,205

FUNCTIONALIZED FLUOROPOLYETHERS

Giuseppe Marchionni; Piero Gavezzotti, both of Milan, and Ezio Strepparola, Treviglio, all of Italy, assignors to Ausimont S.r.l., Milan, Italy

Continuation of Ser. No. 872,209, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 727,309, Jul. 10, 1991, abandoned, which is a continuation of Ser. No. 614,551, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 346,480, May 2, 1989, abandoned. This application Feb. 24, 1994, Ser. No. 209,497
Claims priority, application Italy, Apr. 20, 1989, 47869/89
Int. Cl.[6] C07C 45/00
U.S. Cl. 568—603 2 Claims

1. A functionalized fluoropolyether defined by the formula (II):

$$T'—O(CF_2CF_2O)_p(CF_2O)_qCRR'Y \quad (II)$$

where: R is selected from the group consisting of F, Cl, Br and I; R', equal toor different from R, is selected from the group consisting of F, Cl, Br, and I; T' is selected from the group consisting of

Alog—CF_2CF_2—; Alog—CF_2—; and Alog CF_2CF—(Alog)—;

where Alog is [Cl,] Br [or I];

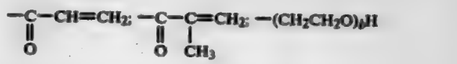
p ranges from 1 to 20 , with q/p being between 0.5 and 2.0;

Y is selected from the group consisting of —CN, —CN_2Z, —COR'",

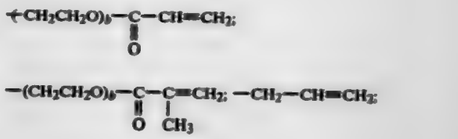


where:

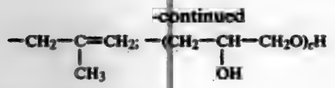
E is —NH—, —O— or —S—, and furthermore with the proviso: (A) when Y is —CH_2Z, Z is OR", where R" is a hydrogen atom, or:



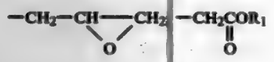
(where b is a number ranging from 1 to 15);



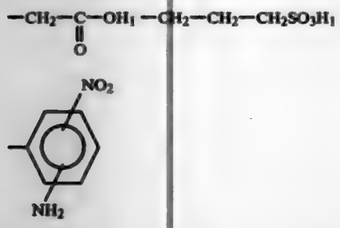
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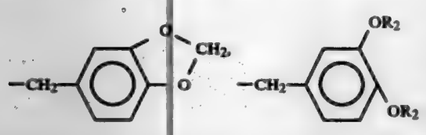
(c=a number from 1 to 3)



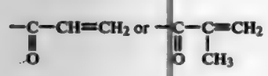
Where R_1 is an alkyl containing from 1 to 30 carbon atoms, with and alkyl containing from 1 to 30 carbon atoms with ether bonds of type —C—O—C—, or $—(CH_2—CH_2O)_dH$, wherein d is a number ranging from 1 to 15 ;



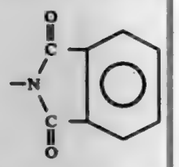
a naphthyl group; a benzyl group; or a mono- or poly-substituted alkyl or akoxy benzyl group of the type:



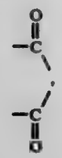
where R_2=an alkyl containing from 1 to 4 carbon atoms; or Z is a nitrogen—containing group $—NR_3R_4$ where R_3 and R_4, alike or different from each other, are hydrogen atoms or they are, either individually or both, R_1 groups as defined above, or, when R_3=H, R_4 is:



or R_3 and R_4 together form a cyclic imide of formula:



wherein the phenyl group contains a substituent group of the anhydride type;



(B) and when Y=COR'", R'", is selected from the group consisting of —NHR_5, where R_5 is hydrogen, C_1–C_8 alkyl, C_1–C_8 mono- or poly-hydroxyalkyl, C_1–C_8 aminoalky, allyl group, methallyl group,

R_6—$Si(OCH_3)_3$ or $R_6Si(OC_2H_5)_3$, where R_6 is C_1–C_8 alkylene, —R_7NCO where R_7 is C_1–C_8 alkylene, C_5–C_6 cycloalkylene, C_6–C_{10} arylene, an unsubstituted aromatic radical or a substituted aromatic radical selected from the group consisting of penta-fluorophenyl, bromotetrafluorophenyl, dibromodifluorophenyl, bromophenyl and bromobenzophenyl.

5,446,206

PROCESS FOR PREPARING CONTROLLED MOLECULAR WEIGHT PERFLUOROPOLYETHERS HAVING PERFLUOROALKYL OR PERFLUOROCHLOROALKYL END GROUPS

Giuseppe Marchionni, and Anna Staccione, both of Milan, Italy, assignors to Ausimont S.r.l., Milan, Italy

Continuation of Ser. No. 24,975, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 744,731, Aug. 14, 1991, abandoned, which is a division of Ser. No. 346,479, Mar. 2, 1989, Pat. No. 5,051,158. This application Jul. 25, 1994, Ser. No. 280,400

Claims priority, application Italy, May 2, 1988, 20407/88

Int. Cl.[6] C07C *43/30, 43/32*

U.S. Cl. 568—604 2 Claims

1. Perfluoropolyethers of the formula:



wherein:

T is a perfluoroalkyl group containing a Cl atom selected from,

R and R', alike or different from each other, are fluorine or chlorine; and the indexes m, n, are numbers ranging from 0 to 20, extremes included, p ranges from 0 to 40, extremes included, and q ranges from 0 to 10, extremes included with the following provisos:

1. when m=0, n ranges from 1 to 20, and (p+q)/n ranges from 0.01 to 0.5, extremes included;
2. when n=0, also q is 0, m ranges from 1 to 20, and p/m ranges from 0.5 to 2, extremes included; and
3. when n and m are other than 0, m+n ranges from 1 to 20, and (p+q)/(m+n) ranges from 0.01 to 0.5, extremes included,

wherein the repeating units are randomly distributed along the chain.

5,446,207

ANTI-DYSLIPIDEMIC AGENTS

Shirley A. Pomponi, Forth Pierce, Fla.; Vincent P. Gullo, Liberty Corner, N.J.; Ann C. Horan, Summit, N.J.; Mahesh G. Patel, Verona, N.J., and Stephen J. Coval, Clinton, N.J., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

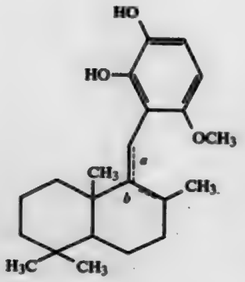
Filed Sep. 1, 1993, Ser. No. 115,947

Int. Cl.[6] C07C *43/23*

U.S. Cl. 568—633 4 Claims

1. A compound of the formula:

I



wherein a is a single bond and b is a double bond; or a is a double bond and b is a single bond; and enantiomers thereof; or a pharmaceutically acceptable salt thereof.

5,446,208

PROCESS FOR PRODUCING ETHER ALCOHOLS BY HYDROGENOLYSIS OF CYCLIC KETAL

Junji Koshino, Wakayama; Hajime Miyabe, Chiba, and Yoshiaki Fujikura, Tochigi, all of Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Mar. 14, 1994, Ser. No. 209,277

Claims priority, application Japan, Mar. 15, 1993, 5-053781

Int. Cl.[6] C07C *41/48*

U.S. Cl. 568—670 6 Claims

1. A process for producing an ether alcohol which comprises subjecting a cyclic ketal to hydrogenolysis in the presence of a catalyst containing palladium in an amount of from 50 to 100% by weight, based on the total active catalytic component present.

5,446,209

SPHERICAL PERFLUOROETHERS

Richard J. Lagow, Austin, Tex., assignor to Exfluor Research Corporation, Austin, Tex.

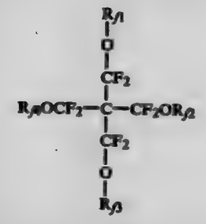
Continuation of Ser. No. 998,654, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 647,694, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 276,957, Nov. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 91,659, Sep. 1, 1987, Pat. No. 4,788,350. This application Oct. 25, 1993, Ser. No. 142,905

The portion of the term of this patent subsequent to Nov. 29, 2005, has been disclaimed.

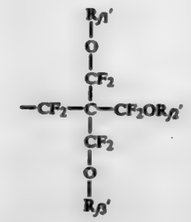
Int. Cl.[6] C07C *41/00, 43/00*

U.S. Cl. 568—677 11 Claims

1. Perfluoroethers of the formula:



wherein R_{f1}, R_{f2}, R_{f3} and R_{f4} are different and are selected from short, straight or branched chain perfluoroalkyl or perfluoroalkyl-ether groups or R_{f1}, R_{f2}, R_{f3} or R_{f4} is a group of the formula;



wherein R_{f1}', R_{f2}', and R_{f3}' are the same or different and are selected from short, straight or branched chain perfluoroalkyl or perfluoroalkyl-ether groups.

5,446,210

PROCESS FOR THE PRODUCTION OF POLYOL ETHERS

Udo Hees, Mayen; Georg Assmann, Neuss, and Fritz Schuster, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/01587, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/02033, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 13, 1992, Ser. No. 185,903

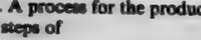
Claims priority, application Germany, Jul. 20, 1991, 41 24 199.1

Int. Cl.[6] C06C *41/00, 43/00*

U.S. Cl. 568—678 20 Claims

1. A process for the production of polyol ethers comprising the steps of

A) reacting a mixture of at least one polyol and at least one carbonyl compound of the formula



(I)

in which R^1 and R^2 independently of one another represent hydrogen or aliphatic hydrocarbon radicals containing 1 to 22 carbon atoms and 0, 1, 2 or 3 double bonds, with hydrogen at an elevated temperature in the presence of a catalyst consisting of a hydrogenation catalyst which is insoluble in the reaction mixture; and

B) separating the polyol ether-containing reaction product from the catalyst.

5,446,211

CHLORINATION OF DIFLUOROMETHYL METHYL ETHER

Gerald J. O'Neill, Arlington, Mass., and Robert J. Bulka, Merrimack, N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Apr. 1, 1994, Ser. No. 221,498

Int. Cl.[6] C07C *41/00, 43/00*

U.S. Cl. 568—684 13 Claims

1. A process for the preparation of fluorinated dimethyl ethers of the formula $CF_2HOCCl_xF_yH_{3-(x+y)}$, wherein x is 0, 1 or 2 and y is 1, 2 or 3 and wherein the total of x+y 1, 2, or 3, said process comprising:

chlorinating CHF_2OCH_3 by reacting said CHF_2OCH_3 with chlorine in the presence of a solvent in an amount effective to dissolve the mixture of said CHF_2OCH_3 and chlorine to form a chlorinated admixture containing at least one compound of the formula $CF_2HOCH_{3-z}Cl_z$ wherein z is 1, 2 or 3;

fluorinating said at least one compound of the formula $CF_2HOCH_{3-z}Cl_z$ with a fluorine source selected from the group consisting of hydrogen fluoride, anhydrous hydrogen fluoride, metal salts of $HF_2\ominus$, NaF, KF, pyridine, amine, and other electron pair donor bases which form complexes of the general formula $BH^+(HF)_xf^-$ (wherein

B is a donor base), in the absence of a catalyst to obtain a fluorinated admixture containing at least one compound of formula $CF_2HOCH_{3-x}F_yCl_{x-y}$.

5,446,212

REDUCED METHYL BROMIDE PROCESS FOR MAKING TETRABROMOBISPHENOL-A

Dave C. Sanders, West Lafayette; Arthur G. Mack, Lafayette, and Larry D. Timberlake, W. Lafayette, all of Ind., assignors to Great Lakes Chemical Corp., West Lafayette, Ind.

Filed Sep. 8, 1994, Ser. No. 302,541
Int. Cl.[6] C07C 37/62, 39/16
U.S. Cl. 568—726 20 Claims

1. A reduced methyl bromide process for making tetrabromobisphenol A in methanol, comprising:
dissolving bisphenol-A in a methanol solvent to form a bisphenol-A methanol solution;
adding bromine to the bisphenol-A methanol solution to partially brominate bisphenol-A and form tetrabromobisphenol A and hydrogen bromide;
exposing the partially brominated bisphenol-A methanol solution to an amount of a hydrogen peroxide agent to reduce the amount of methyl bromide co-product resulting from the bromination of bisphenol-A in methanol by reducing the amount of hydrogen bromide co-product available to react with the methanol; and
collecting the resulting tetrabromobisphenol A product thus formed after the bromination is substantially complete.

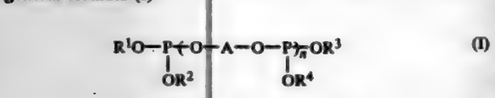
5,446,213

DIMERIZATION METHOD OF LOWER OLEFINS AND ALCOHOL PRODUCTION WITH DIMERIZED PRODUCTS

Keiichi Sato, Tokyo; Yuuji Kawaragi, and Yasuko Higashino, both of Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

PCT No. PCT/JP93/01425, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994
PCT Filed Oct. 5, 1993, Ser. No. 244,212
Claims priority, application Japan, Jun. 10, 1992, 4-267570
Int. Cl.[6] C07C 29/141, 31/125, 11/02, 2/30
U.S. Cl. 568—883 18 Claims

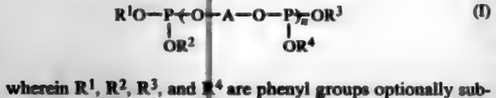
1. A method of dimerizing lower olefins which comprises dimerizing a lower olefin in the presence of a catalyst, wherein the catalyst used comprises a nickel compound, an organic aluminum compound, and a phosphite compound having the general formula (I):



(I)

wherein R^1, R^2, R^3, and R^4 are phenyl groups optionally substituted by substituents and may be different from each other, at least two of R^1, R^2, R^3, and R^4 have a hydrocarbon group as a substituent in the ortho position; A is a divalent aliphatic, alicyclic or aromatic hydrocarbon group which optionally has a substituent; and n is 0 or 1.

16. A method of producing alcohols which comprises:
dimerizing a lower olefin in the presence of a catalyst comprising a nickel compound, an organic aluminum compound, and a phosphite compound having the general formula (I):



(I)

wherein R^1, R^2, R^3, and R^4 are phenyl groups optionally substituted by substituents and may be different from each other, at least two of R^1, R^2, R^3, and R^4 have a hydrocarbon group as a substituent in the ortho position; A is a divalent aliphatic, alicyclic or aromatic hydrocarbon group which optionally has a substituent; and n is 0 or 1; to obtain dimerized olefins and, subjecting the dimerized olefins to a hydroformylation reaction and a hydrogenation reaction.

5,446,214

COTELOMERS AND A PROCESS FOR MAKING THEM

Gerardo Caporiccio, Milan, Italy; Richard D. Chambers, Durham, United Kingdom, and Lee D. Proctor, Moscow, Id., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 27, 1994, Ser. No. 329,935
Claims priority, application United Kingdom, Oct. 29, 1993, 9322366
Int. Cl.[6] C07C 17/269, 17/273, 19/075
U.S. Cl. 570—125 14 Claims

1. A cotelomer of CH_2CF_2— (vinylidene fluoride) units and —$CF_2CF(CF_3)$— (hexafluoropropene) units prepared by reacting in a liquid state: (A) a bromine geminal telogen having the general formula $RC(R')Br_2$ wherein R and R' are selected from the group consisting of F and perfluorinated alkyl radicals having 1 to 8 carbon atoms; (B) 1,1-difluoroethene; and (C) hexafluoropropene, the molar ratio of said components (A):(B):(C) being x:1:1 to x:1:5, in which x is 1 to 5, said cotelomer comprising at least 33% hexafluoropropene units based on the total of VDF and HFP units.

7. A process for preparing a cotelomer in the liquid state comprising reacting (A) a bromine geminal telogen having the general formula $RC(R')Br_2$ wherein R and R' are selected from the group consisting of F and perfluorinated alkyl radicals having 1 to 8 carbon atoms; (B) 1,1-difluoroethene, and (C) hexafluoropropene, the molar ratio of said components (A):(B):(C) being x:1:1 to x:1:5, in which x is 1 to 5.

5,446,215

PRODUCTION OF HYDROFLUOROCARBONS

Malcolm R. Cook, Chester, and John D. Scott, Cheshire, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 4, 1993, Ser. No. 70,950
Claims priority, application United Kingdom, Jun. 11, 1992, 9212410
Int. Cl.[6] C07C 21/18
U.S. Cl. 570—142 7 Claims

1. A process for the production of difluoromethane which comprises contacting bis(fluoromethyl) ether in the vapour phase at an elevated temperature with a catalyst which comprises (i) a metal selected from the group consisting of aluminum, chromium, copper, iron and nickel or an alloy or mixture of at least one of these metals, or (ii) an oxide, fluoride or oxyfluoride of at least one of the metals or alloys defined in (i) and wherein the catalyst is treated to maintain and/or restore its activity and wherein the catalyst treatment comprises either:
(i) heating the catalyst to an elevated temperature above about 250° C. in the absence of the bis(fluoromethyl) ether, or
(ii) contacting the catalyst at an elevated temperature with an oxidising agent.

5,446,216

PROCESS FOR MANUFACTURE OF HIGH PURITY 1,1-DICHLOROTETRAFLUOROETHANE

V. N. Mallikarjuna Rao, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 1, 1993, Ser. No. 146,335
Int. Cl.[6] C07C 19/08, 17/08
U.S. Cl. 570—151 11 Claims

1. A process for producing a product comprising 1,1-dichlorotetrafluoroethane substantially free of 1,2-dichlorotetrafluoroethane, comprising the steps of:
(i) contacting a mixture of perhalogenated hydrocarbons which is essentially free of 1,2-dichlorotetrafluoroethane and comprises from 20 to 80 mole percent 1,1,1-trichlorotrifluoroethane and from 5 to 80 mole percent of at least one compound selected from the group consisting of tetrachloroethylene, pentachlorofluoroethane, tetrachloro-1,2-difluoroethane and tetrachloro-1,1-difluoroethane with hydrogen fluoride and optionally chlorine, provided that when the mixture comprises tetrachloroethylene chlorine is supplied in a chlorine to tetrachloroethylene mole ratio of at least 1:2, in the vapor phase over a fluorination catalyst at an elevated temperature no higher than 375° C., to provide a product mixture comprising 1,1,2-trichlorotrifluoroethane and dichlorotetrafluoroethane wherein the ratio of 1,2-dichlorotetrafluoroethane to 1,1-dichlorotetrafluoroethane is less than about 1:50;
(ii) recovering said dichlorotetrafluoroethane from the product mixture;
(iii) isomerizing 1,1,2-trichlorotrifluoroethane from the product mixture to 1,1,1-trichlorotrifluoroethane in the presence of an isomerization catalyst; and
(iv) recycling the 1,1,1-trichlorotrifluoroethane produced by the isomerization of step (iii) to step (i).

5,446,217

PROCESSES FOR THE PREPARATION OF FLUORINATED OLEFINS AND HYDROFLUOROCARBONS USING FLUORINATED OLEFIN

Michael Van Der Puy, Cheektowaga; G. V. Bindu Madhavan, Amherst; Alagappan Thenappan, Cheektowaga, and Hsueh S. Tung, Getzville, all of N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Filed May 16, 1994, Ser. No. 242,899
Int. Cl.[6] C07C 17/20, 17/25, 17/266, 17/275
U.S. Cl. 570—156 22 Claims

1. A process for preparing a fluorinated olefin comprising:
a) reacting a compound of the formula RCX_aF_b; where $R=C_mX_nF_o$, $m \leq 4$, $n \leq 2$, $m+o=2m+1$, X=Cl or Br, $a=2-3$, and $b=0-1$, with ethylene in the presence of an addition catalyst and a solvent under conditions sufficient to produce a compound of the formula $RCX_{a-1}F_bCH_2CH_2X$ where X=Cl or Br, $a=2-3$, $b=0-1$ and $a+b=3$; and,
b) reacting a compound of the formula $RCX_{a-1}F_bCH_2CH_2X$ where X=Cl or Br, $a=2-3$, $b=0-1$ and $a+b=3$ with hydrogen fluoride in the presence of a fluorination catalyst under conditions sufficient to produce a compound of the formula $RCF_2CH=CH_2$ where R is $C_xCl_yF_z$ and $y+z=2x+1$.

5,446,218

PREPARATION OF FLUORINATED METHANES

James L. Webster, Parkersburg, W. Va., and Jan J. Lerou, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 51,917, Apr. 26, 1993, abandoned. This application Mar. 15, 1994, Ser. No. 213,271
Int. Cl.[6] C07C 17/08
U.S. Cl. 570—169 18 Claims

1. Process consisting essentially of contacting and reacting CH_4 simultaneously with Cl_2 and HF as the essential compounds present during said reacting, all in the gaseous state, under such conditions of temperature between 200° C. and 700° C., presence of thermally stable chlorofluorination catalyst which is an oxide or halide of metal selected from the group consisting of Groups IIA, IIB, IIIB, VIA, and VIIIA of the Periodic Table, catalyst contact time of less than 30 sec., and ratio of reactants wherein the molar ratio of $CH_4/Cl_2/HF$ is at least 1/3/3 and optionally recycling unreacted reactant and byproduct to the contacting and reacting step to obtain as a result thereof at least 50 mol % of at least one reaction product selected from the group consisting of CF_3H, CF_4 and the combination thereof.

5,446,219

HYDROGENOLYSIS OF HALOCARBON MIXTURES

William H. Manogue, Newark, and V. N. Mallikarjuna Rao, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 998,005, Dec. 29, 1992, Pat. No. 5,308,713, which is a continuation-in-part of Ser. No. 682,764, Apr. 9, 1991, Pat. No. 5,208,397. This application Feb. 2, 1994, Ser. No. 190,706
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[6] C07C 19/08
U.S. Cl. 570—176 20 Claims

1. A process for the hydrogenolysis of a mixture of halocarbon starting materials including CCl_2FCF_3 as a first halocarbon starting material and $CClF_2CClF_2$ as a second halocarbon starting material, characterized by:
(i) producing CCl_2FCClF_2 by reacting $CCl_2=CCl_2$, Cl_2, and HF;
(ii) producing $CClF_2CClF_2$ for said mixture of halocarbon starting materials by reacting a first portion of the CCl_2FCClF_2 produced by (i) with HF;
(iii) producing CCl_2FCF_3 for said mixture of halocarbon starting materials by isomerizing a second portion of the CCl_2FCClF_2 produced by (i) to CCl_3CF_3 and reacting said CCl_3CF_3 produced by said isomerization with HF; and
(iv) contacting said mixture of halocarbon starting materials with at least 0.5 mole of hydrogen per mole of said halocarbon starting materials in said mixture undergoing hydrogenolysis, in a reaction vessel of aluminum, molybdenum, titanium, nickel, iron, cobalt, or their alloys or of silicon carbide, which is either empty or is packed with particles or formed shapes of aluminum, molybdenum, titanium, nickel, iron, cobalt, or their alloys or silicon carbide or low surface area carbon at a pressure within the range of from 0 psig to 1000 psig, at a temperature within the range of from 350° C. to 700° C. and for a time sufficient to produce a product mixture containing hydrogenolysis product of said first halocarbon starting material wherein at least one Cl of said first halocarbon starting material has been replaced by a hydrogen atom and the distribution of fluorine substituents on the carbon atoms is the same as the distribution of fluorine substituents on the carbon atoms in said first halocarbon starting material, containing hydrogenolysis product of said second halocarbon starting material wherein at least one Cl of said second halocarbon starting material has been replaced by a hydrogen atom and the distribution of fluorine substituents on the carbon atoms is the same as the distribution of fluorine substituents on the carbon atoms in said second halocarbon starting material, and having a molar ratio of said hydrogenolysis product of the first halocarbon starting material to said hydrogenolysis product of the second halocarbon starting material substantially equal to the molar ratio of said first halocarbon starting material to said second halocarbon starting material in said mixture of halocarbon starting materials.

5,446,220

METHODS FOR INHIBITING VINYL AROMATIC MONOMER POLYMERIZATION

Graciela B. Arhancet, Katy, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 24, 1994, Ser. No. 295,311
Int. Cl.[6] C07C 7/20
U.S. Cl. 585—5 10 Claims

1. A method for inhibiting the polymerization of vinyl aromatic monomers in an oxygen-free vinyl aromatic monomer processing system comprising adding an effective polymerization inhibiting amount of a dinitrophenol compound, a hydroxylamine compound, and a phenylenediamine compound.

5,446,221

OLEAGINOUS COMPOSITIONS CONTAINING NOVEL ETHYLENE ALPHA-OLEFIN POLYMER VISCOSITY INDEX IMPROVER ADDITIVE

Mark J. Struglinski, Bridgewater, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 913,557, Jul. 14, 1992, abandoned, which is a division of Ser. No. 473,590, Feb. 19, 1990, Pat. No. 5,151,204. This application May 20, 1994, Ser. No. 246,645
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[6] C08F *210/16*; C10M *141/02*
U.S. Cl. 585—10 11 Claims

1. An oleaginous composition comprising oleaginous material and a viscosity modifying effective amount of ethylene alpha-olefin polymer comprising monomer units derived from ethylene and at least one alpha-olefin represented by the formula $H_2C{=}CHR^1$ wherein R^1 is an alkyl group of from 1 to 18 carbon atoms, wherein said polymer has a number average molecular weight of from above 25,000 to about 500,000, wherein an average of at least about 30% of the polymer chains contain terminal ethenylidene unsaturation, and wherein said polymer is prepared in the presence of a catalyst system comprising at least one metallocene and an alumoxane compound.

5,446,222

OLIGOMERS OF CYCLOPENTADIENE AND PROCESS FOR MAKING THEM

James R. Boulton, Chalfont, Pa., and Ross A. Kremer, Ringoes, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 17, 1994, Ser. No. 262,118
Int. Cl.[6] C07C *5/22, 13/00, 5/23*; C10L *1/16*
U.S. Cl. 585—12 22 Claims

1. A two-step process for converting cyclopentadiene dimer to a high density fuel mixture comprising the steps of:
(a) reacting said cyclopentadiene dimer in the presence of a solid catalyst comprising a porous crystalline material having a Constraint Index of from about 0.1 to about 12 under oligomerization/isomerization conditions to convert at least a portion of said cyclopentadiene dimer to an intermediate product containing cyclopentadiene trimer, cyclopentadiene tetramer, and the isomerized and oligomerized products derived from the reaction of at least three cyclopentadiene monomer units;
(b) hydrogenating said intermediate product of step (a) in the presence of a hydrogenation catalyst to form a high energy density fuel.

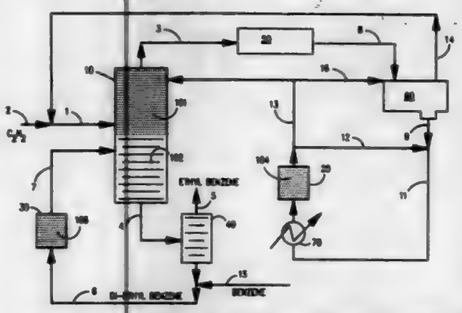
5,446,223

ALKYLATION OF ORGANIC AROMATIC COMPOUNDS

Lawrence A. Smith, Jr., Houston, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.

Filed May 23, 1994, Ser. No. 247,896
Int. Cl.[6] C07C *1/00, 2/64*
U.S. Cl. 585—313 20 Claims

1. A process for the alkylation of organic aromatic compounds, comprising the steps of:
(a) feeding a stream containing organic aromatic compounds and olefins to a distillation column reactor;
(b) concurrently in said distillation column reactor:
(1) contacting said stream with a particulate acidic catalyst whereby a portion of said organic aromatic compounds react with a portion of said olefins to form a reaction mixture containing a first alkylated aromatic product, unreacted organic aromatic compounds and unreacted olefins, and
(2) separating by fractional distillation said first alkylated aromatic product from said unreacted organic aromatic compounds and from said unreacted olefins;
(c) withdrawing said first alkylated aromatic product from said distillation column reactor as bottoms;
(d) withdrawing said unreacted organic aromatic compounds and said unreacted olefins from said distillation column reactor as overheads;
(e) condensing a portion of said overheads to separate said unreacted organic aromatic compounds from said unreacted olefins, said separated organic aromatic compounds being saturated with unreacted olefins;
(f) feeding said olefin-saturated organic compounds to a straight pass alkylation reactor containing a fixed bed of particulate acidic catalyst wherein a portion of said unreacted organic aromatic compounds reacts with a portion of said olefins contained therein to form a reactor effluent containing a second alkylated aromatic product, unreacted organic aromatic compounds and unreacted olefins; and
(g) recycling a portion of said effluent to said straight pass alkylation reactor such that the total olefin content entering the straight pass alkylation reactor is less than one volume percent.

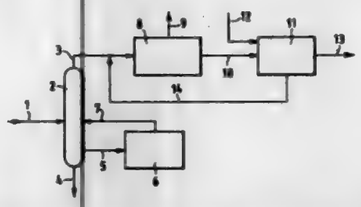


5,446,224

INTEGRATED PROCESS FOR PRODUCING ISO-BUTENE AND ALKYL TERT-BUTYL ETHERS

Ivano Miracca, Lodi, and Giorgio Fusco, Milan, both of Italy, assignors to Snamprotetti S.p.A., Milan, Italy

Continuation of Ser. No. 787,790, Nov. 4, 1991, Pat. No. 5,254,764. This application Apr. 16, 1993, Ser. No. 46,954
Claims priority, application Italy, Feb. 28, 1991, MI91A0519
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[6] C07C *5/03, 41/06*
U.S. Cl. 585—324 4 Claims



1. An integrated process for producing iso-butene and tert-butyl methyl ether or tert-butyl ethyl ether, comprising:
a) dehydrogenating a stream containing iso-butane, then compressing and partially condensing the gases produced to obtain, after separation, a gaseous stream containing hydrogen, nitrogen and C_1–C_4 hydrocarbons, and a liquid stream containing mainly C_4 hydrocarbons;
b) feeding said gaseous stream to an absorption column employing solvent to obtain from the top a gaseous mixture containing essentially hydrogen, nitrogen and C_1–C_3 hydrocarbons and from the bottom a liquid mixture containing essentially C_4 hydrocarbons and the spent solvent;

c) feeding said liquid stream containing mainly C_4 hydrocarbons to a distillation column to obtain from the top a gaseous mixture containing essentially C_3 hydrocarbons and from the bottom a liquid mixture containing iso-butane and iso-butene;
d) feeding the liquid mixture containing iso-butane and iso-butene from stage c) to a reactor, or to a first reactor if two or more reactors are used, together with methanol or ethanol to obtain the tert-butyl methyl ether or tert-butyl ethyl ether;
e) feeding the product from the reactor to a distillation column to obtain from the top a stream containing mainly the unreacted gases and from the bottom a liquid containing essentially tert-butyl methyl ether or tert-butyl ethyl ether;
f) feeding the stream containing mainly unreacted gases from stage e) directly to a wash column if only one reactor is used, or to a second reactor if two or more reactors are used, then feeding the product from said second reactor to a distillation column to obtain from the bottom a liquid mixture containing tert-butyl methyl ether or tert-butyl ethyl ether, which is recycled to the distillation column of stage e), or to a third reactor if several reactors are used, and from the top a mixture containing mainly unreacted gases, this stream being fed to a wash column; and
g) separation in the wash column to obtain from the top essentially the unreacted C_4 hydrocarbons and from the bottom a liquid mixture containing essentially water and methanol or ethanol used, these then being separated in a distillation column, wherein the solvent used in the column stage b) is a fraction of methanol or ethanol which is used in the process which additionally comprises tert-butyl methyl ether or tert-butyl ethyl ether.

5,446,225

PALLADIUM CATALYZED AKYLATIVE CYCLIZATION USEFUL IN SYNTHESES OF VITAMIN D AND ANALOGUES

Barry M. Trost, Los Altos Hills, Calif., and Jacques Dumas, Cologne, Germany, assignors to Board of Trustees of the Leland Stanford Junior Univ., Stanford, Calif.

Continuation-in-part of Ser. No. 49,607, Apr. 20, 1993, Pat. No. 5,292,977, which is a continuation of Ser. No. 831,687, Feb. 5, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,172
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] C07C *13/36, 13/38, 403/00*
U.S. Cl. 585—359 13 Claims

1. An alkylative cycloaddition method comprising:
selecting a compound RX where X is a halide or a pseudo halide and R is a vinyl, an aryl or an alkyl lacking a β-hydrogen;
providing a 1,6 enyne or a 1,7 enyne; and,
reacting the selected compound RX with the enyne in the presence of a palladium catalyst to form a substituted bis(alkylidene)cycloalkane or a cyclohexadiene precursor as reaction product therefrom.

5,446,226

PROCESS FOR PRODUCING DIMETHYLNAPHTHALENE

Shinji Ozawa; Makoto Takagawa, and Takayasu Fujimori, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 2,920, Jan. 11, 1993, abandoned. This application Nov. 19, 1993, Ser. No. 156,402
Claims priority, application Japan, Feb. 3, 1992, 4-047545
Int. Cl.[6] C07C *5/00*
U.S. Cl. 585—411 18 Claims

1. A process for producing dimethylnaphthalene which comprises cyclizing and dehydrogenating 5-tolyl-penta-2-ene in the presence of a catalyst comprising in combination (a) at least one solid acid selected from the group consisting of mordenite, X-zeolite, Y-zeolite, silica-alumina and alumina; (b) at least one member selected from the group consisting of palladium and platinum, wherein the ratio by weight of said (a) at least one solid acid to said (b) at least one member selected from the group consisting of palladium and platinum is 0.1 to 10; and (c) at least one non-acidic carrier selected from the group consisting of carbon, silicon oxide, titanium oxide and zirconium oxide.

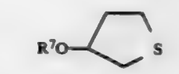
5,446,227

CO-PRODUCTION OF AN ALKENYL AROMATIC COMPOUND OR PRECURSOR THEREOF AND AN OXYGENATED SULFUR-CONTAINING COMPOUND

Paul J. DesLauriers, and Michael S. Matson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1993, Ser. No. 128,498
Int. Cl.[6] C07C *1/00, 315/02*
U.S. Cl. 585—437 22 Claims

1. A process for producing an alkenyl aromatic compound, or precursor thereof, and an oxygenated sulfur-containing compound comprising:
(1) contacting an α-methyl benzylic hydroperoxide with an organic sulfide under conditions sufficient to produce a mixture of an α-methyl benzylic hydroxide which is a precursor of said alkenyl aromatic compound, and said oxygenated sulfur-containing compound;
(2) separating said α-methyl benzylic hydroxide from said oxygenated sulfur-containing compound; and
(3) contacting said α-methyl benzylic hydroxide with a basic compound to convert said α-methyl benzylic hydroxide to an alkenyl aromatic compound; wherein said oxygenated sulfur-containing compound is selected from the group consisting of a sulfoxide, a sulfone, and mixtures thereof; said organic sulfide is selected from the group consisting of thiophnae, 2,4-dimethyl thiophane, 3,4-epoxy thiophane, 3-methyl thiophane, an ether having the formula of



in which R^7 is a C_1–C_{20} alkyl radical, and combinations thereof; and said basic compound is selected from the group consisting of tetramethylammonium hydroxide, tetraethylammonium hydroxide, tetrapropylammonium hydroxide, tetramethylammonium bisulfide, tetraethylammonium bisulfide, lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, sodium bicarbonate, sodium carbonate, sodium oxide, magnesium oxide, calcium oxide, calcium carbonate, sodium phenoxide, barium phenoxide, calcium phenoxide, RONa, RSNa, and mixtures of any two or more thereof: wherein R is a C_1–C_{18} alkyl radical.

5,446,228

BENZYLTOLUENES/BENZYLXYLENES DIELECTRIC COMPOSITIONS

Raymond Commandeur, Vizille; Pierre Jay, Saint-Didier Au Mont D'Or, and Noëlle Berger, Ecully, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Nov. 24, 1992, Ser. No. 980,736
Claims priority, application France, Nov. 26, 1991, 91 14585
Int. Cl.[6] H01B *3/22*; H01G *4/22*
U.S. Cl. 585—6.3 6 Claims

1. A dielectric composition consisting essentially of a mixture of benzylxylene and benzyltoluene.

5,446,229

THERMAL CRACKING PROCESS WITH REDUCED COKING

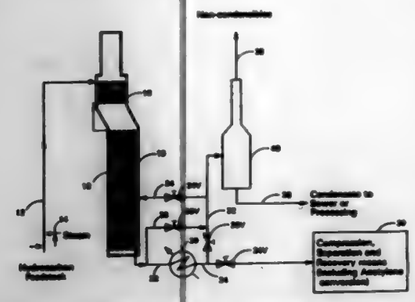
Don M. Taylor, League City; Lynn M. Allen, Navasota, and Myron E. Schroeder, Tomball, all of Tex., assignors to Amoco Corporation, Chicago, Ill.

PCT No. PCT/US93/11730, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO94/14923, PCT Pub. Date Jul. 7, 1994

Continuation-in-part of Ser. No. 992,719, Dec. 18, 1992, abandoned. This PCT application Dec. 9, 1993, Ser. No. 162,025

Int. Cl.[6] C07C *4/04*

U.S. Cl. 585—648 7 Claims



1. A process for production of olefins in an olefins plant comprising an olefins pyrolysis furnace having a hydrocarbon feed port, a convection heating section comprising a plurality of heating coils and cracking sections comprising pyrolysis tubes in which hydrocarbon feed is cracked under pyrolysis conditions to form olefins, which process comprises:

(a) introducing hydrocarbon feed substantially free of phosphorous-containing compounds into the pyrolysis furnace and operating the furnace under pyrolysis conditions to produce an olefin-containing effluent therefrom; and

(b) discontinuing step (a) and removing coke from surfaces of the pyrolysis tubes and (i) continuing the removal of coke until the metal surface of the tubes is substantially exposed and free of coke deposits and then (ii) contacting the exposed metal surface of the tubes with an effective phosphorous-containing passivator of metal catalytic sites on the exposed metal surface by injecting the effective phosphorous-containing passivator into the furnace at a point above the dew point of water and downstream of said hydrocarbon feed port.

5,446,230

CHLORINATED, ALUMINA-BASED, BIMETALLIC CATALYST AND ITS USE IN THE ISOMERIZATION OF C_4-C_6 PARAFFINS

Christine Travers, Rueil Malmaison, and Germain Martino, Poissy, both of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

PCT No. PCT/FR91/00992, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO92/10289, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 10, 1991, Ser. No. 917,149

Claims priority, application France, Dec. 10, 1990, 90 15546

Int. Cl.[6] C07C *5/23*; B01J *21/00, 23/00*

U.S. Cl. 585—748 23 Claims

1. A catalyst composition consisting essentially of eta alumina; 0.01% to 0.4% by weight of a group IV A metal wherein said group IV A metal is germanium or tin; 0.05% to 0.6% by weight of platinum; and 1% to 12% by weight of chlorine.

5. A process for the isomerization of a charge rich in normal C_4–C_6-paraffins without hydrogen recycling, comprising:

contacting a mixture of said charge and hydrogen in a reaction zone with at least one catalyst according to claim 1 under isomerization conditions;

maintaining a chlorine concentration in said reaction zone at 20 ppm–1000 ppm; and

separating effluent from said reaction zone into C_4–C_6-isoparaffins and a gaseous mixture containing hydrogen, said gaseous mixture being eliminated from said process without recycling the hydrogen to said reaction zone,

wherein the hydrogen quantity mixed with said charge is such that the effluent from said reaction zone has a hydrogen/hydrocarbon molar ratio of below 0.05.

5,446,231

METHOD FOR REMOVING CONTAMINANTS FROM HYDROCARBON STREAMS

Robert P. Arganbright, Seabrook; Edward M. Jones, Jr., Friendswood, and Dennis Hearn, Houston, all of Tex., assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Jan. 24, 1994, Ser. No. 185,121

Int. Cl.[6] C07C *7/00, 7/10*

U.S. Cl. 585—802 17 Claims

15. A method for extracting nitrile contaminants from hydrocarbon streams, comprising the steps of:

(a) passing a hydrocarbon stream comprising hydrocarbons and a nitrile contaminant to an extraction column;

(b) passing a solvent stream comprising a mixture of 30 to 60 wt % methanol and water to said extraction column;

(c) removing an extract stream comprising substantially the mixture of methanol and water and the nitrile contaminants;

(d) removing a raffinate stream comprising said hydrocarbons substantially free of the nitrile contaminants;

(e) passing said extract stream and a hydrogen stream to a reactor to produce a reactor effluent stream where substantially all of said nitrile contaminants are converted to amines;

(f) passing said reactor effluent stream and an acid stream to an acid treater to produce an acid treater effluent stream where substantially all of said amines are converted to ammonium salts;

(g) passing said acid treater effluent stream to a distillation column for separation, said distillation column having an overheads product comprising substantially nitrile free methanol and a bottoms product comprising water and ammonium salts.

5,446,232

REMOVING OXYGEN FROM HYDROCARBON GASES

Hang-Chang B. Chen, Getzville, and Deborah J. Olsen, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 14, 1994, Ser. No. 195,310

Int. Cl.[6] C07C *7/148, 7/152*; C01B *13/00*

U.S. Cl. 585—845 30 Claims

1. A method of removing oxygen from a gas selected from the group consisting of hydrogen, hydrocarbons from C_1 to C_4, halogenated hydrocarbons from C_1 to C_4, and mixtures thereof, where said gas contains about 0.01 to about 10 mole % oxygen, comprising contacting said gas at a reaction temperature of about 100° to about 300° C. with a catalyst selected from the group consisting of Mn_2O_3, MnO_2, V_2O_5, WO_3, MoO_3, Cr_2O_3, $CuCl_2$, NiO, $NiCl_2$, $CoCl_3$, mixtures thereof, and mixtures thereof with Fe_2O_3, CuO, Co_3O_4, Ag_2O, or AgCl.

5,446,233

ETHYLENE PLANT CAUSTIC SYSTEM EMULSION BREAKING WITH SALTS OF ALKYL SULFONIC ACIDS

Vincent E. Lewis, Missouri City, and Sherri L. Fisher, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 124,664, Sep. 21, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 225,505

Int. Cl.[6] G07C *7/17*; C10G *67/08*; B01D *17/00*

U.S. Cl. 585—856 10 Claims

1. A process for breaking the emulsion formed in the caustic system of a hydrocarbon cracking plant comprising mixing the emulsion with an effective amount of a Group II metal salt of a C_{4-24} alkyl aryl sulfonic acid, for a time sufficient to break the emulsion.

5,446,234

HYDROCARBON CONVERSION PROCESS USING A SPECIFIED ZEOLITE

John L. Casci, Cleveland; Mervyn D. Shannon, Cheshire, and Ivan J. S. Lake, Cleveland, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 717,194, Jun. 18, 1991. This application Oct. 5, 1993, Ser. No. 131,685

Claims priority, application United Kingdom, Jun. 21, 1990, 9013859

Int. Cl.[6] C07C *2/66, 5/52*

U.S. Cl. 585—467 24 Claims

1. A process for effecting catalytic conversion of an organic charge which comprises contacting said charge under catalytic conditions with a catalyst comprising a zeolite designated NU-85, said zeolite being an intergrowth of zeolites EU-1 and NU-87, and having a composition expressed on an anhydrous basis (in terms of mole ratios of oxide) by the formula:

100 XO_2: less than or equal to 10 Y_2O_3: less than or equal to 20 $R_{2/n}O$

wherein

R is one or more cations of valency of n;

X is silicon and/or germanium;

Y is one of more of aluminum, iron, gallium, boron, titanium, vanadium, zirconium, molybdenum, arsenic, antimony, chromium and manganese; and having, in its prepared form, lattice images which, when oriented to show 20 +/− 0.2 Angstrom fringes of zeolite EU-1 exhibit intergrown 12.5 +/− 0.2 Angstrom fringes together with said 20 +/−0.2 Angstrom fringes and/or an X-ray diffraction pattern including the lines shown in Table 1.

5,446,235

DRAWER AND LID ACTIVATED MUSICAL ROTATING ORNAMENT

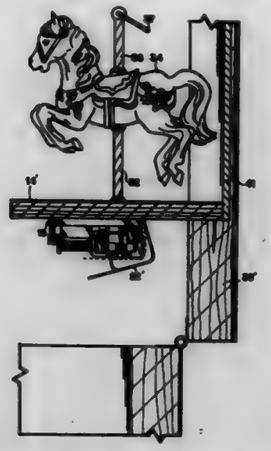
Bohr-Wian Shih, 2597 Sumac La., Boise, Id. 83706, and Barry Shih, 2F, No. 321, Patch Road, Sec. 4, Taipei 10563, Taiwan

Continuation-in-part of Ser. No. 145,327, Oct. 29, 1993. This application Aug. 12, 1994, Ser. No. 289,417

Int. Cl.[6] G10F *1/06*

U.S. Cl. 84—95.2

5 Claims



1. A musical article of furniture which comprises:

a housing;

a lid being pivotally attached to the housing between a generally horizontal closed position and a generally vertical open position, the lid having an inside surface which is unexposed when the lid is in the closed position;

a musical movement supporting member having a top surface and a bottom surface and being perpendicularly attached to the inside surface of the lid;

a musical movement being affixed to the bottom surface of the musical movement supporting member and having a rotating shaft extending through the musical movement supporting member;

an ornament shaft being axially aligned with and affixed to the rotating shaft;

an ornament being radially affixed to the ornament shaft; and

musical movement stop and start means being attached to the housing and configured and positioned to interfere with the musical movement to stop the musical movement when the lid is in its closed position and start the musical movement when the lid is in its open position.

5,446,236

MUSICAL TOY

Takashi Nakada; Keiichi Kazami, both of Saitama, and Shigenori Kuwahara, Tokyo, all of Japan, assignors to Kabushiki Kaisha B-AI, Tokyo, Japan

Filed Oct. 7, 1993, Ser. No. 132,847

Claims priority, application Japan, Apr. 23, 1993, 5-120468

Int. Cl.[6] G10F *1/08*

U.S. Cl. 84—102

6 Claims

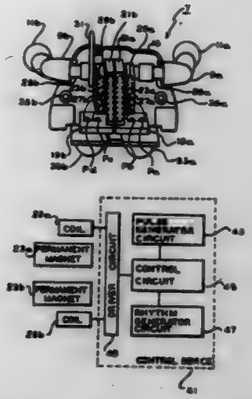
1. A musical toy, comprising:

(a) a toy body including a toy head mounted movably thereon and a sound producing body;

(b) a permanent magnet disposed in the toy body, a swinging member pivotally mounted on the toy body in close proximity to the permanent magnet and a head engaging member mounted on the swinging member;

(c) an electromagnetic coil, mounted on the swinging member, for causing the swinging member to swing by magnetically interacting with the permanent magnet;

(d) a control device including rhythm signal generating means for generating rhythm signals, pulse generator circuit means for producing pulse signals, control circuit means for receiving the pulse signals and the rhythm signals and in response thereto for producing rhythm



drive signals, drive circuit means for receiving and supplying the rhythm drive signals to the coil;

wherein the swinging member swings in response to the rhythm drive signals and the sound producing body is positioned such that it is struck by the swinging member when the swinging member swings to produce sound and the head engaging member strikes and moves the head in concert with the sound.

5,446,237

ELECTRONIC MUSICAL INSTRUMENT HAVING A CONTROL SECTION MEMORY FOR GENERATING MUSICAL TONE PARAMETERS

Yasunao Abe; Satoshi Miyata, and Shinichi Ito, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

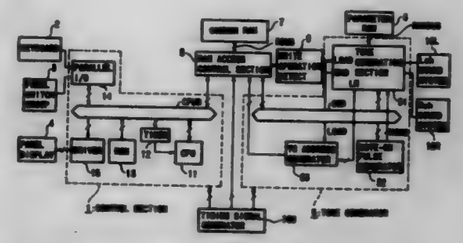
Filed Jan. 5, 1993, Ser. No. 871

Claims priority, application Japan, Jan. 8, 1992, 4-001787; Jan. 8, 1992, 4-001788

Int. Cl.[6] G10H *7/00*; H04J *3/00*

U.S. Cl. 84—617

12 Claims



1. An electronic musical instrument comprising:

random access memory means, which is addressable for writing thereto and reading therefrom, for storing a plurality of musical tone parameters;

musical tone generating means for generating a musical tone based on the musical tone parameters stored in said memory means, and for writing an updated musical tone parameter into said memory means which indicates the

current state of the musical tone being generated by said musical tone generating means; and

control means for directing the musical tone generating means to generate a musical tone by writing the musical tone parameters corresponding to the musical tone into said memory means and controlling the tone generation of the musical tone generating means by monitoring the current state of the musical tone based on said at least one musical tone parameter stored in said memory means.

5,446,238

VOICE PROCESSOR

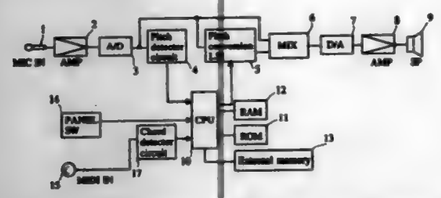
Hirohisa Koyama, and Takeshi Bushida, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 40,561, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 710,586, Jun. 5, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,151

Claims priority, application Japan, Jun. 8, 1990, 2-150256; Jun. 8, 1990, 2-150257

Int. Cl.[6] G10H *1/38*

U.S. Cl. 84—669 **7 Claims**



7. A method of voice processing comprising the steps of:

picking up a voice as a voice signal;

inputting chord information;

converting the voice signal into a pitch-converted voice signal having a pitch different from a pitch of the voice signal in accordance with the input chord information; and

combining the pitch-converted voice signal with the picked up voice signal to add sound effects thereto;

the step of inputting chord information comprising the steps of inputting playing information and detecting the input chord information from the inputted playing information.

5,446,239

SHIELDED FLAT CABLE

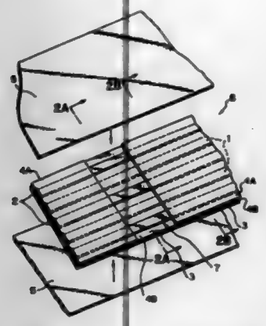
Kenji Mizutani, and Kazuhito Saka, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Oct. 15, 1993, Ser. No. 138,331

Claims priority, application Japan, Oct. 19, 1992, 4-078882 U

Int. Cl.[6] H01B *7/34*

U.S. Cl. 174—36 **4 Claims**



1. A flexible, shielded flat cable comprising a base film, a plurality of strips of circuit conductors thereon, a strip of a ground conductor in parallel with said strips of circuit conductors, a cover layer film attached to said strips of circuit conductors and said ground conductor, and a shield tape of a conductive metal foil extending over said cover layer film, wherein said cover layer film is of a double layered construction comprised of an upper cover layer film having an area provided with no upper layer film therein, and a lower cover layer film, and wherein said ground conductor is exposed through said area, to said shield tape so as to be connected with said shield tape,

said lower cover layer film being over said base film and provided on an upper surface thereof, with said circuit conductors, said ground conductor disposed on said lower cover layer film, said upper cover layer film on said lower cover layer film and on said upper surface of said ground conductor thereby to form a cable body, there being a plurality of said areas at predetermined locations on said body, said shield tape being on the surface of said cable body including said areas to shield said cable body, and said ground conductor and said shield tape being conductively connected with each other through said areas.

5,446,240

MAGNETIC DISK SYSTEM HAVING FLEXIBLE PRINT CABLE FOR MAGNETIC HEAD AND METHOD OF ASSEMBLING THE SAME

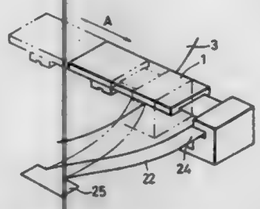
Yuichi Hayakawa, Tokyo; Yoshimasa Hoshino, and Makoto Nakayama, both of Gunma, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,416

Claims priority, application Japan, Mar. 2, 1992, 4-044267

Int. Cl.[6] H01B *7/04*

U.S. Cl. 174—69 **9 Claims**



1. A magnetic disk system, comprising:

a magnetic head movable along a line of motion in a plane of a recording medium;

a stationary electric circuit; and

a flexible print cable for electrically connecting the magnetic head to the stationary electric circuit, and having a first end face at the magnetic head and a second end face at the stationary electric circuit;

wherein the first end face is supported in a plane parallel to the plane of the recording medium and wherein the second end face is supported parallel to and in substantially the same plane as the first end face; and further

wherein the second end face is spaced a distance from the line of motion of the magnetic head in a perpendicular direction to said line of motion of said magnetic head.

5,446,241

APPARATUS AND METHOD FOR TWIST CONNECTING WIRES

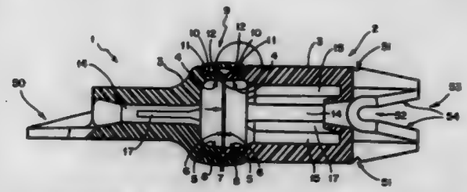
James B. Mackaness, 28 The Crescent, and Shirley R. Packy, 30 The Crescent, both of Cheltenham, New South Wales, 2119, Australia

Continuation-in-part of Ser. No. 807,833, Jan. 16, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 38,971

Claims priority, application Australia, May 23, 1990, PK0289

Int. Cl.[6] H01R *4/10, 11/00*; H02G *15/08*

U.S. Cl. 174—91 **16 Claims**



1. A connector for forming a twist connection between two ductile wires, said connector comprising:

two members with each of said members having elongated cavity means, said cavity means of each said member including a pair of transversely spaced wire chambers with access to the wire chambers of both of said members from inner ends of said members, said cavity means of at least a first member of said members including an associated central chamber disposed between, and connected by, a slot to both of the associated wire chambers of said one member with access to each central chamber from the inner end of said members, access to the cavity means of at least a second member of said members from an outer end of said second member, the cross-sectional area of each wire chamber being such that two wires to be joined cannot simultaneously occupy a wire chamber, the cross-sectional area of each central chamber being such that two twist connected wires are able to be housed therein;

brake surface means on sides of said slots;

torque applying shoulder means and torque reaction shoulder means in the cavity means of both of said members adjacent the inner ends of said members; and,

means for coupling said members together with the inner ends thereof in an adjacent relationship.

5,446,242

INSULATOR

Donald C. Barrett, Wiltshire, England, assignor to Raychem Limited, London, England

PCT No. PCT/GB92/00938, § 371 Date Nov. 23, 1993, § 102(e) Date Nov. 23, 1993, PCT Pub. No. WO92/21130, PCT Pub. Date Nov. 26, 1992

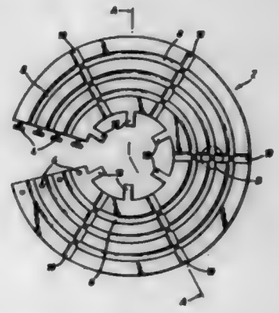
PCT Filed May 22, 1992, Ser. No. 142,352

Claims priority, application United Kingdom, May 24, 1991, 9111299

Int. Cl.[6] H01B *17/42*

U.S. Cl. 174—140 R **12 Claims**

1. An electrically insulating and substantially non-tracking generally planar member suitable for mounting on a shedded elongate porcelain high-voltage insulator, the member being of annular configuration and being arranged for mounting around and spaced apart from a core of the insulator and for mounting over and spaced apart from a shed of the insulator, wherein an upper surface of the member has channels formed therein, each of said channels having an upper channel surface and a lower channel surface, said lower channel surface extending downwardly from a lower surface of the planar member, a plurality of projections extending downwardly from said lower surface



being provided by the intersection of said channels, said projections, in use, contacting the porcelain shed of the insulator.

5,446,243

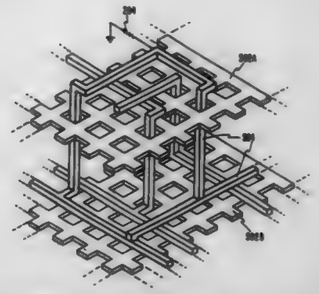
POST PROCESSING SHIELDING

George Crowder, Poughkeepsie, and Roger A. Rippens, Salt Point, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 886,545, May 20, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 209,355

Int. Cl.[6] H05K *1/00*

U.S. Cl. 174—250 **6 Claims**



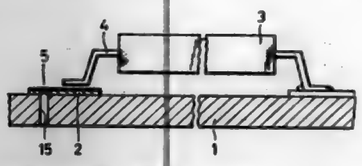
1. A method for reducing coupled noise in a multilayer circuit board having a plurality of signal lines disposed within a set of wiring channels on each of a plurality of layers, the wiring channels being greater in number than the number of signal lines; and, a plurality of vias disposed within a set of via channels and traversing the layers and connecting the signal lines into electrical nets, the via channels being greater in number than the number of bias; said method for reducing coupled noise comprising the steps of:

determining the locations of unused ones of the wiring channels and unused ones of the via channels;

providing shield lines disposed within the unused wiring channels and unused via channels; and,

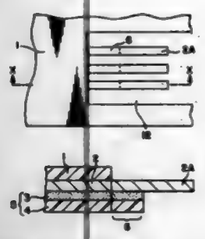
electrically interconnecting the shield lines with one another and to a reference voltage so as to electromagnetically shield at least one of said nets.

5,446,244
PRINTED WIRING PATTERN
Masatoshi Kawasabe; Kenichi Sowa; Akihisa Mori, and Tomoyuki Iwasada, all of Kanagawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan
PCT No. PCT/JP90/00929, § 371 Date Dec. 12, 1990, § 102(e) Date Dec. 12, 1990
PCT Filed Jul. 19, 1990, Ser. No. 635,497
Int. Cl.[6] B23K *101/42, 31/12*
U.S. Cl. 174—261 3 Claims



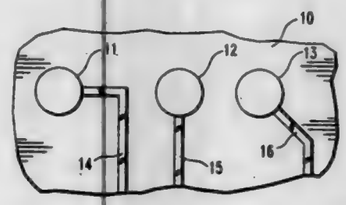
1. A printed wiring pattern for a printed circuit board to be treated by reflow soldering comprising:
an electrically insulating substrate; and
a conductive pattern for connecting a lead terminal of a surface mounting component and an electric wiring of a circuit and wherein:
said pattern provided on a surface of said substrate has a distinguishing means at which conductive material is not formed so as to expose the surface of said substrate; and
said distinguishing means is located in said pattern at a distance from an end of said lead terminal which is only attained by molten solder as it flows expandingly on said pattern when a poorly soldered connection is formed between the pattern and the lead terminal, said distinguishing means having a predetermined width such that the molten solder can flow over at least a part of said distinguishing means when said lead terminal is not connected with said pattern by solder.

5,446,245
FLEXIBLE CIRCUIT WIRING BOARD AND METHOD OF PRODUCING THE SAME
Takeshi Iwayama; Atsushi Miyagawa, and Masaichi Inaba, all of Ushiku, Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan
Division of Ser. No. 117,010, Sep. 8, 1993. This application May 31, 1994, Ser. No. 251,388
Claims priority, application Japan, Jan. 14, 1992, 4-24469
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—261 5 Claims



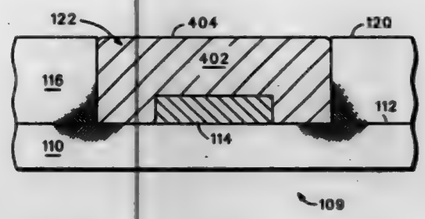
1. A printed circuit comprising:
a flexible insulating base member, said base member having at least a first edge which at least in part defines a connection region;
a pattern of conductors supported on said base member, at least some of said conductors extending outwardly from said base member beyond said first edge into said connection region; and
a flexible protective layer of non-conductive material formed over said pattern of conductors on said base member, portions of said protective layer extending beyond said base member first edge in registration with said outwardly extending conductors to enhance the structural integrity of said conductors in said connection region.

5,446,246
MLC CONDUCTOR PATTERN OFF-SET DESIGN TO ELIMINATE LINE TO VIA CRACKING
Kamalesh S. Desai, Hopewell Junction, and Donald W. DiAngelo, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 921,539, Jul. 29, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 186,227
Int. Cl.[6] H05K *01/00*
U.S. Cl. 174—262 19 Claims



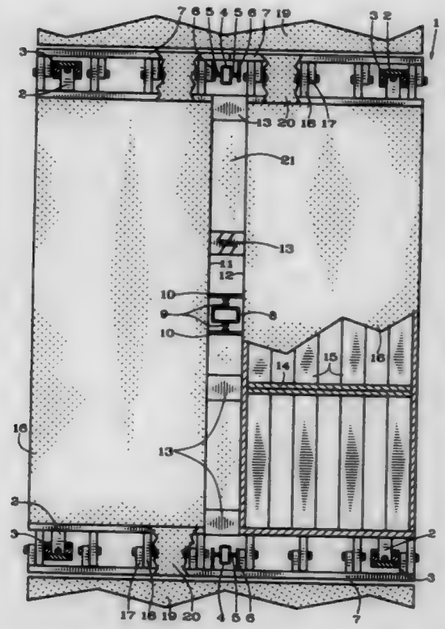
1. A process to eliminate line to via cracking comprising the steps of,
(a) forming a solid via inside a substrate such that one end of said via is exposed and substantially shares the surface of said substrate,
(b) forming a via cap over said exposed via such that said exposed via is completely enveloped by said via cap and wherein said via cap is substantially larger in size than said via, and
(c) forming a line to electrically connect said via through said via cap.

5,446,247
ELECTRICAL CONTACT AND METHOD FOR MAKING AN ELECTRICAL CONTACT
Lubomir Cergel, Geneva, Switzerland; Barry C. Johnson, Scottsdale, and John W. Stafford, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 19, 1993, Ser. No. 154,576
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—267 7 Claims



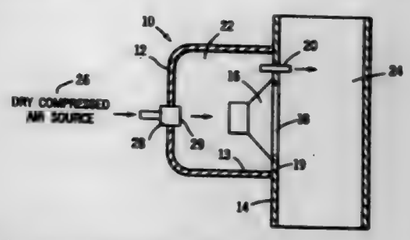
1. An electrical contact comprising:
a board having a first surface;
a bond pad formed on the first surface;
a solder mask having a top surface and walls around the bond pad; and
a flattened solder contact within the walls and contacting the bond pad, the flattened solder contact having a contact top surface substantially level with the solder mask top surface.

5,446,248
CENTER-LOCK PORTABLE TRUCK SCALE
Thomas F. Strasser, Winter Springs, Fla., assignor to First-Weigh Manufacturing, Inc., Sanford, Fla.
Filed Nov. 12, 1992, Ser. No. 975,088
Int. Cl.[6] G01G *19/02, 21/28, 21/12*; E02D *7/00*
U.S. Cl. 177—134 40 Claims



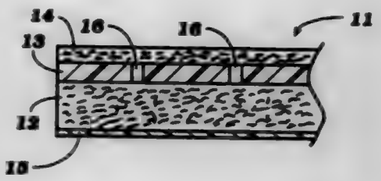
1. A center-lock portable truck scale comprising:
a scale bridge having parallel opposite sides joined linearly at said sides;
a rigid top plate on each of said parallel opposite sides attached to beam framework;
a central positioning post having walls, anchored to a base vertically below a central portion of the scale bridge and extended vertically to a position vertically below a top surface of the scale bridge;
a positioning rod extendible from a positioning base on the beam framework of the scale bridge to a select distance from said walls of the central positioning post;
an end positioning post having walls, anchored to a base vertically below an end portion of each end of the scale bridge and extended vertically to a position vertically below said top surface of the scale bridge;
a lateral positioning rod extendible from a positioning base on the beam framework of the scale bridge to select distances from said walls of the end positioning post; at said each end of the scale bridge;
an extensometer load cell positional on a load-cell base vertically below each end of the scale bridge proximate each corner of the scale bridge;
a bridge support member attached to each end of the beam framework and extended to a position vertically above said extensometer load cell, below said each end of the scale bridge; respectively; and
a load pillar in weight-supportive relationship between said bridge support member attached to said each end of the beam framework; and the extensometer load cell vertically below said bridge support member, respectively.

5,446,249
DRY ACOUSTIC SYSTEM PREVENTING CONDENSATION
Seth D. Goodman, Madison, and Richard A. Hoffmann, Stoughton, both of Wis., assignors to Digisonix, Inc., Middleton, Wis.
Filed Jul. 13, 1993, Ser. No. 90,741
Int. Cl.[6] F01N *1/06*
U.S. Cl. 181—206 29 Claims



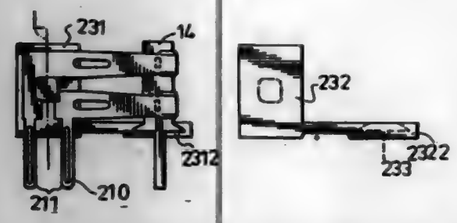
1. An acoustic system comprising:
a duct defining a transmission path for an acoustic wave;
an acoustic transducer operating over a range of operating frequencies and mounted to interact with said acoustic wave through an opening in said duct;
a transducer enclosure having an interior containing said transducer;
a first acoustic element providing an air flow path communicating with said interior of said enclosure through a hole in the enclosure, said first element having a high restriction to air flow and a high acoustic impedance at the operating frequencies of said transducer; and
a second acoustic element providing an air flow path communicating with said interior of said enclosure through a hole in the duct, said second element having a low restriction to air flow and a high acoustic impedance at the operating frequencies of said transducer.

5,446,250
FIBERGLASS REINFORCED PLASTIC DAMPING MATERIAL
Ryusuke Oka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Feb. 10, 1994, Ser. No. 194,699
Int. Cl.[6] F16F *15/00*
U.S. Cl. 181—208 18 Claims



1. A damping pad comprised of a base plate made up of a fiberglass reinforced plastic, a layer of cushioning material affixed to one side of said base plate, and a restraint plate formed of a fiberglass reinforced plastic affixed to the other side of said layer of cushioning material, said restraint plate being of a lesser thickness than said base plate.

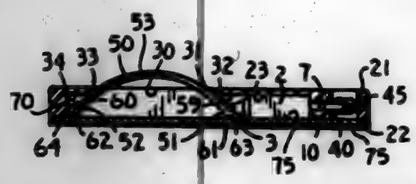
5,446,251
CONDUCTING ASSEMBLY FOR A MICRO SWITCH
Ching-Chuan Lin, Hsin Tien, Taiwan, assignor to Shin Jinh Corp., Hsin Tien, Taiwan
Filed Dec. 6, 1993, Ser. No. 161,527
Int. Cl.[6] H01H *1/00*
U.S. Cl. 200—284 6 Claims



1. A conducting assembly for a micro switch including at least one conducting unit and an insulating member partially enclosing said conducting unit, said conducting unit having two elongated leg portions extending out from said insulating member in a parallel relationship;

said insulating member including two molded insulating pieces which are connected together at opposed surfaces, each of said elongated leg portions having a longitudinal reinforcing member formed integrally with said elongated leg portion along a length thereof, each elongated leg portion being held between said opposed surfaces of said two molded insulating pieces, wherein said reinforcing member is partially enclosed by said insulating member.

5,446,252
FLAT SPRING ACTUATING MECHANISM FOR PLUNGER-TYPE SWITCH
Philip M. Burger, 21002 Bittersweet Dr., Lenexa, Kans. 66220
Filed Jan. 21, 1994, Ser. No. 184,960
Int. Cl.[6] H01H *3/00*
U.S. Cl. 200—329 12 Claims

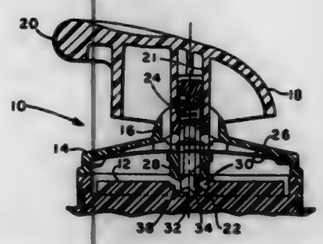


1. An actuating mechanism for a plunger-type switch having alternative open and closed conditions and having a plunger moveable between an extended position and a retracted position whereby said switch condition is changed by the movement of the plunger; said actuating mechanism comprising:

(a) a housing having an upper surface; said housing being adapted to receive a plunger-type switch; and

(b) a spring having a first spring end, a second spring end and a middle portion; said spring being positioned within said housing such that said first spring end is positioned in closely spaced relation to the plunger of a plunger-type switch received within said housing with the plunger in the extended position; said middle portion of said spring bowing above said housing upper surface such that the application of a force to said middle portion of said spring and directed toward said housing upper surface compresses said spring, advancing said first spring end toward the switch received within said housing a distance sufficient to move the switch plunger to the retracted position and upon removal of the force said first spring end advances away from the switch a distance sufficient to allow the switch plunger to move to the extended position.

5,446,253
SWITCH ACTUATOR ASSEMBLY
Thomas J. Oehgan, Mt. Prospect, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 21, 1994, Ser. No. 230,671
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—556 6 Claims



1. An electrical switch actuator assembly adapted for actuating plural switches comprising:

(a) housing means;

(b) an actuator member mounted for movement in opposite directions about a pivot on said housing means, said actuator member including plunger means defining a resiliently deflectable surface;

(c) detent means on said housing means, said detent means contacted by said plunger means deflectable surface and detenting a neutral position for said actuator, said detent means in co-operation with said plunger means operative to bias said actuator to a neutral position and provide a first predetermined resistance to user movement of said actuator member in one direction, away from said neutral position, to a first position and upon continued user movement in said one direction, said detent means operative in co-operation with said plunger to provide a second predetermined resistance substantially greater than said first resistance for user movement of said actuator member to a second position.

5,446,254
PROCESS AND INSTALLATION FOR PRODUCING REINFORCEMENT WIRE MESHES
Klaus Ritter, and Gerhard Ritter, both of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.H., Raaba, Austria
PCT No. PCT/AT93/00013, § 371 Date Oct. 6, 1993, § 102(e) Date Oct. 6, 1993, PCT Pub. No. WO93/16825, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 3, 1993, Ser. No. 133,004
Claims priority, application Austria, Feb. 20, 1992, 316/92
Int. Cl.[6] B21F *27/14*, *27/10*; B23K *11/10*
U.S. Cl. 219—56 20 Claims

1. A process for producing reinforced wire mesh from a number of longitudinal (L, L') and transverse (Q_1, Q_2) wires welded to each other at crossing points of the mesh and having transverse wire end pieces (E) extending beyond longitudinal edge elements,

wherein at least one of the projecting transverse wire end pieces (E) is bent back in the mesh plane in the shape of a loop (S) with respect to the longitudinal edge elements and is welded to at least one of the longitudinal wires, using a continuously operating wire mesh welding machine,

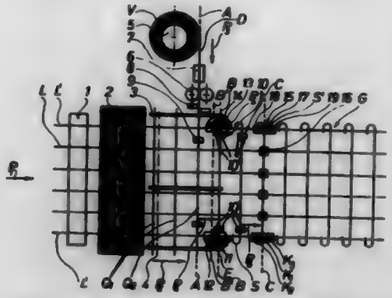
comprising the steps of

conveying straight transverse wires (Q_1, Q_2) having said projecting end pieces (E) across said longitudinal wires (L, L') and locating said wires in a feed line (A—A);

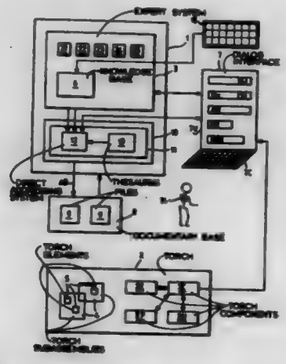
then bending back at least one of the transverse wire end pieces (E) projecting beyond at least one of the longitudinal edge elements in the form of the loop (S) with respect to the longitudinal edge element at a bending line, located ahead of a welding line (C—C) of the wire mesh welding machine; and

subsequently welding, at the welding line (C—C), the transverse wires (Q_1, Q_2) to the longitudinal wires (L, L'), as well as the end of the loop (S) to at least one of the longitudinal wires (L, L') and optionally to at least one edge element (L') of the longitudinal wires, simultaneously with the welding of the longitudinal and transverse wires; and

wherein the welding line (C—C) and the feed line (A—A) are offset from each other in the direction of the longitudinal wires (L, L').



5,446,255
EXPERT SYSTEM FOR PLASMA TORCH
Alain Blondy, Gradignan, and Jean-Marie F. Lambert, Saint Medard En Jalles, both of France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France
Filed Mar. 9, 1993, Ser. No. 28,245
Claims priority, application France, Mar. 27, 1992, 92 03736
Int. Cl.[6] B23K *9/00*
U.S. Cl. 219—121.54 6 Claims



1. A maintenance aid device for a plasma torch (2) consisting of a plurality of subassemblies (4) of electrical, pneumatic and hydraulic elements (5), comprising:

a knowledge base (6) containing data concerning possible errors within said subassemblies, the causes of said errors, and appropriate methods of repair;

an expert system (3) capable of identifying in successive steps individual subassemblies (4) of decreasing size which are likely to contain a defective element; and

a dialog interface (7) between an operator (14) and said expert system (3), said interface being able to send out questions (QU) posed by said expert system for said operator, and to receive from said operator information (REN) intended for said expert system in response to said questions (QU);

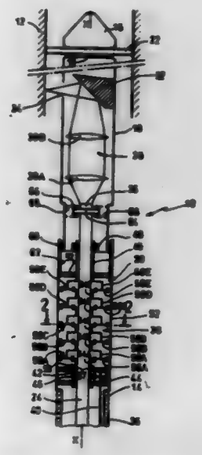
said device further including:

a documentary base (8) consisting of a plurality of files (9) containing data concerning specific technical features of said elements (5) forming said subassemblies (4);

addressing means (10) able to receive data identifying a defined element (5) from the dialog interface (7), to read the information relating to this defined element (5) in said documentary base (8), and to supply the latter information to said dialog interface (7); and

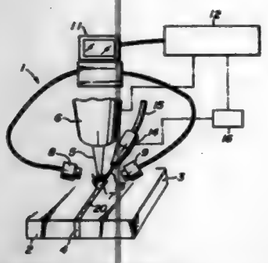
first calculating means (24), able to choose, at any step (ND) of identification by said expert system (3), a subassembly (4) corresponding to information (REN) which is most easily accessible by the operator (14).

5,446,256
DEVICE FOR WORKING INSIDE A TUBULAR ELEMENT BY LASER
Jean-Pierre Cartry, Lyons, France, assignor to Framatome, Courbevoie, France
Filed Nov. 13, 1992, Ser. No. 975,720
Claims priority, application France, Nov. 13, 1991, 91 13937
Int. Cl.[6] B23K *26/00*, *26/08*
U.S. Cl. 219—121.63 9 Claims



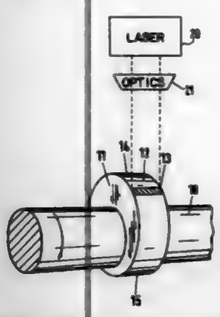
1. Device for working inside a tubular element by laser, said device comprising a laser head which comprises a movable portion provided with an aperture for exit of a working laser beam, and means for driving said movable portion in rotation, comprising a motor located outside of said laser head, a speed reducer and flexible means for transmitting rotational movement of said motor to said movable portion by means of said reducer, wherein said speed reducer is arranged in a rotationally fixed portion of said laser head, in the vicinity of said movable portion.

5,446,257
WELDING METHOD AND WELDING DEVICE
Hiroki Sakamoto, Yokohama; Kimihiro Shibata, Yokosuka, and Kiyokazu Mori, Atsugi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 28, 1994, Ser. No. 218,630
Claims priority, application Japan, Apr. 1, 1993, 5-075996
Int. Cl.[6] B23K *26/00, 26/02*
U.S. Cl. 219—121.63 1 Claim



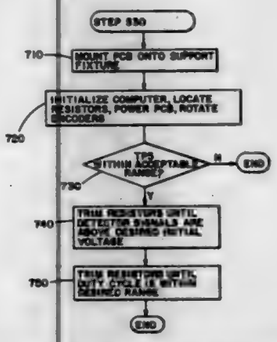
1. A welding device, comprising:
a local heat supply for locally heating and melting surfaces of members to weld the members;
a wire supply means for supplying a filler wire to the locally heated portion of the surfaces;
a plasma intensity measuring means for measuring welding plasma intensities from both sides of the locally heated portion with reference to an advancing direction of the welding; and
a relative position correcting means for correcting the relative position between the filler wire and the local heat supply so as to maintain a magnitude of a difference between the welding plasma intensities measured from both sides of the locally heated portion lower than a certain value.

5,446,258
PROCESS FOR REMELTING METAL SURFACES USING A LASER
Barry L. Mordike, Osterode-Dorste, Germany, assignor to MLI Lasers, Tel Aviv, Israel
PCT No. PCT/DE92/00295, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO92/18653, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 7, 1992, Ser. No. 119,160
Claims priority, application Germany, Apr. 12, 1991, 41 11 989.4
Int. Cl.[6] B23K *26/00, 26/08*
U.S. Cl. 219—121.66 9 Claims



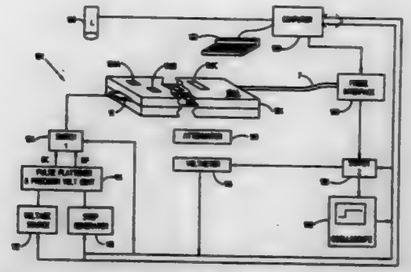
1. A process for remelting metal cam running surfaces on a cast iron cam using a laser beam focused to a rectangle, comprising the steps of:
(a) producing a laser beam having a rectangle length substantially equal to a width of a cam running surface and a rectangle width of approximately 1 to 3 mm and applying the laser beam to the cam running surface;
(b) controlling the laser beam such that immediately above the cam running surface the laser beam has a power density of approximately 5×10^4 to 1×10^5 W/cm^2; and
(c) effecting relative movement between the cam running surface and the laser beam approximately transversely to the laser beam at a speed of approximately 2 to 6.5 cm/sec.

5,446,259
METHOD FOR PRODUCING OPTO-ELECTRONIC CIRCUIT USING LASER-TRIMMING DEVICE
Keith A. Engstrom, Laguna Niguel, Calif., assignor to Alps Electric (U.S.A.), Inc., San Jose, Calif.
Filed Jan. 2, 1993, Ser. No. 71,152
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.69 3 Claims



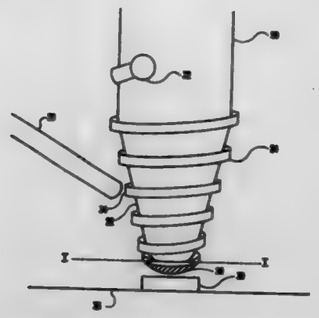
1. A method for producing an opto-electronic device including an emitter and a detector, the emitter emitting radiation received by the detector, the detector generating a detector signal in response to the received radiation, the Opto-electronic device further including a conductor for transmitting the detector signal to a comparator and an adjustable resistor connected to the detector, the method comprising the steps of:
electrically connecting at least the emitter, detector, comparator, conductor, and adjustable resistor such that the opto-electronic device is electrically functional;
measuring the detector signal transmitted on the conductor; and
adjusting a resistance of the adjustable resistor in response to the measured detector signal until the detector signal is within a predetermined range;
wherein the comparator generates a comparator output signal in response to the detector signal, and the method further comprising the steps of:
after the step of adjusting, rotating an encoder between the emitter and the detector, said encoder having a number of slots which allow the radiation to pass through the slots from the emitter to strike the detector such that the detector generates an alternating detector signal;
measuring the comparator output signal to determine a duty cycle of the comparator; and
further adjusting the adjustable resistor until the duty cycle of the comparator is within a second predetermined range.

5,446,260
METHOD OF TRIMMING AN ELECTRONIC CIRCUIT
Thomas F. Uhling, Monument; Philip J. Yearsley, Colorado Springs; Dale L. Pittock, Colorado Springs, and Mark E. Mathews, Colorado Springs, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 937,626, Aug. 28, 1992, Pat. No. 5,420,515.
This application Jan. 18, 1994, Ser. No. 182,926
Int. Cl.[6] B23K *26/02*
U.S. Cl. 219—121.69 11 Claims



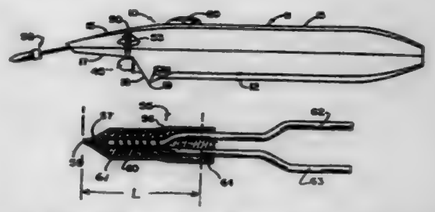
1. A method of trimming an electronic circuit to within a specified amount of a target value of a specified electronic parameter, said method comprising the steps of:
(a) applying electrical power to said electronic circuit;
(b) measuring said electronic parameter;
(c) removing individual portions of a resistor in a first direction which is approximately perpendicular to the current flow in said resistor;
(d) repeating steps (b) and (c) until said electronic parameter is within a selected amount of said target value;
(e) removing individual portions of said resistor in a second direction approximately parallel to said current flow; and
(f) repeating steps (b) and (e) until said electronic parameter is within said specified amount of said target value.

5,446,261
SOLDER APPLICATION SYSTEM USING HELIX TO CONTROL SOLDER MENISCUS
Bernardo Hernandez, Norwalk, Conn.; Raymond R. Horton, Dover Plains, N.Y.; Michael J. Palmer, Walden, N.Y.; Ismail C. Noyan, Yorktown Heights, N.Y., and Frederick G. Weindelmayer, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 26, 1993, Ser. No. 148,451
Int. Cl.[6] H05B *3/42*
U.S. Cl. 219—230 13 Claims



1. An apparatus for applying liquid solder to conductive surfaces comprising:
a soldering iron tip, said soldering iron tip having a free end an a central axis,
heating means for heating said soldering iron tip, and
a helix having an upper end, a lower end and a central axis, and a plurality of coils having a distance therebetween, one of said coils being a lowermost coil, said upper end of said helix attached to said soldering iron tip and said helix disposed about said free end of said soldering iron tip so that said central axis of said helix is substantially parallel to said central axis of said soldering iron tip and forming a capillary path for said liquid solder between said coils and said soldering iron tip.

5,446,262
SOLDERING IRON AND SOLDERING IRON TIP WITH SPACED HEATABLE SHELL EMEMBER
James E. McCambridge, Polo, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Apr. 19, 1994, Ser. No. 229,535
Int. Cl.[6] H05B *3/02*; B23K *3/04*
U.S. Cl. 219—237 7 Claims



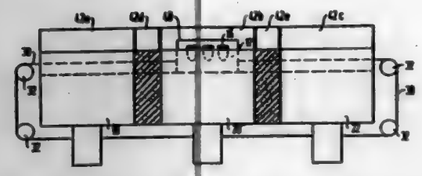
1. An electrically and thermally highly efficient soldering iron, comprising:
a housing having a forward end;
a heatable shell member adapted to be supported in spaced relation with the forward end of said housing, said shell member having a weight of about 0.75 grams or less;
a heating element of resistance wire within said shell member in effective heating relation therewith and electrically insulated therefrom, said element having resistance at room temperature of about 0.19 ohms, and a resistance of about 0.52 ohms when the outside of said shell is heated to about 500° F.;
means for providing electrical power to said heating element; and
a pair of electrical conductors of deformable solid wire connected between said heating element and said power means for energizing said element and for solely supporting said element and said shell member in spaced relation to the forward end of said housing.

5,446,263
DEVICE FOR SETTING THE TEMPERATURE OF A SAMPLE SELECTIVELY TO DIFFERENT VALUES
Manfred Eigen, Göttingen, and Hajo Otten, Esslingen, both of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Germany
Filed May 3, 1991, Ser. No. 671,749
Claims priority, application Germany, Nov. 3, 1988, 8813773 U
Int. Cl.[6] B01L *7/00*; G05D *23/19*
U.S. Cl. 219—521 10 Claims

1. Device for setting the temperature of at least one sample to different values, comprising:
a holder means for receiving said sample, said holder means comprising a thermally conductive sample holder block arrangement provided with recess means for receiving said sample in thermally conductive relationship;
temperature-adjusting means comprising thermostat means adapted to control the temperature to at least two different temperatures, said temperature-adjusting means com-

prising at least two rigid thermally conductive temperature block means arranged along one coordinate;

transport means for said holder means, said transport means moving said sample holder block arrangement along said coordinate for selectively bringing said sample into thermal contact with any of said temperature-adjusting means; and



a control means for controlling said transport means, said control means being adapted for bringing said sample holder block arrangement cyclically and sequentially into contact with said temperature block means for given periods of time, using said transport means.

5,446,264

HONEYCOMB HEATER

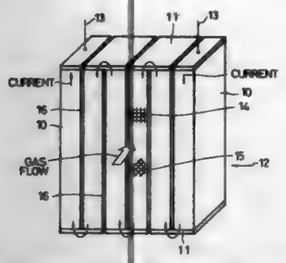
Tomoharu Kondo, Toki, and Fumio Abe, Handa, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 841,555, Feb. 26, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 21,654

Claims priority, application Japan, Mar. 6, 1991, 3-065420

Int. Cl.[6] H05B *3/10*; F01N *3/10*; B01D *53/36*

U.S. Cl. 219—552 **12 Claims**



1. A honeycomb heater for disposal in an exhaust gas system to control exhaust-gas emissions passing therethrough, comprising:

an integrated honeycomb structure which uniformly generates heat upon electrification thereof, said integrated honeycomb structure comprising (i) a plurality of metal monolithic honeycomb structure elements arranged adjacent to each other to form a gap between adjacent honeycomb structure elements, each honeycomb structure element having opposite major surfaces, opposing side surfaces connecting said opposite major surfaces to each other, and a large number of passages defined by a plurality of uninterrupted partition walls, and (ii) connecting means for rigidly interconnecting the honeycomb structure elements with each other, said connecting means comprising conductive plates secured to adjacent side surfaces of adjacent honeycomb structure elements, said conductive plates having an electrical resistance lower than that of the honeycomb structure elements, wherein only one pair of adjacent side surfaces of two adjacent honeycomb structure elements are connected via a conductive plate such that interconnection of the honeycomb structure elements defines a circuitous current path through the integrated honeycomb structure; and

at least two electrodes provided on the integrated honeycomb structure for enabling electrical heating thereof.

5,446,265

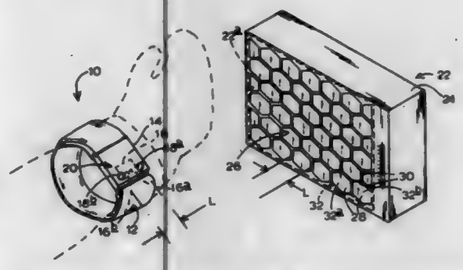
PERSONAL IDENTIFICATION, ACCESS CONTROL AND MONITORING SYSTEM

Clarke W. McAllister, Corvallis, Oreg., assignor to First Tracks, Inc., Eugene, Oreg.

Continuation of Ser. No. 700,215, May 13, 1991, Pat. No. 5,266,783. This application Aug. 17, 1993, Ser. No. 107,450

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—382 **3 Claims**



1. An ambi-orientational method for automatically interrogating a uni-orientational two-terminal code-producing circuit comprising:

energizing the two terminals of the circuit with a first signal pair of first polarity;

measuring the voltage difference between the two terminals and comparing such difference with predetermined criteria to produce an indication regarding the mating orientation of the two terminals relative to such first signal pair;

if said measuring-comparing step indicates a mating orientation of the two terminals that is the reverse of a desired mating orientation then automatically energizing the two terminals of the circuit with a second signal pair of reverse polarity from such first polarity; and

reading the two-terminal code-producing circuit.

5,446,266

SECURITY SYSTEM FOR AN APPARATUS

Leonardus G. M. Beuk, and Bert J. Kalisvaart, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 922,299, Jul. 30, 1992, abandoned. This application May 6, 1994, Ser. No. 239,162

Claims priority, application European Pat. Off., Aug. 1, 1991, 91201992

Int. Cl.[6] G06K *5/00, 7/01*

U.S. Cl. 235—382.5 **15 Claims**

1. A method for validating a security data carrier in a secured apparatus comprising executing the following steps in the secured apparatus

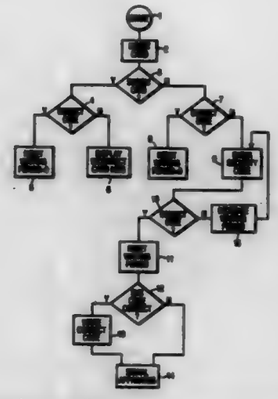
a) first receiving a system security data carrier bearing a system security code;

b) second receiving a command to change a lower level security code, stored in the secured apparatus, to a new code during engagement of the system security data carrier;

c) third receiving a lower level security data carrier bearing a security code which is not the new code;

d) taking manual input of the new code during engagement of the lower level security data carrier;

e) changing the security code on the lower level security data carrier to the new code in response to the manual input; and



f) activating the secured apparatus in response to the manual input.

5,446,267

LAER-BEAM BAR CODE READER

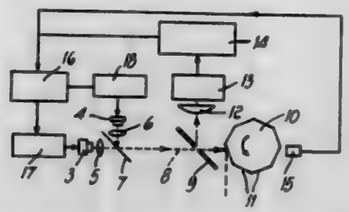
Giuseppe Stanzani, Bologna, and Claudio Mazzone, Casalecchio Reno, both of Italy, assignors to Datalogic S.p.A., Lippo Di Calderara Di Reno, Italy

Continuation of Ser. No. 772,712, Oct. 7, 1991, abandoned. This application Feb. 3, 1994, Ser. No. 191,241

Claims priority, application Italy, Oct. 9, 1990, 3679/90

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—440 **12 Claims**



1. A laser-beam bar code reader, including one single scanner unit, said unit comprising:

at least two laser beam sources;

an electric control means having an input which receives timing pulses and at least two outputs connected to said at least two laser beam sources, said outputs assuming two opposing logical states, said electric control means being connected to change the logical state of said at least two outputs with each timing pulse, such as to alternately enable said sources to emit respective laser beams, said electric control means being further connected to disable alternate operation and lock said outputs in their current states upon receipt of a disable signal;

an optical means receiving the alternatively emitted laser beams, said optical means being suitable for directing the alternatively emitted beams onto a read area and for independently focusing each of said beams onto different preset regions which form said read area, said optical means being suitable for directing the beams reflected from said area to optical return means; and

a processing means connected between said optical return means and a further input of said electric control means, said processing means being suitable for detecting the presence of a bar code in one of said regions of said read area according to the data received from said optical return means and for generating said disable signal upon detection of the presence of a bar code in a region of said area, said disable signal causing said electric control means to lock said at least two laser beam sources in their instant states, such that only the laser source which emits the beam which is focused on said region in which the bar code is present remains in an active state.

5,446,268

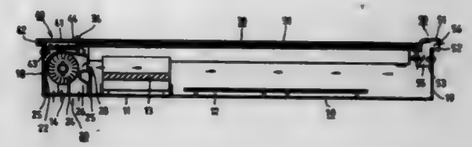
HEAT RADIATING DEVICE OF INDUCTION HEATER

Su-Min Chen, Chung Hwa Hsien, Taiwan, assignor to Superlock Electrics Corp., Chung Hwa Hsien, Taiwan

Filed Apr. 6, 1994, Ser. No. 223,691

Int. Cl.[6] H05B *6/12*

U.S. Cl. 219—623 **1 Claim**



1. An induction heater housing for flush mounting on a surface, comprising:

a housing bottom pan disposable below the surface;

at least one air hole in said bottom pan;

a fan casing disposed within said bottom pan and communicating with said air hole;

a fan disposed within the fan casing for moving air into or out of the bottom pan;

a utensil-receiving plate coupled to edges of said bottom pan so as to at least partially cover a first portion of an upward open side of said bottom pan;

a control unit coupled to said bottom pan so as to at least partially cover a second portion of an upward open side of said bottom pan;

a vent coupled to said bottom pan so as to at least partially cover a third portion of an upward open side of said bottom pan, said vent being disposed proximal to an end panel of said bottom pan,

said vent including an outside port, said port protruding above said plate distal said bottom pan and being configured to pass air in a horizontal direction away from the housing,

said vent supporting said plate and being coupled to the end panel of said bottom pan,

said vent including an internal passage communicating with said port and with an interior space of said bottom pan;

said internal passage including in cross section a generally L-shaped configuration, said L-shaped configuration being oriented such that a first arm of the L is downwardly directed and a second arm of the L is directed in the horizontal direction away from the housing;

said port extending horizontally beyond a rear end panel of said bottom pan;

said air hole being disposed through a bottom-most panel of said bottom pan;

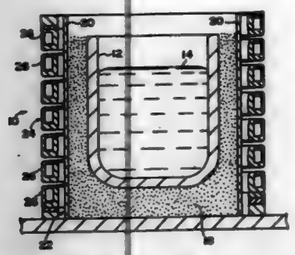
said fan casing being of elongated strip-like construction and said fan being cylindrical;

said fan housing including a wind opening facing an interior of said housing;

said fan casing including tenons engaged in retaining holes of said bottom pan; and

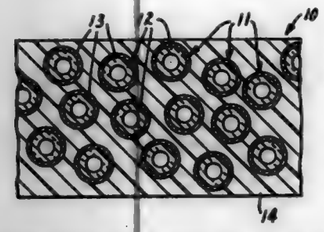
said retaining holes being disposed through the bottom-most panel of said bottom pan and said tenons extending downwardly.

5,446,269
TUBING SHAPE, PARTICULARLY FOR FABRICATING AN INDUCTION COIL
Vitaly Peysakhovich, Moorestown, N.J., and Oleg S. Fishman, Maple Glen, Pa., assignors to Inductotherm Corp., Rancocas, N.J.
Filed May 27, 1993, Ser. No. 67,906
Int. Cl.[6] H05B 6/40
U.S. Cl. 219—672 67 Claims



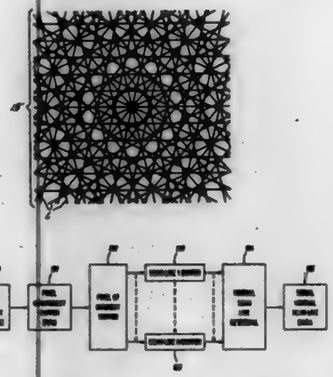
1. Electrically conductive tubing for realizing induction coils having improved efficiencies, the tubing comprising:
(a) an outer peripheral portion of conductive material defined by a plurality of side walls, each side wall having inner and outer surfaces, at least one of said plurality of side walls having a curved outer surface, said at least one of said plurality of side walls having a non-uniform thickness between the curved outer surface and the inner surface of said side wall, and at least one other of said side walls having a straight outer surface; and
(b) a single hollow passageway defined by the inner surfaces.

5,446,270
MICROWAVE HEATABLE COMPOSITES
Craig S. Chamberlain; Glen Connell; Pierre H. LePere; Chris A. Minick; Charlotte M. Palmgren; William C. Tait; George F. Vesley, and Patrick G. Zimmerman, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 588,591, Sep. 26, 1990, Pat. No. 5,294,763, which is a continuation-in-part of Ser. No. 335,044, Apr. 7, 1989, abandoned. This application Jan. 12, 1994, Ser. No. 180,448
Int. Cl.[6] H05B 6/80
U.S. Cl. 219—730 9 Claims



1. An article comprising a flowable meltable particle being spheroidal, rod-like or acicular in shape and having a surface, said surface bearing a coating having an electrical resistivity from 1×10^{-6} Ohm-cm to 1×10^{7} Ohm-cm which absorbs sufficient microwave energy to cause said particle to melt and flow.

5,446,271
OMNIDIRECTIONAL SCANNING METHOD AND APPARATUS
Craig D. Cherry, and Robert J. Actis, both of Eugene, Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.
Filed Aug. 6, 1993, Ser. No. 103,403
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 72 Claims

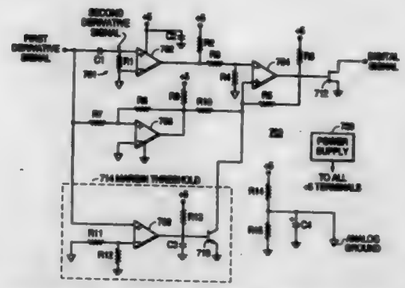


1. A method of reading encoded symbols comprising the steps of:
generating a pattern of virtual scan lines traversing a two-dimensional imaging region, said pattern of virtual scan lines comprising less than the entirety of said two-dimensional imaging region, obtaining a stream of raster data over said two-dimensional imaging region,
prior to storing any of said raster data, identifying a select portion of said raster data corresponding to said virtual scan lines,
storing said select portion of raster data, and
decoding said select portion of raster data.

5,446,272
SYSTEM FOR DIGITIZING A SCANNED SIGNAL INDICATING CHANGES IN SIGNAL INTENSITY
Edward Barkan, Miller Place, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Continuation-in-part of Ser. No. 28,107, Mar. 8, 1993, Pat. No. 5,408,081, and a continuation-in-part of Ser. No. 721,951, Jun. 27, 1991, which is a division of Ser. No. 510,074, Apr. 13, 1990, Pat. No. 5,059,779, which is a continuation-in-part of Ser. No. 367,335, Jun. 16, 1989, Pat. No. 5,124,539. This application Jun. 8, 1994, Ser. No. 257,668
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 17 Claims

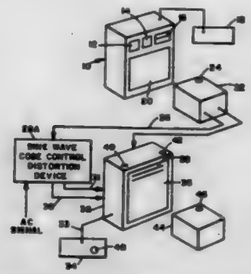
1. A circuit for digitizing an analog electric signal generated from a photoelectronic conversion of reflected light when scanning indicia having spatially-separated, light-reflective portions, comprising:
differentiator circuit means for generating a second derivative signal representing a second derivative of the analog signal;
means, responsive to the second derivative signal, for detecting zero-crossings of the second derivative signal;
means for ignoring noise signals originating from a first derivative of the analog signal; and

output means, responsive to the ignoring means and coupled to the zero-crossing detecting means, for generating an



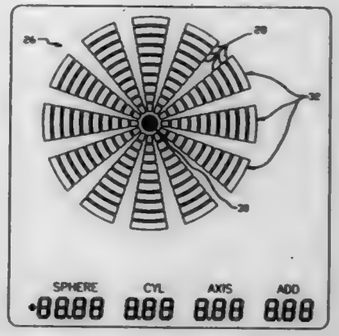
output signal indicating a change in the intensity of the reflected light.

5,446,273
CREDIT CARD SECURITY SYSTEM
William M. Leslie, 5873 Gullstrand St., San Diego, Calif. 92122
Continuation-in-part of Ser. No. 850,921, Mar. 13, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 221,838
Int. Cl.[6] G06K 19/07
U.S. Cl. 235—487 2 Claims



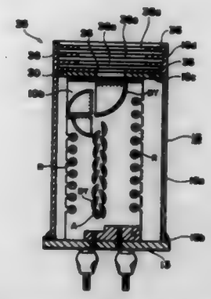
1. A credit card and identification card security system comprising:
means for imparting information personal to a credit card holder, on or in said card, said information in indiscernible form,
means for displaying said information on a first display, said first display including card information and video display information,
a video camera for viewing and converting said first display into an undistorted video output signal,
distortion means for imparting a predetermined distortion condition on said video output signal providing a distorted video output signal,
a second video display responsive to said video output signal for displaying said first display in either the distorted or undistorted condition,
means for displaying an undistorted code signal in said second video display,
camera means for providing an image of said distorted display on a film that forms a credit card,
means for displaying said film in said distorted image on a video camera providing an output video signal,
second distortion means for detecting said code signal and providing a distortion means signal for removing the distortion of said first display to an undistorted display in output video signals, and
third display means responsive to said output video signals for displaying said undistorted display for comparison with information personal to the credit card holder.

5,446,274
INSTRUCTIVE DISPLAY FOR ASSISTING IN CENTERING AN OPTICAL PATH ELEMENT ON A PATH
David A. Luce, Clarence Center, and Christopher J. Percival, Williamsville, both of N.Y., assignors to Leica Inc., Depew, N.Y.
Filed Feb. 22, 1994, Ser. No. 199,703
Int. Cl.[6] G01J 1/20
U.S. Cl. 250—206.2 14 Claims



1. A device to assist an operator in centering an optical element on a path which comprises: light sensitive means for generating a signal representing the x-y location of a light pattern received from the optical element, means for determining the center of said pattern, converting said signal to represent the polar location of said center relative to said path, and display means for providing an explicit symbolic instruction representing the direction of movement to center the optical element.

5,446,275
ELECTRON MULTIPLYING DEVICE HAVING MULTIPLE DYNODE STAGES ENCASED BY A HOUSING
Shiro Sakai; Takehisa Okamoto; Makoto Nakamura; Haruhisa Yamaguchi, and Tetsuya Morita, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed May 19, 1993, Ser. No. 63,418
Claims priority, application Japan, May 20, 1992, 4-127702
Int. Cl.[6] H01J 40/14
U.S. Cl. 250—207 21 Claims



1. A device for receiving an energy beam and multiplying secondary electrons corresponding to the energy beam, comprising:
a base having a main surface which faces in an incident direction of the energy beam;
an electron multiplying unit mounted on the main surface of said base, said electron multiplying unit including:
a plurality of dynodes arranged in a plurality of stages and

stacked with respect to an incident direction of the energy beam, a first dynode within said dynodes receiving the energy beam and emitting the secondary electrons; and

a housing supporting said dynodes, said housing being defined by:

a pair of support plates being arranged on opposing sides of each dynode, said support plates sandwiching and supporting said dynodes; and

a metal plate having an incidence opening for the energy beam passing therethrough and being electrically connected to said first dynode, said metal plate directly contacting and sandwiched by said support plates; and

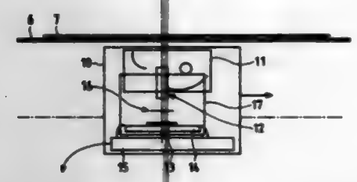
a casing housing said electron multiplying unit therein and being secured to the main surface of said base, said casing having a top surface which is directly exposed to the energy beam, the top surface of said casing having an entrance window for the energy beam passing therethrough.

5,446,276

IMAGE READER AND IMAGE READING METHOD

Tetuso Iyoda; Ikken So, and Takashi Ozawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1994, Ser. No. 194,313
Claims priority, application Japan, Feb. 12, 1993, 5-046103
Int. Cl.[6] H04N *1/04, 1/028*
U.S. Cl. 250—208.1 20 Claims



1. An image reader for reading an image on a document comprising:

a lens between the document and an image plane, the lens having a focal position;

periodic varying means for periodically varying one of the distance between the document and the lens, the distance between the image plane and the lens, and the focal position of the lens;

moving means for moving one of the lens and the document relative to the other in a scan direction; and

detecting means for detecting in-focus image data at the image plane.

5,446,277

AUTOMATED LAMP MONITORING SYSTEM FOR COMPARING LIGHT INTENSITIES WITH A PRESELECTED VALVE

Robert E. Rutter, 40 Placitas Trails Rd., Placitas, N. Mex. 87043

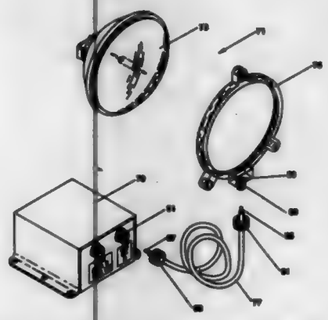
Filed Dec. 27, 1993, Ser. No. 173,087
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214 R 18 Claims

1. A flash tube intensity monitoring system, said system comprising:

a. a human eye spectral response photodiode for producing analog signals, each of said analog signals being directly proportional to the intensity of each flash from said flash tube;

b. means for converting each of said analog signals to a digital time function proportional to said intensity of the corresponding one of said flash; and

c. means for monitoring each of said digital time functions, for flagging those of said time functions which are below a preselected minimum and for sending a fault signal when



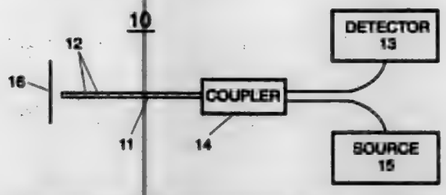
a preselected number of consecutive time functions are below said pre-selected minimum.

5,446,278

FIBER OPTIC SENSOR EMPLOYING SUCCESSIVELY DESTROYED COUPLED POINTS OR REFLECTORS FOR DETECTING SHOCK WAVE SPEED AND DAMAGE LOCATION

Jonathan D. Weiss, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 23, 1993, Ser. No. 172,304
Int. Cl.[6] H01J *5/16*
U.S. Cl. 250—227.15 11 Claims



1. An optical sensor for detecting damage position and shock wave velocity, comprising:

an optical fiber comprising a series of time-of-arrival points further comprising reflection planes distributed along the length of a single along the length of a single optical fiber located at predetermined intervals along said optical fiber wherein each of said time-of-arrival points contribute to the overall light signal received by a light detector means;

a light source means coupled to said optical fiber; and

a light detector means coupled to said optical fiber wherein said light detector means receives light signals transmitted through said optical fiber from said light source means;

wherein said optical fiber provides a unique light signal to said detector means based on the number of time-of-arrival points remaining on said optical fiber at the time of measurement.

5,446,279

FIBER OPTIC SENSOR SENSING CURVATURE OF A DIAPHRAGM

Tsung-Yuan Hsu, Westlake Village, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

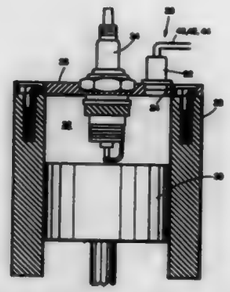
Filed Aug. 27, 1993, Ser. No. 113,537
Int. Cl.[6] G02B *6/26;* H01J *5/16*
U.S. Cl. 250—227.21 32 Claims

1. A sensor for sensing curvature of a disc, the sensor having a low sensitivity to physical perturbations and comprising:

a first optical fiber for transmitting light to the disc;

a second optical fiber disposed on a side of the first optical fiber for receiving light from the first optical fiber after reflection from the disc; and

a third optical fiber disposed on an opposite side of the first optical fiber for receiving light from the first optical fiber after reflection from the disc;



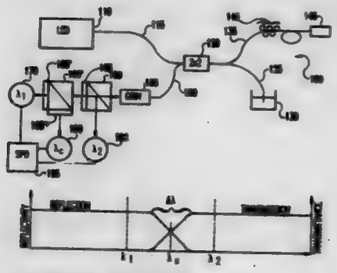
the second and third optical fibers having numerical apertures which are larger than the numerical aperture of the first optical fiber to reduce light loss through the walls of the second and third optical fibers due to physical perturbations of the fibers.

5,446,280

SPLIT-SPECTRUM SELF-REFERENCED FIBER OPTIC SENSOR

Anbo Wang, Blacksburg; Kent A. Murphy, Roanoke, and Richard O. Claus, Christiansburg, all of Va., assignors to Center for Innovative Technology, Herndon; Virginia Polytechnic Institute and State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Filed Aug. 31, 1993, Ser. No. 114,511
Int. Cl.[6] H01J *5/16, 40/14*
U.S. Cl. 250—227.23 8 Claims



1. A fiber optic sensor including

a source of light including at least two spectrally separated wavelengths,

a length of optical fiber for coupling light from said light source to said transducer,

a filter interposed between said optical fiber and said transducer having a predetermined nominal cut-off wavelength between said at least two spectrally separated wavelengths,

means for sensing and comparing light intensity at each of said at least two spectrally separated wavelengths, and

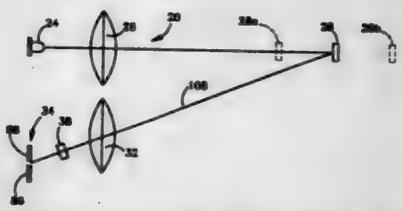
means for sensing light intensity at said predetermined nominal cut-off wavelength and comparing said light intensity at said predetermined nominal cut-off wavelength to one of said at least two spectrally separated wavelengths.

5,446,281

OPTICAL SENSOR WITH MOVABLE REFRACTION ELEMENT TO ADJUST SENSOR RANGE

Michael G. Taranowski, Milwaukee, Wis.; Kenneth A. Langland, Seattle, Wash.; Eugene F. Duncan, Wauwatosa, Wis.; George F. Jambor, Jackson, Wis., and Charles J. Turner, Milwaukee, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 24, 1994, Ser. No. 217,499
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—221 24 Claims



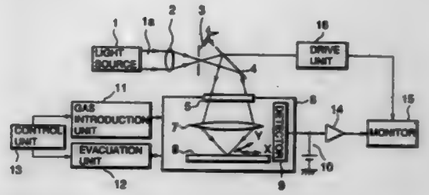
1. An optical sensor comprising means for projecting light to an object, sensor means for sensing light reflected from the object, and refraction means for changing the location of the reflected light upon said sensor means, said refraction means including a body of material through which the light reflected from the object is transmitted along a linear path which extends from a first side surface through which the light reflected from the object enters said body of material to a second side surface through which the light reflected from the object leaves said body of material and means for moving said body of material relative to said sensor means to change the angle of incidence of the light to said first side surface of said body of material.

5,446,282

SCANNING PHOTOELECTRON MICROSCOPE

Shintaro Kawata, Kawasaki, and Keitaro Hara, Ichikawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,173
Claims priority, application Japan, Apr. 5, 1993, 5-077924; Jan. 26, 1994, 6-006824
Int. Cl.[6] G01N *23/22*
U.S. Cl. 250—306 14 Claims



1. A scanning photoelectron microscope comprising:

(a) a stage on which a sample is placed in a state in which gas around said sample is present;

(b) a light source emitting light of a wavelength capable of causing photoelectrons to be emitted from said sample;

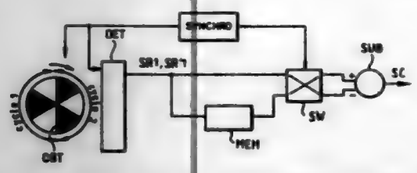
(c) a condensing optical system for condensing the light from said light source on said sample;

(d) scanning means for scanning said sample and said light relative to each other; and

(e) detecting means capable of applying positive potential to said sample, and detecting photoelectrons created from said sample by said condensing, through said gas;

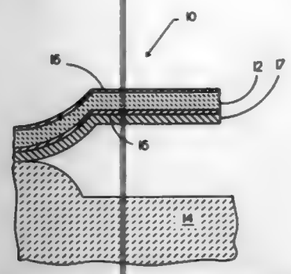
said gas multiplying the photoelectrons from said sample.

5,446,283
THERMAL IMAGE DETECTOR PROVIDED WITH MEANS TO ELIMINATE FIXED PATTERN NOISE
Pierre Dautriche, Chaix, France, assignor to Thomson-CSF Semiconducteurs Specifiques, Paris, France
Filed Dec. 10, 1993, Ser. No. 164,577
Claims priority, application France, Dec. 22, 1992, 92 15479
Int. Cl.[6] G01J *5/10*
U.S. Cl. 250—332 12 Claims



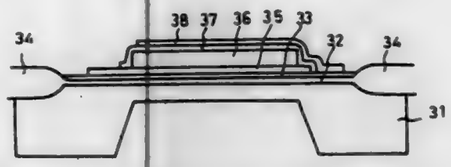
1. A thermal image detector having a shutter for the alternate illuminating and masking of the detector, means for providing, cyclically, at least one signal for the measurement of a pixel illuminated during an illumination phase and at least one signal for the measurement of a pixel masked during a masking phase, and means for utilizing these measurement signals to produce, by different between the measurement signals produced during a cycle, a temperature signal representing a measurement of temperature of said pixel for said cycle, said thermal image detector comprising:
means for producing measurement signals during two successive cycles, each cycle comprising at least one masking phase and one illumination phase, an order to said masking and illumination phases being reversed between two consecutive cycles; and
means for subtracting the signals produced during said first cycle from those produced during said second cycle.

5,446,284
MONOLITHIC DETECTOR ARRAY APPARATUS
Neal R. Butler, Acton, and Shigenato Iwasa, Harvard, both of Mass., assignors to Loral Infrared & Imaging Systems, Inc., Lexington, Mass.
Filed Jan. 25, 1994, Ser. No. 186,653
Int. Cl.[6] G01J *5/20*; H01L *31/09*
U.S. Cl. 250—332 16 Claims



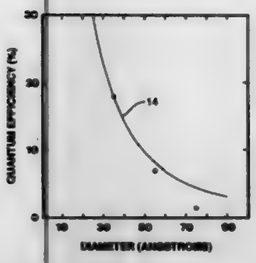
1. An electromagnetic radiation detector comprising:
(a) a substrate having a top surface and a bottom surface; and
(b) a microbridge suspended over the top surface, the microbridge including a diode means for detecting electromagnetic radiation wherein a space is formed below the microbridge by etching a pit beneath the microbridge.

5,446,285
HUMAN BODY SENSING DEVICE AND METHOD FOR FABRICATING THE SAME
Jun R. Choi, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 21, 1993, Ser. No. 170,776
Claims priority, application Rep. of Korea, Dec. 24, 1992, 25469/1992
Int. Cl.[5] H01L *27/144*; G01J *5/10*
U.S. Cl. 250—338.2 12 Claims



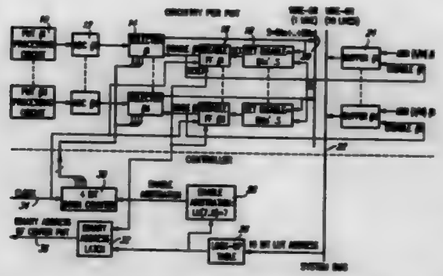
1. A human body sensing device comprising:
a lens unit for dividing a room to be monitored into a plurality of lateral and vertical zones and projecting infrared rays emitted within said zones;
a filter unit for transmitting infrared rays emitted from a living human being in one or more of said zones and blocking rays emitted at other wavelengths;
an infrared sensor unit for sensing the living human being's position, based on the infrared rays received from said filter unit;
wherein said infrared sensor unit comprises a substrate, a first oxide film formed on said substrate in first regions forming a two-dimensional array, a first insulating film formed on the oxide film in said first regions, a lower electrode formed on said first insulating film in said first regions, a dielectric film formed on the insulating film in said first regions, and an upper electrode formed on said dielectric film in said first regions.

5,446,286
ULTRA-FAST DETECTORS USING DOPED NANOCRYSTAL INSULATORS
Rameshwar N. Bhargava, 5 Morningside Ct., Ossining, N.Y. 10562
Filed Aug. 11, 1994, Ser. No. 228,821
Int. Cl.[6] G01T *1/20*; H01L *31/12*
U.S. Cl. 250—361 R 26 Claims



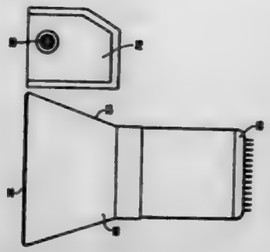
1. A solid-state sensor comprising:
(a) a layer of doped nanocrystals doped with an activator,
(b) said doped nanocrystals having an energy band structure due to quantum confinement,
(c) said activator having atomic energy levels such that excited carriers can transfer to said atomic energy levels and upon recombination will generate photons,
(d) means for detecting the photons generated by the activator.

5,446,287
CENTER PHOTODETECTOR DETERMINATION IN A DIGITAL SCINTILLATION CAMERA
Zoltan Schreck, Ville de Lévy, Canada, assignor to Park Medical Systems Inc., Quebec, Canada
Filed Dec. 13, 1994, Ser. No. 357,188
Int. Cl.[6] G01T *1/208*
U.S. Cl. 250—369 5 Claims



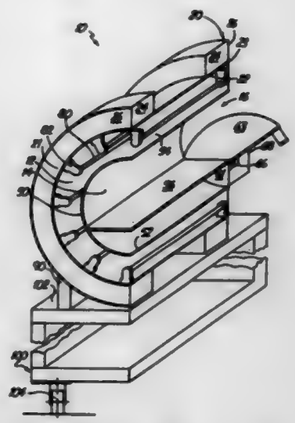
1. An apparatus for generating a center photodetector identification signal based on a plurality of digital photodetector intensity values from a planar array of photodetectors receiving gamma ray scintillation light from a scintillator, comprising:
means for generating one at a time a like plurality of logical 0/1 signals for each bit representing said plurality of values from most-significant to least-significant bit;
OR means for generating a logical OR result of said logical signals;
means associated with each photodetector for disconnecting, until after said identification signal is generated, said logical signal of each associated photodetector from said OR means when said OR result is 1 and said associated logical signal is 0; and
means for detecting when only one of said photodetectors has an associated logical signal connected to said OR means, and for generating a center photodetector identification signal identifying said last one of said photodetectors.

5,446,288
INTEGRATED SUBSTANCE DETECTION INSTRUMENT
Tumay O. Tumer, 107 Sweetwood Ct., Riverside, Calif. 92506
Filed Oct. 25, 1993, Ser. No. 143,417
Int. Cl.[6] G01N *23/204*
U.S. Cl. 250—390.05 12 Claims



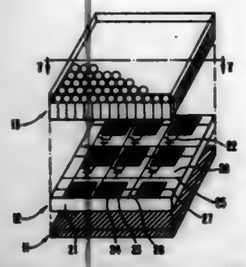
1. A portable system for detecting hydrogen or other light element containing substances comprising:
a weak radioactive source for providing a flux of fast neutrons;
a detector for detecting a scattered flux of thermal neutrons and for generating a detector output signal indicating the magnitude of said scattered flux;
an output device, coupled to said detector, for converting said detector output signal to a format indicating the magnitude of said scattered flux to a user;
a case for enclosing said source and detector and for supporting said output device, wherein said case has a front face and said detector is oriented to detect a flux of thermal neutrons incident upon said front face; and
a moderator, disposed between said source and said front face, for transforming said flux of fast neutrons to a flux of epithermal energy neutrons.

5,446,289
ULTRAVIOLET PASSTHROUGH STERILIZATION DEVICE
Keith Shodeen, Otsego, Minn.; Stewart Davenport, Portage, Mich., and Hans L. Meigaard, North Oaks, Minn., assignors to Despatch Industries Limited Partnership, Minneapolis, Minn.
Filed Apr. 15, 1994, Ser. No. 227,959
Int. Cl.[6] H01J *37/20*
U.S. Cl. 250—455.11 20 Claims



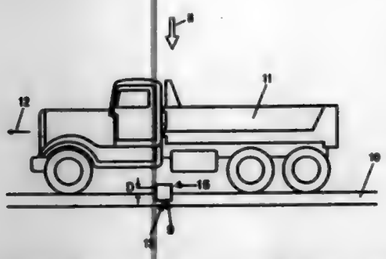
1. An ultraviolet sterilization device comprising:
an external shell extending along a center line and having at first and second ends, the shell having an inner surface defining a chamber extending from the first end to the second end;
a transmissive barrier extending along the center line of the shell and having first and second ends, the barrier being spaced inwardly of the shell to define a lamp cell therebetween, the inner surface of the barrier defining a sterilization cell, the barrier being formed of a material which transmits at least about 70% of light having a wavelength of about 253.7 nm;
supports adapted for positioning the barrier within the shell;
a lamp contained within the lamp cell; and
reflective endwalls including a first reflective endwall sealingly engaging the first ends of the shell and barrier respectively and a second reflective endwall sealingly engaging the second ends of the shell and barrier respectively, the reflective endwalls substantially sealing the lamp cell from the sterilization cell and an outside environment.

5,446,290
FINGERPRINT IMAGE INPUT DEVICE HAVING AN IMAGE SENSOR WITH OPENINGS
Ichiro Fujieda; Yuzo Ono, and Seijin Segawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed May 11, 1994, Ser. No. 240,568
Claims priority, application Japan, May 13, 1993, 5-110827
Int. Cl.[6] G06K 5/00
U.S. Cl. 250—556 12 Claims



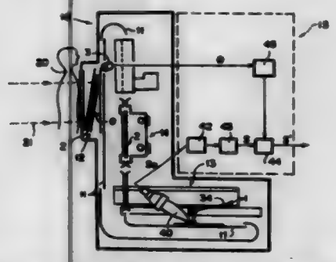
1. A fingerprint image input device comprising a planar light source, a two-dimensional image sensor disposed on said planar light source and having openings for allowing light emitted from said planar light source to pass therethrough, and an optical means for guiding light that has passed through said openings so that the light can be applied obliquely onto a finger and guiding the reflected light from the finger to photo-sensitive element of said two-dimensional image sensor.

5,446,291
METHOD FOR CLASSIFYING VEHICLES PASSING A PREDETERMINED WAYPOINT
Gunnar Becker, Bremen; Norbert Börnken, Ottersberg-Fischerhude; Alwin Gödecken, Moersen; Jürgen Klemp, Achim; Günter Tunnoscheit, Oyten, and Gordian Vilmar, Bremen, all of Germany, assignors to Atlas Elektronik GmbH, Lilienthal, Germany
Filed Feb. 9, 1994, Ser. No. 193,846
Claims priority, application Germany, Feb. 15, 1993, 43 04 298.8
Int. Cl.[6] G01N 21/86
U.S. Cl. 250—559.24 19 Claims



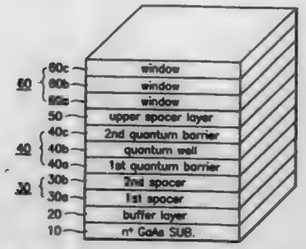
1. A method for classifying a vehicle passing a predetermined waypoint on a road, comprising the steps of:
measuring, at a measuring frequency (F), successive measured distance values from a measuring location on a side of the road, along a fixed measuring line extending through the waypoint and across the road, to the undercarriage of the vehicle passing the waypoint;
measuring a speed (v) of the vehicle passing the waypoint;
determining a spatial distance (ΔL), between adjacent measured distance values along a longitudinal axis of the vehicle, from said speed (v) and said measuring frequency (F);
creating a measurement profile for the undercarriage of the vehicle, with said measurement profile having a series of said successive measured distance values spaced at said spacial distance (ΔL); and
comparing said measurement profile to reference data of known reference vehicles to classify the vehicle passing the predetermined waypoint.

5,446,292
METHOD AND APPARATUS FOR RECORDING AND READING RADIATION IMAGES
Katsuhiro Kobda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 22, 1993, Ser. No. 155,556
Claims priority, application Japan, Nov. 20, 1992, 4-311808
Int. Cl.[6] G03B 42/02
U.S. Cl. 250—585 14 Claims

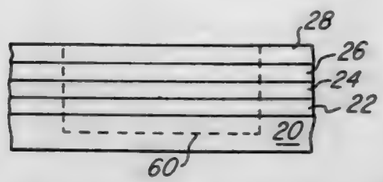


1. A radiation image recording and read-out method, wherein a stimulable phosphor sheet is exposed to radiation carrying image information of an object, a radiation image of the object is thereby stored on the stimulable phosphor sheet, the stimulable phosphor sheet is then exposed to stimulating rays, which cause the stimulable phosphor sheet to emit light in proportion to the amount of energy stored thereon during its exposure to the radiation, and the emitted light is photoelectrically detected, an image signal representing the radiation image being thereby obtained,
the radiation image recording and read-out method comprising the steps of:
i) locating the stimulable phosphor sheet such that it may make an angle falling within the range of 5 degrees to 60 degrees, both inclusive, with respect to a plane, which is normal to the direction of travel of the radiation carrying the image information of the object, when the stimulable phosphor sheet is exposed to the radiation, and
ii) correcting the image signal, which has been obtained by photoelectrically detecting the light emitted by the stimulable phosphor sheet, in accordance with said angle.

5,446,293
RESONANT TUNNELING OPTO-ELECTRONIC DEVICE HAVING A PLURALITY OF WINDOW LAYERS
Hye-Yong Chu; Pyong-Woon Park; Seon-Gyu Han; Young-Wan Choi, and Gyung-Ock Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Rep. of Korea
Filed Nov. 9, 1994, Ser. No. 338,117
Claims priority, application Rep. of Korea, Dec. 8, 1993, 93-26787
Int. Cl.[6] H01L 27/14, 31/00
U.S. Cl. 257—21 4 Claims
1. A resonant tunneling opto-electronic device comprising:
an n^+ type GaAs substrate;
an n^+ type GaAs buffer layer formed on the substrate;
a lower spacer layer having first and second spacers formed sequentially on the buffer layer;
a double barrier quantum well structure formed on the second spacer to reduce an amount of a non-resonant tunneling current, the structure having first and second barriers functioning as a double barrier, and a quantum well formed between the barriers to increase an amount of a resonant tunneling current;
an upper spacer layer formed on the second quantum barrier so as to largely drop an internal voltage therein in accordance with illumination of a light while an external applied voltage is provided to the device; and
a plurality of window layers formed on the upper spacer in order that the light is not absorbed in an upper surface of the device and is mostly absorbed in depletion regions.

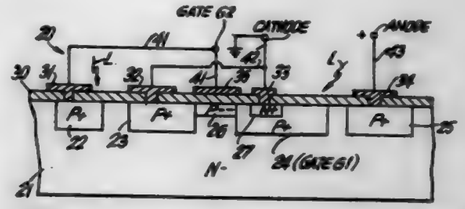


5,446,294
MICROWAVE HETEROJUNCTION BIPOLAR TRANSISTORS SUITABLE FOR LOW-POWER, LOW-NOISE AND HIGH-POWER APPLICATIONS AND METHOD FOR FABRICATING SAME
Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 31, 1991, Ser. No. 738,691
Int. Cl.[6] H01L 39/22, 29/06
U.S. Cl. 257—34 28 Claims

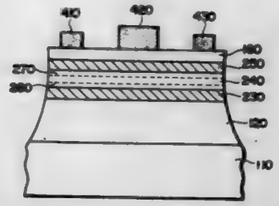


1. A heterojunction bipolar transistor having an emitter, a base, and a collector, wherein said base is at least one island of semiconductor material, said island having a boundary that lies within, and is separate from, any boundaries of an active area of said transistor.

5,446,295
SILICON CONTROLLED RECTIFIER WITH A VARIABLE BASE-SHUNT RESISTANT
David Whitney, San Jose, Calif., assignor to Siemens Components, Inc., Iselin, N.J.
Filed Aug. 23, 1993, Ser. No. 110,608
Int. Cl.[6] H01L 29/74
U.S. Cl. 257—113 18 Claims
1. An improved SCR comprising:
a semiconductor substrate (21) having a plurality of layers with doped impurities located on said substrate;
an anode layer (25) formed in said substrate;
an SCR gate layer (24) formed in said substrate laterally spaced from said anode layer;
a cathode layer (27) formed in said SCR gate layer;
a variable resistance layer (26), having an adjustable resistance, formed on said substrate laterally adjacent said SCR gate layer and conductively connected to said SCR gate layer; and
means for adjusting (22, 35) said adjustable resistance.



5,446,296
SEMICONDUCTOR DEVICE
Shigeru Nakajima, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan
Continuation of Ser. No. 31,965, Mar. 16, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 383,653
Claims priority, application Japan, Mar. 23, 1992, 4-064831; Mar. 23, 1992, 4-064833
Int. Cl.[6] H01L 29/80
U.S. Cl. 257—194 29 Claims



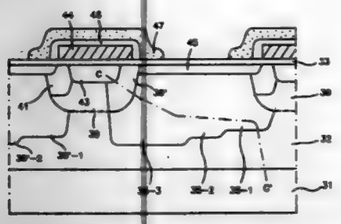
1. A field effect transistor in which a current flowing between a drain region and a source region is controlled by a voltage applied to a gate electrode, said field effect transistor comprising:
a buffer layer; and
a channel region formed on said buffer layer and made up of a multi-layer structure, said multi-layer structure including
a lower electron supply layer consisting of a first compound semiconductor which is formed of a material different from that of said buffer layer, said lower electron supply layer being formed directly on said buffer layer;
a channel formation semiconductor layer consisting of an undoped second compound semiconductor formed directly on said lower electron supply layer; and
an upper electron supply layer consisting of said first compound semiconductor formed directly on said channel formation semiconductor layer; whereby
when a voltage is supplied to said gate electrode, channels are formed in said channel formation semiconductor layer, and electrons for said channel formation semiconductor layer are furnished by real space transition flow through said lower and said upper electron supply layers.

5,446,297

CCD TYPE SOLID-STATE IMAGE SENSOR

Soo K. Lee, Kyungki-do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Feb. 8, 1994, Ser. No. 193,294
Claims priority, application Rep. of Korea, Dec. 13, 1993, 27491/1993
Int. Cl.[6] H01L *29/796, 27/14, 31/00*
U.S. Cl. 257—223 11 Claims



1. A CCD type solid-state image sensor comprising:
a silicon substrate of a first conductivity type;
a first well of a second conductivity type formed over said silicon substrate;
a plurality of photodiode regions deeply and widely formed in said first well to be uniformly spaced from one another;
a plurality of second wells of the second conductivity type formed in the first well, each of said second wells having a higher impurity concentration than that of said first well, each of said second wells being overlapped with each corresponding one of said photodiode regions and one of said photodiode regions preceding to said corresponding photodiode region;
a plurality of vertical CCD channel regions of the first conductivity type respectively formed in said second wells;
a plurality of transfer gate channel regions of the second conductivity type each formed in each one of said second wells between each photodiode region and each corresponding VCCD channel region;
a plurality of channel stop regions of the second conductivity type respectively formed in said second wells, each of said channel stop regions being adapted to isolate each corresponding VCCD channel region from each corresponding preceding photodiode region;
a plurality of impurity regions of the second conductivity type respectively formed beneath surfaces of said photodiode regions;
a thin insulating film formed over the entire exposed surface of the resulting structure;
a plurality of transfer gates formed on said thin insulating film to be respectively disposed over said second wells;
an interlayer insulating film formed on said thin insulating film to cover said transfer gate electrodes; and
a photoshield film formed over the entire exposed surface of the resulting structure except for portions respectively disposed over said photodiode regions.

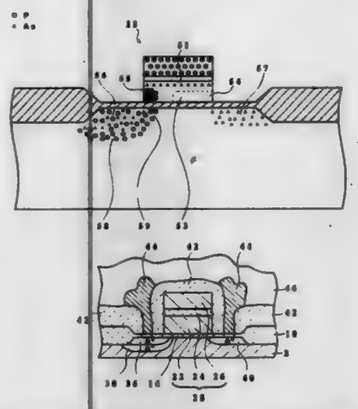
5,446,298

SEMICONDUCTOR MEMORY DEVICE INCLUDING A FLOATING GATE HAVING AN UNDOPED EDGE PORTION PROXIMATE TO A SOURCE PORTION OF THE MEMORY DEVICE

Mitsuo Kojima, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 92,892, Jul. 19, 1993. This application Sep. 6, 1994, Ser. No. 300,984
Claims priority, application Japan, Jul. 22, 1992, 4-195481
Int. Cl.[6] H01L *29/36, 29/78*
U.S. Cl. 257—314 13 Claims

1. A semiconductor device including nonvolatile memories comprising:
a) a substrate of semiconductor;
b) a drain of a first conductivity type located in the surface of the substrate;
c) a source of the first conductivity type located in the surface of the substrate so that the substrate defines a space between the drain and the source;
d) a first insulating layer located on the surface of the substrate;
e) a floating gate located on the first insulating layer, the



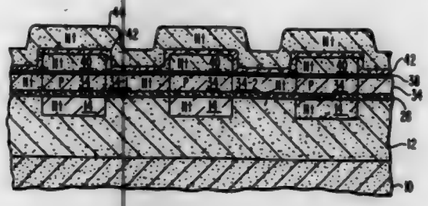
floating gate having an upper region and a lower region under the upper region, the lower region having top portion proximate to the upper region, a bottom edge portion opposite the top portion, a first edge portion at a first side proximate to the source and a second edge portion at a second side opposite the first side and proximate to the drain, the first edge portion being doped, the second edge portion being injected with substantially no dopant;
f) a second insulating layer located on the floating gate; and
g) a control electrode located on the second insulating layer.

5,446,299

SEMICONDUCTOR RANDOM ACCESS MEMORY CELL ON SILICON-ON-INSULATOR WITH DUAL CONTROL GATES

Alexandre Acovic, Mohegan Lake, and Ben S. Wu, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,768
Int. Cl.[6] H01L *27/115, 29/788*
U.S. Cl. 257—316 3 Claims



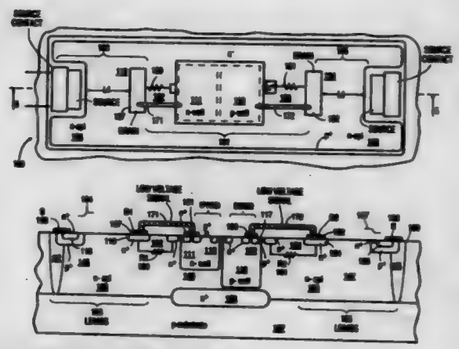
1. A dual control-gate, random access memory cell for a memory array comprising:
a first layer of electrically insulating material;
a layer of semiconductor material overlying said first layer, said layer of semiconductor material containing adjacent source, channel and drain regions of an active device;
a floating gate element overlying said channel region of said layer of semiconductor material;
a first control gate element overlying said floating gate element and disposed parallel to said source and drain regions;
a discrete region of semiconductor material disposed in said first layer of electrically insulating material and underlying said channel region to provide a second control gate element disposed perpendicular to said first control gate element wherein said first control gate element, said floating gate element, said source, said channel and said drain regions and said second control gate element cooperate in combination to form a stacked, dual control gate memory cell for a random access memory array structure wherein said perpendicularly disposed first and second control gate elements are responsive to voltage for selectively reading, writing and erasing said memory cell.

5,446,300

SEMICONDUCTOR DEVICE CONFIGURATION WITH MULTIPLE HV-LDMOS TRANSISTORS AND A FLOATING WELL CIRCUIT

Michael Amato, Shrub Oak; Satyendranath Mukherjee, Yorktown Heights, both of N.Y.; Paul R. Veldman, Oss, Netherlands, and Armin F. Wegener, Grossenlüder, Germany, assignors to North American Philips Corporation, New York, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,382
Int. Cl.[6] H01L *27/088, 29/78*
U.S. Cl. 257—343 29 Claims



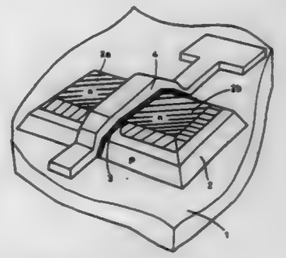
1. A device comprising:
a substrate having an n-epitaxial layer on a surface thereof;
at least one high-voltage LDMOS transistor configuration comprising current sources; and
at least one parasitic resistor formed in the n-epitaxial layer between a drain of said LDMOS transistor and a floating well circuit; wherein:
said current sources are located along a periphery of the floating well circuit;
the floating well circuit is spaced by a predetermined distance (L1) from the drain of said LDMOS transistor, the spacing having a predetermined width (W1);
the device exhibiting parasitic resistance effective to convert a level shift current signal to a voltage signal that is sensed by the floating well circuit.

5,446,301

SEMICONDUCTOR DEVICE INCLUDING SEMICONDUCTOR LAYER HAVING IMPURITY REGION AND METHOD OF MANUFACTURING THE SAME

Koji Eguchi; Natsuo Ajika, and Kazuyuki Sugahara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 838,993, Feb. 21, 1992, Pat. No. 5,381,029. This application Jul. 13, 1994, Ser. No. 274,517
Claims priority, application Japan, Mar. 1, 1991, 3-036239; Sep. 11, 1991, 3-230648
The portion of the term of this patent subsequent to Jan. 10, 2012, has been disclaimed.
Int. Cl.[6] H01L *27/01, 29/06*
U.S. Cl. 257—354 2 Claims



1. A semiconductor device comprising:
an insulating layer;
a semiconductor layer formed on said insulating layer to define source/drain regions and having bottom surface adjacent said insulating layer and upper surface opposite to said bottom surface;
a gate insulating film covering the upper surface of said semiconductor layer with a substantially uniform thickness; and
a gate electrode formed on said gate insulating film; wherein the two opposed side surfaces of said semiconductor layer placed beneath said gate electrode are arcuate surfaces extending from said bottom surface to said upper surface and said side surfaces of said semiconductor layer are concave with respect to a surface of said semiconductor layer enclosed with said side surfaces, and wherein the entire side surfaces of said semiconductor layer located beneath said gate electrode are arcuate surfaces.

5,446,302

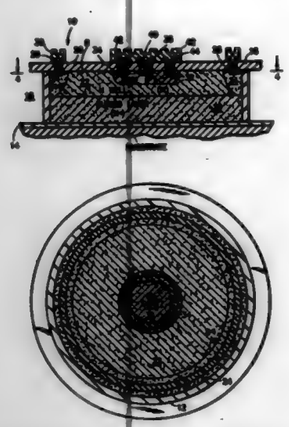
INTEGRATED CIRCUIT WITH DIODE-CONNECTED TRANSISTOR FOR REDUCING ESD DAMAGE

David F. Beigel, Swampscott; Edward L. Wolfe, and William A. Krieger, both of North Andover, all of Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Dec. 14, 1993, Ser. No. 166,636
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—355 4 Claims

1. An integrated-circuit (IC) chip comprising circuitry including elements such as transistors, capacitors or resistors, said circuitry being connected by a lead to an external terminal point of said IC chip, said IC chip further being formed with a clamp device to reduce damage to at least one of said elements of said circuitry from electrostatic discharge (ESD) striking said terminal point, said clamp device being formed during the formation of said circuit elements of the chip and including:
a cell defining a semiconductive region for said clamp device and having a circular cross-section so as to form a right-circular cylindrical configuration having upper and lower regions at opposite ends of the axis of said cylindrical configuration;
said upper and lower regions having top and bottom surfaces

respectively at the ends of said axis, and having side surfaces extending around the circumference of said cell;
dielectric isolation means surrounding said cell at said top, bottom and side surfaces thereof;
a vertical bipolar transistor formed in said cell and comprising:
a well with dopant of one type in said upper region of said cell and having an upper surface in contact with said top dielectric isolation means;
said well serving at least as a part of a collector for said vertical bipolar transistor;
a region of semiconductive material of circular cross-section having dopant of type opposite said one type and formed in said well adjacent said top surface to serve as the base of said bipolar transistor, said base being concentric with the right-circular cylindrical configuration of said cell, and further having an upper surface in contact with the dielectric isolation means at said top surface;



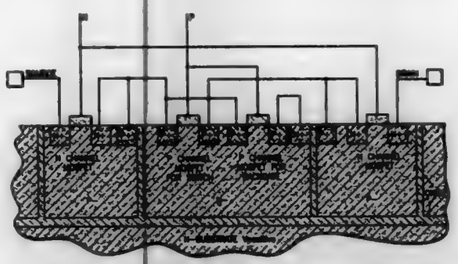
base contact means in the center of said circular base region, said base contact means being highly doped with dopant of said opposite type to establish a contact for making electrical connection to said base;
an annular emitter concentrically arranged in said circular base region around said base contact means;
said emitter being spaced radially from said base contact means such that at least part of said base region is between said base contact means and said emitter;
means conductively connecting said base contact means and said emitter;
means to establish a contact for said region functioning as a collector;
means connecting one of said contacts to a low-impedance bus; and
means connecting the other of said contacts to said lead between said terminal point and said IC circuitry so as to shunt electrostatic energy received from said terminal point thereby to prevent damage to said IC circuitry.

5,446,303
FAULT-PROTECTED OVERVOLTAGE SWITCH WITH EXPANDED SIGNAL RANGE

John Quill, and Frank Poucher, both of Limerick, Ireland, assignors to Analog Devices, Incorporated, Norwood, Mass.

Continuation-in-part of Ser. No. 227,727, Apr. 14, 1994, Pat. No. 5,389,811. This application Sep. 6, 1994, Ser. No. 301,256
Int. Cl.[6] H01L *27/02, 29/06, 29/78*
U.S. Cl. 257—360 5 Claims

1. An integrated-circuit (IC) chip formed with a switch having input and output terminals and for use in applications where overvoltage conditions can cause damage to a device to which the switch is connected;;
said IC chip comprising:
semiconductive material formed with a plurality of MOS transistors each having two current-carrying electrodes and a gate electrode, said current-carrying electrodes serving as the switch input and output terminals and being connected in series sequence;
said series-connected transistors including at least an N-channel transistor and at least a P-channel transistor;
an additional MOS transistor having two current-carrying electrodes and a gate electrode, said additional transistor being formed in said IC chip and interconnected with one of said series-connected transistors in such fashion that the

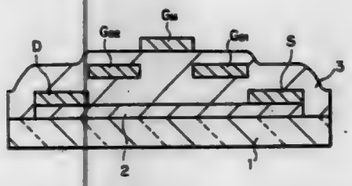


backgates of those transistors are common, the gate electrodes are connected together, and a current-carrying electrode of said one transistor is connected to a current-carrying electrode of said additional transistor to reduce the voltage between the gate and the backgate of said one transistor;
control terminal means connected to the gates of said series-connected transistors for applying control signals thereto for turning off and on said series-connected transistors to open and close the circuit through such transistors; and
means operable, when said series-connected transistors are in "on" state and an overvoltage is applied to said input terminal, for turning off at least one of said series-connected transistors when the applied voltage reaches a predetermined overvoltage level.

5,446,304
INSULATED-GATE-TYPE FIELD EFFECT TRANSISTOR WHICH HAS SUBGATES THAT HAVE DIFFERENT SPACING FROM THE SUBSTRATE THAN THE MAIN GATE

Toshiyuki Sameshima; Naoki Sano; Dharam P. Gosain, and Setsuo Usui, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 951,758, Sep. 28, 1992, abandoned. This application Sep. 29, 1994, Ser. No. 314,929
Claims priority, application Japan, Sep. 30, 1991, 3-278716
Int. Cl.[6] H01L *29/76, 29/04, 27/01*
U.S. Cl. 257—365 1 Claim



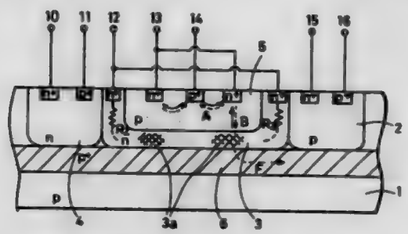
1. An insulated-gate type field effect transistor comprising:

an active layer made of a semiconductor of a low impurity concentration;
a source electrode and a drain electrode formed on said active layer and each of said source electrode and said drain electrode made of a metal conducting film;
a main gate electrode formed between said source electrode and said drain electrode on a gate insulating film so as to face said active layer;
a first subgate electrode formed between said drain electrode and said main gate electrode in said gate insulating film and spaced closer to said active layer than said main gate electrode; and
a second subgate electrode formed between said source electrode and said main gate electrode in said gate insulating film and spaced closer to said active layer than said main gate electrode and said first and second subgate electrodes symmetrically arranged relative to said main gate electrode, and the thickness of said gate insulating film between a first edge of said main gate electrode and a first edge of said first subgate electrode and the thickness of said gate insulating film between a second edge of said main gate electrode and a first edge of said second subgate electrode being thinner than the thickness of said gate insulating film between a second edge of said first subgate electrode and said active layer and the thickness of said gate insulating film between a second edge of second subgate electrode and said active layer, and a planar channel formed between said source electrode and said drain electrode.

5,446,305
SEMICONDUCTOR DEVICE WITH DOUBLE STRUCTURED WELL

Shigeki Komori; Takashi Kurui, and Masahide Inuishi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 867,738, Apr. 13, 1992, abandoned. This application May 9, 1994, Ser. No. 240,282
Claims priority, application Japan, Apr. 17, 1991, 3-085537; Mar. 6, 1992, 4-049869
Int. Cl.[6] H01L *27/02, 29/70*
U.S. Cl. 257—372 2 Claims

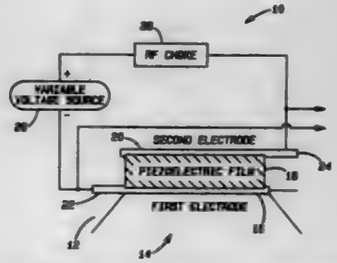


1. A semiconductor device, comprising:
a semiconductor substrate of a first conductivity type having a first impurity concentration;
a conductive layer including said first conductivity type impurities, said conductive layer having a higher impurity concentration than that of said semiconductor substrate and formed in said semiconductor substrate;
a first well of the first conductivity type formed in a major surface of the semiconductor substrate, said first well being formed above and in immediate contact with said conductive layer;
a second well having a second conductivity type and formed laterally adjacent to and in contact with said first well in said major surface of said semiconductor substrate, said second well being formed above and in immediate contact with said conductive layer;
a third well having said first conductivity type and formed inside the second well whereby said third well is surrounded on a lower and side surfaces by said second well;
at least one diffusion layer having said first conductivity type and formed inside the third well whereby said at least one diffusion layer is surrounded on a lower and side surfaces by said third well, said at least one diffuaion layer having a higher impurity concentration than said third well; and
a second conductive layer having a first conductivity type impurity concentration higher than the impurity concentration of said third well, said second conductive layer formed between and in contact with said second well and said third well.

5,446,306
THIN FILM VOLTAGE-TUNED SEMICONDUCTOR BULK ACOUSTIC RESONATOR (SBAR)

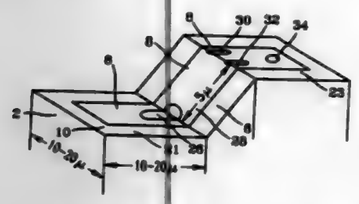
Robert B. Stokes, Rancho Palos Verdes; Jay D. Crawford, Long Beach; Drew Cushman, Lomita, and Alvin M. W. Kong, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 13, 1993, Ser. No. 166,338
Int. Cl.[6] H01L *29/82, 41/04, 41/08, 41/18*
U.S. Cl. 257—416 22 Claims



1. A thin film voltage-tuned semiconductor bulk acoustic resonator (SBAR) comprising:
a substrate, said substrate including a via hole formed therein;
a first electrode positioned over the via hole adjacent to the substrate;
resonator means for resonating at a plurality of frequencies, said resonator means positioned over the via hole adjacent to the first electrode;
a second electrode positioned adjacent the resonator means; and
variable voltage source means for applying a DC bias voltage to the first electrode and the second electrode to create an electric field between the first electrode and the second electrode within the resonator means, said electric field causing the resonator means to resonate at a frequency other than the resonator means unbiased resonant frequency, wherein the DC bias voltage is adjustable to substantially vary the electric field to adjust the resonator means to resonate at the plurality of frequencies with highly linear characteristics.

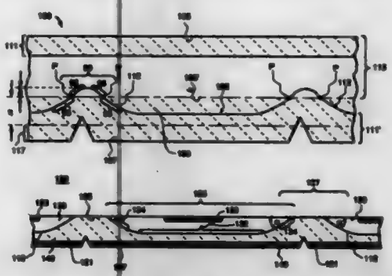
5,446,307
MICROELECTRONIC 3D BIPOLAR MAGNETOTRANSISTOR MAGNETOMETER
Robert A. Lux, Toms River, N.J.; James F. Harvey, Research Triangle Park, N.C.; Charles D. Mulford, Jr., Livingston, and Louis C. Poli, Hazlet, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 4, 1994, Ser. No. 334,823
Int. Cl.[6] H01L 27/22, 29/82, 29/96, 43/00
U.S. Cl. 257—423 10 Claims



1. A three dimensional magnetometer comprising:
a silicon substrate having an etched cavity which has a plurality of slanted faces therein and a bottom surface within the etched cavity, the silicon substrate also having a top surface;
implanted regions formed on at least three of the slanted faces, each implanted region extending from a portion of the top surface of the silicon substrate to a portion of the bottom surface within the etched cavity;
at least two collector contacts disposed on each of the implanted regions at the top surface of the silicon substrate;
an emitter contact disposed on each of the implanted regions at the bottom surface of the etched cavity;
a base region disposed on each of the implanted regions at the slanted face;
wherein appropriate biases are applied to the emitter contact through to the base region and collector contacts and wherein the currents of both minority and majority carriers in the base region will respond to a component of the magnetic field perpendicular to a face of the slanted edge, whereby there will be a difference in the currents in the collector contacts which are calibrated to measure the magnetic field component.

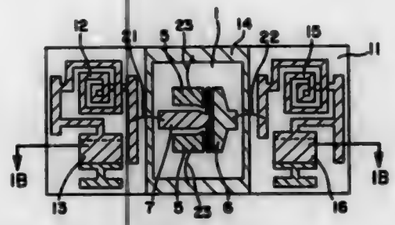
5,446,308
DEEP-DIFFUSED PLANAR AVALANCHE PHOTODIODE
Dante E. Piccone, Glenmoore, Pa.; Ahmad N. Ishaque, Clifton Park, N.Y.; Donald E. Castleberry; Henri M. Rougeot, both of Schenectady, N.Y., and Peter Menditto, Westerlo, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 4, 1994, Ser. No. 223,397
Int. Cl.[6] H01L 327/146, 31/107
U.S. Cl. 257—438 29 Claims

1. A planar deep-diffused semiconductor device comprising:
first surface and a second surface, said second surface being disposed opposite to said first surface;
at least one well extending inward from said first surface, each well comprising an n type semiconductor material having a substantially constant concentration of n type dopant throughout said n type semiconductive material; and
a foundation comprising a p type semiconductor material disposed around each of said n type wells such that a respective p-n junction is disposed therebetween, said foundation further comprising portions of said first surface disposed between respective first surface portions of said wells so as to electrically isolate respective ones of said wells from another along said first surface, said foundation further comprising said second surface of said deep-diffused planar semiconductive device;
the concentration of said p type dopant in said foundation having a positive gradient extending respectively from each of said p-n junctions towards said second surface such that the concentration of said p type dopant increases away from said p-n junction and is such that the peak



surface electric field and peripheral electric field of each of said p-n junctions is less than the bulk electric field of the same p-n junction whereby, upon application of breakdown potential across said p-n junction, said device electrically breaks down in the area of said bulk electric field before breaking down in the area of said surface electric field or said peripheral electric field.

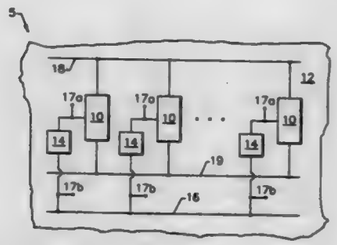
5,446,309
SEMICONDUCTOR DEVICE INCLUDING A FIRST CHIP HAVING AN ACTIVE ELEMENT AND A SECOND CHIP HAVING A PASSIVE ELEMENT
Chinatsu Adachi, Mitou; Masaaki Nishijima, Moriguchi; Yorito Ota, Kobe, and Osamu Ishikawa, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 28, 1993, Ser. No. 69,016
Claims priority, application Japan, Jun. 22, 1992, 4-162480
Int. Cl.[6] H01L 25/00
U.S. Cl. 257—528 6 Claims



1. A semiconductor device comprising:
a first chip having a first semiconductor substrate including a first surface and an opposite second surface, at least one active element without passive elements fabricated on said first surface,
a second chip having a second semiconductor substrate including a third surface which has at least one passive element without active elements, and
wherein the first chip is mounted on a grounding electrode formed on the third surface of the second semiconductor substrate so that the second surface of the first semiconductor substrate makes direct contact to the grounding electrode,
and the active element of the first chip is coupled to a reverse surface electrode, which is electrically connected to the grounding electrode, through a via-hole conductor provided in the semiconductor substrate of the first chip,

and at least the active element of the first chip is electrically connected by a bonding conductor to the passive element of the second chip.

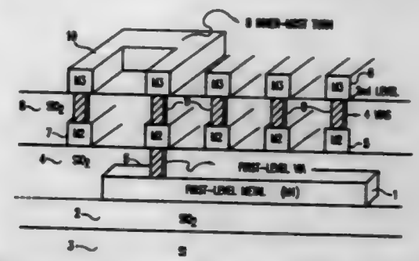
5,446,310
INTEGRATED CIRCUIT POWER DEVICE WITH EXTERNAL DISABLING OF DEFECTIVE DEVICES AND METHOD OF FABRICATING SAME
Bantval J. Baliga, and Prasad Venkatraman, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Jun. 8, 1992, Ser. No. 895,339
Int. Cl.[6] H01L 23/48
U.S. Cl. 257—529 36 Claims



1. A power device comprising:
an integrated circuit;
a plurality of cell blocks formed in said integrated circuit and electrically connected in parallel, each of said cell blocks including at least one cell electrically connected in parallel, each cell handling a relatively small current so that said plurality of cell blocks electrically connected in parallel handle a relatively large current, at least one of said cell blocks being a defective cell block;
at least one electrically or optically activated test pad formed in said integrated circuit and electrically connected to said cell blocks, such that said defective cell block is identified; and
externally activated disabling means formed in said integrated circuit and electrically connected to said cell blocks, for disabling said defective cell block in response to external activation of said disabling means, said externally activated disabling means being incapable of automatically disabling said defective cell block in response to the defect therein;
whereby defects in said plurality of cell blocks are externally identified, and defective cell blocks are externally disabled, to provide an operable integrated circuit power device notwithstanding defective cell blocks therein.

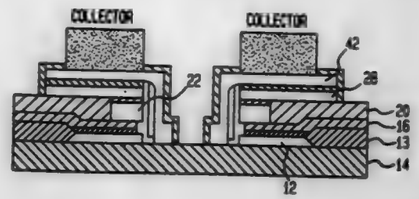
5,446,311
HIGH-Q INDUCTORS IN SILICON TECHNOLOGY WITHOUT EXPENSIVE METALIZATION
John E. Ewen, Yorktown Heights; Salla Ponnapalli, Fishkill, and Mehmet Soyner, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 16, 1994, Ser. No. 307,953
Int. Cl.[6] H01L 27/02, 23/48
U.S. Cl. 257—531 4 Claims

1. A high Q monolithic inductor structure formed using a conventional silicon technology comprising at least first and second metal levels separated from one another by a first insulating layer, said first and second metal levels being formed with identical spiral patterns and connected through via holes



in the first insulating layer to implement parallel connected turns of the inductor structure having a low resistance value.

5,446,312
VERTICAL-GATE CMOS COMPATIBLE LATERAL BIPOLAR TRANSISTOR
Chang-Ming Hsieh; Louis L. G. Hsu, both of Fishkill; Shaw-Ning Mei, Wappingers Falls; Ronald W. Knepper, LaGrangeville, and Lawrence F. Wagner, Jr., Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 303,129, Feb. 28, 1994, Pat. No. 5,371,022, which is a division of Ser. No. 900,881, Jun. 18, 1992, Pat. No. 5,341,023. This application Jun. 24, 1994, Ser. No. 264,885
Int. Cl.[6] H01L 29/70
U.S. Cl. 257—559 4 Claims



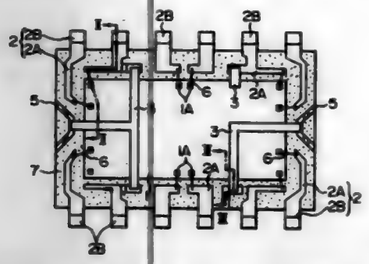
1. A pair of bipolar transistors, comprising in combination:
an extrinsic base layer;
an emitter layer overlying said extrinsic base layer;
a vertical opening extending through said extrinsic base layer and said emitter layer forming facing first and second vertical walls;
an intrinsic base layer formed simultaneously on said first and second vertical walls by a low temperature epitaxial process;
a collector layer formed simultaneously over said intrinsic base layer on said first and second vertical walls by a low temperature epitaxial process;
whereby the intrinsic base layer and the collector layer on said first vertical wall, in combination with the extrinsic base layer and emitter layer that form the first vertical wall, comprise one transistor of said pair, and the intrinsic base layer and the collector layer on said second vertical wall, in combination with the extrinsic base layer and emitter layer that form second vertical wall, comprise the other transistor of said pair.

5,446,313

THIN TYPE SEMICONDUCTOR DEVICE AND MODULE STRUCTURE USING THE DEVICE

Masachika Masuda, Tokorozawa, and Tamaki Wada, Higashimurayama, both of Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed May 24, 1993, Ser. No. 65,788
Claims priority, application Japan, May 25, 1992, 4-132287
Int. Cl.[6] H01L 23/48
U.S. Cl. 257—666 9 Claims



1. A thin type semiconductor device comprising:

a semiconductor chip having upper and low main surfaces, and a side surface extending between said upper and lower main surfaces, said upper main surface including electrode pads;

inner leads each having a first portion and a second portion disposed in the vicinity of said semiconductor chip;

an insulating film tape having a first surface and a second surface, said second surface including a portion affixed to said upper main surface of said semiconductor chip by an adhesive and a portion affixed to said first portion of each of said inner leads by an adhesive;

bonding wires for electrically connecting said electrode pads disposed in said upper main surface of said semiconductor chip to said second portion of each of said inner leads corresponding to said electrode pads; and

resin molding for sealing said semiconductor chip, said inner leads, said electrode pads, said insulating film tape and said bonding wires,

wherein a height from said upper main surface of said semiconductor chip to said first surface of said insulating film tape is smaller than a height from the upper main surface of said semiconductor chip to an apex of said bonding wires, a surface of said second portion of each of said inner leads connected to said bonding wires is positioned lower than said upper main surface of said semiconductor chip and is positioned between said upper main surface of said semiconductor chip and said lower main surface of said semiconductor chip opposite said upper main surface, and said first portion of each of said inner leads is disposed in the vicinity of said side surface of said semiconductor chip and is separated from said semiconductor chip.

5,446,314

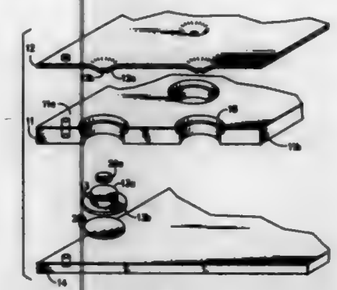
LOW PROFILE METAL-CERAMIC-METAL PACKAGING

Paul J. Melnick, Accord; Anthony J. Mensella, Jr., Saugerties, and Herman P. Meyer, Rifton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 574,415, Aug. 28, 1990, abandoned.
This application Jan. 9, 1992, Ser. No. 157,721
Int. Cl.[6] H01L 23/02, 23/12, 23/16, 23/42
U.S. Cl. 257—678 22 Claims

1. A device for providing an array of semiconductor stacks including

a ceramic spacer having first and second opposing sides and having a predetermined pattern of apertures therein defining said array of stacks, said apertures having a first aperture portion on said first side of said spacer with a first aperture cross sectional area for receiving a semiconductor stack and a second aperture portion, coaxial and adjacent to said first aperture portion on said second side of said spacer, with a larger cross sectional area than said first aperture portion, and



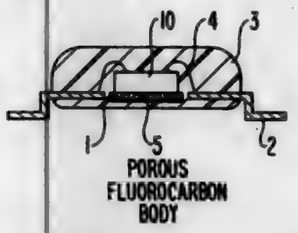
a resilient conductive foil disposed on said second side of said spacer, said foil having raised portions thereof extending into at least some of said apertures of said ceramic spacer.

5,446,315

RESIN-SEALED SEMICONDUCTOR DEVICE CONTAINING POROUS FLUOROCARBON RESIN

Yoshito Hazuki; Minoru Hatakeyama; Sanao Fukutake, and Akira Urakami, all of Okayama, Japan, assignors to Japan Gore-Tex, Inc., Japan

Continuation of Ser. No. 841,685, Feb. 26, 1992, abandoned.
This application Jan. 11, 1994, Ser. No. 182,520
Claims priority, application Japan, Mar. 8, 1991, 3-067530; Mar. 12, 1991, 3-070378
Int. Cl.[6] H01L 23/36, 23/02, 23/12, 39/02
U.S. Cl. 257—687 6 Claims



1. A resin-sealed semiconductor device consisting of:

(a) a semiconductor chip mounted on a chip-mounting element;

(b) a multiplicity of leads located on said chip-mounting element and connected to said chip by gold wire leads; and

(c) a sealing resin containing small pieces of porous fluororesin surrounding as a unit said chip, said chip-mounting element, the interior ends of said leads, and said wire leads.

5,446,316

HERMETIC PACKAGE FOR A HIGH POWER SEMICONDUCTOR DEVICE

Victor A. K. Temple, Clifton, N.Y., and Homer H. Glascock, II, Millis, Mass., assignors to Harris Corporation, Melbourne, Fla.

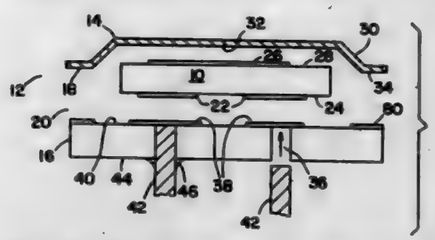
Filed Jan. 6, 1994, Ser. No. 217,801
Int. Cl.[6] H01L 23/02, 23/10
U.S. Cl. 257—704 9 Claims

1. A hermetically packaged semiconductor device comprising:

a semiconductor device having a generally planar substrate with a first, upward facing surface having a first bondable metal contact area thereon, and a second, downward facing surface having plural second bondable metal contact areas thereon;

an electrically and thermally conductive lid bonded to the first contact area of said device, said lid having an edge that extends beyond an edge of said device;

an electrically insulative and thermally conductive base having plural openings therethrough corresponding to said plural second contact areas, said base having an edge congruent with the edge of said lid, said lid and said base



being bonded at their peripheral edge portions to hermetically seal said device thereinside;

plural electrically conductive foils, each having a first flat surface bonded to said base to hermetically close said openings and an opposing flat surface bonded to one of the plural second contact areas of the device; and

plural contact pins, each extending upwardly into one of said openings into electrically conductive contact with one of said foils and being attached to said base,

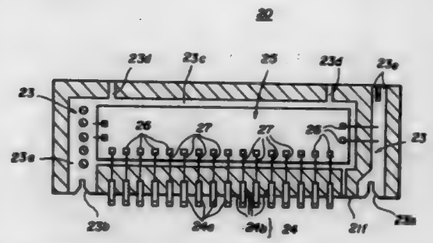
whereby said semiconductor device is hermetically sealed in a compact package, is electrically contactable through said pins and said lid, and is coolable through both said lid and said base.

5,446,317

SINGLE IN-LINE PACKAGE FOR SURFACE MOUNTING

Mitsutaka Sato, and Masanori Yoshimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 5, 1993, Ser. No. 26,809
Claims priority, application Japan, Mar. 9, 1992, 4-050941
Int. Cl.[6] H01L 23/48, 29/44, 29/52; H05K 7/00
U.S. Cl. 257—734 10 Claims



1. A semiconductor device having a package of a single in-line type, comprising:

a semiconductor chip;

a package body that accommodates said semiconductor chip therein, said package body being defined by a pair of opposing major surfaces and surrounded by side walls connecting said pair of opposing major surfaces, said side walls including a bottom edge which extends in a direction perpendicular to said major surfaces, to form a substantially planar bottom edge surface;

a plurality of leads held by said package body so as to extend substantially perpendicularly to said bottom edge surface, each of said leads being electrically connected to said semiconductor chip, each of said leads comprising an inner part located inside said package body and an outer lead part located outside said package body, said outer lead part being bent laterally in the vicinity of the boundary between said inner part and said outer part, in one of a first and a second direction that are opposite from each other and substantially perpendicular to said opposing major surfaces; and

said package body having a cutout part at a predetermined position of said side wall, said cutout part being adapted for engagement with a support leg part for supporting said package body substantially upright on a substrate;

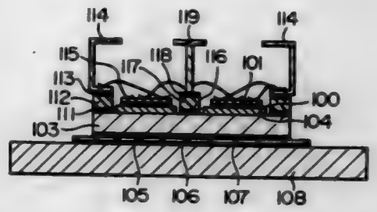
wherein said package body includes a lead frame, for holding said semiconductor chip thereon, said lead frame comprising a cutout portion for engagement with a support leg, said cutout part of said package body exposing said lead frame cutout portion.

5,446,318

SEMICONDUCTOR MODULE WITH A PLURALITY OF POWER DEVICES MOUNTED ON A SUPPORT BASE WITH AN IMPROVED HEAT SINK/INSULATION PLATE ARRANGEMENT

Yoshihiko Koike; Ryuichi Saito; Sigeki Sekine, and Yuuji Wakisawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,358
Claims priority, application Japan, Sep. 8, 1992, 4-239990
Int. Cl.[6] H01L 23/02
U.S. Cl. 257—707 26 Claims



1. A semiconductor module including a plurality of semiconductor chips, an internal heat sink plate for supporting the semiconductor chips, and a base support plate separated from said heat sink plate by an insulating plate, wherein said semiconductor chips, said internal heat sink plate, said insulating plate and said base support plate are all bonded together by solder or metal brazing material, wherein the thickness of the base support plate is more than 2.5 times in maximum thickness of the internal support plate, wherein a Mo heat sink plate is disposed beneath each of said plurality of the semiconductor chips, said internal heat sink plate is disposed under said Mo plates and is comprised of a single copper plate, and the thickness of the internal copper plate heat sink plate is more than twice the thickness of said Mo plates.

5,446,319

PERMANENT MAGNET ENERGY STORAGE APPARATUS

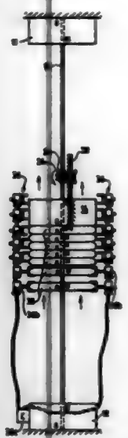
Mark Pawlowski, 7456 W. Rosedale, Chicago, Ill. 60631

Continuation-in-part of Ser. No. 220,370, Mar. 28, 1994. This application Aug. 2, 1994, Ser. No. 284,165
Int. Cl.[6] H02K 7/06
U.S. Cl. 290—1 R 12 Claims

1. An energy storage apparatus comprising:

first and second permanent magnets having north and south poles and being permanently fixed a distance apart along a common longitudinal axis with their respective magnetic

fields aligned along said axis, each of said magnets having a like pole facing said distance between said magnets;
a third permanent magnet having a north and south pole and being movably positioned along said axis between said first and second magnets, said third magnet having its magnetic field aligned along said axis and having a like pole facing one of said fixed magnets and having an opposite pole facing the other of said fixed magnets;
guide means for positioning said third magnet along said axis and allowing movement of said third magnet along said axis between a charged position in which said like pole is proximal said one of said fixed magnets and an uncharged position in which said opposite pole is proximal said other of said fixed magnets;
locking means for releasably securing said third magnet in said charged position and allowing selective release of said third magnet;



power transmission means for moving said third magnet along said longitudinal axis from said uncharged position to said charged position and harnessing kinetic energy from said third magnet when it is released from said charged position and moves to said uncharged position;
a plurality of power-enhancing magnets movably positioned along said axis between said third magnet and said other of said fixed magnets, each of said power-enhancing magnets having a magnetic field aligned along said axis and having a north and south pole positioned to face the opposite poles of adjacent magnets; and
a plurality of magnet holding means, corresponding to said plurality of power-enhancing magnets, for locking each of said plurality of power-enhancing magnets in a selected position for optimizing use of the attraction forces between said powerenhancing magnets and the movable magnet which optimizes an energy storage capacity of the apparatus.

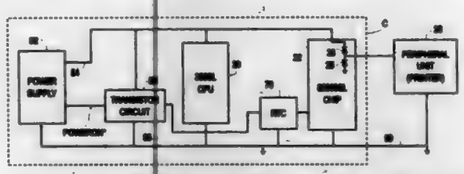
5,446,320

CIRCUIT FOR CLAMPING POWER OUTPUT TO GROUND WHILE THE COMPUTER IS DEACTIVATED

Donald G. Scharnberg, Pasadena, and Patrick R. Cooper, Houston, both of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Filed Jan. 24, 1992, Ser. No. 825,000
Int. Cl.[6] H01H *83/00*; G05F *3/00*
U.S. Cl. 307—100 **32 Claims**

1. An electrical system, comprising:
a first electrical unit including:
a ground reference line;
means for developing a supply voltage which is provided on a supply voltage line;
electrical circuitry connected to said ground reference line and said supply voltage line for receiving a supply voltage and having an input, said input being coupled to said supply voltage line; and
means connected to said ground reference line and said supply voltage line for connecting said ground reference line to said supply voltage line when said first electrical unit is turned off; and
a second electrical unit including:



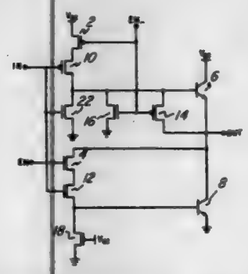
a ground reference line, said second electrical unit ground reference line connected to said first electrical unit ground reference line; and
means for providing an output signal at a high voltage level, said output signal connected to said input of said electrical circuitry of said first electrical unit when said first electrical unit is turned off; and
said electrical circuitry of said first electrical unit including means for partially transferring said output signal high voltage level to said first unit ground reference line when said first electrical unit is turned off.

5,446,321

BICMOS TRI-STATE CIRCUIT WITH FULL OUTPUT VOLTAGE SWING

Toshiaki Yoshino, and Kwok K. Chau, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 989,929, Dec. 11, 1992, abandoned, which is a continuation of Ser. No. 758,434, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 540,542, Jun. 19, 1990, abandoned. This application Jun. 25, 1993, Ser. No. 83,210
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—57 **17 Claims**



1. A tri-state circuit comprising:
a first bipolar transistor having an emitter connected to a reference potential, a base and a collector connected to an output terminal;
a second bipolar transistor having an emitter connected to said output terminal, a base and a collector connected to a first potential, both said first and second bipolar transistors having a first conductivity configuration such that said first and second bipolar transistors are conductive when a potential having a sign correlating the difference between said reference potential subtracted from said first potential relative is applied from said base to said emitter;
a pull-down load having a first terminal connected to said

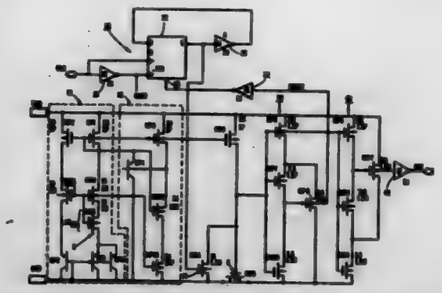
base of said first bipolar transistor and a second terminal connected to said reference potential;
a first switch having a first current handling terminal connected to said base of said first bipolar transistor, a second current handling terminal and a control terminal connected to an input terminal, said first switch having a first switch type wherein said first switch is conductive when a potential having a sign correlating the difference between said reference potential subtracted from said first potential relative is applied to said control terminal;
a second switch having said first type and having a first current handling terminal connected to said second current handling terminal of said first switch, a second current handling terminal connected to said output terminal and a control terminal connected to receive an enable signal;
a third switch having said first type and having a first current handling terminal connected to said reference potential, a second current handling terminal connected to said base of said second bipolar transistor and a control terminal connected to said input terminal;
a fourth switch having said first type and having a first current handling terminal connected to said reference potential, a second current handling terminal connected to said base of said second bipolar transistor and a control terminal connected to receive the inverse of said enable signal;
a fifth switch having a first current handling terminal connected to said base of said second bipolar transistor, a second current handling terminal and a control terminal connected to said input terminal, said fifth switch having a second type wherein said fifth switch is conductive when a potential having a sign opposite the difference between said reference potential subtracted from said first potential relative is applied to said control terminal;
a sixth switch having said second type and having a first current handling terminal connected to said second current handling terminal of said fifth switch, a second current handling terminal connected to said first potential and a control terminal connected to receive said inverse of said enable signal; and
a seventh switch having said second type and having a first current handling terminal connected to said base of said second bipolar transistor, a second current handling terminal connected to said output terminal and a control terminal connected to receive said inverse of said enable signal.

5,446,322

APPARATUS AND METHOD FOR DETERMINING WHEN THE FREQUENCY OF AN ALTERNATING SIGNAL IS BELOW A PREDETERMINED THRESHOLD

David C. Reynolds, Georgetown, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 1, 1992, Ser. No. 876,756
Int. Cl.[6] H03K *9/06*
U.S. Cl. 327—44 **15 Claims**



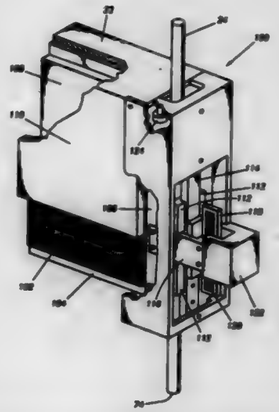
1. Frequency-responsive means for receiving an alternating input signal and producing an output signal indicating when the frequency of the input signal is below a predetermined level;
said frequency-responsive means comprising an integrated circuit formed by a process for making a plurality of MOS transistor means with the integrated circuit including:
first MOS transistor means arranged to establish a capacitor;
means for producing a charging current for said MOS capacitor;
said charging current means including second MOS transistor means including at least one MOS transistor serving as a resistor, said charging current means being arranged to produce said charging current at a level inversely proportional to the value of said resistor,
control means to receive said alternating input signal and coupled to said capacitor to control the discharge thereof in accordance with the frequency of said alternating input signal;
said one MOS transistor forming part of a band-gap regulator circuit;
said band-gap regulator circuit further including a pair of bipolar transistors driven with different current densities so as to produce differing V_{BE} voltages for each;
circuit means connecting said one MOS transistor to said bipolar transistors to produce a ΔV_{BE} voltage across the resistor defined by said one transistor; and
means for producing said output signal when said capacitor is charged by said current to a pre-set voltage level.

5,446,323

ACTUATOR WITH TRANSLATIONAL AND ROTATIONAL CONTROL

Edward A. Neff, Rancho Santa Fe, and John Moss, San Bernardino, both of Calif., assignors to Systems, Machines, Automation Components Corporation, Carlsbad, Calif.

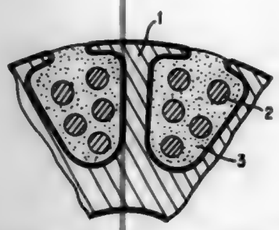
Continuation of Ser. No. 231,703, Apr. 22, 1994, which is a continuation-in-part of Ser. No. 24,503, Mar. 1, 1993, Pat. No. 5,315,189, which is a continuation-in-part of Ser. No. 996,893, Dec. 28, 1992, Pat. No. 5,317,222, which is a continuation-in-part of Ser. No. 765,130, Sep. 25, 1991, Pat. No. 5,175,456. This application Sep. 12, 1994, Ser. No. 304,235
Int. Cl.[6] H02K *41/00*
U.S. Cl. 310—12 **21 Claims**



1. A device for moving and positioning an assembly component in an automated assembly operation which comprises:
a housing;
means mounted on said housing for creating a magnetic field;
an electrical coil slidably mounted on said housing for carrying a current, said coil being disposed for translational

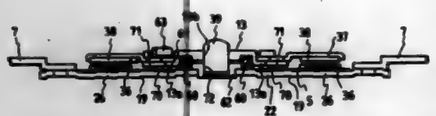
movement within said magnetic field in response to current flow through said coil;
a grip rotatably mounted for translational movement with said coil, said grip being engageable with said component;
a pneumatic rotary actuator mounted for translational movement with said coil;
a coupling for connecting said rotary actuator to said grip;
means electrically connected with said coil for providing said electrical current to move said coil in translation; and
means pneumatically connected with said rotary actuator for activating said rotary actuator to rotate said grip.

5,446,324
COATING MATERIAL FOR AN ARMATURE COIL OF AN ELECTRICAL MOTOR
Tsugio Onodera, Sawa, Japan, assignor to Mitsuba Electric Manufacturing Co. Ltd., Gunma, Japan
Filed May 18, 1993, Ser. No. 63,036
Claims priority, application Japan, May 18, 1992, 4-149980
Int. Cl.[6] H02K *15/12*
U.S. Cl. 310—45 7 Claims



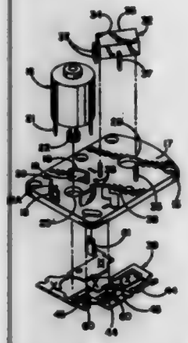
1. An armature for an electrical motor comprising:
an iron armature core;
a copper armature coil wound about the iron armature core; and
a resin composition impregnated on the armature core with the copper armature coil wound thereon to fix the armature coil to the armature core, the resin composition having a coefficient of thermal expansion chosen to be between the coefficients of thermal expansion for iron and copper.

5,446,325
SPINDLE MOTOR AND DISK DRIVING APPARATUS USING THE SAME
Takayoshi Iwabuchi, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jul. 30, 1993, Ser. No. 100,390
Claims priority, application Japan, Jul. 31, 1992, 4-205754
Int. Cl.[6] H02K *7/14, 1/12*
U.S. Cl. 310—67 R 1 Claim



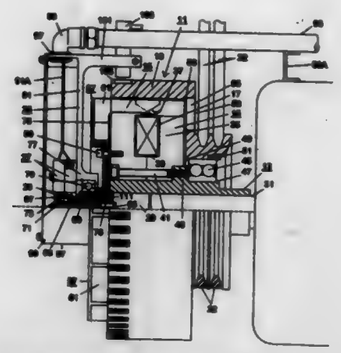
1. A disk driving device including a spindle motor which comprises:
a rotating shaft;
a rotation table to which said rotating shaft is fastened, the rotation table including a flange;
a rotor defining a fitting hole into which said rotation table is received such that said rotor is supported by the flange of said rotation table;
a driving magnet attached to said rotor;
driving coils opposed to said driving magnet; and
a stator yoke to which said driving coils are attached and which includes a bearing,
wherein said rotor is removably mounted on said rotation table,
wherein said rotating shaft is inserted into said bearing to rotatably connect said rotation table to said stator yoke,
wherein said rotor is attracted toward said stator yoke by a magnetic force of said driving magnet, thereby integrally combining said rotation table and said rotor,
wherein said driving magnet is arranged on a side of an outer periphery of said rotor, and
wherein said stator yoke includes a plurality of concentric rings forming a step-like sectional configuration around a rotation center such that each one of said plurality of concentric rings is spaced gradually farther from said rotor in accordance with a distance between said each one of said plurality of rings and the rotation center.

5,446,326
VENDING MACHINE GEARMOTOR
Merwin R. Schelder, Crystal Lake, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed May 4, 1994, Ser. No. 238,235
Int. Cl.[6] H02K *7/116, 11/00*
U.S. Cl. 310—83 6 Claims



1. An electric gearmotor for use in vending machines comprising:
a gearbox having a gearbox housing, having a gearbox cover with an electrically insulating interior surface and having a gear train mounted in said gearbox;
a rotary output shaft having a cam surface, said output shaft being rotatably mounted in said gearbox and being operably coupled to said gear train;
an electrical control circuit enclosed within said gearbox, said control circuit comprising an electrically conductive metal track secured to said electrically insulating interior surface of said gearbox cover and further comprising a plurality of electrical components secured to said metal track in electrical continuity therewith;
a switch assembly mounted on said gearbox cover exteriorly thereof and having an actuating mechanism operably engaging said cam surface of said output shaft, said switch assembly having at least two electrical terminals extending through said gearbox cover and secured to said metal track in electrical contact therewith; and
an electric motor mounted on said gearbox cover exteriorly thereof and having a rotary drive shaft drivingly coupled to said gear train, said motor having at least two electrical terminals extending through said gearbox cover and secured to said metal track in electrical contact therewith.

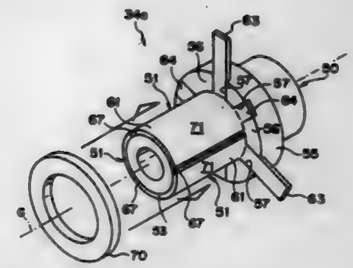
5,446,327
SHAFT MOUNTED EDDY CURRENT DRIVE
Paul D. Boggs, III, 8265 Lupine Cir., Fort Worth, Tex. 76135
Continuation-in-part of Ser. No. 56,132, Apr. 30, 1993, which is a continuation-in-part of Ser. No. 35,981, Mar. 18, 1993. This application Jan. 7, 1994, Ser. No. 179,485
Int. Cl.[6] H02K *49/00*
U.S. Cl. 310—105 17 Claims



1. A variable speed drive, comprising:
a first rotatable member that comprises pole pieces and a drive coil;
a second rotatable member that comprises an armature;
one of said first rotatable member or said second rotatable member comprising a hub that is structured and arranged to be rotated by a motor, the other of said first rotatable member or said second rotatable member being structured and arranged to be coupled to a load;
said pole pieces having plural interdigitated poles, said poles being separated from said armature by a gap;
said drive coil located adjacent to said pole pieces, said pole pieces providing a path for a magnetic field produced by said drive coil;
a first inductive coil coupled to said first rotatable member, said first inductive coil being electrically connected with said coil;
a second inductive coil rotatably coupled to either of said first rotatable member or said second rotatable member;
means for holding said second inductive coil stationary relative to said first inductive coil.

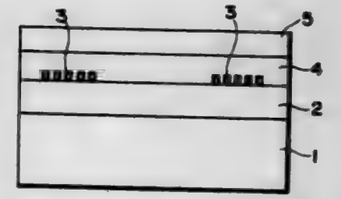
5,446,328
MINIATURE MOTOR WITH PREASSEMBLED COMMUTATOR
Satoshi Suzuki; Michio Tsunoda; Kunitaka Murai, and Katsumi Yamada, all of Chiba, Japan, assignors to Mabuchi Motor Co., Ltd., Matsudo, Japan
Filed May 2, 1994, Ser. No. 235,912
Claims priority, application Japan, Sep. 8, 1993, 5-247993
Int. Cl.[6] H02K *13/04*
U.S. Cl. 310—233 29 Claims

1. A miniature motor in which stators are mounted in an interior of a casing, and a preassembled commutator is provided on a rotor rotatably disposed to face the stators, said preassembled commutator comprising:
a sleeve body having a cylindrical portion provided with a flanged portion, and a plurality of recesses, directed radially outward, in a side wall of said flanged portion, said sleeve body being made of insulating material and mounted on a rotary shaft of said rotor; and
a plurality of conductive commutator pieces each having a body portion formed in an arcuate shape and mounted on an outer circumferential surface of said cylindrical portion, a terminal portion and at least one retainer portion,



each of said terminal portion and said retainer portion being received in said recesses.

5,446,329
SURFACE ACOUSTIC WAVE ELEMENT
Hideaki Nakahata; Akihiro Hachigo; Kenjiro Higaki, and Shinichi Shikata, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 9, 1993, Ser. No. 118,976
Claims priority, application Japan, Sep. 14, 1992, 4-244906; Sep. 7, 1993, 5-222473
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—313 A 15 Claims

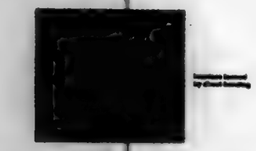


1. A surface acoustic wave element comprising: a hard layer essentially consisting of diamond; a piezoelectric layer formed directly on said hard layer; a silicon dioxide layer formed directly on said piezoelectric layer; and an electrode group sandwiched between said hard layer and said piezoelectric layer or between said piezoelectric layer and said silicon dioxide layer, for performing electro-mechanical conversion; wherein said piezoelectric layer essentially consists of ZnO, and said hard layer has a thickness Hd such that $3<2\pi Hd/\lambda$, where λ denotes a wavelength of said acoustic wave element in the first-order mode.

5,446,330
SURFACE ACOUSTIC WAVE DEVICE HAVING A LAMINATION STRUCTURE
Kazuo Eda, Nara; Yutaka Taguchi; Koji Onishi, both of Settsu, and Shun-ichi Seki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 15, 1994, Ser. No. 213,218
Claims priority, application Japan, Mar. 15, 1993, 5-053431
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—313 R 42 Claims

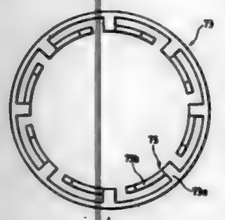
1. A surface acoustic wave device comprising:
a single crystal piezoelectric substrate;
a single crystal piezoelectric thin plate formed on said single crystal piezoelectric substrate, said single crystal piezoelectric thin plate being bonded to said single crystal piezoelectric substrate through at least one of covalent

bonding with oxygen atoms and hydrogen bonding with hydroxyl groups by direct bonding; and



interdigital transducers formed on said single crystal piezoelectric thin plate, for exciting a surface acoustic wave in at least said single crystal piezoelectric thin plate.

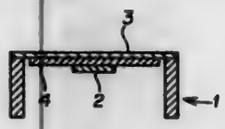
5,446,331
ULTRASONIC WAVE MOTOR
Tsuneo Watanabe, Kawasaki; Tadao Takagi, Yokohama; Daisuke Saya, Urayasu; Ryoichi Suganuma, Yokohama, and Kunihiro Fukino, Fujisawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 16,841, Feb. 12, 1993, abandoned. This application Nov. 7, 1994, Ser. No. 339,283
Claims priority, application Japan, Mar. 5, 1992, 4-048283
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—323 20 Claims



1. An ultrasonic wave motor comprising:
a vibration member for generating a travelling vibration wave;
a movable member driven by said vibration member; and
a pressing mechanism for pressing either said vibration member or said movable member so that said vibration and movable members become close to each other, said pressing mechanism including a plate portion with a small thickness along an axial direction, and a spring formed by a plurality of projections radially and axially extending from said plate portion, said projections being T-shaped, ends of said T-shaped projections pressing either said vibration member or said movable member.

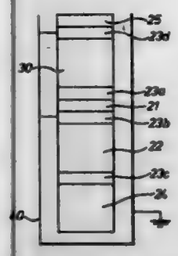
5,446,332
ULTRASONIC TRANSDUCER
Peter Rupps, Karlsruhe; Peter Knoll, Ettlingen; Franz Pachner, Ubstadt; Martin Noll, Nestershausen, and Michael Fischer, Kämpfelbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jul. 28, 1992, Ser. No. 910,031
Claims priority, application Germany, Aug. 4, 1990, 40 24 791.0; Jun. 22, 1991, 41 20 631.9
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—324 4 Claims

1. An ultrasound transducer comprising
a diaphragm (3) which can be excited to oscillate,
a ring-shaped housing (2) bordering said diaphragm,
at least a first one piezo oscillator located on said housing (2), said oscillator having an oscillation characteristic which can be damped in preselected directions,
wherein
the diaphragm (3) and the housing (2) are formed approximately rectangular;
at least one piezo oscillator is located on the diaphragm;



and a second piezo oscillator (4), which has almost the surface area of the diaphragm (3), is located between the first piezo oscillator and the diaphragm (3).

5,446,333
ULTRASONIC TRANSDUCERS
Yoshihiko Ishida, Nagoya, and Makoto Tani, Inazawa, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Sep. 15, 1993, Ser. No. 120,761
Claims priority, application United Kingdom, Sep. 21, 1992, 9219887; Japan, Mar. 30, 1993, 5-072579
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—334 18 Claims

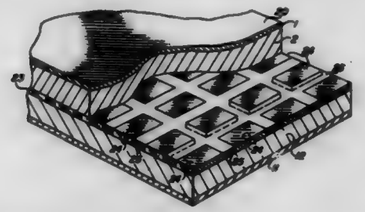


1. An ultrasonic transducer unit for use in pulse-echo ultrasonic investigation at an operating frequency, comprising at least a piezoelectric ultrasonic wave transmitting element, an acoustoelectric ultrasonic wave receiving element consisting essentially of a ZnO single crystal, and electrodes therefor bonded together in an integrated multi-layer structure in which said transmitting element and said receiving element are superimposed in the direction of propagation of transmitted and received ultrasonic waves, said unit further comprising an electrically insulating layer in said integrated multi-layer structure for electrically insulating two components of said ultrasonic transducer unit from each other, said insulating layer consisting essentially of MgO and having an electrical impedance which is higher than that of said acoustoelectric receiving element at the operating frequency of said unit.

5,446,334
PIEZOLUMINESCENT, PYROLUMINESCENT SENSOR
Edward S. Gaffney, Albuquerque, N. Mex., assignor to GRE, Incorporated, Albuquerque, N. Mex.
Filed Jan. 24, 1994, Ser. No. 185,703
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—338 14 Claims

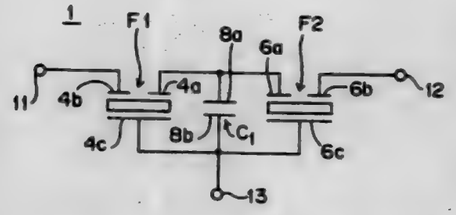
1. A mechanical/thermal stress transducer comprising:
(a) a layer of a piezo-pyroelectric material;
(b) a layer of a material which emits photons in response to the degree of electrical excitation received; and
(c) an electrode forming electrical communication between the said layer of piezo-pyroelectric material and the said layer of material which emits photons in response to the degree of electrical excitation received at disjunct intervals solely in the regions of individual isolated areas of conducting material formed on said electrode and not in

adjacent regions in the plane of said electrode, whereby the luminous intensity of the light at any point on the



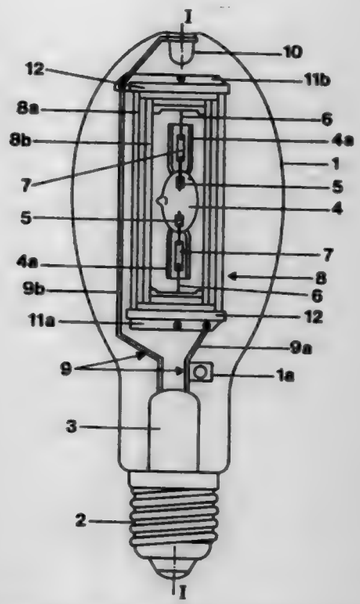
transducer is related to the mechanical/thermal stress acting on that part of the transducer.

5,446,335
PIEZORESONATOR WITH A BUILT-IN CAPACITOR AND A MANUFACTURING METHOD THEREOF
Taketoshi Hino, Nagaokakyo, Japan, assignor to Murata Mfg. Co., Ltd., Japan
Filed Feb. 17, 1994, Ser. No. 197,730
Claims priority, application Japan, Feb. 19, 1993, 5-030716; Apr. 9, 1993, 5-082903
Int. Cl.[6] H03H *9/15*
U.S. Cl. 310—359 14 Claims



1. A piezoresonator with a built-in capacitor, comprising:
a piezoelectric substrate having a first surface and a second surface opposite said first surface;
a plurality of oscillation sections as part of the piezoelectric substrate, each of the oscillation sections including a first oscillation electrode and a second oscillation electrode both being provided on the first surface of the piezoelectric substrate, and a third oscillation electrode provided on the second surface of the piezoelectric substrate opposite the first and second oscillation electrodes;
a coupling capacitor section as part of the piezoelectric substrate for electrically connecting at least two adjacent oscillation sections, the coupling capacitor section including a first capacitor electrode on the first surface of the piezoelectric substrate and a second capacitor electrode on the second surface of the piezoelectric substrate opposite the first capacitor electrode, the first, capacitor electrode being electrically connected to at least one of the first and second oscillation electrodes of each adjacent oscillation section, the second capacitor electrode being electrically connected to the third oscillation electrode of each of the adjacent oscillation sections; and
wherein the piezoelectric substrate is polarized, while a portion of the piezoelectric substrate which includes the coupling capacitor section is partly left unpolarized.

5,446,336
EXPLOSION-PROTECTED HIGH-PRESSURE DISCHARGE LAMP
Karl-Heinz Gleixner, München, and Ulrich Henger, Wipperfürth, both of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Glühlampen mbH, Munich, Germany
Filed Aug. 3, 1993, Ser. No. 101,181
Claims priority, application Germany, Sep. 15, 1992, 42 30 814.3
Int. Cl.[6] H01J *61/00*
U.S. Cl. 313—25 27 Claims



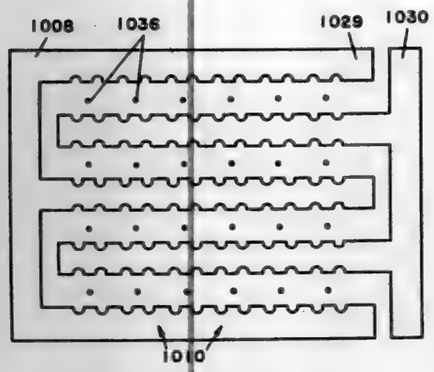
1. Explosion-protected high-pressure discharge lamp having
a discharge vessel (4) having at least one sealed end, and electrodes (5), and an ionizable fill within the discharge vessel;
current supply leads (6) extending from the at least one sealed end of the discharge vessel (4);
an essentially rotation-symmetrical outer bulb (1) defining a lamp axis (I—I) and at least one base (2) located at an end region of the bulb;
a discharge vessel holder means (9) retaining and holding the discharge vessel (4) in position in the bulb (1), said holder means (9) including two ribs or webs (11*a*, 11*b*) extending essentially transversely to the axis (I—I) of the lamp; and
a transparent, essentially cylindrical protective body (8) having open ends and radially surrounding the discharge vessel essentially throughout its entire length, and
comprising
two insulating ceramic centering and holding elements (12, 12', 12''; 512),
said insulating ceramic centering and holding elements being retained on the discharge vessel holder means (9) and holding the protective body (8) in position in the lamp; and
reception means (14, 14', 14''; 514) formed on each of said ceramic centering and holding elements (12, 12', 12''; 520), dimensioned and positioned to receive said transversely extending ribs or webs (11*a*, 11*b*) of the discharge vessel holder means (9).

5,446,337

IMAGE DISPLAY APPARATUS AND METHOD OF MAKING THE SAME

Mitsunori Yokomakura, Takatsuki; Kyouichi Uematsu, Nagaokakyou; Kanji Inui, Takatsuki; Tomohiro Sekiguchi, Kobe, and Toshifumi Nakatani, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 27, 1994, Ser. No. 266,217
Claims priority, application Japan, Jul. 28, 1993, 5-186009; Jul. 28, 1993, 5-186050
Int. Cl.[6] H01J *29/70*
U.S. Cl. 313—422 6 Claims



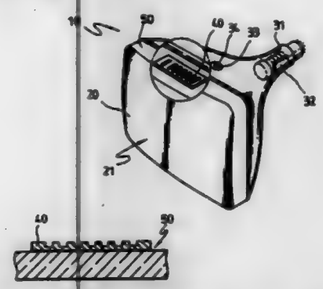
4. An image display apparatus comprising:
an electron beam generating source for generating electrons which travel in a parallel direction,
a rear electrode for controlling the amount of the generated electrons,
an extraction electrode for extracting electron beams from the generated electrons,
a control electrode for selectively controlling the amount of electrons in said electron beams to produce controlled electron beams,
a focusing electrode for electrostatically focusing said controlled electron beams to produce focused electron beams,
a horizontal deflection electrode for electrostatically deflecting said focused electron beams to produce horizontally deflected electron beams,
a vertical deflection electrode for deflecting said horizontal deflected electron beams to produce deflected electron beams, said vertical deflection electrode having a first comb-shaped conductive sheet and a second comb-shaped conductive sheet, each conductive sheet having a plurality of first and second parallel members respectively, said first and second comb-shaped conductive sheets insulated from each other and said first and second members alternatively formed adjacent to each other where said plurality of first parallel members and second parallel members are alternatively disposed in a horizontal direction, said first conductive sheet and said second conductive sheet further including a plurality of projection sections disposed between notches, said horizontal deflection electrode and said vertical deflection electrode insulated from each other and
display means for receiving said deflected electron beams and for displaying light corresponding to said deflected electron beams.

5,446,338

CATHODE RAY TUBE PROVIDED WITH A BAR CODE

Sun-kyeong Lee, Pusan, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 738,617, Jul. 31, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 996,919
Claims priority, application Rep. of Korea, Aug. 8, 1990, 90-12013; Jun. 10, 1992, 92-10060
Int. Cl.[6] H01J *31/00*
U.S. Cl. 313—478 14 Claims



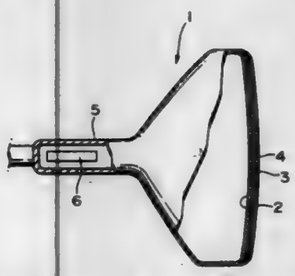
1. A cathode ray tube comprising:
a panel having an inner surface and an outer surface;
a funnel connected to said panel having a neck portion dimensioned to house an electron gun;
a skirt positioned between said panel and said funnel; and
a bar code marking coated on the skirt, said bar code marking consisting essentially of a sheet of heat resisting synthetic resin material disposed in a single layer.

5,446,339

CATHODE RAY TUBE HAVING ANTISTATIC/ANTI-REFLECTION FILM-COVERED TRANSPARENT MATERIAL LAMINATED BODY

Touru Kinoshita, Funabashi; Kenji Takahashi; Tsuneo Yanagisawa, both of Chiba; Masaru Uehara, Matsudo, and Hitoshi Kimata, Narashino, all of Japan, assignors to Sumitomo Cement Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 115,419
Claims priority, application Japan, Aug. 31, 1992, 4-232336; Feb. 10, 1993, 5-023070; Jun. 4, 1993, 5-134968
Int. Cl.[6] H01J *31/00*
U.S. Cl. 313—478 7 Claims



1. A cathode ray tube, wherein a first layer film, containing a mixture of antimony doped tin oxide fine powder and a black colored conductive fine powder, and a second layer film, which is formed on said first layer film and contains a silica sol obtained by the hydrolysis of silicon alkoxide, are formed on at least a front surface.

5,446,340

DISCHARGE LAMP HAVING A LAMP ENVELOPE WITH A TEXTURED SEALED REGION AND METHOD OF MAKING SAME

Edward V. Parillo, Highland Heights; Erwin G. Steinbrenner, Parma Heights, and Alexander L. Gaiss, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 4, 1993, Ser. No. 130,817
Int. Cl.[6] H01J *17/16*
U.S. Cl. 313—493 11 Claims



1. A discharge lamp comprising:
a lamp envelope having at least one sealed end;
a base in which said at least one sealed end is disposed;
excitation means disposed in said lamp envelope and operable so as to emit light output when energized; and
wherein said sealed end of said lamp envelope has a roughened texture disposed around a substantial portion thereof, said roughened sealed end being selectively structurally flawed by said roughened texture relative to the remaining portion of said lamp envelope so that upon the occurrence of a temperature condition in excess of a predetermined value, said roughened sealed end fails in a controlled manner.

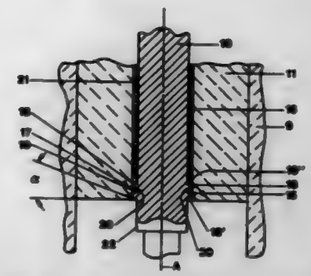
5,446,341

HIGH-PRESSURE ELECTRIC DISCHARGE LAMP WITH TIGHT LEAD-THROUGH PIN ELECTRODE CONNECTION AND METHOD OF ITS MANUFACTURE

Dieter Hofmann, Augsburg, and Stefan Jaeger, Zorneding, both of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany

Filed May 27, 1993, Ser. No. 68,419
Claims priority, application Germany, Jun. 10, 1992, 9207816 U
Int. Cl.[6] H01J *17/18, 61/36*
U.S. Cl. 313—623 15 Claims

1. High-pressure discharge lamp having
a discharge vessel (8) of ceramic material, optionally aluminum oxide, and defining two end portions (9) and a lamp axis (A);
plug means (11) closing off said end portions, said plug means being formed with a through-bore (7);
an ionizable fill in said discharge vessel;
an electrical connection pin or rod (10) passing through at least one through-bore (7) of the plug means (11), said electrical connection pin or rod having a thermal coefficient of expansion which is approximately the same as the material of the plug means (11);
an electrode (12) attached to and electrically connected to said pin or rod (10) and extending into the interior of the discharge vessel; and
an external connection means (6) attached to and electrically connected to said pin or rod, and extending externally of the vessel,
and wherein, in accordance with the invention,
the pin or rod passing through the plug means (11) at at least one end of said discharge vessel defines two axial portions for retaining said pin or rod gas-tightly in the respective plug means (11),
wherein a first one of said axial portions (15, 24, 29) and which faces the interior of the discharge vessel, is formed with at least one circumferentially extending ridge, rim or bead (17, 26) which, in longitudinal section, is approximately triangular, defining an outer edge (19, 20) and



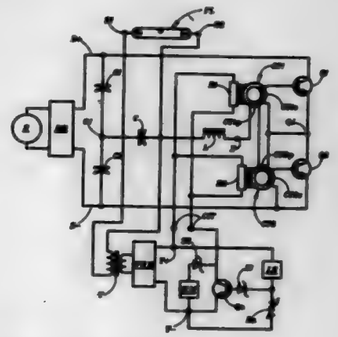
flanks (18, 18', 18'') connecting the outer edge (19, 20) to the first one of said two axial portions,
said outer edge of the at least one ridge, rim or bead being engaged in a tight, sturdy press fit with the wall of the through-bore (7) of the plug means (11);
wherein the outer edge or edges (20) of the rim, or rims, or ridge, or ridges (17, 26) are sheared or deformed and in intimate deformed press fit engagement with the wall of the through-bore (7); and
wherein a glass melt seal (21) is provided to seal and secure the second one of said axial portions (16, 28) in the through-bore, said second one of said axial portions facing said external connection means (6).

5,446,342

LIGHT-OUTPUT-CONTROLLED FLUORESCENT LIGHTING FIXTURE

Ole K. Nilssen, 406 Cassey Dr., Barrington, Ill. 60010

Continuation of Ser. No. 539,508, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 795,540, Nov. 6, 1985, abandoned. This application Oct. 2, 1992, Ser. No. 956,467
The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.
Int. Cl.[6] H05B *37/03, 41/38*
U.S. Cl. 315—129 20 Claims



1. A lighting fixture comprising:

a gas discharge lamp connected with and powered from a source of current-limited voltage and operative to emit light; and

a warning means so positioned and constituted as to: i) intercept part of the light emitted by the lamp means, and ii) provide a warning signal whenever the amount of light emitted by the lamp means fails to reach a pre-determined level, the amount of light emitted being of a substantially higher level than zero; the low light warner being an entity separate from the gas discharge lamp;

such that:

(a) the lighting fixture constitutes an integral entity including and providing mechanical support for: (i) the gas discharge lamp; and (ii) the low light warner; and

(b) the low light warner informs a person exposed to its warning signal to the effect that it may be time to replace the gas discharge lamp.

4. In a lighting system adapted to provide general lighting for offices and the like, an arrangement comprising:

plural lighting fixtures, each lighting fixture including:

(a) a fluorescent lamp requiring for its proper operation to be provided with an AC current at a pair of lamp terminals;

(b) a ballast operative to connect with a source of ordinary power line voltage and to provide an AC voltage operative to supply the AC current to the lamp terminals by way of a frequency-responsive impedance means; the ballast having a control input and being operative, by way of controlling the frequency of the AC voltage, to control the magnitude of the AC current in response to an electrical control signal whenever such signal is being received at its control input; the ballast being further characterized by not including a peak current sensor;

(c) a light sensor having (i) sensor output terminals connected with the control input, and (ii) a light-receiving aperture so disposed within the lighting fixture as to be responsive to light output from the fluorescent lamp while being substantially non-responsive to light from any other source; the light sensor producing an electrical sensor output voltage at its sensor output terminals, thereby to provide said electrical control signal to the control input, thus to control the magnitude of the AC current provided to the lamp terminals; thereby, in turn, being operative to control the amount of light emitted by the fluorescent lamp; the electrical sensor output being: (i) generated at the location of the light-receiving aperture, and (ii) substantially non-responsive to light from any sources other than the fluorescent lamp.

5,446,343

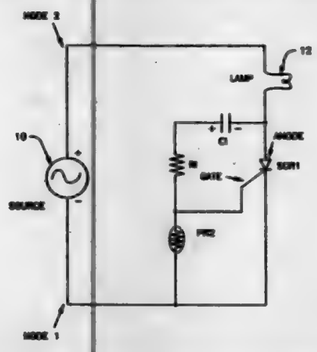
ANTI-FLICKER NIGHT LIGHT

Burt Shulman, Beacon, N.Y., assignor to American Tack & Hardware Co., Inc., Monsey, N.Y.

Filed Aug. 24, 1994, Ser. No. 294,907
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—156 6 Claims

1. In an automatic light turn on circuit comprising a lamp coupled in series with an AC source and a switching element having a gate lead for receiving a gating signal for triggering said switching element, a voltage divider comprising a fixed resistor coupled in series with a photo sensitive element wherein during daylight hours said photo sensitive element has a relatively low impedance resulting in insufficient voltage drop to trigger said switching element and wherein at dusk said photo sensitive element has a relatively high impedance resulting in sufficient voltage drop to trigger said switching element and turn on said lamp, the improvement comprising means for preventing flicker of said lamp at dusk by light from said lamp striking said photo sensitive element, said means comprising:

a capacitor coupled to the junction of said lamp and said switching element and further operatively connected to said voltage divider, said capacitor being sized to develop



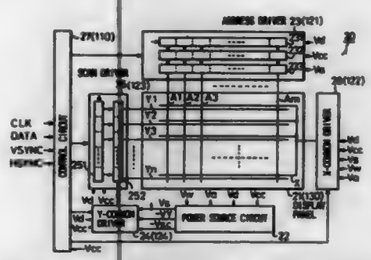
hysteresis which provides increased gate drive when said lamp glows.

5,446,344

METHOD AND APPARATUS FOR DRIVING SURFACE DISCHARGE PLASMA DISPLAY PANEL

Yoshikazu Kanazawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 31, 1994, Ser. No. 188,756
Claims priority, application Japan, Dec. 10, 1993, 5-310937
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.4 37 Claims



1. A method of driving a surface discharge plasma display panel having a first substrate and a second substrate spaced apart and facing each other, and first electrodes, second electrodes, and third electrodes arranged between said first and second substrates, said first electrodes being arranged in parallel with said second electrodes, said third electrodes being arranged orthogonal to said first electrodes and said second electrodes, said first electrodes and said second electrodes intersecting with said third electrodes to form respective intersections which each define a corresponding cell that can be selectively turned ON and OFF, a discharge being produced in a respective cell when a first discharge start voltage is applied to the respective cell, wherein said method comprises:

a reset step of applying a pulse of a first voltage to the respective cell, and thereby cause an accumulation of wall charges in the respective cell, the pulse of the first voltage being higher than the first discharge start voltage, a third voltage being caused by the wall charges and being higher than the first discharge start voltage, and said first, second and third electrodes have the same potential after the application of the pulse of the first voltage;

a write step of applying a pulse of a second voltage to said second and third electrodes to select cells to be turned ON; and

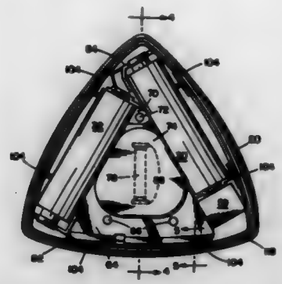
a sustain discharge step of applying an AC pulse of a fourth voltage to said first and second electrodes.

5,446,345

MINIATURE PORTABLE FLASHER LIGHT

Wade Halabi, New Haven, Conn., and Kai K. Ho, Hong Kong, Hong Kong, assignors to Visibility Systems Connecticut Limited Partnership, New Haven, Conn.

Filed Oct. 13, 1993, Ser. No. 135,928
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—200 A 27 Claims



1. A portable flasher device of a size adapted to be hand held, carried in a pocket, worn on a wrist or arm, or mounted on a convenient surface, said device comprising:

A. a housing having front and rear body members joined together, said housing having bi-directional planar dimensions and an axial dimension, said planar dimensions being substantially larger than said axial dimension to give said housing substantially greater planar extent than axial extent whereby said housing is substantially larger across its planar extent than it is thick in axial extent, said bi-directional planar dimensions being such as to define a peripheral extent and axial thickness of said housing suitable for holding said housing within an average adult human hand with said rear body member resting on the palm the hand and the fingertips and thumb thereof grasping said front body member,

B. illumination means mounted within said housing in a position generally centrally with respect to said planar extent, and

C. circuit means mounted in said housing for periodically and momentarily energizing said illumination means to cause said illumination means to periodically flash, whereby said flasher device can be conveniently carried in the palm of the hand of a user while walking or performing some task.

5,446,346

ELECTRONIC BALLAST WITH CONTROLLED DC SUPPLY VOLTAGE

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

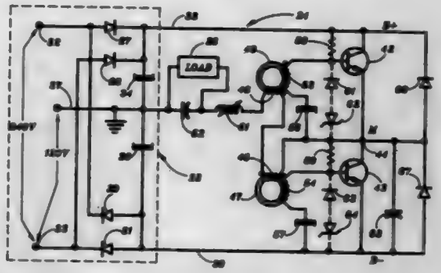
Continuation-in-part of Ser. No. 734,188, Jul. 22, 1991, which is a continuation-in-part of Ser. No. 643,023, Jan. 18, 1991, which is a continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 555,436, Nov. 23, 1983, abandoned, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Mar. 4, 1992, Ser. No. 846,014
Int. Cl.[6] H05B *41/36*
U.S. Cl. 315—209 R 20 Claims

1. An arrangement comprising:

a DC source operative to provide a DC supply voltage at a pair of DC output terminals; the source having a control input operative, on receipt of a control signal, to control the magnitude of the DC supply voltage; the DC source being characterized by causing the magnitude of the DC voltage to reach an undesirably high voltage level in the absence of the control signal; the DC source also being characterized by providing the control signal to the control input whenever the magnitude of the DC voltage exceeds a certain desirable voltage level; the certain desirable voltage level being lower than said undesirably high voltage level;

a lamp means having a pair of lamp input terminals operative to receive lamp current;

an inverter circuit having a pair of DC input terminals and a pair of AC output terminals; the DC input terminals being connected with the DC output terminals; and



lamp connection circuit operative to provide connection between the lamp input terminals and the AC output terminals, thereby to cause lamp current to be supplied to the lamp from the AC output terminals; the lamp connection circuit also having a control output connected with the control input and being operative to provide the control signal to the control input whenever the magnitude of the lamp current exceeds a certain desired current level, thereby to prevent the magnitude of the lamp current from exceeding the certain desired current level even though, in the absence of connection between the control output and the control input, the magnitude of the lamp current would have exceeded the certain desired current level.

5,446,347

ELECTRONIC BALLAST WITH SPECIAL DC SUPPLY

Ole K. Nilssen, 408 Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 819,655, Jan. 13, 1992, which is a continuation of Ser. No. 643,023, Jan. 18, 1991, which is a continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 555,436, Nov. 23, 1983, abandoned, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned, said Ser. No. 555,436, is a continuation-in-part of Ser. No. 330,199, Dec. 14, 1981, Pat. No. 4,430,628, which is a division of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Mar. 16, 1992, Ser. No. 851,495
Int. Cl.[6] H05B *41/36*
U.S. Cl. 315—209 R 19 Claims

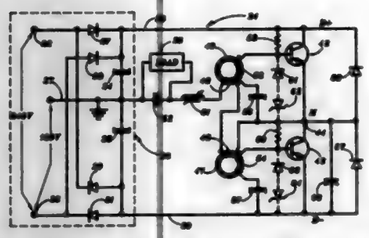
1. An arrangement comprising:

a pair of power line terminals across which is provided an AC power line voltage from an ordinary electric utility power line;

a rectifying circuit assembly connected with the power line terminals and operative to provide a DC voltage between a pair of DC terminals; the magnitude of the DC voltage being substantially constant as well as distinctly higher than the peak magnitude of the AC power line voltage;

an inverting circuit assembly connected with the DC terminals and operative to provide an inverter voltage at a pair of inverter terminals; the frequency of the inverter voltage being substantially higher than the frequency of the AC power line voltage; the inverting circuit assembly being

further characterized by including a transistor having a pair of transistor terminals across which exists a periodic transistor voltage and between which flows a periodic transistor current; the inverting circuit assembly being yet further characterized in that no current flows between the transistor terminals except during periods when the abso-



lute magnitude of the transistor voltage is lower than half the absolute magnitude of the DC voltage;

a gas discharge lamp having a set of lamp terminals; and

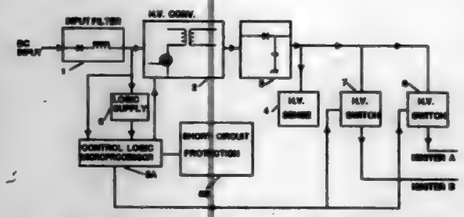
a current-limiting circuit assembly connected between the inverter terminals and the lamp terminals, thereby to cause a lamp current to be supplied to the gas discharge lamp.

5,446,348

APPARATUS FOR PROVIDING IGNITION TO A GAS TURBINE ENGINE AND METHOD OF SHORT CIRCUIT DETECTION

Jan K. Michalek, and Ebrahim B. Shahrodi, both of Newark, Ohio, assignors to Michalek Engineering Group, Inc., Newark, Ohio

Filed Jan. 6, 1994, Ser. No. 178,420
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 SC **29 Claims**



1. A bipolar apparatus for igniting a gas turbine engine by means of an alternating forward and reverse current flow comprising:

a) a storage capacitor capable of storing at least 0.1 Joules of energy;

b) a power supply for charging said storage capacitor to a predetermined voltage;

c) an igniter plug producing a spark in response to energy discharged from said capacitor through said igniter plug;

d) a solid state switch connected in series with said igniter plug and said storage capacitor, wherein said solid state switch, in its conducting state, conducts current alternately in forward and reverse directions therethrough;

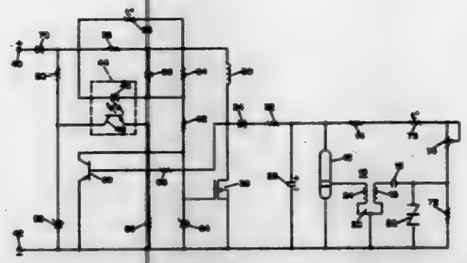
e) a signal generator applying triggering signals to said solid state switch, wherein said triggering signals are applied to said solid state switch responsive to the state of charge of said storage capacitor.

5,446,349

STROBE CIRCUIT UTILIZING OPTOCOUPLER IN DC-TO-DC CONVERTER

Kenneth J. Bocas, Ocean, and David M. Stantz, Ocean Grove, both of N.J., assignors to Wheelock Inc., Long Branch, N.J.

Filed May 10, 1994, Ser. No. 240,863
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—241 S **6 Claims**



1. A strobe circuit for flashing a flashtube at a desired rate, comprising:

a power voltage source having first and second terminals for providing a voltage subject to amplitude variations;

an inductor connected in an electrical path between said first and second terminals of said voltage source;

a flash circuit coupled to said inductor which includes a flashtube, a first capacitor connected in parallel with the flashtube, and a trigger circuit being operable to fire the flashtube to generate a light output upon said first capacitor being charged to a voltage corresponding to the threshold firing voltage of the flashtube;

switch means in said electrical path for electrically connecting and disconnecting said inductor to said power source to store energy in said inductor during periods of connection and causing energy to be coupled from said inductor to said first capacitor during periods of disconnection by said switch means; and

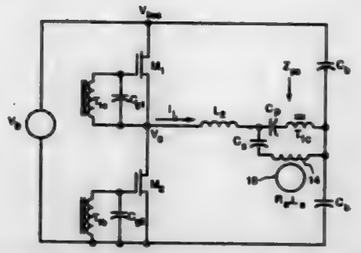
means for repetitively cycling said switch means between an open and a closed state comprising optocoupler means including a light-emitting diode optically coupled to a phototransistor, a resistor network including a first resistor series—connected with a second resistor in parallel with said light-emitting diode, said first resistor being connected in said electrical path between said inductor and said power source, said second resistor being operable in response to an increase in the amplitude of the source voltage to decrease the voltage contribution required from said first resistor at the time said light-emitting diode is turned on thereby to decrease the average input current, wherein said strobe circuit initiates the open period of said switch means in response to the current flowing through the network attaining a value at which the voltage developed across the network is sufficient to turn on the light-emitting diode and initiates the closed period of said switch means in response to the value of the current flowing through said network being insufficient to keep the light-emitting diode turned on, the resistor network ensuring a flashing rate of the flashtube which is substantially independent of variations in amplitude of source voltage.

5,446,350

IMPEDANCE MATCHING CIRCUIT FOR AN ELECTRODELESS FLUORESCENT LAMP BALLAST

Sayed-Amr El-Hamamsy, Schenectady; Gerald W. Ludwig, Scotia, both of N.Y.; David O. Wharmby, Leicester, United Kingdom, and Louis R. Nerone, Brecksville, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1994, Ser. No. 229,826
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—248 **3 Claims**



1. A ballast for an electrodeless of a type of a type having a drive coil situated proximate a light-transmissive envelope for exciting an arc discharge in an ionizable fill contained therein when excited by an alternating current power supply, comprising:

at least two switching devices connected in a bridge configuration; and

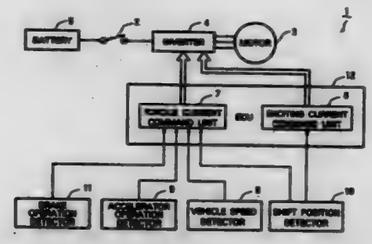
an impedance matching circuit coupled to said bridge configuration of switching devices, said matching circuit comprising an inductance connected in series with a parallel connection of a parallel matching capacitor and said drive coil, said parallel matching capacitor having a capacitance value selected for matching the resistive portion of the impedance of the ballast, said matching circuit further comprising a series matching capacitor connected in series with said drive coil, said series matching capacitor having a capacitance value selected to optimize the phase angle of the impedence of said ballast so as to avoid sensitivity to ballast component and lamp variations and to minimize said inductance.

5,446,351

FALSE-CREEP GENERATING DEVICE FOR ELECTRIC VEHICLES

Katsuyuki Kusano; Akira Ozawa; Yasushi Kanai, all of Saitama, and Tomoyuki Itoh, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,528
Claims priority, application Japan, Aug. 26, 1992, 4-250759
Int. Cl.[6] B60K *31/02*; H02P *7/00*
U.S. Cl. 318—139 **8 Claims**



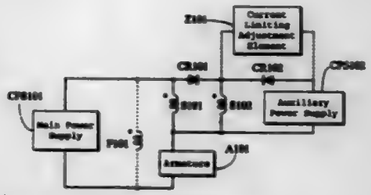
7. A device for generating false creep for an electric vehicle equipped with a transmission, an electric motor for propelling the vehicle through the transmission, and control means for controlling a drive torque produced by the electric motor, an improvement comprising, means for determining vehicle speed and when both an accelerator pedal for operating the control means is released and the transmission is in a selected position to move the vehicle, said means for determining then causing the control means to control the electric motor to produce a small drive torque for vehicle creeping if the vehicle speed is below a predetermined amount.

5,446,352

SERIES OR COMPOUND MOTOR CONTROL CIRCUIT HAVING DUAL SERIES WINDINGS

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Aug. 5, 1993, Ser. No. 102,295
Claims priority, application United Kingdom, Aug. 5, 1992, 9216579
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—248 **4 Claims**



1. A motor control circuit, comprising:

a main power supply;

an armature; and

a main series winding connected in series with the armature and the main power supply, the improvement wherein:

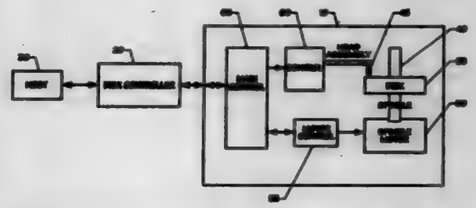
an auxiliary series winding is connected in parallel between the main series winding and an auxiliary power supply, a first end of said auxiliary series winding being connected to a first end of the main series winding, to the armature, and to one terminal of the auxiliary power supply, and a second end of the auxiliary series winding being connected by a first diode to a second end of the main series winding and by a second diode to a second terminal of the auxiliary power supply, the first and second diodes being biased such that the second end of the auxiliary series winding is connected to receive current from both the main and auxiliary power supplies and thereby increase the armature current for improved control at light loads and overload conditions.

5,446,353

DIGITAL MOTOR COMMUNICATION CIRCUIT AND METHOD

Lester F. Schows, Louisville, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Sep. 7, 1993, Ser. No. 116,792
Int. Cl.[6] H02P *6/02*
U.S. Cl. 318—254 **21 Claims**



1. In a disk drive system comprising a disk which revolves around a spindle driven by a spindle motor, an apparatus for controlling the spindle motor comprising:

a synchronizing means which receives as input a back EMF (BEMF) signal, said BEMF signal generated by the spindle motor and transitioning between a first and second state, said synchronizing means generating a synchronizing pulse, said synchronizing pulse generated for each transition of the BEMF signal;

an N bit counter means coupled to receive the synchronizing pulse generated by the synchronizing means and a clock input signal, said counter incrementing a count at each clock, said counter resetting from a maximum count value reached to an initial value when a synchronizing pulse is received;

a dividing means coupled to receive a count value from the counter, said divider means dividing the count value by one/half;

a register means coupled to receive a divided count value from the dividing means, the clock signal input and the synchronizing pulse, said synchronizing pulse triggering the loading of a divided maximum count value received from the dividing means into the register means;

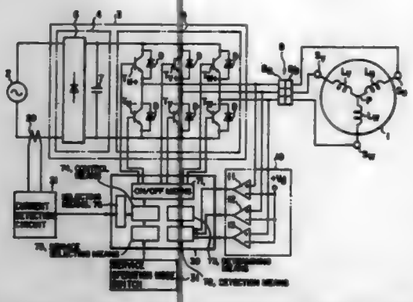
a comparator means coupled to the register means and the counter for comparing each count value output by the counter to the divided maximum count value, said comparator generating an A=B pulse when the count value and the divided maximum count value are equal, wherein said A=B pulse is generated midway between BEMF pulse transitions and is used to control the spindle motor.

5,446,354

DRIVE APPARATUS FOR BRUSHLESS DC MOTOR AND FAILURE DIAGNOSING METHOD FOR THE SAME

Atsuyuki Hiruma, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1994, Ser. No. 214,241
Claims priority, application Japan, Sep. 14, 1993, 5-228526
Int. Cl.[6] H01R *39/46*
U.S. Cl. 318—439 **9 Claims**



1. A drive apparatus for a brushless DC motor constituted by a stator having a plurality of phase coils and a rotor having magnets, said drive apparatus comprising:

a connector for electrically connecting said brushless DC motor and said drive apparatus;

power supply means for sequentially supplying power to said phase coils through said connector;

detection means for receiving a voltage induced in one of said phase coils to which power is not supplied and for detecting a rotational position of said rotor based on said voltage, said voltage being received through said connector;

determining means for determining a switching timing of power supplied from said power supply means to said phase coils based on said rotational position of said rotor detected by said detection means;

selecting means for selecting a service operation mode; and

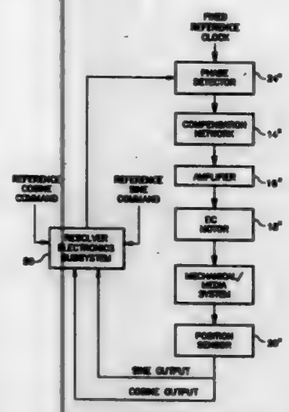
control means for setting a specific frequency for switching said power supplied from said power supply means to said phase coils, said power being supplied based on said specific frequency when said service operation mode is selected by said selecting means irrespective of whether said rotational position is detected by said detection means.

5,446,355

MEDIA TRANSPORT SYSTEM WITH HIGH PRECISION POSITION AND SPEED CONTROL

Mark S. Janosky; David A. Johnson, both of Rochester; Kenneth A. Lindsay, Brockport, and James T. Stoops, Walworth, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1993, Ser. No. 127,844
Int. Cl.[6] G05B *1/06*
U.S. Cl. 318—661 **16 Claims**



1. A media transport system for controlling the position and velocity of media in a document production apparatus marking engine having a media positioning system driven by a motor, said transport system comprising:

a motion control loop to control said motor;

a sensor adapted to detect the position of the media and to create a trigonometric signal characteristic of the position of the media; a resolver electronics, subsystem adapted to trigonometrically process the trigonometric signal to create a resolved signal having a frequency component; and

a phase detector for comparing the frequency component of the resolved signal to a reference clock frequency signal to provide an error signal used to control the motor that drives the media positioning system.

5,446,356

MOBILE ROBOT

Sang-Gwon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 8, 1994, Ser. No. 301,395
Claims priority, application Rep. of Korea, Sep. 9, 1993, 93-18152
Int. Cl.[6] H02J *7/00*
U.S. Cl. 318—587 **9 Claims**

1. A mobile robot system comprising:

a mobile robot including

control means for controlling operation of the robot,

driving means for moving the robot according to control of the control means, and

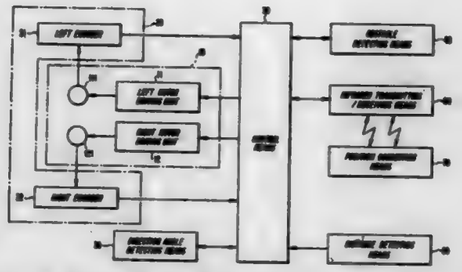
infrared signal transmitting/receiving means for transmitting and/or receiving an infrared signal in the course of travel of the robot; and

position correcting means separated from said mobile robot for receiving the infrared signal from the infrared signal transmitting/receiving means and for sending an intrinsic code signal to the infrared signal transmitting/receiving means, said position correcting means including

an infrared receiving unit for receiving the infrared signal transmitted from the infrared signal transmitting/receiving means;

a trigger generating unit for generating a trigger signal according to the infrared signal received at the infrared receiving unit;

a code establishing unit for receiving a voltage supplied from a power supply unit to thereby output intrinsic code data characteristic of the position correcting means as predetermined by a user;



a code modulating unit for modulating the intrinsic code data output from the code establishing unit; and

an infrared transmitting unit for receiving and amplifying the intrinsic code signal modulated by the code modulating unit to thereby transmit the amplified intrinsic code signal to the infrared transmitting/receiving means,

said mobile robot further including distance detecting means for detecting a separation distance from the position correcting means in order to output separation distance data detected therefrom to the control means, said control means correcting a position error on the basis of said intrinsic code signal and said separation distance data.

5,446,357

DISCONTINUITY COMPENSATION FOR MOTOR DRIVER SERVOS

Trace A. Baker, Boulder; Bruce M. Davis, and Chester L. Rebman, both of Longmont, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

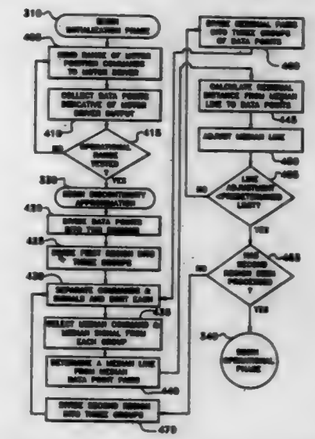
Filed Oct. 5, 1993, Ser. No. 132,108
Int. Cl.[6] G05B *11/18*
U.S. Cl. 318—632 **10 Claims**

1. A method for compensating for a discontinuity of motor current signals in a motor driver servo having a motor position microprocessor, a motor driver, a motor, a means for receiving a plurality of motor position commands by said motor driver, and a means for sending a plurality of motor current signals to said motor from said motor driver, said method comprising the steps of:

(a) collecting data indicative of a correspondence between said plurality of motor position commands and said plurality of motor current signals;

(b) generating a best fit approximation of said plurality of motor position commands around said discontinuity of motor current signals; and

(c) compensating for said discontinuity of motor current signals by adding an offset based on said best fit approximation to at least one selected command among said plurality of motor position commands.

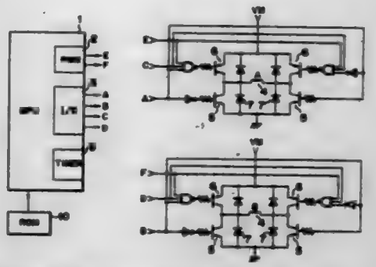


5,446,358

STEPPING MOTOR CONTROL SYSTEM

Kazuhiro Nakata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 99,007
Claims priority, application Japan, Jul. 30, 1992, 4-203863
Int. Cl.[6] H02P *8/00*
U.S. Cl. 318—696 **6 Claims**



1. A stepping motor control system comprising:

a stepping motor;

drive means for driving said stepping motor; said drive means including changeover means for changing an excitation phase of an excitation current supplied to an excitation coil of said stepping motor and switching means for controlling the excitation current supplied to said stepping motor by applying a pulse signal of a present duty factor;

step drive signal generation means for generating a step drive signal supplied to said changeover means for step-driving said stepping motor;

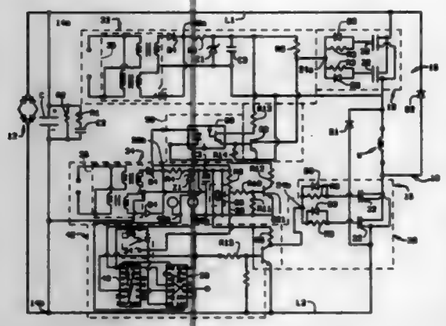
pulse generation means for generating said pulse signal of a preset duty factor supplied to said switching means of said drive means;

memory means for storing a plurality of duty factor data of said pulse signal; and

changing means for changing the duty factor of said pulse signal generated by said pulse generation means in accordance with a plurality of duty ratio data stored in said memory means, said changing means dividing a single

driving range of said stepping motor into a plurality areas and varying the duty ratio in the respective divided areas.

5,446,359
CURRENT DECAY CONTROL IN SWITCHED RELUCTANCE MOTOR
Gary E. Horst, Manchester, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 29, 1993, Ser. No. 175,268
Int. Cl.[6] H02P 7/36
U.S. Cl. 318—701 21 Claims



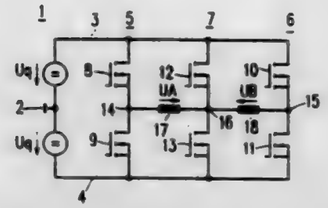
1. A circuit for controlling residual current decay in a single or polyphase SRM comprising:
sensing means for sensing the position of a rotor of the motor;
switch means for directing current flow into a phase winding of the motor when the phase is active and for recovering or dissipating energy in the winding when the phase is inactive, the switch means comprising a first set of switches and a second set of switches, said sets of switches being on respective sides of the phase winding with one set of switches being activated when the phase is active, and deactivated when the phase is inactive;
signal generating means providing an operating signal to the switch means to control current flow and recovery or dissipation, the signal generating means including a PWM signal generator whose output signal pulse width and frequency are a function of the SRM's operating characteristics, the second set of switches being modulated by operating signals from the signal generating means whereby operation of the second set of switches is controlled as a function of the signal characteristics of the operating signal;
a capacitor connected in series with the phase winding and charged by the current in the phase winding when the phase becomes inactive thereby to recover a portion of the energy; and
control means responsive to the sensing means for controlling the signal generating means for the signal generating means to provide operating signals having operating characteristics which differ when a phase is active and when it is not, thereby to facilitate energy recovery or dissipation when the phase becomes inactive, the control means effecting both frequency and/or duty cycle of the operating signals to control the rate of decay of the current and consequently motor noise, the control means being responsive to inputs from the sensing means when the phase becomes inactive to reverse the pulse width of the PWM operating signals produced by the signal generating means from those which are produced when the phase is active.

20. A method of decaying the residual current in a winding of a single or polyphase SRM, current being supplied to the winding when the phase is active and the residual current being the current remaining in the winding when the phase become inactive, the method comprising:
switching the winding between a first circuit which is an energy recovery circuit to recover a portion of the energy represented by the residual current and a second circuit which is an energy dissipation circuit which dissipates a portion of the energy represented by the residual current;
controlling the switching of the winding between the energy recovery and energy dissipation circuits in a controlled manner by which the residual current is decayed to zero so as to cause minimal ringing in the motor and thereby reduce motor noise, controlling switching of the winding including switching the winding between the circuits over a plurality of intervals with the winding being switched into one circuit for a portion of each interval and into the other circuit the remainder of the interval, both the duration of each interval and the portion thereof in which the winding is switched into one circuit or the other being variable in a predetermined manner.

5,446,360
METHOD AND APPARATUS FOR CONTROLLING SINGLE PHASE INDUCTION MOTOR
Byung-Soo Son, and Lee-Kyung Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Aug. 17, 1993, Ser. No. 107,152
Claims priority, application Rep. of Korea, Aug. 17, 1992, 92-14759
Int. Cl.[6] H02P 1/24
U.S. Cl. 318—727 8 Claims

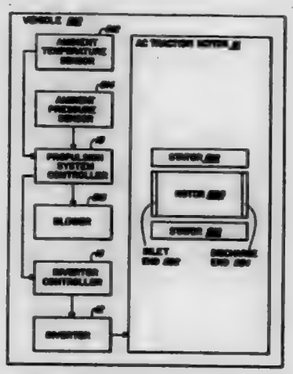
1. A method of controlling a single phase induction motor, comprising the steps of:
calculating an error between an ideal position signal from a reference model and an actual position signal of the motor detected by a position detecting circuit as the motor is controlled;
converting the calculated error into a control coefficient using an adaptive control program so as to set the control coefficient such that the error between the ideal position signal and the actual position signal is zero;
controlling the motor according to the control coefficient; and
wherein said step of calculating an error comprises the steps of:
inputting a desired reference speed;
driving the motor at the desired reference speed input at the reference speed inputting step;
discriminating whether the motor is rotated at the motor driving step;
detecting time per rotation at the motor rotation discriminating step;
detecting a rotation speed of the motor on the basis of the detected time per rotation and storing the detected speed; and
comparing the speed stored at the speed detecting step with the reference speed to obtain a difference therebetween.

5,446,361
CIRCUIT ARRANGEMENT FOR POWERING A TWO-PHASE ASYNCHRONOUS MOTOR
Heinz Van Der Broeck, Zülpich, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 23, 1993, Ser. No. 125,993
Claims priority, application Germany, Sep. 25, 1992, 42 32 134.4
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—747 24 Claims



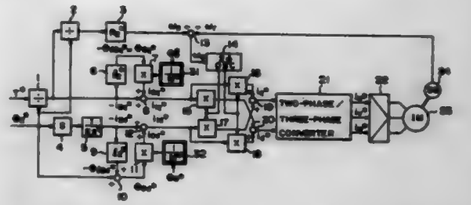
1. A circuit arrangement for powering a two-phase asynchronous motor comprising two windings which each have an end connected to a first node and a second node respectively and which both have a common end connected to a third node, the nodes each being arranged to receive one of, a first alternating voltage, a second alternating voltage and a third alternating voltage whose sinusoidal fundamental waves at least substantially correspond in frequency, characterized in that the third alternating voltage to be applied to the third node assumes constant levels (+Uq, −Uq) in periodically recurring time intervals.

5,446,362
THERMAL PROTECTION FOR AC TRACTION MOTORS USING TEMPERATURE ESTIMATIONS TO CALCULATE TORQUE LIMITS AND BLOWER SPEED REQUIREMENTS
Laurence D. Vanek, Ballston Spa, N.Y.; Robert G. McGrath, North East, and Michael H. Lafferty, Harborcreek, both of Pa., assignors to General Electric Company, Erie, Pa.
Filed Jan. 21, 1994, Ser. No. 263,100
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—901 13 Claims



1. A thermal protection apparatus for an AC traction motor including a stator, a rotor, and an inverter, comprising:
means for measuring ambient air temperature of the motor;
means for measuring atmospheric air pressure of the motor;
means for using the measured ambient air temperature and atmospheric air pressure values for estimating a plurality of temperatures in the AC traction motor;
means for calculating a plurality of motor torque limits imposed by the plurality of estimated temperatures; and
means for controlling the inverter by providing a signal comprising the lowest of the calculated plurality of motor torque limits to an inverter controller.

5,446,363
METHOD OF CONTROLLING INDUCTION MOTOR
Ryoichi Kurosawa, Kokubunji, and Hajime Yamamoto, Tama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 20, 1993, Ser. No. 109,501
Claims priority, application Japan, Feb. 5, 1993, 5-018367
Int. Cl.[6] H02P 5/40
U.S. Cl. 318—806 16 Claims



1. A method of controlling an induction motor, which controls a primary current of the induction motor on the basis of a magnetic flux component current command (i_{1d}^*), a torque component current command (i_{1q}^*), and a slip frequency command (ω_2) which are orthogonal component command values of the primary current of the induction motor, comprising the steps of:
receiving a torque command (T^*) and a secondary magnetic flux command (Φ_2^*);
setting a first, second and third control parameter R_2^*, l_2^* and M^* in accordance with a secondary resistance R_2, a secondary leakage inductance l_2 and a mutual inductance M of the induction motor, respectively; and
calculating the magnetic flux component current command (i_{1d}^*), the torque component current command (i_{1q}^*) and the slip frequency command (ω_2) in accordance with R_2^*, l_2^*, M^*, T^* and Φ_2^*, as given by the following equations:

$$i_{1d}^* = (d\Phi_2^*/dt)/R_2^* + (\Phi_2^* + (d\Phi_2^*/dt)/R_2^* \times l_2^*)/M^*$$

$$i_{1q}^* = T^*/\Phi_2^* + (T^*/\Phi_2^* \times l_2)/M^*$$

$$\omega_2 = T^*/\Phi_2^{*2} \times R_2^*.$$

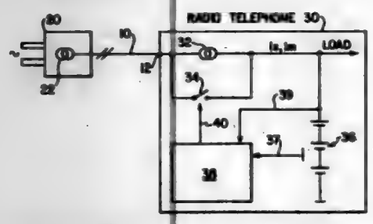
5,446,364
FAST CHARGING ARRANGEMENT
Matti Naskali, Ylöjärvi, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Feb. 14, 1992, Ser. No. 836,092
Claims priority, application Finland, Feb. 25, 1991, 910902
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—2 5 Claims

1. A fast charging apparatus, comprising:
a battery-powered radio telephone device having a battery to be recharged;
a charger means separate from the battery powered radio telephone for charging the battery of the battery-powered radio telephone device with charging current and voltage, said charger means having a constant-current generator for generating a constant current; and
a connection between said charger and said battery-powered radio telephone device, said connection having only two spaced apart conductors extending and making connec-

tion between said charger and said battery-powered radio telephone device; the battery-powered radio telephone device comprising:

a shunt switch in electrical connection with a charger connection of said two-conductor connection and being controllable between open and closed positions,

means for controlling, as a function of at least a charging



state and temperature of the battery which powers said battery-powered radio telephone device, the position of said shunt switch, said controlling means including a logic arrangement within the battery-powered radio telephone device; and

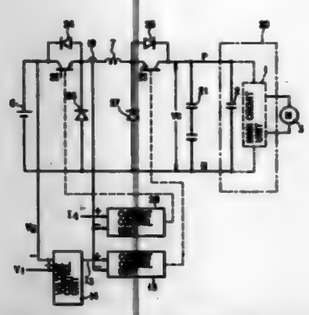
means for conducting the constant current to the battery from the charger connection in response to said shunt switch being in said closed position.

5,446,365

METHOD AND APPARATUS FOR CONTROLLING A BATTERY CAR

Yoshihito Nomura; Koji Endo, and Chihiro Okado, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Hino Jidosha Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed May 18, 1993, Ser. No. 62,569
Claims priority, application Japan, May 19, 1992, 4-125263
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—14 10 Claims



2. A control apparatus for controlling a car including a motor driven by a battery and a motor control means for charging the battery with regeneration power generated by deceleration torque of said motor, said apparatus comprising:

a large-capacitance capacitor, connected in parallel with said motor control means and the battery, for supplying power to said motor control means;

a first current control means, connected between said battery and said large-capacitance capacitor, for controlling a current flowing from said battery to said large-capacitance capacitor; and

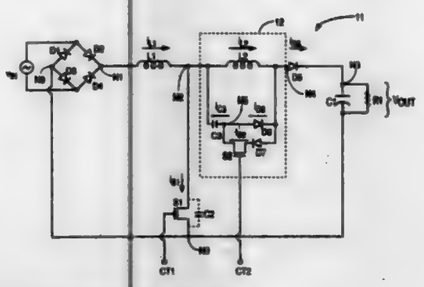
a second current control means, connected in series with said first current control means between said battery and said large-capacitance capacitor, for controlling a current flowing from said large-capacitance capacitor to said battery.

5,446,366

BOOST CONVERTER POWER SUPPLY WITH REDUCED LOSSES, CONTROL CIRCUIT AND METHOD THEREFOR

John A. Bassett, San Ramon, and Arthur B. Odell, Cupertino, both of Calif., assignors to Computer Products, Inc., Fremont, Calif.

Filed Feb. 8, 1994, Ser. No. 193,339
Int. Cl.[6] G05F 1/10
U.S. Cl. 323—222 27 Claims



7. A boost converter, comprising:

an inductor;

a capacitor;

a diode coupled to control a flow of current from said inductor to said capacitor;

a switch coupled to control a flow of current through said inductor, said switch having an intrinsic capacitance, said switch being conductive during a first time period, said switch being substantially nonconductive during a second time period; and

means for discharging said intrinsic capacitance during said second time period using energy of a diode recovery current flowing in said diode during said first time period.

8. A method, comprising the steps of:

generating a first signal having a voltage amplitude proportional to "a−c" by subtracting a signal of voltage amplitude "c" proportional to an input current of a boost converter from a signal of voltage amplitude "a";

generating a second signal having a peak voltage amplitude of approximately said voltage amplitude "a", said second signal being a ramp signal;

generating a pulse width modulated control signal from said first and second signals; and

supplying said pulse width modulated control signal to a control terminal of a switch of said boost converter.

5,446,367

REDUCING CURRENT SUPPLIED TO AN INTEGRATED CIRCUIT

David L. Planey, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed May 25, 1993, Ser. No. 67,194
Int. Cl.[6] G05F 1/40
U.S. Cl. 323—266 46 Claims

1. An integrated circuit powered by an input power signal, the circuit comprising:

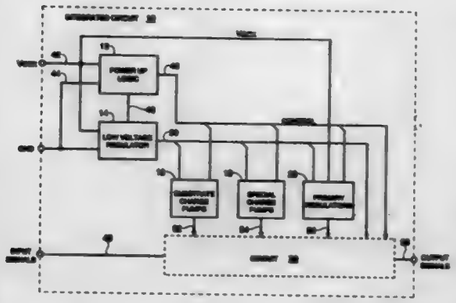
a. preregulating means, coupled to the input power signal to receive a flow of input current, for generating a reference signal, the preregulating means responsive to a first control signal for limiting the flow of input current to the preregulating means, the preregulating means comprising:

(1) a first source for generating a first power signal;

(2) a second source for generating a second power signal; and

(3) means for coupling the first power signal and the second power signal to form an intermediate power signal for providing power from one of the first source, the second source, and both the first source and the second source;

b. regulating means, responsive to the input power signal and coupled to the preregulating means, for generating a regulated power signal from the input power signal in response to the reference signal;



c. timing means coupled to the preregulating means for generating the first control signal; and

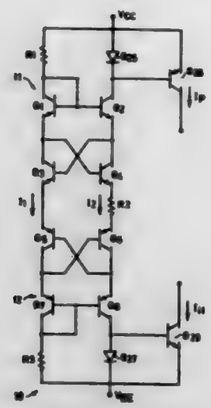
d. a subcircuit coupled to the regulating means for receiving operative power from at least one of the regulated power signal and the intermediate power signal.

5,446,368

VOLTAGE INDEPENDENT SYMMETRICAL CURRENT SOURCE WITH CROSS-COUPLED TRANSISTORS

Gabriel J. Uecategui, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 13, 1994, Ser. No. 180,666
Int. Cl.[6] G05F 3/16; H03F 3/45
U.S. Cl. 323—315 20 Claims



1. A symmetrical current source comprising:

first and second npn transistors configured as a first transistor current source;

third and fourth npn cross coupled transistors connected to said first transistor current source to bias said first transistor current source at a first predetermined voltage;

first and second pnp transistors configured as a second transistor current source;

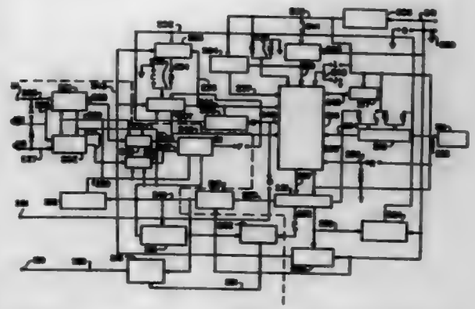
third and fourth cross coupled pnp transistors connected to said second current source and to said third and fourth cross coupled npn transistors to bias said second transistor current source at a second predetermined voltage.

5,446,369

CONTINUOUS, AUTOMATIC AND REMOTE MONITORING OF CORROSION

Mark T. Byrne, Loveland; Kenneth L. Kimes, Mt. Gilead, and John T. Stropki, Westerville, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 958,805, Oct. 9, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 134,292
Int. Cl.[6] G01N 27/20
U.S. Cl. 324—71.2 24 Claims



1. A method for monitoring material corrosion in a remote area comprising the following steps:

(a) providing a corrosion sensor having an exposed element disposed for exposure to the environment of said area and a control element protected from said environment;

(b) imposing an electric current flow through said exposed element and control element from connections remote from said area including a voltage across said exposed element and a separate voltage across said control element;

(c) separately amplifying the induced voltage of said electric current across said exposed element and across said control element through connections remote from said area;

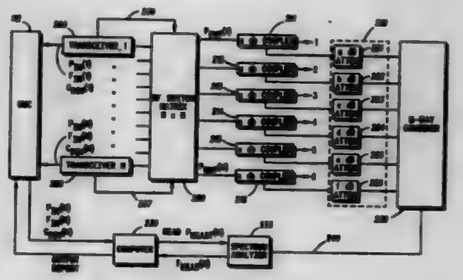
(d) measuring the increase in amplified voltage across said exposed element as compared to the amplified voltage across said control element wherein the increase is indicative of the corrosion of said exposed element.

5,446,370

METHOD AND APPARATUS FOR VERIFYING THE OUTPUT OF A RF SWITCH MATRIX UTILIZED IN A COMMUNICATION SYSTEM

John Voight, Mundelein, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1993, Ser. No. 129,968
Int. Cl.[6] H04B 17/00
U.S. Cl. 324—76.11 12 Claims



1. In a communication system that includes a plurality of transceivers and a switch matrix, each of the plurality of trans-

ceivers coupled to a corresponding input of the switch matrix, a method of verifying an output of the switch matrix, the method comprising the steps of:

providing, by the plurality of transceivers, a plurality of input signals at predetermined input levels to the switch matrix;

switching, by the switch matrix, the plurality of input signals to a plurality of outputs of the switch matrix to produce a plurality of output signals;

adjusting each of the .plurality of output signals by a different predetermined adjustment level to produce a corresponding plurality of adjusted output signals;

measuring, at a frequency of a first input signal of the plurality of input signals, a level of one adjusted output signal of the plurality of adjusted output signals; and

determining which of the plurality of outputs of the switch matrix were switched based on the predetermined input level of the first input signal, the measured level of the one adjusted output signal, and a relationship of the different predetermined adjustment levels to the plurality of outputs of the switch matrix.

5,446,371

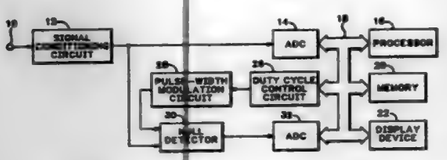
PRECISION ANALOG-TO-DIGITAL CONVERTER WITH LOW-RESOLUTION AND HIGH-RESOLUTION CONVERSION PATHS

Larry E. Eccleston, Edmonds, and David E. Bezold, Mukilteo, both of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed May 12, 1994, Ser. No. 241,835

Int. Cl.[6] G01R *17/06*

U.S. Cl. 324—121 R **8 Claims**



1. A high-resolution voltage measurement circuit, comprising:

an input path for receiving an input voltage to be measured;

analog-to-digital conversion means coupled to said input path for converting said input voltage to a first converted voltage;

a processor circuit coupled to an output of said analog-to-digital conversion means for receiving said first converted voltage;

a programmable DC voltage generator coupled to said processor circuit to provide a DC reference voltage in response to commands from said processor circuit; and

a null detector having a first input coupled to said input path and a second input coupled to an output of said programmable DC voltage generator, said null detector further having an output coupled to an input of said analog-to-digital conversion means,

wherein said processor circuit monitors an output of said analog-to-digital conversion means while commanding said programmable DC voltage generator to adjust said DC reference voltage until the output of said null detector is within a predetermined range amplifying the difference between said input voltage and said DC reference voltage,

said analog-to-digital conversion means further converting said difference between said input voltage and said DC reference voltage to a second converted voltage, and

said processor circuit further adding said second converted voltage to a voltage equal to said DC reference voltage to provide a final voltage representative of said input voltage.

5,446,372

NONINDUCTIVE SHUNT CURRENT SENSOR WITH SELF-POWER CAPABILITY

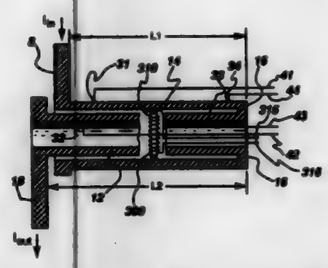
Ertugrul Berkcan, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 85,787, Jul. 6, 1993, Pat. No. 5,420,504. This application Mar. 10, 1994, Ser. No. 208,551

The portion of the term of this patent subsequent to May 30, 2095, has been disclaimed.

Int. Cl.[6] H01F *38/28*

U.S. Cl. 324—126 **18 Claims**



1. A noninductive shunt current sensor comprising:

a cylindrical-shaped conductive element having a first end, a second end, an outer surface, and a major axis extending from the first end to the second end;

a conductive pipe concentric to said conductive element, having a first end, a second end, an inner surface, an outer surface, and a major axis extending from the first end of said pipe to the second end of said pipe;

the inner surface of said pipe being radially spaced at a predetermined distance from the outer surface of said conductive element;

said pipe and said conductive element being connected at their respective second ends by an electrically conductive bridge; and

electrical power generating means situated between said pipe and said conductive element for generating a predetermined electrical power in response to an electromagnetic field formed during current flow through said current sensor.

5,446,373

METHOD OF MEASURING THE CONSUMPTION OF ELECTRICAL ENERGY

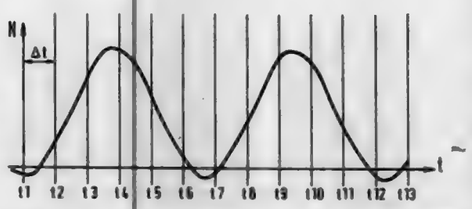
Lutz Bieri, Erding, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Filed Jun. 18, 1993, Ser. No. 79,666

Claims priority, application Germany, Jun. 26, 1992, 42 21 057.7

Int. Cl.[6] G01R *21/06*

U.S. Cl. 324—142 **3 Claims**



1. A method of determining the electrical energy consumption by a consumer, said method comprising:

alternately sampling the analog value of an alternating voltage and an alternating current flowing to the consumer over a plurality of time points with successive time points corresponding to a prescribed sampling period;

measuring the alternating voltage at a first time point to obtain a momentary value of the alternating voltage;

storing the momentary value of the alternating voltage;

thereafter measuring the alternating current at a second time point to obtain a momentary value of the alternating current, with the time interval between the first and second time points defining a sampling period;

forming a product of the stored momentary value of the alternating voltage and the momentary value of the alternating current;

storing the momentary value of the alternating current;

measuring the alternating voltage at a third time point to obtain a second momentary value of the alternating voltage;

forming a product of the stored momentary value of the alternating current and the second momentary value of the alternating voltage;

repeating the sequence of measuring, alternating between the alternating current and the alternating voltage, forming a product, and storing the momentary value, alternating between the momentary value of the alternating voltage and the momentary value of the alternating current;

making an initial determination of the energy consumption by the consumer by summing each of the products so formed to provide a composite product sum; and

providing a corrected determination of the energy consumption by the consumer by compensating for errors introduced into the composite product sum by multiplying the composite product sum with a correction constant dependent upon the frequency of the alternating voltage and the alternating current, as well as upon the sampling period.

5,446,374

POTENTIOMETER MULTIPLIER CIRCUIT, AND AN ELECTRICAL ENERGY METER INCLUDING SUCH A CIRCUIT

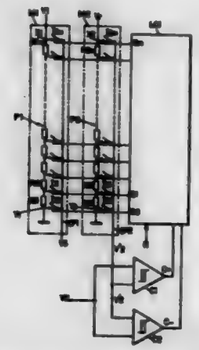
Denis Pradel, Pierrelaye, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique -SAGEM, Paris, France

Filed Mar. 11, 1994, Ser. No. 208,670

Claims priority, application France, Mar. 12, 1993, 93 02882

Int. Cl.[6] G01R *7/00*

U.S. Cl. 324—142 **14 Claims**



1. An electronic circuit for multiplying together two operands represented by respective first and second voltage signals, comprising:

a first multiplier module comprising at least one controllable potentiometer for adjusting a first amplitude ratio between an output signal and an input signal of said first multiplier module; and

a second multiplier module comprising at least one controllable potentiometer for adjusting a second amplitude ratio between an output signal and an input signal of said second multiplier module,

each potentiometer of said first and second multiplier modules being respectively constituted by an array of resistors in connected series and associated with a set of switches each connected between a respective node of said array of resistors and a common output of said potentiometer,

the respective array of resistors and set of switches of said potentiometers of said first and second multiplier modules having identical structures and said potentiometers of said first and second modules being controlled in the same manner by a sequential control unit so that said first and second amplitude ratios are constantly substantially equal,

the first multiplier module receiving as its input signal the first voltage signal and delivering an output signal proportional to the product of the two operands, while the second multiplier module receives as its input signal a reference voltage and delivers as its output signal a feedback signal,

the circuit further including means for comparing the feedback signal with the second voltage signal, and for producing correction signals based on a deviation between said feedback signal and said second voltage signal, said correction signals being applied to the sequential control unit for adjusting said first and second amplitude ratios.

5,446,375

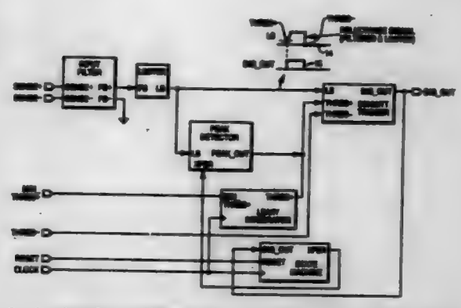
RELUCTANCE SENSOR HAVING VARIABLE THRESHOLD DETECTION CIRCUIT

Luke Perkins, Security, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio and Hyundai Electronics America, Milpitas, Calif.

Filed Oct. 16, 1992, Ser. No. 961,974

Int. Cl.[6] G01P *3/46, 3/488*; F02P *17/02*; H03K *5/24*

U.S. Cl. 324—163 **5 Claims**



1. A signal conditioner for a reluctance sensing system which receives a reluctance signal comprising two signal parts of opposite polarity with a zero crossing separating the parts, and compares the reluctance signal with a threshold value, comprising

means for periodically sampling the reluctance signal; and

means for modifying the threshold value, after the sampling, based on the sampled reluctance signal.

5,446,376

SENSING MOTOR SPEED AND ROTATION DIRECTION

Randy D. Porter, Greene, and Matthew W. Pankow, Buffalo, both of N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Filed Oct. 22, 1993, Ser. No. 139,675

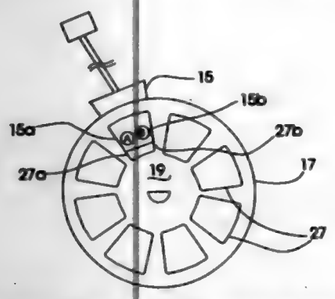
Int. Cl.[6] G01P *3/52, 13/00*; G08B *21/00*

U.S. Cl. 324—165 **2 Claims**

1. An apparatus for sensing both the speed and the direction of rotation of a motor, comprising:

a rotating timing wheel having means for attachment to a rotational shaft of a motor, said timing wheel having a plurality of slots on a face portion thereof, each slot of said plurality of slots having a leading edge and a trailing edge, each rotationally spaced apart at a given angle on said timing wheel;

two spaced-apart sensors, with each comprising an oscillator, and each oscillator operating at a different frequency from the other, said sensors fixedly mounted adjacent the face portion of said timing wheel, said sensors being mounted a given or a fixed distance apart and mounted opposite said timing wheel, so that during the rotation of said rotating timing wheel, both sensors will read within



one slot of said plurality of slots, each of said sensors generating a signal when it is opposite said leading edge or said trailing edge of said slot of the rotating timing wheel; and

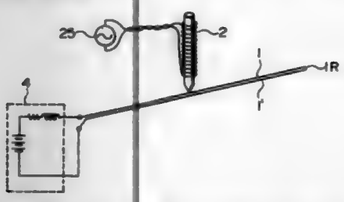
measuring means electrically connected to said sensors and having logic programming for receiving signals from said sensors and for determining the rotational velocity and the rotational direction of the timing wheel and, hence, the motor, said programming including logic for determining the rotational direction of the motor by means of a program that creates and interprets exclusive OR, a condition that is dependent upon one of the sensors being logically high and changing state during a clockwise rotation.

5,446,377

MAGNETIC DETECTOR USING MATTEUCCI EFFECT

Kaneo Mohri, Nagoya; Mitsusari Kano, Seto; Toshihiko Matsuda, Owariasahi; Jiro Kiso, Seto; Morihiko Takashi; Yoshiharu Konishi, both of Owariasahi, and Junichi Oizumi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 797,923, Nov. 26, 1991, Pat. No. 5,298,689.
This application Sep. 10, 1993, Ser. No. 118,764
Claims priority, application Japan, Nov. 28, 1990, 2-322964; Nov. 28, 1990, 2-322965; Jan. 29, 1991, 3-008921
Int. Cl.[6] G01B 7/14
U.S. Cl. 324—207.13 22 Claims



1. A magnetic detector based on Matteucci effect, comprising:

at least one magnetic wire;

means for providing circumferential magnetization to said magnetic wire;

means for generating an A.C. magnetic field;

means for detecting a Matteucci-effect voltage developed across the magnetic wire when a relative distance between said magnetic wire and said A.C. field generation means becomes small;

means for detecting proximity between said magnetic wire and said A.C. field generation means when said Matteucci-effect voltage detected by said detection means is equal to or higher than a predetermined value;

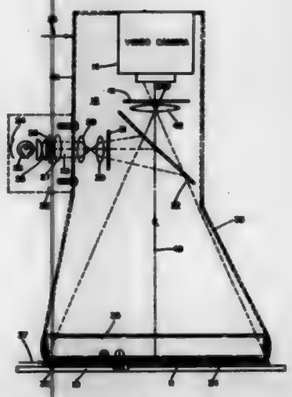
wherein said magnetic wire is made of go and return line paths disposed close to each other.

5,446,378

MAGNETO-OPTIC EDDY CURRENT IMAGING APPARATUS AND METHOD INCLUDING DITHERING THE IMAGE RELATIVE TO THR SENSOR

Stanley M. Reich, Jericho, and Michael Hora, Setauket, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 15, 1993, Ser. No. 167,425
Int. Cl.[6] G01N 21/21
U.S. Cl. 324—238 27 Claims



1. In a magneto-optic eddy current imaging apparatus for detecting defects in one of a ferrous metal, non-ferrous metal and non-metallic structure test object, said apparatus having a sensor, magnetic field means for applying a normal magnetic field to said sensor, optical means for applying polarized light to said sensor, whereby said sensor rotates the plane of polarization passing through it as a function of the applied magnetic field, video camera means, said sensor being positioned between said test object and said video camera means, said magnetic field inducing a uniform flow of eddy currents in said sensor and said test object, said eddy currents being disrupted at defects in said test object, thereby creating secondary magnetic fields normal to the induced eddy currents flowing in said sensor, the low intensity local magnetic fields producing a local rotation of the plane of polarization of light from said optical means passing through said sensor and resulting in an image, the improvement comprising:

background eliminating means for canceling undesired background of a two-dimensional magneto-optically generated image of a defect in the test object, said background eliminating means including:

(i) dithering means for dithering said image relative to said sensor,

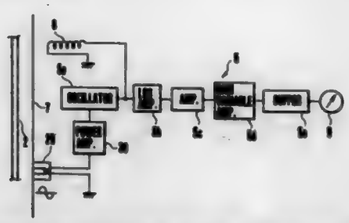
(ii) signal processing means, electrically connected to said video camera means, for processing signals from said video camera means after dithering by said dithering means to eliminate undesired background signals.

5,446,379

METHOD AND SYSTEM FOR SEARCHING AND SENSING REINFORCING STEEL IN CONCRETE BY EMPLOYING AN OSCILLATOR DRIVER SENSOR COIL

Yoshio Machi, Kosigaya, Japan, assignor to Nishimatsu Construction Co. Ltd., Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,940
Claims priority, application Japan, Aug. 28, 1991, 3-296705; Oct. 31, 1991, 3-311578
Int. Cl.[6] G01N 27/87; G01R 33/12
U.S. Cl. 324—240 28 Claims



2. A system for searching and sensing a reinforcing steel in a reinforced concrete, comprising:

means for magnetizing the reinforcing steel in the reinforced concrete with lines of magnetic force generated by a magnetic field; and

means for sensing the lines of magnetic force radiated from the magnetized reinforcing steel to detect an existence and a condition of the reinforcing steel in the reinforced concrete, said sensing means including a coil for sensing a magnetic force,

said magnetizing means being positioned remote from said sensing means,

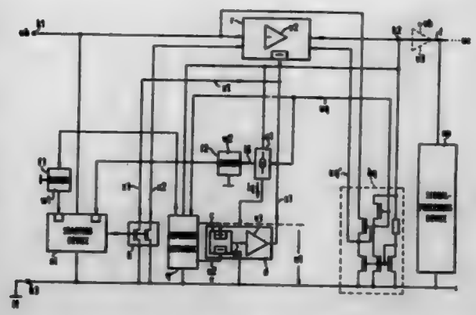
said sensing means includes an oscillator connected to said magnetic field sensing coil, said oscillator generating a voltage signal to be output to said magnetic force sensing coil.

5,446,380

MONOLITHIC INTEGRATED VOLTAGE REGULATOR

Ulrich Theus, Gundelfingen, and Juergen Kassel, Freiburg, both of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Dec. 9, 1993, Ser. No. 164,188
Claims priority, application Germany, Dec. 18, 1992, 42 42 909.7
Int. Cl.[6] G05F 1/565
U.S. Cl. 323—275 13 Claims



1. A series voltage regulator that receives an unregulated input voltage on a first terminal and that generates a regulated supply voltage output on a second terminal, said input voltage and said output voltage being referenced to a reference voltage potential on a third terminal, said series voltage regulator comprising:

a control loop comprising:

a reference network;

a difference device having a first gain; and

a control element having a second gain, said control element connected between said first terminal and said second terminal;

a first power supply for said reference network and for said difference device, said first power supply coupled to said second terminal to receive said regulated output voltage;

a second power supply for said control element, said second power supply coupled to said first terminal to receive said unregulated input voltage; and

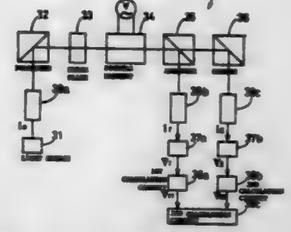
a starting device coupled to an auxiliary circuit, said starting device providing an output signal to said auxiliary circuit during a starting phase to activate said auxiliary circuit, said auxiliary circuit providing an auxiliary signal to said control loop to pull said control loop into a regular operating range so that said control loop causes said regulated output voltage to be controlled toward a desired regulated output voltage during said starting phase.

5,446,381

OPTICAL VOLTAGE ELECTRIC FIELD SENSOR

Hisakazu Okajima, Nishikasugai, and Masanobu Yamamoto, Handa, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Aug. 26, 1993, Ser. No. 112,070
Claims priority, application Japan, Aug. 31, 1992, 4-231964
Int. Cl.[6] G01D 5/34
U.S. Cl. 324—96 4 Claims



1. An optical voltage.electric field sensor for measuring an A.C. voltage or electric field applied thereto, comprising:

a light source;

a polarizer arranged to linearly polarize an incident light beam emanated from the light source;

a phase plate arranged to apply a phase difference to the linearly polarized light beam;

a Pockels element coupled with the phase plate for modulating the linearly polarized light beam applied with the phase difference in accordance with A.C. voltage or electric field applied thereto;

an analyzer coupled with the Pockels element for separating the modulated light beam into an S-polarized light beam in a vibrative direction perpendicular to the polarization plane and a P-polarized light beam in a vibrative direction parallel with the polarization plane;

a first light-receiving element arranged to receive the S-polarized light beam for converting the S-polarized light beam into a first electric signal V_1 indicative of the intensity of the S-polarized light beam;

a second light-receiving element arranged to receive the P-polarized light beam for converting the P-polarized light beam into a second electric signal V_2 indicative of the intensity of the P-polarized light beam;

a first calculation circuit for calculating an equation

$V_{11}=(V_1-DC_1)/DC_1$, DC_1

being a direct current component of the first electric signal, on a basis of the first electric signal V_1 to produce an output V_{11} therefrom;

a second calculation circuit for calculating an equation

$V_{22}=(V_2-DC_2)/DC_2$, DC_2

being a direct current component of the second electric signal, on a basis of the second electric signal V_2 to produce an output V_{22} therefrom; and

a third calculation circuit for calculating an equation

$V_3=1/((\alpha/V_{11})-(\beta/V_{22}))$,

α and β being constants, on a basis of both the outputs V_{11} and V_{22} to produce an output V_3 for measurement of the applied A.C. voltage or electric field.

5,446,382

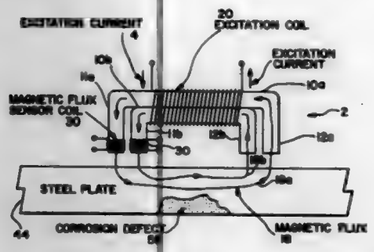
EDDY CURRENT PROBE HAVING ONE YOKE WITHIN ANOTHER YOKE FOR INCREASED INSPECTION DEPTH, SENSITIVITY AND DISCRIMINATION

John H. Flora, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 23, 1993, Ser. No. 81,763

Int. Cl.[6] G01R *33/12*; G01N *27/90, 27/82*

U.S. Cl. 324—232 **12 Claims**



1. A device for detecting a defect on a metal component having a cover, the device comprising:

two magnetizing yokes, each yoke having a body supported by at least two legs for contacting the cover and supporting the body over the cover thereby maintaining the yoke in a fixed orientation with respect to the metal component, one of said yokes being smaller in size than said other yoke and constructed to fit inside said other yoke with an upper part of each yoke making physical contact while said legs of the two yokes are separated by a predetermined distance;

an excitation coil wound around the bodies of the two yokes between the legs for receiving an alternating current and producing separate alternating magnetic fields through the yokes and corresponding magnetic flux in each yoke with one magnetic flux pushing the other magnetic flux into the metal component; and

magnetic flux sensor means for each yoke for scanning for changes in the magnetic flux from each yoke for detecting a defect.

5,446,383

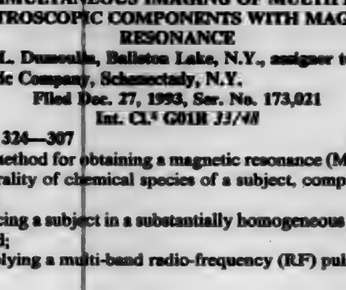
METHOD AND APPARATUS FOR DETECTING MAGNETIC ANOMALIES IN A DIFFERENTIAL TRANSFORMER CORE

James N. Pearse, Dix Hills, and Bernard Gershen, Centerport, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 975,155, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 780,573, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 667,912, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 557,340, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 382,208, Jul. 24, 1989, abandoned. This application Mar. 11, 1994, Ser. No. 212,675

Int. Cl.[6] G01R *33/12*; G01N *27/82*

U.S. Cl. 324—240 **16 Claims**



1. Apparatus for evaluating the permeability of a toroidal magnetic core comprising:

an electromagnet comprising an element of magnetic material and comprising a first winding having at least one turn encircling at least a portion of the periphery thereof;

AC current source means directly coupled to said first winding for causing a predetermined flux field to extend through said magnetic material of said electromagnet to said core positioned adjacent said magnetic material of said electromagnet;

Means for rotating said core adjacent said magnetic material of said electromagnet and subjecting said core to the flux field of said electromagnet;

a second winding having at least one turn encircling at least a portion of the periphery of said core;

AC voltage amplifying means including means for allowing the passing of AC voltage induced in said second winding as said core is rotated through said second winding, having a frequency below a predetermined frequency, operatively coupled to said second winding on said core for amplifying and filtering the resulting AC voltage induced in said second winding by said flux field of said electromagnet, the change in value of said amplified and filtered induced AC voltage as said core is rotated 360 degrees about its axis being indicative of the variation in permeability of said core.

5,446,384

SIMULTANEOUS IMAGING OF MULTIPLE SPECTROSCOPIC COMPONENTS WITH MAGNETIC RESONANCE

Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1993, Ser. No. 173,021

Int. Cl.[6] G01R *33/48*

U.S. Cl. 324—307 **5 Claims**

1. A method for obtaining a magnetic resonance (MR) image of a plurality of chemical species of a subject, comprising the steps of:

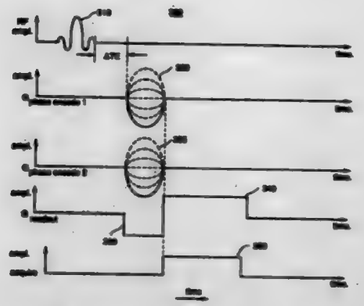
a) placing a subject in a substantially homogeneous magnetic field;

b) applying a multi-band radio-frequency (RF) pulse having a plurality of bands of selected amplitudes at frequencies which correspond to resonant frequency peaks of chemical species desired to be imaged to said subject, each band having a phase ϕ;

c) applying a phase-encoding magnetic field gradient pulse in a phase encoding direction of an amplitude A to said subject;

d) applying a readout magnetic field gradient pulse in a readout direction to said subject;

e) collecting an MR response signal from said subject simultaneously with the application of the readout magnetic field gradient pulse;



f) calculating the Fourier transform of the collected MR response signal with respect to the readout direction to create a processed data set for amplitude A;

g) repeating steps 'b' 'through' f for N repetitions, each with a unique phase encoding magnetic field gradient amplitude A, and a unique phase offset ϕ for at least one band of the multi-band RF pulse; and

h) calculating the Fourier transform of the processed data sets with respect to the phase encoding direction to create an MR image of the desired chemical species.

5,446,385

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Karl-Heinz Kugler, Vaihingen; Walter Gollin, Moeglingen, and Christian Zimmermann, Pleidelsheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

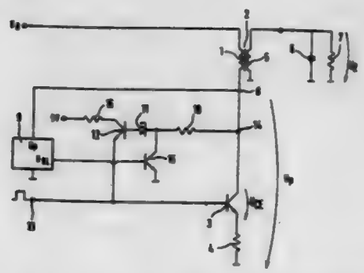
PCT No. PCT/DE93/00817, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO94/08133, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 8, 1993, Ser. No. 244,445

Claims priority, application Germany, Oct. 2, 1992, 42 33 211.7

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—388 **6 Claims**



1. An ignition system for internal combustion engines comprising:

an ignition coil having a primary winding and a secondary winding of the ignition coil;

an evaluation unit coupled to a primary voltage of the primary winding;

an ignition output stage coupled to the primary winding of the ignition coil and to an output of the evaluation unit, the ignition output stage including a voltage bracketing circuit, the voltage bracketing circuit establishing a bracketing voltage, the bracketing voltage controlling a primary current flowing through the primary winding as a function of the primary voltage at the primary winding and the output of the evaluation unit;

the evaluation unit determining whether a secondary load of the ignition coil is a high secondary load or a low secondary load based upon the primary voltage, the evaluation unit inducing a high bracketing voltage if the secondary load is determined to be the high secondary load, the evaluation unit inducing a low bracketing voltage if the secondary load is determined to be the low secondary load.

5,446,386

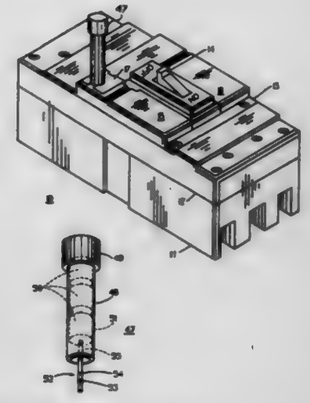
MOLDED CASE CIRCUIT BREAKER AUXILIARY POWER SUPPLY PLUG

John A. Pollman, Seymour; Daniel J. DellaVecchia, Cheshire; Ira B. Goldman, Waterbury; John T. Lewandoski, Terryville, and Paul T. Rajotte, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,460

Int. Cl.[6] G01R *31/02, 31/32*

U.S. Cl. 324—424 **1 Claim**



1. A circuit breaker trip unit auxiliary power supply plug comprising:

a plastic enclosure having a removable cover at one end thereof;

an electrical jack connector at an opposite end of said enclosure, said jack connector having first and second radial contacts providing external connection;

at least one battery within said enclosure having first and second terminals; and

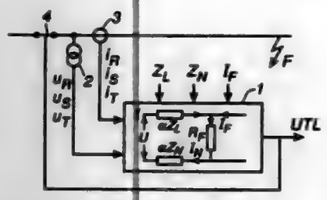
an electrical circuit within said enclosure providing electrical connection between said first and second terminals and said first and second radial contacts said enclosure comprising a first cylinder of a first predetermined dimension and said jack connector comprising a second cylinder of a second dimension, said second dimension comprising a press-fit dimension to a circuit breaker test plug access opening for electrical connection between said first and second terminals and said electrical circuit within a circuit breaker test plug.

5,446,387

METHOD AND A DEVICE FOR DETERMINING A FAULT ON A TRANSMISSION LINE

Leif Eriksson, Saha, and Murari M. Saha, Vasteras, both of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Filed Sep. 21, 1993, Ser. No. 124,034
Claims priority, application Sweden, Oct. 20, 1992, 9203071
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—522 18 Claims



1. A method for determining the relative distance "alpha" to the fault on a transmission line from a measuring station P located close to one of the ends of the transmission line, comprising the steps of:

forming a fault model of the transmission line from the zero-sequence impedance Z_N, the zero-sequence resistance R_N and the zero-sequence inductance L_N of the transmission line and the corresponding transformed zero-sequence current I_N and operating with the voltage balance equation $U=\text{alpha}\,(Z_L I+Z_N I_N)+I_F R_F$;

inputting an assumption of a fault resistance R_F and a fault current I_F at the fault point from the measuring station P to the fault model;

supplying the impedance Z_L, the resistance R_L and the inductance L_L of the transmission line to the fault model;

continuously sampling the phase currents I and the phase voltages U of the transmission line;

feeding the fault current to the fault point from the other end of the transmission line; and

determining the relative distance "alpha" in the fault model from the voltage balance equation.

5,446,388

TOOL FOR PULLING AND TESTING CARTRIDGE-TYPE FUSES

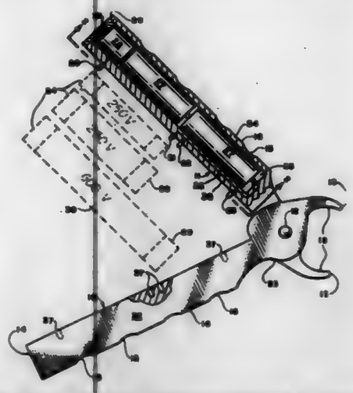
Roy D. Chick, P.O. Box 32, Wheeler, Tex. 79096

Continuation-in-part of Ser. No. 619,597, Nov. 29, 1990. This application Feb. 10, 1992, Ser. No. 833,108
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—550 5 Claims

1. A combination tool for pulling and testing cartridge-type electrical fuses, comprising:

a) a pair of rigid elongated members joined by pivot means adjacent one extremity of said members to define long handle insulation portions and short cooperating jaw portions disposed on the opposite side of said pivot means from said handle portions, said handle portions having facing interior surfaces and opposed outer surfaces, and

b) testing means disposed in at least one of said handle portions for determining the electrical integrity of a cartridge-type fuse, said testing means comprising a series of contacts in substantially linear array spaced apart along the length of the interior surface of said handle portion and projecting therefrom at progressively increased distances, electrical conductor means disposed within said handle portion and communicating with said contacts, at least one battery disposed within said handle portion in series circuit with said contacts, and indicator means activatable by said battery upon completion of a series circuit involving said fuse, contacts, conductor means and battery the other handle portion having receiving apertures in its interior surface positioned to receive said contacts when the handle portions are in contact.

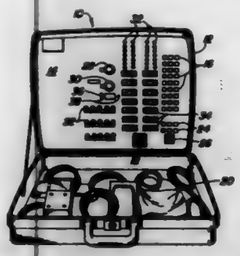


5,446,389

PORTABLE TEST SET FOR TESTING OPERABILITY OF A LOCOMOTIVE

Edward M. Lenz, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 31, 1992, Ser. No. 999,635
Int. Cl.[6] G01R *31/00*; G01M *15/00*
U.S. Cl. 324—555 6 Claims



1. A portable test set for testing operability of a locomotive, the test set being adapted for external testing of internal functions of the locomotive, the locomotive including an externally accessible multi-conductor train line for transmitting and receiving command functions from other locomotives, each end of said train line terminating in a multiple unit connector and a governor connector, the test set comprising:

a portable case;

connector means attached to said case and adapted for coupling to both said multiple unit connector and said governor connector of the train line externally of the locomotive, said connector means including pins in said test set operatively coupled to each conductor of the multi-conductor train line when said connector means is coupled to the train line;

switch means in said test set attached to said case and coupled to first selected ones of said pins for providing signal excitation on selected ones of said conductors in said train line, said switch means being operable to input horsepower commands and thereby energize and operate said locomotive from a locomotive battery, said switch means being operable to energize selective functions of said locomotive from said test kit; and

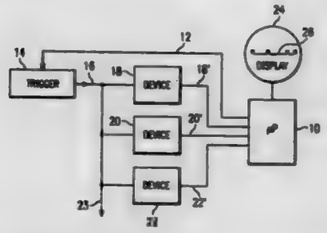
indicator means in said test set attached to said case and coupled to second selected ones of said pins for providing an indication of signal status on the respective conductor associated with a corresponding one of said pins, said indicator means providing data representative of locomotive operability.

5,446,390

METHOD AND APPARATUS FOR MONITORING AND DISPLAYING SEQUENTIALLY OPERATING CONDITIONS OF A PLURALITY OF DEVICES

Ted M. Marks, Kendall Park, N.J., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 821,013, Jan. 15, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 183,561
Int. Cl.[6] G08B *19/00*
U.S. Cl. 324—555 7 Claims



1. Apparatus for indicating, on demand, monitored operating conditions of a plurality of devices comprising:

a control circuit for generating a request signal to request an indication of the operating conditions of a selected one of the plurality of devices;

a plurality of trigger circuits, each associated with one of said plurality of devices, each trigger circuit outputting a trigger signal responsive to receiving a request signal indicating selection of its associated device;

test circuitry, coupled to each device, for providing operating condition signals indicative of the operating conditions of the respective device;

a plurality of operating signal circuits, each associated with one of said plurality of devices, each operating signal circuit coupled to its associated trigger circuit to store a sequence of the operating condition signals corresponding to its associated device and to output the stored sequence of operating condition signals to said control circuit responsive to receiving the trigger signal from its associated trigger circuit; and

a display, controlled by said control circuit, for visually displaying the outputted operating condition signals.

5,446,391

DIELECTRIC DETECTING DEVICE

Kouji Aoki, Nagoya; Masanori Sugiyama, Nishio, and Koichi Sugiyama, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Apr. 21, 1993, Ser. No. 50,811
Claims priority, application Japan, Apr. 23, 1992, 4-103320
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—661 8 Claims

1. A dielectric detecting device comprising:

an earth electrode;

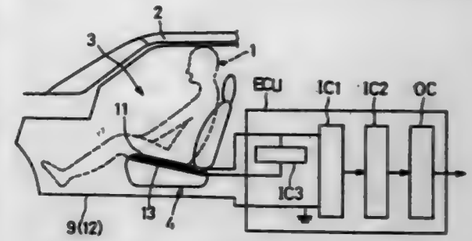
sensor electrode opposed to the earth electrode for constituting a capacitor whose capacitance varies with the existence of a dielectric object therebetween;

a detecting means for detecting detected capacitance values, wherein the detecting means is capable of independently detecting a change in the capacitance of the capacitor and other detected capacitance values of a circuit;

an input signal processing means disposed between the detecting means and the sensor electrode;

a switching means for selectively connecting the input signal processing means and the sensor electrode; and

a judging means for making a first judgment and a second judgment, wherein the first judgment determine whether the dielectric object exists between the sensor electrode and the earth electrode or not and wherein the second judgment determines whether or not a malfunction has occurred on the basis of the detected capacitance values detected by the detecting means.

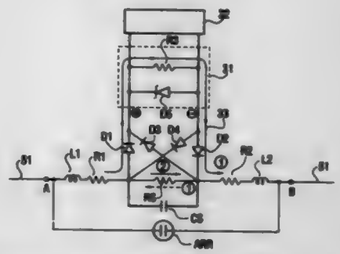


5,446,392

SUBMARINE EQUIPMENT AND FAULT LOCATING METHOD FOR A SUBMARINE COMMUNICATION SYSTEM

Yoshiyuki Inoue, and Makoto Sumitani, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 30, 1993, Ser. No. 128,671
Claims priority, application Japan, Feb. 10, 1993, 5-021542
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—678 7 Claims



1. Submarine equipment for a submarine cable communication system, which is inserted in a submarine cable connecting a plurality of cable landing stations, and is supplied with operating currents from the cable landing stations through a feed line of the submarine cable, said submarine equipment comprising:

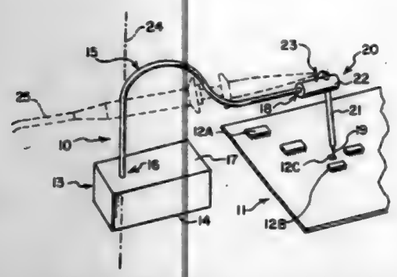
a main processing circuit for transmitting communication signals through the submarine cable;

a power unit, connected in series to the feed line, for receiving the operating current from the feed line and for supplying power to said main processing circuit;

a nonlinear resistance device which is inserted between said power unit and the feed line, whose resistance increases according to decrease in the feed current; and

a charging/discharging resistor connected in parallel to said nonlinear resistance device.

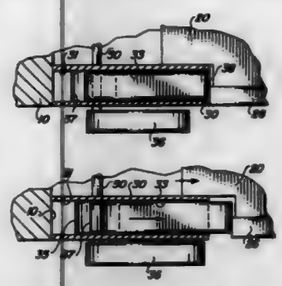
5,446,393
ELECTRICAL MEASURING AND TESTING PROBE HAVING A MALLEABLE SHAFT FACILITATING POSITIONING OF A CONTACT PIN
Richard K. Schaefer, 20 Princeton Cir., Longmont, Colo. 80503
Filed May 21, 1993, Ser. No. 65,965
Int. Cl.[6] G01R *1/04*
U.S. Cl. 324—754 10 Claims



1. A manually operable test probe constructed and arranged to make electrical connection with electrical test points that are associated with a generally planar electrical assembly, the test probe comprising:
a weighted solid base metal member having a generally flat and horizontal bottom surface that is adapted for manual horizontal positioning generally adjacent to the electrical assembly,
a solid and flexible wire shaft formed of a malleable material capable of manual bending and thereafter remaining in the bent position, said shaft having a first end fixed to said base member and extending generally horizontally therefrom in a manner to cause a second end of said shaft to vertically overhang the electrical assembly,
an electrically conductive contact pin supported by said second end of said shaft, said contact pin being movable in a generally vertical direction and extending generally transverse to said shaft, such that downward manual flexing of said shaft is operable to bring said contact pin into electrical contact with a test point that is associated with the electrical assembly, and
electrical connection means in electrical communication with said contact pin, said connection means facilitating the connection of an electrical test instrument or the like to the test point that is associated with the electrical assembly.

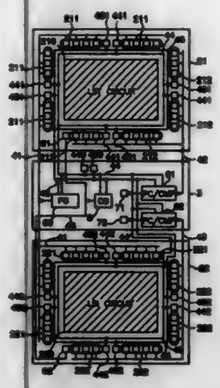
5,446,394
TEST FIXTURE WITH PERMANENT CIRCUIT BOARD EXTRACTOR THEREON
Michael P. Cassidy, Chandler, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Feb. 1, 1994, Ser. No. 189,868
Int. Cl.[6] H01R *13/62*; G01R *1/04*
U.S. Cl. 324—762 8 Claims

1. A board extractor for use with an integrated circuit test fixture for facilitating removal of circuit board from the test fixture, wherein the test fixture has a plurality of pin receptacles on the front thereof and the circuit boards have a corresponding plurality of pin connectors attached to one edge thereof for insertion into the pin receptacles on the front of the test fixture, said board extractor including in combination:
a first slide member mounted on an integrated circuit test fixture adjacent the front thereof for reciprocating movement between the front of said test fixture and a circuit board, said slide member located to engage said one edge of a circuit board and move the circuit board from a first position with the pin connectors of the circuit board inserted into the pin receptacles of the test fixture, to a second position pushing the circuit board away from the test fixture to remove the pin connectors on the one edge of the circuit board from the pin receptacles on the front of the test fixture; and
a rotating operating member movable between at least first and second rotatable positions corresponding to said first and second positions of said slide member, said rotating



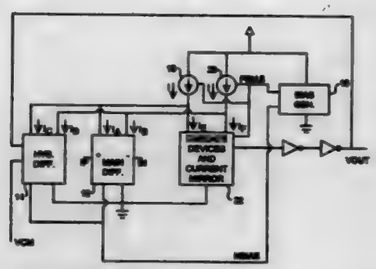
member attached to the test fixture and having a projection thereon for engaging said first slide member to move said slide member from said first position to said second position to effect said reciprocating movement thereof to engage said circuit board.

5,446,395
TEST CIRCUIT FOR LARGE SCALE INTEGRATED CIRCUITS ON A WAFER
Junichi Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 21, 1993, Ser. No. 124,071
Claims priority, application Japan, Sep. 22, 1992, 4-252608
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 4 Claims



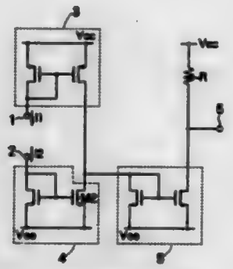
1. A circuit for simultaneously testing at least two of a plurality of integrated circuits provided in dicing regions of a wafer comprising:
an input test signal generating and transmitting means electrically connected to at least two of said plurality of integrated circuits through first interconnection means for generating input test signal patterns and for subsequently transmitting said input test signal patterns to each of said at least two integrated circuits; and
output test signal analyzing means directly electrically connected to each of said at least two integrated circuits through second interconnection means for analyzing output test signals output from each of said at least two integrated circuits in response to said input test signal patterns so as to conduct a test of each of said at least two integrated circuits simultaneously, a number of said analyzing means being equal to a number of integrated circuits to be simultaneously tested.

5,446,396
VOLTAGE COMPARATOR WITH HYSTERESIS
Geoffrey E. Brehmer, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Oct. 22, 1992, Ser. No. 964,781
Int. Cl.[6] H03K *5/24*
U.S. Cl. 327—66 21 Claims



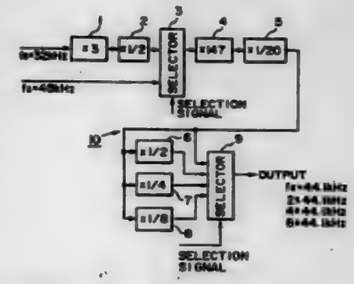
1. A comparator circuit comprising:
a pair of current devices;
cascode devices and current mirror circuit coupled to receive a first portion of current from each said current device;
a pair of differential transistors coupled to receive a pair of input signals and to receive a second portion of current from each said current device;
a pair of hysteresis transistors coupled in parallel with said differential transistors to receive a third portion of current from each said current device; and
means for changing an output voltage produced from said cascode devices and current mirror circuit in response to changes in the relative magnitudes of said first, said second, and said third portions of current.

5,446,397
CURRENT COMPARATOR
Michio Yotsuyanagi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 22,290
Claims priority, application Japan, Feb. 26, 1992, 4-039837
Int. Cl.[6] H03K *5/153*
U.S. Cl. 327—66 11 Claims



1. A current comparator, comprising:
first and second input terminal to which first and second currents to be compared are supplied;
a first current mirror circuit, whose current input terminal is coupled to the first input terminal;
a second current mirror circuit, whose current input terminal is coupled to the second input terminal and whose current output terminal is coupled to an current output terminal of the first current mirror circuit;
a third current mirror circuit, whose current input terminal is coupled to a node of the current output terminals of the first and second current mirror circuits;
a load circuit coupled between a current output terminal of the third current mirror circuit and a terminal to which a first voltage is applied; and
a comparison result output terminal coupled to the load circuit.

5,446,398
SAMPLING FREQUENCY CONVERTER
Toshio Iwata, Sagamihara, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan
Filed Nov. 15, 1993, Ser. No. 151,824
Claims priority, application Japan, Nov. 16, 1992, 4-329003
Int. Cl.[6] H03M *7/30*
U.S. Cl. 327—113 2 Claims

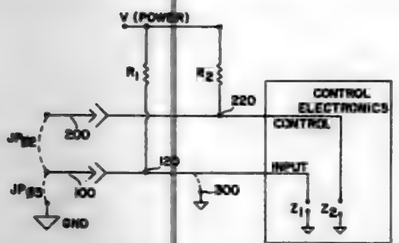


1. A sampling frequency converter comprising:
a first over-sampling filter for over-sampling by a 3-fold input data sampled by sampling pulses having a sampling frequency of 32 kHz;
a first down-sampling filter for down-sampling by a one-2nd-fold the output of said first over-sampling filter;
a first selector for selecting one of input data sampled by sampling pulses having a sampling frequency of 48 kHz and the output data of said first down-sampling filter;
a second over-sampling filter for over-sampling by a 147-fold the output data of said first selector;
a second down-sampling filter for down-sampling by a one-20th-fold the output of said second over-sampling filter;
a plurality of down-sampling filters connected to said second down-sampling filter for producing a plurality of output data respectively sampled by 44.1 kHz, 2×44.1 kHz and 4×44.1 kHz sampling frequencies; and
a second selector for selecting one of said plurality of output data.

5,446,399
METHOD AND STRUCTURE FOR A FAULT-FREE INPUT CONFIGURATION CONTROL MECHANISM
Christopher V. Reggiardo, Alviso, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Nov. 18, 1994, Ser. No. 342,183
Int. Cl.[6] G01R *19/155*
U.S. Cl. 326—16 1 Claim

1. A configuration control mechanism for use in digital systems comprising:
a logic circuit having an input means of high impedance, said input means have a first resistive device operably coupled thereto;
a means of providing a control signal of variable impedance operably coupled to said logic circuit, said control signal means having a second resistive device operably coupled thereto; and
a connecting means for operably coupling said input means

to said control signal means wherein upon said coupling the impedance of said control signal is changed from low



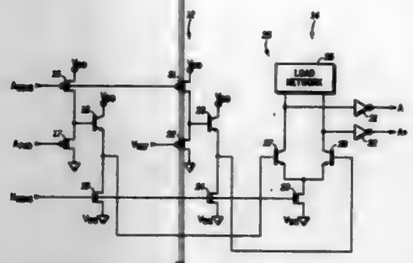
to high and changes in said input means are respectively monitored for a system fault signal.

5,446,400

GTL COMPATIBLE BICMOS INPUT STAGE

Scott G. Nogle, Austin, Tex., assignor to Motorola Inc., Schaumberg, Ill.

Filed Nov. 7, 1994, Ser. No. 334,906
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—64 14 Claims



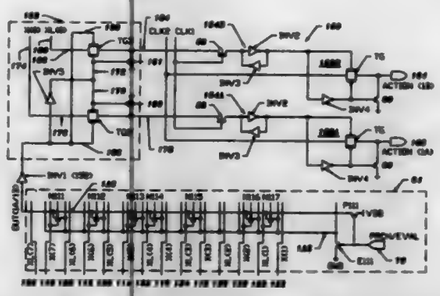
1. A level shifting circuit, comprising:
a current source for providing a current;
a first transistor having a first current electrode coupled to the current source, a control electrode for receiving an input signal, and a second current electrode for providing a first intermediate level signal;
a second transistor having a first current electrode coupled to the first current electrode of the first transistor, a control electrode for receiving a reference voltage, and a second current electrode for providing a second intermediate level signal;
a first load element having a first terminal coupled to the second current electrode of the first transistor, and a second terminal;
a second load element having a first terminal coupled to the second current electrode of the second transistor, and a second terminal coupled to the second terminal of the first load element;
a third load element having a first terminal coupled to the second terminals of both the first and second load elements, and a second terminal;
a first diode having a first terminal coupled to the second current electrode of the first transistor, and a second terminal coupled to the second terminal of the third load element;
a second diode having a first terminal coupled to the second current electrode of the second transistor, and a second terminal coupled to the second terminal of the third load element; and
a third diode having a first terminal coupled to the second terminal of the third load element, and a second terminal coupled to a power supply voltage terminal.

5,446,401

SYNCHRONOUS DUAL WORD DECODING USING PLA

Pranay Gaglani, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 13, 1994, Ser. No. 214,529
Int. Cl.[6] H03M *7/38*; H03K *19/084*
U.S. Cl. 326—108 12 Claims



1. A logic circuit arrangement including a programmable logic array for performing synchronous dual word decoding, comprising:
AND logic plane means (64) for receiving a plurality of control command words and their complements and performing predetermined logic operations thereon and for generating output signals on a plurality of output lines each defining a single output leg;
said control command words being formed of input logic signals and having a binary code consisting of a plurality of bits except for a least significant bit; and
each output leg of said AND logic plane means being formed of one of a plurality of N-channel MOS transistors (N111–N117), each of said plurality of transistors having its drain connected to one of the plurality of output lines and its source connected to a dynamic ground line, selected ones of said plurality of transistors having its gate connected to corresponding bits of the binary code, selected other ones of said plurality of transistors having its gate connected to receive the complement of corresponding bits of the binary code;
means (153) coupled to each one of said plurality of output lines and being responsive to said least significant bit and its complement of said binary code for decoding each one of said plurality of output lines and said least significant bit so as to generate either a first action signal associated with said least significant bit or a second action signal associated with the complement of the least significant bit; and
means for precharging each of said plurality of output lines to a high level during a precharge phase of precharge/evaluation signal.

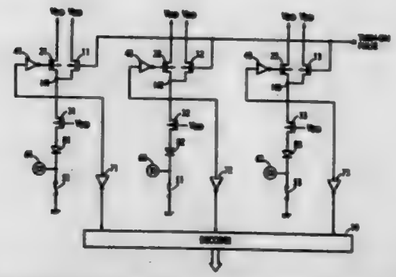
5,446,402

NOISE TOLERANT CODE SETTING CIRCUIT

Masanori Yoshimori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 298,459
Claims priority, application Japan, Sep. 1, 1993, 5-240354
Int. Cl.[6] H03K *19/0948*; H01H *37/76*
U.S. Cl. 326—108 4 Claims

1. A code setting circuit comprising:
a plurality of pad terminals to each of which a voltage pulse is applied;
a plurality of thin-film resistors corresponding respectively to the pad terminals, each of said thin-film resistors being connected between the corresponding pad terminal and a reference potential;
a plurality of first transistors of first conductivity type adapted to be rendered conductive in response to a turn-on pulse;
a plurality of second transistors of the first conductivity type corresponding to said first transistors, each of the second transistors having a channel connected in parallel with a channel of the corresponding first transistor between a voltage source and a corresponding one of a plurality of nodes;
a plurality of inverters corresponding respectively to the second transistors and the nodes, each of the inverters being connected between the corresponding node and the gate terminal of the corresponding second transistor;
a plurality of third transistors of second conductivity type



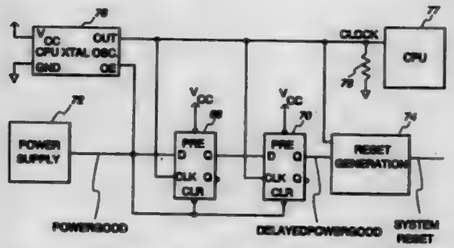
opposite to the first conductivity type and corresponding respectively to said nodes, each of the third transistors having a channel connected at one end to the corresponding node and a gate terminal biased so that the third transistor prevents said voltage source from being coupled through a correasponding one of the second transistors to a corresponding one of said pad terminals;
a plurality of blocking means respectively corresponding to said third transistors and said pad terminals, each of the blocking means being connected between the other end of the channel of the corresponding third transistor and the corresponding pad terminal for preventing a noise pulse which is generated when said voltage pulse is applied to the corresponding pad terminal from being applied to the corresponding third transistor; and
means for generating a digital signal corresponding to a set of different potentials developed at said nodes.

5,446,403

POWER ON RESET SIGNAL CIRCUIT WITH CLOCK INHIBIT AND DELAYED RESET

Todd R. Witkowski, Benton Harbor, Mich., assignor to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Filed Feb. 4, 1994, Ser. No. 192,178
Int. Cl.[6] H03K *3/014*
U.S. Cl. 327—143 16 Claims



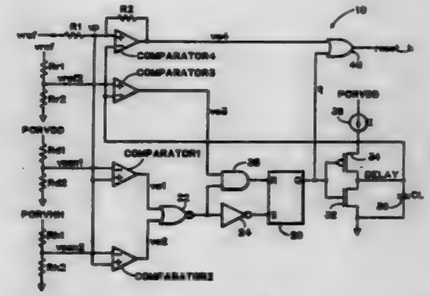
1. A control circuit for controlling a RESET signal in a computer system which includes a power supply, a first clock for generating periodic pulses at a first predetermined frequency, a central processing unit (CPU) driven by said first clock, the control circuit comprising:
first generating means for generating a signal representing that the power supply voltage has stabilized after power-up;
second generating means for generating a RESET signal for resetting said CPU after a power-up condition:
means responsive to said first generating means for inhibiting toggling of said clock pulses to said CPU from said first clock until the power supply voltage has stabilized: and
third generating means responsive to said first generating means for generating a signal representing that the power supply voltage has stabilized after a power-up, delayed in time by a predetermined time period relative to said signal generated by said first generating means, said delayed signal applied to said second generating means to enable said second generating means to sense said delayed signal once the clock pulses become uninhibited to said CPU following a power-up condition.

5,446,404

CMOS POWER-ON RESET CIRCUIT

Rajeev Badyal, Corvallis, Oreg., and Vernon Knowles, Boise, Id., assignors to Hewlett Packard Corporation, Palo Alto, Calif.

Division of Ser. No. 891,587, Jun. 1, 1992, Pat. No. 5,369,310.
This application Apr. 20, 1994, Ser. No. 230,354
The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.
Int. Cl.[6] H03K *17/28*, *5/24*
U.S. Cl. 327—143 8 Claims



1. A power-on circuit for generating a binary reset output signal having a valid state and an invalid state, comprising:
first input means for receiving and scaling a first power supply voltage to be monitored;
threshold voltage means for providing a threshold voltage;
first comparator means for comparing the scaled first power supply voltage to the threshold voltage and indicating a valid power supply state when the first power supply voltage exceeds the threshold voltage and for indicating an invalid power supply state otherwise;
output means for providing a binary reset output signal, the output means asserts the binary reset output signal in a valid state responsive to said indication of a valid power supply state and to assert the reset signal in an invalid state responsive to said indication of an invalid power supply state;
a delay timer for providing a predetermined delay period and indicating completion of the delay period;
means for starting the delay timer responsive to the indication of a valid power supply state;
means for delaying said starting the delay timer until after the delay timer indicates completion of the delay period, to ensure that at least the delay period elapses since the

first power supply last becoming invalid before changing the reset output signal to the valid state; and

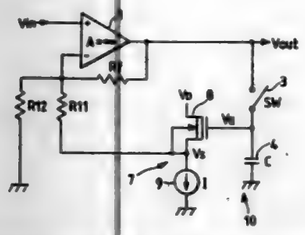
means coupled to the first comparator means for forcing the reset output signal to an invalid state responsive to the indication of an invalid power supply state, said forcing means being connected directly to the output means so as to circumvent the delay timer thereby substantially immediately forcing the reset signal to the invalid state without regard to completion of the delay period.

5,446,405

AMPLIFIER CIRCUIT WITH OFFSET CANCEL CIRCUIT

Chikako Ikeda, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1993, Ser. No. 154,477
Claims priority, application Japan, Nov. 20, 1992, 4-333905
Int. Cl.[6] H03F *1/08*; H03G *3/00*
U.S. Cl. 327—362 **5 Claims**



1. An amplifier circuit with an offset cancel circuit, comprising:

a non-inversion amplifier circuit including an operational amplifier and a feedback resistance connected between an inversion input terminal and an output terminal of said operational amplifier an input to the non-inversion side of said non-inversion amplifier circuit;

a sampling hold circuit connected to an output terminal of said non-inversion amplifier circuit;

a source-follower circuit interposed between an output terminal of said sampling hold circuit and an inversion input terminal of said operational amplifier forming said non-inversion amplifier circuit;

a first resistance which connects an output terminal of said source-follower circuit with the inversion input terminal of said operational amplifier; and

a second resistance having one end held at a constant potential and the other end connected with the inversion input terminal of said operational amplifier.

5,446,406

CONTROL CIRCUIT FOR AN MOS SEMICONDUCTOR COMPONENT WITH A SOURCE-SIDE LOAD

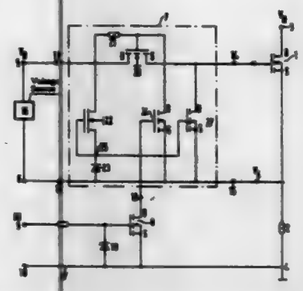
Josef-Matthias Gantioler, and Jesoe Tihanyi, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 10, 1994, Ser. No. 195,158
Claims priority, application Germany, Feb. 10, 1993, 43 03 911.1
Int. Cl.[6] H03K *17/687*
U.S. Cl. 327—427 **6 Claims**

1. A control circuit for a MOS semiconductor component having gate and source terminals and a load connected in series with the source terminal, comprising:

a) a voltage source being at fluctuating potential and having first and second terminals, a first controllable semiconductor switch being connected between the first terminal of said voltage source and the gate terminal of the MOS semiconductor component, said first switch having a control input, and the second terminal of said voltage source being connected to the source terminal of the MOS semiconductor component;

b) a second controllable semiconductor switch being controllable by an input signal and having first and second load terminals, a line being connected to a fixed potential and to the first load terminal of said second switch, the second load terminal of said second switch being switched



from a first to a second potential as a function of the input signal;

c) the first and second potentials being between potentials of the first and second terminals of said voltage source; and

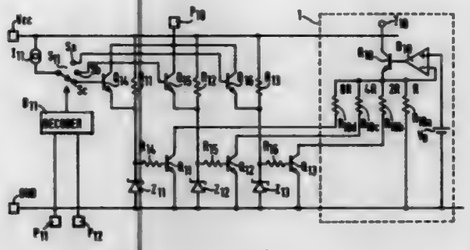
d) the first and second potentials being applied to the control input of said first switch for making said first switch conducting whenever an input signal is applied.

5,446,407

TRIMMING CIRCUIT

Takeshi Yamamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 28, 1993, Ser. No. 141,974
Claims priority, application Japan, Oct. 28, 1992, 4-289911
Int. Cl.[6] H02H *7/20*
U.S. Cl. 327—525 **24 Claims**



1. A trimming circuit comprising:

a plurality of zener zap diodes;

a group of switching devices for selectively zapping the zener zap diodes, wherein each switching device in the group of switching devices is connected to at least one zener zap diode in the plurality of zener zap diodes; and

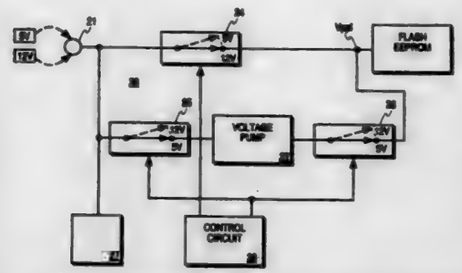
a decoder circuit providing a control signal to the group of switching devices for setting the ON/OFF states of the switching devices.

5,446,408

METHOD AND APPARATUS FOR PROVIDING SELECTABLE SOURCES OF VOLTAGE

Kerry D. Tedrow, Orangevale; Jahanshir J. Javanifard, Sacramento, and Mase J. Taub, Elk Grove, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 119,869, Sep. 10, 1993. This application May 26, 1994, Ser. No. 249,859
Int. Cl.[6] H03K *17/52, 17/74*
U.S. Cl. 327—530 **2 Claims**



1. A method for providing voltage to an integrated circuit, comprising the steps:

(a) detecting a voltage level of a power supply;

(b) if the voltage level is below a predetermined level, then performing the steps of

(i) disconnecting the integrated circuit from the power supply;

(ii) connecting an input of the charge pump to the power supply; and

(iii) connecting an output of the charge pump to the integrated circuit;

(c) if the voltage level is not below the predetermined level, then performing the steps of

(i) disconnecting the input of the charge pump from the power supply;

(ii) disconnecting the output of the charge pump from the integrated circuit; and

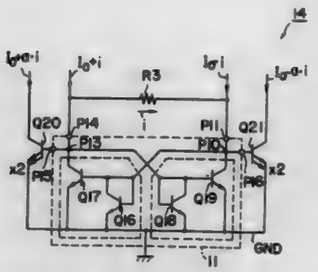
(iii) connecting the power supply to the integrated circuit.

5,446,409

CROSS COUPLED SYMMETRICAL CURRENT SOURCE UNIT

Masayuki Katakura, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Nov. 29, 1993, Ser. No. 158,308
Claims priority, application Japan, Nov. 30, 1992, 4-343514; Dec. 15, 1992, 4-354665
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—538 **9 Claims**



1. A current source circuit comprising:

a differential current amplifier having a first current mirror circuit and a second current mirror circuit, said differential current amplifier having a first terminal and a second terminal;

said first current mirror circuit having a first output terminal and a first input terminal respectively connected to said first terminal and said second terminal;

said second current mirror circuit having a second input terminal and a second output terminal respectively connected to said first and second terminals; and

a resistance connected between said first and second terminals;

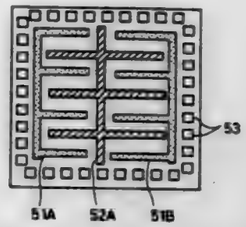
wherein said first terminal is for receiving a first input signal and said second terminal is for receiving a second input signal and said resistor is for receiving a differential current between said first and second input signals.

5,446,410

SEMICONDUCTOR INTEGRATED CIRCUIT

Yasuhiro Nakakura, Osaka, Japan, assignor to Matsushita Electric Industrial Co.,Ltd., Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 47,493
Claims priority, application Japan, Apr. 20, 1992, 4-099233
Int. Cl.[6] H01L *29/44*
U.S. Cl. 327—565 **3 Claims**



1. A semiconductor integrated circuit comprising a plurality of functional blocks provided on a semiconductor chip and a multi-level metal interconnect-wiring layer, wherein:

particular one of said plurality of metal interconnect-wiring layers is for the exclusive use of a power supply line which delivers power to said plurality of functional blocks and a clock signal line through which a clock signal is transmitted to said plurality of functional blocks, and

the minimum width of the lines on said particular metal interconnect-wiring layer is greater than the maximum width of lines on the remaining metal interconnect-wiring layers.

5,446,411

FREQUENCY TUNING FOR A PHASE LOCKED LOOP FM DEMODULATOR

Wayne L. Horsfall, Marlow, United Kingdom, and Gary Shipton, St. Jean de Moirans, France, assignors to SGS-Thomson Microelectronics Limited, Marlow, United Kingdom

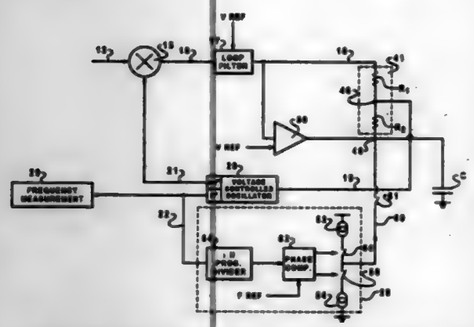
Filed Dec. 30, 1993, Ser. No. 176,342
Claims priority, application United Kingdom, Sep. 29, 1993, 9320069
Int. Cl.[6] H03D *3/02*; H03L *7/087*
U.S. Cl. 329—325 **13 Claims**

8. A method of operating a phase locked loop to provide a demodulated output derived from an FM modulated carrier wave provided as an input to the phase locked loop, the phase locked loop including a voltage controlled oscillator and the method comprising the steps of:

(i) tuning the phase locked loop to operate at a predetermined frequency by supplying a tuning voltage to a signal translation circuit which provides a control voltage for the voltage controlled oscillator, detecting the frequency output from the voltage controlled oscillator and setting the tuning voltage at the predetermined frequency; and

(ii) after setting the tuning voltage, using the voltage con-

trolled oscillator to provide an output to a phase comparator of the phase locked loop, said phase comparator providing a voltage dependent on the phase difference between the output of the voltage controlled oscillator and the FM modulated carrier wave to generate said demodulated output.

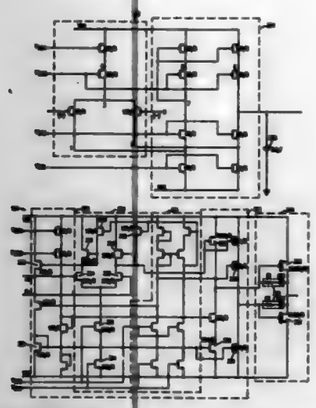


5,446,412

CONTINUOUSLY LINEAR PULSE AMPLIFIER/LINE DRIVER WITH LARGE OUTPUT SWING

M. Kurest Kinyaciogln, Mountain View, and Ismail H. Ozgue, Sunnyvale, both of Calif., assignors to Exar Corporation, San Jose, Calif.

Filed May 19, 1994, Ser. No. 246,059
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—285 11 Claims



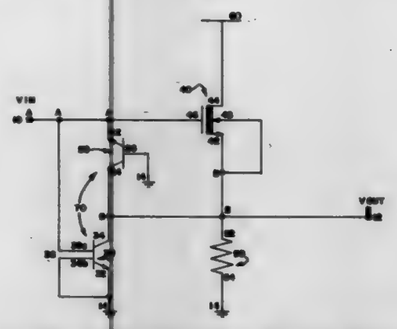
1. A transmission line driver circuit comprising:
a unity-gain-coupled predriver stage having an input for receipt of a transmit signal and an output, said predriver stage comprising:
a differential input stage having a positive input and a negative input coupled to said input and output of said predriver stage, respectively, said differential input stage further comprising cascode current source devices,
a folded cascode second stage coupled to said differential input stage, said folded cascode second stage having an output coupled to said output of said predriver stage and said negative input of said differential input stage, and
a capacitor coupled to said output of said folded cascode second stage;
an output driver amplifier comprising:
a differential input stage having a first input coupled to said output of said predriver stage, and a second input, said differential input stage comprising a pair of input transistors coupled between a current source and a pair of load transistors,
a differential cascode second stage coupled to outputs of said differential input stage,
a push-pull output stage having substantially large pull-up transistor and pull-down transistor driving an output of the line driver circuit, and compensation capacitors coupled across said pull-up and pull-down transistors,
a slew-boosting circuit coupled to said pair of load transistors of said differential input stage and said second cascode stage, said slew-boosting circuit for boosting an amount of current charging said compensation capacitors when said differential input stage is slewing, and
a bias stage for setting up biasing of said differential input stage and said differential cascode second stage; and
a resistive feedback network coupled to said output of the line driver circuit and said second input of said output driver amplifier, for setting a closed loop gain of said output driver amplifier,
wherein, said unity-gain-coupled predriver has a controlled slew rate slower than said output driver amplifier.

5,446,413

IMPEDANCE CIRCUIT FOR A MINIATURE HEARING AID

Peter V. Loeppert, Hoffman Estates, and Steven E. Boor, Lombard, both of Ill., assignors to Knowles Electronics, Inc., Rolling Meadows, Ill.

Filed May 20, 1994, Ser. No. 247,136
Int. Cl.[6] H03F *3/185*
U.S. Cl. 330—277 16 Claims



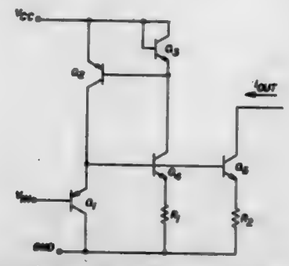
1. A circuit for permitting smooth signal flow from a first transmission medium to a second transmission medium comprising:
means adapted for coupling to the first transmission medium for receiving a signal;
means coupled to the receiving means for transforming the impedance imposed on the signal comprising a buried channel transistor;
means coupled to the transforming means and adapted for coupling to the second transmission medium for conveying the signal to the second transmission medium; and,
means coupled to the transforming means for biasing the transforming means, the biasing means comprising two BJT transistors, each BJT transistor having a collector terminal, wherein the collector terminal of one BJT transistor is connected to the collector terminal of the other BJT transistor.

5,446,414

SIMPLE HIGH SPEED PRECISION TRANSCONDUCTANCE AMPLIFIER CIRCUITS

Madhav V. Kollari, Sunnyvale, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Filed Sep. 27, 1994, Ser. No. 313,546
Int. Cl.[6] H03F *3/18*
U.S. Cl. 330—288 14 Claims



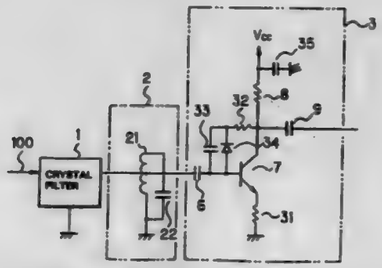
1. A transconductance amplifier comprising:
first and second power supply connections, an input connection and an output connection;
first and second transistors of a first conductivity type, and third, fourth and fifth transistors of a second conductivity type, each having an emitter, a base and a collector;
said first transistor having its collector coupled to said second power supply connection, its base coupled to said input connection and its emitter coupled to the collector of said second transistor and the bases of said fourth and fifth transistor;
said second transistor having its emitter coupled to said first power supply connection;
said third transistor having its collector and base coupled to said first power supply connection and its emitter coupled to the base of said second transistor and to the collector of said fourth transistor;
said fourth and fifth transistors having their emitters coupled to said second power supply connection;
said fifth transistor having its collector coupled to said output connection.

5,446,415

INTERMEDIATE FREQUENCY AMPLIFIER CIRCUIT

Akihiro Kirisawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 28, 1994, Ser. No. 234,050
Claims priority, application Japan, Apr. 28, 1993, 5-102423
Int. Cl.[6] H03F *3/191*
U.S. Cl. 330—302 15 Claims



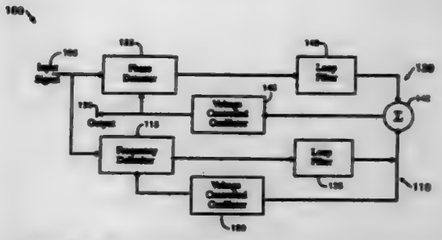
1. An intermediate frequency amplifier arrangement comprising:
a crystal filter for passing an intermediate frequency signal;
a transistor amplifier for amplifying the intermediate frequency signal;
a tuning circuit for matching the reactance between said crystal filter and said transistor amplifier, including a coil and a capacitor and being provided between said crystal filter and said transistor amplifier; and
an impedance matching circuit for matching the resistive impedance between said crystal filter and said transistor amplifier, including a series feedback resistor and a shunt feedback resistor associated with said transistor in said transistor amplifier.

5,446,416

TIME ACQUISITION SYSTEM WITH DUAL-LOOP FOR INDEPENDENT FREQUENCY PHASE LOCK

Jizoo Lin, Taipei Hsien; Hsun-Feng Lin, Yun-Lin Hsien; Ret-Bean Lee, Pintong Hsien, and Chorng-Kuang Wang, Taipei, all of , assignors to Industrial Technology Research Institute, Hsinchu,

Filed Oct. 20, 1993, Ser. No. 139,548
Int. Cl.[6] H03L *7/06*
U.S. Cl. 331—11 15 Claims



6. A method for synchronizing a system to the frequency and phase of an input signal comprising the steps of:
(a) generating a non-zero frequency bias signal in a frequency lock loop (FLL) only when a difference frequency between said FLL and said input signal is outside a predetermined frequency band,
(b) generating a zero frequency bias signal when said difference frequency is inside said predetermined frequency band,
(c) generating a phase bias signal in a phase lock loop (PLL) when said difference frequency is inside said predetermined frequency band, and
(d) summing said frequency bias signal and said phase bias signal to produce a bias input signal.

5,446,417

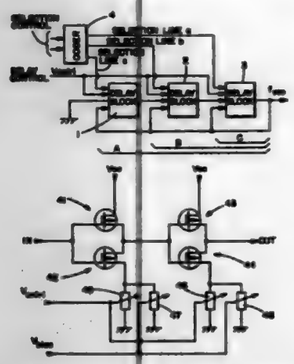
CONTROLLED OSCILLATOR

Veijo Korhonen, and Olli Hanpaporras, both of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Apr. 7, 1993, Ser. No. 44,279
Claims priority, application Finland, Apr. 15, 1992, 921706
Int. Cl.[6] H03B *5/24*
U.S. Cl. 331—57 6 Claims

1. A controlled oscillator comprising a delay line in the form of a plurality of coupled delay elements, each delay element comprising a pair of coupled invertors;
characterized in that a controllable resistance means is coupled between at least one invertor in each pair of coupled invertors and ground, such that the invertor will discharge through said resistance means, whereby the decay

time of the invertor, and thus the oscillator frequency will be determined by the magnitude of the resistance means,



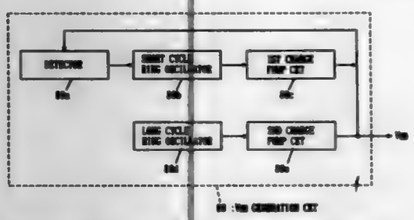
wherein a controllable bias resistance means is coupled between the invertor and ground, in parallel with the controllable resistance means.

5,446,418

RING OSCILLATOR AND CONSTANT VOLTAGE GENERATION CIRCUIT

Motoko Hara, and Takeshi Kajimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1993, Ser. No. 147,268
Claims priority, application Japan, Nov. 6, 1992, 4-296945
Int. Cl.[6] H03K *3/353*
U.S. Cl. 331—57 5 Claims



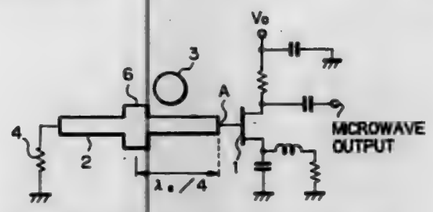
1. Constant voltage generation circuit, comprising:
a first ring oscillator including a plurality of cascade-connected first inverters for generating a first signal in a first cycle;
first voltage generation means responsive to the first signal in the first cycle generated by said first ring oscillator for generating a first voltage;
detection means for detecting an amount by which an absolute magnitude of the first voltage is less than a prescribed absolute magnitude and generating a detection signal;
a second ring oscillator including a plurality of cascade-connected second inverters and responsive to the detection signal received from said detection means, for generating a second signal in a second cycle shorter than said first cycle by feeding back the output of a final stage inverter to a second stage inverter, each of said second inverters including (i) first and second transistors each having a channel sized to delay an output signal of a preceding stage inverter for a first time period corresponding to said second cycle and being turned on/off in a complementary manner in response to the output signal of said preceding stage inverter, and (ii) current limiting means having a mutual conductance whose size is selected corresponding to a resistance component for achieving said first time delay together with said input capacitance component for limiting current flowing from the power supply node and the ground node to said first and second transistors; and
second voltage generating means responsive to the second signal in the second cycle generated by said second ring oscillator for generating a second voltage.

5,446,419

MICROWAVE OSCILLATION APPARATUS CAPABLE OF SUPPRESSING SPURIOUS OSCILLATION

Tatsuya Miya, and Kazuyoshi Uesugi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,852
Claims priority, application Japan, Jul. 27, 1993, 5-204584
Int. Cl.[6] H03B *5/18*
U.S. Cl. 331—99 7 Claims



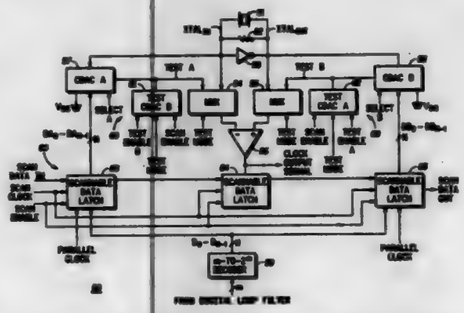
1. A microwave oscillation apparatus comprising:
a negative resistance element;
a microstrip line having a first end connected to said negative resistance element;
a terminating resistor connected to a second end of said microstrip line;
a dielectric resonator magnetically coupled to said microstrip line; and
a capacitive stub provided on said microstrip line at a distance $(\frac{1}{4})\ \lambda_g\ (2N-1)$ from the first end of said microstrip line, where λ_g is a wavelength of a spurious oscillation frequency component and N is a positive integer.

5,446,420

METHOD AND APPARATUS FOR REDUCING JITTER AND IMPROVING TESTABILITY OF AN OSCILLATOR

Alan L. Westwick, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 25, 1993, Ser. No. 111,793
Int. Cl.[6] H03B *5/00*
U.S. Cl. 331—179 12 Claims



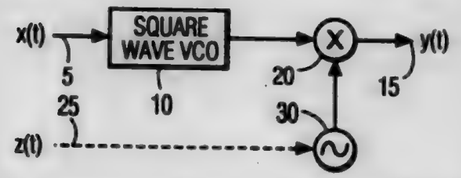
1. A method for reducing jitter and improving testability of an oscillator, comprising the steps of:
selecting one of a first plurality of capacitors in response to a first digital input code;
coupling said selected one of said first plurality of capacitors between a first crystal terminal and a predetermined voltage terminal in response to a parallel clock signal;
coupling a capacitor between a second crystal terminal and said predetermined voltage terminal;
coupling said first crystal terminal to a first input terminal of a comparator;
coupling said second crystal terminal to a second input terminal of said comparator;
providing a clock output signal at an output terminal of said comparator;
generating said parallel clock signal synchronously with said clock output signal; and
charging others of said first plurality of capacitors besides said selected one of said first plurality of capacitors to an average voltage on said first crystal terminal.

5,446,421

LOCAL OSCILLATOR PHASE NOISE CANCELLING MODULATION TECHNIQUE

David L. Kochkayio, Solvay, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Feb. 2, 1994, Ser. No. 190,793
Int. Cl.[6] H04L *27/12, 27/152*
U.S. Cl. 332—100 14 Claims



10. A data transmitter producing a first modulated signal representing a data signal and a second modulated signal representing a signal 180° out-of-phase with said data signal, comprising:
a source of said data signal; and
a voltage controlled square wave oscillator, having a frequency control input terminal coupled to said data signal source.

13. A data receiver, comprising:
a source of a first modulated signal representing a composite of a first and a second data signal, and a second modulated signal representing a composite of said second data signal and a signal 180 out-of-phase with said first data signal;
a first demodulator demodulating said first composite modulated signal;
a second demodulator demodulating said second composite modulated signal;
a subtractor, coupled to said first and second demodulators, producing a signal representative of said first data signal; and
an adder, coupled to said first and second demodulators producing a signal representative of said second data signal.

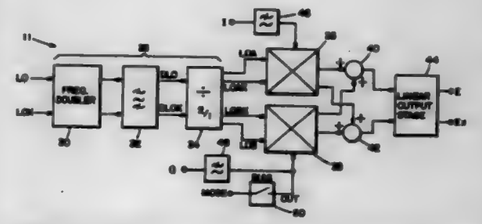
5,446,422

DUAL MODE FM AND DQPSK MODULATOR

Heikki Mattila; Jorma Matero, and Jaakko Halkko, all of Oulu, Finland, assignors to Mokia Mobile Phones Ltd., Salo, Finland

Division of Ser. No. 52,335, Apr. 23, 1993, Pat. No. 5,392,460.
This application Sep. 14, 1994, Ser. No. 305,584
Int. Cl.[6] H04L *27/12, 27/20*
U.S. Cl. 332—103 3 Claims

1. A frequency modulator, comprising:
means for receiving an injection frequency signal and for regenerating the injection frequency signal to provide at a first output a first injection frequency signal and at a second output a second injection frequency signal, said first injection frequency signal having a non-zero phase shift with respect to said second injection frequency signal;
first mixer means having a first input coupled to said first injection frequency signal and a second input coupled to a first modulation control signal, said first mixer means having an output for providing a first output frequency signal that is phase modulated in accordance with said first modulation control signal;
second mixer means having a first input coupled to said second injection frequency signal and a second input coupled to a second modulation control signal, said second mixer means having an output for providing a second output frequency signal that is phase modulated in accordance with said second modulation control signal;
combining means, having a first input coupled to said output of said first mixer means and a second input coupled to said output of said second mixer means, for combining said first and second mixer means outputs into a modulator output signal; and



biasing means having a control input for receiving a mode control signal and an output, said output of said biasing means being coupled to at least said first mixer means for selectively enabling said first mixer means, in a first mode of operation indicated by said mode control signal, to output said phase modulated first output frequency signal, said output of said biasing means selectively enabling said first mixer means, in a second mode of operation indicated by said mode control signal, to output a frequency signal that is substantially identical to said first injection frequency signals, said biasing means being comprised of a diode having a first terminal coupled to a transistor switch and a second terminal coupled to at least said first mixer means, said transistor switch having a control terminal coupled to said mode control signal and being responsive to said mode control signal for reverse biasing said diode in the first mode of operation indicated by said mode control signal and for forward biasing said diode in the second mode of operation indicated by said mode control signal, whereby in the second mode of operation said diode conducts a current to at least said first mixer means.

5,446,423

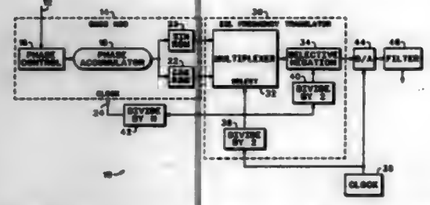
DIGITAL SINGLE SIDEBAND MODULATOR AND METHOD

Richard A. Blum; Lansing M. Carson, both of Chandler, and Marty K. Slemon, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 19, 1994, Ser. No. 308,788
Int. Cl.[6] H03C *1/60*; H04L *27/04*
U.S. Cl. 332—170 21 Claims

1. A digital single sideband modulator comprising:
a numerically controlled oscillator (NCO) having first and second NCO outputs and being clocked at a first frequency; and

a digital frequency translator having first and second inputs coupled to said first and second NCO outputs, respectively, said digital frequency translator being clocked at a second frequency greater than said first frequency.

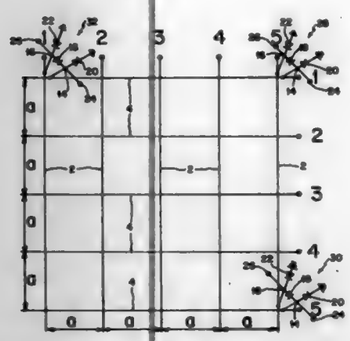


5,446,424

MICROWAVE CROSSPOINT BLOCKING SWITCH MATRIX AND ASSEMBLY EMPLOYING MULTILAYER STRIPLINE AND PIN DIODE SWITCHING ELEMENTS

John A. Pierro, East Meadow, N.Y., assignor to AIL Systems, Inc., Deer Park, N.Y.

Filed May 18, 1994, Ser. No. 245,698
Int. Cl.[6] H01P 1/15
U.S. Cl. 333—104 26 Claims



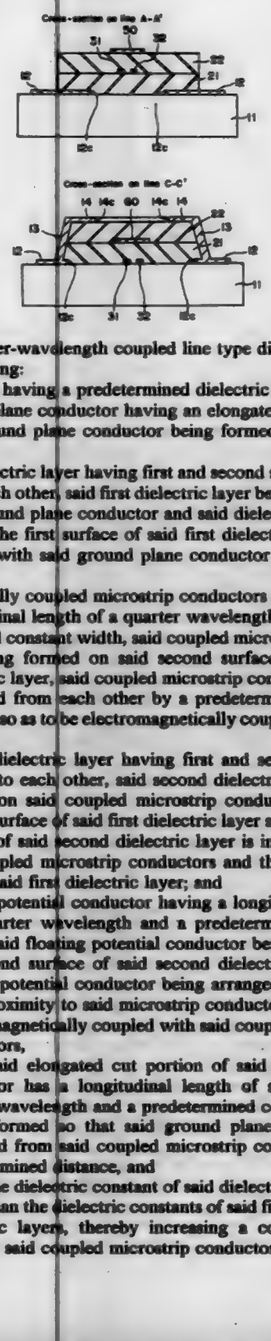
1. A microwave crosspoint blocking switch matrix for routing an input signal having a signal wavelength (λ) comprising:
a plurality of input microwave transmission lines;
a plurality of output microwave transmission lines; and
a plurality of switching arrays having first and second connection points and first and second nodes, each of the plurality of switching arrays being coupled to at least one of the plurality if input microwave transmission lines and to at least one of the plurality of output microwave transmission lines, each of the plurality of switching arrays selectively electrically coupling and decoupling a respective input microwave transmission line to a respective output microwave transmission line, each of the plurality of switching arrays having at least an interconnection device and first and second termination devices, the interconnection device being coupled between the first and second nodes, the first termination device being coupled between the first node and a ground potential, the second termination device being coupled between the second node and the ground potential, the interconnection device and first and second termination devices being selectively activated and deactivated.

5,446,425

FLOATING POTENTIAL CONDUCTOR COUPLED QUARTER-WAVELENGTH COUPLED LINE TYPE DIRECTIONAL COUPLER COMPRISING CUT PORTION FORMED IN GROUND PLANE CONDUCTOR

Seiichi Banba, Kyoto, Japan, assignor to ATR Optical and Radio Communications Research Laboratories, Kyoto, Japan

Filed Jan. 7, 1994, Ser. No. 255,707
Claims priority, application Japan, Jun. 7, 1993, 5-135749
Int. Cl.[6] H01P 5/18
U.S. Cl. 333—116 9 Claims



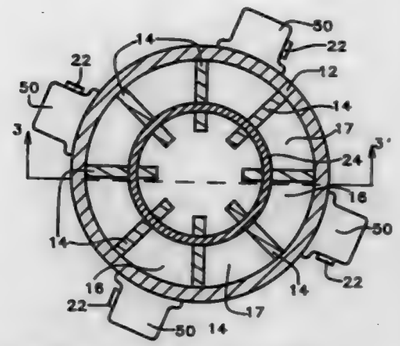
1. A quarter-wavelength coupled line type directional coupler comprising:
a substrate having a predetermined dielectric constant;
a ground plane conductor having an elongated cut portion, said ground plane conductor being formed on said substrate;
a first dielectric layer having first and second surfaces parallel to each other, said first dielectric layer being formed on said ground plane conductor and said dielectric substrate so that the first surface of said first dielectric layer is in contact with said ground plane conductor and said substrate;
two mutually coupled microstrip conductors each having a longitudinal length of a quarter wavelength and a predetermined constant width, said coupled microstrip conductors being formed on said second surface of said first dielectric layer, said coupled microstrip conductors being separated from each other by a predetermined constant distance so as to be electromagnetically coupled with each other;
a second dielectric layer having first and second surfaces parallel to each other, said second dielectric layer being formed on said coupled microstrip conductors and the second surface of said first dielectric layer so that the first surface of said second dielectric layer is in contact with said coupled microstrip conductors and the second surface of said first dielectric layer; and
a floating potential conductor having a longitudinal length of a quarter wavelength and a predetermined constant width, said floating potential conductor being formed on the second surface of said second dielectric layer, said floating potential conductor being arranged in relatively close proximity to said microstrip conductors so as to be electromagnetically coupled with said coupled microstrip conductors,
wherein said elongated cut portion of said ground plane conductor has a longitudinal length of substantially a quarter wavelength and a predetermined constant width, and is formed so that said ground plane conductor is separated from said coupled microstrip conductors by a predetermined distance, and
wherein the dielectric constant of said dielectric substrate is larger than the dielectric constants of said first and second dielectric layers, thereby increasing a coupling factor between said coupled microstrip conductors.

5,446,426

MICROWAVE POWER COMBINER

Jen-chau Wu, and Chi-Nan Chen, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 27, 1994, Ser. No. 365,050
Int. Cl.[6] H01P 5/12; H03F 3/60
U.S. Cl. 333—125 19 Claims



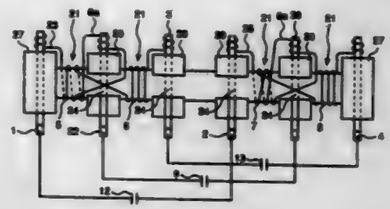
1. A microwave power combiner, comprising:
a cylindrical hollow metallic housing having a circular top, a circular bottom, and a cylindrical sidewall;
an even number of metallic vanes within said cylindrical hollow metallic housing attached to said cylindrical sidewall, evenly spaced about the circumference of said cylindrical sidewall, and extending radially inward from said cylindrical sidewall;
a first ring shaped metallic vane strap having an inner diameter, an outer diameter, and a mean diameter concentric with said cylindrical hollow metallic housing mounted above said metallic vanes and electrically connected to alternate said metallic vanes;
a second ring shaped metallic vane strap having an inner diameter, an outer diameter, and a mean diameter concentric with said cylindrical hollow metallic housing mounted below said metallic vanes and electrically connected to those alternate said metallic vanes not connected to said first ring shaped metallic vane strap;
an even number of compartments equal to the number of said metallic vanes formed within said cylindrical hollow metallic housing, the boundaries of each said compartment comprising two adjacent said metallic vanes, said top of said cylindrical hollow metallic housing, said bottom of said cylindrical hollow metallic housing, and said cylindrical sidewall wherein one half of said compartments are power compartments, one half of said compartments are passive compartments and each said power compartment is between two said passive compartments;
a number of power entry slots equal to the number of said power compartments formed in said cylindrical sidewall each said power entry slot located in that portion of said cylindrical sidewall forming one said boundary of one said power compartment;
a number of power units equal to the number of power entry slots attached to said cylindrical sidewall exterior to said cylindrical hollow metallic housing each said power unit covering one said power entry slot;
a power source attached to each said power unit;
a power exit slot formed in said circular top of said cylindrical hollow metallic housing at the center of said circular top of said cylindrical hollow metallic housing; and
means for extracting microwave power from said microwave power combiner.

5,446,427

BALANCED LOW-PASS FILTER

Kazuhiro Nakayama; Ikuo Ochiai, and Michiya Nakazawa, all of Tsurugashima, Japan, assignors to Toko Kabushiki Kaisha Tsukiba, Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,635
Claims priority, application Japan, May 14, 1993, 5-030562 U
Int. Cl.[6] H03H 7/00
U.S. Cl. 333—181 3 Claims



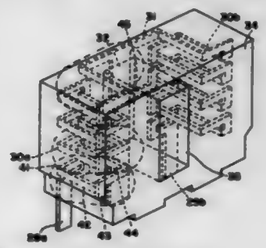
1. A balanced low-pass filter comprising:
a first input terminal and a second input terminal forming a pair of input terminals;
a first output terminal and a second output terminal forming a pair of output terminals;
a pair of first coils being connected in series between said first input terminal and said first output terminal, said first coils being negatively coupled and forming a first connecting point therebetween;
a pair of second coils being connected in series between said second input terminal and said second output terminal, said second coils being negatively coupled and forming a second connecting point therebetween; and
a plurality of capacitors connecting said first input terminal to said second input terminal, said first output terminal to said second output terminal, and said first connecting point to said second connecting point,
wherein said first coils and said second coils are wound on a same bobbin in such a manner that each said pair of coils are formed in adjacent winding portions.

5,446,428

ELECTRONIC COMPONENT AND ITS MANUFACTURING METHOD

Yasushi Kumeji, Kadoma; Seiichi Nishimura, Hirakata; Yoshinobu Nakajima, Katano, and Makoto Itou, Toyooka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

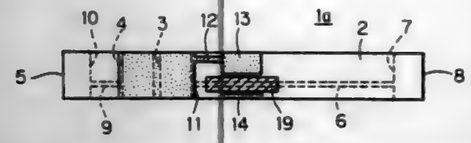
Filed Oct. 12, 1993, Ser. No. 135,291
Claims priority, application Japan, Oct. 12, 1992, 4-272699; Mar. 26, 1993, 5-067833; Jun. 30, 1993, 5-162131
Int. Cl.[6] H03H 7/01; H01F 27/30
U.S. Cl. 333—185 5 Claims



1. An electronic component comprising:
a three dimensional member including
(a) an inductive element having a pair of zigzag parts, said zigzag parts including
(1) a pair of first L-shaped horizontal parts,

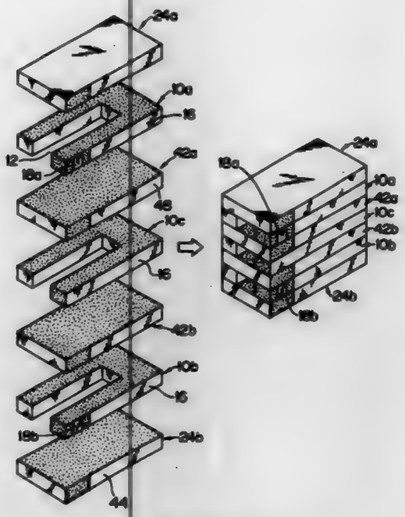
(2) two upward parts each coupled respectively to one of said pair of first L-shaped horizontal parts,
(3) a pair of second L-shaped horizontal parts each coupled to a respective one of said pair of upward parts, and
(4) a pair of downward parts each coupled to a respective one of said pair of second L-shaped horizontal parts, and
(b) a pair of first terminals each connected to one side of a respective one of the pair of zigzag parts,
(c) a connection part connected to another side of the pair of zigzag parts,
(d) an electrode coupled to the connection part, and
(e) a second terminal part, and
an exterior mold formed on said inductive element, said exterior mold having an opening which exposes portions of said electrode and said second terminal.

5,446,429
PIEZOELECTRIC VIBRATOR FOR REDUCTION OF UNDESIRED VIBRATIONS
Mitsuru Tanaka, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Japan
Filed Apr. 8, 1993, Ser. No. 44,960
Int. Cl.[6] H03H *4/00*
U.S. Cl. 333—187 2 Claims



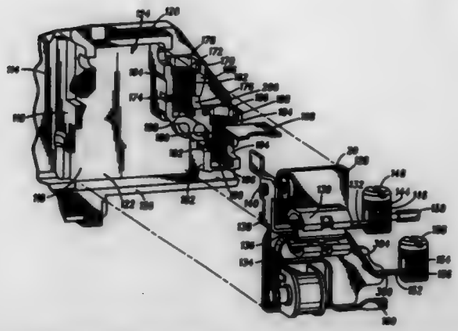
1. A piezo-resonator utilizing thickness shear vibration, comprising:
a piezoelectric substrate having an elongated rectangular shape with a first major surface and a second major surface thereof;
first and second excitation electrodes formed on said first major surface of said piezoelectric substrate, said first and second excitation electrodes being formed on said first major surface at portions of said piezoelectric substrate that are closer to a first longitudinal end portion of said piezoelectric substrate than a predetermined portion of said piezoelectric substrate along the longitudinal direction thereof;
a first lead line being connected to said first excitation electrode and extending toward a second longitudinal end portion of said piezoelectric substrate while passing through said predetermined portion thereof;
a second lead line being connected to said second excitation electrode and extending toward said first longitudinal end portion of said piezoelectric substrate;
an earth electrode being formed on said second major surface of said piezoelectric substrate so as to be simultaneously opposed to both of said first and second excitation electrodes through said piezoelectric substrate;
an earth terminal electrode formed on said second major surface at said predetermined portion of said piezoelectric substrate and connected to said earth electrode through an earth lead line,
said earth terminal electrode being spaced away from a portion of said second major surface directly opposite said first lead line so as to prevent said earth terminal electrode from being opposed to said first lead line through said piezoelectric substrate; and
an electrically insulating film formed on said second major surface at said portion from which said earth terminal electrode is spaced away.

5,446,430
FOLDED STRIP LINE TYPE DIELECTRIC RESONATOR AND MULTILAYER DIELECTRIC FILTER USING THE SAME
Hideki Yamanaka, Ube; Teruto Sugano, and Masasobu Mitarai, both of Onoda, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/01377, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO93/10570, PCT Pub. Date May 27, 1993
PCT Filed Oct. 22, 1992, Ser. No. 87,744
Claims priority, application Japan, Nov. 12, 1991, 3-323759; Nov. 28, 1991, 3-339789; Dec. 10, 1991, 3-350050; Dec. 21, 1991, 3-355852
Int. Cl.[6] H01P *1/20, 1/203, 7/00*
U.S. Cl. 333—202 17 Claims



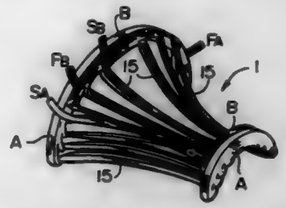
9. A multilayer dielectric filter comprising:
a plurality of dielectric resonator substrates, each of which has two end surfaces, primary surfaces and lateral surfaces, each of said dielectric substrates further having an outer electrode provided on its lateral surfaces but not on its primary surfaces,
coupling degree adjusting dielectric substrates sandwiched between adjacent resonator substrates,
outer dielectric substrates disposed on outer primary surfaces of outermost ones of said dielectric resonator substrates,
said resonator substrates being positioned on both sides of each of said coupling degree adjusting dielectric substrates,
said resonator substrates and said coupling degree adjusting dielectric substrates being joined together as a unit,
wherein each of said coupling degree adjusting dielectric substrates has an electrode on outer circumferential portions thereof,
each of said outer dielectric substrates has an electrode on an outer primary surface thereof and an outer circumferential portion thereof, and
those dielectric resonator substrates of said dielectric resonator substrates which are positioned adjacent to said outer dielectric substrates having independent island electrodes on portions of the lateral surfaces thereof so that said island electrodes are used as input-output coupling electrodes.

5,446,431
GROUND FAULT MODULE CONDUCTORS AND BASE THEREFOR
Thomas C. Leach, Lexington, Ky.; Duane L. Turner, and Darryl Carter, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.
Filed Apr. 28, 1994, Ser. No. 234,335
Int. Cl.[6] H01H *73/00*
U.S. Cl. 335—18 12 Claims



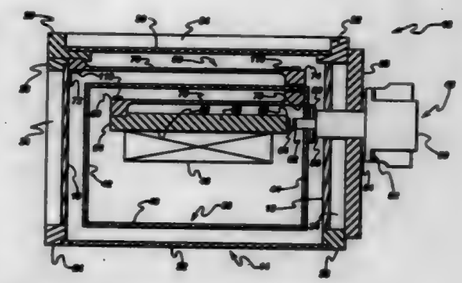
1. A housing assembly for a ground fault circuit interrupter connected between the load and line terminals of a phase and neutral power line, the assembly comprising:
a base made of electrically insulating material, the base having a plurality of cavities, each cavity being defined by upstanding side, top, and bottom walls integrally formed with the base, each cavity having one face open parallel to the base;
a first of the plurality of cavities being adapted to retain a circuit board between the upstanding walls and the base whereby the circuit board is inserted into the first cavity along an axis perpendicular to the open face;
a second of the plurality of cavities being positioned adjacent to the first cavity, the second cavity having a first slot in one of the upstanding side walls, the first slot connecting the first and second cavities and being adapted to insert a phase conductor therethrough, the second cavity having a second slot in the opposite upstanding side wall, the second slot allowing access external to the assembly and being adapted to insert a load phase power line therethrough, the second cavity having a third slot in the upstanding top wall, the third slot allowing access external to the assembly and being adapted to insert a terminal fastener therethrough, the second cavity being adapted to retain a phase terminal whereby the phase terminal is inserted into the second cavity along an axis perpendicular to the open face with the upstanding walls abutting the phase terminal; and
a third of the plurality of cavities being positioned adjacent to the first cavity, the third cavity having a first slot in one of the upstanding side walls, the first slot connecting the first and third cavities and being adapted to insert a neutral conductor therethrough, the third cavity having a second slot in the opposite upstanding side wall, the second slot allowing access external to the assembly and being adapted to insert a load neutral power line therethrough, the third cavity having a third slot in the upstanding top wall, the third slot allowing access external to the assembly and being adapted to insert a terminal fastener therethrough, the third cavity being adapted to retain a neutral terminal whereby the neutral terminal is inserted into the third cavity along an axis perpendicular to the open face with the upstanding walls abutting the neutral terminal.

5,446,432
SADDLE TYPE DEFLECTION COIL
Hiroshi Ikeuchi, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 21,810, Feb. 24, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,465
Claims priority, application Japan, Feb. 24, 1992, 4-072925
Int. Cl.[6] H01H *1/00*; G09G *1/04*; H01J *29/74*
U.S. Cl. 335—213 9 Claims



1. A saddle type deflection coil assembly comprising:
an external coil of a saddle configuration formed of a plurality of multicore parallel conductor wires and including a first bent portion at one end thereof, a second bent portion at an opposite end thereof, and an elongated intermediate portion extending from said first bent portion to said second bent portion, said elongated intermediate portion including a plurality of sections constituted of said multicore parallel conductor wires and speced from each other; and
an internal coil of a saddle configuration similar to that of said external coil and formed of a plurality of parallel conductor wires, said internal coil including a first bent portion at one end thereof, a second bent portion at an opposite end thereof, and an elongated intermediate portion extending from said first bent portion to said second bent portion, said elongated intermediate portion including a plurality of sections constituted of said multicore parallel conductor wires and spaced from each other;
said internal core having a width and a length, respectively, smaller than those of said external coil and said internal coil being superimposed on said external coil so as to accurately fit in said external coil and form therewith a saddle configuration of the deflection coil assembly.

5,446,433
SUPERCONDUCTING MAGNET HAVING A SHOCK-RESISTANT SUPPORT STRUCTURE
Evangelos T. Laskaris, Schenectady; Constantinos Minas, Slingerlands, and Robert A. Ackermann, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 21, 1994, Ser. No. 309,700
Int. Cl.[6] H01F *7/22*
U.S. Cl. 335—216 10 Claims



1. A superconductive magnet comprising:
a) a generally longitudinally extending axis;

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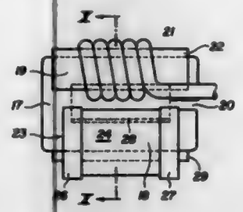
b) a generally annularly-cylindrical-shaped vacuum enclosure generally coaxially aligned with said axis;
c) a generally annularly-cylindrical-shaped thermal shield generally coaxially aligned with said axis and disposed within and spaced apart from said vacuum enclosure;
d) a generally solenoidal-shaped superconductive coil generally coaxially aligned with said axis and disposed within and spaced apart from said thermal shield;
e) a cryocooler coldhead having a housing connected to said vacuum enclosure, a first stage disposed in solid-conductive thermal contact with said thermal shield, and a second stage disposed in solid-conductive thermal contact with said superconductive coil; and
f) a magnet re-entrant support assembly including:
(1) a generally annularly-cylindrical-shaped outer support cylinder generally coaxially aligned with said axis, disposed within and generally spaced apart from said vacuum enclosure, disposed outside and generally spaced apart from said thermal shield, having a first end rigidly connected to said vacuum enclosure, and having a second end rigidly connected to said thermal shield; and
(2) a generally annularly-cylindrical-shaped inner support cylinder generally coaxially aligned with said axis, disposed within and generally spaced apart from said thermal shield, disposed outside and generally spaced apart from said superconductive coil, having a first terminus rigidly connected to said thermal shield proximate said second end of said outer support cylinder, and having a second terminus disposed longitudinally between said first and second ends of said outer support cylinder and rigidly connected to said superconductive coil.

5,446,434
MAGNET HAVING POLE FACES WITH TRAPEZOIDAL-SHAPED SHIMS
Bizhan Dorri, Clifton Park; Evangelos T. Laskaris, Schenectady, and Michele D. Ogle, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 27, 1994, Ser. No. 280,976
Int. Cl.[6] G01V *3/00*
U.S. Cl. 335—301 8 Claims



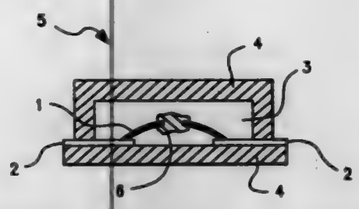
1. A magnet comprising spaced-apart first and second pole pieces including generally opposing first and second pole faces, said first pole face having an axis extending generally towards said second pole face and having a generally circular shim tray generally coaxially aligned with said axis and attached to said first pole face, said circular shim tray having shims each with a shape of a trapezoid when viewed facing said first pole face, wherein said trapezoid has a straight shorter base, a straight longer base, and straight first and second sides, wherein said shorter base is radially disposed closer to said axis than is said longer base, wherein said first side is aligned along a radius line drawn from said axis to said first side, and wherein said second side is aligned along a radius line drawn from said axis to said second side.

5,446,435
CURRENT SENSOR COMPRISING A MAGNETIC CIRCUIT WITH AN AIR GAP
Marcel Etter, Troinex, Switzerland, assignor to Liaisons Electroniques-Mecaniques LEM S.A., Switzerland
PCT No. PCT/CH92/00163, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO93/06491, PCT Pub. Date Apr. 1, 1993
PCT Filed Mar. 20, 1991, Ser. No. 50,053
Claims priority, application Switzerland, Sep. 20, 1991, 2789/91-6
Int. Cl.[6] H01F *17/06, 27/24, 27/30*
U.S. Cl. 336—178 8 Claims



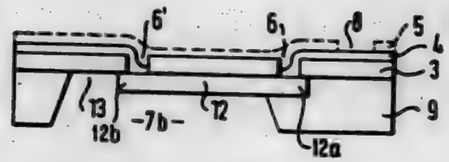
1. An electric current sensor comprising a magnetic circuit with an air-gap and at least one electric coil arranged around a branch of this circuit, this branch having the shape of an elongate rectangular parallelepiped, said magnetic circuit consisting of a single stacking of metal sheets all of said metal sheets being of the same size and shape, and there being only one of said metal sheets per stack layer and having an air-gap extending parallely to the branch on which the coil is arranged, the height of this air-gap being greater than the thickness of the coil measured transversally to the longitudinal direction of said branch, on one side thereof, so as to allow the positioning of the coil by passing it through the air-gap, said coil comprising a winding formed or an insulating support having, at least over the length supporting the winding, a U-shaped cross-section, the open end of the U being directed towards the inside of the magnetic circuit.

5,446,436
HIGH VOLTAGE HIGH POWER ARC SUPPRESSING FUSE
Richard A. Williams, Palo Alto, Calif., assignor to Space Systems/Loral, Inc., Palo Alto, Calif.
Continuation of Ser. No. 971,309, Nov. 4, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 197,667
Int. Cl.[6] H01H *85/38*
U.S. Cl. 337—273 11 Claims



1. A high voltage fuse for operation in a low pressure environment, said fuse comprising:
a fuse element electrically connected to at least two conductive elements, said fuse element having a length and a transverse dimension; wherein
said fuse element is encapsulated within an encapsulating package containing an elastic insulating material, said elastic insulating material having a thickness greater than the transverse dimension of said fuse element;
said elastic insulating material completely fills said encapsulating package and is substantially free of voids and gaseous bubbles, with substantially no gas being present within said encapsulating package; and
said elastic insulating material completely covers said fuse element along the entire length thereof and isolates it from said environment, said elastic insulating material being selected to have an elastic property enabling said elastic insulating material to rapidly fill a void that is created along the length of said fuse element due to a portion of said fuse element being vaporized by an electrical current.

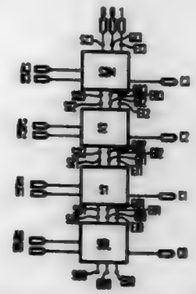
5,446,437
TEMPERATURE SENSOR
Frank Bantien, Ditzingen, and Eckart Reiblen, Reutlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 30, 1992, Ser. No. 998,516
Claims priority, application Germany, Jan. 31, 1992, 42 02 733.0
Int. Cl.[6] H01C *3/04*
U.S. Cl. 338—25 21 Claims



1. A temperature sensor having
a frame (9) of monocrystalline silicon;
a dielectric diaphragm (13) supported by the frame (9);
a monocrystalline silicon structure (2, 11, 35) formed on the dielectric diaphragm (13);
electrical terminal connections (4, 14) connected to the monocrystalline silicon structure (2, 11, 35) to obtain electrical measuring outputs representative of the temperature of the dielectric diaphragm (13); and
wherein the monocrystalline structure comprises a temperature-dependent resistor wherein the monocrystalline structure (2, 11, 35) is doped with a deep doping material.

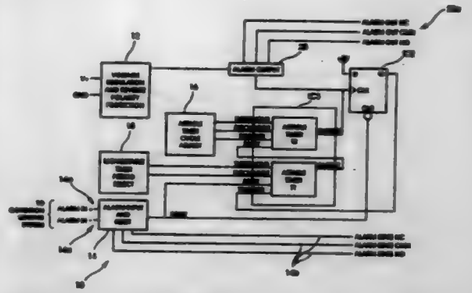
5,446,438
DIGITAL LOGIC CIRCUIT FOR IMPLEMENTING FUZZY LOGIC OPERATORS
Herbert Eichfeld, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE92/00542, § 371 Date Mar. 16, 1994, § 102(e) Date Mar. 16, 1994, PCT Pub. No. WO93/05470, PCT Pub. Date Mar. 18, 1993
PCT Filed Jun. 30, 1992, Ser. No. 211,017
Claims priority, application Germany, Sep. 4, 1991, 41 29 423.8
Int. Cl.[6] G06F *7/02*
U.S. Cl. 340—146.2 15 Claims

1. A digital logic circuit, in which an output word having a plurality of bits is formed from a first input word having a plurality of bits and a second input word having a plurality of bits by means of bit comparators and bit multiplexers the output word being present at an output of the logic circuit and at outputs of the bit multiplexers, and in which the output word represents a minimum of two input words, comprising: a plurality of i stages where i is a whole number, a respective stage thereof providing a respective bit of the output word; an i-th stage of the plurality of i stages forming from an i-th bit of the first input word, from an i-th bit of the second input word, from a less-than input signal of a next more significant (i+1)-th stage from a greater-than input signal of the next more significant (i+1)-th stage and from an equal-to input signal of the next more significant (i+1)-th stage a less-than output signal for a next less significant (i−1)-th stage a greater-than output signal for the next less significant (i−1)-th stage, an equal-to output signal for the next less significant (i−1)-th stage and an i-th bit of the output word; a most significant stage of the plurality of i stages having an input for a respective less-than



input signal supplied with a logic zero and an input for a respective greater-than input signal supplied with a logic zero and an input for a respective equal-to input signal supplied with a logic one, the bits of the output word being generated sequentially in time at the output of the logic circuit with decreasing significance.

5,446,439
EMERGENCY CONDITION LIGHTING CONTROLLER
John C. Kramer, Kokomo, and Robert O. Melvin, Lebanon, both of Ind., assignors to Smartronics, Inc., Indianapolis, Ind.
Filed Mar. 26, 1993, Ser. No. 37,914
Int. Cl.[6] G08B *27/00*
U.S. Cl. 340—326 14 Claims



1. An emergency condition lighting controller for use with a condition sensing system that produces a warning signal in response to detection of an unsafe condition, said emergency lighting controller interfacing with an existing lighting system that includes a plurality of power circuits and a plurality of lighting circuits, wherein each of the plurality of power circuits independently supplies a power signal to a corresponding one of the lighting circuits, said emergency condition lighting controller comprising:
first circuit means responsive to said warning signal for producing an alarm detected signal so long as said warning signal is present;
second circuit means responsive to said alarm detected signal for producing a predetermined duration activation signal;
third circuit means for producing an oscillating signal at a predetermined frequency, said third circuit means responding to said predetermined duration activation signal to produce said oscillating signal so long as said predetermined duration activation signal is produced; and

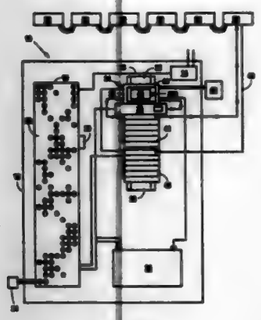
fourth circuit means responsive to said oscillating signal for supplying power switching signals at said oscillator frequency, said fourth circuit means interfacing with certain ones of said power circuits and corresponding ones of said plurality of lighting circuits to intermittently switch power from said power circuits to said lighting circuits in accordance with said power switching signals, to thereby cause the lighting circuits to flash on and off, only so long as said predetermined duration activation signal is present.

5,446,440

EMERGENCY SIGN AND CONTROL CIRCUIT

Cornel T. Gleason, San Antonio, Tex., and John L. Davis, Sierra Vista, Ariz., assignors to Ledorlite Corporation, San Antonio, Tex.

Filed Jan. 6, 1993, Ser. No. 1,582
Int. Cl.[6] G08B 27/00, 5/00; F21V 7/00
U.S. Cl. 340—331 **16 Claims**





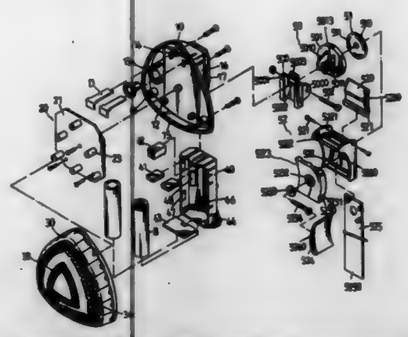
1. An emergency sign and control system comprising:
a test switch connected to high voltage AC power;
an isolation type transformer power supply unit connected to said test switch for converting said high voltage AC power into low voltage DC power output;
said power supply unit further comprising,
a front face and a rear face;
a conformal coating sealing the power supply circuit board of said power supply unit to protect said power supply circuit board from water vapor and moisture;
a perforated aluminum cover plate attached to said front face of said power supply;
a fuse connected for disconnecting said power supply unit from said high voltage AC power; and
an AC power indicator circuit comprising an indicator light emitting diode, a diode/resistor pair connected in series to said power supply unit to convert the received AC power into half wave DC power, and a current limiting resistor connected in series to said diode/resistor pair to limit current reaching said indicator diode whereby, said indicator diode is normally lit and goes off if there is a problem with said AC power to said power supply;
a fuse block having an input and an output, said input of said fuse block connected to said power supply unit for receiving said low voltage DC power and conveying it to a relay flasher;
at least two terminal strips connected to said relay flasher for conveying said low voltage DC power to a branch circuit;
an enclosure which encases said power supply unit, said fuse block, said relay flasher, and said terminal strips;
a plurality of emergency signs connected in parallel along said branch circuit;
a plurality of light emitting diodes arranged on said emergency signs to form an illuminated message on said emergency sign;
means connected to said relay flasher for providing battery backup to said emergency signs should AC power fail; and
a plurality of light emitting diodes arranged on said emergency signs to provide downlighting from said emergency signs.

5,446,441

MOBILE SIGNAL LAMP AND MOUNT UNIT

Yan-Chang Su, 2 F., No. 47, Lane 77, Wen-Chang Street, Feng-Shan City, Kaohsiung Hsien, Taiwan

Filed Nov. 22, 1994, Ser. No. 346,275
Int. Cl.[6] B62J 3/00; G08B 23/00
U.S. Cl. 340—432 **3 Claims**



1. A mobile signal lamp and lamp mount unit comprising:
a housing, said housing comprising a plurality of lampshade mounting posts and lamp assembly mounting posts, a switch mounting hole, a press-button switch mounted in said switch mounting hole, two contact slots, two contact metal plates respectively fastened to the contact slots, a peripheral flange raised along the periphery at a front side, a downward chamber at a back side, a clip extended downwards from said downward chamber on the outside and terminating in a plurality of inward ribs, and a plurality of battery box mounting holes through said downward chamber;
a lamp assembly mounted inside said housing and electrically connected to the contact metal plates of said housing, said lamp assembly comprising a circuit board fastened to said lamp assembly mounting posts and having a control circuit and a plurality of light emitting devices controlled by said control circuit;
a transparent lampshade covered on said housing over said lamp assembly, said lampshade comprising a plurality of mounting posts respectively fastened to said lampshade mounting posts of said housing by screws, an endless mounting groove, which receives the peripheral flange of said housing, a reflecting surface area for reflecting external light, and a refracting surface area, which refracts light from said lamp assembly;
a battery box mounted in said downward chamber of said housing, said battery box comprising two substantially U-shaped top contact metal plates bilaterally horizontally disposed at a top in contact with the contact metal plates of said housing, a power connector for connection to an external power supply device, a flat bottom contact metal plate horizontally disposed at a bottom, a plurality of raised stripes horizontally disposed around an outside wall, a plurality of ribs at a back side and engaged with the inward ribs of said clip, a plurality of locating rods, a plurality of battery cells retained in position by said locating rods and connected in series by the top and bottom metal contact plates of said battery box, and a plurality of retaining rods respectively fastened to said battery box mounting holes on said downward chamber of said housing;
a lamp mounting device for fastening said housing to a user, said lamp mounting device comprising a signal lamp holder, a rotary member, and a fastening belt, said fastening belt comprised of a belt and a buckle, said buckle comprised of a casing, a clamping plate, a packing frame, and an ornamental covering, said signal lamp holder comprising a supporting frame, which holds said housing, and a base frame connected between said supporting frame and said rotary member, said supporting frame comprising two parallel lugs at a back side, a track at a front side mounted on said clip, a stop rod stopped above said clip, a backward handle top, and toothed portions on the lugs of said supporting frame, said base frame comprising two parallel lugs pivotably connected to the lugs of said supporting frame by a screw bolt, portions on the lugs of said base frame respectively engaged with with the toothed portions on the lugs of said supporting frame, an internally threaded mounting rod at a back side, and a unitary internal gear at the back side of said base frame around said internally threaded mounting rod, said rotary member being made of circular shape mounted to said internally threaded mounting rod of said base frame, having a plurality of teeth equiangularly spaced around a border of the rotary member and engaged with said internal gear of said base frame, a plurality of curved splits extended to the border, and a square flange at the back side of said rotary member, said clamping plate being pivotably connected to said casing, said casing comprising a center through hole connected to said internally threaded mounting rod of said base frame, a square recess at a back side, which receives said square flange of said rotary member, a plurality of projecting rods bilaterally disposed on the inside, and two belt slots transversely disposed in parallel at a top end, said packing frame being received in said casing, having a countersunk hole at the center connected to the center through hole of said casing and said internally threaded mounting rod of said base frame by a screw and a washer, and a plurality of locating grooves, which receive the projecting rods of said casing respectively, said ornamental covering being covered on said packing frame, said belt having one end mounted around the screw on the center through hole of said casing and retained between said casing and said packing frame, and an opposite end inserted through said belt slots and held down by said clamping plate to fasten the mobile signal lamp and lamp mount unit to the user.

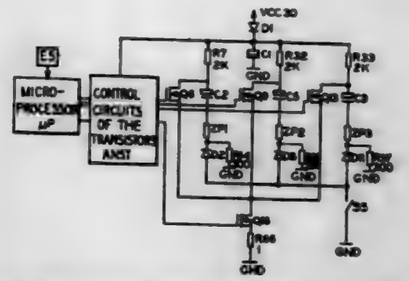
5,446,442

CIRCUIT ARRANGEMENT FOR TRIGGERING A VEHICLE PASSENGER PROTECTION SYSTEM

Martin Swart, Obertraubling; Jürgen Eigler, Regensburg, and Richard Vogt, Sinzing, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 844,642, Mar. 31, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,480
Int. Cl.[6] B60Q 9/00
U.S. Cl. 340—438 **18 Claims**

1. A circuit arrangement for triggering a vehicle passenger protection system in a vehicle having an engine in the event of an accident, comprising:
a voltage source operatively connected to a parallel circuit having at least two current branches,
current branches of said at least two current branches each having a dedicated trigger, wherein a respective dedicated trigger of a respective current branch of said at least two current branches conducts, during the accident, a current impulse,
said current branches of said at least two current branches each having a dedicated capacitor charged by the voltage source, each dedicated capacitor of said dedicated capacitors of said at least two current branches having both a high self-capacitance and a high ignition voltage, wherein during the accident a respective dedicated capacitor of said respective current branch delivers to the respective dedicated trigger the current impulse that triggers the protection system,
current branches of the at least two current branches each having a decoupling element, wherein during the accident decoupling elements of said at least two current branches mutually decouple current impulses flowing in said at least two current branches,
said current branches of said at least two current branches each having an individual triggering switch, a respective individual triggering switch of said respective current branch being connected in parallel to said respective dedicated trigger and said respective dedicated capacitor wherein the respective individual triggering switch is conductive during the accident thereby permitting the



respective current impulse to flow through the respective dedicated trigger and
at least one common triggering switch, which is connected in series with individual triggering switches of the at least two current branches, wherein the at least one common triggering switch is conductive during the accident thereby permitting the respective current impulse to flow through the respective dedicated trigger,
said current branches of said at least two current branches each having at least one measuring point connected in series with the capacitor thereof and the dedicated trigger thereof, at least one of the capacitor and the dedicated trigger of each current branch being connected before the accident by means of the voltage source to continuous-operation voltages which are testable via said measuring point; and
in each of said current branches of said at least two current branches the decoupling element thereof, the capacitor thereof, the trigger thereof and the measuring point thereof forming a series circuit.

5,446,443

FIRE-ALARM SYSTEM

Kenji Ishii, Tokyo, Japan, assignor to Nohmi Bosai, Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,322
Claims priority, application Japan, Apr. 9, 1992, 4-133065
Int. Cl.[5] G08B 26/00
U.S. Cl. 340—505 **14 Claims**

1. A fire-alarm system in which a plurality of terminal units are connected to a fire receiver via a main signal line, said fire receiver polling each of said terminal units, and the terminal unit called by the polling sending a current signal back to said fire receiver, said fire receiver comprising:
a voltage source for outputting a DC voltage;
a voltage signal transmitting circuit for forming a polling signal having an AC signal component and a DC signal component by superposing a pulse signal over said DC

voltage and for transmitting said polling signal to said main signal line; each of said terminal units comprising:

a voltage signal receiving circuit for blocking said DC signal component of said polling signal input via said main signal line and for detecting only said AC signal component of said polling signal;

a signal processing circuit for receiving said AC signal component of said polling signal detected by said voltage signal receiving circuit and for producing a pulse code signal representative of return information to be sent back to said fire receiver; and

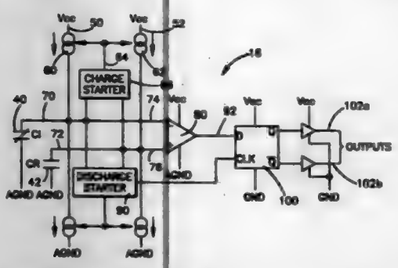
a current signal transmitting circuit for transmitting a current signal of predetermined current to said main signal line in accordance with the pulse code signal of said return information produced by said signal processing circuit.

5,446,444

CAPACITIVE THRESHOLD DETECTOR TEST CIRCUIT

Benjamin N. Lease, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 17, 1993, Ser. No. 169,340
Int. Cl.[6] G08B *29/00*; G01R *31/02*
U.S. Cl. 340—514 8 Claims



1. A level detector comprising:

a) a first charging circuit having a probe that can be placed at a liquid detection site for conducting charge at a rate based on the level of liquid at the liquid detection site;

b) a second charging circuit for conducting charge at a rate independent of the liquid level at the detection site;

c) control circuitry coupled to the first and second charging circuits for periodically activating said first and second charging circuits and for comparing the rates of charging of the first and second charging circuits and producing a detector output signal based upon the comparison; and

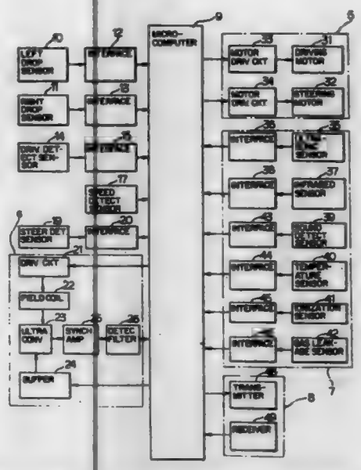
d) a test input for inhibiting one of said first and second charging circuits and thereby controlling the detector output signal to test the functioning of the level detector.

5,446,445

MOBILE DETECTION SYSTEM

John W. Bloomfield; Rudi A. Bischoff; Robert L. Payne; Scott B. Wagner, all of Hilton Head Island, S.C.; Kim Sang-Gweon; Kim Tae-Sik, both of Kyonggi, Rep. of Korea; Kim Ji-Hyun; Jeong Joon-Young, both of Seoul, Rep. of Korea; Yoo Chang-Hyun, Kyonggi, Rep. of Korea, and Dong-Il Shin, Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Continuation-in-part of Ser. No. 789,187, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 727,630, Jul. 10, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,647
Int. Cl.[6] G08B *19/00*; B25J *5/00*
U.S. Cl. 340—521 23 Claims



1. A mobile detection system mounted on a robot, which is movable in order to execute multiple detecting functions to detect abnormal conditions within a monitoring region, said detection system comprising:

a microcomputer for identifying when an abnormal state arises within the monitoring region and for controlling movement of said robot;

a drive operating system controlled by the microcomputer and including:

driving means for providing forward and reverse driving power to the robot, and

steering means for altering a direction in which the robot moves;

navigation means for emitting an object detection signal and receiving said object detection signal which is reflected from an object in the monitoring region in order to detect the object, said navigation means outputting, to the microcomputer, a signal identifying the object;

abnormal condition detection means for detecting generation of abnormal states within the monitoring region and for outputting, to the microcomputer, a signal representative of the abnormal condition; and

communication means for transmitting the signal, representative of the abnormal condition, to a location external to the monitoring region;

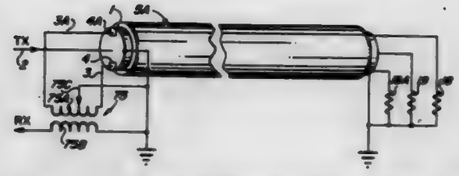
faulty surface detecting means having at least two sensors which detect surface faults, said faulty surface detection means being operatively coupled to said drive operating system to cause said robot to reverse its direction when one of said sensors detects a surface fault and subsequently move forward and turn in a direction away from a side on which said one of said sensors is mounted.

5,446,446

DIFFERENTIAL, MULTIPLE CELL REFLEX CABLE INTRUSION DETECTION SYSTEM AND METHOD

R. Keith Harman, Tempe, Ariz., assignor to Southwest Microwave, Inc., Tempe, Ariz.

Continuation-in-part of Ser. No. 164,364, Dec. 9, 1993. This application Aug. 26, 1994, Ser. No. 296,666
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—566 7 Claims



7. An intrusion detection system, comprising in combination:

(a) a transducer cable including

i. a first conductor,

ii. a second conductor,

iii. dielectric material on opposed sides of the second conductor and between the first conductor and the second conductor,

iv. first and second longitudinal passages extending through the dielectric material, corresponding portions of the first and second longitudinal passages being located on opposed sides of the second conductor, and

v. first and second sense wires extending through and loosely fitting in the first and second passages, respectively, so that physical movement of the transducer cable results in free movement of the first and second sense wires in generally opposite directions relative to the second conductor, causing corresponding changes in the characteristic impedance of a first transmission line formed by the second conductor and the first sense wire and in the characteristic impedance of a second transmission line formed by the second conductor and the second sense wire;

(b) a transmitting circuit adapted to transmit an RF signal down a third transmission line formed by the first conductor and the second conductor, an electromagnetic field being produced along the first conductor by the RF signal and coupling energy to the first and second transmission lines, an intrusion activity causing movement of the transducer cable resulting in movement of the first and second sense wires in the first and second passages, respectively, in generally opposite directions relative to the second conductor and changing characteristic impedances of the first and second transmission lines at portion thereof including the relative movement, the characteristic impedance changes causing reflection of a portion of the coupled energy back along the first and second transmission lines toward the transmitting circuit, the first and second sense wires carrying a differential first signal representative of the reflected energy; and

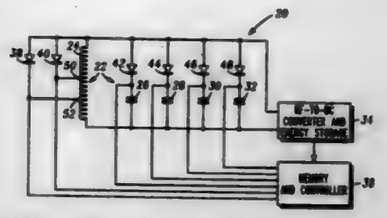
(c) a receiver circuit connected to receive the differential first signal and operative to produce a second signal representative of the occurrence of the activity.

5,446,447

RF TAGGING SYSTEM INCLUDING RF TAGS WITH VARIABLE FREQUENCY RESONANT CIRCUITS

Scott N. Carney, Palatine, Ill.; George L. Lauro, San Jose, Calif.; Eric L. Kross, Crystal Lake, and Sanjar Ghaem, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1994, Ser. No. 195,681
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 39 Claims



1. An RF tagging system comprising:

an RF tag including resonant circuit means being resonant at any one of a plurality of different frequencies within a frequency range, receiver means for receiving an interrogation signal, and control means responsive to receipt of said an interrogation signal by said receiver means for causing said resonant circuit means to be resonant at selected ones of said different frequencies in a predetermined time sequence corresponding to a predetermined identification code; and

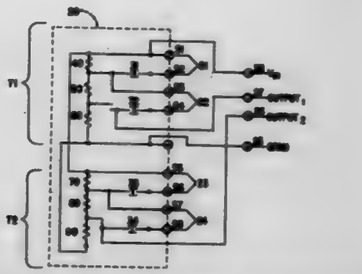
an external reader including detecting means for detecting said selected resonant frequencies of said RF tag, and decoding means for decoding the time sequence of said selected resonant frequencies for recovering said predetermined identification code.

5,446,448

RIVER ICE MOTION DETECTOR

Jon E. Zufelt, Canaan; Charles H. Clark, Enfield, both of N.H., and David S. Deck, Madison, Me., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 8, 1994, Ser. No. 224,417
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—580 4 Claims



1. A river ice motion detector system for detecting ice run conditions in order to warn communities downstream that flooding from ice jams is possible, comprising:

means for receiving and applying a voltage, means for measuring a voltage output, a detector unit and a plurality of sensor loops all having communication with each other;

said voltage applying means providing an input signal to said detector unit and then an input signal to said sensor loops;

said detector unit consisting of a plurality of resistors and a plurality of switches;

said sensor loops, positioned horizontally in slots in an ice

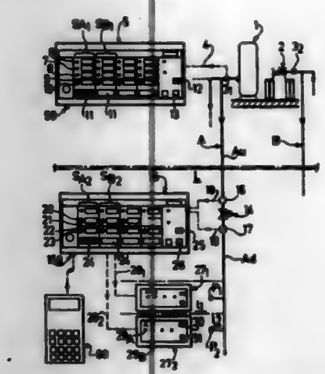
cover, providing a second signal back to said voltage measuring means in response to said input signal;
said slot being refilled with ice and snow to allow refreezing having said sensor wires enclosed therein; wherein
said sensor loops upon breaking, open the circuit when the ice cover begins to break up;
each of said sensor loops consists of two wires fused together permitting breakage to occur at a pre-defined location in said loop;
each of said loops is in communication with one of said switches;
said switches are normally closed, providing a test for the system when said switches are deliberately opened; and
said resistors have resistances providing large step differences, allowing said detector to determine which of said loops has broken.

5,446,449

SYSTEM FOR MONITORING FLUID DISTRIBUTION TOWARDS A UTILIZATION STATION

Gérard Lhomer, Le Mesnil Saint Denis, and Gilbert Theurant, Vitry sur Seine, both of France, assignors to Taema, Antony, France

Filed Jun. 18, 1993, Ser. No. 78,029
Claims priority, application France, Jun. 19, 1992, 92 07485
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—611 19 Claims



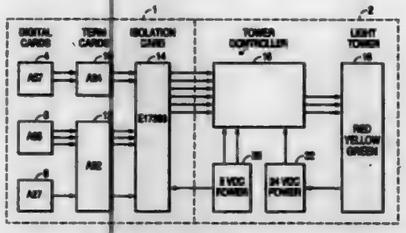
1. A fluid distribution system for delivering at least one fluid toward at least one user station, comprising at least one fluid distribution line having an upstream portion connectable to a source of said fluid, a line length and a downstream portion for fluid connection to said user station, the line length including a fluid control device for controlling a parameter of said delivered fluid and a pair of sensors on both sides of said control device for sensing said parameter upstream and downstream of said control device and providing signals indicative of said parameter, at least one first indicator unit connected to the sensors and having at least one display panel comprising at least one series of warning displays including a pair of displays indicative of under and over thresholds of the parameter sensed upstream of control device and a pair of displays indicative of under and over thresholds of the parameter sensed downstream of the control device.

5,446,450

GENUS TOWER LIGHT CONTROLLER

Paul Knutson, San Antonio, Tex., assignor to Sony Electronics Inc., Park Ridge, N.J.

Filed Nov. 4, 1993, Ser. No. 145,700
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—635 12 Claims



1. An apparatus for indicating the states of a semiconductor wafer production process, comprising:
cassette logic circuitry for generating a first signal that varies depending upon whether wafers are present in a chamber or if said chamber is empty and depending upon whether said chamber is at atmospheric pressure or if said chamber is pumped down to a vacuum;
first indicator logic circuitry, connected to said cassette logic circuitry, for receiving said first signal, for continuously driving a first indicator when said chamber is ready to be loaded with wafers, and for intermittently driving said first indicator when said first signal indicates that said chamber has wafers that are ready to be unloaded;
second indicator logic circuitry for intermittently driving a second indicator when an alarm signal is received and for continuously driving said second indicator when said production process is placed in an interrupt mode; and
third indicator logic circuitry for continuously driving a third indicator when wafers in said chamber are being processed;
wherein said second indicator logic circuitry is connected to said first indicator logic circuitry and to said third indicator logic circuitry and prevents said first indicator logic circuitry and said third indicator logic circuitry from respectively driving said first and third indicators whenever said alarm signal is received at said second indicator logic circuitry.

5,446,451

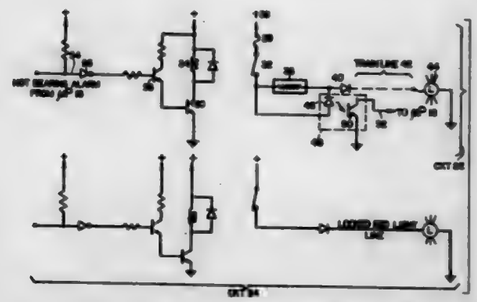
ON BOARD HOT BEARING DETECTOR SYSTEM WITH FAULT DETECTION

George Grosskopf, Jr., Corsan, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Jun. 8, 1993, Ser. No. 73,944
Int. Cl.[6] G08B 21/00; B61K 1/00
U.S. Cl. 340—682 2 Claims

2. An on-board detector system for monitoring the temperatures of train bearings comprising:
a power source;
a plurality of sensors mounted on said train arranged and constructed to generate sensor signals indicative of said bearing temperatures;
a microprocessor for identifying bearings having excessive temperatures;
interfacing means for feeding said sensor signals to said microprocessor; and
diagnostic circuitry in communication with said microprocessor for monitoring a status of said sensors;
said diagnostic circuitry including a plurality of sensor resistors, each sensor resistor being coupled between one of said sensors and a voltage bus and a switch for connecting said power source to said voltage bus, said switch being selectively activated by said microprocessor;

a train line circuit including a relay selectively activated by said microprocessor and a train line controlled by said relay, said train line circuit further including a current limiting element for controlling a current level through said train line, said current limiting element including a current limiting resistor having a positive temperature coefficient;



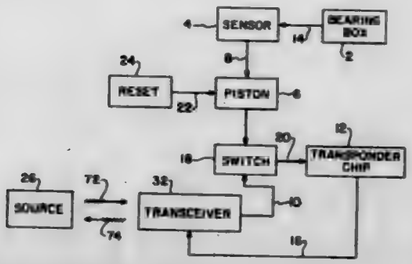
a current monitoring means for monitoring said current level;
wherein said current monitoring means is coupled to said microprocessor, said microprocessor cyclically activating and deactivating said relay when said current level is excessive.

5,446,452

TEMPERATURE MONITORING SYSTEM

Charles J. Litton, 4903 State Rd., Peninsula, Ohio 44264

Filed Feb. 5, 1993, Ser. No. 14,178
Int. Cl.[6] G08B 21/00, 17/04
U.S. Cl. 340—870.17 12 Claims



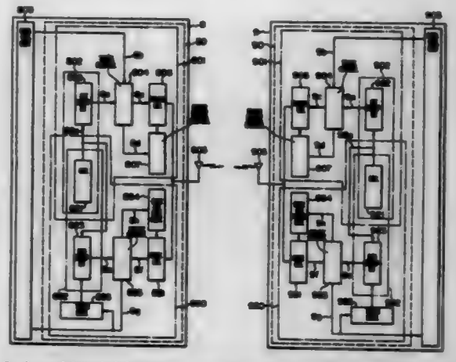
1. A temperature monitoring system activated in response to the occurrence of detecting a temperature greater than a predefined critical temperature which comprises:
(a) a transceiver which receives an incoming electromagnetic wave and subsequently retransmits a modified electromagnetic wave;
(b) a temperature sensing means which upon detecting the temperature which is greater than the predefined critical temperature will complete an electronic circuit which is initially in an open inactive state; and
(c) an electromagnetically interrogatable transponder chip capable of selectively transitioning from the inactive state to an active state upon the temperature sensing means detecting the predefined critical temperature, the transponder chip when in the active state, converts the electromagnetic wave to a surface acoustic wave which passes over the transponder chip and upon exiting from the transponder chip is reconverted to an electromagnetic wave which is slightly modified from the incoming electromagnetic wave, the modification being a modulated signal which contains information which has been encoded on the transponder for retransmission by the transceiver.

5,446,453

RESIDENTIAL FACILITY CONTROL SYSTEM

Shunichi Nagamoto, Nara; Takeshi Muramatu, Shizuoka; Yasuo Yoshimura, Yamatokoriyama, and Masahiro Yamamoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

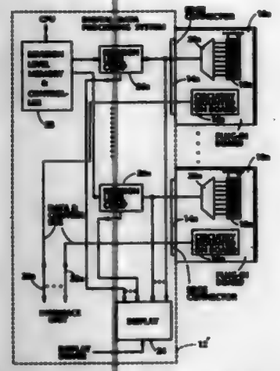
Filed Apr. 7, 1993, Ser. No. 43,560
Claims priority, application Japan, Apr. 9, 1992, 4-088531; Apr. 9, 1992, 4-088532
Int. Cl.[6] G05B 23/02
U.S. Cl. 340—825.06 8 Claims



1. A residential facility control system having a radio control capability comprising a host and a subsidiary apparatus;
said host apparatus including:
first timer means for periodically outputting a first timing signal having a predetermined period;
a transmission data generating unit for generating transmission data;
transmission control means for starting a transmission operation based upon said first timing signal in response to the transmission data, and for outputting a transmission signal and a power source control signal;
a transmitting circuit for converting the transmission signal to a radio signal;
transmitting antenna means for transmitting the radio signal generated by said transmitting circuit; and
transmitting circuit power source control means for controlling a power supply to said transmitting circuit in response to said power source control signal;
said subsidiary apparatus including:
receiving antenna means for receiving the radio signal which is transmitted from said transmitting antenna means;
a receiving circuit for receiving the radio signal from the receiving antenna means and converting it to a reception signal;
second timer means for periodically outputting a second timing signal having a period which is substantially equal to the predetermined period of said first timing signal divided by an integer;
reception control means for determining whether or not there is the reception signal from said receiving circuit and to output reception data in synchronization with said second timing signal and to output a receiving circuit power source control signal to control a further power supply to said receiving circuit in response to said second timing signal; and
receiving circuit power source control means for intermittently activating said receiving circuit by intermittently turning on said further power supply to said receiving

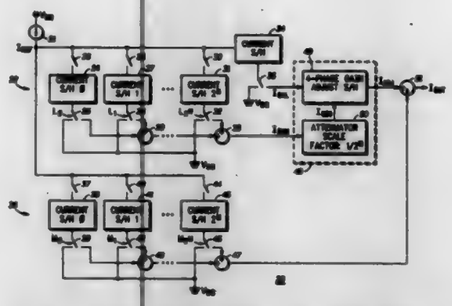
circuit in response to said receiving circuit power source control signal.

5,446,454
ARRANGEMENT OF DETECTING CURRENT REVISION LEVELS OF A PLURALITY OF PLUG-IN BOARDS
Takashi Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 9, 1992, Ser. No. 945,209
Claims priority, application Japan, Sep. 9, 1991, 3-228964
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.52 5 Claims



1. An arrangement of ascertaining revision levels of a plurality of plug-in boards which have been inserted into a digital data processing system, comprising:
- a plurality of switch units which are respectively mounted on said plurality of plug-in boards, each of said switch units having a plurality of separate two-position switches for retaining a revision level of a corresponding plug-in board in binary digits, each of said plurality of switch units producing revision level data;
- a display means which is operatively coupled to said plurality of switch units and which receives said revision level data therefrom, said display means exhibiting said revision levels of said plurality of plug-in boards;
- first means for storing a plurality of revision level ranges of said plurality of plug-in boards, each of said revision level ranges indicating a range of revision levels which are available for said digital data processing system;
- a plurality of revision level comparators each of which is arranged between said first means and said plurality of switch units and which is coupled to said display means, each of said revision level comparators receiving a corresponding revision level range from said first means and said revision level from said corresponding plug-in board and checking if said revision level of said corresponding plug-in board is confined within said corresponding revision level range, each of said revision level comparators applying a comparison result to said display means;
- second means for storing a plurality of plug-in board enable/disable data of said plurality of plug-in boards, said second means being coupled to said plurality of revision level comparators, each of said plug-in board enable/disable data indicating if said corresponding plug-in board is dispensable to said data processing system in the event that said corresponding revision level comparator detects that said revision level of said corresponding plug-in board is outside of said corresponding revision level range, said second means generating a plurality of control signals each of which indicates if said corresponding plug-in board is dispensable, said second means being coupled to said display means; and
- a plurality of buffers which are respectively coupled to circuitry mounted on said plurality of plug-in boards and to said second means, each of said plurality of buffers selectively disconnecting said corresponding plug-in board from said digital data processing system in response to said control signal from said second means.

5,446,455
AUTO-CALIBRATED CURRENT-MODE DIGITAL-TO-ANALOG CONVERTER AND METHOD THEREFOR
Todd L. Brooks, Boston, Mass., assignor to Motorola Inc., Schaumburg, Ill.
Filed Dec. 2, 1993, Ser. No. 160,645
Int. Cl.[6] H03M *1/68*
U.S. Cl. 341—145 20 Claims

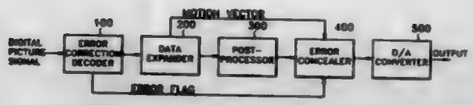


1. A current-mode digital-to-analog converter (DAC), comprising:
- a first sub-DAC having a plurality of current sample and hold circuits, the first sub-DAC receiving a reference current and a plurality of least-significant-bits of a K-bit digital signal, where K is an integer, and in response, the first sub-DAC providing a first analog signal corresponding to the plurality of least-significant-bits;
- a second sub-DAC having a plurality of current sample and hold circuits, the second sub-DAC receiving the reference current and a plurality of most-significant-bits of the K-bit digital signal, and in response, the second sub-DAC providing a second analog signal corresponding to the plurality of most significant-bits;
- an attenuator, coupled to the first sub-DAC, the attenuator attenuating the first analog signal and providing an attenuated first analog signal;
- a gain adjust sample and hold circuit for adjusting the attenuated first analog signal with a constant scale factor to compensate for device mismatch errors in the attenuator, and providing an adjusted attenuated first analog signal; and
- a summing element for receiving the adjusted attenuated first analog signal and the second analog signal, and in response, providing an output analog signal.

5,446,456
DIGITAL SIGNAL PROCESSING SYSTEM
Jin-gyo Seo, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Dec. 29, 1993, Ser. No. 175,279
Claims priority, application Rep. of Korea, Apr. 30, 1993, 93-7483
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 6 Claims

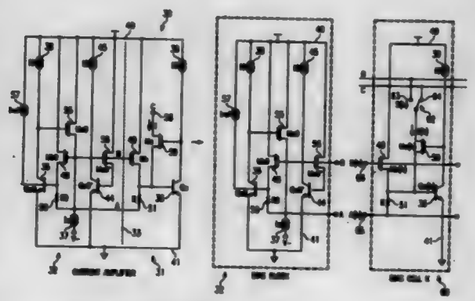
1. A digital signal processing system comprising:
- error-correction-decoder means for error-correction-decoding data for generating an error flag for errors beyond an error correction capability;

- data restoring means for compensating motion of the error-correction-decoded data according to a motion signal which is generated between sequential frames for restoring the error-correction-decoded data into an original video signal; and
- error concealment means for replacing a video signal for an area where the error is not corrected among the error-correction-decoded data with a previous frame video signal, wherein the error concealment means comprises:
  - a first frame memory for storing luminance data output from the data restoring means in frame units;



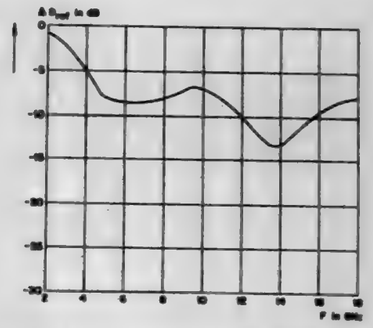
  - a second frame memory for storing color data output from the data restoring means in frame units;
  - selection means for selecting outputs of the first and second frame memories or the data restoring means responsive to an error flag output from the error-correction-decoder means; and
  - address generation means for generating an address obtained by adding a position corresponding to the motion signal to a current frame position or an address of the current frame position responsive to the error flag and for outputting the address generated as an address signal of the first and second frame memories.

5,446,457
CURRENT-SUMMING DIGITAL-TO-ANALOG CONVERTER WITH BINARILY WEIGHTED CURRENT SOURCES
Marc H. Ryat, Fort Collins, Colo., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Feb. 16, 1994, Ser. No. 197,211
Int. Cl.[6] H03M *1/78*
U.S. Cl. 341—136 33 Claims



1. A current-summing digital-to-analog converter, comprising:
- a bias block that provides first and second voltage outputs;
- at least one bit cell for receiving a binary input signal, including:
  - a switch to selectively connect either a first or a second summing node to a current flow path depending upon a state of the binary input signal;
  - an output bipolar transistor and a current source, connected in series on a collector node between a supply voltage and a reference potential;
  - a first MOS transistor connected in said current flow path, said MOS transistor having a gate connected to a junction between the current source and the bipolar transistor and a source connected to the base of the bipolar transistor;
  - a base current compensating second MOS transistor connected between the supply voltage and a base of said output bipolar transistor, said base current compensating second MOS transistor having a gate connected to the first voltage output of said bias block;
  - and a resistor connected between the base of said output bipolar transistor and the second voltage output of said bias block.

5,446,458
PROCESS FOR THE FASTENING OF AN ELEMENT ABSORBING ELECTROMAGNETIC WAVES ON A WALL OF A STRUCTURE OR AN INFRASTRUCTURE
Jean-Pierre Chesmat, Grigny, and Yves Larrere, Corny, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France
Filed Dec. 30, 1986, Ser. No. 947,518
Claims priority, application France, Dec. 30, 1985, 85 19377
Int. Cl.[6] G01S *7/36*
U.S. Cl. 342—1 7 Claims

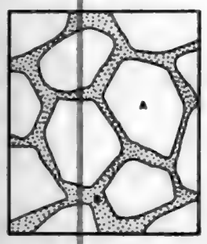


1. Process to fasten an intrinsic element absorbing electromagnetic waves onto a wall of a structure or infrastructure, which process comprises:
- applying a coating onto a surface of the aforesaid wall by means of a syntactic foam that has the rheological properties of a mastic, and that is transparent to electromagnetic waves,
- placing the aforesaid intrinsic absorbent element into or onto the aforesaid syntactic foam coating,
- letting the aforesaid syntactic foam harden.

5,446,459
WIDE BAND TYPE ELECTROMAGNETIC WAVE ABSORBER
Kyung Y. Kim, Seoul; Wang S. Kim, Kyungki; Hyung J. Jung, Seoul, and Yeon D. Ju, Kyungsangnam, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Continuation-in-part of Ser. No. 915,058, Jul. 16, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,754
Claims priority, application Rep. of Korea, Aug. 13, 1991, 13922
Int. Cl.[6] H01Q *17/00*
U.S. Cl. 342—1 7 Claims

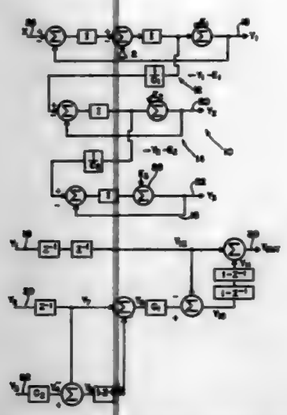
1. An electromagnetic wave absorber for use in broad frequency ranges comprising a sintered wave absorbing ferrite material having a $CuO—Fe_2O_3$ spinal-structured material present at the grain boundaries of the sintered ferrite material,

wherein said spinal-structured material contains from about 40 to about 60 mol % CuO based on the total amount of



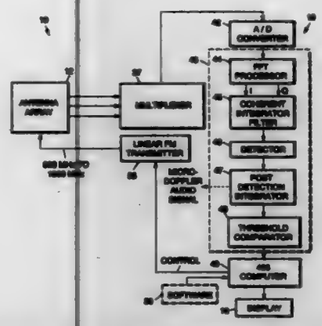
$CuO—Fe_2O_3$ and having different magnetic properties from the sintered ferrite material.

5,446,460
FOURTH-ORDER CASCADED SIGMA-DELTA MODULATOR
Carlin D. Cabler, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Nov. 3, 1993, Ser. No. 147,062
Int. Cl.[6] H03M 3/02
U.S. Cl. 341—143 3 Claims



1. A method of cascading an initial second-order sigma-delta modulator, an intermediate first-order sigma-delta modulator, and a final first order modulator, each modulator having a quantizer, said cascading method comprising the steps of:
applying a first signal to the initial modulator quantizer to develop an initial signal;
scaling said first signal by a first predetermined factor to produce a scaled first signal;
applying said scaled first signal to the intermediate modulator to develop a second signal;
applying said second signal to the intermediate modulator quantizer to develop an intermediate signal;
scaling said second signal by a second predetermined factor to produce a scaled second signal;
applying said scaled second signal to the final modulator to develop a third signal;
applying said third signal to the final modulator quantizer to develop a final signal;
scaling said final signal by the reciprocal of the second predetermined factor to produce a scaled final signal;
delaying said intermediate signal by one sampling period to produce a delayed intermediate signal;
subtracting said delayed intermediate signal from said scaled final signal to produce a difference signal;
differentiating said difference signal to produce a differentiated difference signal;
summing said differentiated difference signal and said delayed intermediate signal to produce a summed signal;
scaling said summed signal by the reciprocal of the first predetermined factor to produce a scaled summed signal;
delaying said initial signal by two sampling periods to produce a delayed initial signal;
subtracting said delayed initial signal from said scaled summed signal to produce a summed difference signal;
twice differentiating said summed difference signal to produce a differentiated summed signal; and
summing said differentiated summed signal and said delayed initial signal to produce an output signal.

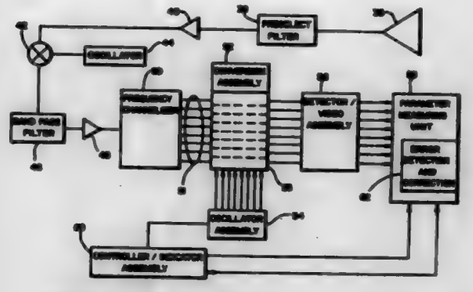
5,446,461
CONCRETE PENETRATING IMAGING RADAR
Lawrence M. Frazier, West Covina, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Apr. 28, 1994, Ser. No. 234,211
Int. Cl.[6] G01S 13/08, 13/90
U.S. Cl. 342—22 13 Claims



1. An imaging radar system for generating images of objects disposed behind an obscuring structure, said system comprising:
a low power, frequency tunable, continuous wave transmitter;
an antenna array coupled to the transmitter that comprises a transmit antenna and a plurality of receive antennas;
a radar receiver coupled to the antenna array;
a computer processor coupled to the radar receiver that comprises a digital signal processor and a computer, and wherein the computer processes radar return signals derived from the objects using time difference of arrival processing to provide radar angle scanning upon receipt of the radar return signals from the objects;
a radar display coupled to the computer; and
a power source coupled to the antenna array, the transmitter, the radar receiver, and the computer processor for providing power thereto.

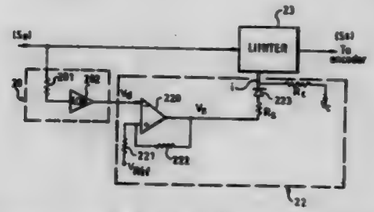
5,446,462
EXTREMELY HIGH FREQUENCY VEHICLE IDENTIFICATION AND COMMUNICATION SYSTEM
Austin R. Cleveland, Gilbert, Ariz., assignor to E-Systems, Inc., Dallas, Tex.
Filed Jan. 14, 1993, Ser. No. 4,617
Int. Cl.[6] G01S 13/79
U.S. Cl. 342—45 16 Claims

1. A vehicle communication and identification system having an IFF mode of operation and a data communications mode of operation, said system comprising:
a multi-channel, extremely high frequency transmitter having an IFF mode of operation and a data communication mode of operation, said transmitter including:
first means for generating an IFF code sequence signal;
second means for generating a communication signal;
control means for selectively actuating the IFF mode or the communications mode, said control means further



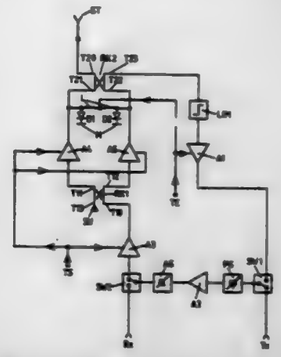
providing IFF codes and communications data to said first and second means respectively; and
a receiver for receiving the transmitted IFF code sequence signal and the transmitted communications signal.

5,446,463
DEVICE WITH HIGH LINEARITY FOR LIMITATION OF A CHARACTERISTIC OF A SIGNAL, AND USE OF THE DEVICE IN A RADAR RECEPTION SYSTEM
Dominique Beaucourt, Gif S/Yvette; Daniel Lemaire, Fontenay Aux Roses, and Gilles Wenchler, Issy Les Moulineaux, all of France, assignors to Thomson-CSF, Paris, France
Filed Feb. 15, 1994, Ser. No. 196,370
Claims priority, application France, Feb. 23, 1993, 93 02055
Int. Cl.[6] G01S 7/285; H03G 11/04
U.S. Cl. 342—198 7 Claims



1. A high linearity device for limitation of a characteristic of an input signal to a predetermined maximum value S_{max} and providing an output signal which is in linear relation with said input signal, wherein said device comprises:
a limiter having an input for receiving said input signal and having a limitation threshold S_{lim} which limitation threshold is switched between one of two possible predetermined values S_h and S_b which are respectively higher than and lower than said maximum value S_{max};
measuring means having an input for receiving said input signal and delivering a measurement value which represents the characteristic;
means to activate said switching of the limitation threshold S_{lim} to the value S_h when said measurement value is lower than a comparison threshold V_H and to the value S_b when said measurement value is higher than said comparison threshold V_H, the comparison threshold V_H being a value such that the characteristic of said signal is never higher than the maximum value S_{max}.

5,446,464
TRANSCEIVER MODULE
Heinz-Peter Feldle, Sendea/Wullenstetten, Germany, assignor to Deutsche Aerospace AG, Munich, Germany
PCT No. PCT/EP92/01536, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO93/16396, PCT Pub. Date Aug. 19, 1993
PCT Filed Jul. 8, 1992, Ser. No. 133,092
Claims priority, application Germany, Feb. 11, 1992, 42 03 932.0
Int. Cl.[6] G01S 13/00
U.S. Cl. 342—175 8 Claims



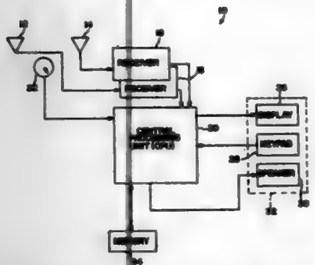
1. A high frequency transceiver module comprising:
a transmit/receive switch coupled to a transmission path and to a receive path, the transmit/receive switch including a 3 dB directional coupler having first, second and third ports, and a decoupled port, the receive path being connected to the decoupled port;
at least two HF power amplifiers connected to the first and second ports of the 3 dB coupler to form a balanced amplifier in the transmission path, the balanced amplifier having an HF output;
an HF switch connected to the first and second ports of the 3 dB coupler for short-circuiting the HF output of the balanced amplifier; and
switching means connected to the HF switch and to the receive path for selectively switching the transmission path and the receive path to be operational.

5,446,465
SATELLITE LOCATION AND POINTING SYSTEM FOR USE WITH GLOBAL POSITIONING SYSTEM
Debra L. Diefes, 7481 Digby Green, Alexandria, Va. 22310; Leopold C. Fan, 10037 Colebrook Ave., Potomac, Md. 20854, and Charles E. Rodgers, 3635 St. Leonard Rd., St. Leonard, Md. 20685
Continuation-in-part of Ser. No. 77,734, Jun. 18, 1993. This application Jun. 29, 1993, Ser. No. 83,267
Int. Cl.[6] H04B 7/185; G01S 5/02
U.S. Cl. 342—357 25 Claims

1. A system for determining the location of and pointing angle to a selected one of a first series of orbiting satellites by receiving telemetry and other electronic signals provided by a second series of orbiting satellites, calculating the location of said system from said telemetry and other electronic signals, and calculating the location and pointing angle of said selected one of said first series of orbiting satellites relative to the location of said system, said system comprising:
antenna array means comprising at least two discrete antenna, said antenna array adapted to receive the telemetry and electronic signals transmitted by the second series of orbiting satellites;
receiver means electronically communicating with each of

said discrete antenna and adapted to interpret the telemetry and electronic signals collected by said antenna array means and to generate receiver output signals;

algorithmic means for locating said selected one of said first series of orbiting satellites and calculating the location of and pointing angle to said selected one of said first series of orbiting satellites; and



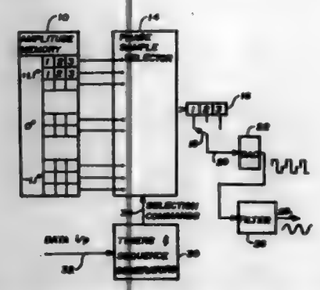
microprocessor means for receiving said receiver output signals and for processing said receiver output signals with said algorithmic means to determine the location of and pointing angle to said selected one of said first series of orbiting satellites.

5,446,466

RADIO BEACON PHASE MODULATOR

Steven J. Bennett, Coquitlam, Canada, assignor to MPR Teltech Ltd., British Columbia, Canada

Filed May 12, 1993, Ser. No. 59,577
Int. Cl.[6] G01S *1/00, 1/08;* H03H *9/00;* H04L *27/10*
U.S. Cl. 342—385 12 Claims



1. A phase modulator for a position indicating radio beacon, comprising:

(a) a digital memory circuit having a plurality of sets of stored numerical amplitude values with each set corresponding to a sine wave of a given phase and having three stored numerical amplitude values in each set;

(b) a digital to analog converter;

(c) means for selecting amplitude values for each of a plurality of successive phase values from said memory circuit in steps from a last primary phase value corresponding to a last input data value to a next primary phase value corresponding to a subsequent input data value and, for each phase value, transferring the set of amplitude values in series at spaced apart time intervals to said digital to analog converter; and

(d) a high frequency filter having an input coupled to an output of said analog-to-digital converter such that a phased modulated sine wave is produced at an output of said high frequency filter.

5,446,467

TECH-TRACK

Eugene M. Willett, 11870 Ardel Dr., Lennon, Mich. 48449, assignor to Eugene M. Willett, Lennon, Mich.

Filed Jan. 15, 1993, Ser. No. 5,078
Int. Cl.[6] G01S *1/08;* F42B *6/04*
U.S. Cl. 342—386 1 Claim



1. A tracking device for tracking a wounded animal comprising:

bracket means attached to an arrow;

electronic sender device detachably coupled to said bracket means for transmitting a signal;

counter-balance means attached to said bracket means in opposed relation to the electronic sender device; and,

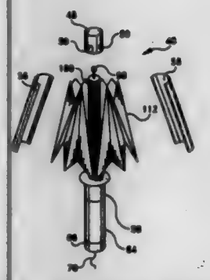
a receiver for picking up the transmitted signal and locating the electronic sender device, wherein the electronic sender device is connected to a barb to penetrate an animal.

5,446,468

LAUNCHER TUBE DEPLOYED MARKER BEACON INCLUDING SETTLEMENT ATOP FOLIAGE FEATURE

Fredrick P. Hiltz, Newport, R.I., and Charles E. Wilson, Clarksville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1994, Ser. No. 216,561
Int. Cl.[6] G01S *1/08*
U.S. Cl. 342—386 8 Claims



1. A marker beacon deployable a maximum predetermined distance from its launching site comprising:

an elongated substantially cylindrical frame having forward and rear ends and an axial opening extending therethrough;

a tractive propulsion motor releasably affixed to the forward end of said frame;

a collapsible and spring loaded counterpoise folded within said frame when said marker beacon is nondeployed and projecting radially outward upon deployment of said marker beacon;

a first actuating means connected to said motor for separating said motor from the remainder of said marker beacon when said marker beacon reaches its maximum predetermined distance;

a second actuating means connected for deploying said counterpoise; and

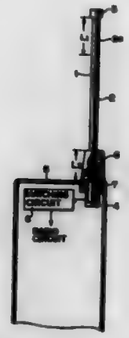
a third actuating means connected for inhibiting said marker beacon's deployment beyond said maximum predetermined distance.

5,446,469

EXTENDIBLE WHIP ANTENNA

Mitsuya Makino, Saitama, Japan, assignor to Nippon Antenna Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 88,568, Jul. 7, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 345,557
Claims priority, application Japan, Jan. 14, 1993, 5-021823
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 9 Claims



1. In an apparatus which includes:

a helical antenna element disposed on a case of a radio circuit;

a matching circuit connected to said helical antenna element and to said radio circuit; and

a whip antenna element which can be accommodated in or extended outside of said case through said helical antenna element;

the improvement comprising said helical antenna element and said whip antenna element each having a ¼-wave length, and connecting means for conductively and directly connecting said matching circuit through a conductive coupler to said whip antenna element when said whip antenna element is extended, so that said antenna elements are conductively and directly connected in parallel with each other to said matching circuit.

5,446,470

LOW-COST COMPACT MICROWAVE ANTENNA FOR A TRANSMITTER AND/OR RECEIVER SYSTEM MOUNTED IN A VEHICLE

Bruno Avignon, Palaiseau, and Yves Canal, Antony, both of France, assignors to Thomson-CSF, Puteaux, France

Filed May 10, 1993, Ser. No. 58,234
Claims priority, application France, May 19, 1992, 92 06042
Int. Cl.[6] H01Q *1/32, 1/06*
U.S. Cl. 343—713 24 Claims

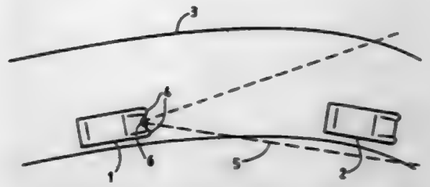
1. A low-cost, compact microwave antenna for at least one of an emitter and receiver system mounted in a vehicle fitted with an external light, comprising:

a casing which forms a light reflector closed by a transparent material lens

at least one radiating element;

a light bulb disposed at a focal point of the light reflector; and

reflector means,



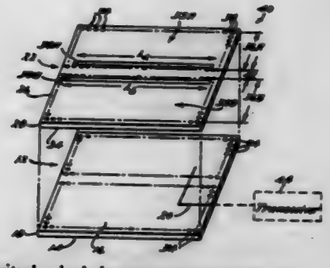
wherein said at least one radiating element is positioned in the closed casing at a distance from the focal point of the light reflector.

5,446,471

PRINTED DUAL CAVITY-BACKED SLOT ANTENNA

Hsin-Hsien Chang, San Diego, and Jeffrey A. Douglass, Poway, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jul. 6, 1992, Ser. No. 909,482
Int. Cl.[6] H01Q *13/10*
U.S. Cl. 343—770 18 Claims



1. A cavity-backed slot antenna comprising:

first substrate board means having a bottom conductive surface and a top surface with a conductive feedline formed thereon;

second substrate board means having a bottom surface bonded to the top surface of said first substrate board means, said second substrate board means further having a top conductive surface with first and second radiating slots formed thereon;

first conductive means substantially surrounding said first radiating slot and forming a first cavity below said first radiating slot, with said first radiating slot formed substantially near a portion of said first conductive means; and

second conductive means substantially surrounding said second radiating slot and forming a second cavity below said second radiating slot, with the second radiating slot formed substantially near a portion of the second conductive means and parallel to the first radiating slot, said first and second conductive cavities being separate from one another, and wherein said conductive feedline extends into said first and second cavities.

5,446,472

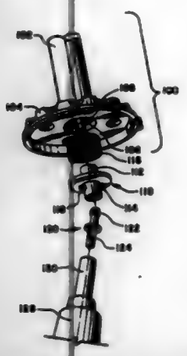
SYSTEM FOR RAISING AND LOWERING AN ANTENNA

Charles E. Rodeffer, Burlington, Iowa, assignor to Winegard Company, Burlington, Iowa

Filed Nov. 30, 1993, Ser. No. 160,039
Int. Cl.[6] H01Q *1/08, 3/02*
U.S. Cl. 343—880 6 Claims

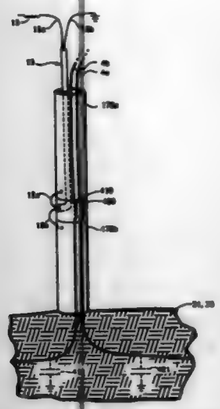
1. A system for raising and lowering an antenna, said system comprising:

(a) means attached to said antenna for positioning said antenna in at least two separate levels, said positioning means having a shaft;
(b) means selectively engaging said shaft for rotating said shaft, said rotating means comprising:
(i) a first adapter, said first adapter engaging said shaft, said first adapter being a crank.



(ii) a second adapter, said second adapter coupling with said first adapter at a plurality of angles; and
(c) a portable self-powered activating device, said device securing to said second adapter to provide rotational force through said first and second adapters to rotate said shaft to position said antenna in one of said separate levels.

5,446,473
VANDALISM-RESISTENT ANTENNA FOR WIRE- AND RADIO-COMMUNICATING POST-MOUNTED ELECTRONIC DEVICES, PARTICULARLY IRRIGATION CONTROLLERS
Wyn Y. Nielsen, 9650 Via La Jolla Dr. #6, La Jolla, Calif. 92037
Filed Aug. 24, 1993, Ser. No. 111,668
Int. Cl.[6] H01Q *1/12*
U.S. Cl. 343—890 **27 Claims**



1. A combination support and radio antenna system for use with a radio comprising:
an electrically non-conducting elongate tubular post for supporting the radio at a position above the surface of the earth;
an electrically-conducting elongate tubular member divided into two substantially equal and spatially separated elongate segments each located within the tubular post so that an axis of the elongate tubular post and an axis of each of the elongate tubular segments are substantially parallel;
a shielded radio frequency feed line electrically connecting the radio in its position supported by the tubular post to the electrically-conducting elongate tubular segment at position between them so as to connect a one of the two tubular segments that is closest to the earth to radio frequency ground, and so as to connect a remaining one of the two tubular segments that is farthest away from the earth to the voltage feed, this electrical connecting of the shielded radio frequency feed line proceeding in a path that is located at least in part inside both the tubular post and the tubular member;
wherein the electrically-conducting tubular member serves as a tubular antenna;
wherein the electrically-conducting tubular member is physically protected by virtue of being contained within the elongate tubular post;
wherein the two tubular segments constitute a tubular dipole antenna; and
wherein the tubular dipole antenna has a radiation pattern above the surface of the earth.

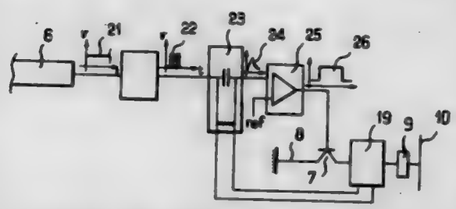
5,446,474
REDEPLOYABLE FURLABLE RIB REFLECTOR
William D. Wade, Los Gatos, and Matthew P. Casebolt, Fremont, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Jan. 19, 1994, Ser. No. 184,243
Int. Cl.[6] H01Q *15/20*
U.S. Cl. 343—915 **19 Claims**



1. A redeployable furlable rib reflector which is furlable and unfurlable between a first stowed position and a second deployed position comprising:
a) a generally spool-shaped hub assembly including a top plate member and a bottom plate member spaced from said top plate member, said top and bottom plate members having a central axial bore sized for removably mounting a support for an antenna feed horn;
b) a plurality of modular rib means spaced about said hub assembly, each of said modular rib means including:
i) a channel section base member attachable between said top and bottom plate members;
ii) a rib member having an inward end and an outward end and constructed to permit the rib member to be circumferentially furled about said hub assembly;
iii) hinge means for pivotally attaching said inward end of said rib member to said channel section base member and for facilitating the furling of said rib member;

c) a preformed lightweight flexible metalized mesh stretched across and attached to said plurality of modular rib means for forming a dish-shaped reflective surface when said reflector is deployed;
d) manually actuable rib furling means rotatably attached to said hub assembly for furling and unfurling the reflector between a first stowed position and a second deployed position, and wherein said manually actuable rib furling means comprises:
i) an annular ring assembly disposed overlying said bottom plate member of said hub assembly;
ii) bearing keeper means for rotatably attaching said annular ring assembly to said bottom plate member; and
iii) said annular ring assembly includes a plurality of rib furling elements disposed extending therefrom and interposed between selected adjacent pairs of modular rib means and handle means actuable by a user for rotating said annular ring assembly and causing said rib furling elements to furl and unfurl said modular rib means about said hub assembly.

5,446,475
THERMAL PRINT HEAD WITH REGULATION OF THE AMOUNT OF ENERGY APPLIED TO ITS HEATING POINTS
Bernard Patry, Orsay, France, assignor to Axiohm, Montrouge, France
Filed Jun. 2, 1993, Ser. No. 70,701
Claims priority, application France, Jun. 3, 1992, 92 06718
Int. Cl.[6] B41J *2/37, 2/36*
U.S. Cl. 347—191 **3 Claims**



1. A thermal print head including a line of electrically resistive heating points and electronic control means for controlling sequential connection thereof to an energy supply providing electrical current, and including for each of said heating points a countdown register which is loaded prior to printing each line of points with a value corresponding to a length of time during which a connection should be maintained with said each of said heating points starting from a print authorization instant common to all of the points, wherein each of the heating points of the line is associated with means for sensing a resistance of said each of the heating points in real time and cooperating with an individual circuit for regulating the energy supplied to said each of the heating points of the line, and wherein the circuit for regulating the energy supplied to said each of the heating points of the line is a voltage weighing circuit disposed on an energy supply line for said each of the heating points, and controlled by the means for sensing the resistance of the point.

5,446,476
COLOR IMAGE FORMING APPARATUS
Masahiro Kouzaki, Gamagori, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Aug. 3, 1993, Ser. No. 101,380
Claims priority, application Japan, Aug. 21, 1992, 4-223090
Int. Cl.[6] H04N *1/21*
U.S. Cl. 347—232 **9 Claims**

1. A color image forming apparatus comprising:
data receiving means for receiving image data of an original image, the image data indicating primary three colors;
image processing means for making print data from the image data received by the receiving means by using at least one of parameters, shading correction data, a reflectance-density conversion characteristic, a UCR/BP characteristic, a masking coefficient, color balance data and γ correction data;

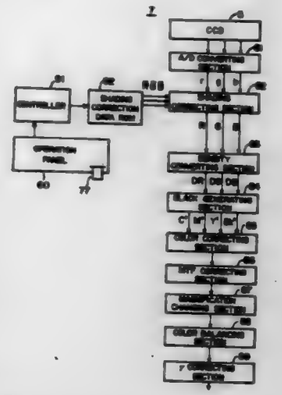
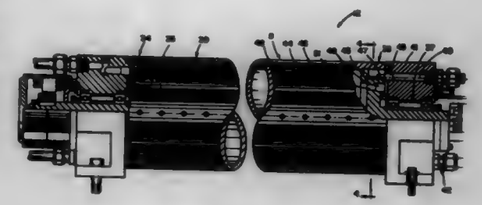


image forming means for forming an image on a recording medium in accordance with the print data made by the image processing means and developing the image into a color image on a sheet;
inputting means for inputting a lighting condition of the formed image; and
adjusting means for adjusting at least one of the parameters of the image processing means in accordance with the lighting condition input by the inputting means.

5,446,477
HOLDER FOR A THERMAL PRINT MEDIUM
Seung Ho. Baek, Pittsford; Robert I. Morrison, Macedon, and Sanwal P. Sarraf, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 509,696, Apr. 16, 1990, Pat. No. 5,053,791. This application Aug. 15, 1991, Ser. No. 745,578
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[6] G01D *15/10*
U.S. Cl. 346—138 **2 Claims**



1. A thermal printer for forming an image on a thermal print medium, said medium comprising a donor from which a dye is transferred by sublimation to a receiver as a result of heating dye in the donor, said printer comprising:
a source of radiation;
means for supporting a thermal print medium; said supporting means including a first support means for supporting said donor, a second support means for supporting said

receiver, and vacuum means for supplying a vacuum to said first and second support means;

a cylindrical roller that is pivotably movable into contact with said donor element to press said donor element into close contact with said receiver element;

means for directing radiation from said source in the form of a dot on said thermal print medium in order to provide sufficient thermal energy to said donor to cause dye to transfer to the receiver; and

means for moving said medium and said source relative to each other to form said image from a series of dots on said medium.

5,446,478

METHOD AND DEVICE FOR CLEANING AN ELECTRODE MATRIX OF AN ELECTROGRAPHIC PRINTER

Ove Larson, Västra Frölunda, Sweden, assignor to Array Printers AB, Mölndal, Sweden

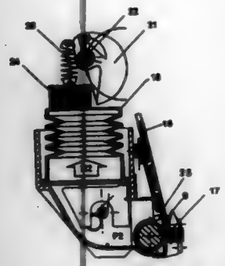
PCT No. PCT/SE90/00394, § 371 Date Dec. 6, 1991, § 102(e) Date Dec. 6, 1991, PCT Pub. No. WO90/14959, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 7, 1990, Ser. No. 781,208

Claims priority, application Sweden, Jun. 7, 1989, 8902090

Int. Cl.[6] G01D *15/06*

U.S. Cl. 347—158 16 Claims



1. A method of improving printing quality and performance of an electrographic printer in which a latent electrical charge pattern of electrical signals is produced by an electrode matrix, having electrodes, which temporarily produces electrical fields for attraction of pigment particles of a toner towards an information carrier, the matrix being disposed between a developer roller and a backing electrode, the method comprising the steps of:

exposing the electrodes of the electrode matrix, during at least a portion of time between printing of subsequent information carriers, to means for producing a cleaning force, wherein the means for producing the cleaning force comprises a bellowed container which, when expanded, produces a stream of air which vacuums the pigment particles from the electrode matrix; and

transporting the pigment particles to the developer roller and away from the electrode matrix by the cleaning force to remove the pigment particles from the electrode matrix.

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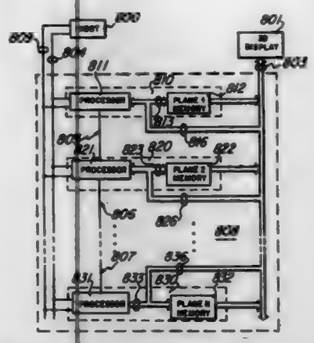
MULTI-DIEMENSIONAL ARRAY VIDEO PROCESSOR SYSTEM

E. Earle Thompson, Dallas, and Thomas W. DeMoss, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 709,087, May 30, 1991, abandoned, which is a continuation of Ser. No. 315,660, Feb. 27, 1989, abandoned. This application Aug. 4, 1992, Ser. No. 925,284

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—139 17 Claims



1. A multi-dimensional array processor system for generating a three dimensional image comprising:

(a) a video memory for storing image data representative of substantially all of said image, said image data being organized as a plurality of planes, each said plane corresponding to a two-dimensional slice of said image, wherein each said slice is independent of other of said slices and each said plane having a plurality of voxel data uniquely corresponding to individual display voxels; and

(b) a processor connected to receive encoded video information and operative to generate and store predetermined portions of one or more of said planes of said image into said memory.

5,446,480

INPUT DEVICE FOR ENTERING DATA FOR ELECTRONIC EQUIPMENTS AND SO FORTH

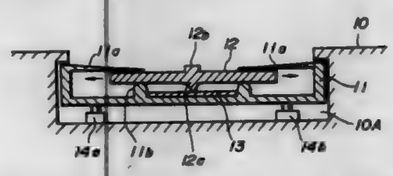
Tadao Yoshida, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 564,727, Aug. 9, 1990, abandoned. This application May 20, 1992, Ser. No. 885,234

Claims priority, application Japan, Aug. 17, 1989, 1-210671

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—157 6 Claims



1. A hand-held type electronic equipment for identifying a two-dimensional coordinate position for use with a display, said electronic equipment comprising:

an input device including a sliding member and switch means and a detector, said input device providing a two-dimensional coordinate system to identify first and second coordinates of said sliding member on said two-dimensional coordinate system, said sliding member being movable on said two-dimensional coordinate system by a respective positioning force applied thereto, said switch means being operatively associated with said two-dimensional coordinate system in order to be selectively actuated by a respective data entry command force exerted on said sliding member when said sliding member is at a desired position on said two-dimensional coordinate system, said detector providing information corresponding to said first and second coordinates of said sliding member in said two-dimensional coordinate system when said data entry command force is exerted on said sliding member;

said detector including a parallel and opposed pair of flat plate resistors and an electrically conductive sheet disposed therebetween, wherein said information corresponding to said first and second components corresponds to continuous values for said position of said sliding member in said two-dimensional coordinate system; function keys for data and/or command input in correspondence to said position in said display corresponding to said desired position of said sliding member on said two-dimensional coordinate system;

a main body with a display and a keyboard, an integral combination of said input device with said sliding member, detector and switching means and of said main body with said display and keyboard being provided, said input device being provided in a cavity in said main body;

said input device further comprising:

said sliding member having a pushing means on a top surface thereof, for receiving said positioning force for moving said sliding member on said two-dimensional coordinate system of said input device, and a projection means on a bottom surface thereof which continuously contacts a top surface of a top one of said flat plate resistors;

a casing which holds said sliding member, said casing including side edges that limit said sliding member to move on said two-dimensional coordinate system of said input device within a predetermined area corresponding to the area of said display, a flexible top surface which bears on a top surface of said sliding member, said flexible top surface having an opening therein for providing access to said pushing means for moving said sliding means, and a bottom surface which supports from below said sliding member and said detector at a central part of said casing, so that said detector detects the position of said projection means on said bottom surface of said sliding member; and

said switching means includes a plurality of switches mounted between the bottom of said cavity and a bottom exterior surface of said casing, said plurality of switches being distributed around the periphery of said casing and outside of said central part thereof.

5,446,481

MULTIDIMENSIONAL HYBRID MOUSE FOR COMPUTERS

William G. Gillick, San Jose, and Ronald A. Rosenberg, Sunnyvale, both of Calif., assignors to Mouse Systems Corporation, Fremont, Calif.

Filed Oct. 11, 1991, Ser. No. 772,395

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—163 5 Claims

1. A multidimensional pointing device for use with a computer comprising,

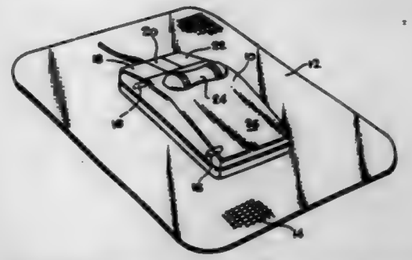
mouse means for sensing x motion and y motion relative to a planar surface, the mouse means including at least one actuatable signalling button and having means for producing x and y electrical signals in response to said motion and means for producing a control signal in response to actuation of the signalling button,

a first finger actuated means mounted on the mouse for indicating z motion, with means for producing a z motion signal in response to said indication, and

output means for delivering said x, y and z motion signals,

a second finger actuated means proximate to the first finger actuated means for indicating roll motion, with means for producing a roll motion signal in response to said indication,

a third finger actuated means proximate to the first finger actuated means for indicating pitch motion, with means for producing a pitch motion signal in response to said indication, wherein said second and third finger actuated



means are switches operable in combination with said first finger actuated means, the closure of one of said switches in combination with actuation of the first finger actuated means indicating pitch or roll

said output means for delivering said x, y and z motion signals also delivering said pitch and roll motion signals.

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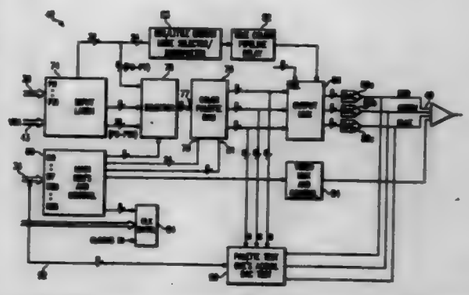
FLEXIBLE GRAPHICS INTERFACE DEVICE SWITCH SELECTABLE BIG AND LITTLE ENDIAN MODES, SYSTEMS AND METHODS

Jerry R. Van Aken, Sagar Laad, and Chenwei J. Yin, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1991, Ser. No. 792,503

Int. Cl.[6] G09G *1/28*

U.S. Cl. 345—199 25 Claims



1. An oxidation furnace for treating semiconductor wafers, said furnace having a combustion device for feeding hydrogen gas and oxygen gas, while heating the same, through a hydrogen gas feed pipe and an oxygen gas feed pipe and combusting the gases to generate water vapor, said combustion device comprising:

an elongate combustion vessel having a first end portion and a second end portion located opposite to said first end portion;

a hydrogen gas injection nozzle located centrally in said first end portion and provided on a forward end of said hydrogen gas feed pipe for axially feeding hydrogen gas into said first end of said elongate combustion vessel, said hydrogen injection nozzle having an injection port;

a plurality of oxygen gas injection nozzles each having an injection port, said oxygen gas injection nozzles being located concentrically around said hydrogen injection nozzle, said oxygen gas injection nozzles being provided

on a forward end of said oxygen gas feed pipe for axially feeding oxygen gas into said first end portion of said elongate combustion vessel,

said oxygen gas injection ports being located further forward toward said second end portion in said elongate combustion vessel beyond said injection port of said hydrogen gas injection nozzle,

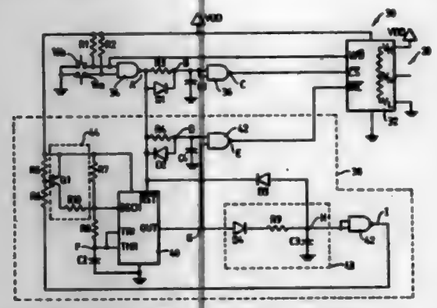
said combustion vessel having a water vapor outlet located at said second end of said elongate combustion vessel.

5,446,483

VARIABLE SPEED CONTROLLER FOR AN ELECTRONIC DISPLAY

Raymond S. Daley, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 19, 1993, Ser. No. 49,975
Int. Cl.[6] G09G 3/00
U.S. Cl. 345—212 11 Claims



1. An electronic display controller comprising:

a potentiometer capable of producing an incremental change in voltage output to an electronic display in response to a clocking signal;

a clocking circuit capable of producing said clocking signal with a series of transitions occurring at an initial low frequency and at a subsequent higher frequency, wherein said clocking circuit comprises:

an bistable circuit responsive to a triggering input;

a power supply and a ground supply;

a discharge path capable of being coupled between said ground supply and said triggering input;

a first charge path of a first resistance capable of being coupled between said power supply and said triggering input;

a second charge path of a second resistance capable of being coupled between said power supply and said triggering input;

means for coupling said first charge path for a first time period and for coupling said discharge path for a second time period, wherein said second time period is dissimilar to said first time period;

means for coupling said second charge path for a third time period and for coupling said discharge path for a fourth time period, wherein said fourth time period is dissimilar to said third time period; and

switch means for activating said clocking circuit.

5,446,484

THIN-FILM TRANSDUCER INK JET HEAD

Paul A. Hoisington, Norwick, Vt.; Edward R. Moynihan, Plainfield, and David W. Gellus, Nashua, both of N.H., assignors to Spectra, Inc., Hanover, N.H.

Division of Ser. No. 615,893, Nov. 20, 1990, Pat. No. 5,265,315.
This application Jul. 9, 1993, Ser. No. 89,310
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] B41J 2/045
U.S. Cl. 347—68 14 Claims



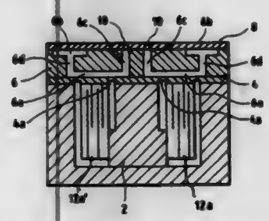
1. An ink jet head for use in an ink jet system comprising a substrate having a plurality of openings providing ink chambers therein, an orifice plate on one side of the substrate containing a plurality of orifices for corresponding ink chambers in the substrate, each of the chambers having a volume, a thin-film piezoelectric transducer element on a side of the substrate opposite to a side adjoining the orifice plate including a piezoelectric film having a thickness in a range from about 1 micron to about 25 microns, an array of electrodes disposed on one surface of the piezoelectric film including at least three electrodes adjacent to each of the chambers and means for selectively applying different electrical potentials to alternate electrodes in the array adjacent to each of the chambers for selective actuation of a corresponding portion of the transducer element to vary the volume of an adjacent chamber.

5,446,485

DROP-ON-DEMAND INK-JET PRINTING HEAD

Minoru Usui; Haruhiko Koto; Haruo Nakamura; Yozo Shimada, and Tomoaki Abe, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 657,910, Feb. 20, 1991, abandoned. This application Jul. 31, 1992, Ser. No. 922,378
Claims priority, application Japan, Feb. 25, 1990, 2-43787; Nov. 30, 1990, 2-337278
Int. Cl.[6] B41J 2/045, 2/055
U.S. Cl. 347—72 24 Claims



1. A drop-on-demand ink-jet printing head comprising:

a base;

a nozzle plate defining a plurality of nozzle apertures;

an array of piezoelectric elements, each of said piezoelectric elements arranged at predetermined intervals and each having one end which is fixed onto said base and another end which is free and which is confronted with respective ones of said nozzle apertures of said nozzle plate; and

an ink reservoir;

wherein said piezoelectric elements are formed by alternately stacking piezoelectric material and conductive material to form a lamination having multiple piezoelectric layers and multiple conductive layers, burning the lamination of said piezoelectric material layers and said conductive material layers to provide a piezoelectric plate, and cutting said piezoelectric plate into a plurality of piezoelectric elements with a predetermined width so that a lamination direction coincides with a main vibrating direction;

wherein the main vibrating direction is an axial direction extending through each of said piezoelectric elements;

wherein a gap is formed between said nozzle apertures of said nozzle plate and said free end of said piezoelectric elements for accumulating ink therein; said gap defining at least a portion of said ink reservoir and

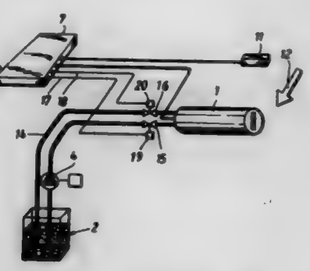
wherein said nozzle plate has a recess at a side opposite to the free end of each of said piezoelectric elements.

5,446,486

LIQUID-JET PRINTER DEVICE

Theo Reis, Mölnlycke, Sweden, assignor to Markpoint System AB, Sweden

PCT No. PCT/EP90/02125, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/08903, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 11, 1990, Ser. No. 853,742
Claims priority, application Sweden, Dec. 12, 1989, 8904182
Int. Cl.[6] B41J 2/175
U.S. Cl. 347—85 10 Claims



1. A liquid-jet printer device for recording information on an information carrier in the form of characters or symbols including:

a print head in which a plurality of liquid channels are arranged to discharge a series of droplets of liquid according to a predetermined pattern during predetermined printing periods, each liquid channel having:

an outlet opening for discharge of the liquid under pressure;

a valve assembly arranged within each said liquid channel, the valve assembly being switchable for opening and closing the liquid channel; and

an inlet for connection of the liquid channel to a supply conduit;

said printer device further comprising a pump arrangement to supply liquid under pressure to said supply conduit from a liquid source;

means for maintaining an operating pressure in the supply conduit only during said printing periods during which printing occurs, and for pressure relief to atmospheric pressure or sub-atmospheric pressure during idle periods between said printing periods; and

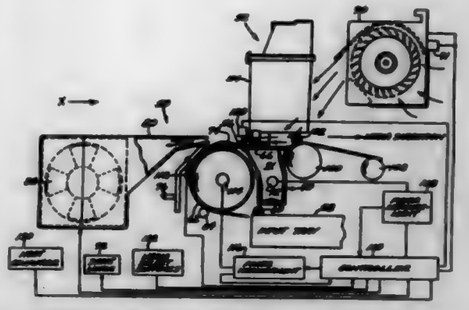
means to achieve a small return flow of liquid during said idle periods so that the outlet openings are substantially emptied of said liquid.

5,446,487

AIR EVACUATION SYSTEM FOR INK-JET PRINTER

Todd L. Russell, Camas, Wash.; Brent W. Richtsmeier, San Diego, and Kevin L. Gleasett, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 876,939, May 1, 1992, Pat. No. 5,296,873. This application Dec. 20, 1993, Ser. No. 171,129
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[6] B41J 2/01, 29/377
U.S. Cl. 347—102 11 Claims



1. A ink-jet printer operable in a heated printing environment, comprising:

a printhead for ink-jet printing on a print medium disposed at a print zone, said printhead being supported by a printhead carriage for movement relative to a printer body;

means for advancing the print medium to said print zone during print operations;

print heater means for heating a portion of said medium at said print zone to cause accelerated drying of ink deposited on said medium, a position of said print heater means being fixed in relation to said printer body; and

air evacuation means for evacuating air and ink carrier vapors away from said print zone, said means comprising an evacuation duct having an elongated inlet opening disposed along an extent of said print zone, said evacuation duct and inlet opening fixed in position relative to said printer body, and means for drawing said air and ink vapors into said evacuation duct and away from said print zone.

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TELEVISION PROGRAMME DISTRIBUTION SIGNAL HAVING THE CAPABILITY TO SELECTIVELY BLOCK NON-PROGRAMME MATERIAL

Peter S. Vogel, Locked Bag 1, Springwood, N.S.W. 2777, Australia

PCT No. PCT/AU89/00423, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO90/03706, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 29, 1989, Ser. No. 689,824
Claims priority, application Australia, Sep. 30, 1988, PJ0706
The portion of the term of this patent subsequent to Mar. 29, 2010, has been disclaimed.
Int. Cl.[6] H04N 7/08
U.S. Cl. 348—3 36 Claims

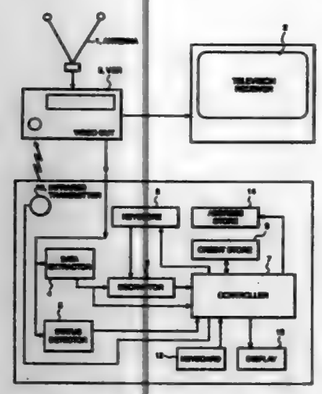
1. A method of distributing television programmes comprising the steps of:

A) Broadcasting a programme signal which represents television programmes interrupted by non-programme material;

B) Encrypting a signal indicating broadcast of said non-programme material;

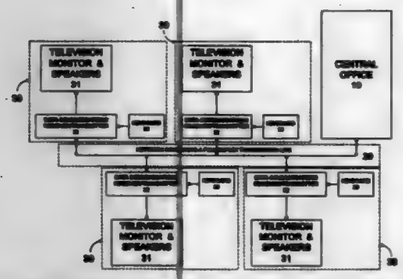
C) Transmitting said encrypted indicating signal;

D) Receiving said programme signal and said indicating signal at a receiving station;
E) Selectively recording the received programme signal;
F) Decrypting the received indicating signal;
G) Determining if the decrypted indicating signal indicates reception of non-programme material;
H) Determining whether the user is authorised to remove non-programme material;



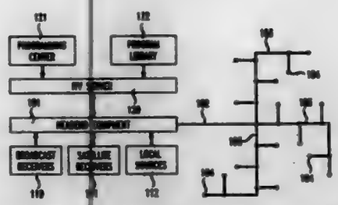
I) If the user is authorised and the decrypted indicating signal indicates non-programme material, pausing the selective recording of the programme signal until such time as said indicating signal indicates cessation of non-programme material; and
J) If the user is not authorised, continuing the selective recording of said received programme signal.

5,446,489
CABLE TELEVISION BILLING METHOD
Andrew Egendorf, P.O. Box 703, Lincoln, Mass. 01773
Filed Jan. 25, 1994, Ser. No. 187,256
Int. Cl.[6] H04N *7/173*
U.S. Cl. 348—3 **10 Claims**



1. A cable television billing method comprising the steps of:
a) establishing a continuous duplex communications link between a provider and a plurality of customers over a common duplex transmission line;
b) assigning a billing account number to each customer;
c) billing each customer at a flat fee rate for the continuous duplex communications link;
d) receiving a request for a product or service together with a billing account number from a customer via the continuous duplex communications link over the common duplex transmission line;
e) providing the product or service to the customer via the continuous duplex communications link over the common duplex transmission line by establishing a duplex communications link between the customer and at least one third party over the common duplex transmission line and delivering data between the customer and the at least one third party via the continuous duplex communication link over the common duplex transmission line; and
f) billing the customer's billing account number an amount in addition to the flat fee rate for the product or service.

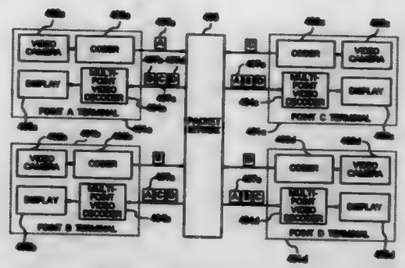
5,446,490
INTERACTIVE TELEVISION WITH TAILORED PROGRAMMING
Donald E. Blahut, Holmdel, and Edward S. Szurkowski, Maplewood, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Oct. 23, 1992, Ser. No. 965,493
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—7 **4 Claims**



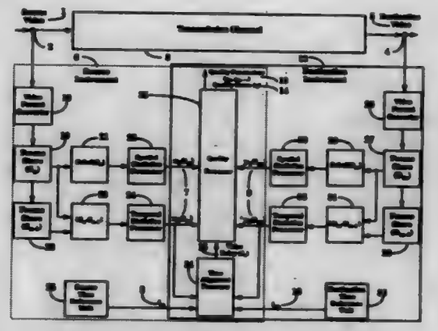
1. A method of providing a tailored program via a multi-channel distribution network, the tailored program comprising a set of one or more program segments, the method comprising:
(a) receiving a request for the tailored program at a central location;
(b) in response to the request, transmitting from the central location at least one control message, the control message identifying a set of one or more tailored program channels over which the tailored program will be transmitted;
(c) transmitting the tailored program from the central location to the multi-channel distribution network on the set of one or more tailored program channels;
(d) receiving a request for a second tailored program at the central location, the second tailored program comprising a second set of one or more program segments, the second tailored program and the tailored program having a common program segment;
(e) identifying a set of one or more filler programs, the set of one or more filler programs being able to substantially fill a time difference, the time difference being an amount of time between a first time a first user requests to view the tailored program and a second time a second user requests to view the second tailored program; and
(f) transmitting information to the multi-channel distribution network, the information identifying at least one channel on which the set of one or more filler programs will be transmitted and a channel on which the common program segment will be transmitted.

5,446,491
MULTI-POINT VIDEO CONFERENCE SYSTEM WHEREIN EACH TERMINAL COMPRISES A SHARED FRAME MEMORY TO STORE INFORMATION FROM OTHER TERMINALS
Koichi Shibata, Kokubunji, and Taizo Kinoshita, Musashimurayama, both of Japan, assignors to Hitachi, Ltd., Tokyu, Japan
Filed Dec. 21, 1993, Ser. No. 170,750
Int. Cl.[6] H04N *7/15*
U.S. Cl. 348—15 **8 Claims**

1. A multi-point video conference system including a plurality of terminals connected to each other via a network, wherein each terminal of said plurality of terminals comprises:
a coding means for packetizing video data inputted from a video camera and outputting packetized data to said network;
a decoder for receiving in a time sharing manner a plurality of packets transmitted from other terminals via said network, decoding received packets in an order of reception thereof, and outputting decoded video information;
a plurality of storage means for storing therein said decoded video information in a frame unit;
a display means for displaying thereon contents stored in said storage means; and
a switch for changing over the contents of said storage means to supply said display means.

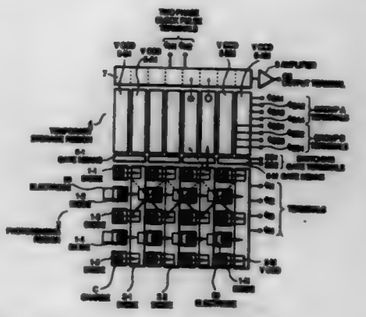


5,446,492
PERCEPTION-BASED VIDEO QUALITY MEASUREMENT SYSTEM
Stephen Wolf, P.O. Box 1450, Nederland, Colo. 80466; Stephen D. Voran, 722 7th St., Boulder, Colo. 80302, and Arthur A. Webster, III, 7171 N. 63rd St., Longmont, Colo. 80503
Filed Jan. 19, 1993, Ser. No. 6,000
Int. Cl.[6] H04N *17/00*
U.S. Cl. 348—192 **18 Claims**



1. A quality measurement system for measuring an image quality of a destination video signal, comprising:
source feature extraction means for extracting source image features from a source video signal corresponding to the destination video signal;
destination feature extraction means for extracting destination image features from the destination video signal;
source time referencing means for providing a source time reference for each one of the source image features;
destination time referencing means for providing destination time reference for each one of the destination image features;
quality parameter generation means for generating image quality parameters, indicative of the image quality of the destination video signal based on the source video signal, from at least one source and at least one destination image feature.

5,446,493
SOLID STATE IMAGE SENSORS FOR REPRODUCING HIGH DEFINITION IMAGES
Yukio Endo; Nozomu Harada; Hidenori Shibata, and Yoshiyuki Matsunaga, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 95,031, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 948,743, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 815,606, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 489,259, Mar. 5, 1990, abandoned, which is a division of Ser. No. 157,718, Feb. 19, 1988, Pat. No. 4,972,254. This application Mar. 9, 1994, Ser. No. 207,267
Claims priority, application Japan, Feb. 24, 1987, 62-39171; Jun. 26, 1987, 62-157935; Sep. 30, 1987, 62-246088
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—320 **14 Claims**



1. A solid state image sensor, comprising:
a substrate;
a photosensing region formed on said substrate, said photosensing region having a plurality of photocells for receiving an incident image to generate and to store signal charges therein;
means for shifting the relation between said incident image and said photosensing region to change the image sampling points;
a plurality of first transfer means formed in said photosensing region, each of said plurality of said first transfer means receiving, in one sampling cycle, said signal charges from adjoining photocells to store signal charges based on said received signal charges and to transfer said stored signal charges out;
a temporary storage region formed on said substrate having a plurality of second transfer means for receiving and storing charges transferred out from said plurality of first transfer means, said second transfer means being divided into groups corresponding, respectively, to said first transfer means, each of said groups of said second transfer means being able to be driven independently to receive all of said signal charges transferred out from said corresponding first transfer means, and each of said group of said second transfer means having a capacity to accommodate all of said signal charges stored in said corresponding first transfer means;
a plurality of gate means respectively formed between each of said first transfer means and said corresponding group of said second transfer means, each of said gate means having a transfer direction which alternates between said groups of said second transfer means so that one of said groups of said second transfer means independently receives and stores all of said signal charges received by said

corresponding first transfer means during a signal sampling cycle; and

third transfer means adjacent to said temporary storage region, said third transfer means having a repetitive read-out cycle comprised of receiving signal charges from a plurality of said second transfer means and then transferring them out.

5,446,494

FOCUS DETECTING SYSTEM

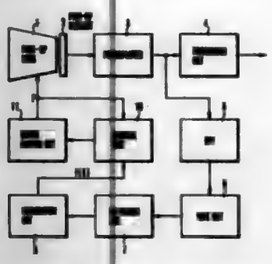
Kouichi Ueda, Kanagawa; Mitsuichi Toyama, Tokyo; Hirofumi Suda, Kanagawa; Naoya Kaneda, Kanagawa, and Youichi Iwasaki, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,302, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 633,163, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,120, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 17,183, Feb. 19, 1987, abandoned. This application Aug. 2, 1994, Ser. No. 284,757

Claims priority, application Japan, Mar. 4, 1986, 61-46868; Mar. 4, 1986, 61-46869

Int. Cl.[6] G03B *13/36*; H04N *5/232*

U.S. Cl. 348—349 63 Claims



1. A focus detecting apparatus, comprising:

a) image pick-up means;

b) a focusing lens for forming an image on an image sensing plane of said image pick-up means;

c) signal processing means supplied with a video signal from said image pick-up means to output a signal related to a focus degree;

d) detection means for detecting the position of said focusing lens; and

e) calculating means for calculating informations of a plurality of positions of said focusing lens detected by said detection means, all such positions being on a common side of an actual in-focus position and not beyond said actual in-focus position, and signals related to the focus degree outputted from said signal processing means at said positions on the basis of a predetermined characteristic defining a relation of the position of said focusing lens and the focus degree so as to estimate the position of said focusing lens where said focus degree becomes a maximum value.

5,446,495

TELEVISION SIGNAL SUB-BAND CODER/DECODER WITH DIFFERENT LEVELS OF COMPATIBILITY

Philippe Tourtier; Jean-Francois Vial, both of Rennes; Jean-Louis Diascorn, Acigne, and Michel Pecot, Thorigne-Fouillard, both of France, assignors to Thomson-CSF, Puteaux, France

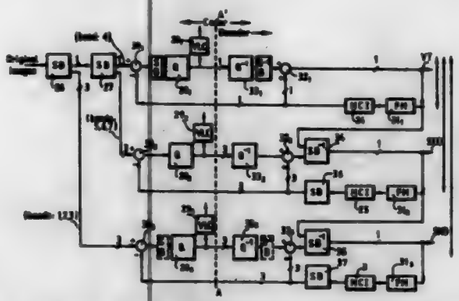
PCT No. PCT/FR92/00514, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/22985, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 9, 1992, Ser. No. 972,485

Claims priority, application France, Jun. 11, 1991, 91 07074

Int. Cl.[6] H04N *7/01, 7/12*

U.S. Cl. 348—398 8 Claims



1. An image signal sub-band coder/decoder with different levels of resolution, comprising:

an input for inputting an image signal;

a plurality of outputs for outputting signals of different levels of resolution;

a first plurality of analysis filters, connected to said input, for partitioning a spatio-temporal spectrum of the input image signal from said input into sub-bands which correspond to different levels of resolution of the input image signal;

a plurality of subtractors, corresponding to a number of said sub-bands, which subtract predicted sub-band signals of a corresponding sub-band from the sub-band signals output from said first plurality of analysis filters and output a result of said subtractions on a corresponding output of each of said plurality of subtractors;

a first plurality of processing circuits, corresponding to said plurality of subtractors, each having an input connected to the output of the corresponding subtractor and an output for outputting a sub-band residue signal, each of said sub-band residue signals which have been output being an output of the coder/decoder in a coding mode;

a second plurality of processing circuits, corresponding to the first plurality of processing circuits and performing a process which is inverse to a processing performed by the first plurality of processing circuits, each having an input, said input of each of said second plurality of processing circuits inputting the output of the corresponding one of the first plurality of processing circuits when the coder/decoder is used in a coding mode, and said input of each of said second plurality of processing circuits inputting coded signals when said coder/decoder is used in a decoding mode, each of said second plurality of processing circuits also having an output which outputs a processed signal;

a plurality of adders, corresponding to said second plurality of processing circuits, each of said plurality of adders having two inputs and an output, a first of said two inputs of each of said plurality of adders connected to the output of the corresponding second processing circuit, a second of said two inputs of each of said plurality of adders inputting a corresponding one of said predicted sub-band signals, and the output of each of said adders outputting reconstructed sub-band signals;

a second plurality of analysis filters each having a plurality of inputs and an output, wherein a number of said second plurality of analysis filters is at least equal to a number of said different levels of resolution minus 1, each of said second plurality of analysis filters corresponding to one of n highest levels of resolution where n is defined to be a number of levels of resolution minus 1, some of said plurality of inputs of each of said second plurality of analysis filters connected to the output of a corresponding one of said adders and another of said plurality of inputs for inputting an output of one of said outputs of the sub-band coder/decoder of a next lower level of resolution;

wherein the plurality of outputs of the sub-band coder/decoder for outputting signals of different levels of resolution correspond to the number of different levels of resolution, are for outputting an image signal at the corresponding level of resolution, and each of said plurality of outputs of the image signal sub-band coder/decoder are connected to the output of said second plurality of analysis filters at a corresponding level of resolution when there exists one of said second plurality of analysis filters at the corresponding level of resolution and connected to the output of the adder at the corresponding level of resolution when one of said second analysis filters at the corresponding level of resolution does not exist;

said sub-band coder/decoder further comprising:

a plurality of motion compensation interpolators, corresponding to said plurality of outputs of the image signal sub-band coder/decoder having inputs connected to the corresponding output of the image signal sub-band coder/decoder, for generating a corresponding plurality of motion compensation signals using interpolation;

a third plurality of analysis filters, corresponding in number to the number of the second plurality of analysis filters, each of said third plurality of analysis filters having an input connected to the output of one of said plurality of motion compensation interpolators for levels of resolution having the second plurality of analysis filters and having outputs thereof connected to one of said plurality of subtractors at the corresponding sub-band level and supplying the corresponding motion compensation signals as said predicted sub-band signals of the corresponding level of resolution, and connected to the second input of the adder at the corresponding sub-band level;

wherein the subtractor and the adder at sub-band levels which do not have one of the third plurality of analysis filters have respective inputs thereof connected to the output of the motion compensation interpolator of the level thereof to input the motion compensation signals output by the corresponding motion compensation interpolator as the predicted sub-band signal at the level thereof.

5,446,496

FRAME RATE CONVERSION WITH ASYNCHRONOUS PIXEL CLOCKS

Bradly J. Foster, Ft. Collins; David J. Hodge, Loveland, and Steven J. Kommrusch, Ft. Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1994, Ser. No. 221,433

Int. Cl.[6] H04N *7/01, 9/64*

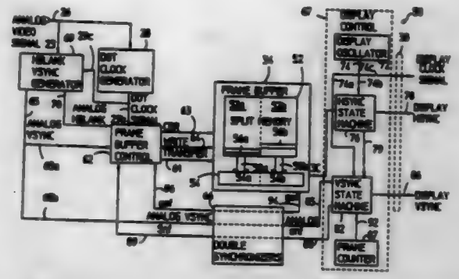
U.S. Cl. 348—441 8 Claims

1. A system for synchronizing data transfers to and from a video frame buffer which are asynchronous, concurrent, and each continuous, the system comprising:

the frame buffer for storing a frame of pixel data, said frame buffer having a split memory for communicating the pixel data to a split output shift register;

a frame buffer control means for controlling writing operations of incoming pixel data to the split memory at a first frame rate; and

a display control means for controlling reading operations of the pixel data from the output shift register at a second frame rate which is slower than said first frame rate, said display control means for counting frames of the pixel data read from said split output shift register, said display control means for aligning in time initiation of said writing and reading operations after a particular number of said



frames has been counted, said display control means for preventing said writing operations during a frame after said alignment so as to prevent said frame buffer control means from writing over and destroying existing pixel data which has not yet been read from said split memory.

5,446,497

METHOD AND APPARATUS FOR PROCESSING AN INPUT 60 FIELD/SECOND VIDEO SIGNAL GENERATED BY 3232 PULLDOWN TO PRODUCE AN OUTPUT VIDEO SIGNAL

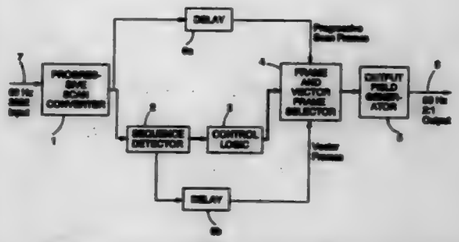
Stephen M. Keating, Reading, and John W. Richards, Stockbridge, both of United Kingdom, assignors to Sony United Kingdom Ltd., Staines, England

Filed Sep. 30, 1993, Ser. No. 129,360

Claims priority, application United Kingdom, Nov. 17, 1992, 9234056

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—443 9 Claims



1. A method of processing an input 60 field/s video signal generated by 3232 pulldown to produce an output video signal, the method comprising the steps of:

producing from the input signal a series of progressive scan format frames, each frame corresponding to a respective one of the input fields;

comparing blocks of pixels in each progressive scan frame with blocks of pixels in the following frame to derive motion vectors representing the motion of the content of respective blocks between frames;

utilising the motion vectors to monitor the field sequence of the input signal; and

producing fields or frames of the output video signal using input fields or progressive scan frames selected in dependence upon the field sequence of the input signal, at least some of the output fields or frames being produced by

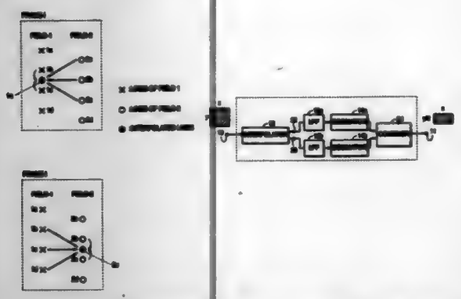
motion compensated temporal interpolation utilising said motion vectors.

5,446,498

SCALING INTERLACED IMAGES FOR ENCODING AND DECODING OF DIGITAL VIDEO SIGNALS OF MULTIPLE SCANNING STANDARDS

Choong S. Boon, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1994, Ser. No. 185,244
Claims priority, application Japan, Jan. 22, 1993, 5-008969
Int. Cl.[6] H04N 7/01, 5/46
U.S. Cl. 348—448 16 Claims



1. A method of scaling an interlaced image each frame of which consists of a first field and a second field, comprising the steps of:

converting said first field of each frame to a first progressive image such that an interpolated line in said first field is formed by a weighted average of two or more adjacent lines in said first field plus a weighted average of two or more adjacent lines in said second field in which one of said two or more adjacent lines in said second field is at the same position as said interpolated line in said first field;

converting said second field of each frame to a second progressive image such that an interpolated line in said second field is formed by a weighted average of two or more adjacent line in said second field plus a weighted average of two or more adjacent lines in said first field in which one of said two or more adjacent lines in said first field is at the same position as said interpolated line in said second field; and

resampling said first and second progressive images vertically according to a predetermined resampling ratio m/n, where m and n are integers, with n indicating the number of output samples out of m input samples.

5,446,499

WINDOW SIGNAL GENERATING APPARATUS

Han-Soo Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Inc., Seoul, Rep. of Korea

Filed Dec. 22, 1993, Ser. No. 172,036
Claims priority, application Rep. of Korea, Dec. 23, 1992, 92-25237
Int. Cl.[6] H04N 9/74
U.S. Cl. 348—596 5 Claims

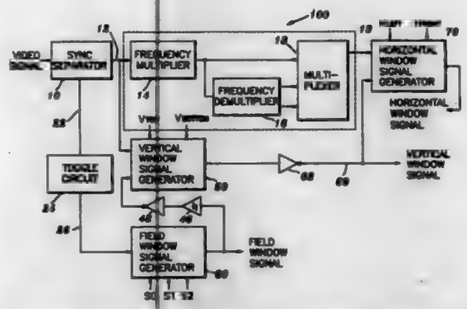
1. An apparatus in a low-bit rate coding system for preprocessing a video signal including interlaced even-numbered and odd-numbered fields, each of the fields having video lines, and each of the video lines consisting of pixels, resulting from scanning an image, to selectively define a window within the image before the video signal is coded for transmission in the low-bit rate coding system, which comprises:

means for receiving the video signal and providing a horizontal sync signal and a field interval signal which defines the even-numbered fields and the odd-numbered fields;

a pixel clock generator for receiving the horizontal sync signal and converting the horizontal sync signal to a pixel clock;

a field window signal generator for receiving the field interval signal and providing a field window signal which allows the selective sampling of the fields;

means for defining the window, said means including a vertical window signal generator in response to the field window signal for counting the number of the horizontal



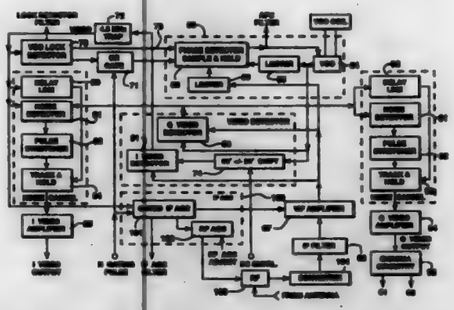
sync signals between a first set value and a second set value to produce a vertical window signal for deriving the lines in the sampled field, and a horizontal window signal generator in response to the vertical window signal for counting the number of the pixel clocks between a third set value and a fourth set value to produce a horizontal window signal for deriving the pixels for each of the derived lines.

5,446,500

NOISE REDUCING APPARATUS AND METHODS FOR TELEVISION RECEIVERS

Jack R. Harford, Flemington, N.J., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 897,812, Jun. 12, 1992, Pat. No. 5,369,445.
This application Oct. 28, 1994, Ser. No. 330,949
Int. Cl.[6] H04N 5/213
U.S. Cl. 348—618 21 Claims



1. In a television system including a source of an intermediate frequency (IF) signal comprising an IF picture carrier amplitude-modulated with video information; a video detector for detecting said video information, which video information is apt to be accompanied at times by detected impulse noise to result in its being outside a prescribed range for normal video information; and processing circuitry for providing an output video signal in response to said video information as detected by said video detector, in which output video signal response to said detected impulse noise is suppressed, said processing circuitry comprising:

noise detecting means for generating an output control signal responsive to said video information as detected by said video detector being outside said prescribed range for normal video information, said output control signal being indicative of whether or not an appreciable amount of said detected impulse noise accompanies said video information as detected by said video detector;

delay means for generating a delayed response to said video information as detected by said video detector; and

video output means controlled by said output control signal, for responding to the current value of said delayed response to said video information as detected by said video detector when said output control signal indicates there is not an appreciable amount of said detected impulse noise accompanying said video information as detected by said video detector, and for substituting for said current value of said delayed response to said video information as detected by said video detector a constant value of video signal when said output control signal indicates there is an appreciable amount of said detected impulse noise accompanying said video information as detected by said video detector.

17. A method of reducing impulse noise in a television system, said system providing an IF amplitude-modulated picture carrier signal, comprising the steps of:

synchronouly demodulating said IF amplitude-modulated picture carrier signal to provide a first in-phase video signal and a second quadrature-phase video signal;

detecting noise pulses on at least one or the other of said first and second video signals to provide a control signal only during the presence of noise pulses;

delaying one of said first and second video signals a given amount to generate a delayed signal;

temporarily storing previous values of said delayed signal;

during the absence of said control signal, outputting a current value of said delayed signal; and

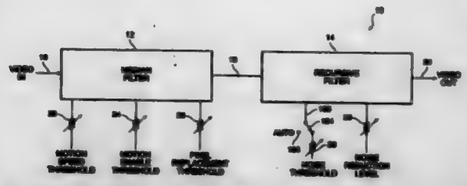
during the presence, of said control signal, substituting for said current value of said delayed signal a previous value of said delayed signal.

5,446,501

THREE-DIMENSIONAL MEDIAN AND RECURSIVE FILTERING APPARATUS AND METHOD FOR VIDEO IMAGE ENHANCEMENT

Sobel Takemoto, Fremont; Kenneth A. Woodhouse, Menlo Park; Luigi C. Gallo, Woodside, and John D. Stern, Menlo Park, all of Calif., assignors to Accom, Incorporated, Menlo Park, Calif.

Filed Oct. 22, 1992, Ser. No. 965,937
Int. Cl.[6] H04N 5/213
U.S. Cl. 348—620 17 Claims



1. Apparatus for enhancement of digital video images, said apparatus connectable to a source of digital video signals operating at a video pixel rate and comprising:

a median filter including storage means for temporarily storing digital data to present simultaneously data representing pixels from a current video frame, a most recent video frame, and a next video frame;

user-selectable data cluster selection means associated with said median filter and operating on substantially every pixel in said current video frame, for identifying one of a plurality of clusters of digital data as a selected cluster from digital data stored in one or more of said current video frame, said most recent video frame, and said next video frame, each of said clusters comprising digital data representing said each pixel and ones of said pixels which are chosen from positional and temporal neighbors of the one of said each pixels being operated on, said selection means comprising means for weighting at least one of said digital data, and for presenting said clusters of digital data to said median filter;

motion detector means for detecting motion in a region of said current video frame containing said each pixel, and for producing a motion-sense signal proportional to the degree of motion in said region, and

first substitution means for substituting an output of said median filter for said each pixel in said current video frame only if said motion-sense signal is below a user-selected threshold.

6. A device for enhancing digital video images, comprising

a video data bus;

first, second, and third nodes coupled to said video data bus, said nodes comprising data indicative of spatially co-located pixels in a set of ordered frames of video data;

a rank-value circuit coupled to said first, second, and third nodes, said rank-value circuit comprising a control input, whereby said rank-value circuit computes a median value of a set selected from said data indicative of said spatially co-located pixels;

a motion detector circuit coupled to said first node and having an output node coupled to said control input, whereby said rank-value circuit is disabled in response to a signal at said output node.

17. In a device for enhancing video data, said video data comprising a sequence of frames each having a plurality of lines each having a plurality of pixels, a data structure comprising

a plurality of weighted values indicative of a set of spatial and temporal neighbors of one of said pixels, at least some of said values having been weighted with weights other than zero and other than one;

a plurality of mask bits associated with said plurality, of values and indicative of a selected and weighted cluster of said spatial and temporal neighbors; and

associated with said plurality of values, a median value computed in response to said selected and weighted cluster.

5,446,502

METHOD AND APPARATUS FOR FILTERING SIGNALS HAVING A FILTER IN WHICH SIGNAL AMPLITUDES ARE ALLOCATED TO A QUANTIZED, TWO-DIMENSIONAL REFERENCE PLANE

Fritz Lebowsky, Freiburg, Germany, assignor to Linotype-Hell AG, Eschborn, Germany

PCT No. PCT/DE92/00006, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/15171, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 8, 1992, Ser. No. 107,797
Claims priority, application Germany, Feb. 22, 1991, 41 05 516.0
Int. Cl.[6] H04N 5/208, 5/14
U.S. Cl. 348—625 28 Claims

1. A method for filtering an input signal to provide an overall output signal, comprising the steps of:

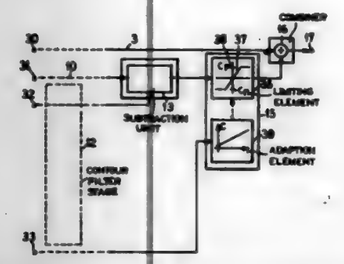
providing the input signal to a first input of an adder whose output is connected to provide said overall output signal, and also providing said input signal to a filter branch providing a filtered signal which is coupled to a second input of said adder;

frequency filtering the input signal in said filter branch such that signal amplitudes are allocated to a quantized, two-dimensional reference plane to provide a frequency filtered signal;

feeding said frequency filtered signal to a first input of a

subtraction unit whose output provides said filtered signal to said second input of said adder;

also providing said frequency filtered signal to a contour filter branch having at least one contour filter stage whose output is connected to a second input of said subtraction unit; and



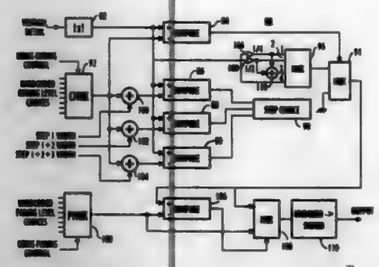
filtering out at least one component of the frequency filtered signal in said contour filter stage that has an amplitude above a prescribable threshold, the threshold being adaptively adjusted dependent on an amplitude of the frequency filtered signal.

5,446,503

VERTICAL DETAIL ENHANCEMENT WITH STEPPED RETURN CORING

Patrick Sproule, Raleigh, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Apr. 11, 1994, Ser. No. 225,690
Int. Cl.[6] H04N *5/208*
U.S. Cl. 348—628 22 Claims



1. Apparatus for enhancing a luminance component of a video signal comprising:

means for supplying a vertical detail signal representative of variations in the luminance of the video signal in successive horizontal scan lines,

means responsive to said supplying means for processing said vertical detail signal to form a modified signal having an amplitude represented by a sequence of steps with variable slopes, and

means for adding the output of said processing means to said luminance component to generate an enhanced luminance signal,

wherein said processing means comprises

coring means responsive to said supplying means for suppressing said vertical detail signal having the amplitude lower than a first predetermined level, and

first modifying means responsive to said supplying means for attenuating by a first predetermined value said vertical detail signal having the amplitude higher than said first predetermined level but lower than a second predetermined level.

11. A digital video signal processor comprising:

a source of vertical detail signals representative of contrasts between successive horizontal lines of a video signal,

a translating circuit coupled to said source for modifying said vertical detail signals, and

a control circuit coupled to said translating circuit for supplying said translating circuit with a predetermined coring level to eliminate said vertical detail signals having an amplitude lower than said coring level, a predetermined paring level to restrict the value of said vertical detail signals having the amplitude higher than said paring level, and predetermined step levels between said coring level and said paring level to reduce the value of said vertical detail signals having the amplitude lower than said predetermined step levels.

16. A method of processing a vertical detail signal representative of contrasts between successive horizontal lines of a video signal comprising the steps of:

suppressing said vertical detail signal having the amplitude lower than a predetermined coring level,

restricting said vertical detail signal having the amplitude higher than a predetermined paring level,

transforming said vertical detail signal having the amplitude higher than a predetermined coring level but lower than a maximum step level into a step-like modified signal having a plurality of step components with variable amplitudes, a first of said step components being formed when said vertical detail signal has the amplitude lower than a first step level, said maximum step level being lower than said paring level, and

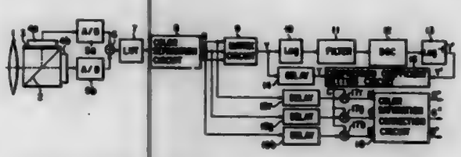
passing without modification said vertical detail signal having the amplitude higher than said maximum step level but lower than said paring level.

5,446,504

IMAGE SIGNAL PROCESSING APPARATUS HAVING FUNCTION FOR COMPRESSING DYNAMIC RANGE AND CORRECTING COLOR SATURATION.

Tohru Wada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1994, Ser. No. 212,741
Claims priority, application Japan, Mar. 12, 1993, 5-052527; Nov. 2, 1993, 5-274598
Int. Cl.[5] H04N *9/68*
U.S. Cl. 348—645 15 Claims



1. An image signal processing apparatus comprising:

input means for inputting an image signal including signals related to colors, said input means including means for outputting a luminance signal in the image signal;

dynamic range compressing means for compressing a dynamic range of the luminance signal from said input means;

compression coefficient setting means for obtaining a compression coefficient from a relationship between an output from said dynamic range compressing means and the luminance signal from said input means;

operating means for executing an operation for compressing dynamic ranges of the signals related to colors in accordance with the compression coefficient from said compression coefficient setting means; and

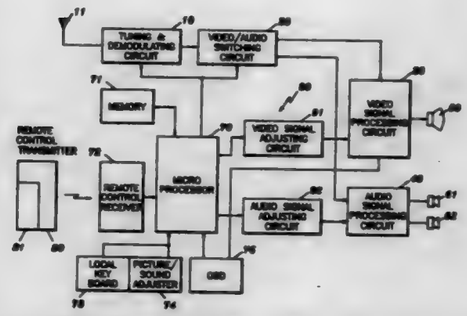
color saturation correcting means for substantially correcting color saturation of the signals related to colors of one of a signal input to said operating means and a signal output from said operating means.

5,446,505

COLOR TELEVISION SYSTEM HAVING BROADCAST PROGRAM ADAPTIVE VIDEO/AUDIO ADJUSTMENT APPARATUS

Hong Chang Soo, and Cho Min Soo, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 8,262, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 518,944, May 4, 1990, abandoned. This application Feb. 9, 1994, Ser. No. 194,472
Claims priority, application Rep. of Korea, May 6, 1989, 89-6076; Jun. 21, 1989, 89-8530; Jun. 23, 1989, 89-8700
Int. Cl.[6] H04N *5/60*
U.S. Cl. 348—738 2 Claims



1. A color television system for receiving and reproducing a broadcast program having an audio and a video signals, which comprises:

remote control means operable for generating a program mode selection signal wherein the remote control means includes a program mode selection key and a plurality of digit keys;

character generating means responsive to the operation of the program mode selection key for generating character signals for displaying a selective list of program modes, and for enabling the digit keys to select the program modes;

memory means having a plurality of memory locations for storing operating parameter data for video and audio signal adjusting means corresponding to the program modes wherein the operating parameter data corresponding to the program modes includes a brightness level, a contrast level, a color level, a tint level, and a sharpness level;

microprocessor responsive to the program mode selection signal for receiving the operating parameter data corresponding thereto and for generating an audio and a video control signals representative of the operating parameter data;

video signal adjusting means responsive to the video control signal for adjusting the video signal to have a video characteristic corresponding to the program mode selection signal wherein the video signal adjusting means includes a digital/analog converter for converting the video control signal into a set of pulse width modulation signals and a plurality of low pass filters for generating DC level signals corresponding to the pulse width modulation signals; and

audio signal adjusting means responsive to the audio control signal for adjusting the audio signal to have a frequency band characteristic corresponding to the program mode selection signal wherein the audio signal processing means includes a high pass filter, a middle pass filter, a middle-low pass filter and a low pass filter; and includes a switching circuit responsive to the audio control signal for selecting one of the outputs from the filters.

2. A color television system for receiving and reproducing a broadcast program having an audio and a video signals, which comprises:

remote control means operable for generating program mode selection signal wherein the remote control means includes a program mode selection key and a plurality of digit keys;

character generating means responsive to the operation of the program mode selection key for generating character signals for displaying a selective list of program modes, and for enabling the digit keys to select the program modes;

memory means having a plurality of memory locations for storing operating parameter data for video signal adjusting means corresponding to the program modes wherein the operating parameter data corresponding to the program modes includes a brightness level, a contrast level, a color level, a tint level, and a sharpness level;

microprocessor responsive to the program mode selection signal for receiving the operating parameter data corresponding thereto and for generating a video control signals representative of the operating parameter data; and

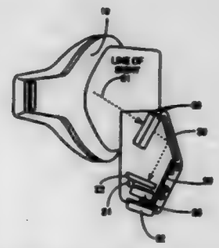
video signal adjusting means responsive to the video control signal for adjusting the video signal to have a video characteristic corresponding to the program mode selection signal wherein the video signal adjusting means includes a digital/analog converter for converting the video control signal into a set of pulse width modulation signals and a plurality of low pass filters for generating DC level signals corresponding to the pulse width modulation signals.

5,446,506

CLOSE-VIEW DATA DISPLAY IMPLANT FOR SPORTING EYEWEAR

Douglas R. Dawkins, Jr., 434 Arguello Blvd., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 720,355, Jun. 25, 1991, Pat. No. 5,258,785. This application Sep. 22, 1993, Ser. No. 125,528
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[6] G02C *1/00*
U.S. Cl. 351—43 6 Claims



1. An eyewear apparatus for use in conjunction with sporting activities comprising:

a transparent eye shield;

means for supporting said eye shield near a person's eyes to allow viewing of objects through said eye shield;

a data display means mounted adjacent to said eye shield for displaying information;

a lens optically positioned to allow viewing of said data display means through said lens; and

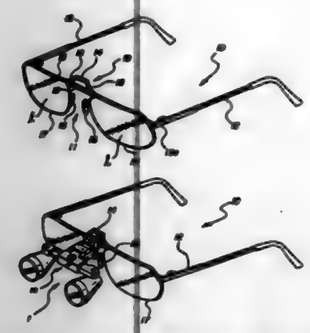
a switch encapsulated within a Watertight encasement and electrically coupled to said data display means for controlling said data display means.

5,446,507

SPECTACLE FRAME FOR TELEMICROSCOPES AND THE LIKE

Byung J. Chang, Ann Arbor, Mich., assignor to General Scientific Corporation, Ann Arbor, Mich.

Filed Dec. 3, 1993, Ser. No. 160,970
Int. Cl.[6] G02C 1/00
U.S. Cl. 351—158 9 Claims



1. A spectacle frame in combination with a telemicroscope capable of having a pair of lenses mounted therein, said frame comprising:
- a pair of temple pieces for supporting said frame on the ears of a wearer;
- a brow bar interconnecting said pair of temple pieces and crossing the wearer's face above the eyes thereof, said brow bar having a pair of opposed ends, one of said ends being pivotally connected to one of said pair of temple pieces, and the other of said ends being pivotally connected to the other of said pair of temple pieces;
- a pair of lens encircling rims depending from said brow bar;
- an elevated bridge assembly disposed on said brow bar at a location medial said pair of depending rims for mounting a telemicroscope including a pair of objective lenses and a pair of eye piece lenses thereon; and
- a nose pad member for supporting said frame on opposite sides of the bridge of the nose of said wearer, said nose pad member being mounted on said rims and extending in a direction away from said temple pieces.

5,446,508

PROGRESSIVE POWER LENS

George A. Kitchen, Plantation, Fla., assignor to BMC Industries, Inc., Minneapolis, Minn.

Filed Feb. 18, 1994, Ser. No. 198,059
Int. Cl.[6] G02C 7/06
U.S. Cl. 351—169 6 Claims



1. A progressively variable focal power lens comprising a progressive power lens surface having a distance portion, a reading portion, a progressive power portion, and peripheral zones, at least a portion of the surface can be defined in parametric form with reference to a three-dimensional coordinate system in which an origin of the coordinate system is at a vertex of the lens surface, the z axis is perpendicular to the lens surface at the vertex, the x axis is vertical relative to the lens surface, and the y axis is horizontal relative to the lens surface, wherein each cross-section of the portion parallel to the y-z plane is defined as a two-dimensional curve having a central portion defined by a parametric function $Z_{m(x,y)}$ and peripheral zones defined by a function $Z_{n(x,y)}$, and wherein:

$$Z_{m(x,y)} = Z_{ma(x)} + \frac{1}{B_{(x)}}\left(\sqrt{\rho^2_{(x)} + B_{(x)}Y^2} - \rho_{(x)}\right) - \frac{1}{N_{(x)}} C_{(x)} Y^{N(x)}$$

and

$$Z_{n(x,y)} = Z_{ma(x)} + R_{(x)} - \sqrt{R^2_{(x)} - Y^2}\ A_{(x)}Y^{L(x)}$$

where:
- $Z_{ma(x)}$ is a function that describes the geometry of an umbilical line of the lens surface;
- $B_{(x)}$ is a conic constant for a conic component of the function;
- $\rho_{(x)}$ is an y-z component of local radius of curvature $R_{m(x)}$ of the umbilical line defined by the function $Z_{ma(x)}$;
- $C_{(x)}$ and $N_{(x)}$ are dependent functions that provide a smooth tangent point of intersection between $Z_{m(x,y)}$ and $Z_{n(x,y)}$;
- $Z_{ma(x)}$ is a function that is similar to $Z_{ma(x)}$ in the bottom half of the lens surface but includes constants that control the intersection of $Z_{m(x,y)}$ and $Z_{n(x,y)}$ and, therefore, the width of the reading portion, in the top half of the lens,

$$Z_{ma(x)} = R_B - \sqrt{R_B^2 - X^2}$$

where R_B is the base curve radius of the surface;
- $R_{(x)}$ is a distance between a point x_1y_1 and a line parallel to the x axis and intersecting a center of a distance portion;
- $A_{(x)}Y^{L(x)}$ is a function that reduces the astigmatism in the lens periphery just below center and to reduce the maximum astigmatism;
- $A_{(x)}$ is a function that is small in order that suppresses the contribution of the $A_{(x)}Y^{F(x)}$ component in the central portion of the curve;
- $L_{(x)}$ is selected to minimize and balance astigmatism in the lens, in the areas where Y equals approximately 18 to 23 millimeters, $Z_{n(x,y)}$ becomes a circle of the same radius and slope as the central curve at that point.

5,446,509

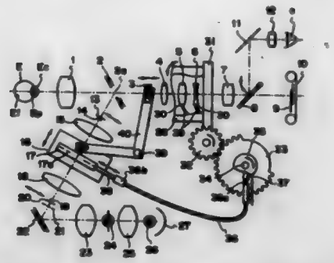
EYE FUNDUS PHOTOGRAPHING APPARATUS AND EYE FUNDUS CAMERA FOR CHANGING MAGNIFICATION WITH WHICH AN OBJECT IS PHOTOGRAPHED

Satoru Ohishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 115,058
Claims priority, application Japan, Sep. 3, 1992, 4-260750
Int. Cl.[6] A61B 3/12, 3/14
U.S. Cl. 351—206 11 Claims

1. An eye fundus photographing apparatus comprising:
- an optical system comprising means for illuminating the fundus of an eye to be examined and means for causing the fundus of the eye to be examined to be photographed with different photographing magnifications;
- an operating mechanism comprising means for changing the photographing magnification, by operating in a predetermined manner; and

interlocking means for varying a portion of said optical system without changing the photographing magnification, by performing an operation with said operating



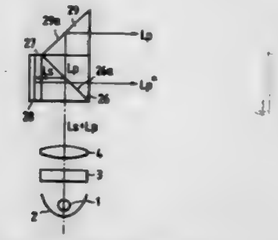
mechanism following the operation performed by said operating mechanism in the predetermined manner for changing the photographing magnification by said optical system.

5,446,510

IMAGE DISPLAY APPARATUS

Hideaki Mitsutake, Tokyo; Nobuo Misoura, Yokohama; Kazumi Kimura, Atsugi, and Katsumi Kurematsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 104,278, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 630,271, Dec. 19, 1990, abandoned. This application Oct. 24, 1994, Ser. No. 328,406
Claims priority, application Japan, Dec. 20, 1989, 1-330033; Jul. 20, 1990, 2-192677
Int. Cl.[6] G03B 21/28
U.S. Cl. 353—20 30 Claims



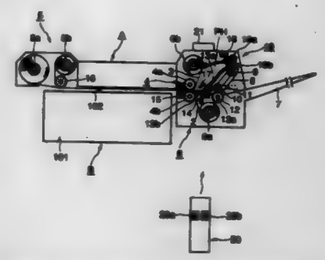
1. An image display apparatus comprising:
- a radiation source;
- a generator for generating an image by modulating a polarized beam; and
- directing means for directing a beam from said radiation source to said generator;
- wherein said directing means comprises a conversion optical system for converting the beam from said radiation source into said polarized beam,
- wherein said conversion optical system includes a polarizing beam splitter for splitting the beam from said radiation source into a first beam and a second beam of mutually orthogonal polarization directions and an arrangement of a ¼ wavelength plate and a mirror for changing the direction of polarization of said first beam to generate a third beam of a polarization direction the same as that of said second beam and for directing said third beam to said polarizing beam splitter,
- wherein said first beam is formed by reflecting one portion of the beam from said radiation source with a beam splitting surface of said polarizing beam splitter and said second beam is formed by transmitting an another portion of the beam from said radiation source through the beam splitting surface of said polarizing beam splitter, and
- wherein said conversion optical system generates said third beam without redirecting said first beam to said radiation source and directs said second and third beams to said generator.

5,446,511

ORIGINAL CONVEYING APPARATUS

Yoshihiko Kitahara, Ushiku, and Kimiaki Hayakawa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1994, Ser. No. 273,130
Claims priority, application Japan, Jul. 19, 1993, 5-200073
Int. Cl.[6] G03B 23/08
U.S. Cl. 353—103 8 Claims



1. An original conveying apparatus comprising:
- original stacking means on which originals are stacked;
- separation means for separating the stacked originals from an upper side and for supplying the separated originals;
- convey means for conveying the separated originals to pass through a reading portion successively and holding the separated originals in a page sequence;
- drive means for rotating said convey means normally or reversely;
- discharge means for returning the originals conveyed by the reverse rotation of said convey means to said original stacking means; and
- control means for controlling said drive means, said discharge means and said separation means, said control means operating to select one of an original among the held originals and the originals stacked on said original stacking means to set the selected original on said reading portion.

5,446,512

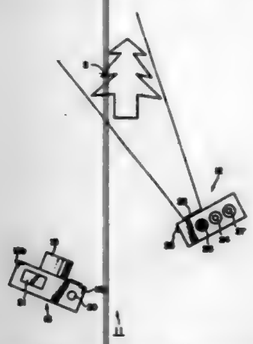
CAMERA SYSTEM HAVING REMOTE CONTROLLER

Makoto Mogamiya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 169,070
Claims priority, application Japan, Dec. 18, 1992, 4-086951 U; Dec. 18, 1992, 4-086952 U
Int. Cl.[6] G03B 15/03
U.S. Cl. 354—131 24 Claims

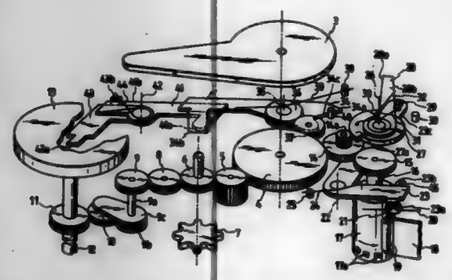
1. A camera system comprising:
- a camera body;
- a remote controller for remotely controlling said camera body to execute a photographing operation, said remote controller comprising means for wirelessly transmitting a photographing operation control signal to said camera body; and
- a strobe provided on said remote controller for being discharged to emit light towards an object being photographed when photographing is executed, said strobe

being distinct from said wirelesly transmitting means, said remote controller comprising a single housing struc-



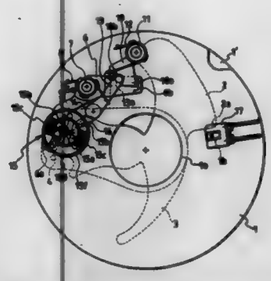
ture receiving said strobe and said wirelesly transmitting means.

5,446,513
CAMERA
Yuichi Sato, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 26, 1994, Ser. No. 186,534
Claims priority, application Japan, Feb. 17, 1993, 5-028277
Int. Cl.[6] G03B *17/42*
U.S. Cl. 354—204 **21 Claims**



1. A camera body in which a film cartridge having a roll film rolled around a film spool may be loaded by feeding a leading edge of the roll film through rotation of the film spool, comprising:
- an operating member which may be manually rotatably operated;
- a first means for carrying out an initial feeding operation of said film, said first means including an engagement member for engaging with said film spool and a first transmission gear train for transmitting a driving torque, generated by the rotational operation of said operating member, to said engagement member;
- a second means for carrying out a film winding operation for said film subsequently after the initial feeding operation, said second means including a winding spool for winding said film and a second transmission gear train for transmitting a driving torque, generated by the rotational operation of said operating member, to said winding spool;
- a means for carrying out a shutter charge operation; and
- a third transmission gear train for transmitting the driving torque, generated by the rotational operation of said operating member, to said shutter charge operation means, wherein said third transmission gear train is kept under an engagement condition at least after the completion of said initial feeding operation.

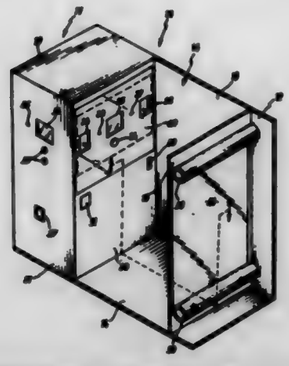
5,446,514
SHUTTER BLADES DRIVE MECHANISM FOR PHOTOGRAPHIC CAMERAS
Junichi Matsumoto, Tokyo, Japan, assignor to Copal Company Limited, Japan
Filed Jan. 4, 1994, Ser. No. 177,248
Claims priority, application Japan, Jan. 11, 1993, 5-000388 U
Int. Cl.[6] G03B *9/08*
U.S. Cl. 354—234.1 **5 Claims**



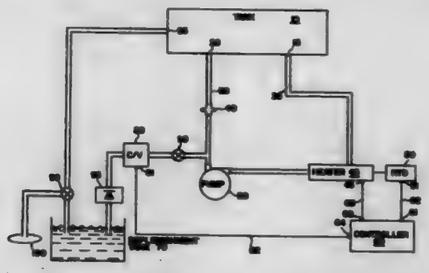
1. A shutter blades drive mechanism for photographic cameras comprising:
- a shutter blades opening and closing means functioning, by reciprocal movements thereof, to allow shutter blades to open and close an exposure aperture, and biased by a spring in a direction to open said exposure aperture;
- a motor consisting of a magnet rotor and a stator having a coil wound thereabout, said magnet rotor being allowed to rotate within a predetermined angular range in a normal direction and reverse direction dependent on the direction of electric current flowing through said coil;
- a driving means structured integrally with said magnet rotor, allowing said shutter blades opening and closing means to be turned by resilience of said spring for opening said shutter blades when said magnet rotor rotates in the normal direction from a standard position thereof, and allowing said shutter blades opening and closing means to turn against the resilience of said spring for closing said shutter blades when said magnet rotor rotates in the reverse direction toward said standard position thereof; and
- a magnetic means disposed at such a location as to exert a magnetic attractive force to said magnet rotor, said magnetic attractive force being larger than the resilience of said spring and smaller than a force to rotate said magnetic rotor derived from the electric current flowing through said coil, thereby functioning to keep said shutter blades opening and closing means at a closed position thereof against the resilience of said spring while no electric current flows through said coil and to allow said magnetic rotor to rotate in accordance with the force derived from the electric current flowing through said coil when the electric current flows through said coil.

5,446,515
AUTOMATIC PICTURE TAKING MACHINE
Maynard F. Wolfe, 27B, Bloc 3 Chiu Fu Far Yuen, Pokfulham; Hin Y. A. Law, c/o Swirl School of Design, Hong Kong Polytechnic, Kowloon, both of Hong Kong, and Malcom J. Kravit, Apartment 203, The Trales, 5018 S. Rainbow Blvd., Las Vegas, Nev. 89118
PCT No. PCT/GB91/00124, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/11748, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 29, 1991, Ser. No. 915,711
Claims priority, application United Kingdom, Jan. 29, 1990, 9001993
Int. Cl.[6] G03B *15/06*
U.S. Cl. 354—290 **29 Claims**

2. An automatic picture taking machine comprising a housing containing a camera and an automatic apparatus which when activated causes the camera to take a picture of a subject located in a zone near to the housing, said zone having a back structure thereto having at least one background display region, said structure being movable upwards and downwards to adjust the height of a display region relative to the subject, said background display being linked to an adjustment device so that height adjustment of the display is effected automatically in correspondence with height adjustment of the camera.



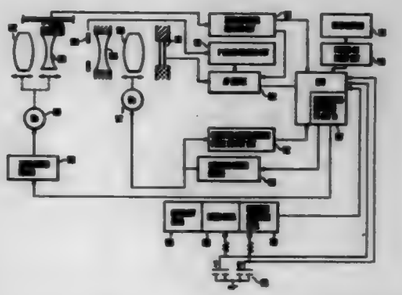
5,446,516
REPLENISHER SYSTEM FOR X-RAY FILM PROCESSOR
Robert L. Barbery, Elgin, and Warren G. Fischer, St. Charles, both, Ill., assignors to Fischer Industries, Inc., Geneva, Ill.
Filed Feb. 23, 1994, Ser. No. 200,202
Int. Cl.[6] G03D *13/00*
U.S. Cl. 354—298 **10 Claims**



1. A combined, temperature-controlled chemical recirculation and replenishment system for use with a reaction tank requiring a quantity of a reactant chemical at an optimum temperature, the reaction tank including an inlet, a drain, and an overflow outlet, the system comprising in combination:
- a first conduit connected between the drain and the inlet, and defining a recirculation loop;
- a pump connected to the first conduit for recirculating the reactant chemical through the first conduit from the drain to the inlet;
- a controllable heater connected in said first conduit between the pump and the inlet for heating the reactant chemical, the heater including a heat sensor for sensing the temperature of the reactant chemical and generating a temperature signal;
- a replenishment tank for maintaining a supply of replenishing reactant;
- a second conduit connected between the replenishment tank and the pump;
- a controllable valve connected in the second conduit between the replenishment tank and the pump;
- a controller connected to the heater and the controllable valve and including an input for receiving the temperature signal from the sensor, the controller being responsive to the temperature signal to selectively activate the heater to maintain the reactant at the optimum temperature, the controller being further responsive to the temperature signal for opening the valve when the reactant is at the optimum temperature, thereby allowing replenishing reactant to flow out of the replenishment tank through the second conduit and to enter the recirculation loop via the pump; and

including a flow control valve disposed between the controllable valve and the pump.

5,446,517
CAMERA
Junichi Murakami, and Naoya Kaneda, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 34,623, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 694,673, May 2, 1991, abandoned. This application Jul. 29, 1994, Ser. No. 282,226
Claims priority, application Japan, May 14, 1990, 2-123707
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—400 **5 Claims**



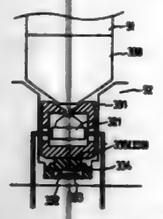
1. An optical apparatus having a lens driving device, comprising:
- (a) a first lens which performs a power varying action by moving in the direction of an optical axis;
- (b) a second lens which performs, by moving in the direction of the optical axis, both a focusing action and a compensating action required as a result of the movement of said first lens;
- (c) a first motor for moving said first lens
- (d) a second motor for moving said second lens, said second motor being a stepping motor;
- (e) an operation switch for performing said power varying action; and
- (f) control means for providing driving excitation for driving said first and second motors, said control means being arranged to selectively perform change-over control over a plurality of respectively different driving excitations for driving said second motor, in accordance with an operation state of said operation switch.

5,446,518

AUTOMATIC EXPOSURE CONTROL APPARATUS

Jiro Kazumi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 918,538, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 530,190, May 29, 1990, Pat. No. 5,181,062. This application Feb. 7, 1994, Ser. No. 192,797
Claims priority, application Japan, May 29, 1989, 1-132769; May 29, 1989, 1-132770; Jun. 15, 1989, 1-153270
Int. Cl.[6] G03B 7/00; G06K 7/10
U.S. Cl. 354—412 10 Claims



1. An apparatus capable of communicating with an information reading and transmitting device wherein the information reading and transmitting device reads data, said apparatus comprising:

(a) detecting means for detecting a light signal output from the information reading and transmitting device with a light signal detecting portion of said detecting means being provided with a switch, said switch having an actuator portion being configured to receive and align a proximal tip end portion of a light signal output portion of the information reading and transmitting device, said switch being adapted to change state while said actuator portion is contacted by the proximal tip end portion, said detecting means being enabled to perform the detecting operation by a change in the state of said switch; and

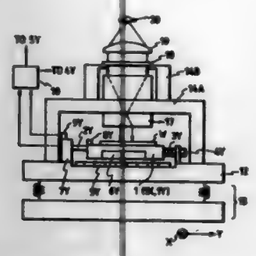
(b) control means for controlling the operation of said apparatus on the basis of the result detected by said detecting means.

5,446,519

STAGE DEVICE

Susumu Makinouchi, Zama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 186,555
Claims priority, application Japan, Feb. 1, 1993, 5-014419
Int. Cl.[6] G03B 27/42
U.S. Cl. 355—53 20 Claims



1. A stage device comprising:

(a) a base plate supported by an antivibration device;

(b) a table movably supported by said base plate;

(c) a first driving system for moving said table, the movement of said table causing a vibration of said base plate; and

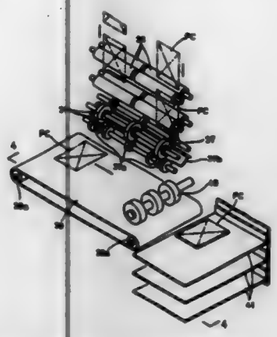
(d) a second driving system which can apply force to said table in a direction parallel to the moving direction of said table to thereby correct an aberration in the relative position of said base plate and said table, induced by said vibration of said base plate.

5,446,520

APPARATUS FOR ARRAYING SHEETS OF PHOTOSENSITIVE MATERIAL

Kenji Todoki, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jun. 14, 1994, Ser. No. 261,042
Claims priority, application Japan, Jun. 15, 1993, 5-143422
Int. Cl.[6] G03B 27/32, 27/52
U.S. Cl. 355—27 3 Claims



1. An apparatus for arraying sheets of photosensitive material in a film printing/developing apparatus having a printing unit and a developing unit, said apparatus comprising:

a carrier means comprising a plurality of pairs of one-way rollers and a plurality of high-speed rollers for feeding the sheets of photosensitive material near the outlet of the film printing/developing apparatus; and

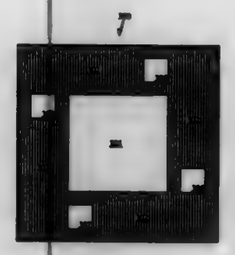
a conveyor provided outside of said outlet in a direction perpendicular to the direction in which the sheets of photosensitive material are discharged, so as to be driven intermittently.

5,446,521

PHASE-SHIFTED OPAQUING RING

Robert F. Hainsey, Portland, Oreg., and Giang T. Dao, Fremont, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 85,402, Jun. 30, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 319,475
Int. Cl.[6] G03B 27/28
U.S. Cl. 355—53 48 Claims



1. A reticle for use in patterning a radiation sensitive layer comprising:

a first region comprising first portions and second portions, said first portions attenuating radiation transmitted therethrough relative to said second portions, wherein said first portions phase-shift radiation transmitted therethrough relative to said second portions, said first portions and said second portions defining first features;

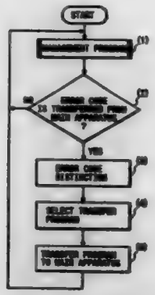
a second region adjacent said first region comprising a pattern of first areas and second areas, wherein radiation transmitted through said first areas is phase-shifted with respect to radiation transmitted through said second areas such that intensity of radiation underneath said pattern is substantially reduced at said radiation sensitive layer.

5,446,522

IMAGE FORMING APPARATUS FOR FORMING IMAGES IN ACCORDANCE WITH PROCESS STEPS RECEIVED FROM AN EXTERNAL DEVICE

Hisatsugu Tabata; Hideki Adachi; Shinichi Nakamura, all of Kawasaki; Naoyuki Ohki; Tokuharu Kaneko, both of Yokohama; Satoshi Kuroyanagi; Hiroshi Ozaki, both of Tokyo; Satoshi Kaneko, Kawasaki; Taisei Fukada, Tokyo; Yukimasa Iseki, Kawasaki; Mitsuhiko Sato, Machida, and Mitsuharu Takizawa, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 950,230, Sep. 24, 1992, abandoned. This application Nov. 16, 1994, Ser. No. 342,017
Claims priority, application Japan, Sep. 30, 1991, 3-276108
Int. Cl.[6] G03G 21/00
U.S. Cl. 355—202 7 Claims



1. A method of managing an image forming apparatus by a remote computer, comprising the steps of:

detecting an abnormal state in said image forming apparatus;

transferring an error code corresponding to the kind of said detected abnormal state to said remote computer;

selecting by said remote computer a predetermined program different from a normal image forming program corresponding to the transferred error code;

transferring said selected predetermined program from said remote computer to the image forming apparatus;

storing the transferred program into a memory of said image forming apparatus; and

executing an operation different from a normal image forming sequence in accordance with the stored predetermined program in the memory of the image forming apparatus.

5,446,523

IMAGE FORMING APPARATUS HAVING SELF-REPAIR FUNCTION AND SELF-REPAIR METHOD FOR THE APPARATUS

Yoshiki Shimomura; Sadao Tanigawa, both of Osaka; Yasushi Umeda, Chofu; Tetsuo Tomiyama, Chiba, and Hiroyuki Yoshikawa, Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Oct. 6, 1993, Ser. No. 132,351
Claims priority, application Japan, Oct. 12, 1992, 4-273209
Int. Cl.[6] G03G 15/00
U.S. Cl. 355—207 14 Claims

1. An image forming apparatus having a repair function, comprising:

sensor means provided in predetermined areas of the apparatus for detecting a predetermined physical amount or change in the physical amount;

actuator means provided in predetermined areas of the apparatus for performing predetermined operations;

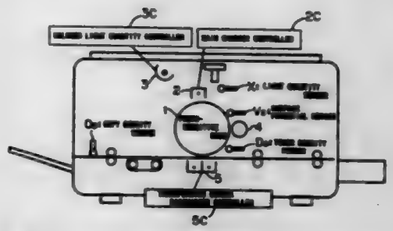
conversion means for converting detected values of said sensor means into fuzzy qualitative values using fuzzy membership functions;

case storage mans for storing a plurality of virtual cases each of which is a representation of a state, which the apparatus can take up when a fault symptom appears in the apparatus, by a qualitative value;

diagnosis means for comparing the fuzzy qualitative values obtained by conversion by said conversion means with the plurality of virtual cases stored in said case storage means to diagnose a present state of the apparatus;

operation information storage means for storing operation information for repair to correspond to each of domains, into which a qualitative quantity space which the apparatus can take up, is divided; and

repair execution means for judging which of the plurality of domains obtained by division is a domain to which the present state of the apparatus which is diagnosed by said diagnosis means belongs, for reading out the operation information corresponding to the domain to which the present state of the apparatus belongs from said operation information storage means, and for operating said actuator means to execute repair.

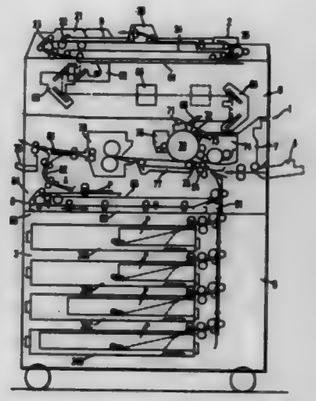


5,446,524

IMAGE FORMING DEVICE WITH A FUNCTION OF SELECTING RECORDING PAPER

Taiso Kaka, Sagisami, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 83,308
Claims priority, application Japan, Jan. 29, 1992, 4-194849
Int. Cl.[6] G03G 15/00
U.S. Cl. 355—208 3 Claims



1. An image forming device having a plurality of recording

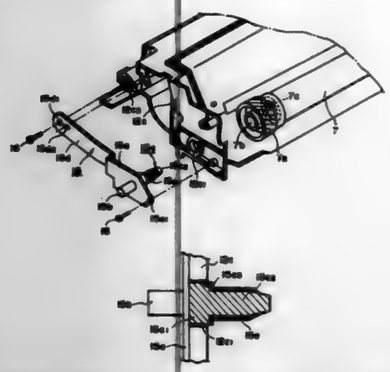
paper trays, an image-existence/absence detecting means for detecting whether an image has already been recorded on one surface of a recording paper accommodated in said recording paper tray, and a controller including means for selecting one of the recording paper trays such that where both-surfaces-blank recording paper and one-surface-copied recording paper are accommodated, respectively, in different ones of the paper feeding trays, said controller selects said one-surface-copied recording paper in response to said detecting means and in preference to said both-surfaces-blank recording paper.

5,446,525

IMAGE BEARING MEMBER MOUNTING METHOD

Hiroo Kobayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1994, Ser. No. 266,457
Claims priority, application Japan, Jun. 25, 1993, 5-155377
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—210 23 Claims



1. A photosensitive drum mounting member, comprising:
a base member;
a first conductive member projected from one side of said base member;
a second conductive member, projected from the other side of said base member, and electrically connected with said first conductive member;
a cylindrical member of plastic material on a surface of said second conductive member, said cylindrical member covering an inside part of said second conductive member from its end; and
an extension from said base member.

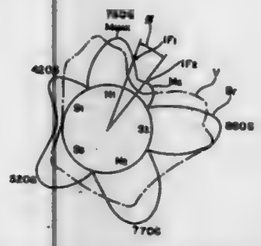
5,446,526

DEVELOPING DEVICE HAVING A DEVELOPER TRANSPORT ROLLER WITH A MAGNETIC FIELD DISTRIBUTION THAT ELIMINATES STREAKING AND FOGGING

Tamotsu Shimizu, Settsu, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 7, 1994, Ser. No. 271,784
Claims priority, application Japan, Jul. 8, 1993, 5-168884
Int. Cl.[6] G03G *15/09*
U.S. Cl. 355—251 9 Claims

1. A developing device comprising:
a movable sleeve confronting an electrostatic latent image carrier at a first point;
a magnet member provided within said sleeve, such that magnetic force produced by said magnet member maintains developer on an external surface of said sleeve, said developer being transported in accordance with movement of said sleeve;
a regulation member confronting the external surface of said sleeve at a second point to regulate a thickness of the developer on the external surface of said sleeve, said second point being upstream of said first point with respect to a direction of developer transportation, and with the distribution curve of vertical magnetic force produced by said magnet member having a peak point in an area between said first and second points, and having first and second inflection points in said area and at a same side of said peak point with respect to the direction of developer transportation, said first inflection point being nearer to said peak point than said second inflection point,



wherein said developing device satisfies the following equations:

$(M_{IF2}/M_{IF1})<0.8$

$(M_{IF2}/M_{IF1})>0.015\Phi$

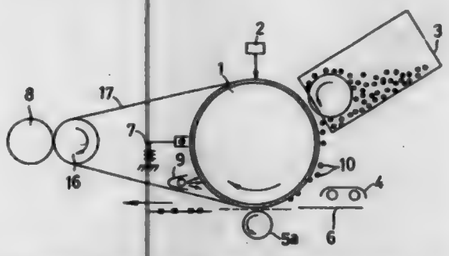
wherein M_{IF1} represents a vertical magnetic force at said first inflection point, M_{IF2} represents a vertical magnetic force at a second inflection point, and Φ represents a central angle between said first and second inflection points.

5,446,527

METHOD OF FORMING FIXED IMAGES

Shin-ichiro Yasuda, Osaka; Kuniyasu Kawabe, Wakayama; Mitsuhiro Sasaki, Wakayama, and Harumasa Yamasaki, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP92/00934, § 371 Date Jan. 12, 1994, § 102(e) Date Jan. 12, 1994, PCT Pub. No. WO93/02403, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 22, 1992, Ser. No. 175,437
Claims priority, application Japan, Jul. 24, 1991, 3-208426
Int. Cl.[6] G03G *13/20*
U.S. Cl. 355—279 9 Claims



1. A method of forming fixed images, comprising:
charging a heat-resistant photoconductor;
covering a surface of said heat-resistant photoconductor with a photopermeable transfer film;
exposing said transfer film and said heat-resistant photoconductor to light, thereby forming electrostatic latent images on the surface of said transfer film and said heat-resistant photoconductor;

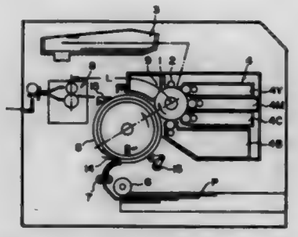
developing said electrostatic latent images on the surface of said transfer film into a visible image by applying an encapsulated toner to said transfer film in the area of said electrostatic latent image;
simultaneously transferring said visible image onto a preheated recording medium and fixing the transferred visible image onto the recording medium by contacting said recording medium with the surface of said transfer film while said transfer film is in contact with the surface of said heat-resistant photoconductor.

5,446,528

IMAGE FORMING APPARATUS HAVING A SEPARATION MECHANISM BETWEEN IMAGE BEARING MEMBER AND TRANSFER MEMBER BEARING MEMBER

Toshiki Nagase, Hoya, and Akira Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,500
Claims priority, application Japan, Jun. 29, 1992, 4-194750
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—309 24 Claims



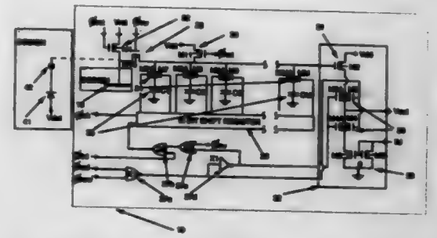
1. An image forming apparatus, comprising:
an image bearing member for bearing an image thereon;
a transfer material bearing member for carrying a transfer material to a transfer position repeatedly, said transfer material bearing member carrying the transfer material to the transfer position so that the image on the image bearing member can be transferred onto the transfer material;
fixing means for fixing the transferred image onto the transfer material, said fixing means having a fixing speed which is selectable between a first speed or a second speed which is slower than the first speed; and
moving speed control means for controlling a moving speed of said transfer material bearing member, said moving speed control means controlling the moving speed of the transfer material after completion of an image transfer operation so as to correspond the fixing speed,
wherein, in the case the second speed is selected as the fixing speed after completion of image transfer operation, said transfer material bearing member re-conveys the transfer material which has an image transferred thereon to the transfer position, and, after completion of image transfer operation and before the transfer material reaches to the fixing position of said fixing means, the moving speed of the transfer material carried by said transfer material bearing member is controlled to correspond to the second speed, and wherein, when the transfer material is being re-conveyed and is being positioned at the transfer position, the transfer material carried on said transfer material bearing member is being separated from said image bearing member.

5,446,529

3D IMAGING UNDERWATER LASER RADAR

Roger Stettner, and Howard W. Bailey, both of Santa Barbara, Calif., assignors to Advanced Scientific Concepts, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 856,019, Mar. 23, 1992. This application Feb. 9, 1993, Ser. No. 15,627
Int. Cl.[6] G01C *3/08*
U.S. Cl. 356—4.01 40 Claims



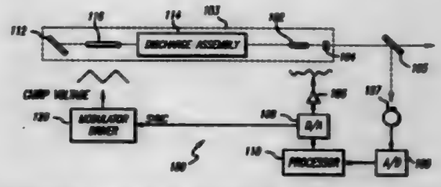
1. A device for imaging sections of a three dimensional object immersed in a light conducting medium comprising
a pulsed light source,
means for transmitting light from said pulsed light source into said medium,
optics for collecting light from said medium during a sequence of time intervals between the transmission of successive pulses from said light source,
sensor means for detecting said collected light, said sensor means comprising
means for amplification of said collected light and for providing an electrical signal corresponding to said amplified light,
an analog-processing readout chip comprising
a plurality of unit cell means each comprising a plurality of storage means for receiving electrical signals from said amplification means during said time intervals, and
readout electronics adapted to provide signals to output electronics from said storage means,
drive electronics for providing voltages and for providing timing for said readout electronics, and
output electronics for converting the signals stored on said storage means from analogue to digital signals.

5,446,530

AMPLITUDE MODULATED CORRECTED FREQUENCY MODULATED LASER

Robbin A. Reeder, Hawthorne, and Kuei-Ru Chien, Cerritos, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 14, 1994, Ser. No. 210,814
Int. Cl.[6] G01K *3/08*
U.S. Cl. 356—5.01 21 Claims



1. A system for correcting power modulation in a frequency modulated laser comprising:
characterization means operable to characterize the frequency modulated laser.

frequency modulation means responsive to the laser for modulating the frequency of the laser; and

amplitude modulation means responsive to the laser for modulating the amplitude of the laser, by application of a corrective voltage, said corrective voltage generated in response to the characterization of the frequency modulated laser, thereby correcting the power modulation of the laser.

5,446,531

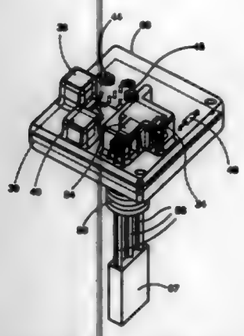
SENSOR PLATFORM FOR USE IN MACHINES FOR WASHING ARTICLES

Jeffrey E. Boyer, Freeport; Mark J. Brashaw, Stockton; Brad L. Cummins, Freeport; Timothy K. Erickson, Lena; Gary R. O'Brien, Jr., and Duane J. Sies, both of Freeport, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 20, 1994, Ser. No. 246,902

Int. Cl.[6] D06F *33/02*; A47L *15/46*

U.S. Cl. 356—72 **16 Claims**



1. A liquid condition sensor, comprising:

a substrate, said substrate having conductive portions, said substrate being disposed within a pump housing of an appliance;

means, attached to said substrate, for directing a beam of light energy along a first line;

first light sensitive means, attached to said substrate, for receiving light energy directly from said directing means, said first line intersecting said first receiving means, said first receiving means providing a first signal representative of the light intensity impinging on said first receiving means;

second light sensitive means, attached to said substrate, for receiving reflected light from said directing means along a second line, said second line being at an angle to said first line, said second line intersecting said second receiving means, said second receiving means providing a second signal representative of the light intensity impinging on said second receiving means, said directing means, said first receiving means and said second receiving means being connected in electrical communication with said conductive portions of said substrate;

means for comparing said first and second signals, said comparing means being connected in signal communication with said first and second receiving means; and

first means, attached to said substrate, for measuring the electrical conductivity of said liquid, said measuring means being connected in electrical communication with a second one of said conductive portions of said substrate, said first measuring means comprises two electrodes extending from said substrate and spaced apart from each other by a predetermined distance.

5,446,532

MEASURING APPARATUS WITH OPTICALLY CONJUGATE RADIATION FULCRUM AND IRRADIATED AREA

Tatsuya Yamazaki, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,223

Claims priority, application Japan, Jun. 9, 1992, 4-149469

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—73 **10 Claims**



1. A measuring apparatus comprising:

an energy radiation source;

applying means for applying radiation from said energy radiation source to an object to be examined, said object to be examined including particles flowing through a flow path; and

detecting means for detecting a characteristic of said object to be examined;

said applying means making a fulcrum of the fluctuation of the pointing of said radiation energy and an irradiation area in which said object to be examined is irradiated with the radiation energy substantially conjugate with each other;

wherein the fulcrum of the fluctuation of the directionality of the radiation energy and the radiation area are made conjugate with each other in a direction crossing the flow direction of said path.

5,446,533

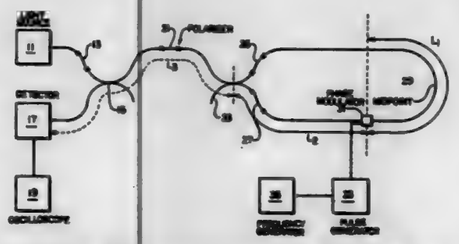
FIBER OPTIC MEASURING APPARATUS AND METHOD

Eric Udd, Huntington Beach, and John P. Theriault, Fountain Valley, both of Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Apr. 8, 1988, Ser. No. 179,639

Int. Cl.[6] G01N *21/00*; G01C *3/08*; G02B *6/00*

U.S. Cl. 356—73.1 **24 Claims**



1. A system for accurate measurement of the length of an optical fiber, comprising:

light source means for producing a constant source of light;

first beam splitting means, in optical communication with said light source means, for facilitating the transmission and reception of light to and from said light source means;

an optical fiber loop;

second beam splitting means, in optical communication with said first beam splitting means and said optical fiber loop for splitting the light from said light source means into a clockwise propagating light beam and a counterclockwise propagating light beam, and thereafter recombining said clockwise and said counterclockwise light beams;

phase modulation means, in optical communication with and spaced at least slightly away from the midpoint of said optical fiber loop, for impressing a phase modulated pulse on both of said clockwise propagating light beam and said counterclockwise propagating light beam; and,

detection means, in optical communication with said first beam splitting means, including electrical circuit means, for measuring the length of the optical fiber loop upon detection of said phase modulated pulse of the recombined said clockwise propagating light beam and said phase modulated pulse of said counterclockwise propagating light beam.

5,446,534

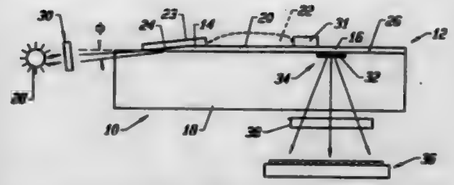
BROAD BAND WAVEGUIDE SPECTROMETER

Don S. Goldman, Folsom, Calif., assignor to Optical Solutions, Inc., Folsom, Calif.

Filed Mar. 5, 1993, Ser. No. 27,026

Int. Cl.[6] G01N *21/41*

U.S. Cl. 356—128 **22 Claims**



1. A spectrometer for analyzing a sample of material by utilization of an electromagnetic radiation source and a detector

comprising:

a. a waveguide possessing an entry for admission of electromagnetic radiation from the source and an exit for the electromagnetic radiation emanating from the source, said waveguide further including a surface between said entry and exit portions, permitting interaction between electromagnetic radiation passing through said waveguide and a sample of material, said waveguide exit permitting electromagnetic radiation from the waveguide to pass from said waveguide;

b. a tapered portion forming a part of said entry of said waveguide, said tapered portion coupling electromagnetic radiation emanating from the source to said waveguide;

c. a substrate adjacent said waveguide, said substrate being capable of passing electromagnetic radiation from the source to said tapered portion forming part of said waveguide entry; and

d. capturing means for directing electromagnetic radiation passing from said exit of said waveguide to a detector.

5,446,535

FIREARM NON-FIRING SIGHT ALIGNMENT SYSTEM

John H. Williams, 601 Plantation Rd., Goldsboro, N.C. 27530

Filed May 9, 1994, Ser. No. 239,699

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—153 **3 Claims**

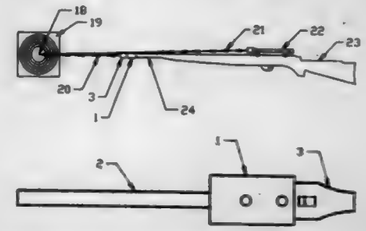
1. A firearm bore sight alignment apparatus comprising:

a light source for projecting a beam of visible light, said light source having an internal power supply and a switch;

a mandrel having a first end which fits into the bore of a firearm and a second end, an axis extending from the first end to the second end of said mandrel;

a housing fitted onto the second end of the mandrel and containing said light source, said housing having means to concentrically position the light source therein and securely fix and hold the light source in exact alignment with the axis of the mandrel;

said means being adjusting screws which extend from the housing and engage the light source to permit horizontal and vertical movement of the light source within the housing, said means allowing the light source to be concentrically positioned in the housing by rotating the light source means through 360° and manipulating said adjusting screws until a light beam projected by the light source is seen as a stationary spot on a target.



5,446,536

SYSTEM OF DETECTING OPTICAL DISTORTION OF A LIGHT-TRANSMITTING PLATE-LIKE MEMBER

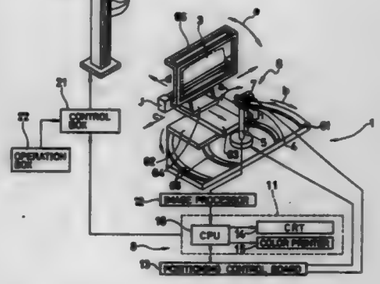
Atsushi Miyake, Hachioji; Yoshimitsu Matsushita, and Takayuki Koyama, both of Kawasaki, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 30, 1993, Ser. No. 55,149

Claims priority, application Japan, May 6, 1992, 4-141001; Nov. 6, 1992, 4-321396

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—239 **24 Claims**



1. A system for detecting an optical distortion of a light-transmitting plate-like member, a predetermined region of the member being divided into a plurality of small parts, a target being sensed in turn through each small part of the region, the system comprising:

target means having at least one target that has at least three light emitting points capable of representing at least one predetermined angle;

image sensing means for sensing the target through each of the small parts of the region so as to determine the optical distortion of each of said small parts;

position change means for changing a positional relationship among the image sensing means, the target and the plate-like member so as to position each of the small parts of the region between the image sensing means and the target sensed by the image sensing means and;

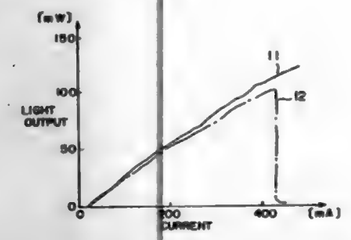
control means connected to the target means the position means and the image sensing means for coordinating a timing of positioning each of said small parts with respect to the target means and the image sensing means and for timing an activation of the light emitting points and the image sensing means.

5,446,537

METHOD OF SORTING SEMICONDUCTOR LASERS

Ichiro Yoshida; Tsukuru Katsuyama, and Jun-ichi Hashimoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 6, 1994, Ser. No. 268,534
Claims priority, application Japan, Jul. 13, 1993, 5-173249; Jul. 1, 1994, 6-151062
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—256 **10 Claims**



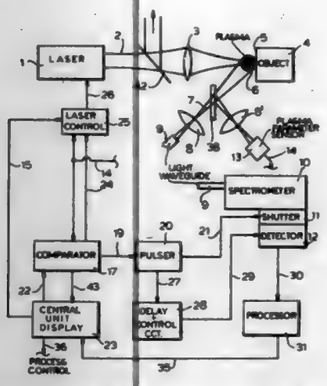
1. A method of sorting semiconductor lasers, comprising:
the first step of supplying a first current within a range of 50 to 150% a maximum rated current to said semiconductor lasers for at least 50 hours;
the second step of supplying a second current larger than the first current within a range of 120 to 250% the maximum rated current for at least 1 micro-second after the first step; and
the third step of measuring light output characteristics after the second step and removing defective devices in accordance with a measurement result.

5,446,538

PROCESS AND DEVICE FOR EMISSION SPECTORSCOPY

Reinhard Noll, Aachen, Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V., Minich, Germany

PCT No. PCT/DE92/00447, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/21957, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 2, 1992, Ser. No. 157,170
Claims priority, application Germany, Jun. 6, 1991, 4118518.8
Int. Cl.[5] G01N *21/63*
U.S. Cl. 356—318 **13 Claims**



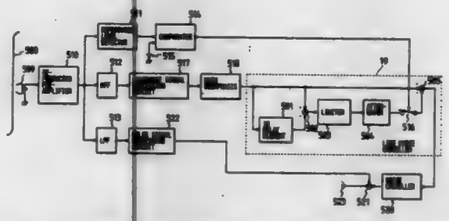
1. A method of elemental analysis comprising the steps of:
(a) directing a laser beam at a material having at least one element for which said material is to be analyzed and with an intensity and for a duration sufficient to generate a plasma at said material emitting spectroscopically detectable radiation including emissions from said element, said laser beam being capable of producing different plasma states in said plasma;
(b) spectroscopically detecting a spectrum of said radiation, transferring at least a portion of the detected spectrum, decomposing at least said portion of said spectrum to determine said emissions, and analyzing for said element from the determination of said emissions;
(c) selecting a tolerance range of values for at least one emission-influencing parameter at which said spectrum most accurately represents an analysis of said element;
(d) monitoring said plasma during the generation thereof for said emission-influencing parameter; and
(e) transferring at least said portion of said spectrum for determination of said emissions and analysis for said element only upon said emission-influencing parameter falling within said range, and blocking transfer of at least said portion of said spectrum for determination of said emissions and analysis for said element upon said emission-influencing parameter lying above and below said range.

5,446,539

MAGNETIC RECORDING AND REPRODUCING DEVICE WITH SELECTIVE LINE NOISE CANCELING

Tokuichi Minakawa, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 944,900, Sep. 15, 1992, abandoned, which is a division of Ser. No. 721,349, Jun. 28, 1991, Pat. No. 5,257,109. This application Mar. 4, 1994, Ser. No. 205,817
Claims priority, application Japan, Jul. 2, 1990, 2-175131; Jul. 4, 1990, 2-176593; Jul. 11, 1990, 2-183198; Jul. 12, 1990, 2-184918; Jul. 23, 1990, 2-194613
Int. Cl.[6] H04N *5/78, 5/21*
U.S. Cl. 358—340 **3 Claims**



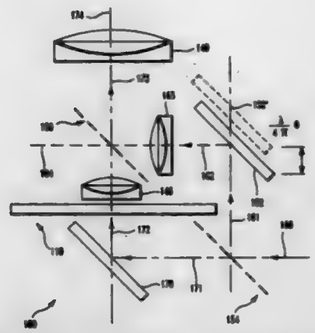
1. In a magnetic recording apparatus, the improvement comprising:
a line noise canceling means;
detection means for detecting an envelope level of a component of a first portion of a video signal reproduced from a recording medium, wherein said envelope level indicates a grade quality of said recording medium;
said line noise canceling means being rendered inoperable when said envelope level detected by said detection means is higher than a predetermined envelope level;
said line noise canceling means, when said envelope level detected by said detection means is less than or equal to said predetermined envelope level, delaying a luminance signal of said first portion of said video signal for a single horizontal scanning period to provide a delayed luminance signal, subtracting the delayed luminance signal from a non-delayed luminance signal of a second portion of said video signal reproduced from the recording medium to provide a first subtraction result signal, extracting a signal whose amplitude does not exceed a predetermined value from the first subtraction result signal constituting a noise component in said non-delayed luminance signal, and subtracting said signal whose amplitude does not exceed the predetermined value from the non-delayed luminance signal to output a luminance signal having the noise component canceled therefrom.

5,446,540

METHOD OF INSPECTING PHASE SHIFT MASKS EMPLOYING PHASE-ERROR ENHANCING

Burn J. Lin, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,745
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **2 Claims**



1. A method for inspecting a phase-shifting mask for photolithography, comprising the steps of:
(a) obtaining a phase shifting mask inspection microscope having a phase contrast objective, and further having an adjustable phase shifter capable of phase shifting the zeroth order light by θ;
(b) adjusting said adjustable phase shifter to phase shift the zeroth order light by θ to enhance the detection of a phase error in the phase-shifting mask, wherein θ is a predetermined value according to:

$$\theta = 2\phi - (1 \pm 2m)\pi$$

where ϕ is the phase shift of a mask element being inspected, m is an integer, and π is the mathematical constant pi; and
(c) subsequently using the microscope to inspect the phase-shifting mask.

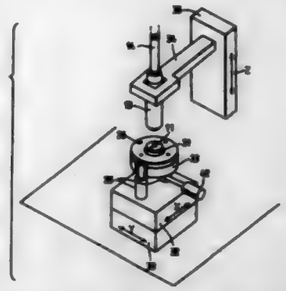
5,446,541

ELEMENTS ALIGNING/COUPLING APPARATUS AND METHOD

Osamu Akita, and Michio Suzuki, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 10, 1992, Ser. No. 925,925
Claims priority, application Japan, Aug. 14, 1991, 3-204297; Aug. 14, 1991, 3-204298; Aug. 14, 1991, 3-204299; Aug. 14, 1991, 3-204300; Feb. 17, 1992, 4-029354; Feb. 17, 1992, 4-029355; Jan. 5, 1992, 4-145242
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—399 **8 Claims**

1. An apparatus for aligning and coupling optical elements comprising:
a first body movable in a first direction and holding a coupling part;
a second body which is movable relative to said first body in a plane orthogonal to said first direction;
first means, mounted on said first body, for bringing said coupling part into contact with one of said optical elements, said one of said optical elements being held by an element holder; and
second means, mounted on said second body, for tiltably and resiliently supporting said element holder in such a manner that said one of said optical elements held by said element holder is adaptively tilted without external adjustment when placed into contact with said coupling part so



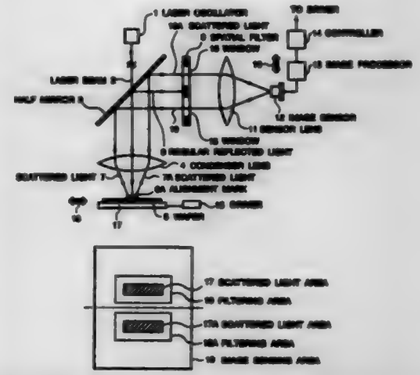
as to minimize a gap between said coupling part and said one of said optical elements.

5,446,542

MARK POSITION DETERMINING APPARATUS FOR USE IN EXPOSURE SYSTEM

Yukihiro Maraoka, Yamagata, Japan, assignor to NEC Corporation, Japan

Filed Mar. 4, 1993, Ser. No. 26,486
Claims priority, application Japan, Mar. 4, 1992, 4-046582
Int. Cl.[6] G01J *1/20*; G01N *21/47*
U.S. Cl. 356—400 **4 Claims**



1. A mark position determining apparatus including a means for projecting a light onto a mark which is formed on a substrate and which has a center flat surface and a pair of side surfaces, said mark having any one of a plurality of sizes and/or shapes, means comprising a spatial filter having areas located to block a light reflected from said center flat surface of said mark, said spatial filter having a pair of windows areas for allowing a passage of substantially all scattered lights reflected from said side surfaces of said mark regardless of which of said sizes and/or shapes of said mark may be present, an image sensor located to receive the scattered lights which have passed through said spatial filter, so as to generate an image signal, and an image processor means responsive to said received image signal for obtaining a light intensity distribution of said image signal, and for discriminating whether or not a plurality of light intensity peaks included in the obtained light intensity distribution are substantially in symmetry, said image processor means operating to determine that a symmetry point is a center position of said mark when the light intensity peaks are substantially in symmetry, said image processor means being configured to prevent signals caused by stray light from

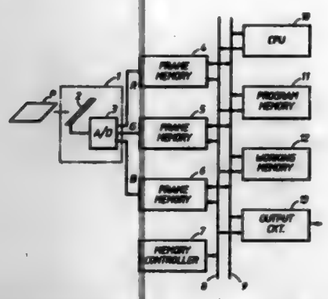
being included in the signal obtained from the received image signal, a signal component corresponding to the stray light entering in places other than said filter window areas which are sufficiently larger than incident areas of a scattered light portion having a relatively high light intensity and which are located to contain therein the incident areas of the scattered light portion having the relatively high light intensity.

5,446,543

METHOD AND APPARATUS FOR EXTRACTING A PATTERN OF COLOR FROM AN OBJECT USING A NEURAL NETWORK

Kazuyo Nakagawa, Kanagawa, and Toshio Sato, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 22, 1993, Ser. No. 95,256
Claims priority, application Japan, Jul. 24, 1992, 4-198378; Dec. 10, 1992, 4-330327; Dec. 14, 1992, 4-332990
Int. Cl.[6] G01N *21/25*
U.S. Cl. 356—405 3 Claims



1. A method for extracting a pattern of a specific color from an object containing a plurality of color patterns, the method comprising the steps of:
collecting data relating to color components R (Red), G (Green) and B (Blue)from the object;
converting the data collected in the collecting step into chromaticity coordinates x, y and luminous reflectance Y;
converting the chromaticity coordinates x, y and luminous reflectance Y into Munsell color data H (Hue), V (Value) and C (Chroma); and
extracting a pattern of a specific color from the object based on the Munsell color data, the extraction including the steps of:
preparing a histogram based on the Munsell color data H, V and C;
defining a principal axis for the histogram where variance becomes maximum;
obtaining one-dimensional data by projecting the histogram against the principal axis; and
selecting a threshold value for dividing the one-dimensional data into at least two groups respectively corresponding to different colors.

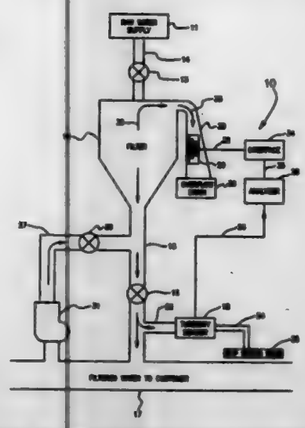
5,446,544

TURBIDIMETER

Howard L. Beers, North Fort Myers, Fla., assignor to HF Scientific, Inc., Fort Myers, Fla.

Filed Jan. 22, 1993, Ser. No. 8,574
Int. Cl.[6] G01N *21/53*
U.S. Cl. 356—339 16 Claims

1. A turbidimeter comprising:
a sensor apparatus that includes a housing having first and second receptacles formed through respective first and second walls of said housing, means for establishing an incident light beam within said housing, said means for establishing including a light source module that is releasably engaged with said first receptacle, said module including a lamp and a lamp holder that extends from said first wall exteriorly of said housing and carries said lamp such that said lamp is located at least partly inside said housing, a test liquid holder removably received by said second receptacle for positioning a liquid to be tested in the path of said incident light beam, and means disposed in said housing for sensing light scattered by said test liquid, and generating a signal representative of the amount of light scattered by said test liquid;
an optical block separate and distinct from and mounted within said housing and communicating with said first and second receptacles for directing said incident light beam through said holder, said optical block including a first, vertical passageway that communicates with said second



receptacle for accommodating said test liquid holder and a second transverse passageway that transmits said incident light beam to said test liquid;
an electrical power source for energizing said light source module and said means for sensing and generating, said module including means for electrically connecting said lamp with complementary means disposed in said housing, which complementary means are electrically connected to said power source to provide electrical power to said lamp; and
an analyzer apparatus that includes means, responsive to said generated signal, for determining the turbidity of said test liquid and means, responsive to said means for determining, for indicating the turbidity of said test liquid.

5,446,545

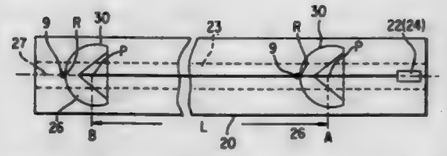
METHOD OF AND APPARATUS FOR CALIBRATING MACHINES INCLUDING A MEASURING PROBE AND A MEASURING APPARATUS

Benjamin R. Taylor, Trelleck, United Kingdom, assignor to Renishaw plc, Gloucestershire, United Kingdom

Filed Mar. 15, 1994, Ser. No. 212,842
Claims priority, application United Kingdom, Mar. 25, 1993, 9306139
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—358 13 Claims

1. A method of calibrating the measuring performance of a machine having relatively movable parts on one of which is mounted a measuring probe, the method comprising the steps of:
mounting a measurement artifact on one of the machine parts for movement along a measurement axis relative to the machine part,
making a measurement of the position of the artifact at each

of a plurality of points on the axis with a measuring apparatus which is independent of the measuring probe,
causing relative movement of the machine parts in order to make a measurement of the position of the artifact at each of said plurality of points using the measuring probe, and



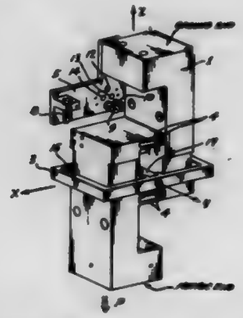
determining the distance between two of said plurality of points as measured by each of the measuring apparatus and the measuring probe, and providing an indication of the difference between the two determinations of the distance measured.

5,446,546

LASER INTERFEROMETRIC SINGLE PIECE FORCE TRANSDUCER

Thomas S. Breidenbach, Renton; Michael E. Mould, Kent, and Charles R. Pond, Des Moines, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 2, 1993, Ser. No. 86,795
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—358 2 Claims



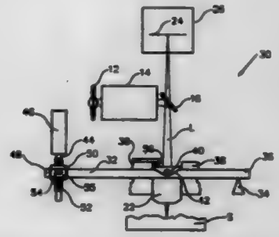
1. A laser interferometric force transducer having a single piece load path for eliminating hysterisis on a macro level comprising in combination:
a force transducer machined from a single piece of material thereby minimizing hysterisis induced by joint slippage;
said force transducer having a ground end, metric end, primary flexures, amplification flexures, and a rectangular shaft;
said ground end being attached to said metric end by each of the said primary flexures and by said amplification flexure, said rectangular shaft, and another of said amplification flexure in series;
a mirror bracket;
said mirror bracket attached to said ground end of said force transducer;
a plurality of spatial displacement monitoring retroreflecturs;
said plurality of spatial displacement monitoring retroreflectors attached to said mirror bracket;
a plurality of beam turning mirrors;
said plurality of beam turning mirrors attached to said mirror bracket;
a metric retroreflector;
said metric retroreflector mounted on the ground end of said force transducer;
another metric retroreflector;
said metric retroreflector mounted on the metric end of said force transducer;
a plurality of laser interferometers;
two beams of the said plurality of laser interferometers positioned to reflect off of said plurality of beam turning mirrors and said plurality of metric retroreflectors in such manner that any axial force applied across the said metric end and said ground end causes a change in the beam lengths by causing a transverse deflection across the said primary flexures; and,
three beams of the said plurality of interferometers positioned to reflect off of said spatial displacement monitoring retroreflectors.

5,446,547

COMBINATION OF MOTORIZED AND PIEZOELECTRIC TRANSLATION FOR LONG-RANGE VERTICAL SCANNING INTERFEROMETRY

Bryan W. Guenther; Paul J. Caber, and John B. Hayes, all of Tucson, Ariz., assignors to Wyko Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 143,372, Oct. 25, 1993, Pat. No. 5,355,221, which is a continuation of Ser. No. 880,083, May 6, 1992, Pat. No. 5,204,734, which is a continuation of Ser. No. 714,215, Jun. 12, 1991, Pat. No. 5,133,601. This application Apr. 29, 1994, Ser. No. 235,105
Int. Cl.[6] G01B *11/02*
U.S. Cl. 356—357 36 Claims



1. In a device adapted to execute white-light vertical-scanning interferometric measurements at multiple distances between a test sample and a reference arm aligned in an optical path to a light-intensity sensor, wherein a scanning means is used to effect a relative translation between the sample and the reference arm to achieve said multiple distances at which light-intensity outputs are produced and wherein said light-intensity outputs are used to calculate a surface-height output corresponding to the test sample, a mechanical scanning means that comprises:
(a) a motor fixedly connected to a support frame for said device;
(b) drive means for coupling an output shaft of said motor to one of said sample or reference arm, such that a motion of said shaft is translated into a relative motion between the sample and the reference arm within said optical path; and
(c) a pair of lenses disposed in said optical path, wherein one of the lenses is fixed with respect to said sample and the other of the lenses is fixed with respect to said reference arm.

5,446,548

PATIENT POSITIONING AND MONITORING SYSTEM

Lee H. Gerig, Almonte, and Sabry F. El-Hakim, Ottawa, both of Canada, assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Oct. 8, 1993, Ser. No. 134,362
Int. Cl.[6] G01B *11/03*
U.S. Cl. 356—375 41 Claims

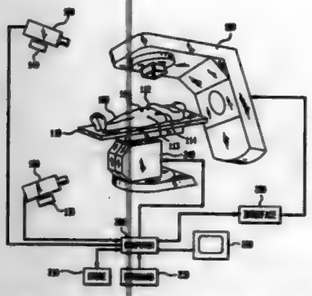
1. Apparatus for monitoring and sensing changes in position

of a patient from a prior position at a prior time to a current position at a current time, which apparatus comprises:

a source of radiation for applying radiation to a patient;

a plurality of individual targets adapted to be releasably affixed at both a current time and a prior time to the patient, for reflecting radiation impinging thereon;

camera and computer means for detecting the reflected radiation from individual ones of the targets, uniquely identifying individual ones of said targets from which radiation was detected, and for individually determining current and prior positions of the uniquely identified targets in three-dimensional space, based on the target fixation to the patient at the current and prior times, respectively;



data storage means for storing data representative of at least the prior position of the uniquely identified targets;

computer means for comparing the current position of the uniquely identified targets with the prior position data stored in the data storage means for those identified targets, and developing from said comparing position signals representative of a difference in position of said identified targets, and therefore said patient from said prior time to said current time; and

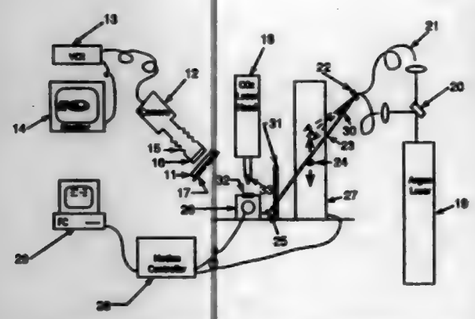
display means responsive to said position signals for displaying indicators representative of said difference in position of said patient.

5,446,549

METHOD AND APPARATUS FOR NONCONTACT SURFACE CONTOUR MEASUREMENT

Jyothirmoy Mazumder, Urbana, Ill., and David D. Voelkel, Redondo Beach, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 14, 1993, Ser. No. 4,763
Int. Cl.[6] G01B *11/24*
U.S. Cl. 356—376 **13 Claims**



1. A noncontact measurement system for determining the contour of an object comprising:

an object to be measured,

a first light source focused close to the surface of said object,

a flat metal strip,

a wedged shaped platform on one end of said strip,

optical fiber means with an input and an output the output of which is mounted on said wedged shaped platform for directing light at said object,

a second light source for sending a beam to the input of said optical fiber means,

a translation stage in physical contact with said metal strip and capable of moving said metal strip so as to change the angle of the output of said optical fiber means,

a camera for receiving reflected light from said object,

a narrow beam filter between said object and said camera,

a recording means for recording light angle reflections given off by said object and received by said camera, and

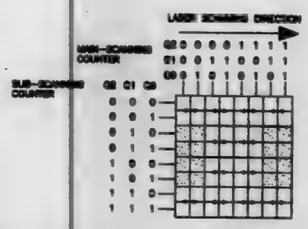
controller means connected to the translation stage for varying the position of said translation stage.

5,446,550

IMAGE FORMING APPARATUS WITH RANDOM DENSITY PATTERN GROWTH

Shinichiro Maekawa, Kawasaki; Kaoru Seto, Chigasaki; Takashi Kawana, Yokohama, and Toru Kosaka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,800
Claims priority, application Japan, Mar. 5, 1992, 4-048511
Int. Cl.[6] H04N *1/21*
U.S. Cl. 358—298 **23 Claims**



1. An image forming apparatus for performing area modulation of a black area of a pixel, which is an aggregate of subdivisions obtained by subdivision based upon multivalued dot information, forming an electrostatic latent image on a recording medium by deflecting a light beam using a signal obtained by the area modulation, and developing the electrostatic latent image, comprising:

pattern generating means for generating density patterns that possess a plurality of different growth directions;

information generating means for generating information for the purpose of changing the growth direction of the density patterns; and

changeover means for changing over the information;

recording of an image being performed by a density pattern having a growth direction based upon the information changed over by said changeover means, wherein said information generating means includes:

means for generating a first growth-direction designating signal based upon a growth direction within an aggregate area of a predetermined pixel; and

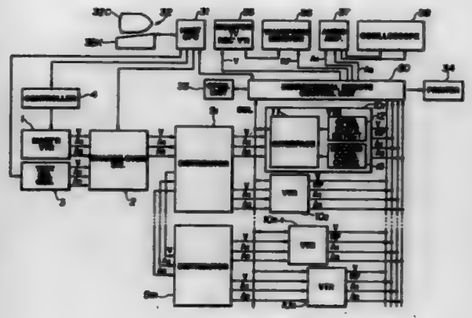
means for generating a second growth-direction designating signal based upon a random signal.

5,446,551

TAPE DUPLICATING APPARATUS

Yuki Kawaguchi; Yohji Hirai; Satoru Inoue; Kazuhiro Kita, and Fumio Sekiguchi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 866,321
Claims priority, application Japan, Apr. 13, 1991, 3-108399; Apr. 13, 1991, 3-108400; Apr. 13, 1991, 3-108401
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—335 **3 Claims**



1. A tape duplication apparatus comprising:

means constituting at least one source of video and audio signals;

a plurality of tape duplicating units having recording and playback modes;

means for connecting said tape duplicating units with said source in said recording mode of said tape duplicating units so that said tape duplicating units simultaneously record said video and audio signals on respective tapes in a recording operation carried out in the recording mode;

test signal generating means for providing a test signal;

means for applying said test signal to said tape duplicating units in said recording mode of the latter for recording said test signal;

means for changing-over said tape duplicating units to said playback mode so as to reproduce the recorded test signal;

detecting means associated with each of said tape duplicating units for indicating a defect in the recording operation thereof from the test signal reproduced therefrom; and

control means responsive to said detecting means for rendering inoperative each of said tape duplicating units for which a defect in the recording operation of the latter is indicated,

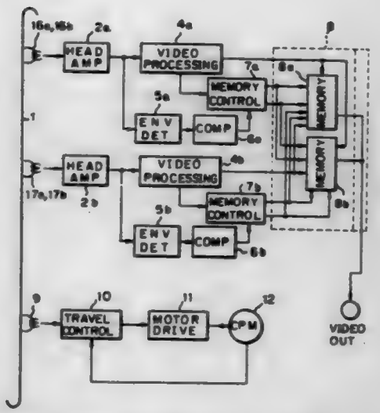
said control means being operative to cause each of said tape duplicating units for which said detecting means fails to detect a defect in the recording operation thereof to erase said recorded test signal and then to fully rewind the respective tape.

5,446,552

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS

Sadayuki Inoue, and Toshifumi Fujii, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 24,488, Mar. 1, 1993, Pat. No. 5,339,165, which is a continuation of Ser. No. 816,844, Dec. 31, 1991, Pat. No. 5,214,515, which is a continuation of Ser. No. 545,127, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 114,651, Oct. 28, 1987, abandoned. This application Jul. 12, 1994, Ser. No. 273,921
Claims priority, application Japan, Oct. 28, 1986, 61-257408; Jun. 26, 1987, 62-160347; Jul. 15, 1987, 62-109149
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[6] H04N *5/76*
U.S. Cl. 358—335 **10 Claims**



1. A video signal recording and reproducing apparatus, wherein a video signal of at least one field period is recorded on a plurality of tracks on a recording medium in an L-channel/S-segment recording system, L and S being respectively positive integers which are never simultaneously equal to one, said apparatus comprising:

at least one rotating reproduction head provided for each of the L-channels for reproducing a video signal on said recording medium;

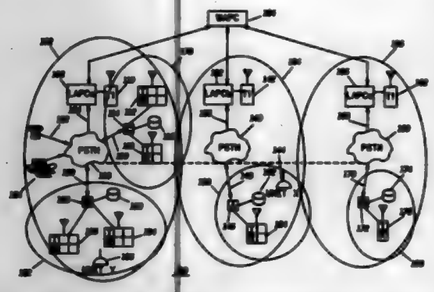
processor means coupled to said rotating reproduction head for demodulating the video signal reproduced by said rotating reproduction head, and for outputting the demodulated video signal;

storing means for storing the demodulated video signal output from the processor means;

storage control means for controlling said storing means so that the demodulated video signal is written in said storing means in synchronism with a synchronization signal detected from the reproduced signal and so that the stored demodulated video signal is read out in asynchronism with the detected synchronization signal; and

recording medium travel control means for selecting a traveling speed of said recording medium so that in case of high speed playback, said recording medium travel control means selects the traveling speed of said recording medium to be $(N+m/M)$ times a recording speed, being equal to $0, \pm 1, \pm 2, \pm 3, \ldots$, and m and M being positive integers having no common divisor except one and so that no integer r exists which satisfies the equation $(N+m/M)\times M\times k=r\times S$, wherein $k=1, 2, 3, \ldots, S-1$ and $M>m$.

5,446,553
WIRELESS FAX RECEPTION METHOD WITH ROOMING
Gary W. Grube, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 15, 1992, Ser. No. 913,331
Int. Cl.[6] H04N *1/00*; H04M *11/00*; H04B *1/00*
U.S. Cl. 358—402 5 Claims

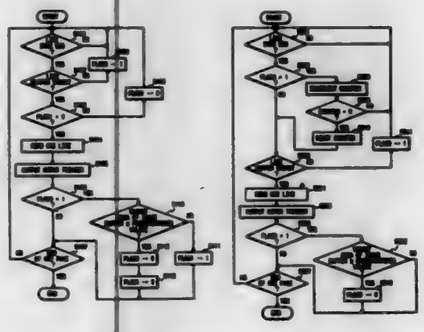


1. A method for transmitting a facsimile (FAX) message to a wireless communication device operating in a wireless communication system which includes a plurality of operatively interconnected wireless communication sub-systems each having defined coverage areas, the wireless communication system also having a wide area wireless communication system having a wireless communication coverage area which substantially overlaps the wireless communication coverage areas of the plurality of wireless communication sub-systems, one of the plurality of wireless communication sub-systems being the wireless communication device's home wireless communication sub-system, the method comprising the steps of:
determining if the wireless communication device is located in the wireless communication device's home wireless communication sub-system;
storing the facsimile message in the home wireless communication sub-system if the wireless communication device is not located in the wireless communication device's home wireless communication sub-system;
transmitting a message over the wide area system directed to the wireless communication device if the wireless communication device cannot be found in the wireless communication device's home wireless communication sub-system;
receiving the wide area system message at the wireless communication device;
switching the wireless communication device to operate using one of the plurality of wireless communication sub-systems as directed by the wide area system message in order to establish a wireless communication link with the wireless communication device's home wireless communication sub-system; and
receiving the facsimile message at the wireless communication device from the home wireless communication sub-system.

5,446,554
READER FOR A FACSIMILE APPARATUS WHICH CARRIES OUT THE READ APPARATUS IN ACCORDANCE WITH A VACANT CAPACITY OF A BUFFER
Takashi Ono, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 28, 1993, Ser. No. 174,452
Claims priority, application Japan, Jan. 7, 1993, 5-001225
Int. Cl.[6] H04N *1/21, 1/04, 1/047*
U.S. Cl. 358—404 21 Claims

1. A reading method for a reading apparatus having an image buffer for storing image data, wherein the reading apparatus reads an image in synchronism with a line sync signal, said method comprising the steps of:
continuously reading the image at a period of the line sync signal, until the image buffer becomes full;
intermittently reading, after the image buffer has become full, the image at a period of at least two line sync signals; and
again continuously reading the image, when a vacant area of the image buffer subsequently exceeds a predetermined volume, at the period of the line sync signal.

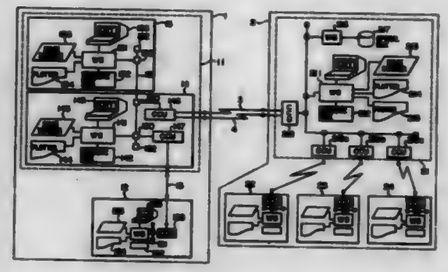
12. A method on an image reading apparatus, said method comprising the steps of:
reading, using reading means, an original image;
carrying out relative movement between an original and the reading means;



storing image data, read at said reading step, in storing means;
detecting a vacant capacity of the storing means; and
changing over between a first speed, indicating a relative moving speed of said carrying out step, and a second speed lower than the first speed, in accordance with the vacant capacity detected at said detecting step,
wherein, at said changing over step, a first predetermined vacant capacity is used as a reference for changing over from the first speed to the second speed, and a second predetermined vacant capacity, different from the first predetermined vacant capacity, is used as a reference for changing over from the second speed to the first speed.

5,446,555
DESIGN DRAWING TRANSMISSION SYSTEM
Koji Fujikawa; Kazuo Shibata; Kenshi Katayama, and Masahiko Yamamoto, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 633,335, Dec. 27, 1990, abandoned.
This application Feb. 7, 1994, Ser. No. 192,804
Claims priority, application Japan, Dec. 28, 1989, 1-342387
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—406 32 Claims

1. A design drawing transmission system comprising:
a design drawing transmission device at a first facility including image reading means for reading a design drawing prepared on a recording sheet and producing an image signal, transmission means for transmitting drawing information including characteristic information indicative of characteristics of the image reading means identifying the reading accuracy of the reading means, and the image signal produced by said image reading means through a predetermined transmission path;
a design drawing receiving device at a second facility including receiving means for receiving the drawing information transmitted through said transmission path, storage means for storing the drawing information received by said receiving means, output means for reading out the drawing information stored by said storage means and reproducing the design drawing on a recording sheet on the basis of the image signal included in said drawing



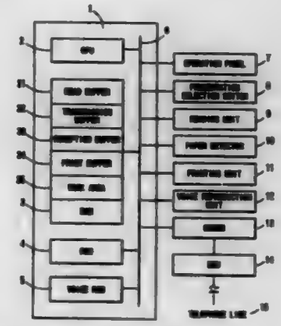
information under control of the characteristic information included in said drawing information which minimizes dimensional errors in a reproduced design drawing.

5,446,556
VIDEO CLOCK SIGNAL GENERATOR IN AN OPTICAL SCANNER IN WHICH A MASK INCLUDING A LINEAR SCALE PROVIDES TIMING FOR CONTROLLING THE AMPLITUDE OF A VIBRATING MIRROR
Yoshinori Kuroiwa, Chigasaki; Hiroshi Nishida, Tokyo; Hisashi Okugawa; Yutaka Ichihara, both of Yokohama, and Satoru Kumagai, Chigasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 970,868, Nov. 3, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,624
Claims priority, application Japan, Nov. 7, 1991, 3-291723; Nov. 7, 1991, 3-291724; Nov. 12, 1991, 3-295944; Jun. 25, 1993, 5-177598
Int. Cl.[6] H04N *1/047, 1/113*
U.S. Cl. 358—406 8 Claims



1. A video clock signal generator comprising:
a linear scale having a plurality of gratings arranged at a predetermined pitch;
beam supply means for supplying a first beam having a first optical characteristic for forming a first light spot on the linear scale and a second beam having a second optical characteristic for forming a second light spot on the linear scale,
a center of the first light spot and a center of the second light spot being spaced from each other by a predetermined distance in a direction of array of the gratings;
a scanner for scanning the first light spot and the second light spot on the linear scale in the direction of array of the gratings; and
processing means for generating the video clock signal in accordance with optical information on the first beam from the linear scale and optical information on the second beam from the linear scale.

5,446,557
FACSIMILE MACHINE CAPABLE OF VOCAL AND PRINTED PRESENTATION OF CAPABILITIES
Toshiro Hase, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jun. 8, 1993, Ser. No. 73,078
Claims priority, application Japan, Jun. 12, 1992, 4-179289
Int. Cl.[6] H04N *1/21, 1/00*
U.S. Cl. 358—444 19 Claims

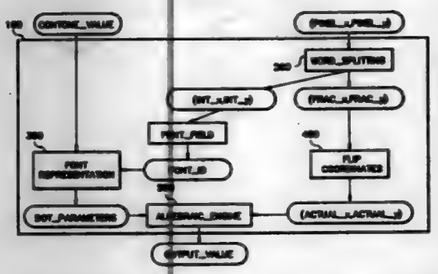


1. A facsimile machine, comprising:
first storage means for storing compressed image data received from a remote facsimile machine;
decoding means for decoding the compressed image data and producing decoded image data;
second storage means for storing predetermined compressed image data not received from a remote facsimile machine, the predetermined compressed image data also being decoded by said decoding means to produce decoded predetermined image data;
switching means for switching between a first mode and a second mode, the first mode causing said decoding means to decode the compressed image data stored in said first storage means, the second mode causing said decoding means to decode the predetermined compressed image data stored in said second storage means;
selection means for operator input of at least a selection of one of the first mode and the second mode;
printing means for carrying out printing on a sheet of paper set on said facsimile machine; and
control means for controlling said switching means to be switched between the first mode and the second mode based on the operator input through said input means, and for further controlling said printing means to carry out printing based selectively on the decoded image data and the decoded predetermined image data.

5,446,558
APPARATUS AND ASSOCIATED METHOD FOR REPRESENTING ELLIPTICAL HALFTONE DOTS
John F. Hamilton, Jr., Rochester, and Anthony J. Leone, III, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 5, 1992, Ser. No. 956,930
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—454 9 Claims

1. Apparatus for generating an elliptical halftone dot pattern comprising:
storing means having stored therein dot parameters representing the envelope of at least one elliptical halftone dot;
means for receiving position signals corresponding to the printing coordinates of a marking engine, and;

means for comparing the received position signals with the stored dot parameters to determine if a printing is to be



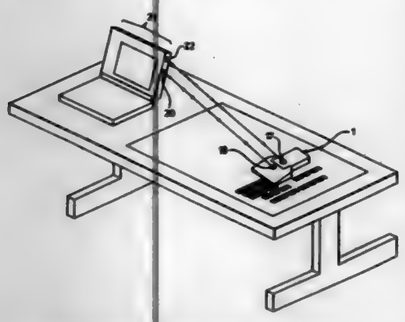
performed by the marking engine at the printing coordinates.

5,446,559

METHOD AND APPARATUS FOR SCANNING AND PRINTING

John R. Birk, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1992, Ser. No. 956,708
Int. Cl.[6] H04N *1/024*
U.S. Cl. 358—473 18 Claims



1. A printing method comprising the steps of:

providing a shuttle assembly including a housing, a propelling mechanism that includes an electric motor rotationally coupled to a rolling member mounted under the housing, and a printing mechanism mounted on the housing;

guiding the shuttle assembly over a top surface of a substrate by activating the motor of the propelling mechanism as the rolling member frictionally engages the top surface of the substrate; and

activating the printing mechanism to write on the top surface of the substrate as the shuttle is guided over the top surface of the substrate, wherein:

the shuttle assembly further includes a sensor coupled to the housing for sensing a substrate feature; and

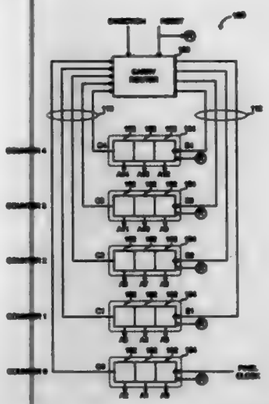
the step of guiding the shuttle assembly over the top surface of the substrate includes activating the motor of the propelling mechanism in response to the sensor sensing the substrate feature.

5,446,560

METHOD AND APPARATUS FOR RASTER TO BLOCK AND BLOCK TO RASTER PIXEL CONVERSION

Edward L. Schwartz, Sunnyvale, Calif., assignor to Ricoh Company, Ltd, Tokyo, Japan and Ricoh Corporation, Menlo Park, Calif.

Filed May 12, 1993, Ser. No. 60,948
Int. Cl.[6] G06K *15/00*
U.S. Cl. 358—445 28 Claims



1. A reordering converter for accepting a first stream of pixels representing a digital image band presented at an input in a first order and outputting the pixels representing the digital image band at an output in a second stream in a second order, where the first and second orders are selected from a raster order and a block order and are not the same order, where a block in the block order is a two-dimensional array of pixels B pixels wide and M pixels high and the image band is a row of W such blocks, where W is an integer power, N, of M, and B, M, N, and W are positive integers, the reordering converter comprising:

a band memory compriaing storage for at least W times B times M pixels, said band memory including a pixel input, a pixel output, an address input and a means for retrieving a pixel from a memory location pointed to by an address on said address input, for outputting said retrieved pixel, and for storing a pixel from said pixel input into said memory location pointed to by said address;

a modulo-B counter coupled to a pixel clock and comprising a count output, a carry input and a carry output, wherein said pixel clock is synchronous with pixels in the first stream;

an array of N+1 modulo-M counters, each modulo-M counter comprising a count output, a carry input and a carry output;

an address bus for coupling each count output of said modulo-M counters and said modulo-B counter to said address input of said band memory; and

a carry signal router, coupled to said array of modulo-M counters and a carry output of said modulo-B counter, for coupling said carry outputs of said modulo-M counters and said modulo-B counter to selected carry inputs of said modulo-M counters, wherein carry inputs are selected such that an address sequence followed by said modulo-M counters sequences addresses in the first order in a first state and sequences addresses in said second order in a second state following said first state,

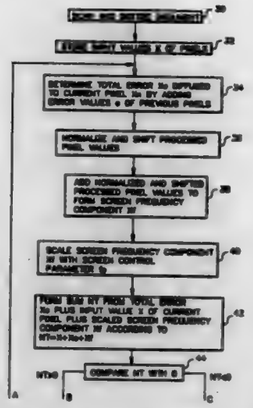
thereby causing an image band of pixels to be read into said band memory in the first order in said first state and to be output in the second order while reading in a second band of pixels in the first order.

5,446,561

METHOD AND APPARATUS FOR DIGITAL SCALE HALFTONING WITH VARIABLE SCREEN STRUCTURE FOR ELECTROPHOTOGRAPHIC PRINTING DEVICES

Hwai-Tzuu Tai, Rochester, and Isaac I. Ajewole, Greece, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1994, Ser. No. 207,507
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—445 21 Claims



1. A method for modifying data representing a digitized image, the method comprising:

a. receiving the data of a digitized image as signals representing input pixel values for a plurality of unprocessed pixels;

b. selecting an unprocessed one of said pixels to be a current pixel for processing;

c. thresholding a value associated with the current pixel wherein a thresholding operation employs a functional relationship that includes the input pixel value for the current pixel, an error value diffused from previously processed pixels to the current pixel, a screen control parameter and a parameter related to a sum of normalized previously processed pixels, to generate a processed pixel value for the current pixel;

d. generating an error incurred in processing the current pixel to the processed pixel value, the error including a functional relationship of the processed pixel value for the current pixel, the error value diffused to the current pixel, the input pixel value for the current pixel and not additionally including the screen control parameter nor the parameter related to a sum of normalized previously processed pixels;

e. distributing the error incurred in processing the current pixel to the processing of at least one other of said plurality of unprocessed pixels; and

f. repeating steps b–e for processing each of the unprocessed pixels and using processed pixel values to generate signals representing a modified digital image.

5,446,562

LIQUID CRYSTAL DISPLAY DEVICE WITH TRANSPARENT CONDUCTIVE FILM BETWEEN PIXEL ELECTRODES AND SIGNAL OR SCANNING LINES

Hajime Sato, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 996,005
Claims priority, application Japan, Dec. 25, 1991, 3-342604
Int. Cl.[6] G02F *1/343, 1335*
U.S. Cl. 359—59 12 Claims

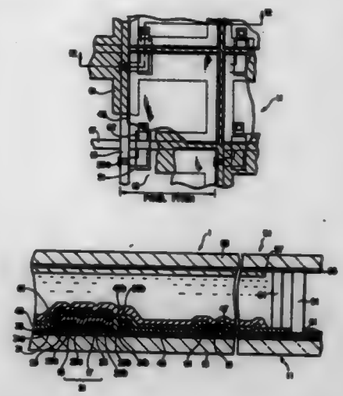
1. A liquid crystal display device comprising:

a first electrode substrate having a plurality of signal lines and scanning lines disposed in a matrix manner, and a plurality of pixel electrodes, each of the pixel electrodes being connected to at least one of the signal lines and at least one of the scanning lines through a switching element;

a second electrode substrate having an opposing electrode which is opposite to the pixel electrodes; and

a liquid crystal layer sealed between the first and second electrode substrates;

said first electrode substrate having a conductive film which



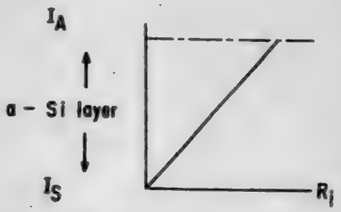
is formed of a transparent conductive film and provided between the pixel electrodes and at least one of a group of the signal lines and a group of the scanning lines, for reducing coupling capacitance between the pixel electrodes and said at least one of the group of the signal lines and the group of the scanning lines, a first insulating film provided between the conductive film and said at least one of the group of the signal lines and the group of the scanning lines, and a second insulating layer provided between the conductive film and the pixel electrodes.

5,446,563

PHOTOCONDUCTOR COUPLED LIQUID CRYSTAL LIGHT VALVE WITH IMPURITY DOPING WHICH VARIES IN THE THICKNESS DIRECTION

Hayakawa Takashi, Soraka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1993, Ser. No. 28,368
Claims priority, application Japan, Mar. 10, 1992, 4-051611
Int. Cl.[6] G02F *1/135*
U.S. Cl. 359—72 2 Claims



1. A photoconductor coupled liquid crystal light valve having at least a photoconductive layer, an optical reflection layer, and a liquid crystal layer between a pair of electrodes, wherein the photoconductive layer is made of amorphous silicon layer, and an impurity doped in the photoconductive layer is uniform in amount in the in-plane direction of the photoconductive layer and continuously higher in concentration in the layer-

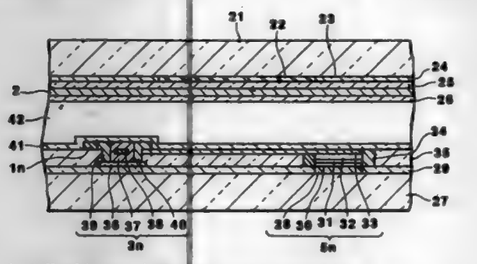
thickness direction from the electrode side toward the optical reflection layer side.

5,446,564

LIQUID CRYSTAL DISPLAY DEVICE HAVING PHOTOSENSOR AT EACH PIXEL

Atsushi Mawatari, Hanoya, and Minoru Kanbara, Hachioji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 71,200
Claims priority, application Japan, Jun. 3, 1992, 4-142901
Int. Cl.[6] G02F *1/135*; G09G *1/28*
U.S. Cl. 359—72 **11 Claims**



1. A liquid crystal display device comprising:
a pair of insulating substrates arranged in parallel with a gap provided between mutually facing surfaces of the insulating substrates, at least one of the insulating substrates being transparent;
a liquid crystal filled in the gap between the mutually facing surfaces of the insulating substrates;
an access line formed on a first surface of one of the insulating substrates, which faces the other insulating substrate;
a plurality of data lines formed on said first surface of said one of the insulating substrates, which faces the other insulating substrate;
a plurality of display pixel elements arranged to apply an electric field to the liquid crystal, said display pixel elements being arranged in accordance with said data lines;
switching means, connected to the access line, to the data lines, and to the display pixel elements, for switching a connection between the display pixel elements and the data lines;
a common electrode formed on a surface of said other insulating substrate which faces the liquid crystal and which faces said one of the insulating substrates; and
a plurality of photosensors each connected in parallel to one display pixel element and each photosensor having an output terminal which is connected to said switching means.

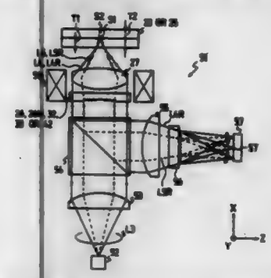
5,446,565

COMPOUND OBJECTIVE LENS HAVING TWO FOCAL POINTS, IMAGING OPTICAL SYSTEM FOR CONVERGING LIGHT WITH THE COMPOUND OBJECTIVE LENS, OPTICAL HEAD APPARATUS FOR RECORDING OR REPRODUCING INFORMATION WITH THE IMAGING OPTICAL SYSTEM, OPTICAL DISK HAVING TWO TYPES O

Yoshiaki Komma, Kyoto; Sadao Mizuno, and Seji Nishino, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1994, Ser. No. 190,520
Claims priority, application Japan, Feb. 1, 1993, 5-014432; Aug. 4, 1993, 5-193353
Int. Cl.[6] G02B *5/32*; G11B *7/00*
U.S. Cl. 359—19 **34 Claims**

1. An optical head apparatus for recording or reproducing a piece of information on or from a first information medium having a first thickness or a second information medium having a second thickness, comprising:
a light source for radiating a beam of incident light;
hologram means for transmitting a part of the incident light radiated from the light source without any diffraction on an outgoing path to form a beam of transmitted light and diffracting a remaining part of the incident light radiated from the light source on the outgoing path to form a beam of diffracted light, the hologram means functioning as a lens for the diffracted light to diverge the diffracted light from the hologram means or converge the diffracted light;
lens means for converging the transmitted light formed in the hologram means at a first focal length on the outgoing path to form a first converging spot at a front surface of the first information medium or converging the diffracted light formed in the hologram means at a second focal length on the outgoing path to form a second converging spot at a front surface of the second information medium, the transmitted light passing through the first information



medium from its rear surface, the transmitted light being reflected at the front surface of the first information medium and again passing through the lens means and the hologram means on an incoming path, the diffracted light passing through the second information medium from its rear surface, and the diffracted light being reflected at the front surface of the second information medium and again passing through the lens means and the hologram means on the incoming path;
wavefront changing means for changing a wavefront of the transmitted light or the diffracted light passing through the lens means and the hologram means on the incoming path to form one or more beams of information light; and
detecting means for detecting intensities of the information light formed by the wavefront changing means and generating an information signal according to the intensities of the information light, the information signal expressing a piece of information recorded on the first information medium or the second information medium.

5,446,566

Patent Not Issued For This Number

5,446,567

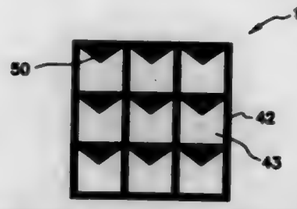
LIQUID CRYSTAL DISPLAY WITH FIRST AND SECOND APERATURES WHERE ONE APERATURE HAS PROTUBERANCES

Elias S. Haim, and Cecil W. Pena, both of Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 23, 1993, Ser. No. 35,992
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 359—49 **2 Claims**

1. A backlighted liquid crystal display (LCD) having a front from which the display is viewed at a viewing angle and a luminance at the front comprising
an array of light transmissive LCD cells,
a backlight assembly for generating and directing light toward said array of LCD cells,
a backlight reflector positioned adjacent said backlight assembly to reflect light incident thereto toward said array of LCD cells,

a light obstructing member comprising an opaque grid with first light transmissive apertures therethrough optically delineating said array of LCD cells,
a patterned mirror, disposed intermediate said backlight assembly and said light obstructing member, comprising a mirror grid with second light transmissive apertures therethrough, said mirror grid aligned with said opaque grid to reflect light directed to said opaque grid toward said



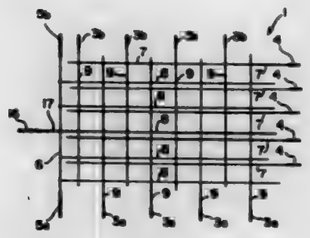
backlight assembly for reflection of light from said backlight reflector towards said first and second light transmissive apertures and said LCD cells, and
protuberances respectively extending into said second apertures to establish shapes of said second apertures that are different from shapes of said first apertures so that said luminance varies in accordance with parallax between said light obstructing member and said patterned mirror in a predetermined manner as said viewing angle changes.

5,446,568

ACTIVE MATRIX DISPLAY APPARATUS WITH PLURAL SIGNAL INPUT CONNECTIONS TO THE SUPPLEMENTAL CAPACITOR LINE

Kiyoshi Nakazawa, Fujiidera; Mikio Katayama, Ikoma; Hiroaki Kato, and Akihiko Imaya, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 558,871, Jul. 30, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,749
Claims priority, application Japan, Aug. 3, 1989, 1-201973
Int. Cl.[6] G02F *1/343*
U.S. Cl. 359—59 **6 Claims**



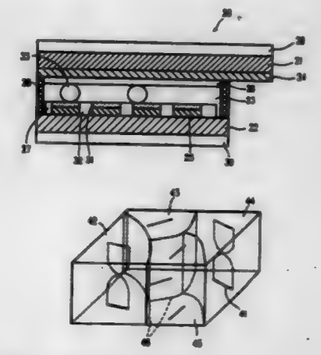
1. An active matrix display apparatus with reduced signal delay characteristics comprising:
pixel electrodes arranged in a matrix fashion on an insulating substrate and enmeshed by generally orthogonal drive lines including a plurality of storage capacitance lines and a plurality of gate bus lines, said storage capacitance lines connected individually to storage capacitance electrodes, said storage capacitance electrodes arranged opposite to said pixel electrodes,
a common main line which is connected to said storage capacitance lines and intersects said plurality of gate bus lines,
at least one branch line branched from said common main line with the number of branch lines being sufficient to reduce the time delay of signals to said storage capacitance electrodes opposite to said pixel electrodes, the branch line dividing equally said common main line, and
a branch terminal formed at the leading end of said at least one branch line,
wherein said common main line is adapted to receive at least three electrically driven signal inputs provided to different locations with equal distances therebetween on said common main line, thereby dividing said common main line into at least two drive line segments, and reducing the time delay for signal inputs to reach pixel electrodes located at positions most remote from the ends of the common main line.

5,446,569

LIQUID CRYSTAL DISPLAY APPARATUS HAVING A RANDOM ORIENTATION ALIGNMENT FILM AND A METHOD FOR PRODUCING THE SAME

Yoshio Iwai, Takatsuki; Shigehiro Sato; Hideaki Mochizuki, both of Osaka; Hiroaki Mizuno, Katano; Shinya Kosako, Kadoma, and Hisako Kurai, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 285,862
Claims priority, application Japan, Aug. 4, 1993, 5-193357; Aug. 6, 1993, 5-195715; Sep. 2, 1993, 5-218330; Oct. 6, 1993, 5-250480; Dec. 6, 1993, 5-305124
Int. Cl.[6] G02F *1/1337*
U.S. Cl. 359—78 **24 Claims**



1. A liquid crystal display apparatus comprising:
a pair of substrates held at a distance;
a pair of electrodes formed on opposing inner faces of the substrates, respectively;
alignment films formed on the opposing inner faces to cover the pair of electrodes, respectively, the alignment films having capability to align a liquid crystal in a horizontal orientation and capability to align the liquid crystal in a random orientation at a predetermined temperature or higher; and
a chiral nematic liquid crystal layer interposed between the pair of alignment films, the chiral nematic liquid crystal layer having a plurality of microscopic domains, each of the microscopic domains having the liquid crystal molecules aligned uniformly in the vicinity of the alignment films, the liquid crystal molecules in different microscopic regions being arranged in different directions with respect to one another.

5,446,570

LIQUID CRYSTAL DISPLAY WITH PROJECTING PORTIONS ON THE ELECTRODES

Shuzo Kaneko, Yokohama; Shinjiro Okada, Isehara; Satoshi Yano, Yokohama; Katsuhiko Shinjo, Isehara; Hirokatsu Miyata, Yokohama, and Masaaki Shibata, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,775
Claims priority, application Japan, Apr. 27, 1993, 5-101040; Apr. 28, 1993, 5-102753
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 359—87 9 Claims



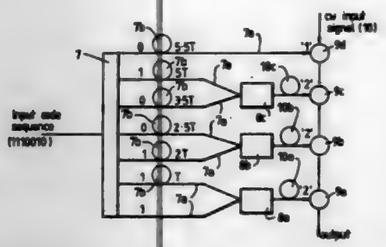
1. A liquid crystal device comprising a liquid crystal disposed between a pair of electrodes, wherein at least one of said electrodes has a plurality of stripe electrodes formed with continuity and different spaces therebetween within each of the pixels, and films provided at least in said spaces and having a sheet resistance of 10^4 Ω/□ to 10^8 Ω/□.

5,446,571

MANCHESTER CODE OPTICAL CODE RECOGNITION UNIT

Mohammed Shabeer, Suffolk, England, assignor to British Telecommunications, plc, London, England

Filed Feb. 4, 1994, Ser. No. 191,502
Claims priority, application European Pat. Off., Sep. 10, 1993, 93307144
Int. Cl.[6] G02F *2/00, 3/00*; H04L *27/10*; H04Q *11/00*
U.S. Cl. 359—107 12 Claims



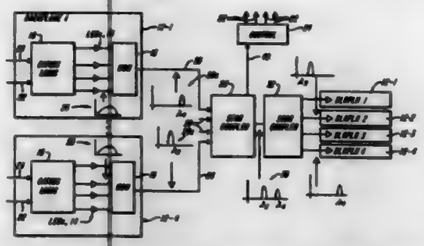
12. Manchester code optical code recognition unit comprising an n-way splitter having an input and n parallel outputs, a delay means provided at at least n−1 of the splitter outputs each having a delay of m half bit periods where m is equal to one half to two times (n−1) and m is an odd number of half bit periods for a "1" or "0" Manchester code input and an even number of half bit periods for a "0" or a "1" Manchester code input respectively, a plurality of optical combiners receiving delayed output signals from respective pairs of delay means, a plurality of AND gates coupled to receive output signals from an associated combiner and one AND gate for receiving an output directly from the n-way splitter, said AND gates being connected in series such that a series path is established through the AND gates when the optical code recognition unit receives a Manchester code matching that to which it is set.

5,446,572

OPTICAL INTERCONNECTS FOR HIGH SPEED BACKPLANES USING SPECTRAL SLICING

Charles R. Husbands, Acton, Mass., and Mary Girard, East Hampstead, N.H., assignors to The Mitre Corporation, Bedford, Mass.

Filed Feb. 14, 1992, Ser. No. 836,986
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—133 11 Claims



1. An n channel optical interconnect for the output signals of n processors, the interconnect providing multiple simultaneous and reconfigurable connections among the processors, comprises

n sources of optical energy associated with each of said processors,

the spectrum of each of said sources being substantially the same,

an optical receiver associated with each of said n processors,

a wavelength division multiplexer (WDM) associated with each of said n processors that receives the optical output of each of the n sources associated with a given processor, and transmits the optical energy from said n sources associated via an optical output with a portion of said spectrum being uniquely associated with and thereby addressing a preselected one of said n processors,

means for coupling the output of all of said WDM's into a single optical output,

a wavelength division demultiplexer (WDDM) having an input and n optical outputs, said input receiving the output of said coupling means and demultiplexes it into n spectral portions each directed to an associated one of said n optical outputs,

means for transmitting each of said n optical outputs of said WDDM to said receiver of the associated one of said n processors,

means for controlling the application of an output signal from a given processor to its associated sources thereby to select the address for the transmission of said output signal to at least one other processor.

5,446,573

ALL-OPTICAL REGENERATOR

Svjatoslav A. Losanshevitch, and Yuri V. Svetlkov, both of Sankt-Peterburg, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

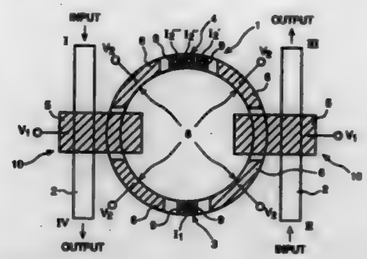
Filed Jul. 6, 1993, Ser. No. 85,949
Claims priority, application U.S.S.R., Jul. 6, 1992, 5066099
Int. Cl.[6] H04B *10/02*
U.S. Cl. 359—158 10 Claims

1. An all-optical regenerator including one or more waveguides, each of said one or more waveguides having an input and an output optical contacts; a nonlinear ring resonator optically coupled to each of said one or more waveguides; and directional couplers, each of said directional couplers being provided with means for adjusting the optical coupling between the nonlinear ring resonator and each of said one or more waveguides and being positioned therebetween, wherein the nonlinear ring resonator comprises:

a source laser serving as a source of optical radiation;

a multi-sectional laser for generating a clock frequency;

mirrors for forming cavities for the source laser and the multi-sectional laser, each of said mirrors being provided at each of the interfaces between the two lasers and their adjacent parts in the nonlinear ring resonator;



a multiplicity of phase modulators being provided between the two lasers and the directional couplers for synchronizing an output optical signal with the clock frequency; and

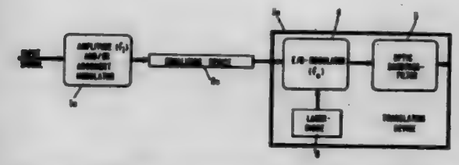
means for controlling the source laser, the multi-sectional laser and the phase modulators.

5,446,574

SYSTEM AND METHOD FOR DISPERSION COMPENSATION IN FIBRE OPTIC HIGH SPEED SYSTEMS

Anders G. Djupsjöbacka, Solna, and Lars Egnell, Saltsjöbaden, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 25, 1994, Ser. No. 217,634
Claims priority, application Sweden, Mar. 26, 1993, 9301023
Int. Cl.[6] H04B *10/04*
U.S. Cl. 359—181 26 Claims



1. System for dispersion compensation in a transmitter in a fiber optic high speed communication system comprising:

means for modulating an electric carrier signal with an information-carrying electric signal and for generating a modulated signal;

means for equalizing the modulated signal generated by the modulating means and for generating an equalized signal; and

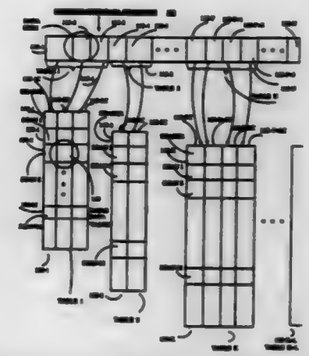
electro-optic means for translating, substantially without loss of information and with substantially maintained phase and amplitude properties, the equalized signal generated by the equalizing means to an optical signal for transmission through an optical fiber.

5,446,575

SYSTEM FOR CONSTRUCTING AND LOADING A TABLE DATA STRUCTURE BASED ON AN ASSOCIATED CONFIGURATION DATA

Richard S. Lysakowski, Jr., Wayland, Mass., assignor to Digital Equipment Corp., Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 722,750
The portion of the term of this patent subsequent to Jul. 18, 2112, has been disclaimed.
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—200.01 16 Claims



1. An apparatus for storing data, comprising:

means for measuring physical data from a chemical sample;

means for storing a configuration data structure, said configuration data structure having a plurality of data items, a one of said plurality of data items further having a name, a data type, a size, and a mapping parameter;

means for arranging ones of said plurality of data items into at least one group, said at least one group defining a table data structure;

said table data structure having a plurality of table data values, said table data values arranged in a plurality of columns and in a plurality of rows, a one of said table data values identified by a said column and a said row;

means, responsive to a one of said data items of said configuration data structure, for defining a one column of said plurality of columns;

means, responsive to said mapping parameter of said one said data items, for referencing said one column of said table data structure; and,

means for storing at least one set of data, obtained by said measuring means, in a predetermined row of said table data structure, said table data structure and said configuration data structure defining a data model, and data corresponding to said model accommodated in each said row.

5,446,576

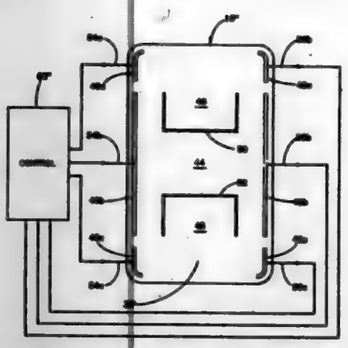
ELECTROCHROMIC MIRROR FOR VEHICLES WITH ILLUMINATION AND HEATING CONTROL

Niall R. Lynam; Desmond J. O'Farrell, both of Holland; Kenneth L. Schierbeek, Zeeland, and Michael A. Hansen, West Olive, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 643,186, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,169, Nov. 26, 1990, Pat. No. 5,151,824. This application Nov. 4, 1992, Ser. No. 971,676
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[6] G02F *1/01*; G02B *5/23, 17/00*
U.S. Cl. 359—267 87 Claims

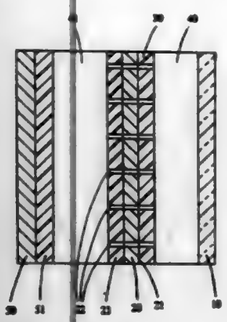
1. A rearview mirror system for a vehicle comprising:

an electrochromic reflective element compriaing a reflective surface having a continuously variable reflectance level;
drive circuit means for supplying a signal to said reflective element in order to establish the reflectance level of said reflective element;
a heater;
wherein said heater includes first and second portions at least partially insulated from each other and terminal means for connecting a source of current selectively to said first portion alone and to said first and said second portion together, wherein said first and second portions



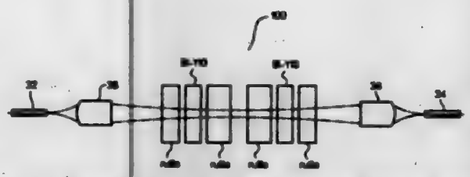
have an electrical resistance together that is greater than either said first or second portion has alone;
control means for selectively connecting said source of current to said first and said second portions together for selectively heating said first and said second portions together at a first rate for a first period of time in order to promote uniform coloration of said reflectance element to a given reflectance level for a given level of said signal and for selectively connecting said source of current to said first portion alone for selectively heating said first portion alone at a second rate that is higher than said first rate for a second period of time.

5,446,577
ELECTRODE FOR DISPLAY DEVICES
Russell N. Bennett, Catonsville; William E. Kokonaski; Michael J. Hannan, both of Columbia, and Larry G. Boxall, Catonsville, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.
Continuation of Ser. No. 504, Jan. 5, 1993, abandoned. This application Oct. 31, 1994, Ser. No. 332,613
Int. Cl.[6] G02F *1/153*
U.S. Cl. 359—273 **20 Claims**



1. A display device comprising:
a) a substantially transparent outer layer;
b) a first electrode located behind said outer layer, and comprising a reflective surface facing said outer layer and including means for allowing ions to pass through said first electrode;
c) an electrochromic material disposed between said reflective surface and said outer layer and adapted to change optical properties by the insertion or extraction of ions therefrom;
d) an electrolyte in contact with said electrochromic material and said first electrode; and
e) a second electrode located behind said outer layer, and at a greater distance from said outer layer than said first electrode;
wherein said display device is substantially flexible thereby allowing said device to conform to an irregular surface.

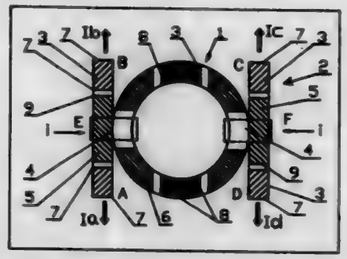
5,446,578
POLARIZATION PRESERVING OPTICAL ISOLATOR
Kok W. Chang, Sunnyvale, and Wayne Sorbo, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation-in-part of Ser. No. 222,597, Jul. 21, 1988, Pat. No. 4,974,944. This application Mar. 23, 1989, Ser. No. 327,945
Int. Cl.[6] G02B *5/30*
U.S. Cl. 359—282 **20 Claims**



1. In an optical isolator that passes forward directed light with greater intensity than reverse directed light and that includes a first rotational element positioned between a first walk off crystal and a second walk off crystal, an improvement comprising:
at least a third walk off crystal in optical communication with the second walk off crystal; the third walk off crystal having a third optical axis orientation relative to the second walk off crystal and having a third selected physical dimension along an axis of light passage;
at least a second rotational element in optical communication with the third walk off crystal; the second rotational element having a second optical rotation;
at least a fourth walk off crystal in optical communication with the second rotational means; the fourth walk off crystal having a fourth optical axis orientation relative to the third walk off crystal and having a fourth selected physical dimension along an axis of light passage; the third and fourth optical axis orientation, the third and fourth selected physical dimensions, and the second optical rotation all being such that the polarization state and the degree of polarization are preserved for forward directed light.

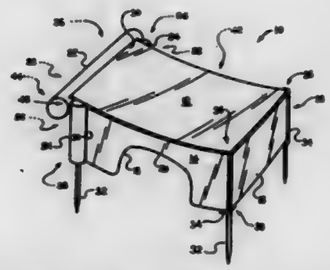
5,446,579
OPTICAL PROCESSOR
Svjatoslav A. Losevskevitch, Sankt-Peterburg, Russian Federation, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Feb. 14, 1994, Ser. No. 194,666
Claims priority, application Russian Federation, Feb. 12, 1993, 93008436
Int. Cl.[6] H01L *31/12*
U.S. Cl. 359—333 **5 Claims**

1. An optical processor, comprising:
a non-linear ring resonator;
at least one pair of strip waveguides, said ring resonator and said pair of strip waveguides disposed on a common substrate, each of said waveguides having a region of optical coupling with said nonlinear ring resonator and each of said waveguides having a semiconductor laser at each opposite end portion thereof;
at least a first semiconductor laser and a second semiconductor laser positioned in said nonlinear ring resonator in regions thereof outside of said regions of optical coupling; and



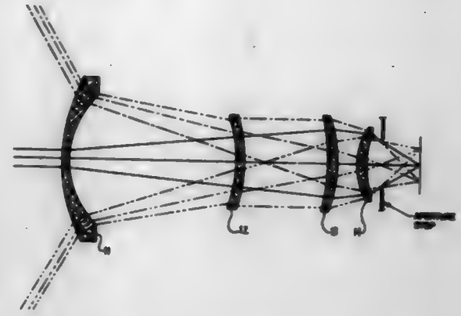
control electrodes located at said regions of optical coupling and located on said ring resonator intermediate to said first and second semiconductor lasers and said regions of optical coupling.

5,446,580
PRIVACY TANNING SCREEN
Frederick L. Collins, 20917 Amie, No. 17, Torrance, Calif. 90503
Filed Jan. 24, 1994, Ser. No. 185,411
Int. Cl.[6] G02B *5/22*; E04H *15/58, 15/00*
U.S. Cl. 359—350 **9 Claims**



1. A privacy tanning screen having:
a plurality of screens made from material which transmits light in the UV-A band, and which is opaque to light in the visible spectrum, said plurality of screens including,
a topmost horizontally disposed screen, and
four vertically disposed screens respectively facing to the front, to the rear, to the right side, and to the left side wherein two opposed said vertically disposed screens have means defining body reliefs formed therein and cooperating with a user's torso;
a first housing containing a reel, means for winding at least one of said screens upon said reel, and means for maintaining said at least one screen unreeled; and
legs for supporting said first housing and for supporting at least one of said screens above and spaced apart from the body of a sunbather, said legs including means engaging an environmental surface, said legs supporting said privacy tanning screen in a deployed condition.

5,446,581
INVERTED TELEPHOTO WIDE-APERTURE WIDE-FIELD INFRARED LENS SYSTEM
Thomas H. Jamieson, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.
Continuation of Ser. No. 31,445, Mar. 15, 1993, abandoned. This application Apr. 13, 1994, Ser. No. 227,086
Int. Cl.[6] G02B *9/12, 13/14, 13/18*
U.S. Cl. 359—357 **7 Claims**

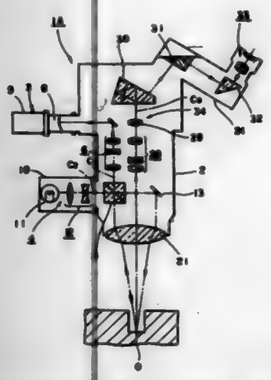


1. An optical system for forming an infrared image of a substantially infinitely distant scene on a focal surface located at a finite distance from said system, said system comprising:
a) a diverging front lens group, said front lens group functioning to form a virtual image of said infinitely distant scene;
b) a converging rear lens group disposed coaxially with respect to said diverging front lens group along an optic axis, said rear lens group functioning to relay said virtual image to said focal surface; and
c) an intermediate lens group located coaxially between said front lens group and said rear lens group, said intermediate lens group coacting with said diverging front lens group and said converging rear lens group to provide substantial correction for geometrical aberrations.

5,446,582
OPERATION MICROSCOPE
Kazutoshi Takagi, and Nobuaki Kitajima, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan
Continuation of Ser. No. 947,373, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 569,038, Aug. 17, 1990, abandoned. This application Mar. 24, 1994, Ser. No. 217,132
Claims priority, application Japan, Aug. 23, 1989, 1-217071
Int. Cl.[6] G02B *21/06, 21/36*
U.S. Cl. 359—385 **2 Claims**

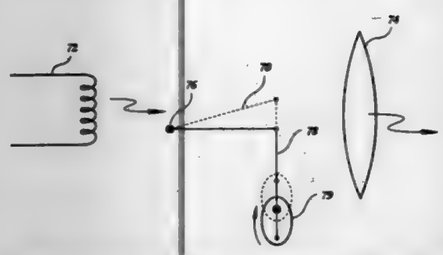
1. An operation microscope, comprising:
an illumination optical means for irradiating an observation object;
a recording optical means for receiving via an objective lens a reflected light from an observation object for recording;
an observation optical means including a prism for receiving a reflected light from an observation object for observation, wherein the illumination optical means includes a light dividing penetration means for receiving light from a light source, directing the received light onto the objective from the direction different from that of a central optical axis of said objective lens, receiving via said objective lens light from the objective and directing the light to the recording optical means; and
an auxiliary reflective mirror means, arranged at a position opposite to said light dividing penetration means with respect to the central optical axis of said objective lens, for reflecting the light which penetrates through said light

dividing penetration means of said illumination optical means and proceeds perpendicular to the optical axis of



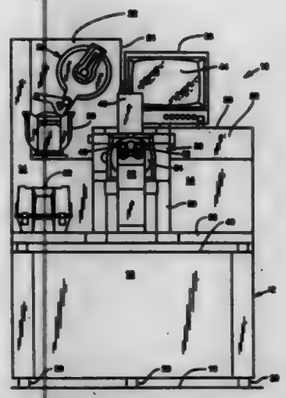
said objective lens and for introducing said light via said objective lens to said observation object.

5,446,583
SURGICAL LIGHT INTERRUPTION DEVICE
Clay W. Evatt, Jr., 1135 Cottage Rd., Charleston, S.C. 29412
Division of Ser. No. 692,690, Apr. 29, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 6,832
Int. Cl.[6] G02B *21/06, 26/02*
U.S. Cl. 359—388 9 Claims



1. A device for periodically interrupting a light source used during surgery, comprising:
a. a microscope having magnification means therein;
b. a light source which directs light through said magnification means to a target;
c. an oscillating means; and
d. a shutter means which is connected to said oscillating means and is controlled by said oscillating means, wherein said shutter means has at least one shutter which is opened periodically by said oscillating means to allow light to pass through said shutter, and said shutter is closed periodically by said oscillating means to prevent light from passing through said shutter, and wherein said shutter is located between said light source and said target.

5,446,584
COMPACT SPECIMEN PROCESSING STATION
Paul E. Bacchi, Novato, and Paul S. Filipski, San Rafael, both of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.
Continuation-in-part of Ser. No. 405,343, Sep. 11, 1989, Pat. No. 5,331,458. This application Mar. 19, 1991, Ser. No. 672,573
Claims priority, application European Pat. Off., Sep. 10, 1990, 90309896
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[6] G02B *21/26*
U.S. Cl. 359—393 14 Claims

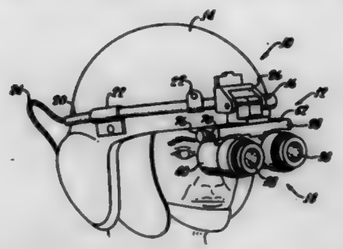


1. A specimen processing station, comprising:
a specimen storage support for storing a specimen in a generally vertical orientation;
a specimen stage for supporting the specimen in a generally vertical orientation and translating the specimen in a vertical plane to present different regions of the specimen for processing;
an automated specimen transporter movable in at least two dimensions for transporting the specimen between the specimen storage support and the stage; and
a specimen processor for performing a processing operation on the specimen supported in a generally vertical orientation on the stage.

5,446,585
NIGHT VISION DEVICE WITH IMPROVED IMAGE STABILITY
Roland M. Morley, and Timothy R. Goebel, both of Tempe, Ariz., assignors to Litton Systems, Inc., Woodland Hills, Calif.
Continuation-in-part of Ser. No. 59,539, May 11, 1993, Pat. No. 5,361,162. This application Jul. 1, 1993, Ser. No. 86,510
The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—411 17 Claims

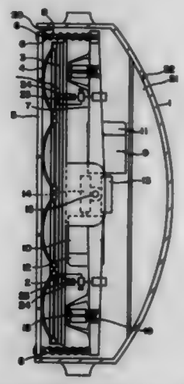
6. An ANVIS 6 type of binocular night vision device comprising a frame supported relative to a user's head and eyes, a pair of night vision monocular scopes depending from said frame in front of the user's eyes, and means for interpupillary distance adjustment of said pair of monocular scopes relative said frame, said adjustment means including a threaded shaft

carried by said frame, and a monocular scope mount threadably engaging and supported by said threaded shaft, said



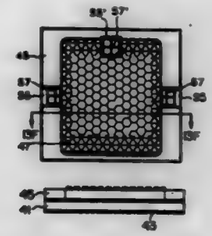
threaded shaft and scope mount defining a dust-shedding dry threaded engagement.

5,446,586
SELF-CLEANING MIRROR SYSTEM FOR A MOTOR VEHICLE
Irán Dornier, C/Deusto Nr. 20, 28023 Madrid, Spain
Filed Apr. 23, 1993, Ser. No. 52,262
Claims priority, application Germany, Apr. 24, 1992, 42 13 506.0
Int. Cl.[6] B60S *1/56, 1/46*
U.S. Cl. 359—507 9 Claims



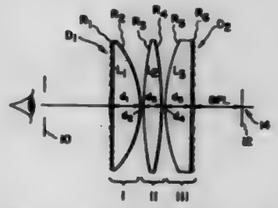
1. A cleaning system for an outside mirror system of a motor vehicle, said system comprising a mirror having a reflective surface, a hollow casing surrounding and supporting said mirror, said hollow casing having a top edge, an elongated wiper blade in wiping engagement with the reflective surface of said mirror, said wiper blade being oriented perpendicular to the top edge of said casing, liquid spray means mounted on said top edge for spraying cleaning liquid toward the reflective surface of said mirror, a support reciprocally mounted for movement within said casing behind said mirror and connected to said wiper blade, drive means for driving said support and wiper blade in a reciprocal fashion, and sensing means for sensing the amount of foreign material on said mirror, said sensing means comprising a transparent region through the reflective surface of said mirror, a light source outside the casing directed toward said transparent region into said casing, and a photocell means mounted within said casing for measuring the intensity of light from said source through said transparent region.

5,446,587
PROJECTION METHOD AND PROJECTION SYSTEM AND MASK THEREFOR
He-young Kang; Cheol-hong Kim; Seung-eon Choi; Woo-sung Han, Suwon, and Chang-jin Sohn, Kwangmyeong, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Sep. 2, 1993, Ser. No. 115,732
Claims priority, application Rep. of Korea, Sep. 3, 1992, 92-16059; Feb. 27, 1993, 93-3019; Jul. 15, 1993, 93-13344
Int. Cl.[6] G02B *27/44;* G03B *27/42;* G01B *11/00;* G03F *9/00*
U.S. Cl. 359—562 6 Claims



3. A mask comprising:
a transparent substrate having opposed first and second surfaces;
a mask pattern formed on the first surface of said transparent substrate for defining an exposure region of an object by selectively obstructing the passage of light, said mask pattern including at least one alignment mark; and
a grating pattern formed on the second surface of said transparent substrate at regular intervals, whereby light interferes by a phase difference of light so that even-numbered-order diffracted light is removed while odd-numbered-order diffracted light is enhanced, said grating pattern being substantial coextensive with said mask pattern but having an aperture therein opposite each said alignment mark.

5,446,588
WIDE-ANGLE EYEPIECE OPTICAL SYSTEM EMPLOYING REFRACTIVE AND DIFFRACTIVE OPTICAL ELEMENTS
Michael D. Missig, Cleveland, Ohio, and G. Michael Morris, Fairport, N.Y., assignors to The University of Rochester, Rochester, N.Y.
Filed Jul. 29, 1994, Ser. No. 283,001
Int. Cl.[6] G02B *5/18, 25/00, 27/44*
U.S. Cl. 359—565 15 Claims



1. A wide angle optical eyepiece system, which comprises a plurality of lens elements which define first, second and third groups of surfaces, all but at least one of said surfaces of said groups being refracting and said at least one surface being diffracting, said groups of surfaces being disposed along an optical axis, a surface of said first group being a front surface of said system which faces a location for the eye of the observer which is the exit pupil of said system and is spaced therefrom by an eye relief, a surface of said third group being a back

surface of said system which is spaced from image plane by a back focal length, and said diffractive surface having sufficient power and refractive surfaces having sufficient curvature to provide said eye relief which is at least 80% of the focal length of said system and corrections of aberration, including spherical aberration at said exit pupil over a field angle of at least about 70° at said exit pupil.

5,446,589

INTERFERENCE DEVICE AND METHOD FOR OBSERVING PHASE INFORMALITIES

Qing X. Ru, Namegawa; Junji Endo, 3-3-33, Tsurumai, Sakado-shi, Saitama 350-02, and Akira Tonomura, 2-19-5, Kaedegaoka, Hatoyama-machi, Hiki-gun, Saitama 350-03, all of Japan, assignors to Research Development Corporation of Japan, Tokyo; Junji Endo and Akira Tonomura, both of Saitama, all of Japan

Filed Aug. 10, 1993, Ser. No. 103,682
Claims priority, application Japan, Aug. 11, 1992, 4-213943
Int. Cl.[6] G02B *26/06*
U.S. Cl. 359—577 **4 Claims**



1. A method for observing phase information, including a plurality of lenses and two scattering films capable of scattering incident waves randomly said scattering films being conjugately coordinated with a specimen located therebetween, the method comprising the steps of:

detecting a first interference pattern arising from waves transmitting through both the scattering films;

removing the specimen from between both of the films; detecting a second interference pattern; and

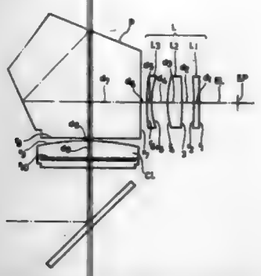
calculating the difference between the first and second detected interference patterns, or the sum or product thereof whereby the phase information of the specimen is observed as interference fringes.

5,446,590

HIGH EYE POINT TYPE VIEWFINDER OPTICAL SYSTEM

Juro Kikuchi, Yamanashi, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,841
Claims priority, application Japan, Jul. 8, 1992, 4-203236
Int. Cl.[6] G02B *25/00*; G03B *13/10, 13/08*
U.S. Cl. 359—645 **23 Claims**



1. A high eye point type viewfinder optical system comprising: an eyepiece lens system for observing an image of an object formed on a reticle, and a pentagonal prism and a condenser lens which are disposed between said reticle and said eyepiece lens system in order from the side of said eyepiece lens system; wherein said eyepiece lens system consists, in order from the side of an eye of a photographer, of a first negative lens component, a second positive lens component and a third negative lens component, wherein said viewfinder optical system permits adjustment of diopter by moving said second lens component along an optical axis with said first lens component and said third lens component kept fixed, and wherein said viewfinder optical system satisfies the following conditions (1) and (3):

$$-0.030<C_4-(1/E_nP_4)<-0.015 \quad (1)$$

$$0.75<P_c/P_L<1.05 \quad (3)$$

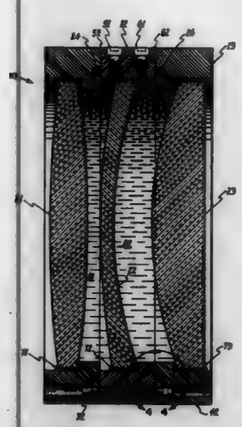
wherein the reference symbol E_nP_4 represents a distance as measured in a unit of millimetre at diopter of −1 dioptry from a surface of said second lens component which is located on the side of said pentagonal prism to an entrance pupil of said eyepiece lens system, the reference symbol C_4 designates curvature as measured in a unit of mm^{-1} on a surface of said second lens component which is located on the side of said pentagonal prism, the reference symbol P_c denotes a refractive power of said condenser lens, and the reference symbol P_L represents a total refractive power of said first lens component and said second lens component as measured at diopter of −1 dioptry of the viewfinder optical system as a whole.

5,446,591

LENS MOUNTING FOR USE WITH LIQUID LENS ELEMENTS

Kevin Medlock, Oakland, Calif., assignor to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Feb. 8, 1993, Ser. No. 14,596
Int. Cl.[6] G02B *1/06, 7/02*
U.S. Cl. 359—666 **34 Claims**



1. A lens assembly comprising a first rigid lens element, a second rigid lens element, and a first liquid lens element; said first liquid lens element being contained between said first and second rigid lens elements; said lens assembly further comprising:

a) a first mounting ring, a circumferential surface portion of said first rigid lens element being adhesively bonded to an interior surface portion of said first mounting ring by means of a first bead of sealant material that is substantially impervious to liquid of which said first liquid lens element consists; and

b) a second mounting ring, a circumferential surface portion of said second rigid lens element being adhesively bonded to an interior surface portion of said second mounting ring by means of a second bead of sealant material that is substantially impervious to liquid of which said first liquid lens element consists;

said first and second mounting rings being dimensioned to maintain said first and second rigid lens elements in coaxial disposition and at a specified axial spacing with respect to each other when corresponding surface portions of said first and second mounting rings adjoin each other, a gap of predetermined configuration thereby being defined between said first and second rigid lens elements;

the surface portion of one of said first and second mounting rings adjoining the corresponding surface portion of the other of said first and second mounting rings having a continuous groove, a compressible first sealing ring being received in said groove, said first sealing ring being substantially impervious to said liquid of which said first liquid lens element consists, said first and second mounting rings being securable to each other so as to compress said first sealing ring while maintaining said first and second rigid lens elements in substantially coaxial alignment with each other, said first sealing ring when compressed serving to retain said liquid of which said first liquid lens element consists within said gap between said first and second rigid lens elements;

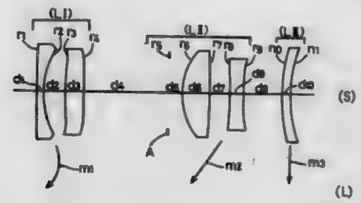
one of said first and second mounting rings having a first fill port through which said liquid of which said first liquid lens element consists can be introduced into said gap between said first and second rigid lens elements to form said first liquid lens element, a first plug being receivable in said first fill port to retain said first liquid lens element in said gap between said first and second rigid lens elements.

5,446,592

COMPACT ZOOM LENS SYSTEM

Tetsuo Kohno, Toyonaka; Takashi Okada, Osaka, and Mitsuko Date, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 714,266, Jun. 12, 1991, Pat. No. 5,283,693. This application Oct. 19, 1993, Ser. No. 139,900
Claims priority, application Japan, Jun. 13, 1990, 2-156421; Jun. 13, 1990, 2-156422; Jun. 14, 1990, 2-156233; Jun. 22, 1990, 2-164854; Jul. 6, 1990, 2-180353; Jul. 6, 1990, 2-180354; Oct. 29, 1990, 2-291493
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—689 **13 Claims**



1. A compact zoom lens system comprising from the object side to the image side:

a first lens component of a negative refractive power;

a second lens component of a positive refractive power with a variable air space between the first and the second lens components; and

a third lens component of a negative refractive power with a variable air space between the second and the third components;

and wherein the zoom lens system fulfills the following conditions:

$$0.6<|\phi_1/\phi_w|<1.5$$

$$0.1<|\phi_3/\phi_w|<0.2$$

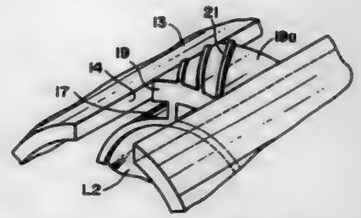
wherein, ϕ_1 and ϕ_3 a represent a refractive power of the first and third lens components, respectively, and ϕ_w represents a refractive power of the zoom lens system at the shortest focal length condition.

5,446,593

LENS ADVANCING MECHANISM

Takuji Hamanaki, and Zenichi Okura, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,171
Claims priority, application Japan, Nov. 5, 1992, 4-295484
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—704 **14 Claims**



1. A lens advancing mechanism comprising:

a stationary barrel provided with a linear guide groove arranged parallel to an optical axis;

a ring member rotatably coupled on an outer circumferential surface of said stationary barrel, an inner surface of said ring member having at least one lead groove formed therein; and

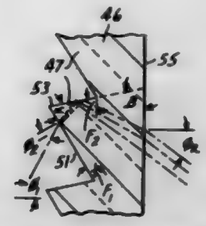
a lens supporting member having a guide portion to be received in said linear guide groove, an outer surface of said guide portion having at least one protruding member to be slidably received in said lead groove of said ring member, wherein said lens supporting member moves along said optical axis when said ring member is rotated, and wherein said at least one lead groove comprises at least one helicoid groove, while said at least one protruding member comprises at least one helicoid member to be meshed with said at least one helicoid groove.

5,446,594

CATADIOPTRIC FRESNEL LENS

John C. Nelson, The Sea Ranch, Calif., and Dennis F. Vanderwerf, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company

Division of Ser. No. 988,851, Dec. 21, 1992, Pat. No. 5,296,882. This application Mar. 21, 1994, Ser. No. 215,936
Int. Cl.[6] G02B *3/08*
U.S. Cl. 359—742 **3 Claims**



1. An achromatic, catadioptric lens for redirecting light from a light source, comprising:

a generally planar substrate having a planar surface and a structured surface;

said structured surface having a plurality of prismatic ridges, each having a refractive surface and a reflective surface, defining a first angle α between said refractive and reflective surfaces, and a second angle β between said reflective surface and said planar surface; and

said angles α and β are approximately equal, and generally conform to the equation

$$\alpha=\beta=(\pi-\Phi_1+\Phi_2)/2$$

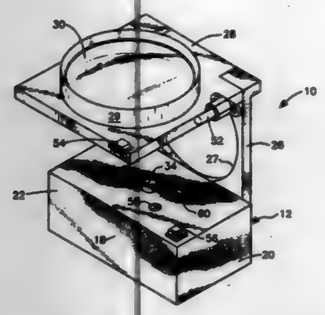
where Φ_1 is an entrance angle, at said refractive surface, of a light ray from the light source, and Φ_2 is a desired exit angle of a light ray exiting said planar surface.

5,446,595

LOOSE STONE DETECTOR

Joseph L. McFall, 1900 Pelican Landing Blvd., Apt. 1013, Clearwater, Fla. 34622

Filed Oct. 28, 1994, Ser. No. 330,548
Int. Cl.[6] G02B *27/02*; G01N *21/87*
U.S. Cl. 359—804 7 Claims



1. A device for detecting loose stones in a jewelry setting, comprising:

a magnifying lens having a predetermined focal length;

a pedestal disposed a predetermined distance away from said magnifying lens, said predetermined distance being substantially equal to the predetermined focal length of said magnifying lens;

vibrating means attached to said pedestal for causing said pedestal to vibrate; and

a switch actuator for activating said vibrating means;

whereby an item of jewelry having at least one stone in a setting is positioned lightly against said pedestal and said vibrating means is activated so that the response of the stone to vibration of the pedestal may be observed through said magnifying lens.

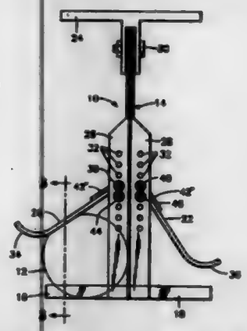
5,446,596

OPHTHALMIC LENS HOLDER

Stephen Mostrorocco, 16 Argyle Pl., Smithtown, N.Y. 11787

Filed Jul. 1, 1993, Ser. No. 84,175
Int. Cl.[6] G02B *7/02*; A61B *3/04*
U.S. Cl. 359—827 10 Claims

1. A lens holder comprising an upright support, a base channel extending transversely from one side of the support, a handle atop the support, a clamping arm, attachment means pivotally securing an inner end of the clamping arm to the support about an axis perpendicular to the support so that the clamping arm extends over the base channel, and a spring means for urging the clamping arm towards the base channel whereby an ophthalmic lens inserted between the clamping arm and base channel can be clamped peripherally therebetween by pressure from the spring means, wherein the base channel, the clamping arm, the attachment means and the spring means are replicated on an opposite side of the support



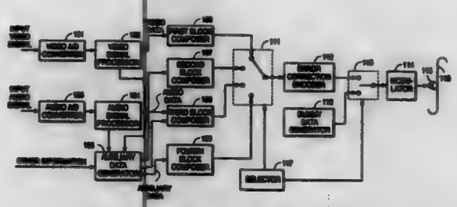
whereby the holder is adapted to hold a pair of ophthalmic lenses side by side.

5,446,597

APPARATUS FOR RECORDING DIGITAL SIGNALS WITH ASSOCIATED AUXILIARY DATA

Chiyoko Matsumi, Suita; Tatsuro Juri, Osaka; Akira Iketani, Higashiosaka, and Shinji Hamai, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 10, 1994, Ser. No. 208,301
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—19.1 7 Claims



1. A recording apparatus for recording main data and associated auxiliary data on a recording medium, comprising:

first encoding means for encoding an input first digital signal to obtain first main data;

second encoding means for encoding an input second digital signal to obtain second main data;

auxiliary data generating means for generating first auxiliary data of fixed data length containing information related to the first main data, second auxiliary data of fixed data length containing information related to the second main data, and third auxiliary data of fixed data length containing other information;

first block composing means for composing said first main data in a first predetermined data length into a first block;

second block composing means for sequentially arranging a first predetermined number of said first auxiliary data to compose a second block;

third block composing means for sequentially arranging a single said second auxiliary data and said second main data in a second predetermined data length to compose a third block;

fourth block composing means for composing each said third auxiliary data of fixed data length into a fourth block;

dummy data generating means for generating a dummy data;

block arranging means for arranging said first, second, third and fourth blocks along with said dummy data into recording blocks to form a first recording block composed of sequentially arranged at least one said dummy data, at least one said second block and at least one said first block, a second recording block composed of sequentially arranged at least one said dummy data and at least one said third block, and a third recording block composed of at least one said fourth block, and for arranging said first, second and third recording blocks in a predetermined order; and

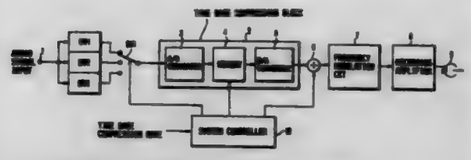
recording means for recording an output of said block arranging means through modulation on a recording medium in the form of a plurality of tracks such that at least one set of said first, second and third recording blocks is recorded on each of the plurality of tracks with a gap between each adjacent two of said first, second and third recording blocks.

5,446,598

SIGNAL PROCESSING APPARATUS

Makoto Takayama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 809,204, Dec. 13, 1991, which is a continuation of Ser. No. 698,357, May 7, 1991, which is a continuation of Ser. No. 223,519, Jul. 25, 1988. This application Sep. 27, 1994, Ser. No. 313,408
Claims priority, application Japan, Jul. 31, 1987, 62-191873
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—32 35 Claims



1. A signal processing apparatus comprising:

a) time base compressing means for compressing a time base of an input signal to output the time-base-compressed signal; and

b) band limiting means for limiting a frequency band of a signal to be supplied to said time base compressing means, said band limiting means being arranged to control a high band cut-off frequency of the signal according to a time base compressing rate of said time base compressing means before effecting the time base compressing and to change a low band frequency characteristic of the signal according to the high band cut-off frequency.

5,446,599

HAND-HELD VIDEO CAMERA-RECORDER HAVING A DISPLAY-SCREEN WALL

Jerome H. Lemelson, Ste. 286, Unit 802 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Division of Ser. No. 818,168, Jan. 8, 1992, Pat. No. 5,260,837, which is a division of Ser. No. 325,768, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 877,319, Jun. 23, 1986, Pat. No. 4,819,101, which is a continuation of Ser. No. 516,532, Jul. 23, 1983, Pat. No. 4,604,668, which is a continuation of Ser. No. 209,057, Nov. 21, 1980, abandoned. This application Aug. 24, 1993, Ser. No. 110,861
The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.
Int. Cl.[6] H04N *5/78*
U.S. Cl. 360—35.1 20 Claims

1. A hand-held portable video camera, recorder, and display device comprising:

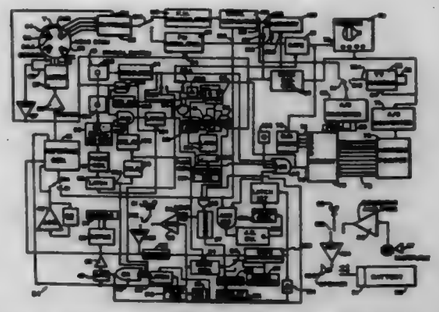
(a) a box-like housing supporting:

(i) a camera having an output for electrical video picture signals representative of image phenomena occurring outside said housing,

(ii) a video recorder and reproduction device electrically coupleable to the output of the camera and having an output for picture signals reproduced from a record member supported in said housing, and

(iii) a video-signal display unit;

(b) a display screen comprising part of said video-signal display unit that is viewable from the exterior of said housing and forms part of an exterior wall of said housing;



(c) a manually operated selection switch that couples the video-signal display unit to one of: (i) the output of said camera and (ii) the output of said video recorder and reproduction device; and

(d) a manually operated recording trigger that, when in a predetermined position, couples the output of the camera to the video recorder;

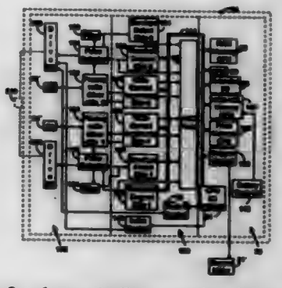
(e) wherein the selection switch and the trigger are configured so that picture signals are displayed on the display screen when the selection switch couples the video-signal display unit to the output of the camera, regardless of whether the trigger is in the predetermined position.

5,446,600

ELECTRONICALLY ALIGNABLE FLEXIBLE DISK DRIVE

Gregory M. Galloway, Sunnyvale; Titus E. Davis, Santa Clara, and Roger O. Williams, Fremont, all of Calif., assignors to Greg Galloway, Sunnyvale, Calif.

Division of Ser. No. 611,962, Nov. 13, 1990, Pat. No. 5,333,084. This application Jan. 28, 1994, Ser. No. 189,158
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—46 11 Claims



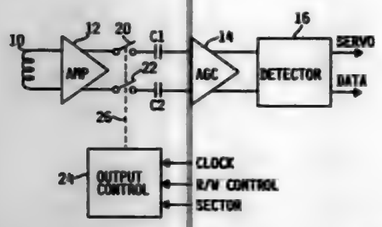
1. A system for electronically correcting the asymmetry in a magnetic read/write transducer comprising:

integrated circuit means for controlling the current flow in at least one winding of a magnetic read/write transducer and having at least a first input pin and a second input pin, and a first output pin and a second output pin;

current control means electrically connected to the inte-

grated circuit means for varying an amount of current supplied to said first and second input pins;
variable voltage means electrically connected to said current control means for controlling the amount of current supplied by the current control means such that current flow in both windings of the magnetic read/write transducer is separately and continuously adjusted to correct for asymmetry of the magnetic read/write transducer.

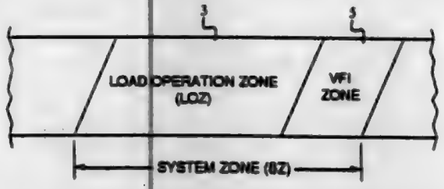
5,446,601
READ/WRITE CIRCUIT FOR MINIMIZING RECOVERY TIME
Masaru Fukuta, Fujisawa, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 7, 1994, Ser. No. 207,010
Claims priority, application Japan, Mar. 8, 1993, 5-046968
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—46 **16 Claims**



1. A read/write circuit for a magnetic recording apparatus comprising:
a head;
an amplifier used during a read operation for amplifying a signal read by head;
an automatic gain control circuit for receiving the output of said amplifier used during a read operation;
a coupling capacitor between each input and each output of said amplifier used during a read operation and between each input and each output of said automatic gain control circuit;
a detector connected to the output of said automatic gain control circuit; and
means for detecting that the operation is switched from writing to reading;
means for making the output of said amplifier used during a read operation high impedance in response to said means for detecting that the operation is switched from writing to reading for a predetermined time after detection of switching between writing and reading.

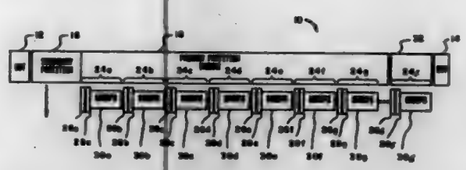
5,446,602
TAPE MEDIA FORMATTED TO INCLUDE MULTIPLE, SPACED APART SYSTEM ZONES EACH FOR STORING VOLUME FORMAT INFORMATION
Stephen M. Adams, Sachse, Tex., and Lionel C. Shih, San Jose, Calif., assignors to E-Systems, Inc., Dallas, Tex. and Ampex Corporation, Redwood City, Calif.
Filed Feb. 28, 1992, Ser. No. 843,533
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—48 **8 Claims**

1. A method for formatting a magnetic tape comprising the steps of:
identifying a tape volume format for the magnetic tape;
formatting a plurality of spaced apart system zones along the length of the magnetic tape in accordance with the tape volume format; and
storing information on the tape volume format within each of the plurality of system zones to allow for retrieval of



tape volume format information at a plurality of locations along the length of the magnetic tape.

5,446,603
METHOD OF RETRIEVING MESSAGES AT SELECTED TIMES FROM A DIGITAL AUDIO TAPE
John Henits, Bethel, and Robert B. Swick, Stratford, both of Conn., assignors to Dictaphone Corporation, Stratford, Conn.
Filed Dec. 21, 1993, Ser. No. 171,286
Int. Cl.[6] G11B 5/09, 5/596
U.S. Cl. 360—48 **6 Claims**

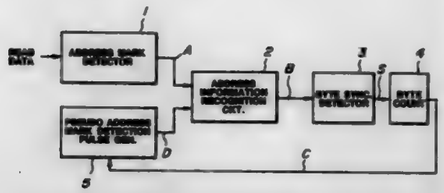


1. A method for searching a digital audio tape (DAT) for a message, the steps comprising:
a) providing audio to a digital audio tape,
b) dividing the tape into fixed time increments by writing on the tape one file mark for each time increment, wherein varying amounts of audio are contained in each time increment,
c) creating a record session table that stores the time audio is recorded on the digital audio tape relative to the time increments,
d) scanning the record session table to find audio at a selected time,
e) positioning the tape at its location corresponding to the selected time, and
f) playing the digital tape.

5,446,604
APPARATUS FOR DETECTING ADDRESS INFORMATION RECORDED ON EACH SECTOR OF A DISC RECORDING MEDIUM BY DETECTING A FIRST ADDRESS MARK AND THEN, IN THE ABSENCE OF A SECOND ADDRESS MARK, GENERATING A PSEUDO ADDRESS MARK A PREDETERMINED TIME AFTER DETECTION OF TH
Takayoshi Chiba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Division of Ser. No. 983,646, Dec. 1, 1992. This application Apr. 5, 1994, Ser. No. 223,520
Claims priority, application Japan, Feb. 12, 1991, 3-317245
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—49 **5 Claims**

1. An apparatus for detecting header information of a plurality of sectors recorded on a disc recording medium, the header information being recorded on each sector of the disc recording medium and being constituted by a sector mark indicating a head position of the corresponding sector, a plurality of

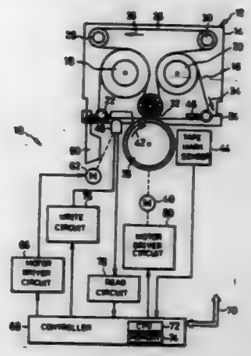
address marks and address information data, said apparatus comprising:
a) address mark detecting means for detecting each address mark of each sector and outputting a head position detection signal indicating a head position of the address information data immediately subsequent to the address mark;
b) address information data recognizing means for extracting and recognizing the address information data on the basis of, alternatively, the received head position detection signal or an address information data recognition start signal, and outputting an end position detection signal indicating an end position of the address information data; and
c) recognition start signal generating means supplied with the end position detection signal for counting a predeter-



mined number of bytes on the header from a point corresponding to the end position of a preceding address information data to a point corresponding to a head position of a subsequent address information data and for outputting the address information data recognition start signal to the address information data recognizing means when a predicted position of the head position is reached, said address information data recognizing means extracting and recognizing the address information data in accordance with the address information data recognition start signal from the recognition start signal generating means when the head position detection signal is not supplied by the address mark detecting means and, otherwise, extracting and recognizing the address information data in accordance with the supplied head position detection signal.

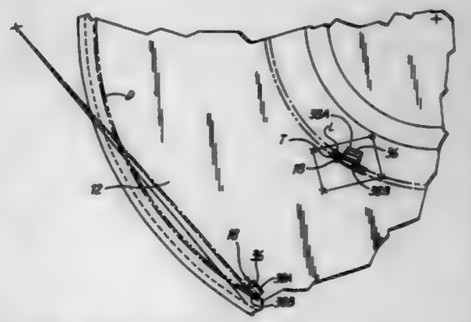
5,446,605
METHOD AND APPARATUS FOR MOVING HEAD FROM ONE TAPE TRACK TO ANOTHER AGAINST THE RISK OF DAMAGING THE TAPE
Shinji Umehara, Kodaira; Mitsuru Hasegawa, Komae; Kohji Nagai, Musashino, and Yoshinobu Yanagibashi, Tokyo, all of Japan, assignors to TEAC Corporation, Tokyo, Japan
Filed Dec. 20, 1993, Ser. No. 170,518
Claims priority, application Japan, Dec. 24, 1992, 4-359085
Int. Cl.[6] G11B 15/08
U.S. Cl. 360—74.6 **6 Claims**

1. In a magnetic tape apparatus having a head unit for writing and/or reading data along at least two bidirectional data tracks on a length of magnetic recording tape of a tape assembly, wherein the tape travels with increasing tension in either direction between a pair of reels of the tape assembly, a method of moving the head unit across the tape from one track to another thereon, which comprises:
(a) running the tape from a first toward a second extremity thereof;
(b) stopping the tape;
(c) running the tape a predetermined distance from the second toward the first extremity thereof;
(d) stopping the tape after running the tape the predetermined distance from the second toward the first extremity thereof; and
(e) moving the head unit across the tape from one track to another after the tape is stopped,



(f) whereby the head unit is shifted between the bidirectional data tracks on the tape when the tape tension is substantially at a minimum.

5,446,606
DISC DRIVE WITH SEPARATE LANDING AND TAKEOFF ZONES
Mark Brunner, Eden Prairie; Jonathan Hall, Bloomington, and Garry Koriel, New Prague, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Continuation of Ser. No. 958,559, Oct. 8, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 196,911
Int. Cl.[6] G11B 21/00
U.S. Cl. 360—75 **11 Claims**



1. A disc drive comprising:
a magnetic disc having a recording zone within which data is selectively recorded, a landing zone, and a separate takeoff zone;
means for rotating the magnetic disc;
disc drive data head means for reading data from and writing data to the recording zone;
actuator means for positioning the disc drive data head means with respect to the magnetic disc, wherein the disc drive data head means is directed to initially contact the landing zone of the magnetic disc as the magnetic disc slows and the disc drive data head means is moved from the landing zone to the takeoff zone where the disc drive data head means loses contact with the accelerating magnetic disc, the disc drive data head means only sliding radially on the disc surface when moving from the landing zone to the takeoff zone during the transition to takeoff;

actuator control means for controlling the actuator means; and

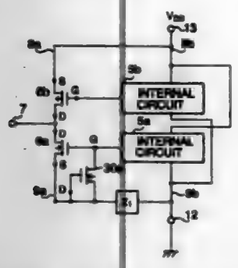
sensing means for detecting rotation of the magnetic disc, wherein upon starting the rotation of the magnetic disc the disc drive data head means is moved from the landing zone to the takeoff zone when the sensing means detects rotation of the magnetic disc.

5,446,607

SEMICONDUCTOR INTEGRATED CIRCUIT WITH SURGE-PROTECTED OUTPUT MISFET'S

Yasuhiro Fukuda, Tokyo, Japan, assignor to Oki Electric Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 42,402
Claims priority, application Japan, Apr. 14, 1992, 4-093970
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—18 30 Claims



1. A semiconductor integrated circuit, comprising:

an external output terminal;

an input circuit, said input circuit having an input terminal for receiving an input signal;

an internal circuit for providing an internal signal, said internal circuit being connected to said input circuit;

a first power supply line and a first ground line, connected for activating said internal circuit;

an output MISFET circuit, responsive to the internal signal from Said internal circuit, for outputting an output signal to said external output terminal;

a second power supply line and a second ground line, connected for activating said output MISFET circuit;

an impedance circuit, electrically connecting at least said second power supply line to said first power supply line or said second ground line to said first ground line; and

a surge protection circuit, located between a gate circuit of said output MISFET circuit, and at least said second power supply line or said second ground line, and responsive to a breakdown of said output MISFET circuit, for reducing a voltage difference between said gate circuit and either or both of said second power supply line and said second ground line, thereby to protect said output MISFET circuit from damage by a surge of static electricity on said external output terminal.

5,446,608

MAGNETIC HEAD POSITIONER FOR A MAGNETIC DISK APPARATUS

Yotaro Sanada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

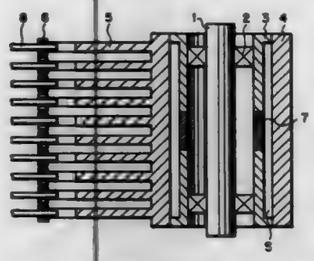
Filed May 27, 1994, Ser. No. 250,604
Claims priority, application Japan, May 27, 1993, 5-148595
Int. Cl.[6] G11B *33/14*
U.S. Cl. 360—97.02 5 Claims

1. A magnetic head positioner for a magnetic disk apparatus, comprising:

a shaft, mounted on an inner peripheral side of bearings, and comprising a material with a prescribed coefficient of linear expansion;

a sleeve, mounted on an outer peripheral side of said bearings, and comprising a material with a different coefficient of linear expansion from that of said shaft;

a magnetic head holder, mounted on an outer peripheral side of said sleeve, and provided with magnetic heads; and



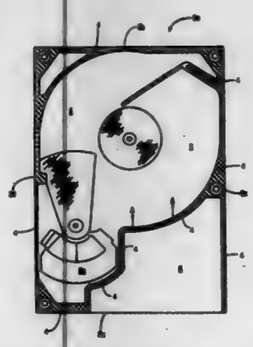
a correcting plate, interposed in a prescribed part of said sleeve, and comprising a material having a different coefficient of linear expansion from that of said shaft for compensating the difference in the coefficient of linear expansion between said shaft and said sleeve.

5,446,609

LOW PROFILE DISK DRIVE ASSEMBLY

William N. Thanos; Steven L. Kaczeus, and James D. Fahey, all of San Jose, Calif., assignors to TEAC Corporation, Tokyo, Japan and Pont Peripherals Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 764,590, Sep. 24, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 963,316
Int. Cl.[6] G11B *5/012*
U.S. Cl. 360—97.02 33 Claims



1. A disk drive assembly comprising:

a three dimensional enclosure housing having a lateral form factor area and a vertical thickness, the enclosure housing defined by a substantially planar enclosure base, a substantially planar enclosure cover, first and second side walls, an end wall, and an open end, the first and second side walls and end wall coupled between the enclosure base and the enclosure cover;

a partition wall extending across the enclosure base opposite the open end and between two of said walls, the partition wall dividing the enclosure housing into an enclosed sealed volume and a substantially enclosed circuit volume adjacent the open end;

at least one disk disposed within the sealed volume;

at least one electronic circuit surface disposed within the circuit volume; and

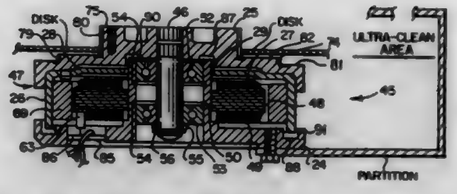
means extending across the partition wall for transmitting electrical signals between the sealed volume and the circuit volume.

5,446,610

DISK STORAGE DEVICE HAVING A BRUSHLESS DC DRIVE MOTOR

Dieter Elsasser, St. Georgen/Schwarzwald, and Johann von der Heide, Schramberg, both of Germany, assignors to Papst Licensing GmbH, Spaichingen, Germany

Continuation of Ser. No. 883,478, May 15, 1992, Pat. No. 5,216,557, which is a continuation of Ser. No. 682,495, Apr. 9, 1991, Pat. No. 5,128,819, which is a continuation of Ser. No. 259,132, Oct. 18, 1988, Pat. No. 5,006,943, which is a continuation of Ser. No. 32,954, Mar. 31, 1987, Pat. No. 4,779,165, which is a continuation of Ser. No. 733,231, May 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 412,093, Aug. 27, 1982, abandoned. This application Apr. 19, 1993, Ser. No. 47,308
Claims priority, application Germany, Sep. 7, 1981, 31 35 385.1; Switzerland, Jun. 1, 1984, 2680/84; Mar. 30, 1985, 01374/85
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.08 11 Claims



1. A disk storage device, comprising:

a clean chamber isolated by a partition;

a storage disk having a central opening with a first diameter, the storage disk being in the clean chamber; and

a brushless DC drive motor, including:

a stator including a lamination disposed about a motor axis and a winding on the lamination;

a bearing and shaft assembly connected to said stator and including a shaft aligned on the motor axis and bearings affixed to the shaft; and

a rotor supported on said bearing and shaft assembly to rotate about the motor axis, said rotor having a body portion, an inner surface, and a magnet affixed to the inner surface of the rotor and coaxially surrounding the lamination, the magnet being spaced from the star or by a substantially cylindrical air gap having a second diameter greater than the first diameter, said rotor body portion being configured as a hub to support said storage disk for rotation in said clean chamber.

5,446,611

HEAD SUSPENSION ASSEMBLY WHICH INCLUDES A LOAD BEAM ELEMENT HAVING RELIEF CHANNELS

Valerie P. Webber, Hutchinson, Minn., assignor to Hutchinson Technology, Inc., Hutchinson, Minn.

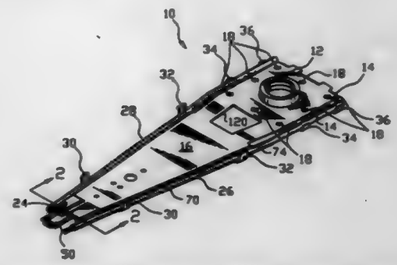
Continuation-in-part of Ser. No. 583,048, Sep. 14, 1990, abandoned. This application Apr. 20, 1993, Ser. No. 50,517
Int. Cl.[6] G11B *21/21*
U.S. Cl. 360—104 4 Claims

1. A magnetic head suspension for attachment to a rigid arm, said head suspension comprising, in combination:

(a) a spring load beam element joined to the arm at a proximal end of the load beam element and having stiffening flanges which project from longitudinal edges of the load beam element;

(b) a gimballed flexure means joined to the load beam element near a distal end of the load beam element from a point on a planar surface of the load beam element proximally displaced from a distal apex of the load beam element;

and wherein planar surfaces of the load beam element in a vicinity of the flexure means have relief channels embossed thereupon constructed and arranged to avoid interference between the load beam element and flexible arms



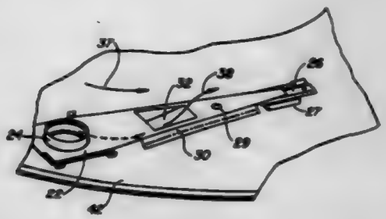
of the flexure means for facilitating flexible gimballing of a magnetic head to be attached thereto by reducing pitch and roll stiffness while maintaining dimple contact in a plane of the load beam surface.

5,446,612

SELF LOADING SUSPENSION FOR HARD DISK DRIVES

Arnold O. Thornton; Hung T. Nguyen; Greg N. Nguyen, and Don P. Williams, all of San Jose, Calif., assignors to Areal Technology, Inc., San Jose, Calif.

Filed Mar. 22, 1994, Ser. No. 216,222
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 2 Claims



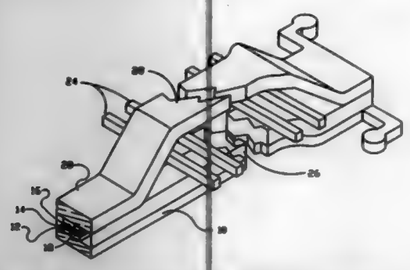
1. In a head suspension assembly for a rotating disk data storage device that includes a suspension arm extending adjacent to a data storing surface of the disk and a head assembly supported at the distal end of the suspension arm, the suspension arm having a web section defining a nominal plane, the improvement comprising;

means for providing a resilient beam loading force to urge said suspension arm to diverge away from said surface of the rotating disk;

aerodynamic means for interacting with a film of air moving in a predetermined direction adjacent to the surface of the rotating disk and generating a negative lift force to counteract said beam loading force and urge said head assembly toward the surface of the rotating disk, said aerodynamic means including an airfoil formed on said suspension arm, said airfoil including a vane extending out of the nominal plane of said web section of said suspension arm and terminating in a free end facing upstream of said predetermined direction; and,

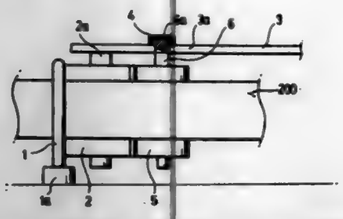
air bearing means for interacting with said moving film of air adjacent to the surface of the rotating disk and generating a positive lift force to counteract said negative lift force of said aerodynamic means and maintain said head assembly at a stable operational height above the rotating disk.

5,446,613
MAGNETIC HEAD ASSEMBLY WITH MR SENSOR
Robert E. Rottmayer, Fremont, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.
Filed Feb. 28, 1994, Ser. No. 203,225
Int. Cl.[6] G11B 5/39
U.S. Cl. 360—113 7 Claims



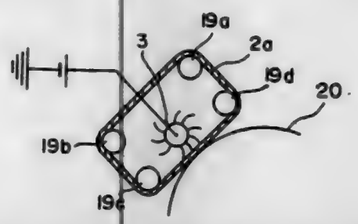
1. A thin film magnetic read/write head comprising:
first and second magnetic pole layers that serve as write poles, magnetic shields, and conductive leads for providing a magnetic and electrical circuit;
a read portion including a giant magnetoresistive element disposed between said first and second magnetic pole layers, said first and second magnetic pole layers providing shielding of said giant magnetoresistive element from fringing magnetic flux, said first and second magnetic pole layers providing a conductive path to conduct sense current to said giant magnetoresistive element in a read mode;
a first electrically conductive layer disposed between said first magnetic pole layer and said giant magnetoresistive element for providing magnetic decoupling between said giant magnetoresistive element and said first magnetic pole layer, and
a second electrically conductive layer disposed between said second magnetic pole layer and said giant magnetoresistive element for providing magnetic decoupling between said giant magnetoresistive element and said second magnetic pole layer;
whereby off-track reading of data is minimized.

5,446,614
PINCH ROLLER CLEANING APPARATUS OF TAPE RECORDING/REPRODUCTION DEVICE
Chol Seung-Lyul, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-Do, Rep. of Korea
Filed Sep. 30, 1992, Ser. No. 953,227
Claims priority, application Rep. of Korea, Oct. 29, 1991, 91-18141
Int. Cl.[6] G11B 5/10, 5/127
U.S. Cl. 360—137 4 Claims



1. A tape recording/reproduction device comprising:
a receiving area defined in the device which is adapted to receiving a cassette housing the tape;
a capstan;
a capstan motor coupled to said capstan so as to impart rotation to said capstan;
a lever pivotally attached to the recording/reproducing device;
a pinch roller disposed in opposition to said capstan so as to press a recording medium, which passes between said pinch roller and said capstan, against said capstan;
a cleaning device for removing foreign objects from said pinch roller, said cleaning device being disposed outside of said receiving area;
said pinch roller and said cleaning device being disposed on said lever;
said cleaning device comprises an axle which is inserted into a hole formed in said lever, a nut threadably engaged with an end portion of said axle so as to fix said axle to said lever, a cleaning roller rotatably disposed on said axle, said cleaning roller being in rotatable contact with said pinch roller so as to remove foreign objects from said pinch roller.

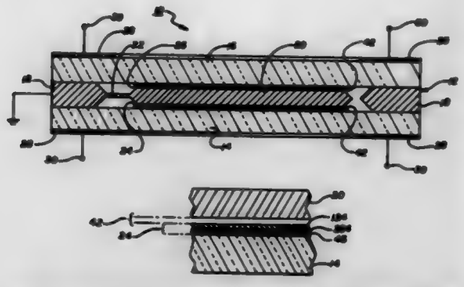
5,446,615
ELECTRIFYING METHOD AND ELECTRIFYING APPARATUS USED THEREFOR
Shoji Matsumoto; Masanori Matsuda; Eiji Goto; Akinori Nishida; Teruaki Higuchiguchi, and Isao Iwagawa, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Mar. 26, 1993, Ser. No. 37,419
Claims priority, application Japan, Mar. 26, 1992, 4-068148
Int. Cl.[6] G03G 15/02
U.S. Cl. 361—225 14 Claims



1. An apparatus for electrifying a material to be electrified by physically contacting an electrifying member with the material to be electrified, wherein the electrifying member comprises a flexible and electrically conducting endless belt, a rotary brush roller which is opposed to the material to be electrified via the endless belt and depresses the endless belt onto the material to be electrified, and a power source which applies an electrification voltage to the endless belt.

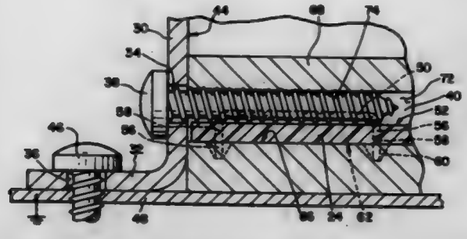
5,446,616
ELECTRODE STRUCTURE AND METHOD FOR ANODICALLY-BONDED CAPACITIVE SENSORS
Keith O. Warren, Newbury Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Mar. 28, 1994, Ser. No. 218,711
Int. Cl.[6] H01G 7/00
U.S. Cl. 361—283.2 21 Claims

1. An anodically-bonded capacitive sensor comprising:
a sensing element having a frame structure;
at least one glass layer anodically bonded to the frame structure and having a metallic sensing electrode adjacent the sensing element; and



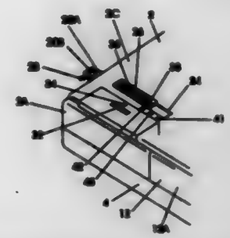
a patterned interfacial barrier layer on the glass layer, said pattered interfacial barrier layer disposed between the glass layer and the metallic sensing electrode.

5,446,617
BALLAST CIRCUIT ENCLOSURE AND GROUNDING STRUCTURE
Troy E. Blocher, North Manchester, and Daniel P. O'Brien, Fort Wayne, both of Ind., assignors to Diversitec Incorporated, Columbia City, Ind.
Filed May 13, 1994, Ser. No. 242,311
Int. Cl.[6] H02B 1/18
U.S. Cl. 361—674 19 Claims



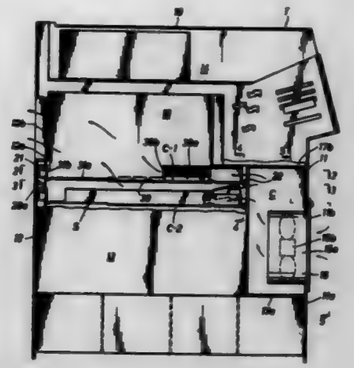
1. An apparatus for supporting and electrically grounding a ballast circuit to a chassis, said apparatus comprising:
a circuit board whereupon ballast circuit components can be mounted;
said circuit board having circuit board trace and an outer edge;
a grounding wire affixed to said circuit board near and along said edge and coupled to said circuit board trace;
a supporting chassis having an elongate abutment shoulder and an elongate wall extending generally over said shoulder, said elongate wall forming an elongate channel;
said circuit board edge resting on said shoulder and said grounding wire extending longitudinally along and between said shoulder and channel; and,
fastening means received longitudinally in said channel for engaging said grounding wire and said elongated wall, whereby electrical contact is provided between said grounding wire and said chassis.

5,446,618
PERSONAL COMPUTER SECURITY APPARATUS WITH LOCKABLE SLIDES ENGAGING REMOVABLE COVER
Okitani Tetsuya; Yokohama; Yoshiharu Uchiyama, Isehara, and Hideo Nomura, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 16, 1993, Ser. No. 122,871
Claims priority, application Japan, Sep. 16, 1992, 4-246292
Int. Cl.[6] G06F 1/16; H05K 5/02; E05B 73/00; B65D 55/02
U.S. Cl. 361—683 3 Claims



1. A computer having a security device, comprising:
a housing, wherein said housing includes an aperture for receiving a removable device;
means disposed within said housing for receiving the removable device;
a cover removably mounted over said aperture for blocking access to the removable device via said aperture;
a movable member adapted to engage said cover; said movable member movable between first and second positions, said movable member including a hole within a portion of said movable member for receiving a lock; and
a lock, wherein when said lock is fastened through said hole, said movable member is locked in said second position, said movable member is engaged with said cover so that said cover is prevented from being removed, and said housing is securable to a fixture to which said lock is attachable.

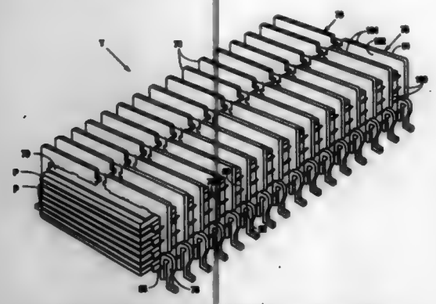
5,446,619
CARD EXTENDER UNIT FOR COMPUTER
Roberta M. Madsen, Houston; David A. Moore, Tomball, and Brian J. Perona, Houston, all of Tex., assignors to Compaq Computer Corp., Houston, Tex.
Filed Aug. 12, 1993, Ser. No. 106,051
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—695 5 Claims



1. A housing for a computer, including:
a generally box-like chassis including front and rear walls joined with first and second side walls to form an enclo-

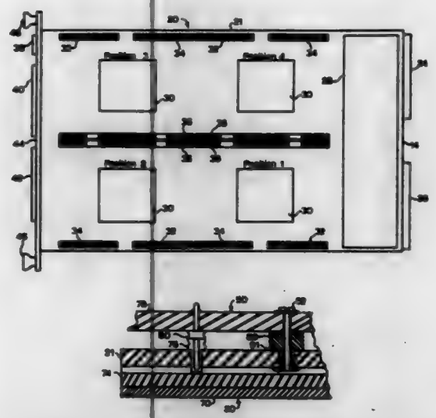
sure to house computer internals including electronic circuitry;
said chassis including a substantially enclosed plenum chamber formed by said front wall and said first and second side walls externally and one or more internal partitions which cooperate to form said substantially enclosed plenum chamber;
said plenum chamber having a fan mounted therein, said fan circulating air from outside of said chassis into said plenum chamber;
one of said internal partitions having openings therein through which said circulating air flows such that said fan circulated air is drawn from outside said chassis and through said plenum chamber;
a card extender unit mounted within said chassis in position to receive said circulating air, said card extender including a printed circuit board containing electronics including one or more high wattage, integrated circuits, and an extender housing which is attached to said printed circuit board and includes a first section extending into attachment with said rear wall and a second section extending into attachment with said one internal partition having said openings therein through which said circulating air flows; and
said second section of said card extender housing including a flow direction channel section for receiving and directing said circulating air over said one or more high powered integrated circuits.

5,446,620
ULTRA HIGH DENSITY INTEGRATED CIRCUIT PACKAGES
Carmen D. Burns; Jerry Rooze, and James W. Cady, all of Austin, Tex., assignors to Staktek Corporation, Austin, Tex.
Division of Ser. No. 884,066, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 561,417, Aug. 1, 1990, abandoned. This application Oct. 8, 1993, Ser. No. 133,395
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—704 28 Claims



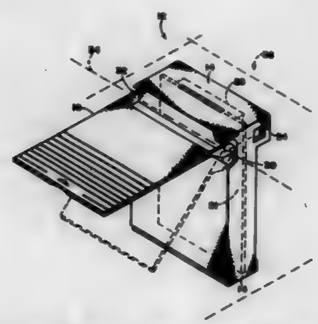
1. A modular integrated circuit package comprising:
a plurality of level-one integrated circuit packages, each comprising:
an integrated circuit element, said integrated circuit element comprising an integrated circuit formed on a semiconductor substrate and having a plurality of electrical interconnect leads extending therefrom;
a protective layer surrounding said integrated circuit element, said protective layer having an upper surface, a lower surface and a perimeter wall; and wherein said leads extend from said substrate through a portion of said perimeter wall of said protective layer; wherein said portion of each lead that extends from said perimeter wall is adapted to be electrically and thermally coupled to a thermally and electrically conductive external rail assembly;
said level-one packages being aligned in a stacked configuration so that said leads from said level-one packages are aligned in a row and column configuration; and
said rail assembly comprising: a plurality of thermally and electrically conductive substantially planar rails; said rails each having a first and a second planar surface and a perimeter edge, each of said rails being electrically and thermally coupled at one or more points to one or more of said leads.

5,446,621
PLATFORM MODULE SYSTEM FOR A LARGER ELECTRONIC SYSTEM
Peter H. Jansen, Durham, and Viral K. H. Chokshi, Cary, both of N.C., assignors to Wandel & Goltermann ATE Systems Ltd., Morrisville, N.C.
Filed Apr. 28, 1994, Ser. No. 234,853
Int. Cl.[6] H05K 7/00
U.S. Cl. 361—729 20 Claims



1. A platform module system for a larger electronic system, said larger electronic system having standard circuit modules spaced apart by a predetermined spacing and capable of accommodating electronic components of an allowable height determined by the predetermined spacing, said standard modules each having an area thereon normally occupied by functional circuit components, comprising:
a platform module having at least one area thereon of a magnitude normally occupied by circuit components on the standard modules of the larger electronic system;
at least one circuit sub-module having an area that is substantially less than the one area of the platform module;
the platform module having capacity for accommodating at least one circuit sub-module on said platform module, with at least one opening in the platform module for accepting high components on the sub-module without reducing the allowable component height within the predetermined spacing, said opening being approximately aligned with the area on the platform module to be occupied by the sub-module, and said opening having an area that is a substantial proportion of the area of the sub-module;
connection means on the platform module for making electrical connections to the sub-module; and connection means on the sub-module for making electrical connections to the platform module.

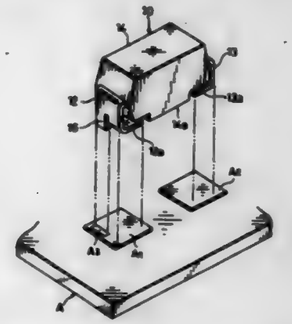
5,446,622
PC BOARD CARTRIDGE FOR A COMPUTER TERMINAL
Christian C. Landry, Harvard, Mass.; Tzong-Bin Tsai, Taipei, Taiwan; Bradford G. Chapin, Nashua, N.H., and Jin-Bond Lou, Taoyuan, Taiwan, assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 6, 1993, Ser. No. 103,510
Int. Cl.[6] H05K 1/04
U.S. Cl. 361—737 10 Claims



7. A PC board cartridge for a computer terminal, the cartridge comprising:
a casing open on one side and comprising:
a back wall having an inner surface comprising standoffs extending normally from the inner surface, the standoffs having an end region and a base region wider than the end region;
end walls extending normally from the inner surface of the back wall, one end wall having a greater width than the other end wall, said one end wall having a slot therein;
two elongated sidewalls extending normally from the inner surface of the back wall, the sidewalls having inner surfaces, one end of each sidewall being of the width of the one end wall, each
sidewall having a line of snap tabs on its inner surface along its length;
a PC board in the casing, the PC board having a connector mounted thereon, the PC board having a tab extending through the slot and holes through which the end regions of the standoffs extend, the board resting on the base regions of the standoffs and being held in place by the snap tabs, the connector being positioned on the board such that it lies between the wider ends of the sidewalls.

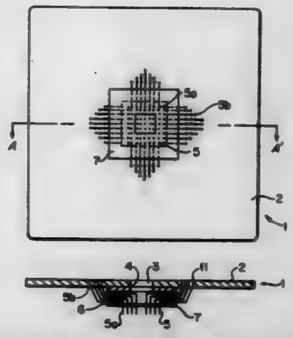
5,446,623
SURFACE MOUNTING TYPE POLAR ELECTRONIC COMPONENT
Yasuo Kanetaka, Kyoto, Japan, assignor to Rohm Co. Ltd., Japan
Filed Aug. 23, 1994, Ser. No. 294,017
Claims priority, application Japan, Aug. 24, 1993, 5-209238
Int. Cl.[6] H01R 9/00; H05K 7/02
U.S. Cl. 361—760 10 Claims

1. A surface mounting type polar electronic component comprising a polar element electrically connected to a plate-like positive lead and a plate-like negative lead, and a package enclosing the polar element together part of the respective leads, the package having a mounting surface, each of the leads having a contact end bent substantially in parallel to the mounting face of the package,
wherein one of the leads has a projection extending beyond the contact end of said one lead; and



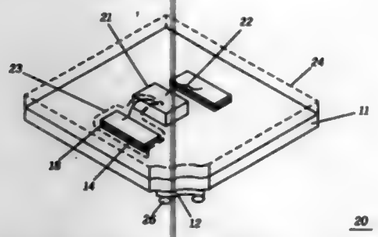
wherein the contact end of the other of the leads is entirely in parallel to the mounting face of the package.

5,446,624
APPARATUS FOR TESTING AND PRODUCING SEMICONDUCTOR CHIPS AND INTESRATED CIRCUITS
Kimiyoshi Saito, Yokohama, Japan, assignor to Toho Electronics, Inc., Kanagawa, Japan
Filed Jun. 25, 1993, Ser. No. 81,144
Int. Cl.[6] H05K 1/02
U.S. Cl. 361—774 14 Claims



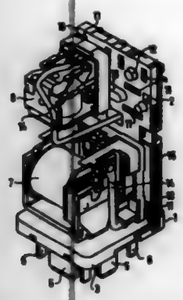
1. An apparatus for testing and producing semiconductor chips, said apparatus comprising:
a probe circuit board, said probe circuit board having at least one probe head;
a means for preventing sliding and bending movement of said at least one probe head when said at least one probe head contacts a respective terminal of said semiconductor chip, said preventing means comprising a thin film guide mask in communication with said probe circuit board, said thin film guide mask having at least one alignment hole, said at least one alignment hole corresponding to said at least one probe head and said at least one probe head passing through said at least one alignment hole; and
a ring shaped probe supporter for supporting said at least one probe head, said ring shaped probe supporter affixed to said probe circuit board.

5,446,625
CHIP CARRIER HAVING COPPER PATTERN PLATED WITH GOLD ON ONE SURFACE AND DEVOID OF GOLD ON ANOTHER SURFACE
Glenn F. Urbish, Coral Springs; William B. Mullen, III, Boca Raton, and Kingsbak Banerji, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 150,519, Nov. 10, 1993, abandoned.
This application Dec. 28, 1994, Ser. No. 365,988
Int. Cl.[6] H05K *7/02, 1/18;* H01L *23/28*
U.S. Cl. 361—761 3 Claims



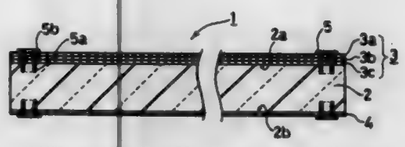
1. A pad array chip carrier, comprising:
a substrate having a first surface with a first copper pattern disposed thereon, and a second opposing surface with a second copper pattern disposed thereon, the second copper pattern having gold disposed thereon to form wire bondable areas, the first copper pattern being devoid of gold;
a semiconductor device disposed on the second opposing surface, the device being wire bonded to the wire bondable areas of the second copper pattern;
an array Of solder deposits disposed on the first copper pattern of the first surface; and
a protective coveting about the wire bondable areas.

5,446,626
PLUGGABLE ASSEMBLY, PARTICULARLY A RELAY MODULE FOR MOTOR VEHICLES
Michael Dittmann, Berlin, and Erwin Kruger, Colonge, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 13, 1994, Ser. No. 274,328
Claims priority, application Germany, Jul. 15, 1993, 43 23 827.0
Int. Cl.[6] H01R *23/68;* H05K *5/02*
U.S. Cl. 361—785 16 Claims



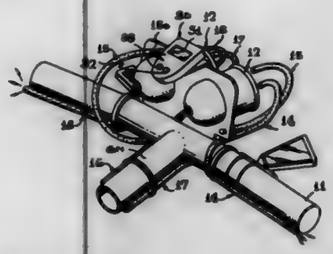
1. In a pluggable relay module having a printed circuit board, having components secured on the printed circuit board and electrically connected to one another via interconnects, and having flat plugs secured to the printed circuit board and each respectively connected to one of the interconnects, the improvement comprising:
the printed circuit board is fashioned as a molded part of plastic having a vertical first leg for the acceptance of components and a second leg that forms a base and the first and second legs being relatively perpendicular and molded of one piece;
the interconnects are formed by at least one punched leadframe embedded into the printed circuit board said at least one punched leadframe having interconnects within both said first leg and said second leg; and
at least one flat plug emerges from an end section of the printed circuit board as an extension of the punched leadframe extending out of said second leg.

5,446,627
METHOD OF PRODUCING A LIGHT CONDUCTIVE PLATE TYPE LIGHT SOURCE
Youji Oki, Yokohama; Atsuhiko Ushioda, and Jiro Nishihara, both of Hadano, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Jul. 11, 1994, Ser. No. 273,380
Claims priority, application Japan, Jul. 12, 1993, 5-193888
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—31 7 Claims



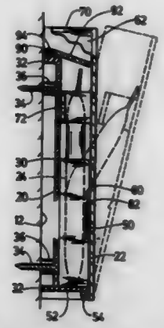
1. A method of producing a light conductive plate type light source wherein at least one light diffusing plate and a light reflecting plate each prepared in the form of a sheet-shaped member are secured to the opposite illuminating surfaces of a light conductive plate while coming in substantially close contact with them, comprising the steps of;
placing said light diffusing plate and said light reflecting plate on the opposite illuminating surfaces of said light conductive plate in the overlapped state at a predetermined position relative to said light conductive plate, and
press-fitting a plurality of fixing members into said light conductive plate through said light diffusing plate and/or through said light reflecting plate with the aid of supersonic vibration applied to each fixing member.

5,446,628
FLEXIBLE FIBRE OPTIC SYSTEM FOR BICYCLE ILLUMINATION
Richard P. Blom, 6301 Honolulu Ave. 39, and Robert J. Hauerwaas, 10125 Glah Ave., both of Tujunga, Calif. 91042
Filed Mar. 17, 1994, Ser. No. 210,166
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—32 10 Claims



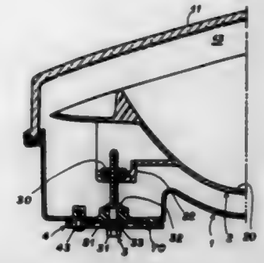
1. In combination with a two wheeled vehicle having a headlight, a flexible light transfer conduit comprising:
a tubular flexible sheath;
a wire within said sheath;
a fibre optic light conductor within said sheath;
said light conductor having an input end positionable by said sheath and wire exposed to a source of illumination and having an output end for dispersing illumination;
said fibre optic conduit positioned with the input end exposed to illumination from the vehicle headlight for transferring light from the headlight to various positions on the vehicle with minimal support at positions on said vehicle requiring illumination;
the wire and fibre optic of the flexible light transfer conduit having sufficient stiffness to retains its shape after being bent whereby said conduit may be bent to place the output end adjacent to selected parts of the vehicle allowing said fibre optic conductor to transfer light through various shapes with minimal or no support.

5,446,629
EMERGENCY LIGHT FIXTURE
Joseph Steiger, Wooddale, Ill., and Stephen Mulligan, Lake Wanda, N.J., assignors to Omniglow Corporation, Novato, Calif.
Filed Mar. 31, 1994, Ser. No. 221,088
Int. Cl.[6] F21V *21/00;* F21K *2/06*
U.S. Cl. 362—34 25 Claims



1. An emergency light fixture comprising, in combination:
a mount assembly including a back side, two peripheral flanges extending frontwardly from said back side and a restraining plate which traverses said flanges opposite from said back side;
a front cover including a front side and two peripheral sides extending rearwardly from said front side;
means for coupling said front cover to said mount assembly to facilitate the movement of said cover with respect to said mount from a closed position to an open position;
at least one chemiluminescent light stick having a top and a bottom, which illuminates upon bending, inserted into said fixture; and
a break plate traversing said peripheral sides of said cover opposite said front side which engages and bends the top of said at least one light stick about said restraining plate when the front cover is pivoted to an open position thereby causing said at least one light stick to illuminate.

5,446,630
OPTICAL-AXIS ADJUSTMENT CHECKER FOR AUTOMOTIVE HEADLAMPS
Akira Chikada, Isehara, and Tadamitsu Kiryuu, Hadano, both of Japan, assignors to Ichikoh Industries, Ltd., Tokyo, Japan
Filed Jun. 22, 1994, Ser. No. 264,165
Claims priority, application Japan, Jun. 22, 1993, 5-0033594 U; Aug. 24, 1993, 5-209531
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—66 9 Claims

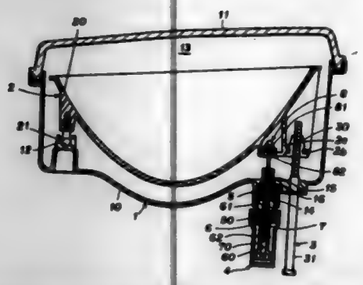


1. In an automotive headlamp having a base member, a to-be-adjusted member pivotably installed on the base member, a lamp bulb provided in the to-be-adjusted member and an optical-axis adjusting mechanism mounted on the to-be-adjusted member and base member and having mounted rotatably but not axially movably on the base member an adjusting screw which is to be turned to adjust the optical axis of the to-be-adjusted member,
a device for checking the optical-axis adjustment, having an index and scale marked on the base member and an adjusting screw side, respectively, a deviation between the index and a reference point on the scale being to be read as a measure for necessary optical-axis adjustment, comprising:
a plate member on which the scale on the adjusting screw side is marked;
a means for mounting the plate member on the base member slidably in one direction;
a mechanism for converting a turning of the adjusting screw into a sliding of the plate member; and
a means of holding the plate member in such a manner that the turning of the adjusting screw is not transmitted to the plate member via the converting mechanism.

5,446,631
DEVICE FOR CONFIRMING OPTICAL-AXIS ADJUSTMENT OF AUTOMOTIVE HEADLAMP
Akira Chikada, Isehara, Japan, assignor to Ichikoh Industries, Inc., Tokyo, Japan
Filed Dec. 28, 1993, Ser. No. 174,540
Claims priority, application Japan, Dec. 28, 1992, 4-089166 U
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—66 5 Claims

1. A device for confirming adjustment of an optical axis of an automotive headlamp, the headlamp including a lamp housing, a reflector movably mounted inside the lamp housing and adjusting means for adjusting the optical axis of the lamp by moving the reflector with respect to the lamp housing, the device comprising:
a tubular case open at a first end thereof and closed at a second end thereof and being comprised of a transparent material through which an inside of the case can be viewed, the case being fixed to the lamp housing such that a portion of the first end of the case is located inside the lamp housing, the case including an index mark near the second end of the case;
a rod having a first end attached to the reflector and a second end having a scale marked thereon, the rod being

inserted into the case through the first end of the case, the scale being aligned with the index mark such that a displacement of the rod caused by a movement of the reflector changes a relative position of the index mark to indicate an adjustment of the optical axis of the headlamp; and



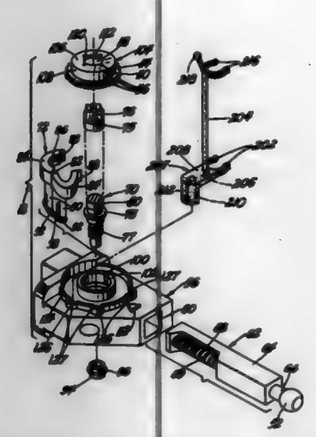
a protective cover having an open end and being fixed to the lamp housing at the open end so as to cover at least the case and the rod, the protective cover including a viewing window to view the index mark and the scale and a lighting window formed opposite the viewing window.

5,446,632

VEHICLE HEADLAMP ASSEMBLY WITH CALIBRATION RESTRICTOR

Mark A. Childs; Jan A. Wisler, and Marcus M. Hess, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 1, 1994, Ser. No. 283,360
Int. Cl.[6] B60Q *1/08*
U.S. Cl. 362—69 **5 Claims**



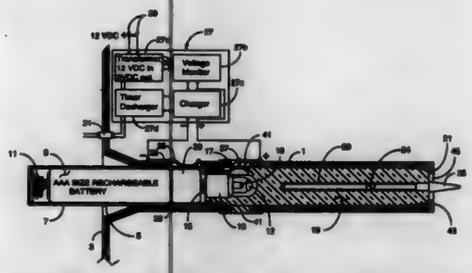
1. In combination with a headlamp assembly having a lamp unit mounted on a fixed portion of a vehicle and supporting a light source, a first adjustment device and a second adjustment device located between the fixed portion of the vehicle and the lamp unit for adjusting the lamp unit in a vertical plane and in a horizontal plane, respectively, for aiming a light beam emitted by the light source, one of the adjustment devices comprising:
- a housing generally secured to a fixed portion of the vehicle, the housing having a zero ("0") marking;
- a driven member mounted by the housing and extendable therefrom to set a distance between the fixed portion of the vehicle and the lamp unit;
- a driver member rotatably mounted to the housing wherein rotation of the driver member determines the extension of the driven member from the housing;
- a position indicator mounted on the driver member for adjustable movement relative thereto and having a pointer marker therewith so that upon establishing the desired aim position of the lamp unit by rotating the driver member, the position indicator is located with the pointer marking in line with the zero ("0") marking; and
- a restrictor connected to the housing and the position indicator to prevent movement of the position indicator marking from the zero ("0") marking when the lamp unit is initially being adjusted.

5,446,633

WRITING IMPLEMENT WITH RECHARGEABLE BUILT-IN ILLUMINATION

Rolf Hauggi, 5121 Amberwood Cir., Suisun City, Calif. 94585

Filed Dec. 7, 1993, Ser. No. 162,612
Int. Cl.[6] B43K *29/10*
U.S. Cl. 362—118 **16 Claims**



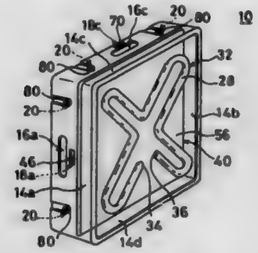
1. A writing implement for writing on a surface having a built-in illumination system defining a space for inclusion of a battery having a first and a second terminal being of opposite electrical polarity from each other, said writing implement comprising:
- a top portion to house said battery in axial alignment therewithin, said top portion having a blind proximate end and an open distal end with at least a portion of the interior of said top portion being electrically coupleable to said first terminal of said battery to provide an electrically conductive path therefrom to said open end, and with closure means defined at said open end;
- a bottom portion of a non electrically conductive material having a proximate end and a distal end with said proximate end defining a means for mating with said closure means of said top portion to interconnect said top and bottom portions, said bottom portion defining an opening at said distal end thereof;
- wherein at least one of said top portion at the distal end thereof and said bottom portion at the proximate end thereof defines a first side opening port therethrough;
- a writing implement mechanism having a writing tip with said mechanism being housed within said bottom portion with said writing tip passing out therefrom through said opening defined at the distal end of said bottom portion;
- an illumination system within at least one of said top and bottom portions having a third and a fourth electrical terminal with said third electrical terminal coupleable to said second terminal of said battery to illuminate the surface upon which said writing tip comes into contact while being used; and
- an electrically conductive spring finger coupled to said fourth electrical terminal of said illumination system and biased to extend into said first side opening port to make electrical contact with said electrically conductive path of said top portion to complete the electrical circuit between said third and fourth electrical contacts of said illumination system and said first and second contacts of said battery, and to break said electrical circuit when said spring finger is depressed into said first side opening port.

5,446,634

CONSTRUCTION MATERIAL

Shiroshi Okubo, Saita, Japan

Filed Aug. 16, 1993, Ser. No. 106,704
Claims priority, application Japan, Aug. 17, 1992, 4-063302 U
Int. Cl.[6] E04C *1/420*
U.S. Cl. 362—147 **5 Claims**



2. A construction member comprising:
- an external frame portion having connection holes formed along its periphery;
- a panel removably attached to one side of said external frame portion, said panel having integrally formed on its surface a visually perceptible part in the form of a letter or pattern;
- a partitioning member located a spaced distance from said panel and freely removably disposed within said external frame portion, said partitioning member having formed on its surface a reflective sheet made of light-reflecting material; and
- means for illuminating said visually perceptible part wherein said panel includes a first plate having a continuous through-portion defining a visually perceptible part and a transparent flat second plate bonded to one surface of said first plate to form a continuous hollow portion defining said visually perceptible part between said first plate and said second plate.

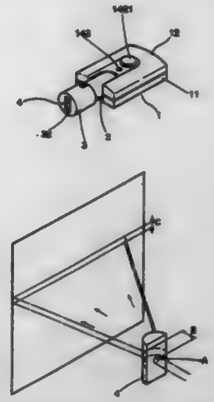
5,446,635

LASER ASSEMBLY FOR MARKING A LINE ON A WORKPIECE FOR GUIDING A CUTTING TOOL

E. F. Jeha, Taipei, Taiwan, assignor to Quarton, Inc., Taipei, Taiwan

Filed Jan. 24, 1993, Ser. No. 80,813
Int. Cl.[6] H01S *3/00*; F21V *21/00*
U.S. Cl. 362—259 **1 Claim**

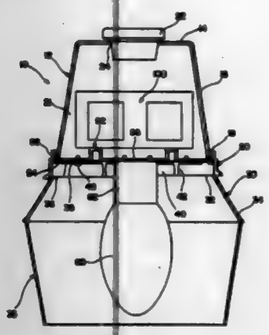
1. A laser marker comprising:
- a laser marker body, said laser marker body being comprised of a substantially rectangular bottom cover, a top cover covered on said bottom cover, a battery lid, and a control circuit board, said bottom cover comprising a plurality of transversely spaced parallel division boards, pairs of half-round recesses respectively formed on the division boards at the top, an upright center locating pin in the middle, pairs of opposite retaining notches symmetrically disposed on two opposite lateral sides thereof at the top, two upright front pins bilaterally disposed on a front side thereof, a smoothly curved front opening on the front side thereof in the middle, two opposite axle supports disposed on two opposite sides by the front opening, two contact metal plates respectively fastened to two holder frames being bilaterally spaced between the axle supports and the division boards, and a rear opening transversely disposed on a rear side thereof, said top cover comprising pairs of half-round recesses on pairs of spaced division boards thereof respectively fitted over the half-round recesses on the division boards of said bottom cover to hold dry battery cells between said top and bottom covers, pairs of opposite side hooks respective hooked on the retaining notches of said bottom cover, two pin holes bilaterally disposed on the front side thereof into which the upright front pin of said bottom cover fit respectively, a smoothly curved front opening on the front side thereof in the middle fitted over the front opening of said bottom cover at the top, two opposite axle supports disposed on two opposite sides by the front opening thereof and respectively fitted over the axle supports of said bottom cover, a push-button mounting hole and a lamp hole spaced in the middle, a rear opening disposed on a rear side thereof fitted over the rear opening on said bottom cover to hold said battery lid, and a rear hook in the rear opening thereof in the middle, said battery lid being received in the rear openings of said bottom and top covers and having a hooked portion hooked with the rear hook on said top cover and a small projection to prevent reverse installation of dry battery cells, said control circuit board comprising a center pin hole into which the upright center locating pin of said bottom cover fits, a push-button switch controlled by a push-button extended out of the push-button mounting hole of said top cover, and an indicator lamp extended out of the lamp hole of said top cover;



- a laser module pivotably fastened to said laser marker body and electrically connected to said control circuit board, said laser module comprising a cylindrical casing fastened to the axle supports of said top and bottom covers by two symmetrical half-round mounting sockets to hold a laser diode and a lens behind a front projecting hole thereof, said cylindrical casing comprising a plurality of longitudinal grooves equiangularly spaced around the periphery; and
- a set of laser firing caps alternatively mounted on said cylindrical casing of said laser module, each laser firing cap comprising a laser firing hole in line with the projecting hole on said cylindrical casing of said laser module, a plano-convex lens disposed between the laser firing hole thereof and the projecting hole on said cylindrical casing of said laser module, a rear mounting hole, which receives said cylindrical casing of said laser module, and a positioning rib engaged into either longitudinal groove on said cylindrical casing of said laser module for positioning; the plano-convex lens of each of said laser firing caps having a different focal length;
- whereby pressing on the push-button of said push-button switch of said control circuit board causes said laser diode to emit a laser beam through the plano-convex lens on the laser firing cap being mounted on said laser module for

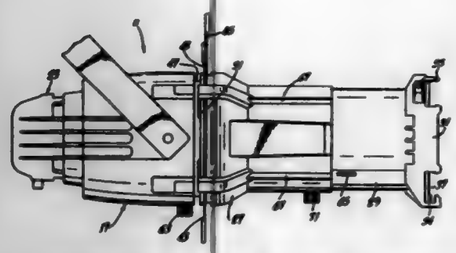
drawing a line of light on a workpiece for guiding a cutting tool to cut said workpiece.

5,446,636
LIGHT FIXTURE WITH IMPROVED HEAT DISSIPATION CHARACTERISTICS
Wenlee Huang, Miami, Fla., assignor to Galaxy Electrical Mfg., Inc., Miami, Fla.
Filed Feb. 7, 1994, Ser. No. 193,541
Int. Cl.[6] F21V *29/00*
U.S. Cl. 362—294 13 Claims



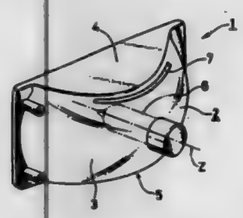
1. A light fixture comprising:
an upper housing member having an interior chamber and a support arm extending away from said chamber, the support arm having an opening in communication with the interior chamber; and
a reflector attached to said upper housing member, said reflector having a top portion which includes first and second substantially planar surfaces, said first and second surfaces being substantially parallel and spaced from each other with at least one opening disposed therebetween, said at least one opening providing a vent for the escape of heat from an interior of said reflector.

5,446,637
LIGHTING FIXTURE
David W. Cunningham, 8443 Hollywood Blvd., Los Angeles, Calif. 99069, and Gregory F. Easkoff, 9131 Santiago Dr., Huntington Beach, Calif. 92646
Division of Ser. No. 972,141, Nov. 5, 1992, Pat. No. 5,345,371. This application Jul. 14, 1994, Ser. No. 275,626
Int. Cl.[6] F21V *17/02*
U.S. Cl. 362—321 7 Claims



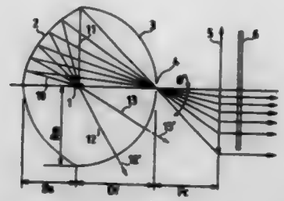
1. A lighting fixture for theater, television, or architectural lighting applications, the lighting fixture configured for use with a lamp to image a beam of light at a distant location, comprising:
a substantially ellipsoidal reflector having a base at one end and a mouth at the other end and further having a first focal region near the base and a second focal region beyond the mouth, a longitudinal axis thereby being defined;
a housing for supporting the reflector;
means for supporting the lamp adjacent the base of the reflector, with one or more filaments of the lamp located substantially coincident with the first focal region of the reflector, wherein light emitted by the lamp is reflected by the reflector toward the second focal region of the reflector;
a support bracket for supporting the lighting fixture;
a power cable for supplying electrical power to the lamp from an external power source;
one or more shutters or patterns located substantially at the second focal region of the reflector and selectively slidable into the path of light reflected thereto;
a generally cylindrical lens tube having a longitudinal axis, the lens tube being secured to the housing with the longitudinal axis of the lens tube substantially aligned with the longitudinal axis of the reflector; and
a lens mounted at a selected location within the lens tube, for imaging the reflected light at a distant location, wherein the lens is a single aspheric lens that substantially corrects spherical and chromatic aberrations, astigmatism, and field curvature in the projected beam;
wherein the lens tube is configured to be controllably movable along its longitudinal axis, to position the lens a selected distance from the second focal region of the reflector and thereby to controllably adjust the distance at which the light projected by the lens is imaged.

5,446,638
REFLECTOR MOLDED OF SYNTHETIC RESIN FOR A LIGHTING DEVICE MOUNTED ON A VEHICLE
Makio Matsuzaki, Meguro, and Shigeru Furuya, Yokohama, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Aug. 11, 1993, Ser. No. 105,888
Claims priority, application Japan, Aug. 12, 1992, 4-061979 U
Int. Cl.[6] B60Q *1/04*; F21V *29/00*
U.S. Cl. 362—341 4 Claims



1. A lighting device comprising:
a curved reflective surface, said curved reflective surface having a focal point and an optical axis;
an upper flat surface and a lower flat surface, said upper flat surface connected to said curved reflective surface by a first joint line, said lower flat surface connected to said curved reflective surface by a second joint line, said upper flat surface and said lower flat surface being substantially parallel;
a light source positioned at said focal point; and
a slit disposed in said curved reflective surface, said slit transversely positioned below and substantially parallel to said first joint line and above said light source and in a selected relationship with respect to said curved reflective surface and said optical axis, said slit disposed in a region proximate to first said and just below joint line to minimize the effect on light reflected by said reflective surface from said source in a forward direction.

5,446,639
ILLUMINATING APPARATUS
Kenjiro Hamanaka; Takashi Kishimoto; Koichi Nishizawa, and Kenichi Nakano, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Mar. 30, 1993, Ser. No. 39,838
Claims priority, application Japan, Apr. 3, 1992, 4-081988; Apr. 3, 1992, 4-082057; Apr. 3, 1992, 4-082214; Mar. 2, 1993, 5-040772
Int. Cl.[6] F21V *7/09*
U.S. Cl. 362—350 1 Claim



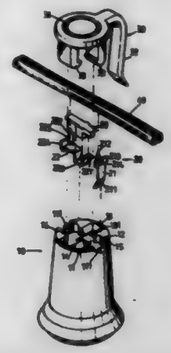
1. An illuminating apparatus using illumination optics that comprises a light source that emits light rearwardly away from and forwardly toward an object to be illuminated in a wide range of directions subtending a solid angle of no less than approximately 2π from within the range of a spherical zone having a radius of no more than approximately 10 mm, a spheroidal mirror positioned rearwardly of said light source, a spherical mirror positioned forwardly of said light source and which is provided with an open window through which to pick up illuminating light, and a positive lens positioned between the spherical mirror and the object to be illuminated to receive diverging light rays passing through the open window and project substantially collimated light rays toward the object to be illuminated, said light source being positioned near the first focal point of said spheroidal mirror and near the center of curvature of said spherical mirror so that the greater part of the rays issuing from said light source will be collected near the second focal point of said spheroidal mirror, and the following conditions being satisfied:

$$2.3 \leq m \leq 5 \text{ and } 0.8\ Df \leq Rms \leq 1.2\ Df$$

where Rms is the radius of said spherical mirror; Df is the distance between the first and second focal points of said spheroidal mirror; Ds is the distance between the vertex and the first focal point of said spheroidal mirror; and m is the magnification expressed by (Ds+Df)/Ds.

5,446,640
CHRISTMAS LIGHT
Mei Mei Lin, Suite 1 11F, No. 95- 8 Chang Ping Road, Secl, Taichung, Taiwan
Filed Mar. 21, 1994, Ser. No. 210,449
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—407 3 Claims

1. A Christmas light comprising:
light stand having a circular body, a hanger connected to an outer periphery of said body which extends outwardly and downwardly from said body, and a pair of correspondingly opposite projections extended downwardly from said body with hooks on the ends thereof, each of said hooks perpendicularly extended from each projection and face toward one another;
a lamp receptacle having on one end a flare opening and having a threaded inner periphery for fastening an incandescent lamp bulb therein, and another end which has an elongated groove with a pair of corresponding opposite oval shaped portions extending at opposite ends thereof for receiving a two-ply electrical cable therein, said another end of said receptacle further includes a pair of recesses disposed symmetrically and perpendicularly to said groove and bisects said groove to receive said hooks therein respectively, an aperture positioned at a center of said groove, a recess formed on one end of said groove and at a bottom of one of said oval shaped portions, two block pieces each formed at one end of said groove adjacent to said oval shaped portion, two slits each formed at one end of said groove between said oval shaped portion and said block piece; and
contact means which are embedded in said slits of said lamp receptacle respectively comprising a first copperflake and a second copperflake, said first copperflake having on one end a tilting portion and another end a spur with laterally

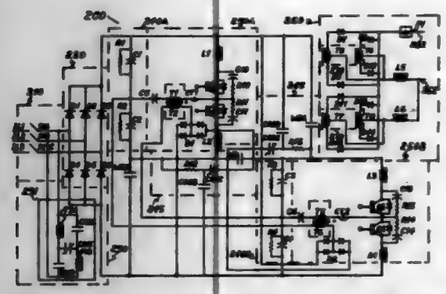


protrudent portion and a reinforcement groove therebetween, said tilting portion stops against said recess, said second copperflake having one end a fixing piece, and another end a spur with a laterally protrudent portion and a reinforcement groove therebetween, an u-shape bend abutting said fixing piece and intermediate the ends of said second copperflake, said u-shape bend of said second copperflake being inserted into said aperture, and said first and second copperflakes being fixed to and restrained from said slits, respectively, with said spurs thrusted into said two-ply cables for transmitting the electric current therefrom to a tip contact and a ring contact of said incandescent lamp bulb respectively.

5,446,641
POWER SELECTION AND PROTECTION CIRCUIT RESPONSIVE TO AN INPUT VOLTAGE FOR PROVIDING SERIES OR PARALLEL CONNECTED INVERTERS
Jon O. Reynolds, Appleton, and Albert M. Nowak, DePere, both of Wis., assignors to Miller Electric Mfg. Co., Appleton, Wis.
Continuation of Ser. No. 822,370, Jan. 17, 1992, Pat. No. 5,319,533. This application Feb. 7, 1994, Ser. No. 193,226
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[6] B23K *9/10*
U.S. Cl. 363—17 21 Claims

1. A welding power source, comprising:
rectifier means for receiving an AC voltage signal at one of a plurality of voltage levels, and providing a DC voltage;
inverter means for receiving the DC voltage and providing an AC voltage output;

output rectifier means for receiving the AC output voltage and providing a DC output voltage;



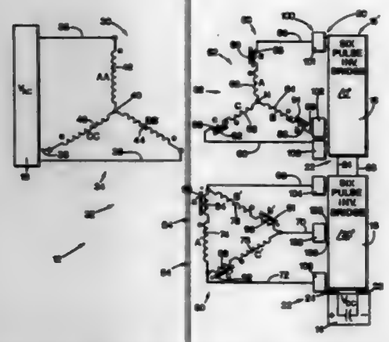
configuration means for determining the one of the plurality of voltage levels and configuring the inverter means for the one of the plurality of voltage level levels.

5,446,642

HARMONIC BLOCKING CONVERTER SYSTEM

William McMurray, Schenectady, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 881,403, May 11, 1992, abandoned. This application Mar. 3, 1994, Ser. No. 206,205
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—40 12 Claims



1. A converter system for converting power between an AC power source and a DC power source, comprising:

a conventional wye-wye/delta transformer having primary and secondary windings, said primary winding having a primary wye winding set for coupling to said AC power source, and said secondary windings comprising a secondary wye winding set and a secondary delta winding set, said secondary wye winding set including first, second, and third wye input nodes, said secondary delta winding set including first, second, and third delta input nodes that are not connected to said first, second, and third wye input nodes and thereby establish electrical isolation between said secondary wye winding set and said secondary delta winding set;

a converter coupled to said secondary windings and to said DC power source for transferring power therebetween, said converter generating harmonic currents; and

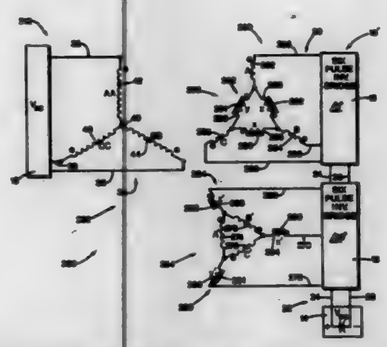
a polyphase harmonic blocker for blocking selected harmonics of said harmonic currents, said harmonic blocker having first and second blocking coil sets, said first blocking coil set connected between said converter and said secondary wye winding set and said second blocking coil set connected between said converter and said secondary delta winding set, with one of said first and second blocking coil sets providing an additive secondary current, and the other of said first and second blocking coil sets providing a subtractive secondary current, said additive secondary current and said subtractive secondary current reducing harmonics at said primary wye winding set.

5,446,643

HARMONIC BLOCKING CONVERTER SYSTEM

William McMurray, Schenectady, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 881,403, May 11, 1992, abandoned. This application Feb. 8, 1994, Ser. No. 193,442
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—40 11 Claims



1. A converter system for converting power between an AC power source and a DC power source, comprising:

a polyphase main transformer having primary and secondary windings, said primary winding having a primary wye winding set for coupling to said AC power source, and said secondary windings comprising a first delta winding set and a second delta winding set, said first delta winding set having first, second, and third delta input nodes, said second delta winding set having fourth, fifth, and sixth delta input nodes that are not connected to said first, second and third delta input nodes and thereby establish electrical isolation between said first delta winding set and said second delta winding set;

a converter coupled to said secondary windings the to said DC power source for transferring power therebetween, said converter generating harmonic currents; and

a polyphase harmonic blocker for blocking selected harmonics of said harmonic currents, said harmonic blocker having first and second blocking coil sets, said first blocking coil set connected between said converter and said first delta winding set, and said second blocking coil set connected between said converter and said second delta winding set, with one of the first and second blocking coil sets providing an additive secondary current, and the other of said first and second blocking coil sets providing a subtractive secondary current, said additive secondary current and said subtractive secondary current reducing harmonics at said primary wye winding set.

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DC VOLTAGE DIVIDER

Fu M. Zhou, Room 301 Unit 1, 9 of 28, Gaoloumen, Xuanwu District, Nanjing, Jiangsu, China

Continuation of Ser. No. 27,764, Mar. 8, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 327,845
Claims priority, application China, Mar. 10, 1992, 92101331.0
Int. Cl.[6] H02M *3/06*
U.S. Cl. 363—62 16 Claims

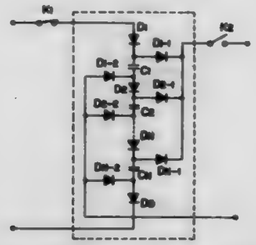
1. A DC voltage divider comprising:

at least one input terminal;

at least one output terminal;

an input circuit connected to said input terminal and including a plurality of serially connected energy-storing circuits and an isolating diode connected serially to said plurality of energy-storing circuits, each of said plurality of energy-storing circuits including an input diode and a capacitor, said capacitor having a first and second side, and said first side of said capacitor being connected to a cathode of said input diode;

an output circuit connected to said output terminal and including a plurality of energy-releasing circuits working alternatively in sequence with respect to said input circuit, each of said energy-releasing circuits including said capacitor and a first and second output diode serially connected



to said capacitor, an anode of said first output diode being connected to said first side and a cathode of said second output diode being connected to said second side;

at least one output switch disposed between each output terminal and said output circuit; and

at least one input switch disposed between each input terminal and said input circuit, said input switch opening and closing alternatively in sequence with respect to said output switch, said input and output switches being set to operate at a predetermined and adjustable operating frequency so as to set and control a power output of said DC voltage divider, and said operating frequency of said input and output switches being adjustable independently of each capacitor.

5,446,645

INVERTER APPARATUS AND UINTERRUPTIBLE POWER SUPPLY USING THE SAME

Hidefumi Shirahama; Yorito Jifuku; Akira Kobayashi; Keizo Shimada; Norikazu Tokunaga, all of Hitachi; Yoshimi Sakurai, Hitachiota; Ikuo Yamato, Hitachi; Tomoaki Mino, Hitachi, and Satoru Inukai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,642
Claims priority, application Japan, Feb. 18, 1992, 4-030366; Aug. 24, 1992, 4-224270
Int. Cl.[6] H02M *7/515;* H02J *3/38*
U.S. Cl. 363—71 4 Claims

1. An apparatus for controlling parallel running of inverters for use in an inverter system in which a plurality of inverters are connected at their output sides to a load common to said inverters and an output voltage of each inverter of said inverters is controlled in accordance with a duty command, said apparatus comprising:

a plurality of output current detection means each adapted to detect an output current of each inverter of said inverters;

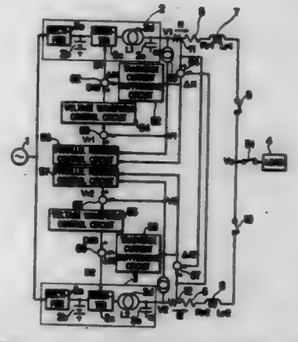
a plurality of output voltage detection means each adapted to detect an output voltage of each said inverter;

a plurality of current difference calculation means each adapted to calculate a difference between said output current of respective said output current detection means and deliver a cross current signal equivalent to a current flowing between said inverters;

a plurality of cross current suppressing signal generation means each adapted to respond to said cross current signal delivered out of each said current difference calculation means to generate a cross current suppressing signal for suppressing said cross current signal to zero;

a plurality of voltage waveform command generation means each adapted to respond to said output voltage of each said output voltage detection means and said cross current suppressing signal generated from each said cross current suppressing signal generation means to generate a voltage waveform command for specifying amplitude and frequency of an output voltage of each said inverter;

a plurality of voltage difference calculation means each adapted to calculate and output as a calculation value, a difference between said voltage waveform command generated from each said voltage waveform command



generation means and said output voltage of each said output voltage detection means;

a plurality of duty command generation means each adapted to generate from said calculation value of each said voltage difference calculation means a duty command for suppressing said calculation value to zero;

a plurality of duty command correction means each adapted to correct said duty command generated from each said duty command generation means with said cross current suppressing signal generated from each said cross current suppressing signal generation means; and

a plurality of inverter control means each adapted to control said output voltage of each said inverter in accordance with said duty command corrected by each said duty command correction means.

5,446,646

METHOD AND APPARATUS FOR CONTROL OF PULSE WIDTH MODULATION (PWM) CONVERTER

Masanori Miyazaki, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1992, Ser. No. 851,782
Claims priority, application Japan, Mar. 15, 1991, 3-050900
Int. Cl.[6] H02M *7/219*
U.S. Cl. 363—89 3 Claims

1. In a control apparatus for a pulse width control (PWM) converter which is connected to a reactor via an alternating current (AC) power source, and which performs the sending and receiving of power between the AC power source and a direct current (DC) power source, said PWM converter receiving either AC power or DC power,

said control apparatus comprising:

means for detecting current detection values of at least two phases of a three-phase AC power;

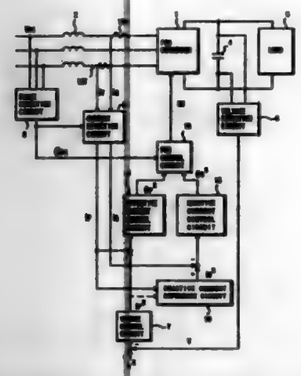
means for detecting a voltage phase of said three-phase AC power;

means for separating said current detection values into an effective current and a reactive current by using said voltage phase of said three-phase AC power;

effective current control means for performing feedback

control so that said separated effective current becomes equal to a first required value;

reactive current control means for performing feedback control so that said separated reactive current becomes equal to a second required value; and



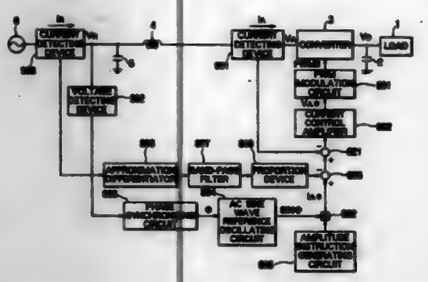
reference calculation means for calculating a reactive current reference so that a reference value of said reactive current becomes larger when said effective current and power voltage are of opposite polarities than when they are of the same polarity.

5,446,647

CONTROL APPARATUS FOR POWER CONVERTER

Katsumi Ikeda, and Yushin Yamamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 291,756
Claims priority, application Japan, Aug. 19, 1993, 5-205175
Int. Cl.[6] H02M *3/338*
U.S. Cl. 363—89 16 Claims



1. A power converter control apparatus for controlling a power converter which has a plurality of switching elements and converts AC current to DC current to supply DC output to a load, said control apparatus comprising:

a filter which includes a reactor and a capacitor provided between an AC power supply and said power converter;

a resonance detecting means which detects a resonance component caused by a system reactor component existing between said AC power supply and said capacitor of said filter said resonance detecting means being connected to said AC power supply;

a converter current detecting device which detects a converter current flowing into said power converter through said filter;

an input voltage detecting device which detects an input voltage supplied from said AC power supply;

a current instruction value generating means which obtains a current instruction value for said power converter according to the voltage detected by said input voltage detecting device and an amplitude instruction;

a current instruction value control means which changes said current instruction value output from said current instruction value generating means according to the resonance component detected by said resonance detecting means; and

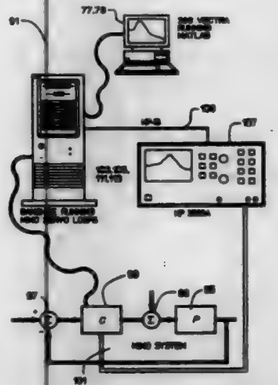
a current control means which obtains a voltage instruction value according to the difference between said current instruction value output from said current instruction value control means and a current value detected by said converter current detecting device, and transmits a control output for pulse-width modulation according to said voltage instruction value to said power converter for controlling said plurality of switching elements to provide the DC output to said load.

5,446,648

DETERMINATION OF OPEN LOOP RESPONSES FROM CLOSED LOOP MEASUREMENTS

Daniel Y. Abramovitch, 2470 Glendenning Ave., Santa Clara, Calif. 95050, and Carl P. Taussig, 2295 Alameda, Redwood City, Calif. 94061

Filed Feb. 28, 1992, Ser. No. 843,665
Int. Cl.[6] G05B *13/02*; G06F *15/46*
U.S. Cl. 364—148 48 Claims



1. Apparatus for determining open-loop parameters for a First Configuration, multiple-input, multiple output, closed-loop control system, the apparatus comprising:

a feedback loop having a difference module, a controller module, a plant module and a sensor module arranged in that order in a feedback loop that operates in its linear operating region, the sensor module having sensor dynamics represented by a matrix H of dimensions $n_1 \times n_2$, the controller module having controller dynamics represented by a matrix C of dimensions $n_3 \times n_1$, and the plant module having physical system dynamics represented by a matrix P of dimensions $n_2 \times n_3$, where n_1, n_2 and n_3 are selected positive integers;

the difference module having a first input terminal that receives an array R of n_1 predetermined input signals, having a second input terminal that receives an array Z of n_1 input signals, and having an output terminal, where the difference module forms and issues at its output terminal a difference signal array $E=R-Z$;

the controller module receiving the vector array E of signals at an input terminal thereof and, in response thereto, forming and issuing an array $U=CE$ of n_3 intermediate output signals at an output terminal thereof;

the plant module receiving the vector array U of signals at an input terminal thereof and, in response thereto, forming and issuing an array $Y=PU$ of n_2 output signals at an output terminal thereof;

the sensor module receiving the vector array Y of signals at an input terminal thereof and, in response thereto, forming and issuing an array $Z=HY$ of n_1 signals at an output terminal thereof;

measurement means connected to the feedback loop for measuring the array Z of signals received in response to provision of the array R of n_1 signals; and

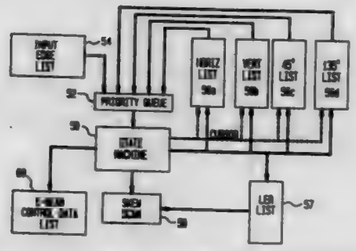
computation means for receiving measurements of the array Z of n_1 signals from the measurement means, for determining the entries of a matrix T, of dimensions $n_1 \times n_1$ and representing the closed loop response of the feedback loop, by solving the matrix identity $Z=TR$, for forming a quasi-inverse matrix (I-T) , for determining the entries of a matrix HPC or HP.

5,446,649

DATA-HIDING AND SKEW SCAN FOR UNIONING OF SHAPES IN ELECTRON BEAM LITHOGRAPHY POST-PROCESSING

Byoung J. Keum, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,445
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—167.01 8 Claims



1. An apparatus for processing edge data to obtain control signals for control of an pattern exposure tool, comprising

a state machine,

means for inputting data into said state machine, and

a plurality of memory regions forming a plurality of lists, said state machine including

means for detecting an angular direction of an edge,

means for detecting an orientation of an edge,

means for maintaining a cover count in response to said means for detecting an orientation of an edge, and

means responsive to said means for detecting said angular direction of an edge for storing edge data in one of said plurality of memory regions.

5,446,650

LOGIC SIGNAL EXTRACTION

Craig Overhage, Beaverton, and Richard Austin, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

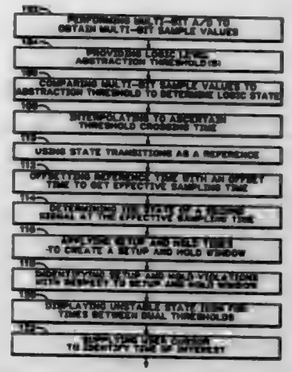
Filed Oct. 12, 1993, Ser. No. 135,099
Int. Cl.[6] G01R *13/00*
U.S. Cl. 364—487 21 Claims

1. A method for determining a time of occurrence of a logic signal state transition comprising the steps of:

performing multi-bit A/D conversion on an input signal at a plurality of sample times to obtain a series of multi-bit digital sample values with each sample value being associated with a corresponding sample time;

providing a logic level abstraction threshold as a reference for determining when a sample value is in a first logic state or a second logic state; and

ascertaining from the series of multi-bit digital sample values and the logic level abstraction threshold a threshold crossing time, the threshold crossing time being the time at which an interpolated value of the input signal amplitude



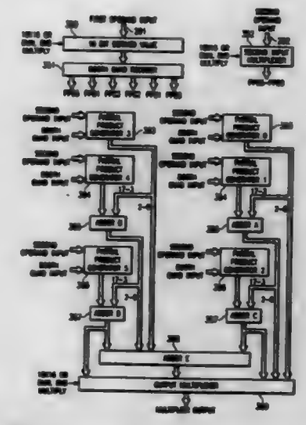
crossed the logic level abstraction threshold and indicating the time of occurrence of a logic signal state transition of the input signal.

5,446,651

SPLIT MULTIPLY OPERATION

Phillip Moyse, Bromham; Derek Roskell, Irchester, and Richard D. Simpson, Carlton, all of England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 159,349
Int. Cl.[6] G06F *7/52*
U.S. Cl. 364—760 41 Claims



1. A multiplication apparatus for selectively multiplying a pair of 2N bit digital numbers or two pair of N bit digital numbers comprising:

a predetermined plurality of partial product generators consisting of a first half of said partial product generators and a second half of said partial product generators, each partial product generator having an input receiving a corresponding partial product input signal and a control input receiving a corresponding partial product control signal, each partial product generator generating a partial product of said partial product input signal having a multiplication factor corresponding to said partial product control signal;

a first input encoding circuit having an input receiving a first

data word representing either a 2N bit digital number or a pair of N bit digital numbers and a control input receiving a control signal indicating either multiplication of a pair of 2N bit digital numbers or two pair of N bit digital numbers, said first encoding circuit generating a predetermined number of partial product control signals having a first encoding if a control signal has a first sense indicating multiplication of a pair of 2N bit digital numbers and having a second encoding if said control signal has a second sense indicating multiplication of two pair of N bit digital numbers, said predetermined number being integrally divisible by 2;

a second input encoding circuit having an input receiving a second word representing either a 2N bit digital number or a pair of N bit digital numbers and a control input receiving said control signal, said second input encoding circuit generating said predetermined number of partial product input signals, said partial product input signals being identical if said control signal has said first sense and said partial product input signals including a first set of partial product input signals corresponding to a first of said pair of N bit digital numbers supplied to a first half of said partial product generators and a second set of partial product input signals corresponding to a second of said pair of N bit digital numbers supplied to a second half of said partial product generators if said control signal has said second sense; and

a set of adders connected to said partial product generators and receiving said control signal, said set of adders including

a first set of adders forming a correspondingly weighted first sum of said first half of partial products signals,

a second set of adders forming a correspondingly weighted second sum of said second half of partial product signals,

a third adder forming a correspondingly weighted sum of said first and second sums, and

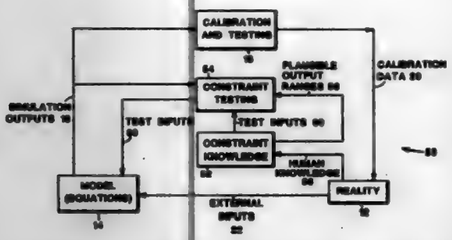
a multiplexer connected to said set of first adders, said set of second adders and said third adder and having a control input receiving said control signal, said multiplexer forming an output in said first sense from said third adder if said control signal has said first sense and forming an output in a second sense having least significant bits corresponding to said first sum and most significant bits corresponding to said second sum if said control signal has said second sense.

5,446,652

CONSTRAINT KNOWLEDGE IN SIMULATION MODELING

David W. Peterson, Harvard, and Robert L. Eberlein, Belmont, both of Mass., assignors to Ventana Systems, Inc., Harvard, Mass.

Filed Apr. 27, 1993, Ser. No. 53,613
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 7 Claims



1. A computer-based method for aiding a user to validate a computer-based simulation model of the kind which simulates a multiple variable system using a suite of equations, comprising

storing user-entered constraint knowledge defining (a) possible conditions of variables of the multiple variable system, the constraint knowledge being separate from the suite of equations, and (b) corresponding expected constraints on consequences of variables of the system,

automatically applying the possible conditions of variables to the suite of equations to produce test consequences on variables of the system, and

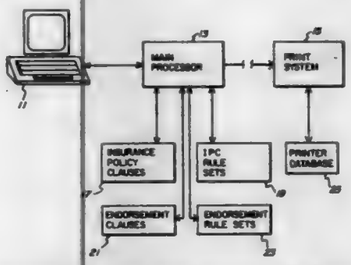
automatically analyzing the test consequences with respect to the constraints as an indication of the validity of the simulation model.

5,446,653

RULE BASED DOCUMENT GENERATION SYSTEM

Kevin J. Miller, Longmeadow, Mass., and Richard L. Rowley, Glastonbury, Conn., assignors to Aetna Casualty and Surety Company, Hartford, Conn.

Continuation of Ser. No. 59,706, May 10, 1993, abandoned. This application Jun. 22, 1994, Ser. No. 264,185
Int. Cl.[6] G06F *17/30*
U.S. Cl. 364—401 20 Claims



1. A rule based document generation system for constructing insurance policies in response to coverage information input thereto, comprising:

a computer processor;

first memory means coupled to said processor, said first memory means storing a library of rule sets each corresponding to a different insurance policy clause and designating a set of parameters that must be satisfied in order for its corresponding insurance policy clause to be included in an insurance policy;

a user interface coupled to said processor for enabling a user to enter coverage information identifying a set of different coverages to be provided in an insurance policy;

said processor being adapted to compare the parameters designated by the rule sets for the insurance policy clauses to the set of different coverages identified by said coverage information, to provide a list of those rule sets having parameters that are all satisfied by said coverage information;

means for identifying superseded insurance policy rule sets referred to on said list and replacing the superseded insurance policy rule sets referred to on said list with references to superseding endorsement rule sets each corresponding to a different endorsement clause; and

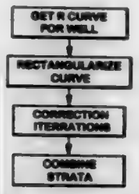
means for assembling the insurance policy and endorsement clauses corresponding to the rule sets referred to on said list into said insurance policy.

5,446,654

SHOULDER EFFECT LOGGING METHOD

Roland E. Chemali, Houston, and David O. Torres, Austin, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Jul. 16, 1992, Ser. No. 914,076
Int. Cl.[6] G06F *17/00*; G01V *3/10*; E21B *47/00*
U.S. Cl. 364—422 3 Claims



1. A method of logging a wellbore in a reservoir, said method comprising the steps of:

using a conveying system to move a logging device along said wellbore;

using said logging device to generate first electrical signals correlative to resistivity of said reservoir along a portion of the wellbore;

using said conveying system to generate second electrical signals correlative to depth of said logging device in said wellbore;

electrically plotting said first electrical signals versus said second electrical signals to produce a log of resistivity versus depth; and

electrically modifying said log to correct for shoulder bed interference to generate a corrected log by:

rectangularizing said log using a programmed computer, wherein said computer selects a transition between adjacent zones of said reservoir and assigns a respective resistivity value to each respective zone, each assigned resistivity value corresponding to one of a maximum resistivity measured in said respective zone, a minimum resistivity measured in said respective zone, and an average resistivity measured in said respective zone, depending on measured resistivity values of zones adjacent said respective zone;

computing a respective first correction factor for each respective zone using said resistivity values from said rectangularized log and using a respective first assumed cumulative resistivity value for zones which are beyond about thirty feet above the center of said respective zone and a respective second assumed cumulative resistivity value for zones which are beyond about thirty feet below the center of said respective zone; and

using said first correction factors to generate said corrected log having corrected resistivity values.

5,446,655

MULTIPLE-METER DRIVING APPARATUS

Kazuyuki Fukuda, and Hiroshi Murase, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Japan

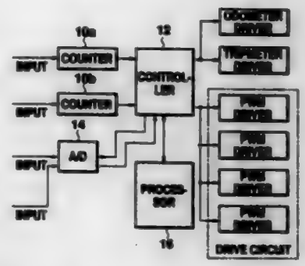
Continuation of Ser. No. 931,353, Aug. 18, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,467
Claims priority, application Japan, Aug. 28, 1991, 3-217540
Int. Cl.[6] G06F *3/14*
U.S. Cl. 364—424.01 14 Claims

1. A multiple-meter driving apparatus comprising:

(a) a plurality of counter means, each counter means for receiving a pulse signal having a frequency corresponding to a first type of input from a first-type sensor, counting a period T of said pulse signal, and outputting a period signal;

(b) A/D converter means for receiving a DC signal corresponding to a second type of input from a second-type sensor and converting said DC signal into a digital signal;

(c) control means for sequentially inputting, during each predetermined time-sharing interval, the period signal from each of said plurality of counter means and said digital signal from said A/D converter means, said control means including processing means for time-share processing each of said input signals input exactly once during the predetermined time-sharing interval to form a corresponding meter angle signal and sequentially outputting the meter angle signal corresponding to each of said input signals; and



(d) drive means for sequentially receiving the meter angle signals during the predetermined time interval and driving a plurality of meters based on the meter angle signals outputted from said control means during the predetermined time interval, each meter angle signal driving a corresponding one of the plurality of meters.

5,446,656

METHOD OF GUIDING THE TRAVEL OF GOLF CARTS

Masanori Koseki, No. 13-15, Higashishinmachi, Itabashi-ku, Tokyo, 174; Hiroo Shoji, No. 31-5-406, Yoyogi, 5-chome, Shibuya-ku, Tokyo, 150, and Ken Miura, No. 34-20, Honcho, 3-chome, Hatogaya-shi, Saitama-ken, 334, all of Japan

Filed Oct. 5, 1993, Ser. No. 131,598
Claims priority, application Japan, Feb. 8, 1993, 5-041739
Int. Cl.[6] B62D *1/02*; G05B *19/18*; G05D *1/02*
U.S. Cl. 364—424.02 6 Claims



1. An improved method of moving and guiding the travel along a golf course of golf carts equipped with cart sensing means for sensing elements of a marker line, operational means for determining angular orientation of the golf cart, and steering means for altering the steering angle of the golf cart, wherein the golf cart is movable in at least one of a serpentine and zig-zag orientation between at least two marker lines, from one marker line to the other marker line, each marker line formed by burying elements detectable by the cart sensing means on or under the golf course ground surface, wherein the improved method comprises the steps of:

(a) laying a plurality of parallel lines formed of elements detectable by the golf cart sensing means between the st

least two marker lines such that an extension of said parallel lines traverse said marker lines, said parallel lines being disposed such that a golf cart traverses said parallel lines during movement between one marker line toward the other marker line;

(b) sensing a golf cart traversal of at least a pair of said parallel lines;

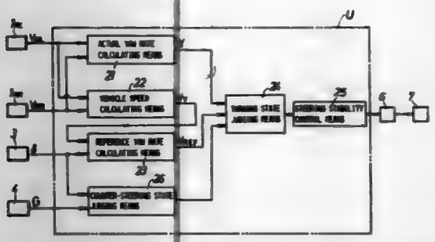
(c) steering the golf cart, following the sensing of the golf cart traversal of the last of said plurality of parallel lines, at a predetermined angle of departure with respect to said parallel lines.

5,446,657

STEERING STABILITY CONTROL SYSTEM FOR VEHICLE

Tooru Ikeda; Naoki Ohnomo; Hironobu Kiryu; Takashi Nishihara, and Shuji Shirahshi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 15,173
Claims priority, application Japan, Feb. 14, 1992, 4-028271
Int. Cl.[6] B60K *26/00*; B62D *6/00*
U.S. Cl. 364—424.05 **4 Claims**



1. A steering stability control system for a vehicle having an engine, comprising a turning state judging means for judging a turning state of the vehicle and outputting either an oversteering signal or an understeering signal based on said turning state of the vehicle, and a steering stability control means for controlling an output torque from said engine on the basis of an output from said turning state judging means, wherein

said system further includes a counter-steering judging means for judging a counter-steering state of the vehicle and causing said turning state judging means to output said oversteering signal for controlling the output torque from the engine according to said oversteering signal when said counter-steering state is judged.

5,446,658

METHOD AND APPARATUS FOR ESTIMATING INCLINE AND BANK ANGLES OF A ROAD SURFACE

Stephen R. Pastor, Sterling Heights, and Gordon L. Tierney, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1994, Ser. No. 263,694
Int. Cl.[6] G01C *9/10*; B60T *8/58*
U.S. Cl. 364—424.01 **16 Claims**

1. An apparatus for estimating an incline angle of a road surface upon which a front wheel drive vehicle is travelling, the apparatus comprising:

a first sensor for providing a first output signal responsive to a rotational speed of a first rear wheel;

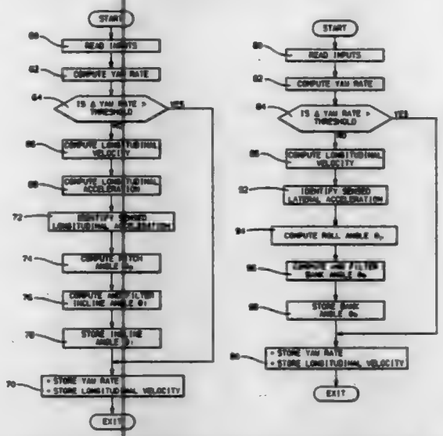
a second sensor for providing a second output signal responsive to a rotational speed of a second rear wheel;

a third sensor for providing a third output signal responsive to a sensed longitudinal acceleration of the vehicle; and

a controller for processing the first, second and third output signals to arrive at an estimated incline angle, the controller comprising:

means for computing a longitudinal acceleration as a function of the rotational speeds of the first and second rear wheels in accordance with the first and second output signals;

means for determining a pitch angle of the vehicle as a function of the sensed longitudinal acceleration in accordance with the third output signal; and



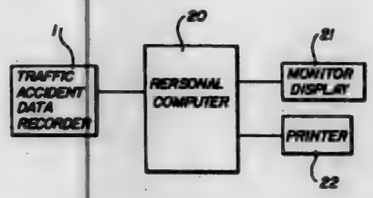
means for estimating the road surface incline angle as a function of the computed longitudinal acceleration, sensed longitudinal acceleration in accordance with the third output signal and pitch angle.

5,446,659

TRAFFIC ACCIDENT DATA RECORDER AND TRAFFIC ACCIDENT REPRODUCTION SYSTEM

Yuichiro Yamawaki, Kobe, Japan, assignor to Awaji Ferryboat Kabushiki Kaisha, Kobe, Japan

Filed Apr. 14, 1994, Ser. No. 227,733
Claims priority, application Japan, Apr. 20, 1993, 5-092626
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—424.03 **7 Claims**



1. A traffic accident reproduction system for reproducing a traffic accident of a vehicle during a predetermined time period after a traffic accident occurrence time, the traffic accident reproduction system comprising:

acceleration measurement means for measuring acceleration of the vehicle in three axial directions in a three-dimensional space to output acceleration data,

angular velocity measurement means for measuring angular velocity of the vehicle about three directional axes in a three-dimensional space, to output angular velocity data,

storage means for storing the acceleration data and the angular velocity data,

control means for determining the traffic accident occurrence time by recognizing a time when a predetermined acceleration value has been exceeded by a respective acceleration datum obtained by the acceleration measurement means or a predetermined angular velocity value has been exceeded by a respective angular velocity datum obtained by the angular velocity measurement means, to start the acceleration data and the angular velocity data being stored in the storage means, and for stopping the acceleration data and the angular velocity data from being stored in the storage means when the predetermined time has passed after the traffic accident occurrence time,

analyzing means for analyzing the acceleration data and the angular velocity data from said storage means to obtain traffic accident data indicating the speed, posture and position of the vehicle during said predetermined time period, and

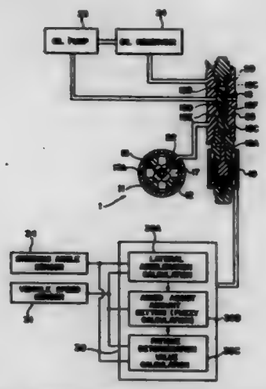
visualizing means for visualizing the speed, posture and position of the vehicle based on said traffic accident data during said predetermined time period.

5,446,660

ELECTRONICALLY CONTROLLED POWER STEERING APPARATUS AND METHOD THEREFOR

Yoshinori Miichi; Mitsuhiko Harara, and Tadao Tanaka, all of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,758
Claims priority, application Japan, Sep. 22, 1992, 4-253174
Int. Cl.[6] B62D *5/00*
U.S. Cl. 364—424.05 **27 Claims**



1. In an electronically controlled power steering apparatus which comprises aimed assist amount setting means for setting an aimed assist amount for controlling a steering assist amount of a vehicle in response to the aimed assist amount set by said aimed assist amount setting means, the improvement comprising

fatigue detection means for detecting a degree of fatigue of a driver of the vehicle according to a hysteresis of an operation condition of a steering wheel; and

lateral acceleration detection means for detecting a lateral acceleration acting upon the vehicle;

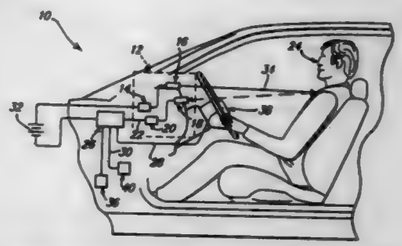
wherein said aimed assist amount setting means sets the aimed assist amount so that the steering assist amount is increased as the degree of fatigue increases and the steering assist amount is decreased as the lateral acceleration increases.

5,446,661

ADJUSTABLE CRASH DISCRIMINATION SYSTEM WITH OCCUPANT POSITION DETECTION

Tony Gioutsos, Brighton; Edward J. Gillis, Canton; Walter E. Chapelle, Southfield, and Carolyn A. Swayze, Northville, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Apr. 15, 1993, Ser. No. 48,366
Int. Cl.[6] B60R *21/12, 21/32*
U.S. Cl. 364—424.05 **17 Claims**



1. A method for optimizing a discrimination analysis used in a system for actuating a vehicle occupant safety restraint in response to a vehicle collision comprising the steps of:

continuously detecting a static position of a vehicle occupant relative to a fixed structure within the vehicle;

generating data representative of the detected static occupant position; and

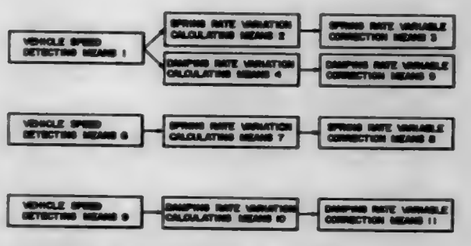
adjusting a discrimination threshold value used in the discrimination analysis for determining whether actuation of the safety restraint is required based on the data representative of the detected static occupant position.

5,446,662

SUSPENSION CONTROL DEVICE FOR VEHICLE, TUNING METHOD FOR SPRING RATE OF SUSPENSION, AND TUNING METHOD FOR DAMPING RATE THEREOF

Yoshio Kajima; Osamu Murata, and Hirobumi Ohta, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 27, 1994, Ser. No. 250,689
Claims priority, application Japan, May 27, 1993, 5-151056; Dec. 28, 1993, 5-350843
Int. Cl.[6] B60G *17/00, 21/00*
U.S. Cl. 364—424.05 **39 Claims**



1. A suspension control device for a vehicle comprising:

vehicle speed detecting means for detecting a vehicle running speed;

at least one spring rate variation calculating means for calculating variation of apparent spring rate of a suspension of a vehicle due to a change of the vehicle running speed on the basis of the vehicle running speed detected by said vehicle speed detecting means, and damping rate variation

calculating means for calculating variation of an apparent damping rate of the suspension of the vehicle due to a change of the vehicle running speed on the basis of the vehicle running speed detected by the vehicle speed detecting means; and

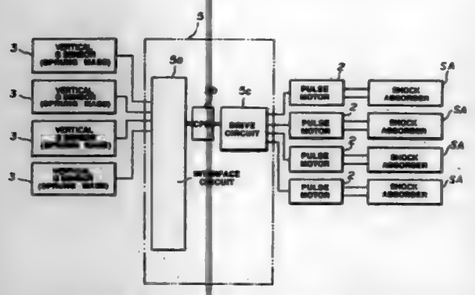
at least one of spring rate variable correction means for varying and correcting the apparent spring rate of the vehicle suspension to a predetermined value on the basis of the variation of the spring rate, and damping rate variable correction means for varying and correcting an apparent damping rate of the vehicle suspension to a predetermined value on the basis of the variation of the damping rate, wherein the spring rate variable correction means corrects the apparent spring rate by an amount proportional to variation in an aerodynamic force due to displacement of an attitude of the vehicle body, wherein the aerodynamic force is dependent on the vehicle running speed and an aerodynamic characteristic which is determined on the basis of a configuration of the vehicle body.

5,446,663

APPARATUS FOR CONTROLLING DAMPING COEFFICIENT FOR VEHICULAR SHOCK ABSORBER

Mitsuo Sasaki; Shinobu Kakizaki; Fumiyuki Yamaoka; Toru Takahashi, and Makoto Kimura, all of Atsugi, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Dec. 11, 1992, Ser. No. 991,629
Claims priority, application Japan, Dec. 19, 1991, 3-336761
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 13 Claims



1. An apparatus for controlling a damping coefficient for a vehicular shock absorber, the shock absorber being interposed between a vehicle body and a tire wheel, comprising:

a) an actuator;

b) damping coefficient changing means for operatively changing the damping coefficient for the shock absorber in response to movement of said actuator, said damping coefficient changing means having variable rate of change;

c) input signal generating means for generating an input signal related to a vehicular behavior;

d) damping coefficient controlling means for generating and outputting a control signal to said actuator so as to provide an optimum damping coefficient for the shock absorber via said damping coefficient changing means on the basis of the input signal from the input signal generating means; and

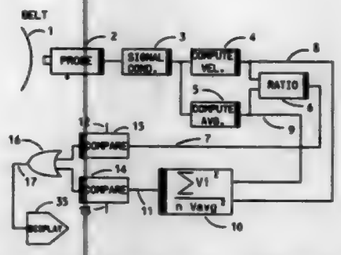
e) correction means for operatively correcting the rate of change of said damping force coefficient changing means of the shock absorber corresponding to the variation in the rotated position of said damping coefficient changing means so as to correct a deviation between a target damping coefficient varying characteristic of the shock absorber and an actual damping coefficient varying characteristic in accordance with a value of the input signal of the input signal generating means.

5,446,664

METHOD AND APPARATUS FOR DIAGNOSING FAULTY CYLINDERS IN INTERNAL COMBUSTION ENGINES

David L. Vossen, and James T. Walters, both of Kalamazoo, Mich., assignors to SPX Corporation, Muskegon, Mich.

Continuation of Ser. No. 957,667, Oct. 7, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,628
Int. Cl.[6] G01P *3/56*
U.S. Cl. 364—431.03 6 Claims



1. An apparatus for diagnosing a faulty cylinder in an internal combustion engine comprising:

a probe means for producing an electrical signal representative of instantaneous engine angular velocity;

means for converting said electrical signal to discrete measures of instantaneous angular velocity at N predetermined times during a cylinder period where N is an integer greater than two;

means for averaging said measures of instantaneous angular velocity to produce an average angular velocity by summing an integer number of said measures of instantaneous angular velocity and dividing that sum by said integer number;

means for computing a PPC parameter from said measures of intsantaneous angular velocity for each cylinder period by subtracting the square of the measure of instantaneous angular velocity at the beginning of a cylinder cycle from the square of the measure of instantaneous angular velocity at the end of that cylinder period and dividing that difference by the square of the average engine angular velocity;

means for declaring a possible cylinder fault when said PPC parameter is less than zero.

5,446,665

AUTOMOTIVE MULTIPLE MEMORY SELECTOR APPARATUS

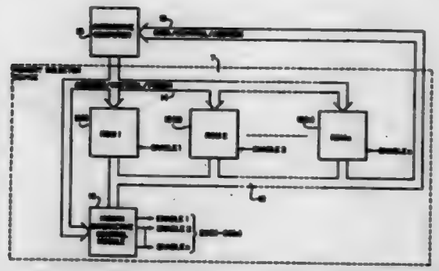
John B. Adrian, and John Von Colln, both of Port Hueneme, Calif., assignors to John B. Adrain, Rocky River, Ohio

Continuation of Ser. No. 33,040, Mar. 18, 1993, Pat. No. 5,293,317. This application Mar. 3, 1994, Ser. No. 205,686
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] B60K *41/00*
U.S. Cl. 364—431.04 12 Claims

1. An improvement in a vehicle having a predetermined combination of operational elements for controlling vehicular operation according to at least one originally provided program, said predetermined combination of operational elements being defined in a fixed system having a bus with a predetermined operable design for operation of said vehicle, said elements of said system controlled by an electronic control unit according to said originally provided program, said improvement comprising:

a universal module coupled to said bus for arbitrarily reconfiguring programmed control of said electronic control unit regardless of the design of said system in which said electronic control unit is employed, said universal module for permitting selection of an additional operational protocol not originally included within said fixed system design, said universal module comprising:

at least one preprogrammed memory for storing said additional program for use in controlling operation of said vehicle in a distinguishable protocol in addition to that provided by said originally provided program and in lieu of control provided by said originally provided program; and



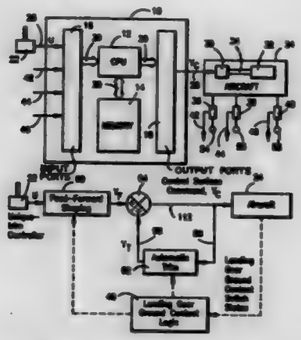
a control coupled only to said preprogrammed memory for selectively communicating said preprogrammed memory to said electronic control unit, operation of said vehicle being changed by said control while said vehicle is in normal operation and thereafter becomes controlled according to said additional program in said preprogrammed memory in lieu of said originally provided program.

5,446,666

GROUND STATE-FLY STATE TRANSITION CONTROL FOR UNIQUE-TRIM AIRCRAFT FLIGHT CONTROL SYSTEM

Carl J. Bauer, Glassboro, N.J., assignor to The Boeing Company, Seattle, Wash.

Filed May 17, 1994, Ser. No. 243,796
Int. Cl.[6] B64C *9/00*; B60V *3/08*
U.S. Cl. 364—434 13 Claims



1. A system for controlling an aircraft, having landing gear and defining a pitch axis, a roll axis, a yaw axis and a lift axis, during a transition between a fly state, when no landing gear contact ground, and a ground state, when landing gear contact ground, comprising:

controller means for producing a control input representing a desired value of an aircraft variable, wherein said aircraft variable comprises at least one of attitude with respect to the pitch axis, attitude with respect to the roll axis, heading with respect to the yaw axis, and altitude with respect to the lift axis;

sensing means responsive to the landing gear for providing sensor signals representing whether each landing gear contacts ground;

landing gear ground contact means responsive to said sensor signals for producing signals indicating aircraft operation in the fly state and ground state;

feedforward shaping means responsive to signals from said landing gear ground contact means and said control input, for developing a feedforward command that changes during the transition between the fly state and ground state, the feedforward command being proportional to said control input in the ground state and having a predetermined frequency dependent response profile in the fly state;

summing junction means for combining the feedforward command and a trim command, and for producing therefrom a control surface command; and

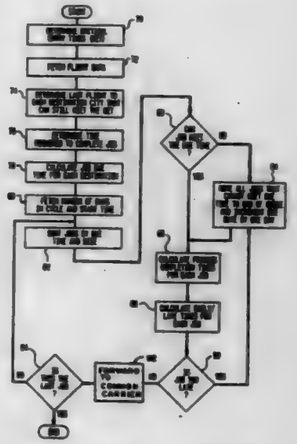
automatic trim means responsive to signals from said landing gear ground contact means and said control surface command for producing a trim command, for removing the effect of steady-state control input from the control surface command when operating in the fly state, and for producing a control surface neutral position command during operation in the ground state with all landing gear in ground contact.

5,446,667

JUST-IN-TIME MAIL DELIVERY SYSTEM AND METHOD

Je H. Oh, Stamford; William M. Hunt, Shelton, and Ronald P. Sansone, Weston, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 18, 1992, Ser. No. 900,397
Int. Cl.[6] G07B *17/00*
U.S. Cl. 364—464.02 3 Claims



1. A system for the handling and processing of mail having a mailer sort mail in accordance with the zip code designation thereof, separating local mail from non local mail, traying the non local mail and providing mail destination data to the mail trays, comprising:

(a) microprocessor means for assembling, arranging, and processing zip code, sorting, routing, and time table data;

(b) means for determining the routing of the mail trays through a transportation system;

(c) means for determining the times of departures of the transportation system;

(d) means for determining if non local mail can be processed in time to meet the critical entry time of the postal distribution center of the mail destination;

(e) means for determining the cost of shipping the mail and

paying the cost of transporting the non local mail to the common carrier;

(f) means for delivering non local mail to a common carrier in accordance with the times of departures of the transportation system in time to meet a departure sequence for the common carrier as determined by the routing of the mail; and

(g) means for notifying a postal authority of said processing of said non local mail so that said postal authority can charge said mailer for said mail.

5,446,668

FRANKING MACHINE

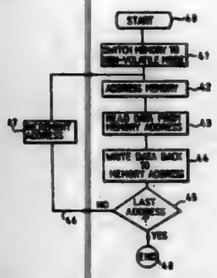
Raymond J. Herbert, Leigh-on-Sea, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom

Filed Dec. 18, 1992, Ser. No. 992,702

Claims priority, application United Kingdom, Dec. 19, 1991, 9126998

Int. Cl.[5] G07B *17/00*

U.S. Cl. 364—464.02 10 Claims



1. A franking machine including electronic accounting and control circuits; data storage means including a plurality of first storage locations for storing first data and a plurality of second storage locations for storing second data; each said first storage location and each said second storage location being switchable between a volatile mode of operation and a non-volatile mode of operation; said storage locations being effective in said volatile mode of operation to retain data stored therein only when an energizing potential of at least a predetermined magnitude is supplied to the storage means and being effective in said non-volatile mode of operation to retain said data stored therein when said energizing potential is less than said predetermined magnitude; power means operative during normal operation of the franking machine to apply said energizing potential of at least said predetermined magnitude to said storage locations of said data storage means; said storage locations during normal operation of the franking machine being in said volatile mode of operation and said accounting and control circuits being operative to generate address signals to address selected ones of said storage locations and to generate a control signal having a first state for writing and a second state for reading respectively to and from said selected ones of said storage locations; control means operative in response to said control signal being in said first state during normal operation of the franking machine to inhibit addressing of each of said plurality of second storage locations; and said accounting and control circuits being operative in response to a power down condition in which said energizing potential decreases to less than said predetermined magnitude to switch said storage locations of said storage means from said volatile mode of operation to said non-volatile mode of operation.

5,446,669

METHOD AND APPARATUS FOR MANAGING A MACHINING SYSTEM

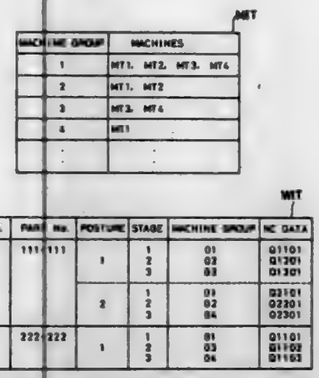
Yasuhiro Yamashita, Okazaki; Kunpei Manabe, Nagoya, and Atsuhisa Asada, Chu, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 13, 1991, Ser. No. 806,325

Claims priority, application Japan, Dec. 26, 1990, 2-406354

Int. Cl.[6] G06F *15/46*

U.S. Cl. 364—468 12 Claims



1. A computer implemented method of managing a machining system which is provided with plural machine tools, a workpiece storage for storing plural workpieces, a transfer apparatus for selectively transferring said workpieces between said workpiece storage and said machine tools and a computer for controlling the transfer operation of said transfer apparatus, said method comprising steps of:

memorizing in a memory of the computer first information indicating membership of said machine tools in plural machine groups corresponding to plural kinds of machinings;

memorizing in said memory second information indicating the kinds of workpieces to be machined and machine groups which can carry out said plural kinds of machinings, respectively, for machining said workpieces, respectively;

checking the conditions of said machine tools to find an empty machine tool which requires a new workpiece;

finding out one of workpieces stored in said workpiece storage which can be machined by a machine group to which said empty machine belongs; and

using the computer for controlling the transfer of a workpiece found in said finding step to said empty machine tool.

5,446,670

ERROR MANAGEMENT SYSTEM FOR ERRORS IN IMBRICATED FORMATIONS OF PRINTED PRODUCTS

René Hunziker, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 6, 1993, Ser. No. 58,466

Claims priority, application Switzerland, May 7, 1992, 01467/92

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—468 22 Claims

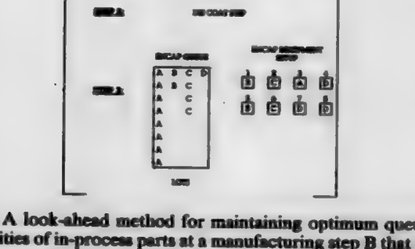
1. A system for detecting and treating errors in an imbricated stream of sheet-like products, comprising:

conveying means (21, 22, 23, 24) for conveying said imbricated product stream (S) in a conveying direction and defining a conveying path,

an observation element (1) arranged adjacent to said conveying path and provided with means for scanning the imbricated product stream (S) passing by and for generating a correlated measuring signal (MS),

an interpretation element (2) connected to said observation element (1) so as to receive the measuring signal (MS) and including means for the interpretation of said measuring signal (MS) so as to detect each of a plurality of possible errors in the imbricated stream, and for generating error signals based on the interpretation and which are characteristic of the particular error detected,

a control element (3) connected to said interpretation element (2) so as to receive the error signals and being provided with means for generating different control signals



which are correlated with the different error signals received,

a plurality of controlled elements (4.1, 4.2, 4.3, 10, 20, 30) connected to said control element (3) and so that each controlled element receives a particular one of the different control signals, said controlled elements being arranged downstream from said observation element and being provided with means for responding to the receipt of a particular control signal so as to eliminate the detected error or minimize its effect, and

a single clock system for controlling each of said interpretation element, said control element, and said controlled elements.

5,446,671

LOOK-AHEAD METHOD FOR MAINTAINING OPTIMUM QUEUED QUANTITIES OF IN-PROCESS PARTS AT A MANUFACTURING BOTTLENECK

Craig M. Weaver, Boise; Ruth A. Allison, Kuna; Grace G. Metsker, Boise; Jeanne M. Clemons, Boise; Douglas S. Durham, Boise, all of Id.; Gary A. Sabin, Cupertino, Calif., and Keven A. Hope, Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Oct. 22, 1993, Ser. No. 142,252

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—468 15 Claims

11. A look-ahead method for maintaining optimum queued quantities of in-process parts at a manufacturing step B that has been determined to be a throughput bottleneck, said method controlling the production at a manufacturing step P which precedes step B and comprising the following steps:

(a) providing a data processing system having memory means for data storage, addressing means for updating and accessing data in said memory means, and processor means for comparing stored data values;

(b) assigning a maximum step B queue lot quantity Q_{MAX} and a minimum step B queue lot quantity Q_{MIN} for at least one product which must be processed at step B, said Q_{MAX} and Q_{MIN} values being stored in said memory means;

(c) maintaining a running account of lot quantities queued for processing at step B for those products assigned Q_{MAX} and Q_{MIN} values, said running account being stored in said memory means;

(d) assigning a set flag status to a product whenever the queued lot quantity exceeds that product's assigned Q_{MAX}, said set flag status also be stored in said memory means;

(e) clearing a set flag status whenever the queued lot quantity for a particular product drops below that product's assigned Q_{MIN}; and

(f) assigning to those products having a clear flag status a higher priority for processing at step B than those products having a set flag status, and controlling production at step P responsive to a running account of lot quantities queued for processing at step B.

5,446,672

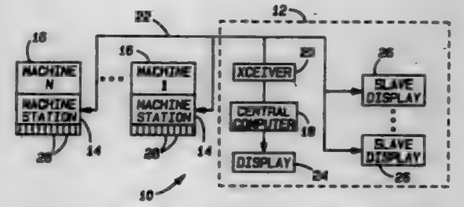
MACHINE MONITORING SYSTEM

Michael Boldys, Sterling Heights, Mich., assignor to Air Gage Company, Livonia, Mich.

Filed Aug. 9, 1994, Ser. No. 287,905

Int. Cl.[6] G06F *15/46*

U.S. Cl. 364—474.16 9 Claims



1. A machine monitoring system for use with a plurality of machines, each of which performs cyclic work operations comprising:

a machine unit adjacent each of said plurality of machines, each of said machine units comprising.

means for detecting each work cycle for a plurality of tools of the machine and for generating work cycle output signals representative of each tool thereof;

means for detecting each work cycle for a plurality of maintenance functions of the machines and for generating work cycle output signals representative of each said maintenance function thereof;

means for counting said work cycle output signals representative of each of said tools and for generating count output signals thereof;

means for counting said work cycle output signals representative of each of said maintenance functions of the machines and for generating count output signals thereof;

a central station remote from said monitoring system, said central station system comprising:

means for receiving said count output signals from said machine unit;

means for comparing said count output signals with predetermined limit counts for each of said plurality, of tools indicative of the status of each of said plurality, of tools

and means for generating output signals corresponding to the status of said tools;

means for comparing said count output signals with predetermined limit counts for each of said maintenance functions of the machines and means for generating output signals corresponding to status of said machines;

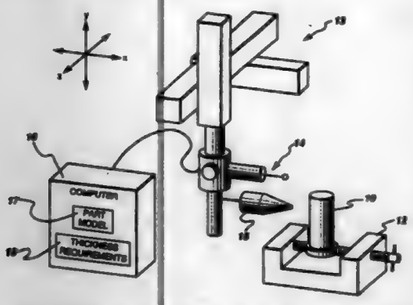
means for activating an alarm when said output count equals said limit count.

5,445,673

SYSTEM AND METHOD FOR FINISH MACHINING AN IN-PROCESS PART HAVING AN INACCESSIBLE INTERIOR CAVITY

Lowell W. Baner, and Martin K. Lee, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1993, Ser. No. 39,664
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—474.37 **9 Claims**



1. A system for finish machining an in-process part having an inaccessible interior cavity, an envelope of excess material to be machined, predefined minimum wall thickness requirements, and a requirement to maximize excess wall thicknesses, said system comprising:

a fixture for holding said in-process part to be finish machined;

a co-ordinate measurement machine having a ball probe for measuring external co-ordinates of said in-process part and a sonic thickness probe for measuring wall thickness of said in-process part at a plurality of selected points on said in-process part;

a computer, operably connected to said co-ordinate measurement machine, having a model of a nominal part stored in memory therein, wherein said computer is programmed to calculate an optimal position of said nominal part in relation to said inaccessible interior cavity within said in-process part, said computer computationally translating and rotating said nominal part until said predefined minimum wall thickness requirements are met and said excess wall thicknesses are maximized, said excess wall thicknesses defined as the difference between said nominal part surface and said minimum wall thickness requirements at any given point; and

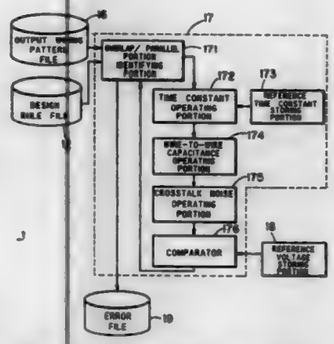
a numerical control device responsive to the computer for finish machining said in-process part according to the optimal position of said nominal part.

5,446,674

CROSSTALK VERIFICATION DEVICE

Minoru Ikeda, and Tsunesato Munakata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,291
Claims priority, application Japan, Jun. 9, 1992, 4-149340
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[6] H01L *25/00*
U.S. Cl. 364—489 **16 Claims**



1. A crosstalk verification device comprising:

first providing means for providing layout pattern data specifying a layout pattern to be verified;

second providing means for providing a design rule on said layout pattern to be verified;

first storing means for storing a first reference on the size of a transistor prone to exert the influence of crosstalk and a second reference on the size of a transistor susceptible to crosstalk;

first extracting means connected to said first and second providing means and said first storing means for processing said layout pattern data while referring to said design rule and said first and second references to extract, from said layout pattern data, data on output wiring patterns of a first transistor satisfying said first reference and a second transistor satisfying said second reference out of transistors in said layout pattern to be verified;

second storing means for storing a third reference on the magnitude of crosstalk noise;

second extracting means connected to said first extracting means and said second storing means for calculating a wire-to-wire capacitance of an overlap/parallel portion between output wires of said first and second transistors as a function of said data on said output wiring patterns to determine the magnitude of crosstalk noise produced when an output signal of said second transistor rises and falls as a function of said wire-to-wire capacitance, to extract said overlap/parallel portion as an error portion if said magnitude of crosstalk noise exceeds said third reference;

display means connected to said second extracting means for visually displaying said error portion;

first file means connected to said first extracting means for accumulating said data on said output wiring patterns extracted by said first extracting means to apply said accumulated data to said second extracting means;

second file means connected to said second extracting means for accumulating data on said error portion extracted by said second extracting means to apply said accumulated data to said display means;

wherein, said first extracting means comprises:

data extracting means connected to said first and second providing means for extracting coordinate data on said transistors in said layout pattern;

transistor size operating means connected to said data extracting means for calculating transistor sizes of said transistors size in said layout pattern as a function of said coordinate data;

comparing means connected to said transistor size operating means and said first storing means for comparing each of said transistor sizes with said first and second references to identify said first and second transistors;

wherein, said second extracting means comprises:

overlap/parallel portion identifying means connected to said first and second providing means for identifying said overlap/parallel portion between said output wires of said first and second transistors;

time constant operating means connected to said overlap/parallel portion identifying means and said second providing means for calculating a time constant in said output wire of said first transistor having said overlap/parallel portion with said output wire of said second transistor to extract an overlap/parallel portion of an output wire of a third transistor having a highly probable danger of crosstalk noise occurrence as a function of said time constant in accordance with a predetermined reference;

wire-to-wire capacitance operating means connected to said time constant operating means and said second providing means for calculating said wire-to-wire capacitance of said. overlap/parallel portion of said output wire extracted by said time constant operating means;

crosstalk noise operating means connected to said wire-to-wire capacitance operating means for calculating said magnitude of crosstalk noise produced when said output signal of said second transistor rises and falls as a function of said wire-to wire capacitance; and

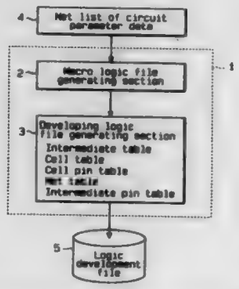
error portion extracting means connected to said crosstalk noise operating means and said second storing means for extracting said overlap/parallel portion as said error portion if said magnitude of crosstalk noise exceeds said third reference.

5,446,675

DEVELOPING METHOD AND APPARATUS OF HIERARCHICAL GRAPHIC DATA FOR USE IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Terumi Yoshimura, Kasugai, Japan, assignor to Fujitsu Limited and Fujitsu VLSI Limited, Aichi, Japan

Filed Jan. 31, 1994, Ser. No. 189,033
Claims priority, application Japan, Mar. 19, 1993, 5-060772
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **4 Claims**



1. A method of using a computer system to assist in the design of a semiconductor circuit wherein a user inputs circuit parameter data to said computer system by an input device for processing by said computer system into a hierarchy of data used to describe the design of the semiconductor, its component parts, and the connections between said component parts, said hierarchy being organized according to a net list of circuit data input to said computer system describing circuit parameters of at least one circuit cell representative of semiconductor component having input and output pins, said circuit cell parameters including information describing the location of said input and output pins, said hierarchy being further organized according to a user defined cell macro having data representative of a plurality of circuit cells and the connections made therebetween, and according to a controlling macro comprising data describing said circuit cell and said user defined cell macro as well as the connections made therebetween, the method comprising:

a first step of inputting a net list of circuit parameter data into said computer system to produce a plurality of macro logic files corresponding to the number of user defined cell macros defined in said net list;

a second step of producing a logic development file from said plurality of macro logic files, said logic development file containing a plurality of data tables wherein a hierarchy of data is arranged by:

storing circuit parameter information respecting said controlling and user defined macro data in an intermediate table;

storing circuit parameter information respecting said circuit cell data in a circuit cell table;

storing information respecting the input and output pin locations of said logic cell in a cell pin table;

storing information respecting said net list data in a net list table;

storing information respecting the input and output pin locations described in said user defined macro in an intermediate pin table; and

cross referencing the information stored in said plurality of tables using an identical table and a multi-table pointer, said identical table pointer operating to cross reference information stored within each of said intermediate table, said circuit cell table, and said cell pin table, said multi-table pointer operating to cross reference the information stored between said intermediate and circuit cell tables, said circuit cell and cell pin tables, said cell pin and net list tables and said net list and intermediate pin tables;

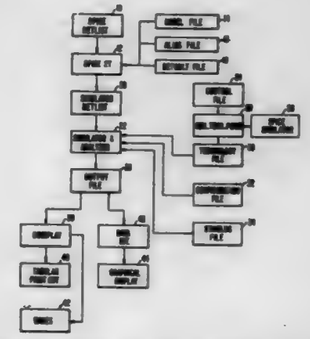
a third step of displaying the hierarchical relationship contained in said logic development file.

5,446,676

TRANSISTOR-LEVEL TIMING AND POWER SIMULATOR AND POWER ANALYZER

Xiaoli Huang, and William H. Zhang, both of Cupertino, Calif., assignors to EPIC Design Technology Inc., Santa Clara, Calif.

Filed Mar. 29, 1993, Ser. No. 40,531
Int. Cl.[6] G06F *15/60, 15/20*
U.S. Cl. 364—578 **17 Claims**



1. In an appropriately programmed digital computer having a CPU, memory, user interface and printer, a method of simulating electronic circuits and analyzing these circuits with

respect to timing behavior and power consumption comprising the steps of:

a) inputting a netlist of a circuit to be simulated identifying transistors and nodes;

b) inputting a technology file for characterizing transistors in said netlist, wherein said technology file initially contains a two-dimensional I-V table tabulating transistor drain to source currents at various drain-to-source and gate-to-source voltage pairs, said I-V table being subsequently converted into a two-dimensional linearization table holding piece-wise linear elements approximating MOS transistors;

c) inspecting each node in said netlist and constructing a static channel connected component at said each node where more than one transistor channel is coupled to said each node and where node quantity in said static channel connected component is below a maximum threshold value, said static channel connected component being stored in memory;

d) establishing initial voltage values at said each node in said netlist through input vectors;

e) advancing circuit simulation to a pending event next in time, wherein said pending event is a voltage change on a node that exceeds an event resolution, said voltage change being determined from a previous voltage level which caused an earlier event at said node;

f) identifying an affected transistor coupled to said node on which said pending event next in time is to occur;

g) associating an affected channel connected component with said affected transistor wherein the step of associating an affected channel connected component includes:

i) retrieving from memory a stored static channel connected component containing said affected transistor if in existence, and

ii) constructing a dynamic channel connected component containing said affected transistor if said stored static channel connected component is not in existence;

h) evaluating a response of said affected channel connected component to said pending event next in time through linear approximation, wherein each transistor contained in said affected channel connected component is replaced with a current source, resistor and transconductor retrieved from said technology file, said evaluating step including:

i) checking nodes contained in said affected channel connected component for event occurrence; and

ii) scheduling an event occurrence when detected.

5,446,677

DIAGNOSTIC SYSTEM FOR USE IN AN ENVIRONMENT CONTROL NETWORK

Howard A. Jensen, Mequon; Barrett G. Wainscott, Jr., Waukesha; Donald R. Albinger, New Berlin, and Richard H. Monroe, West Milwaukee, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

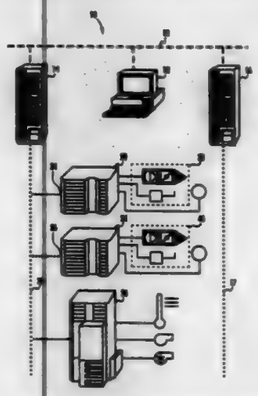
Filed Apr. 28, 1994, Ser. No. 234,827
Int. Cl.[6] G01F *1/06*
U.S. Cl. 364—510 **20 Claims**

1. An environment control network, comprising:

a plurality of box units, each of said plurality of box units having a controller operatively associated with said box unit, said box unit including a damper driven by an actuator, said damper controlling air flow to an environment, said box unit being coupled to a sensor for providing a parameter signal, each controller including a parameter input, coupled to said sensor, for receiving the parameter signal and an actuator output coupled with said actuator, said controller providing an actuator signal at said actuator output to position said actuator;

a communication bus coupled to each said controller; and

a computer operatively couplable with said communication bus, said computer configured to cause said controller to position said actuator to a plurality of particular positions, said computer configured to receive a plurality of particular parameter signals associated with said plurality of particular positions, wherein said computer is configured



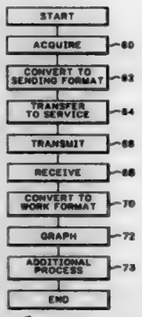
to display said plurality of particular positions with said plurality of parameter signals.

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TRANSMISSION OF INFORMATION OVER AN ALPHANUMERIC PAGING NETWORK

William E. Saltzstein, Amity, and Ray Wardell, McMinnville, both of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Dec. 18, 1992, Ser. No. 993,473
Int. Cl.[6] G08B *5/22*
U.S. Cl. 364—514 R **16 Claims**



1. A method of transmitting information, comprising the steps of:

sampling a set of data, thereby acquiring digital data;

converting said digital data to a format acceptable to a paging network, thereby creating a binary data stream in a non-graphical form;

transmitting said binary data stream over said paging network;

receiving said binary data stream;

unconverting said binary data stream, thereby creating said digital data; and

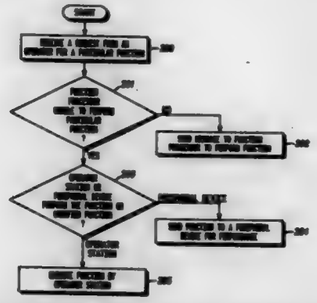
processing said digital data.

5,445,679

METHOD FOR AN OPERATOR STATION TO PERFORM REQUESTED FUNCTIONS WHEN A FUNCTIONS PROCESSOR IS UNABLE

Chris M. Griffis, Westmont; Arthur L. Fumerolo, Schaumburg; Timothy L. McVey, Fox River Grove, and Kenneth G. Sommer, Bartlett, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1993, Ser. No. 102,369
Int. Cl.[6] H04Q *11/00*
U.S. Cl. 364—514 C **8 Claims**



1. In a communication system that includes at least one operator station, a functions processor, and a plurality of peripheral communication devices, wherein the operator station conveys requests for functions to be performed to the functions processor such that the functions processor performs the functions requested, a method for the operator station to perform functions when the functions processor is unable to perform the functions requested within a predetermined period of time, the method comprises the steps of:

a) receiving, at the operator station, at least one request for a particular function to produce at least one requested function;

b) determining, by the operator station, whether the functions processor is able to perform the at least one requested function within the predetermined period of time;

c) when it is determined that the functions processor is unable to perform the at least one requested function within the predetermined period of time, determining, by the operator station, which of the operator station and a peripheral communication device of the plurality of peripheral communication devices is to perform the at least one requested function;

d) when it is determined that the operator station is to perform the at least one requested function, performing, by the operator station, the at least one requested function based on operational instructions, wherein the operational instructions indicate instructions needed to perform the at least one requested function; and

e) when it is determined that the peripheral communication device is to perform the at least one requested function, transporting, by the operator station, the at least one requested function to the peripheral communication device.

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SYSTEM AND METHOD FOR OBTAINING NETWORK PERFORMANCE DATA

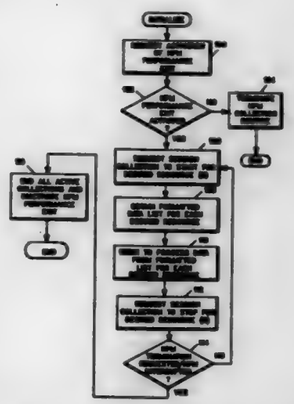
Jeffrey G. Sekiya, Raleigh; Michael W. Stayton, Cary, and Leo Tomoshenko, Carrboro, all of N.C., assignors to IBM Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 717,249, Aug. 9, 1991, abandoned. This application Jul. 13, 1994, Ser. No. 274,565
Int. Cl.[6] G01B *7/00*
U.S. Cl. 364—550 **8 Claims**

1. A method for obtaining performance measurements for at least one selected resource in a computer network, said computer network containing a plurality of resources and executing a communication access program to control communication sessions between pairs of said plurality of resources, comprising the steps of:

activating a performance exit interface in the communication access program to signal that performance data is to be collected for said at least one selected resource;

requesting said communication access program to start the collection of performance data for each communication session between said pairs of plurality of resources having said at least one selected resource as one of said pairs of plurality of resources;



collecting said performance data for said each communication session having said at least one selected resource as one of said pairs of plurality of resources without impairing any trace facilities of said communication access program and providing said performance data to said performance exit interface;

processing said performance data to determine performance measurements for said at least one selected resource; and

terminating said collection of performance data for said each communication session and deactivating said performance exit interface.

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METHOD OF ESTIMATING PROPERTY AND/OR COMPOSITION DATA OF A TEST SAMPLE

Jon S. Gethner, Scotch Plains; Terry R. Todd, Budd Lake, and James M. Brown, Flemington, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 990,715, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 596,435, Oct. 12, 1990, abandoned. This application Sep. 2, 1994, Ser. No. 300,016
Int. Cl.[6] G06F *15/20*
U.S. Cl. 364—554 **12 Claims**

1. A method for recalibrating an analyzer which uses a correlation between calibration sample spectra and a property and/or composition data for estimating that property and/or composition data of a test sample, comprising

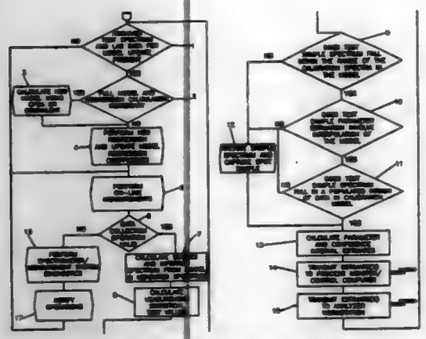
(a) performing a spectral measurement on the test sample,

(b) determining the property and/or composition data of the test sample from its measured spectrum, the determination being made from the correlation of the calibration sample spectra to said known property and/or composition data of the calibration sample,

(c) comparing calibration sample spectra as to whether or not the measured spectrum is within the range of the calibration sample spectra,

(d) isolating the test sample if said measured spectrum is not within the correlation between said calibration sample spectra and the property and/or composition data,

(e) analyzing said test sample of step (d) by a separate method to ascertain the property and/or composition data, and



(f) recalibrating the analyzer with this data and with the spectral measurement data obtained by performing the spectral measurement on the test sample of step (d).

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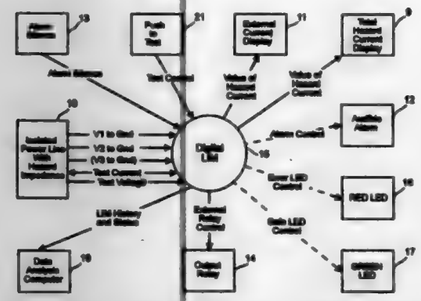
SYSTEM FOR CALIBRATING A LINE ISOLATION MONITOR

Donald R. Janke, Milwaukee, and James A. Rodrian, Grafton, both of Wis., assignors to Square D Company, Palatine, Ill.

Filed Mar. 21, 1994, Ser. No. 215,437

Int. Cl.[6] G01R *35/00*

U.S. Cl. 364—571.01 **13 Claims**



1. A system for self-calibrating a line isolation monitor that continuously displays a hazard current between line conductors of an ungrounded polyphase power distribution system and ground, said monitor having a current sensing circuit for measuring a test current injected into said power distribution system, a voltage sensing circuit for each of said line conductors, said voltage sensing circuits for measuring voltages between said line conductors and ground, said voltages consisting of a line voltage and a test voltage generated across a hazard impedance between said line conductors and ground by said test current, said self-calibrating system comprising;

A. a sine wave generator for generating a calibration test voltage, said test voltage having a predetermined frequency at a multiple of a determined line frequency of said power distribution system;

B. a calibration control for selecting inputs to said voltage sensing circuits, said inputs coupled to said line conductors when said monitor is in a normal mode of operation, and said inputs coupled to said sine wave generator when said monitor is in a calibration mode, said voltage sensing circuits to measure said voltages between said line conductors and ground when in said normal mode and to measure said test voltage when in said calibration mode;

C. a first comparator for comparing outputs of said voltage sensing circuits with predetermined parameters when in said calibration mode, said predetermined parameters calculated as theoretical values based on component values and tolerances within said voltage sensing circuits, said first comparator for outputting a first signal representative of a deviation from said predetermined parameters;

D. a second comparator for comparing said test current with a theoretical value based on component values and tolerances within said current sensing circuit, said second comparator for outputting a second signal representative of a deviation from said theoretical value;

E. an output circuit for producing a visual and an audible indication of a warning condition if either of said first or second signals representing a deviation from said predetermined parameter and theoretical value, respectively, exceed a first, predetermined amount, and for producing a visual and an audible indication of a fault condition if either of said first or second signals exceed a second, greater, predetermined amount when in said calibration mode; and

F. wherein said line isolation monitor periodically self-calibrates at predetermined times without interfering with said continuous display of said hazard current.

5,446,683

METHODS AND APPARATUS FOR GENERATING PSEUDO-RANDOM BINARY PATTERNS

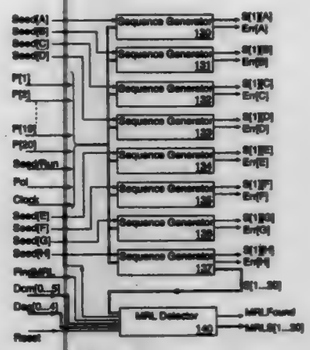
Sean F. Mullen, and Jonathan Jebwab, both of Bristol, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1994, Ser. No. 221,354

Claims priority, application European Pat. Off., Apr. 6, 1993, 93302681

Int. Cl.[6] G06F *1/02*

U.S. Cl. 364—717 **16 Claims**



1. Apparatus for generating a pseudo-random binary pattern having a variable characteristic polynomial, said pseudo-random binary pattern formed as a plurality of serial bit streams, corresponding bits in each said stream forming together one of successive w-bits words in said binary pattern, comprising:

a plurality of LFSR sequence generators, each said LFSR sequence generator arranged to generate bits for one of said serial bit streams and including a plurality of stages, said stages having an input stage, at least one intermediate stage, and an output stage, said stages being coupled for sequential propagation of signals through said stages, and at least one of said stages in each LFSR generator being responsive to a respective control signal for that stage to determine whether signal propagation through said stage is influenced by a feedback signal for that LFSR generator; and means for producing in accordance with said variable characteristic polynomial a portion of predetermined length of one of said serial bit streams, and deriving said control signal from said portion.

5,446,684

STORAGE MEDIUM, STORAGE METHOD AND STORED INFORMATION READING METHOD

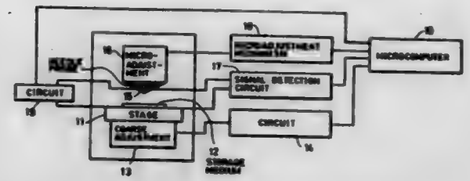
Norio Kaneko; Katsuhiko Shimho, and Keisuke Yamamoto, all of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 804,593, Dec. 10, 1991, Pat. No. 5,335,197, which is a division of Ser. No. 500,569, Mar. 28, 1990, Pat. No. 5,097,443. This application May 10, 1994, Ser. No. 240,473

Claims priority, application Japan, Mar. 28, 1989, 1-73744

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—46 **15 Claims**



1. A storage medium, for use in recording and/or reproducing information, comprising an oxide layer, wherein a surface of said oxide layer comprises a plurality of pits and projections, said oxide layer storing information by exhausting oxygen from said oxide layer to an adjacent atmosphere through local application of a voltage to portions of said oxide layer in accordance with information signals.

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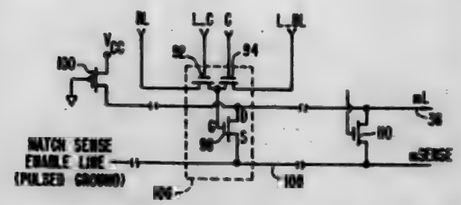
PULSED GROUND CIRCUIT FOR CAM AND PAL MEMORIES

John C. Holst, San Jose, Calif., assignor to Intergraph Corporation, Huntsville, Ala.

Filed Feb. 23, 1993, Ser. No. 23,904

Int. Cl.[6] G11C *15/04*

U.S. Cl. 365—49 **8 Claims**



1. A content addressable memory (CAM), wherein a match line associated with a row of CAM cells indicates a match condition when a value placed on a plurality of bit lines matches a value stored in the row of CAM cells, comprising:

a row of match transistors, each match transistor of said row of match transistors coupled at a gate to a match output of a corresponding CAM cell of the row of CAM cells, and said each match transistor coupled at a first terminal to the match line;

a match sense line coupled to a second terminal of each match transistor of said row of match transistors, said match sense line carrying a match sense signal, said match sense signal characterized by two different voltages, a sensing voltage and a charging voltage, wherein a voltage level of the match line is sensed when said match sense line is at said sensing voltage to detect a match condition if present; and

means for supplying charge to the match line through said match transistors to charge the match line to a quiescent level when said match sense line is at said charging voltage.

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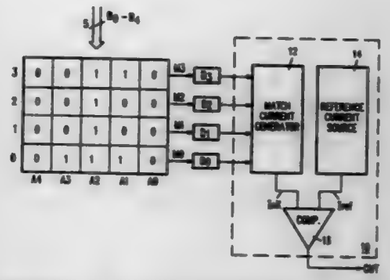
METHOD AND APPARTUS FOR DETECTING MULTIPLE ADDRESS MATCHES IN A CONTENT ADDRESSABLE MEMORY

Robert J. Bonnyak, and Mark R. Santoro, both of Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Aug. 2, 1994, Ser. No. 285,013

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **7 Claims**



1. A detection circuit for detecting multiple matches in an associative array, wherein the associative array includes a plurality of rows of storage elements such that each row stores one or more boolean data bits defining a boolean data word, the associative array including comparison circuitry for comparing a boolean input signal broadcasted to the associative array to the boolean data words stored in the associative array to determine whether there is a match in one or more rows of the associative array, a match in any row causing the comparison circuitry to generate an active match signal for that row, the detection circuit comprising:

a match current generator that responds to active match signals generated by the associative array by generating a match current that is linearly proportional to the number of active match signals generated by the associative array;

a reference current source that generates a reference current that is between one and two times greater than the match current generated by the match current generator when only one active match signal is generated by the associative array; and

a comparator that compares the match current and the reference current and generates an active output signal when the match current is greater than the reference current.

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DATA STORAGE MEDIUM FOR STORING DATA AS A POLARIZATION OF A DATA MAGNETIC FIELD AND METHOD AND APPARATUS USING SPIN-POLARIZED ELECTRONS FOR STORING THE DATA ONTO THE DATA STORAGE MEDIUM AND READING THE STORED DATA THEREFROM

Thomas D. Hurt, Chantilly, Va., and Scott A. Halpine, Gaithersburg, Md., assignors to Terastore, Inc., Gaithersburg, Md.

Filed Jan. 31, 1994, Ser. No. 188,828

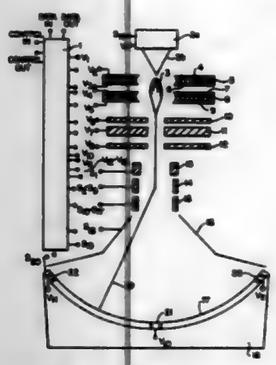
Int. Cl.[6] G11C *13/04*

U.S. Cl. 365—121 **27 Claims**

1. A method of storing data as a direction of polarization of a data magnetic field, the method comprising the steps of:

providing a spin-polarized electron having an electron magnetic field, the electron magnetic field having a direction of polarization corresponding to one of first and second data values; and

directing the spin-polarized electron, through an electrically nonconductive environment, at the data magnetic field to



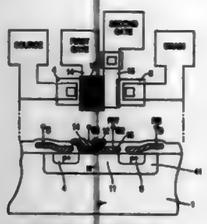
impart the direction of polarization of the electron magnetic field to the data magnetic field.

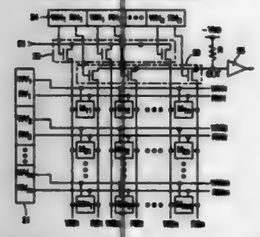
5,446,688

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Yasuo Torimaru, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1993, Ser. No. 171,715
Claims priority, application Japan, Dec. 24, 1992, 4-344923
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 4 Claims





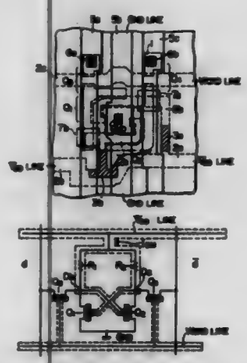
2. A non-volatile semiconductor memory device, comprising:
- a plurality of word lines for writing and a plurality of word lines for reading arranged in parallel with each other in a row direction;
- a plurality of bit lines for writing, to which multivalued data having at least three voltage levels or analog data is input, and a plurality of bit lines for reading, from which multivalued data having at least three voltage levels or analog data is read, the plurality of bit lines for writing and the plurality of bit lines for reading being arranged in parallel with each other in a column direction;
- row scanning means for successively activating the word lines for writing or the word lines for reading in the respective rows in an alternative manner;
- column scanning means for successively connecting the bit lines for writing or the bit lines for reading in the respective columns to an input data line or an output data line, while any one of the word lines for writing or any one of the word lines for reading is activated by the row scanning means; and
- memory cells arranged in a matrix in each crossed portion of one pair of the word line for writing and the word line for reading and one pair of the bit line for writing, and the bit line for reading,
- wherein each of the memory cells has an MOS transistor for reading, an MOS transistor for writing and an MFS transistor provided with a gate having a ferroelectric film above a channel region;
- one of a drain and a source of the MFS transistor has a common electric potential;
- the gate of the MFS transistor is connected to the corresponding bit line for writing through the MOS transistor for writing;
- the other of the drain and the source of the MFS transistor is connected to the corresponding bit line for reading through the MOS transistor for reading;
- a gate of the MOS transistor for writing is connected to the corresponding word line for writing; and
- a gate of the MOS transistor for reading is connected to the corresponding word line for reading.

5,446,689

SEMICONDUCTOR MEMORY HAVING A POLYCRYSTALLINE SILICON LOAD RESISTOR AND CMOS PERIPHERAL CIRCUITRY

Tokumasa Yasui, Kodaira; Shinji Shimizu, Koganei, and Kotaro Nishimura, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 684,867, Apr. 15, 1991, Pat. No. 5,359,562, which is a continuation of Ser. No. 383,536, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 140,243, Dec. 31, 1987, abandoned, which is a division of Ser. No. 818,200, Jul. 22, 1977, abandoned. This application Apr. 21, 1994, Ser. No. 230,814
Claims priority, application Japan, Jul. 26, 1976, 51-88159; Jun. 1, 1977, 52-63330; Jul. 6, 1977, 52-79838
The portion of the term of this patent subsequent to Oct. 25, 2011, has been disclaimed.
Int. Cl.[6] G11C *11/417*
U.S. Cl. 365—154 19 Claims



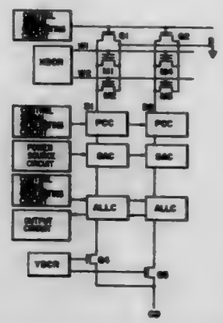
19. A static random access memory device comprising:
- a semiconductor substrate having a main surface, said semiconductor substrate including:
- an N-conductivity type semiconductor region which extends into said semiconductor substrate from said main surface, and
- a P-conductivity type semiconductor region which extends into said N-conductivity type semiconductor region from said main surface to such a depth that said P-conductivity type semiconductor region forms a PN junction with said N-conductivity type semiconductor region;
- a plurality of memory cells formed on a semiconductor substrate in rows and columns, each memory cell consisting essentially of two cross-coupled MISFETs, two transmission MISFETs and two polycrystalline silicon strips each having a first and a second portion formed on an insulating film covering said main surface; and
- a peripheral circuit connected to the memory cells,
- wherein said second portion has the predetermined impurity concentration and said first portion has lower impurity concentration that the impurity concentration of said second region,
- wherein the MISFETs of the memory cells are formed as N-channel MISFETs in said P-conductivity type semiconductor region, and
- wherein the peripheral circuit is comprised of a P-channel MISFET and an N-channel MISFET connected in series with each other and formed on said semiconductor substrate.

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SEMICONDUCTOR NONVOLATILE MEMORY DEVICE

Toshihiro Tanaka, Akigawa; Masataka Kato, Musashino; Toshio Sasaki, Nishitama; Hitoshi Kume, Musashino; Hiroaki Kotani, Ome, and Kazunori Furusawa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1994, Ser. No. 249,383
Claims priority, application Japan, Aug. 10, 1993, 5-198180
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185 16 Claims



1. A semiconductor nonvolatile memory device comprising:
- a plurality of word lines;
- a plurality of data lines intersecting said plurality of word lines;
- a plurality of source lines intersecting said plurality of word lines;
- a plurality of nonvolatile semiconductor memory cells each of which including a control gate, a floating gate, and a source connected to one source line of said plurality of source lines and a drain connected to one data line of said plurality of data lines;
- a plurality of precharging circuits each connected to a data line of said plurality of data lines;
- a plurality of state detecting circuits each connected to a data line of said plurality of data lines; and
- a plurality of data hold circuits connected to each data line of said plurality of data lines; wherein in programming operation for loading data from the exterior in said plurality of memory cells,

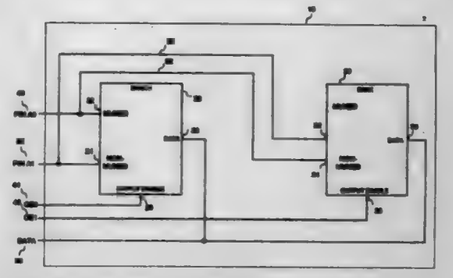
said plurality of data hold circuits store data applied to said memory device and also load said data applied to said memory device are programmed for a predetermined period of time to said plurality of memory cells connected to a selected word line of said plurality of word lines;
- after said selected word line is made unselected, said plurality of precharging circuits precharge said plurality of data lines to the voltage in accordance with the data held in said plurality of data hold circuits;
- data stored in said plurality of data hold circuits are reprogrammed according to the data programmed in said plurality of memory cells connected to reselected word line by reselecting said selected word line thereafter;
- said state detecting circuits compare the reprogrammed data stored in said plurality of data hold circuits; and
- when the reprogrammed data stored in said plurality of data hold circuits are different from each other, said reprogrammed data stored in said plurality of data hold circuits are reprogrammed again for a predetermined period of time in said plurality of memory cells connected to said reselected word line.

5,446,691

INTERLEAVE TECHNIQUE FOR ACCESSING DIGITAL MEMORY

Tom North, Los Altos Hills, and Francis Siu, Saratoga, both of Calif., assignors to ShaBLAMM! Computer Inc., Cupertino, Calif.

Filed Mar. 15, 1994, Ser. No. 215,144
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—189.02 11 Claims



1. A digital memory comprising:
- a first memory circuit having a first multiplexed pin and a first non-multiplexed pin; and
- a second memory circuit having a second multiplexed pin and a second non-multiplexed pin;
- wherein the first multiplexed pin is coupled via a first coupling to the second non-multiplexed pin, and the first non-multiplexed pin is coupled via a second coupling to the second multiplexed pin, such that a first address signal is applicable to the first coupling to access data in the first memory circuit, and a second address signal is applicable to the second coupling to access data in the second memory circuit.

5,446,692

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY MEMORY CELLS SHARED AMONG MEMORY BLOCKS

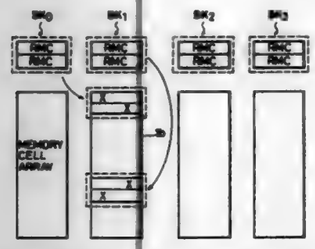
Yoshiyuki Haraguchi; Kouzaki Fujita, and Kiyoyasu Akai, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,109
Claims priority, application Japan, Feb. 14, 1992, 4-028414
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—200 3 Claims

1. A semiconductor memory device, comprising:
- a plurality of memory blocks each including a memory cell array, and first and second redundancy memory cell rows; and

a plurality of redundancy access control circuits each provided for said first and second redundancy memory cell rows in a corresponding one of the memory blocks and controlling access to the corresponding first and second redundancy memory cell rows; wherein

each redundancy access control circuit provided for said first and second redundancy memory cell rows in the



corresponding one of the memory blocks includes means for functionally simultaneously replacing two adjacent memory cell rows in a memory cell array in a memory block other than said corresponding one of the memory blocks containing said corresponding first and second redundancy memory cell rows used for functionally replacing two adjacent memory cell rows.

5,446,693

SEMICONDUCTOR STORAGE DEVICE

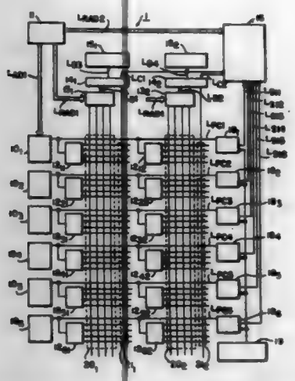
Toshiharu Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,311

Claims priority, application Japan, Sep. 22, 1993, 5-236385

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **4 Claims**



1. A semiconductor storage circuit which includes a memory cell block in which memory cells formed from non-volatile transistors are arranged two-dimensionally,

a spare memory cell block constituted from a plurality of spare memory cells to be replaced by defective memory cells produced in said memory cell block,

a plurality of row pre-decoder circuits for selecting a row of said memory cell block,

a plurality of fuse circuits which are constituted from fuse elements formed from non-volatile transistors of the same structure as those of said memory cells and which are adapted to write redundancy switching information therein,

a fuse circuit write voltage supply circuit for supplying to said fuse circuits a voltage necessary to write redundancy switching information,

a redundancy switching circuit for switching data from said memory cell block to data from said spare memory cell block, and

a redundancy switching control circuit for referring to redundancy switching information written in said fuse circuits to provide to said redundancy switching circuit an instruction whether or not data from said memory cell block should be switched to data from said spare memory cell block,

characterized in that:

said plurality of row pre-decoder circuits and said plurality of fuse circuits are connected in a one-by-one corresponding relationship to each other, and

one of said plurality of fuse circuits is selected by said one of plurality of row pre-decoder circuits and redundancy switching information is written into each of said fuse circuits.

5,446,694

SEMICONDUCTOR MEMORY DEVICE

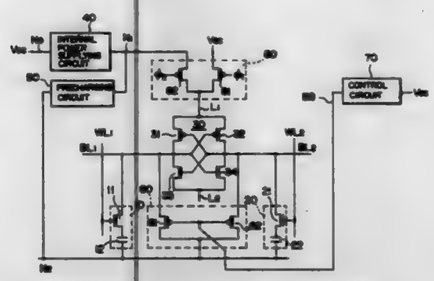
Takayuki Tanaka; Junichi Sayama; Kazukiyo Fukudome, and Yuki Hashimoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 225,968

Claims priority, application Japan, Apr. 28, 1993, 5-102788

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—203 **11 Claims**



1. A semiconductor memory device comprising:

a first node and a second node;

a memory cell for storing data therein, including a first transistor having a first electrode, a second electrode and a gate electrode, and a capacitor connected to the first electrode;

a bit line connected to the second electrode and the first node;

a sense amplifier connected to the first and second nodes, for amplifying a potential of said first node;

a power supply for supplying a supply power potential to said second node;

a first switching circuit connected between said power supply and said second node, for connecting said power supply with said sense amplifier in response to a first control signal indicating a first logic level, the first control signal having either the first or a second logic level;

an internal power supplying circuit connected to said power supply, for supplying an internal potential less than the supply power potential;

a precharging circuit for providing a half potential of the internal potential to said memory cell and said bit line; a second switching circuit connected between said precharging circuit and said bit line, for connecting said bit line with said precharging circuit in response to a second control signal; and

a control circuit for outputting the second control signal having the supply power potential before transition of the first logic level of the first control signal into the second logic level.

5,446,695

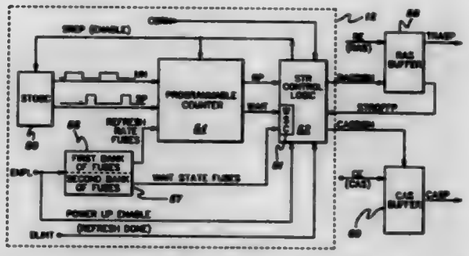
MEMORY DEVICE WITH PROGRAMMABLE SELF-REFRESHING AND TESTING METHODS THEREFORE

David E. Dosse; Wayne F. Ellis, both of Jericho, and Erik L. Hedberg, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1994, Ser. No. 216,578

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **14 Claims**



1. A programmable refresh circuit integrated with a semiconductor memory device having a memory array accessed through word lines and bit lines, said programmable refresh circuit comprising:

a self-timed oscillator that outputs a clocking signal;

programmable pattern generating means for generating a first signal pattern;

counter means connected to receive the clocking signal output from the self-timed oscillator and the first signal pattern generated by the programmable pattern generating means, said counter means having a count driven by said clocking signal and outputting a signal pulse upon the count reaching a digital pattern representation corresponding to the first signal pattern generated by said programmable pattern generating means; and

refresh control logic connected to said counter means for receiving the signal pulse output therefrom, said refresh control logic responding thereto by refreshing a portion of the memory array of the semiconductor memory device, wherein output of multiple signal pulses from the counter means defines a refresh rate at which the memory array is refreshed, said refresh control logic further including means for disabling refreshing of the memory array for a programmable "wait state interval" subsequent to said refresh control logic receiving from a control system connected to the semiconductor memory device a signal initiating self-refresh, and means for enabling refreshing of the memory array subsequent to said wait state interval.

5,446,696

METHOD AND APPARATUS FOR IMPLEMENTING REFRESH IN A SYNCHRONOUS DRAM SYSTEM

Frederick A. Ware, Los Altos Hills; James A. Gasbarro, Mountain View; John B. Dillon, Palo Alto; Michael P. Farmwald, Portola Valley; Mark A. Horowitz, Palo Alto, and Matthew M. Griffin, Mountain View, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 68,758, May 28, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 347,770

Int. Cl.[6] G11G *7/00*

U.S. Cl. 365—222 **10 Claims**

1. A synchronous dynamic random access memory (DRAM) system, the DRAM system comprising a normal operating state and a power down state, during said power down state devices of the DRAM are powered down to minimize consumption of power, said system performing mixed refresh while in the power down state, said system comprising:

at least one synchronous DRAM comprising;

a memory array of elements,

a row address register for receiving a row address of a memory element in the array to be accessed,

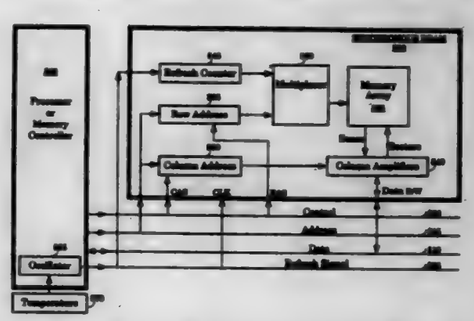
column amplifiers for sensing the row of the memory array identified by the received row address and storing the row sensed,

a refresh address counter incremented by a refresh signal and identifies a row to be refreshed, said refresh address counter maintained in an awake state such that when the DRAM is in the power down state, the refresh address counter is incremented to cause a refresh of the row identified by the refresh address counter;

a precise time base device for generating a refresh signal when the DRAM is in a power down state; and

communication means for communicating the refresh signal from the time base device directly to the refresh address counter of the DRAM when ini a power down state to increment the refresh address counter and cause at least one row identified by the refresh address counter to be refreshed by the column amplifiers sensing the row and restoring the row of memory;

wherein data in the memory array are refreshed when the DRAM is in the power down state.



5,446,697

SEMICONDUCTOR MEMORY DEVICE

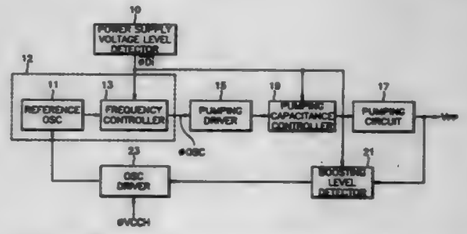
Seung-Moon Yoo, Suwon; Ejaz ul Haq, Seoul; Yun-Ho Choi, Suwon; Soo-In Cho; Dae-Je Chin, both of Seoul; Nam-Soo Kang, and Seung-Hun Lee, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 28, 1993, Ser. No. 68,547

Claims priority, application Rep. of Korea, Dec. 2, 1992, 23132/1992

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—226 **21 Claims**



1. A semiconductor memory device, comprising:

power supply voltage level detecting means for detecting a plurality of predetermined levels of a power supply volt-

age and for generating level detection signals corresponding to respective ones of said predetermined levels; and

oscillating means for generating a frequency-controlled oscillation pulse having a frequency selected in accordance with said level detection signals, said oscillating means including a reference oscillator for generating a reference oscillation pulse having a frequency, and frequency controlling means responsive to said level detection signals for varying said frequency of said reference oscillation pulse to thereby generate said frequency-controlled oscillation pulse.

5,446,698

BLOCK DECODED REDUNDANT MASTER WORDLINE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 30, 1994, Ser. No. 268,788
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—230.03 34 Claims



1. A structure for replacing faulty elements of an integrated circuit memory device with redundant elements, comprising:

a memory array organized in a plurality of memory blocks which are grouped in a plurality of memory segments, wherein a memory segment has one or more memory blocks;

a plurality of global wordlines, wherein a global wordline spans the plurality of memory blocks of the memory array and has a plurality of local wordlines associated with a memory block, and wherein the global wordline may have one or more faulty local wordlines associated with at least one memory segment;

a plurality of segment information circuits, wherein a segment information circuit products an output signal which provides a block information of the memory segment, wherein the block information defines one or more local wordlines of the memory segment and the output signal is formed by a plurality of row addresses and a plurality of block addresses; and

a redundant global wordline, having a plurality of redundant local wordlines, which may be enabled to replace the faulty local wordlines associated with the global wordline upon receipt of one or more addresses of the memory segment which are associated with the faulty local wordlines.

5,446,699

BIT-LINE PAIR SELECTING CIRCUIT IN A MEMORY CELL ARRAY

Ihachi Naiki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

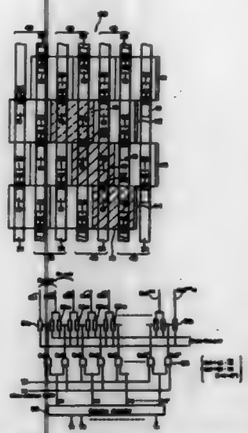
Division of Ser. No. 975,083, Nov. 12, 1992. This application Apr. 11, 1994, Ser. No. 225,520
Claims priority, application Japan, Nov. 12, 1991, 3-323795; Feb. 4, 1992, 4-047884
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.04 3 Claims

1. A bit-line pair selecting circuit in a memory cell array of cells having a cell length where SRAM cells in odd rows and those in even rows are so arranged as to respectively have a positional deviation of approximately half the cell length in the direction parallel With word lines and, with the exception of the bit lines at both ends of the array, each bit line functions as one of the paired bit lines for the odd-row memory cells and also as one of the paired bit lines for the even-row memory cells, said bit-line pair selecting circuit comprising:

individual column switches connected respectively to said bit lines at both ends;

parallel-connected column switch pairs connected respectively to said bit lines except those at both ends;

a column decoder for outputting bit-line pair selecting signals in accordance with input column address signals; and



an AND gate circuit group for outputting logical products of said bit-line pair selecting signals, a row-address LSB signal and an inverted signal thereof;

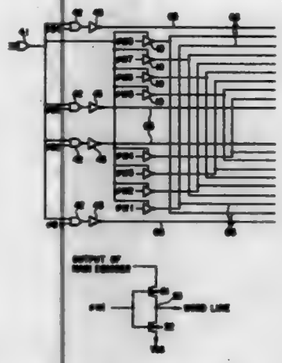
wherein the switching actions of said individual column switches and the mates of said column switch pairs are controlled by the output signals of said AND gate circuit group.

5,446,700

DECODER CIRCUIT HAVING CMOS INVERTER CIRCUITS

Taira Iwase, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 979,079, Nov. 19, 1992, abandoned. This application Mar. 17, 1994, Ser. No. 214,158
Claims priority, application Japan, Nov. 12, 1991, 3-305974
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—230.06 1 Claim



1. A semiconductor device comprising:

a plurality of memory cell blocks arranged in pairs, each memory cell block including a plurality of memory cell

transistors constituting a NOR-type mask ROM having gates which are coupled to word lines, each memory cell block further including a block selecting enhancement type MOS transistor and a block selecting depletion type MOS transistor connected in series with said memory cell transistors, wherein a gate of the block selecting enhancement type MOS transistor in one memory cell block of a given pair and a gate of the block selecting depletion type MOS transistor in the other memory cell block of said given pair are commonly connected to one of a plurality of block selection lines; and

a decoder circuit for selecting one of said memory cells of one of said memory cell blocks by driving said block selection lines and said word lines, said decoder circuit comprising:

a main decoder portion for outputting a main decoder portion output signal;

block selection line drive logic having a plurality of input nodes applied with said main decoder portion output signal and block selection signals, for driving one of said block selection lines in accordance with said main decoder portion output signal and said block selection signals; and

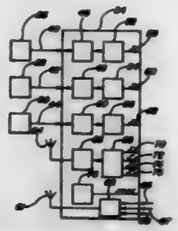
a plurality of CMOS inverters, each CMOS inverter comprising a P channel MOS transistor and an N channel MOS transistor, a source of said P channel MOS transistor applied with said main decoder portion output signal, a source of said N channel MOS transistor applied with a predetermined potential, gates of said P channel MOS transistor and said N channel MOS transistor connected to a corresponding one of a plurality of word line selection signal lines, and drains of said P channel MOS transistor and said N channel MOS transistor connected to a corresponding one of said word lines.

5,446,701

OBJECT LOCATOR SYSTEM

Reinhold E. Utke; John L. Eldmann; Dale P. Van de Loo; Gary L. Ellingson, all of Moorhead, Minn., and Joel T. Aslakson, Fargo, N. Dak., assignors to Team Systems, Inc., Moorhead, Minn.

Division of Ser. No. 937,477, Aug. 28, 1992, Pat. No. 5,346,120. This application Aug. 10, 1993, Ser. No. 104,813
Int. Cl.[6] G01S *3/80*
U.S. Cl. 367—118 8 Claims



1. A method of determining a position of an object comprising the steps of:

establishing an object area which is graphically represented by a first cylindrical coordinate system having a first origin and a second cylindrical coordinate system having a second origin;

positioning a reference receiver at a reference location in the object area, a first additional receiver at a first additional location in the object area and a second additional receiver at a second additional location in the object area;

transmitting a signal from the object;

measuring, at a processing unit operable to process signals received by the reference receivers, and the first and second additional receivers, a first time delay as a function of the difference between receipt times of the signal received at the reference location and a signal received at the processing unit via the first additional location;

measuring, at the processing unit a second time delay as a function of the difference between receipt times of the signal received at the reference location and a signal received at the processing unit via the second additional location;

determining which ray of the first cylindrical coordinate system represents the first time delay and which ray of the second cylindrical coordinate system represents the second time delay; and

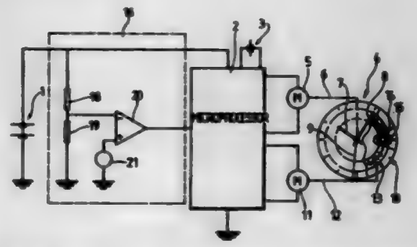
determining whether a first position along the ray of the first coordinate system and a second position along the ray of the second coordinate system are located within a predetermined tolerance.

5,446,702

HOROLOGICAL PIECE COMPRISING A BATTERY END OF LIFE INDICATOR DEVICE

Gabriel Meaux, Annemasse, and Pascal Puthod, Arenthon, both of France, assignors to ISA France S.A., Villers-le-Lac, France

Filed Apr. 18, 1994, Ser. No. 229,346
Claims priority, application Switzerland, Apr. 20, 1993, 01199/93
Int. Cl.[6] G04B *19/20, 9/00*
U.S. Cl. 368—37 8 Claims



1. Electronic horological movement for use in a wristwatch or table clock comprising:

a time-keeping circuit;

a first motor;

first display means controlled by said time-keeping circuit for displaying the time and driven by said first motor;

second display means controlled by said time-keeping circuit for displaying the day of the week or the day of month, said second display means constituted of day of the week or a day of the month ring;

an energy source connected so as to provide power to said time-keeping circuit and said first and second display means; and

a control and detection circuit connected to said energy source and to said second display means for, as a function of a state of charge of said source being less than a predetermined level controlling said second display means so that said second display means adopt a configuration in which said state of charge is indicated,

said day of the week or day of the month ring comprising at least a recurring cycle indicator driven by a second motor independent from first motor and said day of the week or day of the month ring having a supplementary display position at which is provided a sign representative of said state of charge; and

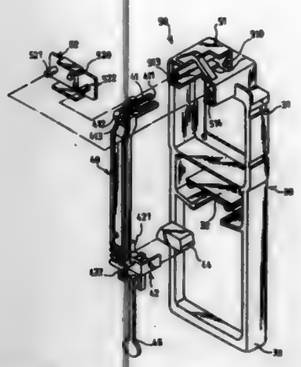
said control and detection circuit being adapted to, firstly, during the detection of said predetermined charge level, control said second display means so that they move the day of the week or day of the month ring a required number of steps to indicate said representative sign, and, secondly, jump said supplementary position during the normal operation of said horological movement.

5,446,703
ANALOG TIMEPIECE MOVEMENT
Herbert Schwartz, Wurmberg, Germany, assignor to Timex Corporation, Middlebury, Conn.
Filed Dec. 12, 1994, Ser. No. 353,758
Int. Cl.[6] G04B *19/04, 37/00*
U.S. Cl. 368—80 10 Claims



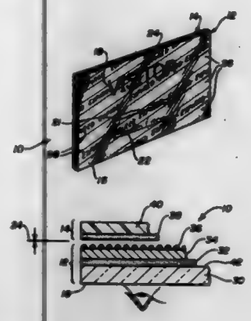
1. An improved movement for an analog wristwatch of the type having a plastic frame with a peripheral wall surrounding a central wall, said central wall supporting a stepping motor and a gear train connected to said stepping motor and adapted to drive analog watch hands, wherein the improvement comprises:
an annular printed circuit board,
a plurality of discrete electronic components disposed on one side of said annular printed circuit board and electrically connected thereto,
said peripheral wall of said frame arranged to support said printed circuit board and further defining a plurality of discrete recesses surrounding said central wall and adapted to receive said discrete electronic components when the annular printed circuit board is so supported,
an annular conductive spring plate disposed on said annular printed circuit board,
means for holding the spring plate, and the printed circuit board against said peripheral wall, and
said annular conductive spring plate, and said annular printed circuit board together defining an opening dimensioned to receive a circular energy cell.

5,446,704
STRUCTURE OF CLOCK
Ching-Ti Chen, Chang-hua County, Taiwan
Filed Jan. 23, 1995, Ser. No. 377,056
Int. Cl.[6] G04B *17/02*
U.S. Cl. 368—134 2 Claims



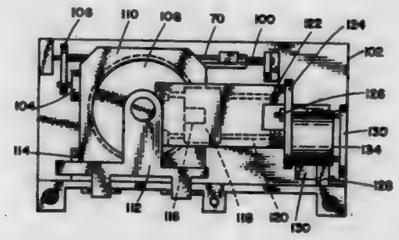
1. A structure of clock comprising:
a main body, said body including a first chamber on the upper portion for disposing a clock mechanism therein, a second chamber on the medial portion for disposing batteries and electrical circuit therein a third chamber on the lower portion thereof for receiving a pendulum therein and a oscilatory control device on the top thereof;
said pendulum comprising a tubular member perpendicularly formed on the top thereof having a pair of corresponding right triangular recesses of arcuate bottom respectively formed at two ends therein and a retainer at the lower end thereof including a means for receiving a magnetic piece and a means for holding a bob member;
said oscilatory control device comprising a less dimensional housing slightly protruded backward from said main body having a pair of parallel extended tubular retainers near the lateral walls of said housing and a first support member of right triangular cross-section smaller in size than the dimension of said right triangular recesses, centrally protruded from the inward surface of the front wall thereof;
a lid member in concomitance with said oscilatory control device, said lid member comprising a pair of cylinder rods parallel extended from the inward surface and positionally in registry with said tubular retainers of said housing, and second support member of right triangular cross-section centrally pretruded from the inward surface thereof in registry with said first support member of said housing;
whereby, said pendulum is mounted to said oscilatory control device by loosely suspending said right triangular recesses at two ends of said tubular member from said first and second support members of said housing and said lid member respectively when said cylinder rods of said lid member engage with said tubular retainers of said housing respectively.

5,446,705
TIME INDICATOR HAVING DISCRETE ADHESIVE
David J. Haas, and Sandra F. Haas, both of Suffern, N.Y., assignors to Temtec, Inc., Suffern, N.Y.
Continuation-in-part of Ser. No. 197,631, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 45,552, Apr. 9, 1993, Pat. No. 5,364,132, which is a continuation-in-part of Ser. No. 650,221, Feb. 4, 1991, abandoned. This application Jul. 29, 1994, Ser. No. 282,178
Int. Cl.[6] G04B *17/00*; G09F *19/00*
U.S. Cl. 368—327 16 Claims



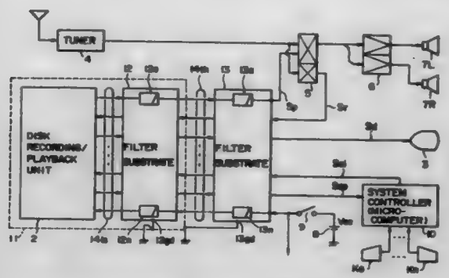
1. A time indicator comprising:
a base substrate with colored ink deposited on a first surface; and
a top substrate having a first surface and a second surface, the first surface having thereon unconnected discrete areas of an adhesive;
wherein when the first surface of the top substrate and the first surface of the base substrate are put into adhesive contact, the areas of the adhesive contact and coact with the colored ink to dissolve the ink and permit the ink to migrate through the adhesive to cause a color change visible through the top substrate, the unconnected discrete areas of adhesive inhibiting lateral migration of the colored ink between the unconnected discrete areas of adhesive.

5,446,706
OPTICAL DISC, DATA STORAGE AND RECOVERY
Albert T. Naito, 2776 Cibola, Costa Mesa, Calif. 92626
Filed Jun. 22, 1992, Ser. No. 901,995
Int. Cl.[6] G11B *7/08, 17/04*
U.S. Cl. 369—13 15 Claims



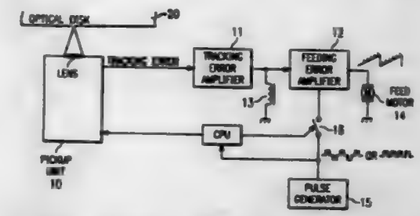
1. The method of withdrawing an optical disc sleeve from a storage unit in which it is stored in close proximity and parallel to other optical disc sleeves, in the circumstance in which the sleeve is formed, in part, of non-magnetic sheet material with an optical disc therebetween which method comprises the steps of:
providing the optical sleeve with at least one magnetizable element configured as a spacer between opposing surfaces of said sheet material with said element at a corner of said sleeve and having an angled edge;
moving an electromagnet with a matingly contoured angled edge into proximity with said angled edge of said magnetizable element such that the magnetizable element is magnetizable as part of the electromagnet's flux path; and
moving the electromagnet in a direction to pull the sleeve from the storage unit.

5,446,707
DEVICE FOR REDUCING ELECTROMAGNETIC INTERFERENCE IN DISC RECORDING AND/OR REPRODUCING APPARATUS WITH RADIO RECEIVING FUNCTION
Akio Arakik, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 23, 1993, Ser. No. 156,457
Claims priority, application Japan, Dec. 8, 1992, 4-351681
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 12 Claims



1. A disc apparatus with a radio receiving function, comprising:
a radio receiving unit;
a recording/playback unit having a high-frequency clock generator;
a shield case for wholly shielding said recording/playback unit from electromagnetic waves;
a first filter means disposed inside said shield case to suppress the unrequited high-frequency components of input and output signals of said recording/playback unit; and
a second filter means disposed outside said shield case to suppress the unrequited high-frequency components of input and output signals of said first filter means.

5,446,708
PICKUP DRIVING SYSTEM FOR OPTICAL DISK APPARATUS
Mamoru Takehayashi, 64, Kokufuhongo, Oiso-machi, Naka-gun, Kanagawa-Ken; Takashi Tatsuhima, 1817-2, Oksda, Atsugi-shi, Kanagawa-Ken; Tomonori Mitsui, Anekkasoh-take, 483, Tatsunodai, Zama-shi, Kanagawa-Ken; Makoto Ogawa, 396, Nagao, Hayama-machi, Miura-gun, Kanagawa-Ken; Hidehiro Takahashi, 2-6-27, Mizuhiki, Atsugi-shi, Kanagawa-Ken, and Takehiro Katsoka, 2-11-4, Mizuhiki, Atsugi-shi, Kanagawa-Ken, all of Japan
Filed Jul. 28, 1993, Ser. No. 98,935
Claims priority, application Japan, Jul. 29, 1992, 4-222085
Int. Cl.[6] G11B *17/22, 7/095*
U.S. Cl. 369—32 4 Claims



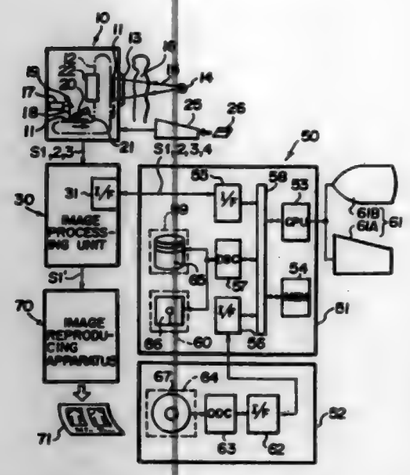
1. A system including a central processing unit for correcting errors in position of an optical pickup unit having an optical read head for reading information stored on an optical disk, which comprises:
(a) tracking error generation means for measuring a difference between a target track position commanded by said central processing unit and an actual track position of said optical pickup unit, and issuing an error signal based upon said difference;
(b) first amplifier means in electrical communication with said tracking error generation means for amplifying said error signal;
(c) an actuator coil in said optical read head in electrical communication with said first amplifier means for actuating said optical read head to read track information stored on said optical disk;
(d) second amplifier means in electrical communication with said actuator coil and said first amplifier means for supplying a drive voltage having superimposed thereon a pulse train;
(e) pulse generator means in electrical communication with said central processing unit for generating a pulse signal which is sensed by said central processing unit;
(f) switch means in electrical communication with said central processing unit and said pulse generator, and receiving said pulse signal and commands from said central processing unit, and supplying said pulse train to said second amplifier means; and
(g) feed motor means electrically connected to an output of said second amplifier means and responsive to said drive voltage for moving said read head during intervals determined by said pulse train to said target track position.

5,446,709

IMAGE FILING APPARATUS

Hachiro Mukai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 978,163, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 642,589, Jan. 17, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,867
Claims priority, application Japan, Jan. 17, 1990, 2-7328
Int. Cl.[6] G11B *17/22*; G06F *15/00*
U.S. Cl. 369—32 6 Claims



1. An image filing apparatus provided with:

i) a drive means which is loaded with an optical disk for storing a plurality of signals, and on which image signals representing images and subsidiary information belonging to each of the images are stored and read therefrom,

ii) a data base constructing means which, when the image signals and the subsidiary information corresponding to each of the image signals are stored on the optical disk loaded into the drive means, constructs an image signal retrieving data base from the subsidiary information such that the image signals corresponding to the subsidiary information are available for retrieval after the image signals are stored on the optical disk, and

iii) a storage means which stores said image signal retrieving data base such that said image signal retrieving database can be revised,

wherein the improvement comprises:

classification means for determining a loaded optical disk classification of said optical disk loaded into said drive means,

an automatic judgment means for automatically judging if an image signal retrieving data base is to be constructed by said data base constructing means depending on said loaded optical disk classification, and

an interconnecting means comprising a drive means interface and a data base constructing means interface which interconnects said drive means and said data base constructing means,

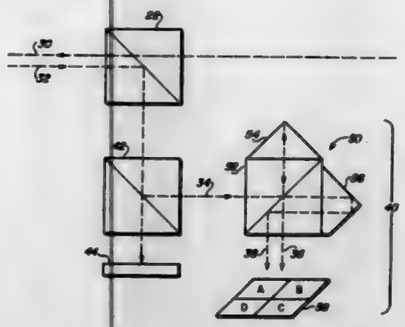
wherein, if said automatic judgment means judges that a first type of optical disk is loaded in said drive means, said data base constructing means constructs said image signal retrieving data base, and if said automatic judgment means judges that a second type of optical disk is loaded in said drive means, said data base constructing means is prevented from constructing said image signal retrieving data base.

5,446,710

FOCUS ERROR DETECTION USING AN EQUAL PATH LENGTH LATERAL SHEARING INTERFEROMETER

Timothy S. Gardner; Ronald P. Stahl, both of Tucson, Ariz., and Syed T. Shafaat, Langley, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,578
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.14 7 Claims



1. An optical data storage device comprising an optical record storage medium with addressable data storage locations, said optical record storage medium capable of reflecting light wherein the reflected light beam has a collimation indicative of the focus of an impinging light beam, and further comprising:

means for generating a monochromatic coherent light beam;

optical path means for coupling said light beam from said generating means to said optical record storage medium;

addressing means included with said optical path means for moving said light beam to optically access said data storage locations for recording data onto or sensing data from said optical record storage medium; and

focus error detection means for detecting the focus error of said impinging light beam at said addressable data storage location, said focus error detection means including:

an equal path length interference pattern generating means optically coupled with said reflected light beam, for creating an interference pattern with a dynamically varying rotational orientation indicative of the focus of said impinging light beam wherein a first rotational orientation indicates said impinging light beam being in focus at said addressable data storage location and relative clockwise or counter-clockwise rotational orientations indicate too-close or too-far nonfocus conditions; and

rotation sensing means in optical communication with said interference pattern generating means, for sensing said rotational orientation;

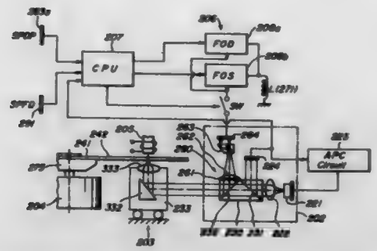
wherein said interference pattern generating means comprises beamsplitting cube means for generating two separate beams from said reflected light beam and for recombining said two beams to create an interference pattern, and further comprises two roof prisms abutting adjacent faces of said beamsplitting cube means, oriented with hypotenuse faces each receiving one of said two beams, for laterally shearing said two beams and for tilting said two beams with respect to one another such that after exiting said interference pattern generating means the projections of said two beams in a plane orthogonal to the direction of shear are not parallel; and wherein the difference in path length between said two beams is less than the coherence length of said coherent light beam.

5,446,711

APPARATUS FOR RECORDING AND/OR REPRODUCING INFORMATION AND/OR FROM OPTICAL INFORMATION RECORD DISK

Kunio Yamamiya, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 225,977
Claims priority, application Japan, Apr. 12, 1993, 5-084637
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—44.14 14 Claims



1. An apparatus for recording and/or reproducing information on and/or from an optical record disk comprising:

an optical head including a semiconductor laser for emitting a laser beam, an objective lens for projecting the laser beam emitted by the semiconductor laser onto the optical information record disk and a photodetecting means for receiving a return laser beam reflected by said optical information record disk to produce information signal and focusing error signal;

a disk driving means including an up-down block arranged movably in a direction perpendicular to a plane of the optical information record disk between a lower position and an upper position, an up-down motor for moving said up-down block between said lower position and upper position, a turntable for supporting the optical information record disk and a spindle motor secured to said up-down block and having a driving shaft coupled with said turntable for rotating the turntable together with the optical information record disk;

an optical head driving means for driving at least said objective lens in a radial direction of the optical information record disk;

a position detecting means for detecting directly a position of said up-down block to derive a position signal when the up-down block is driven into said upper position;

a rotation detecting means for detecting a rotation of said optical information record disk to derive a rotation signal when the optical information record disk is rotated at a predetermined revolving speed; and

a control means for initiating a focus control for moving said objective lens and turntable relative to each other in accordance with said position signal and rotation signal.

5,446,712

OPTICAL SYSTEM HAVING A PRECISION ANGULAR DISPLACEMENT MECHANISM INCLUDING A FLAT METAL SPRING

Tadashi Yamada, and Hiroyuki Ishikawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP92/00505, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993
PCT Filed Apr. 20, 1992, Ser. No. 949,818
Claims priority, application Japan, Apr. 22, 1991, 3-090267; Sep. 17, 1991, 3-236343; Dec. 11, 1991, 3-327361
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.16 15 Claims

1. An optical system for use with an optical disk, comprising:

stationary optical system means including:

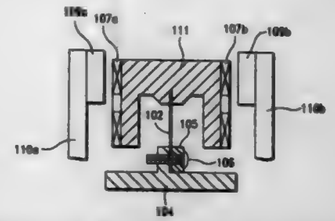
a light source for supplying a laser beam, and

angular displacement means including:

a moving section comprising a reflecting mirror, responsive to the light source, for reflecting the laser beam, and a holder attached at its one end to the reflecting mirror,

a flat metal spring attached at its tip to the holder for supporting the holder,

a base on which the metal spring is mounted, and



actuator means for rotating the moving section around a predetermined point on the flat metal spring so as to minutely tilt the reflecting mirror at precision angles for placing a laser light spot on a desired track of the optical disk; and

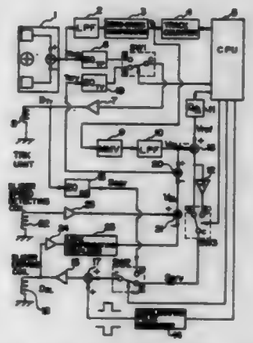
shifting optical system means, radially movable relative to the optical disk and receiving the laser beam reflected from the reflecting mirror, for providing the reflected laser beam to the optical disk for carrying out record and playback operations.

5,446,713

OPTICAL PICKUP DRIVE CONTROL APPARATUS WITH VIBRATION RESTRAINT

Kiyoshi Tateishi, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 143,474
Claims priority, application Japan, Oct. 27, 1992, 4-288098
Int. Cl.[6] G11B *7/085*
U.S. Cl. 369—44.28 8 Claims



1. A drive control apparatus for an optical pickup, which is provided with a slider for transporting the optical pickup in a direction of crossing a track on an optical disk, and a tracking unit mounted on said slider movably in the direction of crossing the track, and to which a rough seeking mode to access a desired track on said optical disk at a high speed is set as one operation mode of said optical pickup, said drive control apparatus comprising:

a slider transferring speed detecting means for detecting a transferring speed of said slider;

a track crossing speed detecting means for detecting a track crossing speed when said slider crosses the track, said track crossing speed being prescribed by a sum of the

transferring speed of said slider and a relative speed of said tracking unit with respect to said slider including a vibrating component of said tracking unit;

a vibrating component extracting means for extracting the vibrating component of said tracking unit by subtracting the detected transferring speed of said slider from the detected track crossing speed in the rough seeking mode, and for outputting a vibrating component signal indicating the extracted vibrating component; and

a loop for feeding back the vibrating component signal to said tracking unit in the rough seeking mode.

5,446,714

DISC CHANGER AND PLAYER THAT READS AND STORES PROGRAM DATA OF ALL DISCS PRIOR TO REPRODUCTION AND METHOD OF REPRODUCING MUSIC ON THE SAME

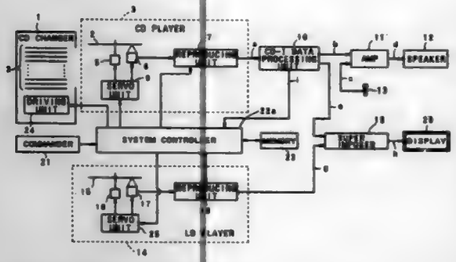
Junichi Yoshio; Yukio Tanbi, and Munetoshi Morichi, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 91,881

Claims priority, application Japan, Jul. 21, 1992, 4-193823; Jul. 21, 1992, 4-193824; Jul. 21, 1992, 4-193825

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—48 **7 Claims**



4. A disc player comprising:

a plurality of first format discs, each of said first format discs storing program information by a first format;

at least one second format disc, said second format disc storing program information name data of each of the first format discs by a second format different from the first format;

a reproducing unit for selecting one of the first format discs and reproducing the program information of a selected first format disc;

a memory for storing the program information name data;

a displaying means for displaying a program information name; and

a controlling means for reading the program information name data from the second format disc, a means for storing said information name data to said memory, and a means for transferring the program information name data corresponding to the selected first format disc to said displaying means before said reproducing unit reproduces the program information of the selected first format disc.

5,446,715

CIRCUIT FOR DETECTING A SYNCHRONOUS SIGNAL INCLUDED IN AN INFORMATION SIGNAL

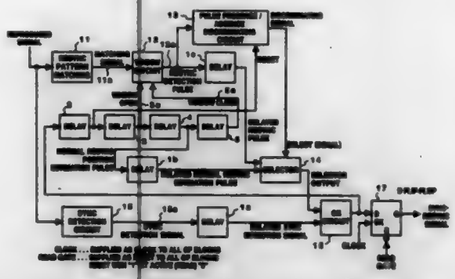
Seiichiro Satomura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 738,537, Jul. 31, 1991, abandoned. This application May 9, 1994, Ser. No. 240,215

Claims priority, application Japan, Aug. 3, 1990, 2-205227; Sep. 25, 1990, 2-254801

Int. Cl.[6] G11B *5/09, 15/52, 20/10, 27/22*

U.S. Cl. 369—49 **11 Claims**



1. An information reproducing apparatus comprising:

an input circuit for inputting reproduced data signals including synchronous signals having digital data of a predetermined bit pattern from a storage medium;

a detection circuit for detecting a signal having digital data of the predetermined bit pattern within a predetermined time zone from among said reproduced signals inputted through said input circuit;

a generation circuit for estimating a timing in which said detection circuit will detect said signal and generating an estimating signal at the estimated timing, based on which of said predetermined time zones is created;

a first delay circuit for delaying the circuit detected by said detection circuit out of said predetermined time zone and outputting a first delayed signal;

a second delay circuit for delaying the estimation signal generated by said generation circuit out of said predetermined time zone and outputting a second delayed signal;

a selection circuit for selecting the first delayed signal as a synchronous signal, when said detection circuit has detected the signal, and for selecting the second delayed signal as a synchronous signal when said detection circuit has not detected the signal; and

a process circuit for processing said reproduced data signals in accordance with said synchronous signal selected by said selection circuit.

5,446,716

LASER POWER CONTROL IN AN OPTICAL RECORDING SYSTEM TO COMPENSATE FOR MULTIPLE SYSTEM DEGRADATIONS

Clarke K. Eastman; James A. Perconti, both of Rochester; Gerald J. Smart, Penfield, and Peter J. Spyra, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 10, 1994, Ser. No. 179,394

Int. Cl.[6] G11B *7/00*

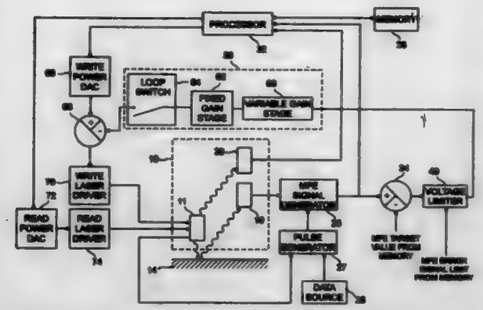
U.S. Cl. 369—54 **20 Claims**

1. An optical recording system for recording data on an optical recording medium, said system comprising:

an optical source for supplying to said medium an incident write signal, said incident write signal including at least one incident write pulse, such that a logic level of said data may be recorded on said medium during said pulse as a mark having a distinct reflectivity;

means for detecting a reflection of said incident write signal from said medium to provide a reflected write signal, said reflected write signal including a reflected write pulse corresponding to said incident write pulse;

means for generating a mark formation effectiveness signal from said reflected write pulse, said mark formation effectiveness signal generator providing an indication of the quality of said mark;



means for generating an error signal from said mark formation effectiveness signal and a target value of said mark formation effectiveness signal; and

means for controlling a write power level of said optical source by providing a partial correction of a first type of variation in said error signal and a full correction of a second type of variation in said error signal.

5,446,717

OPTICAL DISC AND RECORDING AND REPRODUCING METHOD FOR AN OPTICAL DISC WITH A HIGH DENSITY

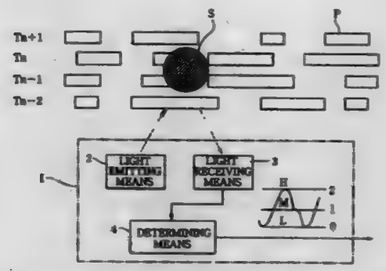
Yoshimi Tomita, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 1, 1993, Ser. No. 144,358

Claims priority, application Japan, Nov. 5, 1992, 4-295670

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—58 **2 Claims**



2. A recording and reproducing system for an optical disc having a plurality of tracks, comprising:

means for storing a previous signal recorded on at least one track adjacent to an instant track on which a recording signal is to be recorded;

means for performing an exclusive or operation of the stored previous signal and an original signal thereby to produce a recording signal;

means for recording the recording signal at a position corresponding to a position where the previous signal is recorded;

a pickup for radiating a light beam to the instant track and the adjacent track to form a spot on recorded positions of the previous signal and the recording signal to produce a reproduced signal having a level dependent on conditions of the recorded positions; and

a determining means for determining a level of the original signal from the level of the reproduced signal.

5,446,718

INFORMATION RECORDING AND REPRODUCING METHOD AND SYSTEM FOR DISC-SHAPED RECORDING MEDIUMS

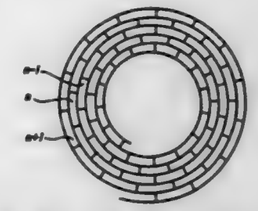
Kikuo Shimizu, Hirotaka, and Kazuo Shigematsu, Kitakatsushika, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 27,045

Claims priority, application Japan, Mar. 4, 1992, 4-047120

Int. Cl.[6] H04N *5/76;* **G11B** *5/09*

U.S. Cl. 369—59 **3 Claims**



2. A disc recording medium for operating at a constant angular velocity in an optical disc system adapted for recording and reading information on said medium in response to a read/write clock frequency, said medium comprising:

a plurality of spiral recording tracks, each of said tracks having a plurality of information sectors, and each of said sectors being provided with an information header having a clock pattern to accommodate synchronization with said read/write clock frequency;

a plurality of circumferential zones, each of said zones comprising plural ones of said tracks, wherein at least pairs of said tracks have a same track address, each of said zones having one or more of said sectors than an adjacent radially inner zone, and one less of said sectors than an adjacent radially outer zone;

wherein said information header of said sectors only in every other one of said spiral tracks are radially aligned on said medium.

5,446,719

OPTICAL INFORMATION REPRODUCING APPARATUS

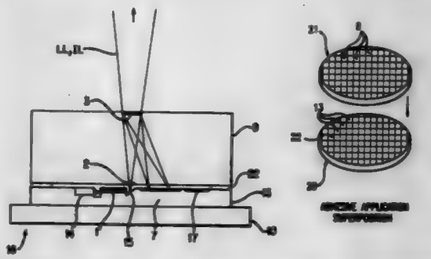
Yoshio Yoshida, Nara; Yukio Kurata, Tenri, and Shigeki Tsuji, Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1993, Ser. No. 13,038

Claims priority, application Japan, Feb. 5, 1992, 4-020243; Aug. 26, 1992, 4-227635

Int. Cl.[6] G11B *7/00, 7/13*

U.S. Cl. 369—116 **23 Claims**



23. A method of manufacturing a plurality of light emitting and receiving units, each of said light emitting and receiving

units being used in an optical information reproducing apparatus, said method comprising the steps of:

(A) monolithically forming, on a semiconductor substrate, a plurality of photo detecting means each for detecting light reflected by a recording medium and outputting a signal corresponding to the intensity of said light incident thereon;

(B) providing, on said semiconductor substrate, a plurality of light generating means for generating light, said plurality of light generating means is disposed adjacently to said plurality of photo detecting means, respectively;

(C) mounting, on said semiconductor substrate, a light diffraction member including a plurality of light diffraction devices formed therein by which said light generated from said plurality of light generating means are diffracted and emitted, and by which the incident light is diffracted to illuminate said plurality of photo detecting means, respectively; and

(D) adjusting distances between said plurality of light diffraction devices and said plurality of light generating means, and distances between said plurality of light diffraction devices and said plurality of photo detecting means, by moving said light diffraction member, respectively.

5,446,720

INFORMATION RECORDING METHOD AND APPARATUS RECORDING TWO OR MORE CHANGES IN TOPOGRAPHICAL AND ELECTRICAL STATES

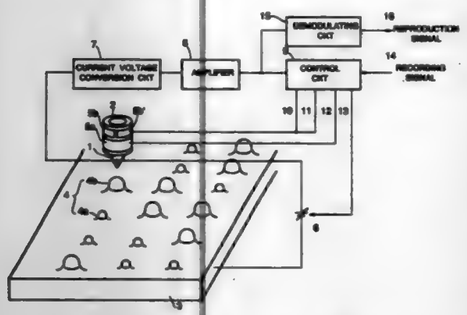
Takahiro Ogachi, Atsugi; Kunihiro Sakai, Isehara; Toshimitsu Kawase, Atsugi; Akihiko Yamano, Yokohama, and Ryo Kuroda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 666,212, Mar. 7, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,473

Claims priority, application Japan, Mar. 9, 1990, 2-056675; Feb. 28, 1991, 3-055559

Int. Cl.[6] G11B *9/00*

U.S. Cl. 369—126 35 Claims



1. A method of recording multi-level information on a recording medium, said method comprising the steps of:

scanning over the recording medium using a probe capable of recording multi-level information, said scanning being performed along a surface of the recording medium, the recording medium being adapted assume two or more kinds of changes in at least one of a topographical state and an electrical characteristic state different from that of a non-recorded portion of the recording medium; and

forming any one of the two or more kinds of state changes selected in accordance with a respective level of the multi-level information so as to form on the recording medium separate bits each of which correspond to the respective level of the multi-level information while performing said scanning step,

wherein each of the topographical states or electrical characteristic states of the bits formed on the recording medium is different from that of the non-recorded portion state as the topographical state or electrical characteristic state of the non-recorded portion exists between the bits.

5,446,721

OBJECTIVE LENS DRIVE DEVICE WITH SUPPORT SYSTEM

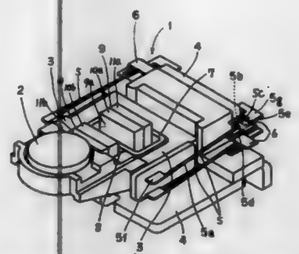
Yoshihiro Sekimoto, Nara; Toshiharu Inui, Yamatokouriyama; Yasuo Nakata, Nara; Nobuo Ogata, Tenri, and Hideaki Sato, Yamatokouriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1993, Ser. No. 138,014

Claims priority, application Japan, Oct. 22, 1992, 4-284106

Int. Cl.[6] G02B *7/02;* G11B *7/00*

U.S. Cl. 369—247 2 Claims



1. An objective lens driving apparatus, comprising:

a fixed portion;

a movable portion including condenser means for condensing a light beam to irradiate a recording medium therewith, and holding means for holding the condenser means;

supporting means for supporting said movable portion against said fixed portion, so that said condenser means can be moved at least in focusing and tracking directions to said recording medium;

driving means for moving said movable portion in focusing and tracking directions; wherein

said supporting means includes an elastic body for connecting said fixed portion and said movable portion, and a damping means provided for said elastic body;

said elastic body includes:

a first end portion attached to one of said movable portion and said fixed portion, a second end portion attached to the other of said movable portion and said fixed portion, and

a connecting portion for connecting said first end portion and said second end portion;

said connecting portion includes a first linear portion, having flexibility, a second linear portion, having flexibility, extending along a different line from the first linear portion, a coupling portion extended in a direction crossing said first and second linear portions to couple these portions, and a branch portion with a free end branching from said first linear portion and extending away from said first end portion and toward said second end portion;

said first linear portion has two ends;

said second linear portion has two ends;

one end of said first linear portion is connected to said first end portion;

one end of said second linear portion is connected to said second end portion;

the other end of said first linear portion and the other end of said second linear portion are connected by said coupling portion; and

said damping means connects said second end portion with said free end of said branch portion; and

said branch portion being only a single branch portion extending only from a first side of the first linear portion and including a portion extending substantially in parallel with said first linear portion.

5,446,722

INFORMATION RECORDING APPARATUS HAVING MAGNETIC SHIELD MEANS

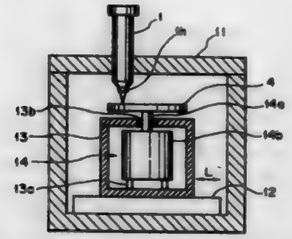
Yoshiaki Kojima; Yasumitsu Wada, and Masahiro Katsumura, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 7, 1993, Ser. No. 132,958

Claims priority, application Japan, Oct. 14, 1992, 4-276068

Int. Cl.[6] G11B *19/20*

U.S. Cl. 369—266 5 Claims



1. An information recording apparatus comprising:

an enclosure means for enclosing the information recording apparatus adapted to support a vacuum inside the enclosure means;

means for rotatably driving an information-recording disk disposed inside said enclosure means;

an irradiation means for having an electron beam irradiate a recording surface of said information-recording disk disposed inside said enclosure means;

a movement means for producing, between said information-recording disk and said irradiation means, a relative movement in a direction parallel to said recording surface of said information-recording disk disposed inside said enclosure means;

said driving means comprising a turn table for carrying said information-recording disk, a spindle for supporting said turn table, an electric motor for rotatably driving said spindle, and a magnetic shield means for preventing magnetic fields of said electric motor from leaking outward, said turn table, said spindle, said electric motor, and said magnetic shield means all disposed within said enclosure means.

5,446,723

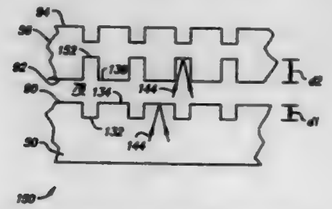
MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 79,473, Jun. 18, 1993, abandoned, which is a division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,262. This application Jan. 10, 1995, Ser. No. 371,309

Int. Cl.[6] G11B *7/24, 7/095*

U.S. Cl. 369—275.1 38 Claims



1. An optical data storage system comprising:

an optical data storage medium having at least one contiguous data surface, each data surface having a first continuous track portion at a first elevation and having a second continuous track portion at a second elevation different from the first elevation;

a radiation source for producing a radiation beam;

a focusing device for focusing the radiation beam to a selected one of the data surfaces;

a movement device for moving the medium relative to the radiation beam;

a data signal generator for receiving a return radiation beam from the medium and generating a data signal responsive thereto;

a tracking signal generator for receiving a return radiation beam from the medium and selectively generating a first and a second tracking signal; and

a beam positioning device connected to the track signal generator for positioning the beam along the first continuous track portion of a data surface responsive to the first tracking signal and positioning the beam along the second continuous track portion of the same data surface responsive to the second tracking signal.

5,446,724

INFORMATION STORAGE MEDIUM WITH FIRST AND SECOND RECORDING REGIONS EACH HAVING A PREDETERMINED RECORDING DENSITY

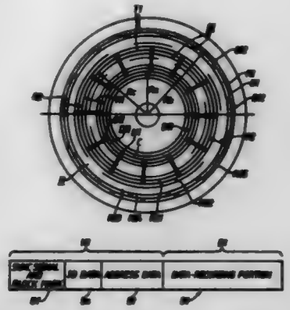
Koichi Tabe, and Kouichi Yoneyama, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 5, 1992, Ser. No. 894,628

Claims priority, application Japan, Jun. 28, 1991, 3-158892

Int. Cl.[6] G11B *7/007*

U.S. Cl. 369—275.1 16 Claims



1. An information recording medium comprising:

a first recording region comprising first tracks having a plurality of blocks, each block of said first tracks having a first data storage capacity and each of said first tracks having a same number of blocks; and

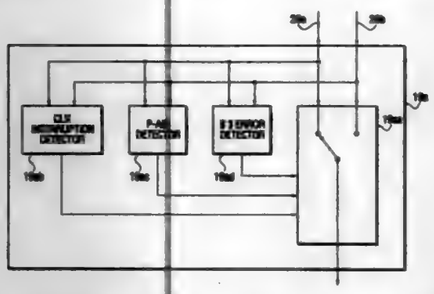
a second recording region comprising second tracks having a plurality of blocks, each block of said second tracks having a second data storage capacity different than the first data storage capacity, one of said second tracks having a first number of blocks and another of said second tracks having a second number of blocks different than the first number of tracks.

5,446,725

METHOD OF CHANGING OVER PATH SWITCH IN OPTICAL TRANSMISSION DEVICE

Junichi Ishiwatari, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 936,209, Aug. 27, 1992, abandoned.
This application Nov. 28, 1994, Ser. No. 348,181
Claims priority, application Japan, Aug. 29, 1991, 3-218983
Int. Cl.[6] H04L 1/22
U.S. Cl. 370—16.1 16 Claims



1. A method of changing over a path switch in an optical transmission device having a first line terminal equipment unit and a second line terminal equipment unit for receiving optical signals transmitted bidirectionally over optical transmission lines, the path switch being connected to respective paths to said first line terminal equipment unit and said second line terminal equipment unit, and selectively outputting respective output signals from said first line terminal equipment unit and said second line terminal equipment unit to a lower-level receiver, said method comprising the steps of:

receiving the optical signals, transmitted bidirectionally over the optical transmission lines, by said first line terminal equipment unit and said second line terminal equipment unit;

generating by said first line terminal equipment unit and said second line terminal equipment unit the respective output signals responsive to the optical signals;

monitoring, with said path switch, the output signals transmitted by said first line terminal equipment unit and said second line terminal equipment unit to said path switch over the respective paths;

generating one of a plurality of path switch alarms indicative of respective faults of the output signals, based on states of the output signals applied to said path switch; and

actuating said path switch depending on the generated path switch alarm to output a selected one of the respective output signals from said first line terminal equipment unit and said second line terminal equipment unit to said lower-level receiver.

5,446,726

ERROR DETECTION AND CORRECTION APPARATUS FOR AN ASYNCHRONOUS TRANSFER MODE (ATM) NETWORK DEVICE

Michael D. Rostoker, Boulder Creek, and D. Tony Stelliga, Pleasanton, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 29, 1993, Ser. No. 139,551
Int. Cl.[6] H04J 3/24; H04L 12/26
U.S. Cl. 370—17 8 Claims

1. An adaptive error detection and correction apparatus for an Asynchronous Transfer Mode (ATM) network device, comprising:

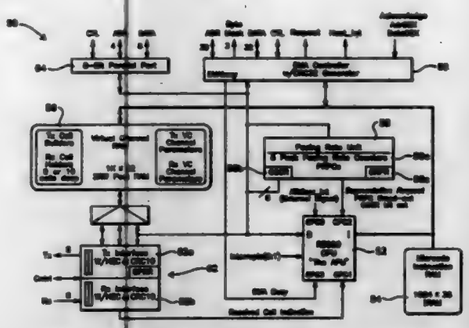
a sensing unit for sensing a congestion condition in said ATM network; and

a global pacing rate unit for adaptively reducing a maximum allowable transmission ratio of ATM cells containing information to idle ATM cells in response to a sensed congestion condition, the global pacing rate unit comprising:

a global pacing rate register;

a processor for storing a number corresponding to a relatively high maximum allowable transmission ratio in the global pacing rate register in the absence of a sensed congestion condition, and storing a number corresponding to a relatively low maximum allowable transmission ratio in the global pacing rate register in response to a sensed congestion condition; and

a controller for adjusting said maximum allowable transmission ratio in accordance with said number stored in the global pacing rate register.

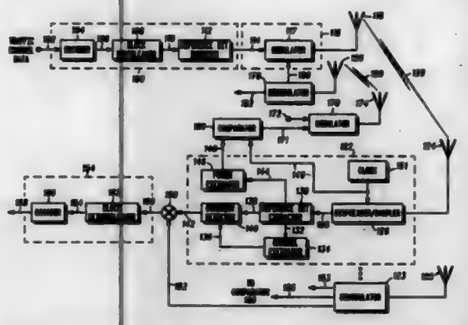


5,446,727

METHOD AND APPARATUS FOR TIME ALIGNING SIGNALS FOR RECEPTION IN A CODE-DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM

Eugene J. Bruckert, Arlington Heights, and Richard A. Sonnentag, Lake Zurich, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 30, 1993, Ser. No. 159,633
Int. Cl.[6] H04J 13/00, 3/06
U.S. Cl. 370—18 18 Claims



1. A method of time aligning signals for reception in a code-division multiple access (CDMA) communication system, the method comprising the steps of:

receiving, at a base-station, signals transmitted by a plurality of subscriber units;

determining a time position of each signal received based on estimates of the power of a plurality of delayed rays representative of each signal; and

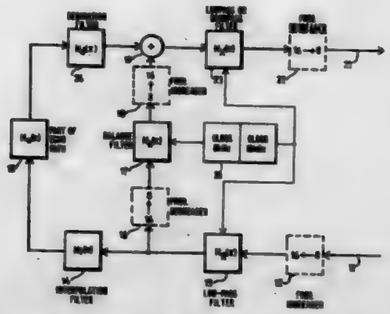
transmitting, from the base-station, an alignment signal, based on the step of determining, to each of the plurality of subscriber units such that subsequent signals transmitted by the plurality of subscriber units are received by the base-station substantially in time alignment.

5,446,728

METHOD AND ARRANGEMENT FOR USE IN THE ELIMINATION OF ECHOES IN A SUBSCRIBER LINE CIRCUIT

Bengt G. Löfmark, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 29, 1991, Ser. No. 783,866
Claims priority, application Sweden, Nov. 16, 1990, 9003661
Int. Cl.[6] H04B 3/20
U.S. Cl. 370—32.1 2 Claims



1. A method for decreasing the necessary size of a digital filter used for echo elimination in a subcriber line circuit having digital signal processing, in which echo elimination is effected in an interface where a sampling frequency is higher than an original sampling frequency of transmitted signals, said method comprising the steps of:

decreasing the sampling frequency on an input side of the digital filter to a sampling frequency equal to said original sampling frequency of transmitted signals, and

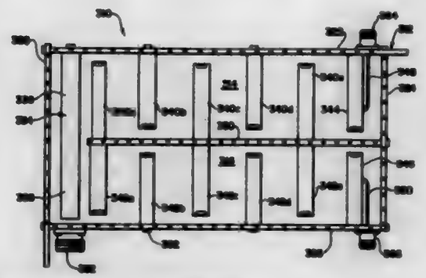
increasing the sampling frequency on an output side of the digital filter to the sampling frequency used in said interface.

5,446,729

COMPACT, LOW-INTERMODULATION MULTIPLEXER EMPLOYING INTERDIGITAL FILTERS

Douglas R. Jachowski, Reno, Nev., assignor to Allen Telecom Group, Inc., Solon, Ohio

Filed Nov. 1, 1993, Ser. No. 146,716
Int. Cl.[6] H04J 1/08
U.S. Cl. 370—37 13 Claims



1. An antenna circuit multiplexer comprising:

a housing;

first, second, and third connection ports;

transformer means disposed within said housing and extending in a first direction therein;

first and second filter means adjacently disposed within said housing along said transformer means;

said first filter means being electrically coupled to said first connection port;

said second filter means being electrically coupled to said second connection port;

said transformer means being electrically coupled to said third connection port;

said first and second filter means each having means for electrically coupling to said transformer means;

said first filter means being tuned to a first predetermined frequency corresponding to a first electrical wavelength;

said second filter means being tuned to a second predetermined frequency corresponding to a second electrical wavelength;

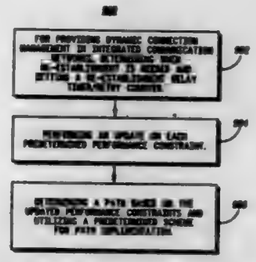
said means for electrically coupling said first filter means to said transformer means being separated from said means for electrically coupling said second filter means to said transformer means by a distance no more than approximately one eighth of said wavelengths as measured along said first direction.

5,446,730

METHOD FOR DYNAMIC CONNECTION MANAGEMENT IN INTEGRATED COMMUNICATION NETWORKS

Whay C. Lee, Cambridge, and Michael G. Hluchyj, Wellesley, both of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1993, Ser. No. 123,774
Int. Cl.[6] H04Q 11/00
U.S. Cl. 370—54 10 Claims



1. A method for dynamic connection management in integrated communication networks such that an acceptable quality of service over an entire duration of a connection is maintained, comprising the steps of:

1A) determining when re-establishment is needed and setting a re-establishment delay timer/retry counter,

1B) performing an update on at least a predetermined performance constraint, and

1C) determining a path for supporting the connection based on the updated performance constraints and utilizing a predetermined scheme for path implementation,

wherein the predetermined scheme for path computation and implementation includes the steps of:

1D) computing a path in accordance with the updated performance constraints,

1E) determining whether the path is available,

1F) where the path is unavailable, determining whether one of: the re-establishment delay timer has expired and the re-establishment retry counter has reached a predetermined limit,

and one of 1F1–1F2;

1F1) where one of; the re-establishment delay timer is unexpired and the re-establishment retry counter is yet to reach said predetermined limit, waiting a predetermined time for a next retry, and then recycling to computing a path in accordance with the updated performance constraints,

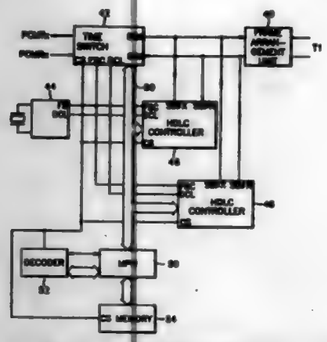
1F2/where one of: the re-establishment delay timer is expired and the re-establishment retry counter has reached said determined limit, stopping the re-establishment process and where the path is available, using the

path for re-establishment, then stopping the re-establishment process.

5,446,731
SIGNALING CHANNEL DATA TRANSMITTING/RECEIVING CIRCUIT OF A PRIMARY MULTIPLEXER

Kyo-Soon Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 26, 1993, Ser. No. 157,450
Claims priority, application Rep. of Korea, Nov. 26, 1992, 1992-23459
Int. Cl.[6] H04J 3/12
U.S. Cl. 370—58.2 20 Claims



1. In a signaling data transmitting/receiving circuit of an integrated services digital network switching system connected to a primary multiplexer transmitting/receiving data through a transmission line, the circuit comprising:

a frame arrangement unit connected between the transmission line and a 32-channel PCM-highway, for arranging data within a frame from 32-channel data to 24-channel data or from 24-channel data to 32-channel data;

a time switch connected between the 32-channel PCM highway and said frame arrangement unit for switching B-channel data in response to a switching control signal;

first and second high level data link controllers interposed between said frame arrangement unit and said time switch, each having a plurality of time slot registers accessible to at least 4 channel data, for inserting and extracting CV-channel data representative of signalling data having a time slot width and a channel data rate according to mode assignment data into and from time slots of said 32-channel PCM-highway corresponding to time slot assigning data stored in said time slot registers; and

a microprocessing unit for supplying to said time switch said switching control signal, for controlling switching of said time switch and supplying said mode assignment data and said time slot assigning data to said first and second high level data link controllers to control the insertion and extraction of said CV channel data.

5,445,732
METHOD OF AND APPARATUS FOR SIGNALLING BETWEEN NODES IN NETWORK

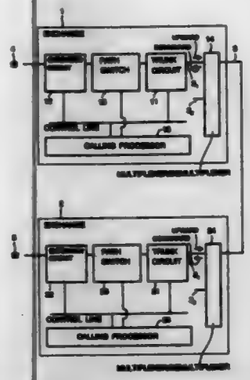
Naoyuki Miyamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 14, 1993, Ser. No. 136,583
Claims priority, application Japan, Oct. 14, 1992, 4-275600
Int. Cl.[6] H04Q 11/04
U.S. Cl. 370—58.2 36 Claims

1. An inter-node controlling method in a network for transmitting and receiving control information, said network being constructed by connecting trunk circuits of a plurality of exchanges through trunks and connecting one or more terminals to said exchanges, said exchanges each including: a calling processor for performing a calling process; a trunk circuit for connecting said trunks; an extension circuit for connecting said terminals; and a path switch for selectively connecting said trunk circuits to said extension circuit under control of said calling processor,

said method comprising, when performing signalling relative to communications between said exchanges, the steps of:

transmitting and receiving at least one item of control



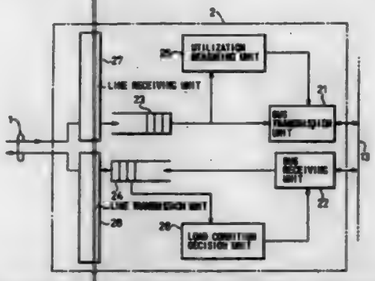
information on a trunk connection call between said exchanges and on an operational management maintenance of said exchanges by utilizing a not-in-service channel of a trunk from a time when said trunk connection call takes place to a time before receiving a response of a remote party; and

transmitting and receiving said control information by utilizing a no-data period in an in-communication channel of said trunk from a time after receiving the response of said remote party with respect to said trunk connection call to an end-of-communications time.

5,446,733
CONGESTION PROCESSING MODE AND CONGESTION PROCESSING CIRCUIT IN FRAME RELAY EXCHANGE APPARATUS

Tetsunei Tsuruoka, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 4, 1994, Ser. No. 191,816
Claims priority, application Japan, Mar. 22, 1993, 5-062083; Sep. 20, 1993, 5-233763
Int. Cl.[6] H04L 12/56
U.S. Cl. 370—60.1 16 Claims



1. A congestion processing mode in a frame relay exchange apparatus which accommodates a plurality of subscriber lines and relay lines and transmits frames received from these lines to destination lines, wherein

an amount of communication data of each assigned connection is individually measured along with an elapsed time;

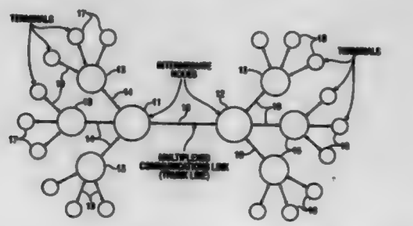
at a point of time when each of said frames received from said subscriber lines and relay lines is subjected to switching processing in said frame relay exchange apparatus, a coefficient for limiting the amount of communication data, and determined in accordance with the magnitude of the load of a network resource utilized by a connection to which the related frame belongs, is calculated along with an elapsed time;

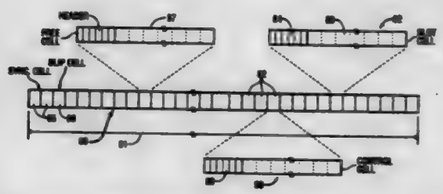
based on the aforesaid measured amount of communication data, said limiting coefficient is multiplied with the upper limit value of an acceptable amount of communication data for each assigned connection detected to perform a communication exceeding the upper limit value of the acceptable amount of communication data which is determined in advance for each assigned connection, and it is decided whether to discard said frame belonging to the related assigned connection or give notification that it exists in the congested state based on that limited upper limit value.

5,446,734
TELECOMMUNICATIONS NETWORK WITH PLESIOCHRONOUS TRANSFER MODE

Fred R. Goldstein, Arlington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 765,483, Sep. 25, 1991, which is a continuation of Ser. No. 509,563, Apr. 13, 1990, abandoned. This application Mar. 24, 1993, Ser. No. 36,228
Int. Cl.[6] H04L 12/56; H04J 3/06
U.S. Cl. 370—60.1 17 Claims





1. A communication network having a plurality of data links between nodes, comprising:

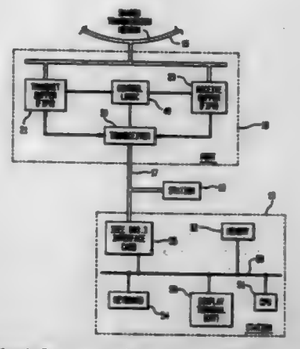
a transmitter in one of said nodes of said network and sending repetitive transmitted data frames to one of said links, said transmitted data frames being of fixed length which is an integral multiple of a basic control period consisting of a time greater than the period of a propagation delay over a shortest one of said links; and each of said transmitted data frames being in a frame format containing a number of data cells, each data cell containing identification of a virtual channel and data for a message transmitted for said virtual channel;

a receiver in another of said nodes of said network and receiving said repetitive transmitted data frames, said receiver being synchronized with said transmitted data frames by clocked cell periods generated at said receiver, said clocked cell periods being of the same timing as said cells of said transmitted data frames, and said receiver receiving data in said transmitted data frames for forwarding on other of said data links according to said identification of said virtual channels.

5,446,735
BANDWIDTH ALLOCATION IN A SHARED TRANSMISSION CHANNEL EMPLOYING CSMA/CD

Fouad A. Tobagi, Los Altos; Joseph M. Gang, Jr., Saratoga, and Bruce L. Lieberman, San Jose, all of Calif., assignors to Starlight Networks, Mountain View, Calif.

Filed Dec. 18, 1992, Ser. No. 992,897
Int. Cl.[6] H04J 3/14
U.S. Cl. 370—85.3 27 Claims



1. A method for transmitting a plurality of packets, said plurality of packets including packets containing continuous data via a transmission channel from a network interface device to at least one station in a communications network segment comprising the steps of:

at the network interface device, maintaining a variable which stores information relating to the success or failure of transmission of said plurality of packets in said transmission channel,

sensing said channel by said network interface device,

if said channel is sensed idle, transmitting one of said packets from said network interface device, and if said channel is sensed busy by said network interface device, sensing said channel for an end-of-carrier signal, waiting a period of time equal to an interframe gap g and attempting to transmit said one packet after a delay ζ selected according to a first basic bandwidth allocation protocol if said variable maintained at said network interface device is less than a certain limit and according to a second basic bandwidth allocation protocol different from said first basic bandwidth allocation protocol if said variable equals or exceeds said certain limit, said first protocol and second protocol assuring a particular fraction of a bandwidth of said transmission channel to said network interface for the transmission of said plurality of packets containing said continuous data to said at least one station while also providing a portion of said bandwidth of said channel to said at least one station for the transmission of packets via said channel to said network interface device.

5,446,736
METHOD AND APPARATUS FOR CONNECTING A NODE TO A WIRELESS NETWORK USING A STANDARD PROTOCOL

Bryan J. Gleeson, and Paulette R. Altmaier, both of Cupertino, Calif., assignors to AST Research, Inc., Irvine, Calif.

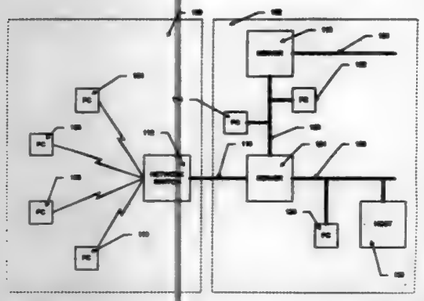
Filed Oct. 7, 1993, Ser. No. 133,513
Int. Cl.[6] H04L 12/66
U.S. Cl. 370—85.13 47 Claims

1. A system for connecting a node of an enterprise network to a wireless network so that standard, enterprise-network-

specific protocols that are transmission-medium independent can be used to communicate with a wireless node over the wireless network, comprising:

a standard, transmission-medium-independent protocol stack that generates data packets to send to other nodes, the other nodes including the wireless node, and that processes data packets received from the other nodes, each data packet having a header with a plurality of header fields, the stack thereby providing communication services to application programs in accordance with the enterprise-network-specific protocols;

an enterprise network interface apparatus which is connected to the node of the enterprise network, for transmitting and receiving data packets to and from the enterprise network in accordance with a transmission-medium-specific protocol;



an optimization layer that receives data packets from the standard protocol stack that are addressed to the wireless network, and which reduces unnecessary data flow over the wireless network by

(a) discarding data packets that have predetermined header values; and

(b) discarding unnecessary header fields within non-discarded data packets to thereby generate optimized data packets; and

a wireless network interface apparatus for forwarding the optimized data packets to the wireless network in accordance with a wireless network access protocol, the wireless network access protocol being suitable for radio-frequency transmissions of data packets over the wireless network, and being different from the transmission-medium-specific protocol used by the enterprise network.

5,446,737

METHOD AND APPARATUS FOR DYNAMICALLY ALLOCATING SHARED RESOURCE ACCESS QUOTA

Israel Cidon, Bronx; Leonidas Georgiadis, Chappaqua; Roch A. Guerin, Yorktown Heights, all of N.Y.; Yuval Y. Shavitt, Technion City, Israel, and Andrew E. Slater, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1994, Ser. No. 192,464

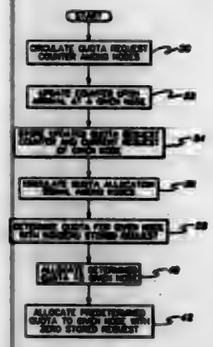
Int. Cl.[6] H04J 3/16

U.S. Cl. 370—85.5 **35 Claims**

1. A method for dynamically determining shared resource access quota in a communication system including a plurality of nodes, comprising:

circulating a quota request counter among said plurality of nodes, said quota request counter indicating current total node requests for said shared resource access quota; and

determining a shared resource access quota for a given node as a function of said quota request counter, a quota request



of said given node and a total access quota for all of said plurality of nodes.

5,446,738

ATM MULTIPLEXING SYSTEM

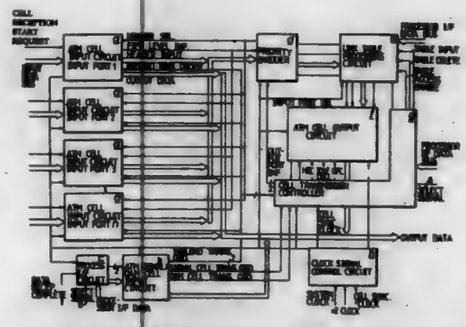
Kyeong S. Kim; Hyup J. Kim, and Mun K. Choi, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Dec. 28, 1993, Ser. No. 173,181

Claims priority, application Rep. of Korea, Dec. 29, 1992, 1992-26122

Int. Cl.[6] H04J 3/24

U.S. Cl. 370—94.2 **6 Claims**



1. An ATM multiplexing system having priority processing and header changing functions, comprising:

a plurality of ATM cell input means, each of said ATM cell input means storing a cell stream incoming from a corresponding input stage and receiving and removing instantaneous, displacement of the incoming cells;

priority encoding means for receiving simultaneously FIFO storage level information from said plurality of ATM cell input means and determining a priority for processing first an input stage with the largest number of stored cells, said FIFO storage level information including the number of the cells stored in said ATM cell input means;

link table processing means for receiving output headers from said priority encoding means and input port numbers corresponding to the received headers and outputting changed headers corresponding to the received headers;

ATM cell output means for receiving the changed headers and link information from said link table processing means, determining a cell transmission order according to a service priority and performing a header assembling function for accurate cell production;

cell transmission control means for transmitting output headers from said ATM cell output means and the corresponding payloads and controlling said ATM cell input means, said priority encoding means, said link table processing means and said ATM cell output means; and

clock signal control means for generating a clock signal to control timing of said ATM cell input means, said priority encoding means, said link table processing means, said ATM cell output means and said cell transmission control means.

5,446,739

RADIO COMMUNICATION SYSTEM

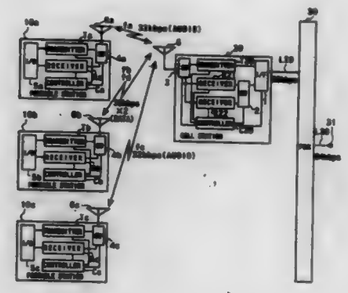
Motohiro Nakano, Ome, and Masakazu Shirakawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 4, 1994, Ser. No. 177,313

Claims priority, application Japan, Jan. 6, 1993, 5-000791

Int. Cl.[6] H04B 7/212, 7/26

U.S. Cl. 370—95.3 **10 Claims**



1. A radio communication system for performing communication between a cell station and a plurality of portable stations based on time division multiple access using a plurality of carrier frequencies and a plurality of slots in one frame, wherein

the plurality of portable stations each comprises:

first reception means for receiving data at a slot assigned thereto; and

first transmission means for transmitting data at a slot assigned thereto its own portable station, and the cell station comprises:

second reception means including two receivers for alternately receiving data transmitted from the plurality of portable stations at a slot assigned thereto; second transmission means for transmitting data to the plurality of portable stations at a slot assigned thereto; and

control means for performing slot assignment for the plurality of portable stations, the slot assignment including assignment of plural slots in one frame such as to be spaced from each other by one slot or more when the cell station communicates with one of the portable stations using the plural slots in one frame.

5,446,740

METHOD OF AND APPARATUS FOR PROCESSING DATA AT A REMOTE WORKSTATION

Richard S. Yien, and William N. Stratigos, both of New York, N.Y., assignors to Empire Blue Cross/Blue Shield and Sigma Imaging Systems, Inc., both of New York, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,327

Int. Cl.[6] G06F 15/00; H04J 3/12

U.S. Cl. 370—110.1 **28 Claims**

1. A method of business data processing at a remote workstation, a group of compressed image files located on a computer network at a central location, comprising the steps of:

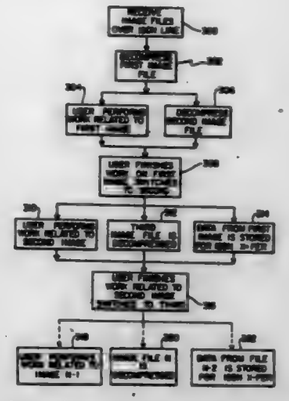
establishing an ISDN telephone connection between the network and the remote workstation;

transferring at least a portion of the group of compressed image files to the remote workstation over the ISDN lines;

storing at least part of the portion of compressed image files at the remote workstation as compressed image files;

terminating the ISDN telephone connection when the transfer has been completed;

decompressing, at the remote workstation, a first image in the portion of image files based on predetermined criteria without user intervention;



decompressing at the remote workstation without user intervention, a second image file in the group based on the predetermined criteria, while the uncompressed first image file is available for the user at the workstation to perform work related thereto;

decompressing, without user intervention, at the remote workstation, a third image file;

storing data, without user intervention, created from the work related to the first image file when the user has stopped working on it and while the second image file is available for the user to perform work related thereto; and

compressing and storing the first image file at the remote terminal.

5,446,741

FAST MEMORY POWER-ON DIAGNOSTICS USING DMA

Gerald D. Boldt, Longmont, Colo.; Stephen D. Hanna, Tucson, Ariz., and Robert E. Vogelsberg, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 561,835, Aug. 2, 1990, abandoned. This application Dec. 23, 1993, Ser. No. 171,989

Int. Cl.[6] G06F 11/00, 11/22

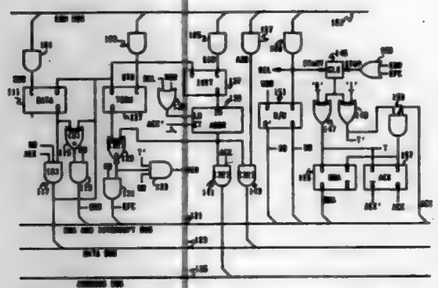
U.S. Cl. 371—21.1 **5 Claims**

1. In a processing system including a processor unit coupled to a memory means for executing instructions stored in the memory means that access and utilize data stored in and retrieved from the memory means during access cycles, a testing system for interactively testing the memory means while the processor is executing stored instructions comprising:

interrupting means for controlling access to the memory means by the testing system while excluding access to the memory means by the processor unit during an access cycle;

addressing means for supplying address signals to the memory means to select successive location in the memory means not utilized by the processor unit;

writing means for storing test data in the memory means at locations addressed by the addressing means;
reading means for retrieving data from the memory means at locations addressed by the addressing means; and



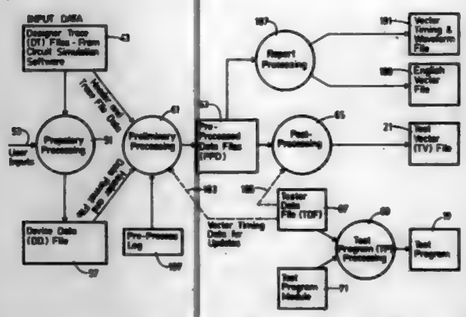
comparing means coupled to receive test data from the writing means and data retrieved from the memory means by the reading means for verifying that the data stored in locations by the writing means is equal to the data retrieved from the same locations by the reading means.

5,446,742

TECHNIQUES FOR DEVELOPING INTEGRATED CIRCUIT TEST PROGRAMS AND THEIR USE IN TESTING ACTUAL CIRCUITS

Mahammadreza Vahabi, Milpitas, and Alfred Kohanteb, Campbell, both of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Aug. 1, 1990, Ser. No. 561,297
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—27 **6 Claims**
MICROFICHE APPENDIX INCLUDED
(14 Microfiche, 70 Pages)



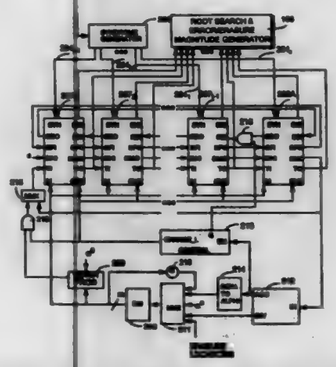
1. A method of testing integrated circuits of a, given design on automatic testing equipment having a preset number of independent test signal generators, comprising the steps of:
(a) acquiring at least first and second designer trace files for said given design that each includes a plurality of test vectors of (i) individual input pin digital signals and (ii) expected responsive individual output pin digital signals, both of said input signal and output signal test vectors representing respective at least first and second operations of said integrated circuits of the given design,
(b) processing the test vectors of said first designer trace file by calculating at least a format of the digital signals of various pins, by calculating filtered bytes of the test vectors, and by grouping together into common time sets those test vectors having substantially the same signal edge timing characteristics, and then storing the results of the calculations and grouping in an intermediate memory file,
(c) subsequently processing said first designer trace file calculation results stored in the intermediate memory file by grouping together said results of those pins of the circuit having substantially the same edge timing of their digital signals, thereby forming a plurality of groups, and assigning one of the test signal generators of the automatic testing equipment to each of said groups,
(d) processing the test vectors of said second designer trace file by calculating at least a format of the digital signals of various pins, by calculating filtered bytes of the test vectors, and by grouping together into common time sets, by reference with time sets from the results of groupings from said first trace file test vectors, those test vectors having substantially the same signal edge timing characteristics, and then storing the results of the calculations and grouping in said intermediate memory file,
(e) subsequently processing said second designer trace file calculation results stored in the intermediate memory file by grouping together said results of those pins of the circuit having substantially the same edge timing of their digital signals, said grouping being accomplished by reference to the groupings formed from the first trace file, and assigning one of the test signal generators of the automatic testing equipment to any such group to which a test signal generator was not assigned when processing the first trace file, and
(f) causing said automatic testing equipment test signal generators to generate test vectors in accordance with the results of the processing of said at least first and second trace files, said causing step including an application of input test vectors to input pins of one of said integrated circuits, and comparing test vectors from the output pins thereof with expected output test vectors, thereby to test operation of said integrated circuits in accordance with said at least first and second designer trace files.

5,446,743

COEFFICIENT UPDATING METHOD AND APPARATUS FOR REED-SOLOMON DECODER

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 147,650, Nov. 4, 1993. This application Oct. 18, 1994, Ser. No. 326,164
Int. Cl.[6] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—371 **37 Claims**



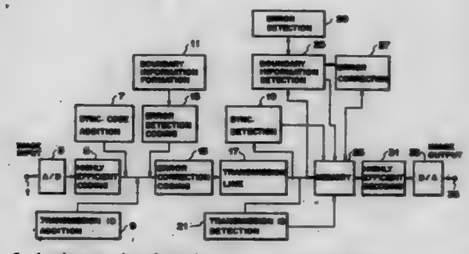
1. A decoder for generating electrical signals indicative of coefficients of an error locator polynomial for a codeword by conducting a plurality of error locator iterations, each error locator iteration having two phases, wherein the decoder comprises:
first circuit means for updating, during the first phase of each iteration, electrical signals stored in a bank of intermediate registers, the electrical signals stored in the bank of intermediate registers representing values of updated coefficients of an intermediate polynomial $\tau^{(n)}(x)$, said first circuit means utilizing:
electrical signals representing an inverse of a prior discrepancy $d_{(n-1)}{}^{-1}$ generated during a directly preceding error locator iteration, and
electrical signals representing values of updated coefficients of the error locator polynomial $\sigma^{(n)}(x)$ as updated during the directly preceding error locator iteration for all error locator iterations after a first error locator iteration;
second circuit means for generating, during the first phase of each error locator iteration, electrical signals representing a current discrepancy d_n, the second circuit means utilizing the electrical signals representing coefficients of the error locator polynomial $\sigma^{(n)}(x)$ as updated during the directly preceding error locator iteration for all error locator iterations after the first error locator iteration;
an inversion circuit for generating electrical signals representing an inverse $d_n{}^{-1}$ of the current discrepancy during an error locator iteration, which inverse $d_n{}^{-1}$ becomes the inverse of the prior discrepancy $d_{n-1}{}^{-1}$ during a directly succeeding error locator iteration; and
third circuit means connected to said first and said second circuit means for generating, during the second phase of each error locator iteration, electrical signals representing coefficients of the error locator polynomial $\sigma^{(n+1)}(x)$, the third circuit means utilizing:
the electrical signals representing the coefficients of the error locator polynomial $\sigma^{(n)}(x)$ as updated during the directly preceding error locator iteration,
the electrical signals representing the current discrepancy d_n, and
the electrical signals representing the coefficients of the intermediate polynomial $\tau^{(n)}(x)$ as updated during the first phase;
whereby, at the conclusion of a final error locator iteration for the codeword, electrical signals representing final values for the coefficients of the error locator polynomial are stored in the bank of error locator registers.

5,446,744

IMAGE SIGNAL CODING DEVICE

Kenichi Nagasawa, and Akihiro Shikakura, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 827,164, Jan. 28, 1992, abandoned. This application Feb. 8, 1995, Ser. No. 385,722
Claims priority, application Japan, Jan. 29, 1991, 3-009148; Feb. 7, 1991, 3-016470
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.4 **11 Claims**



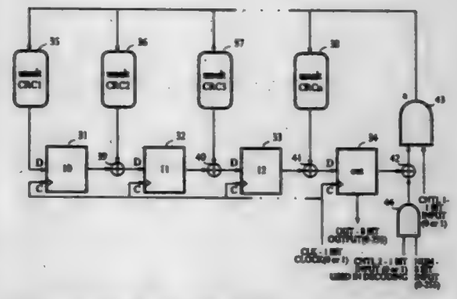
1. An image signal coding device, comprising:
(a) coding means for carrying out variable length coding for each of plural regions resulting from dividing each picture provided by an image signal, and outputting image codes;
(b) block forming means for forming a data block which includes the image codes;
(c) boundary forming means for forming boundary information indicative of a position, in the data block, of the boundary between the image codes in each two adjacent regions of the divided regions, the boundary information being added to the data block; and
(d) error detection or correction coding means for forming, in the data block, a first error detection or correction check code, with respect to the boundary information, which does not include the image codes, and a second error detection or correction check code with respect to the image codes and the boundary information.

5,446,745

APPARATUS FOR CORRECTING ERRORS IN OPTICAL DISKS

Vickie L. Gibbs, Durham, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 956,207, Oct. 5, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,897
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—37.7 **28 Claims**



1. An apparatus for detecting errors in an optical disk memory means comprising:
Cyclic Redundancy Check (CRC) encoding means responsive to an input data supplied to said optical disk memory means for generating CRC code words added to the input data,
Reed-Solomon (RS) encoding means responsive to the input data for generating RS code words to be supplied to said optical disk memory means,
syndrome generating means responsive to the RS code words generated by said RS encoding means and supplied from said optical disk memory means for detecting errors in data read from said optical disk memory means, and
CRC decoding means responsive to the CRC code words for checking parity errors in the read data,
each of said CRC encoding means, RS encoding means, syndrome generating means and CRC decoding means including a plurality of unary multipliers for multiplying by elements of a Galois field GF(2^n) generated using a primitive element β^j, each of said unary multipliers consisting of a number of Exclusive-OR (XOR) gates defined by a primitive element β^j predetermined to reduce a total number of said XOR gates in said apparatus for detecting errors.

5,446,746

PATH MEMORY APPARATUS OF A VITERBI DECODER

Il-keun Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

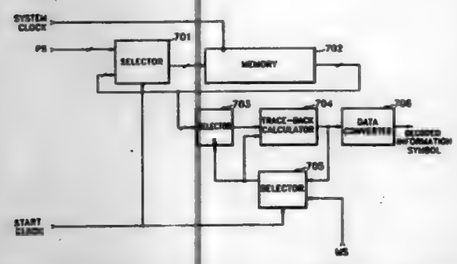
Filed Aug. 27, 1993, Ser. No. 112,282
Claims priority, application Rep. of Korea, Aug. 31, 1992, 92-15795
Int. Cl.[6] H03M *13/12*
U.S. Cl. 371—43 **7 Claims**

1. A path memory apparatus of a Viterbi decoder having an

add-compare-select means for producing path select signals and a minimum state number every symbol period, the path memory apparatus comprising:

first selecting means for selecting between the path select signals and feedback signals in accordance with a start clock;

storing means for receiving the outputs of said first selecting means and shifting the received output in one direction in accordance with a system clock, and applying the outputs thereof to said first selecting means as the feedback signals;



second selecting means for selecting one among the outputs of the memory means in accordance with a current state number;

third selecting means for selecting between the minimum state number and a next state number in accordance with the start clock to produce the current state number;

trace-back calculating means for receiving the current state number and the output of said second selecting means and then producing the next state number; and

data converting means for operating on the next state numbers to produce a decoded information symbol per each symbol period.

5,446,747

ERROR-CORRECTION CODING METHOD WITH AT LEAST TWO SYSTEMATIC CONVOLUTIONAL CODINGS IN PARALLEL, CORRESPONDING ITERATIVE DECODING METHOD, DECODING MODULE AND DECODER

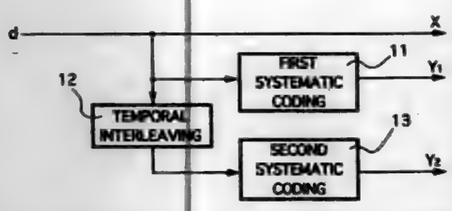
Claude Berrou, Le Conquet, France, assignor to France Telecom and Telediffusion de France S.A., both of France

Filed Apr. 16, 1992, Ser. No. 870,614

Claims priority, application France, Apr. 23, 1991, 91 05280

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—45 **22 Claims**



1. A method for error-correction coding of source digital data elements, comprising the steps of:

implementing at least two independent and parallel steps of systematic convolutional coding, each of said coding steps taking account of all of said source data elements and providing parallel outputs of distinct series of coded data elements;

and temporally interleaving said source data elements to modify the order in which said source data elements are taken into account for at least one of said coding steps.

5,446,748

APPARATUS FOR PERFORMING LOGIC SIMULATION

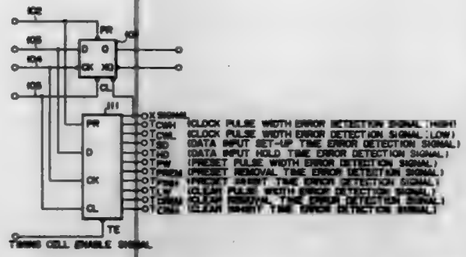
Tetsuya Hasebe, Soginami; Hiroaki Hayashi, Sagamihara, and Kazuki Shinoda, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Division of Ser. No. 193,601, Jan. 26, 1994, which is a continuation of Ser. No. 639,892, Jan. 11, 1991, abandoned. This application Jan. 27, 1995, Ser. No. 379,769

Claims priority, application Japan, Jan. 12, 1990, 2-4926

Int. Cl.[6] G11B *27/00*; H03M *13/00*; H04L *7/00*

U.S. Cl. 371—61 **1 Claim**



1. A logic simulation apparatus which performs logic simulation of an operation of a logic circuit which includes at least a plurality of logic cells and a plurality of nets connecting the logic cells together, said apparatus comprising:

a check circuit having at least one data input to which a data input signal is applied, a clock input to which a clock signal is applied, and an output, said check circuit comparing said data input signal with a predetermined data value at a time determined by said clock input signal and producing at said output of said check circuit a timing error detection signal based on the comparing; and

a memory cell having said data input signal applied to one input thereof, and the output signal of said check circuit applied from the output of said check circuit to another input of said memory cell, said memory cell having an output outputting said data input signal when said timing error detection circuit indicates that no timing error has occurred and outputting a signal which exhibits neither a high level nor a low level when the timing error detection signal indicates a timing error has occurred; and

means for executing the logic simulation on the basis of the output signal output by said memory cell so that said output signal is immediately propagated in said logic simulation.

5,446,749

DIODE PUMPED, MULTI AXIAL MODE, INTRACAVITY DOUBLED LASER

William L. Nighan, Jr., Menlo Park; John Cole, Sunnyvale, and Thomas M. Baer, Mountain View, all of Calif., assignors to Spectra-Physics Lasers Inc., Mountain View, Calif.

Filed Feb. 4, 1994, Ser. No. 191,656

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—22 **43 Claims**

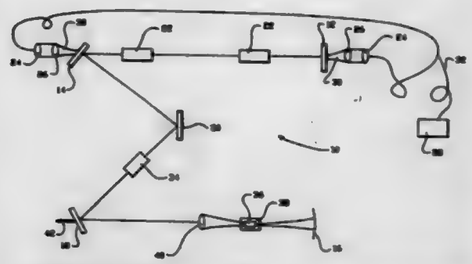
1. A diode pumped, multi axial mode, intracavity doubled laser, comprising:

at least two resonator mirrors defining a resonator cavity;

a laser crystal positioned in the resonator cavity;

a doubling crystal positioned in the resonator cavity;

a diode pump source supplying a pump beam to the laser crystal and producing a laser crystal beam with a plurality of axial modes that is incident on the doubling crystal to produce a frequency doubled output beam, the resonator cavity providing a sufficient number of axial modes to



oscillate so that the doubled output beam has a RMS noise of less than 3%; and

a power supply supplying power to the diode pump source.

5,446,750

LASER DIODE PUMPED SOLID LASER

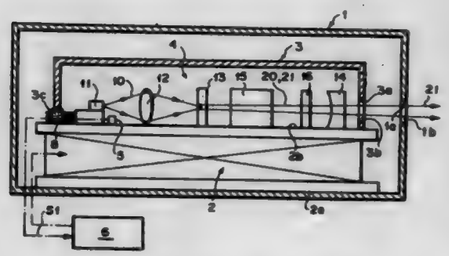
Hisashi Ohtsuka; Yoji Okazaki; Hiroaki Hyuga, and Shinji Mitsumoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1994, Ser. No. 323,883

Claims priority, application Japan, Nov. 12, 1993, 5-283123

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—34 **5 Claims**



1. A laser diode pumped solid laser comprising:

i) an optical module comprising a laser diode, a solid laser crystal, which is excited by a laser beam produced by the laser diode, and a resonator,

ii) an electronic cooling device having a cooling surface, on which the optical module is placed, and a heat radiating surface,

iii) an inner case housing, which houses the optical module therein on the cooling surface of the electronic cooling device,

iv) an outer case housing, which houses the inner case housing and the electronic cooling device therein, and which supports the electronic cooling device via its heat radiating surface,

v) a temperature sensor for detecting the temperature in the region inside of the inner case housing, and

vi) a control circuit, which controls the electronic cooling device in accordance with an output of the temperature sensor and thereby keeps the temperature in the region inside of the inner case housing at a predetermined target value.

5,446,751

OPTOELECTRONIC DEVICE

David Wake, Ipswich, United Kingdom, assignor to British Telecommunications public limited company, London, England

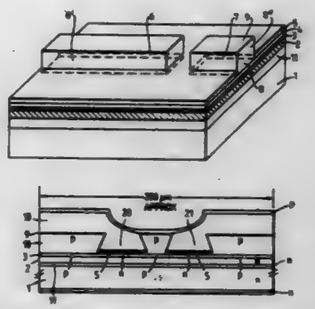
PCT No. PCT/GB91/00702, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO91/17575, PCT Pub. Date Nov. 14, 1991

PCT Filed May 1, 1991, Ser. No. 946,465

Claims priority, application United Kingdom, May 1, 1990, 9009726

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **49 Claims**



1. An optoelectronic semiconductor device comprising:

a first epitaxial layer grown on a semiconductor substrate,

a second epitaxial layer grown on said first layer, said second epitaxial layer having a higher refractive index than that of the first layer and an optical input/output, and

a third epitaxial layer in the form of a ridge structure selectively grown on or over said second layer,

wherein said first; epitaxial layer is of a first conductivity type, said third epitaxial layer is of a second conductivity type and a p-n junction is formed in said second epitaxial layer between a region of material of said second conductivity type, which is aligned beneath said ridge structure, and adjacent regions of said first conductivity type of said second layer, and having an electrical output/input across said p-n junction.

5,446,752

VCSEL WITH CURRENT BLOCKING LAYER OFFSET

Donald E. Ackley, Lambertville, N.J.; Chan-Long Shieh, Paradise Valley; Michael S. Lebby, Apache Junction, both of Ariz.; Hsing-Chung Lee, Calabasas, Calif., and Piotr Grodzinski, Chandler, Ariz., assignors to Motorola, Schaumburg, Ill.

Continuation-in-part of Ser. No. 124,059, Sep. 21, 1993, abandoned. This application Jul. 7, 1994, Ser. No. 271,534

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **27 Claims**

1. An optical waveguide for a vertical cavity surface emitting laser having an emission wavelength comprising:

a semiconducting substrate of a first conductivity type with a surface lying in a first plane;

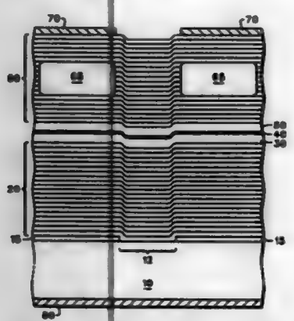
a semiconducting current blocking region of a second conductivity type positioned on the substrate with a surface lying in a second plane substantially parallel to and spaced from the first plane, the current blocking region having a centrally located region removed down to the first plane and a predetermined thickness;

a first semiconducting mirror stack of first conductivity type positioned so as to overlie the centrally located region and a portion of the current blocking region surrounding the centrally located region, with an area over the centrally located region aligned to the first plane and an area over the surrounding portion aligned to the second plane so as

to produce an offset in the first mirror stack substantially equal to the thickness of the current blocking region;

a first spacer layer of intermediate bandgap positioned on the first mirror stack in such a way as to produce an offset in the first spacer layer substantially equal to the thickness of the current blocking region;

an active region having at least a quantum well and barriers positioned on the first spacer layer in such a way as to produce an offset in the active region substantially equal to the thickness of the current blocking region;



a second spacer layer of intermediate bandgap positioned on the active region in such a way as to produce an offset in the second spacer layer substantially equal to the thickness of the current blocking region; and

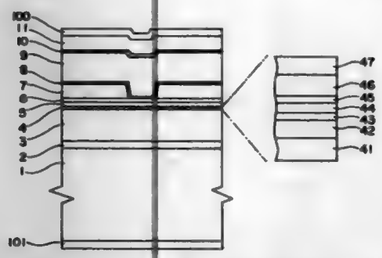
a second semiconducting mirror stack of second conductivity type positioned on the second spacer layer in such a way as to produce an offset in the second semiconducting mirror stack substantially equal to the thickness of the current blocking region.

5,446,753

CURRENT BLOCK TYPE SEMICONDUCTOR LASER

Ichiro Yoshida, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Jun. 1, 1994, Ser. No. 252,563
Claims priority, application Japan, Jun. 4, 1993, 5-134469
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **12 Claims**



1. A current block type semiconductor laser, comprising:

a GaAs substrate; and

a multiple layer structure formed on said GaAs substrate, said multiple layer structure including:

an active layer having a band gap that is smaller than a band gap of GaAs;

lower and upper main cladding layers sandwiching said active layer, said lower main cladding layer being located between said active layer and said GaAs substrate;

a current block layer formed on said upper main cladding layer except at a stripe-shaped current passage region;

a first auxiliary cladding layer formed in the stripe-shaped current passage region; and

a second auxiliary cladding layer formed on said first auxiliary cladding layer, wherein

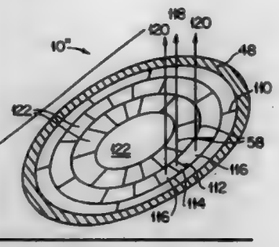
said current block layer has a lower refractive index than said second auxiliary cladding layer, and said first auxiliary cladding layer has a higher refractive index than both said second auxiliary cladding layer and said upper main cladding layer.

5,446,754

PHASED ARRAY SEMICONDUCTOR LASER

Jewell, Jack L., and Greg R. Olbright, both of Boulder, Colo., assignors to Photonics Research Incorporated, Longmont, Colo.

Filed Nov. 5, 1993, Ser. No. 147,564
Int. Cl.[6] H01S *3/05, 3/10, 3/18a*
U.S. Cl. 372—50 **46 Claims**



1. A semiconductor laser comprising:

an optical cavity having a first and second dimension, both perpendicular to said optical cavity;

first and second mirrors, said mirrors defining said optical cavity;

an active layer for providing optical gain;

at least two separate lasing elements, said at least two lasing elements having different first dimensions or different second dimensions and separated by separation means, said separation means being patterned in substantially rectangular patterns, each of said lasing elements having an effective optical cavity length;

means for emitting light beam elements from said lasing regions, said light beam elements characterized by amplitude and phase; and

means for substantially phase-locking said light beam elements and thereby causing said light beam elements to collectively for a light beam.

5,446,755

LASER ABLATION APPARATUS

Yoshikazu Yoshida, and Shinichi Mizuguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 200,524, Feb. 23, 1994, abandoned. This application Dec. 7, 1994, Ser. No. 350,734
Claims priority, application Japan, Feb. 24, 1993, 5-35101
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—109 **5 Claims**

1. A laser ablation apparatus comprising:

a laser oscillator;

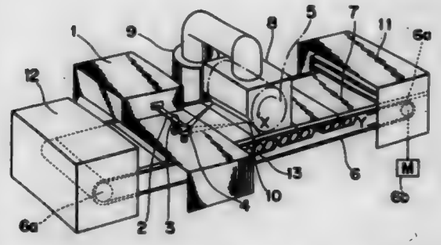
a condenser lens for condensing a laser light generated from the oscillator;

a rotary cylindrical target having a side face which is illuminated by the laser light;

a driving device for rotating the cylindrical target;

a substrate carrier device for moving a substrate in a direction parallel to a tangential direction of the cylindrical target; and

a vacuum chamber located above the substrate, enclosing a part of the cylindrical target, and having an open laser inlet port so that the side face of the cylindrical target is illuminated by the laser light passing through the laser inlet port to adhere material evaporated from the cylindrical target to the substrate when the substrate passes through the vacuum chamber.

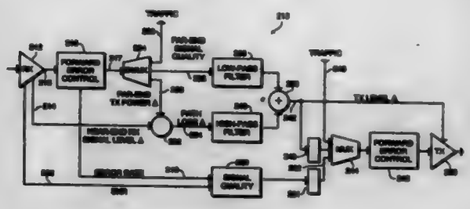


5,446,756

INTEGRATED CELLULAR COMMUNICATIONS SYSTEM

Albert J. Mallinckrodt, Santa Ana, Calif., assignor to Celaxt America, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 781,972, Oct. 24, 1991, Pat. No. 5,339,330, which is a continuation-in-part of Ser. No. 495,497, Mar. 19, 1990, Pat. No. 5,073,900. This application Oct. 28, 1993, Ser. No. 145,246
Int. Cl.[6] H04B *1/69*
U.S. Cl. 375—200 **3 Claims**



1. A cellular communication system comprising:

(a) a first transceiver comprising

a first receiver for receiving a first signal,

quality measurement means for determining the quality of said first signal and for generating a first quality signal representative of the quality of said first signal, and

a first transmitter for transmitting a second signal and said first quality signal;

(b) a second transceiver comprising

a second transmitter for transmitting said first signal,

a second receiver for receiving said second signal and said first quality signal,

a history compilation means for compiling history data relating to received first quality signals,

signal strength measurement means for measuring the signal strength of said second signal,

a processor means for processing said first quality signal, said compiled history data and said signal strength of said second signal for providing a path loss signal, and

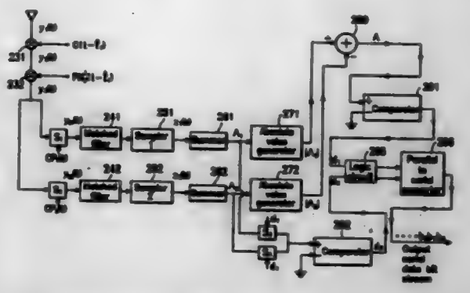
controller means for controlling the output power level of said first signal in accordance with said path loss signal.

5,446,757

CODE-DIVISION-MULTIPLE-ACCESS-SYSTEM BASED ON M-ARY PULSE-POSITION MODULATED DIRECT-SEQUENCE

Chen-Yi Chang, 1001 Ta Hsueh Road, Hsinchu,

Filed Jan. 14, 1993, Ser. No. 77,347
Int. Cl.[6] H03K *7/04*; H04B *1/00*
U.S. Cl. 375—239 **13 Claims**



1. A method of transmitting and receiving a serial data bit stream in a communication system, comprising the steps of:

(a) converting each group of M consecutive bits of a serial data bit stream which is to be transmitted to a receiver of the communication system into M parallel bits with a bit duration equal to M×T, where "x" is a multiplication indicator and T is a time duration of a bit in the serial data bit stream, and forming an M-bit vector from the M parallel bits according to a predetermined positive integer M larger than 1, such that serial M-bit vectors converted from serial groups of M consecutive bits form a sequence of M-bit vectors with every M-bit vector having said bit duration equal to M×T;

(b) selecting a pseudorandom sequence process $PN_p(t)$ which has a sequence period N_{cp}, where N_{cp} is a positive integer;

(c) dividing each said bit duration equal to M×T by the sequence period N_{cp} of the pseudorandom sequence process $PN_p(t)$ into N_{cp} intervals with the time duration of each interval equal to a chip duration T_{cp} of the pseudorandom sequence process $PN_p(t)$, where $T_{cp}=M\times T/N_{cp}$, where "/" is a division indicator;

(d) dividing each of the chip duration T_{cp} into 2^{M-1} pulse positions, each pulse position having a time duration T_s, where $T_s=T_{cp}/2^{M-1}$;

(e) defining a mapping table by which each M-bit vector formed in Step (a) is converted during each said bit duration equal to M×T into a package of N_{cp} duty pulses, thus forming a duty pulse package with each duty pulse appearing at a pulse position, which is one of the 2^{M-1} pulse positions in each T_{cp} and with a predetermined pulse polarity, the duty pulse packages and the duty pulses in each duty pulse package being generated sequentially to form a duty pulse train;

(f) modulating the duty pulse train formed at Step (e) with a pseudorandom sequence signal $PN^i_p(t)$ to form a pulse-position-modulated-direct-sequence, where $PN^i_p(t)$ is a sample of the pseudorandom process $PN_p(t)$ defined at Step (b);

(g) modulating the pulse-position-modulated-direct-sequence formed in Step (f) with a carrier signal to form a carrier modulated signal and transmitting the carrier modulated signal over a channel of the communication system;

(h) receiving as a received carrier modulated signal the carrier modulated signal which is transmitted via the communication channel from the transmitting portion of the communication system;

(i) recovering the N_{cp} duty pulses in each duty pulse package

formed in Step (e) from the received carrier modulated signal by demodulating the received carrier modulated signal synchronously with a local generated carrier signal and pseudorandom sequence signal $PN^{j}_{p}(t)$;

(j) determining pulse position and polarity of the N_{cp} duty pulses in each duty pulse package received, and determining accordingly by using the mapping table defined in Step (e) in a reverse manner the M-bit vector represented by each duty pulse package received; and

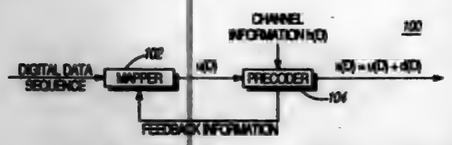
(k) converting each M-bit vector determined at step (j) to corresponding M consecutive bits of the serial data bit stream.

5,446,758

DEVICE AND METHOD FOR PRECODING

M. Vedat Eyuboglu, Concord, Mass., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 8, 1993, Ser. No. 89,319
Int. Cl.[6] H04B *1/10*; H04L *5/12, 27/00*; G06F *11/10*
U.S. Cl. 375—259 42 Claims



1. A device for mapping an input digital data sequence into an output signal point sequence x(D) for transmission over a channel characterized by a nonideal channel response h(D) using a trellis code C comprising:

a mapper for mapping the digital data sequence into a signal point sequence u(D) such that the components u_k of u(D), where k is a time index, are selected based in part on past components $\{y_{k-1}, y_{k-2}, \ldots\}$ of a channel output sequence y(D)=x(D)h(D) which are obtained based on feedback information provided by a precoder,

a precoder for generating said output signal point sequence x(D) according to x(D)=u(D)+d(D), wherein d(D) represents a nonzero difference between a selected sequence c(D) and a postcursor intersymbol interference (ISI) sequence p(D) substantially of a form p(D)=x(D)[h(D)−1], wherein c(D)is selected such that the channel output sequence y(D) is a code sequence in said trellis code C.

5,446,759

INFORMATION TRANSMISSION SYSTEM AND METHOD OF OPERATION

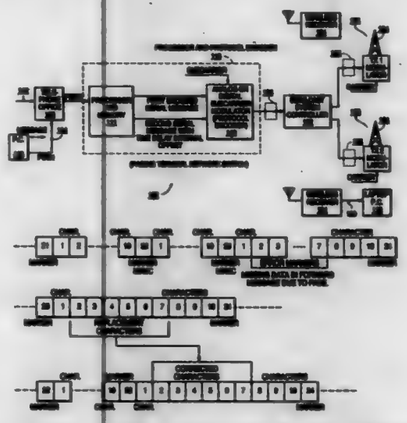
Thomas J. Campana, Jr., Chicago, Ill., assignor to NTP Incorporated, Annandale, Va.

Continuation-in-part of Ser. No. 850,275, Mar. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 850,276, Mar. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 850,487, Mar. 12, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,256
Int. Cl.[6] H04L *1/02*
U.S. Cl. 375—267 235 Claims

1. A transceiver for transmitting and receiving atmospherically transmitted information with the atmospherically received information being subject to atmospheric fading for a time interval and being modulated with a carrier modulated with a subcarrier with the subcarrier being modulated with identical first and second encoded information streams to produce first and second parallel information streams modulated on cycles of the subcarrier with the first parallel information stream containing the first encoded information stream and with the second parallel information stream containing the second encoded information stream with the parallel information streams being atmospherically transmitted with a time delay interval between the parallel information streams as modulated on the subcarrier which is equal to or greater than the time interval, the transceiver comprising:

a detector for detecting the transmitted first and second parallel information streams; and

at least one processor, responsive to the detected parallel streams, for determining if faded information is present in at least one of the detected first and second parallel information streams received by the transceiver, in response to determined faded information replacing the faded information caused by an atmospheric fade with replacement information from at least one of the first and second parallel information streams which is time offset at transmission from the faded information by the time delay interval and



outputting error free atmospherically transmitted information including the replacement information; and wherein

the at least one processor places an error marker within the detected first and second parallel information streams to mark each faded information unit within the faded information requiring replacement and controls replacement of each error marker within at least one of the first and second parallel information streams with replacement bits within one of the first and second parallel information streams which were time offset at transmission by the time delay interval to produce the error free atmospherically transmitted information.

5,446,760

PROGRAMMABLE DIGITAL PULSE SHAPING PHASE MODULATOR

Richard A. Biess, Chandler, and Daniel J. Morelli, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,001
Int. Cl.[6] H04L *27/04, 27/12, 27/20*
U.S. Cl. 375—295 18 Claims

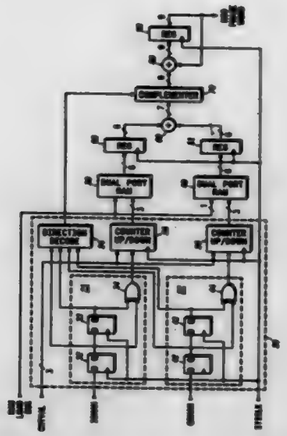
1. A digital pulse shaping phase modulator comprising:

direction controller means for receiving digital data inputs, said direction controller means producing at least first and second counter outputs and a direction output, said first and second counter outputs indicating a number of steps relating to changes in said digital data inputs, said direction output indicating the direction of said steps;

RAM memory means coupled to said direction controller means, said RAM memory means having prestored values corresponding to said steps, said RAM memory means being operated in response to said first and second counter outputs to transmit said prestored values;

said direction controller means including means for dynamically setting said number of steps for each change in each digital data inputs, said means for dynamically setting

other prestored values corresponding to said number of steps, said means for dynamically setting coupled to said RAM memory means; and



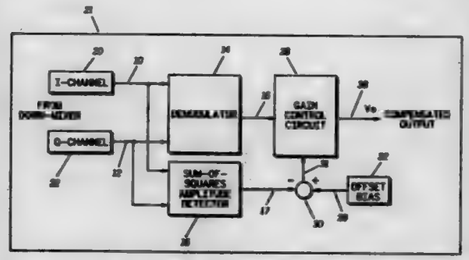
phase accumulator means coupled to said RAM memory means, said phase accumulator means for continuously adding each of said transmitted prestored values to produce a digital accumulated phase angle.

5,446,761

DECODER CIRCUIT FOR PHASE MODULATED SIGNALS

Manbir Nag, Plantation, and Joseph P. Heck, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 11, 1993, Ser. No. 74,525
Int. Cl.[6] H03D *3/00*; H03K *9/06*
U.S. Cl. 375—317 16 Claims



1. A decoder circuit for providing amplitude compensation for a phase modulated signal, comprising:

inphase receive signal component of the phase modulated signal;

quadrature receive signal component of the phase modulated signal;

demodulator means for receiving the inphase receive signal and the quadrature receive signal as inputs and outputting an amplitude varying signal;

feedforward automatic gain control circuit for receiving the inphase receive signal, the quadrature receive signal and the amplitude varying signal and outputting an amplitude compensated signal;

means for detecting the inphase receive signal and the quadrature receive signal;

means for outputting a DC signal representing an amplitude of the inphase receive signal and the quadrature receive signal;

a constant current bias for offsetting said DC signal and providing a control signal; and

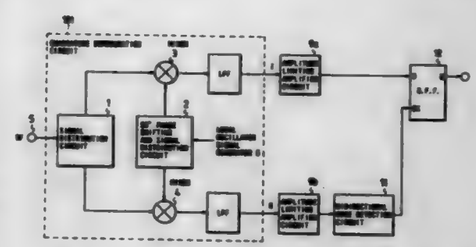
gain control circuit for receiving the control signal and the amplitude varying signal and outputting the amplitude compensated signal.

5,446,762

DATA DEMODULATION CIRCUIT FOR FSK MODULATED RF SIGNAL RECEIVER PROVIDING WIDE-BAND 90° BASEBAND PHASE SHIFTING

Motoi Ohba, Yokohama; Makoto Hasegawa, Tokyo, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1990, Ser. No. 572,594
Claims priority, application Japan, Aug. 25, 1989, 1-218824
Int. Cl.[6] H04L *27/14*; H03D *3/18*
U.S. Cl. 375—324 10 Claims



1. In a circuit including means for demodulating a modulated radio frequency (RF) signal to obtain an in-phase (I) pulse signal comprising a pulse train and to obtain a quadrature (Q) pulse signal comprising a pulse train varying between a condition of 90° phase advancement and 90° phase retardation with respect to said phase quadrature pulse signal in accordance with frequency modulation of said radio frequency signal, and means for phase shifting one of said phase quadrature pulse signal and in-phase pulse signal by 90° with respect to the other of said phase quadrature pulse signal and in-phase pulse signal, the improvement wherein said means for 90° phase shifting comprises:

a bidirectional edge detection circuit for generating successive pulses in response to respective level transitions of a first pulse signal, said first pulse signal being a first one of said in-phase pulse signal and phase quadrature pulse signal; and

a D-type flip-flop having a data input terminal coupled to receive a second pulse signal, said second pulse signal being a second one of said in-phase pulse signal and phase quadrature pulse signal, and a clock input terminal coupled to receive said pulses generated by said bidirectional edge detection circuit, whereby said second pulse signal is sampled at level transitions of said first pulse signal;

said D-type flip-flop thereby producing successive output pulses which are 90° phase shifted with respect to said second pulse signal.

5,446,763

APPARATUS AND METHOD FOR CONVERTING SOFT SYMBOLS INTO SOFT BITS

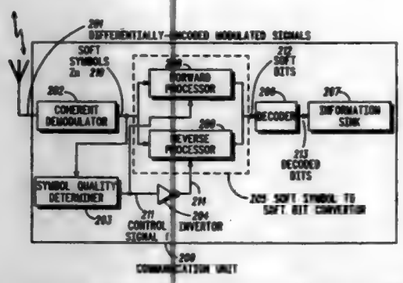
Kevin L. Baum, Hoffman Estates, and Bruce D. Mueller, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 724,663, Jul. 2, 1991, Pat. No. 5,214,675. This application May 6, 1993, Ser. No. 57,600
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—340 24 Claims

1. In a communication unit that coherently demodulates differentially-encoded modulated signals to produce sequential soft symbols including first and second soft symbols, a method,

for use by the communication unit, for converting the sequential soft symbols into soft bits, comprising the steps of:

determining a quality measure for at least the first soft symbol indicating when the quality for the first soft symbol is favorable and when the quality for the first soft symbol is unfavorable;



processing the first and second soft symbols in a forward direction in time to produce the soft bits when the quality measure for the first soft symbol is favorable; and

processing the first and second soft symbols in a reverse direction in time to produce the soft bits when the quality measure for the first soft symbol is unfavorable.

5,446,764

COMMUNICATION CONTROL DEVICE

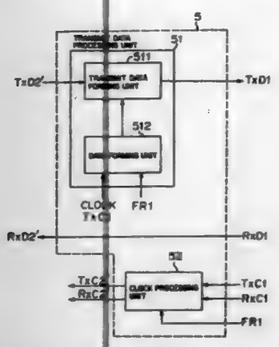
Koji Kondo, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,343

Claims priority, application Japan, Apr. 2, 1992, 4-080648

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **28 Claims**



1. A communication control device comprising:

(a) a rate adapting unit including means for accepting a first receive clock having a first waveform, for receiving a digital signal having a plurality of discrete bits, each discrete bit being defined by a pair of clock edges in the first receive clock, and for outputting a second receive clock having a second waveform having at least one uneven portion; and

(b) means for receiving each bit of at least a portion of the plurality of discrete bits of the digital signal synchronously with receipt of a clock edge of the second receive clock outputted from the rate adapting unit.

5,446,765

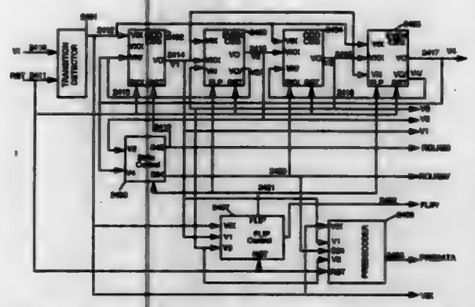
APPARATUS FOR RECOVERING DATA AND CLOCK INFORMATION FROM AN ENCODED SERIAL DATA STREAM

Geary L. Leger, Fremont, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 979,573, Nov. 19, 1992. This application Aug. 17, 1994, Ser. No. 292,629

Int. Cl.[6] H04L *7/02*

U.S. Cl. 375—359 **17 Claims**



1. A clock recovery apparatus to output a recovered clock from a serial signal containing both clock information and data information, comprising:

transition detector means to detect transitions in said serial signal and to generate a transition-detected signal responsive to said transitions;

first odd clock state generator means, including a first and a second precision delay means, and being responsive to said transition-detected signal and to a clock-state-four signal, to generate a clock-state-one signal that, in the absence of said transitions, is held active by said first precision delay means for a predetermined duration starting immediately after said clock-state-four signal;

first even clock state generator means, including a third precision delay means, and being responsive to said clock-state-one signal, to generate a clock-state-two signal that is held active by said third precision delay means for said predetermined duration starting immediately after said clock-state-one signal;

second odd clock state generator means, including a fourth and a fifth precision delay means, and being responsive to said transition-detected signal and to said clock-state-two signal, to generate a clock-state-three signal that, in the absence of said transitions, is held active by said fourth precision delay means for said predetermined period starting immediately after said clock-state-two signal;

second even clock state generator means, including a sixth precision delay means, and being responsive to said clock-state-three signal, to generate said clock-state-four signal that is held active by said sixth precision delay means for said predetermined duration starting immediately after said clock-state-three signal;

recovered clock output means to generate and to output said recovered clock responsive to one or more of said clock-state-one, clock-state-two, clock-state-three, and clock-state-four signals;

said second precision delay means, operating when said transition-detected signal occurs close to the start of said clock-state-one signal, to hold said clock-state-one signal active for said predetermined duration after said occurrence of said transition-detected signal, notwithstanding the operation of said first precision delay, such that when said transition-detected signal occurs during said clock-state-one signal then the duration of said clock-state-one signal is lengthened so as to correspond to the phase of said serial signal and when said transition-detected signal occurs prior to the start of said clock-state-one signal then said clock-state-one signal is immediately started so as to correspond to the phase of said serial signal;

said fifth precision delay means, operating when said transition-detected signal occurs close to the start of said clock-state-three signal, to hold said clock-state-three signal active for said predetermined duration after said occurrence of said transition-detected signal, notwithstanding the operation of said fourth precision delay, such that when said transition-detected signal occurs during said clock-state-three signal then the duration of said clock-state-three signal is lengthened so as to correspond to the phase of said serial signal and when said transition-detected signal occurs prior to the start of said clock-state-three signal then said clock-state-three signal is immediately started so as to correspond to the phase of said serial signal.

5,446,766

DIGITAL COMMUNICATION SYSTEMS

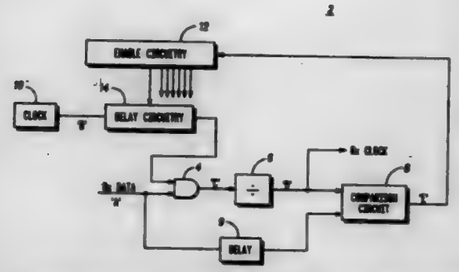
Anthony Wray, Basingstoke, United Kingdom, assignor to Motorola, Schaumburg, Ill.

Filed Apr. 8, 1993, Ser. No. 39,268

Claims priority, application United Kingdom, Aug. 15, 1991, 9117645

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—373 **14 Claims**



1. A method of synchronising a clock signal with a received data signal in a digital communications system, the clock signal having a signal frequency which is greater than the signal frequency of the received data signal by a predetermined amount, the method comprising the steps of:

a) logically combining the clock signal with the received data signal to provide a synchronisation signal;

b) comparing the synchronisation signal with the received data signal and generating an error signal dependent on the difference between the synchronisation signal and the received data signal; and

c) delaying the clock signal in response to the error signal so as to reduce the difference between the synchronisation signal and the received data signal.

5,446,767

FREQUENCY SYNTHESIZER

Jun'ichi Nakagawa, Tokorozawa; Masaru Kokubo, Hachioji, and Michiaki Kuroszwa, Nakaminato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,424

Claims priority, application Japan, Apr. 23, 1992, 4-104786; Aug. 25, 1992, 4-225618; Sep. 21, 1992, 4-250907

Int. Cl.[6] H03D *3/24;* **H03K** *5/13;* **H03L** *7/00*

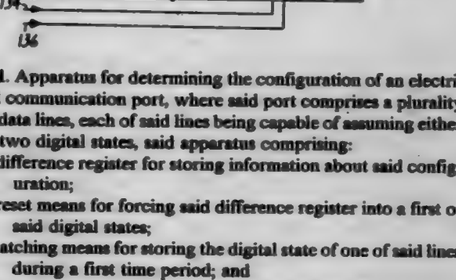
U.S. Cl. 375—376 **97 Claims**

1. A frequency synthesizer comprising:

an oscillator having its oscillating frequency controlled by a voltage or a current;

first differential phase generating means for outputting a value corresponding to a differential phase of a reference signal at a predetermined frequency as a first differential phase;

second differential phase generating means for extracting phase information from an oscillating signal corresponding to an output of said oscillator and for outputting the phase information as a second differential phase;



comparing means for calculating the difference between said first and second differential phases;

signal processing means for integrating an output of said comparing means; and

means for converting an output of said signal processing means to a voltage or a current to control said oscillator.

5,446,768

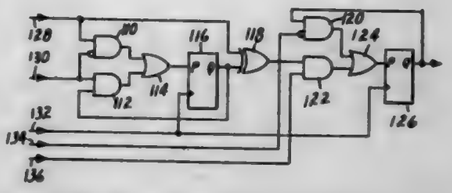
CONFIGURATION DETECTION APPARATUS FOR DATA LINK

Michael E. Griffis, and Christopher R. Yungers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 946,007, Sep. 15, 1992, Pat. No. 5,267,069, which is a continuation of Ser. No. 326,284, Mar. 21, 1989, abandoned. This application Nov. 29, 1993, Ser. No. 159,036

Int. Cl.[6] H04L *23/00*

U.S. Cl. 375—377 **7 Claims**



1. Apparatus for determining the configuration of an electrical communication port, where said port comprises a plurality of data lines, each of said lines being capable of assuming either of two digital states, said apparatus comprising:

difference register for storing information about said configuration;

reset means for forcing said difference register into a first of said digital states;

latching means for storing the digital state of one of said lines during a first time period; and

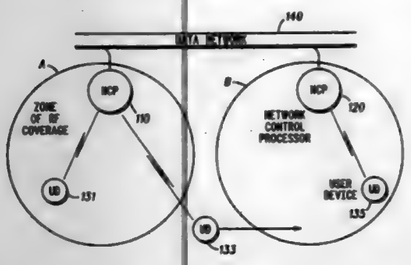
comparison means for comparing said digital state stored in said latching means with the digital state of said line during a subsequent time period, said comparison means causing said difference register to change to a second digital state if said digital state stored by said latching means and said digital state of said line during a subsequent time are different, said second digital state differing from said first digital state.

5,446,769

METHOD FOR PROVIDING HAND-OFFS IN A FREQUENCY HOPPING COMMUNICATION SYSTEM

John Shaver, Glen Ellyn; Michael P. Nolan, Lake Zurich; Charles D. Macenski, Arlington Heights; Alan D. Muehlfeld, Mount Prospect, and Brian Wesselman, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1994, Ser. No. 205,461
Int. Cl.[6] H04B *1/713*
U.S. Cl. 375—202 **12 Claims**



1. In a frequency hopping communication system wherein network control processors (NCPs) communicate with user devices by transmitting traffic channel information at each respective frequency within a plurality of frequencies, known as a hopping set, and for a period of time at each respective frequency, known as a dwell, each NCP having a different hopping set, a method for handing off user devices between NCPs comprising the steps of:

establishing a set of synchronization frequencies for use by said NCPs;

informing the plurality of user devices of said synchronization frequencies;

assigning a single synchronization frequency from the set of synchronization frequencies to each respective NCP;

each NCP transmitting synchronization information at the assigned synchronization frequency during a portion of each dwell;

upon a determination that a user device handoff is necessary;

said user device tuning to the synchronization frequency employed by a different NCP and receiving transmitted synchronization information; and

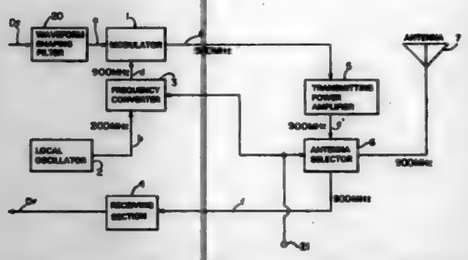
said user device synchronizing its operation to the hopping set employed by the different NCP.

5,446,770

TIME DIVISION DUPLEX TRANSCEIVER

Yoshio Urabe, Ibaraki; Hitoshi Taksi, Osaka, and Hidetoshi Yamasaki, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 28, 1994, Ser. No. 218,664
Claims priority, application Japan, Mar. 31, 1993, 5-073198
Int. Cl.[6] H04L *5/16*; H04B *1/38*
U.S. Cl. 375—219 **10 Claims**



1. A transceiver for transmitting and receiving a signal having the same frequency according to a time division, the transceiver comprising:

a local oscillating means for generating a local signal having a first frequency;

a frequency converting means for converting the local signal into a carrier signal;

a modulating means for modulating the carrier signal by using a transmitting baseband signal so as to generate a transmitting signal having a second frequency; and

a receiving means for receiving, during a receiving operation, a receiving signal having the second frequency which is the same as that of the transmitting signal,

wherein the frequency converting means includes a fractional frequency converting means for converting a signal having an input frequency into a signal having an output frequency, the output frequency being n_2/n_1 times the input frequency, where n_1 is an integer greater than 2, n_2 is an integer greater than 1, n_1 and n_2 being relatively prime, whereby the second frequency of the transmitting signal is not any integral multiple of the first frequency of the local signal, and

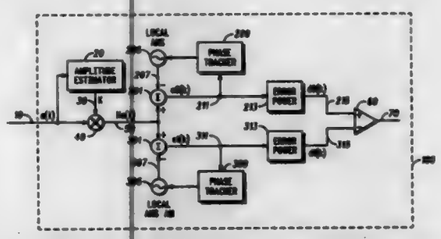
further comprising control means for selectively terminating operation of the frequency converting means, wherein, in the receiving operation of the transceiver, operation of the frequency converting means is terminated.

5,446,771

ADAPTIVE COHERENT SIGNAL DETECTION METHOD AND APPARATUS

Jingdong Lin, Norwood, Mass., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1994, Ser. No. 185,619
Int. Cl.[6] H04B *3/46*
U.S. Cl. 375—224 **20 Claims**



1. A method for determining when an input signal comprises a first signal and when the input signal comprises a second signal, the method comprising the steps of:

(a) scaling the input signal by a predetermined scaling factor, thus forming a scaled input signal;

(b) generating a first local signal based on the first signal;

(c) generating a second local signal based on the second signal;

(d) forming a first error signal by subtraction of the first local signal from the scaled input signal;

(e) forming a second error signal by subtraction of the second local signal from the scaled input signal;

(f) forming a first distance between the scaled input signal and the first local signal based on the first error signal;

(g) forming a second distance between the scaled input signal and the second local signal based on the second error signal; and,

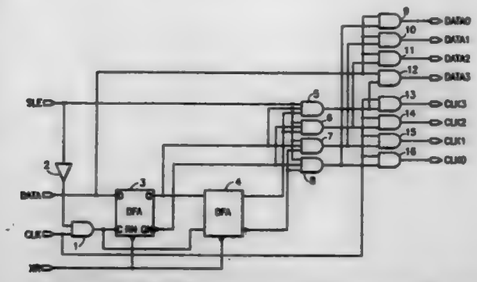
(h) determining when the input signal includes the first signal and when the input signal includes the second signal based on comparing the first distance and the second distance.

5,446,772

INTEGRATED CIRCUIT BUS

Veijo Korhonen, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 1, 1993, Ser. No. 130,592
Claims priority, application Finland, Oct. 9, 1992, 924588
Int. Cl.[6] H04B *3/00*; H04T *3/02*
U.S. Cl. 375—257 **6 Claims**



1. An integrated bus for transmission of a serial data signal which includes both address bits and data bits, said integrated bus comprising:

a clock pulse source;

a plurality of pairs of data lines and clock lines, each pair coupled to a register;

a signal termination line manifesting first and second states;

circuit means coupled to said signal termination line and and clock pulse source and responsive to said first state on said signal termination line to clock, transform and decode said address bits;

logic means coupled to said circuit means and clock pulse source and responsive to decoded address bits to select one pair of said pairs of data lines and clock lines; and

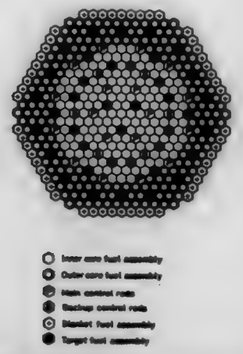
means for changing said first state on said signal termination line to said second state to enable said data bits to pass to a data line and clock pulses to a clock line of said selected pair of said pairs of data lines and clock lines.

5,446,773

FAST REACTOR CORE

Toshio Wakabayashi, Higashi, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,972
Claims priority, application Japan, Nov. 17, 1993, 5-311190
Int. Cl.[6] G21G *1/02*
U.S. Cl. 376—170 **3 Claims**



1. A heterogeneously loaded fast reactor core comprising a plurality of core fuel assemblies and a plurality of target fuel assemblies,

each of said core fuel assemblies comprising a hexagonal wrapper tube and a plurality of core fuel rods positioned within said wrapper tube, each of said core fuel rods having a first predetermined diameter,

each of said target fuel assemblies comprising a hexagonal wrapper tube and a plurality of target fuel rods positioned within said wrapper tube, each of said target fuel rods having a second predetermined diameter, each of said target fuel rods containing 20 to 50% of minor actinide nuclides,

said second predetermined diameter being smaller than said first predetermined diameter,

each of said wrapper tubes of said core fuel assemblies and of said target fuel assemblies, being of the same shape and size,

each of said core fuel assemblies having 271 core fuel rods,

each of said target fuel assemblies having either 331 or 397 target fuel rods,

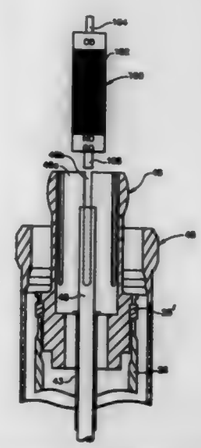
said fast reactor core having 30 to 50 target fuel assemblies heterogeneously dispersed and loaded therein.

5,446,774

SPUD FINGER GAUGE

Harry L. Russell, Campbell, and Bettadapur N. Sridhar, Cupertino, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 15, 1994, Ser. No. 196,736
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 **9 Claims**



6. A method for checking the condition of a spud in a control rod drive, said spud having a plurality of fingers and a plurality of spacings, said fingers being arranged along a circumference with a corresponding one of said plurality of spacings separating each pair of adjacent fingers, comprising the steps of:

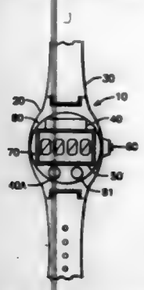
(a) trying to pass a first cylindrical projection having a transverse dimension of first magnitude through a first spacing of said plurality of spacings; and

(b) trying to pass a second cylindrical projection having a transverse dimension of second magnitude through said first spacing,

wherein said first and second magnitudes are selected such that said first and second cylindrical projections respectively pass and do not pass through any spacing separating adjacent fingers of an undeformed spud having a spacing width of third magnitude, said third magnitude being within a predetermined range of magnitudes defined by a minimum acceptable magnitude and a maximum acceptable magnitude, wherein said first magnitude is less than said minimum acceptable magnitude and said second mag-

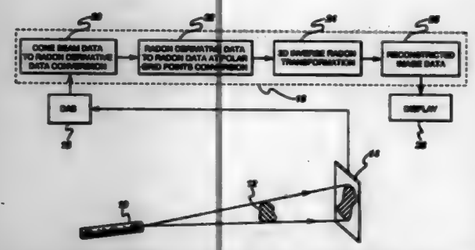
nitude is greater than said maximum acceptable magnitude.

5,446,775
MOTION DETECTOR AND COUNTER
Larry A. Wright, 1413 SE. 8th Ave., Okeechobee, Fla. 34974, and Al Muldoon, 2603 Wills Dr., St. Joe, Mich. 49085
Filed Dec. 20, 1993, Ser. No. 169,640
Int. Cl.[6] A63B *71/06*; G01P *1/07*
U.S. Cl. 377—24.2 10 Claims



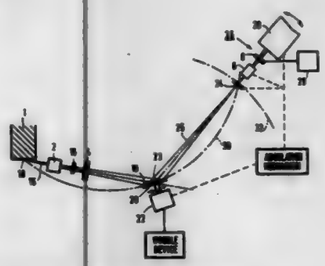
1. A device for detecting and counting occurrences of a specific motion, said device comprising:
at least one acceleration-sensitive switch;
processing means connected to an output of said at least one acceleration-sensitive switch, for determining based on the output from said at least one acceleration-sensitive switch whether said specific motion has occurred and having means for counting occurrences of said specific motion; and
display means controlled by the processing means to display results from said means for counting, said results being indicative of the number of times the specific motion has occurred;
wherein said at least one acceleration-sensitive switch is uniaxial and closes in response to acceleration forces greater than a predetermined magnitude in a predetermined direction corresponding to an axis of the switch, and
wherein the switch outputs a pulse when closing, the duration of the pulse depending on the amount of time that acceleration forces in the predetermined direction exceed the predetermined magnitude.

5,446,776
TOMOGRAPHY WITH GENERATION OF RADON DATA ON POLAR GRID POINTS
Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 2, 1993, Ser. No. 100,818
Int. Cl.[6] A61B *6/03*; G01N *23/083*
U.S. Cl. 378—4 15 Claims



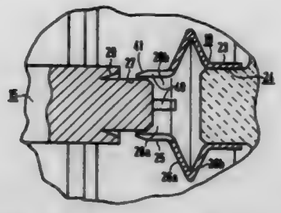
13. A system for three-dimensional computerized tomography comprising:
a source for generating cone beam imaging energy passing it through an object of interest;
a detector for detecting the cone beam imaging energy as attenuated by passage through the object of interest to provide cone beam data;
means for defining polar grid points on radial lines on a plurality of coaxial planes for which Radon data is sought;
means for defining a Radon circle on each of said plurality of planes;
means for calculating Radon derivative data using said cone beam data at each point of intersection between the Radon circle and said radial lines on each of the planes for different relative source positions;
means for storing the Radon derivative data in a function bin corresponding to each of a plurality of derivative points on said radial lines on said planes for different relative source positions;
means for, upon completion of storage of Radon derivative data in function bins for the plurality of derivative points, using the values stored in the function bins to provide reconstructed image data; and
a display connected to said means for using the values stored in the function bins for displaying an image of the object of interest using said reconstructed image data.

5,446,777
POSITION-SENSITIVE X-RAY ANALYSIS
Elisabethus Houtman, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 3,113, Jan. 25, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,053
Claims priority, application European Pat. Off., Jan. 27, 1992, 92200208
Int. Cl.[6] G01N *23/02*
U.S. Cl. 378—45 10 Claims



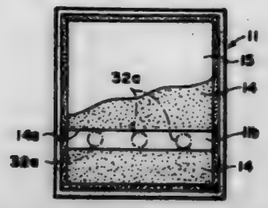
1. X-ray analysis apparatus comprising:
(a) an X-ray source for generating an X-ray beam,
(b) means for supporting an object to be analyzed,
(c) a detection system for X-rays, from said object, said detection system comprising a one-dimensional, position-sensitive detector,
(d) a detection collimator system located in front of the one-dimensional position-sensitive detector;
(e) said X-ray source, object, and detection collimator system lying on a focus circle of the apparatus,
(f) an angulation mechanism connected to the object supporting means, the detection system, and the detection collimator system for rotating the object and the detection system and the detection collimator system to maintain the object and detection collimator system on the focus circle,
(g) said X-ray beam irradiating a part of the object,
(h) said one-dimensional position-sensitive detector and said detection collimator system being arranged and oriented with respect to one another and to the X-ray beam such that position-sensitive analysis of radiation incident on the detection collimator system is carried out for a number of positions in parallel.

5,446,778
MOUNTING ASSEMBLY FOR AN AXLE IN A HOUSING
Roland Schmidt, Erlangen; Hans Stroehlein, Nuremberg, and Thomas Weller, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Continuation of Ser. No. 34,774, Mar. 19, 1993. This application Dec. 12, 1994, Ser. No. 353,691
Claims priority, application Germany, Mar. 27, 1992, 42 10 146.8
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—125 2 Claims



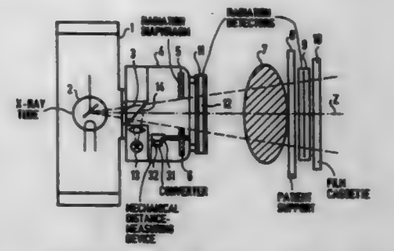
1. A mounting assembly for an axle of a rotating anode in a vacuum housing of an X-ray tube wherein at least one end of the axle is connected to the housing, said assembly comprising a mounting part connecting the axle to the housing and having at least one sleeve section for telescopically receiving an end of the axle or a housing projection with radial play during an assembly process, and said assembly having clamp means provided for acting, at the end of the assembly process, on said at least one sleeve section to cause a substantially play-free engagement between said at least one sleeve section and the end of the axle or the housing projection respectively.

5,446,779
CASSETTE
Yasunori Ohta, and Syouichi Kosemura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 59,366, May 12, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 283,149
Claims priority, application Japan, May 12, 1992, 4-119006
Int. Cl.[6] G03B *42/04*
U.S. Cl. 378—182 8 Claims



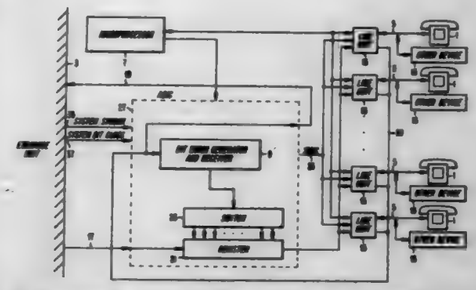
1. A cassette for housing therein a sheet-shaped radiation image recording medium such that the sheet-shaped radiation image recording medium is capable of being taken out therefrom, wherein the improvement comprises the provision of one of a thermal-bond and a spunlace type nonwoven fabric, which is adhered to an inner surface of a flat plate-like portion of the cassette, said flat plate-like portion facing an image recording layer of the sheet-shaped radiation image recording medium, said nonwoven fabric directly contacting said image recording layer, thereby preventing said sheet-shaped radiation image recording medium from being scratched.

5,446,780
X-RAY APPARATUS WITH MECHANICAL DISTANCE-MEASURING DEVICE
Horst Aichinger, Fuerth, and Thomas Schmitt, Forchheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 25, 1994, Ser. No. 202,018
Claims priority, application Germany, May 5, 1993, 43 14 897.2
Int. Cl.[6] A61B *10/00*
U.S. Cl. 378—204 5 Claims



1. An x-ray apparatus for examining a patient comprising:
x-ray means for irradiating said patient with an x-ray beam emanating from said focus and having a central ray, said x-ray means having an x-ray means housing;
mechanical distance-measuring means extensible along said central ray for mechanically measuring a distance from said x-ray means housing; and
converter means for converting the distance mechanically measured by said mechanical distance-measuring means into an electrical signal.

5,446,781
TESTING OF SUBSCRIBER LINES IN A DIGITAL SWITCH
Anders O. Lindström, Vällingby; Anna K. Boström, Solna, and Hans M. Broberg, Hägersten, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Mar. 31, 1994, Ser. No. 221,232
Claims priority, application Sweden, Apr. 1, 1993, 9301090
Int. Cl.[6] H04M *1/24*, *3/08*, *3/22*
U.S. Cl. 379—6 2 Claims



1. A device for testing line connections at a digital telephone exchange, the exchange being arranged for the transfer of digital information and comprising:
line circuits, each line circuit being intended for connection through a line to a subscriber set and for forwarding bit sequences to and from the subscriber set;
pairs of input and output lines, each pair of one input line and one output line being connected to a group of line circuits, each group comprising at least two line circuits, thus on each pair of lines information being intended to be trans-

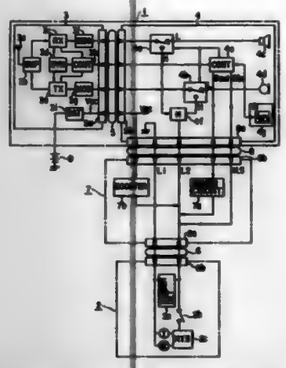
mitted to and from subscriber sets connected to the line circuits of the corresponding group, the digital information being transmitted as bit sequences on the lines;
the testing device comprising:
a generator for generating a bit sequence;
a comparator for comparing a received bit sequence to a generated bit sequence;
means for indicating whether the received bit sequence agrees with the generated bit sequence;
wherein the testing device is connected to only one pair of an input and an output line of the exchange and further comprises:
means for inserting in a data stream on the output line and for extracting from a data stream on the input line of the pair, bit sequences transmitted to and from a selected one of the line circuits;
wherein communication from the exchange to a group of several line circuits is performed by means of time multiplexed serial transmission, such that each line circuit and thereby a connected subscriber set is always assigned fixed, periodical time slots; the inserting and extracting means are controlled by a signal such that after receiving the signal the inserting and extracting means directly transmits a portion of a bit sequence generated by the generator and having a predetermined length corresponding to a part of or a whole time slot on the output line of the exchange; the inserting and extracting means comprises intermediate storage means, connected to the output line of the exchange, for storing information in successive time slots for at least each one of the line circuits, the generator being arranged to store a portion of a generated bit sequence in a place in the intermediate storage means, the place corresponding to a time slot associated with a selected line circuit, when information associated with the line circuits are intermediately stored in the storage means.

5,446,782

TERMINAL CONNECTING DEVICE HAVING AN AUTO DATA RECEIVING FUNCTION

Osamu Kurokawa; Hiroki Yoshida, and Tsutomu Inaba, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 15, 1992, Ser. No. 913,382
Claims priority, application Japan, Jul. 16, 1991, 3-175549; Oct. 4, 1991, 3-257764
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—58 **11 Claims**



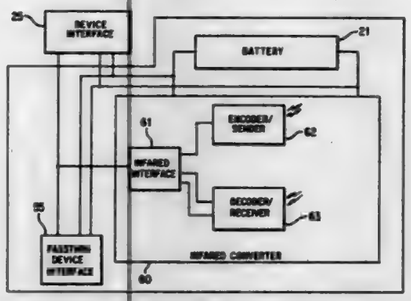
1. A terminal connecting device for interfacing a radio telephone device to a data terminal device, wherein said radio telephone device comprises a switch for selecting, in response to a control signal, either a voice signal path or a data signal path to said data terminal device, said terminal connecting device comprising:
a first connector connectable to said radio telephone device for accepting signals from said radio telephone device and said radio telephone device;
a second connector connectable to said data terminal device for sending and receiving signals to and from said data terminal device;
first means, connected between said first connector and said second connector for receiving from said first connector a predetermined signal in response to detection of a calling signal, generating a ringer signal compatible with said data terminal device upon receiving said predetermined signal, and transferring the ringer signal to said second connector; and
second means, connected between said first connector and said second connector, for receiving a receive response signal from said second connector indicating said data terminal device is in a data reception state, and for transferring the receive response signal to said first connector to generate said control signal to select the data signal path.

5,446,783

CELLULAR PHONE WITH INFRARED BATTERY PACK

Gregory J. May, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 1994, Ser. No. 189,568
Int. Cl.[6] H04Q *7/22*; H04M *11/00*
U.S. Cl. 379—59 **8 Claims**



4. An infrared battery pack for a cellular phone, comprising:
a battery for powering said cellular phone; and
an infrared port for transmitting infrared information between said cellular phone and an electronic device;
said infrared battery pack capable of replacing a conventional battery pack lacking infrared capability for said cellular phone, said cellular phone operating as a fully functional conventional cellular phone when said conventional battery pack is installed, said cellular phone having the ability to communicate with said electronic device over said infrared port when said infrared battery pack is installed.

5,446,784

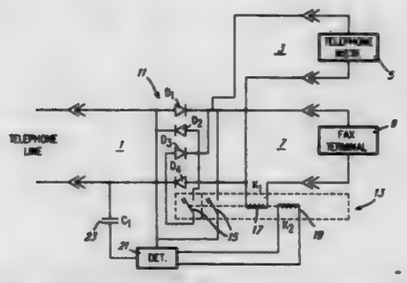
APPARATUS FOR COUPLING A TELEPHONE LINE TO A TELEPHONE LINE SUBSCRIBER DEVICE

Donald MacTaggart, 4144 Marlowe Ave., Montreal, Quebec, Canada H4A 3M2

Continuation-in-part of Ser. No. 22,965, Feb. 25, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 151,412
Int. Cl.[6] H04M *11/00, 3/42*
U.S. Cl. 379—102 **3 Claims**

1. An apparatus for connecting a multiple ringing capacity telephone line to a subscriber telephone line device set to answer after a single ringing burst and associated with a special directory number different from a primary directory number, the apparatus comprising:

an input jack connectable to a wall socket for said multiple ringing capacity telephone line;
an output means connectable to said subscriber telephone line device;
a normally open switch connecting said input jack to said output means, said switch being closed when a closing signal is supplied said input jack being disconnected from said output when said switch is open;
means connected to said output means and said switch for providing said closing signal to said switch when said subscriber telephone line device goes off-hook;
a timing capacitor;
means for discharging said timing capacitor continuously;



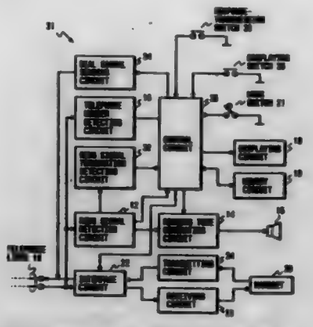
diode means connected to said input jack for converting and supplying DC power only from an AC ringing current at said input jack;
means connected to said diode means for charging said timing capacitor to a maximum charge value; and
means connected to said diode means, said switch and said timing capacitor for supplying said closing signal when said timing capacitor has a level of charge above a predetermined threshold when said DC power begins to be supplied, whereby a second ring, arriving within a predetermined time interval after a first ring at said input jack, will be passed through to said output means.

5,446,785

TELEPHONE TERMINAL EQUIPMENT IN WHICH TELEPHONE NUMBERS OF CALLERS ARE DISPLAYED

Yuji Hirai, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 25, 1993, Ser. No. 66,197
Claims priority, application Japan, May 27, 1992, 4-134692; Jun. 12, 1992, 4-153570
Int. Cl.[6] H04M *1/69, 1/56, 15/06*
U.S. Cl. 379—142 **17 Claims**



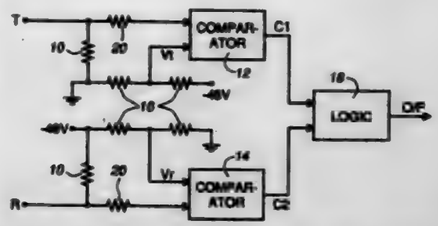
1. A telephone terminal equipment comprising:
ring signal detecting means for detecting ring signals related to a telephone call of a caller to a subscriber;
telephone number detecting means for detecting a telephone number of the caller transferred with the ring signals detected by the ring signal detecting means;
memory means for storing the telephone number detected by the telephone number detecting means;
control means for controlling the memory means to store no-response information in relation to the telephone number in the memory means, the no-response information indicating that the subscriber makes no response to the telephone call of the caller;
displaying means for displaying both the telephone number and the no-response information relating to the telephone number stored in the memory means; and
ring signal termination detecting means for detecting termination of the ring signals detected by the ring signal detecting means, the no-response information being stored in the memory means under the control of the control means in cases where the termination of the ring signals is detected in the ring signal termination detecting means;
wherein the termination of the ring signals is detected in the ring signal termination detecting means when a predetermined set-up time passes without the detection of any ring signals by the ring signal termination detecting means.

5,446,786

TWO-WIRE TELECOMMUNICATIONS LINE DETECTION ARRANGEMENTS

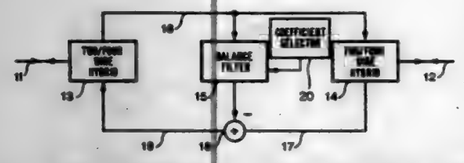
Alexander J. Shtulman, Tucker, Ga., assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 3, 1993, Ser. No. 25,568
Int. Cl.[6] H04M *3/22*
U.S. Cl. 379—377 **8 Claims**



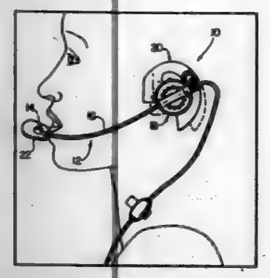
1. A line detection arrangement for detecting a state of a two-wire telecommunications line having a first wire and a second wire, comprising:
a first comparator arranged to compare a first voltage on the first wire of the line with a first reference voltage;
a second comparator arranged to compare a second voltage on the second wire of the line with a second reference voltage, the second reference voltage being more negative than the first reference voltage; and
logic responsive to outputs of the first and second comparators for determining a first state of the line when the first voltage is more negative than the first reference voltage and the second voltage is more positive than the second reference voltage, determining a second state of the line when the first voltage is more positive than the first reference voltage and the second voltage is more negative than the second reference voltage, and otherwise maintaining a previous determination of the state of the line.

5,446,787
METHOD FOR AVOIDING SELF-OSCILLATION IN CONJUNCTION WITH ECHO CANCELLATION
Bengt G. Löfmark, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Apr. 8, 1993, Ser. No. 44,050
Claims priority, application Sweden, Apr. 9, 1992, 9201145
Int. Cl.[6] H04B *3/20*
U.S. Cl. 379—410 36 Claims



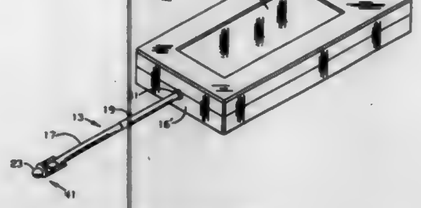
1. In a system including a four-wire loop coupled to an echo canceler, the echo canceler including an adaptive filter, a method for controlling the echo canceler to avoid self-oscillation in the system, comprising the steps of:
determining coefficients for use in the adaptive filter in a manner such that an absolute value of a filter transfer function, ($|H_{ce}|$), satisfies a relationship $|H_{ce}|<1/|H_{fe}|-|H_{ne}|$, where H_{fe} is an echo transfer function in a far-end of the four-wire loop and H_{ne} is an echo transfer function in a near-end of the four-wire loop; and
controlling the adaptive filter by applying the determined coefficients thereto.

5,446,788
ADJUSTABLE TELEPHONE HEADSET
Robert E. Lacey, Sudbury, Mass.; John Ela, Atkinson, N.H.; Christopher O. Lada; Lawrence G. Shubert, both of Palo Alto, Calif., and Christopher Loew, San Francisco, Calif., assignors to UNEX Corporation, Nashua, N.H.
Continuation of Ser. No. 952,967, Sep. 29, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 231,981
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—430 11 Claims



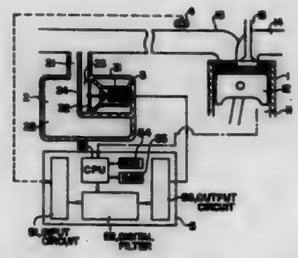
1. A telephone headset comprising:
a earphone portion comprising:
an earphone housing; and
an earphone located within said earphone housing;
a boom microphone portion comprising:
a microphone; and
a microphone boom having a first end and a second end, said microphone positioned at said first end of said microphone boom and said second end of said microphone boom being movably attached to said earphone housing; and
an ear support portion comprising:
a fixed curvilinear member having a first end and a second end, said first end having a pivot;
an adjustable curvilinear member having a first end and a second end, said first and said second end of said adjustable curvilinear member having a fixed distance therebetween, said first end of said adjustable curvilinear member pivotably attached to said pivot of said fixed curvilinear member, said first and said second end of each of said fixed curvilinear member and said adjustable curvilinear member substantially defining a plane, said pivot having an axis substantially perpendicular to said plane to permit said second end of said adjustable curvilinear member to move along an arcuate path substantially within said plane and at a fixed distance from said pivot; and
a mounting ring rotatably attached to said second end of said fixed curvilinear member,
said fixed curvilinear member constructed to rest on the ear of a wearer and said earphone housing being rotatably and removably attached to said mounting ring.

5,446,789
ELECTRONIC DEVICE HAVING ANTENNA FOR RECEIVING SOUNDWAVES
Robert D. Loy, Whitney Point, and Osvaldo A. Mantilla, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 150,674, Nov. 10, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,142
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—433 10 Claims



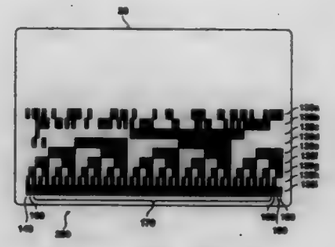
1. An electronic device comprising:
a housing;
a printed circuit board located within said housing, said printed circuit board adapted for having various electronic components thereon;
microphone means positioned on said printed circuit board located within said housing; and
an antenna positioned within or upon said housing and adapted for receiving electronic signals over an established frequency range, said antenna including a hollow body portion operatively coupled to said microphone means and adapted for being extended a predetermined distance from said housing, said antenna further including a receiving portion located relative to said hollow body portion and adapted for receiving sound waves, said hollow body portion including a segment positioned within said housing on said printed circuit board adjacent said microphone means and at a spaced distance from said microphone means, said hollow body portion including an opening and directing said sound waves received by said receiving portion toward said microphone means through said opening whereby said microphone means will receive said sound waves.

5,446,790
INTAKE SOUND CONTROL APPARATUS
Katsuyuki Tanaka, Nukata; Masaaeri Kato, Seto; Kouzi Ohara, Nukata; Tokio Kohama, Nishio, and Yoshitaka Nishio, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Continuation of Ser. No. 35,881, Mar. 23, 1993, which is a continuation of Ser. No. 617,074, Nov. 23, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 165,579
Claims priority, application Japan, Nov. 24, 1989, 1-305668
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71 19 Claims



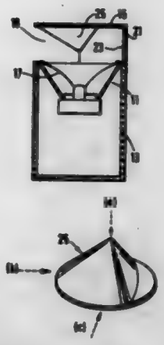
1. An intake sound control apparatus for an internal combustion engine which has an intake passage, comprising:
detecting means for detecting an intake sound and a rotational speed of said internal combustion engine;
a resonator, provided in said intake passage, for resonating frequency components of said intake sound;
control means for producing a sound signal on the basis of a detected intake sound by said detecting means, said sound signal having characteristics for cancelling at least a sound having plural harmonics having frequencies (n+0.5) times a detected rotating speed by said detecting means, where n is an integer and n≧0;
cancelling sound generating means provided in said resonator, acoustically coupled to said intake passage for generating a cancelling sound on the basis of said sound signal.

5,446,791
SOUND SYNTHESIZER SYSTEM OPERABLE BY OPTICAL DATA CARDS
Gene W. Wooley, Moorpark, Calif.; Anthony Van de Ven, Hong Kong, and John A. Dackombe, Lantau Island, both of Hong Kong, assignors to JAG Design International Limited, Centre, Hong Kong
Filed Mar. 17, 1993, Ser. No. 33,642
Int. Cl.[6] G10D *5/00*
U.S. Cl. 381—118 11 Claims



1. A sound synthesizer system comprising:
an optical card reader for reading a card having disposed thereon a plurality of parallel tracks of digital information, said tracks comprising optically contrasting marks and spaces and each being disposed a fixed distance from an edge of said card, at least one of said tracks being a timing track formed of uniformly spaced marks and spaces, said optical card reader adapted to read said plurality of parallel tracks of said card simultaneously in response to having said card manually swept through it, said optical card reader adapted to generate digital signals which correspond to marks and spaces contained in said plurality of tracks of digital information;
a processor responsive to said digital signals and adapted to generate synthesizer commands which correspond to said digital signals;
a synthesizer adapted to generate audio level signals responsive to said synthesizer commands; and
an audio output generator responsive to audio level signals;
wherein said digital signals are formed of a successive plurality of data bytes, each of which is formed by reading columns orthogonal to said edge, said columns intersecting each of said plurality of parallel data tracks and corresponding to a timing mark on said timing track to determine, for each said track other than said timing track, whether a mark or a space is disposed in said column and setting the bits of said data bytes to correspond to the marks and/or spaces detected in each of said tracks; and
wherein at least one of said data bytes is a stop byte.

5,446,792
REFLECTION-TYPE SPEAKER APPARATUS
Hitoshi Sauge, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan
Filed Dec. 21, 1993, Ser. No. 170,922
Claims priority, application Japan, Dec. 25, 1992, 4-346907
Int. Cl.[6] H04R *25/00*; H04N *5/64*; H05K *5/00*
U.S. Cl. 381—160 5 Claims



1. A speaker apparatus, comprising:
a speaker having a diaphragm for radiating sound waves;
a frame covering over said diaphragm, and having a mouth for releasing said sound waves outside and a shield positioned opposite said mouth.
wherein said mouth opens perpendicularly to an axis of said diaphragm; and
a reflector positioned in said frame opposite said diaphragm, for reflecting said sound waves radiated from said diaphragm,
wherein said reflector is conical, and has an asymmetrical shape between said mouth and said shield, and
wherein the center of said conical, asymmetrical shape is positioned on said axis of said diaphragm.

5,446,793

METHOD OF IMPROVING THE QUALITY OF SOUND REPRODUCTION AND APPARATUS FOR CARRYING AT LEAST ONE LOUDSPEAKER EMITTING IN THREE DIRECTIONS

Pierre Piccaluga, and Claude A. Perrichon, both of Thurinsey, F-71260 Montbellet, France

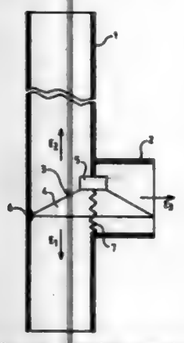
PCT No. PCT/FR91/00803, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO92/07448, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 14, 1991, Ser. No. 64,119

Claims priority, application France, Oct. 16, 1990, 90 12757

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—188 **16 Claims**



8. An apparatus for reproducing sound comprising at least one tube open at both ends, a cavity adjacent to the tube and open on one side, and one electro-acoustic transducer disposed half in the tube and half in the cavity, said transducer having a transducer axis, a membrane seal provided between the cavity and the tube, said transducer dividing the tube into a forward emission area (E1) and a rearward emission area (E2) which are sealed from each other, said transducer defining in the cavity a lateral emission area (E3) which extends laterally with respect to said transducer axis and is in quadrature with the other two emission areas.

5,446,794

Patent Not Issued For This Number

5,446,795

UNIVERSAL DECODER FOR TELEVISION SIGNAL SCRAMBLE SYSTEMS

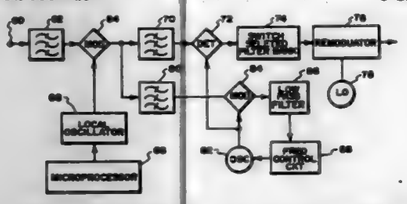
Adrian J. Devries, Aurora, Ill., and Bruno A. Rist, Woodland Hills, Calif., assignors to International Telesystems, Inc., Pacific Grove, Calif.

Continuation of Ser. No. 455,512, Dec. 21, 1989, Pat. No. 5,235,640. This application Mar. 25, 1993, Ser. No. 36,985

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[6] H04N *7/167*

U.S. Cl. 380—13 **6 Claims**



1. A decoder for elimination of one or more interfering carries injected near the frequency of the video signal of a television signal transmission;

filter means for receiving and filtering spurious responses from said television signal;

local oscillating means for producing a precise oscillating signal at a predetermined frequency;

modulating means for receiving and modulating said television signal with said precise oscillating signal from said local oscillating means to down convert said television signal with said one or more interfering carriers to a predetermined frequency;

one or more sharp narrow band notch filter means for receiving said down converted television signal, said one or more sharp narrow band notch filter means having a center frequency at the frequency of said one or more interfering carriers in said down converted television signal;

up converting means for receiving the output of said sharp narrow band notch filter means with said interfering carrier removed for converting said television signal back to the original frequency of said television signal transmission;

whereby said one or more interfering carriers are not removed.

5,446,796

METHOD AND APPARATUS FOR SETTLEMENT OF ACCOUNTS BY IC CARDS

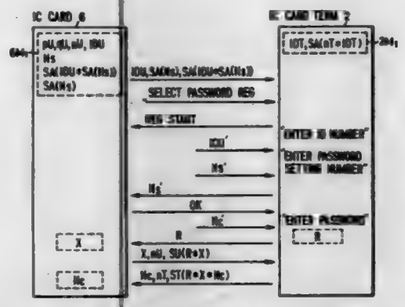
Ginya Ishiguro; Toshiyasu Muta; Kazutaka Sakita, all of Yokosuka; Shoji Miyaguchi, Yokohama; Tatsuaki Okamoto, Yokosuka, and Atsushi Fujioka, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 119,850, Sep. 13, 1993, Pat. No. 5,396,558. This application Oct. 31, 1994, Ser. No. 331,735

Claims priority, application Japan, Sep. 18, 1992, 4-249293; Sep. 18, 1992, 4-249294; Nov. 18, 1992, 4-308688; Nov. 26, 1992, 4-317254; Nov. 26, 1992, 4-317255

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—24 **4 Claims**



1. A password registration method for an IC card, wherein said IC card has card information memory means wherein there are written, as card information, from a management center a card identification number IDU, a predetermined setting number Ns, a fourth master digital signature SA4 for said setting number Ns, and a fifth master digital signature SA5 for information including said card identification number IDU and said fourth master digital signature SA4, and wherein an IC card terminal has terminal information memory means wherein there are written, as terminal information, from said management center a master public key nA for verifying a master digital signature, terminal secret keys pT and qT for creating a digital signature by said IC card terminal and a terminal public key nT for verifying said terminal digital signature; said method comprising:

a step wherein said IC card transmits said card identification number IDU and said fourth and fifth master digital signatures SA4 and SA5 to said IC card terminal;

a step wherein said IC card terminal verifies said fifth master digital signature SA5 and, if valid, becomes enabled for password registration processing and transmits a setting number Ns' to said IC card when it is entered;

a step wherein said IC card transmits an authentication signal to said IC card terminal when said setting number Ns' received from said IC card terminal matches said setting number Ns in said card information memory means;

a step wherein upon receiving said authentication signal, said IC card terminal becomes enabled for entering of password and creates a terminal digital signature ST for information including an entered password Nc and transmits said terminal digital signal ST to said IC card together with said password Nc and said terminal public key nT; and

a step wherein said IC card verifies said terminal digital signature ST and, if valid, writes said password Nc into password memory means.

5,446,797

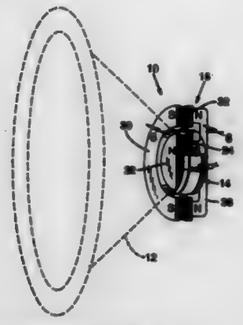
AUDIO TRANSDUCER WITH ETCHED VOICE COIL

Paul W. Paddock, McMinnville, Oreg., assignor to Linaeum Corporation, Portland, Oreg.

Continuation of Ser. No. 916,038, Jul. 17, 1992, abandoned. This application Oct. 12, 1994, Ser. No. 322,108

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—192 **17 Claims**



1. An audio transducer comprising:

(a) a frame;

(b) a magnet structure attached to the frame, the magnet structure having a central portion with a forward part of a first polarity and a rearward part of a second polarity opposite the first polarity, and an outer portion in circumferential relationship to the central portion, the outer portion having a forward part of the second polarity and a rearward part of the first polarity, the forward parts defining a forward magnet gap between the central and outer portions, and the rearward parts defining a rearward magnet gap between the central and outer portions;

(c) a voice coil movably positioned within the forward magnet gap and the rearward magnet gap, the voice coil being connectable to a source of electric current so as to allow passage of electric current from the source through the voice coil and thereby cause the voice coil to move relative to the magnet structure, the voice coil comprising a looped electrical conductor having a first portion situated in the forward magnet gap and oriented so as to conduct electric current in a first direction relative to the magnet structure, and a second portion situated in the rearward magnet gap and oriented so as to conduct electric current in a second direction, opposite the first direction, relative to the magnet structure; and

(d) an acoustic member attached to the voice coil and flexibly attached to the frame so as to enable the acoustic member to move in a manner sufficient to generate sound in response to the electric current passing from the source through the voice coil.

5,446,798

METHOD AND APPARATUS FOR MEASURING POSITION AND ORIENTATION OF AN OBJECT BASED ON A SEQUENCE OF PROJECTED POINTS

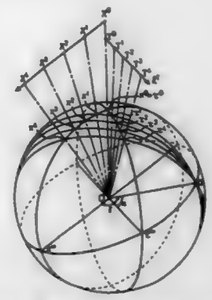
Toshihiko Morita, Kawasaki, and Susumu Kawakami, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 929,505, Aug. 18, 1992, abandoned, which is a continuation of Ser. No. 655,373, Feb. 20, 1991, abandoned. This application Feb. 24, 1994, Ser. No. 201,082

Claims priority, application Japan, Jun. 20, 1989, 1-157906

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—154 **84 Claims**



1. A method for obtaining geometrical information on an object, comprising the steps of:

a) moving a camera in a predetermined direction with regard to an object subject to measurement;

b) taking a plurality of images of the object by the camera at a plurality of camera positions;

c) extracting a plurality of contour images respectively from the plurality of images taken in step b) by the camera, where each of the plurality of contour images contains at least one image element of the object;

d) projecting at least one image element in each of the plurality of contour images of the object onto a projected point on a predetermined projection surface, for each of the at least one image element, from a predetermined projection center corresponding to a camera center, to obtain, for each of the at least one image element, a plurality of projected points on a predetermined projection surface as a sequence of movement points (x^t, t=0, 1, 2, . . .) which line up on a first intersection line at which the predetermined projection surface intersects with a first plane containing the predetermined projection center, where the predetermined projection surface is one of a plane and a surface of the second order;

e) generating as a sequence of reference points (π^t, t=0, 1, 2, . . .), a plurality of points which line up on a second intersection line of the predetermined projection surface and a second plane containing the projection center, so that the sequence of reference points (π^t, t=0, 1, 2, . . .) and the sequence of movement points (x^t, t=0, 1, 2, . . .) share a point, and the sequence of reference points (π^t, t=0, 1, 2, . . .) is not identical with the sequence of movement points (x^t, t=0, 1, 2, . . .), and has the same cross ratio (inharmonic ratio) as a cross ratio of the sequence of movement points (x^t, t=0, 1, 2, . . .);

f) obtaining a first intersection point of a plurality of third intersection lines at which a plurality of third planes respectively intersect the predetermined projection surface, the plurality of third planes each containing the projection center, one movement point in the sequence of movement points (x^t, t=0, 1, 2, . . .), and one reference point, corresponding to the movement point, in the sequence of reference points (π^t, t=0, 1, 2, . . .); and

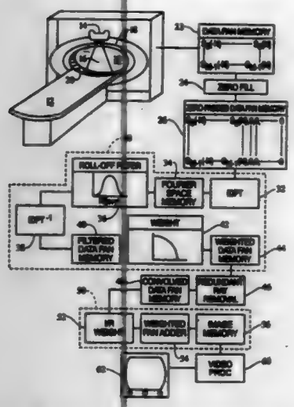
g) obtaining geometrical information on the object with respect to the camera position, based on the position of the first intersection point to achieve environment recognition.

5,446,799

CT SCANNER WITH IMPROVED PROCESSING EFFICIENCY 180 DEGREES+ FAN ANGLE RECONSTRUCTION SYSTEM

Heang K. Tuy, Chesterland, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Nov. 1, 1993, Ser. No. 146,985
Int. Cl.[6] G06K *9/00*; G06F *15/00*
U.S. Cl. 382—132 4 Claims



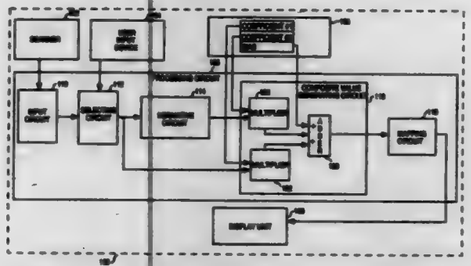
1. A medical diagnostic scanner comprising:
an x-ray source for generating a fan beam of radiation which is directed across an examination region, the x-ray source being mounted for rotation about a central point of the examination region;
an x-ray detector array disposed across the examination region from the x-ray source for converting rays of the fan beam of radiation which have traversed the examination region into electronic data;
a detector data memory for storing electronic data in data fans, each data fan having a plurality of data values, each data value in a given data fan corresponding to a ray of that fan beam, to produce data fans;
a convolver means including:
a convolver for convolving each data fan with a kernel function to produce convolved data fans, and
a convolver weighting means for weighting each data value of a convolved data fan in proportion to the reciprocal of the cosine of the angle between its corresponding ray and the ray passing through the central point of the examination region, to produce weighted convolved data fans;
a redundant ray removal processor connected to receive the output of the convolver, for removing redundant data values representing redundant rays from the weighted convolved data fans to produce corrected convolved data fans;
a backprojector connected to receive the output of the redundant ray removal processor for backprojecting each corrected convolved data fan into an image memory;
a processor for converting image data in the image memory to an appropriate format for display on a monitor.

5,446,800

METHOD AND APPARATUS FOR DISPLAYING ANGIOGRAPHIC DATA IN A TOPOGRAPHIC FORMAT

Sandra A. Briggs, Hayward; Ray S. Spratt, San Jose, and Steven F. Forestieri, Santa Clara, all of Calif., assignors to Diasonics Ultrasound, Inc., Milpitas, Calif.

Filed Jan. 13, 1994, Ser. No. 259,198
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—128 18 Claims



1. An apparatus for generating an image representing a flow of a substance in a scanned area, the image having a plurality of image subregions, the scanned area having a plurality of scanned sections, the apparatus comprising:
a scanner for scanning said scanned area to produce a plurality of scanned values, said plurality of scanned values including a scanned value for each scanned section of said plurality of scanned sections, said scanned value for each scanned section having an amplitude representing said flow of said substance in said scanned section;
a processing circuit operatively coupled to said scanner, said processing circuit receiving said plurality of scanned values from said scanner, said processing circuit generating a plurality of spatial derivative values based on said plurality of scanned values, said processing circuit determining a color value for each image subregion of said plurality of image subregions, said color value varying in proportion to a corresponding composite value, wherein one component of said corresponding composite value is a spatial derivative value of said plurality of spatial derivative values; and
a display unit operatively coupled to said processing circuit, said display unit receiving said color value for each image subregion from said processing circuit, said display unit displaying each image subregion responsive to said color value.

5,446,801

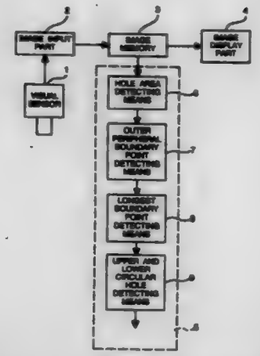
RECOGNIZING METHODS OF CIRCULAR HOLES

Yoshihiro Itsuzaki, Kashihara; Misuzu Takano, Hirakata; Kinji Horikami, Seita, and Masaya Nakao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 1, 1994, Ser. No. 203,291
Claims priority, application Japan, Mar. 2, 1993, 5-040998
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—141 9 Claims

1. A method of automatically determining the positions of first and second circular holes having a same radius and respectively contained in first and second objects, the first object located over the second object such that first and second holes partially overlap one another, said method comprising:
viewing an upper surface of the first object with an image pick-up device to generate image data indicative of a resultant image within an image frame, the resultant image including an image of the first circular hole and a partial image of the second circular hoe which overlaps the image of the first circular hole;
storing the image data in a memory;

retrieving the image data from said memory and subjecting the image data to data processing which includes (a) detecting boundary points along an outer periphery of the partial image, (b) detecting two maximally spaced-apart boundary points from among the boundary points, (c) defining first and second circles within the image frame



including the two maximally spaced-apart boundary points and having respective centers of gravity which are symmetric to each other relative to a line segment connecting the maximally spaced-apart boundary points, and (d) detecting respective positions of the first and second circular holes based on the defined first and second circles within the image frame.

5,446,802

IMAGE PROCESSING APPARATUS COMPRISING JUDGEMENT MEANS FOR JUDGING DOT PHOTOGRAPH IMAGE, PHOTOGRAPH IMAGE AND CHARACTER IMAGE

Kaoru Tada, Aichi; Hideo Kumashiro, Toyokawa; Hiroya Sugawa, Toyokawa; Shigeru Moriya, Toyokawa, and Hiroshi Murakami, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 941,921, Sep. 8, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,392
Claims priority, application Japan, Sep. 5, 1991, 3-225737
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—170 41 Claims



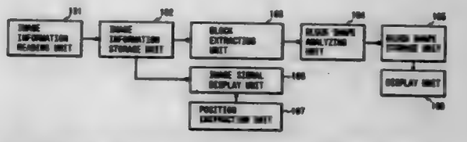
1. An image processing apparatus comprising:
means for generating pixels from a document image;
first pixel detecting means for comparing each pixel in a one-dimension direction to a predetermined constant density and identifying each of said pixels having a peak density in the one-dimension direction larger than the predetermined constant density from image data located in a predetermined image area of the document image;
second pixel detecting means for comparing each pixel in a one-dimension direction to the predetermined constant density and identifying each of said pixels having peak densities in the two-dimension directions larger than the predetermined constant density from said image data;
first counting means for counting a number of said first peak density pixels of one dimension identified by said first pixel detecting means;
second counting means for counting a number of said second peak density pixels of two dimensions identified by said second pixel detecting means;
means for selecting an image processing method based on said number counted by said first counting means and said number counted by said second counting means; and
means for processing said image data according to the image processing method selected by said selecting means;
wherein the first and second pixel detecting means are coupled to the pixel generating means.

5,446,803

IMAGE SIGNAL PROCESSING APPARATUS

Setsu Kunitake; Koh Kamizawa, and Yutaka Koshi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 27,904, Mar. 8, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,168
Claims priority, application Japan, Mar. 9, 1992, 4-50694
Int. Cl.[6] G06K *9/32*
U.S. Cl. 382—290 12 Claims



1. An image signal processing apparatus comprising:
image information reading means for reading image information;
image signal display means for displaying an image signal of the image information read by said image information reading means;
blocking means for superimposing a plurality of blocks constituted by a predetermined number of picture elements over the image information read by said image information reading means;
block shape analyzing means for analyzing shapes of images in said respective blocks to detect shapes having orientation information;
display means for displaying the shapes having orientation information detected by said block shape analyzing means at positions corresponding to blocks which the shapes having orientation information belong to; and
position instruction means for inputting positions in an image of said image signal displayed by said image signal display means to correct an inclination of the image signal;
whereby the shapes having orientation information highlight the inclination of the image data.

5,446,804

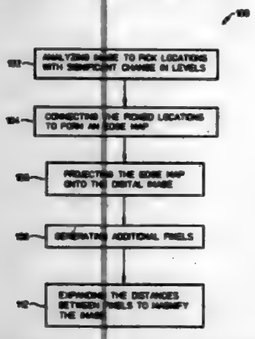
MAGNIFYING DIGITAL IMAGE USING EDGE MAPPING

Jan P. Allebach, West Lafayette, Ind., and Ping W. Wong, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 14, 1994, Ser. No. 227,764
Int. Cl.[6] G06K *9/42*
U.S. Cl. 382—298 18 Claims

4. A method of magnifying a digital image with a plurality of original pixels to form a magnified image, each pixel having a level the locations of the pixels having a resolution, the method comprising the steps of:
producing an edge map with a plurality of boundaries by:
analyzing the digital image to pick locations in neighborhoods where levels change significantly; and
connecting any two picked locations to form an edge if the distance between the locations is less than or equal to the minimum distance between two adjacent original pixels;
projecting the edge map onto the digital image;

generating one or more additional pixels in locations among the original pixels by manipulating the levels of one or more original pixels that do not have among them any boundaries set by the edge map; and



expanding the distances between all the pixels to generate the magnified image so that the resolution of the locations of all the pixels in the magnified image becomes the same as the original pixels in the digital image;

such that the total number of additional pixels is related to the number of original pixels and the magnification.

5,446,805

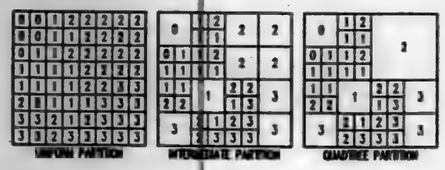
Patent Not Issued For This Number

5,446,806

QUADTREE-STRUCTURED WALSH TRANSFORM VIDEO/IMAGE CODING

Xiaonong Ran, Cupertino, and Michael Van Scherrenburg, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 15, 1993, Ser. No. 153,322
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—240 **16 Claims**



1. A video coder comprising:

a memory;

means for creating a quadtree code representing a partition of a two-dimensional array of values stored in the memory, the quadtree code containing embedded Walsh transform coefficients of blocks in the partition, wherein the means for creating the quadtree code comprises:

means for generating a quadtree partition of the two-dimensional array, the quadtree partition consisting of blocks from a series of partitions of the two-dimensional array, each partition in the series having a corresponding integer I with $N \leq I < M$ and containing 4^I non-intersecting blocks of values from the two-dimensional array, wherein N and M are integers with $N < M$, and for each integer J with $N \leq J < M$, each block in a partition corresponding to integer J equals a union of four blocks in a partition corresponding to an integer $J+1$;

means for generating a code that indicates which blocks from the series of partitions are in the quadtree partition of the two-dimensional array; and

means for generating Walsh transform coefficients for each block in the quadtree partition and embedding the generated Walsh transform coefficients in the code which indicates the quadtree partition;

means for quantizing the Walsh transform coefficients embedded in the quadtree code; and

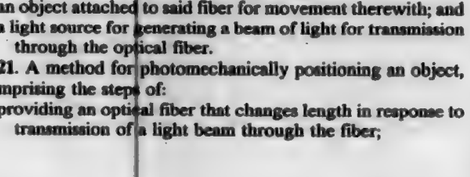
means for variable length coding the quantized Walsh transform coefficients.

5,446,807

PASSBAND-FLATTENED ACOUSTO-OPTIC POLARIZATION CONVERTER

Jane E. Baran, Metuchen, N.J.; Antonio d'Alessandro, Roma, Italy, and Janet L. Jackel, Holmdel, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 23, 1994, Ser. No. 264,673
Int. Cl.[6] G02B *6/12, 6/26*
U.S. Cl. 385—11 **13 Claims**



1. An acousto-optic polarization converter, comprising:

a first acousto-optic waveguide formed in a piezo-electric substrate;

a second acoustic waveguide formed in said substrate and separated from said first acoustic waveguide in an interaction region by a gap supporting only an evanescent acoustic wave and across which acoustic power is coupled between said first and second acoustic waveguides along an interaction length;

launching means for launching a first acoustic wave into said interaction region of said first acoustic waveguide;

an optical waveguide formed in and extending along said interaction region of said second acoustic waveguide;

a first partial acoustic absorber formed over said first and second acoustic waveguides and being spaced from said launching means along said interaction region by a cross-over length such that said acoustic wave is transferred from said first acoustic waveguide to said second acoustic waveguide and back to said first acoustic waveguide in said crossover length, the interaction length being greater than the crossover length; and

a complete acoustic absorber formed over said first and second acoustic waveguides and being spaced from said launching means along said interaction region by the interaction length.

5,446,808

PHOTOMECHANICAL POSITIONING AND STABILIZATION METHOD AND DEVICES USING OPTICAL FIBERS AND FEEDBACK

Mark G. Kuzyk, SE 750 Greenhill Ct., and David J. Welker, P.O. Box 369, both of Pullman, Wash. 99163

Filed Sep. 22, 1994, Ser. No. 310,883
Int. Cl.[6] G02B *6/10*; G01B *9/02*
U.S. Cl. 385—13 **27 Claims**

1. A photomechanical positioning apparatus, comprising:

an optical fiber which changes its length in response to the transmission of a light beam through said fiber as a result of photothermal heating of the fiber;

an object attached to said fiber for movement therewith; and

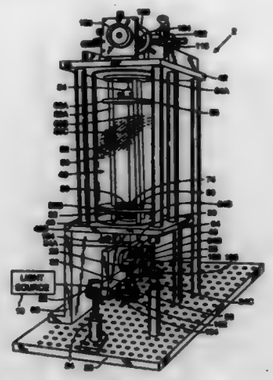
a light source for generating a beam of light for transmission through the optical fiber.

21. A method for photomechanically positioning an object, comprising the steps of:

providing an optical fiber that changes length in response to transmission of a light beam through the fiber;

attaching the optical fiber to an object to provide controlled movement of the fiber in response to a change in length of the optical fiber;

generating a beam of light; and



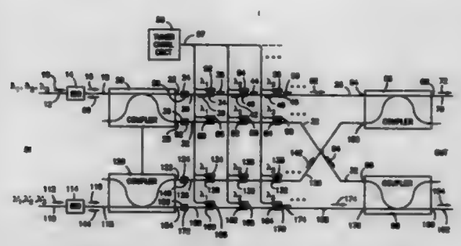
transmitting the beam of light through the fiber to change the length of the fiber from a first length to a second length.

5,446,809

ALL FIBER WAVELENGTH SELECTIVE OPTICAL SWITCH

Daniel J. Fritz, East Longmeadow; Timothy J. Bailey, Longmeadow, both of Mass., and Gary A. Ball, Simsbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 23, 1994, Ser. No. 311,644
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—17 **10 Claims**



1. A wavelength selective optical switch, comprising:

input optical coupling means, having an input port and at least one output port, for optically coupling an input signal at said input port to at least one output port, said input signal having at least one input wavelength;

an optical waveguide attached to each of said at least one output port;

at least one optical reflective element located along said optical waveguide, said reflective element reflecting a predetermined wavelength band of light centered at a predetermined central wavelength;

said central wavelength being at a base wavelength when said reflective element is not detuned, said base wavelength corresponding to a corresponding wavelength of said input signal;

tuning means, attached to said reflective element, for detuning said central wavelength away from said base wavelength so as to pass said corresponding wavelength of said input signal; and

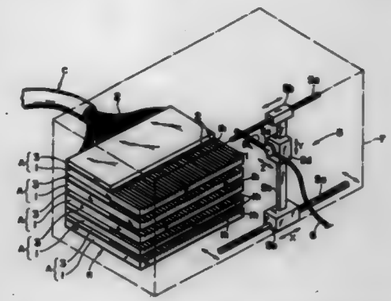
thereby allowing any combination of the wavelengths of said input signal to be passed through all of said reflective elements along a given one of said waveguides as an optical output signal along an associated optical output waveguide.

5,446,810

OPTICAL SWITCH, OPTICAL FIBER ARRANGING MEMBER AND METHOD OF MANUFACTURING THE OPTICAL FIBER ARRANGING MEMBER

Tsutomu Watanabe; Kazuhito Saito; Kazunaga Ozawa; Shunichi Mizuno, all of Yokohama, and Izumi Sankawa, Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Filed May 14, 1993, Ser. No. 61,105
Claims priority, application Japan, May 15, 1992, 4-123730; Jun. 16, 1992, 4-156667; Jun. 16, 1992, 4-156669; Jan. 13, 1993, 5-004229; Apr. 30, 1993, 5-104665
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—22 **23 Claims**



15. An optical switch for selectively coupling optical fibers, comprising:

an optical fiber arranging member, including

a fiber fixing portion for receiving and arranging a plurality of first optical fibers, each first optical fiber having an end portion, and

a fiber introduction portion having fiber introduction grooves therein for receiving at least one second optical fiber, said second optical fiber having a distal end portion,

means for inserting longitudinally said second optical fiber to any selected fiber introduction groove for conveying longitudinally said second optical fiber distal end along said fiber introduction groove to a selected first optical fiber to optically couple said second optical fiber with said selected first optical fiber,

wherein said fiber introduction grooves are arranged parallel to each other;

wherein said fiber fixing portion has a plurality of fiber fixing grooves therein., said fiber fixing grooves being arranged parallel to each other; and

wherein said fiber arranging member includes:

said fiber fixing portion and said fiber introduction portion which are separate;

said fiber fixing portion having first guide means for aligning and fixing said fiber introduction grooves and said fiber fixing grooves, said first guide means located on both sides of said plurality of fiber fixing grooves, and

said fiber introduction portion having second guide means for aligning and fixing said fiber introduction grooves and said fiber fixing grooves, said second guide means located on both sides of said fiber introduction grooves and positioned at corresponding positions to said first guide means,

wherein said optical switch further comprises guide pins to engage said first guide means and said second guide

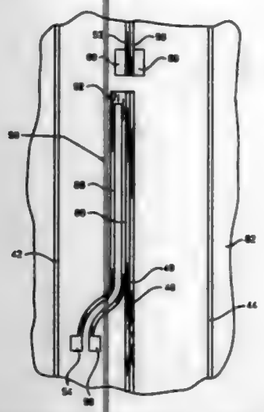
means, thereby aligning and fixing corresponding first and second guide means.

5,446,811

THERMALLY ACTUATED OPTICAL FIBER SWITCH

Leslie A. Field, Portola Valley, and Richard C. Ruby, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 14, 1994, Ser. No. 212,543
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—23 20 Claims



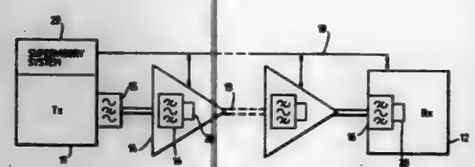
1. A micromachined device for selectively switching an optical fiber comprising:
a substrate;
a movable optical fiber disposed in a first position on said substrate; and
a thermally operated means for deflecting said movable optical fiber having first and second legs, said first and second legs having characteristics with respect to at least one of generating and releasing thermal energy that are significantly different, thereby having a thermal expansion differential, said first and second legs having a coupling at first ends of said first and second legs, said coupling being displaceable in a direction substantially parallel to a major surface of said substrate, said means for deflecting having input means for connecting said means for deflecting to a source of electrical current, said coupling being positioned adjacent to said movable optical fiber for deflection thereof.

5,446,812

IMPROVING SIGNAL TO NOISE RATIO IN AN OPTICAL TRANSMISSION SYSTEM

Ian J. Hirst, Kent, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 12, 1993, Ser. No. 152,280
Claims priority, application United Kingdom, Nov. 17, 1992, 9224215
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—24 2 Claims



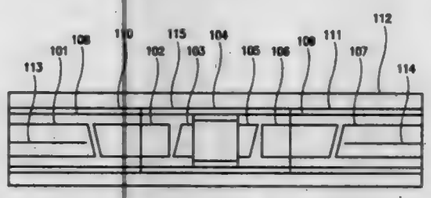
1. A method of controlling optical transmission of signals along a signal path comprising a transmitter, a receiver and a guided optical transmission path incorporating a plurality of concatenated optical amplifiers therebetween, the method consisting of,
selectively notch filtering filter a signal transmitted on to the path from the transmitter;
bandpass filtering the transmitted signal at each amplifier and at the receiver so as to select signals within said notch, said selected signals corresponding to noise in the transmitted signal;
measuring the power of the selected signals;
comparing at each said amplifier and at the receiver the measured power of the selected signals with measurements on a transmitted signal to which said notch filtering has not been applied so as to determine a measure of the signal to noise ratio of the signals received by that amplifier or by the receiver;
generating, in response to each said signal to noise determination, a feedback control signal from each said amplifier and from the receiver;
transmitting each said feedback control signal over a supervisory channel to the immediately previous concatenated amplifier;
and controlling the gain of each said amplifier in response to the respective feedback control signal so as to enhance the gain of relatively noise free amplifiers and reduce the gain of relatively noisy amplifiers whereby to maximise the signal to noise ratio of the system.

5,446,813

OPTICAL ISOLATOR

K. Roger Lee; Song-Fure Liu, both of Hsinchu, and Yuh-Liu Cheng, Tainan, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Aug. 8, 1994, Ser. No. 287,362
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—31 7 Claims



1. An optical isolator mounted in the path between a first optical fiber and a second optical fiber, the optical isolator comprising:
a first GRIN lens for receiving rays emitted from the first optical fiber and converging into parallel rays;
a first birefringent crystal wedge for splitting the parallel rays into a first ray polarized along the optical axis of the birefringent crystal and a second ray polarized perpendicularly to the optical axis;
a second birefringent crystal wedge for recombining the first ray and the second ray wherein at least one of the first birefringent crystal wedge and the second birefringent crystal wedge comprises a birefringent crystal of YVO_4;
a second GRIN lens for focusing the recombined rays into the second optical fiber through the second birefringent crystal wedge;
a Faraday rotator mounted between the first birefringent crystal wedge and the second birefringent crystal wedge so that the rays emitted from the first optical fiber can be recombined and focused into the second optical fiber, and the rays reflected from the second optical fiber will be diverged and cannot be focused into the first optical fiber.

5,446,814

MOLDED REFLECTIVE OPTICAL WAVEGUIDE

Shun-Meen Kuo, Chandler, and Christopher K. Y. Chun, Gilbert, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Continuation-in-part of Ser. No. 147,514, Nov. 5, 1993. This application Dec. 13, 1994, Ser. No. 355,457
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—31 15 Claims



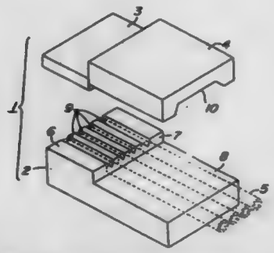
8. A molded optical interconnect module comprising:
a first molded optical portion having a first surface with a first alignment guide disposed thereon and an end surface;
a core region having a first terminal end disposed into the first surface of the molded first optical portion, the first terminal end of the core region terminates in a reflective surface that extends across the core region entirety at an angle located in the first surface of the first molded optical portion; and
a second molded optical portion having a first surface with a first alignment guide and a second surface with a plurality of electrical traces, the first surface and the second surface of the first and the second molded optical portions are mated and aligned using the first alignment guide of the first molded optical portion and the first alignment guide of the second molded optical portion, thereby aligning the first molded optical portion with the second molded optical portion.

5,446,815

OPTICAL COLLIMATOR ARRAY INCLUDING A SPACER FOR RECEVING A MICROLENS AND METHOD OF ALIGNING LIGHT AXES THEREOF

Takashi Ota, Kasugai, and Masashi Fukuyama, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 10, 1994, Ser. No. 208,273
Claims priority, application Japan, Mar. 11, 1993, 5-050866; Feb. 15, 1994, 6-018363
Int. Cl.[6] G02B 6/32
U.S. Cl. 385—33 6 Claims



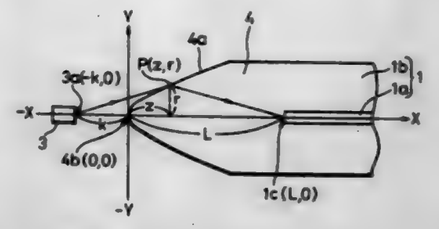
1. An optical collimator array, comprising:
an optical fiber array including a plurality of optical fibers;
a microlens array including a plurality of lenses, said lenses being optically aligned with respective optical fibers of the optical fiber array; and
a spacer for connecting the microlens array to the optical fiber array, said spacer having a spacer body which includes a connecting surface which is joined to said optical fiber array, a first recess which receives the microlens array, said first recess extending through the spacer body along a first direction toward said connecting surface, and a second recess formed in said connecting surface of said spacer body and extending along a second direction which is opposite said first direction to intersect the first recess, thereby forming an open window portion through which light beams are irradiated from the optical fiber array.

5,446,816

OPTICAL FIBER HAVING A LENS FORMED AT AN END THEREOF

Kazuo Shiraishi, Kitakatsushika; Kazuhito Matsumura, Utsunomiya; Izumo Oishi, and Katsuo Ehine, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 283,959
Claims priority, application Japan, Aug. 4, 1993, 5-193632
Int. Cl.[6] G02B 6/32
U.S. Cl. 385—33 3 Claims



1. An optical fiber having a lens portion formed at an end thereof, the optical fiber comprising:
a fiber body including a core and a cladding; and
an incident light guide portion having a uniform refractive index and said incident light guide portion being integrally connected to said fiber body at an end portion of said fiber body, said incident light guide portion having an outer surface forming a lens portion;
the outer surface of said incident light guide portion forming said lens portion being party convex-shaped,
the core of said fiber body having a distal end located within said incident light guide portion at a position close to a focal point of said incident light guide portion,
the convex-shaped outer surface of said incident light guide portion forming said lens portion being non-spherical and having dimensional properties defined as follows:
when said incident light guide portion is arranged in alignment with a light source such that an extremity of the convex-shaped outer surface of said incident light guide portion faces a light-emitting surface of the light source, assuming that an X-Y coordinate system is established wherein an X axis coincides with an optical axis of said fiber body and a Y axis coincides with a radius direction of said fiber body, a relationship expressed by the following equation is fulfilled:

$$k + nL = \sqrt{(k + z)^2 + r^2} + n\sqrt{(L - z)^2 + r^2}$$

where coordinates of the extremity of the convex-shaped outer surface of said incident light guide portion are (0, 0), coordinates of the light-emitting surface of the light source are (−k, 0, coordinates of the distal end of the core are (L, 0), coordinates of an incident point at which light from the light-emitting surface of the light source falls upon the convex-shaped outer surface of said incident light guide portion are (z, r), and the refractive index of said incident light guide portion is n.

5,446,817
FORMED ALIGNMENT SLEEVE FOR FIBER OPTIC TERMINI

Louis F. Kardos, Fountain Valley; James T. Hartley, Tustin, and Paul F. Mathews, Santa Ana, all of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 23, 1994, Ser. No. 311,227
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—72 5 Claims



1. An optical fiber termini assembly comprising a first optical fiber terminus having a forward guide bushing of a given diameter and a central through opening for centrally positioning an optical fiber when inserted therethrough,

a second optical fiber terminus having a forward guide bushing of a given diameter and a central through opening for centrally positioning an optical fiber when inserted therethrough, a cylindrical retainer sleeve,

and an alignment sleeve retained in said retainer sleeve for axially aligning said bushing of said first optical terminus with said bushing of said second terminus when the bushings are inserted into opposite ends of the alignment sleeve, the improvement being that said alignment sleeve comprises a metal tube which is of a constant and polygonal cross sectional shape throughout its axial length and whose sides lie on inscribed circle whose diameter is slightly less than the given diameters of said bushings, said sides of said polygonal shaped sleeve being resilient and being slightly outwardly bowed when said bushings are inserted therein so that they exert a radially inwardly directed force against said bushings at equidistant circumferentially spaced locations on said bushings to maintain the bushings accurately axially aligned,

said retainer sleeve adjacent one end portion thereof having axially extending slots and beveled radially inwardly extending flanges extending between the slots at its one end and a radially inwardly extending flange at its other end for axially retaining said alignment sleeve within said retainer sleeve, said second terminus having a radially inwardly extending groove adjacent its forward guide bushing thereof which is defined in part by a beveled radially extending flange which engages and deflects the flanges at said end of said retainer sleeve until the groove is aligned with these flanges whereupon said flanges at said one end snap into the groove to connect said second termini to said retainer sleeve.

5,446,818
FIBER OPTIC CONNECTOR HAVING A SHIELDING APPARATUS FOR PROTECTING THE EXPOSED END OF A FIBER OPTIC

Glenn S. Baker, Studio City; David D. Chang, Encino, and Fred P. Paulino, Westminster, all of Calif., assignors to Cogent Light Technologies, Inc., Santa Clara, Calif.

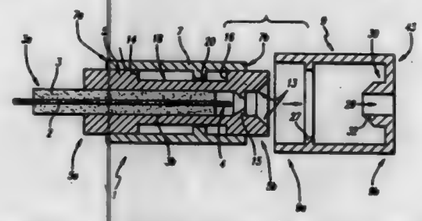
Filed May 5, 1994, Ser. No. 238,589
Int. Cl.[6] G02B 6/36, 7/26
U.S. Cl. 385—78 33 Claims

1. A fiber optic connector comprising:

a housing having first and second ends and a through-hole for reception of a fiber optic having a fiber optic end protruding from the second end of the cylindrical housing;

a first sleeve with first and second ends and a through-hole passing between the ends for movable reception of the housing, with the first sleeve being biased towards the second end of the housing to sheathe the fiber optic end;

a second sleeve with first and second ends and a through-hole passing between the ends for movable reception of the first sleeve, with the second sleeve being biased



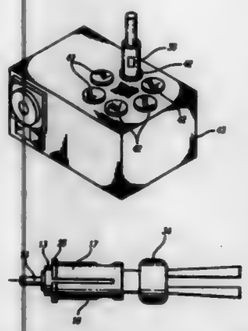
towards the second end of the first sleeve to lock the first sleeve in position over the fiber optic end; and

wherein movement of the second sleeve towards the first end of the first sleeve unlocks the first sleeve and causes the first sleeve to move towards the first end of the housing to unsheathe the fiber optic end.

5,446,819
TERMINATION TOOL AND METHOD FOR OPTICAL FIBRE CABLES

Nigel S. Foster, Southampton, and David P. Murray, Nr. Winchester, both of United Kingdom, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 14, 1994, Ser. No. 274,878
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—80 19 Claims



17. A method of terminating an end of an optical fibre cable comprising the steps of:

(a) stripping the covering from an end of the cable to expose a fibre for termination,

(b) mounting a connector, having a ferrule containing a meltable adhesive for receipt of an optical fibre, in a recess in a tool such that the ferrule end projects therefrom,

(c) using the tool to insert the ferrule end into a heating aperture of an oven and allowing the ferrule end to be heated,

(d) watching for a change of appearance of a heat sensitive region on the tool, which is responsive to conductive heat, to indicate when the ferrule temperature has exceeded the melting point of the adhesive,

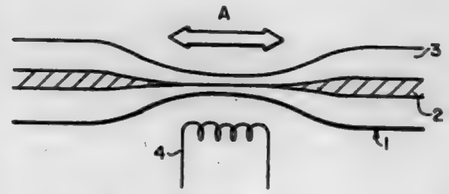
(e) using the tool to remove the ferrule end from the oven,

(f) inserting the stripped optical fibre into the ferrule until the fiber passes substantially completely through the ferrule, and allowing the connector and tool to cool.

5,446,820
MODE FIELD DIAMETER CONVERSION OPTICAL FIBER

Shinji Ishikawa; Hiroo Kanamori; Koji Nakazato; Masayuki Nishimura, and Yuichi Ohga, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 29, 1993, Ser. No. 98,908
Claims priority, application Japan, Jul. 29, 1992, 4-202407
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—123 12 Claims



1. An optical fiber comprising:

a core for optical transmission having a drawing induced tensile stress; and

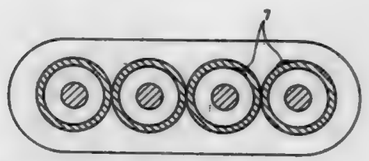
a cladding surrounding the core and having a lower refractive index than that of the core;

wherein a desired portion of the optical fiber is heated for relaxing the residual tensile stress at the desired portion and increasing a refractive index difference between the core and the cladding at the desired portion above 0.05×10^{-2}.

5,446,821
COATED OPTICAL FIBER

Tsuyoshi Nosaka, and Nobuhiro Akasaka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 21, 1994, Ser. No. 309,591
Int. Cl.[6] G02B 6/22
U.S. Cl. 385—128 5 Claims



1. A coated optical fiber, comprising:

an optical fiber;

a primary coating layer provided on an outer circumference of said optical fiber; and

a secondary colored coating layer provided on an outer circumference of said primary coating layer;

wherein ink in said colored layer has weight change of less than 3% by immersion into water in a temperature range in which said coated optical fiber is used.

5,446,822
CONNECTOR CLIP FOR FIBER OPTIC HOUSING

Roger H. Keith, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

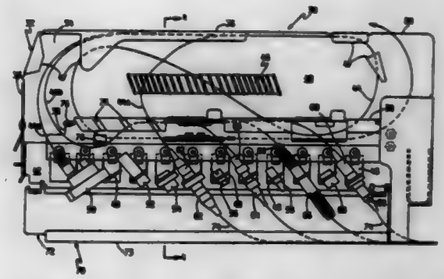
Filed May 28, 1993, Ser. No. 69,176
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—135 7 Claims

1. A device for housing a connector and associated conductors, comprising:

a tray member having front and rear areas;

means in said rear area for storing excess slack from the conductors; and

bulkhead means in said front area for receiving the connectors, said bulkhead means including a plurality of bulk-

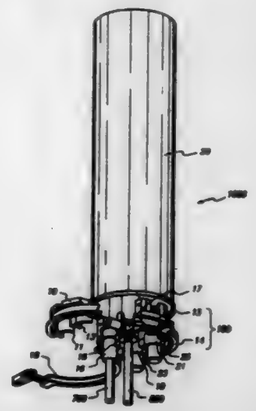


head clips comprising a planar base having two parallel edges and a bulkhead riser attached to said base, said riser having a hole therein for receiving a connector coupling, said hole defining an axis which is at an oblique angle with respect to said edges of said base.

5,446,823
AERIAL, PEDESTAL, BELOW GRADE, OR BURIED OPTICAL FIBER CLOSURE

Gail J. Bingham, Menlo Park; Jeff Haller, San Francisco, and Mathew Steinberg, Santa Clara, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 26, 1994, Ser. No. 187,585
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—135 16 Claims



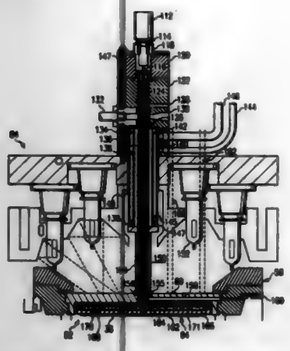
1. A flanged segmented end seal for a telecommunications closure comprising a plurality of flanged segments which when joined together create an outer periphery and adjacent interior portions of the flanged segments have opening portions such that when fitted together the flanged segmented end seal provides at least two tubular pass through openings for optical fiber cables.

5,446,824

LAMP-HEATED CHUCK FOR UNIFORM WAFER PROCESSING

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments, Dallas, Tex.

Continuation of Ser. No. 774,677, Oct. 11, 1995, abandoned.
This application May 17, 1993, Ser. No. 63,110
Int. Cl.[6] H05B *3/00*; H01L *21/027*; F27D *11/00*
U.S. Cl. 392—416 5 Claims



1. A single-wafer rapid thermal processing/plasma multiprocessing reactor comprising:
- a process chamber;
- a plurality of heating lamps operable to form multiple heating zones within said chamber;
- means for placing plasma in and removing plasma from said process chamber; and
- a radio-frequency plasma chuck within said chamber, but thermally decoupled from the mass of the reactor, including an absorbing surface positioned to absorb optical energy from said heating lamps and to transform said optical energy into radiant energy, a thermal mass in association with said absorbing surface and being capable of distributing said radiant heat energy, and a circular contact surface in association with said thermal mass capable of transferring to an associated semiconductor wafer said distributed radiant heat energy, said thermal mass including a circular heat distribution chamber centrally connected to a tubular extension thereof and containing a metallic substance that transforms into a liquid substance at a suitable operating temperature.

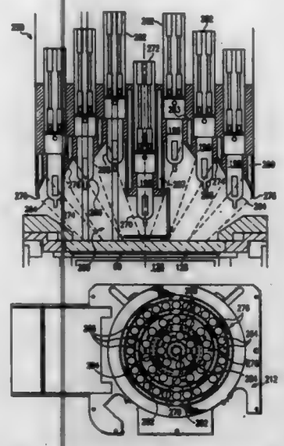
5,446,825

HIGH PERFORMANCE MULTI-ZONE ILLUMINATOR MODULE FOR SEMICONDUCTOR WAFER PROCESSING

Mehrdad M. Moslehi, Dallas; Cecil J. Davis, Greenville, and Robert T. Matthews, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 981,897, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 690,426, Apr. 24, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 114,590
Int. Cl.[6] H01L *21/324*, *21/205*
U.S. Cl. 392—416 19 Claims

1. A high-performance multi-zone illuminator module for directing optical energy into a semiconductor device fabrication reactor to improve semiconductor wafer heating uniformity and to provide real-time process uniformity control, comprising:
- a housing connectable to the wafer fabrication reactor and having a bottom side;
- a reflector mounted to said bottom side and comprising a plurality of concentric lamp zones including a single continuous concentric circular ring of reflective material associated with each concentric lamp zone for reflecting and shaping optical energy, said zones comprising a plurality of lamp sockets;
- a plurality of independently adjustable power supplies, each of said adjustable power supplies associated to provide electrical power to a respective lamp zone;
- a dummy lamp load for balancing the electrical power distribution from said power supplies; and
- a plurality of point-source lamps engaged within said lamp sockets for generating and directing optical energy towards the semiconductor wafer and associated with said reflector, said reflector being operable to reflect and further direct said optical energy toward the wafer, at least one point-source lamp comprising a vertically variable position socket, said socket comprising an adjustable mount operable to vertically vary the spacing and position of said at least one lamp relative to the semiconductor wafer.

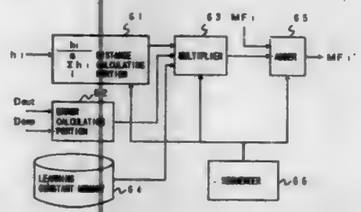


5,446,826

MEMBERSHIP FUNCTION TUNING SYSTEM USING DEFUZZY CALCULATION

Satoshi Otsuki, Ikeda, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,875
Claims priority, application Japan, Dec. 15, 1992, 4-354220
Int. Cl.[6] G05B *13/02*
U.S. Cl. 395—3 8 Claims



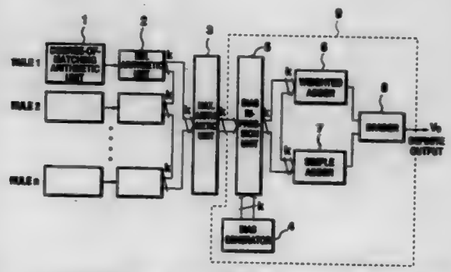
1. A tuning apparatus which tunes a membership function to perform a fuzzy inference using a singleton as the conclusion-membership function, said tuning apparatus comprising:
- a) an error calculation means for receiving an output result of fuzzy inference and an output expectation value, and for redetermining an error between the output result of fuzzy inference and the output expectation value with respect to an input value of fuzzy inference;
- b) a distance calculation means for receiving a height signal, and for calculating:
  - 1) a total sum of heights of conclusion membership functions in a defuzzy calculation in said fuzzy inference,
  - 2) a ratio of a height of each conclusion-membership function to said total sum, and
  - 3) a distance in proportion to said ratio;
- c) an updating means, connected to said error calculation means to receive the error and to said distance calculation means to receive the distance, for tuning and updating the conclusion-membership function by shifting a position of said conclusion-membership function according to said distance calculated by said distance calculation means and the error determined by said error calculation means; and
- d) a control means to which said error calculation means, said distance calculation means and said updating means are connected, for controlling said error calculation means, said distance calculation means and said updating means.

5,446,827

BIAS IMPRESSION FOR DEFUZZIFYING APPARATUS

Fumiaki Shigeoka, and Masanari Oh, both of Fukuoka, Japan, assignors to Rohm Co., Ltd., Japan

Continuation of Ser. No. 994,316, Dec. 21, 1992, abandoned.
This application Dec. 29, 1994, Ser. No. 366,409
Claims priority, application Japan, Dec. 27, 1991, 3-347342; Dec. 28, 1991, 3-359885
Int. Cl.[6] G06F *7/70*
U.S. Cl. 395—3 4 Claims



1. A defuzzifying apparatus for generating a defuzzified output by defuzzifying a plurality of inference output grades generated by a fuzzy inference machine, said apparatus comprising:
- (a) a bias impression unit that adds an arbitrary bias value to each of the plurality of inference output grades generated by said fuzzy inference machine to generate a plurality of biased inference output grades; and
- (b) calculating means for calculating a center of gravity of the plurality of biased inference output grades, the center of gravity being the defuzzified output, wherein the arbitrary bias value reduces effects on the center of gravity caused by one of errors in the inference output grades and noise.

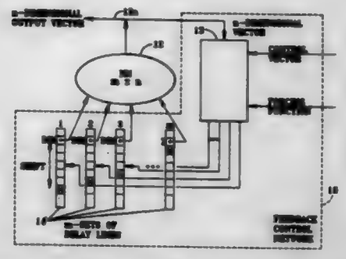
5,446,828

NONLINEAR NEURAL NETWORK OSCILLATOR

Roger L. Woodall, Jewett City, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1993, Ser. No. 33,226
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—23 19 Claims

18. Apparatus for copying representations from a first set of connection weights within a first neural network into a second set of connection weights of a second neural network, comprising:
- a nonlinear oscillator comprising the first neural network, the first neural network having a plurality of inputs for simultaneously receiving a m-dimensional input vector, the first neural network further including an output for outputting an n-dimensional output vector in response to the m-dimensional input vector, said nonlinear oscillator further comprising means, having an input coupled to the output of the first neural network, for storing a plurality of samples of the n-dimensional output vector, the storing means having a plurality of outputs individual ones of which are coupled to an individual one of the plurality of inputs of the first neural network and also to an individual one of a plurality of inputs of the second neural network for providing a selectively-variable time-delayed sample of the n-dimensional output vector to each of the first and the second neural networks;



differencing means having a first input coupled to the output of the first neural network and a second input coupled to an output of the second neural network, said differencing means having an output for expressing a difference signal indicative of a difference between the output of the first neural network and the output of the second neural network; and

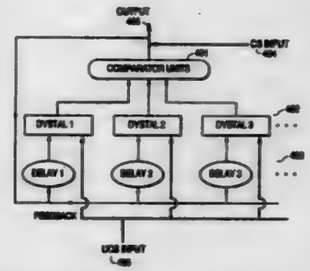
weight adjustment means, having an input coupled to the output of the differencing means, for adjusting the second set of connection weights of the second neural network so as to minimize, for a given m-dimensional input vector, a magnitude of the difference signal.

5,446,829

ARTIFICIAL NETWORK FOR TEMPORAL SEQUENCE PROCESSING

Lipo Wang, Silver Springs, and Daniel L. Alkon, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 24, 1993, Ser. No. 82,003
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—24 12 Claims



1. A computer-based, artificial neural network system for learning, recognizing, and generating a temporal-spatial sequence, said system comprising:
- (a) a parallel array of hetero-associative neural subnetworks for receiving signals from input channels of said system, said neural subnetworks producing output neuron signals, said output signals including a "don't know" answer;

(b) a comparator element comprising comparator units for receiving an input signal from a corresponding output neuron signal in each subnetwork, said comparator including an averager for averaging said output signals produced by said neural subnetworks to produce a comparator output signal; and

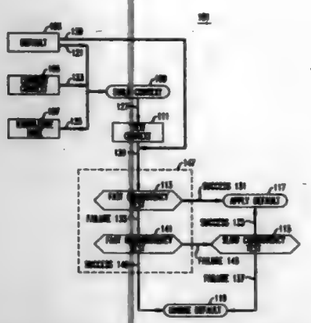
(c) a delay element linking said comparator output signal with each said neural subnetwork by means of a signal that travels from the comparator output to each said subnetwork over signal transmission pathways of different lengths.

5,446,830

EFFICIENT NONMONOTONIC REASONING APPARATUS AND METHODS

James M. Crawford, Jr., Stirling, and David W. Etherington, Fanwood, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 889,692, May 27, 1992, abandoned.
This application May 2, 1994, Ser. No. 236,708
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—51 20 Claims



1. A method employed in a reasoning system implemented using a computer system, the reasoning system including a knowledge base of formulae which is accessible to the computer system and the method serving to approximately determine for the reasoning system whether a given fact about one or more objects is consistent with the knowledge base, the method comprising the steps of:

obtaining a context made up of a subset of the formulae from the knowledge base;

determining a consistency relationship between the given fact and the context using a test whose success implies consistency but whose failure does not necessarily provide any information; and

indicating to the reasoning system that the given fact is consistent with the knowledge base if the test succeeds.

5,446,831

IMAGE DATA PROCESSOR FOR CONVERTING INPUT IMAGE DATA INTO OUTPUT IMAGE DATA SUITABLE FOR A LOWER RESOLUTION OUTPUT DEVICE

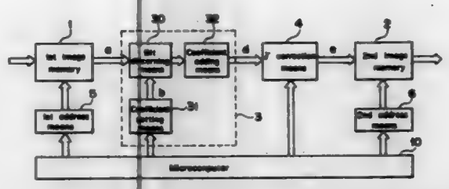
Haruo Yamashita, Osaka, and Takahiko Naakou, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 917,348, Jul. 23, 1992, abandoned. This application May 9, 1994, Ser. No. 239,835
Claims priority, application Japan, Jul. 26, 1991, 3-187270
Int. Cl.[6] G06T *3/40*
U.S. Cl. 395—102 14 Claims

8. An image data processor comprising a first image memory for storing a binary image data of a first image having M1 pixels in a longitudinal direction and M2 pixels in a lateral direction and a second image memory for storing a multivalued image data of a second image having N1 pixels in the longitudinal direction and N2 pixels in the lateral direction, where M1, M2, N1 and N2 are positive integers and where M1>N1 and M2>N2, said image data processor for converting and reducing the binary image data stored in said first image memory into the multivalued image data according to a designated reduction rate and for storing the multivalued image data in said second image memory, and further comprising:

coefficient setting means for setting two dimensional correction coefficients L1×L2 are set, where L1 and L2 are fixed positive integers determined from inverses of preset maximum reduction rates in the longitudinal and lateral directions, respectively;

spatial operation means comprising a coefficient adding means for summing together correction coefficients set at



respective bits in an operation area of L1×L2 pixels by said coefficient setting means and a bit discerning means for discerning an ON/OFF status of each bit of said image data stored in said first image memory which is included in the operation area of L1×L2 pixels to determine whether a correction coefficient at said each bit is to be summed by said adding means;

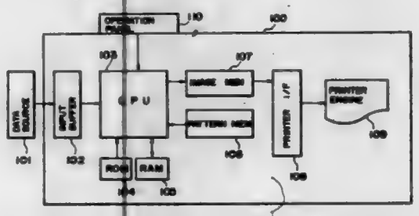
address means for outputting positional information of said first image memory corresponding to respective pixel positions of said second image memory at which the produced multivalued image data are to be stored; and γ correction means for correcting a gradation characteristic of multivalued data output from said spatial operation means with a correction characteristic determined based on a γ characteristic of a display.

5,446,832

PRINTING METHOD AND APPARATUS

Yuichi Higuchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 074,152, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 708,248, May 31, 1991, abandoned. This application Jan. 12, 1995, Ser. No. 371,578
Claims priority, application Japan, Jun. 1, 1990, 2-141603
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—113 14 Claims



1. A printer apparatus for generating information based on information input from an information processing apparatus and for printing the generated information, said printer apparatus comprising:

determining means for determining whether transfer inhibition information for inhibiting memory means, which stores the generated information, from transferring the generated information to a printer engine is input from externally of said printer apparatus prior to an actual printing operation; and

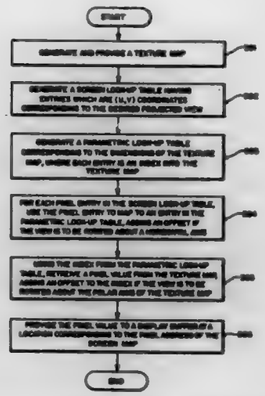
control means for controlling the memory means to continuously store the generated information based on the information input from the information processing apparatus and inhibiting the memory means from transferring the stored, generated information to the printer engine when said determining means determines that the transfer inhibition information is input.

5,446,833

TEXTURED SPHERE AND SPHERICAL ENVIRONMENT MAP RENDERING USING TEXTURE MAP DOUBLE INDIRECTION

Gavin S. P. Miller, Mountain View, and Shenchang E. Chen, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 880,240, May 8, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 205,137
Int. Cl.[6] G06F *15/72*
U.S. Cl. 395—125 22 Claims



1. A method for rendering views of an image projected onto a sphere from a predetermined projection orientation with respect to a viewer, said views being capable of manipulation along multiple axes, said method comprising the steps of:

a) providing a texture map comprised of a plurality of pixel shading values, said texture map providing an image to be viewed;

b) generating a screen look-up table comprised of look-up addresses, said screen look-up table corresponding to a display window having said predetermined projection orientation with respect to a viewer;

c) generating a parametric look-up table comprised of texture map indices, said parametric look-up table being of the same size as said texture map, said texture map indices in said parametric look-up table corresponding to information in said screen look-up table being rotated N degrees; for each look-up address in said screen look-up table;

providing a first offset to said look-up address to identify a corresponding entry in said parametric look-up table, said first offset causing rotation of said image projected onto a sphere from a predetermined projection orientation with respect to a viewer along a first axis;

providing a second offset to said identified corresponding entry in said parametric look-up table to create an index value into said texture map, said second offset causing rotation of said image projected onto a sphere from a predetermined projection orientation with respect to a viewer along a second axis, said second axis being different than said first axis;

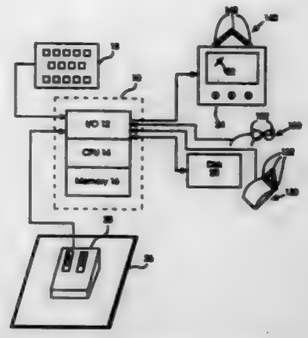
retrieving an entry in said texture map based on said index value, said entry being a pixel shading value for said look-up address in said screen look-up table.

5,446,834

METHOD AND APPARATUS FOR HIGH RESOLUTION VIRTUAL REALITY SYSTEMS USING HEAD TRACKED DISPLAY

Michael Deering, Los Altos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 875,042, Apr. 28, 1992, abandoned.
This application Dec. 6, 1994, Ser. No. 359,331
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—127 10 Claims



6. An apparatus for generating an accurate stereo three dimensional image comprising:

means for measuring a three dimensional eye position for each eye of a viewer, such that the eye positions correspond to points in a three dimensional display plate coordinate space registered to a display screen of a display device;

means for generating a viewing matrix for each of the eye positions, the viewing matrices mapping a virtual object mathematically defined in the display plate coordinate space to a pair of display windows generated on the display screen;

means for generating corrected viewing matrices by adjusting the viewing matrices that map the virtual object to the display windows to correct for distortion caused by optical properties of the display screen;

means for mapping the virtual object mathematically specified in the display plate coordinate space into the display windows using the corrected viewing matrices;

means for generating and displaying the virtual object in the display windows in stereo on the display screen.

5,446,835

HIGH-SPEED PICKING SYSTEM FOR STACKED PARTS

Yasuhiro Iida; Yasuo Hibi, both of Nagoya; Toshio Kato, Toyoake, all of Japan, and Hiroshi Harada, Bloom Field, Mich., assignors to Nippondenso Co., Ltd., Kariya, Japan

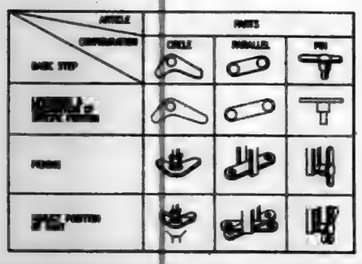
Filed Oct. 29, 1992, Ser. No. 968,065
Claims priority, application Japan, Oct. 30, 1991, 3-313974; Oct. 30, 1991, 3-313975; Oct. 30, 1991, 3-313976; Nov. 8, 1991, 3-320994
Int. Cl.[6] G06K *9/00*
U.S. Cl. 395—133 10 Claims

1. A stacked-part high-speed picking system for obtaining border lines of stacked parts from a two-dimensional image, for extracting a plurality of constitutive line segments from said border lines, and for recognizing said stacked parts on the basis

of said constitutive line segments so that said stacked parts are picked up by a robot, said picking system comprising:

means for storing a plurality of collative models, each based upon data specifying a configuration when a plurality of specific portions of said stacked parts are disposed in one of a plurality of basic positions, said plurality of collative models representing said plurality of specific portions so as to allow recognition of said plurality of specific portions in said two-dimensional image, each of said plurality of specific portions having a simple shape, which allows said stacked parts to be picked up by said robot;

means for storing a collation limit value which is based upon an inclination limit angle of said plurality of specific portions relative to each of said basic positions, said inclination limit angle defining a range that allows a selected one



of said plurality of specific portions to be picked by said robot and indicating an allowable non-coincidence range between said selected specific portion and a corresponding one of said collative models;

specific portion detecting means for detecting, as said selected specific portion, a portion of said two-dimensional image which is within said allowable non-coincidence range and which is recognized in accordance with said collative models;

means for determining a position of said detected selected specific portion; and

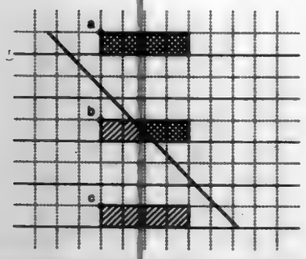
command means for positioning said robot at said determined position of said detected selected specific portion so as to allow said robot to pick up said selected specific portion.

5,446,836

POLYGON RASTERIZATION

Derek J. Lentz, Los Gatos; David R. Kosmal, Newark, and Glenn C. Poole, Fremont, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 968,901
Int. Cl.[6] G06F *15/72*
U.S. Cl. 395—141 20 Claims



1. A computer-based method for determining which pixels to render as part of a triangle in order to rasterize polygons, the method comprising the steps of:

(1) generating, for the three edges of the triangle, three edge variables each of which indicates whether a first pixel falls inside or outside a triangle;

(2) generating three masks based upon the values of said edge variables, said masks are representative of a span of pixels, wherein said first pixel is the initial pixel in said span of pixels; and

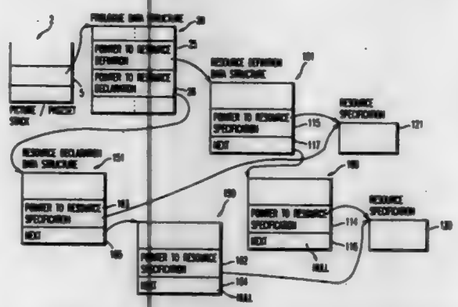
(3) logically ANDing said three masks to produce a render-mask which represents which pixels within said span of pixels should be rendered.

5,446,837

METHOD AND SYSTEM TO PROCESS RESOURCES IN A DOCUMENT PROCESSING LANGUAGE

Tetsuro Motoyama, and Yueh-Lin Chang, both of San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 87,571, Jul. 2, 1993, which is a continuation-in-part of Ser. No. 931,800, Aug. 11, 1992, Pat. No. 5,416,896, which is a continuation-in-part of Ser. No. 876,601, Apr. 30, 1992, Pat. No. 5,319,748, and Ser. No. 879,251, Apr. 30, 1992, Pat. No. 5,325,484. This application Sep. 10, 1993, Ser. No. 119,930
The portion of the term of this patent subsequent to May 16, 2012, has been disclaimed.
Int. Cl.[6] G06F *17/22*
U.S. Cl. 395—145 16 Claims



1. A method for implementation in a computer of processing a hierarchically structured document, comprising the steps of:

creating a data structure for keeping track of hierarchical levels of the document;

inputting an element indicating a beginning of a hierarchical level A of the document;

creating a plurality of references for an entry A in said data structure for keeping track of hierarchical levels, said plurality of references for the entry A being used to keep track of parameters of the hierarchical level A of said document including a reference used for keeping track of declared resources which are used during processing of the document;

inputting an element at the hierarchical level A declaring that a first predefined resource is to be used during processing of the document;

changing the reference used for keeping track of declared resources to refer to said first predefined resource;

inputting an element indicating a beginning of a hierarchical level B of the document which is below the hierarchical level A in the hierarchical structure of the document;

creating a plurality of references for an entry B in said data structure for keeping track of hierarchical levels, the entry B being different from the entry A in said data structure for keeping track of hierarchical levels, said plurality of references for the entry B being used to keep track of parameters of the hierarchical level B of said document including a reference used for keeping track of declared resources which are used during processing of the hierarchical level B of the document, said plurality of references for the entry B being equal to said plurality of references for the entry A when said plurality of references for the entry B are created;

inputting an element at the hierarchical level B declaring that a second predefined resource is to be used during processing of the hierarchical level B, in addition to the first predefined resource;

changing the reference used for keeping track of declared resources for the entry B to refer first to said second predefined resource and subsequently to said first predefined resource; and

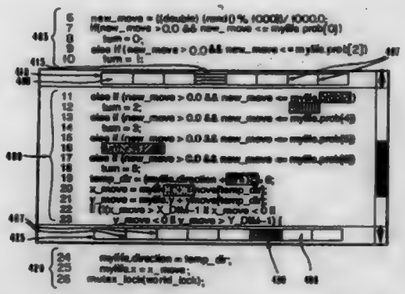
accessing said predefined resources by using first the reference to the second predefined resource and if a desired resource is not found, using subsequently the subsequent reference to the first predefined resource, without referring to said plurality of references for the entry A.

5,446,838

FLOATING HIGHLIGHTS ON A COMPUTER PROGRAM CODE DISPLAY

Douglas N. Kimelman, Danbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,120
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—161 11 Claims



1. A graphical display for showing which line of code of a computer program each of a plurality of parallel processors is executing comprising:

a plurality of lines of computer code having an undisplayed part of one or more computer code lines not displayed on the display and a displayed part of one or more computer code lines displayed on the display, each line in the displayed part being broken into one or more code line segments, each line segment delineated from other line segments on the code lines by one or two division points, each line segment being associated with at least one processor of the plurality of processors;

a first gutter line, segmented in the same wax as the code lines in the displayed part, a gutter segment being highlighted when a code line in the undisplayed part is executed by a processor associated with the gutter segment; and

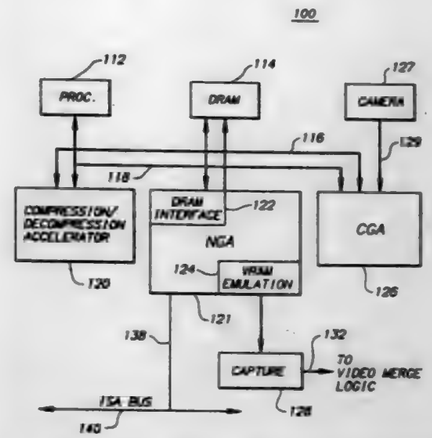
a highlight associated with each processor which highlights the line segment of the associated processor on the line in the displayed part when the associated processor is executing a line in the displayed part.

5,446,839

METHOD FOR CONTROLLING DATAFLOW BETWEEN A PLURALITY OF CIRCULAR BUFFERS

David Dea, Honeybrook, Pa.; Gary Looser, Ocean, N.J., and Kevin Harney, Brooklyn, N.Y., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 26, 1993, Ser. No. 67,858
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—163 3 Claims



1. A video processor system having system memory locations for storing images, said system memory locations including a buffer block having an end, comprising:

separate first and second video processor means for reading and writing said buffer block and performing video processor functions;

said first video processor means having (1) a first read pointer for indicating a memory location within said buffer block wherein said first video processor means is reading a first input image for performing a selected video processing function upon said first input image, and (2) a first write pointer for indicating a memory location within said buffer block wherein said first video processor means is writing a first processed image;

said second video processor means having (1) a second read pointer for indicating a memory location within said buffer block wherein said second video processor means is reading a second input image for performing a selected video processor function upon said second input image, and (2) a second write pointer for indicating a memory location within said buffer block wherein said second video processor means is writing a second processed image;

said first read and write pointers and said second read and write pointers having means for advancing through said buffer block to the end of said buffer block as said first and second video processor means perform said video processor functions and thereupon continuing said advancing at the beginning of said buffer block thereby defining first and second circular buffer areas; and,

means for controlling said first write pointer to write new data into said first circular buffer area;

means for controlling said second read pointer to read said new data to provide companded data;

means for controlling said second write pointer to write said companded data into said first circular buffer area; and

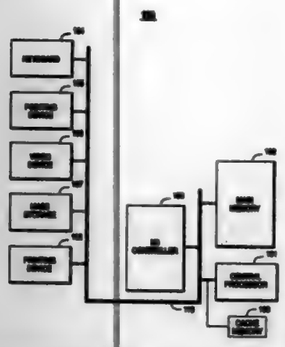
means for controlling said first read pointer to read said companded data for motion estimation.

5,446,840

SYSTEM AND METHODS FOR OPTIMIZED SCREEN WRITING

Raymond S. Kiuchi, Santa Cruz; Peter Johnson, Oakland, and Randolph T. Soltes, Berkeley, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Feb. 19, 1993, Ser. No. 19,799
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—164 27 Claims



1. In a system comprising a computer coupled to a display means, the computer including a processor and a main memory, the display means including a display memory and a screen, an improved method for displaying information to a user, the method comprising:

(a) writing the information as an image to a selected region of the main memory; and

(b) at a periodic time interval, updating the display memory with the image stored in said selected region of the main memory, whereupon the screen displays the image;

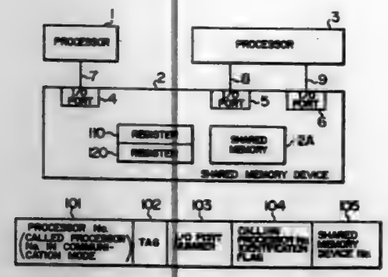
wherein the time interval is selected so that step (b) is performed at a rate (frame rate) lower than a screen refresh rate of the display means, and wherein the frame rate is substantially equal to about 20 to 30 frames/sec.

5,446,841

MULTI-PROCESSOR SYSTEM HAVING SHARED MEMORY FOR STORING THE COMMUNICATION INFORMATION USED IN COMMUNICATING BETWEEN PROCESSORS

Masahiro Kitano, Hiratsuka; Yoshitaka Ohfusa; Katsuya Kohda, both of Yokohama; Keiichi Sasaki, Hadano; Hiroyuki Okura, Hadano, and Katsumi Takeda, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,688
Claims priority, application Japan, Jun. 15, 1991, 3-170548
Int. Cl.[6] G06F *12/08, 13/00*
U.S. Cl. 395—200 6 Claims



1. A method of communication between processors used with an information processing system having a plurality of processors and a plurality of shared memories connected to said plurality of processors, said method comprising the steps of:

storing information from a processor for specifying which of said plurality of processors is connected to said shared memories to be directly accessible from another processor, into register means when said system is started by turning on a power supply to said system, or when said system is started just after connection paths between said shared memories and said processors are changed;

feeding a communication instruction from one of said processors to a specified one of said shared memories for indicating that said one of said processors communicates with another processor via said specified shared memory;

checking said information stored in said register means by said specified shared memory, in response to said communication instruction, and confirming by said specified shared memory that said one processor and said another processor are connected to said specified shared memory such that said specified shared memory is directly accessible from either of said one processor and said another processor;

storing communication information from said one processor into a memory area of said specified shared memory, after confirming that said one processor and said another processor are connected to said specified shared memory such that said specified shared memory is directly accessible from either of said one processor and said another processor;

feeding a communication read interruption from said specified shared memory to said another processor; and

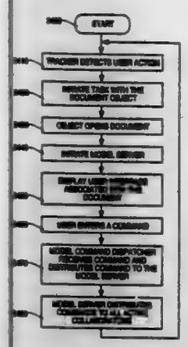
reading out, in response to said communication read interruption, said communication information from said memory area of said specified shared memory by said another processor and storing said communication information in a primary storage of said another processor.

5,446,842

OBJECT-ORIENTED CALLABORATION SYSTEM

Arnold Schaeffer, Belmont; David R. Anderson, Cupertino; Jack H. Palevich, Sunnyvale, and Larry S. Rosenstein, Santa Clara, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Feb. 26, 1993, Ser. No. 23,987
Int. Cl.[6] G06F *9/00, 9/44*
U.S. Cl. 395—200.01 20 Claims



1. An apparatus for supporting real-time collaboration of at least two users of an application on at least two computers joined via a communication link, including means for initiating processing steps of said application by user commands, including a command object with logic and data for performing a command and an associated selection object with logic and data specifying the target of said command, and means for generating the same view to the results of said processing steps on displays of said users, comprising:

(a) means for issuing a first user command object by a first one of said users determining certain ones of said processing steps of said application;

(b) means for generating a first user selection object specifying first data associated with said first user command object in response to a user selection of said first data;

(c) means for distributing said first user command object and said first user selection object to a second user involved in said collaboration utilizing said communication link joining said at least two computers; and

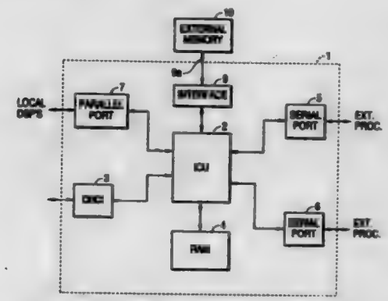
(d) processing means for executing said first user command and said first user selection object in said application for said first user and said second user involved in said collaboration.

5,446,843

INTERFACE UNIT FOR DYNAMICALLY CONFIGURING A BUFFER IN DIFFERENT MODES TO STORE DATA TRANSFERS BASED UPON DIFFERENT CONNECTION DETAILS OF CONNECTED PROCESSING UNITS

Michele Fucito, Meta; Marzo Recchia, Rome; Silvestro Puglia, Pomezia; Claudio Mariani, Rome; Giulio Colangeli, Gerenzano di Roma, and Antonio Rotunno, Salerno, all of Italy, assignors to Alcatel Italia SpA, Milan, Italy

Filed Nov. 13, 1991, Ser. No. 792,208
Claims priority, application Italy, Dec. 20, 1990, 22462/90; Dec. 20, 1990, 22463/90
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—250 9 Claims



1. A circuit device for interconnecting processing units equipped with micro-processors, said device enabling data transfers with the processing units each having different connection details, said device comprising:

at least two connection ports for connecting said circuit device to said processing units for data transfers therewith, the connection ports providing compatibility with connection details of said processing units;

internal memory means for storing data;

interface means for interfacing said circuit device to external memory means; and

control means for controlling said circuit device, said control means being connected to said at least two connection ports, to said internal memory means, and to said interface means, and for directly providing data transfers to and from said connection ports, said internal memory means, and said interface means;

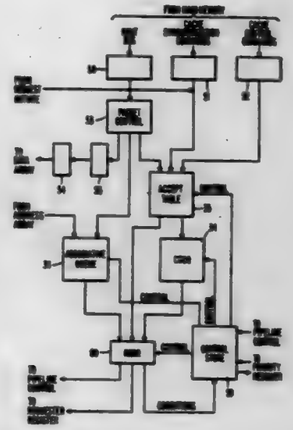
wherein said control means dynamically controls at least said internal memory means based upon requirements by said processing nits in at least one memory block of a type selected from the group including: multi-port RAM, FIFO, LIFO, and circular queue.

5,446,844

PERIPHERAL MEMORY INTERFACE CONTROLLER AS A CACHE FOR A LARGE DATA PROCESSING SYSTEM

Thomas M. Steckler, Christiana; Dana A. Gryger, Downingtown, and Robert H. Tickner, Paoli, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 104,473, Oct. 5, 1987, abandoned. This application Aug. 5, 1991, Ser. No. 741,963
Int. Cl.[6] G06F *13/16*
U.S. Cl. 395—250 6 Claims



1. In a data processing system having at least one central processor, a main memory including a memory controller coupled to said processor for providing access thereto, the combination comprising:

a plurality of peripheral requestors external to said processor and said main memory, each requestor providing a data request indicating a request for main memory data;

an interface coupled between said requestors and said main memory controller;

said interface comprising:

first means for receiving main memory data requests from said requestors;

a cache memory for storing main memory data;

second means for determining whether main memory data requested by a requestor is stored in said cache memory and if so for reading out the requested data from said cache memory and sending it to the requestor;

third means for requesting data from said main memory when data requested by a requestor is found not to be stored in said cache memory;

said third means including a queue for storing a plurality of main memory requests whose requested data are not stored in said cache memory, a data request from a requestor being stored in said queue when the requested data is found not to be stored in said cache memory; and

fourth means for receiving main memory data sent from said main memory as a result of data requested by a requestor having been found not to be stored in said cache;

said fourth means associating received main memory data with the corresponding data request stored in said queue and in response thereto routing the received main memory data to the corresponding requestor without the requestor having to send another request, said received main memory data also being stored in said cache memory;

said fourth means providing for receiving cache control commands and data from said main memory for updating the data stored in said cache memory;

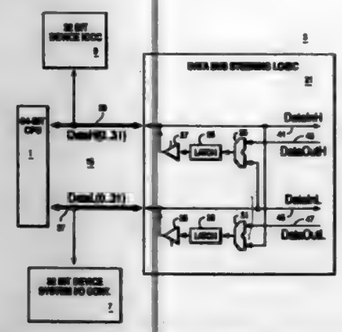
said fourth means including accept table means responsive to said cache control commands for providing consistency status of data stored in said cache memory with respect to data stored in said main memory so that a cache control command is targeted to the proper data in said cache memory, and wherein said access table means is accessed by said fourth means before performing operations affecting data in said cache memory.

5,446,845

STEERING LOGIC TO DIRECTLY CONNECT DEVICES HAVING DIFFERENT DATA WORD WIDTHS

Ronald X. Arroyo; William E. Burky; Tricia A. Gruwell, all of Austin, and Joaquin Hinojosa, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1993, Ser. No. 123,821
Int. Cl.[6] G06F *13/40*
U.S. Cl. 395—250 **15 Claims**



1. A data processing system including a central processing unit that processes data having a first data width, comprising:

a system bus capable of transferring data words of said first data width, said system bus comprising first and second portions;

at least one device, directly connected to a said first portion of said system bus, that processes data words having a second data width equal to or less than half of said first data width; and

means, operating independently of said CPU control, for steering transparently to the CPU, data between said first and second portions of said system bus such that data of said first data width can be transferred between said at least one device and said system bus, said means for steering including:

i) means for forcing data having said second data width onto said first portion of said system bus simultaneous with said device forcing other data having said second data width onto said second portion of said system bus, for CPU load operations; and

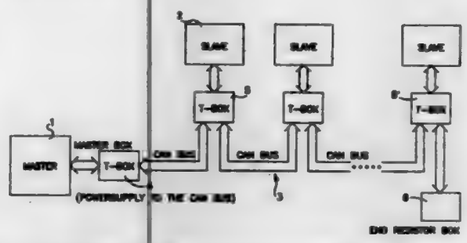
ii) means for forcing data having said second data width onto said first portion of said system bus sequentially with other data having said second data width forced by said CPU onto said first portion of said system bus, for CPU store operations when said device is directly connected to said first portion of said system bus.

5,446,846

DISTRIBUTED COMPUTER SYSTEM ARRANGEMENT

Kent Lennatsson, Östergårdsgatan 1:20, S-212 22 Malmö Sweden

PCT No. PCT/SE91/00539, § 371 Date Feb. 17, 1993, § 102(e) Date Feb. 17, 1993, PCT Pub. No. WO92/03881, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 13, 1991, Ser. No. 969,302
Claims priority, application Sweden, Aug. 20, 1990, 9002703
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—250 **10 Claims**



1. A distributed computer system comprising:

a serial data bus;

a plurality of module units for performing logical operations at a plurality of locations;

a plurality of connecting devices, each connecting device connecting a respective module unit to said serial data bus, each connecting device including:

a memory device storing information which is unique to a respective connected module unit for enabling said module unit to communicate over said bus, including identification information to identify said module unit to other module units; and,

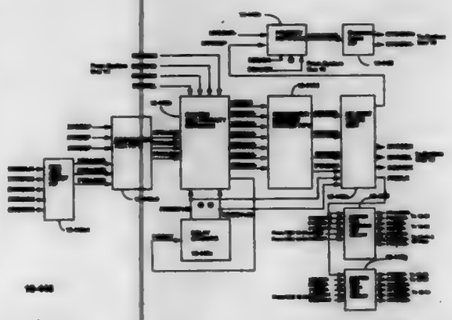
logic means connected to said memory device for transferring said information to said respective module unit during an initiation phase of said system, whereby said module unit is enabled to communicate over said data bus.

5,446,847

PROGRAMMABLE SYSTEM BUS PRIORITY NETWORK

James W. Keeley, Nashua, N.H.; George J. Barlow, Tewksbury, and Richard A. Lemay, Carlisle, both of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Continuation of Ser. No. 771,584, Oct. 4, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 531
Int. Cl.[6] G06F *13/18, 13/372*
U.S. Cl. 395—280 **11 Claims**



1. A bus interface priority network for use on a system which includes a system bus in which requests are asynchronously transferred according to a predetermined bus protocol between a plurality of different types of units which connect to different physical positions along said system bus to access said system bus through a distributed priority network on a priority basis relative to said unit's position on said bus, said interface network being connected to one of said different physical positions and comprising:

an input section coupled to receive requests from a plurality of different types of requestors for processing different types of transactions;

priority network request generator means coupled to said system bus and to said input section for receiving respectively, input bus request signals indicating the presence of a higher priority request on said system bus and input request signals representative of requests from said requestors, said priority network request generator means generating output request signals and a priority network busy signal indicating a start of a bus resolution cycle of operation in response to said input bus request signals,

request storage means connected to said priority network generator means, said request storage means storing said input request signals representative of requests received from said different types of requestors for resolution during said bus resolution cycle of operation;

delay generation means coupled to said priority network request generator means for generating a plurality of output delay signals representative of predetermined delay intervals established for said different types of requestors to access said system bus in response to said priority network busy signal; and,

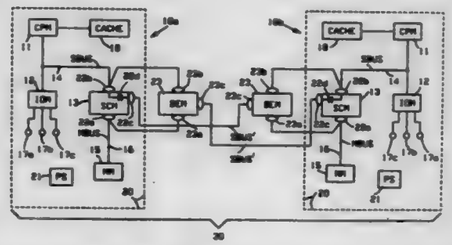
request pulse generation means for generating an output bus request signal and being connected to receive said input request signals stored by said request storage means and said plurality of output delay signals from said delay generation means, said request pulse generation means including programmable array logic (PAL) circuit means programmed to select a predetermined one of said output delay signals as a function of which one of said different types of requestors is selected by said PAL circuit means as having the highest priority request according to a predetermined priority scheme for generating said output bus request signal to said distributed priority network for enabling bus access within a minimum access time for each type of transaction being processed by said different requestors sharing common access to said system bus.

5,446,848

ENTRY LEVEL DATA PROCESSING SYSTEM WHICH IS EXPANDABLE BY A FACTOR OF TWO TO A PARTITIONABLE UPGRADED SYSTEM WITH LOW OVERHEAD

Gary C. Whitlock, 22822 Via Octavo; Richard D. Freeman, 25742 Serenata, both of Mission Viejo, Calif. 92691, and Keith S. Saldanha, 31971 Lazy Glen, Trabuco Canyon, Calif. 92679

Filed Jun. 25, 1993, Ser. No. 82,175
Int. Cl.[6] G06F *11/20*
U.S. Cl. 395—280 **12 Claims**



1. An upgraded data processing system which is comprised of two intercoupled entry level data processing systems; each entry level data processing system including:

a system bus;

a central processing module, an input/output module, and a system control module; all of which are coupled to said system bus;

a memory module coupled via a memory bus to said system control module;

a system expansion interface comprising—a) a memory bus expansion port for externally communicating with said memory bus, b) a first system bus expansion port for externally communicating with said system bus, and c) an extension of said system bus through a switch on said system control module to a second system bus expansion port for externally communicating therewith;

a three port bus expansion module which intercouples said first system bus expansion port and memory bus expansion port of one entry level data processing system to said second system bus expansion port of the other entry level data processing system;

said three port bus expansion module having a partition control circuit with an input for receiving a partition command, and which in response to said partition command inhibits all transmissions from said bus expansion module to said first system bus expansion port and said memory bus expansion port; and,

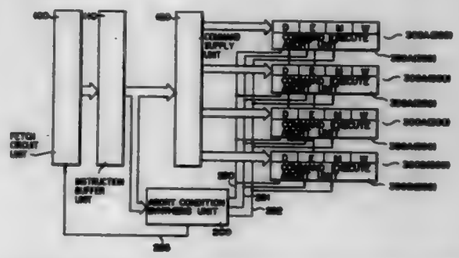
said system control module having a partition control circuit with an input which also receives said partition command, and which in response thereto opens said switch in the system control module.

5,446,849

ELECTRONIC COMPUTER WHICH EXECUTES SQUASH BRANCHING

Kenji Minagawa, Urayasu; Takeshi Aikawa, Tokyo, and Mitsuo Saito, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 799,981
Claims priority, application Japan, Nov. 30, 1990, 2-340347; Apr. 5, 1991, 3-073273
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—375 **7 Claims**



1. An electronic computer capable of executing a plurality of instructions simultaneously, comprising:

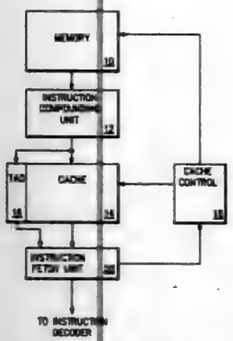
abort condition synthesizing means for judging whether each of a plurality of instructions is one of a delayed branch instruction and a squash branch instruction, and based on the results, producing a flag indicating an abort condition for each instruction; and

command execute abort means for aborting execution of each of said instructions on the basis of said flag and whether a branch instruction is completed.

5,446,850
CROSS-CACHE-LINE COMPOUNDING ALGORITHM FOR SCISM PROCESSORS

Thomas L. Jeremiah, Endwell, and Bartholomew Blaner, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 875,507, Apr. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 642,011, Jan. 15, 1991, Pat. No. 5,295,249, and a continuation-in-part of Ser. No. 677,685, Mar. 29, 1991, Pat. No. 5,303,356. This application Jul. 27, 1994, Ser. No. 281,321
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—375 5 Claims



1. A data processing system in which instructions are transferred in blocks called instruction lines from a relatively low speed memory to a relatively high speed cache memory and from which cache memory instruction lines are fetched for execution and are deleted a line at a time, said system including an instruction compounding unit in which instructions are processed in order to generate tag information that indicates instructions that can be executed in parallel, said data processing system comprising in combination:

means to address a first instruction line in said cache memory in order to transfer said first instruction line from said cache memory to an instruction fetch unit;

means to generate a miss signal if said first instruction line is not resident in said high speed cache memory;

means responsive to said miss signal for transferring said first instruction line from said relatively low speed memory to said instruction compounding unit;

means responsive to said miss signal for determining an address of a second instruction line that is next in succession to said first instruction line for transfer to said instruction fetch unit;

means for transferring said second instruction line to said instruction compounding unit if said second instruction line resides in said cache memory;

said instruction compounding unit processing instructions from said first instruction line and said second instruction line in order to generate tag information indicating an instruction in said first instruction line that can be executed in parallel with an instruction in said second instruction line

means for determining if an instruction line in said cache memory has been deleted and replaced prior to its execution;

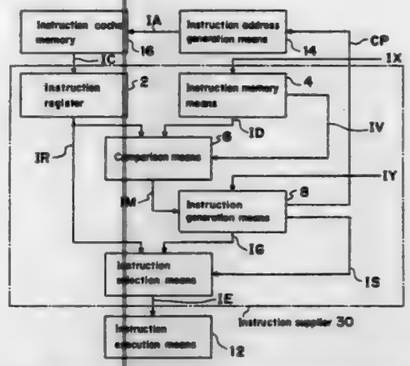
means to determine if said deleted and replaced instruction line contains instructions that have been compounded with another instruction line in said cache memory; and

means to delete tag information that indicates an instruction in said another instruction line can be compounded with an instruction in said instruction line that has been deleted and replaced.

5,446,851
INSTRUCTION SUPPLIER FOR A MICROPROCESSOR CAPABLE OF PREVENTING A FUNCTIONAL ERROR OPERATION

Seiji Yamaguchi, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 739,840, Aug. 2, 1991, abandoned. This application Jun. 8, 1994, Ser. No. 257,454
Claims priority, application Japan, Aug. 3, 1990, 2-207237
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—375 15 Claims



1. An instruction supplier for supplying instructions in sequence to a microprocessor comprising:

an instruction memory unit for storing instructions corresponding to instruction addresses;

an instruction register for temporarily storing therein an instruction read out from said instruction memory unit in accordance with an inputted instruction address;

an error causing instruction memory means for storing therein at least one error causing instruction for causing a functional error operation to occur in said microprocessor if the error causing instruction is executed at this point in the sequence of instructions;

at least one comparison means for detecting whether or not at least one error causing instruction stored in said error causing instruction memory means agrees with the instruction stored in said instruction register, respectively, by comparing at least portions of said two stored instructions, and for outputting an agreement detection signal, said agreement detection signal being at a first level when said comparison means has detected that at least one error causing instruction stored in said error causing instruction memory means agrees with the instruction stored in said instruction register and said agreement detection signal being at a second level which is different from said first level when said comparison means has detected that at least one error causing instruction stored in said error causing instruction memory means fails to agree with the instruction stored in said instruction register;

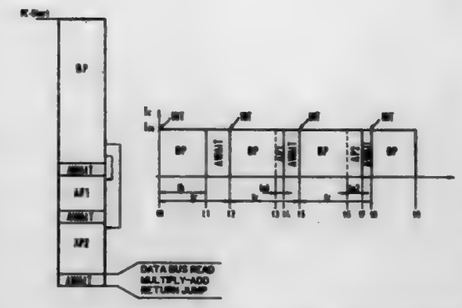
an instruction generation means for generating at least one specific instruction in accordance with the agreement detection signal outputted from said comparison means being at said first level; and

an instruction selection means for selecting and outputting the instruction stored in said instruction register to said microprocessor in response to the agreement detection signal being at said second level, and for selecting and outputting the specific instruction generated by said instruction generation means to said microprocessor in response to the agreement detection signal being at said first level, thereby preventing any functional error operation from taking place in said microprocessor.

5,446,852
METHOD OF REDUCING NOISE SIGNALS CAUSED BY FLUCTUATIONS IN POWER REQUIREMENTS OF DIGITAL SIGNAL PROCESSOR HAVING RECURRING WAIT ROUTINES

Thomas Hilpert, Gundelfingen; Stefan Mueller, Freiburg; Juergen Becher, Emmendingen, and Wilfried W. Gehrig, March, all of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Germany

Continuation of Ser. No. 46,054, Apr. 12, 1993, abandoned. This application Aug. 1, 1994, Ser. No. 283,926
Claims priority, application Germany, Apr. 24, 1992, 42 13 504.4
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—375 16 Claims



1. A method of reducing spurious signals caused by changes in power consumed by a processor which includes internal logic that requires varying-amounts of current in accordance with activities performed by said logic, said processor executing a plurality of instructions to control said activities of said internal logic, said power consumed by said processor at a particular time being dependent on a particular one of said plurality of instructions being executed at said particular time, said processor performing cyclically recurring program routines that include sequences of said plurality of instructions, said program routines being repeatedly initiated by said processor, said cyclically recurring program routines having respective run times which result in a first mean power consumption for said processor while running said program routines during said run times, said method comprising the steps of;

performing a predetermined wait routine by said processor between each occurrence of said cyclically recurring program routines; and

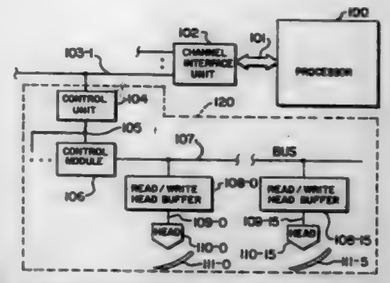
executing selected operations by said processor during said predetermined wait routine, said selected operations including selected activities performed by said internal logic of said processor to cause said current required by said internal logic to have a predetermined mean current magnitude, said predetermined mean current magnitude causing said power required by said processor to execute said selected operations to have a second mean power consumption while executing said selected operations approximately equal to said first mean power consumption,

wherein said internal logic of said processor comprises a data bus, said bus requiring varying amounts of currents in accordance with data transferred on said bus, said selected operations including data transfer instructions that cause data to be transferred on said data bus, said data selected to cause said data bus to require an increased amount of current and to increase said power consumed by said processor during said wait routine.

5,446,853
SYSTEM FOR BUFFERING TRACK IMAGE AT EACH READ/WRITE HEAD IN A DISK DRIVE UNIT HAVING MULTIPLE READ/WRITE HEADS

Robert E. Dean, Boulder; Steven C. Cacka, Longmont; Douglas P. Schaefer, Lafayette; Hossein F. Sevvom, Boulder, and Robert A. Brunnet, Denver, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation of Ser. No. 304,788, Jan. 31, 1989, abandoned. This application Jan. 18, 1991, Ser. No. 622,922
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—410 27 Claims



1. In a data processing system that includes a processor connected by at least one data channel to at least one control module, each control module being connected by a bus to a plurality of data storage devices, each of said data storage devices comprising:

a plurality of read/write heads for accessing data from said rotating media on which data is stored in data tracks;

a plurality of buffer means connected both to said bus and to said read/write heads, for storing the entire image of each of said data tracks read by one of said read/write heads from said rotating media; wherein each of said buffer means is connected to a single one of said read/write heads;

means, responsive to said processor transmitting a command to said control module requesting data stored on one of said data tracks on one of said data storage devices, for transferring said entire image of said one of said data tracks via one of said read/write heads directly into said buffer means.

5,446,854
VIRTUAL MEMORY COMPUTER APPARATUS AND ADDRESS TRANSLATION MECHANISM EMPLOYING HASHING SCHEME AND PAGE FRAME DESCRIPTOR THAT SUPPORT MULTIPLE PAGE SIZES

Yousef A. Khalidi, Sunnyvale, Calif.; Madhusudhan Talluri, Madison, Wis.; Dock G. Williams, Sunnyvale, and Vikram P. Joshi, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 20, 1993, Ser. No. 139,549
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—401 14 Claims

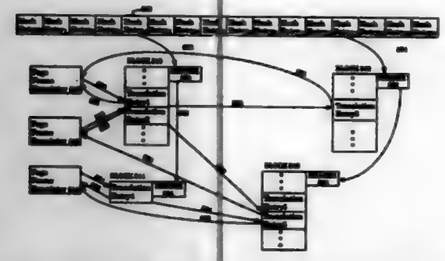
1. A method for providing address translations for a computer system having a virtual memory that is mapped onto a physical memory, the apparatus comprising:

a) providing at least one page frame descriptor for describing a contiguous portion of physical memory, each page frame descriptor having a base physical address, a physical address range beginning at the base physical address and a translation entry pointer;

b) providing at least one translation block for describing a contiguous portion of virtual memory, each translation block having a base virtual address, a virtual address range beginning at the base virtual address, a page size used to map the virtual address range of the translation block, a header and at least one translation entry, each header

having a translation block pointer and each translation entry having a backward pointer, each translation entry of the translation block corresponding to a different equal-sized translation range of the virtual address range of the translation block, if the translation range of a translation entry is backed by a physical memory page frame, then the backward pointer of the translation entry points to a describing page frame descriptor that describes a corresponding page frame and the translation entry pointer of the describing page frame descriptor points to the translation entry; and

c) providing a hash list having a plurality of hash entries, each hash entry having a translation header pointer and an associated hash index unique to the hash entry, if a virtual address translation chain of at least one translation block exists, wherein each translation block of the virtual address translation chain has a virtual address range such that each virtual address of the virtual address range of a translation block of the virtual address translation chain can be hashed to provide a hash index of a same hash entry, then the translation header pointer of the hash entry having the hash index obtained will point to a first translation block of the virtual address translation chain, if more than one translation block is in the virtual address translation chain then the translation block pointer of the first translation block will point to a second translation block in the virtual address translation chain and every translation block of the virtual address translation chain except the first translation block will be pointed to by a translation



block pointer of a different translation block of the virtual address translation chain;

d) if a virtual address to be translated is received, performing steps e) through h);

e) extracting a first translation hash index from the virtual address to be translated;

f) if a hash entry corresponding to the first translation hash index is not empty, then making the translation block pointed to by the translation header pointer of the hash entry corresponding to the first translation hash index a translation block being examined and examining the virtual address range of the translation block being examined to determine whether the virtual address to be translated is contained within the virtual address range of the translation block being examined;

g) if the virtual address to be translated is contained within the virtual address range of the translation block being examined, examining the translation entry of the translation block being examined having a translation range that contains the virtual address to be translated to determine whether the translation entry is valid, if the translation entry is valid, using the backward pointer of the translation entry to locate the page frame descriptor that describes a page frame that is backed by the translation entry;

h) if the virtual address to be translated is not contained within the virtual address range of the translation block being examined, then examining the translation block pointer of the translation block being examined and, if the translation block pointer is not empty, making the translation block pointed to by the translation block pointer of the translation block being examined the translation block being examined and repeating steps g) and h);

i) if a physical address to be translated is received, performing steps j) through m);

j) determining whether a page frame descriptor exists that has a physical address range that contains the physical address to be translated;

k) if a page frame descriptor exists that has a physical address range that contains the physical address to be translated, examining the translation entry pointer of the page frame descriptor to see if the translation entry pointer points to a translation entry;

l) if the translation entry pointer points to a translation entry, making the translation entry pointed to by the translation entry pointer a translation entry being examined;

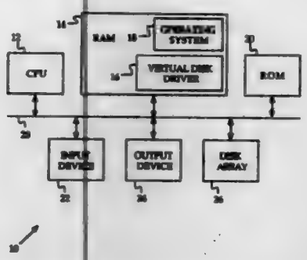
m) using the translation entry being examined and the header of the translation block containing the translation entry being examined to identify a virtual address corresponding to the physical address being translated.

5,446,855

SYSTEM AND METHOD FOR DISK ARRAY DATA TRANSFER

Joe Dang, Poway; Bernd Strauss, San Diego, and Robert Long, Vista, all of Calif., assignors to BusLogic, Inc., Santa Clara, Calif.

Filed Feb. 7, 1994, Ser. No. 192,389
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—401 26 Claims



1. A system for disk array I/O request management comprising:

a processing unit having an input and an output, for executing steps in an application program requiring one or more I/O operations;

a memory having an input and an output for storing data corresponding to an I/O request, the input of the memory coupled to the output of the processing unit and the output of the memory coupled to the input of the processing unit;

a disk array having an input and an output for receiving data from and writing data to the memory, the input of the disk array coupled to the output of the memory, the output of the disk array coupled to the input of the memory;

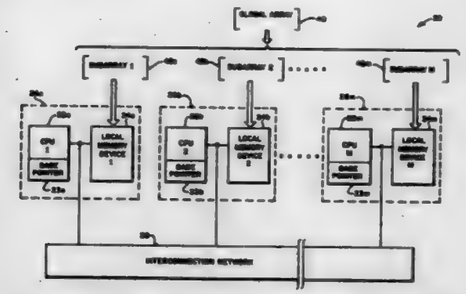
a request modification means having an input and an output, the input of the request modification means coupled to the output of the processing unit and to the output of the memory, the output of the request modification means coupled to the input of the disk array, the request modification means creating a set of subrequests from an I/O request, each subrequest created according to an I/O request type, an I/O request length, and sector row storage capacity, combining subrequests into a set of array requests, and issuing array requests to the disk array.

5,446,856

CIRCUITRY AND METHOD FOR ADDRESSING GLOBAL ARRAY ELEMENTS IN A DISTRIBUTED MEMORY, MULTIPLE PROCESSOR COMPUTER

Marc Baber, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 184,784, Jan. 21, 1994, abandoned, which is a continuation of Ser. No. 692,673, Apr. 29, 1991, abandoned. This application Dec. 15, 1994, Ser. No. 357,083
Int. Cl.[6] G06F *12/06, 12/08*
U.S. Cl. 395—401 **21 Claims**



1. A method of global addressing in a distributed memory computer having a multiplicity of local memories including a first local memory, each of the multiplicity of local memories storing a subarray of a global array, each subarray having a subarray base element, each of the local memories having a subarray base element memory address, the global array including a multiplicity of global elements, each of the local memories being associated with a processing device having a base pointer memory location for storing a base pointer pointing to the base element of the associated local memory, all of the multiplicity of local memories being accessible by each of the processing devices, the processing devices including a first processing device, a method of addressing an arbitrary global element stored within the first local memory associated with the first processing device, the method of global addressing comprising the steps of:

a. for each subarray:

1. calculating a subarray offset;

2. calculating a base pointer value for the processing device associated with the local memory storing the subarray based upon the subarray offset and the associated subarray base element address;

3. generating base pointer electrical signals representative of the base pointer value;

4. storing the base pointer electrical signals within the base pointer memory location associated with the processing device associated with the local memory storing the subarray;

b. receiving an arbitrary global element offset signal representative of the offset of the arbitrary global element; and

c. generating address signals for local and nonlocal accesses of the arbitrary global element by combining the base pointer electrical signal for the first processing device with the arbitrary global element offset signal.

5,446,857

METHOD AND APPARATUS FOR WRITING FILES ON NONERASABLE STORAGE MEDIUM

Craig F. Russ, Berwyn, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 12, 1992, Ser. No. 898,109
Int. Cl.[6] G06F *12/00, 13/00*
U.S. Cl. 395—427 19 Claims

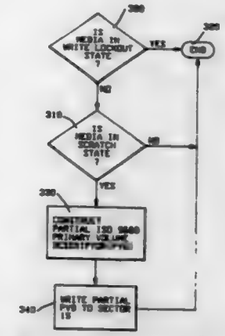
1. A method of writing to a write once storage medium, said method comprising:

initializing said write once storage medium for I/O actions;

reading medium management information from said write once storage medium, said medium management information including Directory Audit Records;

constructing file management information using said medium management information;

managing data recorded on said write once storage medium as a series of files, said files having a format used for a read



only optical disc, said managing including writing said data to said write once storage medium in a read only optical disc format; and

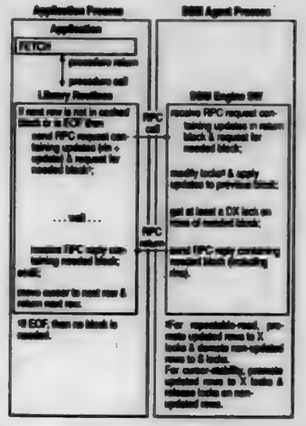
freezing said data on said write once storage medium which results in said write once storage medium having a read only optical disc format.

5,446,858

AN APPARATUS AND METHOD FOR TRANSFERRING INFORMATION IN BLOCKS FROM A DATABASE TO A MEMORY

George P. Copeland; Richard D. Hoffman, both of Austin, Tex.; Timothy R. Malkemus, Unionville, Canada, and Marc G. Smith, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,679
Int. Cl.[6] G06F *12/08, 12/12*
U.S. Cl. 395—427 12 Claims



1. A method for transferring information in blocks from a database server to a memory associated with a client application process, said method comprising the steps of:

(a) building a reserved area in the memory;

(b) checking the reserved area in the memory for a requested information;

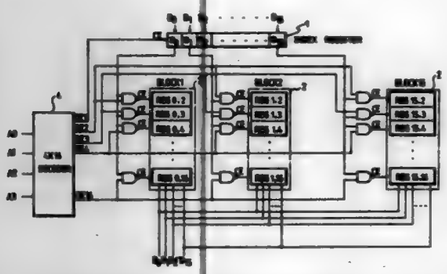
(c) sending a request for the requested information to the database server when the requested information is not in the reserved area in the memory, wherein said request includes updated information for a previous block;
(d) receiving the request and updated information by the database server;
(e) modifying locks and applying updated information to the previous block;
(f) obtaining at least a demotable exclusive lock on the requested information;
(g) sending the requested information from the database server to the client application process; and
(h) placing the requested information in blocks in the reserved area in the memory,
wherein said modifying step includes the steps of:
in the case of a repeatable-read isolation level associated with said previous block, promoting an updated portion of said previous block to an exclusive lock, and demoting a non-updated portion of said previous block to a shared lock; and
in the case of a cursor-stability isolation level associated with said previous block, promoting an updated portion of said previous block to an exclusive lock, and releasing a lock on a non-updated portion of said previous block.

5,446,859

REGISTER ADDRESSING CONTROL CIRCUIT INCLUDING A DECODER AND AN INDEX REGISTER

Won G. Shin, Kangnamku; Dae H. Kim, Yeongweolkun, and Jong H. Hong, Seocheku, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 995,780
Claims priority, application Rep. of Korea, Dec. 31, 1991, 1991-36027
Int. Cl.[6] G06F *12/06, 13/00*
U.S. Cl. 395—427 2 Claims



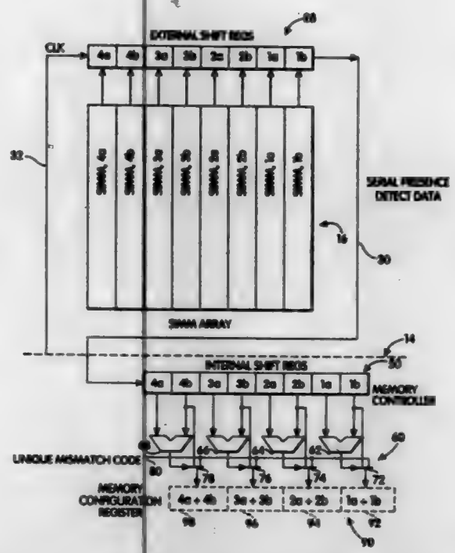
1. A register addressing circuit for addressing (n−1)n registers arranged as n register blocks, each register block having (n−1) registers, comprising:
a decoder having n output lines and m input lines, wherein 2^m=n, each of said m lines receiving an address signal, (n−1) of said n output lines being connected to (n−1) registers of each of said n register blocks; and
an index register with a chip enable input line connected to the nth output line of said decoder, said index register providing index data signals on n output lines, one each of said n index register output lines connected to a corresponding one of said n register blocks, so that the n output lines of the index register and the (n−1) output lines of the decoder are capable of addressing (n−1)n registers.

5,446,860

APPARATUS FOR DETERMINING A COMPUTER MEMORY CONFIGURATION OF MEMORY MODULES USING PRESENCE DETECT BITS SHIFTED SERIALLY INTO A CONFIGURATION REGISTER

Scott A. Dresser, Mountain View, Calif.; Scott A. Markinson, Goffstown, N.H., and Richard B. Gould, Concord, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1993, Ser. No. 3,194
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—427 16 Claims



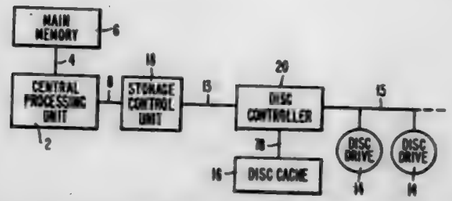
7. Apparatus for determining a memory configuration of one or more pairs of memory modules for use in controlling said memory modules, each memory module producing presence detect bits, comprising:
a register for receiving presence detect bits produced by each of said memory modules and for storing said presence detect bits, said presence detect bits including encoded bits representative of memory module capacity and memory module speed;
a memory configuration register;
comparison means for comparing the presence detect bits of each pair of memory modules and generating a match signal or a mismatch signal for each pair of memory modules, said match signal indicating a match between the presence detect bits of a corresponding pair of memory modules and said mismatch signal indicating a mismatch between the presence detect bits of the corresponding pair of memory modules; and
selector means responsive to said match signal for loading the presence detect bits of one memory module of the corresponding pair of memory modules into said memory configuration register and responsive to said mismatch signal for loading a predefined mismatch code into said memory configuration register.

5,446,861

VARIABLE DATA RATE IMPROVEMENT OF DISC CACHE SUBSYSTEM

Thomas E. Idleman, Santa Clara, and Jesse I. Stanmeen, Sunnyvale, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 857,113, Mar. 23, 1992, Pat. No. 5,241,666, which is a continuation of Ser. No. 131,314, Dec. 7, 1987, abandoned, which is a continuation of Ser. No. 596,881, Apr. 5, 1984, abandoned, which is a division of Ser. No. 519,213, Aug. 2, 1983, abandoned, which is a continuation of Ser. No. 236,453, Feb. 20, 1981, abandoned, which is a continuation of Ser. No. 45,361, Jun. 4, 1979, abandoned. This application Aug. 26, 1993, Ser. No. 112,401
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[6] G06F *12/12, 13/00*
U.S. Cl. 395—427 29 Claims



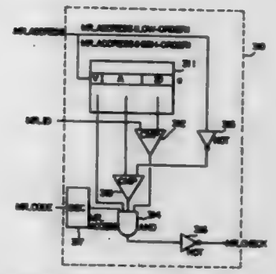
1. For use in a data processing system having a data processor coupled to the inboard side of a disk channel means via which said data processor provides processor input-output disc commands for use in performing disk operations, the combination comprising:
a plurality of disc drives;
a disc cache subsystem coupled between the outboard side of said disc channel means and said disc drives for controlling the transfer of data therebetween;
said disc cache subsystem providing for disc caching of said disc drives transparently to said data processor;
said disc cache subsystem comprising:
disc cache memory means having a relatively small storage capacity and fast access time relative to said disc drives;
disc processing means coupled to said disc cache memory means and said disc drives, said disc processing means being operable to control the storage of data in said disc cache memory means such that said disc cache memory means stores data likely to be requested by said data processor; and
disc control means coupled between the outboard side of said channel means and said disc processing means, said disc control means being responsive to processor input-output disc commands received from said processor via said channel means for communicating control signals to said disc processing means and also for communicating data between said disc processing means and said channel means as required in the performance of a processor input-output command,
said disc processing means being responsive to said control signals communicated thereto by said disc control means for selectively communicating data among said disc cache memory means, said disc drives and said disc control means for performing processor input-output commands, said disc processing means selectively providing a plurality of different selectable types of operations in response to said control signals, at least one of which varies the extent of disc caching provided by said disc cache memory means in transferring data between said processor and said disc cache subsystem via said disc channel;
said disc processing means controlling the storage of data in said disc cache memory means in accordance with an algorithm which may require replacement of data stored therein.
said disc processing means including locking indication means for identifying data in said cache memory means which is not to be replaced by said algorithm, said disc processing means being responsive to said locking indication means for preventing replacement of the identified data.

5,446,862

SYSTEM AND METHOD FOR GRANTING OR PREVENTING ATOMIC OR NONATOMIC MEMORY ACCESS REQUESTS TO SHARED MEMORY REGIONS

Takahide Ohkami, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 630,300, Dec. 19, 1990, abandoned. This application Nov. 29, 1993, Ser. No. 160,363
Claims priority, application Japan, Feb. 23, 1990, 2-43820
Int. Cl.[6] G06F *12/00, 13/00*
U.S. Cl. 395—427 6 Claims



4. A data processing system comprising:
a plurality of processors;
a shared memory;
a memory bus connected to said plurality of processors and connected to said shared memory;
wherein each of the plurality of processors may make memory access requests to addresses signifying regions of the shared memory, and said memory access requests including exclusive memory access requests which are non-interruptible by any other memory access request;
a memory access system connected to the memory bus, including, a memory access memory array for storing at least a validity field, low-order bits of a memory address, and a field for identifying a process making a memory access request, the process being executed on any of the plurality of processors;
an interrupt mechanism for detecting a new memory access request having an identifier field different from any identifier field already stored in the memory access memory array; and
a means for immediately initiating a processing routine upon detection of the new memory access request.

5,446,863

CACHE SNOOP LATENCY PREVENTION APPARATUS

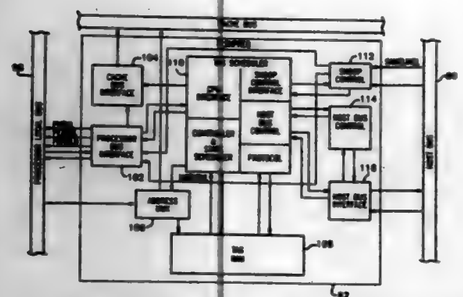
Jeffrey C. Stevens, Spring; Jess K. Ramsey, Houston; Randy M. Bonella, Cypress, and Phillip C. Kelly, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 839,853, Feb. 21, 1992. This application Dec. 16, 1993, Ser. No. 168,718
Int. Cl.[6] G06F *12/12*
U.S. Cl. 395—427 3 Claims

1. An apparatus for reducing latency problems in a cache system, comprising:
a system bus;
memory coupled to said system bus;

a processor coupled to said system bus which can access said memory using said system bus;

a cache system coupled between said processor and said system bus which generates a read allocation request to allocate data into the cache system and snoops addresses presented to its address inputs, wherein said cache system



also services requests from said processor when said processor is not using said system bus; and

means coupled to said cache system for gaining access to said cache system address inputs for snooping purposes immediately after said cache system generates a read allocation request.

5,446,864

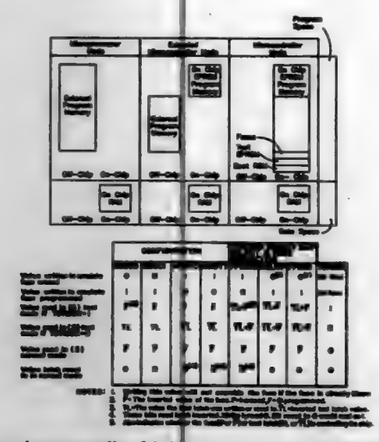
SYSTEM AND METHOD FOR PROTECTING CONTENTS OF MICROCONTROLLER MEMORY BY PROVIDING SCRAMBLED DATA IN RESPONSE TO AN UNAUTHORIZED READ ACCESS WITHOUT ALTERATION OF THE MEMORY CONTENTS

Martin Burghardt, Oberneuching, Germany; Eric Berman, Hicksville, N.Y.; Ajay Padgaonkar, Sugarland, Tex., and Ray Allen, Mesa, Ariz., assignors to Microchip Technology, Inc., Chandler, Ariz.

Continuation of Ser. No. 790,970, Nov. 12, 1991, abandoned. This application Mar. 7, 1994, Ser. No. 207,886

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—427 **6 Claims**



1. A microcontroller fabricated on a semiconductor chip to execute programs and instructions and, in response, to generate control signals to selectively control external apparatus, comprising:

an on-chip EPROM program memory, and

mode selecting means for selectively configuring the microcontroller to operate in any one of a plurality of predetermined operating modes, including at least one secure microcontroller mode,

said mode selecting means including:

a plurality of EPROM configuration fuses mapped into the on-chip EPROM program memory as bits in respective address locations thereof, each bit having a value of "1" or "0", the value of a bit representing any one of said fuses reflecting a state of being either erased or blown, respectively, for the respective fuse,

means for configuring the microcontroller by programming the bits in address locations of said EPROM program memory representing selected fuses in said EPROM program memory so that each fuse is either blown or erased according to a selected configuration, and

means for making address locations of fuses in said EPROM program memory inaccessible for reading or writing except in said at least one secure microcontroller mode such that when in said at least one secure microcontroller mode any attempt to read an address location within said EPROM program memory that is executed externally from said EPROM program memory results in reading scrambled data and wherein the contents of said EPROM program memory are unaltered.

5,446,865

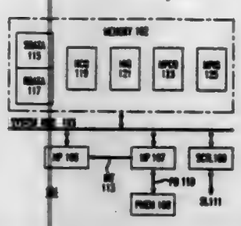
PROCESSOR ADAPTED FOR SHARING MEMORY WITH MORE THAN ONE TYPE OF PROCESSOR

Gary T. Corcoran, Fanwood; Robert C. Fairfield, Randolph, and Akkas T. Safi, Somerset, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 13, 1990, Ser. No. 493,018

Int. Cl.[6] G06F *3/00, 5/00*

U.S. Cl. 395—500 **6 Claims**



1. In a processor able to share memory containing data with another processor and having instruction execution means for executing instructions, the improvement comprising:

data format signal receiving means for receiving a data format signal from a source external to the processor which provides the data format signal independently of the instructions currently being executed and the data currently being processed by the processor, the data format signal indicating a data format which is an order of pluralities of bytes in the memory employed by the other processor; and

operation means in the instruction execution means, the operation means being responsive to data format dependency indicating means in certain ones of the instructions which indicate that the manner in which a read or write operation specified by the instruction is executed depends on the data format employed by the other processor and being also responsive to the data format signal to perform the operation specified by the instruction as required by the data format indicated by the data format signal.

5,446,866

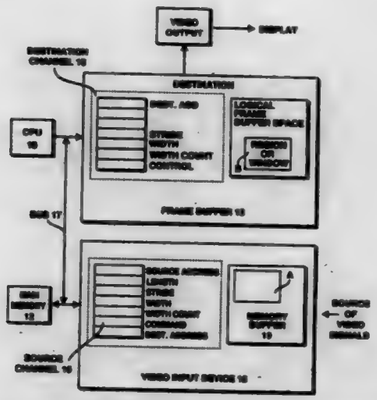
ARCHITECTURE FOR TRANSFERRING PIXEL STREAMS, WITHOUT CONTROL INFORMATION, IN A PLURALITY OF FORMATS UTILIZING ADDRESSABLE SOURCE AND DESTINATION CHANNELS ASSOCIATED WITH THE SOURCE AND DESTINATION COMPONENTS

Dean M. Drake, Cupertino, and Steven G. Roskowski, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 30, 1992, Ser. No. 828,353

Int. Cl.[6] G06F *3/00, 3/14*

U.S. Cl. 395—500 **25 Claims**



1. An arrangement for transmitting information from a first component of a computer system to a second component of the computer system comprising:

a processor;

a source channel associated with the first component of the computer system, wherein information for transfer from the first component to the second component is initially transferred from the first component to the source channel;

a destination channel associated with the second component of the computer system, wherein the destination channel and the second component are separately addressable by the source channel, the destination channel being operative to control transfer of information to the second component when the destination channel is addressed by the source channel;

means for interconnecting the source and the destination channels;

wherein the source channel comprises:

means for creating a stream of information in a selected one of a plurality of prescribed formats using information received from the first component;

means for designating the destination channel as an address for the stream of information; and

means for transferring the stream of information to the means for interconnecting the source and the destination channels;

and the destination channel comprises:

means for receiving the stream of information in any of the plurality of prescribed formats from the means for interconnecting the source and the destination channels;

means for receiving control information from the processor apart from the stream of information; and

means for controlling transfer of the stream of information to the second component in response to the control information when the destination channel is designated as the address for the stream of information.

5,446,867

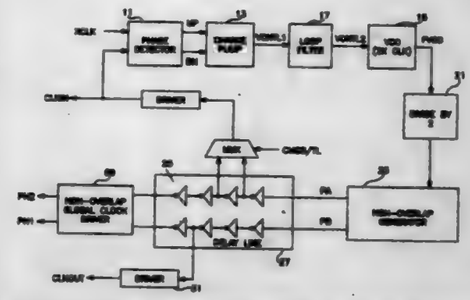
MICROPROCESSOR PLL CLOCK CIRCUIT WITH SELECTABLE DELAYED FEEDBACK

Ian Young; Keng L. Wong, and Jeffrey Smith, all of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 29, 1992, Ser. No. 890,937

Int. Cl.[6] G06F *1/00, 1/04, 1/06, 1/10*

U.S. Cl. 395—550 **9 Claims**



1. A circuit for eliminating skew between two clock signals used in a microprocessor comprising:

a) phase detector means for detecting phase differences between an internal clock signal and an external clock signal and generating UP and DN signals representing the detected phase differences;

b) charge pump means coupled to the phase detector means for generating a control signal based upon said UP and DN signals;

c) voltage controlled oscillator means coupled to said charge pump means for generating a timing signal based upon said control signal;

d) delay line means for tracking circuit delays in said microprocessor, said delay line means including a plurality of delay elements for delaying said timing signal, wherein a first signal tapped from said plurality of delay elements is said internal clock signal which is one of said inputs to said phase detector means and wherein a second signal is tapped from said plurality of delay elements at a position different from the location at which said first signal is tapped:

e) a multiplexor coupled to said delay line means having said first tapped signal and said second tapped signal as inputs, said multiplexor adapted to select one of said first and said second signals as said internal clock signal; whereby said selected signal is used as a clocking signal for I/O timings for a predetermined one of a TTL circuit and a CMOS circuit.

5,446,868

NETWORK BRIDGE METHOD AND APPARATUS

Raymond A. Gardea, II, Winston-Salem; Martin D. Covington, Jr., Rural Hall; Brent W. Carter, Jamestown, and Forrest W. Bowling, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 11, 1992, Ser. No. 943,635

Int. Cl.[6] G06F *13/42, 15/173*

U.S. Cl. 395—500 **19 Claims**

1. A data communications system comprising:

a first local area network for communicating data in LAT protocol packets containing DF1 format;

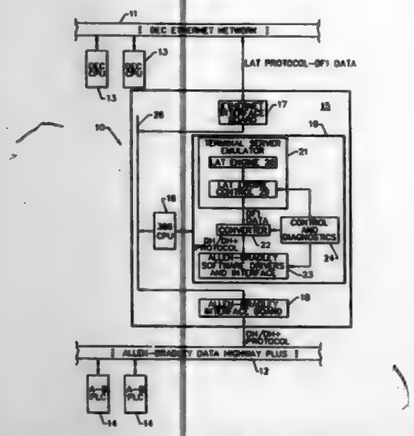
a second local area network for communicating data using DH/DH+ protocol;

terminal server emulating means, electrically connected to said first local area network, for stripping said LAT protocol from data received from said first local area network to provide DF1 format data; and

converting means, electrically connected to said terminal server emulating means and to said second local area

network, for converting said DF1 data into data using DE/DE+ protocol and transmitting said data using DH/DH+ protocol to said second local area network, and for converting data using DH/DH+ protocol into DF1 data and transmitting said DF1 data to said terminal server emulating means, said terminal server emulating means further including means for placing said DF1 data in LAT packets and transmitting said LAT packets to said first local area network;

wherein said DF1 data received from said terminal server



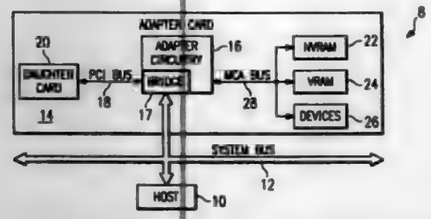
emulating means adds to the DF1 data a transaction number and wherein said converting means comprises means for removing said transaction number from said DF1 data and substituting a pseudo transaction number therefor, and wherein said DH/DH+ protocol data received from said second local area network includes said pseudo transaction number and wherein said converting means further comprises means for removing said pseudo transaction number from DH/DH+ protocol data received from said second local area network and replacing the pseudo transaction number with the associated transaction number.

5,446,869

CONFIGURATION AND RAM/ROM CONTROL OF PCI EXTENSION CARD RESIDING ON MCA ADAPTER CARD

Russell S. Padgett, West Palm Beach; Amado Nassiff, Hialeah, and Spencer G. Rauenzahn, II, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1993, Ser. No. 175,988
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **44 Claims**



1. A method of configuring and ensuring that system memory space is allocated to at least one daughter card residing on a first type of bus on an adapter card, said adapter card being connected to a host portion of a computer via a second type of bus and comprising a bridge for interfacing said first type of bus with said second type of bus, the method comprising:

storing a value which identifies a device residing on said at least one daughter card in a first register of said adapter card;

storing a value which addresses a byte of configuration data of said identified device in a second register of said adapter card;

writing configuration data to be written to said addressed configuration data byte of said identified device to a third register of said adapter card;

responsive to said at least one daughter card including RAM, selectively enabling a RAM aperture for addressing said RAM;

responsive to said at least one daughter card including ROM, selectively enabling a ROM aperture for addressing said ROM;

storing a size of said RAM aperture in a fourth register of said adapter card;

storing a starting address of said RAM aperture in a fifth register of said adapter card;

storing a location of said ROM aperture in a sixth register of said adapter card;

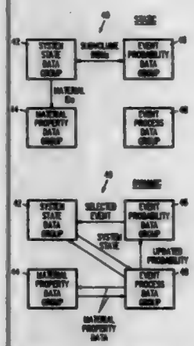
wherein each of said adapter card registers are electrically coupled to said bridge.

5,446,870

SPATIALLY RESOLVED STOCHASTIC SIMULATION SYSTEM

William D. Hinsberg, III, and Frances A. Houle, both of Fremont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 874,475, Apr. 23, 1992, abandoned.
This application Oct. 4, 1994, Ser. No. 317,421
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—500 **1 Claim**



1. A simulator system for simulating a time-progressive non-homogeneous material-energy system which is subdivided into subvolumes for the simulation, the simulator system comprising:

i) a data storage system;

ii) a system state data group, stored in the data storage system, including definitions, configuration information, material composition information, and system condition information for each of the subvolumes, each of the definitions including a respective subvolume index;

iii) a material property data group, stored in the data storage system, including a plurality of data subgroups, each of the subgroups having associated therewith a material property ID specifying a material contained within at least one of the subvolumes, each of the subgroups including physical and chemical information describing respective materials and chemical species present in the material-energy system, each subgroup also containing definitions of properties of the specified material;

the material composition information in the system state data group including the material properly IDs, for linking between a given one of the subvolumes and the data subgroups of the material property data group, based on a material composition of the given subvolume;

the simulator system further comprising:

iv) an event probability data group, stored in the data storage system, including event probability subgroups of respective events, each event probability subgroup including an event number for identifying the event, each event being associated with at least one of the subvolumes and having an event probability depending on the system condition and the material properties of the materials in the associated subvolumes;

each event probability subgroup being assigned to ones of the subvolumes for which the respective events may take place, by including the subvolume index within the event probability subgroup, for linking the event probability subgroups to the associated subvolumes, the event probability subgroups being arranged in a array such that, from a predetermined arithmetic expression, an array index may be calculated from a subvolume index to determine an event probability subgroup assigned to a subvolume;

and the simulator system further comprising:

v) an event process data group, stored in the data storage system, including a plurality of process functions for determining the event probabilities from the system condition information included in the system state data group, each process function having associated therewith a subvolume index corresponding with a subvolume within which an event, for which the process function is used to determine the event probability, is to take place;

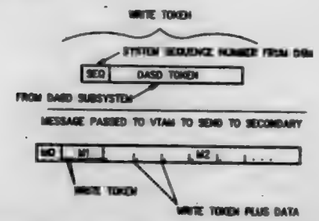
wherein a linking relationship between the data groups is provided by the subvolume indices and the material property IDs to facilitate operation of the simulation system.

5,446,871

METHOD AND ARRANGEMENT FOR MULTI-SYSTEM REMOTE DATA DUPLEXING AND RECOVERY

Robert W. Shomler, Morgan Hill, and James E. McIlvain, San Jose, both of Calif., assignors to International Business Machines, Armonk, N.Y.

Filed Mar. 23, 1993, Ser. No. 36,017
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—180 **5 Claims**



5. A system comprising a processor; an operating system (OS) resident at said processor; an external storage means; means responsive to applications executing on said processor for writing updates to external storage through calls to said OS; and means for propagating dual copies of said updates at a site remote from said external storage means and asynchronous to application execution, said propagating means including means for asynchronously writing said dual copies of said updates at said remote site, wherein said dual copy means comprise:

(a) means responsive to each write operation at said external storage means for forming a write token including a unique sequence number and an external storage address;

(b) means for establishing a communications path between the external store and the remote site and for sending messages there between;

(c) means including the write token forming means and the communications path establishing means for sending messages on the path, each message preceding each other serially in time each message selectively including a list of write tokens generated since the preceding message and a set of fields, each field containing a token and any write update data associated with that token; and

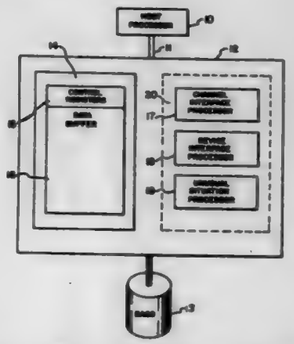
(d) means at the remote site responsive to each received message for maintaining a pending write queue to match addresses of the update data with tokens, for scheduling and writing matched tokens and updates at the remote site only in runs of matched tokens and addresses of the updates and in order of appearance in the pending write queue.

5,446,872

METHOD FOR ERROR RECOVERY IN A NON-SYNCHRONOUS CONTROL UNIT

Kathryn J. Ayres; Brent C. Beardsley; Keith A. Bello; Michael T. Benhase; Donald M. Nordahl, all of Tucson, Ariz.; Alfred G. Torre, Lafayette; Bao T. Trieu, San Jose, both of Calif., and Linda D. VanPatten, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 575,734, Aug. 31, 1990, abandoned.
This application Jun. 23, 1993, Ser. No. 82,349
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—180 **12 Claims**



8. A control unit for a Direct Access Storage Device (DASD), said control unit connected to a channel and to a DASD, wherein data records previously stored on said DASD are read into a buffer storage from a beginning location to a final location in a buffer filling operation and read from said buffer onto said channel in a buffer emptying operation, said filling operation capable of operating in a non-synchronous manner with respect to said emptying operation that is, operating on different data records from said emptying operation at any particular point in time, said control unit comprising:

said buffer storage;

a Device Interface Processor (DIP) connected to said buffer for controlling the transfer of data records from said DASD to said buffer storage;

a Channel Interface Processor (CHIP) connected to said buffer storage for controlling the transfer of data records from said buffer to said channel, said CHIP processor organized to trail said DIP processor in said buffer storage in order to access data records previously placed in said buffer storage by said DIP; and

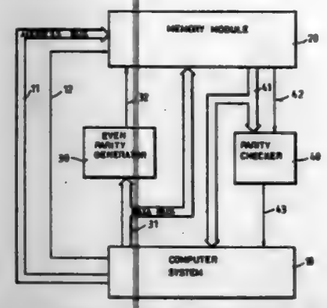
an Unusual Situation Processor (USURP) interconnected with said buffer, said DIP and said CHIP for controlling error recovery operations, said USURP including means for waiting for both said CHIP processor and said DIP processor to halt operations upon reporting of an error

condition to said USURP; said USURP further including means for determining whether said CHIP and said DIP are halted in synchronism and means for restarting only said CHIP if said DIP and said CHIP are not in synchronism.

5,446,873
MEMORY CHECKER

James Chan, Taipei, , assignor to Brain Power Co., Taipei, Taiwan

Filed Oct. 15, 1993, Ser. No. 136,127
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—180 1 Claim



1. A memory checker comprising: a parity checker, a bit storage connected to said parity checker, and a parity generator connected to said bit storage, and installed in a memory module of a computer system for checking data error, wherein:

the parity checker receives a data bus from the computer system and an input parity bit generated by a parity generator of the computer system, and is controlled by a read/-write control signal from the computer system to provide a corresponding bit value output to the bit storage as the parity checker determines whether a relation between the data bus and the input parity bit is in conformity with a parity checking protocol;

the bit storage receives the bit value output of the parity checker and the read/write control signal from the computer system, and is controlled by the read/write control signal to output the stored bit value to the parity generator and simultaneously to clear the stored bit value from the bit storage;

the parity generator receives an output data bus of the memory module and the read/write control signal of the computer system, and is controlled to output a bit signal to the parity checker according to the parity checking protocol, causing the parity checker to determine whether there is an error in data which has been fetched from the memory module and then to provide an interrupt signal to the computer system upon determining that an error exists.

5,446,874
AUTOMATED BENCHMARKING WITH SELF CUSTOMIZATION

John G. Waclawsky, Frederick, Md.; Paul C. Hershey, Manassas, Va., and Raymond F. Daugherty, Mt. Airy, Md., assignors to International Business Machines Corp., Armonk, N.Y.

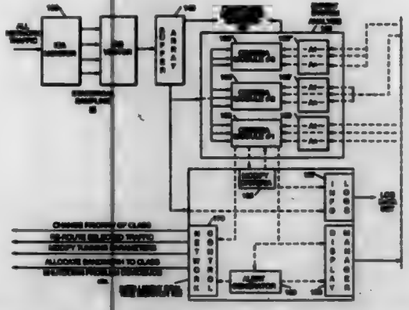
Filed Dec. 23, 1993, Ser. No. 173,530
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—575 23 Claims

1. In a system for analyzing, managing and controlling the output of a data communications network which communicates using a stream of data having characteristic patterns, a method for outputting control signals which are customized by classes of traffic on the network, comprising:

storing a first criteria of rules in an expert system in said system to compare information derived from an event vector for a first class of traffic in said network with a standard for said first class of traffic in said network; said event vector comprising multiple statistical patterns of traffic classes;

storing in a benchmark manager in said system a first benchmark data set as said standard for said first class of traffic, said first benchmark data set being derived from previously monitored events of said first class of traffic in said network;

inputting to said system an event vector from an Event Driven Interface coupled to a data communications network, in response to an event of said first class of traffic in said network;



accessing said first criteria of rules and comparing information derived from said event vector with said standard, using said first criteria of rules;

outputting from said expert system in in said system, an inference signal in response to said comparison, which characterizes said event;

archiving information derived from said event vector in a second benchmark data set in said system, for subsequent use as said standard;

outputting control signals from a monitor to said network in response to said inference signal to manage and control said first class of traffic.

5,446,875
SYSTEM TO PASS THROUGH RESOURCE INFORMATION

Yukihisa Ogisu, and Kunio Shimizu, both of Numazu, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 568,513, Aug. 16, 1990, abandoned.
This application Jan. 14, 1994, Ser. No. 181,368
Claims priority, application Japan, Aug. 17, 1989, 1-211991; Oct. 13, 1989, 1-265425
Int. Cl.[6] G06F *11/14, 12/16*
U.S. Cl. 395—575 13 Claims

5. A system to pass-through resource information in a computer system having an actual process, a back-up process, and a non-volatile shared memory to which said actual and back-up processes are connected, said actual process having information to be stored in said shared memory and to be passed through to said back-up process, said back-up process being passed the contents of said shared memory and performing an operation as a new actual process after being passed said contents of said non-volatile shared memory when said actual process is not operable, said system comprising:

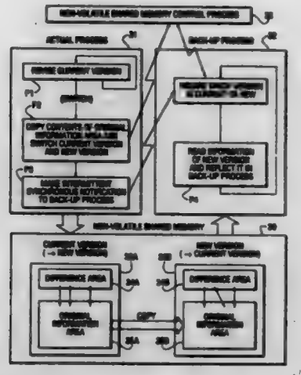
means for enabling an area of the non-volatile shared memory to which the resource information is set, to comprise a dual structure with a current version and a new version;

means for setting original information areas storing the information that is transmitted from the actual process to the back-up process and difference areas storing information related to a change in the original information area in a current version and a new version, respectively;

means for the actual process writing into the current version;

means for the back-up process reading from the new version;

means for enabling the actual process to copy the content of the original information area of the current version to the original information area of the new version and to switch a current version to a new version and a new version to a



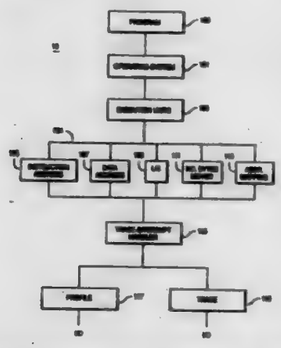
current version after elapse of a preset time period or after a preset volume threshold stored in said difference area is reached; and

means for enabling the actual process to notify the back-up process of the switching between the current version and the new version.

5,446,876
HARDWARE MECHANISM FOR INSTRUCTION/DATA ADDRESS TRACING

Frank E. Levine; Brian C. Twichell, and Edward H. Welbon, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,326
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—184.01 16 Claims



1. A method of recording trace information relating to the execution of instructions on a processor unit, comprising the steps of:

storing instruction information output from at least one execution unit in said processing unit;

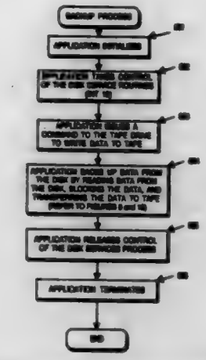
determining from said instruction information whether said instructions access data from a memory subsystem; and

determining from said instruction information, stored in said processor unit, a data address at which said data, operated on by said instructions, was accessed.

5,446,877
METHOD AND APPARATUS FOR OPERATION OF A DATA ARCHIVAL APPARATUS ALLOWING FOR COUPLING OF THE DATA ARCHIVAL DEVICE WITH AN IDE INTERFACE

Faan-Hoan Liu, and Jorge Gustavson, both of Sauta Cruz, Calif., assignors to Nakamichi Peripherals Corporation, Torrance, Calif.

Continuation of Ser. No. 105,478, Aug. 12, 1993, abandoned, which is a continuation of Ser. No. 612,540, Nov. 13, 1990, abandoned. This application Jun. 23, 1994, Ser. No. 265,494
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—180 3 Claims



1. A data archival process for use in a computer system, said computer system having a host computer having an Intelligent Device Electronics (IDE) interface for coupling a first data storage device and a second data storage device, said first data storage device and said second data storage device coupled with said computer system over said IDE interface, said computer system including an address space having a interrupt vector address space, a input/output system address space, and an application address space, said interrupt vector address space including a first pointer to a first disk service routine in said input/output address space, said first pointer addressable at a first address location, said first address location capable of storing one pointer, a method of performing a data archival process comprising the steps of:

(a) said computer system initializing said data archival process to execute on said computer system for archiving data stored on said second device onto said fast device, said data archival process providing for reading data from said second device over said IDE interface and writing data read from said second device to said first device over said IDE interface;

(b) said host computer executing said data archival process reading said first pointer at said first address and storing a value of said first pointer;,

(c) said host computer executing said data archival process storing a second pointer at said first address, said second pointer replacing said first pointer, said second pointer pointing to a second disk service routine, said second disk routine allowing for concurrent operation of said first data storage device and said second data storage device over said IDE interface;

(d) said host computer executing said data archival process archiving data from said second dam storage device, where said second data storage device is a disk drive, to said first data storage device, where said fast data storage device is a tape drive, by repetitively issuing commands to read data from said disk drive and to write data to said tape drive, said host computer implementing said second disk service routine to provide for the repetitive issuance of commands, said host computer accessing said second

disk service routine by accessing said second pointer stored at said first address;
(e) said host computer executing said data archival process writing said stored value of said first pointer to said first address upon completion of said step d in order to restore said computer system's interrupt vector address space to its original state; and
(f) terminating said data archival process.

5,446,878

METHOD FOR SELECTIVELY ENABLING SUBSET OF EMBEDDED EVENT-MAKING INSTRUCTIONS AND SELECTING TYPES AND ITEMS OF EVENT-BASED DATA TO BE COLLECTED PER ENABLED INSTRUCTION

Philip K. Royal, Merrimack, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 52,227, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 485,372, Feb. 26, 1990, abandoned. This application Oct. 20, 1994, Ser. No. 326,815
Int. Cl.[6] G06F *11/30*
U.S. Cl. 395—180 9 Claims
MICROFICHE APPENDIX INCLUDED
(14 Microfiche, 660 Pages)



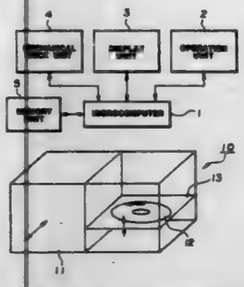
1. A computer implemented process for collecting event-based data for a software application, the process comprising the steps of:
prior to execution of the software application:
(a) embedding event-marking instructions in the software application, each of said event marking instructions having an enabled state in which event-based data is collected, and a disabled state in which event-based data is not collected; and
(b) storing definitions of each of said event-marking instructions that have been embedded in the software application, said definitions identifying the software application in which the corresponding event-marking instructions are embedded, each of said definitions identifying a type superset of possible types of event-based data that may be collected by the corresponding event-marking instructions, each of said types including a corresponding item superset of possible items of event-based data that may be collected for said each type;
after embedding of the event-marking instructions in the software application, and prior to or during execution of the software application:
(c) selecting a subset of event-marking instructions, said subset including one or more but fewer than all of the event-marking instructions already embedded in the software application;
(d) selecting, for each of said selected event-marking instructions in said subset, a type selection of one or more and in some cases fewer than all of said possible types of event-based data to be collected from said type superset in the corresponding definition, and for each of said selected types, an item selection of one or more and in some cases fewer than all of said possible items of event-based data to be collected from said item superset in the corresponding definition;
(e) selecting, for each of said selected event-marking instructions in said subset, a time period for collection of said selected items of event-based data; and
(f) placing each of said selected event-marking instructions in said subset in said enabled state; and
during execution of the software application:
(g) detecting each of said selected event-marking instructions in said enabled subset and collecting each of said selected items of each of said selected types of event-based data specified by said type selection and said item selection, at times falling within said selected time period.

5,446,879

DISC CHANGING APPARATUS WITH ERROR LOGGING

Takeshi Yamamoto, Tokyo; Tamiya Tanaka, Kanagawa; Hirotaka Yamamoto, Kanagawa, and Rikiso Tabe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 916,378, Jul. 21, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 359,002
Claims priority, application Japan, Jul. 27, 1991, 3-210210
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—180 3 Claims



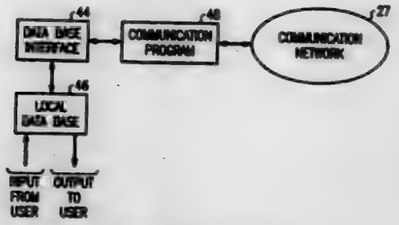
1. An electronic system in which a microcomputer for system control is assembled, comprising:
disc changing means for changing and transferring stacked discs from one of a stacked position or a playing position to other of said stacked position or said playing position, including a plurality of units each for performing a respective plurality of operations and each being controlled by said microcomputer;
input means connected to said microcomputer for inputting a command to said microcomputer;
memory means including non-volatile memory means in communication with said microcomputer such that when an error occurs in an operation of one of said plurality of units controlled by said microcomputer, error information identifying said operation in which said error occurred is written into said non-volatile memory means in response to a control signal from said microcomputer, wherein said non-volatile memory means has n memory addresses and said error information comprises a respective different error code for each of a plurality of possible operations, and error codes are sequentially written into said memory means at each occurrence of an error with memory addresses being sequentially incremented so that a latest n error codes are stored thereinto as history information; and
output means for reading out said history information from said non-volatile memory means in response to a second control signal issued by said microcomputer, including error information at any arbitrary address designated by said microcomputer in response to a service command input through said input means, wherein said output means includes display means connected to said microcomputer for displaying said history information read out from said non-volatile memory means according to said second control signal from said microcomputer.

5,446,880

DATABASE COMMUNICATION SYSTEM THAT PROVIDES AUTOMATIC FORMAT TRANSLATION AND TRANSMISSION OF RECORDS WHEN THE OWNER IDENTIFIED FOR THE RECORD IS CHANGED

Timothy E. Balgeman, Warrenville; Diane M. Ciodi, Oswego; Robert W. Haddleton, Jr., Naperville; John R. North, Geneva, and Judith A. Selby, Wheaton, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 31, 1992, Ser. No. 937,814
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 15 Claims



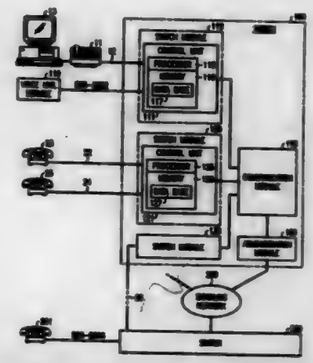
1. A communication system comprising:
first and second nodes coupled to each other;
first and second databases associated with said first and second nodes respectively, each store records, said first database storing said records in a first field format and said second database storing said records in a second field format which is different from said first field format;
means at said first and second nodes for transmitting records having standardized format to and receiving records having standardized format from the other of said first and second nodes, said standardized format being different from said first and second field formats;
means at said first node for automatically translating a received standardized format record into said first field format record for storage in said first database and for automatically translating a first field format record stored in said first database into standardized format record for transmission to said second node;
means for independently identifying an originator and an owner of each record, said translating and transmitting means acting to translate and transmit a first record contained in said first database associated with said first node to said second database associated with said second node based upon entry in said first record of an owner associated with said second database, wherein records in said first database that do not identify an owner are not transmitted to said second database;
said identifying means permitting the identified owner of a duplicate record stored at the second database and corresponding to said first record to be changed thereby changing responsibility for acting on the duplicate record and causing the duplicate record with changed ownership to be automatically transmitted to a database associated with the changed owner.

5,446,881

DATABASE STORAGE AND RETRIEVAL METHOD USING A DECLINING STAGE SIZE AND REPETITIVE SEARCHES

Lewis H. Mammel, Jr., Wheaton, Ill., assignor to AT&T Corp., Murray Hill, N.J.

Filed Sep. 25, 1992, Ser. No. 951,080
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—600 7 Claims



1. A method for retrieving data corresponding to a key in a database, said database having a plurality of data blocks, each of said data blocks including a further key portion and a data portion, said data blocks being in a list, said list being divided into more than two stages, wherein the size of each of said stages, except a first of said stages, comprises fewer data blocks than previous stages said method comprising the steps of:
a. initializing a stage number to said first stage;
b. deriving an offset into a stage based on said key, the size of the stage and the stage number;
c. using said offset as an index into said stage of data blocks to determine an indexed-to data block;
d. retrieving said data if said key is the further key portion of said indexed-to data block; and
if said key is not the further key portion of said indexed-to data block in said stage, incrementing said stage number and repeating steps b–d, wherein there is a geometrically increasing likelihood that said data will be found in each succeeding stage.

5,446,882

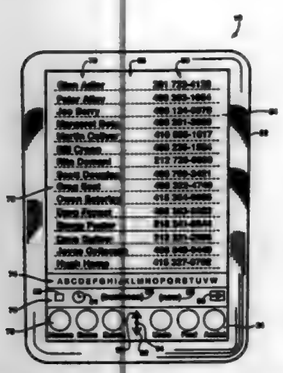
INTERFACE FOR A COMPUTERIZED DATABASE HAVING CARD AND LIST VIEWS

Stephen P. Capps, San Carlos; Benjamin W. Sharpe, San Francisco, and Gregg S. Foster, Woodside, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 2, 1992, Ser. No. 955,839
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 15 Claims

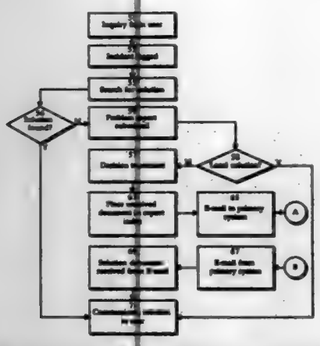
1. A method for managing a computerized database on a pen-based computer, comprising:
(a) providing a plurality of view styles including at least a first view style having a card area displaying information for a plurality of database fields contained in a selected record of said computerized database and a free-form area for displaying unstructured information from said selected record of said computerized database and a second view style having a list area displaying information contained in a plurality of database fields from at least one selected record in said database;
(b) selecting an initial view style from said plurality of view styles using a stylus;
(c) determining an initial filter type from a plurality of filter types;

(d) filtering the records of said database to locate records that satisfy said determined filter type;
(e) displaying said information for said plurality of fields for said records that satisfy said determined filter type in said selected view style on a screen of said pen-based computer system;



(f) detecting a user input indicating a user option selected from the group consisting of a view style, said plurality of filter types and a view style and said plurality of filter types; and
(g) repeating steps d, e, and f in response to said detected user input.

5,446,883
METHOD AND SYSTEM FOR DISTRIBUTED INFORMATION MANAGEMENT AND DOCUMENT RETRIEVAL
Louise Kirkbride, Monte Sereno, and Todd Eisemann, Santa Clara, both of Calif., assignors to Answer Systems, Inc., Sunnyvale, Calif.
Filed Oct. 23, 1992, Ser. No. 965,165
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—600 **13 Claims**



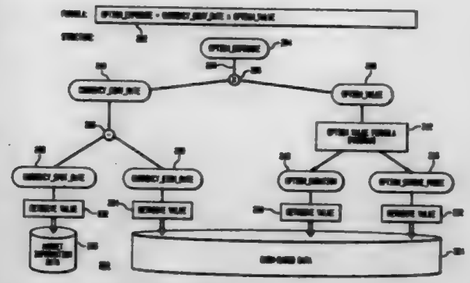
1. A method for retrieving a solution document in response to an inquiry from among a system of distributed data bases, the system having at least a first and a second computer, each computer having a data base of solution documents, the method comprising the steps of:
receiving at least one inquiry into the first computer, the inquiry having a subject;
searching the data base of the first computer for a solution document related to the subject of the inquiry;
responsive to finding at least one solution document in the data base of the first computer related to the subject of the inquiry, retrieving the solution document from the first computer;
responsive to finding no solution document in the data base of the first computer related to the subject of the inquiry, performing the steps of:
generating in the first computer, a document from at least one inquiry in the first computer for which no solution document was found, the document containing for each such inquiry the subject of the inquiry, and an identity of the computer in which the inquiry originated;
transmitting the document to the second computer;
extracting in the second computer any inquiries from the document;
for each extracted inquiry, searching the data base of the second computer for a solution document related to the subject of the inquiry;
responsive to finding at least one solution document in the data base of the second computer, retrieving the solution document from the second computer and exporting the solution document to the computer in which the inquiry originated; and,
responsive to finding no solution document in the data base of the second computer, notifying the computer in which the inquiry originated that no solution document has been found.

5,446,884
DATABASE RECOVERY APPARATUS AND METHOD
Walter Schwendemann, and Peter C. Wang, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 13, 1992, Ser. No. 835,635
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **9 Claims**



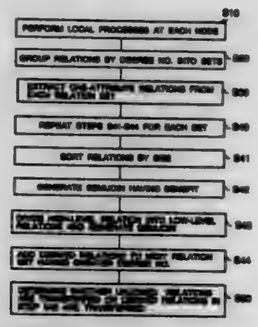
1. A method for recovering a database with one or more records to a previous state at a particular time, comprising the steps of:
(a) archiving one or more changed records in the database since said particular time, said one or more changed records archived in reverse chronological order, wherein said step of archiving one or more changed records further comprises the steps of:
sorting said one or more changed records in said reverse chronological order; and
archiving said sorted one or more changed records onto a tape storage device in said reverse chronological order; and;
(b) recovering the database by applying the one or more changed records archived in said tape storage device in said reverse chronological order so that only the archived changed record occuring nearest in time to said particular time is applied to said database.

5,446,885
EVENT DRIVEN MANAGEMENT INFORMATION SYSTEM WITH RULE-BASED APPLICATIONS STRUCTURE STORED IN A RELATIONAL DATABASE
Allan R. Moore, Herndon; Lori J. Poulos, McLean, and Lynn G. DeFazio, Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 15, 1992, Ser. No. 883,460
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **17 Claims**



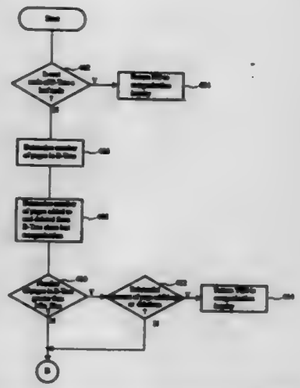
16. A computer-basal method for storing rules utilized by an externally and internally event driven application program for calculating risk and exposure variables for an institution, wherein the rules are stored as objects in a data base, the method comprising the steps of:
(1) converting a risk and exposure rule in the form of a mathematical or a logical formula having variables to a table format, wherein each of said variables in said rule is decomposed into a rule previously converted into said table format, a program for retrieving a primitive data value for each said variable or a program for calculating a value for each said variable; and
(2) storing said table as an object in said data base.

5,446,886
SYSTEM FROM OPTIMIZING QUERY PROCESSING OF MULTI-ATTRIBUTE DISTRIBUTED RELATIONS USING LOCAL RELATION TUPLE NUMBERS TO CHOOSE SEMIJOINS
Heng Li, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 31,207
Claims priority, application Japan, Mar. 12, 1992, 4-088208
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **10 Claims**



1. A distributed database system for a communication network having a plurality of nodes, each of which nodes includes a distributed database, said distributed database system comprising:
local process means for extracting relations from each database of said communication network by performing local processes at each of said nodes of said communication system when a query including multi-attribute relations is input from one of said nodes;
degree setting means for setting a degree number of each of said extracted relations from said local process means based on (A) tuple numbers of single-attribute relations derived from said multi-attribute relations and (B) a tuple number of each of said multi-attribute relations;
relation set means for arranging a plurality of relation sets, each of which relation sets contains relations having the same degree number in ascending order by grouping said extracted relations from said local process means according to the degree number set by said degree setting means, wherein said relation sets include a first relation set containing relations with the lowest degree number;
extraction means for extracting single-attribute relations from each of said relation sets arranged by said relation set means so that said single-attribute relations are added to said first relation set;
semijoin operating means for repeatedly semijoining two relations of a relation set when a quantity of transfer data after said semijoining is detected to be smaller than a quantity of transfer data before said semijoining, and for adding derived relations resulting from said semijoining to a following relation set among the plurality of relation sets arranged by said relation set means; and
control means or allowing said semijoin operating means to sequentially perform said semijoining and said adding for all of the plurality of relation sets arranged by said relation set means, starting from said first relation set and ending at a relation set having the highest degree number, so that each derived relation resulting from said semijoining is added to the transfer data.

5,446,887
OPTIMAL REORGANIZATION OF A B-TREE
Brian T. Berkowitz, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Filed Sep. 17, 1993, Ser. No. 123,322
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **11 Claims**



7. A method in a computer system of determining whether a B-tree should be reorganized, wherein the B-tree comprises a plurality of pages and data is stored in each page of the B-tree, the method comprising the steps of:
determining a time when the B-tree was last reorganized;
determining a total number of key values deleted from the B-tree in a specified time period; and

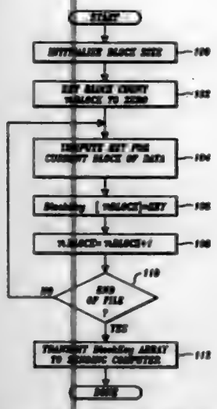
determining that the B-tree should be reorganized when a specified amount of time has passed since the time when the B-tree was last reorganized and said told number of key values that were deleted from the B-tree in the specified time period exceeds a threshold.

5,446,888

REMOTE FILE TRANSFER METHOD AND APPARATUS

Charles F. Pyne, 187 Seekonk St., Norfolk, Mass. 02056

Filed Jan. 14, 1994, Ser. No. 182,969
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—600 8 Claims



1. A method of transmitting data from a source file located at a sending computer to a receiving computer, the computers being connected through a computer data interface, the method comprising the steps of;

(a) dividing the reference file into a plurality of data blocks, each data block having a length of n bytes, and associating each data block with a reference key value determined by the data in that block in accordance with a key defining method; and

(b) identifying blocks of data of length n bytes from the source file, determining source key values in accordance with the key defining method, and using the source and reference key values to compare blocks of data from the reference file with blocks of data from the source file and, in instances where a match is found between a block of data from each file, sending an indication of the match to the receiving computer so that the block of data indicated by the match need not be transmitted to the receiving computer, wherein the blocks of data from the source file are sequentially identified and compared with the blocks of data from the reference file and each source block of data includes some of the data from the preceding source block of data if the preceding source block of data did mot match a reference block of data.

5,446,889

COMPUTER-BASED METHODS FOR DETERMINING THE HEAD OF A LINKED LIST

James Prestifilippo, Chalfont, and Clark C. Kogen, West Chester, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 21, 1994, Ser. No. 278,179
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 10 Claims

1. A computer system comprising:

a processing unit;

a memory connected to the processing unit;

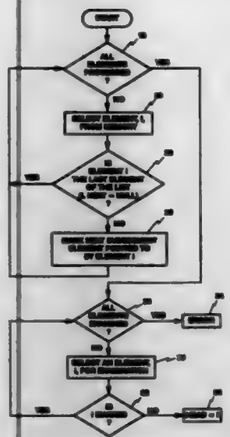
a linked list comprising a plurality of elements each stored at a different location in said memory, each stored element of the linked list comprising information and a pointer that points to a next subsequent stored element in the linked list,

the processing unit being programmed to:

a) retrieve one of the stored elements of the linked list from said memory;

b) identify, from the pointer of said retrieved element, the next subsequent stored element of the linked list;

c) mark said next subsequent stored element;



d) repeat steps (a) through (c) for each other stored element of the list; and thereafter,

e) identify which of said stored elements is not marked, and designate the stored element that is not marked as a head of the linked list,

whereby the processing unit is able to identify the head of the linked list when such information has been lost or is inaccessible.

5,446,890

SYSTEM FOR USING SUBSETS OF RULES APPLIED TO A DATABASE FOR UPDATING AND GENERATING THE RULE KNOWLEDGE BASE AND FORECASTS OF SYSTEM DEMAND

Erland Rensio, Roseville; Elizabeth M. Harker, Newcastle, both of Calif.; Clayton M. Collins, Blountville, Tenn.; Elaine R. Boliere, Auburn, Calif.; Douglas A. Anderson, Roseville, Calif., and Kimberly Gardner, Sacramento, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 128,388, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 800,656, Nov. 27, 1991, abandoned. This application Oct. 25, 1994, Ser. No. 328,934
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 8 Claims

1. A forecasting system for predicting demand for products produced by a manufacturing line, the forecasting system comprising:

a database for storing information related to the volume of orders for products produced by the manufacturing line, wherein there is a plurality of types of products produced by the manufacturing line;

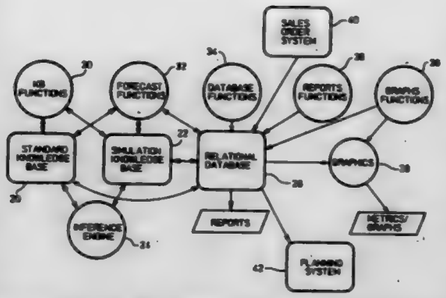
a knowledge base for storing rules relevant to forecasting demand for the products produced by the manufacturing line;

a test knowledge base for storing proposed rules for forecasting demand for the products produced by the manufacturing line; and

a program interface, coupled to the data base, the knowledge base and the test knowledge base, for providing a user interface to the database, the knowledge base and the test knowledge base, the program interface including

generating means, coupled to the data base and the knowledge base, for generating forecasts of the future product demand for the products based on the rules stored in the knowledge base and the information stored in the data base,

displaying means, coupled to the generating means, for displaying the forecasts generating by the generating means,



simulation means for allowing generation of test forecasts using the proposed rules stored in the test knowledge base operating upon the information stored in the database, and

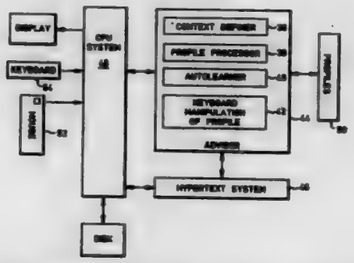
updating means, coupled to the data base and the knowledge base, for updating the database and for updating the rules stored in the knowledge base, wherein updating the rules results in changing the forecasts generated by the generating means.

5,446,891

SYSTEM FOR ADJUSTING HYPERTEXT LINKS WITH WEIGHED USER GOALS AND ACTIVITIES

Craig A. Kaplan, Santa Cruz; James R. Chen, Saratoga; David C. Fallside, San Jose; Justine R. Fenwick, Santa Cruz; Mitchell D. Forcier, Walnut Creek, and Gregory J. Wolff, Mountain View, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 841,965, Feb. 26, 1992, abandoned. This application Nov. 2, 1994, Ser. No. 333,082
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 29 Claims



1. A computer-implemented hypertext system comprising:

display means for displaying images and text;

keyboard means for accepting user commands;

memory means for storing a plurality of data objects including user goal objects and text panel objects organized to form at least one hypertext object;

profile storage means for storing at least one link profile each associated with a specific set of one or more users and containing a plurality of link vectors each containing a plurality of numerical link-weights each representing an associated user activity relationship between two said data objects; and

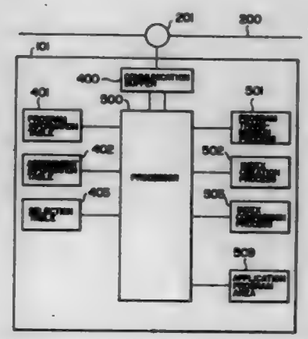
advisor means for creating an ordered list of one or more said data objects responsive to user input activity, said list being ordered in accordance with the relative values of said numerical link-weights representing said user input activity.

5,446,892

METHOD OF AND APPARATUS FOR RE-ALLOCATING PROGRAMS IN A DISTRIBUTED PROGRAMMING SYSTEM

Yasuo Suzuki, Ebina; Kinji Mori, Yokohama; Katsumi Kawano; Masayuki Orimo, both of Kawasaki, and Hiroyuki Ogura, Yokohama, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 409,614, Sep. 15, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 993,657
Claims priority, application Japan, Sep. 19, 1988, 63-232367
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—650 15 Claims



7. A distributed processing system including a plurality of processors connected to each other via a network, the processors including at least two processors each comprising:

means for sending a program module message including a program to all of the processors of the system via the network;

means for receiving a program module message including a program sent from one other one of the at least two processors;

means for creating an assessment index indicative of a status of the processor;

means for sending a candidate message including the assessment index for the processor and a code identifying the processor to all of the processors of the system via the network;

means for receiving a candidate message sent from each of at least one other processor of the at least two processors;

means for comparing the assessment index for the processor with the assessment index included in each candidate message sent from the at least one other processor of the at least two processors;

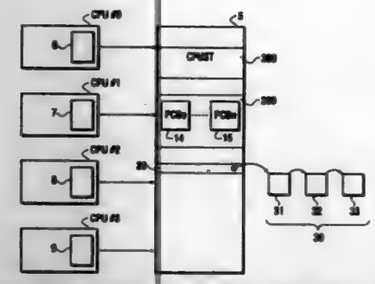
means for determining whether the program included in the program module message sent from the one other one of the at least two processors is to be stored in the processor for execution by the processor based on a result of the comparing performed by the comparing means.

5,446,893

PROCESS DISPATCHING METHOD

Imahi Uehara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 10, 1993, Ser. No. 164,555
Claims priority, application Japan, Dec. 10, 1992, 4-352231
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—650 2 Claims



1. A process dispatching method for a multiprocessor system in which each processor of said multiprocessor system has a cache memory, said process dispatching method comprising:

a first step of reading a priority and a prior processor number of a first process from a process control block of said first process, said prior processor number representing a processor of said multiprocessor system in which said first process was last executed;

a second step of selecting at least one lowest priority process, said selected lowest priority process having a lowest priority among processes being executed by said processors of said multiprocessor system;

a third step of discontinuing said process dispatching method when a priority of said at least one lowest priority process selected in said second step is higher than the priority of said first process;

a fourth step of dispatching said first process to a processor of said multiprocessor system which is executing a lowest priority process when only one process has been selected as said lowest priority process by said second step and when a priority of said lowest priority process is lower than the priority of said first process;

a fifth step of dispatching said first process to the processor indicated by said prior processor number of said first process when said prior processor number of said first process represents a processor executing said at least one lowest priority process selected by said second step; and

a sixth step of dispatching said first process to a processor executing said process dispatching method when said process dispatching method is being executed by a processor of said multiprocessor system as executing a process selected as having said lowest priority by said second step.

5,446,894

METHOD FOR VARYING MULTI-TASKING TIME SLICE TO MAINTAIN SYSTEM FRAME OPERATING TIME CLOSE TO DESIRED TIME UPON VIDEO FRAME REFRESH TIME

Lawrence E. DeMar, Chicago, and Paul G. Dussault, Barrington, both of Ill., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

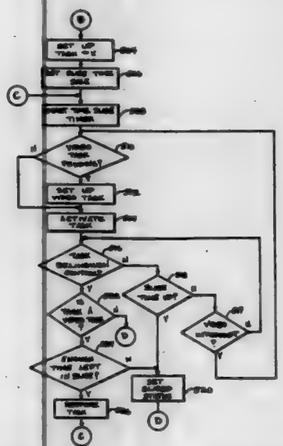
Continuation of Ser. No. 962,492, Nov. 23, 1992, abandoned, which is a continuation of Ser. No. 724,793, Jul. 2, 1991, Pat. No. 5,255,185, which is a division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354. This application Jan. 5, 1994, Ser. No. 177,610
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—650 5 Claims

1. A method of operating a processing system under control of a multi-tasking time slice operating system to provide continuous processing of multiple tasks using a variable time slice time size, the processing system providing for real-time operation of a video display, the display operation defining a video frame refresh time, comprising the steps of:

a. determining a desired system frame operating time dependent upon said video frame refresh time;

b. preselecting an initial time slice time size;

c. operating a system frame by sequentially enabling each of the multiple tasks to perform processing functions during the system frameup to a maximum time allotted for each task being defined by the time slice time size, wherein each of said task could take less or up to said maximum allotted time to perform its function;



d. determining an elapsed system frame operating time for performing said multi-tasks, wherein said elapsed system frame operating time is variable;

e. resetting the time slice time size as by increasing the time size if the determined elapsed system frame operating time is less than the desired system frame operating time, or by decreasing the time size if the determined elapsed system frame operating time is greater than the desired system frame operating time; and

f. continually repeating steps c–e so that the time slice time size is varied as necessary to maintain the elapsed system frame operating time close to the desired system frame operating time.

5,446,895

MEASUREMENT ANALYSIS SOFTWARE SYSTEM AND METHOD

Leonard R. White, and Caroline K. White, both of 178 Foxhunt La., East Amherst, N.Y. 14051

Continuation of Ser. No. 808,020, Dec. 13, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 220,939
Int. Cl.[6] G06F *15/21, 15/401*
U.S. Cl. 395—650 13 Claims

1. A measurement analysis software system directed by computer hardware for analyzing efficiency and effectiveness of software development and maintenance processes by integration of measurement, metric and attribute data including separate data repositories for measurement, metric and attribute data at project and application levels wherein a project level is the management level responsible for managing individual new development or major enhancements to a software application, and wherein application level is the management level responsible for managing maintenance activities as well as new development or major enhancement projects for one or more applications, comprising:

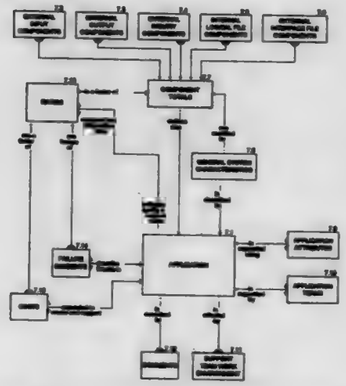
a) means for updating function point counts, wherein a function point is a metric that describes a unit of work product suitable for quantifying application software, from a project related to an application;

b) means for automatically calculating the sum of an application's related project updated function point counts;

c) means for entering summary application information such as application cost and failure incident information;

d) means for automatically calculating quality and support ratios for said application from summary application information such as cost and failure incident information;

e) means for tracking data relating to said application such as work teams, team environment and characteristics of said application;



f) means for component explosion allowing for entry of multiple data components with one entry;

g) means for moving data or information from a related project level to an application level and means for storing said data or information once moved into the application level; and

h) means for an option to include or exclude a project or application from analysis and reporting so that adjustment applications or projects entered to mend previous data entry errors made during work on the other applications or projects can be excluded from analysis and reporting results of complete applications and projects that were recorded.

5,446,896

METHOD AND APPARATUS FOR INTER-PROGRAM COMMUNICATION

Paul Hegarty, Fremont, and Trey Matteson, Palo Alto, both of Calif., assignors to Next, Inc., Redwood City, Calif.

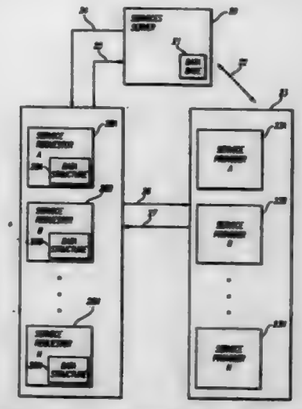
Continuation of Ser. No. 629,222, Dec. 17, 1990, abandoned. This application Nov. 14, 1994, Ser. No. 339,649
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—680 38 Claims

32. An apparatus for supervising message passing in a computer system comprising;

supervisory function having a first and second communication line for sending and receiving messages;

requestor function coupled to said supervisory function via said first communication line, said requestor function sending messages to and receiving messages from said supervisory function via said first communication line;

provider function coupled to said supervisory function via said second communication line, said provider function sending messages to and receiving messages from said supervisory function via said second communication line;



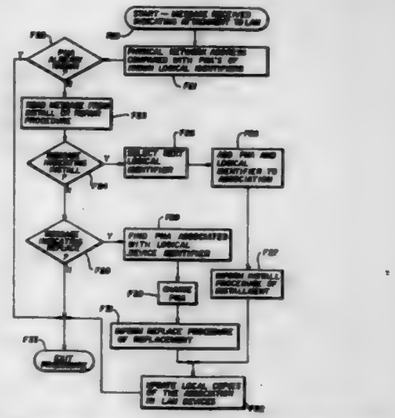
said supervisory function supervising messages between said requestor and provider functions.

5,446,897

AUTOMATED ADDRESS DISCOVERY METHOD AND APPARATUS FOR LOCAL AREA NETWORKS

Thomas R. Mathias, Vestal; Richard J. Plasutis, Endicott, and Judith A. Wierbowski, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 575,579
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—700 12 Claims



1. In a local area network comprised of a plurality of intelligent devices and a central administrator, wherein each intelligent device has a physical network address stored therein, a method comprising the steps of,

transmitting the physical network address of a device from the device to the central administrater, receiving the physical network address of the device at the central administrator,

associating the physical network address of the device with a logical identifier at the central administrator, transmitting the logical identifier back to the device, and

maintaining a compilation of associations between physical network addresses and logical identifiers for intelligent

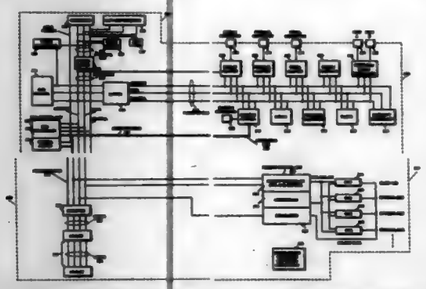
devices of the local area network at the central administrator.

5,446,898

METHOD AND APPARATUS FOR CONFIGURING AND INSTALLING A LOADABLE ABIOS DEVICE SUPPORT LAYER IN A COMPUTER SYSTEM

Richard Bealkowski, and Mary M. Bolt, both of Delray Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,134
Int. Cl.[6] G06F *9/44, 9/445*
U.S. Cl. 395—700 **9 Claims**



1. A personal computer system for making use of a logical memory space containing plural regions, each region containing multiple logical address locations; said regions including at least a low region having discrete lower and upper address boundary limits, a high region having a lower address boundary limit, and an intermediate region located between said low and high regions; said intermediate region being traditionally used for storing firmware information for controlling said system; said firmware information including separate first and second portions of operating system microcode; said first portion being required by said system for completing a preliminary initialization enabling said system to handle application programs incapable of addressing said high region; said second portion being conditionally used by said system, after completion of said preliminary initialization, for enabling said system to handle application programs capable of addressing any of said regions; said personal computer system comprising:

a data bus;

a microprocessor electrically coupled to said data bus; said microprocessor operating in different first and second modes; said first mode restricting said microprocessor to address only said low and intermediate regions, and said second mode permitting said microprocessor to address any of said regions;

non-volatile memory electrically coupled to the data bus, said non-volatile memory being accessible to said microprocessor via said data bus;

said non-volatile memory storing said first portion of operating system microcode,

said non-volatile memory storing request information indicating whether said system does or does not support loading into said computer system of a said second portion of operating system microcode from storage media not normally contained in said system; said request information being used only when the configuration of said system is initially established or altered to prompt a user of said system to provide access to said second portion of microcode on said storage media not normally contained in said system;

volatile memory electrically coupled to the data bus, said volatile memory being accessible to said microprocessor via said data bus; said volatile memory being used to store linking information enabling said system to retrieve said second portion of operating system microcode while running under control of said first portion of operating system microcode;

a memory controller electrically coupled to said data bus, said microprocessor, said volatile memory and said non-volatile memory, said memory controller regulating communications between said volatile memory, said non-volatile memory and said microprocessor; said memory controller translating logical addresses into physical addresses of storage locations in said volatile and non-volatile memories; and,

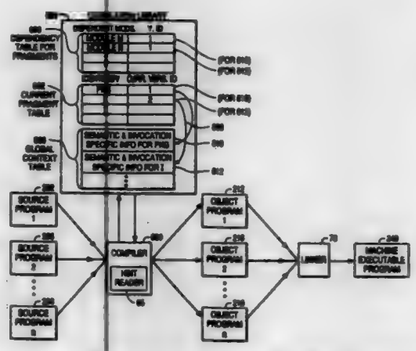
a direct access storage device electrically coupled to said data bus, said direct access storage device storing an image of said second portion of operating system microcode when said second portion of operating system microcode has been obtained from said media not contained in said system based upon said request information.

5,446,899

HINT GENERATION IN SMART RECOMPILATION

Bevin R. Brett, Merrimack, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 26, 1992, Ser. No. 906,212
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—700 **17 Claims**



1. In a computer system including a memory, a method of compiling source programs, the method comprising the steps of:

compiling a first program to produce a first compiled program and a first set of post-code generation information characterizing the first compiled program;

compiling a second program to produce a second compiled program using the first set of postcode generation information to minimize differences between the first and second compiled program;

determining differences between the first and second compiled programs; and

compiling a third program dependent upon the differences between the first and second compiled programs.

5,446,900

METHOD AND APPARATUS FOR STATEMENT LEVEL DEBUGGING OF A COMPUTER PROGRAM

Paul Kimelman, Walnut Creek, Calif., assignor to Microtec Research, Inc., Santa Clara, Calif.

Filed Jul. 24, 1992, Ser. No. 920,093
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—700 **20 Claims**

1. In an interactive debugging system monitoring a first computer program executing on a computer system, a computer mediated method for suspending said first computer program executing on said computer system at a statement in said first computer program comprising the steps of:

a) executing a compiler on said computer system, said compiler controlling said computer system to perform the steps of:

1) loading a source file comprising said first computer program from a data storage device coupled to said computer system to a main memory of said computer system;

2) compiling said source file on said computer system;

3) generating in said main memory an object module from said source file, said object module having machine code instructions corresponding to said first computer program, each of said machine code instructions having:

i) a machine code address,

ii) a line number of a line in said source file, and

iii) a column reference of a statement on said line in said source file, said column reference comprising one or more column numbers of said statement; and,

4) storing said object module on said data storage device;

b) executing said interactive debugging system comprising a second computer program on said computer system, said interactive debugging system controlling said computer system to perform the steps of:

1) loading said object module from said data storage device to said main memory;

2) extracting from said object module said machine code address, said line number and said column reference of a statement for each of said machine code instructions;

3) constructing therefrom a line table in main memory associating said line number, said column reference and said machine code address for each of said machine code instructions;

4) displaying said source file on a display device coupled to said computer system;

5) selecting a first statement in said source file at which execution of said machine code instructions is to be suspended;

6) obtaining from said line table a first machine code address corresponding to said first statement;

7) executing said machine code instructions corresponding to said first computer program; and,

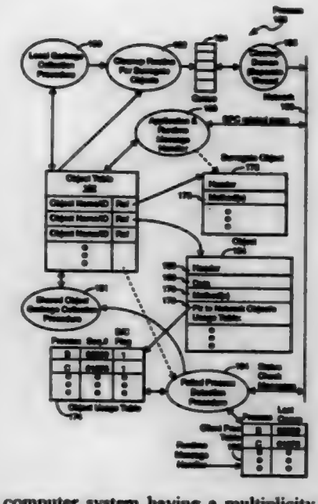
8) suspending execution of said machine code instructions at said first machine code address.

5,446,901

FAULT TOLERANT DISTRIBUTED GARBAGE COLLECTION SYSTEM AND METHOD FOR COLLECTING NETWORK OBJECTS

Susan S. Owicki, Palo Alto; Andrew D. Birrell, Los Altos; Charles G. Nelson, Palo Alto, and Edward P. Wobber, Menlo Park, all of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1993, Ser. No. 85,407
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—700 **9 Claims**



1. In a computer system having a multiplicity of concurrently active processes, a method of operating the distributed computer system comprising the steps of:

storing objects in at least one computer memory, each object being owned by one of said multiplicity of processes;

for each of a plurality of said objects, distributing handles for accessing said each object to processes other than the process that owns said each object;

each process further performing the steps of:

upon receiving a handle to an object owned by any other process, sending a first message to the other process that owns said object, wherein said first message identifies said object and the process which received said handle;

upon releasing a handle to an object owned by any other process, sending a second message to the process that owns said object, wherein said second message identifies said object and the process which released said handle;

receiving ones of said first message for objects owned by said each process and storing object usage data indicating which other processes have a handle to each object owned by said each process;

receiving ones of said second message for objects owned by said each process and deleting corresponding portions of said object usage data;

sending status request messages to said other processes that said stored object usage data indicates have handles to objects owned by said each process to determine if any of said other processes have terminated, and deleting portions of said object usage data corresponding to those of said other processes determined to have terminated; and

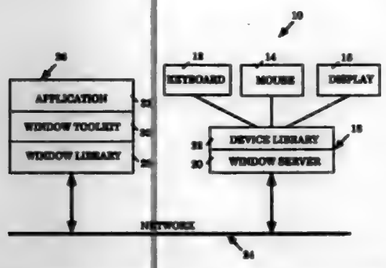
garbage collecting objects owned by said each process for which said usage data indicates that no process has a handle.

5,446,902

METHOD FOR IMPLEMENTING COMPUTER APPLICATIONS IN AN OBJECT ORIENTED MANNER USING A TRADITIONAL NON-OBJECT ORIENTED PROGRAMMING LANGUAGE

Nayeem Islam, Mountain View, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 515,427, Apr. 27, 1990, abandoned.
This application Jul. 14, 1993, Ser. No. 91,536
Int. Cl.[6] G06F 7/00
U.S. Cl. 395—700 7 Claims



1. In a computer system comprising a C programming language compiler and its runtime libraries, wherein said compiler and its runtime libraries are used to create applications having a number of object creators and users which create and use objects, a method for creating and using an object by an object creator and at least one object user in a manner that relieves the object creator from actually having to implement the object, and shielding the object's implementation from the object creator and the at least one object user, said method comprising the steps of:

a) providing an object oriented toolkit comprising a static class hierarchy having a least one root class, said root class having a plurality of public interface methods for interfacing between a plurality of program calls and a plurality of private class methods, said program calls being made by object creators and users for creating objects using said class hierarchy and manipulating the created objects, said private class methods being methods of classes subclass to said root class for creating and manipulating class instances of said classes and having a corresponding relationship to said public interface methods, said root class further having at least one list for correspondingly chaining said private class methods to said public interface methods by their class orders, said at least one list being automatically updated whenever one of said classes subclass is defined and added to said static class hierarchy, each of said public interface methods invoking at least its correspondingly chained private class methods in a predetermined one of two orders whenever itself is invoked by one of said program calls;

b) creating a first class subclass to said root class by compiling at least a first source file having a first and a second header file into at least a first object file, and linking at least said first object file into a first executable file,

said first and additional source files, if any, comprising a first data structure and a first plurality of functions, said first data structure defining class data common to all class instances of said first class including a first class identifier identifying said first class, and first parent identifier identifying said root class as said first class's superclass, said first plurality of functions implementing the private class methods of said first class, each of said first plurality of functions being executed when the private class method of said first class it implements is invoked,

said first header file comprising a second data structure defining class instance data for a class instance of said first class including an opaque handler for locating and shielding the class instance of said first class, each of said opaque handlers of class instances of said first class being instantiated and returned by a first of said first plurality of functions for creating a class instance of said first class when said first function of said first class is executed,

said second header file comprising a third data structure defining a first plurality of interfacing attributes of said first class and a first plurality of function declarations defining said first plurality of functions, said first plurality of interfacing attributes being correspond to and shielding said class instances' data of said first class;

c) creating the object creator by compiling at least a second source file having at least said second header file into at least a second object file, and linking at least said second object file into a second executable file, said second source file comprising a first of said program calls to a first of said public interface methods to create the object as a first class instance of said first class using said first parent identifier, said first class identifier, and selectively said first plurality of interfacing attributes, and to obtain a first opaque handler for said created first class instance;

d) executing the object creator by executing said second executable file, causing said first program call to be made, which in turns leads to said first public interface method and its correspondingly chained private interface method of said first class to be invoked said first executable file and said first function of said first class to be executed, said first class instance to be created, said first opaque handler to be instantiated and returned, thereby creating the object without requiring the object creator to actually implement the object and shielding the implementation of the object from the object creator.

7. The method as set forth in claim 1, wherein,

said computer system further comprises an event notifier/-distributor subsystem;

said application is an event driven application;

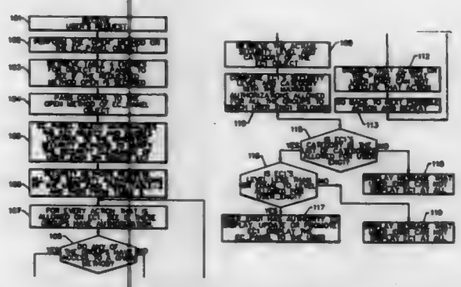
said first plurality of interface attributes comprise a functional interface attribute for associating an event handling procedure with a class instance of said first class.

5,446,903

METHOD AND APPARATUS FOR CONTROLLING ACCESS TO DATA ELEMENTS IN A DATA PROCESSING SYSTEM BASED ON STATUS OF AN INDUSTRIAL PROCESS BY MAPPING USER'S SECURITY CATEGORIES AND INDUSTRIAL PROCESS STEPS

Robert L. Abraham, Marietta; Herman Mitchell, Lithonia; Badari N. Panaganti, Mableton, and Laura A. Stowers, Smyrna, all of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1993, Ser. No. 57,527
Int. Cl.[6] G06F 12/14
U.S. Cl. 395—728 22 Claims



1. A method for controlling security of data elements which represent an industrial process and which are manipulated by a plurality of users on a data processing system, said industrial process comprising a plurality of industrial process steps, said data security method comprising the steps of:

assigning predetermined groups of said plurality of users to access predetermined groups of said data elements at predetermined ones of said industrial process steps;

accepting a request from a user to access a data element; and

preventing the access requesting user from accessing the requested data element if the access requesting user is not a member of one of said predetermined groups of said users which has been assigned access to a predetermined group of data elements which includes the requested data element or if the industrial process is not at an industrial process step corresponding to said predetermined ones of said industrial process steps;

wherein said assigning step comprises the steps of:

providing a first table executing on said data processing system, which maps said predetermined groups of users to corresponding security categories;

providing a second table executing on said data processing system, which maps said plurality of industrial process steps to at least one old security category and to a corresponding at least one new security category; and

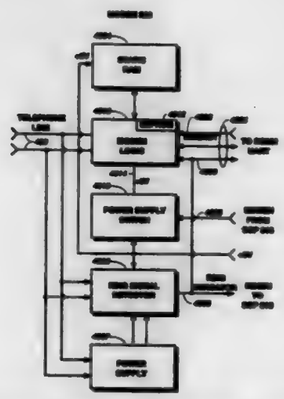
in response to operator input, entering into said first and second tables user groups, industrial process steps and corresponding old and new security categories.

5,446,904

SUSPEND/RESUME CAPABILITY FOR A PROTECTED MODE MICROPROCESSOR

Steven L. Belt, Stevensville, and Scott A. Hovey, St. Joseph, both of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Division of Ser. No. 752,342, Aug. 30, 1991, which is a continuation-in-part of Ser. No. 705,039, May 17, 1991, abandoned. This application Jun. 4, 1992, Ser. No. 894,511
Int. Cl.[6] G06F 1/00
U.S. Cl. 395—750 9 Claims



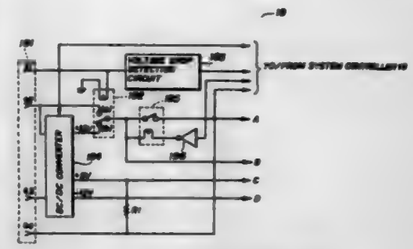
1. An apparatus comprising: a processor having a modem power control output and a modem configuration output, and a modem operable in normal and reduced power modes when said modem power control output is respectively actuated and deactuated, said modem having memory means for storing first and second sets of configuration information simultaneously, and said modem having means responsive to actuation of said modem power control output for configuring said modem using respectively said first set of configuration information and said second set of configuration information when said configuration output is respectively actuated and deactuated.

5,446,905

DATA PROCESSING APPARATUS HAVING IMPROVED POWER SUPPLY SYSTEM

Takaho Koshiishi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 598,151, Oct. 16, 1990, abandoned.
This application Jan. 11, 1993, Ser. No. 3,855
Claims priority, application Japan, Oct. 18, 1989, 1-269138
Int. Cl.[6] G06F 1/26
U.S. Cl. 395—750 13 Claims



1. A data processing apparatus comprising:

a data processing means for processing data;

a power supply connector for detachably attaching a power supply to said data processing means and having a plurality of inputs therein;

an image recording means coupled to said data processing means for printing information on a printed medium;

an original power supply means detachably connectable to said power supply connector and wherein said original power supply means provides power from sources selected from among, a commercial power source adapter outputting a direct current voltage which is generated from a commercial power source, a battery unit, and an automobile power source which is coupled to a connection device adapted to be coupled to an automobile power source;

a direct-current/direct-current (DC/DC) converter means, coupled to said power supply connector for generating direct-current power supply voltages from a selected original power supply voltage supplied from a selected original power supply device via said power supply connector;

power supply switching means, coupled to the power supply connector in said DC/DC converter means for switching between supplying a power supply from the original power supply voltage in said direct-current power supply voltages to said data processing means when one of said commercial power source adapter or said battery unit is supplying power to said power supply connector and supplying only said direct-current power supply voltage generated by said DC/DC converter means to said data processing means when said connection device coupled to said automobile power supply is supplying power to said power supply connector;

voltage drop detection circuit means coupled to said power supply connector for automatically detecting and providing a signal indicative of the type of power supply being connected to said power supply connector based upon a voltage supplied and upon which inputs said power supply is connected to;

mode switching means coupled to said image recording means such that said image recording means has a first recording mode in which an image is recorded on said printed medium at a first recording speed when said voltage drop detection means detects that a commercial power source adapter is supplying voltage to said power supply connector and a second power saving mode in which an image is recorded on said printed medium at a second recording speed when one of said battery unit or said connection device coupled to said automobile power

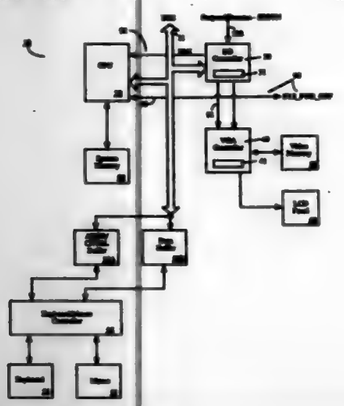
source is supplying voltage to said power supply connector and wherein said first recording speed is faster than said second recording speed and further wherein both recording modes operate on the same printed medium but at different power levels per unit time.

5,446,906

METHOD AND APPARATUS FOR SUSPENDING AND RESUMING A KEYBOARD CONTROLLER

James P. Kardach, San Jose, Calif.; Jayesh M. Joshi, Boca Raton, Fla.; Patrick M. Bland, Del Ray Beach, Fla., and Grant L. Clarke, Jr., Boca Raton, Fla., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,647
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750 15 Claims



1. In a computer system having a processor and at least one memory, an improvement for conserving power comprising:

an input device coupled to the processor to input data and command selections to the processor;

a controller coupled the input device to prevent command selections from being received by the processor from the input device until at least one predetermined input is received from the input device when the computer system is in a security mode;

wherein, when in the security mode, the controller is responsive to the processor only for commands to save and restore state information of the input device, wherein the controller saves the state information of the input device in said at least one memory to allow power to the input device to be removed when the computer system enters a reduced power consumption state and restores the state information of the input device from said at least one memory after power to the input device has been restored when exiting the reduced power consumption state to ensure that the computer system returns to the security mode upon exiting the reduced power consumption state.

5,446,907

Patent Not Issued For This Number

5,446,908

METHOD AND APPARATUS FOR PRE-PROCESSING INPUTS TO PARALLEL ARCHITECTURE COMPUTERS

Aram K. Kevorkian, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

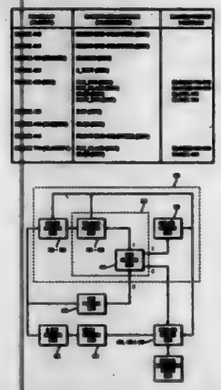
Filed Oct. 21, 1992, Ser. No. 964,594
Int. Cl.[6] G06F *15/347, 15/32*
U.S. Cl. 395—800 17 Claims

9. In the field of parallel architecture computers comprising a front-end computer and a suite of at least two sub-processors, said subprocessors for solving a first problem in a class of problems in linear algebra, said class of problems having input data in a form Mx=b, where M is a given sparse symmetric matrix having n rows and n columns, b is a given column vector having n elements, and x is an unknown column vector having n elements;

a pre-processor for decomposing said first problem into a suite of sub-problems and for allocating said subproblems to said sub-processors,

said pre-processor comprising a hard-wired logic circuit embodying an arithmetic Boolean function having an input for receiving an information-theoretic equivalent of said sparse symmetric matrix,

said information theoretic equivalent comprising a matrix



str(M) defining a sparsity structure of said sparse symmetric matrix,

wherein said arithmetic Boolean function has an output comprising a permutation $\P=(\pi_1\pi_2, ..., \pi_n)$ of positive integers (1,2, .., n) and is defined by a graph-theoretic solution of a combinatorial problem formed by associating an undirected graph G=(V,E) of vertices V and edges E with said sparsity structure of said symmetric matrix M, and

wherein regions of perfect parallelism in said undirected graph G are identified by a set S of vertices wherein interior cliques in said undirected graph G are connected components of an induced subgraph G(V-S).

5,446,909

BINARY MULTIPLICATION IMPLEMENTED BY EXISTING HARDWARE WITH MINOR MODIFICATIONS TO SEQUENTIALLY DESIGNATE BITS OF THE OPERAND

Gideon Intrater, Ramat-Gan; Ohad Falik, Petach-Tivka; Aharon Ostrer, Hertzelia; Yair Baydatch, Ramat-Hasaron, and Gadi Erlich, Kfar-Haim, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 11, 1992, Ser. No. 989,219
Int. Cl.[6] G06F *7/50, 7/52*
U.S. Cl. 395—800 6 Claims

1. A binary multiplier in a central processing unit (CPU) for integers that accepts two n-bit operands to provide an n-bit product after completion of n operational steps, comprising:

an adder for adding two n-bit integer operands to produce a partial product, wherein the bits range from a least significant bit (LSB) to a most significant bit (MSB);

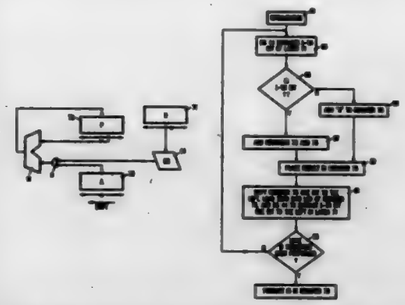
designating means which for each of the n-operational steps designates a bit from the n-bits of one of said operands, and including a barrel shifter which operates as part of the CPU for multiplication as well as non-multiplication operations;

first storing means for storing said partial product;

second storing means for storing the other one of said operands and which, in each of the n-operational steps, shifts such operand one bit to the left while loading a "0" in the LSB and discarding the MSB;

said adder having inputs coupled to outputs of said first storing means and said second storing means; and

control means for carrying out each of said n operational steps by actuating the designating means to shift said bit



designation from the LSB to MSB in a one bit increment, and to add the partial product to contents of said second storing means if the designated bit has a predetermined value;

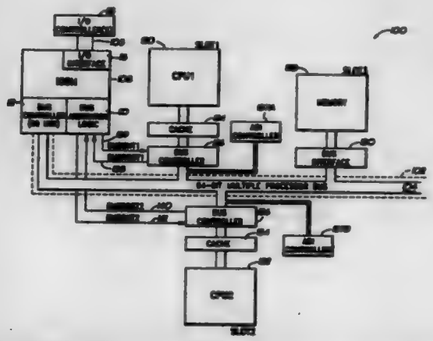
wherein said adder, said first storing means and said second storing means handle only n bits for each of said n operational steps.

5,446,910

INTERRUPT CONTROLLER WITH AUTOMATIC DISTRIBUTION OF INTERRUPTS FOR A MULTIPLE PROCESSOR COMPUTER SYSTEM

Barry Keanedy, Santa Ana, and Thomas W. Masters, Anaheim, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 721,693, Jun. 26, 1991, abandoned.
This application Aug. 24, 1993, Ser. No. 111,281
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800 6 Claims



1. An automatic interrupt handling system for use in a multiprocessor computer, said interrupt handling system comprising:

a multiple processor backplane bus;

an input/output interface;

a plurality of input/output devices coupled to said input-/output interface;

a system interrupt controller coupled to said multiprocessor backplane bus and coupled to said input/output interface, said system interrupt controller accepting interrupts for central processing units coupled to said multiple processor backplane bus, said system interrupt controller responsive to said interrupts to signal an interrupt request on said multiple processor backplane bus;

at least two central processing units installed in said computer on said backplane bus, wherein said central processing units accept at least one interrupt;

a memory module coupled to said backplane bus having a bus interface which interfaces said memory module with said multiple processor backplane bus such that said memory module is accessible by each of said at least two central processing units;

at least two local interrupt controllers coupled to said system interrupt controller via said multiple processor backplane bus, a first one of said at least two local interrupt controllers associated with and coupled to a first one of said at least two central processing units, and a second one of said at least two local interrupt controllers associated with and coupled to a second one of said at least two central processing units, said local interrupt controllers comprising an interrupt assigned mask for the associated central processing units, said interrupt assigned mask comprising logic circuitry responsive to said interrupt requests signalled from said system interrupt controller to determine if a signalled interrupt request is a selected interrupt which is enabled for one of said central processing units associated with a selected one of the local interrupt controllers such that the selected one of said local interrupt controllers accepts the selected interrupt and generates a local interrupt for its associated central processing unit, said local interrupt controllers further comprising an interrupt register, wherein said selected one of said local interrupt controllers accepts the selected interrupt and stores an indicator of the interrupt in its interrupt register, the local interrupt controllers further comprising an interrupt response line, said local interrupt controllers acknowledging interrupts to the system interrupt controller for the associated central processing unit; and

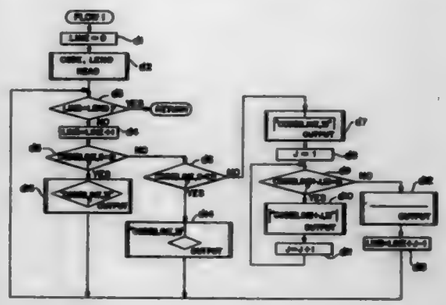
inter-processor interrupt control logic which provides the capability for central processing units in the computer to interrupt, or transfer an interrupt to, other central processing units in the computer.

5,446,911

APPARATUS FOR AUTOMATICALLY PREPARING A FLOWCHART BY ANALYZING A SOURCE PROGRAM AND A LIST OF JUMP COMMANDS

Hiromi Juso, Gose, and Takeshi Tanaka, Higashihiroshima, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 614,454, Nov. 16, 1990, abandoned.
This application Dec. 10, 1993, Ser. No. 164,761
Claims priority, application Japan, Nov. 16, 1989, 1-299012
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—800 5 Claims



1. An apparatus for automatically preparing a flowchart of a

source program having more than two different command types, the apparatus comprising:

source program storage means for storing lines of the source program;

jump command storage means for previously storing as a group a list consisting of jump commands used in an assembler language for the source program;

identification data producing means, coupled to said source program storage means and said jump command storage means, for judging whether or not a jump command is included in a line of the source program by comparing the lines of the source program with the jump commands stored in the jump command storage means and for producing and respectively grouping first and second identification data in accordance with the judging result,

said first identification data respectively being designated for each command of the source program to uniquely identify command type and to identify if execution contents of other commands immediately preceding and following a particular command along a command sequence of the source program are to be executed sequentially,

said first identification data including:

first data indicative of the command type, having label, jump command, return command and other command types,

second data indicative that a corresponding line of the source program is a continuation line or a first command in a block, and

third data descriptive of a command or label,

said second identification data respectively being designated for each jump command to identify which address of a command is to be jumped to;

identification data storage means, coupled to said identification data producing means, for storing said first and second identification data as respective groups;

analysis means, coupled to said identification data storage means, for analyzing a value of said first identification data stored in said identification data storage means to generate a plurality of drawing elements of the flowchart and for analyzing a value of said second identification data stored in said identification data storage means to generate at least a drawing line connecting one of the plurality of drawing elements to another of the plurality of drawing elements; and

output means, coupled to said analysis means, for outputting the plurality of drawing elements and at least the drawing line of the flowchart of the source program.

5,446,912

PARTIAL WIDTH STALLS WITHIN REGISTER ALIAS TABLE

Robert P. Colwell, Portland, and Andrew F. Glew, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 129,867, Sep. 30, 1993. This application Dec. 29, 1993, Ser. No. 174,841

Int. Cl.[6] G06F *15/78*

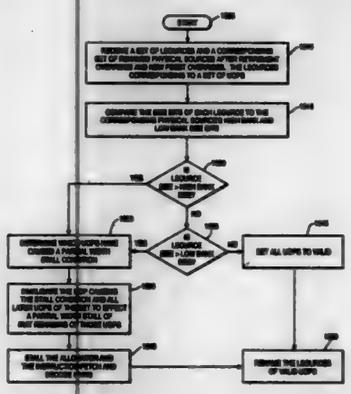
U.S. Cl. 395—800 **34 Claims**

1. In a mechanism for renaming a current set of logical registers associated with a current set of operations to a current set of physical registers of an extended register set, an apparatus for processing size mismatches, said apparatus comprising:

array means for renaming said current set of logical registers to said current set of physical registers, wherein said logical registers and said physical registers have partial widths, wherein said logical registers have logical register sizes and said physical registers have physical register sizes;

size comparison means, coupled to said array means, for comparing said logical register sizes to said physical register sizes; and

partial width stall means, coupled to said size comparison means and said array means, for stalling said array means when a first logical register is of larger size than a corresponding physical register to which said first logical register is renamed.



5,446,913

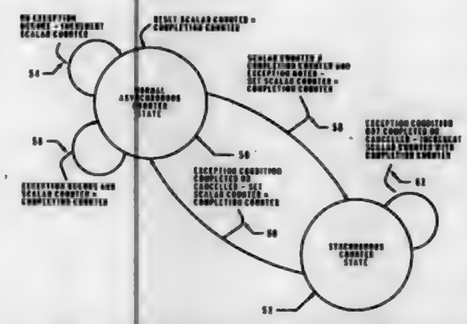
METHOD AND SYSTEM FOR NONSEQUENTIAL EXECUTION OF INTERMIXED SCALAR AND VECTOR INSTRUCTIONS IN A DATA PROCESSING SYSTEM UTILIZING A FINISH INSTRUCTION ARRAY

Norman C. Chou, Poughkeepsie; Edward J. D'Avignon, Kingston; James C. Gregerson, Hyde Park; James R. Robinson, Clinton Corners; Michael S. Siegel, Hyde Park, all of N.Y.; Michael A. Smolcic, Middletown, Conn., and Albert J. Van Norstrand, Jr., Red Hook, N.Y., assignors to International Business Machines Corporation

Filed Dec. 16, 1992, Ser. No. 991,665

Int. Cl.[6] G06F *9/26, 9/30, 9/38*

U.S. Cl. 395—800 **6 Claims**



1. A method for enhanced processing efficiency in a data processing system which includes multiple scalar processors and at least one vector processor and which processes an ordered sequence of intermixed scalar and vector instructions in a nonsequential order, said method comprising the steps of:

coupling said ordered sequence of intermixed scalar and vector instructions to said multiple scalar processors and said at least one vector processor for processing therein;

storing an indication of each instruction which is finished processing and an indication of each occurrence of an exception during processing of an instruction within a finish instruction array;

initiating a first vector instruction within said at least one vector processor only in response to an indication within said finish instruction array that each scalar instruction which precedes said first vector instruction within said ordered sequence is finished processing;

generating a vector advance signal in response to an initiation of each vector instruction within said at least one vector processor; and

initiating a subsequent vector instruction within said at least one vector processor only in response to an occurrence of said vector advance signal and an indication within said finish instruction array that each scalar instruction which precedes said subsequent vector instruction within said ordered sequence of intermixed scalar and vector instructions is finished processing and no exception has occurred during processing of any scalar instruction which precedes said subsequent vector instruction within said ordered sequence of intermixed scalar and vector instructions wherein chained processing of vector instructions is accomplished.

5,446,914

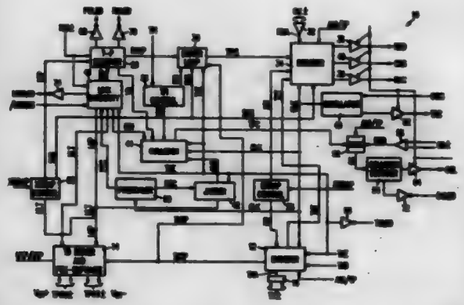
TWISTED PAIR AND ATTACHMENT UNIT INTERFACE (AUI) CODING AND TRANSCEIVING CIRCUIT WITH FULL DUPLEX, TESTING, AND ISOLATION MODES

Prasun K. Paul, Santa Clara, and Edwin De Souza, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Del.

Filed Dec. 22, 1992, Ser. No. 995,598

Int. Cl.[6] G06F *7/02, 9/02, 11/16, 15/20*

U.S. Cl. 395—800 **20 Claims**



1. A twisted pair and attachment unit interface (AUI) coding and transceiving circuit for connecting an external controller to either a twisted pair network or a coaxial network, the circuit comprising:

an encoder that encodes data received from the external controller to form output encoded data in response to an enable signal;

an AUI driver that transmits the output encoded data as a pair of output complementary AUI signals when a select signal is asserted;

a twisted pair driver that transmits the output encoded data as a pair of output complementary twisted pair signals and a pair of output delayed complementary twisted pair signals when the select signal is deasserted;

a twisted pair receiver that receives a pair of input complementary twisted pair signals from the twisted pair network, and forms input twisted pair encoded data in response thereto;

an AUI receiver that receives a pair of input complementary AUI signals from the coaxial network, and forms input AUI encoded data in response thereto;

a decoder that generates a received data signal and a recovered clock signal by decoding either the input twisted pair encoded data or the input AUI encoded data in response to the select signal, and that generates a carrier sense signal when the twisted pair receiver receives valid twisted pair signals from the twisted pair network;

a collision circuit that identifies a simultaneous transmission by the twisted pair driver and reception by the twisted pair receiver, and generates a collision signal in response thereto;

a traffic ignore circuit that disables the collision circuit in response a first external command,

wherein the coding and transceiving circuit provides full duplex operation by disabling the collision circuit.

5,446,915

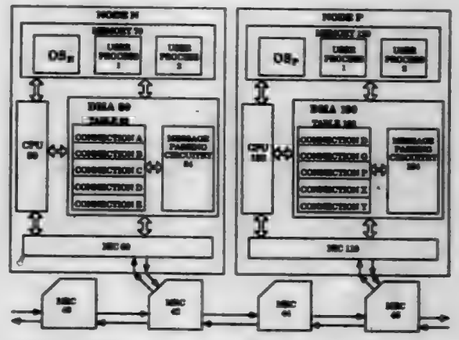
PARALLEL PROCESSING SYSTEM VIRTUAL CONNECTION METHOD AND APPARATUS WITH PROTECTION AND FLOW CONTROL

Paul R. Pierce, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 25, 1993, Ser. No. 66,579

Int. Cl.[6] G06F *9/38, 9/445, 13/14, 15/16*

U.S. Cl. 395—800 **6 Claims**



1. In a parallel processing system including a first processor node including a first operating system, a first user process, and message passing circuitry, a second processor node including a second operating system, and second message passing circuitry, and routing means coupled to said first message passing circuitry and said second message passing circuitry, a method for providing and utilizing a virtual connection between said second processor node and said first processor node, said method comprising the steps of:

said first and second operating systems establishing in said first processor node a first connection table including a first connection entry comprising a first data structure;

said first and second operating systems establishing in said second processor node a second connection table including a second connection entry comprising a second data structure;

wherein said first connection entry defines a first end of said virtual connection and said second connection entry defines a second end of said virtual connection;

wherein the following steps are accomplished without accessing said first and second operating systems:

said first user process coupling a first signal to said first message passing circuitry;

said first message passing circuit responsive to said first signal utilizing said first data structure to couple a flow control message to said routing means;

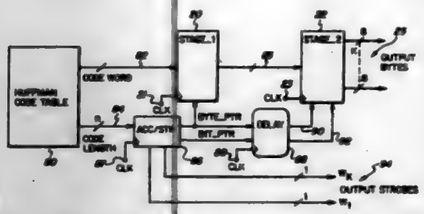
said routing means responsively coupling said flow control message to said second message routing circuitry in said second processor node;

said second message routing circuitry responsive to said flow control message, utilizing said second data structure to couple a data message to said routing means;

said routing means responsively coupling said data message to said first message passing circuitry;

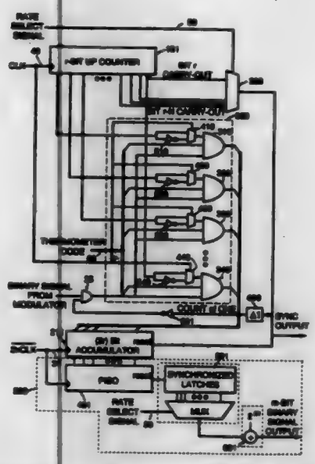
said first message passing circuit responsively coupling said data message to said first user process.

5,446,916
VARIABLE LENGTH CODEWORD PACKER
Henry Derovanessian, La Jolla, and Vincent Liu, San Gabriel, both of Calif., assignors to GI Corporation, Hatboro, Pa.
Filed Mar. 24, 1993, Ser. No. 31,011
Int. Cl.[6] H03M *7/40*
U.S. Cl. 395—800 9 Claims



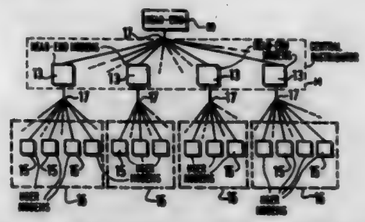
1. A variable length codeword packer for use in communicating codeword data in successive m-bit bytes comprising:
means for accumulating a binary sum indicative of a total number of codeword bits received over time;
means for deriving a byte pointer from at least one most significant bit of said binary sum;
means for deriving a bit pointer from a plurality of least significant bits of said binary sum;
a first data storage array having a plurality of m-bit first storage bytes and responsive to said byte pointer for storing full variable length codewords among designated ones of said first storage bytes;
a second data storage array having a plurality of m-bit second storage bytes and responsive to said byte and bit pointers for filling said second storage bytes with codeword data from said first data storage array;
clock means for:
clocking said codeword data into said first data storage array one codeword at a time.
inputting said byte, pointer to said first data storage array when a corresponding codeword is clocked therein,
clocking said codeword data from said first data storage array into said second data, storage array one codeword at a time, and
inputting said byte and bit pointers to said second data storage array when a corresponding codeword is clocked therein; and
means for outputting an m-bit byte of codeword data from each filled second storage byte to provide successive m-bit bytes of codeword data; wherein:
incoming variable length codewords are successively stored in said first data storage array, each codeword commencing at the beginning of a particular first storage byte identified by said byte pointer based on the binary sum of preceding codeword bit lengths, and
each of the variable length codewords stored in said first data storage array is transferred to said second data storage array commencing at a location within a second storage byte identified by said byte pointer and bit pointer based on the binary sum of preceding codeword bit lengths.

5,446,917
PROGRAMMABLE LENGTH DECIMATION FILTER AS FOR SIGMA-DELTA MODULATORS
Joseph E. Kriesinger, Clifton Park, N.Y.; Steven L. Garverick, University Heights, Ohio, and Donald T. McGrath, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 3, 1993, Ser. No. 25,456
Int. Cl.[6] G06F *15/31*
U.S. Cl. 395—800 17 Claims



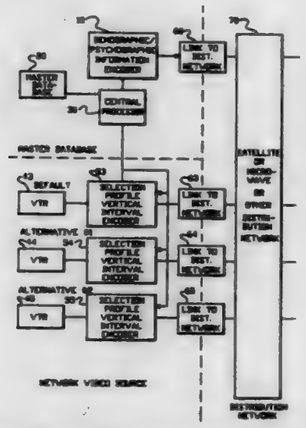
1. A programmable length decimation filter responsive to an externally derived single bit stream of quantized electrical signals arriving from a one bit sigma-delta modulator at a predetermined rate, said filter comprising:
an r bit binary counter, being adapted to respond to a first plurality of externally derived clock pulses corresponding to the predetermined rate, said counter including a plurality of output ports each being adapted to provide a separate counter output signal;
a resolution filter comprising r logical AND gates, each of said AND gates having a first, a second, and a third input port and one output port, the input and output ports of said AND gates constituting the input and output ports of said resolution filter, respectively, the first input port of each AND gate being adapted to respond to the resolution select signal, the second input port of each AND gate being coupled to a separate counter output port, the third input port of each AND gate being adapted to respond to the single bit stream from said one-bit modulator; and
a 2r bit binary accumulator, adapted to respond to the resolution filter output signals, including a plurality of input ports and an output port, separate ones of said accumulator input ports being coupled to separate ones of said resolution filter output ports, respectively, said accumulator being adapted to respond to a second plurality of externally derived clock pulses corresponding to twice the rate of the first plurality of externally derived clock pulses;
wherein said second input port of each of said filter gates is coupled to an output port of a separate two-to-one digital multiplexer having two input ports, and a control signal port, said two multiplexer input ports being coupled to one of said separate counter output ports, and each said separate multiplexer being adapted to respond to the first plurality of externally derived clock pulses; and
a signal inverter coupling one of said two multiplexer input ports to said one counter output port.

5,446,918
CABLE NETWORK AND MODULATOR-DEMONDULATOR ARRANGEMENT FOR SUCH A NETWORK
Bernard Lamy, Palaiseau, France, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 772,895, Oct. 4, 1991, abandoned. This application Nov. 29, 1993, Ser. No. 160,319
Claims priority, application France, Oct. 5, 1990, 90 12305
Int. Cl.[6] H04H *1/02;* H04B *1/50*
U.S. Cl. 455—5.1 9 Claims



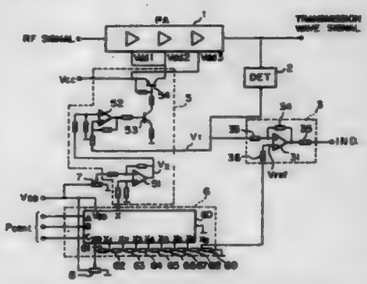
1. A modulator-demodulator arrangement for an interactive communications network which receives at a first frequency and transmits at a second frequency, said modulator-demodulator arrangement being coupled to a transmitter-receiver comprising a heterodyne reception section using an intermediate frequency, wherein the value of said second frequency is equal to $(FR-FI*I_1)/I_2$, where FR is the value of said first frequency, FI is the value of said intermediate frequency, I_1 is a first integer and I_2 is a second integer.

5,446,919
COMMUNICATION SYSTEM AND METHOD WITH DEMOGRAPHICALLY OR PSYCHOGRAPHICALLY DEFINED AUDIENCES
Jeff K. Wilkins, P.O. Box 4223, Stanford, Calif. 94309
Continuation-in-part of Ser. No. 482,286, Feb. 20, 1990, abandoned. This application Oct. 9, 1991, Ser. No. 773,520
Int. Cl.[6] H04H *1/02*
U.S. Cl. 455—6.2 28 Claims



1. A system for selective transmission of a message to subscribers of a cable television service, comprising:
a cable network,
a head end transmitting system connected to said cable network,
a plurality of cable decoders, one for each of the subscribers, connected to said cable network,
means at said head end transmitting system for storing demographic/psychographic information about the subscribers and transmitting the demographic/psychographic information for each subscriber to the one of said plurality of cable decoders for that subscriber, free of input by the subscribers,
means at each one of said plurality of cable decoders for storing the demographic/psychographic information for each subscriber,
means at said head end transmitting system for transmitting a demographic/psychographic profile for desired recipients of the message and for transmitting the message,
means at each one of said plurality of cable decoders for comparing the demographic/psychographic profile with the demographic/psychographic information stored at that one of said plurality of cable decoders and for enabling that one of said plurality of cable decoders to provide the message to that one of the subscribers corresponding to that one of said plurality of cable decoders when the transmitted demographic/psychographic profile matches the stored demographic/psychographic information.

5,446,920
VARIABLE TRANSMISSION POWER TYPE TRANSMITTER
Yoshihiro Matsumoto, Kawasaki, and Yoshifumi Toda, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 950,770, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 495,983, Mar. 20, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 213,831
Claims priority, application Japan, Mar. 20, 1989, 1-67875
Int. Cl.[6] H04B *1/04*
U.S. Cl. 455—126 3 Claims



1. A variable transmission power type transmitter, comprising:
transmission amplifier means for receiving an RF signal at an input side and for outputting a transmission wave signal having a variable transmission power at an output side;
detection means, operatively connected to the output side of said transmission amplifier means, for producing a detected voltage corresponding to the variable transmission power of the transmission wave signal output from said transmission amplifier means;
power selection means for selecting one of a plurality of power level settings as a selected power level setting and for producing a reference voltage based on one of the plurality of power level settings;
power control means, operatively connected to said detecting means, said power selection means and said transmission amplifier means, for receiving the detected voltage from said detection means and for automatic control of the variable transmission power of said transmission amplifier means based on a difference between the detected voltage and the selected power level setting; and
transmission interruption detection means, operatively connected to said detection means and said power selection means, for comparing the reference voltage to the detected voltage to produce a comparison signal and for

detecting absence of the transmission wave signal at the output side of said transmission amplifier means based on the comparison signal,

said power selection means producing the plurality of power level settings,

the plurality of power level settings including a minimum power level setting and a maximum power level setting,

said power selection means dividing the minimum power level setting to produce the reference voltage, the plurality of power level settings being voltage levels, and

the reference voltage being automatically adjusted in conjunction with adjustment of the minimum power level setting.

5,446,921

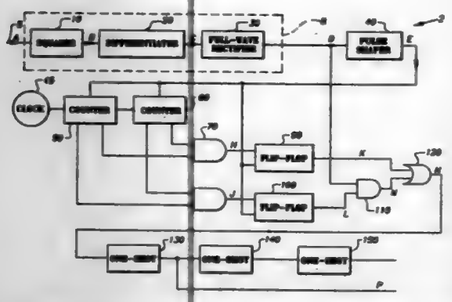
CIRCUIT FOR DETECTING NOISE AND PRODUCING A SQUELCH SIGNAL

Ulrich J. Tobler, Exton, Pa., assignor to General Electric Company, Malvern, Pa.

Continuation of Ser. No. 826,783, Oct. 25, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 104,239

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—221 **20 Claims**



1. An apparatus for detecting noise and generating squelch signals, comprising:

(a) means for receiving an analog signal;

(b) means for generating a plurality of zero-pulses corresponding to zero transitions of said analog signal;

(c) means for generating an error pulse when an interval between any one of said zero-pulses and a next succeeding one of said zero-pulses either (i) exceeds a preselected long window interval or (ii) is less than a preselected short window interval; and

(d) means for generating, in response to said error pulse, a squelch signal,

wherein said means for generating an error pulse when a period of time between successive ones of said zero-pulses exceeds a preselected long window interval comprises:

means for establishing a time delay equal to said preselected long window interval, said establishing means being reset by each one of said zero-pulses.

5,446,922

METHOD AND APPARATUS FOR SWITCHED DIVERSITY RECEPTION OF A RADIO SIGNAL

Kazimierz Siwiak, Coral Springs; Robert J. Schwendeman, Pompano Beach, and Robert L. Breeden, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 993,761

Int. Cl.[6] H04B *7/08*

U.S. Cl. 455—277.2 **8 Claims**

1. A method of diversity reception of a radio signal in a data communication receiver comprising first and second antenna feeds having substantially de-correlated sensitivities to the radio signal, the radio signal comprising data including at least one information batch having a predetermined batch duration and prefixed by a predetermined bit pattern, the method comprising the steps of:

(a) selecting between the first antenna feed and the second antenna feed as a transitory source of the radio signal during transmission of the predetermined bit pattern;

(b) monitoring the radio signal received from the transitory source selected in step (a) during the transmission of the predetermined bit pattern to derive the data therefrom;

(c) determining at least one bit error count for the data derived in step (b);

(d) selecting between the first and second antenna feeds to be a continuing source of the radio signal at a completion of the predetermined bit pattern in response to the at least one bit error count determined in step (c);

(e) measuring a first signal strength of the radio signal from the first antenna feed during transmission of a first portion of the predetermined bit pattern;

(f) measuring a second signal strength of the radio signal from the second antenna feed during transmission of a second portion of the predetermined bit pattern;

(g) determining that a signal strength conflict exists in response to the first signal strength being greater than the second signal strength, the second antenna feed having been selected in step (d) as the continuing source, and also in response to the second signal strength being greater than the first signal strength, the first antenna feed having been selected in step (d) as the continuing source;

(h) determining that no signal strength conflict exists in response to the first signal strength being greater than the second signal strength, the first antenna feed having been selected in step (d) as the continuing source, and also in response to the second signal strength being greater than the first signal strength, the second antenna feed having been selected in step (d) as the continuing source;

(i) maintaining the selection of the continuing source selected in step (d) throughout the predetermined batch duration, it having been determined in step (g) that a signal strength conflict exists; and

(j) periodically re-selecting the continuing source throughout the predetermined batch duration in response to signal strength measurements determined for the first and second antenna feeds, it having been determined in step (h) that no signal strength conflict exists.

5,446,923

MIXER USING FUNDAMENTAL FREQUENCY OR SECOND OR THIRD HARMONIC FREQUENCIES OF A LOCAL OSCILLATOR FOR MAXIMIZED RESULTANT FREQUENCY MIXER PRODUCT

Glen D. Martinson, Oakville, Canada, and Marian M. Buria, Conyers, Ga., assignors to B.E.L.-Tronics Limited, Mississauga, Canada

Filed Mar. 3, 1994, Ser. No. 205,169

Int. Cl.[6] H04B *1/28*; G01S *7/36, 7/285*

U.S. Cl. 455—330 **12 Claims**

1. A mixer circuit for converting input signals from a first signal source at a frequency of f_{IN}, where said mixer circuit

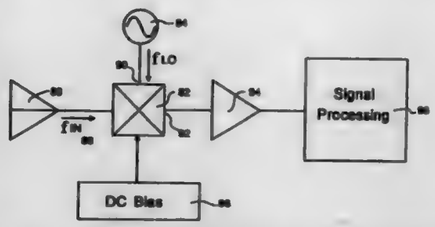
comprises a mixing element, together with a local oscillator having fundamental frequency f_{LO}, means for conducting input signals to an input signal port of said mixing element, means for conducting a signal from said local oscillator to a local oscillator signal port of said mixing element, and means for conducting a maximized resultant frequency signal away from an output port of said mixing element;

wherein said mixer circuit further comprises a DC bias source for imposing a DC component of bias voltage across said mixing element, where said DC component of bias voltage has a level that can be adjusted;

wherein the magnitude of said resultant frequency signal may be maximized by selection of a DC bias so as to minimize conversion loss in said mixing element at any one of the resultant frequencies selected from the group of frequencies consisting of $|f_{IN}\pm f_{LO}|$, $|f_{IN}\pm 2f_{LO}|$ and $|f_{IN}\pm 3f_{LO}|$;

wherein said mixing element is a two-terminal device having a substantially symmetrical non-linear forward and reverse voltage/current characteristic;

wherein said DC bias source further comprises means to adjust the level of the DC component of bias voltage across said mixing element to a first zero DC component of bias voltage across said mixing element, a second DC component of bias voltage across said mixing element, and a third DC component of bias voltage across said mixing element, and wherein the level of said second DC component of bias voltage across said mixing element is higher than the level of said third DC component of bias voltage across said mixing element;



wherein said mixing element has a pair of conduction threshold voltages which are substantially symmetrical above and below zero volts, beyond which said mixing element will be conductive at least when a signal from said local oscillator is imposed on said mixing element;

wherein the signal from said local oscillator has a substantially sinusoidal voltage waveform with a peak-to-peak voltage which is greater than the voltage difference between said pair of conduction threshold voltages;

wherein, when said first zero DC component of bias voltage is imposed across said mixing element, the voltage across said mixing element is centred about zero volts and passes through each of said conduction threshold voltages in a respective symmetrical positive-going and negative-going sense;

wherein, when said second DC component of bias voltage is imposed across said mixing element, the voltage across said mixing element is shifted by the amount of said second DC component of bias voltage with respect to zero volts in the same sense as said bias voltage is directed so as to be above or below zero volts for a first substantial portion of each cycle thereof, and below or above zero volts for only a second small portion of each cycle, wherein the magnitude of the value of voltage across said mixing element during said first portion exceeds said threshold voltage in the same sense as said voltage shift for about 40% to 60% of the period of said cycle so that said mixing element is conductive in its respective direction during said 40% to 60% of the period of said cycle, and wherein the magnitude of the value of voltage across said mixing element during said second small portion is less than said threshold voltage in the opposite sense as said voltage shift so that said mixing element is not conductive at any time during said second smaller portion; and

wherein, when said third DC component of bias voltage is imposed across said mixing element, the voltage across said mixing element is shifted by the amount of said third DC component of bias voltage with respect to zero volts in the same sense as said bias voltage is directed so as to be above or below zero volts for a first portion of each cycle thereof, and below or above zero volts for a second portion of each cycle, wherein the magnitude of the value of voltage across said mixing element during said first portion exceeds said threshold voltage in the same sense as said voltage shift for about 35% to 55% of the period of said cycle so that said mixing element is conductive in its respective direction during said 35% to 55% of said cycle, and wherein the magnitude of the value of voltage across said mixing element during said second portion exceeds said threshold voltage in the opposite sense as said voltage shift so that said mixing element is conductive in the opposite direction for a third period of time during said second portion;

whereby, said mixing element has an idealized reflection coefficient waveform having a fundamental frequency which is twice the fundamental frequency of said local oscillator when said first zero DC component of bias voltage is imposed across said mixing element, so as to give said maximized resultant frequency $|f_{IN}\pm 2f_{LO}|$; and said idealized reflection coefficient waveform has a fundamental frequency which is equal to said fundamental frequency of said local oscillator when said second DC component of bias voltage is imposed across said mixing element, so as to give said maximized resultant frequency $|f_{IN}\pm f_{LO}|$; and said idealized reflection coefficient waveform has a large amplitude component that is at a frequency that is three times the fundamental frequency of said local oscillator when said third DC component of bias voltage is imposed across said mixing element, so as to give said maximized resultant frequency $|f_{IN}\pm 3f_{LO}|$.

5,446,924

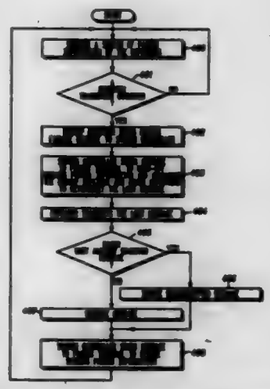
METHOD FOR ASSURING DATA INTEGRITY DURING A REPEATER TRANSITION

Paul R. Christian, Crystal Lake, and Scott G. Chapman, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 55,332

Int. Cl.[6] H04B *3/36*

U.S. Cl. 455—8 **12 Claims**



1. In a paging system that includes a paging terminal, a system controller, and a plurality of repeaters distributed throughout a coverage area, wherein at least two repeaters of

the plurality of repeaters are located at a given site, and wherein one of the at least two repeaters functions as an active repeater while another repeater of the at least two repeaters functions as a backup repeater for information transmission in an event that the active repeater experiences operational failure, a method for assuring data integrity during a transition of information transmission from the active repeater to the backup repeater, the method comprising the steps of:

a) storing, by each of the plurality of repeaters, a stream of paging information for a predetermined period of time, wherein the paging information includes a control word that identifies at least one paging message;

b) determining in response to detection of the transition by the backup repeater associated with the active repeater experiencing operational failure, the at least one paging message that was not transmitted during the repeater transition based on most recently stored control word;

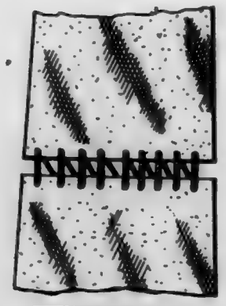
c) transmitting, by the backup repeater associated with the transition, a paging failure message to the system controller, wherein the paging failure message indicates that the at least one paging message was not transmitted; and

d) commanding, by the system controller, at least the backup repeater associated with the repeater transition to retransmit the at least one paging message that was not transmitted.

DESIGNS

AUGUST 29, 1995

361,650
NECKWEAR
Michael Barnes, 92 Chatteris Avenue, Harold Hill, Romford, Essex RM3 8LB, England
Filed Aug. 4, 1993, Ser. No. 11,406
Claims priority, application United Kingdom, Feb. 6, 1993, 2029147; Feb. 16, 1993, 2029149; Feb. 16, 1993, 2029150; Feb. 16, 1993, 2029151; Feb. 16, 1993, 2029154; Feb. 16, 1993, 2029155
Term of patent 14 years
U.S. Cl. D2—608



361,651
REFLECTIVE BELT
Norman F. Jacob, 129 N. 9th Ave., Highland Park, N.J. 08904
Filed Jun. 15, 1994, Ser. No. 24,499
Term of patent 14 years
U.S. Cl. D2—627



361,652
SHIRT
Masahiro Yoshida, I-63, 4-Chome, Nagayoshi-Kawanabe, Hirano-Ku, Osaka, Japan
Filed Jun. 6, 1994, Ser. No. 23,984
Term of patent 14 years
U.S. Cl. D2—844



361,653
SHOE UPPER
David J. Schenone, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 12, 1994, Ser. No. 32,257
Term of patent 14 years
U.S. Cl. D2—969



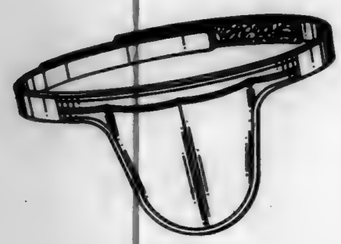
361,654
COMBINED UMBRELLA AND BODY ATTACHABLE UMBRELLA SUPPORT
Angelo L. Petracco, 446 Hamilton South, Sciota, Pa. 18354
Filed Feb. 14, 1994, Ser. No. 18,660
Term of patent 14 years
U.S. Cl. D3—5



361,655
COMBINED CRUTCH AND LIGHT
Lester T. Lanceford, R.R. 2 Box 106, Hampton, Tenn. 37658
Filed Apr. 28, 1994, Ser. No. 21,859
Term of patent 14 years
U.S. Cl. D3—8



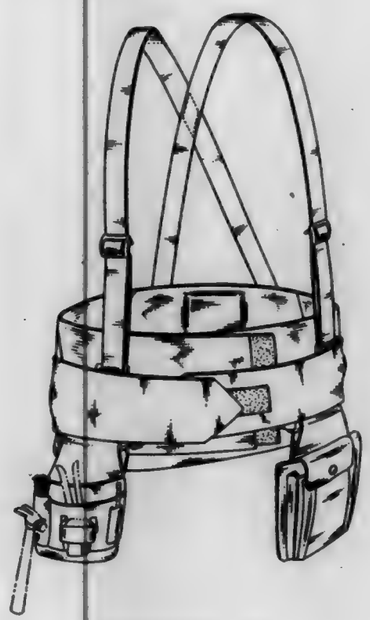
361,656
HAND GUN HOLSTER
Thomas C. Fogarty, Jr., P.O. Box 2238, Satellite Beach, Fla. 32937
Filed Sep. 27, 1993, Ser. No. 13,509
Term of patent 14 years
U.S. Cl. D3—222



361,657
TEST TOOL HOLSTER
Carl J. Ledbetter, Lynnwood; Roger L. Howell, Seattle, and Alden J. Carlson, Snohomish, all of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Jul. 13, 1993, Ser. No. 10,631
Term of patent 14 years
U.S. Cl. D3—228



361,658
COMBINED HARNESS AND TOOL BELT
Susan A. Martin, Lake Dallas, Tex., assignor to U.S. Action Concepts, Inc., Dallas, Tex.
Filed Nov. 4, 1993, Ser. No. 15,059
Term of patent 14 years
U.S. Cl. D3—228



361,659
TACKLE BOX
W. Henry Kahl, Wooster, and John Koenig, Columbus, both of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Jun. 28, 1993, Ser. No. 10,018
Term of patent 14 years
U.S. Cl. D3—260

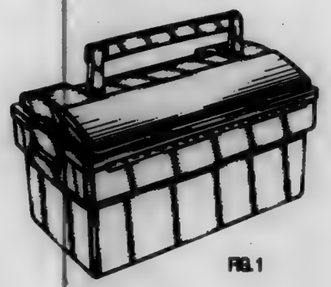
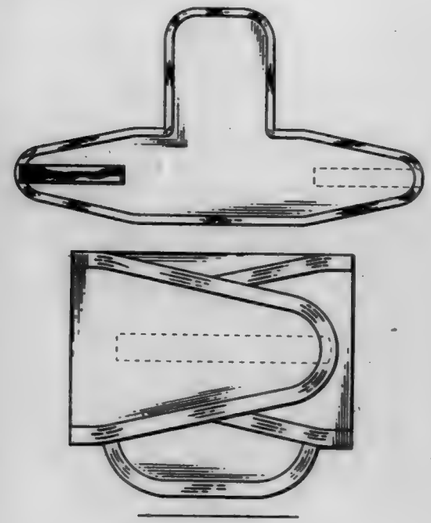
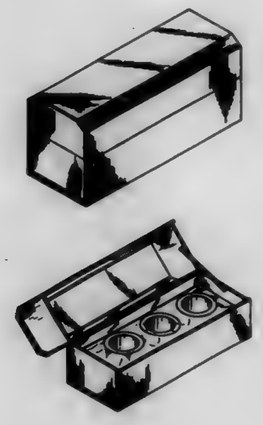


FIG. 1

361,660
WRAP FOR GOGGLES
Robert L. Booth, and Minnie S. Booth, both of 122 Fer Don Rd., Dayton, Ohio 45405
Filed Aug. 31, 1993, Ser. No. 12,397
Term of patent 14 years
U.S. Cl. D3—265



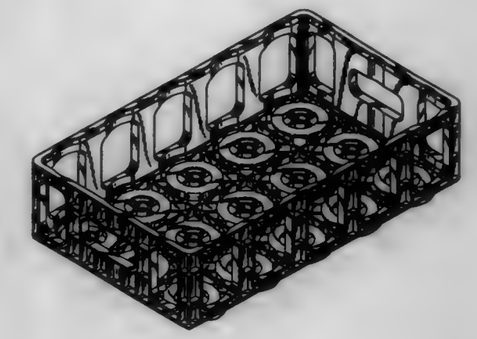
361,661
STORAGE BOX FOR COSMETICS
Izanu Masuda, Fukuoka, Japan, assignor to Nihonkenkozoshin-kenkyukai Co., Ltd., Fukuoka, Japan
Filed Oct. 5, 1993, Ser. No. 13,890
Term of patent 14 years
U.S. Cl. D3—273



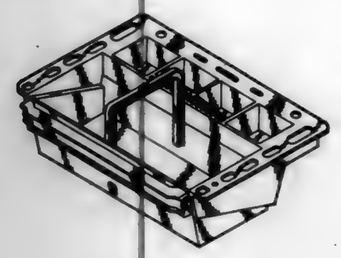
361,662
SATCHEL
William L. King, and Terry Oltrogge, both of Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Feb. 8, 1994, Ser. No. 18,502
Term of patent 14 years
U.S. Cl. D3—276



361,663
STACKABLE CRATE FOR BOTTLES
Jonathan A. Kalin, Manhattan Beach, Calif., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Filed Nov. 22, 1993, Ser. No. 15,618
Term of patent 14 years
U.S. Cl. D3—314



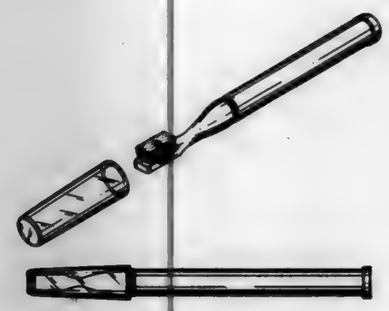
361,664
LADDER CADDY
Harry L. Brown, 2224 Beach St., Virginia Beach, Va. 23451, assignor to Harry L. Brown and Lyle L. Tatroe, both of Virginia Beach, Va.
Continuation-in-part of Ser. No. 839,495, Feb. 20, 1992, abandoned, and a continuation-in-part of Ser. No. 777,105, Oct. 16, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 16,752
Term of patent 14 years
U.S. Cl. D3—315



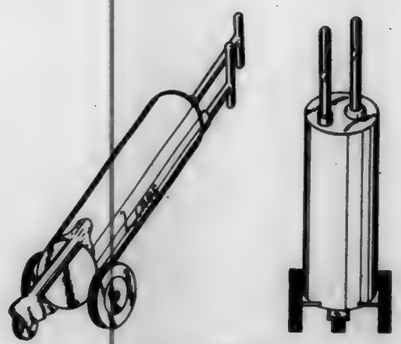
361,665
HINGE CONNECTOR FOR A SHOULDER STRAP
Hiroaki Izumi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Oct. 26, 1993, Ser. No. 14,594
Claims priority, application Japan, Apr. 26, 1993, 5-12381
Term of patent 14 years
U.S. Cl. D3—318



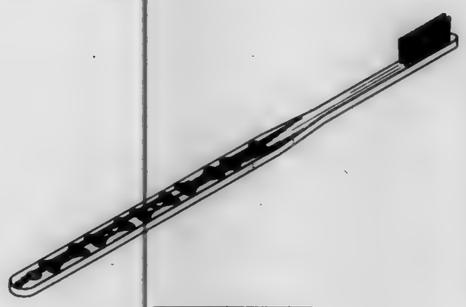
361,666
COMBINED DISPOSABLE TOOTHBRUSH AND CAP
Patsy Keane, 1563 Solano Ave., #255, Berkley, Calif. 94707
Filed Feb. 3, 1994, Ser. No. 18,289
Term of patent 14 years
U.S. Cl. D4—108



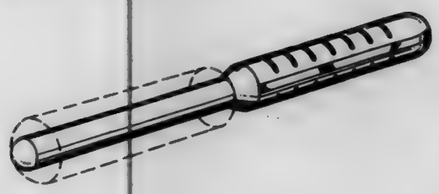
361,667
BASKETBALL COURT LINE MARKER
Tom Brown, 500-2 Magnolia Dr., Mt. Sterling, Ky. 40353
Filed Nov. 16, 1993, Ser. No. 15,375
Term of patent 14 years
U.S. Cl. D4—122



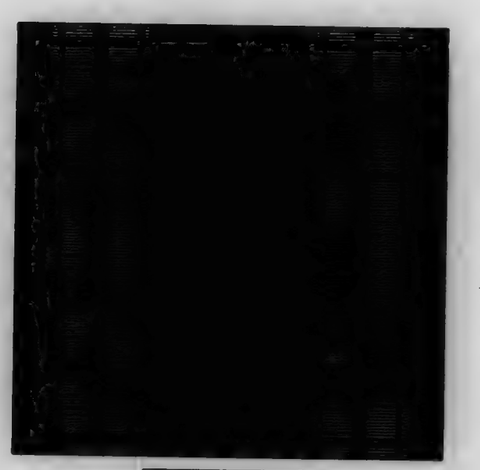
361,668
FOOT BRUSH
Ronald G. Moody, R.R. #35474 Lyons Creek Rd., Niagara Falls, Ontario, Canada L2E 6S6
Filed Jul. 1, 1993, Ser. No. 10,144
Term of patent 14 years
U.S. Cl. D4—134



361,669
HANDLE AND HEAD UNIT FOR A ROUND BRUSH
Eric Chan, New York, N.Y., and Eric Anderson, Maplewood, N.J., assignors to Goody Products, Inc., Kearny, N.J.
Filed Apr. 15, 1993, Ser. No. 7,132
Term of patent 14 years
U.S. Cl. D4—138



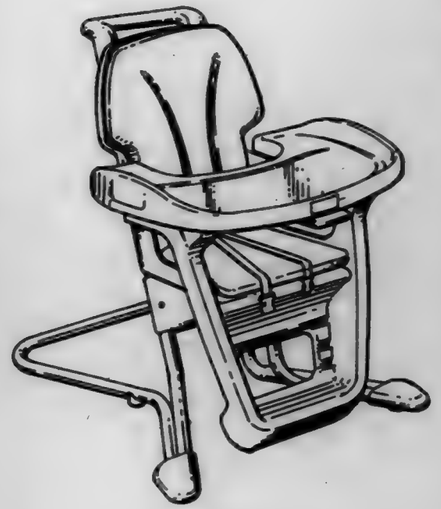
361,670
TARTAN TEXTILE
William McMillan, Polloksbaws, United Kingdom, assignor to The Scottish Football Association Limited, Glasgow, United Kingdom
Filed Aug. 2, 1993, Ser. No. 11,377
Claims priority, application United Kingdom, Feb. 3, 1993, 0600933
Term of patent 14 years
U.S. Cl. D5—46



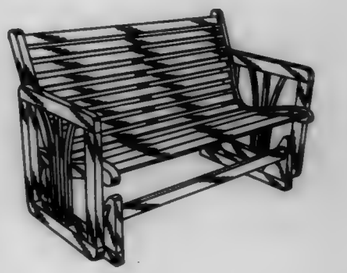
361,671
ROBE HOOK
Norton Sharpe, Los Angeles, Calif., assignor to Franklin Brass Manufacturing Company, Los Angeles, Calif.
Filed Aug. 23, 1993, Ser. No. 12,081
Term of patent 14 years
U.S. Cl. D6—323



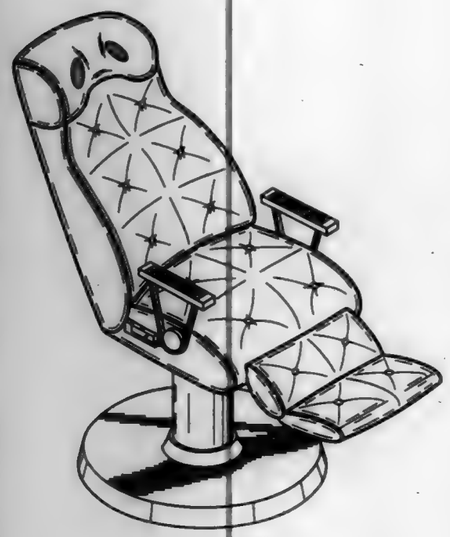
361,672
ADJUSTABLE HIGH CHAIR
John V. Mariol, Cincinnati, and Paul K. Meeker, Hiram, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 29, 1993, Ser. No. 13,660
Term of patent 14 years
U.S. Cl. D6—339



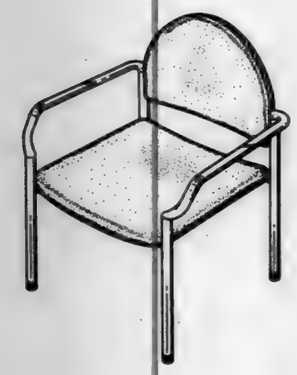
361,673
GLIDER
Charles Pomeroy, and John T. Bycraft, both of South Bend, Ind., assignors to Jack-Post Corporation, Buchanan, Mich.
Filed May 31, 1994, Ser. No. 23,733
Term of patent 14 years
U.S. Cl. D6—344



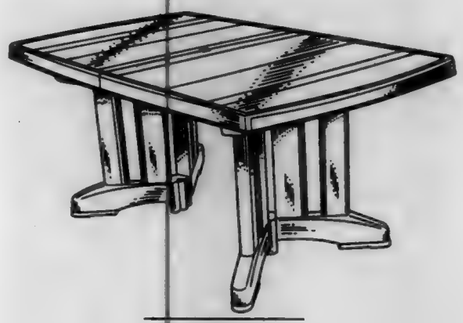
361,674
MULTI-PURPOSE, ROTATIONAL, VIBRATING, ACOUSTICAL CHAIR
Michael C. Carter, Sr., 129 Quincy St., Springfield, Mass. 01109
Filed Feb. 14, 1994, Ser. No. 18,707
Term of patent 14 years
U.S. Cl. D6—364



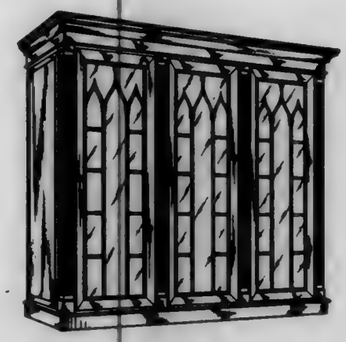
361,675
CHAIR
Chang-Keun Ruy, No. 1-168 Kan Sok 3 dong, Nam Dong Ku, Inchon, Rep. of Korea
Filed Oct. 4, 1993, Ser. No. 13,844
Term of patent 14 years
U.S. Cl. D6—379



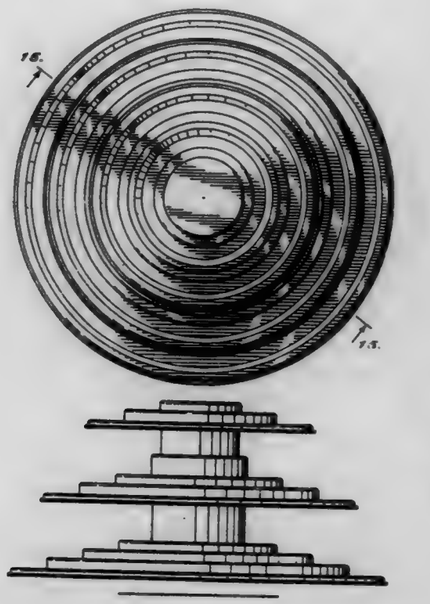
361,676
COLLAPSIBLE GARDEN TABLE
Josephus P. M. Westerburgen, Heythuysen, Netherlands, assignor to Lawn Comfort S.A., Ans-Alleur, Belgium
Filed Feb. 28, 1994, Ser. No. 21,280
Claims priority, application France, Aug. 30, 1993, DM/027128
Term of patent 14 years
U.S. Cl. D6—429



361,677
GLASS CASE
Michael D. Tatum, Dallas, Tex., and Robert W. Purdom, deceased, late of Washington, D.C. by Richard E. Cytowic, executor , assignors to Kimball International, Inc., Jasper, Ind.
Filed Jun. 11, 1993, Ser. No. 9,378
Term of patent 14 years
U.S. Cl. D6—436



361,678
JEWELRY DISPLAY STAND
John H. Tavone, Hallandale, Fla., and Frank Garafano, Jr., Johnston, R.I., assignors to Displays By Garo, Inc., Johnston, R.I.
Filed Mar. 18, 1993, Ser. No. 6,190
Term of patent 14 years
U.S. Cl. D6—457



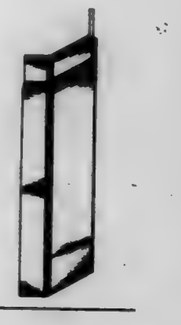
361,679
DRESSING TABLE
Merlin A. Brunner, Appleton, and Harvey J. Drabeim, Wetauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 6, 1993, Ser. No. 8,045
Term of patent 14 years
U.S. Cl. D6—479



361,680
SELF STANDING SHELVING WITH SLOPED SHELVES
Leif Palsson, Lund, Sweden, assignor to BTJ, Inc., Chicago, Ill.
Filed Jun. 17, 1994, Ser. No. 24,598
Term of patent 14 years
U.S. Cl. D6—479



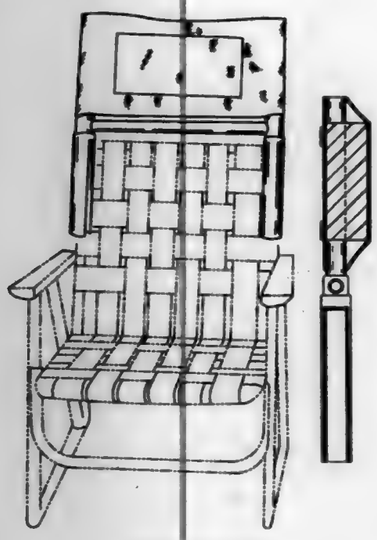
361,681
PANEL CAP FOR A DISPLAY PANEL
Gordon M. Calder, Sunbury-On-Thames, Great Britain, assignor to Over-Panel Technology, Ltd., Beaconsfield, Great Britain
Filed Dec. 3, 1993, Ser. No. 16,000
Claims priority, application United Kingdom, Jun. 3, 1993, 2031519
Term of patent 14 years
U.S. Cl. D6—494



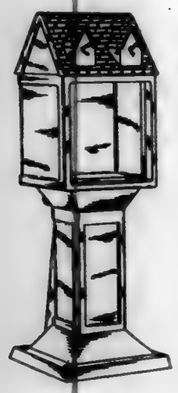
361,682
BASE SUPPORT FOR A TABLE TOP
Anthony Ramirez, P.O. Box 1458, Lockeford, Calif. 95237
Filed Sep. 13, 1994, Ser. No. 28,371
Term of patent 14 years
U.S. Cl. D6—497



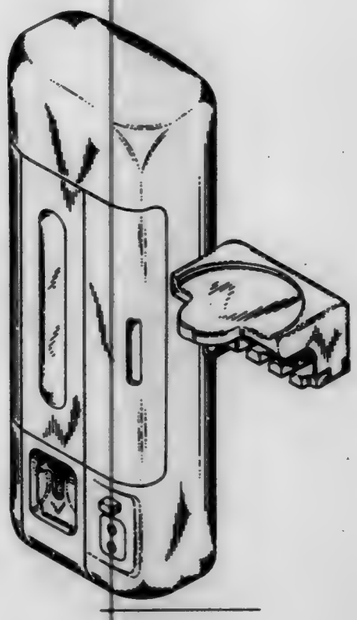
361,683
REMOVABLE LAWN CHAIR HEADREST
Darrol L. Jahl, 5411 Palm Crest Ct., Pinellas Park, Fla. 34666
Filed Mar. 8, 1994, Ser. No. 19,639
Term of patent 14 years
U.S. Cl. D6—501



361,684
MAGAZINE DISTRIBUTION RACK
John A. Russell, Lawrenceville, Ga., assignor to Network Publications, Inc., Lawrenceville, Ga.
Filed Jun. 6, 1994, Ser. No. 23,955
Term of patent 14 years
U.S. Cl. D6—512



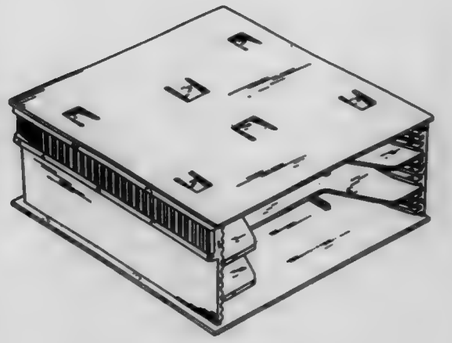
361,685
COMBINATION TOOTHPASTE DISPENSER, CUP AND TOOTHBRUSH HOLDER
Min K. Choi, 21710 Park Valley, Katy, Tex. 77450
Filed Apr. 15, 1993, Ser. No. 7,142
Term of patent 14 years
U.S. Cl. D6—531



361,686
INFANT WRAPPING BLANKET WITH POCKET
Sarah C. Stearns, 4764 US 90, Wellborn, Fla. 32094-9764
Continuation-in-part of Ser. No. 872,656, Apr. 23, 1992, abandoned. This application Mar. 3, 1994, Ser. No. 19,405
Term of patent 14 years
U.S. Cl. D6—603



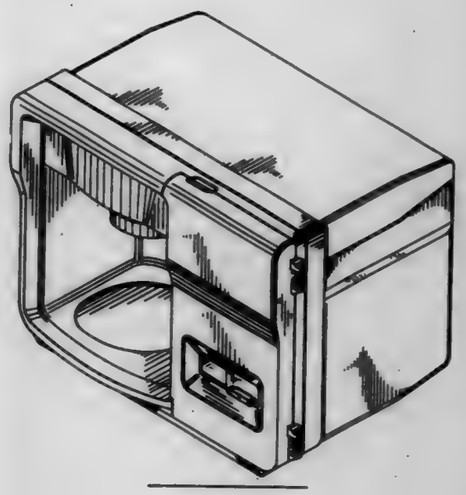
361,687
MAGAZINE FOR TAPE CARTRIDGES OR CASSETTES
James C. Dow, Ft. Collins, Colo.; Steven A. Dimond; Phillip R. Williams, both of Bristol, England, and Thomas Riester, Villingen, Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 18, 1993, Ser. No. 14,279
Claims priority, application United Kingdom, Apr. 19, 1993, 2030465
Term of patent 14 years
U.S. Cl. D6—629



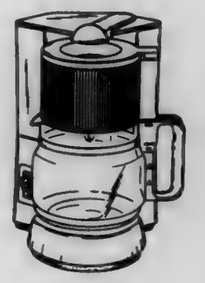
361,688
STRAW
Erik Lipson, Philadelphia, Pa., assignor to Fun-Time International, Inc., Philadelphia, Pa.
Filed May 9, 1994, Ser. No. 22,593
Term of patent 14 years
U.S. Cl. D7—300.2



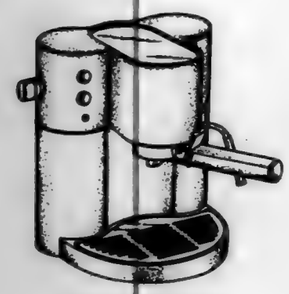
361,689
UNDER-THE-CABINET-COFFEEMAKER
Dan R. McCloskey, Stratford, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Jan. 13, 1994, Ser. No. 17,491
Term of patent 14 years
U.S. Cl. D7—309



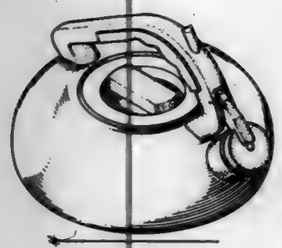
361,690
COFFEE MAKER
Richard Amie, Thal, Switzerland, assignor to Arthur Eugster AG, Romanshorn, Switzerland
Filed Mar. 3, 1994, Ser. No. 19,484
Term of patent 14 years
U.S. Cl. D7—309



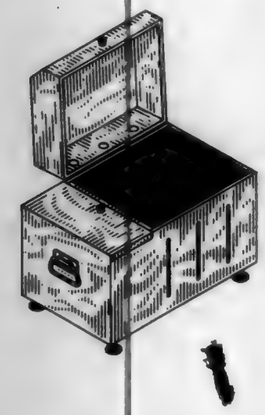
361,691
PUMP-TYPE ESPRESSO MACHINE
Rudolf Mazza, Jr., Solingen, Germany, assignor to Arthur Eugster AG, Romanshorn, Switzerland
Filed Mar. 3, 1994, Ser. No. 19,485
Term of patent 14 years
U.S. Cl. D7—309



361,692
KETTLE
Chen-Kun Lee, No. 1, Lane 111, Sec. 3, Chung San Rd., Tan Tzu Hsiang, Taichung Hsien, Taiwan
Filed Mar. 30, 1994, Ser. No. 20,651
Term of patent 14 years
U.S. Cl. D7—322



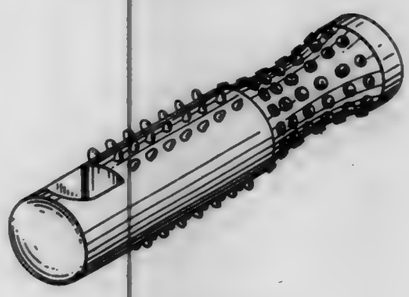
361,693
FOOD GRILL
Terrence M. Burke, Pollock Pines, Calif., assignor to TSD Industries, Inc., Placerville, Calif.
Filed Jun. 3, 1994, Ser. No. 23,956
Term of patent 14 years
U.S. Cl. D7—337



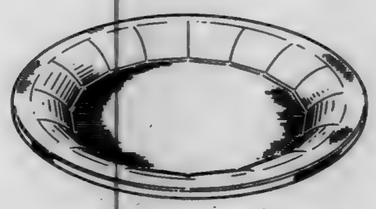
361,694
FOOD PROCESSOR
Yan K. Wong, 21 Lam Hing Street, Unit 17 10/F, Metro Centre 2 Kowloon Bay, Kowloon, Hong Kong
Filed Dec. 28, 1993, Ser. No. 16,850
Term of patent 14 years
U.S. Cl. D7—384



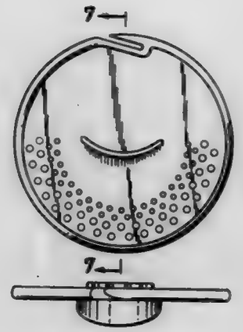
361,695
KITCHEN UTENSIL HANDLE
Martin Sutker, Cooper City, Fla., assignor to Atico International, Inc., Miami, Fla.
Filed May 31, 1994, Ser. No. 23,702
Term of patent 14 years
U.S. Cl. D7—401.2



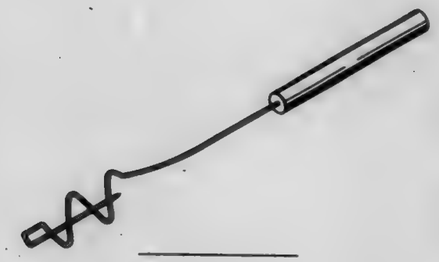
361,696
PLATE
Anthony H. Wolfenden, Elwood, Australia, assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Nov. 6, 1992, Ser. No. 1,272
Term of patent 14 years
U.S. Cl. D7—584



361,697
CAN STRAINER
Patrick J. McNaughton, Minneapolis, Minn., assignor to McNaughton, Inc., Minneapolis, Minn.
Filed Apr. 6, 1994, Ser. No. 20,993
Term of patent 14 years
U.S. Cl. D7—667



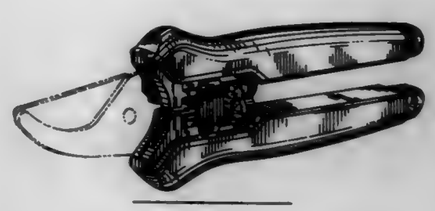
361,698
COOKING IMPLEMENT
Alfred A. Stark, 3685 - 197th Street, Langley, British Columbia, Canada V3A 1B2
Filed May 27, 1994, Ser. No. 23,630
Term of patent 14 years
U.S. Cl. D7—683



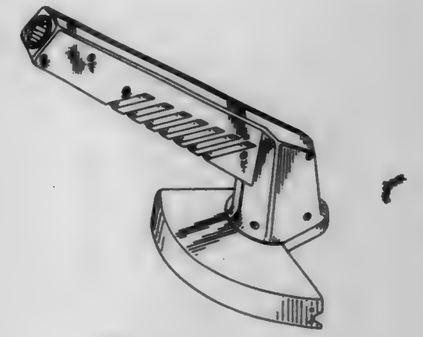
361,699
HOT DOG COOKER
John T. McHugh, P.O. Box 5010, Kent, Wash. 98064-5010
Filed Jun. 3, 1994, Ser. No. 23,952
Term of patent 14 years
U.S. Cl. D7—683



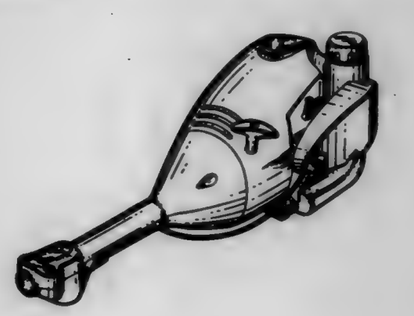
361,700
TOOL HANDLE
Douglas J. Birkholz, Deforest, Wis., assignor to Fiskars Oy Ab, Helsinki, Finland
Filed Jun. 30, 1994, Ser. No. 25,409
Term of patent 14 years
U.S. Cl. D8—5



361,701
LOWER HOUSING OF FILAMENT TRIMMER
Anthony N. Pink, Shorewood, Minn., assignor to The Toro Company, Minneapolis, Minn.
Continuation of Ser. No. 11,343, Aug. 2, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 21,214
Term of patent 14 years
U.S. Cl. D8—8



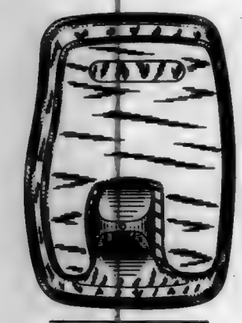
361,702
POWER HEAD FOR A VEGETATION CUTTER
Michael E. Kidwell, and Jeffery S. Franke, both of Charlotte, N.C., assignors to Homelite, Inc., Charlotte, N.C.
Filed Jul. 19, 1994, Ser. No. 26,100
Term of patent 14 years
U.S. Cl. D8—8



361,703
LUMBER WRENCH
Douglas F. Payne, P.O. Box 582, Wellsriver, Vt. 05081
Filed Nov. 7, 1994, Ser. No. 30,768
Term of patent 14 years
U.S. Cl. D8—21



361,704
ELECTRONIC INSTRUMENT FOR REMOVING SECURITY TAGS
Hans P. Witzky, Pompano, and Elbert Dooley, Jr., Lake Worth, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Sep. 7, 1994, Ser. No. 28,118
Term of patent 14 years
U.S. Cl. D8—51



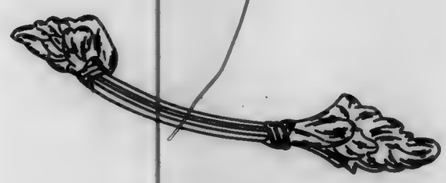
361,705
SCISSORS
Douglas J. Birkholz, Deforest, Wis., assignor to Fiskars Inc., Wausau, Wis.
Continuation-in-part of Ser. No. 17,419, Jan. 12, 1994, Pat. No. Des. 354,423. This application Aug. 1, 1994, Ser. No. 26,538
Term of patent 14 years
U.S. Cl. D8—57



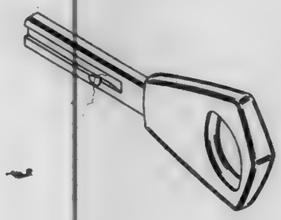
361,706
DOOR HANDLESET
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Continuation of Ser. No. 742,660, Aug. 8, 1991, abandoned. This application May 31, 1994, Ser. No. 24,274
Term of patent 14 years
U.S. Cl. D8—302



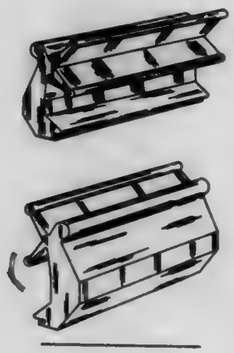
361,707
PULL
Robert Chioda, Wheaton, Ill., assignor to Newell Operating Company, Freeport, Ill.
Filed Aug. 3, 1993, Ser. No. 11,365
The portion of the term of this patent subsequent to Apr. 11, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—305



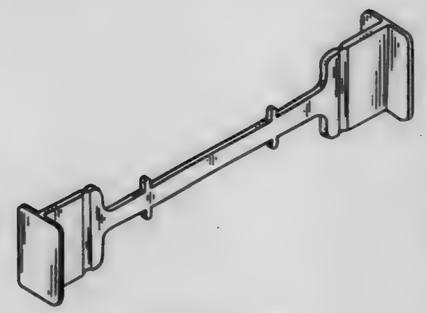
361,708
KEY BLANK
Hannu O. Kähöen, Helsinki, Finland, assignor to Abloy Security Ltd Oy, Helsinki, Finland
Filed Aug. 12, 1994, Ser. No. 27,119
Claims priority, application Finland, Mar. 7, 1994, 149/94
Term of patent 14 years
U.S. Cl. D8—347



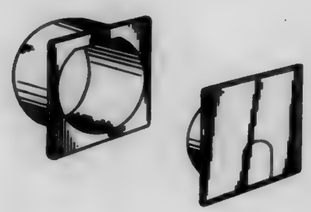
361,709
EXTRUDED BRACKET FOR A TILT TRAY SORTING CONVEYOR
J. David Fortenbery, Charlotte, N.C., assignor to Mantissa Corporation, Charlotte, N.C.
Filed Dec. 17, 1992, Ser. No. 4,831
Term of patent 14 years
U.S. Cl. D8—349



361,710
CONCRETE FORMING TIE
Patrick E. Boeshart, P.O. Box 774, Sioux City, Iowa 51102
Filed Apr. 22, 1994, Ser. No. 21,739
Term of patent 14 years
U.S. Cl. D8—354



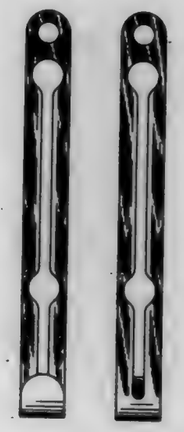
361,711
WIRING GROMMET
Roger K. Plumley, 266 S. Marengo, Pasadena, Calif. 91101
Filed Feb. 18, 1994, Ser. No. 18,967
Term of patent 14 years
U.S. Cl. D8—356



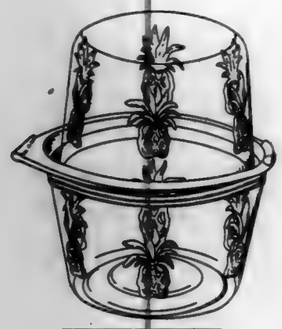
361,712
SUPPORT BRACKET FOR COMMUNICATION CABLE
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Mar. 8, 1994, Ser. No. 19,649
Term of patent 14 years
U.S. Cl. D8—356



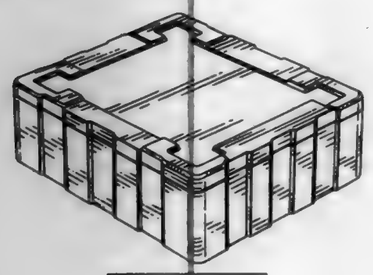
361,713
HANGER FOR POT COVERS
John A. Grant, 5880 Langford Bay Rd., Chestertown, Md. 21620
Continuation of Ser. No. 7,260, Apr. 21, 1993, abandoned. This application May 18, 1994, Ser. No. 23,130
Term of patent 14 years
U.S. Cl. D8—373



361,714
CLAMSHELL PACKAGE FOR CORED PINEAPPLE FRUIT
Calvin S. Krupa, Medina, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Apr. 26, 1994, Ser. No. 21,944
Term of patent 14 years
U.S. Cl. D9—329



361,715
CONTAINER AND LID
Joseph Haupert, Mississauga, Canada, assignor to National Bait Inc., Mississauga, Canada
Filed Aug. 23, 1994, Ser. No. 27,498
Claims priority, application Canada, Mar. 2, 1994, 1994-0394
Term of patent 14 years
U.S. Cl. D9—424



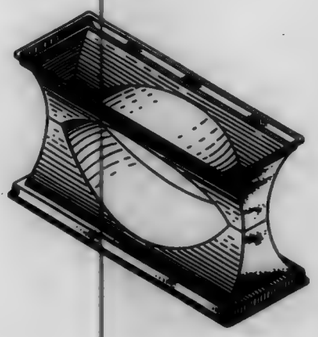
361,716
BOTTLE TOP
Ernest M. Simon, Paradise Valley, Ariz., assignor to Plain Enterprises, Inc., Norcross, Ga.
Filed Jul. 9, 1993, Ser. No. 10,561
Term of patent 14 years
U.S. Cl. D9—436



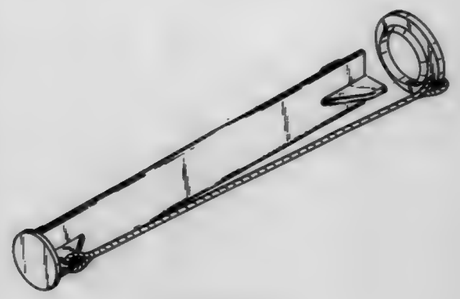
361,717
BOTTLE HOLDER
Bill McCormack, 510 Mango Ave., Sarasota, Fla. 34237
Filed Jan. 16, 1993, Ser. No. 9,605
Term of patent 14 years
U.S. Cl. D9—455



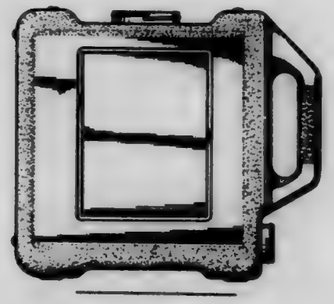
361,718
PACKAGE FOR A FOOTBALL SHAPED OBJECT
Jay J. Baker, Mayville, N.Y., assignor to Jamestown Plastics, Inc., Brocton, N.Y.
Filed Jan. 18, 1994, Ser. No. 17,595
Term of patent 14 years
U.S. Cl. D9—455



361,719
PLUNGER AND ATTACHMENT COLLAR FOR TUBULAR CONTAINERS
Dale D. Walther, 213 S. Belmore, Leipsic, Ohio 45856
Filed Jan. 20, 1994, Ser. No. 24,682
Term of patent 14 years
U.S. Cl. D9—456



361,720
BOTTLE
Phyllis A. Rokus, Hacienda Heights, and Richard Reuben, Alta Loma, both of Calif., assignors to Reid Plastics, Inc., Arcadia, Calif.
Filed Apr. 12, 1994, Ser. No. 21,272
Term of patent 14 years
U.S. Cl. D9—520



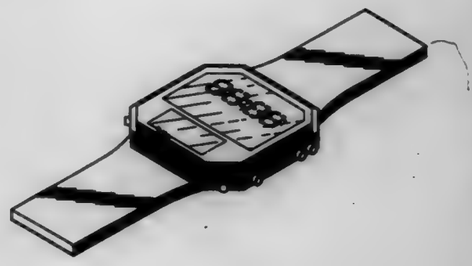
361,721
BOTTLE
Morris Braun, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.
Filed Feb. 3, 1992, Ser. No. 829,164
Term of patent 14 years
U.S. Cl. D9—568



361,722
WRIST WATCH
Ryoichi Koga, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Japan
Filed Apr. 28, 1994, Ser. No. 22,066
Term of patent 14 years
U.S. Cl. D10—30



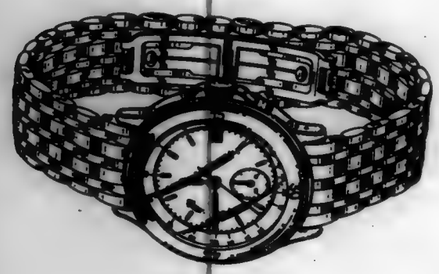
361,723
COMBINED WRISTWATCH AND PAGER WITH BAND PORTIONS
Lakdas Nanayakkara, 22822 Pine Wood Ct., Boca Raton, Fla. 33433
Filed May 14, 1993, Ser. No. 8,380
Term of patent 14 years
U.S. Cl. D10—31



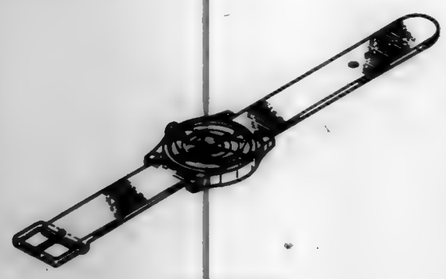
361,724
COMBINED WRISTWATCH AND PAGER WITH BAND PORTIONS
Lakdas Nanayakkara, 22822 Pine Wood Ct., Boca Raton, Fla. 33433
Filed Jun. 1, 1993, Ser. No. 8,945
Term of patent 14 years
U.S. Cl. D10—31



361,725
WATCH AND BRACELET
Karl-Friedrich Scheufele, Pronenthoux, Switzerland, assignor to Le Petit Fils de L.U. Chopard & Cie/S.A., Meyrin, Switzerland
Filed Oct. 2, 1991, Ser. No. 770,955
Claims priority, application Hague Agreement, Apr. 4, 1991, 15/8153
The portion of the term of this patent subsequent to Jul. 11, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—32



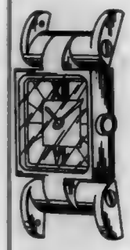
361,726
SPORTS WATCH WITH RACING THEME APPEARANCE
Robert L. Mabbitt, 1417 E. 31st St., Anderson, Ind. 46016
Filed Aug. 5, 1993, Ser. No. 11,464
Term of patent 14 years
U.S. Cl. D10—32



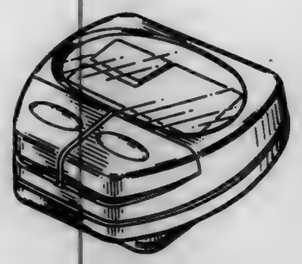
361,727
WRIST WATCH
Ryoichi Koga, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Japan
Filed Apr. 28, 1994, Ser. No. 22,065
Term of patent 14 years
U.S. Cl. D10—32



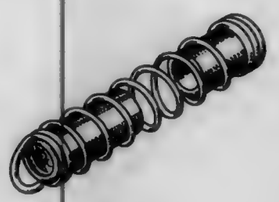
361,728
WRISTWATCH
Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari S.p.A., Rome, Italy
Filed Jul. 28, 1994, Ser. No. 26,006
Claims priority, application WIPO, Jan. 31, 1994, DMA/002411
Term of patent 14 years
U.S. Cl. D10—39



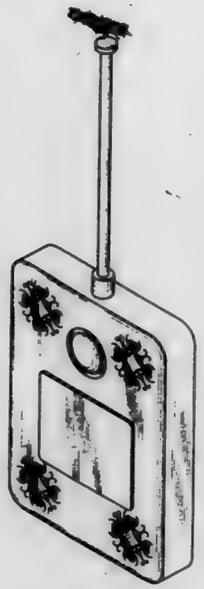
361,729
SPEEDOMETER FOR A BICYCLE
Masao Tsushi, Sakai, Japan, assignor to Cateye, Co., Ltd., Osaka, Japan
Filed Jul. 19, 1994, Ser. No. 26,072
Claims priority, application Japan, Mar. 2, 1994, 6-5416
Term of patent 14 years
U.S. Cl. D10—98



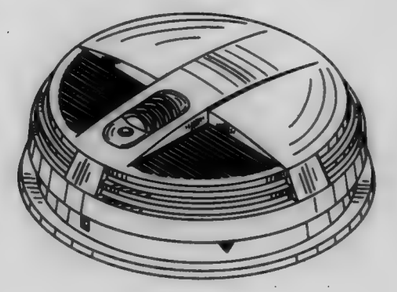
361,730
PITOT TUBE COVER
H. Burk Wright, Grand Junction, Colo., assignor to Western Filament, Inc., Grand Junction, Colo.
Division of Ser. No. 3,427, Jan. 6, 1993, Pat. No. Des. 351,114.
This application Jun. 21, 1994, Ser. No. 24,757
Term of patent 14 years
U.S. Cl. D10—103



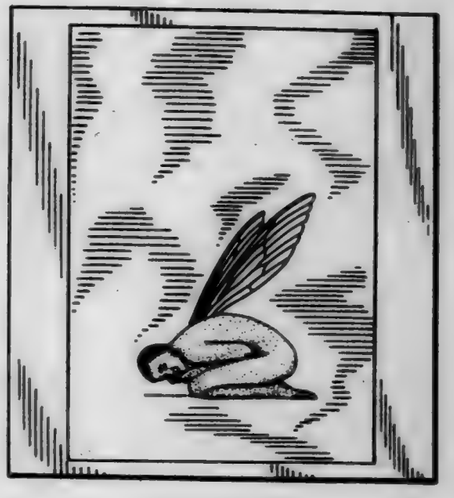
361,731
TRANSMITTER FOR CONTROLLING TRAFFIC LIGHTS FOR EMERGENCY VEHICLES
Roland Steger, 5025 Pennsylvania, Detroit, Mich. 48213
Filed Oct. 18, 1993, Ser. No. 14,272
Term of patent 14 years
U.S. Cl. D10—106



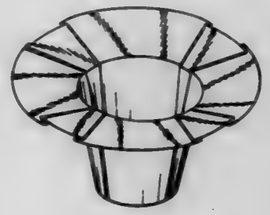
361,732
SMOKE DETECTOR HOUSING
Robert G. Fischette, Portland, Oreg.; Kirk R. Johnson, Vancouver, Wash., and Maki Myoga, Portland, Oreg., assignors to Sentrol, Inc., Tualatin, Oreg.
Filed Aug. 16, 1994, Ser. No. 27,218
Term of patent 14 years
U.S. Cl. D10—106



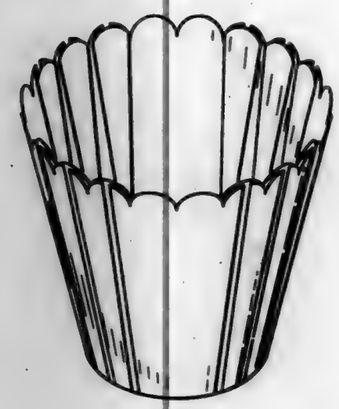
361,733
POSTER
Izumo Masuda, Fukuoka, Japan, assignor to Nihon Kenko Zoushin Kenkyukai Corporation, Fukuoka, Japan
Filed Apr. 4, 1994, Ser. No. 20,858
Term of patent 14 years
U.S. Cl. D11—130



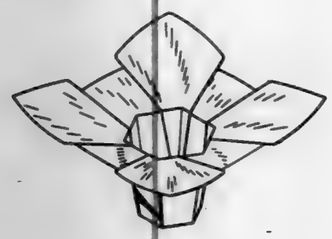
361,734
FLOWER POT COVER
Donald E. Woder, and Joseph G. Streeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1995, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,678
The portion of the term of this patent subsequent to Jul. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



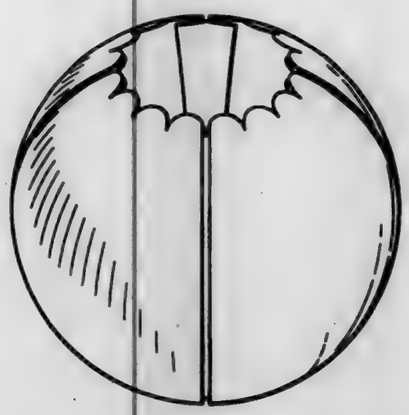
361,735
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,905
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



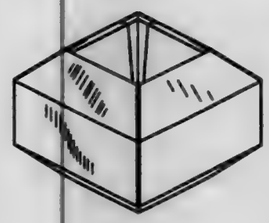
361,736
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, which is a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,549
The portion of the term of this patent subsequent to Aug. 27, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



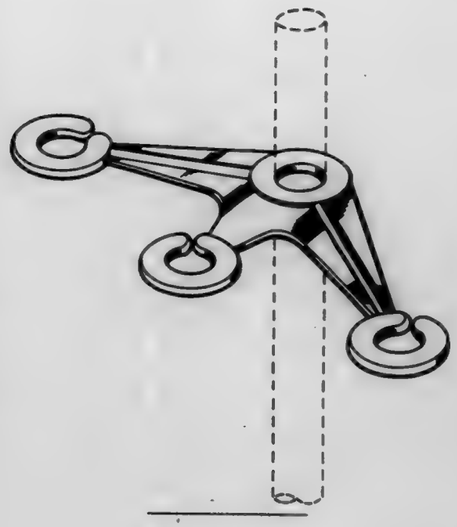
361,737
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. 5,089,425, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 809,640
Term of patent 14 years
U.S. Cl. D11—164



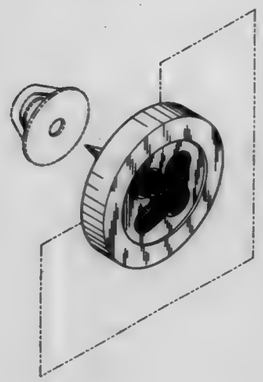
361,738
FLOWER POT COVER
Jon S. Shryock, Bethany, Okla., assignor to Highland Supply Corporation, Highland, Ill.
Filed May 26, 1993, Ser. No. 8,860
Term of patent 14 years
U.S. Cl. D11—164



361,739
STAKE MOUNTED SUPPORT FOR PLANTS
William L. Heckathorne, 650 Jacksonville Rd., Bellefonte, Pa. 16823
Filed Apr. 22, 1994, Ser. No. 21,749
Term of patent 14 years
U.S. Cl. D11—164



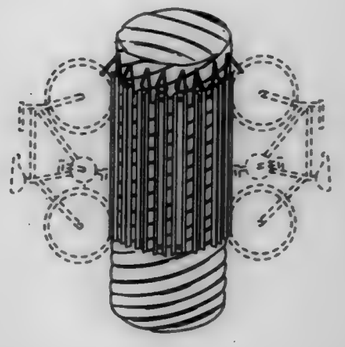
361,740
INTERCHANGEABLE BUTTON
Susan F. Kidd, 3343 Windsor Dr., Charlotte, N.C. 28209
Filed Aug. 19, 1991, Ser. No. 747,105
Term of patent 14 years
U.S. Cl. D11—228



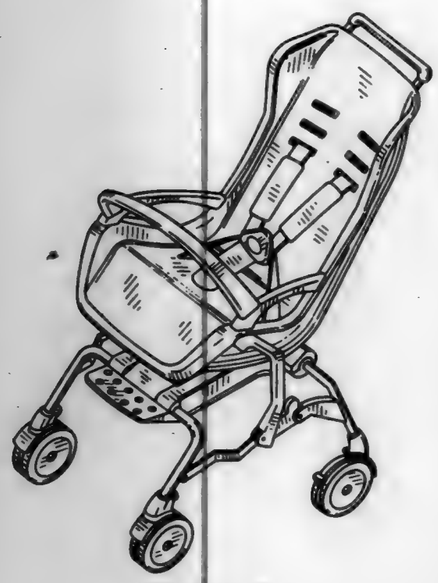
361,741
MOTOR-SCOOTER
Shuichi Sofue, and Yumio Shibata, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1994, Ser. No. 21,438
Claims priority, application Japan, Oct. 19, 1993, 5-31747
Term of patent 14 years
U.S. Cl. D12—110



361,742
BICYCLE DISPLAY RACK
Bill Matiage, 10765 Wheatfield La., Parker, Colo. 80134
Filed Jan. 19, 1993, Ser. No. 3,854
The portion of the term of this patent subsequent to Aug. 22, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—115



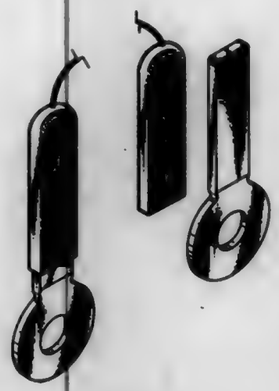
361,743
BABY CHAIR
Hiroshi Matsumoto; Tetsuro Otobe; Kazuhiro Sasaki; Kazumasa Okumura, all of Kariya; Kazuo Sato, Obu, and Masaaki Toya, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Leaman, Inc., Nagoya, both of Japan
Filed Apr. 18, 1994, Ser. No. 21,465
Claims priority, application Japan, Oct. 19, 1993, 5-031881
Term of patent 14 years
U.S. Cl. D12—129



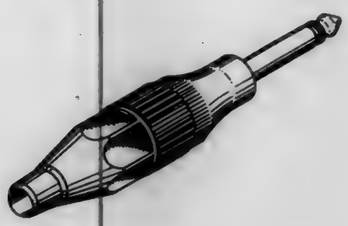
361,744
BATTERY POWER BELT
Elemer A. Nyiry, Magnolia Lake, Mamheadm, Exeter EX6 8HG, United Kingdom
Filed Jun. 18, 1993, Ser. No. 9,752
Claims priority, application United Kingdom, Dec. 19, 1992, 2027869
Term of patent 14 years
U.S. Cl. D13—103



361,745
SET OF TERMINALS FOR BATTERY BOOSTER CABLES
Robert M. Geroux, and Catherine Y. O'Hara, both of 215 Milvan Drive, Weston, ON, CN M9L 2A3, Canada
Filed Apr. 9, 1993, Ser. No. 6,879
Term of patent 14 years
U.S. Cl. D13—120



361,746
ELECTRICAL PLUG
David L. Van Emmerik, Moorabbin, Australia, assignor to Alcatel Australia Ltd., Sydney, Australia
Filed Apr. 6, 1994, Ser. No. 20,991
Claims priority, application Australia, Oct. 11, 1993, 3232/93
Term of patent 14 years
U.S. Cl. D13—133



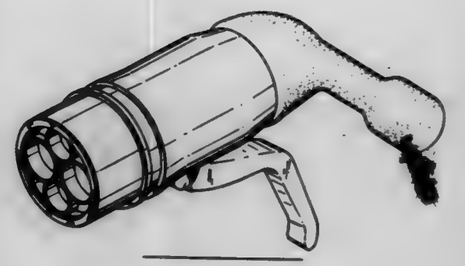
361,747
ELECTRICAL RECEPTACLE IN DINOSAUR CARICATURE SHAPE FOR EXTENSION
Wen J. Chen, No. 16, Dong Hwu St., Shih Jyy Jenn, Taipei, Taiwan
Filed Aug. 11, 1994, Ser. No. 27,070
Term of patent 14 years
U.S. Cl. D13—137



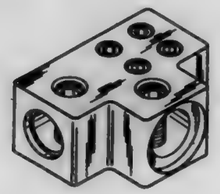
361,748
ELECTRICAL RECEPTACLE EXTENSION
Wen J. Chen, No. 16, Dong Hwu St., Shih Jyy Jenn, Taipei, Taiwan
Filed Aug. 11, 1994, Ser. No. 27,032
Term of patent 14 years
U.S. Cl. D13—139



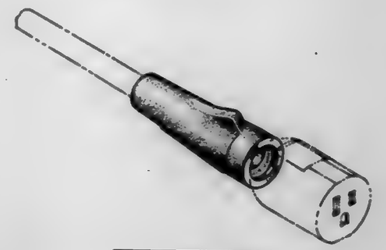
361,749
ELECTRICAL CHARGING PLUG
Yasuyoshi Fukao; Toshiyuki Sekimori; Hiromichi Kano, all of Toyota; Nobuaki Yoshioka, Shizuoka; Toshiaki Hasegawa, Shizuoka, and Shigemitsu Inaba, Shizuoka, all of Japan, assignors to Yazaki Sogyo K.K. and Toyota Jidosha K.K., Japan
Filed Mar. 18, 1994, Ser. No. 20,177
Claims priority, application Japan, Sep. 20, 1993, 5-28066
Term of patent 14 years
U.S. Cl. D13—146



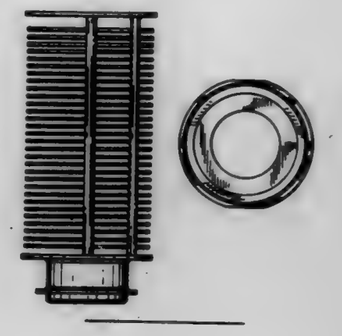
361,750
ELECTRICAL CONDUCTOR DISTRIBUTION BLOCK
Micah S. Ansley, Belleair Beach, Fla., assignor to AAMP of Florida, Inc., Clearwater, Fla.
Filed Sep. 29, 1994, Ser. No. 29,087
Term of patent 14 years
U.S. Cl. D13—151



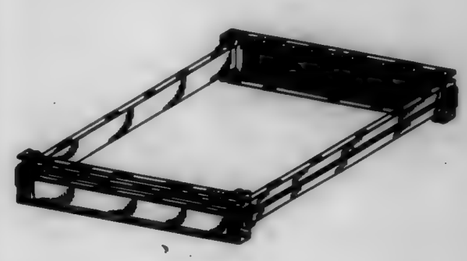
361,751
STRAIN RELIEF FOR ELECTRICAL CONNECTORS
Mark W. Geis, Carmel, Ind., assignor to Woods Industries, Inc., Carmel, Ind.
Filed Aug. 29, 1994, Ser. No. 27,717
Term of patent 14 years
U.S. Cl. D13—154



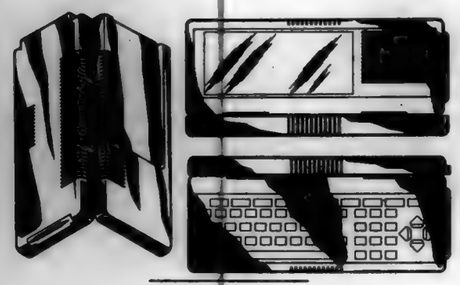
361,752
WAFER BOAT OR RACK FOR HOLDING SEMICONDUCTOR WAFERS
Kenichi Yamaga, Sagamihara, Japan, assignor to Tokyo Electron Kasbushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kabushiki Kaisha, Esashi, both of Japan
Filed Sep. 17, 1993, Ser. No. 13,079
Term of patent 14 years
U.S. Cl. D13—182



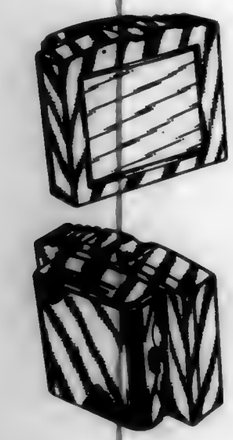
361,753
CARRIER FOR PRINTED CIRCUITS
Mazal Alkelai, Tel-Aviv, Israel, assignor to Laurec Ltd., Rishon Lezion, Israel
Filed Mar. 29, 1994, Ser. No. 20,605
Claims priority, application Israel, Sep. 29, 1993, 21434
Term of patent 14 years
U.S. Cl. D13—182



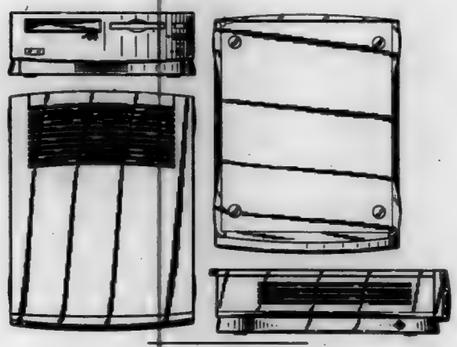
361,754
COMBINED PORTABLE PHONE ORGANIZER AND COMPUTER
Shrirang Jambhekar, Schaumburg, and Rudolf W. Krolopp, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 9, 1992, Ser. No. 341
Term of patent 14 years
U.S. Cl. D14—100



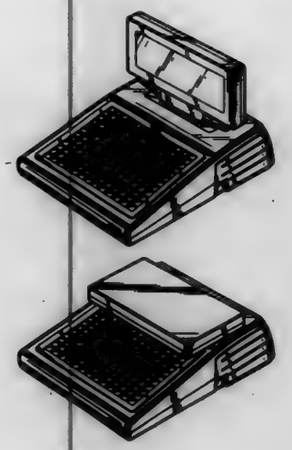
361,755
HAND HELD COMPUTER HOUSING
Edward H. Frank, Portola Valley; Michael R. Sheridan, Mountain View, and Steve Peart, Los Gatos, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Oct. 27, 1992, Ser. No. 859
Term of patent 14 years
U.S. Cl. D14—100



361,756
PERSONAL COMPUTER
Calvin Seid, San Francisco; Tim Parsey, Palo Alto, and James C. Meechter, San Francisco, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jul. 8, 1994, Ser. No. 25,702
Term of patent 14 years
U.S. Cl. D14—100



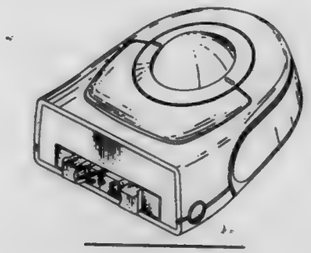
361,757
CASH REGISTER
Kanji Mizunugi, Mie, and Yukio Kusaoka, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 17, 1994, Ser. No. 28,573
Claims priority, application Japan, Apr. 26, 1994, 6-12182
Term of patent 14 years
U.S. Cl. D14—105



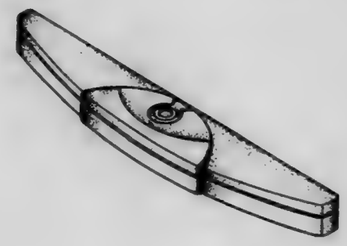
361,758
EXPANSION BASE FOR A NOTEBOOK PERSONAL COMPUTER
John E. Youens, Tomball, Tex., and Richard C. Watson, Boston, Mass., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 30, 1993, Ser. No. 16,931
Term of patent 14 years
U.S. Cl. D14—107



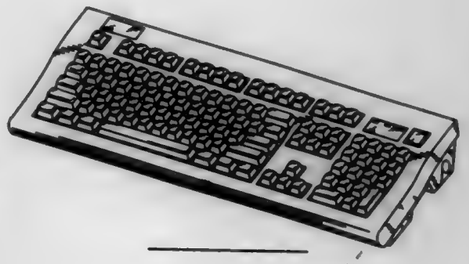
361,759
POINTING DEVICE AND A COUPLING ASSEMBLY
Mike M. Paull; Michael D. Nelson; Claire H. Bellard; Domenic S. Giantoli; Robert C. Evans, III, all of Seattle, and William P. Stiles, Bothell, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Oct. 30, 1992, Ser. No. 973
The portion of the term of this patent subsequent to Feb. 28, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—114



361,760
TRACKBALL
Stephen Chang, Taipei Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Dec. 17, 1993, Ser. No. 16,466
Term of patent 14 years
U.S. Cl. D14—114



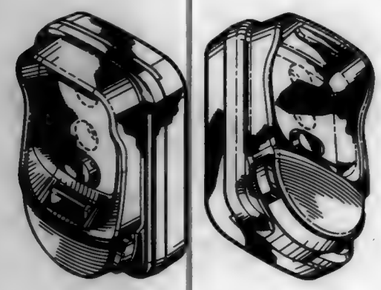
361,761
COMPUTER KEYBOARD
Timothy C. Barry, Fremont, and Charles E. Ader, Concord, both of Calif., assignors to Microspeed, Incorporated, Fremont, Calif.
Filed May 26, 1994, Ser. No. 23,555
Term of patent 14 years
U.S. Cl. D14—115



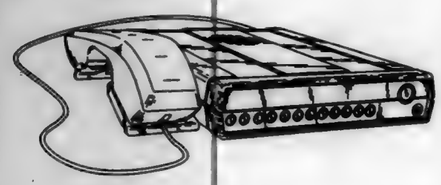
361,762
PORTABLE TELEPHONE
Adrian Berry, London, England, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jul. 25, 1994, Ser. No. 26,298
Claims priority, application United Kingdom, Mar. 1, 1994, 2037443
Term of patent 14 years
U.S. Cl. D14—138



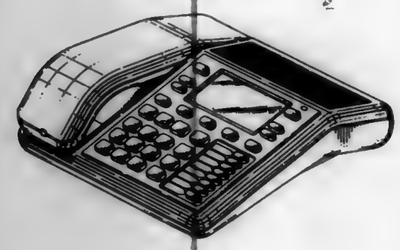
361,763
TELEPHONE HANDSET HANG-UP DEVICE AND CARD READER
Albert L. Nagaie, Wilmette, and John F. Hannon, Gurnee, both of Ill., assignors to Motorola, Schaumburg, Ill.
Filed Mar. 16, 1994, Ser. No. 19,980
Term of patent 14 years
U.S. Cl. D14—144



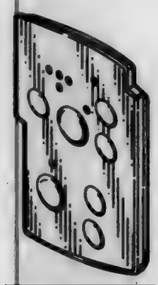
361,764
COMBINED TELEPHONE AND MODEM CASE FOR A COMPUTER-BASED MULTIFUNCTION COMMUNICATIONS SYSTEM
Dean Brandt, Minneapolis, and Greg Johnson, Fridley, both of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.
Division of Ser. No. 2,439, Dec. 9, 1992, Pat. No. Des. 355,653. This application Oct. 5, 1994, Ser. No. 29,417
Term of patent 14 years
U.S. Cl. D14—149



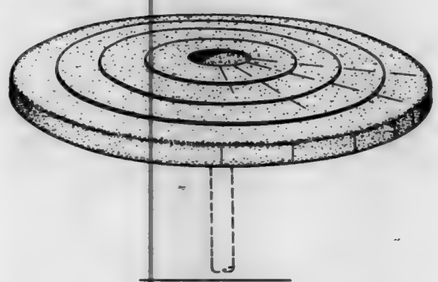
361,765
TELEPHONE APPARATUS
Keith R. Bryant, Stevenage, England, assignor to SDX Business Systems Limited, Hertfordshire, United Kingdom
Filed Jun. 28, 1994, Ser. No. 25,248
Claims priority, application United Kingdom, Apr. 7, 1994, 2038263
Term of patent 14 years
U.S. Cl. D14—151



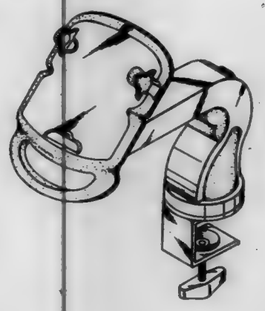
361,766
AUDIO RECORDER/PLAYER
Spencer L. Mackay, North Hollywood, Calif., assignor to Voice It Technologies, Inc., Fort Collins, Colo.
Filed Dec. 10, 1993, Ser. No. 16,220
Term of patent 14 years
U.S. Cl. D14—167



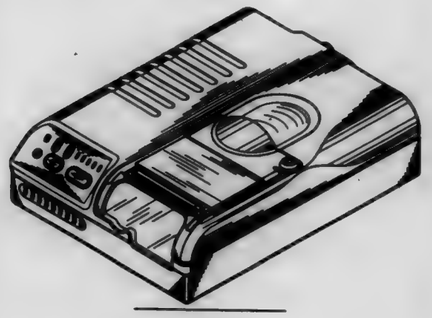
361,767
ANTENNA
Paul Tinsphong, Parsippany, N.J., assignor to Gemini Industries, Inc., Clifton, N.J.
Filed Feb. 28, 1994, Ser. No. 19,353
Term of patent 14 years
U.S. Cl. D14—230



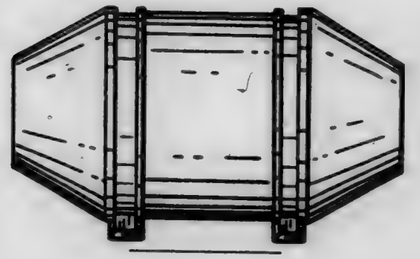
361,768
TELEPHONE SECURING FRAME
Shu-ying Chen, Tainan Hsien, Taiwan, assignor to Horng Technical Enterprise Co. Ltd., Tainan Hsien, Taiwan
Filed Sep. 2, 1994, Ser. No. 27,977
Term of patent 14 years
U.S. Cl. D14—251



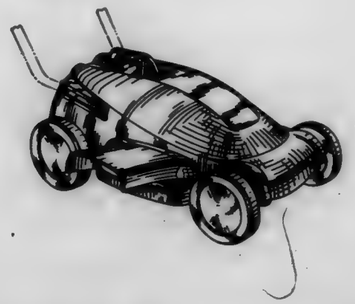
361,769
RADIO VEHICULAR ADAPTER
Scott H. Richards, Plantation; Robert L. Sorensen, Sunrise, and Craig A. Bartling, North Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 2, 1993, Ser. No. 10,257
Term of patent 14 years
U.S. Cl. D14—265



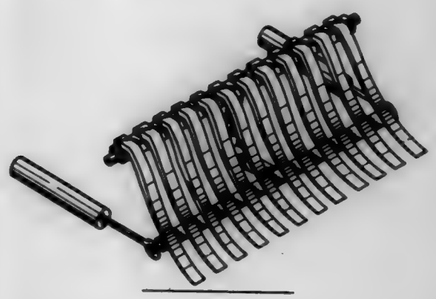
361,770
FUEL ECONOMIZER
Jose Luis D. Barreiro, Rafael Calvo 30, 28010 Madrid, Spain
Filed Apr. 26, 1994, Ser. No. 21,955
Term of patent 14 years
U.S. Cl. D15—5



361,771
LAWNMOWER
John Ledingham, 9009 White Oak La., Apt. #102, Bayside, Wis. 53712
Filed Jul. 19, 1994, Ser. No. 26,121
Term of patent 14 years
U.S. Cl. D15—14

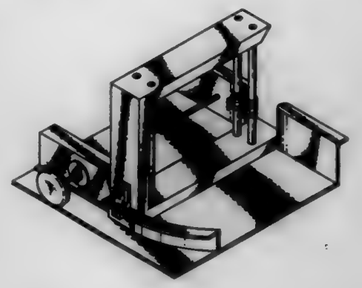


361,772
FRONT END LOADER ATTACHMENT FOR MOVING ROCKS
Wayne E. Hulsey, R.R. 4, Box 4228 B, Bangor, Pa. 18013
Filed Apr. 11, 1994, Ser. No. 21,145
Term of patent 14 years
U.S. Cl. D15—32

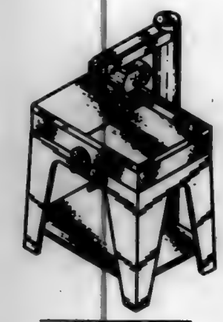


361,773
SEWING MACHINE
Antonio Jimenez, Meyrin, Switzerland, assignor to Mefina SA, Meyrin, Switzerland
Filed Nov. 17, 1993, Ser. No. 15,465
Claims priority, application Switzerland, May 17, 1993, 120 624
Term of patent 14 years
U.S. Cl. D15—69

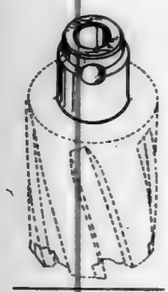
361,774
CHAIN SAW ANGLE GUIDE
Thomas J. Barry, 10 Ordway Ave., Haverhill, Mass. 01830-4348
Filed Oct. 17, 1994, Ser. No. 29,843
Term of patent 14 years
U.S. Cl. D15—133



361,775
COMBINATION SAW
Joseph M. Josephson, 1 Church View Rd., Oxford, Conn. 06478
Filed Nov. 14, 1994, Ser. No. 31,213
Term of patent 14 years
U.S. Cl. D15—133



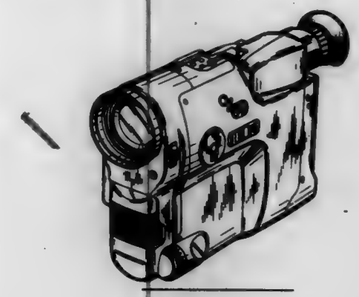
361,776
SHANK FOR A HOLE CUTTER
Osamu Asano, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1994, Ser. No. 25,204
Term of patent 14 years
U.S. Cl. D15—138



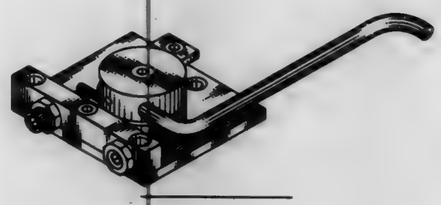
361,777
BINOCULARS
Jun Akahane, Yokohama, and Arata Ono, Urawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jun. 13, 1994, Ser. No. 24,354
Claims priority, application Japan, Dec. 16, 1993, 5-38157
Term of patent 14 years
U.S. Cl. D16—133



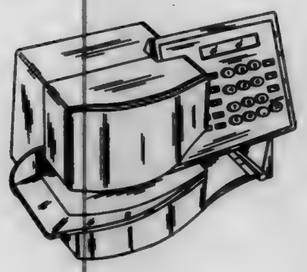
361,778
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Yoshiyuki Matsumura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 15,811, Nov. 30, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 28,627
Claims priority, application Japan, Jun. 2, 1993, 5-16533
Term of patent 14 years
U.S. Cl. D16—202



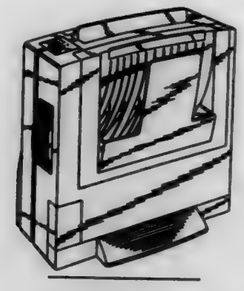
361,779
STRING PULLER
Kenneth A. Lambert, Jr., P.O. Box 28, New Vineyard, Me. 04956
Filed Jan. 2, 1994, Ser. No. 23,884
Term of patent 14 years
U.S. Cl. D17—21



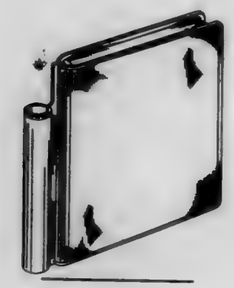
361,780
MAIL PROCESSING MACHINE
Ian R. Jenkins, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed May 5, 1994, Ser. No. 22,495
Term of patent 14 years
U.S. Cl. D18—51



361,781
PRINTER
Makoto Tanahide; Soiichi Miyaji, and Kanootsu Uchiyama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 1, 1994, Ser. No. 23,842
Claims priority, application Japan, May 24, 1993, 5-15020
Term of patent 14 years
U.S. Cl. D18—55



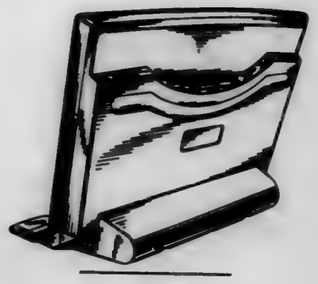
361,782
POCKET NOTEBOOK
Won Y. Chang, 258-1 1-dong, Dapshp-li, Dongdaemoon-gu, Seoul, Rep. of Korea
Filed Aug. 23, 1993, Ser. No. 12,120
Claims priority, application Rep. of Korea, Feb. 23, 1993, 3011/93
Term of patent 14 years
U.S. Cl. D19—26



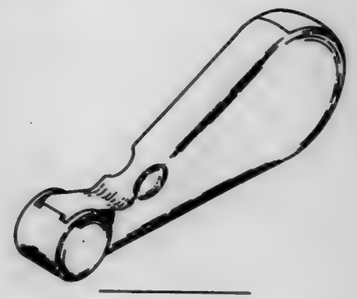
361,783
PEN
Ching-Lin Wei, 3Fl.-1, No. 274, Tzuhwa Rd., Kushan Dist., Kaohsiung, Taiwan
Filed Dec. 28, 1994, Ser. No. 32,785
Term of patent 14 years
U.S. Cl. D19—48



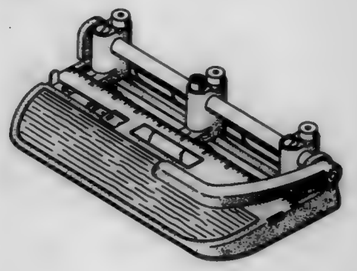
361,784
ELECTRONIC EDUCATIONAL GAME BOARD
Damon R. Saddler, Inglewood, and Gregory B. Burgoyne, La Habra, both of Calif., assignors to Educational Insights, Inc., Dominguez Hills, Calif.
Filed Jan. 31, 1995, Ser. No. 34,250
Term of patent 14 years
U.S. Cl. D19—64



361,785
TAPE APPLICATOR
Peter W. Brossler, and John D. Coleman, both of Philadelphia, Pa., assignors to Tapelicator, Inc., Philadelphia, Pa.
Filed Aug. 8, 1994, Ser. No. 26,894
Term of patent 14 years
U.S. Cl. D19—69



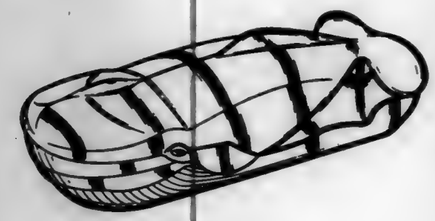
361,786
PUNCH
Gee L. Yang, 5Fl., No. 412-12, 2 Sec., Chung Shan Rd., Tai Peiping, Taichung, Taiwan
Filed May 9, 1994, Ser. No. 22,564
Term of patent 14 years
U.S. Cl. D19—72



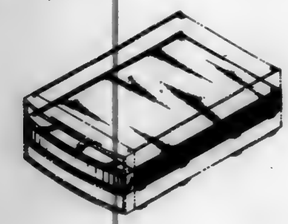
361,787
PENCIL BOX
John Meinian, Rancho Palos Verdes, and Daniel Schwartz, Long Beach, both of Calif., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Sep. 26, 1994, Ser. No. 28,900
Term of patent 14 years
U.S. Cl. D19—82



361,788
STORAGE BOX FOR SCHOOL SUPPLIES
John Meinian, Rancho Palos Verdes, and Daniel Schwartz, Long Beach, both of Calif., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.
Filed Sep. 26, 1994, Ser. No. 28,926
Term of patent 14 years
U.S. Cl. D19—82



361,789
STACKABLE PHOTO FILE
Richard E. Hewitt; John K. Clay, both of Santa Barbara, Calif., and William L. Bartlett, Santa Fe, N. Mex., assignors to Endeavour IV, Inc., Santa Barbara, Calif.
Filed May 27, 1994, Ser. No. 23,604
Term of patent 14 years
U.S. Cl. D19—86



361,790
CONFECTION DISPENSER
Bruce Menzi, 464 Oakridge Way, S.W., Calgary, Alberta, Canada T2V 1T3
Filed Jun. 29, 1994, Ser. No. 25,307
Claims priority, application Canada, May 4, 1994, 1994-0896
Term of patent 14 years
U.S. Cl. D20—7



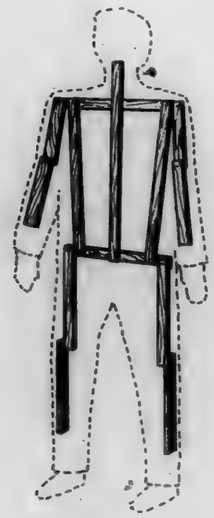
361,791
GAS TANK LOCATION STICKER
Susan F. Klatz, 1114 State St., Schenectady, N.Y. 12304
Filed Jun. 10, 1993, Ser. No. 8,913
Term of patent 14 years
U.S. Cl. D20—11



361,792
LIGHTED HOUSE NUMBER
James Lam, 149 Cowan Avenue, Apt. 105, Toronto, Ontario, Canada N6K2N5
Filed Nov. 7, 1994, Ser. No. 30,755
Term of patent 14 years
U.S. Cl. D20—17



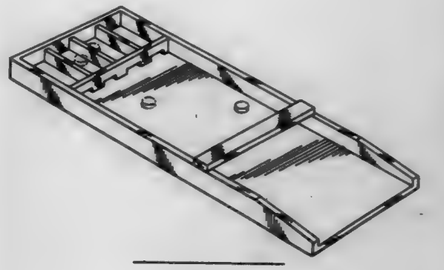
361,793
FRAME FOR A SCARECROW
Richard C. Hayden, 1576 Heatherwood Dr., Decatur, Ga. 30033
Filed Sep. 2, 1994, Ser. No. 27,979
Term of patent 14 years
U.S. Cl. D20—31



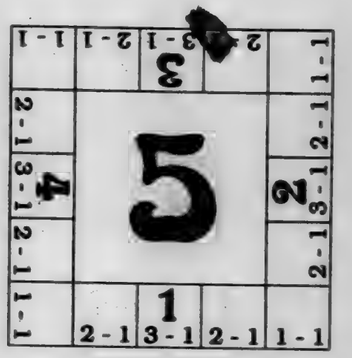
361,794
YARD SIGN
William R. M. Oakley, 8340 N. Austin Ave., Morton Grove, Ill. 60053
Continuation-in-part of Ser. No. 4,679, Feb. 11, 1993. This application Jan. 17, 1995, Ser. No. 33,639
Term of patent 14 years
U.S. Cl. D20—41



361,795
AMUSEMENT GAME
Ioan Abrudan, 320 W. Johnson #1, Palatine, Ill. 60067
Filed Dec. 20, 1993, Ser. No. 16,512
Term of patent 14 years
U.S. Cl. D21—7



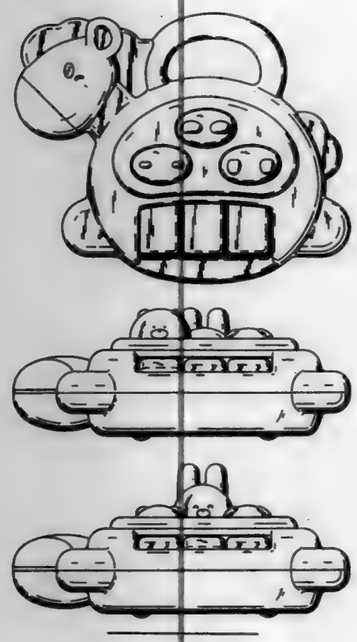
361,796
CASINO GAMBLING GAME BOARD
Anthony V. Florentino, 4666 N. Callisch, Fresno, Calif. 93726
Filed Aug. 2, 1994, Ser. No. 26,628
Term of patent 14 years
U.S. Cl. D21—37



361,797
DART POINT
Mark J. Kalik, 866 Irvin Ct., Hayward, Calif. 94541
Filed Mar. 15, 1994, Ser. No. 19,934
Term of patent 14 years
U.S. Cl. D21—49



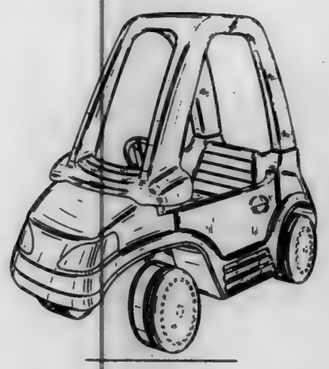
361,798
TOY PIANO
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1994, Ser. No. 18,033
Term of patent 14 years
U.S. Cl. D21—64



361,799
TRUNDLE TOY
Eduardo M. Ferreira, P.O. Box 24040-301 Oxford St. W., London, Ontario, Canada N6H-5C4
Filed Mar. 1, 1994, Ser. No. 19,412
Term of patent 14 years
U.S. Cl. D21—71



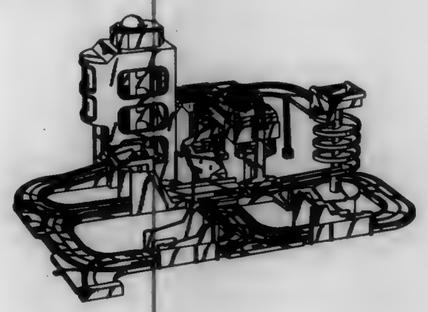
361,800
TOY CAR
Gary Lenihan, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Aug. 19, 1994, Ser. No. 27,332
Term of patent 14 years
U.S. Cl. D21—78



361,801
WAND FOR ROLLING A HOOP
Robert N. Hill, 669 Mock Rd., Asheboro, N.C. 27203
Filed May 20, 1994, Ser. No. 23,244
Term of patent 14 years
U.S. Cl. D21—101



361,802
TOY LOADER SET
Hisashi Shiraishi, Tokyo, Japan, assignor to Tomy Company Ltd., Katsushika, Japan
Filed Aug. 19, 1993, Ser. No. 11,993
Claims priority, application Japan, Feb. 19, 1993, 5-4774
Term of patent 14 years
U.S. Cl. D21—118



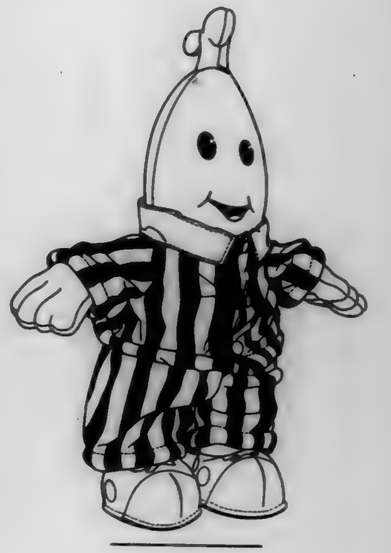
361,803
UPRIGHT PORTION OF A TOY VACUUM CLEANER WITH APERTURE FOR STORING A TOY HAND VACUUM
Robert L. Houry, Solon; John R. Nottingham, Chagrin Falls, and John W. Spirk, Jr., Moreland Hills, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Apr. 13, 1993, Ser. No. 7,002
Term of patent 14 years
U.S. Cl. D21—122



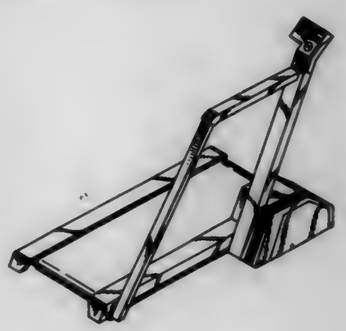
361,804
TOY CRADLE
Alain Monneret, Voiteur, France, assignor to Monneret Jouets, Lons-le-Saunier, France
Filed Jul. 12, 1993, Ser. No. 10,498
Claims priority, application Hague Agreement, Jan. 18, 1993, DM/024 947
Term of patent 14 years
U.S. Cl. D21—123



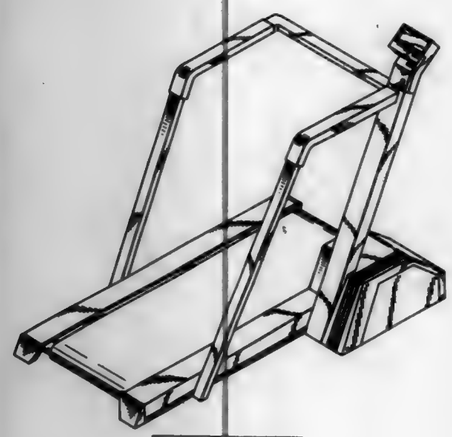
361,805
TOY FIGURE
Anthony A. Barber, East Hawthorn, Australia, assignor to Australian Broadcasting Corporation, Ultimo, Australia
Filed Aug. 10, 1994, Ser. No. 26,900
Term of patent 14 years
U.S. Cl. D21—171



361,806
EXERCISE TREADMILL
Randall N. Bartlett, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Jan. 28, 1994, Ser. No. 18,074
Term of patent 14 years
U.S. Cl. D21—192



361,807
TREADMILL
Randall Bartlett, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Jan. 28, 1994, Ser. No. 18,079
Term of patent 14 years
U.S. Cl. D21—192

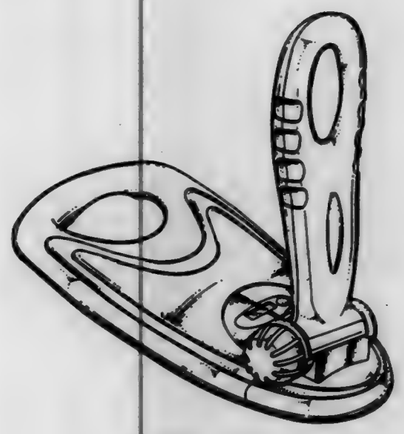


361,808
EXERCISE MACHINE
Jonathan Yeh, No. 77-3, Nanshih Village, Linkou Hsiang, Taipei Hsien,
Filed Apr. 18, 1994, Ser. No. 21,471
Term of patent 14 years
U.S. Cl. D21—195

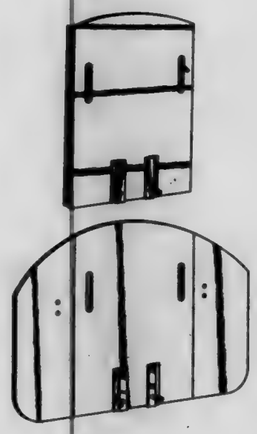




361,809
ARM EXERCISER
Ming-Chih Huang, No. 33, Lane 1000, Chun Jih Rd., Tao Yuan, Taiwan
Filed Jun. 2, 1994, Ser. No. 23,904
Term of patent 14 years
U.S. Cl. D21—198



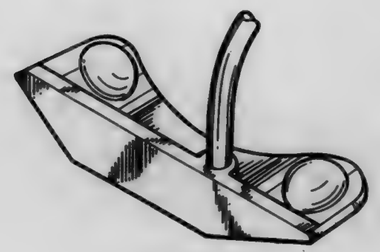
361,810
BASKETBALL BACKBOARD
Iain Haigh, 151 Dewdney Crescent, Penticton, British Columbia, Canada V2A 7N2
Filed May 17, 1994, Ser. No. 23,065
Claims priority, application Canada, Feb. 2, 1994, 1994-0153
Term of patent 14 years
U.S. Cl. D21—201



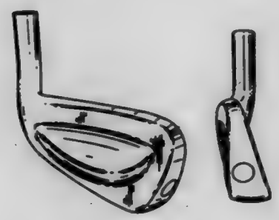
361,811
TOSSING BALL
Thomas H. Grimm, Menlo Park; Christopher S. Page, and William A. Scott, both of Palo Alto, all of Calif., assignors to OddzOn Products, Inc., Campbell, Calif.
Filed Jun. 21, 1994, Ser. No. 24,825
Term of patent 14 years
U.S. Cl. D21—204



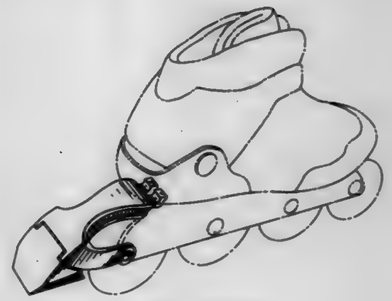
361,812
GOLF CLUB HEAD
Robert C. Rey, Huntington Beach, Calif., assignor to Pacific Golf USA, Westminster, Calif.
Filed May 3, 1994, Ser. No. 22,328
Term of patent 14 years
U.S. Cl. D21—217



361,813
GOLF CLUB HEAD
Jean-Marc Guiband, Annecy; Nicolas Mimeur, Annecy Le Vieux; Franck Dumontier, Annecy, all of France; Pascal Stolz, Del Mar, and Mike Peters, San Diego, both of Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Jul. 26, 1993, Ser. No. 11,056
Claims priority, application France, Jan. 25, 1993, 93 0391
Term of patent 14 years
U.S. Cl. D21—220



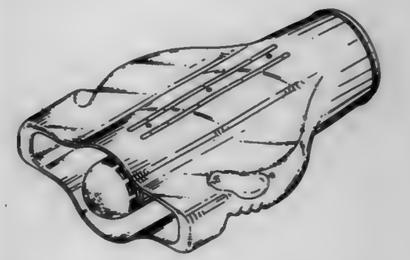
361,814
IN-LINE ROLLER SKATE BRAKE
Antonin A. Meibock, Cleveland, Ohio, and John E. Svensson, Seattle, Wash., assignors to K-2 Corporation, Vashon, Wash.
Continuation-in-part of Ser. No. 94,576, Jul. 19, 1993, Ser. No. 100,745, Aug. 2, 1993, and Ser. No. 128,629, Sep. 13, 1993. This application Jan. 21, 1994, Ser. No. 17,731
Term of patent 14 years
U.S. Cl. D21—226



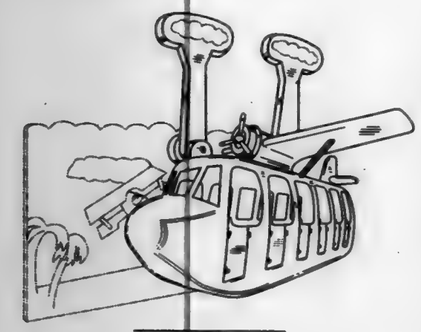
361,815
GOLF TOOL
Craig A. Fanckas, 23 Walnut Ave., Mill Valley, Calif. 94941
Filed Jan. 21, 1994, Ser. No. 24,748
Term of patent 14 years
U.S. Cl. D21—234



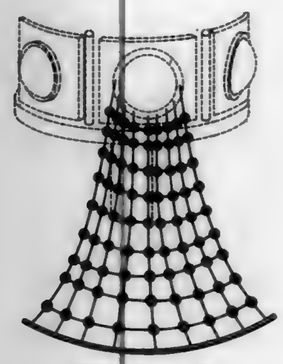
361,816
WATER SPORT VEHICLE
Sheng-Fu Yeh, P.O. Box 82-144, Taipei, Taiwan
Filed Sep. 22, 1994, Ser. No. 28,807
Term of patent 14 years
U.S. Cl. D12—308



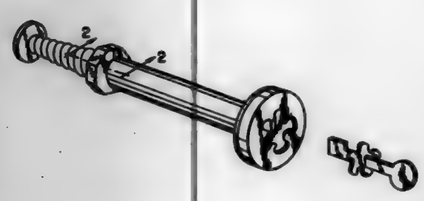
361,817
AIRPLANE AMUSEMENT RIDE
Mario Bolliva, Vicenza, Italy, assignor to Zamperla, Inc., Parsippany, N.J.
Filed Mar. 23, 1994, Ser. No. 20,293
Term of patent 14 years
U.S. Cl. D21—242



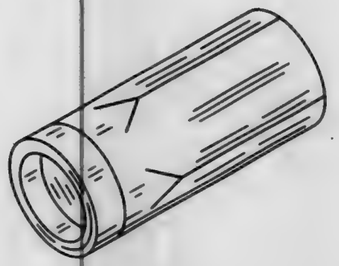
361,818
PLAYGROUND WEB CLIMBER
Terry Von Parrish, Monett, Mo., assignor to Miracle Recreation Equipment Company, Monett, Mo.
Filed Oct. 14, 1993, Ser. No. 14,177
Term of patent 14 years
U.S. Cl. D21—245



361,819
MUZZLE LOCK FOR FIREARM BARREL
Anthony Serrao, 6363 Lowell Dr., Verona, Pa. 15147
Filed Apr. 8, 1994, Ser. No. 21,873
Term of patent 14 years
U.S. Cl. D22—108



361,820
MULTIPLE FLECHETTES SABBOT
John M. Flanagan, 1525 Moon Ter., Medford, Oreg. 97504
Filed Feb. 14, 1994, Ser. No. 18,626
Term of patent 14 years
U.S. Cl. D22—116



361,821
FOLDABLE PLATFORM FOR SUPPORTING AN ICE FISHING STRUCTURE
Mark C. Shappell, Lansing, Mich., assignor to Shappell Corporation, Lansing, Mich.
Filed Feb. 22, 1994, Ser. No. 19,012
Term of patent 14 years
U.S. Cl. D22—134



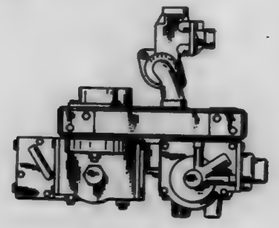
361,822
TANK USED FOR PUMP
Yoshiaki Fujisaka, Tokyo; Yukio Maruyama, Saitama; Toshiaki Hada, Saitama, and Yoshikazu Shimazu, Saitama, all of Japan, assignors to Iwaki Co., Ltd., Tokyo, Japan
Filed Mar. 9, 1994, Ser. No. 19,694
Claims priority, application Japan, Sep. 10, 1993, 5-27640
Term of patent 14 years
U.S. Cl. D23—202



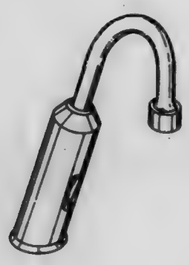
361,823
WATER TREATMENT DEVICE
James R. Layton, Quakertown; Michael Yeshpe, Chalfont, and Pavel Talberg, Doylestown, all of Pa., assignors to Aquarium Pharmaceuticals, Inc., Chalfont, Pa.
Filed Sep. 7, 1994, Ser. No. 28,421
Term of patent 14 years
U.S. Cl. D23—207



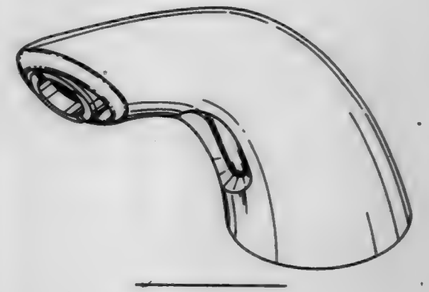
361,824
FLUID BRAKE CONTROL VALVE
G. Nicholas Gavrila, and Heinz J. Listl, both of Watertown, N.Y., assignors to Knorr Brake Holding Corporation, Westminster, Md.
Filed Sep. 3, 1993, Ser. No. 12,476
Term of patent 14 years
U.S. Cl. D23—233



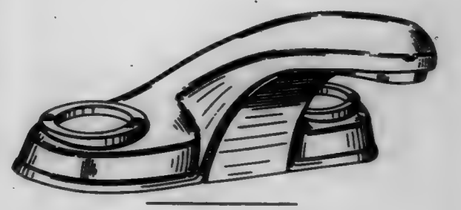
361,825
INFRARED FAUCET
Yukio Mine, Kitakyushu, Japan, assignor to Toto Ltd., Kitakyushu, Japan
Filed Aug. 25, 1994, Ser. No. 27,595
Term of patent 14 years
U.S. Cl. D23—238



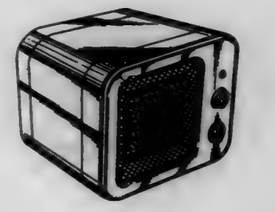
361,826
INFRARED FAUCET
Yukio Mine, Kitakyushu, Japan, assignor to Toto Ltd., Fukuoka, Japan
Filed Aug. 25, 1994, Ser. No. 27,603
Claims priority, application Japan, Feb. 25, 1994, 6-4708
Term of patent 14 years
U.S. Cl. D23—238



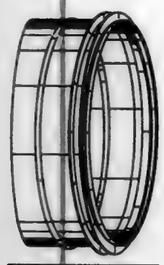
361,827
FAUCET BODY
Frederic C. Doughty, S. Pasadena, Calif., and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Jan. 31, 1994, Ser. No. 18,140
Term of patent 14 years
U.S. Cl. D23—241



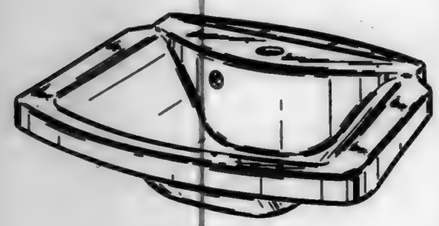
361,828
AIR HEATER
Cheng-Ho Chen, Taipei, Taiwan, assignor to Yei Li Electrical Works Co., Ltd., Taipei, Taiwan
Filed Apr. 6, 1994, Ser. No. 20,962
Term of patent 14 years
U.S. Cl. D23—335



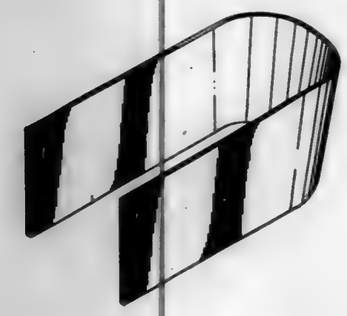
361,829
CIRCULAR SLEEVE COUPLING
Carl-Gustaf Sondén, Ängelholm, and Kenneth Lennartsson, Torekov, both of Sweden, assignors to Lindab AB, Bastad, Sweden
Filed Apr. 9, 1993, Ser. No. 6,943
Claims priority, application Denmark, Mar. 1, 1993, 022193
Term of patent 14 years
U.S. Cl. D23—262



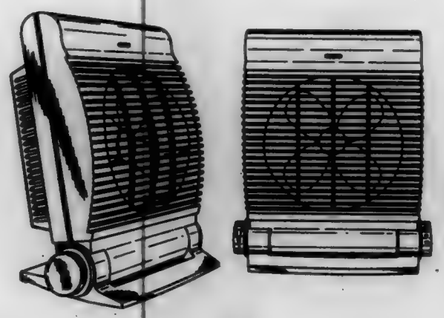
361,830
LAVATORY
Ludwig A. Segenschmid, Munich, Germany, assignor to American Standard Inc., N.J.
Filed Sep. 20, 1993, Ser. No. 13,182
Claims priority, application Hague Agreement, Mar. 19, 1993, DM/025,574
Term of patent 14 years
U.S. Cl. D23—293.1



361,831
BATHTUB LINER
Debra L. Pokasa, 3016 W. Rte. 120, McHenry, Ill. 60050
Filed Jul. 6, 1994, Ser. No. 25,187
Term of patent 14 years
U.S. Cl. D23—304



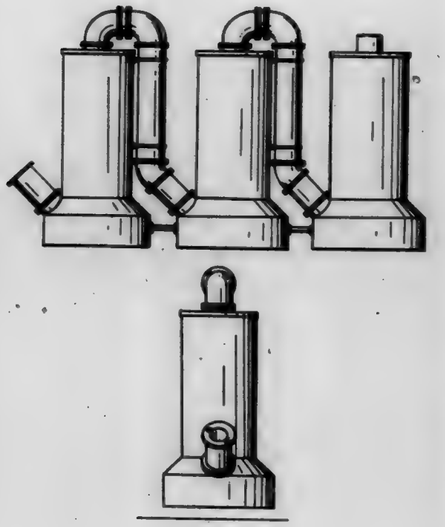
361,832
HEATER FAN
Joseph M. Canning, Cohasset, Mass., assignor to Holmes Products Corp., Milford, Mass.
Filed Mar. 1, 1994, Ser. No. 19,365
Term of patent 14 years
U.S. Cl. D23—328



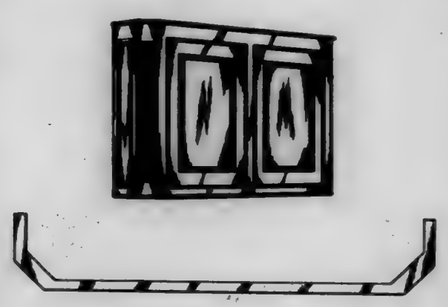
361,833
AIR CONDITIONER
Masao Shigesari, Yokohama, Japan, assignor to Fujitsu General Limited, Japan
Filed Oct. 25, 1994, Ser. No. 30,282
Term of patent 14 years
U.S. Cl. D23—351



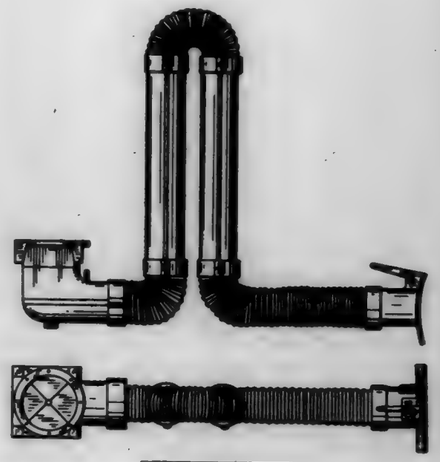
361,834
AIR SCRUBBER UNIT FOR USE IN THE REMOVAL OF POLLUTANTS FROM THE AIR
David J. Hunniford, Sarasota, Fla., assignor to Davis Water & Waste Industries, Inc., Tallevast, Fla.
Division of Ser. No. 708,624, May 31, 1991, Pat. No. Des. 347,469. This application Jan. 25, 1994, Ser. No. 17,896
Term of patent 14 years
U.S. Cl. D23—364



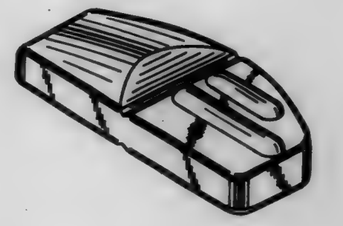
361,835
KITCHEN STOVE HOOD
John B. Brandon, Attica, N.Y., assignor to Harrow Products Inc., Grand Rapids, Mich.
Filed Sep. 17, 1993, Ser. No. 13,078
Term of patent 14 years
U.S. Cl. D23—372



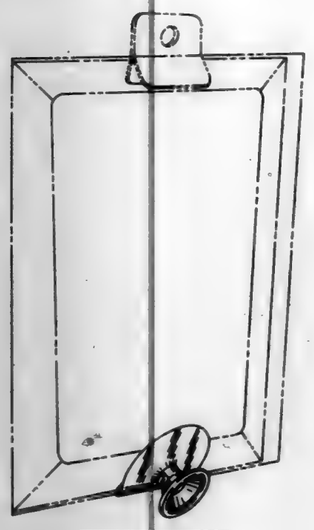
361,836
COMBINED EXTRACTION AND FEEDING ARTICULATED CONDUIT ARM UNIT FOR GAS
Hans T. Engström, Helsingborg, Sweden, assignor to AB Fr. Nederman & Co., Helsingborg, Sweden
Filed Feb. 25, 1992, Ser. No. 840,986
Claims priority, application Sweden, Aug. 26, 1991, 91-1669
Term of patent 14 years
U.S. Cl. D23—387



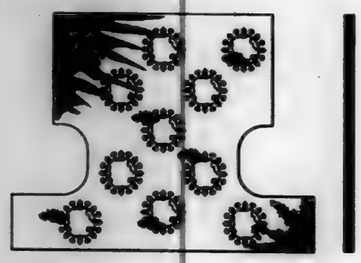
361,837
BREAKABLE TABLET
Stijn Swinkels, Amsterdam, Netherlands, assignor to Solvay-Duphar B.V., Weesp, Netherlands
Filed Dec. 28, 1993, Ser. No. 16,770
Claims priority, application WIPO, Jun. 28, 1993, DM/026583
Term of patent 14 years
U.S. Cl. D24—103



361,838
FLUID ACCESS PORT FOR MEDICAL CONTAINER
Thomas Kuhn, Mundelein; Erik Andersen, Gurnee; George Nassif, Palatine, and David G. Quinn, Grayslake, all of Ill., assignors to Corpak, Inc., Wheeling, Ill.
Continuation-in-part of Ser. No. 732,682, Jul. 19, 1991, Pat. No. Des. 338,726. This application Mar. 8, 1993, Ser. No. 5,609
The portion of the term of this patent subsequent to Aug. 24, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—118



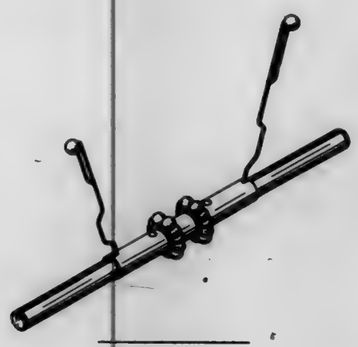
361,839
DIAPER
Margaret S. Doss, Rte. 1 Box 89, Saltillo, Miss. 38866
Filed May 13, 1993, Ser. No. 8,545
Term of patent 14 years
U.S. Cl. D24—126



361,840
STETHOSCOPE HEAD
Gary Savage, 5625 17th Avenue, Montréal, Québec, Canada H1X 2R7 , and Michel Swift, 444, Édouard Charles Outremont, Québec, Canada H2P 2N4
Filed Apr. 21, 1994, Ser. No. 21,668
Term of patent 14 years
U.S. Cl. D24—134



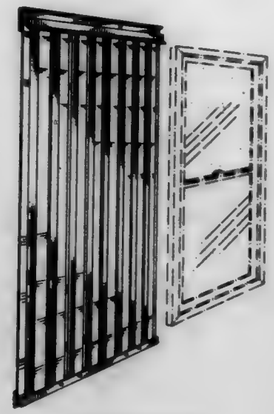
361,841
SELF-MASSAGER
Katsu Terashima, 8-2, Yahiro 3-chome, Sumida-ku, Tokyo, Japan
Filed Sep. 26, 1994, Ser. No. 28,600
Term of patent 14 years
U.S. Cl. D24—211



361,842
IMMUNOASSAY TEST CARTRIDGE
Albert R. Nazareth, Mercerville, and Ronnold L. Klawson, Flemington, both of N.J., assignors to Carter Wallace, Inc., New York, N.Y.
Filed May 23, 1994, Ser. No. 23,294
Term of patent 14 years
U.S. Cl. D24—225



361,843
STORM SHUTTER
Kenneth Pangborn, Sunrise, Fla., assignor to Keller Industries, Inc., Miami, Fla.
Filed Jul. 14, 1994, Ser. No. 25,880
Term of patent 14 years
U.S. Cl. D25—67



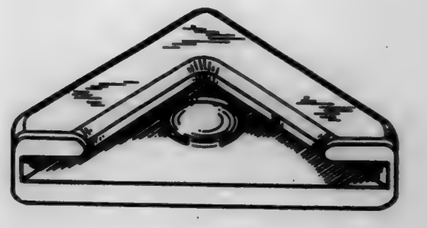
361,844
IRON GUARD
Ann L. Vetter, 1755 Maple Ave., Croydon, Pa. 19021
Filed May 9, 1994, Ser. No. 22,583
Term of patent 14 years
U.S. Cl. D25—53



361,845
ARCH FORM
Lester R. Peterson, Jr., 21625 Lake Point Rd., Humble, Tex. 77338
Filed Feb. 7, 1994, Ser. No. 18,484
Term of patent 14 years
U.S. Cl. D25—60



361,846
CORNER PIECE PARTICULARLY FOR FRAMES
David N. Te'Kaneen, 13, chemin du Pont-de-ville, 1234 Chene-Bourgeries, Switzerland
Filed Oct. 12, 1994, Ser. No. 29,615
Claims priority, application Hague Agreement, Apr. 12, 1994, DMA/002484
Term of patent 14 years
U.S. Cl. D25—60



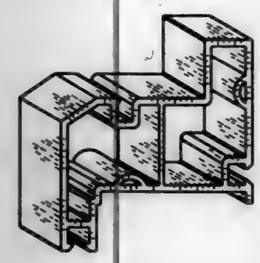
361,847
SPLIT CORNER SLIP-ON PIPE FITTING
Marc E. Cotrulo, Ft. Thomas, Ky., assignor to The Hollaender Manufacturing Co., Cincinnati, Ohio
Filed Mar. 21, 1994, Ser. No. 20,202
Term of patent 14 years
U.S. Cl. D25—68



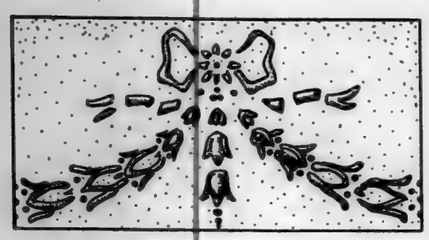
361,848
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Oct. 26, 1994, Ser. No. 30,315
Term of patent 14 years
U.S. Cl. D25—122



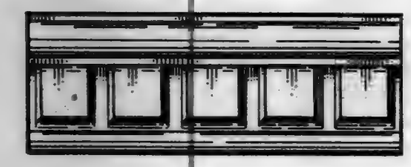
361,849
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Oct. 26, 1994, Ser. No. 30,309
Term of patent 14 years
U.S. Cl. D25—124



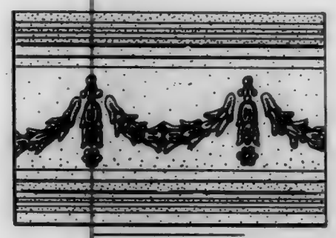
361,850
TILE
Miles P. Jennings, Exeter, United Kingdom, assignor to Stovax Limited, United Kingdom
Filed Mar. 7, 1994, Ser. No. 19,590
Term of patent 14 years
U.S. Cl. D25—157



361,851
TILE
Miles P. Jennings, Exeter, United Kingdom, assignor to Stovax Limited, United Kingdom
Filed Mar. 7, 1994, Ser. No. 19,604
Term of patent 14 years
U.S. Cl. D25—157



361,852
TILE
Miles P. Jennings, Exeter, United Kingdom, assignor to Stovax Limited, United Kingdom
Filed Mar. 7, 1994, Ser. No. 19,605
Term of patent 14 years
U.S. Cl. D25—157



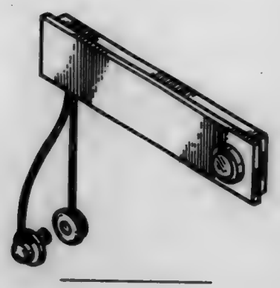
361,853
DECORATIVE LAWN EDGING
Melaney L. Northrop, Cleburne, Tex., assignor to Deskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Mar. 30, 1993, Ser. No. 6,475
Term of patent 14 years
U.S. Cl. D25—164



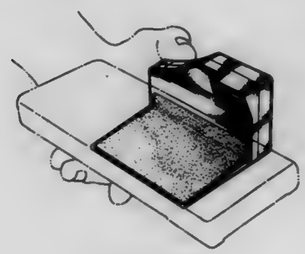
361,854
RIBBON CANDLE
Harri J. Siltonen, Nikkarintie 4, SF-54800 Savitaipale, Finland
Filed Apr. 8, 1994, Ser. No. 21,058
Claims priority, application Finland, Oct. 8, 1993, 669/93
Term of patent 14 years
U.S. Cl. D26—6



361,855
PURSE LIGHT
Harvey Jones, 2402 N. Hwy 175 #314, and Lavette Stubblefield, 2402 N. Hwy., #314, both of Seagoville, Tex. 75159
Filed Mar. 28, 1994, Ser. No. 20,502
Term of patent 14 years
U.S. Cl. D26—37



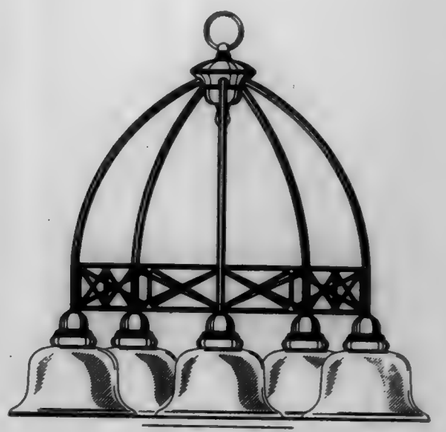
361,856
REMOTE CONTROL ILLUMINATION DEVICE
Carl F. Ziegler, 14094 N. Hyde Ave., Hugo, Minn. 55038
Filed Apr. 7, 1994, Ser. No. 21,004
Term of patent 14 years
U.S. Cl. D26—37



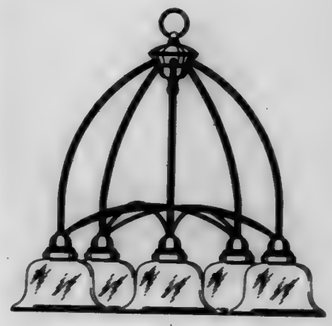
361,857
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed May 16, 1994, Ser. No. 22,908
Term of patent 14 years
U.S. Cl. D26—91



361,858
SUSPENDED LIGHT FIXTURE
Mark A. Pickett, Louisville, Ky., assignor to Thomas Industries, Inc., Louisville, Ky.
Filed Jun. 28, 1994, Ser. No. 25,136
Term of patent 14 years
U.S. Cl. D26—84



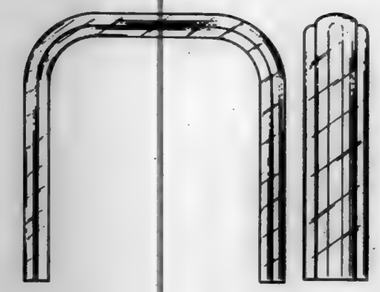
361,859
CHANDELIER
Mark A. Pickett, Louisville, Ky., assignor to Thomas Industries, Inc., Louisville, Ky.
Filed Jun. 28, 1994, Ser. No. 25,139
Term of patent 14 years
U.S. Cl. D26—84



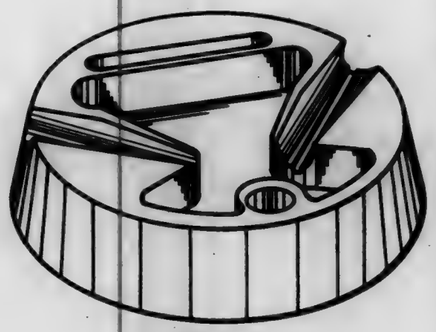
361,860
TABLE LAMP BASE
John R. Drucker, Atlanta, Ga., assignor to The Speer Lamp Corp. of New York, Smyrna, Ga.
Filed Jul. 19, 1993, Ser. No. 10,844
Term of patent 14 years
U.S. Cl. D26—110



361,861
DECORATIVE LENS PANEL FOR WALL AND PENDANT LIGHTING FIXTURES
Mark Ziv, Bel Air, Calif., assignor to Trans Globe Imports, North Hollywood, Calif.
Filed May 19, 1992, Ser. No. 885,382
Term of patent 14 years
U.S. Cl. D26—152



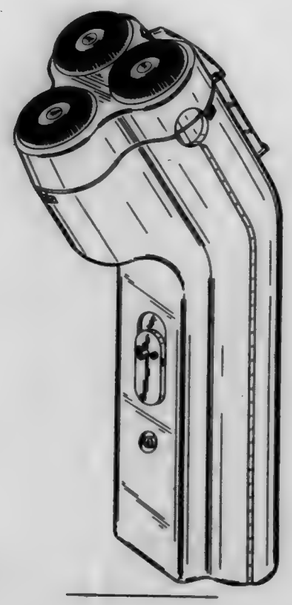
361,862
ROUND ASHTRAY
W. Clair Havens, 1157 SW. 10th Ave., Ontario, Oreg. 97914, assignor to W. Clair Havens and Earl Cheatham, Ontario, Oreg.
Filed Jul. 29, 1994, Ser. No. 26,501
Term of patent 14 years
U.S. Cl. D27—102



361,863
POCKET LIGHTER
Shohzoh Motobayashi, Osaka, Japan, assignor to Motobayashi Co., Ltd., Osaka, Japan
Filed Jun. 23, 1994, Ser. No. 24,911
Claims priority, application Japan, Mar. 8, 1994, 6-5777
Term of patent 14 years
U.S. Cl. D27—154



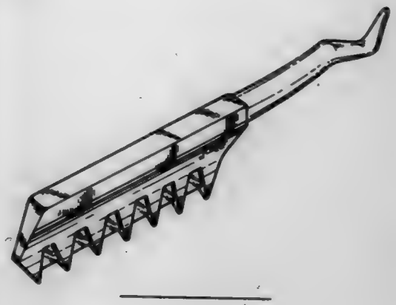
361,864
ELECTRIC SHAVER
Tsuyoshi Nakano, Nagano, Japan, assignor to Izumi Products Company, Nagano, Japan
Filed May 5, 1993, Ser. No. 7,942
Claims priority, application Japan, Jan. 29, 1993, 5-2381
Term of patent 14 years
U.S. Cl. D28—50



361,865
NAIL CLIPPER AND SUPPORT
Francis A. Tesolt, 28470 Webster, Clinton Township, Macomb County, Mich. 48035
Filed Dec. 28, 1993, Ser. No. 16,800
Term of patent 14 years
U.S. Cl. D28—60



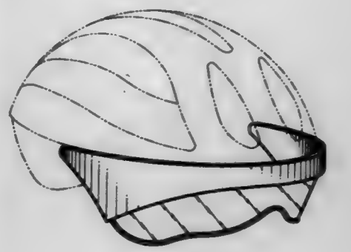
361,866
SAFETY RAZOR WITH DISPOSABLE BLADE
Hiram Febus, Box 3403, Victory, Bayamon, P.R. 00958
Filed Feb. 24, 1993, Ser. No. 5,122
Term of patent 14 years
U.S. Cl. D28—46



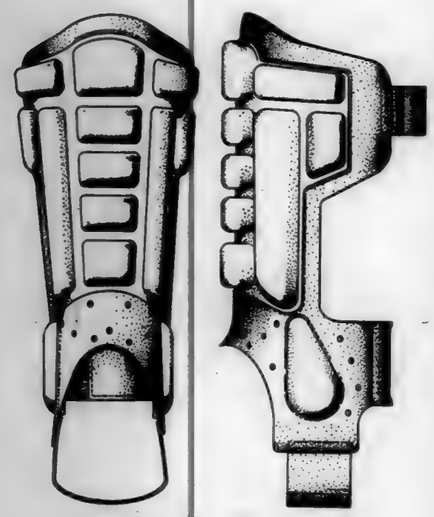
361,867
HELMET
Fujio Taniuchi, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 7, 1993, Ser. No. 12,699
Claims priority, application Japan, May 6, 1993, 5-13205
Term of patent 14 years
U.S. Cl. D29—102



361,868
EYE SHIELD FOR BICYCLE HELMET
Robert A. Raugh, 21621 Feralcaf, El Toro, Calif. 92630
Filed Jul. 5, 1994, Ser. No. 25,513
Term of patent 14 years
U.S. Cl. D29—109



361,869
SHIN PROTECTIVE PAD
Nicholas B. Paffett, 35 Eldridge Ct., Hingham, Mass. 02043, and Edward D. Krent, 207 Hampton Rd., Sharon, Mass. 02067
Filed Feb. 2, 1993, Ser. No. 4,345
Term of patent 14 years
U.S. Cl. D29—120



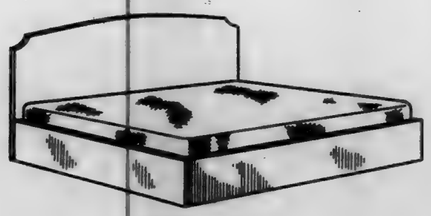
361,870
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,227
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—101



361,871
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,240
Term of patent 14 years
U.S. Cl. D30—101



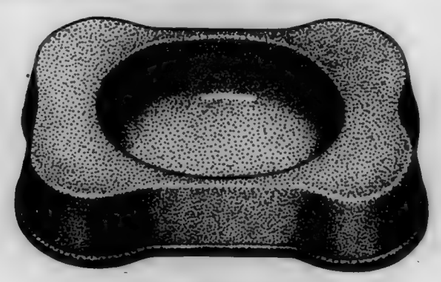
361,872
BED FOR PETS
Franklin McMahon, and Jeanifer Hornery, both of New York, N.Y., assignors to Univier International Corp., New York, N.Y.
Filed Nov. 2, 1992, Ser. No. 1,017
Term of patent 14 years
U.S. Cl. D30—118



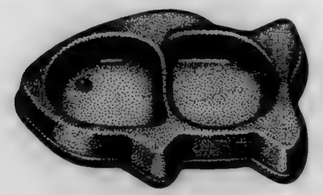
361,873
BIRD FEEDER
John R. Nottingham, Hunting Valley; John J. Pastrick, University Heights, and John W. Spirk, Jr., Moreland Hills, all of Ohio, assignors to County Line Limited, L.L.C., Cleveland, Ohio
Continuation-in-part of Ser. No. 931,934, Aug. 18, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 13,662
Term of patent 14 years
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361,874
ANIMAL FEEDING BOWL
Steven F. Keller, and Karen S. Keller, both of 8721 Golden Gardens Dr., NW., Seattle, Wash. 98117
Filed Jul. 22, 1994, Ser. No. 26,235
Term of patent 14 years
U.S. Cl. D30—129



361,875
ANIMAL FEEDING BOWL
Steven F. Keller, and Karen S. Keller, both of 8721 Golden Gardens Dr. NW., Seattle, Wash. 98117
Filed Jul. 22, 1994, Ser. No. 26,236
Term of patent 14 years
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361,876
FELINE SCRATCHING POST
Melaney L. Northrop, Cleburne, and Thomas B. Murphy, Arlington, both of Tex., assignors to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jul. 15, 1993, Ser. No. 10,723
The portion of the term of this patent subsequent to Jan. 31, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—160



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Kukimoto, Takashi; Aoki, Yasutoshi; Yamaginhi, Naoto; and Usui, Shinji, 5,445,201, Cl. 152-209.00R.

Aoyama Seisakusho Co., Ltd.: *See*—
Kazino, Hiroshi, 5,444,908, Cl. 29-798.000.

Apple Computer, Inc.: *See*—
Capps, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., 5,446,882, Cl. 395-600.000.
Drako, Dean M.; and Roskowski, Steven G., 5,446,866, Cl. 395-500.000.
Miller, Gavin S. P.; and Chen, Shenchang E., 5,446,833, Cl. 395-125.000.

Apps, William P., to Rehrig Pacific Company, Inc. Low depth nestable tray for cans or the like. 5,445,273, Cl. 206-505.000.

Aquapore Moisture Systems, Inc.: *See*—
Prasser, Thomas N.; and Bard, Shannon, 5,445,775, Cl. 264-41.000.

Aquatique U.S.A.: *See*—
Formhals, Dominique; and Pepin, Yves, 5,445,322, Cl. 239-18.000.

Arai, Masatoshi: *See*—
Yagimuma, Atsushi; Hasebe, Nobuyuki; Kimura, Tsuneo; and Arai, Masatoshi, 5,445,873, Cl. 428-220.000.

Arai, Takeo: *See*—
Uehara, Katsuhiro; Endo, Mikio; Araki, Hitoyuki; Arai, Takeo; and Kawase, Yasuhiro, 5,446,181, Cl. 556-424.000.

Arai, Tsuyoshi, to Nissei Plastic Industrial Co., Ltd. Method for detecting abnormality in hydraulic system of molding machine and apparatus therefor. 5,445,773, Cl. 264-40.100.

Arai, Yoshinobu: *See*—
Toda, Masaaki; Miyamoto, Tumoru; and Arai, Yoshinobu, 5,446,058, Cl. 514-381.000.

Araki, Hitoyuki: *See*—
Uehara, Katsuhiro; Endo, Mikio; Araki, Hitoyuki; Arai, Takeo; and Kawase, Yasuhiro, 5,446,181, Cl. 556-424.000.

Araki, Keiji: *See*—
Nakamura, Yoshitaka; Araki, Keiji; Okamura, Kazumi; and Mizuno, Koji, 5,445,241, Cl. 180-296.000.

Arakik, Akio, to Sony Corporation. Device for reducing electromagnetic interference in disc recording and/or reproducing apparatus with radio receiving function. 5,446,707, Cl. 369-13.000.

Arasawa, Masashi: *See*—
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.

Arcade, Inc.: *See*—
Brown, Hubert F.; and French, Paul J. A., 5,445,821, Cl. 424-401.000.

Archuleta, Adrian A.: *See*—
Hayes, William J.; Forehand, Andrew M.; Archuleta, Adrian A.; Hinkle, Paul R.; Mundell, Jerry A.; and Luciterhand, Mark A., 5,445,450, Cl. 312-223.200.

Areal Technology, Inc.: *See*—
Thornton, Arnold O.; Nguyen, Hang T.; Nguyen, Greg N.; and Williams, Don P., 5,446,612, Cl. 360-104.000.

Arendt, Phillip S.; and Langley, Charles E., to Food Sciences, Inc. Method for the extraction of oils from grain materials and grain-based food products. 5,445,841, Cl. 426-312.000.

Arganbright, Robert P.; Jones, Edward M., Jr.; and Hearn, Dennis, to Chemical Research & Licensing Company. Method for removing contaminants from hydrocarbon streams. 5,446,231, Cl. 585-802.000.

Arhancet, Graciela B., to Betz Laboratories, Inc. Methods for inhibiting vinyl aromatic monomer polymerization. 5,446,220, Cl. 585-5.000.

Arisaka, Masakazu: *See*—
Yamaguti, Shuji; Ukon, Masayuki; Miawa, Shiroji; and Arisaka, Masakazu, 5,445,722, Cl. 204-229.000.

Arizona Board of Regents on behalf of the University of Arizona, The: *See*—
Masuho, Yasuhiko; Sugano, Toru; Matsumoto, Yoh-Ichi; Hersh, Evan M.; Petersen, Eskild A.; Lake, Douglas; and Kawamura, Takashi, 5,445,960, Cl. 435-240.270.

Armand, Michel; Bearabah, Djamila; and Sanchez, Jean-Yves, to Centre National de la Recherche Scientifique; and Hydro Quebec. Bis(-perfluorosulfonyl)methane salts, and a process for preparing same. 5,446,134, Cl. 534-558.000.

Armbrust, Bernard F., Jr., to Reynolds Metal Company. Process for preparing ultra-white alumina trihydrate. 5,445,808, Cl. 423-629.000.

Arnold, William K.: *See*—
Grim, Tracy E.; Arnold, William K.; and Iglesias, Joseph M., 5,445,602, Cl. 602-27.000.

Array Printers AB: *See*—
Larson, Ove, 5,446,478, Cl. 347-158.000.

Arroyo, Ronald X.; Burky, William E.; Gruwell, Tricia A.; and Hinojosa, Joaquin, to International Business Machines Corporation. Steering logic to directly connect devices having different data word widths. 5,446,845, Cl. 395-250.000.

Arturo Salice S.p.A.: *See*—
Salice, Luciano, 5,444,895, Cl. 16-278.000.

Asada, Atsuhisa: *See*—
Yamashita, Yasuhiro; Manabe, Kuspei; and Asada, Atsuhisa, 5,446,669, Cl. 364-468.000.

Asahi Glass Company Ltd.: *See*—
Haraseiwa, Masako; Misuda, Katsutoshi; Matsubara, Toshiya; and Tanuma, Toshihiro, 5,445,868, Cl. 428-206.000.
Sugawara, Tsuneihiko; Murakami, Toshihide; and Kobayashi, Yusuke, 5,445,285, Cl. 220-2.10A.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Anazawa, Noboru; and Shimoda, Yoshitaka, 5,446,101, Cl. 525-239.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Adachi, Rensuke; Sone, Hiroshi; and Tanaka, Chinari, 5,445,157, Cl. 128-664.000.
Hamasaki, Takuji; and Okura, Zenichi, 5,446,593, Cl. 359-704.000.
Mogamiya, Makoto, 5,446,512, Cl. 354-131.000.

Asai, Haruo; Kuwahara, Mitsuru; and Kotera, Nobukazu, to Toyo Boseki Kabushiki Kaisha. Water-dispersible polyester composition for image recording medium. 5,446,082, Cl. 524-389.000.

Asai, Kuniaki: *See*—
Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.

Asako, Hirofumi: *See*—
Sugie, Masami; and Asako, Hirofumi, 5,445,153, Cl. 128-653.500.

Asakura, Osamu; Uchikata, Yoshio; Kawazoe, Kenji; and Kanome, Yuji, to Canon Kabushiki Kaisha. Ink ribbon usage in a multicolor image recording apparatus. 5,445,464, Cl. 400-249.000.

Asaoka, Sachio: *See*—
Ikuta, Yuzo; Tashiro, Satoshi; Hatano, Yoshiyuki; Fujita, Tadasu; Andoh, Noboru; Asaoka, Sachio; Kobayashi, Haruto; and Minami, Takeshi, 5,445,955, Cl. 435-180.000.

Asea Brown Boveri AB: *See*—
Eriksson, Leif; and Saha, Murari M., 5,446,387, Cl. 324-522.000.

Askew, Victoria E.: *See*—
Rickwood, Martin; Marsden, Sean D.; and Askew, Victoria E., 5,446,150, Cl. 544-71.000.

Askin, David: *See*—
Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

Aslakson, Joel T.: *See*—
Utke, Reinhold E.; Eidsness, John L.; Van de Loo, Dale P.; Ellingson, Gary L.; and Aslakson, Joel T., 5,446,701, Cl. 367-118.000.

Aslund, Christer: *See*—
Friedman, Ira; and Aslund, Christer, 5,445,787, Cl. 419-38.000.

Assman, Georg: *See*—
Hees, Udo; Assman, Georg; and Schuster, Fritz, 5,446,210, Cl. 568-671.000.

Associated Materials, Inc.: *See*—
Shaner, John F.; and Evans, Daniel W., 5,445,208, Cl. 160-232.000.

AST Research, Inc.: *See*—
Kennedy, Barry; and Masters, Thomas W., 5,446,910, Cl. 395-800.000.

AST Research, Inc.: *See*—
Gleeson, Bryan J.; and Altmaier, Paulette R., 5,446,736, Cl. 370-85.130.

Asta Medica AG: *See*—
Engel, Jurgen; Wolf-Hesse, Elisabeth; Orth, Helmut; Wichert, Burkhard; and Sauerber, Dieter, 5,446,033, Cl. 514-77.000.

ASTA Medica Aktiengesellschaft: *See*—
Kutscher, Bernhard; and Dieter, Hans-Reinhold, 5,446,148, Cl. 544-14.000.

AT&T Corp.: *See*—
Balgeman, Timothy E.; Clodi, Diane M.; Haddleton, Robert W., Jr.; North, John R.; and Selby, Judith A., 5,446,880, Cl. 395-600.000.
Bishut, Donald E.; and Szurkowski, Edward S., 5,446,490, Cl. 348-7.000.
Corcoran, Gary T.; Fairfield, Robert C.; and Sufi, Akkas T., 5,446,865, Cl. 395-500.000.
Crawford, James M., Jr.; and Etherington, David W., 5,446,830, Cl. 395-51.000.
Mammel, Lewis H., Jr., 5,446,881, Cl. 395-600.000.

AT&T Global Information Solutions Company: *See*—
Perkins, Luke, 5,446,375, Cl. 324-163.000.

AT&T IPM Corp.: *See*—
Evans, Glen A.; and Kip, Ruloff F., Jr., 5,445,489, Cl. 414-458.000.

Atallah, Yousef H.; Butz, Robert G.; and Krueger, James P. New microorganisms. 5,445,962, Cl. 435-252.100.

Atlantic Richfield Company: *See*—
Rathmell, James J.; and Yavra, Charles L., 5,445,228, Cl. 175-4.000.

Atlas Copco Berema Aktiebolag: *See*—
Brannstrom, Osten; and Henriksson, Roland, 5,445,232, Cl. 175-417.000.

Atlas Elektronik GmbH: *See*—
Becker, Gunnar; Borsken, Norbert; Gudesen, Alwin; Klemp, Jurgen; Tunmoscheit, Gunter; and Vilmar, Gordian, 5,446,291, Cl. 250-559.240.

Atoji, Tadashi: *See*—
Tokunaga, Hiroyuki; and Atoji, Tadashi, 5,445,992, Cl. 437-100.000.

ATR Optical and Radio Communications Research Laboratories: *See*—
Banba, Seiichi, 5,446,425, Cl. 333-116.000.

Atsugi Unisia Corporation: *See*—
Sasaki, Mitsuo; Kakizaki, Shinobu; Yamaoka, Fumiyuki; Takahashi, Toru; and Kimura, Makoto, 5,446,663, Cl. 364-424.050.

Atwal, Harninder: *See*—
Maiti, Samarendra; Fiskani, Charles; Reddy, A. V. N.; Czajkowski, David; Spevak, Paul; Atwal, Harninder; and Micetich, Ronald G., 5,446,037, Cl. 514-201.000.

Aubertot, Christophe. Straight setting pattern for clay bricks. 5,445,492, Cl. 414-786.000.

Augelli-Szafran, Corinne E.; Saen, Juan C.; Schwarz, Roy; and Thomas, Anthony J., to Warner-Lambert Company. Substituted tetrahydropyridine and piperidine carboxylic acids as muscarinic antagonists. 5,446,057, Cl. 514-356.000.

Augustine, Robert L.; and Tanielyan, Setrak K., to Philip Morris Incorporated. Production of supported particulate catalyst suitable for use in a vapor phase reactor. 5,446,003, Cl. 502-159.000.

Ausimont S.r.l.: *See*—
Marchionni, Giuseppe; Gavezotti, Piero; and Strepparola, Ezio, 5,446,205, Cl. 568-603.000.
Marchionni, Giuseppe; and Staccione, Anna, 5,446,206, Cl. 568-604.000.

Austin, Richard: *See*—
Overhage, Craig; and Austin, Richard, 5,446,650, Cl. 364-487.000.

Austin, Robert. Free ranging monotrack sortveyor with selectively lockable article carrying tilt tray. 5,445,080, Cl. 104-119.000.

Automotive Systems Laboratory, Inc.: *See*—
Gillis, Edward J.; Gioutsos, Tony; and Palmer, Dennis E., 5,445,412, Cl. 280-735.000.
Gioutsos, Tony; Gillis, Edward J.; Chapelle, Walter E.; and Swayze, Carolyn A., 5,446,661, Cl. 364-424.050.

Avignon, Bruno; and Canal, Yves, to Thomson-CSF. Low-cost compact microwave antenna for a transmitter and/or receiver system mounted in a vehicle. 5,446,470, Cl. 343-713.000.

Avihod, Eli, to Medisol U.S.A. Inc. Kit for a reclining chair-back thoracic-lumbar-sacral corrective orthosis wheelchair. 5,445,433, Cl. 297-380.000.

Awaji Ferryboat Kabushiki Kaisha: *See*—
Yanawaki, Yuichiro, 5,446,659, Cl. 364-424.030.

Axiocom: *See*—
Patry, Bernard, 5,446,473, Cl. 367-191.000.

Ayres, Kathryn J.; Beardsley, Brent C.; Bello, Keith A.; Benhase, Michael T.; Nordahl, Donald M.; Torre, Alfred G.; Trieu, Bao T.; and VanPatten, Linda D., to International Business Machines Corporation. Method for error recovery in a non-synchronous control unit. 5,446,872, Cl. 395-180.000.

Azkoyen Industrial, S.A.: *See*—
Inasusti, Jose L. P.; and Iturrola, Jesus E., 5,445,296, Cl. 221-7.000.

B B S.R.L.: *See*—
Barbanti, Arturo, 5,445,134, Cl. 123-527.000.

B.E.L.-Tronics Limited: *See*—
Martinson, Glen D.; and Burin, Marian M., 5,446,923, Cl. 455-330.000.

B&S Plastics, Inc.: *See*—
Holtsnider, Michael D., 5,444,879, Cl. 4-541.010.

Baba, Shozo: *See*—
Hanai, Nobuo; Baba, Shozo; and Ozawa, Tadachika, 5,445,938, Cl. 435-7.230.

Babb, Robert A.: *See*—
Cryer, Michael A.; Danielson, William D.; and Babb, Robert A., 5,445,553, Cl. 451-7.000.

Babcock, Douglas J.: *See*—
Letang, Dennis M.; Babcock, Douglas J.; and Weisman, S. Miller, II, 5,445,128, Cl. 123-436.000.

Babcock & Wilcox Company, The: *See*—
Flora, John H., 5,446,382, Cl. 324-232.000.

Baber, Marc, to Intel Corporation. Circuitry and method for addressing global array elements in a distributed memory, multiple processor computer. 5,446,856, Cl. 395-401.000.

Babuder, Gerald A.: *See*—
Mohlenkamp, Michael J.; Babuder, Gerald A.; Jobling, Peter A.; and Conover, Charles E., 5,445,263, Cl. 206-303.000.

Bacchi, Paul E.; and Filipski, Paul S., to Kensington Laboratories, Inc. Compact specimen processing station. 5,446,584, Cl. 359-393.000.

Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Lindes, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., to Orion-yhtyma Oy. Pharmacologically active catechol derivatives. 5,446,194, Cl. 558-401.000.

Badyal, Rajeev; and Knowles, Vernon, to Hewlett Packard Corporation. CMOS power-on reset circuit. 5,446,404, Cl. 327-143.000.

Badyiak, Stephen F.; Geddes, Leslie A.; Shelbourne, K. Donald; Lantz, Gary C.; and Coffey, Arthur C., to Purdue Research Foundation; and Methodist Hospital of Indiana, Inc. Tendon or ligament graft for promoting autogeneous tissue growth. 5,445,833, Cl. 424-551.000.

Baek, Hyun C.: *See*—
Yook, Hyung S.; Park, Sang H.; Back, Hyun C.; Lee, Young C.; Kim, Sang I.; and Baik, Dong W., 5,445,990, Cl. 437-69.000.

Baek, Seung Ho.; Morrison, Robert I.; and Sarraf, Sanwal P., to Eastman Kodak Company. Holder for a thermal print medium. 5,446,477, Cl. 346-138.000.

Baer, Thomas M.: *See*—
Nighan, William L., Jr.; Cole, John; and Baer, Thomas M., 5,446,749, Cl. 372-22.000.

Baik, Dong W.: *See*—
Yook, Hyung S.; Park, Sang H.; Back, Hyun C.; Lee, Young C.; Kim, Sang I.; and Baik, Dong W., 5,445,990, Cl. 437-69.000.

Bailey, David S.; and Parton, Richard L., to Eastman Kodak Company. Process for the formation of heat image separation elements of improved sensitometry. 5,445,913, Cl. 403-203.000.

Bailey, Howard W.: *See*—
Stettner, Roger; and Bailey, Howard W., 5,446,529, Cl. 356-4.010.

Bailey, Timothy J.: *See*—
Fritz, Daniel J.; Bailey, Timothy J.; and Ball, Gary A., 5,446,809, Cl. 385-17.000.

Bair, Keith A.: *See*—
Chen, Fu; Bair, Keith A.; and Boyette, Scott M., 5,445,758, Cl. 252-180.000.

Baird, Michael C.; Gillis, Daniel J.; and Quyoum, Ruhksana, to Queen's University at Kingston. Process for producing amorphous syndiotactic polystyrene. 5,446,117, Cl. 526-134.000.

Baker, Glenn S.; Chang, David D.; and Paulino, Fred P., to Cogent Light Technologies, Inc. Fiber optic connector having a shielding apparatus for protecting the exposed end of a fiber optic. 5,446,818, Cl. 385-78.000.

Baker Hughes Incorporated: *See*—
Scott, Danny E.; Lu, Mou-Chih; and Pessier, Rudolf C. O., 5,445,231, Cl. 175-374.000.

Baker, Stephen: *See*—
Belardinelli, Luiz; Olsson, Ray; Baker, Stephen; and Scammells, Peter J., 5,446,046, Cl. 514-263.000.

Baker, Trace A.; Davis, Bruce M.; and Rebman, Chester L., to Storage Technology Corporation. Discontinuity compensation for motor driver servos. 5,446,357, Cl. 318-632.000.

Baldazzi, Claudia; Piani, Silvano; Barbanti, Maria; and Marchi, Egidio, to Alfa Wassermann S.p.A. Heterocyclic compounds active in gastrointestinal pathologies. 5,446,152, Cl. 544-123.000.

Balgeman, Timothy E.; Clodi, Diane M.; Haddleton, Robert W., Jr.; North, John R.; and Selby, Judith A., to AT&T Corp. Database communication system that provides automatic format translation and transmission of records when the owner identified for the record is changed. 5,446,880, Cl. 395-600.000.

Balgobin, Neil G.: *See*—
Eadie, James S.; Balgobin, Neil G.; and Buck, Harvey, 5,445,933, Cl. 435-6.000.

Baliga, Bantval J.; and Venkatraman, Prasad, to North Carolina State University. Integrated circuit power device with external disabling of defective devices and method of fabricating same. 5,446,310, Cl. 257-529.000.

Ball, Gary A.: *See*—
Fritz, Daniel J.; Bailey, Timothy J.; and Ball, Gary A., 5,446,809, Cl. 385-17.000.

Banan, Mohsen: *See*—
Hansen, Richard L.; and Banan, Mohsen, 5,445,679, Cl. 134-1.000.

Banba, Seiichi, to ATR Optical and Radio Communications Research Laboratories. Floating potential conductor coupled quarter-wavelength coupled line type directional coupler comprising cut portion formed in ground plane conductor. 5,446,425, Cl. 333-116.000.

Bando, Takashi: *See*—
Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masateru, 5,445,713, Cl. 162-304.000.

Banerji, Kingshuk: *See*—
Urbish, Glenn F.; Mullen, William B., III; and Banerji, Kingshuk, 5,446,625, Cl. 361-761.000.

Banjo, Toshinobu: *See*—
Kawata, Yoshinobu; and Banjo, Toshinobu, 5,445,677, Cl. 118-724.000.

Banks, Stewart, to Sprintvest Corporation NV. Liquid dispenser for dispensing foam. 5,445,288, Cl. 222-95.000.

Bantien, Frank; and Reihlen, Eckart, to Robert Bosch GmbH. Temperature sensor. 5,446,437, Cl. 338-25.000.

Banyu Pharmaceutical Co., Ltd.: *See*—
Ishikawa, Kiyofumi; and Hayama, Takashi, 5,446,164, Cl. 546-139.000.

Baran, Jane E.; d'Alessandro, Antonio; and Jackel, Janet L., to Bell Communications Research, Inc. Passband-flattened acousto-optic polarization converter. 5,446,807, Cl. 385-11.000.

Barbanti, Arturo, to B B S.R.L. Self-compensated and electrically heated reducer for compressed gas or L.P.G. 5,445,134, Cl. 123-527.000.

Barbanti, Maria: *See*—
Baldazzi, Claudia; Piani, Silvano; Barbanti, Maria; and Marchi, Egidio, 5,446,152, Cl. 544-123.000.

Barbee, Steven G.; Datta, Madhav; Heinz, Tony F.; Li, Leping; Ratzlaff, Eugene H.; and Shenoy, Ravindra V., to International Business Machines Corporation. Method and apparatus for contactless real-time in-situ monitoring of a chemical etching process. 5,445,705, Cl. 156-627.100.

Barber-Colman Company: *See*—
Scheider, Merwin R., 5,446,326, Cl. 310-83.000.

Bard, Shannon: *See*—
Prassas, Thomas N.; and Bard, Shannon, 5,445,775, Cl. 264-41.000.

Bard, Steven L.; Jones, Jeffrey D.; Katyl, Robert H.; Moore, Ronald J.; and Moreno, Oscar A., to International Business Machines Corporation. Fluid treatment apparatus and method. 5,444,925, Cl. 34-638.000.

Barkan, Edwrd, to Symbol Technologies, Inc. System for digitizing a scanned signal indicating changes in signal intensity. 5,446,272, Cl. 235-462.000.

Barker, John M.: *See*—
Plyley, Alan K.; Foshee, Floyd L.; Barker, John M.; and Petrich, Robert W., 5,445,304, Cl. 227-176.000.

Barkhorn, Gerald, to Lohmann GmbH & Co. KG. Tubular bag packaging. 5,445,454, Cl. 383-207.000.

Barlow, George J.: *See*—
Keeley, James W.; Barlow, George J.; and Lemay, Richard A., 5,446,847, Cl. 395-280.000.

Barnes, Travis E., to Caterpillar Inc. Method for controlling a hydraulically-actuated fuel injection system. 5,445,129, Cl. 123-446.000.

Barnett International, Inc.: *See*—
Bybee, Mark T., 5,445,139, Cl. 124-23.100.

Barone, Chris A.: *See*—
McDonough, James M.; Barone, Chris A.; and Doucet, Michel, 5,445,518, Cl. 431-153.000.

Barone, Larry A. Marine impeller tester. 5,445,012, Cl. 73-116.000.

Barradas, George. Combination bread making machine and cooker. 5,445,061, Cl. 99-340.000.

Barrand, Kerwood, to Vision Lighting, Inc. Attachment member for lamp socket and method. 5,445,540, Cl. 439-573.000.

Barre, Bertrand, to Cheasbrough-Pond's USA Co., Division of Conopco, Inc. Toothbrush assembly. 5,444,889, Cl. 15-167.100.

Barrett, Donald C., to Raychem Limited. Insulator. 5,446,242, Cl. 174-140.00R.

Bartels, Craig R.: *See*—
Teohey, David; Bartels, Craig R.; and Shah, Vatsal M., 5,445,731, Cl. 202-173.080.

Barth, Gunter; and Maier, Rolf, to Robert Bosch GmbH. Drive-slip control system. 5,445,442, Cl. 303-141.000.

Barth, Peter: *See*—
Hauber, Michael; Freudenberg, Ulrich; Joseflak, Christoph; Barth, Peter; and Dietrich, Bernd, 5,445,768, Cl. 264-6.000.

Bartholoma, Hans-Dieter, to Union Special GmbH. Looper for a single-thread chainstitch sewing machine. 5,445,091, Cl. 112-199.000.

Bartholomew, Paul J.: *See*—
Rodrigues, Julio F.; Bartholomew, Paul J.; Bowman, Timothy S.; and Lowery, Gary L., 5,445,538, Cl. 439-460.000.

Barton, Herald M. Outboard crop divider structure guard assembly. 5,444,968, Cl. 56-119.000.

BASF Aktiengesellschaft: *See*—
Benoit, Remy; Sauter, Hubert; Kirstgen, Reinhard; Lorenz, Gisela; and Ammermann, Eberhard, 5,446,067, Cl. 514-640.000.
Burkhart, Bernd; Oftring, Alfred; Schwendemann, Volker; and Glaser, Klaus, 5,445,724, Cl. 205-259.000.
Campbell, John W.; Cheung, Alex; and Eddy, Christina K., 5,445,952, Cl. 435-121.000.
Closs, Friedrich; Albert, Bernhard; and Wiesand, Henning, 5,445,672, Cl. 106-402.000.
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,446,168, Cl. 548-359.100.
Elfers, Guenther; Sager, Wilfried; Vogel, Hans-Henning; and Oppenlaender, Knut, 5,445,765, Cl. 252-344.000.
Isak, Heinz; Wettling, Thomas; Keil, Michael; Wolf, Bernd; and Doetzer, Reinhard, 5,446,199, Cl. 562-869.000.
Marschner, Claus; and Patsch, Manfred, 5,446,193, Cl. 558-30.000.
Schwendemann, Volker; Gisser, Klaus; Tschang, Chung-Ji; Burkhart, Bernd; Oftring, Alfred; and Dung, Bernhard, 5,445,727, Cl. 205-271.000.
Tenten, Andreas; and Weidlich, Peter, 5,446,004, Cl. 502-312.000.
Weber, Martin; Seitz, Friedrich; Jung, Andreas; and Guentherberg, Norbert, 5,446,094, Cl. 525-93.000.

BASF Corporation: *See*—
Hoyt, Matthew B.; and Wilson, Phillip E., 5,445,884, Cl. 428-370.000.
Sandison, Mark; Eva, Ron; and James, Lawrence E., 5,446,197, Cl. 562-435.000.

BASF Lacke+ Farben AG: *See*—
Huemke, Klaus; Hoffmann, Gerhard; and Paul, Dieter, 5,446,084, Cl. 524-504.000.

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Varasi, Mario; Dostert, Philippe; Pevarello, Paolo; and Bonsignori, Alberto, 5,446,066, Cl. 514-620.000.

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Loeppert, Peter V.; and Boor, Steven E., 5,446,413, Cl. 330-277.000.

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Rutke, Russell J.; and Malecha, Gregory J., 5,445,255, Cl. 192-45.100.
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Bortinger, Arie, to Scientific Design Company, Inc. Treatment for virgin phosphorous/vanadium oxidation catalysts. 5,446,000, Cl. 502-38.000.

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Czapp, Adelbert T.; Huber, Mark A.; Bos, Bradley C.; Diss, William F.; and Thomas, David E., 5,445,410, Cl. 280-728.300.

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Girot, Pierre; and Boschetti, Egisto, 5,445,732, Cl. 210-198.200.

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Lindstrom, Anders O.; Bostrom, Anna K.; and Broberg, Hans M., 5,446,781, Cl. 379-6.000.

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Suhadolnik, Joseph; Botkin, James H.; and Hendricks, Carmen, 5,445,872, Cl. 428-215.000.

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Eipper, Konrad; and Bottcher, Lothar, 5,445,300, Cl. 224-496.000.

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Bourget, John, to Waterbury Style, Inc. Molded metal tip for leather belt. 5,444,896, Cl. 24-265.00A.

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Stouffer, Ronald D., 5,445,516, Cl. 431-8.000.

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Boyer, Joseph H.: *See*—
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Boyette, Scott M.: *See*—
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Schneider, Michel; Tournier, Herve ; and Lamy, Bernard, 5,445,810, Cl. 424-9.400.
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Bracco, Umberto, to Nestec S.A. Cosmetic compositions containing fatty acid triglyceride mixtures. 5,445,822, Cl. 424-401.000.

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Bradfute, John W., to Globe Products Inc. Armature winding method and apparatus. 5,445,333, Cl. 242-7.05B.

Bradley, Gary W.; and Chapman, Ronald D., to Marlen Research Corporation. Segmented piston face plate assembly for patty forming apparatus. 5,445,512, Cl. 425-193.000.

Bradshaw, Jerald S.: *See*—
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Bradshaw, Richard L., to International Business Machines Corporation. Polymeric compositions containing inorganic fillers and use thereof. 5,446,085, Cl. 524-507.000.

Brain Power Co.: *See*—
Chan, James, 5,446,873, Cl. 395-180.000.

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Brandel, Lars: *See*—
Koppelomaki, Leo, 5,444,899, Cl. 24-625.000.

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Johnson, Douglas P.; and Brandmeyer, A. Joseph, 5,445,462, Cl. 401-132.000.

Brannstrom, Osten; and Henriksson, Roland, to Atlas Copco Berema Aktiebolag. Hydraulic breaking hammer. 5,445,232, Cl. 175-417.000.

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Brasz, Joost J., to Carrier Corporation. Centifugal compressor with pipe diffuser and collector. 5,445,496, Cl. 415-208.300.

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Lucas, Rafael P.; Blasco, Jose C.; and Rius, Antonio R., 5,445,069, Cl. 99-508.000.

Braun, Patrick A.: *See*—
Kauffman, Michael S.; Braun, Patrick A.; Heacock, Donna J.; and DeBoer, Jeffrey A., 5,445,452, Cl. 312-405.100.

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Breeden, Robert L.: *See*—
Siwiak, Kazimierz; Schwendeman, Robert J.; and Breeden, Robert L., 5,446,922, Cl. 455-277.200.

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Durand, Jean-Pierre; Binet, Daniel; Gateau, Patrick; and Bregent, Roger, 5,445,651, Cl. 44-459.000.

Brehmer, Geoffrey E., to Advanced Micro Devices, Inc. Voltage comparator with hysteresis. 5,446,396, Cl. 327-66.000.

Breidenbach, Thomas S.; Mould, Michael E.; and Pond, Charles R., to Boeing Company, The. Laser interferometric single piece force transducer. 5,446,546, Cl. 356-358.000.

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Brett, Bevin R., to Digital Equipment Corporation. Hint generation in smart recompilation. 5,446,899, Cl. 395-700.000.

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Kukimoto, Takashi; Aoki, Yasutoshi; Yamagishi, Naoto; and Usui, Shinji, 5,445,201, Cl. 152-209.00R.
Nakayama, Shohachiro; Iwata, Toyomi; Kuroda, Masahiro; Goto, Naoyuki; Ueda, Hiroshi; and Ishii, Michio, 5,445,691, Cl. 152-209.00R.
Ozawa, Chiaki; and Hosono, Motoaki, 5,445,695, Cl. 156-131.000.

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Maruko, Takashi; and Chikaraishi, Toshio, 5,445,387, Cl. 273-216.000.

Briggs, Barbara S.; and Zmijewski, Milton J., Jr., to Eli Lilly and Company. Enzyme from microbial source: phthalyl amidase. 5,445,959, Cl. 435-228.000.

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Fiorenza, John A., II; Dykstra, Richard A.; Pfaff, Joseph L.; Wesenberg, Scott L.; and Shears, Douglas, 5,445,014, Cl. 73-117.300.

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Bright, Mark D.: *See*—
Pritchard, Michael D.; McCain, James R.; McCain, Gary R.; and Bright, Mark D., 5,445,222, Cl. 116-298.000.

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British Aerospace Public Limited Company: *See*—
Varnham, Malcolm P.; and McInnes, James, 5,445,007, Cl. 73-1.0DV.

British Biotech Pharmaceuticals Limited: *See*—
Whittaker, Mark; and Miller, Andrew, 5,446,032, Cl. 514-63.000.

British TEelecommunications, plc: *See*—
Shabeer, Mohammed, 5,446,571, Cl. 359-107.000.

British Telecommunications public limited company: *See*—
Wake, David, 5,446,751, Cl. 372-46.000.
Winter, Christoper S.; Oliver, Stephen N.; Rush, James D.; Underhill, Allan E.; and Hill, Callum A. S., 5,445,767, Cl. 252-587.000.

Brkic, Zinka: *See*—
Kovacevic, Mice; Herak, Jure J.; Mandiec, Zora; Lukic, Irena; Tomic, Mirjana; and Brkic, Zinka, 5,446,038, Cl. 514-210.000.

Broadbent, Neal E.; and MacGregor, Duncan D., to Intel Corporation. Interconnection scheme for integrated circuit card with auxiliary contacts. 5,445,525, Cl. 439-64.000.

Broberg, Hans M.: *See*—
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Brochot, Jean: *See*—
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Bromley, Lauran, 5,445,376, Cl. 273-109.000.

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Brooks, Clint D. W.: *See*—
Dellaria, Joseph F.; Ratajczyk, James D.; Brooks, Clint D. W.; and Basha, Anwer, 5,446,055, Cl. 514-337.000.

Brooks, Gary A. Golf training device. 5,445,385, Cl. 273-189.00A.

Brooks, Todd L., to Motorola Inc. Auto-calibrated current-mode digital-to-analog converter and method therefor. 5,446,455, Cl. 341-145.000.

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Haze, Toshiro, 5,446,557, Cl. 358-444.000.
Sasaki, Ichiro, 5,445,459, Cl. 400-76.000.

Brown, David B.: *See*—
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Brown, Gordon C. Location method and panel pressing apparatus. 5,445,000, Cl. 72-31.000.

Brown, Graham. Automated vending machine system for recorded goods. 5,445,295, Cl. 221-3.000.

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Brown, Lori. Liquid fillable dumbell. 5,445,587, Cl. 482-108.000.

Brown, Robert W.: *See*—
Korsunsky, Iosif; Shipe, Joanne E.; Harlan, Tod M.; Foreman, Gerald L.; Klotz, Robert C.; and Brown, Robert W., 5,444,906, Cl. 29-741.000.

Brown, Sterling B.: *See*—
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Gearin, Peter; Halpin, Terence; Pileggi, James D.; Browne, Michael P. J.; and Beutler, William C., 5,445,278, Cl. 211-13.000.

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Bruckner, Gerhard, to MTU Motoren- Und Turbinen-Union Muenchen GmbH. Apparatus for sealing a clearance. 5,445,392, Cl. 277-27.000.

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Brummer, Michael; Vitiello, Antonio; and Daume, Volker, to Carl Freudenberg, Firma. Fuel distributor for a multi-cylinder internal combustion engine. 5,445,130, Cl. 123-456.000.

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Bryant, Henry U.; and Grese, Timothy A., to Eli Lilly and Company. Methods for lowering serum cholesterol. 5,446,061, Cl. 514-456.000.

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Budzilek, Russell A.; Monarchie, Dominic L.; Podoba, Myroslaw; and Swatson, Richard R., to Westinghouse Norden Systems. Sunlight viewable thin film electroluminescent display. 5,445,898, Cl. 428-690.000.

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Builder, Stuart E.; Ogez, John R.; Olson, Charles V.; and Reifsnyder, David, to Genentech, Inc. Purification of insulin-like growth factor. 5,446,024, Cl. 514-12.000.

Bulka, Robert J.: *See*—
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Burdette, Danny R.: *See*—
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Burdsall, John R., II: *See*—
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Herzig, Christian; Burger, Willibald; Deubzer, Bernward; and Bloechl, Martina, 5,446,119, Cl. 528-26.000.

Burghardt, Martin; Berman, Eric; Padgaonkar, Ajay; and Allen, Ray, to Microchip Technology, Inc. System and method for protecting contents of microcontroller memory by providing scrambled data in response to an unauthorized read access without alteration of the memory contents. 5,446,864, Cl. 395-427.000.

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Burky, William E.: *See*—
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Burns, Geoffrey: *See*—
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Reed, Jason C.; and Bushnell, Dennis M., 5,445,095, Cl. 114-67.00A.

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Cabler, Carlin D., to Advanced Micro Devices, Inc. Fourth-order cascaded sigma-delta modulator. 5,446,460, Cl. 341-143.000.

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Rody, H. Steven, 5,445,360, Cl. 251-148.000.

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Cain, Frederick W.: *See*—
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Mohlenkamp, Michael J.; Babuder, Gerald A.; Jobling, Peter A.; and Conover, Charles E., 5,445,263, Cl. 206-303.000.

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Caldwell, William D.; and Lin, Wei-Chung, to Reliable Bethea Power Products, Inc. Auxiliary cable attachment. 5,445,348, Cl. 248-74.100.

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Metz, James G.; Lardizabal, Kathryn D.; and Lassner, Michael W., 5,445,947, Cl. 435-69.100.

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Farkye, Nana Y.; and Prasad, B. Bhanu, 5,445,845, Cl. 426-582.000.

Calmar Inc.: *See*—
Harriman, Ron E., 5,445,299, Cl. 222-153.130.

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Cammann, Karl, to Daimler-Benz Aerospace AG. Process and device for prolonging the usage the time and reducing the temperature dependence of ion-selective polymer membrane electrodes. 5,445,726, Cl. 204-153.220.

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Cannata, Antonio. Heat exchanger. 5,445,216, Cl. 165-88.000.

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Asakura, Osamu; Uchikata, Yoshio; Kawazoe, Kenji; and Kanome, Yuji, 5,445,464, Cl. 400-249.000.
Higuchi, Yuichi, 5,446,832, Cl. 395-113.000.
Hirabayashi, Keiji; and Hirose, Yoichi, 5,445,851, Cl. 427-450.000.
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Kaneko, Shuzo; Okada, Shinjiro; Yuasa, Satoshi; Shinjo, Katsuhiko; Miyata, Hirokatsu; and Shibata, Masaaki, 5,446,570, Cl. 359-87.000.
Kazumi, Jiro, 5,446,518, Cl. 354-412.000.
Kitahara, Yoshihiko; and Hayakawa, Kimiaki, 5,446,511, Cl. 353-103.000.
Kobayashi, Hiroo, 5,446,525, Cl. 355-210.000.
Maekawa, Shinichiro; Seto, Kaoru; Kawana, Takashi;; and Kosaka, Toru, 5,446,550, Cl. 358-298.000.
Mitsutake, Hideaki; Minoura, Nobuo; Kimura, Kazumi; and Kurematsu, Katsumi, 5,446,510, Cl. 353-20.000.
Miura, Mitsuru, 5,445,556, Cl. 451-28.000.
Murakami, Junichi; and Kaneda, Naoya, 5,446,517, Cl. 354-400.000.
Nagasawa, Kenichi; and Shikakura, Akihiro, 5,446,744, Cl. 371-37.400.
Nagase, Toshiki; and Ito, Akira, 5,446,528, Cl. 355-309.000.
Nakata, Kazuhiro, 5,446,358, Cl. 318-696.000.
Oguchi, Takahiro; Sakai, Kunihiro; Kawase, Toshimitsu; Yamano, Akihiko; and Kuroda, Ryo, 5,446,720, Cl. 369-126.000.
Okinishi, Satoru, 5,446,509, Cl. 351-206.000.
Ono, Takashi, 5,446,554, Cl. 358-404.000.
Satomura, Seiichiro, 5,446,715, Cl. 369-49.000.
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.
Takayama, Makoto, 5,446,598, Cl. 360-32.000.
Tokunaga, Hiroyuki; and Atoji, Tadashi, 5,445,992, Cl. 437-100.000.
Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, 5,446,494, Cl. 348-349.000.
Yamazaki, Tatsuya, 5,446,532, Cl. 356-73.000.

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Capps, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., to Apple Computer, Inc. Interface for a computerized database having card and list views. 5,446,882, Cl. 395-600.000.

Carapace, Inc.: *See*—
Edenbaum, Martin, 5,445,599, Cl. 602-76.000.

Carbery, David J.: *See*—
Newton, Jefferson F.; Martin, Thomas D.; Westre, Willard N.; Carbery, David J.; and Ikegami, Roy, 5,445,861, Cl. 428-116.000.

Cardia, Ennio. Dispensing container. 5,445,465, Cl. 401-175.000.

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Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,446,123, Cl. 528-354.000.

Carl Freudenberg, Firma: *See*—
Brummer, Michael; Vitiello, Antonio; and Daume, Volker, 5,445,130, Cl. 123-456.000.
Hauber, Michael; Freudenberg, Ulrich; Josefiak, Christoph; Barth, Peter; and Dietrich, Bernd, 5,445,768, Cl. 264-6.000.
Ullrich, Gunter; Honlinger, Herwig; and Henrich, Uwe, 5,445,049, Cl. 74-574.000.

Carl Roth GmbH Co.: *See*—
Dratz, Werner, 5,445,270, Cl. 206-443.000.

Carlsen, Arne; Nygaard, Erik C.; Syrstad, Erik; and Consoli, Tom, to Norsk Hydro a.s. Fertilizer composition comprising dispersions or solutions of nutrient compounds and method for its manufacture. 5,445,663, Cl. 71-28.000.

Carney, Scott N.; Lauro, George L.; Krenz, Eric L.; and Ghaem, Sanjar, to Motorola, Inc. RF tagging system including RF tags with variable frequency resonant circuits. 5,446,447, Cl. 340-572.000.

Carpenter Manufacturing Co., Inc.: *See*—
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Carpenter, Thomas S.; Hand, David D.; and Palmowski, David J., to Carpenter Manufacturing Co., Inc. Measure-cut-strip wire processing apparatus. 5,445,051, Cl. 81-9.510.

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Peschka, Walter; Carpetis, Constantin; and Schneider, Gottfried, 5,445,666, Cl. 75-335.000.

Carrier Corporation: *See*—
Brasz, Joost J., 5,445,496, Cl. 415-208.300.

Carroll, Roger: *See*—
Tanski, William J.; Carroll, Roger; and Branciforte, Emilio J., 5,445,711, Cl. 216-13.000.

Carson, Lansing M.: *See*—
Bienz, Richard A.; Carson, Lansing M.; and Siemon, Marty K., 5,446,423, Cl. 332-170.000.

Carson, Mathew; Han, Ru-Jen L.; LeMahieu, Ronald A.; and Madison, Vincent S., to Hoffmann-La Roche Inc. Intermediates for the production of N-substituted anilines, inhibitors of phospholipases A_2. 5,446,189, Cl. 560-44.000.

Carson, Steven D. Storage cabinet with active dehumidifier. 5,444,984, Cl. 62-3.400.

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Gardea, Raymond A., II; Covington, Martin D., Jr.; Carter, Brent W.; and Bowling, Forrest W., 5,446,868, Cl. 395-500.000.

Carter, Darryl: *See*—
Leach, Thomas C.; Turner, Duane L.; and Carter, Darryl, 5,446,431, Cl. 335-18.000.

Cartry, Jean-Pierre, to Framatome. Device for working inside a tubular element by laser. 5,446,256, Cl. 219-121.630.

Casati, Paolo; and Magni, Pierangelo, to SGS-Thomson Microelectronics, S.r.l. Method for manufacturing plastic-encapsulated semiconductor devices with exposed metal heat sink. 5,445,995, Cl. 437-211.000.

Casci, John L.; Shannon, Mervyn D.; and Lake, Ivan J. S., to Imperial Chemical Industries PLC. Hydrocarbon conversion process using a specified zeolite. 5,446,234, Cl. 585-467.000.

Casebolt, Matthew P.: *See*—
Wade, William D.; and Casebolt, Matthew P., 5,446,474, Cl. 343-915.000.

Casio Computer Co., Ltd.: *See*—
Mawatari, Atsushi; and Kanbara, Minoru, 5,446,564, Cl. 359-72.000.

Cassidy, Michael P., to VLSI Technology, Inc. Test fixture with permanent circuit board extractor thereon. 5,446,394, Cl. 324-762.000.

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Casti, Thomas E. Diamond coated microcomposite sintered body. 5,445,887, Cl. 428-408.000.

Castleberry, Donald E.: *See*—
Piccone, Dante E.; Ishaque, Ahmad N.; Castleberry, Donald E.; Rougeot, Henri M.; and Menditto, Peter, 5,446,308, Cl. 257-438.000.

Casturo, Scott E.; Lewis, P. E.; Harlow, E. V.; Olsen, Gerald L.; Hensley, E. Rod; and Wing, Keith M., to United States of America, National Aeronautics and Space Administration. Cylinder rounding-/holding tool. 5,444,902, Cl. 29-56.600.

Catalytica: *See*—
Oziomek, James; Hergenrother, William L.; Hamm, David R.; and Bouton, Thomas C., 5,446,102, Cl. 525-245.000.

Caterpillar Inc.: *See*—
Barnes, Travis E., 5,445,129, Cl. 123-446.000.

Cattoen, Thierry; Duturc, Daniel; and Vaquier, Mariannick, to Societe Nationale Industrielle et Aerospatiale; and Sextant Avionique. Method and device for assistance in piloting an aerodyne by the graphic representation of the vertical flight plan of this aerodyne. 5,445,021, Cl. 73-178.00R.

Caufield, Craig E.: *See*—
Failli, Amedeo A.; Steffan, Robert J.; Caufield, Craig E.; Hu, David C.; and Grinfeld, Alexander A., 5,446,048, Cl. 514-291.000.

Cavey, Daniel: *See*—
Rocher, Jean-Philippe; and Cavey, Daniel, 5,446,059, Cl. 514-374.000.

Cawiezel, Kay E.: *See*—
Nelson, Erik B.; Cawiezel, Kay E.; and Constien, Vernon G., 5,445,223, Cl. 166-308.000.

Cawile, Sidney C., Jr. Modular pack system. 5,445,303, Cl. 224-222.000.

Cazaillon, Jean-Mary; and Chatellard, Bernard, to Salomon S.A. Ski structure formed by injection process. 5,445,403, Cl. 280-610.000.

Cazalet, Peter M.: *See*—
Landi, Curtis L.; Wilson, Susan L.; and Cazalet, Peter M., 5,444,881, Cl. 5-454.000.

CCA Inc.: *See*—
Uchida, Hiroshi; Onuki, Mitsuhiro; and Watanabe, Hideo, 5,445,772, Cl. 264-32.000.

Cederholm, Roger: *See*—
Martin, John R.; Cederholm, Roger; Schlittler, Kendall E.; and Wenzel, Ronald, 5,445,341, Cl. 242-527.300.

Celestino, Mario; and Inglehart, Barbara C. Bicycle enclosing protective cover. 5,445,200, Cl. 150-167.000.

Celsat America, Inc.: *See*—
Mallinckrodt, Albert J., 5,446,756, Cl. 375-200.000.

Center for Innovative Technology: *See*—
Wang, Anbo; Murphy, Kent A.; and Claus, Richard O., 5,446,280, Cl. 250-227.230.

Center, John L.; and Stalder, James W., to Recot, Inc. Co-dispensing snack food products and beverages from a vending machine. 5,445,287, Cl. 221-1.000.

Central Research Institute of Electric Power Industry: *See*—
Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.

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Rocher, Jean-Philippe; and Cavey, Daniel, 5,446,059, Cl. 514-374.000.

Centre National de la Recherche Scientifique: *See*—
Armand, Michel; Benrabah, Djamila; and Sanchez, Jean-Yves, 5,446,134, Cl. 534-558.000.

Centro Sviluppo Materiali S.p.A.: *See*—
Tolve, Pietro; Tonelli, Riccardo; and Capotosti, Romeo, 5,445,211, Cl. 164-428.000.

Centro Sviluppo Settori Impiego S.r.l.: *See*—
Addeo, Antonio; D'Oria, Francesco; and Bonari, Roberto, 5,445,781, Cl. 264-328.600.

Cer-Wat Corporation: *See*—
Lee, Charles A., 5,445,746, Cl. 210-783.000.

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Delvaux, Pierre; Legast, Pierre; Lesmerises, Normand; and Beerli, Eric, 5,445,849, Cl. 427-215.000.

Cergel, Lubomir; Johnson, Barry C.; and Stafford, John W., to Motorola, Inc. Electrical contact and method for making an electrical contact. 5,446,247, Cl. 174-267.000.

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Chaffee, Brent F.: *See*—
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Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., to Minnesota Mining and Manufacturing Company. Microwave heatable composites. 5,446,270, Cl. 219-730.000.

Chambers, Richard D.: *See*—
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Chan, Kwok K.: *See*—
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Chan, Ming F.; and Woodward, David F., to Allergan, Inc. Intraocular pressure reducing 11-acyl prostaglandins. 5,446,041, Cl. 514-530.000.

Chang, Byung J., to General Scientific Corporation. Spectacle frame for telemicroscopes and the like. 5,446,507, Cl. 351-158.000.

Chang, Chen-Yi. Code-division-multiple-access system based on M-ary pulse-position modulated direct-sequence. 5,446,757, Cl. 375-239.000.

Chang, David D.: *See*—
Baker, Glenn S.; Chang, David D.; and Paulino, Fred P., 5,446,818, Cl. 385-78.000.

Chang-Hyun, Yoo: *See*—
Bloomfield, John W.; Bischoff, Rudi A.; Payne, Robert L.; Wagner, Scott B.; Sang-Gwoon, Kim; Tae-Sik, Kim; Ji-Hyun, Kim; Joon-Young, Jeong; Chang-Hyun, Yoo; and Shin, Dong-Il, 5,446,445, Cl. 340-521.000.

Chang, Kok W.; and Sorin, Wayne, to Hewlett-Packard Company. Polarization preserving optical isolator. 5,446,578, Cl. 359-282.000.

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Chang, Yueh-Lin: *See*—
Motoyama, Tetsuro; and Chang, Yueh-Lin, 5,446,837, Cl. 395-145.000.

Chapdelaine, Marc J.; and McLaren, Charles D., to Imperial Chemical Industries, PLC. Therapeutic benzazapine compounds. 5,446,039, Cl. 514-213.000.

Chapelle, Walter E.: *See*—
Gioutsos, Tony; Gillis, Edward J.; Chapelle, Walter E.; and Swayze, Carolyn A., 5,446,661, Cl. 364-424.050.

Chapin, Bradford G.: *See*—
Landry, Christian C.; Tsai, Tzong-Bin; Chapin, Bradford G.; and Lou, Jin-Bond, 5,446,622, Cl. 361-737.000.

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Afflerbaugh, Richard L.; West, Richard L.; Patno, Timothy J.; and Chapman, Arthur S., 5,445,506, Cl. 417-477.200.

Chapman, Ronald D.: *See*—
Bradley, Gary W.; and Chapman, Ronald D., 5,445,512, Cl. 425-193.000.

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Charbonnel, Jean-Louis, to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "Snecma". Retaining and sealing system for rotor blades. 5,445,499, Cl. 416-220.0WR.

Charles, Harlan W., to General Motors Corporation. Tensioning mechanism for vehicle auxiliary seat. 5,445,254, Cl. 192-17.00R.

Chatellard, Bernard: *See*—
Cazaillon, Jean-Mary; and Chatellard, Bernard, 5,445,403, Cl. 280-610.000.

Chattin, Jessie R., to Trans-Chattin, Inc. Automatic transmission for a multi-speed bicycle. 5,445,567, Cl. 474-78.000.

Chaumat, Jean-Pierre; and Larrere, Yves, to Societe Nationale des Poudres et Exploifs. Process for the fastening of an element absorbing electromagnetic waves on a wall of a structure or an infrastructure. 5,446,458, Cl. 342-1.000.

Chauveau, Laurent: *See*—
Dupuy, Jean-Paul; Halin, Gilles; Chauveau, Laurent; and Bonnet, Alain, 5,445,077, Cl. 102-481.000.

Chaverot, Pierre; and Lopez, Emile, to Koch Materials Company. Crack anti-rise system inserted between the structural layer and the road carpet of a carriageway and process for producing such a system. 5,445,473, Cl. 404-75.000.

Cheil Synthetics Inc.: *See*—
Ihm, Dae W.; Kim, Dae J.; Kim, Young J.; Lee, Myung S.; and Lee, Chang S., 5,445,778, Cl. 264-176.100.

Chemali, Roland E.; and Torres, David O., to Halliburton Company. Shoulder effect logging method. 5,446,654, Cl. 364-422.000.

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Arganbright, Robert P.; Jones, Edward M., Jr.; and Hearn, Dennis, 5,446,231, Cl. 585-802.000.
Smith, Lawrence A., Jr., 5,446,223, Cl. 585-313.000.

Chen, Benjamin Y.-H.; Tseng, Carol L.; and Peterson, Frank B., to United States of America, Navy. Torque balanced postswirl propulsor unit and method for eliminating torque on a submerged body. 5,445,105, Cl. 114-338.000.

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Wu, Jen-chau; and Chen, Chi-Nan, 5,446,426, Cl. 333-125.000.

Chen, Ching-Ti. Structure of clock. 5,446,704, Cl. 368-134.000.

Chen, Ching-Wen. Water filter. 5,445,734, Cl. 210-232.000.

Chen, Fu; Bair, Keith A.; and Boyette, Scott M., to Betz Laboratories, Inc. Copolymers of ethylenically unsaturated and polyethyleneglycol monomethacryiate monomeric repeat units useful as scale control agents in boiler systems. 5,445,758, Cl. 252-180.000.

Chen, Hang-Chang B.; and Olsen, Deborah J., to Occidental Chemical Corporation. Removing oxygen from hydrocarbon gases. 5,446,232, Cl. 585-845.000.

Chen, Hung-ming. Antenna-mounting device. 5,445,355, Cl. 248-514.000.

Chen, Hwi-Huang: *See*—
Hong, Gary; and Chen, Hwi-Huang, 5,445,984, Cl. 437-43.000.

Chen, James C.; and Saaski, Eric W., to Chen, James C. Method and apparatus for providing light-activated therapy. 5,445,608, Cl. 604-20.000.

Chen, James R.: *See*—
Kaplan, Craig A.; Chen, James R.; Failside, David C.; Fenwick, Justine R.; Forcier, Mitchell D.; and Wolff, Gregory J., 5,446,891, Cl. 395-600.000.

Chen, Jeng-Chih. Quick mounting bulb socket. 5,445,536, Cl. 439-419.000.

Chen, Shenchang E.: *See*—
Miller, Gavin S. P.; and Chen, Shenchang E., 5,446,833, Cl. 395-125.000.

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Chen, Su-Min, to Superluck Electrics Corp. Heat radiating device of induction heater. 5,446,268, Cl. 219-623.000.

Cheng, Daniel C. H.: *See*—
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Cheng, Wang. Minimally invasive method to determine the left ventricular pressure waveform. 5,445,159, Cl. 128-672.000.

Cheng, Yuh-Lin: *See*—
Lee, K. Roger; Lin, Song-Fure; and Cheng, Yuh-Lin, 5,446,813, Cl. 385-31.000.

Chernesky, Linda J.: *See*—
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Cherry, Craig D.; and Actis, Robert J., to Spectra-Physics Scanning Systems, Inc. Omnidirectional scanning method and apparatus. 5,446,271, Cl. 235-462.000.

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Cheung, Alex: *See*—
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Chi, Yi C. Hanger means for a wheeled vehicle. 5,445,047, Cl. 74-551.100.

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Zuccarello, William; Kurtz, Andrew D.; Kirschner, Lawrence; and Marder, Herman, 5,445,805, Cl. 423-422.000.

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Leger, Geary L., 5,446,765, Cl. 375-359.000.
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Weaver, Craig M.; Allison, Ruth A.; Metsker, Grace G.; Clemons, Jeanne M.; Durham, Douglas S.; Sabin, Gary A.; and Hope, Keven A., 5,446,671, Cl. 364-468.000.

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Martinage, Louis H.; Cuisson, Edward M.; and Clower, Penn H., 5,445,040, Cl. 74-5.460.

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Brassell, David, 5,445,210, Cl. 164-369.000.

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Richter, Simon J.; Totten, Kevin J.; Credle, William S., Jr.; and Boston, Thomas R., 5,445,186, Cl. 137-614.200.

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Badylak, Stephen F.; Geddes, Leslie A.; Shelbourne, K. Donald; Lantz, Gary C.; and Coffey, Arthur C., 5,445,833, Cl. 424-551.000.

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Baker, Glenn S.; Chang, David D.; and Paulino, Fred P., 5,446,818, Cl. 385-78.000.

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Watanabe, Shunso F.; Eckert, Steven J.; Engelman, Gerald H.; Dionesotes, Neil T.; Collins, Steven R.; and Bernstein, Steven D., 5,445,185, Cl. 137-596.170.

Colombo, Adalberto: *See*—
Venzi, Stefano; and Colombo, Adalberto, 5,445,848, Cl. 427-142.000.

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Comeaux, Luther R. Hydrostatic control valve. 5,445,224, Cl. 166-312.000.

Commandeur, Raymond; Jay, Pierre; and Berger, Noelle, to Elf Atochem S.A. Benzyltoluenes/benzylxylenes dielectric compositions. 5,446,228, Cl. 585-6.300.

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Madsen, Roberta M.; Moore, David A.; and Perona, Brian J., 5,446,619, Cl. 361-695.000.
Scharnberg, Donald G.; and Cooper, Patrick R., 5,446,320, Cl. 307-100.000.
Stevens, Jeffrey C.; Ramsey, Jens K.; Bonella, Randy M.; and Kelly, Philip C., 5,446,863, Cl. 395-427.000.

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Wong, James; Rudziak, Mark K.; and Wong, Terence, 5,445,681, Cl. 148-98.000.

Computer Products, Inc.: *See—*
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Condon, Nancy J.: *See—*
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Conover, Charles E.: *See—*
Mohlenkamp, Michael J.; Babuder, Gerald A.; Jobling, Peter A.; and Conover, Charles E., 5,445,263, Cl. 206-303.000.

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Carlsen, Arne; Nygaard, Erik C.; Syrstad, Erik; and Consoli, Tom, 5,445,663, Cl. 71-28.000.

Constien, Vernon G.: *See—*
Nelson, Erik B.; Cawiezel, Kay E.; and Constien, Vernon G., 5,445,223, Cl. 166-308.000.

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Allen, Bernie; Edington, Christopher J.; Swartz, Eric; Parracho, Rui; and Mochen, Richard, 5,444,926, Cl. 36-93.000.

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Cook, Malcolm R.; and Scott, John D., to Imperial Chemical Industries PLC. Production of hydrofluorocarbons. 5,446,215, Cl. 570-142.000.

Cook, Melvin. Staples. 5,445,048, Cl. 606-219.000.

Coons, Mark E.: *See—*
Reuter, Gerald L.; Harrison, Maureen M.; and Coons, Mark E., 5,446,063, Cl. 514-535.000.

Cooper Industries, Inc.: *See—*
Roeczewski, Paul M.; Lenz, Russell J.; and Knapp, Todd K., 5,445,533, Cl. 439-184.000.

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Copeland, George P.; Hoffman, Richard D.; Malkemus, Timothy R.; and Smith, marc G., to International Business Machines Corporation. An apparatus and method for transferring information in blocks from a database to a memory. 5,446,858, Cl. 395-427.000.

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Cortens, Willem: *See—*
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Cox, Gary L.: *See—*
Shawhan, Jim; Cox, Gary L.; and Woedl, Steve, 5,444,900, Cl. 27-19.000.

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Crawford, James M., Jr.; and Etherington, David W., to AT&T Corp. Efficient nonmonotonic reasoning apparatus and methods. 5,446,830, Cl. 395-51.000.

Crawford, Jay D.: *See—*
Stokes, Robert B.; Crawford, Jay D.; Cushman, Drew; and Kong, Alvin M. W., 5,446,306, Cl. 257-416.000.

Crawley, Graham C.; and Girodeau, Jean-Marc M. M., to Imperial Chemical Industries Plc; and ICI Pharma. Isoquinolyl, quinoxalinyl and quinazolinyl derivatives as inhibitors of 5-lipoxygenase. 5,446,043, Cl. 514-249.000.

Credle, William S., Jr.: *See—*
Richter, Simon J.; Totten, Kevin J.; Credle, William S., Jr.; and Boston, Thomas R., 5,445,186, Cl. 137-614.200.

Creehan, Robert D., to Hyperion Catalysis International, Inc. Process for preparing composite structures. 5,445,327, Cl. 241-22.000.

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Crews, Paul B. Backpacking stove for tent use. 5,445,137, Cl. 126-59.000.

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Crowder, George; and Rippens, Roger A., to International Business Machines Corporation. Post processing shielding. 5,446,243, Cl. 174-250.000.

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Culver, John A.; Flewelling, Ross F.; Farbarik, John M.; Stuart, Charles E.; and Davenport, James M., to Nellcor Incorporated. Portable carbon dioxide monitor. 5,445,160, Cl. 128-719.000.

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Cunningham, David W.; and Esakoff, Gregory F. Lighting fixture. 5,446,637, Cl. 362-321.000.

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Wang, Chao-Huei J.; and Shah, Dinesh O., 5,445,969, Cl. 436-526.000.

Daewoo Electronics Co., Inc.: *See—*
Kim, Han-Soo, 5,446,499, Cl. 348-596.000.

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Chang Soo, Hong; and Min Soo, Cho, 5,446,505, Cl. 348-738.000.

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Kuwana, Akihiro; Honda, Kimihide; and Koga, Kunio, 5,446,176, Cl. 549-546.000.

Daido Metal Company Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaki; and Kidokoro, Hideyuki, 5,445,896, Cl. 428-647.000.

Daidousanso Co., Ltd.: *See—*
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; Hayashida, Tadashi; and Minato, Teruo, 5,445,683, Cl. 148-317.000.

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Kanesaki, Hiroyuki; Seika, Tetsuyuki; and Mikami, Masafumi, 5,446,173, Cl. 549-13.000.

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Dale, James L., to Whitaker Corporation, The. Electrical wiring device for power control with low voltage input. 5,445,539, Cl. 439-535.000.

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Lekhtman, David, 5,445,549, Cl. 440-17.000.

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Nelson, Dennis J., 5,445,259, Cl. 192-107.00R.

Dana-Farber Cancer Institute: *See—*
Brenner, Michael B.; and Der Simonian, Harout, 5,445,940, Cl. 435-7.240.

Dang, Joe; Stramm, Bernd; and Long, Robert, to BusLogic, Inc. System and method for disk array data transfer. 5,446,855, Cl. 395-401.000.

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Hainsey, Robert F.; and Dao, Giang T., 5,446,521, Cl. 355-53.000.

Dark, Jay A.: *See—*
Yourgalite, Ray A.; Becicka, Kenneth F.; Dark, Jay A.; Reece, Alan R.; and Kleber, Robert J., 5,445,493, Cl. 414-791.600.

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Stanzani, Giuseppe; and Mazzone, Claudio, 5,446,267, Cl. 235-440.000.

Date, Mitsuko: *See—*
Kohno, Tetsuo; Okada, Takashi; and Date, Mitsuko, 5,446,592, Cl. 359-679.000.

Datta, Madhav: *See—*
Barbee, Steven G.; Datta, Madhav; Heinz, Tony F.; Li, Leping; Ratzlaff, Eugene H.; and Shenoy, Ravindra V., 5,445,705, Cl. 156-627.100.

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Waclawsky, John G.; Hershey, Paul C.; and Daugherty, Raymond F., 5,446,874, Cl. 395-575.000.

Daugherty, William K.; Parkin, Bernard A., Jr.; and Ling, Franklin D. Process for the disposal of municipal refuse and certain hazardous waste. 5,445,088, Cl. 110-346.000.

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Brummer, Michael; Vitiello, Antonio; and Daume, Volker, 5,445,130, Cl. 123-456.000.

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Culver, John A.; Flewelling, Ross F.; Farbarik, John M.; Stuart, Charles E.; and Davenport, James M., 5,445,160, Cl. 128-719.000.

Davenport, Stewart: *See—*
Shodeen, Keith; Davenport, Stewart; and Melgaard, Hans L., 5,446,289, Cl. 250-455.110.

Davidson Textron Inc.: *See—*
Jackson, Kenneth L., Jr., 5,445,510, Cl. 425-182.000.
Nichols, Lawrence R., 5,445,430, Cl. 296-153.000.

D'Avignon, Edward J.: *See—*
Chou, Norman C.; D'Avignon, Edward J.; Gregerson, James C.; Robinson, James R.; Siegel, Michael S.; Smoolca, Michael A.; and Van Norstrand, Albert J., Jr., 5,446,913, Cl. 395-800.000.

Davis, Bruce M.: *See—*
Baker, Trace A.; Davis, Bruce M.; and Rebman, Chester L., 5,446,357, Cl. 318-632.000.

Davis, Cecil J.: *See—*
Moslehi, Mehrdad M.; Davis, Cecil J.; and Matthews, Robert T., 5,446,825, Cl. 392-416.000.

Davis, Jim B. Cargo tiedown. 5,445,482, Cl. 410-115.000.

Davis, John L.: *See—*
Gleason, Cornel T.; and Davis, John L., 5,446,440, Cl. 340-331.000.

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Dawkins, Douglas R., Jr. Close-view data display implant for sporting eyewear. 5,446,506, Cl. 351-43.000.

Dea, David; Loeser, Gary; and Harney, Kevin, to Intel Corporation. Method for controlling dataflow between a plurality of circular buffers. 5,446,839, Cl. 395-163.000.

Deady, Robert B., to General Motors Corporation. Transmission and control with hydraulically actuated synchronizers. 5,445,042, Cl. 74-329.000.

Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvoss, Hossein F.; and Brunnet, Robert A., to Storage Technology Corporation. System for buffering track image at each read/write head in a disk drive unit having multiple read/write heads. 5,446,853, Cl. 395-410.000.

Debbas, Elie. Apparatus for locating a breast mass. 5,445,645, Cl. 606-192.000.

Debio Recherche Pharmaceutique S.A.: *See—*
Orsolini, Piero; and Heimgartner, Frederic, 5,445,832, Cl. 424-491.000.

DeBoer, Jeffrey A.: *See—*
Kauffman, Michael S.; Braun, Patrick A.; Heacock, Donna J.; and DeBoer, Jeffrey A., 5,445,452, Cl. 312-405.100.

Debrauwere, Jack; Bernes, Jean-Claude; and Mathias, Jean-Marie, to Baxter International Inc. Blood storage container and methods of using same. 5,445,629, Cl. 604-403.000.

De Bruin, Diederik W.: *See—*
Allen, Henry V.; Terry, Stephen C.; and De Bruin, Diederik W., 5,445,006, Cl. 73-1.00D.

DeCanio, Stephen J.: *See—*
Khan, Motasimur R.; Albert, Christine C.; and DeCanio, Stephen J., 5,445,659, Cl. 48-197.00R.

Dechovich, Boris: *See—*
Korall, Menachem; Harats, Yehuda; Dechovich, Boris; and Goldstein, Jonathan, 5,445,901, Cl. 429-27.000.

Deck, David S.: *See—*
Zufelt, Jon E.; Clark, Charles H.; and Deck, David S., 5,446,448, Cl. 340-580.000.

Deckner, George E.: *See—*
Hall, Bonnie J.; Baur, Julie A.; and Deckner, George E., 5,445,823, Cl. 424-401.000.

Deere & Company: *See—*
Stickler, Mark F.; Braunhardt, Klaus A.; and Gerber, Merle R., 5,445,563, Cl. 460-69.000.

Deering, Michael, to Sun Microsystems, Inc. Method and apparatus for high resolution virtual reality systems using head tracked display. 5,446,834, Cl. 395-127.000.

DeFazio, Lynn G.: *See—*
Moore, Allan R.; Poulos, Lori J.; and DeFazio, Lynn G., 5,446,885, Cl. 395-600.000.

Degen, Peter J., to Pall Corporation. Process for preparing hollow fiber separatory devices. 5,445,771, Cl. 264-22.000.

De Groote, Isabelle M. C.: *See—*
Convents, Andre C.; Busch, Alfred; De Groote, Isabelle M. C.; and Liu, Don K. K., 5,445,755, Cl. 252-102.000.

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Domesle, Rainer; Engler, Bernd; and Lox, Egbert, 5,446,006, Cl. 502-439.000.

DeKalb Genetics Corporation: *See—*
Genovesi, Anthony D.; and Yingling, Richard A., 5,445,961, Cl. 435-240.500.

Dekker, Jacobus N.; and Wevers, Dirk, to U.S. Philips Corporation. Shaving apparatus. 5,444,914, Cl. 30-43.600.

Delajoud, Pierre R. Precision gas mass flow measurement apparatus and method maintaining constant fluid temperature in thin elongated flow path. 5,445,035, Cl. 73-861.520.

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Hayes, William J.; Forehand, Andrew M.; Archuleta, Adrian A.; Hinkle, Paul R.; Mundell, Jerry A.; and Lacterhand, Mark A., 5,445,450, Cl. 312-223.200.

Delima, Robert L. Method and apparatus for drilling, cracking, and withdrawing earth cores. 5,445,229, Cl. 175-20.000.

Dellaria, Joseph F.; Ratajczyk, James D.; Brooks, Clint D. W.; and Basha, Anwer, to Abbott Laboratories. Polyether naphthalenic lignan lactones as inhibitors of 5-lipoxygenase. 5,446,055, Cl. 514-337.000.

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Pollmas, John A.; DellaVecchia, Daniel J.; Goldman, Ira B.; Lewandoski, John T.; and Rajotte, Paul T., 5,446,386, Cl. 374-424.000.

Dellora, Giancarlo; and Polverelli, Paolo, to Iveco Fiat S.p.A.; and Nissan Diesel Motor Co., Ltd. Electronic control system for a variable geometry turbocompressor for an engine provided with a continuous braking device. 5,444,980, Cl. 60-602.000.

DeLustro, Frank: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, 5,446,091, Cl. 525-54.100.

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DeMars, Jimmy A., to Pillsbury Company, The. Device for dispensing thixotropic sauce onto pizza crusts. 5,445,674, Cl. 118-669.000.

DeMond, Thomas W.: *See*—
Thompson, E. Earle; and DeMond, Thomas W., 5,446,479, Cl. 345-139.000.

Denen, Dennis J.; and Weller, Albert E., to Hemostatic Surgery Corporation. Regulated-current power supply and methods for resistively-heated surgical instruments. 5,445,635, Cl. 606-27.000.

DePuy Inc.: *See*—
McNulty, Donald E.; Kelman, David C.; Moreland, John R.; and Hamm, John E., 5,445,642, Cl. 606-88.000.

Dermik Laboratories, Inc.: *See*—
Klein, Robert W.; and Beckman, Albert M., 5,446,028, Cl. 514-43.000.

De Roeck, Jozef; Vaeck, Eduard V.; Sillis, Marc; Marckx, Michel; and Van Hecke, Paul. Detachable carriage drive. 5,445,461, Cl. 400-322.000.

Derovanessian, Henry; and Liu, Vincent, to GI Corporation. Variable length codeword packer. 5,446,916, Cl. 395-800.000.

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Brenner, Michael B.; and Der Simonian, Harout, 5,445,940, Cl. 435-7.240.

Desai, Kamalesh S.; and DiAngelo, Donald W., to International Business Machines Corporation. MLC conductor pattern off-aet design to eliminate line to via cracking. 5,446,246, Cl. 174-262.000.

Design Display Group, Inc.: *See*—
Loew, Jonathon, 5,444,930, Cl. 40-544.000.

DesLauriers, Paul J.; and Matson, Michael S., to Phillips Petroleum Company. Co-production of an alkenyl aromatic compound or precursor thereof and an oxygenated sulfur-containing compound. 5,446,227, Cl. 585-437.000.

Desmond, Richard: *See*—
Jones, Todd K.; Mills, Sanger G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

De Souza, Edwin: *See*—
Paul, Prasun K.; and De Souza, Edwin, 5,446,914, Cl. 395-800.000.

Despatch Industries Limited Partnership: *See*—
Shodeen, Keith; Davenport, Stewart; and Melgaard, Hans L., 5,446,289, Cl. 250-455.110.

Detlefsen, William D.: *See*—
Shiau, David W.; Detlefsen, William D.; and Phillips, Earl K., 5,446,089, Cl. 524-596.000.

Detroit Diesel Corporation: *See*—
Letang, Dennis M.; Babcock, Douglas J.; and Weisman, S. Miller, II, 5,445,128, Cl. 123-436.000.

Detroit, William J., to LignoTech USA, Inc. Nitric acid oxidized lignosulfonates. 5,446,133, Cl. 530-500.000.

Deubzer, Bernward: *See*—
Herzig, Christian; Burger, Willibald; Deubzer, Bernward; and Bloechl, Martina, 5,446,119, Cl. 528-26.000.

Deuter, Klaus, to Boehringer Mannheim GmbH. Method for analyzing a component of a liquid sample. 5,445,967, Cl. 436-164.000.

Deutsche Aerospace AG: *See*—
Feldle, Heinz-Peter, 5,446,444, Cl. 342-175.000.

Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V.: *See*—
Peschka, Walter; Carpetis, Constantin; and Schneider, Gottfried, 5,445,666, Cl. 75-335.000.

Deutsche ITT Industries GmbH: *See*—
Hilpert, Thomas; Mueller, Stefan; Becher, Juergen; and Gehrig, Wilfried W., 5,446,852, Cl. 395-375.000.
Theus, Ulrich; and Kessel, Juergen, 5,446,380, Cl. 323-275.000.
Zimmer, Hans-Guenter, 5,445,998, Cl. 437-228.000.

Devivar, Rodrigo V.: *See*—
Revankar, Ganapathi R.; Lewis, Arthur F.; Bhattacharya, Birendra K.; Devivar, Rodrigo V.; Rando, Robert F.; and Fennewald, Susan M., 5,446,045, Cl. 514-258.000.

Devries, Adrian J.; and Rist, Bruno A., to International Telesystems, Inc. Universal decoder for television signal scramble systems. 5,446,795, Cl. 380-13.000.

Diacel Chemical Industries, Ltd.: *See*—
Nakano, Shinji; Morimoto, Takao; Yamada, Shin-ya; Fujiwa, Takaaki; Matsui, Hideki; and Tabuchi, Takeharu, 5,446,110, Cl. 525-439.000.

DiAngelo, Donald W.: *See*—
Desai, Kamalesh S.; and DiAngelo, Donald W., 5,446,246, Cl. 174-262.000.

Diascorn, Jean-Louis: *See*—
Tourtier, Philippe; Vial, Jean-Francois; Diascorn, Jean-Louis; and Pecot, Michel, 5,446,495, Cl. 348-398.000.

Diasonics Ultrasound, Inc.: *See*—
Briggs, Sandra A.; Spratt, Ray S.; and Forestieri, Steven F., 5,446,800, Cl. 382-128.000.

Diaz, Michael A.: *See*—
Bothe Almquist, Catherine L.; Diaz, Michael A.; Halm, Roland L.; Hasler, James R., Jr.; and Smith, James S., 5,445,742, Cl. 210-670.000.

Dickson, Dale A.: *See*—
Lattin, Gary A.; Dickson, Dale A.; and Grace, Michael J., 5,445,609, Cl. 604-70.000.

Dictaphone Corporation: *See*—
Henits, John; and Swick, Robert B., 5,446,603, Cl. 360-48.000.

Didier, Gazeau; and Thoen, Christiaan A., to Procter & Gamble Company, The. Stable liquid detergent compositions containing peroxygen bleach suspended by a hydropholic silica. 5,445,756, Cl. 252-104.000.

Diefes, Debra L.; Fan, Leopold C.; and Rodgers, Charles E. Satellite location and pointing system for use with global positioning system. 5,446,465, Cl. 342-357.000.

Diekema, Keith A.: *See*—
Dinerstein, Robert J.; Sabol, Jeffrey S.; and Diekema, Keith A., 5,446,068, Cl. 514-649.000.

Dieter, Hans-Reinhold: *See*—
Kutscher, Bernhard; and Dieter, Hans-Reinhold, 5,446,148, Cl. 544-14.000.

Dietrich, Bernd: *See*—
Hauber, Michael; Freudenberg, Ulrich; Josefiak, Christoph; Barth, Peter; and Dietrich, Bernd, 5,445,768, Cl. 264-6.000.

Dietrich, Rolf. Cycle, tensioned spoked wheel assembly and rim therefor. 5,445,439, Cl. 301-55.000.

Digisonix, Inc.: *See*—
Goodman, Seth D.; and Hoffmann, Richard A., 5,446,249, Cl. 181-206.000.

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Brett, Bevin R., 5,446,899, Cl. 395-700.000.
Fitch, John S.; and Hamburgen, William R., 5,445,697, Cl. 156-295.000.
Goldstein, Fred R., 5,446,734, Cl. 370-60.100.
Lysakowski, Richard S., Jr., 5,446,575, Cl. 395-200.010.
Owicki, Susan S.; Birrell, Andrew D.; Nelson, Charles G.; and Wobber, Edward P., 5,446,901, Cl. 395-700.000.
Royal, Philip K., 5,446,878, Cl. 395-180.000.

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Landry, Christian C.; Tsai, Tzong-Bin; Chapin, Bradford G.; and Lou, Jin-Bond, 5,446,622, Cl. 361-737.000.

Dilla, Wolfgang; Dillenburg, Helmut; Klumpe, Michael; Krebber, Hans-Georg; Linke, Horst; Orzol, Detlef; and Ploenissen, Erich, to Solvay Deutschland GmbH. Process for treating waste water. 5,445,741, Cl. 210-631.000.

Dillenburg, Helmut: *See*—
Dilla, Wolfgang; Dillenburg, Helmut; Klumpe, Michael; Krebber, Hans-Georg; Linke, Horst; Orzol, Detlef; and Ploenissen, Erich, 5,445,741, Cl. 210-631.000.

Dillon, John B.: *See*—
Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Farnwald, Michael P.; Horowitz, Mark A.; and Griffin, Matthew M., 5,446,696, Cl. 365-222.000.

Di Lullo, Alberto; Marcotullio, Armando; and Borgarello, Enrico, to Enitricerche S.p.A.; and AGIP S.p.A. Process for recovering and causing highly viscous petroleum products to flow. 5,445,179, Cl. 137-13.000.

Dinerstein, Robert J.; Sabol, Jeffrey S.; and Diekema, Keith A., to Merrell Dow Pharmaceuticals Inc. 1-phenyl-3-phenyl-2-propyne-1-ones as calcium uptake inhibitors. 5,446,068, Cl. 514-649.000.

Dionesotes, Neil T.: *See*—
Watanabe, Shunso F.; Eckert, Steven J.; Engelman, Gerald H.; Dionesotes, Neil T.; Collins, Steven R.; and Bernstein, Steven D., 5,445,185, Cl. 137-596.170.

Director-General of Agency of Industrial Science and Technology: *See*—
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.

Director of National Food Research Institute Ministry of Agriculture, Forestry and Fisheries: *See*—
Kobayashi, Shoichi; Miwa, Shoji; and Tsuzuki, Wakako, 5,445,950, Cl. 435-99.000.

Dias, William F.: *See*—
Czapp, Adelbert T.; Huber, Mark A.; Bos, Bradley C.; Dias, William F.; and Thomas, David E., 5,445,410, Cl. 280-728.300.

Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Lantsch, Hartmut, to BASF Aktiengesellschaft. Naphthindazole-4,9-quinones. 5,446,168, Cl. 548-359.100.

Dittmann, Michael; and Kruger, Erwin, to Siemens Aktiengesellschaft. Pluggable assembly, particularly a relay module for motor vehicles. 5,446,626, Cl. 361-785.000.

Divall, John E., to Odin Developments Limited. Fluid flow control. 5,445,180, Cl. 137-15.000.

Diversitec Incorporated: *See*—
Blocher, Troy E.; and O'Brien, Daniel P., 5,446,617, Cl. 361-674.000.

Dixon, Elizabeth L.: *See*—
Falsetti, Robert V.; and Dixon, Elizabeth L., 5,445,029, Cl. 73-609.000.

Dixon, Joe K. Load testing apparatus and method for a personnel platform. 5,445,032, Cl. 73-788.000.

Dizon, Cipriano. Wallpaper applicator. 5,445,704, Cl. 156-574.000.

Djupsjobacka, Anders G.; and Egnell, Lars, to Telefonaktiebolaget LM Ericsson. System and method for dispersion compensation in fibre optic high speed systems. 5,446,574, Cl. 359-181.000.

Dmitrievich, Kim I.: *See*—
Kinoshita, Hiromi; Matsushita, Yoshiki; Inoue, Yoshihiro; Ignatyevich, Zykin V.; Dmitrievich, Kim I.; Nikolaevich, Boitsov A.; and Anatolyevich, Visyagin O., 5,444,933, Cl. 43-9.700.

Doane, I. Gerald; and Van de Ven, John, to Moore Business Forms, Inc. High throughput, low cost, non-impact printing. 5,444,961, Cl. 53-411.000.

Doba, Takahisa; and Watanabe, Bunya, to Zeneca Limited. Photopolymerisable compositions. 5,445,918, Cl. 430-285.000.

Dr. Ing. h.c.F. Porsche AG: *See*—
Koehler, Harald; Raisch, Dieter; and Homann, Bodo, 5,445,429, Cl. 296-107.000.

Dodds, Willard J.: *See*—
Heberling, Paul V.; Kelsey, Mark P.; and Dodds, Willard J., 5,444,982, Cl. 60-737.000.

Doduco GmbH & Co. Dr. Eugen Durrwachter: *See*—
Behrens, Volker; Meyer, Carl L.; Saeger, Karl; Honig, Thomas; and Michal, Roland, 5,445,895, Cl. 428-567.000.

Doerge, Licael: *See*—
Witte, Ernst-Christian; Beckh, Hansjorg; Stegmeier, Karlheinz; and Doerge, Liesel, 5,446,065, Cl. 514-604.000.

Doetzer, Reinhard: *See*—
Isak, Heinz; Wettling, Thomas; Keil, Michael; Wolf, Bernd; and Doetzer, Reinhard, 5,446,199, Cl. 562-869.000.

Doherty, James E.: *See*—
Beach, John R.; Paul, Sigismund G.; Kenny, Daniel J.; Hasan, Syed Riaz-Ul; and Doherty, James E., 5,445,297, Cl. 221-257.000.

Doig, Peter C.: *See*—
Hodges, Robert S.; Paranchych, William; Lee, Kok K.; Parimi, Sastry A.; Irvin, Randall T.; and Doig, Peter C., 5,445,818, Cl. 424-184.100.

Dolbear, Thomas P.: *See*—
Nelson, Richard D.; Dolbear, Thomas P.; and Froehlich, Robert W., 5,445,308, Cl. 228-121.000.

Domesle, Rainer; Engler, Bernd; and Lox, Egbert, to Degussa Aktiengesellschaft. Monolithic catalyst with a metal carrier. 5,446,006, Cl. 502-439.000.

Domke, Klaus: *See*—
Buchner, Norbert; Domke, Klaus; Reichert, Manfred; Stottkiewitz, Herbert; Wilke, Bernd; Zimmermann, abine; Lemke, Kuno; and Voegele, Guenther, 5,445,870, Cl. 428-214.000.

Donnelly Corporation: *See*—
Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., 5,446,576, Cl. 359-267.000.

Doppel, Paul L.: *See*—
McGill, Robert S., III; Wright, Timothy A.; Burdette, Danny R.; and Doppel, Paul L., 5,444,990, Cl. 62-298.000.

Doraswamy, Jayanthi: *See*—
Beck, Donald D.; Doraswamy, Jayanthi; and Leces, Oscar A., 5,444,974, Cl. 60-274.000.

D'Oria, Francesco: *See*—
Addeo, Antonio; D'Oria, Francesco; and Bonari, Roberto, 5,445,781, Cl. 264-328.600.

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Varasi, Mario; Dostert, Philippe; Pevarello, Paolo; and Bonsignori, Alberto, 5,446,066, Cl. 514-620.000.

Doucet, Michel: *See*—
McDonough, James M.; Barone, Chris A.; and Doucet, Michel, 5,445,518, Cl. 431-153.000.

Douglas Machine Limited Liability Company: *See*—
Pazdernik, Irvan L., 5,445,590, Cl. 493-317.000.

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Chung, Hsin-Hsien; and Douglass, Jeffrey A., 5,446,471, Cl. 343-770.000.

Douse, David E.; Ellis, Wayne F.; and Hedberg, Erik L., to International Business Machines Corporation. Memory device with programmable self-refreshing and testing methods therefore. 5,446,695, Cl. 365-222.000.

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Newsham, Mark D.; Inbasekaran, Muthiah N.; and Mang, Michael N., 5,445,854, Cl. 428-1.000.
Pierini, Peter E.; and Cho, Myung H., 5,445,779, Cl. 264-210.500.
Traugott, Thomas D.; and Workentine, Shari L., 5,446,103, Cl. 525-282.000.

Dow Corning Asia Ltd.: *See*—
Tachikawa, Mamoru, 5,446,180, Cl. 556-408.000.

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Bothe Almquist, Catherine L.; Diaz, Michael A.; Halm, Roland L.; Hasler, James R., Jr.; and Smith, James S., 5,445,742, Cl. 210-670.000.
Caporiccio, Gerardo, 5,445,752, Cl. 252-49.600.
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Cobb, Vicky S.; Mc Vannel, Donald E.; Norris, Ann W.; and Legrow, Gary E., 5,446,185, Cl. 556-451.000.
Haluska, Loren A.; and Michael, Keith W., 5,445,894, Cl. 428-557.000.
Haluska, Loren A., 5,446,088, Cl. 524-588.000.

Dow Corning GmbH: *See*—
Holinski, Rudiger, 5,445,748, Cl. 252-30.000.

Dow Corning Toray Silicon Co., Ltd.: *See*—
Kanzaki, Yasue; Kobayashi, Hideki; Masatomi, Toru; and Murakami, Ichiro, 5,445,751, Cl. 252-49.600.
Kobayashi, Hideki, 5,446,115, Cl. 528-18.000.

Dow Corning Toray SiliconCo., Ltd.: *See*—
Kasuya, Akira, 5,445,891, Cl. 428-450.000.

Dow, William C.: *See*—
Love, David B.; Dow, William C.; Himmelsbach, Richard J.; Watson, Alan D.; and Rocklage, Scott M., 5,446,145, Cl. 540-465.000.

Dowbrands: *See*—
Miller, Burdette W.; McCree, John O.; and Price, William D., 5,445,865, Cl. 428-192.000.

Dowell, a division of Schlumberger Technology Corporation: *See*—
Nelson, Erik B.; Cawiezel, Kay E.; and Constien, Vernon G., 5,445,223, Cl. 166-308.000.

Draber, Edgar: *See*—
Schmuck, Arno; Draber, Edgar; and Minsfeldt, Michael, 5,445,928, Cl. 430-508.000.

Draka Polva B.V.: *See*—
Berhaut-Streel, Jacques, 5,445,331, Cl. 241-79.100.

Drako, Dean M.; and Roskowski, Steven G., to Apple Computer, Inc. Architecture for transferring pixel streams, without control information, in a plurality of formats utilizing addressable source and destination channels associated with the source and destination components. 5,446,866, Cl. 395-500.000.

Draper, Randal K. Shrouded electric outboard motor. 5,445,545, Cl. 440-6.000.

Dratz, Werner, to Carl Roth GmbH Co. Packaging unit for pipette tips. 5,445,270, Cl. 206-443.000.

Drechsler, Peter H., to Torrington Company, The. Methods of regenerating metalworking fluids with chelating agents. 5,445,945, Cl. 435-29.000.

Dresser, Scott A.; Markinson, Scott A.; and Goud, Richard B., to Hewlett-Packard Company. Apparatus for determining a computer memory configuration of memory modules using presence detect bits shifted serially into a configuration register. 5,446,860, Cl. 395-427.000.

Drumm, Arthur E. Strip brush for mounting on a rotary drum. 5,445,438, Cl. 300-21.000.

Drzewinski, Michael A., to Istituto Guido Donegani S.p.A.; and Enichem S.p.A. Miscible blends of polysulfones and aromatic alkyl methacrylate polymers. 5,446,096, Cl. 525-189.000.

DSC Communications Corporation: *See*—
Martin, Edward G., 5,445,527, Cl. 439-78.000.

Du Pont Merck Pharmaceutical Company, The: *See*—
Wityak, John; and Sielecki-Dzurdz, Thais M., 5,446,056, Cl. 514-340.000.

Duby, Philippe; and Huynh-Ba, Tuong, to Nestec S.A. Preparation of 2-acetyl-1-pyrroline. 5,446,171, Cl. 548-540.000.

Duffy, William J., Jr.: *See*—
Miller, Kenneth, Jr.; and Duffy, William J., Jr., 5,445,900, Cl. 429-1.000.

Duley, Raymond S., to Advanced Micro Devices, Inc. Variable speed controller for an electronic display. 5,446,483, Cl. 345-212.000.

Dumas, Jacques: *See*—
Trost, Barry M.; and Dumas, Jacques, 5,446,225, Cl. 585-359.000.

Dumoulin, Charles L.; and Darrow, Robert D., to General Electric Company. Invasive system employing a radiofrequency tracking system. 5,445,150, Cl. 128-653.100.

Dumoulin, Charles L., to General Electric Company. Simultaneous imaging of multiple spectroscopic components with magnetic resonance. 5,446,384, Cl. 324-307.000.

Dumoulin, Charles L.: *See*—
Darrow, Robert D.; and Dumoulin, Charles L., 5,445,151, Cl. 128-653.300.

Duncan, Eugene F.: *See*—
Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., 5,446,281, Cl. 250-221.000.

Dung, Bernhard: *See*—
Schwendemann, Volker; Glaser, Klaus; Tschang, Chung-Ji; Burkhart, Bernd; Oftring, Alfred; and Dung, Bernhard, 5,445,727, Cl. 205-271.000.

Dunn, W. J.: *See*—
Worthen, W. G.; Worthen, Howard V., deceased; and Dunn, W. J., 5,445,164, Cl. 128-759.000.

Du Pont de Nemours, E. I., and Company: *See*—
Manogue, William H.; and Rao, V. N. Mallikarjuna, 5,446,219, Cl. 570-176.000.
Rao, V. N. Mallikarjuna, 5,446,216, Cl. 570-151.000.
Webster, James L.; and Lerou, Jan J., 5,446,218, Cl. 570-169.000.

Dupuy, Jean-Paul; Halin, Gilles; Chauveau, Laurent; and Boanet, Alain, to Giat Industries. Initiation device for a pyrotechnic system. 5,445,077, Cl. 102-481.000.

Durand, Jean-Pierre; Binet, Daniel; Gateau, Patrick; and Bregeat, Roger, to Institut Francais du Petrole. Polyfunctional polyisobutenes, their preparation, their formulation and their use. 5,445,657, Cl. 44-459.000.

Durand, Michel G., to Antal Trading, Ltd. Normed transport pallet. 5,445,084, Cl. 108-56.300.

Durham, Douglas S.: *See*—
Weaver, Craig M.; Allison, Ruth A.; Metsker, Grace G.; Clemons, Jeanne M.; Durham, Douglas S.; Sabin, Gary A.; and Hope, Keven A., 5,446,671, Cl. 364-468.000.

Durrance, Debra H.; and Sasse, Philip A., to Kimberly-Clark Corporation. Environmentally friendly polymeric web compositions. 5,446,100, Cl. 525-221.000.

Durrfeld, Rainer; Kowoll, Johannes; Kuske, Eberhard; Niermann, Hans; Wilmer, Gerhard; and Wolff, Joachim, to Krupp Koppers GmbH. Gasification apparatus for a finely divided combustible material. 5,445,658, Cl. 48-62.000.

Dussault, Paul G.: *See*—
DeMar, Lawrence E.; and Dussault, Paul G., 5,446,894, Cl. 395-650.000.

Dusserre-Telmon, Guy F. P.; and Plona, Daniel G., to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation (SNECMA). Sealing means between a pressurized chamber and a lubricated chamber. 5,445,394, Cl. 277-173.000.

Dutton, Kris R.; and Rothlisberger, Linda C. Mathematical board game apparatus. 5,445,390, Cl. 273-243.000.

Duturc, Daniel: *See*—
Cattoen, Thierry; Duturc, Daniel; and Vaquier, Mariannick, 5,445,021, Cl. 73-178.000.

Dworschak, Heinz; and Modica, Giovanni, to European Atomic Energy Community (Euratom). Method and a device for decomposing tritiated water and for recovering elementary tritium. 5,445,803, Cl. 423-657.000.

Dykstra, Richard A.: *See*—
Fiorenza, John A., II; Dykstra, Richard A.; Pfaff, Joseph L.; Wesenberg, Scott L.; and Shears, Douglas, 5,445,014, Cl. 73-117.300.

Dyno Nobel Inc.: *See*—
Lawrence, Lawrence D.; and Halander, John B., 5,445,059, Cl. 88-12.000.

E.R. Squibb and Sons, Inc.: *See*—
Shah, Sadiq; and Kirchner, Fred, 5,445,761, Cl. 252-94.000.

E-Systems, Inc.: *See*—
Adams, Stephen M.; and Shih, Lionel C., 5,446,602, Cl. 360-48.000.
Cleveland, Austin R., 5,446,462, Cl. 342-45.000.

E-Tek Dynamics, Inc.: *See*—
Pan, Jing-Jong; Shih, Ming; Mao, Zhong M.; Liang, Frank Y. F.; and Shih, Kung, 5,445,319, Cl. 239-1.000.

Each, Thomas C.; and Nilchian, Mohammad, to Blue Coral, Inc. Abrasive-containing surface-finish composition. 5,445,670, Cl. 106-3.000.

Eadie, James S.; Balgobin, Neil G.; and Buck, Harvey, to Boehringer Mannheim Corporation. Strand displacement assay and complex useful therefor. 5,445,933, Cl. 435-6.000.

Eagan, Chris S. Electronic instrument for locating and diagnosing engine sounds. 5,445,026, Cl. 73-591.000.

Eastern Company, The: *See*—
Weinerman, Lee S.; and Kuminski, Arthur J., 5,445,422, Cl. 292-247.000.

Eastman Chemical Company: *See*—
Blevins, Richard W.; and Turner, S. Richard, 5,446,106, Cl. 525-379.000.
Boaz, Neil W., 5,445,963, Cl. 435-280.000.
Buchanan, Charles M.; Gardner, Robert M.; and White, Alan W., 5,446,079, Cl. 524-41.000.

Eastman, Clarke K.; Perconti, James A.; Smart, Gerald J.; and Spyra, Peter J., to Eastman Kodak Company. Laser power control in an optical recording system to compensate for multiple system degradations. 5,446,716, Cl. 369-54.000.

Eastman Kodak Company: *See*—
Back, Seung Ho.; Morrison, Robert I.; and Sarraf, Sanwal P., 5,446,477, Cl. 346-138.000.
Bailey, David S.; and Parton, Richard L., 5,445,913, Cl. 403-203.000.
Brown, Vincent R.; and Burdsall, John R., II, 5,445,929, Cl. 430-511.000.
Eastman, Clarke K.; Perconti, James A.; Smart, Gerald J.; and Spyra, Peter J., 5,446,716, Cl. 369-54.000.
Hamilton, John F., Jr.; and Leone, Anthony J., III, 5,446,558, Cl. 358-454.000.
Janosky, Mark S.; Johnson, David A.; Lindsay, Kenneth A.; and Stoops, James T., 5,446,355, Cl. 318-661.000.
Marsden, Peter D.; and Evans, Gareth B., 5,445,925, Cl. 430-393.000.
Pagano, Daniel M., 5,445,336, Cl. 242-348.300.
Reinke, Stephen M., 5,445,343, Cl. 242-587.100.
Seger, Peter R.; and Fanelli, Michael J., 5,445,344, Cl. 242-597.300.
Tai, Hwai-Tzuu; and Ajewole, Isaac I., 5,446,561, Cl. 358-445.000.

Eaton Corporation: *See*—
Graves, Roger A., Jr., 5,445,126, Cl. 123-399.000.
Oshgan, Thomas J., 5,446,253, Cl. 200-556.000.
Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., 5,446,281, Cl. 250-221.000.

Eaton, James R.; and Hunter, Joseph H., to General Motors Corporation. Hydraulic shift control for a power transmission. 5,445,043, Cl. 74-335.000.

Eberhard Hoesch & Sohne GmbH, Verfahrens-und Anlagentechnik: *See*—
Van Egdom, Richard; and Geiss, Rudolf, 5,445,733, Cl. 210-229.000.

Eberlein, Robert L.: *See*—
Peterson, David W.; and Eberlein, Robert L., 5,446,652, Cl. 364-578.000.

Ebine, Katsuo: *See*—
Shiraishi, Kazuo; Matsumura, Kazuhito; Oishi, Isamu; and Ebine, Katsuo, 5,446,816, Cl. 385-33.000.

Ebner, Cynthia L.: *See*—
Mueller, Walter B.; Ebner, Cynthia L.; and Roberts, William P., 5,445,893, Cl. 428-500.000.

Eccleston, Larry E.; and Bezold, David E., to Fluke Corporation. Precision analog-to-digital converter with low-resolution and high-resolution conversion paths. 5,446,371, Cl. 324-121.00R.

Echlin Inc.: *See*—
Plantan, Ronald S., 5,443,440, Cl. 303-7.000.

Eckert, Steven J.: *See*—
Watanabe, Shunso F.; Eckert, Steven J.; Engelman, Gerald H.; Dionesotes, Neil T.; Collins, Steven R.; and Bernstein, Steven D., 5,445,185, Cl. 137-596.170.

Eco Stills, Inc.: *See*—
Myers, Henry S., 5,445,714, Cl. 202-176.000.

Eda, Hiroshi; Someya, Kenji; and Chikuma, Isamu, to NSK Ltd. Electric power steering apparatus. 5,445,237, Cl. 180-79.100.

Eda, Kazuo; Taguchi, Yutaka; Onishi, Keiji; and Seki, Shun-ichi, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave device having a lamination structure. 5,446,330, Cl. 310-313.00R.

Eddy, Christina K.: *See*—
Campbell, John W.; Cheung, Alex; and Eddy, Christina K., 5,445,952, Cl. 435-121.000.

Eden, Herbert R. Closed loop oil charging for AC or refrigerant compressor units. 5,444,988, Cl. 62-125.000.

Edenbaum, Martin, to Carapace, Inc. Warp-knit casting bandage fabric, warp-knit casting bandage and method for making bandage. 5,445,599, Cl. 602-76.000.

Edington, Christopher J.: *See*—
Allen, Bernie; Edington, Christopher J.; Swartz, Eric; Parracho, Rui; and Mochen, Richard, 5,444,926, Cl. 36-93.000.

Edo Sports, Inc.: *See*—
Pearce, Terry V.; and Pearce, Tony M., 5,445,382, Cl. 273-167.00R.

Egendorf, Andrew. Cable television billing method. 5,446,489, Cl. 348-3.000.

Eggelte, Hendrikus J.: *See*—
Rabin, Brian R.; Harbron, Stuart; Eggelte, Hendrikus J.; Hollaway, Michael R., deceased; and Holloway, Ann, legal representative, 5,445,942, Cl. 435-18.000.

Eggers, Patrick J.: *See*—
Cullen, Michael J.; Ulrey, Joseph N.; Giangrande, Michael R.; and Eggers, Patrick J., 5,445,127, Cl. 123-422.000.

Eggins, Douglas W.: *See*—
Walsh, Roger C.; and Eggins, Douglas W., 5,445,356, Cl. 251-5.000.

Eglin, Hugo: *See*—
Ris, Jurg; Eglin, Hugo; Bonde, Mikael; Frey, Urs; and Bubendorf, Francois, 5,444,892, Cl. 15-304.000.

Egnell, Lars: *See*—
Djupsjobacka, Anders G.; and Egnell, Lars, 5,446,574, Cl. 359-181.000.

Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device including semiconductor layer having impurity region and method of manufacturing the same. 5,446,301, Cl. 257-354.000.

Eichen Conn, Robin S.: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,446,123, Cl. 528-354.000.

Eichfeld, Herbert, to Siemens Aktiengesellschaft. Digital logic circuit for implementing fuzzy logic operators. 5,446,438, Cl. 340-146.200.

Eidsness, John L.: *See*—
Utke, Reinhold E.; Eidsness, John L.; Van de Loo, Dale P.; Ellingson, Gary L.; and Aslakson, Joel T., 5,446,701, Cl. 367-118.000.

Eigen, Manfred; and Otten, Hajo, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Device for setting the temperature of a sample selectively to different values. 5,446,263, Cl. 219-521.000.

Eigler, Jurgen: *See*—
Swart, Marten; Eigler, Jurgen; and Vogt, Richard, 5,446,442, Cl. 340-438.000.

Einset, Erik O., to General Electric Company. Method for making high thermal conducting diamond. 5,445,106, Cl. 117-1.000.

Eipper, Konrad; and Bottcher, Lothar, to Mercedes-Benz AG. Load carrier for vehicles. 5,445,300, Cl. 224-496.000.

Eisemann, Todd: *See*—
Kirkbride, Louise; and Eisemann, Todd, 5,446,883, Cl. 395-600.000.

Ela, John: *See*—
Lucey, Robert E.; Ela, John; Lada, Christopher O.; Shubert, Lawrence G.; and Loew, Christopher, 5,446,788, Cl. 379-430.000.

Electric Fuel (E.F.L.) Ltd.: *See*—
Korall, Menachem; Harats, Yehuda; Dechovich, Boris; and Goldstein, Jonathan, 5,445,901, Cl. 429-27.000.

Electric Power Research Institute: *See*—
Woolf, Herbert D.; and Vasavada, Kamendu C., 5,445,844, Cl. 426-580.000.

Electric Power Research Institute, Inc.: *See*—
McMurray, William, 5,446,642, Cl. 363-40.000.
McMurray, William, 5,446,643, Cl. 363-40.000.

Electronics and Telecommunications Research Institute: *See*—
Chu, Hye-Yong; Park, Pyong-Woon; Han, Seon-Gyu; Choi, Young-Wan; and Kim, Gyung-Ock, 5,446,293, Cl. 257-21.000.
Kim, Kyeong S.; Kim, Hyup J.; and Choi, Mun K., 5,446,738, Cl. 370-94.200.

Elf Atochem S.A.: *See*—
Commandeur, Raymond; Jay, Pierre; and Berger, Noelle, 5,446,228, Cl. 585-6.300.

Elf Sanofi: *See*—
Blaiseu, Pierre-Louis; Legoux, Richard; Leguay, Jean-Jacques; and Schneider, Michel, 5,446,138, Cl. 536-23.740.

Elfers, Guenther; Sager, Wilfried; Vogel, Hans-Henning; and Oppenlaender, Knut, to BASF Aktiengesellschaft. Petroleum emulsion breakers. 5,445,765, Cl. 252-344.000.

Elger, Walter: *See*—
Ottow, Eckhard; Wiechert, Rudolf; Neef, Gunter; Beier, Sybille; Elger, Walter; and Henderson, David A., 5,446,178, Cl. 552-510.000.
Scholz, Stefan; Ottow, Eckhard; Neef, Guenter; Elger, Walter; Beier, Sybille; and Chwalisz, Krzysztof, 5,446,036, Cl. 514-175.000.

El-Hakim, Sabry F.: *See*—
Gerig, Lee H.; and El-Hakim, Sabry F., 5,446,548, Cl. 356-375.000.

El-Hamamsy, Sayed-Amr; Ludwig, Gerald W.; Wharmby, David O.; and Nerone, Louis R., to General Electric Company. Impedance matching circuit for an electrodeless fluorescent lamp ballast. 5,446,350, Cl. 315-248.000.

Eli Lilly and Company: *See*—
Briggs, Barbara S.; and Zmijewski, Milton J., Jr., 5,445,959, Cl. 435-228.000.
Bryant, Henry U.; and Grese, Timothy A., 5,446,061, Cl. 514-456.000.
Grese, Timothy A., 5,446,071, Cl. 514-307.000.
Keohane, Patrick, 5,446,053, Cl. 514-324.000.
Ornstein, Paul L., 5,446,051, Cl. 514-307.000.
Yang, Na N., 5,445,941, Cl. 435-6.000.

Elist, James J. Implant for expanding penile girth and length. 5,445,594, Cl. 600-38.000.

Ellingson, Gary L.: *See*—
Utke, Reinhold E.; Eidsness, John L.; Van de Loo, Dale P.; Ellingson, Gary L.; and Aslakson, Joel T., 5,446,701, Cl. 367-118.000.

Ellis-Davies, Graham C. R.; and Kaplan, Jack H. Structure and synthesis of nitrophenyl-EGTA, a caged calcium, intermediates thereof and a method of producing a high photochemical yield of liberated calcium. 5,446,186, Cl. 556-50.000.

Ellis, Wayne F.: *See*—
Douse, David E.; Ellis, Wayne F.; and Hedberg, Erik L., 5,446,695, Cl. 365-222.000.

Elmer, Stefan, to Schmid & Wezel GmbH & Co. Revolving blade skinning device and revolving blade thereof. 5,445,561, Cl. 452-133.000.

Elsaesser, Dieter; and von der Heide, Johann, to Papst Licensing GmbH. Disk storage device having a brushless DC drive motor. 5,446,610, Cl. 360-99.080.

Ely, Susan; and Tippett, Janet M., to Zeneca Limited. *Bacillus thuringiensis* toxin with activity against Diabrotica species. 5,446,019, Cl. 514-2.000.

Emerson Electric Co.: *See*—
Horst, Gary E., 5,446,359, Cl. 318-701.000.

Emhart Glass Machinery Investments Inc.: *See*—
Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,445,662, Cl. 65-158.000.

Emhart Inc.: *See*—
Fultz, Robb M., 5,445,483, Cl. 411-181.000.

Emonds-Alt, Xavier; Grossriether, Isabelle; Proietto, Vincenzo; and Van Broeck, Didier, to Sanofi. New Dialkylenepiperidino compounds and their enantiomers, process for preparing them and pharmaceutical compositions containing them. 5,446,052, Cl. 514-318.000.

Empire Blue Cross/Blue Shield: *See*—
Yien, Richard S.; and Stratigos, William N., 5,446,740, Cl. 370-110.100.

Endo, Junji: *See*—
Ru, Qing X.; Endo, Junji; and Tonomura, Akira, 5,446,589, Cl. 359-577.000.

Endo, Koji: *See*—
Nomura, Yoshihito; Endo, Koji; and Okado, Chihiro, 5,446,365, Cl. 320-14.000.

Endo, Mikio: *See*—
Uehara, Katsuhiro; Endo, Mikio; Araki, Hitoyuki; Arai, Takeo; and Kawase, Yasuhiro, 5,446,181, Cl. 556-424.000.

Endo, Morinobu. Pitch-based activated carbon fiber. 5,446,005, Cl. 502-433.000.

Endo, Yukio; Harada, Nozomu; Shibata, Hidenori; and Matsunaga, Yoshiyuki, to Kabushiki Kaisha Toshiba. Solid state image sensors for reproducing high definition images. 5,446,493, Cl. 348-320.000.

Endress+Hauser GmbH+Co.: *See*—
Benzel, Hubert, 5,445,031, Cl. 73-724.000.

Engel, Jurgen; Wolf-Heuss, Elisabeth; Orth, Helmut; Wichert, Burkhard; and Sauerbier, Dieter, to Asta Medica AG. Stabilized hexadecylphosphocholine solutions in glycerol alkyl ethers. 5,446,033, Cl. 514-77.000.

Engel, Wolf-Dieter: *See*—
Seidel, Christoph; Burns, Geoffrey; and Engel, Wolf-Dieter, 5,445,820, Cl. 424-237.100.

Engelman, Gerald H.: *See*—
Watanabe, Shunso F.; Eckert, Steven J.; Engelman, Gerald H.; Dionesotes, Neil T.; Collins, Steven R.; and Bernstein, Steven D., 5,445,185, Cl. 137-596.170.

Engels, Juergen: *See*—
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Reul, Bernhard; Henn, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.

Engle, Thomas H., to Knorr Brake Holding Corporation. Lock and coupler for a railway ramp car. 5,445,083, Cl. 105-355.000.

Engler, Bernd: *See*—
Domesle, Rainer; Engler, Bernd; and Lox, Egbert, 5,446,006, Cl. 502-439.000.

Engstrom, Keith A., to Alps Electric (U.S.A.), Inc. Method for producing opto-electronic circuit using laser-trimming device. 5,446,259, Cl. 219-121.690.

Enichem S.p.A.: *See*—
Drzewinski, Michael A., 5,446,096, Cl. 525-189.000.

Eniricerche S.p.A.: *See*—
Di Lullo, Alberto; Marcotullio, Armando; and Borgarello, Enrico, 5,445,179, Cl. 137-13.000.

Enomoto, Katashi: *See*—
Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, 5,446,141, Cl. 540-139.000.

Ensuiko Sugar Refining Co., Ltd.: *See*—
Tanaka, Takemi; Okemoto, Hisashi; and Kuwahara, Nobuhiro, 5,445,842, Cl. 426-540.000.

EPIC Design Technology Inc.: *See*—
Huang, Xinoli; and Zhang, William H., 5,446,676, Cl. 364-578.000.

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Fischer, Michael: *See*—
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Focus Golf Systems, Inc.: *See*—
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Fodor, Stephen P. A.; Pirrung, Michael C.; Read, J. Leighton; and Stryer, Lubert, to Affymax Technologies N.V. Array of oligonucleotides on a solid substrate. 5,445,934, Cl. 435-6.000.

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Thuerig, Peter J., 5,445,419, Cl. 285-1.000.
Fuisz Technologies Ltd.: *See*—
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Yamanaka, Hideki; Sugano, Teruto; and Mitarai, Masanobu, 5,446,430, Cl. 333-202.000.
Fuji Kiko Co., Ltd.: *See*—
Katsumi, Yoshimasa; and Ikegami, Yasuyuki, 5,445,046, Cl. 74-527.000.
Fuji Oil Co., Ltd.: *See*—
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Fuji Photo Film Co., Ltd.: *See*—
Harada, Toru; and Fujiwara, Itsuo, 5,445,930, Cl. 430-588.000.
Hasebe, Kazunori, 5,445,526, Cl. 430-399.000.
Kawai, Kiyoshi, 5,445,924, Cl. 430-363.000.
Kohda, Katsuhiro, 5,446,292, Cl. 250-585.000.
Mukai, Hachiro, 5,446,705, Cl. 369-32.000.
Ohta, Yasunori; and Kosemura, Syouichi, 5,446,779, Cl. 378-182.000.
Ohtsuka, Hisashi; Okazaki, Yoji; Hyuga, Hiroaki; and Mitsumoto, Shinji, 5,446,750, Cl. 372-34.000.
Soga, Norikazu, 5,445,370, Cl. 271-12.000.
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Yamanouchi, Junichi; Tamura, Yutaka; and Takagi, Yasuyuki, 5,445,931, Cl. 430-627.000.
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Akasaki, Yutaka; Sato, Katsuhiro; and Nukada, Katsumi, 5,445,909, Cl. 430-58.000.
Ikeda, Chikaho, 5,446,405, Cl. 327-362.000.
Iyoda, Tetsuo; So, Ikkei; and Ozawa, Takashi, 5,446,276, Cl. 250-208.100.
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Fujimori, Takayasu: *See*—
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Fujita, Shigetomo; Hasegawa, Tsukasa; Hayashi, Tomoe; and Suzuki, Osamu, to Mitsubishi Jukogyo Kabushiki Kaisha. Tanker for the prevention of cargo oil spillage. 5,445,097, Cl. 114-74.00R.
Fujita, Tadasu: *See*—
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Fukuda, Hideo; Fujita, Haruhiko; Shimoda, Hideyoshi; and You, Shiryu, to Nippon Zeon Co., Ltd. Covulcanizable rubber composition of partially hydrogenated nitrile rubber and chlorinated ethylene-propylene copolymer. 5,446,098, Cl. 525-194.000.
Fukuda, Katsumi; Iizuka, Tadashi; Naka, Reishi; Hata, Hiroaki; Gommori, Masahiko; and Homma, Yoshiharu, to Hitachi, Ltd. Lubricant for refrigeration compressors. 5,445,753, Cl. 252-52.00R.
Fukuda, Kazuyuki; and Murase, Hiroshi, to Rohm Co., Ltd. Multiple-meter driving apparatus. 5,446,655, Cl. 364-424.010.
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Fukuta, Masaru, to International Business Machines Corporation. Read/write circuit for minimizing recovery time. 5,446,601, Cl. 360-46.000.
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Fukuzawa, Sumiko; Nakano, Shinichi; and Yamaura, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Chain guide structure. 5,445,568, Cl. 474-144.000.
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Gaffney, Edward S., to GRE, Incorporated. Piezoluminescent, pyroluminescent sensor. 5,446,334, Cl. 310-338.000.
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Gale, Richard O.; and Mignardi, Michael A., to Texas Instruments Incorporated. Wafer-like processing after sawing DMDs. 5,445,559, Cl. 451-388.000.
Gallaher, Dale M.: *See*—
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Gardner, John F.; Laycock, Jane F.; Norlin, Eric C.; Slogoff, Shelly I.; Williams, E. Ford; and Williams, Tobin H., to Lionville Systems, Inc. Method for automatic dispensing of articles stored in a cabinet. 5,445,294, Cl. 221-1.000.
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Korhonen, Veijo; and Haapaporras, Olli, 5,446,417, Cl. 331-57.000.

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Gearin, Peter; Halpin, Terence; Pileggi, James D.; Browne, Michael P. J.; and Beutler, William C., 5,445,278, Cl. 211-13.000.

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Sakai, Shiro; Okamoto, Takehisa; Nakamura, Makoto; Yamaguchi, Haruhisa; and Morita, Tetsuya, 5,446,275, Cl. 250-207.000.

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O'Neill, Gerald J.; and Bulka, Robert J., 5,446,211, Cl. 568-684.000.
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Carson, Mathew; Han, Ru-Jen L.; LeMahieu, Ronald A.; and Madison, Vincent S., 5,446,189, Cl. 560-44.000.

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Chu, Hye-Yong; Park, Pyong-Woon; Han, Seon-Gyu; Choi, Young-Wan; and Kim, Gyung-Ock, 5,446,293, Cl. 257-21.000.

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Hand, David D.: *See*—
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Handtmann, Thomas. Filtering method for filtering liquids. 5,445,745, Cl. 210-777.000.

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Hannan, Michael J.: *See*—
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Hansen, Don. Vertical blind assembly. 5,445,205, Cl. 160-168.100.

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Hara, Fumio: *See*—
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Harada, Hiroshi: *See*—
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Harasawa, Masako; Misuda, Katsutoshi; Matsubara, Toshiya; and Tanuma, Toshihiro, to Asahi Glass Company Ltd. Recording sheet and record. 5,445,868, Cl. 428-206.000.
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Pomponi, Shirley A.; Gulto, Vincent P.; Horan, Ann C.; Patel, Mahesh G.; and Coval, Stephen J., 5,446,207, Cl. 568-633.000.
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Hardee, Johnnie R., Jr.: *See*—
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Harford, Jack R., to Samsung Electronics Co., Ltd. Noise reducing apparatus and methods for television receivers. 5,446,500, Cl. 348-618.000.
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Harlow, Robert R., to TBC Orthopedics, Inc. Back support device having bands securing the support plate. 5,445,601, Cl. 602-19.000.
Harman, R. Keith, to Southwest Microwave, Inc. Differential, multiple cell reflex cable intrusion detection system and method. 5,446,446, Cl. 340-566.000.
Harmony, Richard C. Cabinet and drawer latch. 5,445,451, Cl. 312-333.000.
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Harriman, Ron E., to Calmar Inc. Tamper evident lock for liquid pump dispenser. 5,445,299, Cl. 222-153.130.
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Uscategui, Gabriel J., 5,446,368, Cl. 323-315.000.
Harris, J. Milton, to Shearwater Polymers, Inc. Isolatable, water soluble, and hydrolytically stable active sulfones of poly(ethylene glycol) and related polymers for modification of surfaces and molecules. 5,446,090, Cl. 525-54.100.
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Hart, Sandra A. Wrist support system. 5,445,349, Cl. 248-118.000.
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Haruta, Naoya: *See*—
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Harvey, James F.: *See*—
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Hasan, Syed Riaz-Ul: *See*—
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Hâuquier, Guido; Cortens, Willem; Coppens, Paul; Vermeersch, Joan; Mostaert, Erik; and Verschueren, Eric, to AGFA-Gevaert, N.V. Lithographic base and a method for making a lithographic printing plate therewith. 5,445,912, Cl. 430-159.000.
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Hayakawa, Kunio; and Torii, Masafumi, to Ricoh Company, Ltd. Thermosensitive recording material. 5,446,011, Cl. 503-209.000.
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Hayama, Takashi: *See*—
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Beach, John R.; Paul, Siginmuad G.; Keany, Daniel J.; Hasan, Syed Riaz-Ul; and Doherty, James E., 5,445,297, Cl. 221-257.000.
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Shih, Ruey-Sheng; Yeh, Kevin J.; Chow, Show-Shyang; Hung, Jui-Chi; and Chen, Shi-Shiow, 5,445,366, Cl. 267-140.130.

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Lee, K. Roger; Lin, Song-Fure; and Cheng, Yuh-Lin, 5,446,813, Cl. 385-31.000.
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Travers, Christine; and Martino, Germain, 5,446,230, Cl. 585-748.000.

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Shokry Rashwan, Mohamed M.; and Burrows, Barry, 5,445,330, Cl. 241-78.000.

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Harpster, Joseph W., 5,445,018, Cl. 73-118.200.

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Broadbent, Neal E.; and MacGregor, Duncan D., 5,445,525, Cl. 439-64.000.
Colwell, Robert P.; and Glew, Andrew F., 5,446,912, Cl. 395-800.000.
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Hainsey, Robert F.; and Dao, Giang T., 5,446,521, Cl. 355-53.000.
Kardach, James P.; Joshi, Jayesh M.; Bland, Patrick M.; and Clarke, Grant L., Jr., 5,446,906, Cl. 395-750.000.
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Tedrow, Kerry D.; Javanifard, Jahanshir J.; and Taub, Mase J., 5,446,408, Cl. 327-530.000.
Young, Ian; Wong, Keng L.; and Smith, Jeffrey, 5,446,867, Cl. 395-550.000.

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McGill, Robert S., III; Wright, Timothy A.; Burdette, Danny R.; and Doppel, Paul L., 5,443,990, Cl. 62-298.000.

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Holst, John C., 5,446,685, Cl. 365-49.000.

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Acovic, Alexandre; and Wu, Ben S., 5,446,299, Cl. 257-316.000.
Arroyo, Ronald X.; Burky, William E.; Gruwell, Tricia A.; and Hinojosa, Joaquin, 5,446,845, Cl. 395-250.000.
Ayres, Kathryn J.; Beardsley, Brent C.; Bello, Keith A.; Benhase, Michael T.; Nordahl, Donald M.; Torre, Alfred G.; Trieu, Bao T.; and VanPatten, Linda D., 5,446,872, Cl. 395-180.000.
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Bard, Steven L.; Jones, Jeffrey D.; Katyl, Robert H.; Moore, Ronald J.; and Moreno, Oscar A., 5,444,925, Cl. 34-638.000.
Bealkowski, Richard; and Bolt, Mary M., 5,446,898, Cl. 395-700.000.
Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,446,723, Cl. 369-275.100.
Boldt, Gerald D.; Hanna, Stephen D.; and Vogelsberg, Robert E., 5,446,741, Cl. 371-21.100.
Boyd, Alexander; French, William; Lees, Stuart P.; Murray, Kenneth S.; and Robertson, Briand L., 5,445,313, Cl. 228-248.100.
Bradshaw, Richard L., 5,446,085, Cl. 524-507.000.
Chou, Norman C.; D'Avignon, Edward J.; Gregerson, James C.; Robinson, James R.; Siegel, Michael S.; Smoolca, Michael A.; and Van Norstrand, Albert J., Jr., 5,446,913, Cl. 395-800.000.
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Copeland, George P.; Hoffman, Richard D.; Malkemus, Timothy R.; and Smith, Marc G., 5,446,858, Cl. 395-427.000.
Crowder, George; and Rippens, Roger A., 5,446,243, Cl. 174-250.000.
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Desai, Kamalesh S.; and DiAngelo, Donald W., 5,446,246, Cl. 174-262.000.
Douse, David E.; Ellis, Wayne F.; and Hedberg, Erik L., 5,446,695, Cl. 365-222.000.
Ewen, John E.; Ponnapalli, Saila; and Soyuer, Mehmet, 5,446,311, Cl. 257-531.000.
Fukuta, Masaru, 5,446,601, Cl. 360-46.000.
Gardner, Timothy S.; Stahl, Ronald P.; and Shafaat, Syed T., 5,446,710, Cl. 369-44.140.
Hernandez, Bernardo; Horton, Raymond R.; Palmer, Michael J.; Noyan, Ismail C.; and Weindelmayer, Frederick G., 5,446,261, Cl. 219-230.000.
Hinsberg, William D., III; and Houle, Frances A., 5,446,870, Cl. 395-500.000.
Hsieh, Chang-Ming; Hsu, Louis L. G.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,446,312, Cl. 257-559.000.
Jeremiah, Thomas L.; and Blaner, Bartholomew, 5,446,850, Cl. 395-375.000.
Kaplan, Craig A.; Chen, James R.; Fallside, David C.; Fenwick, Justine R.; Forcier, Mitchell D.; and Wolff, Gregory J., 5,446,891, Cl. 395-600.000.
Keum, Byoung J., 5,446,649, Cl. 364-167.010.
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Levine, Frank E.; Twichell, Brian C.; and Welbon, Edward H., 5,446,876, Cl. 395-184.010.
Lin, Burn J., 5,446,540, Cl. 356-345.000.
Loy, Robert D.; and Mantilla, Osvaldo A., 5,446,789, Cl. 379-433.000.
Mathias, Thomas B.; Planutis, Richard J.; and Wierbowski, Judith A., 5,446,897, Cl. 395-700.000.
Melnick, Paul J.; Monnella, Anthony J., Jr.; and Meyer, Herman P., 5,446,314, Cl. 257-678.000.
Moore, Allan R.; Poulos, Lori J.; and DeFazio, Lynn G., 5,446,885, Cl. 395-600.000.
Padgett, Russell S.; Nassiff, Amado; and Rauenzahn, Spencer G., II, 5,446,869, Cl. 395-500.000.
Schwendemann, Walter; and Wang, Peter C., 5,446,884, Cl. 395-600.000.
Taylor, Russell H., 5,445,166, Cl. 128-897.000.
Tetsuya, Ohtani; Yokohama; Uchiyama, Yoshiharu; and Nomura, Hideo, 5,446,618, Cl. 361-683.000.
Waclawsky, John G.; Hershey, Paul C.; and Daugherty, Raymond F., 5,446,874, Cl. 395-575.000.

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Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.

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Larsch, Paul; and Wagner, Rickey L., 5,445,154, Cl. 128-660.100.

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Iosef, Alexander, to Rotem Fertilizers Ltd. Process for the manufacture of pure amorphous silica from rocks. 5,445,804, Cl. 423-339.000.

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ISA France S.A.: *See—*
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Ishida Co., Ltd.: *See—*
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Mori, Toru; Sugawa, Hideo; Yamada, Nobutoshi; and Ueda, Yoshimichi, 5,446,129, Cl. 530-324.000.

Ishii, Kenji, to Nohmi Bosai, Ltd. Fire-alarm system. 5,446,443, Cl. 340-505.000.

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Yamada, Mitsuo; Ishii, Toshiyuki; Nojiri, Hiroyuki; and Kawakami, Ichiro, 5,446,077, Cl. 523-415.000.

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Yamada, Tadashi; and Ishikawa, Hiroyuki, 5,446,712, Cl. 369-44.160.

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Istituto Guido Donegani S.p.A.: *See—*
Drzewinski, Michael A., 5,446,096, Cl. 525-189.000.

Itani, Mohammad S.: *See—*
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Ito, Akira: *See—*
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Ito, Toshikazu: *See—*
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Ito, Yoshikazu: *See—*
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.

Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, to Mitsui Toatsu Chemicals, Incorporated; and Yamamoto Chemicals, Incorporated. Alkylphthalocyanine near-infrared absorbers and recording/display materials using the same. 5,446,141, Cl. 540-139.000.

Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, to Mitsui Toatsu Chemicals, Inc.; and Yamamoto Chemicals, Inc. Phthalocyanine and naphthalocyanine light-absorbing compound and optical recording medium containing same. 5,446,142, Cl. 540-139.000.

Itoh, Hisato: *See—*
Misawa, Tsutami; Ogino, Akira; Imai, Rihoko; and Itoh, Hisato, 5,446,135, Cl. 534-714.000.

Itoh, Teruaki. Sample sorting apparatus. 5,445,037, Cl. 73-864.250.

Itoh, Tomoyuki: *See—*
Kusano, Katsuyuki; Ozawa, Akira; Kanai, Yasushi; and Itoh, Tomoyuki, 5,446,351, Cl. 318-139.000.

Itou, Atsushi: *See—*
Kato, Shigekazu; Tamura, Naoyuki; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,445,484, Cl. 414-217.000.

Itou, Daisuke; and Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Vacuum pump having parallel kinetic pump inlet section. 5,445,502, Cl. 417-203.000.

Itou, Makoto: *See—*
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,446,428, Cl. 333-185.000.

Itsuzaki, Yoshihiro; Takano, Misuzu; Horikami, Kinji; and Nakao, Masaya, to Matsushita Electric Industrial Co., Ltd. Recognizing methods of circular holes. 5,446,801, Cl. 382-141.000.

ITT Corporation: *See—*
Gauger, Derek K.; and Heesch, Max O., 5,445,354, Cl. 248-429.000.

ITT Industries, Inc.: *See—*
Foster, Nigel S.; and Murray, David P., 5,446,819, Cl. 385-80.000.

Iura, Tadashi. Rotary, invalid bed. 5,444,883, Cl. 5-618.000.

Iveco Fiat S.p.A.: *See—*
Dellora, Giancarlo; and Polverelli, Paolo, 5,444,980, Cl. 60-602.000.

Ives, John R., to Beth Israel Hospital Association. Apparatus and method for recording an electroencephalogram during magnetic resonance imaging. 5,445,162, Cl. 128-731.000.

Iwabuchi, Takayoshi, to Alps Electric Co., Ltd. Spindle motor and disk driving apparatus using the same. 5,446,325, Cl. 310-67.00R.

Iwagawa, Isao: *See*—
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; Higashiguchi, Teruaki; and Iwagawa, Isao, 5,446,615, Cl. 361-225.000.

Iwai, Hiroyuki: *See*—
Kitayama, Hirofumi; Iwai, Hiroyuki; Wada, Shinichi; and Oosawa, Tetsu, 5,445,486, Cl. 414-416.000.

Iwai, Yoshio; Sato, Shigehiro; Mochizuki, Hideaki; Mizuno, Hiroaki; Kosako, Shinya; and Kurai, Hisako, to Matsushita Electric Industrial Co., Ltd. Liquid crystal display apparatus having a random orientation alignment film and a method for producing the same. 5,446,569, Cl. 359-78.000.

Iwamura, Shinji; Muramatsu, Shigeru; and Yamada, Sadayuki, to Matsushita Electric Industrial Co., Ltd. Sealed compressor with dust reservoir. 5,445,504, Cl. 417-368.000.

Iwanami, Yoshimu: *See*—
Kobayashi, Seizo; Mizoe, Takashi; Iwanami, Yoshimu; Yokoyama, Shigeki; and Jimbo, Keizi, 5,445,883, Cl. 428-355.000.

Iwano, Toshiyuki: *See*—
Chikuma, Isamu; and Iwano, Toshiyuki, 5,445,238, Cl. 180-79.100.

Iwasa, Shigesato: *See*—
Butler, Neal R.; and Iwasa, Shigesato, 5,446,284, Cl. 250-332.000.

Iwasaki, Akiko: *See*—
Toyofuku, Kunitaka; and Iwasaki, Akiko, 5,446,010, Cl. 503-208.000.

Iwasaki, Masayuki: *See*—
Wakata, Yuichi; Iwasaki, Masayuki; and Inoue, Koji, 5,445,919, Cl. 430-287.000.

Iwasaki, Youichi: *See*—
Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, 5,446,494, Cl. 348-349.000.

Iwase, Taira, to Kabushiki Kaisha Toshiba. Decoder circuit having CMOS inverter circuits. 5,446,700, Cl. 365-230.060.

Iwata, Toshio, to Kabushiki Kaisha Kenwood. Sampling frequency converter. 5,446,398, Cl. 327-113.000.

Iwata, Toyomi: *See*—
Nakayama, Shohachiro; Iwata, Toyomi; Kuroda, Masahiro; Goto, Naoyuki; Ueda, Hiroshi; and Ishii, Michio, 5,445,691, Cl. 152-209.00R.

Iwayama, Takeshi; Miyagawa, Atsushi; and Inaba, Masaichi, to Nippon Mektron, Ltd. Flexible circuit wiring board and method of producing the same. 5,446,245, Cl. 174-261.000.

Iyoda, Tetsuo; So, Ikken; and Ozawa, Takashi, to Fuji Xerox Co., Ltd. Image reader and image reading method. 5,446,276, Cl. 250-208.100.

Izatt, Reed M.: *See*—
Bruening, Ronald L.; Tarbet, Bryon J.; Izatt, Reed M.; and Bradshaw, Jerald S., 5,446,183, Cl. 556-427.000.

J & M Laboratories, Inc.: *See*—
Allen, Martin A.; and Fetcko, John T., 5,445,509, Cl. 425-72.200.

J.M. Voith GmbH: *See*—
Bernert, Richard, 5,445,673, Cl. 118-123.000.

Jachowski, Douglas R., to Allen Telecom Group, Inc. Compact, low-intermodulation multiplexer employing interdigital filters. 5,446,729, Cl. 370-37.000.

Jackel, Janet L.: *See*—
Baran, Jane E.; d'Alessandro, Antonio; and Jackel, Janet L., 5,446,807, Cl. 385-11.000.

Jackson, Kenneth L., Jr., to Davidson Textron Inc. Mold heating apparatus. 5,445,510, Cl. 425-182.000.

Jackson, Paul R. Chimney reinforcing device. 5,444,952, Cl. 52-219.000.

Jacob Berg GmbH & Co. KG: *See*—
Krautkramer, Gunter J., 5,445,283, Cl. 215-218.000.

Jaen, Juan C.: *See*—
Augelli-Szafran, Corinne E.; Jaen, Juan C.; Schwarz, Roy; and Thomas, Anthony J., 5,446,057, Cl. 514-356.000.

JAG Design International Limited: *See*—
Wooley, Gene W.; Van de Ven, Anthony; and Dackombe, John A., 5,446,791, Cl. 381-118.000.

Jambor, George F.: *See*—
Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., 5,446,281, Cl. 250-221.000.

James B. Copelan Family Trust: *See*—
Copelan, Phoebe; and Copelan, James B., 5,445,825, Cl. 424-448.000.

James, Lawrence E.: *See*—
Sandison, Mark; Eva, Ron; and James, Lawrence E., 5,446,197, Cl. 562-435.000.

James, Paul L. Hinged locking mechanism. 5,444,998, Cl. 70-14.000.

Jamieson, Thomas H., to Lockheed Missiles & Space Co., Inc. Inverted telephoto wide-aperture wide-field infrared lens system. 5,446,581, Cl. 359-357.000.

Janke, Donald R.; and Rodrian, James A., to Square D Company. System for calibrating a line isolation monitor. 5,446,682, Cl. 364-571.010.

Janosky, Mark S.; Johnson, David A.; Lindsay, Kenneth A.; and Stoops, James T., to Eastman Kodak Company. Media transport system with high precision position and speed control. 5,446,355, Cl. 318-661.000.

Jansen, Peter H.; and Chokshi, Viral K. H., to Wandel & Goltermann ATE Systems Ltd. Platform module system for a larger electronic system. 5,446,621, Cl. 361-729.000.

Japan Gore-Tex, Inc.: *See*—
Fujimoto, Hiroyoshi; and Sakai, Mari, 5,445,739, Cl. 210-490.000.
Hazaki, Yoshito; Hatakeyama, Minoru; Fukutake, Sunao; and Urakami, Akira, 5,446,315, Cl. 257-687.000.

Japan Natural Food Co., Ltd.: *See*—
Hagiwara, Yoshihide; and Hagiwara, Hideaki, 5,445,839, Cl. 426-270.000.

Jaraczewski, Richard; and West, Scott, to Medtronic CardioRhythm. Intracardiac electrical potential reference catheter. 5,445,148, Cl. 128-642.000.

Javanifard, Jahanshir J.: *See*—
Tedrow, Kerry D.; Javanifard, Jahanshir J.; and Taub, Mase J., 5,446,408, Cl. 327-530.000.

Jay, Pierre: *See*—
Commandeur, Raymond; Jay, Pierre; and Berger, Noelle, 5,446,228, Cl. 585-6.300.

JC Electronics Corporation: *See*—
Hoshino, Masayoshi; and Yayoshi, Masakazu, 5,445,526, Cl. 439-69.000.

Jebwab, Jonathan: *See*—
Mullen, Sean F.; and Jebwab, Jonathan, 5,446,683, Cl. 364-717.000.

Jeffreyes, Walter C., Jr. Futuristic board game. 5,445,389, Cl. 273-243.000.

Jehn, E. F., to Quarton, Inc. Laser assembly for marking a line on a workpiece for guiding a cutting tool. 5,446,635, Cl. 362-259.000.

Jenara Enterprises Ltd.: *See*—
Clarke, John M. C.; and Marander, Dennis J., 5,445,248, Cl. 188-273.000.

Jennmar Corporation: *See*—
Calandra, Frank, Jr., 5,445,477, Cl. 405-259.100.

Jensen, Brian J.: *See*—
Bryant, Robert G.; Jensen, Brian J.; and Hergenrother, Paul M., 5,446,204, Cl. 568-333.000.

Jensen, Howard A.; Wainscott, Barrett G., Jr.; Albinger, Donald R.; and Monroe, Richard H., to Johnson Service Company. Diagnostic system for use in an environment control network. 5,446,677, Cl. 364-510.000.

Jequier, Pascal; and Marazza, Fabrizio, to Sapec S.A. fine chemicals. Process for the preparation of diastereoisomeric pure tetrahydrofolates. 5,446,156, Cl. 544-251.000.

Jeremiah, Thomas L.; and Blaner, Bartholomew, to International Business Machines Corporation. Cross-cache-line compounding algorithm for scism processors. 5,446,850, Cl. 395-375.000.

Jeroma, Rudolf, to Werbelicht KG Rudolf Jeroma. Electric sign advertising element. 5,444,932, Cl. 40-564.000.

Jewell, Jack L.; and Olbright, Greg R., to Photonics Research Incorporated. Phased array semiconductor laser. 5,446,754, Cl. 372-50.000.

Ji-Hyun, Kim: *See*—
Bloomfield, John W.; Bischoff, Rudi A.; Payne, Robert L.; Wagner, Scott B.; Sang-Gweon, Kim; Tae-Sik, Kim; Ji-Hyun, Kim; Joon-Young, Jeong; Chang-Hyun, Yoo; and Shin, Dong-Il, 5,446,445, Cl. 340-521.000.

Jia, Youke. Billfold with coin holder. 5,445,199, Cl. 150-136.000.

Jiang, Ying, to United States Surgical Corporation. Polymer derived from cyclic amide graft copelymer and medical devices manufactured therefrom. 5,446,108, Cl. 528-417.000.

Jifuku, Yorito: *See*—
Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, 5,446,645, Cl. 363-71.000.

Jimbo, Keizi: *See*—
Kobayashi, Seizo; Mizoe, Takashi; Iwanami, Yoshimu; Yokoyama, Shigeki; and Jimbo, Keizi, 5,445,883, Cl. 428-355.000.

Jimbo, Sadayuki: *See*—
Hori, Masaru; Yano, Hiroyuki; Horioka, Keiji; Hayashi, Hisataka; Jimbo, Sadayuki; Okano, Haruo; Tomioka, Kazuhiro; Ito, Yasuhiro; and Mori, Haruki, 5,445,710, Cl. 156-643.100.

Jimenez, Oscar, to Exonix Research Corporation. Catheter with progressively compliant tip. 5,445,624, Cl. 604-280.000.

Jina Manufacturer Thai Co., Ltd.: *See*—
Chien, Jui-Lung, 5,445,432, Cl. 297-344.180.

JMK International, Inc.: *See*—
Gibbon, Robert M., 5,446,075, Cl. 523-137.000.

Jobling, Peter A.: *See*—
Mohlenkamp, Michael J.; Babuder, Gerald A.; Jobling, Peter A.; and Conover, Charles E., 5,445,263, Cl. 206-303.000.

Johansson, Karl N. G.: *See*—
Eriksson, Bertil F. H.; Johansson, Karl N. G.; Stening, Goran B.; and Oberg, Bo P., 5,446,029, Cl. 514-45.000.

John Hine Limited: *See*—
Hine, John, 5,445,552, Cl. 446-477.000.

Johns Hopkins University, The: *See*—
Huang, Ru C.; and Giza, Paul E., 5,445,954, Cl. 435-252.330.

Johnson, Barry C.: *See*—
Cergel, Lubomir; Johnson, Barry C.; and Stafford, John W., 5,446,247, Cl. 174-267.000.

Johnson, Catherine A. Overlapping hospital gown. 5,444,872, Cl. 2-114.000.

Johnson, David A.: *See*—
Janosky, Mark S.; Johnson, David A.; Lindsay, Kenneth A.; and Stoops, James T., 5,446,355, Cl. 318-661.000.

Johnson, Douglas P.; and Brandmeyer, A. Joseph, to Medi-Flex Hospital Products, Inc. Liquid applicator. 5,445,462, Cl. 401-132.000.

Johnson & Johnson Medical, Inc.: *See*—
Lopez, Francisco G., 5,444,871, Cl. 2-114.000.

Johnson, Noel L.: *See*—
Poli, Robert G.; Johnson, Noel L.; Burnside, Robert R.; Chamness, Leland D.; Huang, J. Terry; and Thomas, V. Stanton, 5,445,621, Cl. 604-246.000.

Johnson, Peter: *See*—
Kiuchi, Raymond S.; Johnson, Peter; and Solton, Randolph T., 5,446,840, Cl. 395-164.000.

Johnson, Robert W.: *See*—
Herr, Arthur G. F.; Johnson, Robert W.; and Welles, Toby S., 5,445,265, Cl. 206-308.100.

Johnson Service Company: *See*—
Jensen, Howard A.; Wainscott, Barrett G., Jr.; Albinger, Donald R.; and Monroe, Richard H., 5,446,677, Cl. 364-510.000.

Johnson, Todd S.; Lane, Richard A.; Petersen, Thomas D.; Nichols, Chuck; and Howard, John R., to Zimmer, Inc. Tibial resector guide. 5,445,640, Cl. 606-86.000.

Johnston, Gary. Seat uplift apparatus. 5,445,431, Cl. 297-339.000.

Johnston, James P.: *See*—
Thoen, Christiaan A. J. K.; Fredj, Adbennaceur; and Johnston, James P., 5,445,651, Cl. 8-111.000.

Johnston, William Calvin: *See*—
Tibbals, Edward C., Jr., 5,445,364, Cl. 267-74.000.

Johr, Hans; and Krebs, Roland, to Styner & Bienz AG. Method and device for feeding a band or strip along a straight or zig-zag course to a machine such as one for cutting out of blanks. 5,445,305, Cl. 226-112.000.

Jones, David V., to Morton International, Inc. Mechanical lock assembly for a driver side inflator. 5,445,406, Cl. 280-728.200.

Jones, Edward M., Jr.: *See*—
Arganbright, Robert P.; Jones, Edward M., Jr.; and Hearn, Dennis, 5,446,231, Cl. 585-802.000.

Jones, Jeffrey D.: *See*—
Bard, Steven L.; Jones, Jeffrey D.; Katyl, Robert H.; Moore, Ronald J.; and Moreno, Oscar A., 5,444,925, Cl. 34-638.000.

Jones, John A. Geographic location identification system. 5,445,524, Cl. 434-153.000.

Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, to Merck & Co., Inc. Process for synthesis of FK-506 and tricarbonyl intermediates. 5,446,158, Cl. 546-14.000.

Jonsson, Sonny; Sundell, Per-Erik G.; and Schaeffer, William R., to Fusion Systems Corporation. Photopolymerization process employing a charge transfer complex without a photoinitiator. 5,446,073, Cl. 522-104.000.

Joon-Young, Jeong: *See*—
Bloomfield, John W.; Bischoff, Rudi A.; Payne, Robert L.; Wagner, Scott B.; Sang-Gweon, Kim; Tae-Sik, Kim; Ji-Hyun, Kim; Joon-Young, Jeong; Chang-Hyun, Yoo; and Shin, Doug-Il, 5,446,445, Cl. 340-521.000.

Josefiak, Christoph: *See*—
Hauber, Michael; Freudenberg, Ulrich; Josefiak, Christoph; Barth, Peter; and Dietrich, Bernd, 5,445,768, Cl. 264-6.000.

Joseloff, Michael. Apparatus for the display of a multiplicity of objects or pictures. 5,444,929, Cl. 40-152.100.

Joseph, Joseph T.: *See*—
Kukes, Simon G.; Karol, Thomas J.; and Joseph, Joseph T., 5,446,002, Cl. 502-155.000.

Jos. Zimmermann GmbH & Co. KG: *See*—
Hallmann, Franz; and Keusch, Albert, 5,445,335, Cl. 242-118.100.

Joshi, Jayesh M.: *See*—
Kardach, James P.; Joshi, Jayesh M.; Bland, Patrick M.; and Clarke, Grant L., Jr., 5,446,906, Cl. 395-750.000.

Joshi, Vikram P.: *See*—
Khalidi, Yousef A.; Talluri, Madhusudhan; Williams, Dock G.; and Joshi, Vikram P., 5,446,854, Cl. 395-401.000.

Joslin, Dan F.; and Ryherd, Dan J. Electronic control of clother dryer. 5,444,924, Cl. 34-486.000.

Joslin, Daniel F.; and Ryherd, Daniel J., to White Consolidated Industries, Inc. Washer and dryer communication. 5,444,996, Cl. 68-12.040.

JP Marechal SA: *See*—
Marechal, Jean-Pierre, 5,445,098, Cl. 114-102.000.

Ju, Yoon D.: *See*—
Kim, Kyung Y.; Kim, Wang S.; Jung, Hyung J.; and Ju, Yoon D., 5,446,459, Cl. 342-1.000.

Juengst, Stefan: *See*—
Hofmann, Dieter; and Juengst, Stefan, 5,446,341, Cl. 313-623.000.

Jung, Andreas: *See*—
Weber, Martin; Seitz, Friedrich; Jung, Andreas; and Guentherberg, Norbert, 5,446,094, Cl. 525-93.000.

Jung, Hyung J.: *See*—
Kim, Kyung Y.; Kim, Wang S.; Jung, Hyung J.; and Ju, Yoon D., 5,446,459, Cl. 342-1.000.

Juri, Tatsuro: *See*—
Matsumi, Chiyoko; Juri, Tatsuro; Iketani, Akira; and Hamai, Shinji, 5,446,597, Cl. 360-19.100.

Juso, Hiromi; and Tanaka, Takeshi, to Sharp Kabushiki Kaisha. Apparatus for automatically preparing a flowchart by analyzing a source program and a list of jump commands. 5,446,911, Cl. 395-800.000.

Kaakinen, John W. Combination filter block and effluent flow deflector. 5,445,735, Cl. 210-247.000.

Kaakkola, Seppo K.: *See*—
Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., 5,446,194, Cl. 558-401.000.

Kabushiki Kaisha Ace Denken: *See*—
Takemoto, Takatoshi; and Kawashima, Kazunari, 5,445,277, Cl. 209-534.000.

Kabushiki Kaisha B-AI: *See*—
Nakada, Takashi; Kazami, Keiichi; and Kuwabara, Shigenori, 5,446,236, Cl. 84-102.000.

Kabushiki Kaisha Izumi Seiki Seisakusho: *See*—
Shimizu, Tetsuhiko; and Koiwai, Tomomi, 5,445,332, Cl. 241-100.000.

Kabushiki Kaisha Kakizaki Seisakusho: *See*—
Kakizaki, Takeyoshi; Ikeda, Kenji; and Shiozaki, Tetsuya, 5,445,271, Cl. 206-459.500.

Kabushiki Kaisha Kenwood: *See*—
Iwata, Toshio, 5,446,398, Cl. 327-113.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Hasegawa, Naoyuki; Ishida, Seiji; and Shiraishi, Hisanori, 5,445,682, Cl. 148-241.000.
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,445,776, Cl. 264-65.000.
Kubo, Kenji; Ichikawa, Katsumi; Ureshino, Kashiro; Kurosaki, Toshio; and Kaneko, Shigeru, 5,445,508, Cl. 425-28.100.

Kabushiki Kaisha Sakura Kurepasu: *See*—
Mukunoki, Tadashi, 5,445,466, Cl. 401-199.000.

Kabushiki Kaisha TOPCON: *See*—
Takagi, Kazutoshi; and Kitajima, Nobuaki, 5,446,582, Cl. 359-385.000.

Kabushiki Kaisha Toshiba: *See*—
Aida, Yasuhiko; Miyano, Hiroshi; Hattori, Kiyoshi; Sakurai, Yoshiyuki; Manome, Eiji; and Nasuda, Toshiaki, 5,445,249, Cl. 188-378.000.
Endo, Yukio; Harada, Nozomu; Shibata, Hidenori; and Matsunaga, Yoshiyuki, 5,446,493, Cl. 348-320.000.
Hiruma, Atsuyuki, 5,446,354, Cl. 318-439.000.
Hori, Masaru; Yano, Hiroyuki; Horioka, Keiji; Hayashi, Hisataka; Jimbo, Sadayuki; Okano, Haruo; Tomioka, Kazuhiro; Ito, Yasuhiro; and Mori, Haruki, 5,445,710, Cl. 156-643.100.
Iwase, Taira, 5,446,700, Cl. 365-230.060.
Kodera, Masako; Yano, Hiroyuki; Shigeta, Atsushi; Aoki, Riichirou; Yajima, Hiromi; and Okano, Haruo, 5,445,996, Cl. 437-225.000.
Kurokawa, Osamu; Yoshida, Hiroki; and Inaba, Tsutomu, 5,446,782, Cl. 379-58.000.
Kurosawa, Ryoichi; and Yamamoto, Hajime, 5,446,363, Cl. 315-506.000.
Minagawa, Kenji; Aikawa, Takeshi; and Saito, Mitsuo, 5,446,849, Cl. 395-375.000.
Miyazaki, Masanori, 5,446,646, Cl. 363-89.000.
Nakagawa, Kazuyo; and Sato, Toshio, 5,446,543, Cl. 356-405.000.
Nakano, Motohiro; and Shirakawa, Masakazu, 5,446,739, Cl. 370-95.300.
Nomura, Yoshihito; Endo, Koji; and Okado, Chihiro, 5,446,365, Cl. 320-14.000.
Sango, Hitoshi, 5,446,792, Cl. 381-160.000.
Tabe, Koichi; and Yoneyama, Kouichi, 5,446,724, Cl. 369-275.100.
Yamamoto, Takeshi, 5,446,407, Cl. 327-525.000.
Yoshida, Atsuya, 5,445,846, Cl. 427-65.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kojima, Yoshio; Murata, Osamu; and Ohta, Hirobumi, 5,446,662, Cl. 364-424.050.

Kabushiki Kaisha Yasuda Corporation: *See*—
Yasuda, Masahiro, 5,445,170, Cl. 132-279.000.

Kabushiki Kasiha Toshiba: *See*—
Sato, Hajime, 5,446,562, Cl. 359-59.000.

Kaczeus, Steven L.: *See*—
Thanos, William N.; Kaczeus, Steven L.; and Fahey, James D., 5,446,609, Cl. 360-97.020.

Kahn, Michael, to University of Illinois, The Board of Trustees of the. Alpha-helix mimetics and methods relating thereto. 5,446,128, Cl. 530-317.000.

Kai, Katsumi; Okamoto, Kenji; and Miura, Yuuichi, to Ishikawajima-Harima Heavy Industries Co., Ltd. Working apparatus traveling through tank web frame of ship. 5,445,094, Cl. 114-65.00R.

Kai, Manabu, to Yamaha Hatsudoki Kabushiki Kaisha. Engine operational control unit. 5,445,121, Cl. 123-198.0DC.

Kaigen Co., Ltd.: *See*—
Terakura, Seiji; and Maeda, Toyoyuki, 5,445,612, Cl. 604-58.000.

Kaino, Kikuo: *See*—
Terada, Jiro; Takenaka, Hiroshi; Ushihara, Masaharu; Tamura, Masami; Nishimura, Hitoshi; and Kaino, Kikuo, 5,445,025, Cl. 73-504.150.

Kairisalo, Pekka J.: *See*—
Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., 5,446,194, Cl. 558-401.000.

Kajikawa, Akira: *See*—
Saito, Kenji; Kajikawa, Akira; Nakatani, Akihiro; Yamahira, Atsushi; Noma, Hiroyuki; and Kawamura, Kazuhiko, 5,445,203, Cl. 152-527.000.

Kajima Corporation: *See*—
Hino, Toshiyuki, 5,444,986, Cl. 62-66.000.

Kajimoto, Takeshi: *See*—
Hara, Motoko; and Kajimoto, Takeshi, 5,446,418, Cl. 331-57.000.

Kakehashi, Nobuharu: *See*—
Yamamoto, Ken; Kuroyanagi, Isao; Yamanaka, Yasushi; and Kakehashi, Nobuharu, 5,444,993, Cl. 62-473.000.
Kakizaki, Shinobu: *See*—
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Mawatari, Atsushi; and Kanbara, Minoru, 5,446,564, Cl. 359-72.000.
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Murakami, Junichi; and Kaneda, Naoya, 5,446,517, Cl. 354-400.000.
Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, 5,446,494, Cl. 348-349.000.
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Kanetake, Yasuo, to Rohm Co. Ltd. Surface mounting type polar electronic component. 5,446,623, Cl. 361-760.000.
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Kano, Mitsunari: *See*—
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Murase, Heihachi; Norimatsu, Tsutomu; Ogawa, Masao; and Haruta, Naoya, 5,445,871, Cl. 428-215.000.
Kanto Special Steel Works, Ltd.: *See*—
Shimizu, Shigeki, 5,445,589, Cl. 492-58.000.
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Yasuda, Shin-ichiro; Kawabe, Kuniyasu; Sasaki, Mitsuhiro; and Yamasaki, Harumasa, 5,446,527, Cl. 355-279.000.
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Kee, Kok-Hiong; Schneider, James G.; and Kartchner, Gene B., 5,445,141, Cl. 128-203.120.
Kasai, Shigeru: *See*—
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Kasuya, Akira, to Dow Corning Toray SiliconCo., Ltd. Curable organopolysiloxane composition containing novel adhesion promoter. 5,445,891, Cl. 428-450.000.
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Tanaka, Toshihiro; Kato, Masataka; Sasaki, Toshio; Kume, Hitoshi; Kotani, Hiroaki; and Furusawa, Kazunori, 5,446,690, Cl. 365-185.000.
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Kawakami, Susumu: *See*—
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Masuho, Yasuhiko; Sugano, Toru; Matsumoto, Yoh-Ichi; Hersh, Evan M.; Petersen, Eskild A.; Lake, Douglas; and Kawamura, Takashi, 5,445,960, Cl. 435-240.270.
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Kawaragi, Yuuji: *See*—
Sato, Keiichi; Kawaragi, Yuuji; and Higashino, Yasuko, 5,446,213, Cl. 568-883.000.
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Chafetz, Harry; Liu, Christopher S.; Papke, Brian L.; and Kennedy, Thomas A., 5,445,750, Cl. 252-49.600.
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Kilic, Soner: *See*—
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Kishii, Shiroh: *See*—
Nishikawa, Makoto; Hirayama, Yoshio; Kishii, Shiroh; and Ishii, Masao, 5,446,092, Cl. 525-66.000.
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Kitchen, George A., to BMC Industries, Inc. Progressive power lens. 5,446,508, Cl. 351-169.000.
Kiuchi, Raymond S.; Johnson, Peter; and Solton, Randolph T., to Borland International, Inc. System and methods for optimized screen writing. 5,446,840, Cl. 395-164.000.
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Korsunsky, Iosif; Shipe, Joanne E.; Harlan, Tod M.; Foreman, Gerald L.; Klotz, Robert C.; and Brown, Robert W., 5,444,906, Cl. 29-741.000.
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Irish, Truly R.; and Kmiecik, Daniel J., 5,445,783, Cl. 264-515.000.
Knapp, Todd K.: *See*—
Roscizewski, Paul M.; Lenz, Russell J.; and Knapp, Todd K., 5,445,533, Cl. 439-184.000.
Knauer, Adolf, to Beteiligungen Sorg GmbH & Co. KG. Melting end for glass melting furnaces with soldier blocks and operating process therefor. 5,445,661, Cl. 65-17.100.
Knepper, Ronald W.: *See*—
Hsieh, Chang-Ming; Hsu, Louis L. G.; Mei, Shaw-Ning; Knepper, Ronald W.; and Wagner, Lawrence F., Jr., 5,446,312, Cl. 257-559.000.
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Knoll, Peter: *See*—
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Knorr Brake Holding Corporation: *See*—
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Knowles Electronics, Inc.: *See*—
Loeppert, Peter V.; and Boor, Steven E., 5,446,413, Cl. 330-277.000.
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Badyal, Rajeev; and Knowles, Vernon, 5,446,404, Cl. 327-143.000.
Knudsen, Rolf A., to A/S Spilka International Ltd. Window constructions. 5,444,942, Cl. 49-261.000.
Knutson, Paul, to Sony Electronics Inc. Genus tower light controller. 5,446,450, Cl. 340-635.000.
Koba, Tomohito; Nakakura, Toshiyuki; Sakai, Hideo; Kishi, Satoru; and Maruko, Chiaki, to Research Association for New Technology Development of High Performance Polymer. Apparatus of manufacturing a sheet-prepreg reinforced with fibers. 5,445,701, Cl. 156-441.000.
Kobayashi, Akira: *See*—
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Kobayashi, Haruto: *See*—
Ikuta, Yuzo; Tashiro, Satoshi; Hatano, Yoshiyuki; Fujita, Tadasu; Andoh, Noboru; Asaoka, Sachio; Kobayashi, Haruto; and Minami, Takeshi, 5,445,955, Cl. 435-180.000.
Kobayashi, Hideaki; and Matsui, Hidekazu, to Hitachi, Ltd. Spindle directly driven by motor and textile machine using same. 5,444,970, Cl. 57-100.000.
Kobayashi, Hideki, to Dow Corning Toray Silicon Co., LTD. Surface-treatment composition. 5,446,115, Cl. 528-18.000.
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Kusunoki, Hideki; Fujii, Masaki; and Kobayashi, Hideki, 5,445,131, Cl. 123-493.000.
Kobayashi, Hideshi; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, to Zenyaku Kogyo Kabushiki Kaisha. Heterocyclic compound and cardiotonic agent containing the same as effective component. 5,446,042, Cl. 514-222.500.
Kobayashi, Hiroo, to Canon Kabushiki Kaisha. Image bearing member mounting method. 5,446,525, Cl. 355-210.000.
Kobayashi, Masaharu: *See*—
Shima, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; and Sakumoto, Yukinori, 5,446,080, Cl. 524-99.000.
Kobayashi, Norihide: *See*—
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Kobayashi, Osamu: *See*—
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Kobayashi, Shoichi; Miwa, Shoji; and Tsuzuki, Wakako, to Director of National Food Research Institute Ministry of Agriculture, Forestry and Fisheries. Method of using α-amylase to prepare slightly decomposed starch granules having low viscosity. 5,445,950, Cl. 435-99.000.
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Nakagawa, Yoshinori; Mitani, Shinichi; Kobayashi, Takehiko; and Honda, Takaaki, 5,445,491, Cl. 414-786.000.
Kobayashi, Yasushi; Kamiya, Masahiro; and Fujii, Toshifumi, to New OJI Paper Co., Ltd. Support sheet for photographic printing sheet. 5,445,882, Cl. 428-329.000.
Kobayashi, Yusuke: *See*—
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Kobold, Klaus: *See*—
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Koch, Edith: *See*—
Seela, Frank; Bourgeouis, Werner; Gumbiowski, Rainer; Roling, Angelika; Roemeyer, Helmut; Mertens, Alfred; Zilch, Harald; Konig, Bernhard; and Koch, Edith, 5,446,139, Cl. 536-26.700.
Koch, Leonard. System for spray washing boat hulls. 5,445,101, Cl. 114-222.000.
Koch Materials Company: *See*—
Chaverot, Pierre; and Lopez, Emile, 5,445,473, Cl. 404-75.000.
Koch, Wolfgang: *See*—
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Koehler, Harald; Raisch, Dieter; and Homann, Bodo, to Dr. Ing. h.c.F. Porsche AG. Convertible wind protection device. 5,445,429, Cl. 296-107.000.
Koenig, Melissa M.; and Vukovich, William J., to General Motors Corporation. Hydraulic control for a power transmission with a manual override. 5,445,578, Cl. 477-142.000.
Koenig, Paul J.; Hutchings, Douglas F.; Gibbard, David W.; and Manwell, Richard C., to Trayco, Inc. Interior corner joist simulating grout line for wall boards simulating tiles embedded in grout. 5,444,953, Cl. 52-282.100.
Koeninger, Horst; and Kohlbauer, Walter, to AGFA-Gevaert Aktiengesellschaft. Apparatus for preparing and dispensing liquids for the treatment of photosensitive material. 5,445,193, Cl. 141-18.000.
Koers, Bonno, to N.V. Vuilafvoer Maatschappij Vam. Apparatus for cleaning gases with the aid of organic filtration material. 5,445,660, Cl. 55-222.000.
Koga, Kunio: *See*—
Kuwana, Akihiro; Honda, Kimihide; and Koga, Kunio, 5,446,176, Cl. 549-546.000.
Kogen, Clark C.: *See*—
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Kohama, Tokio: *See*—
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Kohanteb, Alfred: *See*—
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Kohda, Katsuhiro, to Fuji Photo Film Co., Ltd. Method and apparatus for recording and reading radiation images. 5,446,292, Cl. 250-585.000.
Kohda, Katsuya: *See*—
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Kohler Co.: *See*—
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Kohno, Tetsuo; Okada, Takashi; and Date, Mitsuko, to Minolta Camera Kabushiki Kaisha. Compact zoom lens system. 5,446,592, Cl. 359-689.000.
Kohut, Thomas P., to General Motors Corporation. Head restraint mounting arrangement. 5,445,434, Cl. 297-391.000.
Koide, Kunihiro; and Yajima, Tamotsu, to Tokyo Yogyo Kabushiki Kaisha. Sensor probe for measuring hydrogen concentration in molten metal and method for measuring hydrogen concentration. 5,445,725, Cl. 204-153.100.
Koike, Tadao, to Ricoh Company, Ltd. Image forming device with a function of selecting recording paper. 5,446,524, Cl. 355-208.000.

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Koike, Tsuneaki; Hama, Hideo; and Yamanaka, Toora, to Mitsui Petrochemical Industries, Ltd. Hydrazine compound, process for the preparation of the same, and nonlinear optical organic material. 5,445,888, Cl. 428-411.100.

Koike, Yoshihiko; Saito, Ryuichi; Sekine, Sigeki; and Wakisawa, Yuuji, to Hitachi, Ltd. Semiconductor module with a plurality of power devices mounted on a support base with an improved heat sink/insulation plate arrangement. 5,446,318, Cl. 257-707.000.

Koishikawa, Koji; and Shishido, Motoyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas sampling device for outboard motor. 5,445,548, Cl. 440-89.000.

Koiwai, Tomomi: *See*—
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Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, to Hitachi, Ltd.; Tokyo Electron Limited; and Tokyo Electron Yamanashi Limited. Anisotropic etching method and apparatus. 5,445,709, Cl. 216-71.000.

Kojima, Mitsuo, to Rohm Co., Ltd. Semiconductor memory device including a floating gate having an undoped edge portion proximate to a source portion of the memory device. 5,446,298, Cl. 257-314.000.

Kojima, Yoshiaki; Wada, Yasumitsu; and Katsumura, Masahiro, to Pioneer Electronic Corporation. Information recording apparatus having magnetic shield means. 5,446,722, Cl. 369-266.000.

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Kokko, Pekka, to Andritz-Patentverwaltungs-Gesellschaft m.b.h. Device for replacing the knives of a disc chipper. 5,444,904, Cl. 29-402.080.

Kokonaski, William E.: *See*—
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Kokubo, Masaru: *See*—
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Kaufer, Helmut; Grimm, Maximiliam; and Kreuzer, Martin, 5,445,048, Cl. 74-552.000.

Kolluri, Madhav V., to Maxim Integrated Products. Simple high speed precision transconductance amplifier circuits. 5,446,414, Cl. 330-288.000.

Kolstad, Jeffrey J.: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Hall, Eric S.; Eichen Conn, Robin S.; and Ryan, Christopher M., 5,446,123, Cl. 528-354.000.

Komma, Yoshiaki; Mizuno, Sadao; and Nishino, Seji, to Matsushita Electric Industrial Co., Ltd. Compound objective lens having two focal points, imaging optical system for converging light with the compound objective lens, optical head apparatus for recording or reproducing information with the imaging optical system, optical disk having two types o. 5,446,565, Cl. 359-19.000.

Kommrusch, Steven J.: *See*—
Foster, Bradly J.; Hodge, David J.; and Kommrusch, Steven J., 5,446,496, Cl. 348-441.000.

Komori Corporation: *See*—
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Komori, Kazuhiro; Meguro, Satoshi; Nishimoto, Toshiaki; Kume, Hitoshi; and Yamamoto, Hideaki, to Hitachi, Ltd. Method of making a semiconductor memory device. 5,445,980, Cl. 437-43.000.

Komori, Shigeki; Kuroi, Takashi; and Inuishi, Masahide, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with double structured well. 5,446,305, Cl. 257-372.000.

Kondo, Koji, to Mitsubishi Denki Kabushiki Kaisha. Communication control device. 5,446,764, Cl. 375-354.000.

Kondo, Shigeo: *See*—
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Kondo, Tomoharu; and Abe, Fumio, to NGK Insulators, Ltd. Honeycomb heater. 5,446,264, Cl. 219-552.000.

Kondou, Masamitsu; Umekage, Yasuhiro; and Nakamura, Kunio, to Matsushita Electric Industrial Co., Ltd. Adaptive noise silencing system of combustion apparatus. 5,445,517, Cl. 431-18.000.

Kone Oy: *See*—
Ketonen, Ari, 5,445,244, Cl. 187-325.000.
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Kong, Alvin M. W.: *See*—
Stokes, Robert B.; Crawford, Jay D.; Cushman, Drew; and Kong, Alvin M. W., 5,446,306, Cl. 257-416.000.

Konica Corporation: *See*—
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,445,910, Cl. 430-106.600.

Konig, Bernhard: *See*—
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Konishi, Hiroshige: *See*—
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Konishi, Yoshiharu: *See*—
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Koppelomaki, Leo, to Brandel, Lars. Safety catch. 5,444,899, Cl. 24-625.000.

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Koto, Haruhiko: *See*—
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Kotoh, Satoru: *See*—
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Ito, Susumu; Yamanaka, Katsuyuki; Kouketsu, Akira; and Ijima, Kazunari, 5,445,511, Cl. 425-183.000.

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Kowoll, Johannes: *See*—
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Miyake, Atsushi; Matsushita, Yoshimitsu; and Koyama, Takayuki, 5,446,536, Cl. 356-239.000.

Koyo Seiko Co., Ltd.: *See*—
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Agbo, Francis; and Spradlin, Joseph E., 5,445,836, Cl. 426-52.000.

Kramer, John C.; and Melvin, Robert O., to Smartronics, Inc. Emergency condition lighting controller. 5,446,439, Cl. 340-326.000.

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Krashkevich, David G.; and Pucilowski, Sally, to Schott Glass Technologies, Inc. Brown contrast enhancement glass. 5,446,007, Cl. 501-64.000.

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Kravit, Malcom J.: *See*—
Wolfe, Maynard F.; Law, Hin Y. A.; and Kravit, Malcom J., 5,446,515, Cl. 354-290.000.

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Krebs, Roland: *See*—
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Bell, Rodney E.; Kreidler, Marc S.; Hung, David T. H.; Moya, Robert L.; and Wolters, Harrie J. M., 5,445,152, Cl. 128-653.500.

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Boulton, James R.; and Kremer, Ross A., 5,446,222, Cl. 585-12.000.

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Carney, Scott N.; Lauro, George L.; Krenz, Eric L.; and Ghaem, Sanjar, 5,446,447, Cl. 340-572.000.

Kreuzer, Martin: *See*—
Kaufer, Helmut; Grimm, Maximilian; and Kreuzer, Martin, 5,445,048, Cl. 74-552.000.

Krieger, Karl: *See*—
Hussong, Kurt; Russ, Werner H.; and Krieger, Karl, 5,445,654, Cl. 8-546.000.

Krieger, William A.: *See*—
Beigel, David F.; Wolfe, Edward L.; and Krieger, William A., 5,446,302, Cl. 257-355.000.

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Beriger, Ernst; and Kristinsson, Haukur, 5,446,154, Cl. 544-182.000.

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Krueger, James P.: *See*—
Atallah, Yousef H.; Butz, Robert G.; and Krueger, James P., 5,445,962, Cl. 435-252.100.

Kruger, Erwin: *See*—
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Krupp Koppers GmbH: *See*—
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Houng, Chong L.; Wang, Po-Ching; Kuei-Lin, Lu; Sun, Tingzong; Fan, Yunxiang; Yang, Ziwan; and Wang, Xiourong, 5,445,089, Cl. 111-105.000.

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Kuhrts, Eric H., to CIBUS Pharmaceutical, Inc. Delivery system containing a gel-forming dietary fiber and a drug. 5,445,826, Cl. 424-451.000.

Kukes, Simon G.; Karol, Thomas J.; and Joseph, Joseph T., to Amoco Corporation. Resid hydroprocessing catalyst. 5,446,002, Cl. 502-155.000.

Kukimoto, Takashi; Aoki, Yasutoshi; Yamagishi, Naoto; and Usui, Shinji, to Bridgestone Corporation. Heavy duty pneumatic tires preventing uneven wearing. 5,445,201, Cl. 152-209.00R.

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Kumarasurier, Jey. Foot actuated double acting lever for lifting a toilet seat. 5,444,877, Cl. 4-246.100.

Kumashiro, Hideo: *See*—
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Kumazawa, Satoru: *See*—
Hayashi, Shoichiro; Sunagawa, Kazuhiko; and Kumazawa, Satoru, 5,446,167, Cl. 548-262.200.

Kume, Hitoshi: *See*—
Komori, Kazuhiro; Meguro, Satoshi; Nishimoto, Toshiaki; Kume, Hitoshi; and Yamamoto, Hideaki, 5,445,980, Cl. 437-43.000.
Tanaka, Toshihiro; Kato, Masataka; Sasaki, Toshio; Kume, Hitoshi; Kotani, Hiroaki; and Furusawa, Kazunori, 5,446,690, Cl. 365-185.000.

Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, to Matsushita Electric Industrial Co., Ltd. Electronic component and its manufacturing method. 5,446,428, Cl. 333-185.000.

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Kunczynski, Jan K., to Yantrak, LLC. Transit system employing a traction belt. 5,445,081, Cl. 104-165.000.

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Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masateru, to Mitsubishi Jukogyo Kabushiki Kaisha; and SK Engineering Co., Ltd. Apparatus for use in making multilayered paper. 5,445,713, Cl. 162-304.000.

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Kuo, Shun-Meen; and Chun, Christopher K. Y., to Motorola. Molded reflective optical waveguide. 5,446,814, Cl. 385-31.000.

Kurai, Hisako: *See*—
Iwai, Yoshio; Sato, Shigehiro; Mochizuki, Hideaki; Mizuno, Hiroaki; Kosako, Shinya; and Kurai, Hisako, 5,446,569, Cl. 359-78.000.

Kuraray Co., Ltd.: *See*—
Nishikawa, Makoto; Hirayama, Yoshio; Kishii, Shiroh; and Ishii, Masao, 5,446,092, Cl. 525-66.000.

Kurata, Yukio: *See*—
Yoshida, Yoshio; Kurata, Yukio; and Tsuji, Shigeki, 5,446,719, Cl. 369-116.000.

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Hayashi, Shoichiro; Sunagawa, Kazuhiko; and Kumezawa, Satoru, 5,446,167, Cl. 548-262.200.

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Mitsutake, Hideaki; Minoura, Nobuo; Kimura, Kazumi; and Kurematsu, Katsumi, 5,446,510, Cl. 353-20.000.

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Tokita, Suguru; Yamane, Kenji; Inagaki, Hajime; and Kurisu, Masayoshi, 5,445,855, Cl. 428-65.100.

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Kuroda, Ryo: *See*—
Oguchi, Takahiro; Sakai, Kunihiro; Kawase, Toshimitsu; Yamano, Akihiko; and Kuroda, Ryo, 5,446,720, Cl. 369-126.000.

Kurohashi, Masaharu; Nakamura, Ko; and Ienaga, Kazuharu, to Nippon Zoki Pharmaceutical Co., Ltd. Agricultural and horticultural compositions inducing resistance in plants against salt- and water-stress. 5,446,021, Cl. 514-9.000.

Kuroi, Takashi: *See*—
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Kuroiwa, Yoshinori; Nishida, Hiroshi; Okugawa, Hisashi; Ichihara, Yutaka; and Kumagai, Satoru, to Nikon Corporation. Video clock signal generator in an optical scanner in which a mask including a linear scale provides timing for controlling the amplitude of a vibrating mirror. 5,446,556, Cl. 358-406.000.

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Kurokawa, Osamu; Yoshida, Hiroki; and Inaba, Tsutomu, to Kabushiki Kaisha Toshiba. Terminal connecting device having an auto data receiving function. 5,446,782, Cl. 379-58.000.
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Kubo, Kenji; Ichikawa, Katsumi; Ureshino, Kashiro; Kurosaki, Toshio; and Kaneko, Shigeru, 5,445,508, Cl. 425-28.100.
Kurosawa, Michiaki: *See*—
Nakagawa, Jun'ichi; Kokubo, Masaru; and Kurosawa, Michiaki, 5,446,767, Cl. 375-376.000.
Kurosawa, Ryoichi; and Yamamoto, Hajime, to Kabushiki Kaisha Toshiba. Method of controlling induction motor. 5,446,363, Cl. 318-806.000.
Kuroyanagi, Isao: *See*—
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Kuroyanagi, Satoshi: *See*—
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.
Kurtz, Andrew D.: *See*—
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Durrfeld, Rainer; Kowoll, Johannes; Kuske, Eberhard; Niermann, Hans; Wilmer, Gerhard; and Wolff, Joachim, 5,445,658, Cl. 48-67.00R.
Kuslich, Stephen D.; and Corin, James D., to Spine-Tech, Inc. Intervertebral reamer construction. 5,445,639, Cl. 606-80.000.
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Kutscher, Bernhard; and Dieter, Hans-Reinhold, to ASTA Medica Aktiengesellschaft. Method for the production of azaphenothiazines. 5,446,148, Cl. 544-14.000.
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Kuwahara, Mitsuru: *See*—
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Kuwahara, Nobuhiro: *See*—
Tanaka, Takemi; Okemoto, Hisashi; and Kuwahara, Nobuhiro, 5,445,842, Cl. 426-540.000.
Kuwana, Akihiro; Honda, Kimihide; and Koga, Kunio, to Daicel Chemical Industries, Ltd. Purified 3,4-epoxycyclohexyl methyl (meth)acrylate, a process for the preparation thereof and a 3,4-epoxycyclohexyl methyl (meth) acrylate composition. 5,446,176, Cl. 549-546.000.
Kuzyk, Mark G.; and Welker, David J. Photomechanical positioning and stabilization method and devices using optical fibers and feedback. 5,446,808, Cl. 385-13.000.
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Paradissis, George N.; Garegnani, James A.; and Whaley, Roy S., 5,445,829, Cl. 424-480.000.
Kvietok, Lisa L.; Trinh, Toan; and Hollingshead, Judith A., to Procter & Gamble Company, The. Cellulase fabric-conditioning compositions. 5,445,747, Cl. 252-86.000.
Kwart, Lawrence D.: *See*—
Ruff, Michael R.; Hill, Joanna M.; Kwart, Lawrence D.; and Pert, Candace B., 5,446,026, Cl. 514-15.000.
Kwon, Seog Ha, to Samsung Electronics Co., Ltd. Tape recorder having integral tension pole and impedance roller. 5,445,337, Cl. 242-334.600.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Hanai, Nobuo; Baba, Shozo; and Ozawa, Tadachika, 5,445,938, Cl. 435-7.230.
Kyricos, Christopher J. Vapor exchange medium. 5,445,876, Cl. 428-283.000.
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Lacotta, Paul R.: *See*—
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Lada, Christopher O.: *See*—
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Lafferty, Michael H.: *See*—
Vanek, Laurence D.; McGrath, Robert G.; and Lafferty, Michael H., 5,446,362, Cl. 318-801.000.
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Lagow, Richard J., to Exfluor Research Corporation. Spherical perfluoroethers. 5,446,209, Cl. 568-677.000.
Laing, Inge: *See*—
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Lairmore, Arley G.; and Lairmore, Lisa M. Footprint configuration sponge and base novelty device. 5,445,420, Cl. 283-117.000.
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Lake, Douglas: *See*—
Masuho, Yasuhiko; Sugano, Toru; Matsumoto, Yoh-Ichi; Hersh, Evan M.; Petersen, Eskild A.; Lake, Douglas; and Kawamura, Takashi, 5,445,960, Cl. 435-240.270.
Lake, Ivan J. S.: *See*—
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Lamb, Steven R.: *See*—
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Lambert, Jean-Marie F.: *See*—
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Lamy, Bernard, to U.S. Philips Corporation. Cable network and modulator-demodulator arrangement for such a network. 5,446,918, Cl. 455-5.100.
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Lancaster, Gregory D.; Moore, Glenn A.; Stone, Mark L.; and Reagen, William K., to United States of America, Energy. Volatile organic compound sensing devices. 5,445,795, Cl. 422-86.000.
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Landingham, Richard L.: *See*—
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Landry, Christian C.; Tsai, Tzong-Bin; Chapin, Bradford G.; and Lou, Jin-Bond, to Digital Equuipment Corporation. PC board cartridge for a computer terminal. 5,446,622, Cl. 361-737.000.
Lane, Richard A.: *See*—
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Lang, Stephen M., to Smith & Nephew Associated Companies, Ltd. Wound dressing with conformable elastomeric wound contact layer. 5,445,604, Cl. 602-47.000.
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Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., 5,446,281, Cl. 250-371.000.
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Lomashevitch, Svjatoslav A.; and Svetikov, Yuri V., to Samsung Electronics Co., Ltd. All-optical regenerator. 5,446,573, Cl. 359-158.000.

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Roduit, Jean-Paul; and Wellig, Alain, 5,446,162, Cl. 546-273.000.

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Rabin, Brian R.; Harbron, Stuart; Eggelte, Hendrikus J.; Hollaway, Michael R., deceased; and Holloway, Ann, legal representative, 5,445,942, Cl. 435-18.000.

Long, Jesse L. Portable telescoping stand for truck camper tops. 5,445,352, Cl. 248-354.500.

Long, John A. System and method for preparing letters for mailing. 5,445,367, Cl. 270-1.100.

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Dang, Joe; Stramm, Bernd; and Long, Robert, 5,446,855, Cl. 395-401.000.

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Stucky, Gerhard; and Imwinkelried, Renee , 5,446,159, Cl. 546-118.000.
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Chaverot, Pierre; and Lopez, Emile, 5,445,473, Cl. 404-75.000.

Lopez, Francisco G., to Johnson & Johnson Medical, Inc. Medical gown with seamless sleeve protector. 5,444,871, Cl. 2-114.000.

Loral Infrared & Imaging Systems, Inc.: *See*—
Butler, Neal R.; and Iwasa, Shigesato, 5,446,284, Cl. 250-332.000.

L'Oreal: *See*—
Li, Ming; Sevenet, Thierry; Schaller, Hubert; Abdul Hadi, Hamid; Guenard, Daniel; Potier, Pierre; and Pilleux, Eric, 5,445,816, Cl. 424-62.000.

Lorenz, Gisela: *See*—
Benoit, Remy; Sauter, Hubert; Kirstgen, Reinhard; Lorenz, Gisela; and Ammermann, Eberhard, 5,446,067, Cl. 514-640.000.

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Lindegren, Ulf; Freller, Helmut; and Lorenz, Peter, 5,445,859, Cl. 428-76.000.

Lotspih, John A., to General Motors Corporation. Air bag module. 5,445,407, Cl. 280-728.200.

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Landry, Christian C.; Tsai, Tzong-Bin; Chapin, Bradford G.; and Lou, Jin-Bond, 5,446,622, Cl. 361-737.000.

Love, David B.; Dow, William C.; Himmelsbach, Richard J.; Watson, Alan D.; and Rocklage, Scott M., to Nycomed Salutar, Inc. Polychelant compounds. 5,446,145, Cl. 540-465.000.

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Rodrigues, Julio F.; Bartholomew, Paul J.; Bowman, Timothy S.; and Lowery, Gary L., 5,445,538, Cl. 439-460.000.

Lox, Egbert: *See*—
Domesle, Rainer; Engler, Bernd; and Lox, Egbert, 5,446,006, Cl. 502-439.000.

Loy, Robert D.; and Mantilla, Osvaldo A., to International Business Machines Corporation. Electronic device having antenna for receiving soundwaves. 5,446,789, Cl. 379-433.000.

LSI Logic Corporation: *See*—
Rostoker, Michael D.; and Stelliga, D. Tony, 5,446,726, Cl. 370-17.000.

Lu, Ching-Nan. Door frame. 5,444,958, Cl. 52-775.000.

Lu, Mou-Chih: *See*—
Scott, Danny E.; Lu, Mou-Chih; and Pessier, Rudolf C. O., 5,445,231, Cl. 175-374.000.

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Hong, Hyun-Soo, 5,445,749, Cl. 252-33.600.
Pollack, Robert A., 5,445,760, Cl. 252-73.000.

Lucas Industries public limited company: *See*—
Farr, Glyn P. R.; and Sheriff, Philip W., 5,445,447, Cl. 303-117.100.

Lucas, Rafael P.; Blasco, Jose C.; and Rius, Antonio R., to Braun Aktiengesellschaft. Citrus juicer. 5,445,069, Cl. 99-508.000.

Luce, David A.; and Percival, Christopher J., to Leica Inc. Instructive display for assisting in centering an optical path element on a path. 5,446,274, Cl. 250-206.200.

Lucey, Robert E.; Ela, John; Lada, Christopher O.; Shubert, Lawrence G.; and Loew, Christopher, to UNEX Corporation. Adjustable telephone headset. 5,446,788, Cl. 379-430.000.

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Hayes, William J.; Forehand, Andrew M.; Archuleta, Adrian A.; Hinkle, Paul R.; Mundell, Jerry A.; and Lucterhand, Mark A., 5,445,450, Cl. 312-223.200.

Ludwig, Gerald W.: *See*—
El-Hamamsy, Sayed-Amr; Ludwig, Gerald W.; Wharmby, David O.; and Nerone, Louis R., 5,446,350, Cl. 315-248.000.

Lukic, Irena: *See*—
Kovacevic, Mice; Herak, Jure J.; Mandic, Zora; Lukic, Irena; Tomic, Mirjana; and Brkic, Zinka, 5,446,038, Cl. 514-210.000.

Lundegard, Paul D.; Flint, Carl E.; and Chaffee, Brent F., to Union Oil Company of California. Pulsing remediation method. 5,445,474, Cl. 405-128.000.

Lur, Water; and Yen, Po-Wen, to United Microelectronics Corp. Method of forming device isolation regions. 5,445,989, Cl. 437-67.000.

Lux, Robert A.; Harvey, James F.; Mulford, Charles D., Jr.; and Poli, Louis C., to United States of America, Army. Microelectronic 3D bipolar magnetotransistor magnetometer. 5,446,307, Cl. 257-423.000.

Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., to Donnelly Corporation. Electrochromic mirror for vehicles with illumination and heating control. 5,446,576, Cl. 359-267.000.

Lyszkowski, Richard S., Jr., to Digital Equipment Corp. System for constructing and loading a table data structure based on an associated configuration data. 5,446,575, Cl. 395-200.010.

Lyver, David J. Offset handle apparatus for paint buckets. 5,445,425, Cl. 294-31.200.

Maag, Hans; Rose, Samuel J.; and Schmidt, Beat, to Syntex (U.S.A.) Inc. Oligonucleotides containing 4'-substituted nucleotides. 5,446,137, Cl. 536-23.100.

Mabuchi Motor Co., Ltd.: *See*—
Suzuki, Satoshi; Tsunoda, Michio; Murai, Kunitaka; and Yamada, Katsumi, 5,446,328, Cl. 310-233.000.

Macarak, Edward J.: *See*—
Weisz, Paul B.; and Macarak, Edward J., 5,446,030, Cl. 514-58.000.

Macenski, Charles D.: *See*—
Shaver, John; Nolan, Michael P.; Macenski, Charles D.; Muehlfeld, Alan D.; and Wesselman, Brian, 5,446,769, Cl. 375-202.000.

MacGregor, Duncan D.: *See*—
Broadbent, Neal E.; and MacGregor, Duncan D., 5,445,525, Cl. 439-64.000.

Machacek, Gilbert A. Neuro-aids pinwheel. 5,445,163, Cl. 123-744.000.

Machi, Yoshio, to Nishimatsu Construction Co. Ltd. Method and system for searching and sensing reinforcing steel in concrete by employing an oscillator driver sensor coil. 5,446,379, Cl. 324-240.000.

Machida, Haruhiko: *See*—
Sakata, Shinji; Machida, Haruhiko; Ijichi, Katsushi; and Kano, Fumitaka, 5,446,031, Cl. 514-50.000.

Machin, Peter J.: *See*—
Handa, Balraj K.; Machin, Peter J.; Martin, Joseph A.; Redshaw, Sally; and Thomas, Gareth J., 5,446,161, Cl. 546-225.000.

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Sanders, Dave C.; Mack, Arthur G.; and Timberlake, Larry D., 5,446,212, Cl. 568-726.000.

Mackaness, James B.; and Puchy, Shirley R. Apparatus and method for twist connecting wires. 5,446,241, Cl. 174-91.000.

MacTaggart, Donald. Apparatus for coupling a telephone line to a telephone line subscriber device. 5,446,784, Cl. 379-102.000.

Mader, Gerald E., to Von Duprin, Inc. Breakaway lever clutch. 5,445,423, Cl. 292-336.300.

Madhavan, G. V. Bindu: *See—*
Van Der Puy, Michael; Madhavan, G. V. Bindu; Thenappan, Alagappan; and Tung, Hsueh S., 5,446,217, Cl. 570-156.000.

Madison, Vincent S.: *See—*
Carson, Mathew; Han, Ru-Jen L.; LeMahieu, Ronald A.; and Madison, Vincent S., 5,446,189, Cl. 560-44.000.

Madsen, Roberta M.; Moore, David A.; and Perona, Brian J., to Compaq Computer Corp. Card extender unit for computer. 5,446,619, Cl. 361-695.000.

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Terakura, Seiji; and Maeda, Toyoyuki, 5,445,612, Cl. 604-58.000.

Maeda, Yoshiyasu: *See—*
Matsui, Isamu; Maeda, Yoshiyasu; Todo, Yuji; Kiriake, Masaharu; and Nakao, Takashi, 5,445,334, Cl. 242-35.50A.

Maekawa, Shinichiro; Seto, Kaoru; Kawana, Takashi;; and Kosaka, Toru, to Canon Kabushiki Kaisha. Image forming apparatus with random density pattern growth. 5,446,550, Cl. 358-298.000.

Maeuser, Helmut: *See—*
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Raul, Bernhard; Hess, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.

Magnet-Physik Dr. Steingroever GmbH: *See—*
Steingroever, Erich; and Biedermann, Udo, 5,444,963, Cl. 53-488.000.

Magni, Pierangelo: *See—*
Casati, Paolo; and Magni, Pierangelo, 5,445,995, Cl. 437-211.000.

Magnus, Brian J.: *See—*
Miller, Randy S.; and Magnus, Brian J., 5,445,239, Cl. 180-132.000.

Mahendroo, Mala S.: *See—*
Simpson, Evan R.; Mahendroo, Mala S.; and Mendelson, Carole R., 5,446,143, Cl. 536-24.100.

Maheras, Joanne C.; Hopkins, John B., Jr.; and Tatzlaff, Heribert, to Hoechst Celanese Corporation. Polymer blend composed of cellulose acetate and starch acetate and starch used to form fibers, films and plastic materials and a process to prepare said blend. 5,446,140, Cl. 536-123.000.

Maier, Rolf: *See—*
Barth, Gunter; and Maier, Rolf, 5,445,442, Cl. 303-141.000.

Maiti, Samarendra; Fiakpui, Charles; Reddy, A. V. N.; Czajkowski, David; Spevak, Paul; Atwal, Harninder; and Micetich, Ronald G., to Synphar Laboratories, Inc. 2-[(substituted) methylene] cephalosporin sulfones as antiinflammatory, antidegenerative and antithrombin agents. 5,446,037, Cl. 514-201.000.

Majkowski, Richard F.: *See—*
Lee, Peter S.; Vitale, Joseph A., Jr.; and Majkowski, Richard F., 5,445,964, Cl. 436-60.000.

Makimoto, Mitsuo: *See—*
Ohba, Motoi; Hasegawa, Makoto; and Makimoto, Mitsuo, 5,446,762, Cl. 375-324.000.

Makino, Mitsuya, to Nippon Antenna Co., Ltd. Extendible whip antenna. 5,446,469, Cl. 343-702.000.

Makinouchi, Susumu, to Nikon Corporation. Stage device. 5,446,519, Cl. 355-53.000.

Malani, Bert D.: *See—*
Racine, Raymond P.; and Malani, Bert D., 5,445,184, Cl. 137-460.000.

Malecha, Gregory J.: *See—*
Rutke, Russell J.; and Malecha, Gregory J., 5,445,255, Cl. 192-45.100.

Malin, Richard A.; Cuozzo, Pasquale; and Rigo, Stephen, to Pitney Bowes Inc. Value selection and printing apparatus including a security device. 5,445,074, Cl. 101-91.000.

Malkemus, Timothy R.: *See—*
Copeland, George P.; Hoffman, Richard D.; Malkemus, Timothy R.; and Smith, marc G., 5,446,858, Cl. 395-427.000.

Mallinckrodt, Albert J., to Celsat America, Inc. Integrated cellular communications system. 5,446,756, Cl. 375-200.000.

Malmstrom, Rolf, to A. Ahlstrom Corporation. Method for reducing material containing metal oxide in solid phase. 5,445,667, Cl. 75-448.000.

Malone, Ronald F. Floating media biofilter. 5,445,740, Cl. 210-618.000.

Mammel, Lewis H., Jr., to AT&T Corp. Database storage and retrieval method using a declining stage size and repetitive searches. 5,446,881, Cl. 395-600.000.

Mammino, Joseph: *See—*
Sypula, Donald S.; Mammino, Joseph; and Richter, Bela, 5,445,720, Cl. 204-181.100.

Manabe, Kenji: *See—*
Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.

Manabe, Kunpei: *See—*
Yamashita, Yasuhiro; Manabe, Kunpei; and Asada, Atsuhisa, 5,446,669, Cl. 364-468.000.

Mandiec, Zora: *See—*
Kovacevic, Mice; Herak, Jure J.; Mandiec, Zora; Lukic, Irena; Tomic, Mirjana; and Brkic, Zinka, 5,446,038, Cl. 514-210.000.

Mando Machinery Corporation: *See—*
Lee, Jong H., 5,445,991, Cl. 216-2.000.

Manero, Javier; and Rosch, Norbert, to Hoechst Aktiengesellschaft. Stabilized complex liganda and their use in liquid crystal displays. 5,445,762, Cl. 252-299.010.

Mang, Michael N.: *See—*
Newsham, Mark D.; Inbasekaran, Muthiah N.; and Mang, Michael N., 5,445,854, Cl. 428-1.000.

Mangiaracina, Pietro: *See—*
Shih, Neng-Yang; Mangiaracina, Pietro; Green, Michael J.; and Ganguly, Ashit K., 5,446,069, Cl. 514-681.000.

Manitou Mountain Bikes, Inc.: *See—*
Bradbury, E. Douglas, 5,445,401, Cl. 280-276.000.

Mannisto, Pekka I.: *See—*
Beckstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pyntynen, Jarmo J., 5,446,194, Cl. 558-401.000.

Mano, Hiroshi: *See—*
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.

Manogue, William H.; and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Hydrogenolysis of halocarbon mixtures. 5,446,219, Cl. 570-176.000.

Manome, Eiji: *See—*
Aida, Yasuhiko; Miyano, Hiroshi; Hattori, Kiyoshi; Sakurai, Yoshiyuki; Manome, Eiji; and Nasuda, Toshiaki, 5,445,249, Cl. 188-378.000.

Mansfield, Jeffrey P.: *See—*
Wodicka, George R.; Mansfield, Jeffrey P.; and Voorhees, William D., 5,445,144, Cl. 128-207.140.

Mantelle, Juan A., to Mover Pharmaceuticals, Inc. Compositions and methods for topical administration of pharmaceutically active agents. 5,446,070, Cl. 514-772.600.

Mantilla, Osvaldo A.: *See—*
Loy, Robert D.; and Mantilla, Osvaldo A., 5,446,789, Cl. 379-433.000.

Manwell, Richard C.: *See—*
Koenig, Paul J.; Hutchings, Douglas F.; Gibbard, David W.; and Manwell, Richard C., 5,444,953, Cl. 52-282.100.

Mao, Zhong M.: *See—*
Pan, Jing-Jong; Shih, Ming; Mao, Zhong M.; Liang, Frank Y. F.; and Shih, Kung, 5,445,319, Cl. 239-1.000.

Maple, Marshall, to Hewlett-Packard Company. Broadband printed spiral. 5,445,922, Cl. 430-314.000.

Maraganore, John M., to Biogen, Inc. Thrombin receptor antagonists. 5,446,131, Cl. 530-324.000.

Marander, Dennis J.: *See—*
Clarke, John M. C.; and Marander, Dennis J., 5,445,248, Cl. 188-273.000.

Marazza, Fabrizio: *See—*
Jequier, Pascal; and Marazza, Fabrizio, 5,446,156, Cl. 544-251.000.

Marchi, Egidio: *See—*
Baldazzi, Claudia; Piani, Silvano; Barbanti, Maria; and Marchi, Egidio, 5,446,152, Cl. 544-123.000.

Marchioli, Lisamarie: *See—*
Ferro, Joseph; and Marchioli, Lisamarie, 5,445,326, Cl. 292-336.000.

Marchionni, Giuseppe; Gavezotti, Piero; and Strepparola, Ezio, to Ausimont S.r.l. Fluorinated fluoropolyethers. 5,446,203, Cl. 568-603.000.

Marchionni, Giuseppe; and Staccione, Anna, to Ausimont S.r.l. Process for preparing controlled molecular weight perfluoropolyethers having perfluoroalkyl or perfluorochloroalkyl end groups. 5,446,206, Cl. 568-604.000.

Marckx, Michel: *See—*
De Roeck, Jozef; Vaeck, Eduard V.; Sillis, Marc; Marckx, Michel; and Van Hecke, Paul, 5,445,461, Cl. 400-322.000.

Marcotullio, Armando: *See—*
Di Lullo, Alberto; Marcotullio, Armando; and Borgarello, Enrico, 5,445,179, Cl. 137-13.000.

Marder, Herman: *See—*
Zuccarello, William; Kurtz, Andrew D.; Kirschner, Lawrence; and Marder, Herman, 5,445,805, Cl. 423-422.000.

Marechal, Jean-Pierre, to JP Marechal SA. Luff guiding device and in particular for a sail to be wound on the boom. 5,445,098, Cl. 114-102.000.

Mareilli, Ernesto. Diesel fuel emulsion. 5,445,656, Cl. 44-301.000.

Mariani, Claudio: *See—*
Fucito, Michele; Rocchia, Maruo; Puglia, Silvestro; Mariani, Claudio; Colangeli, Giulio; and Rotunno, Antonio, 5,446,843, Cl. 395-250.000.

Marine Bio Co., Ltd.: *See—*
Someya, Nobuo, 5,445,824, Cl. 424-520.000.

Marion, Frank A., to Universal Propulsion Company, Inc. Apparatus and method for dispensing payloads. 5,445,078, Cl. 102-505.000.

Marketing Displays, Inc.: *See—*
Hillstrom, Brian J., 5,444,931, Cl. 40-564.000.

Markinson, Scott A.: *See—*
Dresser, Scott A.; Markinson, Scott A.; and Goud, Richard B., 5,446,860, Cl. 395-427.000.

Markpoint System AB: *See—*
Reis, Theo, 5,446,496, Cl. 347-85.000.

Marks, Ted M., to SGS-Thomson Microelectronics, Inc. Method and apparatus for monitoring and displaying sequentially operating conditions of a plurality of devices. 5,446,390, Cl. 324-555.000.

Marlen Research Corporation: *See—*
Bradley, Gary W.; and Chapman, Ronald D., 5,445,512, Cl. 425-193.000.

Marois, Marco F., to Kamyr, Inc. Controlling screen backflush and wash distribution in a pressure diffuser. 5,444,884, Cl. 8-156.000.

Marolewski, Theodore A.: *See—*
Hombek, Richard; Opsahl, Ross C.; and Marolewski, Theodore A., 5,446,105, Cl. 525-327.600.

Marschner, Claus; and Patsch, Manfred, to BASF Aktiengesellschaft. Formazan-based reactive dyes with at least two reactive groups, and aminophenols. 5,446,193, Cl. 558-30.000.

Marsden, Peter D.; and Evans, Gareth B., to Eastman Kodak Company. Method of forming a photographic color image. 5,445,925, Cl. 430-393.000.

Marsden, Sean D.: *See—*
Rickwood, Martin; and Marsden, Sean D., 5,446,149, Cl. 544-71.000.
Rickwood, Martin; Marsden, Sean D.; and Askew, Victoria E., 5,446,150, Cl. 544-71.000.
Rickwood, Martin; Hepworth, John D.; Gabbutt, Christopher D.; and Marsden, Sean D., 5,446,151, Cl. 544-71.000.

Marsh, Catherine L.; Licht, Stuart L.; and Matthews, Donna E., to United States of America, Navy. Dual flow aluminum hydrogen peroxide battery. 5,445,905, Cl. 429-105.000.

Marshall, John L.: *See—*
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.

Marshall, Perry C. Device for changing hardness of putter striking face. 5,445,386, Cl. 273-194.00A.

Martin Automatic, Inc.: *See—*
Martin, John R.; Cederholm, Roger; Schlittler, Kendall E.; and Wenzel, Ronald, 5,445,341, Cl. 242-527.300.

Martin, Dean A.: *See—*
Forsythe, David P.; and Martin, Dean A., 5,445,290, Cl. 222-129.100.

Martin, Edward G., to DSC Communications Corporation. Press fit pinless latching shroud. 5,445,527, Cl. 439-78.000.

Martin, John R.; Cederholm, Roger; Schlittler, Kendall E.; and Wenzel, Ronald, to Martin Automatic, Inc. Flying paster core winding method and apparatus. 5,445,341, Cl. 242-527.300.

Martin, Joseph A.: *See—*
Handa, Balraj K.; Machin, Peter J.; Martin, Joseph A.; Redshaw, Sally; and Thomas, Gareth J., 5,446,161, Cl. 546-225.000.

Martin Marietta Corporation: *See—*
Bennett, Russell N.; Kokonaski, William E.; Hannan, Michael J.; and Boxall, Larry G., 5,446,577, Cl. 359-273.000.

Martin marietta Energy Systems, Inc.: *See—*
Hobson, David O.; and Snyder, William B., Jr., 5,445,906, Cl. 429-162.000.
Wachter, Eric A.; and Thundat, Thomas G., 5,445,008, Cl. 73-24.060.

Martin, Michael G.: *See—*
Clark, Robin D.; Fisher, Lawrence E.; Flippin, Lee A.; Martin, Michael G.; and Stabler, Stephen R., 5,446,121, Cl. 548-253.000.

Martin, Pierre A.; Pascaud, Christian; and Riffard, Jean-Marie. Cycle frame. 5,445,400, Cl. 280-281.100.

Martin, Thomas D.: *See—*
Newton, Jefferson F.; Martin, Thomas D.; Westre, Willard N.; Carbery, David J.; and Ikegami, Roy, 5,445,861, Cl. 428-116.000.

Martinage, Louis H.; Cusson, Edward M.; and Clower, Penn H., to United States of America, Navy. Caging system. 5,445,040, Cl. 74-5.460.

Martino, Germain: *See—*
Travers, Christine; and Martino, Germain, 5,446,230, Cl. 585-741.000.

Martinson, Glen D.; and Burin, Marian M., to B.E.L.-Tronics Limited. Mixer using fundamental frequency or second or third harmonic frequencies of a local oscillator for maximized resultant frequency mixer product. 5,446,923, Cl. 455-330.000.

Martinson, Robert E.; Stofko, John J.; Sarkar, Manisha; Hedrick, Steven T.; and Larson, Wayne K., to Minnesota Mining and Manufacturing Company. Water-based transparent image recording sheet. 5,445,866, Cl. 428-195.000.

Martiny, Frank. Covering with improved optical qualities. 5,445,880, Cl. 428-323.000.

Maruko, Chiaki: *See—*
Koba, Tomohito; Nakakura, Toshiyuki; Sakai, Hideo; Kishi, Satoru; and Maruko, Chiaki, 5,445,701, Cl. 156-441.000.

Maruko, Takashi; and Chikaraishi, Toshio, to Bridgestone Sports, Co., Ltd. of 45. Thread-wound golf ball. 5,445,387, Cl. 273-216.000.

Maruoka, Wataru: *See—*
Ishizuka, Hironori; Maruoka, Wataru; and Tomikawa, Arifumi, 5,445,534, Cl. 439-352.000.

Maruyama, Teruo: *See—*
Itou, Daisuke; and Maruyama, Teruo, 5,445,502, Cl. 417-203.000.

Maruyama, Tsuyoshi: *See—*
Okuno, Yasuo; Tamura, Hitoshi; and Maruyama, Tsuyoshi, 5,445,706, Cl. 156-637.100.

Marzolph, Gerhard: *See—*
Kraus, Helmut; Blank, Heinz-Ulrich; and Marzolph, Gerhard, 5,446,192, Cl. 560-172.000.

Marzullo, Joseph H.; and Thompson, Brian S., to Pitney Bowes Inc. Apparatus and method for buckling a sheet. 5,445,371, Cl. 271-21.000.

Masaki, Mitsuo; Yamakawa, Tomio; Satoh, Masaru; Takeda, Hiromitsu; Yoshino, Yasushi; and Matsukura, Hitoshi, to Nippon Chemiphar Co., Ltd. Piperazine derivative having substituted phenyl groups. 5,446,146, Cl. 540-575.000.

Masatomi, Toru: *See—*
Kanzaki, Yasue; Kobayashi, Hideki; Masatomi, Toru; and Murakami, Ichiro, 5,445,751, Cl. 252-49.600.

Mason, Michael W.: *See—*
Gipson, William P.; Mason, Michael W.; and Hensler, Thomas A., 5,445,628, Cl. 604-392.000.

Mason, Murray R.: *See—*
Cudini, Ivano G.; Mason, Murray R.; and Klages, Gerrald A., 5,445,002, Cl. 72-62.000.

Masse, Michael A.: *See—*
Hoxmeier, Ronald J.; Spence, Bridget A.; Chin, Steven S.; and Masse, Michael A., 5,446,093, Cl. 525-89.000.

Masters, Thomas W.: *See—*
Kennedy, Barry; and Masters, Thomas W., 5,446,910, Cl. 395-800.000.

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Maiti, Samarendra; Fiakpui, Charles; Reddy, A. V. N.; Czajkowski, David; Spevak, Paul; Atwal, Harminder; and Micetich, Ronald G., 5,446,037, Cl. 514-201.000.

Michael, Keith W.: *See*—
Haluska, Loren A.; and Michael, Keith W., 5,445,894, Cl. 428-357.000.

Michaels, Alan S.: *See*—
Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLastro, Frank; and Bentz, Hanne, 5,446,091, Cl. 525-54.100.

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Pinney, David L., 5,446,367, Cl. 323-266.000.
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Thakur, Randhir P. S.; and Mathews, Viju K., 5,445,999, Cl. 437-242.000.

Microsoft Corporation: *See*—
Berkowitz, Brian T., 5,446,887, Cl. 395-600.000.

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Kimelman, Paul, 5,446,900, Cl. 395-700.000.

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Gale, Richard O.; and Mignardi, Michael A., 5,445,559, Cl. 451-388.000.

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Kakovitch, Thomas, 5,444,981, Cl. 60-649.000.

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Schoendorfer, Donald W.; and Miller, William R., 5,445,147, Cl. 128-632.000.

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Pittman, Edgar H.; and Hornung, Mark A., 5,445,414, Cl. 280-743.100.

Mills, Sander G.: *See*—
Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

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Blaser, Peter T.; Hauck, Dieter; and Miltner, Karl-Hermann, 5,445,372, Cl. 271-309.000.

MIM Industries, Inc.: *See*—
Conley, Ralph F., Jr., 5,445,090, Cl. 112-102.500.

Mima Incorporated: *See*—
Kaliner, David J., 5,445,053, Cl. 83-23.000.

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Chang Soo, Hong; and Min Soo, Cho, 5,446,505, Cl. 348-738.000.

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Laskaris, Evangelos T.; Minas, Constantinos; and Ackermann, Robert A., 5,446,433, Cl. 335-216.000.

Minato, Teruo: *See*—
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; Hayashida, Tadashi; and Minato, Teruo, 5,445,683, Cl. 148-317.000.

Minegishi, Toshihiko: *See*—
Kanmera, Tatsuhiko; Mori, Akihisa; Nakao, Yoshihide; and Minegishi, Toshihiko, 5,446,130, Cl. 530-324.000.

Minick, Chris A.: *See*—
Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., 5,446,270, Cl. 219-730.000.

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Adam, Randall E.; Cleary, James D.; Horn, Jerold S.; and Pazirandeh, Said, 5,445,770, Cl. 264-16.000.
Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., 5,446,270, Cl. 219-730.000.
Griffin, Michael E.; and Yungers, Christopher R., 5,446,768, Cl. 375-377.000.
Irie, Shinichi, 5,445,881, Cl. 428-328.000.
Keith, Roger H., 5,446,822, Cl. 385-135.000.
Lindstrom, Kyle J.; and Nikolaides, Nick, 5,446,153, Cl. 544-127.000.
Martinson, Robert E.; Stofko, John J.; Sarkar, Manisha; Hedrick, Steven T.; and Larson, Wayne K., 5,445,866, Cl. 428-195.000.
Nelson, John C.; and Vanderwerf, Dennis F., 5,446,594, Cl. 359-742.000.

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Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.

Mino, Tomoaki: *See*—
Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, 5,446,645, Cl. 363-71.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kohno, Tetsuo; Okada, Takashi; and Date, Mitsuko, 5,446,592, Cl. 359-689.000.
Kouzaki, Masahiro, 5,446,476, Cl. 347-232.000.
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Tada, Kaoru; Kumashiro, Hideo; Sugawa, Hiroya; Moriya, Shigeru; and Murakami, Hiroshi, 5,446,802, Cl. 382-170.000.

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Mitsutake, Hideaki; Minoura, Nobuo; Kimura, Kazumi; and Kurematsu, Katsumi, 5,446,510, Cl. 353-20.000.

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Mishima, Takashi: *See*—
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Mishima, Takayuki: *See*—
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.

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Schmuck, Arno; Draber, Edgar; and Missfeldt, Michael, 5,445,928, Cl. 430-508.000.

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Harasawa, Masako; Misuda, Katsutoshi; Matsubara, Toshiya; and Tanuma, Toshihiro, 5,445,868, Cl. 428-206.000.

Mita Industrial Co., Ltd.: *See*—
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Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,446,523, Cl. 355-207.000.

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Mitchell, William R. Illuminated playing card board game apparatus. 5,445,388, Cl. 273-237.000.

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Husbands, Charles R.; and Girard, Mary, 5,446,572, Cl. 359-133.000.

Mitson, Ken J. Flush tank tool for replacing a ballcock assembly. 5,445,183, Cl. 137-315.000.

Mitsuba Electric Manufacturing Co. Ltd.: *See*—
Onodera, Tsugio, 5,446,324, Cl. 310-45.000.

Mitsubishi Chemical MKV Company: *See*—
Hori, Kazuya; and Yamanaka, Masahiro, 5,446,064, Cl. 524-536.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, 5,446,301, Cl. 257-354.000.
Hara, Motoko; and Kajimoto, Takeshi, 5,446,418, Cl. 331-57.000.
Haraguchi, Yoshiyuki; Fujita, Koreaki; and Akai, Kiyoyasu, 5,446,692, Cl. 365-200.000.
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,445,798, Cl. 422-121.000.
Ikeda, Katsumi; and Yamamoto, Yushin, 5,446,647, Cl. 363-89.000.
Ikeda, Minoru; and Munakata, Tsunesato, 5,446,674, Cl. 364-489.000.
Inoue, Sadayuki; and Fujii, Toshifumi, 5,446,552, Cl. 358-335.000.
Isoda, Satoru; Kamiya, Toshiyuki; Hanazato, Yoshio; and Ikeda, Akira, 5,445,800, Cl. 422-186.300.
Kawata, Yoshinobu; and Banjo, Toshinobu, 5,445,677, Cl. 118-724.000.
Komori, Shigeki; Kuroi, Takashi; and Inuishi, Masahide, 5,446,305, Cl. 257-372.000.
Kondo, Koji, 5,446,764, Cl. 375-354.000.
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,445,507, Cl. 418-55.100.
Ohkami, Takahide, 5,446,862, Cl. 395-427.000.
Ohmori, Masashi; Tanaka, Hiroshi; Nishimoto, Akira; Sasai, Hiroshi; Fujino, Naohiko; and Kotoh, Satoru, 5,445,171, Cl. 134-61.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
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Fujita, Kenjiro; and Usuki, Katsutoshi, 5,445,579, Cl. 477-156.000.
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Namiki, Koichi; Matsumoto, Takuya; Hashimoto, Toru; and Yoshida, Yasuhisa, 5,445,015, Cl. 73-118.100.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
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Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masateru, 5,445,713, Cl. 162-304.000.

Mitsubishi Kasei Corporation: *See*—
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Sato, Keiichi; Kawaragi, Yuuji; and Higashino, Yasuko, 5,446,213, Cl. 568-883.000.
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Mitsubishi Kasei Polytec Company: *See*—
Satoh, Tadashige; and Fujita, Hisanori, 5,445,897, Cl. 428-688.000.

Mitsubishi Semiconductor America, Inc.: *See*—
Gibbs, Vickie L., 5,446,745, Cl. 371-37.700.
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Mitsuhashi, Hiroyuki: *See*—
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Mitsui Petrochemical Industries, Ltd.: *See*—
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Tokita, Sugura; Yamane, Kenji; Inagaki, Hajime; and Kurisu, Masayoshi, 5,445,855, Cl. 428-65.100.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, 5,446,141, Cl. 540-139.000.
Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, 5,446,142, Cl. 540-139.000.
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Mitsui, Tomonori: *See*—
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Mitsutake, Hideaki; Minoura, Nobuo; Kimura, Kazumi; and Kurematsu, Katsumi, to Canon Kabushiki Kaisha. Image display apparatus. 5,446,510, Cl. 353-20.000.

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Koseki, Masamori; Shoji, Hiroo; and Miura, Ken, 5,446,656, Cl. 364-414.020.

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Miura, Yuuichi: *See*—
Kai, Katsumi; Okamoto, Kenji; and Miura, Yuuichi, 5,445,094, Cl. 114-65.00R.

Miwa, Shoji: *See*—
Kobayashi, Shoichi; Miwa, Shoji; and Tsuzuki, Wakako, 5,445,950, Cl. 435-99.000.

Miya, Tatsuya; and Uemura, Kazuyoshi, to NEC Corporation. Microwave oscillation apparatus capable of suppressing spurious oscillation. 5,446,419, Cl. 331-99.000.

Miyabe, Hajime: *See*—
Koshino, Junji; Miyabe, Hajime; and Fujikura, Yoshiaki, 5,446,208, Cl. 568-670.000.

Miyagawa, Atsushi: *See*—
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Miyaguchi, Shoji: *See*—
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Miyaji, Hiroyuki: *See*—
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Miyake, Atsushi; Matsuhita, Yoshimitsu; and Koyama, Takayuki, to Nippon Sheet Glass Co., Ltd. System of detecting optical distortion of a light-transmitting plate-like member. 5,446,536, Cl. 356-239.000.

Miyamoto, Naoyuki, to Fujitsu Limited. Method of and apparatus for signalling between nodes in network. 5,446,732, Cl. 370-58.200.

Miyamoto, Tumoru: *See*—
Toda, Masaaki; Miyamoto, Tumoru; and Arai, Yoshinobu, 5,446,058, Cl. 514-381.000.

Miyamura, Noriyuki: *See*—
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Miyano, Hiroshi: *See*—
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Miyata, Hirokatsu: *See*—
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Miyata, Satoshi: *See*—
Abe, Yasunao; Miyata, Satoshi; and Ito, Shinichi, 5,446,237, Cl. 84-617.000.

Miyazaki, Masanori, to Kabushiki Kaisha Toshiba. Method and apparatus for control of pulse width modulation (PWM) converter. 5,446,646, Cl. 363-89.000.

Miyazawa, Kenichi: *See*—
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Miyoshi, Takanori: *See*—
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Mizoe, Takashi: *See*—
Kobayashi, Seizo; Mizoe, Takashi; Iwanami, Yoshimu; Yokoyama, Shigeki; and Jimbo, Keizi, 5,445,883, Cl. 428-355.000.

Mizoguchi, Toshiaki: *See*—
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Mizuguchi, Shinichi: *See*—
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Mizuno, Hiroaki: *See*—
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Mizuno, Hiroshige: *See*—
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Mizuno, Koji: *See*—
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Mizuno, Masayuki, to Mita Industrial Co., Ltd. Motor start examining device and method. 5,445,017, Cl. 73-118.100.

Mizuno, Sadao: *See*—
Komma, Yoshiaki; Mizuno, Sadao; and Nishino, Seji, 5,446,565, Cl. 359-10.000.

Mizuno, Shunichi: *See*—
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Mizusawa, Takashi: *See*—
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Mizutani, Kenji; and Saka, Kazuhito, to Sumitomo Wiring Systems, Ltd. Shielded flat cable. 5,446,239, Cl. 174-36.000.
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MLI Lasers: *See*—
Mordike, Barry L., 5,446,258, Cl. 219-121.660.
Mobil Oil Corporation: *See*—
Boulton, James R.; and Kremer, Ross A., 5,446,222, Cl. 585-12.000.
Mobin-Uddin, Kazi: *See*—
Blake, Kenneth R.; and Mobin-Uddin, Kazi, 5,445,632, Cl. 606-1.000.
Mochen, Richard: *See*—
Allen, Bernie; Edington, Christopher J.; Swartz, Eric; Parracho, Rui; and Mochen, Richard, 5,444,926, Cl. 36-93.000.
Mochizuki, Hideaki: *See*—
Iwai, Yoshio; Sato, Shigehiro; Mochizuki, Hideaki; Mizuno, Hiroaki; Kosako, Shinya; and Kurai, Hisako, 5,446,569, Cl. 359-78.000.
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Ichikawa, Makoto, 5,445,500, Cl. 431-321.000.
Modica, Giovanni: *See*—
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Mohlenkamp, Michael J.; Babader, Gerald A.; Jobling, Peter A.; and Conover, Charles E., to Cajon Company. Gasket container and assembly tool. 5,445,263, Cl. 206-303.000.
Mohr, Heinz: *See*—
Herget, Gerhard; Hechler, Wolfgang; Husseini, Brigitte; Mohr, Heinz; and Smolka, Rudiger, 5,445,671, Cl. 106-20.00R.
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Mokia Mobile Phones Ltd.: *See*—
Mattila, Heikki; Matero, Jorma; and Hulkko, Jaakko, 5,446,422, Cl. 332-103.000.
Molecular Probes, Inc.: *See*—
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; and Haugland, Richard P., 5,445,946, Cl. 435-34.000.
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Budzilek, Russell A.; Monarchie, Dominic L.; Podoba, Myroslaw; and Swatson, Richard R., 5,445,898, Cl. 428-690.000.
Monarchie, Dominick L.: *See*—
Budzilek, Russell A.; Monarchie, Dominick L.; Podoba, Myroslaw; Schlam, Elliott; and Swatson, Richard R., 5,445,899, Cl. 428-690.000.
Mongeon, Paul-EmEmile: *See*—
Turenne, Sylvain; and Mongeon, Paul-EmEmile, 5,445,788, Cl. 419-42.000.
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Monroe, Jerry B.; Widenburg, Wayne T.; Ford, Jon S.; and Monroe, James A., to Premier Manufactured Systems, Inc. Counter top reverse osmosis system. 5,445,729, Cl. 210-86.000.
Monroe, Richard H.: *See*—
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Moore, Allan R.; Poulos, Lori J.; and DeFazio, Lynn G., to International Business Machines Corporation. Event driven management information system with rule-based applications structure stored in a relational database. 5,446,887, Cl. 395-600.000.
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Blend, Theodore, 5,445,418, Cl. 283-58.000.
Doane, I. Gerald; and Vande Ven, John, 5,444,961, Cl. 53-411.000.
Moore, David A.: *See*—
Madsen, Roberta M.; Moore, David A.; and Perona, Brian J., 5,446,619, Cl. 361-695.000.
Moore, Glenn A.: *See*—
Lancaster, Gregory D.; Moore, Glenn A.; Stone, Mark L.; and Reagen, William K., 5,445,795, Cl. 422-86.000.
Moore, Robert R.: *See*—
Andrews, E. Trent; Moore, Robert R.; and Lamb, Steven R., 5,444,882, Cl. 5-618.000.
Moore, Roger M., to Rockwell International Corporation. Solar-gas combined cycle electrical generating system. 5,444,972, Cl. 60-39.182.
Moore, Ronald J.: *See*—
Bard, Steven L.; Jones, Jeffrey D.; Katyl, Robert H.; Moore, Ronald J.; and Moreno, Oscar A., 5,444,925, Cl. 34-638.000.
Moormann, Alan E.: *See*—
Flynn, Daniel L.; and Moormann, Alan E., 5,446,049, Cl. 514-295.000.
Mordike, Barry L., to MLI Lasers. Process for remelting metal surfaces using a laser. 5,446,258, Cl. 219-121.660.
Moreland, John R.: *See*—
McNulty, Donald E.; Kelman, David C.; Moreland, John R.; and Hamm, John E., 5,445,642, Cl. 606-88.000.
Morelli, Daniel J.: *See*—
Biesz, Richard A.; and Morelli, Daniel J., 5,446,760, Cl. 375-295.000.
Moreno, Oscar A.: *See*—
Bard, Steven L.; Jones, Jeffrey D.; Katyl, Robert H.; Moore, Ronald J.; and Moreno, Oscar A., 5,444,925, Cl. 34-638.000.
Morgan, Lee R.; and Boyer, Joseph H. Boron difluoride compounds useful in photodynamic therapy and production of laser light. 5,446,157, Cl. 546-13.000.
Mori, Akihisa: *See*—
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Kawanabe, Masateshi; Sowa, Kenichi; Mori, Akihisa; and Sawada, Tomoyuki, 5,446,244, Cl. 174-261.000.
Mori-Gumi Co., Ltd.: *See*—
Taguchi, Akira, 5,445,500, Cl. 417-54.000.
Mori, Haruki: *See*—
Hori, Masaru; Yano, Hiroyuki; Horioka, Keiji; Hayashi, Hisataka; Jimbo, Sadayuki; Okano, Haruo; Tomioka, Kazuhiro; Ito, Yasuhiro; and Mori, Haruki, 5,445,710, Cl. 156-643.100.
Mori, Kinji: *See*—
Suzuki, Yasuo; Mori, Kinji; Kawano, Katsumi; Orimo, Masayuki; and Ogura, Hiroyuki, 5,446,892, Cl. 395-650.000.
Mori, Kiyokazu: *See*—
Sakamoto, Hiroki; Shibata, Kimihiro; and Mori, Kiyokazu, 5,446,257, Cl. 219-121.630.
Mori, Rentaro, to Toyota Jidosha Kabushiki Kaisha. Oxygen concentration sensor with heat resistant coating. 5,445,796, Cl. 422-98.000.
Mori, Toru; Sugawa, Hideo; Yamada, Nobutoshi; and Ueda, Yoshimichi, to Ishihara Sangyo Kaisha Ltd. Peptide or its salt for autoimmune hyperthyroidism containing it. 5,446,129, Cl. 530-324.000.
Mori, Yoshio: *See*—
Ishibashi, Nobuyuki; Takano, Tsurumatsu; and Mori, Yoshio, 5,445,588, Cl. 492-31.000.
Moriichi, Munetoshi: *See*—
Yoshio, Junichi; Tanai, Yukio; and Moriichi, Munetoshi, 5,446,714, Cl. 369-48.000.
Morimoto, Takao: *See*—
Nakano, Shinji; Morimoto, Takao; Yamada, Shin-ya; Fujiwa, Takaaki; Matsu, Hideki; and Tabuchi, Takeharu, 5,446,110, Cl. 525-439.000.
Morita, Tetsuya: *See*—
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Morita, Toshihiko; and Kawakami, Susumu, to Fujitsu Limited. Method and apparatus for measuring position and orientation of an object based on a sequence of projected points. 5,446,798, Cl. 382-154.000.
Moritoki, Masato: *See*—
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,445,776, Cl. 264-65.000.
Moriya, Shigeru: *See*—
Tada, Kaoru; Kumashiro, Hideo; Sugawa, Hiroya; Moriya, Shigeru; and Murakami, Hiroshi, 5,446,802, Cl. 382-170.000.
Morley, Roland M.; and Goebel, Timothy R., to Litton Systems, Inc. Night vision device with improved image stability. 5,446,585, Cl. 359-411.000.
Morris, G. Michael: *See*—
Missig, Michael D.; and Morris, G. Michael, 5,446,588, Cl. 359-565.000.
Morrison, Robert L: *See*—
Back, Seung Ho.; Morrison, Robert L; and Sarraf, Sanwal P., 5,446,477, Cl. 346-138.000.
Morton International, Inc.: *See*—
Jones, David V., 5,445,406, Cl. 280-728.200.
Mossi, G. Dean, 5,445,408, Cl. 280-728.200.
Morton, Michael L: *See*—
Shelby, Charles B., 5,445,315, Cl. 229-117.060.
Moser, Winfried: *See*—
Gohre, Jochen; and Moser, Winfried, 5,444,975, Cl. 60-274.000.
Moslehi, Mehrdad M., to Texas Instruments. Lamp-heated chuck for uniform wafer processing. 5,446,824, Cl. 392-416.000.
Moslehi, Mehrdad M.; Davis, Cecil J.; and Matthews, Robert T., to Texas Instruments Incorporated. High performance multi-zone illuminator module for semiconductor wafer processing. 5,446,825, Cl. 392-416.000.
Moss, John: *See*—
Neff, Edward A.; and Moss, John, 5,446,323, Cl. 310-12.000.
Mossi, G. Dean, to Morton International, Inc. Split ring inflator adapter. 5,445,408, Cl. 280-728.200.
Mossuz, Gabriel; and Puthod, Pascal, to ISA France S.A. Horological piece comprising a battery end of life indicator device. 5,446,702, Cl. 368-37.000.
Mostaert, Erik: *See*—
Hauquier, Guido; Cortens, Willem; Coppens, Paul; Vermeersch, Joan; Mostaert, Erik; and Verschueren, Eric, 5,445,912, Cl. 430-159.000.
Mostrorocco, Stephen. Ophthalmic lens holder. 5,446,596, Cl. 359-827.000.
Motamedi, Nader; and Nitz, Larry T., to Saturn Corporation. Engine torque management during coast downshifting of an automatic shift transmission. 5,445,576, Cl. 477-105.000.
Motika, Werner: *See*—
Benedix, Hermann-Josef; and Motika, Werner, 5,446,196, Cl. 560-352.000.
Motorola: *See*—
Ackley, Donald E.; Shieh, Chan-Long; Lebby, Michael S.; Lee, Hsing-Chung; and Grodzinski, Piotr, 5,446,752, Cl. 372-46.000.

Kuo, Shun-Meen; and Chun, Christopher K. Y., 5,446,814, Cl. 385-31.000.
Wray, Anthony, 5,446,766, Cl. 375-373.000.
Motorola, Inc.: *See*—
Baum, Kevin L.; and Mueller, Bruce D., 5,446,763, Cl. 375-340.000.
Bienz, Richard A.; Carson, Lansing M.; and Siemon, Marty K., 5,446,423, Cl. 332-170.000.
Bienz, Richard A.; and Morelli, Daniel J., 5,446,760, Cl. 375-295.000.
Brooks, Todd L., 5,446,455, Cl. 341-145.000.
Bruckert, Eugene J.; and Sonnentag, Richard A., 5,446,727, Cl. 370-18.000.
Carney, Scott N.; Lauro, George L.; Krenz, Eric L.; and Ghaem, Sanjar, 5,446,447, Cl. 340-572.000.
Cergel, Lubomir; Johnson, Barry C.; and Stafford, John W., 5,446,247, Cl. 174-267.000.
Christian, Paul R.; and Chapman, Scott G., 5,446,924, Cl. 455-8.000.
Eyuboglu, M. Vedat, 5,446,758, Cl. 375-259.000.
Griffin, Chris M.; Fumarolo, Arthur L.; McVey, Timothy L.; and Sommer, Kenneth G., 5,446,679, Cl. 364-514.00C.
Grube, Gary W., 5,446,553, Cl. 358-402.000.
Huddleston, Wyatt A., 5,445,306, Cl. 228-1.100.
Lee, Whay C.; and Hluchyj, Michael G., 5,446,730, Cl. 370-54.000.
Lin, Jingdong, 5,446,771, Cl. 375-224.000.
Nag, Manbir; and Heck, Joseph P., 5,446,761, Cl. 375-317.000.
Nogle, Scott G., 5,446,400, Cl. 326-64.000.
Roth, Scott S.; and Kirsch, Howard C., 5,445,107, Cl. 117-8.000.
Scribner, Cliff J., 5,445,774, Cl. 264-40.500.
Shaver, John; Nolan, Michael P.; Macenski, Charles D.; Muehlfeld, Alan D.; and Wesselman, Brian, 5,446,769, Cl. 375-202.000.
Siwiak, Kazimierz; Schwendeman, Robert J.; and Breeden, Robert L., 5,446,922, Cl. 455-277.200.
Urbish, Glenn F.; Mullen, William B., III; and Banerji, Kingshuk, 5,446,625, Cl. 361-761.000.
Voight, John, 5,446,370, Cl. 324-76.110.
Westwick, Alan L., 5,446,420, Cl. 331-179.000.
Motoyama, Tetsuro; and Chang, Yueh-Lin, to Ricoh Company, Ltd.; and Ricoh Corporation. Method and system to process resources in a document processing language. 5,446,837, Cl. 395-145.000.
Mould, Michael E.: *See*—
Breidenbach, Thomas S.; Mould, Michael E.; and Pond, Charles R., 5,446,546, Cl. 356-358.000.
Mouse Systems Corporation: *See*—
Gillick, William G.; and Rosenberg, Ronald A., 5,446,481, Cl. 345-163.000.
Moya, Robert L.: *See*—
Bell, Rodney E.; Kreidler, Marc S.; Hung, David T. H.; Moya, Robert L.; and Wolters, Harrie J. M., 5,445,152, Cl. 128-653.500.
Moynihan, Edwasrd R.: *See*—
Hoisington, Paul A.; Moynihan, Edwasrd R.; and Gailus, David W., 5,446,484, Cl. 347-68.000.
Moyse, Phillip; Roskell, Derek; and Simpson, Richard D., to Texas Instruments Incorporated. Split multiply operation. 5,446,651, Cl. 364-760.000.
MPR Teltech Ltd.: *See*—
Bennett, Steven J., 5,446,466, Cl. 342-385.000.
MTU Motoren- Und Turbinen-Union Muenchen GmbH: *See*—
Bruckner, Gerhard, 5,445,392, Cl. 277-27.000.
Muehlfeld, Alan D.: *See*—
Shaver, John; Nolan, Michael P.; Macenski, Charles D.; Muehlfeld, Alan D.; and Wesselman, Brian, 5,446,769, Cl. 375-202.000.
Mueller, Bruce D.: *See*—
Baum, Kevin L.; and Mueller, Bruce D., 5,446,763, Cl. 375-340.000.
Mueller, Karl-Heinz: *See*—
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Reul, Bernhard; Henn, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.
Mueller, Klaus: *See*—
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Mueller, Manfred: *See*—
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Mueller, Stefan: *See*—
Hilpert, Thomas; Mueller, Stefan; Becher, Juergen; and Gehrig, Wilfried W., 5,446,852, Cl. 395-375.000.
Mueller, Walter B.; Ebner, Cynthia L.; and Roberts, William P., to W.R. Grace & Co.-Conn. pH control polymer. 5,445,893, Cl. 428-500.000.
Muellers, Brian T.: *See*—
Pall, David B.; Gaell, Thomas C.; and Muellers, Brian T., 5,445,736, Cl. 210-257.100.
Mukai, Hachiro, to Fuji Photo Film Co., Ltd. Image filing apparatus. 5,446,709, Cl. 369-32.000.
Mukherjee, Satyendranath: *See*—
Amato, Michael; Mukherjee, Satyendranath; Veidman, Paul R.; and Wegener, Armin F., 5,446,300, Cl. 257-343.000.
Mukunoki, Tadashi, to Kabushiki Kaisha Sakura Kurepasu. Liquid applicator with screw lock. 5,445,466, Cl. 401-199.000.
Muldoon, Al: *See*—
Wright, Larry A.; and Muldoon, Al, 5,446,775, Cl. 377-24.200.
Mulford, Charles D., Jr.: *See*—
Lux, Robert A.; Harvey, James F.; Mulford, Charles D., Jr.; and Poli, Louis C., 5,446,307, Cl. 257-423.000.
Mulhauser, Paul J.: *See*—
Clark, Jeffrey G.; Spranger, Douglas M.; Mulhauser, Paul J.; and Lacotta, Paul R., 5,445,597, Cl. 602-48.000.
Mullen, Sean F.; and Jebwab, Jonathan, to Hewlett-Packard Company. Methods and apparatus for generating pseudo-random binary patterns. 5,446,683, Cl. 364-717.000.
Mullen, William B., III: *See*—
Urbish, Glenn F.; Mullen, William B., III; and Banerji, Kingshuk, 5,446,625, Cl. 361-761.000.
Mulligan, Stephen: *See*—
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Multiplex Company, Inc.: *See*—
Forsythe, David P.; and Martin, Dean A., 5,445,290, Cl. 222-129.100.
Munakata, Tsunesato: *See*—
Ikeda, Minoru; and Munakata, Tsunesato, 5,446,674, Cl. 364-489.000.
Mundell, Jerry A.: *See*—
Hayes, William J.; Forehand, Andrew M.; Archuleta, Adrian A.; Hinkle, Paul R.; Mundell, Jerry A.; and Lucterhand, Mark A., 5,445,450, Cl. 312-223.200.
Murai, Kunitaka: *See*—
Suzuki, Satoshi; Tsunoda, Michio; Murai, Kunitaka; and Yamada, Katsumi, 5,446,328, Cl. 310-233.000.
Murakami, Hiroshi: *See*—
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Murakami, Ichiro: *See*—
Kanzaki, Yasue; Kobayashi, Hideki; Masatomi, Toru; and Murakami, Ichiro, 5,445,751, Cl. 252-49.600.
Murakami, Junichi; and Kaneda, Naoya, to Canon Kabushiki Kaisha. Camera. 5,446,517, Cl. 354-400.000.
Murakami, Toshihide: *See*—
Sugawara, Tsunehiko; Murakami, Toshihide; and Kobayashi, Yusuke, 5,445,285, Cl. 220-2.10A.
Murakami, Yoshio: *See*—
Kaneko, Shingo; Murakami, Yoshio; and Yamashita, Yoshinari, 5,445,862, Cl. 428-148.000.
Muramatsu, Shigeru: *See*—
Iwamura, Shinji; Muramatsu, Shigeru; and Yamada, Sadayuki, 5,445,504, Cl. 417-368.000.
Muramatu, Takeshi: *See*—
Nagamoto, Shunichi; Muramatu, Takeshi; Yoshimura, Yasuo; and Yamamoto, Masahiro, 5,446,453, Cl. 340-825.060.
Muraoka, Yukihiro, to NEC Corporation. Mark position determining apparatus for use in exposure system. 5,446,542, Cl. 356-400.000.
Murase, Heihachi; Norimatsu, Tsutomu; Ogawa, Masao; and Haruta, Naoya, to Kansai Paint Co., Ltd. Surface-modified plastic plate. 5,445,871, Cl. 428-215.000.
Murase, Hiroshi: *See*—
Fukuda, Kazuyuki; and Murase, Hiroshi, 5,446,655, Cl. 364-424.010.
Murata Kikai Kabushiki Kaisha: *See*—
Matsui, Isamu; Maeda, Yoshiyasu; Todo, Yuji; Kiriake, Masaharu; and Nakao, Takashi, 5,445,334, Cl. 242-35.50A.
Murata Mfg. Co., Ltd.: *See*—
Hino, Taketoshi, 5,446,335, Cl. 310-359.000.
Ikeuchi, Hiroshi, 5,446,432, Cl. 335-213.000.
Tanaka, Mitsuru, 5,446,429, Cl. 333-187.000.
Murata, Osamu: *See*—
Kojima, Yoshio; Murata, Osamu; and Ohta, Hirobumi, 5,446,662, Cl. 364-424.050.
Murata, Shinichi; and Miyamura, Noriyuki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Valve system for internal combustion engine. 5,445,115, Cl. 123-90.160.
Murooka, Takao: *See*—
Hayashi, Yoko; Tamura, Shin-Ichiro; Murooka, Takao; and Yanagisawa, Yoshitake, 5,445,853, Cl. 428-64.400.
Murphy, Kent A.: *See*—
Wang, Anbo; Murphy, Kent A.; and Claus, Richard O., 5,446,280, Cl. 250-227.230.
Murray, David P.: *See*—
Foster, Nigel S.; and Murray, David P., 5,446,819, Cl. 385-80.000.
Murray, Kenneth S.: *See*—
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Musellec, Jean-Noel: *See*—
Combot-Courrau, Yves; Le Saint, Benoit; Musellec, Jean-Noel; and Le Quere, Philippe, 5,445,395, Cl. 277-207.00A.
Musselman, Ronald L., to Andritz Sprout-Bauer, Inc. Dual zone refiner with separated discharge flow control. 5,445,328, Cl. 241-37.000.
Muta, Toshiyasu: *See*—
Ishiguro, Ginya; Muta, Toshiyasu; Sakita, Kazutaka; Miyaguchi, Shoji; Okamoto, Tatsuaki; and Fujioka, Atsushi, 5,446,796, Cl. 380-24.000.
Myers, Garry L.: *See*—
Rutkowski, William F.; Myers, Garry L.; and Bogue, B. Arlie, 5,445,769, Cl. 264-8.000.
Myers, Henry S., to Eco Stills, Inc. Waste materials concentrator. 5,445,714, Cl. 202-176.000.
Nag, Manbir; and Heck, Joseph P., to Motorola, Inc. Decoder circuit for phase modulated signals. 5,446,761, Cl. 375-317.000.
Nagai, Kohji: *See*—
Umehara, Shinji; Hasegawa, Mitsuru; Nagai, Kohji; and Yanagibashi, Yoshinobu, 5,446,605, Cl. 360-74.600.

Nagai, Shigekazu; Saitoh, Akio; Sugiyama, Toru; and Hasegawa, Masahisa, to SMC Kabushiki Kaisha. Actuator and actuator arrangement. 5,445,045, Cl. 74-490.000.

Nagamoto, Shunichi; Muramatu, Takeshi; Yoshimura, Yasuo; and Yamamoto, Masahiro, to Matsushita Electric Industrial Co., Ltd. Residential facility control system. 5,446,453, Cl. 340-825.060.

Nagarajan, R.: *See*—
Sommese, Anthony G.; and Nagarajan, R., 5,446,076, Cl. 523-200.000.

Nagasawa, Kenichi; and Shikakura, Akihiro, to Canon Kabushiki Kaisha. Image signal coding device. 5,446,744, Cl. 371-37.400.

Nagase, Toshiki; and Ito, Akira, to Canon Kabushiki Kaisha. Image forming apparatus having a separation mechanism between image bearing member and transfer member bearing member. 5,446,528, Cl. 355-309.000.

Nagata, Junichi: *See*—
Kamikawa, Yuuji; Matsumura, Kimiharu; Nomura, Masafumi; and Nagata, Junichi, 5,445,699, Cl. 156-345.000.

Naiki, Ibachi, to Sony Corporation. Bit-line pair selecting circuit in a memory cell array. 5,446,699, Cl. 365-230.040.

Naito, Albert T. Optical disc, data storage and recovery. 5,446,706, Cl. 369-13.000.

Naito, Satoru: *See*—
Toda, Toshimasa; Naito, Satoru; Oxawa, Hisayu; and Yamazaki, Takaaki, 5,446,144, Cl. 544-198.000.

Naka, Reishi: *See*—
Fukuda, Katsumi; Iizuka, Tadashi; Naka, Reishi; Hata, Hiroaki; Gommori, Masahiko; and Homma, Yoshiharu, 5,445,753, Cl. 252-52.00R.

Nakabe, Katsuji: *See*—
Shima, Takeshi; Nakabe, Katsuji; Kobayashi, Masaharu; and Sakumoto, Yukinori, 5,446,080, Cl. 524-99.000.

Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, to Sumitomo Electric Industries, Ltd.; Director-General of Agency of Industrial Science and Technology; and Research Institute of Innovative Technology for the Earth. Membrane for the separation of carbon dioxide. 5,445,669, Cl. 96-5.000.

Nakada, Takashi; Kazami, Keiichi; and Kuwabara, Shigenori, to Kabushiki Kaisha B-AI. Musical toy. 5,446,236, Cl. 84-102.000.

Nakagawa, Jun'ichi; Kokubo, Masaru; and Kurosawa, Michiaki, to Hitachi, Ltd. Frequency synthesizer. 5,446,767, Cl. 375-376.000.

Nakagawa, Kazuyo; and Sato, Toshio, to Kabushiki Kaisha Toshiba. Method and apparatus for extracting a pattern of color from an object using a neural network. 5,446,543, Cl. 356-405.000.

Nakagawa, Yoshinori; Mitani, Shinichi; Kobayashi, Takehiko; and Honda, Takaaki, to Toshiba Kikai Kabushiki Kaisha. Method for multichamber sheet-after-sheet type treatment. 5,445,491, Cl. 414-786.000.

Nakahata, Hideaki; Hachigo, Akihiro; Higaki, Kenjiro; and Shikata, Shinichi, to Sumitomo Electric Industries, Ltd. Surface acoustic wave element. 5,446,329, Cl. 310-313.00A.

Nakajima, Shigeru, to Sumitomo Electric Industries, Ltd. Semiconductor device. 5,446,296, Cl. 257-194.000.

Nakajima, Takeshi, to Sony Corporation. Pressure-contact device for applying print head onto platen of printer. 5,445,460, Cl. 400-120.160.

Nakajima, Toshiharu; Goto, Tadashi; and Hoshino, Shinji, to Honda Giken Kogyo Kabushiki Kaisha. Dressing apparatus for an electrode tip. 5,445,481, Cl. 409-140.000.

Nakajima, Yoshinobu: *See*—
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,446,428, Cl. 333-185.000.

Nakakura, Toshiyuki: *See*—
Koba, Tomohito; Nakakura, Toshiyuki; Sakai, Hideo; Kishi, Satoru; and Maruko, Chiaki, 5,445,701, Cl. 156-441.000.

Nakakura, Yasuhiro, to Matsushita Electric Industrial Co.,Ltd. Semiconductor integrated circuit. 5,446,410, Cl. 327-565.000.

Nakama, Kenichi: *See*—
Hamanaka, Kenjiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,446,639, Cl. 362-350.000.

Nakamichi Peripherals Corporation: *See*—
Liu, Faan-Hoan; and Gustavson, Jorge, 5,446,877, Cl. 395-180.000.

Nakamura, Daisuke, to Sanshin Kogyo Kabushiki Kaisha. Shift assistor for outboard drive shifting mechanism. 5,445,546, Cl. 440-75.000.

Nakamura, Haruo: *See*—
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,446,485, Cl. 347-72.000.

Nakamura, Ko: *See*—
Kurohashi, Masaharu; Nakamura, Ko; and Ienaga, Kazuharu, 5,446,021, Cl. 514-9.000.

Nakamura, Kunio: *See*—
Kondou, Masamitsu; Umekage, Yasuhiro; and Nakamura, Kunio, 5,445,517, Cl. 431-18.000.

Nakamura, Makoto: *See*—
Sakai, Shiro; Okamoto, Takehisa; Nakamura, Makoto; Yamaguchi, Haruhisa; and Morita, Tetsuya, 5,446,275, Cl. 250-207.000.

Nakamura, Shinichi: *See*—
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.

Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, to Sumitomo Electric Industries, Ltd. Superconducting device having a reduced thickness of oxide superconducting layer. 5,446,015, Cl. 505-193.000.

Nakamura, Takao: *See*—
Tanaka, So; Nakamura, Takao; and Iiyama, Michitomo, 5,446,016, Cl. 505-329.000.

Nakamura, Takua; and Sumiya, Toshifumi, to Nidek Co., Ltd. Ablation apparatus for ablating a cornea by laser beam. 5,445,633, Cl. 606-5.000.

Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Scroll type compressor having a spacer coupling the fixed scroll to the frames. 5,445,507, Cl. 418-55.100.

Nakamura, Yoshitaka; Araki, Keiji; Okamura, Kazumi; and Mizuno, Koji, to Mazda Motor Corporation. Exhaust gas pipe assembly for an automotive engine. 5,445,241, Cl. 180-296.000.

Nakano, Motohiro; and Shirakawa, Masakazu, to Kabushiki Kaisha Toshiba. Radio communication system. 5,446,739, Cl. 370-95.300.

Nakano, Shinichi: *See*—
Fukuzawa, Sumiko; Nakano, Shinichi; and Yamaura, Hiroshi, 5,445,568, Cl. 474-144.000.

Nakano, Shinji; Morimoto, Takao; Yamada, Shin-ya; Fujiwa, Takaaki; Matsui, Hideki; and Tabuchi, Takeharu, to Nippon Paint Co., Ltd.; and Diacel Chemical Industries, Ltd. Carbonate modified polyester polyol. 5,446,110, Cl. 525-439.000.

Nakao, Masaya: *See*—
Itsuzaki, Yoshihiro; Takano, Misuzu; Horikami, Kinji; and Nakao, Masaya, 5,446,801, Cl. 382-141.000.

Nakao, Takashi: *See*—
Matsui, Isamu; Maeda, Yoshiyasu; Todo, Yuji; Kiriake, Masaharu; and Nakao, Takashi, 5,445,334, Cl. 242-35.50A.

Nakao, Yoshihide: *See*—
Kanmera, Tatsuhiko; Mori, Akihisa; Nakao, Yoshihide; and Minegishi, Toshihiko, 5,446,130, Cl. 530-324.000.

Nakase, Hideo, to Sony Corporation. Tape driver. 5,445,338, Cl. 242-349.000.

Nakata, Hiroyuki: *See*—
Inoue, Nori; Okumura, Hitoshi; Nankoh, Youichi; and Nakata, Hiroyuki, 5,445,530, Cl. 439-157.000.

Nakata, Kazuhiro, to Canon Kabushiki Kaisha. Stepping motor control system. 5,446,358, Cl. 318-696.000.

Nakata, Yasuo: *See*—
Sekimoto, Yoshihiro; Inui, Toshiharu; Nakata, Yasuo; Ogata, Nobuo; and Sato, Hideaki, 5,446,721, Cl. 369-247.000.

Nakatani, Akihiro: *See*—
Saito, Kenji; Kajikawa, Akira; Nakatani, Akihiro; Yamahira, Atsushi; Noma, Hiroyuki; and Kawamura, Kazuhiko, 5,445,203, Cl. 152-527.000.

Nakatani, Toshifumi: *See*—
Yokomakura, Mitsunori; Uematsu, Kyouichi; Imai, Kanji; Sekiguchi, Tomohiro; and Nakatani, Toshifumi, 5,446,337, Cl. 313-422.000.

Nakatsugawa, Naoki: *See*—
Ikeda, Akira; Tamimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,445,798, Cl. 422-121.000.

Nakayama, Kazuhiro; Ochiai, Ikuo; and Nakazawa, Michiya, to Toko Kabushiki Kaisha Toshiba. Balanced low-pass filter. 5,446,427, Cl. 333-181.000.

Nakayama, Makoto: *See*—
Hayakawa, Yuichi; Hoshino, Yoshimasa; and Nakayama, Makoto, 5,446,240, Cl. 178-69.000.

Nakayama, Nobuko: *See*—
Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.

Nakayama, Shohachiro; Iwata, Toyomi; Kuroda, Masahiro; Goto, Naoyuki; Ueda, Hiroshi; and Ishii, Michio, to Bridgestone Corporation. Precure tread for tire including surface and rear grooves. 5,445,691, Cl. 152-209.00R.

Nakazato, Koji: *See*—
Ishikawa, Shinji; Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Ohga, Yuichi, 5,446,820, Cl. 385-123.000.

Nakazawa, Kiyoshi; Katayama, Mikio; Kato, Hiroaki; and Imaya, Akihiko, to Sharp Kabushiki Kaisha. Active matrix display apparatus with plural signal input connections to the supplemental capacitor line. 5,446,568, Cl. 359-59.000.

Nakazawa, Michiya: *See*—
Nakayama, Kazuhiro; Ochiai, Ikuo; and Nakazawa, Michiya, 5,446,427, Cl. 333-181.000.

Nalco Chemical Company: *See*—
Lewis, Vincent E.; and Fisher, Sherri L., 5,446,233, Cl. 585-856.000.
Rowe, Carl T.; and Fisher, Sherri L., 5,445,743, Cl. 210-701.000.
Sommese, Anthony G.; and Nagarajan, R., 5,446,076, Cl. 523-200.000.

Namiki, Koichi; Matsumoto, Takuya; Hashimoto, Toru; and Yoshida, Yasuhisa, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Method and apparatus of detecting faults for fuels evaporative emission treatment system. 5,445,015, Cl. 73-118.100.

Namioka, Makoto: *See*—
Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.

Namura, Ichiro: *See*—
Yoshida, Masaya; Noda, Nobuhisa; Namura, Ichiro; and Kawamura, Kiyoshi, 5,446,099, Cl. 525-204.000.

Nankoh, Youichi: *See*—
Inoue, Nori; Okumura, Hitoshi; Nankoh, Youichi; and Nakata, Hiroyuki, 5,445,530, Cl. 439-157.000.

Nankou, Takahiko: *See*—
Yamashita, Haruo; and Nankou, Takahiko, 5,446,831, Cl. 395-102.000.

Nanninga, Thomas N.: *See*—
Butler, Donald E.; Le, Tung V.; and Nanninga, Thomas N., 5,446,054, Cl. 514-326.000.

Nannini, Leandro; and Libera, Franco, to Breda Danieli Extrusion; and Forging Presses Spa. Extrusion method with gas evacuation, and extrusion press. 5,445,004, Cl. 72-272.000.

Narisawa, Shizuo: *See*—
Mitsutake, Tatsuo; and Narisawa, Shizuo, 5,446,072, Cl. 521-54.000.

Naskali, Matti, to Nokia Mobile Phones Ltd. Fast charging arrangement. 5,446,364, Cl. 320-2.000.

Nass, Peter: *See*—
Krolla, Georg; Kissl, Paul; Nass, Peter; and Schaupert, Kurt, 5,446,008, Cl. 501-68.000.

Nassiff, Amado: *See*—
Padgett, Russell S.; Nassiff, Amado; and Rauenzahn, Spencer G., II, 5,446,869, Cl. 395-500.000.

Nasuda, Toshiaki: *See*—
Aida, Yasuhiko; Miyano, Hiroshi; Hattori, Kiyoshi; Sakurai, Yoshiyuki; Manome, Eiji; and Nasuda, Toshiaki, 5,445,249, Cl. 188-378.000.

National Blood Authority: *See*—
Feldman, Peter A., 5,445,958, Cl. 435-214.000.

National Research Council of Canada: *See*—
Turenne, Sylvain; and Mongeon, Paul-EmEmile, 5,445,788, Cl. 419-42.000.

National Science Council: *See*—
Hu, Chen-Ti; and Chiou, Wen-Chih, 5,445,790, Cl. 419-44.000.

National Semiconductor Corporation: *See*—
Intrater, Gideon; Falik, Ohad; Ostrer, Aharon; Baydatch, Yair; and Erlich, Gadi, 5,446,909, Cl. 395-800.000.
Paul, Prasun K.; and De Souza, Edwin, 5,446,914, Cl. 395-800.000.
Ran, Xiaonong; and Van Scherrenburg, Micheal, 5,446,806, Cl. 382-240.000.

Nealis, Michael F. Temporomandibular joint prosthesis. 5,445,650, Cl. 623-18.000.

NEC Corporation: *See*—
Fujieda, Ichiro; Ono, Yuzo; and Sugama, Seijin, 5,446,290, Cl. 250-556.000.
Goto, Junichi, 5,446,395, Cl. 324-763.000.
Hayakawa, Yuichi; Hoshino, Yoshimasa; and Nakayama, Makoto, 5,446,240, Cl. 174-69.000.
Hirota, Toshiyuki, 5,445,986, Cl. 437-60.000.
Kirisawa, Akihiro, 5,446,415, Cl. 330-302.000.
Koike, Takeshi, 5,446,454, Cl. 340-825.520.
Miya, Tatsuya; and Uemura, Kazuyoshi, 5,446,419, Cl. 331-99.000.
Muraoka, Yukihiro, 5,446,542, Cl. 356-400.000.
Okamoto, Toshiharu, 5,446,693, Cl. 365-200.000.
Saito, Atsushi, 5,445,920, Cl. 430-311.000.
Sanada, Yotaro, 5,446,608, Cl. 360-97.020.
Uehara, Izushi, 5,446,893, Cl. 395-650.000.
Yoshimori, Masanori, 5,446,402, Cl. 326-108.000.
Yotsuyanagi, Michio, 5,446,397, Cl. 327-66.000.

Neef, Guenter: *See*—
Scholz, Stefan; Ottow, Eckhard; Neef, Guenter; Elger, Walter; Beier, Sybille; and Chwalisz, Krzysztof, 5,446,036, Cl. 514-175.000.

Neef, Gunter; Steinmeyer, Andreas; Kirsch, Gerald; Schwarz, Katica; Thieroff-Ekerdt, Ruth; Wiesinger, Herbert; and Haberey, Martin, to Schering Aktiengesellschaft. 20-methyl-substituted vitamin D derivatives. 5,446,035, Cl. 514-167.000.

Neef, Gunter: *See*—
Ottow, Eckhard; Wiechert, Rudolf; Neef, Gunter; Beier, Sybille; Elger, Walter; and Henderson, David A., 5,446,178, Cl. 552-510.000.

Neff, Edward A.; and Moss, John, to Systems, Machines, Automation Components Corporation. Actuator with translational and rotational control. 5,446,323, Cl. 310-12.000.

Negami, Takayuki: *See*—
Wada, Takahiro; Nishitani, Mikihiko; and Negami, Takayuki, 5,445,847, Cl. 427-74.000.

Neigebauer, James J., to Ford Motor Company. Torque converter clutch solenoid functional test. 5,445,016, Cl. 73-118.100.

Nellcor Incorporated: *See*—
Culver, John A.; Flewelling, Ross F.; Farbarik, John M.; Stuart, Charles E.; and Davenport, James M., 5,445,160, Cl. 128-719.000.

Nelson, Charles G.: *See*—
Owicki, Susan S.; Birrell, Andrew D.; Nelson, Charles G.; and Wobber, Edward P., 5,446,901, Cl. 395-700.000.

Nelson, Dennis J., to Dana Corporation. High strength electromagnetic coupling disc. 5,445,259, Cl. 192-107.00R.

Nelson, Don. Sensing device. 5,444,917, Cl. 33-366.000.

Nelson, Erik B.; Cawiezel, Kay E.; and Constien, Vernon G., to Dowell, a division of Schlumberger Technology Corporation. Delayed borate crosslinked fracturing fluid having increased temperature range. 5,445,223, Cl. 166-308.000.

Nelson, John C.; and Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Catadioptric fresnel lens. 5,446,594, Cl. 359-742.000.

Nelson, Neil R., to P.S.A.M.S., Inc. Water-based, thermal paint. 5,445,754, Cl. 252-62.000.

Nelson, Richard D.; Dolbear, Thomas P.; and Froehlich, Robert W. Thermally conductive connection with matrix material and randomly dispersed filler containing liquid metal. 5,445,308, Cl. 228-121.000.

Nelson, Sieglinde E. Tools for use in dressmaking. 5,444,920, Cl. 33-494.000.

Nemoto, Mamoru, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Canister purge gas control device and control method for internal combustion engine. 5,445,133, Cl. 123-520.000.

Neopost Limited: *See*—
Herbert, Raymond J., 5,446,668, Cl. 364-464.020.

Nerone, Louis R.: *See*—
El-Hamamsy, Sayed-Amr; Ludwig, Gerald W.; Wharmby, David O.; and Nerone, Louis R., 5,446,350, Cl. 315-248.000.

Nestec S.A.: *See*—
Beckett, Stephen T., 5,445,843, Cl. 426-548.000.
Bracco, Umberto, 5,445,822, Cl. 424-401.000.
Duby, Philippe; and Huynh-Ba, Tuong, 5,446,171, Cl. 548-540.000.
Wadell, Lars G. A., 5,445,840, Cl. 426-297.000.

Neu, Steven B., to ACI Australia Limited. Method of manufacturing glass reinforced concrete building products. 5,445,864, Cl. 428-192.000.

Neumann, Dieter: *See*—
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Reul, Bernhard; Henn, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.

Neveu, Jean-Louis; Schutz, Rudolph W.; and Lipp, George, to Kayserberg, S.A. Anti-theft dispensers for roll materials. 5,445,345, Cl. 242-597.600.

Neveu, Pierre: *See*—
Castaing, Jean; and Neveu, Pierre, 5,445,217, Cl. 165-104.120.

New Holland North America, Inc.: *See*—
Strosser, Richard P.; Weaver, Marvin G., Jr.; and Chow, Mark K., 5,444,966, Cl. 56-10.20J.
Wagstaff, Robert A.; and Crego, John B., 5,444,969, Cl. 56-341.000.

New OJI Paper Co., Ltd.: *See*—
Kobayashi, Yasushi; Kamiya, Masahiro; and Fujii, Toshifumi, 5,445,882, Cl. 428-329.000.
Toyofuku, Kunitaka; and Iwasaki, Akiko, 5,446,010, Cl. 503-201.000.

New York University: *See*—
McNelis, Edward, 5,446,203, Cl. 568-322.000.

Newsham, Mark D.; Inbasekaran, Muthiah N.; and Mang, Michael N., to Dow Chemical Company, The. Nonlinear optical epoxy-containing compositions and crosslinked nonlinear optical polymeric composition therefrom. 5,445,854, Cl. 428-1.000.

Newsome, Reginald W. Space saver pizza box and method of use. 5,445,314, Cl. 229-120.210.

Newton, Jefferson F.; Martin, Thomas D.; Westré, Willard N.; Carbery, David J.; and Ikegami, Roy, to Boeing Company, The. Lightweight honeycomb panel structure. 5,445,861, Cl. 428-116.000.

Next, Inc.: *See*—
Hegarty, Paul; and Matteson, Trey, 5,446,896, Cl. 395-650.000.

Ng, Joseph S., to Hughes Aircraft Company. Automated wireless preventive maintenance monitoring system for magnetic levitation (MAGLEV) trains and other vehicles. 5,445,347, Cl. 246-169.00R.

NGK Insulators, Ltd.: *See*—
Harada, Takashi; Mizuno, Hiroshige; Abe, Fumio; and Ohashi, Tsuneaki, 5,445,786, Cl. 419-2.000.
Ishida, Yoshihiko; and Tani, Makoto, 5,446,333, Cl. 310-334.000.
Kondo, Tomoharu; and Abe, Fumio, 5,446,264, Cl. 219-552.000.
Okajima, Hisakazu; and Yamamoto, Masanobu, 5,446,381, Cl. 324-96.000.
Ota, Takashi; and Fukuyama, Masashi, 5,446,815, Cl. 385-33.000.
Soma, Takao; Takahashi, Tomonori; Kawasaki, Shinji; and Yoshioka, Katsuki, 5,445,902, Cl. 429-30.000.

Nguyen, Can: *See*—
Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,445,662, Cl. 65-158.000.

Nguyen, Gia V.; and Terver, Roland A., to Goodyear Tire & Rubber Company, The. Radial ply tire with specified bead portion fitment to design rim. 5,445,202, Cl. 152-454.000.

Nguyen, Greg N.: *See*—
Thornton, Arnold O.; Nguyen, Hang T.; Nguyen, Greg N.; and Williams, Don P., 5,446,612, Cl. 360-104.000.

Nguyen, Hang T.: *See*—
Thornton, Arnold O.; Nguyen, Hang T.; Nguyen, Greg N.; and Williams, Don P., 5,446,612, Cl. 360-104.000.

Nguyen-Senderowicz, Khoi. Brace for infant footwear, namely, socks, soft shoes, booties and/or moccasins. 5,445,598, Cl. 602-65.000.

Nichols, Chuck: *See*—
Johnson, Todd S.; Lane, Richard A.; Petersen, Thomas D.; Nichols, Chuck; and Howard, John R., 5,445,640, Cl. 606-86.000.

Nichols, John D., Jr. Vacuum chuck for lathe. 5,445,052, Cl. 82-152.000.

Nichols, Lawrence R., to Davidson Textron Inc. Collapsing arm rest construction. 5,445,430, Cl. 296-153.000.

Nidek Co., Ltd.: *See*—
Nakamura, Takua; and Sumiya, Toshifumi, 5,445,633, Cl. 606-5.000.

Nieh, Sen. Compact heat exchanger. 5,445,218, Cl. 165-125.000.

Nielsen, Wyn Y. Vandalism-resistent antenna for wire- and radio-communicating post-mounted electronic devices, particularly irrigation controllers. 5,446,473, Cl. 343-890.000.

Niermann, Hans: *See—*
Durrfeld, Rainer; Kowoll, Johannes; Kuske, Eberhard; Niermann, Hans; Wilmer, Gerhard; and Wolff, Joachim, 5,445,658, Cl. 48-82.00R.

Nighan, William L., Jr.; Cole, John; and Baer, Thomas M., to Spectra-Physics Lasers Inc. Diode pumped, multi axial mode, intracavity doubled laser. 5,446,749, Cl. 372-22.000.

Night Golf, Inc.: *See—*
Franks, Randy, 5,445,373, Cl. 273-32.00R.

Nikolaevich, Boitsov A.: *See—*
Kinoshita, Hiromi; Matsushita, Yoshiki; Inoue, Yoshihiro; Ignatyevich, Zykin V.; Dmitrievich, Kim I.; Nikolaevich, Boitsov A.; and Anatolyevich, Vinyagin O., 5,444,933, Cl. 43-9.700.

Nikolaides, Nick: *See—*
Lindstrom, Kyle J.; and Nikolaides, Nick, 5,446,153, Cl. 544-127.000.

Nikon Corporation: *See—*
Kawata, Shintaro; and Hara, Keitaro, 5,446,282, Cl. 250-306.000.
Kuroiwa, Yoshinori; Nishida, Hiroshi; Okugawa, Hisashi; Ichihara, Yutaka; and Kumagai, Satoru, 5,446,556, Cl. 358-406.000.
Makinouchi, Susumu, 5,446,519, Cl. 355-53.000.
Wakabayashi, Tsutomu; Daitoku, Koichi; and Ezawa, Akira, 5,445,340, Cl. 242-356.000.
Watanabe, Tsuneo; Takagi, Tadao; Saya, Daisuke; Suganuma, Ryouichi; and Fukino, Kunihiro, 5,446,331, Cl. 310-323.000.

Nilchian, Mohammad: *See—*
Each, Thomas C.; and Nilchian, Mohammad, 5,445,670, Cl. 106-3.000.

Nilsen, Ole K. Light-output-controlled fluorescent lighting fixture. 5,446,342, Cl. 315-129.000.

Nilsen, Ole K. Electronic ballast with controlled DC supply voltage. 5,446,346, Cl. 315-209.00R.

Nilsen, Ole K. Electronic ballast with special DC supply. 5,446,347, Cl. 315-209.00R.

Nippon Antenna Co., Ltd.: *See—*
Makino, Mitsuya, 5,446,469, Cl. 343-702.000.

Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Yamakawa, Tomio; Satoh, Masaru; Takeda, Hiromitsu; Yoshino, Yasushi; and Matsukura, Hitoshi, 5,446,146, Cl. 540-575.000.

Nippon Intek Co., Ltd.: *See—*
Yamaguti, Shuji; Ukon, Masayuki; Misawa, Shiroji; and Arisaka, Masakazu, 5,445,722, Cl. 204-229.000.

Nippon Mektron, Ltd.: *See—*
Iwayama, Takeshi; Miyagawa, Atsushi; and Inaba, Masaichi, 5,446,245, Cl. 174-261.000.
Sonoi, Takehiro, 5,446,081, Cl. 524-251.000.

Nippon Oil Co., Ltd.: *See—*
Kobayashi, Seizo; Mizoe, Takashi; Iwanami, Yoshimu; Yokoyama, Shigeki; and Jimbo, Keizi, 5,445,883, Cl. 428-355.000.

Nippon Paint Co., Ltd.: *See—*
Nakano, Shinji; Morimoto, Takao; Yamada, Shin-ya; Fujiwa, Takaaki; Matsui, Hideki; and Tabuchi, Takeharu, 5,446,110, Cl. 525-439.000.
Yamada, Mitsuo; Ishii, Toshiyuki; Nojiri, Hiroyuki; and Kawakami, Ichiro, 5,446,077, Cl. 523-415.000.

Nippon Paper Industries Co., Ltd.: *See—*
Minami, Toshiaki; and Fukuchi, Tadakazu, 5,446,009, Cl. 503-204.000.

Nippon Sheet Glass Co., Ltd.: *See—*
Hamanaka, Kenjiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,446,639, Cl. 362-350.000.
Miyake, Atsushi; Matsushita, Yoshimitsu; and Koyama, Takayuki, 5,446,536, Cl. 356-239.000.

Nippon Shokubai Co., Ltd.: *See—*
Yoshida, Masaya; Noda, Nobuhisa; Namura, Ichiro; and Kawamura, Kiyoshi, 5,446,099, Cl. 525-204.000.

Nippon Steel Corporation: *See—*
Fujikawa, Koji; Shibata, Kazuo; Katayama, Kenshi; and Yamamoto, Masahiko, 5,446,535, Cl. 358-406.000.
Ueshima, Yoshiyuki; Mizoguchi, Toshiaki; Miyazawa, Kenichi; and Nishimura, Satoshi, 5,446,686, Cl. 148-330.000.

Nippon Telegraph and Telephone Corporation: *See—*
Ishiguro, Gmya; Muta, Toshiyasu; Sakita, Kazutaka; Miyaguchi, Shoji; Okamoto, Tatsuaki; and Fujioka, Atsushi, 5,446,796, Cl. 380-24.000.
Watanabe, Tsutomu; Saito, Kazuhito; Ozawa, Kazumasa; Mizuno, Shunichi; and Sankawa, Izumi, 5,446,810, Cl. 385-22.000.

Nippon Zeon Co., Ltd.: *See—*
Fukuda, Hideo; Fujita, Haruhiko; Shimoda, Hideyoshi; and You, Shiryu, 5,446,098, Cl. 525-194.000.

Nippon Zoki Pharmaceutical Co., Ltd.: *See—*
Kurohashi, Masaharu; Nakamura, Ko; and Ienaga, Kazuharu, 5,446,021, Cl. 514-9.000.

Nippondenso Co., Ltd.: *See—*
Iida, Yasuhiro; Hibi, Yasuo; Kato, Toshio; and Harada, Hiroshi, 5,446,835, Cl. 395-133.000.
Kawabata, Tsuyoshi, 5,444,977, Cl. 60-276.000.
Tabuchi, Yasuo; Tobayama, Masashi; Ohguchi, Junichi; and Kishibuchi, Akira, 5,445,256, Cl. 192-84.00C.
Tanaka, Katsuyuki; Kato, Masanori; Ohara, ouzi; Kohama, Tokio; and Nishio, Yoshitaka, 5,446,790, Cl. 381-71.000.
Yamamoto, Ken; Kuroyanagi, Isao; Yamanaka, Yasushi; and Kakehashi, Nobuharu, 5,444,993, Cl. 62-473.000.
Yamashita, Yukihiro; and Suzumura, Toshihiro, 5,445,136, Cl. 123-689.000.

Niro-Aeromatic AG: *See—*
Ris, Jurg; Eglin, Hugo; Bonde, Mikael; Frey, Urs; and Bubendorf, Francois, 5,444,892, Cl. 15-304.000.

Nishibayashi, Toru: *See—*
Ishizue, Yoshihiro; Ishida, Kozo; Odomi, Masaaki; Nishibayashi, Toru; and Koshino, Kazuyo, 5,445,830, Cl. 424-484.000.

Nishida, Akinori: *See—*
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; Higashiguchi, Teruaki; and Iwagawa, Isao, 5,446,615, Cl. 361-225.000.

Nishida, Hiroshi: *See—*
Kuroiwa, Yoshinori; Nishida, Hiroshi; Okugawa, Hisashi; Ichihara, Yutaka; and Kumagai, Satoru, 5,446,556, Cl. 358-406.000.

Nishihara, Jiro: *See—*
Oki, Youji; Ushioda, Atsuhiko; and Nishihara, Jiro, 5,446,627, Cl. 362-31.000.

Nishihara, Takashi: *See—*
Ikeda, Tooru; Ohsomo, Naoki; Kiryu, Hirosobu; Nishihara, Takashi; and Shiraishi, Shuji, 5,446,657, Cl. 364-424.050.

Nishihata, Kouji: *See—*
Kato, Shigekazu; Tamura, Naoyuki; Nishihata, Kouji; Tsuboue, Tsunehiko; and Itou, Atsushi, 5,445,484, Cl. 414-217.000.

Nishijima, Masaaki: *See—*
Adachi, Chinatsu; Nishijima, Masaaki; Ota, Yorito; and Ishikawa, Osamu, 5,446,309, Cl. 257-528.000.

Nishikawa, Makoto; Hirayama, Yoshio; Kishii, Shiroh; and Ishii, Masao, to Kuraray Co., Ltd. Thermoplastic polymer composition. 5,446,092, Cl. 525-66.000.

Nishikawa, Masao: *See—*
Gomi, Hiroshi; Nishikawa, Masao; Hirose, Masato; Takahashi, Hideaki; and Matsumoto, Takashi, 5,445,235, Cl. 180-8.600.

Nishikawa, Tooru: *See—*
Suyama, Shuji; Nishikawa, Tooru; Matsushima, Masaru; and Okada, Hiroshi, 5,446,191, Cl. 560-126.000.

Nishimatsu Construction Co. Ltd.: *See—*
Machi, Yoshio, 5,446,379, Cl. 324-240.000.

Nishimoto, Akira: *See—*
Ohmori, Masashi; Tanaka, Hiroshi; Nishimoto, Akira; Sasai, Hiroshi; Fujino, Naohiko; and Kotoh, Satoru, 5,445,171, Cl. 134-61.000.

Nishimoto, Toshiaki: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Nishimoto, Toshiaki; Kume, Hitoshi; and Yamamoto, Hideaki, 5,445,980, Cl. 437-43.000.

Nishimura, Eiichi: *See—*
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.

Nishimura, Hitoshi: *See—*
Terada, Jiro; Takenaka, Hiroshi; Ushihara, Masaharu; Tamura, Masami; Nishimura, Hitoshi; and Kaino, Kikuo, 5,445,025, Cl. 73-504.150.

Nishimura, Kotaro: *See—*
Yasui, Tokumasa; Shimizu, Shinji; and Nishimura, Kotaro, 5,446,689, Cl. 365-154.000.

Nishimura, Masayuki: *See—*
Ishikawa, Shinji; Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Ohga, Yuichi, 5,446,820, Cl. 385-123.000.

Nishimura, Nobuko: *See—*
Shimizu, Norio; Fukuzono, Shinichi; Nishimura, Nobuko; Fujimori, Kiyoshi; and Odawara, Yoji, 5,445,948, Cl. 435-69.700.

Nishimura, Satoshi: *See—*
Ueshima, Yoshiyuki; Mizoguchi, Toshiaki; Miyazawa, Kenichi; and Nishimura, Satoshi, 5,445,686, Cl. 148-330.000.

Nishimura, Seiichi: *See—*
Kumeji, Yasushi; Nishimura, Seiichi; Nakajima, Yoshinobu; and Itou, Makoto, 5,446,428, Cl. 333-185.000.

Nishino, Seji: *See—*
Komma, Yoshiaki; Mizuno, Sadao; and Nishino, Seji, 5,446,565, Cl. 359-19.000.

Nishio, Shinji: *See—*
Ikeda, Akira; Tanemura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroo, 5,445,798, Cl. 422-121.000.

Nishio, Yoshitaka: *See—*
Tanaka, Katsuyuki; Kato, Masanori; Ohara, ouzi; Kohama, Tokio; and Nishio, Yoshitaka, 5,446,790, Cl. 381-71.000.

Nishiahita, Makoto; Goto, Masato; and Ueda, Sanae, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Over-based sulfurized alkaline earth metal phenate and process for producing the same. 5,446,202, Cl. 568-23.000.

Nishitani, Mikihiko: *See—*
Wada, Takahiro; Nishitani, Mikihiko; and Negami, Takayuki, 5,445,847, Cl. 427-74.000.

Nishizawa, Koichi: *See—*
Hamanaka, Keajiro; Kishimoto, Takashi; Nishizawa, Koichi; and Nakama, Kenichi, 5,446,639, Cl. 362-350.000.

Nishizawa, Tsutomu: *See—*
Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, 5,446,141, Cl. 540-139.000.

Nissan Diesel Motor Co., Ltd.: *See—*
Dellora, Giancarlo; and Polverelli, Paolo, 5,444,980, Cl. 60-602.000.

Nissan Motor Co., Ltd.: *See—*
Sakamoto, Hiroki; Shibata, Kimihiro; and Mori, Kiyokazu, 5,446,257, Cl. 219-121.630.
Sekiguchi, Shinichi; Kusukawa, Hirotaka; and Tobita, Kenichi, 5,445,574, Cl. 475-346.000.

Shida, Kazuki; and Onda, Yuji, 5,445,404, Cl. 280-689.000.

Nissei ASB Machine Co., Ltd.: *See—*
Orimoto, Hiroyuki; Yokota, Katsumasa; Amari, Fumiya; and Suzuki, Seburo, 5,445,515, Cl. 425-526.000.

Nissei Plastic Industrial Co., Ltd.: *See—*
Arai, Tsuyoshi, 5,445,773, Cl. 264-40.100.

Nisshin Oil Mills, Ltd., The: *See—*
Ikuta, Yuzo; Tashiro, Satoshi; Hatano, Yoshiyuki; Fujita, Tadasu; Andoh, Noboru; Asaoka, Sachio; Kobayashi, Haruto; and Minami, Takeshi, 5,445,955, Cl. 435-180.000.

Nissho Corporation: *See—*
Uchida, Tadatoshi, 5,445,631, Cl. 604-412.000.

Nissinbo Industries, Inc.: *See—*
Yukio, Hosoya, 5,445,445, Cl. 303-113.500.

Nissinen, Erkki A. O.: *See—*
Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Polito, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., 5,446,194, Cl. 558-401.000.

Nisula, Bruce C.: *See—*
Blithe, Diana; Wehmann, Robert E.; and Nisula, Bruce C., 5,445,968, Cl. 436-510.000.

Nitta, Itaru: *See—*
Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.

Nitta, Toshiyuki, to Sumitomo ELectric Industries, Ltd. Process for reinforcing a semiconsductor wafer. 5,445,692, Cl. 156-87.000.

Nitz, Larry T.: *See—*
Motamedi, Nader; and Nitz, Larry T., 5,445,576, Cl. 477-105.000.

Niwano, Masahiro; Manabe, Kenji; Nitta, Itaru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, to Sumitomo Chemical Company, Limited. Aromatic oligomer and process for preparing the same. 5,446,124, Cl. 528-361.000.

No, Min S.: *See—*
Ahn, Hyung S.; No, Min S.; Si, Sang K.; Choi, Won T.; Seo, Joo O.; Lim, Jin H.; and Yang, Min, 5,445,993, Cl. 431-129.000.

Noda, Nobuhisa: *See—*
Yoshida, Masaya; Noda, Nobuhisa; Namura, Ichiro; and Kawamura, Kiyoshi, 5,446,099, Cl. 525-204.000.

Noel, John R.; Richards, Mark R.; and Krautter, Edward H., to Procter & Gamble Company, The. Air laying forming station with baffle member for producing nonwoven materials. 5,445,777, Cl. 264-113.000.

NOF Corporation: *See—*
Suyama, Shuji; Nishikawa, Tooru; Matsushima, Masaru; and Okada, Hiroshi, 5,446,191, Cl. 560-126.000.

Nogle, Scott G., to Motorola Inc. GTL compatible BICMOS input stage. 5,446,400, Cl. 326-64.000.

Nohmi Bosai, Ltd.: *See—*
Ishii, Kenji, 5,446,443, Cl. 340-505.000.

Nojiri, Hiroyuki: *See—*
Yamada, Mitsuo; Ishii, Toshiyuki; Nojiri, Hiroyuki; and Kawakami, Ichiro, 5,446,077, Cl. 523-415.000.

Nokia Mobile Phones Ltd.: *See—*
Korhonen, Veijo; and Haapaporras, Olli, 5,446,417, Cl. 331-57.000.
Korhonen, Veijo, 5,446,772, Cl. 375-257.000.
Naskali, Matti, 5,446,364, Cl. 320-2.000.

Nolan, Michael P.: *See—*
Shaver, John; Nolan, Michael P.; Macenski, Charles D.; Muehlfeld, Alan D.; and Wesselman, Brian, 5,446,769, Cl. 375-202.000.

Noll Manufacturing Co.: *See—*
Miller, Barry K., 5,444,947, Cl. 52-100.000.

Noll, Martin: *See—*
Rapps, Peter; Knoll, Peter; Pachner, Franz; Noll, Martin; and Fischer, Michael, 5,446,332, Cl. 310-324.000.

Noll, Reinhard, to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V. Process and device for emission spectroscopy. 5,446,538, Cl. 356-318.000.

Noma, Hiroyuki: *See—*
Saito, Kenji; Kajikawa, Akira; Nakatani, Akihiro; Yamahira, Atsushi; Noma, Hiroyuki; and Kawamura, Kazuhiko, 5,445,203, Cl. 152-527.000.

Nomura, Hideo: *See—*
Tetsuya, Ohtani; Yokohama; Uchiyama, Yoshiharu; and Nomura, Hideo, 5,446,618, Cl. 361-683.000.

Nomura, Masafumi: *See—*
Kamikawa, Yuuji; Matsumura, Kimiharu; Nomura, Masafumi; and Nagata, Junichi, 5,445,699, Cl. 156-345.000.

Nomura, Yoshihito; Endo, Koji; and Okado, Chihiro, to Kabushiki Kaisha Toshiba; and Hino Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling a battery car. 5,446,365, Cl. 320-14.000.

Non-Invasive Monitoring Company (NIMCO): *See—*
Eppstein, Jonathan A.; and Eppstein, Deborah A., 5,445,611, Cl. 604-49.000.

Nonaka, Shuchi; Ueki, Norihito; and Mishima, Takashi, to Mitsui Petrochemical Industries Ltd. Vulcanizable rubber composition and vulcanized rubber. 5,446,097, Cl. 525-193.000.

Nonaka, Tsuyoshi; and Akasaka, Nobuhiro, to Sumitomo Electric Industries, Ltd. Coated optical fiber. 5,446,821, Cl. 385-128.000.

Noranda, Inc.: *See—*
Gagne, Martin, 5,445,791, Cl. 420-514.000.

Nordahl, Donald M.: *See—*
Ayres, Kathryn J.; Beardsley, Brent C.; Bello, Keith A.; Benhase, Michael T.; Nordahl, Donald M.; Torre, Alfred G.; Trieu, Bao T.; and VanPatten, Linda D., 5,446,872, Cl. 395-180.000.

Norimatsu, Tsutomu: *See—*
Murase, Heihachi; Norimatsu, Tsutomu; Ogawa, Masao; and Haruta, Naoya, 5,445,871, Cl. 428-215.000.

Noritsu Koki Co., Ltd.: *See—*
Todoki, Kenji, 5,446,520, Cl. 355-27.000.

Norlin, Eric C.: *See—*
Gardner, John F.; Laycock, Jane F.; Norlin, Eric C.; Slogoff, Shelly I.; Williams, E. Ford; and Williams, Tobin H., 5,445,294, Cl. 221-1.000.

Norris, Ann W.: *See—*
Cobb, Vicky S.; Mc Vannel, Donald E.; Norris, Ann W.; and Legrow, Gary E., 5,446,185, Cl. 556-451.000.

Norrlind, Bjorn; and Wretlind, Arvid, to Pharmacia AB. Organ specific emulsion. 5,445,811, Cl. 424-9.400.

Norsk Hydro a.s.: *See—*
Carlsen, Arne; Nygaard, Erik C.; Syrstad, Erik; and Consoli, Tom, 5,445,663, Cl. 71-28.000.

North American Philips Corporation: *See—*
Amato, Michael; Mukherjee, Satyendranath; Veldman, Paul R.; and Wegener, Armin F., 5,446,300, Cl. 257-343.000.

North Carolina State University: *See—*
Baliga, Bantval J.; and Venkatraman, Prasad, 5,446,310, Cl. 257-529.000.

North, John R.: *See—*
Balgeman, Timothy E.; Clodi, Diane M.; Haddleton, Robert W., Jr.; North, John R.; and Selby, Judith A., 5,446,880, Cl. 395-600.000.

North, Tom; and Siu, Francis, to ShaBLAMM! Computer Inc. Interleave technique for accessing digital memory. 5,446,691, Cl. 365-189.020.

Northeastern University: *See—*
Giese, Roger W.; and Itani, Mohammad S., 5,445,966, Cl. 436-159.000.

Northern Telecom Limited: *See—*
Hirst, Ian J., 5,446,812, Cl. 385-24.000.
Shtulman, Alexander J., 5,446,786, Cl. 379-377.000.

Northrop Grumman Corporation: *See—*
Kornely, Michael G., 5,445,689, Cl. 148-565.000.

Norvell, Jean, to W. L. Gore & Associates, Inc. Water-resistant closure. 5,444,898, Cl. 24-389.000.

Noujaim, Sharbel E.: *See—*
Daft, Christopher M. W.; Hall, Anne L.; Noujaim, Sharbel E.; Thomas, Lewis J.; and Welles, Kenneth B., II, 5,445,156, Cl. 128-661.080.

Novalek, Inc.: *See—*
Grosman, Bert, 5,445,112, Cl. 119-265.000.

Nover Pharmaceuticals, Inc.: *See—*
Mantelle, Juan A., 5,446,070, Cl. 514-772.600.

Nowak, Albert M.: *See—*
Reynolds, Jon O.; and Nowak, Albert M., 5,446,641, Cl. 363-17.000.

Nowobilski, Jeffert J., to Praxair Technology, Inc. Textured vacuum insulation panel. 5,445,857, Cl. 428-69.000.

Noyan, Ismail C.: *See—*
Hernandez, Bernardo; Horton, Raymond R.; Palmer, Michael J.; Noyan, Ismail C.; and Weindelmayer, Frederick G., 5,446,261, Cl. 219-230.000.

NSK Ltd.: *See—*
Chikuma, Isamu; and Iwano, Toshiyuki, 5,445,238, Cl. 180-79.100.
Eda, Hiroshi; Someya, Kenji; and Chikuma, Isamu, 5,445,237, Cl. 180-79.100.
Sato, Hideyuki, 5,445,247, Cl. 188-266.000.

NTP Incorporated: *See—*
Campana, Thomas J., Jr., 5,446,759, Cl. 375-267.000.

Nukada, Katsumi: *See—*
Akasaki, Yutaka; Sato, Katsuhiro; and Nukada, Katsumi, 5,445,909, Cl. 430-58.000.

Nurnberger, Gunter, to Fichtel & Sachs AG. Multi-speed gear hub. 5,445,573, Cl. 475-298.000.

N.V. Vuilafvoer Maatschappij Vam: *See—*
Koers, Bonno, 5,445,660, Cl. 55-222.000.

Nwoko, Luck I. Attenuating pad. 5,445,858, Cl. 428-71.000.

Nycomed Salutar, Inc.: *See—*
Love, David B.; Dow, William C.; Himmelsbach, Richard J.; Watson, Alan D.; and Rocklage, Scott M., 5,446,145, Cl. 540-465.000.

Nye, Larry W.: *See—*
Romm, Douglas W.; Nye, Larry W.; and Head, Michael R., 5,444,923, Cl. 34-233.000.

Nygaard, Erik C.: *See—*
Carlsen, Arne; Nygaard, Erik C.; Syrstad, Erik; and Consoli, Tom, 5,445,663, Cl. 71-28.000.

Nyitray, Z. John. Long span trussed frame. 5,444,913, Cl. 29-897.310.

Oberg, Bo F.: *See—*
Eriksson, Bertil F. H.; Johansson, Karl N. G.; Stening, Goran B.; and Oberg, Bo F., 5,446,029, Cl. 514-45.000.

O'Brien, Daniel P.: *See—*
Blocher, Troy E.; and O'Brien, Daniel P., 5,446,617, Cl. 361-674.000.

O'Brien, Gary R., Jr.: *See—*
Boyer, Jeffrey E.; Bradshaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., 5,446,531, Cl. 356-72.000.

O'Brien, Joseph A.: *See—*
Rydell, Mark A.; and O'Brien, Joseph A., 5,445,638, Cl. 606-51.000.

Occidental Chemical Corporation: *See*—
Chen, Hang-Chang B.; and Olsen, Deborah J., 5,446,232, Cl. 585-845.000.

OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji; Fitzgerald, Edward A.; and Ferreira, Lawrence, 5,446,125, Cl. 528-486.000.
Honda, Kenji, 5,446,126, Cl. 528-482.000.

Ochi, Hideo: *See*—
Takahashi, Jun; Yasuda, Akira; and Ochi, Hideo, 5,445,923, Cl. 430-340.000.

Ochiai, Ikuo: *See*—
Nakayama, Kazuhiro; Ochiai, Ikuo; and Nakazawa, Michiya, 5,446,427, Cl. 333-181.000.

O'Connor, Kevin N.: *See*—
Peterson, George T.; Liska, Timothy J.; Nguyen, Can; McDevitt, John W.; O'Connor, Kevin N.; and Collins, George J., 5,445,662, Cl. 65-158.000.

Odawara, Yoji: *See*—
Shimizu, Norio; Fukuzono, Shinichi; Nishimura, Nobuko; Fujimori, Kiyoshi; and Odawara, Yoji, 5,445,948, Cl. 435-69.700.

Odell, Arthur B.: *See*—
Bassett, John A.; and Odell, Arthur B., 5,446,366, Cl. 323-222.000.

Odin Developments Limited: *See*—
Divall, John E., 5,445,180, Cl. 137-15.000.

Odomi, Masaaki: *See*—
Ishizue, Yoshihiro; Ishida, Kozo; Odomi, Masaaki; Nishibayashi, Toru; and Koshino, Kazuyo, 5,445,830, Cl. 424-484.000.

O'Farrell, Desmond J.: *See*—
Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., 5,446,576, Cl. 359-267.000.

Oftring, Alfred: *See*—
Burkhart, Bernd; Oftring, Alfred; Schwendemann, Volker; and Glaser, Klaus, 5,445,724, Cl. 205-259.000.
Schwendemann, Volker; Glaser, Klaus; Tachang, Chung-Ji; Burkhart, Bernd; Oftring, Alfred; and Dung, Bernhard, 5,445,727, Cl. 205-271.000.

Ogasawara, Kunio: *See*—
Takano, Seiichi; and Ogasawara, Kunio, 5,446,175, Cl. 549-544.000.

Ogata, Nobuo: *See*—
Sekimoto, Yoshihiro; Inui, Toshiharu; Nakata, Yasuo; Ogata, Nobuo; and Sato, Hideaki, 5,446,721, Cl. 369-247.000.

Ogawa, Hiroshi: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,445,507, Cl. 418-55.100.

Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kurokawa, Jitsuo, to Sumitomo Chemical Company, Limited. Process for gas phase polymerization. 5,446,116, Cl. 526-68.000.

Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Structure having a surface covered with a monomolecular film. 5,445,886, Cl. 428-403.000.

Ogawa, Kazuo: *See*—
Onozawa, Satoru; Yamada, Naoki; Isogai, Shigetaka; and Ogawa, Kazuo, 5,445,405, Cl. 280-707.000.

Ogawa, Keiko: *See*—
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,445,910, Cl. 430-106.600.

Ogawa, Makoto: *See*—
Takebayashi, Mamoru; Tateshima, Takashi; Mitsui, Tomonori; Ogawa, Makoto; Takahashi, Hidehiro; and Kataoka, Takehiro, 5,446,708, Cl. 369-32.000.

Ogawa, Masahiko; and Irifune, Shinji, to Shin-Etsu Chemical Co., Ltd. Thermal transfer recording sheets and back coating compositions therefor. 5,445,867, Cl. 428-195.000.

Ogawa, Masao: *See*—
Murase, Heihachi; Norimatsu, Tsutomu; Ogawa, Masao; and Haruta, Naoya, 5,445,871, Cl. 428-215.000.

Ogez, John R.: *See*—
Builder, Stuart E.; Ogez, John R.; Olson, Charles V.; and Reifsnyder, David, 5,446,024, Cl. 514-12.000.

Ogiso, Akira: *See*—
Misawa, Tsutami; Ogiso, Akira; Imai, Rihoko; and Itoh, Hisato, 5,446,135, Cl. 534-714.000.

Ogisu, Yukihisa; and Shimizu, Kenio, to Fujitsu Limited. System to pass through resource information. 5,446,875, Cl. 395-575.000.

Ogle, Michele D.: *See*—
Dorri, Bizhan; Laskaris, Evangelos T.; and Ogle, Michele D., 5,446,434, Cl. 335-301.000.

Oguchi, Takahiro; Sakai, Kunihiro; Kawase, Toshimitsu; Yamano, Akihiko; and Kuroda, Ryo, to Canon Kabushiki Kaisha. Information recording method and apparatus recording two or more changes in topographical and electrical states. 5,446,720, Cl. 369-126.000.

Oguchi, Takahisa: *See*—
Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, 5,446,141, Cl. 540-139.000.
Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, 5,446,142, Cl. 540-139.000.

Ogura, Hiroyuki: *See*—
Suzuki, Yasuo; Mori, Kinji; Kawano, Katsumi; Orimo, Masayuki; and Ogura, Hiroyuki, 5,446,892, Cl. 395-650.000.

Oh, Je H.; Hunt, William M.; and Sansone, Ronald P., to Pitney Bowes Inc. Just-in-time mail delivery system and method. 5,446,667, Cl. 364-464.020.

Oh, Masanari: *See*—
Shigeoka, Fumiaki; and Oh, Masanari, 5,446,827, Cl. 395-3.000.

Ohara, ouzi: *See*—
Tanaka, Katsuyuki; Kato, Masanori; Ohara, ouzi; Kohama, Tokio; and Nishio, Yoshitaka, 5,446,790, Cl. 381-71.000.

Ohashi, Tsuneaki: *See*—
Harada, Takashi; Mizuno, Hiroshige; Abe, Fumio; and Ohashi, Tsuneaki, 5,445,796, Cl. 419-2.000.

Ohashi, Yukihiro: *See*—
Fujimori, Taketoshi; Ohashi, Yukihiro; and Kawamata, Akira, 5,446,027, Cl. 514-25.000.

Ohba, Motoi; Hasegawa, Makoto; and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Data demodulation circuit for FSK modulated RF signal receiver providing wide-band 90° baseband phase shifting. 5,446,762, Cl. 375-324.000.

Ohfusa, Yoshitaka: *See*—
Kitano, Masahiro; Ohfusa, Yoshitaka; Kohda, Katsuya; Sasaki, Keiichi; Okura, Hiroyuki; and Takeda, Katsumi, 5,446,841, Cl. 395-200.000.

Ohga, Yuichi: *See*—
Ishikawa, Shinji; Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Ohga, Yuichi, 5,446,820, Cl. 385-123.000.

Ohguchi, Junichi: *See*—
Tabuchi, Yasuo; Tobayama, Masashi; Ohguchi, Junichi; and Kishibuchi, Akira, 5,445,256, Cl. 192-84.00C.

Ohkami, Takahide, to Mitsubishi Denki Kabushiki Kaisha. System and method for granting or preventing atomic or nonatomic memory access requests to shared memory regions. 5,446,862, Cl. 395-427.000.

Ohki, Naoyuki: *See*—
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.

Ohm, Heinz F.: *See*—
Hauser, Berthold; Ohm, Heinz F.; and Roll, Georg, 5,445,443, Cl. 303-137.000.

Ohmomo, Naoki: *See*—
Ikeda, Tooru; Ohmomo, Naoki; Kiryu, Hironobu; Nishihara, Takashi; and Shiraishi, Shuji, 5,446,657, Cl. 364-424.050.

Ohmori, Masashi; Tanaka, Hiroshi; Nishimoto, Akira; Sasai, Hiroshi; Fujino, Naohiko; and Kotoh, Satoru, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor cleaning apparatus and wafer cassette. 5,445,171, Cl. 134-61.000.

Ohnaka, Tadao: *See*—
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, 5,445,698, Cl. 156-307.700.

Ohta, Hirobumi: *See*—
Kojima, Yoshio; Murata, Osamu; and Ohta, Hirobumi, 5,446,662, Cl. 364-424.050.

Ohta, Yasunori; and Kozemura, Syouichi, to Fuji Photo Film Co., Ltd. Cassette. 5,446,779, Cl. 378-182.000.

Ohtsuka, Hisashi; Okazaki, Yoji; Hyuga, Hiroaki; and Mitsumoto, Shinji, to Fuji Photo Film Co., Ltd. Laser diode pumped solid laser. 5,446,750, Cl. 372-34.000.

Oi, Ryu: *See*—
Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, 5,446,142, Cl. 540-139.000.

Oide, Masahiko: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,445,507, Cl. 418-55.100.

Oishi, Isamu: *See*—
Shiraishi, Kazuo; Matsumura, Kazuhito; Oishi, Isamu; and Ebine, Katsuo, 5,446,816, Cl. 385-33.000.

Oishi, Keiichiro: *See*—
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hisashi; Tsuji, Takahiro; and Oishi, Keiichiro, 5,445,687, Cl. 148-433.000.

Oizumi, Junichi: *See*—
Mohri, Kaneo; Kano, Mitsunari; Matsuda, Toshihiko; Kino, Jiro; Takashi, Morihiko; Konishi, Yoshiharu; and Oizumi, Junichi, 5,446,377, Cl. 324-207.130.

Oka, Ryusuke, to Yamaha Hatsudoki Kabushiki Kaisha. Fiberglass reinforced plastic damping material. 5,446,250, Cl. 181-208.000.

Okabe, Kazuhiro: *See*—
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.

Okada, Hiroshi: *See*—
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,445,776, Cl. 264-65.000.
Suyama, Shuji; Nishikawa, Tooru; Matsushima, Masaru; and Okada, Hiroshi, 5,446,191, Cl. 560-126.000.

Okada, Shinjiro: *See*—
Kaneko, Shuzo; Okada, Shinjiro; Yuasa, Satoshi; Shinjo, Katsuhiko; Miyata, Hirokatsu; and Shibata, Masaaki, 5,446,570, Cl. 359-87.000.

Okada, Takashi: *See*—
Kohno, Tetsuo; Okada, Takashi; and Date, Mitsuko, 5,446,592, Cl. 359-689.000.

Okado, Chihiro: *See*—
Nomura, Yoshihito; Endo, Koji; and Okado, Chihiro, 5,446,365, Cl. 320-14.000.

Okajima, Hisakazu; and Yamamoto, Masanobu, to NGK Insulators, Ltd. Optical voltage electric field sensor. 5,446,381, Cl. 324-96.000.

Okamoto, Kazuhisa: *See*—
Ohnji, Takahiro; Fujisawa, Yoshikazu; Okamoto, Kazuhisa; Tabata, Masamune; and Hirose, Kenji, 5,445,684, Cl. 148-320.000.

Okamoto, Kenji: *See*—
Kai, Katsumi; Okamoto, Kenji; and Miura, Yuuichi, 5,445,094, Cl. 114-65.00R.

Okamoto, Takehisa: *See*—
Sakai, Shiro; Okamoto, Takehisa; Nakamura, Makoto; Yamaguchi, Haruhisa; and Morita, Tetsuya, 5,446,275, Cl. 250-207.000.

Okamoto, Tatsuaki: *See*—
Ishiguro, Ginya; Muta, Toshiyasu; Sakita, Kazutaka; Miyaguchi, Shoji; Okamoto, Tatsuaki; and Fujioka, Atsushi, 5,446,796, Cl. 380-24.000.

Okamoto, Toshiharu, to NEC Corporation. Semiconductor storage device. 5,446,693, Cl. 365-200.000.

Okamura, Kazumi: *See*—
Nakamura, Yoshitaka; Araki, Keiji; Okamura, Kazumi; and Mizuno, Koji, 5,445,241, Cl. 180-296.000.

Okano, Haruo: *See*—
Hori, Masaru; Yano, Hiroyuki; Horioka, Keiji; Hayashi, Hisataka; Jimbo, Sadayuki; Okano, Haruo; Tomioka, Kazuhiro; Ito, Yasuhiro; and Mori, Haruki, 5,445,710, Cl. 156-643.100.
Kodera, Masako; Yano, Hiroyuki; Shigeta, Atsushi; Aoki, Riichirou; Yajima, Hiromi; and Okano, Haruo, 5,445,996, Cl. 437-225.000.

Okazaki, Yoji: *See*—
Ohtsuka, Hisashi; Okazaki, Yoji; Hyuga, Hiroaki; and Mitsumoto, Shinji, 5,446,750, Cl. 372-34.000.

Okemoto, Hisashi: *See*—
Tanaka, Takemi; Okemoto, Hisashi; and Kuwahara, Nobuhiro, 5,445,842, Cl. 426-540.000.

Oki Densen Kabushiki Kaisha: *See*—
Ishizuka, Hironori; Maruoka, Wataru; and Tomikawa, Arifumi, 5,445,534, Cl. 439-352.000.

Oki Electric Industrial Co., Ltd.: *See*—
Fukuda, Yasuhiro, 5,446,607, Cl. 361-18.000.

Oki Electric Industry Co., Ltd.: *See*—
Tanaka, Takayuki; Suyama, Junichi; Fukudome, Kazukiyo; and Hashimoto, Yuki, 5,446,694, Cl. 365-203.000.

Oki, Youji; Ushioda, Atsuhiko; and Nishihara, Jiro, to Stanley Electric Co., Ltd. Method of producing a light conductive plate type light source. 5,446,627, Cl. 362-31.000.

Okinishi, Satoru, to Canon Kabushiki Kaisha. Eye fundus photographing apparatus and eye fundus camera for changing magnification with which an object is photographed. 5,446,509, Cl. 351-206.000.

Okubo, Kazutoshi: *See*—
Inoue, Koichi; Okubo, Kazutoshi; Kitagawa, Kohei; Tanaka, Keisuke; and Watanabe, Tomoya, 5,445,908, Cl. 429-229.000.

Okubo, Shiroshi. Construction material. 5,446,634, Cl. 362-147.000.

Okugawa, Hisashi: *See*—
Kuroiwa, Yoshinori; Nishida, Hiroshi; Okugawa, Hisashi; Ichihara, Yutaka; and Kumagai, Satoru, 5,446,556, Cl. 358-406.000.

Okuhara, Masakuni: *See*—
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,446,022, Cl. 514-11.000.

Okumura, Hitoshi: *See*—
Inoue, Nori; Okumura, Hitoshi; Nankoh, Youichi; and Nakata, Hiroyuki, 5,445,530, Cl. 439-157.000.

Okuno, Yasuo; Tamura, Hitoshi; and Maruyama, Tsuyoshi, to Stanley Electric Co., Ltd.; and Kanagawa Academy of Science and Technology. Wet treatment adapted for mirror etching ZnSe. 5,445,706, Cl. 156-637.100.

Okura, Hiroyuki: *See*—
Kitano, Masahiro; Ohfusa, Yoshitaka; Kohda, Katsuya; Sasaki, Keiichi; Okura, Hiroyuki; and Takeda, Katsumi, 5,446,841, Cl. 395-200.000.

Okura, Zenichi: *See*—
Hamasaki, Takuji; and Okura, Zenichi, 5,446,593, Cl. 359-704.000.

Olbright, Greg R.: *See*—
Jewell, Jack L.; and Olbright, Greg R., 5,446,754, Cl. 372-50.000.

O'Lenick, Anthony J., Jr., to Siltech Inc. Fluorinated dimethicone copolyols. 5,446,114, Cl. 528-15.000.

O'Lenick, Anthony J., Jr., to Siltech Inc. Silicone ester emulsifiers. 5,446,183, Cl. 556-437.000.

O'lenick, Anthony J., Jr., to Siltech Inc. Glyceryl silicone ester emulsifiers. 5,446,184, Cl. 556-437.000.

Oliver, Stephen N.: *See*—
Winter, Christoper S.; Oliver, Stephen N.; Rush, James D.; Underhill, Allan E.; and Hill, Callum A. S., 5,445,767, Cl. 252-587.000.

Ollivier, Gerald. Anti-hail shock wave generator. 5,445,321, Cl. 239-14.100.

Olsen, Deborah J.: *See*—
Chen, Hang-Chang B.; and Olsen, Deborah J., 5,446,232, Cl. 585-845.000.

Olsen, Gerald L.: *See*—
Casturo, Scott E.; Lewis, P. E.; Harlow, E. V.; Olsen, Gerald L.; Hensley, E. Rod; and Wing, Keith M., 5,444,902, Cl. 29-56.600.

Olson, Charles V.: *See*—
Builder, Stuart E.; Ogez, John R.; Olson, Charles V.; and Reifsnyder, David, 5,446,024, Cl. 514-12.000.

Olsson, Ray: *See*—
Belardinelli, Luiz; Olsson, Ray; Baker, Stephen; and Scammells, Peter J., 5,446,046, Cl. 514-263.000.

Olympus Optical Co., Ltd.: *See*—
Kikuchi, Juro, 5,446,590, Cl. 359-645.000.
Sato, Yuichi, 5,446,513, Cl. 354-204.000.
Wada, Tohru, 5,446,504, Cl. 348-645.000.
Yamamiya, Kunio, 5,446,711, Cl. 369-44.140.

Omniglow Corporation: *See*—
Steiger, Joseph; and Mulligan, Stephen, 5,446,629, Cl. 362-34.000.

Onda, Yuji: *See*—
Shida, Kazuki; and Onda, Yuji, 5,445,404, Cl. 280-689.000.

Ondrick, Edwin P., to Poly-Plating, Inc. Apparatus for diffusion dialysis. 5,445,737, Cl. 210-321.710.

O'Neill, Gerald J.; and Bulka, Robert J., to Hampshire Chemical Corp. Chlorination of difluoromethyl methyl ether. 5,446,211, Cl. 568-684.000.

Onishi, Keiji: *See*—
Eda, Kazuo; Taguchi, Yutaka; Onishi, Keiji; and Seki, Shun-ichi, 5,446,330, Cl. 310-313.00R.

Ono Pharmaceutical Co., Ltd.: *See*—
Toda, Masaaki; Miyamoto, Tumoru; and Arai, Yoshinobu, 5,446,058, Cl. 514-381.000.

Ono, Takashi, to Canon Kabushiki Kaisha. Reader for a facsimile apparatus which carries out the read apparatus in accordance with a vacant capacity of a buffer. 5,446,554, Cl. 358-404.000.

Ono, Yuzo: *See*—
Fujieda, Ichiro; Ono, Yuzo; and Sugama, Seijin, 5,446,290, Cl. 250-316.000.

Onodera, Tsugio, to Mitsuba Electric Manufacturing Co. Ltd. Coating material for an armature coil of an electrical motor. 5,446,324, Cl. 310-45.000.

Onozawa, Satoru; Yamada, Naoki; Isogai, Shigetaka; and Ogawa, Kazuo, to Ainn Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Suspension control apparatus. 5,445,405, Cl. 280-707.000.

Onuki, Mituhiro: *See*—
Uchida, Hiroshi; Onuki, Mituhiro; and Watanabe, Hideo, 5,445,772, Cl. 264-32.000.

Oosawa, Tetsu: *See*—
Kitayama, Hirofumi; Iwai, Hiroyuki; Wada, Shinichi; and Oosawa, Tetsu, 5,445,486, Cl. 414-416.000.

Oppenlaender, Knut: *See*—
Elfers, Guenther; Sager, Wilfried; Vogel, Hans-Henning; and Oppenlaender, Knut, 5,445,765, Cl. 252-344.000.

Opsahl, Ross C.: *See*—
Hombek, Richard; Opsahl, Ross C.; and Marolewski, Theodore A., 5,446,105, Cl. 525-327.600.

Optical Solutions, Inc.: *See*—
Goldman, Don S., 5,446,534, Cl. 356-128.000.

Ordogh, Frank: *See*—
Ordogh, Joseph; and Ordogh, Frank, 5,445,478, Cl. 408-1.00R.

Ordogh, Joseph; and Ordogh, Frank, to Parts Manufacturing Co. Ltd. Hand-held apparatus for machining of cylinder head valve guide holes. 5,445,478, Cl. 408-1.00R.

Orimo, Masayuki: *See*—
Suzuki, Yasuo; Mori, Kinji; Kawano, Katsumi; Orimo, Masayuki; and Ogura, Hiroyuki, 5,446,892, Cl. 395-650.000.

Orimoto, Hiroyuki; Yokota, Katsumasa; Amari, Fumiya; and Suzuki, Saburo, to Nissei ASB Machine Co., Ltd. Apparatus for forming a heat-resistant container. 5,445,515, Cl. 425-526.000.

Orion-Babson Co., Ltd.: *See*—
Torgerson, Kevin L.; Keefe, Kevin M.; Schultz, David A.; and Matsuzawa, Minoru, 5,445,357, Cl. 251-146.000.

Orion-yhtyma Oy: *See*—
Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., 5,446,194, Cl. 558-401.000.

Ornstein, Paul L., to Eli Lilly and Company. Aryl-spaced decahydroisoquinoline-3-carboxylic acids as excitatory amino acid receptor antagonists. 5,446,051, Cl. 514-307.000.

Orsolini, Piero; and Heimgartner, Frederic, to Debio Recherche Pharmaceutique S.A. Process for the preparation of microspheres made of a biodegradable polymeric material. 5,445,832, Cl. 424-491.000.

Orth, Helmut: *See*—
Engel, Jurgen; Wolf-Heuss, Elisabeth; Orth, Helmut; Wichert, Burkhard; and Sauerbier, Dieter, 5,446,033, Cl. 514-77.000.

Orth, Jeffrey L., to Rocky Mountain Research, Inc. Condition detection system and clamp. 5,445,613, Cl. 604-66.000.

Orthopedic Systems, Inc.: *See*—
Andrews, E. Trent; Moore, Robert R.; and Lamb, Steven R., 5,444,882, Cl. 5-618.000.

Orzol, Detlef: *See*—
Dilla, Wolfgang; Dillenburg, Helmut; Klumpe, Michael; Krebber, Hans-Georg; Linke, Horst; Orzol, Detlef; and Ploenissen, Erich, 5,445,741, Cl. 210-631.000.

Osada, Hatsuo: *See*—
Kubodera, Masao; Kasai, Shigeru; and Osada, Hatsuo, 5,445,675, Cl. 118-719.000.

Osawa, Hisayu: *See*—
Toda, Toshimasa; Naito, Satoru; Osawa, Hisayu; and Yamazaki, Takaaki, 5,446,144, Cl. 544-198.000.

Oscar Mayer Foods Corporation: *See*—
Lipinski, Jeffrey M.; and Lawless, Brian P., 5,445,838, Cl. 426-129.000.

Oshgan, Thomas J., to Eaton Corporation. Switch actuator assembly. 5,446,253, Cl. 200-556.000.

Ostrer, Aharon: *See*—
Intrater, Gideon; Falik, Ohad; Ostrer, Aharon; Baydatch, Yair; and Erlich, Gadi, 5,446,909, Cl. 395-800.000.

Ota, Takashi; and Fukuyama, Masashi, to NGK Insulators, Ltd. Optical collimator array including a spacer for receving a microlens and method of aligning light axes thereof. 5,446,815, Cl. 385-33.000.

Ota, Yorito: *See*—
Adachi, Chinatsu; Nishijima, Masaaki; Ota, Yorito; and Ishikawa, Osamu, 5,446,309, Cl. 257-528.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Ishizue, Yoshihiro; Ishida, Kozo; Odomi, Masaaki; Nishibayashi, Toru; and Koshino, Kazuyo, 5,445,830, Cl. 424-484.000.
Otsuki, Satoshi, to Ricoh Company, Ltd. Membership function tuning system using defuzzy calculation. 5,446,826, Cl. 395-3.000.
Otten, Hajo: *See*—
Eigen, Manfred; and Otten, Hajo, 5,446,263, Cl. 219-521.000.
Otto Sauer Achsenfabrik Keilberg: *See*—
Koschinat, Hubert B., 5,445,250, Cl. 188-328.000.
Ottow, Eckhard; Wiechert, Rudolf; Neef, Gunter; Beier, Sybille; Elger, Walter; and Henderson, David A., to Schering Aktiengesellschaft. Process for preparing 19,11β-bridged steroids. 5,446,178, Cl. 552-510.000.
Ottow, Eckhard: *See*—
Scholz, Stefan; Ottow, Eckhard; Neef, Guenter; Elger, Walter; Beier, Sybille; and Chwalisz, Krzyszlof, 5,446,036, Cl. 514-175.000.
Ou, Yang-Chiu, to An Shun Enterprise Co., Ltd. Combination wall. 5,444,955, Cl. 52-309.900.
Oukouchi, Terunaga, to Takigen Manufacturing Co., Ltd. Joint assembly. 5,445,472, Cl. 403-348.000.
Ouziel, Philippe: *See*—
Kuhn, Martin; and Ouziel, Philippe, 5,445,655, Cl. 8-555.000.
Overby, Gerald L.: *See*—
Gramm, John A.; and Overby, Gerald L., 5,445,557, Cl. 451-75.000.
Overhage, Craig; and Austin, Richard, to Tektronix, Inc. Logic signal extraction. 5,446,650, Cl. 364-487.000.
Owczarz, Aleksander: *See*—
Thompson, Raymon F.; and Owczarz, Aleksander, 5,445,172, Cl. 134-153.000.
Owen, Donald R. S., to Flomotion Limited. Bulk container with removable tray. 5,445,289, Cl. 222-105.000.
Owens, Michael R. Hand-held ice skate blade sharpener tool. 5,445,050, Cl. 76-83.000.
Owicki, Susan S.; Birrell, Andrew D.; Nelson, Charles G.; and Wobber, Edward P., to Digital Equipment Corporation. Fault tolerant distributed garbage collection system and method for collecting network objects. 5,446,901, Cl. 395-700.000.
Ozaki, Hiroshi: *See*—
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.
Ozawa, Akira: *See*—
Kusano, Katsuyuki; Ozawa, Akira; Kanai, Yasushi; and Itoh, Tomoyuki, 5,446,351, Cl. 318-139.000.
Ozawa, Chiaki; and Hosono, Motoaki, to Bridgestone Corporation. Band forming method. 5,445,695, Cl. 156-131.000.
Ozawa, Kazumasa: *See*—
Watanabe, Tsutomu; Saito, Kazuhito; Ozawa, Kazumasa; Mizuno, Shunichi; and Sankawa, Izumi, 5,446,810, Cl. 385-22.000.
Ozawa, Shinji; Takagawa, Makoto; and Fujimori, Takayasu, to Mitsubishi Gas Chemical Company, Inc. Process for producing dimethylnaphthalene. 5,446,226, Cl. 585-411.000.
Ozawa, Tadachika: *See*—
Hanai, Nobuo; Baba, Shozo; and Ozawa, Tadachika, 5,445,938, Cl. 435-7.230.
Ozawa, Takashi: *See*—
Iyoda, Tetsuo; So, Ikken; and Ozawa, Takashi, 5,446,276, Cl. 250-208.100.
Ozguc, Ismail H.: *See*—
Kimyacioglu, M. Kursat; and Ozguc, Ismail H., 5,446,412, Cl. 330-285.000.
Oziomek, James; Hergenrother, William L.; Hamm, David R.; and Bouton, Thomas C., to Bridgestone, Corporation; and Catalytica. Olefin metathesis catalysts for degelling polymerization reactors. 5,446,102, Cl. 525-245.000.
P.S.A.M.S., Inc.: *See*—
Nelson, Neil R., 5,445,754, Cl. 252-62.000.
Pachner, Franz: *See*—
Rapps, Peter; Knoll, Peter; Pachner, Franz; Noll, Martin; and Fischer, Michael, 5,446,132, Cl. 310-324.000.
Pacific Fitness Corporation: *See*—
Habing, Theodore G., 5,445,583, Cl. 482-52.000.
Pacifici, Joseph A., to West Point Pepperell. Water-soluble active methylenes as formaldehyde scavengers. 5,446,195, Cl. 560-178.000.
Pacione, Peter L. Two-piece presentation folder. 5,445,468, Cl. 402-75.000.
Packman, Albert M.: *See*—
Klein, Robert W.; and Packman, Albert M., 5,446,028, Cl. 514-43.000.
Paddock, Paul W., to Linacum Corporation. Audio transducer with etched voice coil. 5,446,797, Cl. 381-192.000.
Padgaonkar, Ajay: *See*—
Burghardt, Martin; Berman, Eric; Padgaonkar, Ajay; and Allen, Ray, 5,446,864, Cl. 395-427.000.
Padgett, Russell S.; Nassiff, Assado; and Rauenzahn, Spencer G., II, to International Business Machines Corporation. Configuration and RAM/ROM control of PCI extension card residing on MCA adapter card. 5,446,869, Cl. 395-500.000.
Pagano, Daniel M., to Eastman Kodak Company. Internal film drive for thrusting film cartridge. 5,445,336, Cl. 242-348.300.
Pahle, William E. Fishing lure with jet-stream hole and dried bait plugs for insertion therein. 5,444,935, Cl. 43-42.060.
Pajaril, Heikki T.: *See*—
Karki, Ari M. O.; Lindstrom, Matti J.; and Pajaril, Heikki T., 5,445,717, Cl. 204-82.000.
Palevich, Jack H.: *See*—
Schaeffer, Arnold; Anderson, David R.; Palevich, Jack H.; and Rosenstein, Larry S., 5,446,842, Cl. 395-200.010.
Pall Corporation: *See*—
Degen, Peter J., 5,445,771, Cl. 264-22.000.
Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., 5,445,736, Cl. 210-257.100.
Pall, David B.; Gsell, Thomas C.; and Muellers, Brian T., to Pall Corporation. Device and filter element for processing blood for human transfusion. 5,445,735, Cl. 210-257.100.
Palmer, David C.; and Terradas, Fernand, to McNeil-PPC, Inc. Regioselective enzymatic deacylation of sucrose esters in anhydrous organic media. 5,445,951, Cl. 435-100.000.
Palmer, Dennis E.: *See*—
Gillis, Edward J.; Gioutsos, Tony; and Palmer, Dennis E., 5,445,412, Cl. 280-735.000.
Palmer, Donald P., to Burle Technoligies, Inc. Method of constructing low crosstalk faceplates. 5,445,921, Cl. 430-311.000.
Palmer, Michael J.: *See*—
Hernandez, Bernardo; Horton, Raymond R.; Palmer, Michael J.; Noyan, Ismail C.; and Weindelmayer, Frederick G., 5,446,261, Cl. 219-230.000.
Palmgren, Charlotte M.: *See*—
Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., 5,446,270, Cl. 219-730.000.
Palmowski, David J.: *See*—
Carpenter, Thomas S.; Hand, David D.; and Palmowski, David J., 5,445,051, Cl. 81-9.510.
Pan, Jing-Jong; Shih, Ming; Mao, Zhong M.; Liang, Frank Y. F.; and Shih, Kung, to E-Tek Dynamics, Inc. Torch for manufacture of optical fiber couplers and method of manufacture. 5,445,319, Cl. 239-1.000.
Panipinto, Charles L. Doubly articulated screen printing apparatus with on-line registration capability. 5,445,075, Cl. 101-127.100.
Pankow, Matthew W.: *See*—
Porter, Randy D.; and Pankow, Matthew W., 5,446,376, Cl. 324-165.000.
Panuganti, Badari N.: *See*—
Abraham, Robert L.; Mitchell, Herman; Panuganti, Badari N.; and Stowers, Laura A., 5,446,903, Cl. 395-728.000.
Pape, Kerstin; and Berneth, Horst, to Bayer Aktiengesellschaft. Pyrazole azo dyestuffs. 5,446,136, Cl. 534-753.000.
Papke, Brian L.: *See*—
Chafetz, Harry; Lau, Christopher S.; Papke, Brian L.; and Kennedy, Thomas A., 5,445,750, Cl. 252-49.600.
Papst Licensing GmbH: *See*—
Elsaesser, Dieter; and von der Heide, Johann, 5,446,610, Cl. 360-99.080.
Paradissis, George N.; Garegnani, James A.; and Whaley, Roy S., to KV Pharmaceutical Company. Extended release harmaceutical formulations. 5,445,829, Cl. 424-480.000.
Paranchych, William: *See*—
Hodges, Robert S.; Paranchych, William; Lee, Kok K.; Parimi, Sastry A.; Irvin, Randall T.; and Doig, Peter C., 5,445,818, Cl. 424-184.100.
Paranjpe, Suresh C. Combination ink or dye ribbon for nonimpact printing. 5,445,463, Cl. 400-240.000.
Parillo, Edward V.; Steinbrenner, Erwin G.; and Guba, Alexander L., to General Electric Company. Discharge lamp having a lamp envelope with a textured sealed region and method of making same. 5,446,340, Cl. 313-493.000.
Parimi, Sastry A.: *See*—
Hodges, Robert S.; Paranchych, William; Lee, Kok K.; Parimi, Sastry A.; Irvin, Randall T.; and Doig, Peter C., 5,445,818, Cl. 424-184.100.
Park, Il-keun, to Samsung Electronics Co., Ltd. Path memory apparatus of a viterbi decoder. 5,446,746, Cl. 371-43.000.
Park Medical Systems Inc.: *See*—
Schreck, Zoltan, 5,446,287, Cl. 250-369.000.
Park, Pyong-Woon: *See*—
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Malin, Richard A.; Cuozzo, Pasquale; and Rigo, Stephen, 5,445,074, Cl. 101-91.000.
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Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.

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Quill, John; and Poucher, Frank, 5,446,303, Cl. 257-360.000.

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Moore, Allan R.; Poulos, Lori J.; and DeFazio, Lynn G., 5,446,885, Cl. 395-600.000.

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Burkea, Alice L.; and Fox, Mary M., 5,445,837, Cl. 426-74.000.
Convents, Andre C.; Busch, Alfred; De Groote, Isabelle M. C.; and Liu, Don K. K., 5,445,755, Cl. 252-102.000.
Daniel, Wade K., 5,445,291, Cl. 220-366.100.
Didier, Gazeau; and Thoen, Christiaan A., 5,445,756, Cl. 252-104.000.
Gipson, William P.; Mason, Michael W.; and Hensler, Thomas A., 5,445,628, Cl. 604-392.000.
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Liang, Nong, 5,445,814, Cl. 424-52.000.
Noel, John R.; Richards, Mark R.; and Krautter, Edward H., 5,445,777, Cl. 264-113.000.
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Proctor, Lee D.: *See*—
Caporiccio, Gerardo; Chambers, Richard D.; and Proctor, Lee D., 5,446,214, Cl. 570-125.000.

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Puchy, Shirley R.: *See*—
Mackanesa, James B.; and Puchy, Shirley R., 5,446,241, Cl. 174-91.000.

Pucilowski, Sally: *See*—
Krashkevich, David G.; and Pucilowski, Sally, 5,446,007, Cl. 501-64.000.

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Badylak, Stephen F.; Geddes, Leslie A.; Shelbourne, K. Donald; Lantz, Gary C.; and Coffey, Arthur C., 5,445,833, Cl. 424-551.000.
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Puthod, Pascal: *See*—
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Puttick, Anthony J.: *See*—
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.

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Backstrom, Reijo J.; Heinola, Kalevi E.; Honkanen, Erkki J.; Kaakkola, Seppo K.; Kairisalo, Pekka J.; Linden, Inge-Britt Y.; Mannisto, Pekka I.; Nissinen, Erkki A. O.; Pohto, Pentti; Pippuri, Aino K.; and Pystynen, Jarmo J., 5,446,194, Cl. 558-401.000.

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Jehn, E. F., 5,446,635, Cl. 362-259.000.

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Vedamuthu, Ebenezer R., 5,445,835, Cl. 426-9.000.

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Baird, Michael C.; Gillis, Daniel J.; and Quyoum, Ruhksana, 5,446,117, Cl. 526-134.000.

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Gardea, Raymond A., II; Covington, Martin D., Jr.; Carter, Brent W.; and Bowling, Forrest W., 5,446,868, Cl. 395-500.000.
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Racine, Raymond P.; and Malani, Bert D. Magnetic valve reset mechanism. 5,445,184, Cl. 137-460.000.

Rahn, Carl H. Modular display rack. 5,445,280, Cl. 211-186.000.

Raisch, Dieter: *See*—
Koehler, Harald; Raisch, Dieter; and Homann, Bodo, 5,445,429, Cl. 296-107.000.

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Pollman, John A.; DellaVecchia, Daniel J.; Goldman, Ira B.; Lewandoski, John T.; and Rajotte, Paul T., 5,446,386, Cl. 324-424.000.

Ramberg, Fred G., to Bostec Engineering. Penetration limiting gland and metal gasket. 5,445,393, Cl. 277-167.500.

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Ware, Frederick A.; Gasbarro, James A.; Dillon, John B.; Farnwald, Michael P.; Horowitz, Mark A.; and Griffin, Matthew M., 5,446,696, Cl. 365-222.000.

Ramsey, Jens K.: *See*—
Stevens, Jeffrey C.; Ramsey, Jens K.; Bonella, Randy M.; and Kelly, Philip C., 5,446,863, Cl. 395-427.000.

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Riedl, Robert; and Randin, Jean-Paul, 5,445,892, Cl. 428-469.000.

Rando, Robert F.: *See*—
Revankar, Ganapathi R.; Lewis, Arthur F.; Bhattacharya, Birendra K.; Devivar, Rodrigo V.; Rando, Robert F.; and Fennewald, Susan M., 5,446,045, Cl. 514-258.000.

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Manague, William H.; and Rao, V. N. Mallikarjuna, 5,446,219, Cl. 570-176.000.

Rappa, Peter; Knoll, Peter; Pachner, Franz; Noll, Martin; and Fischer, Michael, to Robert Bosch GmbH. Ultrasonic transducer. 5,446,332, Cl. 310-324.000.

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Dellaria, Joseph F.; Ratajczyk, James D.; Brooks, Clint D. W.; and Basha, Anwer, 5,446,053, Cl. 514-337.000.

Rathmell, James J.; and Vavra, Charles L., to Atlantic Richfield Company. Method and apparatus for formation sampling during the drilling of a hydrocarbon well. 5,445,228, Cl. 175-4.000.

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Barbee, Steven G.; Datta, Madhav; Heinz, Tony F.; Li, Leping; Ratzlaff, Eugene H.; and Shenoy, Ravindra V., 5,445,705, Cl. 156-627.100.

Rauenzahn, Spencer G., II: *See*—
Padgett, Russell S.; Nassiff, Amado; and Rauenzahn, Spencer G., II, 5,446,869, Cl. 395-500.000.

Raven, Alfred J., III: *See*—
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Raychem Corporation: *See*—
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Raychem Limited: *See*—
Barrett, Donald C., 5,446,242, Cl. 174-140.00R.

Raymond Corporation, The: *See*—
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Read, J. Leighton: *See*—
Fodor, Stephen P. A.; Pirrung, Michael C.; Read, J. Leighton; and Stryer, Lubert, 5,445,934, Cl. 435-6.000.

Read-Rite Corporation: *See*—
Rottmayer, Robert E., 5,446,613, Cl. 360-113.000.

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Lancaster, Gregory D.; Moore, Glenn A.; Stone, Mark L.; and Reagen, William K., 5,445,795, Cl. 422-86.000.

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Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

Reazer, Terry J.; and Reazer, William J., Jr. Cassette winder tool. 5,445,339, Cl. 242-350.000.

Reazer, William J., Jr.: *See*—
Reazer, Terry J.; and Reazer, William J., Jr., 5,445,339, Cl. 242-350.000.

Rebel, Joachim, to Maweva Holding, AG. Food processor. 5,445,070, Cl. 99-511.000.

Rebman, Chester L.: *See*—
Baker, Trace A.; Davis, Bruce M.; and Rebman, Chester L., 5,446,357, Cl. 318-632.000.

Recchia, Maruo: *See*—
Fucito, Michele; Recchia, Maruo; Puglia, Silvestro; Mariani, Claudio; Colangeli, Giulio; and Rotunno, Antonio, 5,446,843, Cl. 395-250.000.

Recore, Francis R. Game accessory for a diving board. 5,445,379, Cl. 273-1.50R.

Recot, Inc.: *See*—
Center, John L.; and Stalder, James W., 5,445,287, Cl. 221-1.000.

Reddy, A. V. N.: *See*—
Maiti, Samarendra; Fiakpui, Charles; Reddy, A. V. N.; Czajkowski, David; Spevak, Paul; Atwal, Harninder; and Micetich, Ronald G., 5,446,037, Cl. 514-201.000.

Redmon, Robert A. Apparatus to manually open and close a shutter-like device for tracheostomy patients to facilitate breathing. 5,445,145, Cl. 128-207.160.

Redshaw, Sally: *See*—
Handa, Balraj K.; Machin, Peter J.; Martin, Joseph A.; Redshaw, Sally; and Thomas, Gareth J., 5,446,161, Cl. 546-225.000.

Redwood, Richard, to American Trading & Production Corporation. Binder or portfolio. 5,445,231, Cl. 190-109.000.

Ree, Moonhor: *See*—
Czornyj, George; Ree, Moonhor; Volksen, Willi; and Yang, Dominic C., 5,446,074, Cl. 522-164.000.

Reece, Alan R.: *See*—
Yourgalite, Ray A.; Beccka, Kenneth F.; Dark, Jay A.; Reece, Alan R.; and Kleber, Robert J., 5,445,493, Cl. 414-791.600.

Reed, Guy L.; and Matsueda, Gary R., to General Hospital Corporation, The. Thrombin-activated platelet protein-2 (TAPP-2). 5,446,132, Cl. 530-350.000.

Reed, Jason C.; and Bushnell, Dennis M., to United States of America, National Aeronautics and Space Administration. Polymer/riblet combination for hydrodynamic skin friction reduction. 5,445,095, Cl. 114-67.00A.

Reed, Robert R. Safe, accurate and fast measuring device. 5,445,023, Cl. 73-427.000.

Reeder, Robbin A.; and Chien, Kuei-Ru, to Hughes Aircraft Company. Amplitude modulated corrected frequency modulated laser. 5,446,530, Cl. 356-5.010.

Reggiardo, Christopher V., to Varian Associates, Inc. Method and structure for a fault-free input configuration control mechanism. 5,446,399, Cl. 326-16.000.

Regueiro, Jose F., to Chrysler Corporation. Tappet and shim assembly for internal combustion engine. 5,445,119, Cl. 123-90.480.

Rehrig Pacific Company, Inc.: *See*—
Apps, William P., 5,445,273, Cl. 206-505.000.

Reich, Stanley M.; and Horn, Michael, to Grumman Aerospace Corporation. Magneto-optic eddy current imaging apparatus and method including dithering the image relative to the sensor. 5,446,378, Cl. 324-238.000.

Reichert, Manfred: *See*—
Buchner, Norbert; Domke, Klaus; Reichert, Manfred; Stotkiewitz, Herbert; Wilke, Bernd; Zimmermann, abine; Lemke, Kuno; and Voegele, Guenther, 5,445,870, Cl. 428-214.000.

Reifsnyder, David: *See*—
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Reihlen, Eckart: *See*—
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Reilly Industries, Inc.: *See*—
Scriven, Eric F. V.; Keay, James G.; and Zhang, Tony, 5,446,163, Cl. 546-277.000.

Reinke, Stephen M., to Eastman Kodak Company. Film spool with integral cantilever to engage and release film end. 5,445,343, Cl. 242-587.100.

Reis, Theo, to Markpoint System AB. Liquid-jet printer device. 5,446,486, Cl. 347-85.000.

Reliable Bethea Power Products, Inc.: *See*—
Caldwell, William D.; and Lin, Wei-Chung, 5,445,348, Cl. 248-74.100.

Rendina, David D. Hydrogen hydride keel. 5,445,099, Cl. 114-140.000.

Renishaw plc: *See*—
Taylor, Benjamin R., 5,446,545, Cl. 356-358.000.

Renk Aktiengesellschaft: *See*—
Schliephack, Christian, 5,445,457, Cl. 384-277.000.

Renslo, Erland; Harker, Elizabeth M.; Collins, Clayton M.; Bobiere, Elaine R.; Anderson, Douglas A.; and Gardner, Kimberly, to Hewlett-Packard Company. System for using subsets of rules applied to a database for updating and generating the rule knowledge base and forecasts of system demand. 5,446,890, Cl. 395-600.000.

Reppert, Francis J. Fence assembly. 5,445,362, Cl. 256-24.000.

Research Association for New Technology Development of High Performance Polymer: *See*—
Koba, Tomohito; Nakakura, Toshiyuki; Saksi, Hideo; Kishi, Satoru; and Maruko, Chiaki, 5,445,701, Cl. 156-441.000.

Research Development Corporation of Japan: *See*—
Ru, Qing X.; Endo, Junji; and Tonomura, Akira, 5,446,589, Cl. 359-577.000.

Research and Development Institute at Montana State University: *See*—
Strobel, Gary A.; and Stierle, Andrea A., 5,445,809, Cl. 424-1.810.

Research Institute of Innovative Technology for the Earth: *See*—
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.

Resikast Corporation: *See*—
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Resonex Holding Company: *See*—
Bell, Rodney E.; Kreidler, Marc S.; Hung, David T. H.; Moya, Robert L.; and Wolters, Harrie J. M., 5,445,152, Cl. 128-653.500.

Reul, Bernhard: *See*—
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Reul, Bernhard; Henn, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.

Reuter, Gerald L.; Harrison, Maureen M.; and Coons, Mark E., to American Home Products Corporation. Anesthetic compositions. 5,446,063, Cl. 514-535.000.

Revankar, Ganapathi R.; Lewis, Arthur F.; Bhattacharya, Birendra K.; Devivar, Rodrigo V.; Rando, Robert F.; and Fennewald, Susan M. Antiviral guanine analogs. 5,446,045, Cl. 514-258.000.

Reyes, Carlos C., to Saturn Corporation. Shift control mechanism for a multi-speed countershaft transmission. 5,445,253, Cl. 192-4.00C.

Reynard CVC, Inc.: *See*—
Herr, Arthur G. F.; Johnson, Robert W.; and Welles, Toby S., 5,445,265, Cl. 206-308.100.

Reynolds, David C., to Analog Devices, Inc. Apparatus and method for determining when the frequency of an alternating signal is below a predetermined threshold. 5,446,322, Cl. 327-44.000.

Reynolds, Jon O.; and Nowak, Albert M., to Miller Electric Mfg. Co. Power selection and protection circuit responsive to an input voltage for providing series or parallel connected inverters. 5,446,641, Cl. 363-17.000.

Reynolds Metal Company: *See*—
Armbrust, Bernard F., Jr., 5,445,808, Cl. 423-629.000.

Rhee, Woonza; Wallace, Donald G.; Michaels, Alan S.; Burns, Ramon A., Jr.; Fries, Louis; DeLustro, Frank; and Bentz, Hanne, to Collagen Corporation. Collagen-polymer conjugates containing an ether linkage. 5,446,091, Cl. 525-54.100.

Rhim, Hannong, to Kimberly-Clark Corporation. Method of preparing a nonwoven web of poly(vinyl alcohol) fibers. 5,445,785, Cl. 264-555.000.

Rhone-Poulenc Chimie: *See*—
Chizat, Francois; and Soldat, Andre, 5,446,087, Cl. 524-588.000.

Schuppiser, Jean-Luc; and Knipper, Magali, 5,446,014, Cl. 504-250.000.

Richards, John W.: *See*—
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Richards, Mark R.: *See*—
Noel, John R.; Richards, Mark R.; and Krautter, Edward H., 5,445,777, Cl. 264-113.000.

Richards, Paul N., to Xerox Corporation. Signature booklet maker with a modified fold blade and a trim waste elimination device. 5,445,592, Cl. 493-444.000.

Richmond, Frank M. Drip Chamber with luer fitting. 5,445,623, Cl. 604-251.000.

Richmond, Frank M. Spike with luer fitting. 5,445,630, Cl. 604-411.000.

Richter, Bela: *See*—
Sypula, Donald S.; Masmmino, Joseph; and Richter, Bela, 5,445,720, Cl. 204-181.100.

Richter, Simon J.; Totten, Kevin J.; Credle, William S., Jr.; and Boston, Thomas R., to Coca-Cola Company, The. Back-flow preventing bag valve for bag-in-box container. 5,445,186, Cl. 137-614.200.

Richtsmeier, Brent W.: *See*—
Russell, Todd L.; Richtsmeier, Brent W.; and Glassett, Kevin L., 5,446,487, Cl. 347-102.000.

Rickloff, James R.; Upchurch, Donald C.; and Childers, Robert W., to American Sterilizer Company. Optimum hydrogen peroxide vapor sterlization method. 5,445,792, Cl. 422-28.000.

Rickwood, Martin; and Marsden, Sean D., to Pilkington plc. Bridged spiroxazine photochromic compounds. 5,446,149, Cl. 544-71.000.

Rickwood, Martin; Marsden, Sean D.; and Askew, Victoria E., to Pilkington plc. Photochromic spiroxazine compounds. 5,446,150, Cl. 544-71.000.

Rickwood, Martin; Hepworth, John D.; Gabbutt, Christopher D.; and Marsden, Sean D., to Pilkington plc. Photo reactive spiro-benzoxazine compounds. 5,446,151, Cl. 544-71.000.

Ricoh Company, Ltd.: *See*—
Hayakawa, Kunio; and Torii, Masafumi, 5,446,011, Cl. 503-209.000.
Koike, Tadao, 5,446,524, Cl. 355-208.000.
Koshiishi, Takaho, 5,446,905, Cl. 395-750.000.
Li, Hong, 5,446,886, Cl. 395-600.000.
Motoyama, Tetsuro; and Chang, Yueh-Lin, 5,446,837, Cl. 395-145.000.
Otsuki, Satoshi, 5,446,826, Cl. 395-3.000.

Ricoh Company, Ltd: *See*—
Schwartz, Edward L., 5,446,560, Cl. 358-445.000.

Ricoh Corporation: *See*—
Motoyama, Tetsuro; and Chang, Yueh-Lin, 5,446,837, Cl. 395-145.000.
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Ricon Corporation: *See*—
Saucier, Stanton D.; Savaria, Pierre; Tremblay, Jules; and Tremblay, Nelson, 5,445,488, Cl. 414-546.000.

Riedl, Robert; and Randin, Jean-Paul, to Eta SA Fabriques d'Ebauches. Object having a rosy pink coloring. 5,445,892, Cl. 428-469.000.

Rieger, Bernhard: *See*—
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Riess, Jean G.: *See*—
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Riffard, Jean-Marie: *See*—
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Rigo, Stephen: *See*—
Malin, Richard A.; Cuozzo, Pasquale; and Rigo, Stephen, 5,445,074, Cl. 101-91.000.

Rigsby, Kenneth D. Adjustable container holder. 5,445,350, Cl. 248-313.000.

Riley, Claude R., Jr.; and Suneeri, Michael G. Automotive motion recorder. 5,445,024, Cl. 73-489.000.

Rintasalo, Umari: *See*—
Koponen, Ismo; Vainio, Jari; and Rintasalo, Umari, 5,445,055, Cl. 83-53.000.

Riordan, William J.: *See*—
Piran, Uri; Riordan, William J.; and Livshin, Laurie A., 5,445,936, Cl. 435-6.000.

Rippens, Roger A.: *See*—
Crowder, George; and Rippens, Roger A., 5,446,243, Cl. 174-250.000.

Ris, Jurg; Eglin, Hugo; Bonde, Mikael; Frey, Urs; and Bubendorf, Francois, to Niro-Aeromatic AG. Appliance for the wet cleaning of filter cartridges in fluidised-bed apparatuses, spray driers and moving-bed intallations. 5,444,892, Cl. 15-304.000.

Rist, Bruno A.: *See*—
Devries, Adrian J.; and Rist, Bruno A., 5,446,795, Cl. 380-13.000.

Ritter, Gerhard: *See*—
Ritter, Klaus; and Ritter, Gerhard, 5,446,254, Cl. 219-56.000.

Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.H. Process and installation for producing reinforcement wire meshes. 5,446,254, Cl. 219-56.000.

Rius, Antonio R.: *See*—
Lucas, Rafael P.; Blasco, Jose C.; and Rius, Antonio R., 5,445,069, Cl. 99-508.000.

Riverwood International Corporation: *See*—
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Roane, Jerry: *See*—
Burns, Carmen D.; Roane, Jerry; and Cady, James W., 5,446,620, Cl. 361-704.000.

Robbins, John B.: *See*—
Schneerson, Rachel; Levi, Lily; and Robbins, John B., 5,445,817, Cl. 424-194.100.

Robert Bosch GmbH: *See*—
Bantien, Frank; and Reihlen, Eckart, 5,446,437, Cl. 338-25.000.
Barth, Gunter; and Maier, Rolf, 5,445,442, Cl. 303-141.000.
Buchner, Norbert; Domke, Klaus; Reichert, Manfred; Stotkiewitz, Herbert; Wilke, Bernd; Zimmermann, abine; Lemke, Kuno; and Voegele, Guenther, 5,445,870, Cl. 428-214.000.
Gerhard, Albert; Betz, Dieter; and Streit, Walter, 5,445,122, Cl. 123-310.000.
Gohre, Jochen; and Moser, Winfried, 5,444,975, Cl. 60-274.000.
Kugler, Karl-Heinz; Gollin, Walter; and Zimmermann, Christian, 5,446,385, Cl. 324-388.000.
Rapps, Peter; Knoll, Peter; Pachner, Franz; Noll, Martin; and Fischer, Michael, 5,446,332, Cl. 310-324.000.
Wolff, Guenter; Mueller, Klaus; Alaze, Norbert; Friedow, Michael; and Gruber, Juergen, 5,445,448, Cl. 303-119.200.

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Roth, Scott S.; and Kirsch, Howard C., to Motorola, Inc. Semiconductor device and method of formation. 5,445,107, Cl. 117-8.000.
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Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., to Amoco Corporation. Increased throughput in melt fabrication and foaming of polyester. 5,446,111, Cl. 525-444.000.
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Ruff, Michael R.; Hill, Joanna M.; Kwart, Lawrence D.; and Pert, Candace B., to Advanced Peptides & Biotechnology Sciences. Potent non-opiate analgesic. 5,446,026, Cl. 514-15.000.
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Russ, Craig F., to Unisys Corporation. Method and apparatus for writing files on nonerasable storage medium. 5,446,857, Cl. 395-427.000.
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Rutkowski, William F.; Myers, Garry L.; and Bogue, B. Arlie, to Fuisz Technologies Ltd. Spinner head for flash flow processing. 5,445,769, Cl. 264-8.000.
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Hueller, Theodore H., 5,445,038, Cl. 73-864.630.
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Sakamoto, Masaaki: *See*—
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Sakamoto, Yuji, to Senju Seiyaku Kabushiki Kaisha. Support device for animal clamp. 5,445,353, Cl. 248-421.000.
Sakata, Shinji; Machida, Haruhiko; Ijichi, Katsushi; and Kano, Fumitaka, to Yamasa Shuyu Kabushiki Kaisha. 1-β-D-arabinofuranosyl-(E)-5-(2-halogenovinyl) uracil derivatives. 5,446,031, Cl. 514-50.000.
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Ishikawa, Takayuki; and Santo, Kouichi, 5,445,869, Cl. 428-209.000.
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Bosnyak, Robert J.; and Santoro, Mark R., 5,446,686, Cl. 365-49.000.
Santrade Ltd.: *See*—
Schermutzki, Konrad; and Wurmseher, Herbert, 5,445,108, Cl. 117-200.000.
Sapec S.A. fine chemicals: *See*—
Jequier, Pascal; and Marazza, Fabrizio, 5,446,156, Cl. 544-251.000.
Sarkar, Manisha: *See*—
Martinson, Robert E.; Stofko, John J.; Sarkar, Manisha; Hedrick, Steven T.; and Larson, Wayne K., 5,445,866, Cl. 428-195.000.

Sarraf, Sanwal P.: *See—*
Baek, Seung Ho.; Morrison, Robert I.; and Sarraf, Sanwal P., 5,446,477, Cl. 346-138.000.

Sasai, Hiroshi: *See—*
Ohmori, Masashi; Tanaka, Hiroshi; Nishimoto, Akira; Sasai, Hiroshi; Fujino, Naohiko; and Kotoh, Satoru, 5,445,171, Cl. 134-61.000.

Sasaki, Ichiro, to Brother Kogyo Kabushiki Kaisha. Printing apparatus having data memory and method therefor. 5,445,459, Cl. 400-76.000.

Sasaki, Junsou: *See—*
Hitomi, Mitsuo; Masuda, Shunji; Hattori, Toshihiko; Kashiyama, Kenji; and Sasaki, Junsou, 5,445,123, Cl. 123-311.000.

Sasaki, Keiichi: *See—*
Kitano, Masahiro; Ohfusa, Yoshitaka; Kohda, Katsuya; Sasaki, Keiichi; Okura, Hiroyuki; and Takeda, Katsumi, 5,446,841, Cl. 395-200.000.

Sasaki, Mitsuhiro: *See—*
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; Sasaki, Mitsuhiro; and Yamasaki, Harumasa, 5,446,527, Cl. 355-279.000.

Sasaki, Mitsuo; Kakizaki, Shinobu; Yamaoka, Fumiyuki; Takahashi, Toru; and Kimura, Makoto, to Atsugi Unisia Corporation. Apparatus for controlling damping coefficient for vehicular shock absorber. 5,446,663, Cl. 364-424.050.

Sasaki, Shoichi: *See—*
Kawakami, Hiroyuki; Yasuda, Masaaki; and Sasaki, Shoichi, 5,445,877, Cl. 428-283.000.

Sasaki, Toshio: *See—*
Tanaka, Toshihiro; Kato, Masataka; Sasaki, Toshio; Kume, Hitoshi; Kotani, Hiroaki; and Furusawa, Kazunori, 5,446,690, Cl. 365-185.000.

Sasaki, Yoshizumi: *See—*
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kurokawa, Jitsuo, 5,446,116, Cl. 526-68.000.

Sasse, Philip A.: *See—*
Durrance, Debra H.; and Sasse, Philip A., 5,446,100, Cl. 525-221.000.

Sato, Hajime, to Kabushiki Kaisha Toshiba. Liquid crystal display device with transparent conductive film between pixel electrodes and signal or scanning lines. 5,446,562, Cl. 359-59.000.

Sato, Hideaki: *See—*
Sekimoto, Yoshihiro; Inui, Toshiharu; Nakata, Yasuo; Ogata, Nobuo; and Sato, Hideaki, 5,446,721, Cl. 369-247.000.

Sato, Hideyuki, to NSK Ltd. Damping unit. 5,445,247, Cl. 188-266.000.

Sato, Katsuhiro: *See—*
Akasaki, Yutaka; Sato, Katsuhiro; and Nukada, Katsumi, 5,445,909, Cl. 430-14.000.

Sato, Keiichi; Kawaragi, Yuuji; and Higashino, Yasuko, to Mitsubishi Kasei Corporation. Dimerization method of lower olefins and alcohol production with dimerized products. 5,446,213, Cl. 568-883.000.

Sato Kogyo Co., Ltd.: *See—*
Fukushima, Haruo; and Soeda, Shosuke, 5,444,916, Cl. 33-361.000.

Sato, Mitsuhiko: *See—*
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukuda, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.

Sato, Mitsuo: *See—*
Yagi, Takashi; and Sato, Mitsuo, 5,445,072, Cl. 100-48.000.

Sato, Mitsutaka; and Yoshimoto, Masanori, to Fujitsu Limited. Single in-line package for surface mounting. 5,446,317, Cl. 257-734.000.

Sato, Shigehiro: *See—*
Iwai, Yoshio; Sato, Shigehiro; Mochizuki, Hideaki; Mizuno, Hiroaki; Kosako, Shinya; and Kurai, Hisako, 5,446,569, Cl. 359-78.000.

Sato, Tomoko: *See—*
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,446,022, Cl. 514-11.000.

Sato, Toshio: *See—*
Nakagawa, Kazuyo; and Sato, Toshio, 5,446,543, Cl. 356-405.000.

Sato, Yuichi, to Olympus Optical Co., Ltd. Camera. 5,446,513, Cl. 354-204.000.

Satoh, Masaru: *See—*
Masaki, Mitsuo; Yamakawa, Tomio; Satoh, Masaru; Takeda, Hiromitsu; Yoshino, Yasushi; and Matsukura, Hitoshi, 5,446,146, Cl. 540-575.000.

Satoh, Tadashige; and Fujita, Hisanori, to Mitsubishi Kasei Polytec Company; and Mitsubishi Kasei Corporation. Epitaxial wafer and process for producing the same. 5,445,897, Cl. 428-688.000.

Satomura, Seiichiro, to Canon Kabushiki Kaisha. Circuit for detecting a synchronous signal included in an information signal. 5,446,715, Cl. 369-49.000.

Saturn Corporation: *See—*
Motamedi, Nader; and Nitz, Larry T., 5,445,576, Cl. 477-105.000.
Reyes, Carlos C., 5,445,253, Cl. 192-4.00C.

Saucier, Stanton D.; Savaria, Pierre; Tremblay, Jules; and Tremblay, Nelson, to Ricon Corporation. Locking wheelchair lift. 5,445,488, Cl. 414-546.000.

Sauer, Gerd: *See—*
Gillner, Manfred; Mueller, Karl-Heinz; Pikhard, Siegfried; Engels, Juergen; Sauer, Gerd; Reul, Bernhard; Henn, Klaus; Maeuser, Helmut; Immerschitt, Stefan; and Neumann, Dieter, 5,445,694, Cl. 156-106.000.

Sauer, Robert A.: *See—*
Green, Randall L.; Sauer, Robert A.; and Ford, Gary P., 5,445,191, Cl. 138-126.000.

Sauerbier, Dieter: *See—*
Engel, Jurgen; Wolf-Heuss, Elisabeth; Orth, Helmut; Wichert, Burkhard; and Sauerbier, Dieter, 5,446,033, Cl. 514-77.000.

Sauter, Hubert: *See—*
Benoit, Remy; Sauter, Hubert; Kirstgen, Reinhard; Lorenz, Gisela; and Ammermann, Eberhard, 5,446,067, Cl. 514-640.000.

Savaria, Pierre: *See—*
Saucier, Stanton D.; Savaria, Pierre; Tremblay, Jules; and Tremblay, Nelson, 5,445,488, Cl. 414-546.000.

Savkar, Sudhir D.; Whipple, Walter, III; and Harris, Lawson P., to General Electric Company. Bottom pour melt flow rate measurement using magnetic field. 5,445,033, Cl. 73-861.120.

Sawa, Yoshihide: *See—*
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, 5,445,698, Cl. 156-307.700.

Sawada, Tomoyuki: *See—*
Kawanabe, Masatoshi; Sowa, Kenichi; Mori, Akihisa; and Sawada, Tomoyuki, 5,446,284, Cl. 174-261.000.

Saya, Daisuke: *See—*
Watanabe, Tsuneo; Takagi, Tadao; Saya, Daisuke; Suganuma, Ryouichi; and Fukino, Kunihiro, 5,446,331, Cl. 310-323.000.

Scammells, Peter J.: *See—*
Belardinelli, Luiz; Olsson, Ray; Baker, Stephen; and Scammells, Peter J., 5,446,046, Cl. 514-263.000.

Scanlan International, Inc.: *See—*
Blake, Kenneth R.; and Mobin-Uddin, Kazi, 5,445,632, Cl. 606-1.000.

Schaefer, Douglas P.: *See—*
Dean, Robert E.; Cadka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,446,853, Cl. 395-410.000.

Schaefer, Richard K. Electrical measuring and testing probe having a malleable shaft facilitating positioning of a contact pin. 5,446,393, Cl. 324-754.000.

Schaeffer, Arnold; Anderson, David R.; Palevich, Jack H.; and Rosenstein, Larry S., to Taligent, Inc. Object-oriented collaboration system. 5,446,842, Cl. 395-200.010.

Schaeffer, William R.: *See—*
Jonsson, Sonny; Sundell, Per-Erik G.; and Schaeffer, William R., 5,446,073, Cl. 522-104.000.

Schaller, Hubert: *See—*
Li, Ming; Sevenet, Thierry; Schaller, Hubert; Abdul Hadi, Hamid; Guenard, Daniel; Potier, Pierre; and Pilleux, Eric, 5,445,816, Cl. 424-62.000.

Schams, Wolfram: *See—*
Angenendt, Heinrich; Meier, Michael; and Schams, Wolfram, 5,446,201, Cl. 564-900.000.

Scharnberg, Donald G.; and Cooper, Patrick R., to Compaq Computer Corp. Circuit for clamping power output to ground while the computer is deactivated. 5,446,320, Cl. 307-100.000.

Schaupert, Kurt: *See—*
Krolla, Georg; Kissl, Paul; Nass, Peter; and Schaupert, Kurt, 5,446,008, Cl. 501-68.000.

Scheider, Merwin R., to Barber-Colman Company. Vending machine gearmotor. 5,446,326, Cl. 310-83.000.

Scheiflinger, Friedrich: *See—*
Dorner, Friedrich; Scheiflinger, Friedrich; and Falkner, Falko G., 5,445,953, Cl. 435-172.300.

Schelfhorst, Hendrik W. Roof for a silo or the like. 5,444,943, Cl. 52-63.000.

Schenk, Johannes: *See—*
Kepplinger, Leopold W.; Matzawrakos, Panajiotis; Schenk, Johannes; and Siuka, Dieter, 5,445,668, Cl. 75-491.000.

Schering Aktiengesellschaft: *See—*
Neef, Gunter; Steinmeyer, Andreas; Kirsch, Gerald; Schwarz, Katica; Thieroff-Ekerdt, Ruth; Wiesinger, Herbert; and Haberey, Martin, 5,446,035, Cl. 514-167.000.
Ottow, Eckhard; Wiechert, Rudolf; Neef, Gunter; Beier, Sybille; Elger, Walter; and Henderson, David A., 5,446,178, Cl. 552-510.000.
Scholz, Stefan; Ottow, Eckhard; Neef, Guenter; Elger, Walter; Beier, Sybille; and Chwalisz, Krzysztof, 5,446,036, Cl. 514-175.000.

Schering Corporation: *See—*
Shih, Neng-Yang; Mangiaracina, Pietro; Green, Michael J.; and Ganguly, Ashit K., 5,446,069, Cl. 514-681.000.

Scherle, Hans-Jurgen: *See—*
Maute, Dieter; and Scherle, Hans-Jurgen, 5,445,571, Cl. 474-219.000.

Schermutzki, Konrad; and Wurmseher, Herbert, to Santrade Ltd. Process and apparatus for the crystallization of a melt. 5,445,108, Cl. 117-200.000.

Schierbeek, Kenneth L.: *See—*
Lynam, Niall R.; O'Farrell, Desmond J.; Schierbeek, Kenneth L.; and Hansen, Michael A., 5,446,576, Cl. 359-267.000.

Schindler, David B.: *See—*
Bromer, Carl B.; and Schindler, David B., 5,445,417, Cl. 281-46.000.

Schirtzinger, Gary A., to United Technologies Corporation. Tab locked pin attachment mechanism. 5,445,470, Cl. 403-79.000.

Schlam, Elliott: *See—*
Budzilek, Russell A.; Monarchie, Dominick L.; Podoba, Myroslaw; Schlam, Elliott; and Swatson, Richard R., 5,445,899, Cl. 428-690.000.

Schliephack, Christian, to Renk Aktiengesellschaft. Electrically insulated self adjusting bearing. 5,445,457, Cl. 384-277.000.

Schlittler, Kendall E.: *See—*
Martin, John R.; Cederholm, Roger; Schlittler, Kendall E.; and Wenzel, Ronald, 5,445,341, Cl. 242-527.300.

Schlosser, Hubert; and Kaltbeitzel, Anke, to Hoechst Aktiengesellschaft. 3-fluoropyridines, process for their preparation, and their use in liquid-crystal mixtures. 5,445,763, Cl. 252-299.610.

Schmid & Wezel GmbH & Co.: *See—*
Elmer, Stefan, 5,445,561, Cl. 452-133.000.

Schmidt, Beat: *See—*
Maag, Hans; Rose, Samuel J.; and Schmidt, Beat, 5,446,137, Cl. 536-23.100.

Schmidt, Roland; Stroehlein, Hans; and Weller, Thomas, to Siemens Aktiengesellschaft. Mounting assembly for an axle in a housing. 5,446,778, Cl. 378-125.000.

Schmitt, Thomas: *See—*
Aichinger, Horst; and Schmitt, Thomas, 5,446,780, Cl. 378-204.000.

Schmuck, Arno; Draber, Edgar; and Missfeldt, Michael, to Agfa-Gevaert AG. Color photographic recording material. 5,445,928, Cl. 430-508.000.

Schneeberger, Winfried: *See—*
Bechtel, Hans-Peter; and Schneeberger, Winfried, 5,445,495, Cl. 415-177.000.

Schneerson, Rachel; Levi, Lily; and Robbins, John B., to United States of America, Health and Human Services. Pertussis toxin used as a carrier protein with non-charged saccharides in conjugate vaccines. 5,445,817, Cl. 424-194.100.

Schneider, Gottfried: *See—*
Peschka, Walter; Carpetis, Constantin; and Schneider, Gottfried, 5,445,666, Cl. 75-335.000.

Schneider, James G.: *See—*
Kee, Kok-Hiong; Schneider, James G.; and Kartchner, Gene B., 5,445,141, Cl. 128-203.120.

Schneider, Michel; Tournier, Herve ; and Lamy, Bernard, to Bracco International B.V. Injectable opacifying composition containing liposomes of high encapsulating capacity for x-ray examinations. 5,445,810, Cl. 424-9.400.

Schneider, Michel; Brochot, Jean; Puginier, Jerome; and Yan, Feng, to Bracco International B.V. Stable microbubble suspensions as enhancement agents for ultrasound echography. 5,445,813, Cl. 424-9.510.

Schneider, Michel: *See—*
Blaineu, Pierre-Louis; Legoux, Richard; Legusy, Jean-Jacques; and Schneider, Michel, 5,446,138, Cl. 536-23.740.

Schoendorfer, Donald W.; and Miller, William R., to Sudor Partners. Method and apparatus for determination of chemical species in body fluid. 5,445,147, Cl. 128-632.000.

Scholz, Stefan; Ottow, Eckhard; Neef, Guenter; Elger, Walter; Beier, Sybille; and Chwalisz, Krzysztof, to Schering Aktiengesellschaft. 13-alkyl-11beta-phenylgonanes. 5,446,036, Cl. 514-175.000.

Schott Glass Technologies, Inc.: *See—*
Krashkevich, David G.; and Pucilowski, Sally, 5,446,007, Cl. 501-64.000.

Schott Glaswerke: *See—*
Krolla, Georg; Kissl, Paul; Nass, Peter; and Schaupert, Kurt, 5,446,008, Cl. 501-68.000.

Schowe, Lester F., to Maxtor Corporation. Digital motor communication circuit and method. 5,446,353, Cl. 318-254.000.

Schreck, Zoltan, to Park Medical Systems Inc. Center photodetector determination in a digital scintillation camera. 5,446,287, Cl. 250-369.000.

Schroeder, Mel: *See—*
Laborde, Edgardo; and Schroeder, Mel, 5,446,044, Cl. 514-252.000.

Schroeder, Myron E.: *See—*
Taylor, Don M.; Allen, Lynn M.; and Schroeder, Myron E., 5,446,229, Cl. 585-648.000.

Schuler, Edward F.: *See—*
Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., 5,445,957, Cl. 435-200.000.

Schultz, David A.: *See—*
Torgerson, Kevin L.; Keefe, Kevin M.; Schultz, David A.; and Matsuzawa, Minoru, 5,445,357, Cl. 251-146.000.

Schuppiser, Jean-Luc; and Knipper, Magali, to Rhone-Poulenc Chimie. Cationic compound/xanthan gum aqueous compositions. 5,446,014, Cl. 504-250.000.

Schuster, Fritz: *See—*
Hees, Udo; Assman, Georg; and Schuster, Fritz, 5,446,210, Cl. 568-678.000.

Schutz, Rudolph W.: *See—*
Neveu, Jean-Louis; Schutz, Rudolph W.; and Lipp, George, 5,445,345, Cl. 242-597.600.

Schutz, Udo. Lid seal for wide-mouthed barrels of synthetic resin. 5,445,293, Cl. 220-319.000.

Schwalke, Udo, to Siemens Aktiengesellschaft. Method for manufacturing a trench in a substrate for use in smart-power technology. 5,445,988, Cl. 437-67.000.

Schwartz, Edward L., to Ricoh Company, Ltd; and Ricoh Corporation. Method and apparatus for raster to block and block to raster pixel conversion. 5,446,560, Cl. 358-445.000.

Schwartz, Herbert, to Timex Corporation. Analog timepiece movement. 5,446,703, Cl. 368-80.000.

Schwarz, Katica: *See—*
Neef, Gunter; Steinmeyer, Andreas; Kirsch, Gerald; Schwarz, Katica; Thieroff-Ekerdt, Ruth; Wiesinger, Herbert; and Haberey, Martin, 5,446,035, Cl. 514-167.000.

Schwarz, Roy: *See—*
Angelli-Szafran, Corinne E.; Jaca, Juan C.; Schwarz, Roy; and Thomas, Anthony J., 5,446,057, Cl. 514-356.000.

Schwendeman, Robert J.: *See—*
Siwiak, Kazimierz; Schwendeman, Robert J.; and Breeden, Robert L., 5,446,922, Cl. 455-277.200.

Schwendemann, Volker; Glaser, Klaus; Tschang, Chung-Ji; Burkhart, Bernd; Oftring, Alfred; and Dung, Bernhard, to BASF Aktiengesellschaft. Production of nickelized shaped articles. 5,445,727, Cl. 205-271.000.

Schwendemann, Volker: *See—*
Burkhart, Bernd; Oftring, Alfred; Schwendemann, Volker; and Glaser, Klaus, 5,445,724, Cl. 205-259.000.

Schwendemann, Walter; and Wang, Peter C., to International Business Machines Corporation. Database recovery apparatus and method. 5,446,884, Cl. 395-600.000.

Scientific Design Company, Inc.: *See—*
Bortinger, Arie, 5,446,000, Cl. 502-38.000.

Sciened Life Systems Incorporated: *See—*
Sieben, Wayne, 5,445,155, Cl. 128-660.070.

Sciened Lifesystems, Inc.: *See—*
Euteneuer, Charles L.; Fraser, Phlayne M.; Burmeister, Paul H.; and Peterson, Dean A., 5,445,646, Cl. 606-198.000.

Scios Nova Inc.: *See—*
Andy, Robin J.; and Larson, Eric R., 5,446,020, Cl. 514-3.000.

Scott, Blayney J.; Gilbert, Barry G.; and Cowan, George R., to Scott Plastics Ltd. Foam generating apparatus for attachment to hose delivering pressurized liquid. 5,445,226, Cl. 169-15.000.

Scott, Danny E.; Lu, Mou-Chih; and Pessier, Rudolf C. O., to Baker Hughes Incorporated. Earth-burning bit having an improved hardfaced tooth structure. 5,445,231, Cl. 175-374.000.

Scott, James R.; and Hrytsak, Andrew R. Bracket for supporting fence posts. 5,444,951, Cl. 52-169.900.

Scott, John D.: *See—*
Cook, Malcolm R.; and Scott, John D., 5,446,215, Cl. 570-142.000.

Scott Plastics Ltd.: *See—*
Scott, Blayney J.; Gilbert, Barry G.; and Cowan, George R., 5,445,226, Cl. 169-15.000.

Scribner, Cliff J., to Motorola, Inc. Method for detecting mold plate information and plate mold matching system. 5,445,774, Cl. 264-40.500.

Scriven, Eric F. V.; Keay, James G.; and Zhang, Tony, to Reilly Industries, Inc. Preparation of hydrazones, dihydrothiadiazoles and triazinones. 5,446,163, Cl. 546-277.000.

Seagate Technology, Inc.: *See—*
Brunner, Mark; Hall, Jonathan; and Korbel, Garry, 5,446,606, Cl. 360-75.000.

Searer, Floyd A.; and Tack, Charles W., to Fas, Inc. Trim molding with removable insert. 5,444,956, Cl. 52-312.000.

SEB S.A.: *See—*
Rosset, Roger, 5,445,066, Cl. 99-446.000.

Sebor, Pavel, to Gale Group, Inc. Nestable dolly construction. 5,445,396, Cl. 280-33.998.

Seela, Frank; Bourgeouis, Werner; Gumbiowski, Rainer; Roling, Angelika; Rosemeyer, Helmut; Mertens, Alfred; Zilch, Harald; Konig, Bernhard; and Koch, Edith, to Boehringer Mannheim GmbH. Purine analog nucleoside and nucleotide compounds. 5,446,139, Cl. 536-26.700.

Seemar, George H. Variable pitch propellers. 5,445,497, Cl. 416-131.000.

Sefcik, Michael C.: *See—*
Haka, Raymond J.; and Sefcik, Michael C., 5,445,246, Cl. 188-77.00R.

Seger, Peter R.; and Fanelli, Michael J., to Eastman Kodak Company. Reel-locking device. 5,445,344, Cl. 242-597.300.

Seidel, Christoph; Burns, Geoffrey; and Engel, Wolf-Dieter, to Boehringer Mannheim GmbH. Streptolysin O peptide antigens and methods for the determination of streptolysin antibodies. 5,445,820, Cl. 424-237.100.

Seiko Epson Corporation: *See—*
Lentz, Derek J.; Kosmal, David R.; and Poole, Glenn C., 5,446,836, Cl. 395-141.000.
Uchiyama, Yukihiro, 5,445,458, Cl. 400-55.000.
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,446,485, Cl. 347-72.000.
Yamada, Tadashi; and Ishikawa, Hiroyuki, 5,446,712, Cl. 369-44.160.

Seitz, Friedrich: *See—*
Weber, Martin; Seitz, Friedrich; Jung, Andreas; and Guentherberg, Norbert, 5,446,094, Cl. 525-93.000.

Seki, Kazuo: *See—*
Yamada, Yonekazu; Yoshino, Yutaka; Kitada, Mitsuhira; and Seki, Kazuo, 5,445,309, Cl. 228-170.000.

Seki, Shun-ichi: *See—*
Eda, Kazuo; Taguchi, Yutaka; Onishi, Keiji; and Seki, Shun-ichi, 5,446,330, Cl. 310-313.00R.

Sekiguchi, Fumio: *See—*
Kawaguchi, Yuki; Hirai, Yohji; Inoue, Satoru; Kita, Kazuhiro; and Sekiguchi, Fumio, 5,446,551, Cl. 358-335.000.

Sekiguchi, Shinichi; Kusukawa, Hirotaka; and Tobita, Kenichi, to Nissan Motor Co., Ltd. Multiple-disc clutch type electronically controlled differential limiting device with a torsional damper for each driver shaft. 5,445,574, Cl. 475-346.000.

Sekiguchi, Tomohiro: *See*—
Yokomakura, Mitsunori; Uematsu, Kyouichi; Imai, Kanji; Sekiguchi, Tomohiro; and Nakatani, Toshifumi, 5,446,337, Cl. 313-422.000.

Sekimoto, Yoshihiro; Inui, Toshiharu; Nakata, Yasuo; Ogata, Nobuo; and Sato, Hideaki, to Sharp Kabushiki Kaisha. Objective lens drive device with support system. 5,446,721, Cl. 369-247.000.

Sekine, Sigeki: *See*—
Koike, Yoshihiko; Saito, Ryuichi; Sekine, Sigeki; and Wakisawa, Yuuji, 5,446,318, Cl. 257-707.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamada, Yonekazu; Yoshino, Yutaka; Kitada, Mitsuhira; and Seki, Kazuo, 5,445,309, Cl. 228-170.000.

Sekiya, Jeffrey G.; Stayton, Michael W.; and Temoshenko, Leo, to IBM Business Machines Corporation. System and method for obtaining network performance data. 5,446,680, Cl. 364-550.000.

Selby, Judith A.: *See*—
Balgeman, Timothy E.; Clodi, Diane M.; Haddleton, Robert W., Jr.; North, John R.; and Selby, Judith A., 5,446,880, Cl. 395-600.000.

Semitool, Inc.: *See*—
Thompson, Raymon F.; and Owczarz, Aleksander, 5,445,172, Cl. 134-153.000.

Senbokuya, Haruo: *See*—
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; Hayashida, Tadashi; and Minato, Terio, 5,445,683, Cl. 148-317.000.

Senju Seiyaku Kabushiki Kaisha: *See*—
Sakamoto, Yuji, 5,445,353, Cl. 248-421.000.

Seo, Jin-gyo, to Samsung Electronics Co., Ltd. Digital signal processing system. 5,446,456, Cl. 341-118.000.

Seo, Joo O.: *See*—
Ahn, Hyung S.; No, Min S.; Si, Sang K.; Choi, Won T.; Seo, Joo O.; Lim, Jin H.; and Yang, Min, 5,445,993, Cl. 431-129.000.

Sepracor Inc.: *See*—
Girot, Pierre; and Boschetti, Egisto, 5,445,732, Cl. 210-198.200.

Serizay, Dominique, to Framatome Connectors France. Shielding band for electrical connectors and connector fitted with same. 5,445,542, Cl. 439-609.000.

Servo Corporation of America: *See*—
Grosskopf, George, Jr., 5,446,451, Cl. 340-682.000.

Seto, Kaoru: *See*—
Maekawa, Shinichiro; Seto, Kaoru; Kawana, Takashi;; and Kosaka, Toru, 5,446,550, Cl. 358-298.000.

Setteducati, Mark. Table top magic theater set. 5,445,565, Cl. 472-57.000.

Seung-Lyul, Choi, to Samsung Electronics Co., Ltd. Pinch roller cleaning apparatus of tape recording/reproduction device. 5,446,614, Cl. 360-137.000.

Sevenet, Thierry: *See*—
Li, Ming; Sevenet, Thierry; Schaller, Hubert; Abdul Hadi, Hamid; Guenard, Daniel; Potier, Pierre; and Pilleux, Eric, 5,445,816, Cl. 424-62.000.

Sevvom, Hossein F.: *See*—
Dean, Robert E.; Cacka, Steven C.; Schaefer, Douglas P.; Sevvom, Hossein F.; and Brumnet, Robert A., 5,446,853, Cl. 395-410.000.

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Cattoen, Thierry; Duturc, Daniel; and Vaquier, Mariannick, 5,445,021, Cl. 73-178.00R.

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Shelby, Charles B., 5,445,315, Cl. 229-117.060.

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Lenk, Leopold, 5,445,082, Cl. 105-4.100.

SGS-Thomson Microelectronics, Inc.: *See*—
Marks, Ted M., 5,446,390, Cl. 324-555.000.
McClure, David C., 5,446,698, Cl. 365-230.030.
Ryat, Marc H., 5,446,457, Cl. 341-136.000.

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Horsfall, Wayne L.; and Shipton, Gary, 5,446,411, Cl. 329-325.000.

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Casati, Paolo; and Magni, Pierangelo, 5,445,995, Cl. 437-211.000.

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North, Tom; and Siu, Francis, 5,446,691, Cl. 365-189.020.

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Gardner, Timothy S.; Stahl, Ronald P.; and Shafaat, Syed T., 5,446,710, Cl. 369-44.140.

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Wang, Chao-Huei J.; and Shah, Dinesh O., 5,445,969, Cl. 436-526.000.

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Shah, Vatsal M.: *See*—
Tuohey, David; Bartels, Craig R.; and Shah, Vatsal M., 5,445,731, Cl. 202-173.000.

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Michalek, Jan K.; and Shahrodi, Ebrahim B., 5,446,348, Cl. 315-209.0SC.

Shaner, John F.; and Evans, Daniel W., to Associated Materials, Inc. Vinyl door panel section. 5,445,208, Cl. 160-232.000.

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Casci, John L.; Shannon, Mervyn D.; and Lake, Ivan J. S., 5,446,234, Cl. 585-467.000.

Sharp Kabushiki Kaisha: *See*—
Juso, Hiromi; and Tanaka, Takeshi, 5,446,911, Cl. 395-800.000.
Nakazawa, Kiyoshi; Katayama, Mikio; Kato, Hiroaki; and Imaya, Akihiko, 5,446,568, Cl. 359-59.000.
Sekimoto, Yoshihiro; Inui, Toshiharu; Nakata, Yasuo; Ogata, Nobuo; and Sato, Hideaki, 5,446,721, Cl. 369-247.000.
Takashi, Hayakawa, 5,446,563, Cl. 359-72.000.
Torimaru, Yasuo, 5,446,688, Cl. 365-145.000.
Yoshida, Yoshio; Kurata, Yukio; and Tsuji, Shigeki, 5,446,719, Cl. 369-116.000.

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Cappa, Stephen P.; Sharpe, Benjamin W.; and Foster, Gregg S., 5,446,882, Cl. 395-600.000.

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Cidon, Israel; Georgiadis, Leonidas; Guerin, Roch A.; Shavitt, Yuval Y.; and Slater, Andrew E., 5,446,737, Cl. 370-85.500.

Shawhan, Jim; Cox, Gary L.; and Woedl, Steve, to Vandor Corporation. Fluid-encapsulating casket mattress. 5,444,900, Cl. 27-19.000.

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Clayton, William, Jr.; and Shchedrin, Dmitry, 5,445,013, Cl. 73-117.000.

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Fiorenza, John A., II; Dykstra, Richard A.; Pfaff, Joseph L.; Wesenberg, Scott L.; and Shears, Douglas, 5,445,014, Cl. 73-117.300.

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Harris, J. Milton, 5,446,090, Cl. 525-54.100.

Sheckles, Harold, to Kelly Box & Packaging Corporation. Corrugated temporary seat. 5,445,835, Cl. 297-440.120.

Shehata, Hussein A., to Fabrite Scientific Corp. Waterproof, blood-proof and virus-proof breathable laminates. 5,445,874, Cl. 428-252.000.

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Handlin, Dale L., Jr.; Erickson, James R.; and Stewart, David R., 5,446,104, Cl. 525-314.000.
Hoxmeier, Ronald J.; Spence, Bridget A.; Chin, Steven S.; and Masse, Michael A., 5,446,093, Cl. 525-89.000.
Pritchard, Michael D.; McCain, James R.; McCain, Gary R.; and Bright, Mark D., 5,445,222, Cl. 116-298.000.
Sgouros, George E.; and Gallaher, Dale M., 5,445,476, Cl. 405-224.000.

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Danishefsky, Samuel J.; Bornmann, William G.; and Shen, Wang, 5,446,047, Cl. 514-280.000.

Shen, Ya X.; and Thompson, Robert, to W. L. Gore & Associates, Inc. Fluorinated acrylic monomers containing urethane groups and their polymers. 5,446,118, Cl. 526-245.000.

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Barbee, Steven G.; Datta, Madhav; Heinz, Tony F.; Li, Leping; Ratzlaff, Eugene H.; and Shenoy, Ravindra V., 5,445,705, Cl. 156-627.100.

Shepard, James M. Flexible closures formed of interlocking segments. 5,445,206, Cl. 160-201.000.

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Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,446,120, Cl. 528-171.000.

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Strum, Michael J.; Goldberg, Alfred; Sherby, Oleg D.; and Landingham, Richard L., 5,445,685, Cl. 148-324.000.

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Farr, Glyn P. R.; and Sheriff, Philip W., 5,445,447, Cl. 303-117.100.

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Kee, Kok-Hiong; Schneider, James G.; and Kartchner, Gene B., 5,445,141, Cl. 128-203.120.

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Endo, Yukio; Harada, Nozomu; Shibata, Hidenori; and Matsunaga, Yoshiyuki, 5,446,693, Cl. 348-320.000.

Shibata, Kazuo: *See*—
Fujikawa, Koji; Shibata, Kazuo; Katayama, Kenshi; and Yamamoto, Masahito, 5,446,555, Cl. 358-406.000.

Shibata, Kimihiro: *See*—
Sakamoto, Hiroki; Shibata, Kimihiro; and Mori, Kiyokazu, 5,446,257, Cl. 219-121.630.

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Kaneko, Shuzo; Okada, Shinjiro; Yuasa, Satoshi; Shinjo, Katsuhiko; Miyata, Hirokatsu; and Shibata, Masaaki, 5,446,570, Cl. 359-87.000.

Shibayama, Motoaki: *See*—
Takahata, Ryoichi; and Shibayama, Motoaki, 5,446,018, Cl. 310-90.500.

Shida, Kazuki; and Onda, Yuji, to Nissan Motor Co., Ltd. Axle beam type suspension arrangement for automotive vehicle. 5,445,404, Cl. 280-689.000.

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Ackley, Donald E.; Shieh, Chan-Long; Lebby, Michael S.; Lee, Hsing-Chung; and Grodzinski, Piotr, 5,446,752, Cl. 372-46.000.

Shigematsu, Kazuo: *See*—
Shimizu, Kikuo; and Shigematsu, Kazuo, 5,446,718, Cl. 369-59.000.

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Shigeta, Atsushi: *See*—
Kodera, Masako; Yano, Hiroyuki; Shigeta, Atsushi; Aoki, Riichirou; Yajima, Hiromi; and Okano, Haruo, 5,445,996, Cl. 437-225.000.

Shih, Barry: *See*—
Shih, Bohr-Winn; and Shih, Barry, 5,446,235, Cl. 84-95.200.

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Shih, Kung: *See*—
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Shih, Lionel C.: *See*—
Adams, Stephen M.; and Shih, Lionel C., 5,446,602, Cl. 360-48.000.

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Shih, Ruey-Sheng; Yeh, Kevin J.; Chow, Show-Shyang; Hung, Jui-Chi; and Chen, Shi-Shiow, to Industrial Technology Research Corporation. Hydraulic shock absorbing device for a bicycle front fork. 5,445,366, Cl. 267-140.130.

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Nagasawa, Kenichi; and Shikakura, Akihiro, 5,446,744, Cl. 371-37.400.

Shikata, Shinichi: *See*—
Nakahata, Hideaki; Hachigo, Akihiro; Higaki, Kenjiro; and Shikata, Shinichi, 5,446,329, Cl. 310-313.00A.

Shima, Takeshi; Nakaba, Katsuji; Kobayashi, Masaharu; and Sakamoto, Yukinori, to Tomoegawa Paper Co., Ltd. Liquid adhesive for electronic parts and process for forming insulating adhesive layer using the same. 5,446,080, Cl. 524-99.000.

Shimada, Keizo: *See*—
Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, 5,446,645, Cl. 363-71.000.

Shimada, Masahiko: *See*—
Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.

Shimada, Yozo: *See*—
Usui, Minoru; Koto, Haruhiko; Nakamura, Haruo; Shimada, Yozo; and Abe, Tomoaki, 5,446,485, Cl. 347-72.000.

Shimadzu Corporation: *See*—
Sugie, Masami; and Asako, Hirofumi, 5,445,153, Cl. 128-653.500.

Shimazu, Hiroto: *See*—
Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masatera, 5,445,713, Cl. 162-304.000.

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Shimizu, Kunio: *See*—
Ogisu, Yukihisa; and Shimizu, Kunio, 5,446,875, Cl. 395-575.000.

Shimizu, Norio; Fukuzono, Shinichi; Nishimura, Nobuko; Fujimori, Kiyoshi; and Odawara, Yoji, to Hitachi, Ltd. Process for culturing recombinant cells. 5,445,948, Cl. 435-69.700.

Shimizu, Shigeki, to Kanto Special Steel Works, Ltd. Cold rolling work roll. 5,445,589, Cl. 492-58.000.

Shimizu, Shinji: *See*—
Yasui, Tokumasa; Shimizu, Shinji; and Nishimura, Kotaro, 5,446,689, Cl. 365-154.000.

Shimizu, Tamotsu, to Minolta Camera Kabushiki Kaisha. Developing device having a developer transport roller with a magnetic field distribution that eliminates streaking and fogging. 5,446,526, Cl. 355-251.000.

Shimizu, Tetsuhiko; and Koiwai, Tomomi, to Kabushiki Kaisha Izumi Seiki Seisakusho. Food processor. 5,445,332, Cl. 241-100.000.

Shimoda, Hideyoshi: *See*—
Fukuda, Hideo; Fujita, Haruhiko; Shimoda, Hideyoshi; and You, Shiryu, 5,446,098, Cl. 525-194.000.

Shimoda, Yoshihito: *See*—
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hisashi; Tsuji, Takahiro; and Oishi, Keiichiro, 5,445,687, Cl. 148-433.000.

Shimoda, Yoshitaka: *See*—
Anazawa, Noboru; and Shimoda, Yoshitaka, 5,446,101, Cl. 525-239.000.

Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, to Mita Industrial Co., Ltd. Image forming apparatus having self-repair function and self-repair method for the apparatus. 5,446,523, Cl. 355-207.000.

Shin, Dong-Il: *See*—
Bloomfield, John W.; Bischoff, Rudi A.; Payne, Robert L.; Wagner, Scott B.; Sang-Gweon, Kim; Tae-Sik, Kim; Ji-Hyun, Kim; Joon-Young, Jeong; Chang-Hyun, Yoo; and Shin, Dong-Il, 5,446,445, Cl. 340-521.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Ogawa, Masahiko; and Irifune, Shinji, 5,445,867, Cl. 428-195.000.
Uehara, Katsuhiro; Endo, Mikio; Araki, Hitoyuki; Arai, Takeo; and Kawase, Yasuhiro, 5,446,181, Cl. 556-424.000.
Yaginuma, Atsushi; Hasebe, Nobuyuki; Kimura, Tsuneo; and Arai, Masatoshi, 5,445,873, Cl. 428-220.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Hosokawa, Kaoru, 5,445,554, Cl. 451-11.000.

Shin Jiuh Corp.: *See*—
Lin, Ching-Chuan, 5,446,251, Cl. 200-284.000.

Shin, Won G.; Kim, Dae H.; and Hong, Jong H., to Hyundai Electronics Industries Co., Ltd. Register addressing control circuit including a decoder and an index register. 5,446,859, Cl. 395-427.000.

Shinjo, Katsuhiko: *See*—
Kaneko, Shuzo; Okada, Shinjiro; Yuasa, Satoshi; Shinjo, Katsuhiko; Miyata, Hirokatsu; and Shibata, Masaaki, 5,446,570, Cl. 359-87.000.

Shinkai, Ichiro: *See*—
Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

Shinoda, Kazuki: *See*—
Hasebe, Tetsuya; Hayashi, Hiroaki; and Shinoda, Kazuki, 5,446,748, Cl. 371-61.000.

Shinsho, Katsuhiko: *See*—
Kaneko, Norio; Shinsho, Katsuhiko; and Yamamoto, Keisuke, 5,446,684, Cl. 365-46.000.

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Kakizaki, Takeyoshi; Ikeda, Kenji; and Shiozaki, Tetsuya, 5,445,271, Cl. 206-459.500.

Shipe, Joanne E.: *See*—
Korsunsky, Iosif; Shipe, Joanne E.; Harlan, Tod M.; Foreman, Gerald L.; Klotz, Robert C.; and Brown, Robert W., 5,444,906, Cl. 29-741.000.

Shipton, Gary: *See*—
Horsfall, Wayne L.; and Shipton, Gary, 5,446,411, Cl. 329-325.000.

Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, to Hitachi, Ltd. Inverter apparatus and uninterruptible power supply using the same. 5,446,645, Cl. 363-71.000.

Shiraishi, Hisanori: *See*—
Hasegawa, Naoyuki; Ishida, Seiji; and Shiraishi, Hisanori, 5,445,682, Cl. 148-241.000.

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Shiraishi, Shuji: *See*—
Ikeda, Tooru; Ohmomo, Naoki; Kirya, Hironobu; Nishihara, Takashi; and Shiraishi, Shuji, 5,446,657, Cl. 364-424.050.

Shirakawa, Masakazu: *See*—
Nakano, Motohiro; and Shirakawa, Masakazu, 5,446,739, Cl. 370-95.300.

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Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,445,910, Cl. 430-106.600.

Shishido, Motoyoshi: *See*—
Koishikawa, Koji; and Shishido, Motoyoshi, 5,445,548, Cl. 440-89.000.

Shodeen, Keith; Davenport, Stewart; and Meigaard, Hans L., to Despatch Industries Limited Partnership. Ultraviolet passthrough sterilization device. 5,446,289, Cl. 250-455.110.

Shoei Kako Kabushiki Kaisha: *See*—
Taniuchi, Fujio, 5,444,875, Cl. 2-424.000.

Shoji, Hiroo: *See*—
Koseki, Masamori; Shoji, Hiroo; and Miura, Ken, 5,446,656, Cl. 364-424.020.

Shokry Rashwan, Mohamed M.; and Burrows, Barry, to Integrated Construction Engineering Systems Inc. Mobile crushing plant. 5,445,330, Cl. 241-78.000.

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Funami, Yasuo; Takayanagi, Hisao; and Toyoshima, Omito, 5,444,979, Cl. 60-460.000.

Shtalman, Alexander J., to Northern Telecom Limited. Two-wire telecommunications line detection arrangements. 5,446,786, Cl. 379-377.000.

Shubert, Lawrence G.: *See*—
Lucey, Robert E.; Ela, John; Lada, Christopher O.; Shubert, Lawrence G.; and Loew, Christopher, 5,446,788, Cl. 379-430.000.

Shulman, Burt, to American Tack & Hardware Co., Inc. Anti-flicker night light. 5,446,343, Cl. 315-156.000.

Si, Sang K.: *See*—
Ahn, Hyung S.; No, Min S.; Si, Sang K.; Choi, Won T.; Seo, Joo O.; Lim, Jin H.; and Yang, Min, 5,445,993, Cl. 431-129.000.

Sieben, Wayne, to Scimed Life Systems Incorporated. Intravascular imaging apparatus and methods for use and manufacture. 5,445,155, Cl. 128-660.070.

Siegel, Michael S.: *See*—
Chou, Norman C.; D'Avignon, Edward J.; Gregerson, James C.; Robinson, James R.; Siegel, Michael S.; Smoolca, Michael A.; and Van Norstrand, Albert J., Jr., 5,446,913, Cl. 395-800.000.
Siegfried, Robert W. Dry sunscreen composition. 5,445,815, Cl. 424-59.000.
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Wityak, John; and Sielecki-Dzurdz, Thais M., 5,446,056, Cl. 514-340.000.
Siemens Aktiengesellschaft: *See*—
Aichinger, Horst; and Schmitt, Thomas, 5,446,780, Cl. 378-204.000.
Dittmann, Michael; and Kruger, Erwin, 5,446,626, Cl. 361-785.000.
Eichfeld, Herbert, 5,446,438, Cl. 340-146.200.
Lindegren, Ulf; Freiler, Helmut; and Lorenz, Peter, 5,445,859, Cl. 428-76.000.
Schmidt, Roland; Stroehlein, Hans; and Weller, Thomas, 5,446,778, Cl. 378-125.000.
Schwalke, Udo, 5,445,988, Cl. 437-67.000.
Swart, Marten; Eigler, Jurgen; and Vogt, Richard, 5,446,442, Cl. 340-438.000.
Zorner, Walter, 5,445,027, Cl. 73-593.000.
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Siemens Components, Inc.: *See*—
Whitney, David, 5,445,974, Cl. 437-6.000.
Whitney, David, 5,446,295, Cl. 257-113.000.
Siemens Medical Systems, Inc.: *See*—
Gerig, Lee H.; and El-Hakim, Sabry F., 5,446,548, Cl. 356-375.000.
Siemon, Marty K.: *See*—
Bienz, Richard A.; Carson, Lansing M.; and Siemon, Marty K., 5,446,423, Cl. 332-170.000.
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Boyer, Jeffrey E.; Brashaw, Mark J.; Cummins, Brad L.; Erickson, Timothy K.; O'Brien, Gary R., Jr.; and Sies, Duane J., 5,446,531, Cl. 356-72.000.
Siggers, David L., to Hitech Holding, Inc. Apparatus for enhancing concentration. 5,445,513, Cl. 425-200.000.
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Sigma Imaging Systems, Inc.: *See*—
Yien, Richard S.; and Stratigos, William N., 5,446,740, Cl. 370-110.100.
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Burger, Jacob C.; Sijtsema, Petrus J. J. M.; Lakeman, Jan D.; and Cain, Frederick W., 5,445,834, Cl. 426-3.000.
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Yilmaz, Hamza, 5,445,978, Cl. 437-41.000.
Sillis, Marc: *See*—
De Roeck, Jozef; Vaeck, Eduard V.; Sillis, Marc; Marckx, Michel; and Van Hecke, Paul, 5,445,461, Cl. 400-322.000.
Siltech Inc.: *See*—
O'Lenick, Anthony J., Jr., 5,446,114, Cl. 528-15.000.
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St. Clair, Albert R., 5,444,905, Cl. 29-564.700.
Simplimatic Engineering Company: *See*—
Yourgalite, Ray A.; Beciccia, Kenneth F.; Dark, Jay A.; Reece, Alan R.; and Kleber, Robert J., 5,445,493, Cl. 414-791.600.
Simpson, Evan R.; Mahendroo, Mala S.; and Mendelson, Carole R., to Board of Regents, the University of Texas System. Adipose-specific promoter region of human aromatase cytochrome P450 gene. 5,446,143, Cl. 536-24.100.
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Sims, David J., to Fisher & Paykel Limited. Humidifier with dual float valves. 5,445,143, Cl. 128-203.260.
Sinnett, Kevin B.: *See*—
Pogorzelski, Thomas J.; and Sinnett, Kevin B., 5,445,242, Cl. 188-71.600.
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Peleman, Guido, 5,445,467, Cl. 402-57.000.
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North, Tom; and Siu, Francis, 5,446,691, Cl. 365-189.020.
Siuka, Dieter: *See*—
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Sivore, George A., Jr.: *See*—
Romanelli, Aldo; Wegner, David K.; Sivore, George A., Jr.; and Romanelli, Dennis M., 5,445,207, Cl. 160-209.000.
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SK Engineering Co., Ltd.: *See*—
Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masateru, 5,445,713, Cl. 162-304.000.
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Suda, Hirofumi: *See*—
Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, 5,446,494, Cl. 348-349.000.
Sudlow, H. Arne: *See*—
Bayha, Charles E.; and Sudlow, H. Arne, 5,445,890, Cl. 428-431.000.
Sudor Partners: *See*—
Schoendorfer, Donald W.; and Miller, William R., 5,445,147, Cl. 128-632.000.
Sufi, Akkas T.: *See*—
Corcoran, Gary T.; Fairfield, Robert C.; and Sufi, Akkas T., 5,446,865, Cl. 395-500.000.
Sugahara, Kazuyuki: *See*—
Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, 5,446,301, Cl. 257-354.000.
Sugai, Isao. Method of coating a substrate with a coating material by vibrating charged particles with a electric field. 5,445,852, Cl. 427-474.000.
Sugama, Seijin: *See*—
Fujieda, Ichiro; Ono, Yuzo; and Sugama, Seijin, 5,446,290, Cl. 293-556.001.
Sugano, Teruto: *See*—
Yamanaka, Hideki; Sugano, Teruto; and Mitarai, Masanobu, 5,446,430, Cl. 333-202.000.
Sugano, Toru: *See*—
Masuho, Yasuhiko; Sugano, Toru; Matsumoto, Yoh-Ichi; Hersh, Evan M.; Petersen, Eskild A.; Lake, Douglas; and Kawamura, Takashi, 5,445,960, Cl. 435-240.270.
Suganuma, Ryouichi: *See*—
Watanabe, Tsuneo; Takagi, Tadao; Saya, Daisuke; Suganuma, Ryouichi; and Fukino, Kunihiro, 5,446,331, Cl. 310-323.000.

Sugawa, Hideo: *See*—
Mori, Toru; Sugawa, Hideo; Yamada, Nobutoshi; and Ueda, Yoshimichi, 5,446,129, Cl. 530-324.000.
Sugawa, Hiroya: *See*—
Tada, Kaoru; Kumashiro, Hideo; Sugawa, Hiroya; Moriya, Shigeru; and Murakami, Hiroshi, 5,446,802, Cl. 382-170.000.
Sugawara, Tsunehiko; Murakami, Toshihide; and Kobayashi, Yasuke, to Asahi Glass Company Ltd. Glass bulb for a cathode ray tube. 5,445,285, Cl. 220-2.10A.
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hisashi; Tsuji, Takahiro; and Oishi, Keiichiro, to Toyo Valve Co., Ltd.; and Sanbo Shindo Kogyo Co., Ltd. Hot working material of corrosion resistant copper-based alloy. 5,445,687, Cl. 148-433.000.
Sugie, Masami; and Asako, Hirofumi, to Shimadzu Corporation. Orthogonal RF coil for MRI apparatus. 5,445,153, Cl. 128-653.500.
Sugii, Nobuyuki: *See*—
Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.
Sugimoto, Kenichi: *See*—
Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, 5,446,142, Cl. 540-139.000.
Sugiura, Horoaki; Tanaka, Fuminori; and Uesugi, Daisuke, to Yoshino Kogyosho Co., Ltd. Method of blow-molding biaxially-oriented polyethylene terephthalate resin bottle-shaped container. 5,445,784, Cl. 264-521.000.
Sugiyama, Hiroyuki; and Hirose, Norio, to Komori Corporation. Cylinder throw apparatus. 5,445,076, Cl. 101-218.000.
Sugiyama, Koichi: *See*—
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Sugiyama, Masanori: *See*—
Aoki, Kouji; Sugiyama, Masanori; and Sugiyama, Koichi, 5,446,391, Cl. 324-661.000.
Sugiyama, Noriyuki; Miyaji, Hiroyuki; Kamiya, Makoto; Chisoku, Arisa; and Yamamoto, Kaoru, to Polyplastics Co., Ltd. Polyoxymethylene composition. 5,446,086, Cl. 524-542.000.
Sugiyama, Toru: *See*—
Nagai, Shigekazu; Saitoh, Akio; Sugiyama, Toru; and Hasegawa, Masahisa, 5,445,045, Cl. 74-490.090.
Suhadolnik, Joseph; Botkin, James H.; and Hendricks, Carmen, to Ciba-Geigy Corporation. Laminated thermoplastics stabilized with bisbenzophenones. 5,445,872, Cl. 428-215.000.
Sulzer Papertec Euskirchen GmbH: *See*—
Whitehead, Roger, 5,445,490, Cl. 414-607.000.
Sumitani, Makoto: *See*—
Inoue, Yoshiyuki; and Sumitani, Makoto, 5,446,392, Cl. 124-678.000.
Sumitomo Cement Co., Ltd.: *See*—
Kinoshita, Touru; Takahashi, Kenji; Yanagisawa, Tsuneo; Uehara, Masaru; and Kimata, Hitoshi, 5,446,339, Cl. 313-478.000.
Sumitomo Chemical Co., Ltd.: *See*—
Mitsutake, Tatsuo; and Narimawa, Shizuo, 5,446,072, Cl. 521-54.000.
Niwano, Masahiro; Manabe, Kenji; Nitta, Iteru; Asai, Kuniaki; Namioka, Makoto; and Nakayama, Nobuko, 5,446,124, Cl. 528-361.000.
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kurokawa, Jitsuo, 5,446,116, Cl. 526-68.000.
Sumitomo Electric Industries, Ltd.: *See*—
Akita, Osamu; and Suzuki, Michio, 5,446,541, Cl. 356-399.000.
Ishikawa, Shinji; Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Ohga, Yuichi, 5,446,820, Cl. 385-123.000.
Nakabayashi, Makoto; Okabe, Kazuhiro; Mishima, Takayuki; Mano, Hiroshi; and Haraya, Kenji, 5,445,669, Cl. 96-5.000.
Nakajima, Shigeru, 5,446,296, Cl. 257-194.000.
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, 5,446,015, Cl. 505-193.000.
Nitta, Toshiyuki, 5,445,692, Cl. 156-87.000.
Nonaka, Tsuyoshi; and Akasaka, Nobuhiro, 5,446,821, Cl. 385-128.000.
Tanaka, So; Nakamura, Takao; and Ilyama, Michitomo, 5,446,016, Cl. 505-329.000.
Watanabe, Tsutomu; Saito, Kazuhito; Ozawa, Kazumasa; Mizuno, Shunichi; and Sankawa, Izumi, 5,446,810, Cl. 385-22.000.
Yoshida, Ichiro; Katsuyama, Tsukuru; and Hashimoto, Jun-ichi, 5,446,537, Cl. 356-256.000.
Yoshida, Ichiro, 5,446,753, Cl. 372-46.000.
Sumitomo Electric Industries, Ltd.: *See*—
Nakahata, Hideaki; Hachigo, Akihiro; Higaki, Kenjiro; and Shikata, Shinichi, 5,446,329, Cl. 310-313.00A.
Sumitomo Rubber Industries Ltd.: *See*—
Saito, Kenji; Kajikawa, Akira; Nakatani, Akihiro; Yamahira, Atsushi; Noma, Hiroyuki; and Kawamura, Kazuhiko, 5,445,203, Cl. 152-527.000.
Sumitomo Wiring Systems: *See*—
Inoue, Nori; Okumura, Hitoshi; Nankoh, Youichi; and Nakata, Hiroyuki, 5,445,530, Cl. 439-157.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Ito, Hikaru; and Kasugai, Masakuni, 5,445,907, Cl. 429-178.000.
Mizutani, Kenji; and Saka, Kazuhito, 5,446,239, Cl. 174-36.000.
Sumiya, Toshifumi: *See*—
Nakamura, Takua; and Sumiya, Toshifumi, 5,445,633, Cl. 606-5.000.
Sun Microsystems, Inc.: *See*—
Bosnyak, Robert J.; and Santoro, Mark R., 5,446,686, Cl. 365-49.000.
Deering, Michael, 5,446,834, Cl. 395-127.000.
Islam, Nayeem, 5,446,902, Cl. 395-700.000.
Khalidi, Yousef A.; Talluri, Madhusudhan; Williams, Dock G.; and Joshi, Vikram P., 5,446,854, Cl. 395-401.000.
Sun, Tingzong: *See*—
Houng, Chong L.; Wang, Po-Ching; Kuei-Lin, Lu; Sun, Tingzong; Fan, Yunxiang; Yang, Ziwan; and Wang, Xiourong, 5,445,089, Cl. 111-105.000.
Sunagawa, Kazuhiko: *See*—
Hayashi, Shoichiro; Sunagawa, Kazuhiko; and Kumazawa, Satoru, 5,446,167, Cl. 548-262.200.
Sunbeam Corporation: *See*—
Kemnitz, Glen D., 5,445,436, Cl. 297-452.630.
Sundeen, Arthur R. Ignition lock cylinder and gear shift lever interlock. 5,445,575, Cl. 477-99.000.
Sundell, Per-Erik G.: *See*—
Jonsson, Sonny; Sundell, Per-Erik G.; and Schaeffer, William R., 5,446,073, Cl. 522-104.000.
Sundwiger Eisenhutte Maschinenfabrik GmbH & Co.: *See*—
Frauenkron, Armin; Ilchmann, Volker; Vogt, Erhard; and Gellenbeck, Herbert, 5,445,212, Cl. 164-429.000.
Sunseri, Michael G.: *See*—
Riley, Claude R., Jr.; and Sunseri, Michael G., 5,445,024, Cl. 73-489.000.
Suntory Limited: *See*—
Uchida, Tadatoshi, 5,445,631, Cl. 604-412.000.
Superluck Electrics Corp.: *See*—
Chen, Su-Min, 5,446,268, Cl. 219-623.000.
Supracor Systems, Inc.: *See*—
Landi, Curtis L.; Wilson, Susan L.; and Cazalet, Peter M., 5,444,881, Cl. 5-454.000.
Sutherland, Robert L., to Riverwood International Corporation. Bottle carrier. 5,445,262, Cl. 206-148.000.
Suyama, Junichi: *See*—
Tanaka, Takayuki; Suyama, Junichi; Fukudome, Kazukiyo; and Hashimoto, Yuki, 5,446,694, Cl. 365-203.000.
Suyama, Shuji; Nishikawa, Tooru; Matsushima, Masaru; and Okada, Hiroshi, to NOF Corporation. 1-cyclohexyl-1-methylethylperoxy carbonate, method for production thereof, and uses therefor. 5,446,191, Cl. 560-126.000.
Suzuki, Hisao, to Sony Corporation. Case for a tape cassette. 5,445,268, Cl. 206-387.100.
Suzuki, Michio: *See*—
Akita, Osamu; and Suzuki, Michio, 5,446,541, Cl. 356-399.000.
Suzuki, Osamu: *See*—
Fujita, Shigetomo; Hasegawa, Tsukasa; Hayashi, Tomoe; and Suzuki, Osamu, 5,445,097, Cl. 114-74.00R.
Suzuki, Saburo: *See*—
Orimoto, Hiroyuki; Yokota, Katsumasa; Ameri, Fumiya; and Suzuki, Saburo, 5,445,515, Cl. 425-526.000.
Suzuki, Satoshi; Tsunoda, Michio; Murai, Kunitaka; and Yamada, Katsumi, to Mabuchi Motor Co., Ltd. Miniature motor with preassembled commutator. 5,446,328, Cl. 310-233.000.
Suzuki, Yasuo; Mori, Kinji; Kawano, Katsumi; Orimo, Masayuki; and Ogura, Hiroyuki, to Hitachi Ltd. Method of and apparatus for reallocating programs in a distributed programming system. 5,446,892, Cl. 395-650.000.
Suzumura, Toshihiro: *See*—
Yamashita, Yukihiro; and Suzumura, Toshihiro, 5,445,136, Cl. 123-689.000.
Svetikov, Yuri V.: *See*—
Lomashevitch, Svjatoslav A.; and Svetikov, Yuri V., 5,446,573, Cl. 359-158.000.
Swart, Martes; Eigler, Jurgen; and Vogt, Richard, to Siemens Aktiengesellschaft. Circuit arrangement for triggering a vehicle passenger protection system. 5,446,442, Cl. 340-438.000.
Swartz, Eric: *See*—
Allen, Bernie; Edington, Christopher J.; Swartz, Eric; Parracho, Rui; and Mochen, Richard, 5,444,926, Cl. 36-93.000.
Swatson, Richard R.: *See*—
Budzilek, Russell A.; Monarchie, Dominic L.; Podoba, Myroslaw; and Swatson, Richard R., 5,445,898, Cl. 428-690.000.
Budzilek, Russell A.; Monarchie, Dominick L.; Podoba, Myroslaw; Schlam, Elliott; and Swatson, Richard R., 5,445,899, Cl. 428-690.000.
Swayze, Carolyn A.: *See*—
Gioutsos, Tony; Gillis, Edward J.; Chapelle, Walter E.; and Swayze, Carolyn A., 5,446,661, Cl. 364-424.050.
Sweatman, Hobert C.: *See*—
Hixson, Robert R.; Rawlston, Randy J.; and Sweatman, Hobert C., 5,445,653, Cl. 8-531.000.
Sweeny, John R. Gotcha ball toy. 5,445,375, Cl. 273-58.00E.
Swick, Robert B.: *See*—
Henits, John; and Swick, Robert B., 5,446,603, Cl. 360-48.000.
Symbol Technologies, Inc.: *See*—
Barkan, Edwrd, 5,446,272, Cl. 235-462.000.
Synphar Laboratories, Inc.: *See*—
Maiti, Samarendra; Fiakpui, Charles; Reddy, A. V. N.; Czajkowski, David; Spevak, Paul; Atwal, Harninder; and Micetich, Ronald G., 5,446,037, Cl. 514-201.000.
Syntex (U.S.A.) Inc.: *See*—
Clark, Robin D.; Fisher, Lawrence E.; Flippin, Lee A.; Martin, Michael G.; and Stabler, Stephen R., 5,446,121, Cl. 548-253.000.
Maag, Hans; Rose, Samuel J.; and Schmidt, Beat, 5,446,137, Cl. 536-23.100.
Ullman, Edwin F., 5,445,944, Cl. 435-28.000.

Synthes: *See*—
Frigg, Robert; and Ambuhl, Rudolf, 5,445,641, Cl. 606-86.000.
Sypula, Donald S.; Mammino, Joseph; and Richter, Bela, to Xerox Corporation. Substrates, belts and electrostatographic imaging members, and methods of making. 5,445,720, Cl. 204-181.100.
Syrstad, Erik: *See*—
Carlsen, Arne; Nygaard, Erik C.; Syrstad, Erik; and Consoli, Tom, 5,445,663, Cl. 71-28.000.
Systems, Machines, Automation Components Corporation: *See*—
Neff, Edward A.; and Moss, John, 5,446,323, Cl. 310-12.000.
Szablikowski, Klaus; Koch, Wolfgang; Leffers, Heinrich; Poersch-Panke, Hans-Gunter; and Boehmer, Branislav, to Wolff Walsrode Aktiengesellschaft. Method for the preparation of cationic, water-soluble polymers and their use. 5,446,107, Cl. 525-385.000.
Szarvas, Thomas L.: *See*—
Perr, Julius P.; Pataki, Arpad; and Szarvas, Thomas L., 5,445,323, Cl. 239-91.000.
Szpala, Anthony: *See*—
Connell, David L.; Huddlestone, Kenneth M.; and Szpala, Anthony, 5,445,652, Cl. 8-196.000.
Szurkowski, Edward S.: *See*—
Blahut, Donald E.; and Szurkowski, Edward S., 5,446,490, Cl. 348-7.000.
Tabata, Masamune: *See*—
Gunji, Takahiro; Fujisawa, Yoshikazu; Okamoto, Kazuhisa; Tabata, Masamune; and Hirose, Kenji, 5,445,684, Cl. 148-320.000.
Tabe, Koichi; and Yoneyama, Kouichi, to Kabushiki Kaisha Toshiba. Information storage medium with first and second recording regions each having a predetermined recording density. 5,446,724, Cl. 369-275.100.
Tabe, Rikizo: *See*—
Yamamoto, Takeshi; Tanaka, Tamiya; Yamamoto, Hirotaka; and Tabe, Rikizo, 5,446,879, Cl. 395-160.000.
Tabuchi, Takeharu: *See*—
Nakano, Shinji; Morimoto, Takao; Yamada, Shin-ya; Fujiwa, Takaaki; Matsui, Hideki; and Tabuchi, Takeharu, 5,446,110, Cl. 525-419.000.
Tabuchi, Yasuo; Tobayama, Masashi; Ohguchi, Junichi; and Kishibuchi, Akira, to Nippondenso Co., Ltd. Electromagnetic clutch. 5,445,256, Cl. 192-84.00C.
Tachikawa, Mamoru, to Dow Corning Asia Ltd. Compounds containing 1-aza-3-oxa-4-silacyclohex-1-enyl groups, and tautomers of said compounds. 5,446,180, Cl. 556-408.000.
Tack, Charles W.: *See*—
Searer, Floyd A.; and Tack, Charles W., 5,444,956, Cl. 52-312.000.
Tada, Kaoru; Kumashiro, Hideo; Sugawa, Hiroya; Moriya, Shigeru; and Murakami, Hiroshi, to Minolta Camera Kabushiki Kaisha. Image processing apparatus comprising judgement means for judging dot photograph image, photograph image and character image. 5,446,802, Cl. 382-170.000.
Tae-Sik, Kim: *See*—
Bloomfield, John W.; Bischoff, Rudi A.; Payne, Robert L.; Wagner, Scott B.; Sang-Gweon, Kim; Tae-Sik, Kim; Ji-Hyun, Kim; Joon-Young, Jeong; Chang-Hyun, Yoo; and Shin, Dong-Il, 5,446,445, Cl. 340-521.000.
Taema: *See*—
Lhomer, Gerard; and Theurant, Gilbert, 5,446,449, Cl. 340-611.000.
Taguchi, Akira, to Mori-Gumi Co., Ltd., a part interest. Method of transferring fluent material with compressed gas. 5,445,500, Cl. 417-54.000.
Taguchi, Yutaka: *See*—
Eda, Kazuo; Taguchi, Yutaka; Onishi, Keiji; and Seki, Shun-ichi, 5,446,330, Cl. 310-313.00E.
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, to Canon Kabushiki Kaisha. Image forming apparatus for forming images in accordance with process steps received from an external device. 5,446,522, Cl. 355-202.000.
Tahara, Masaaki; Senbokuya, Haruo; Kitano, Kenzo; Hayashida, Tadashi; and Minato, Teruo, to Daidousanso Co., Ltd. Nickel alloy products with their surfaces nitrided and hardened. 5,445,683, Cl. 148-317.000.
Tahara, Yuji, to Hoxan Corporation. 1-β7,8-trihydroxy vitamin D_2, 1β7,8-trihydroxy vitamin D_3, and derivatives thereof. 5,446,174, Cl. 549-214.000.
Tai, Hwai-Tzuu; and Ajewole, Isaac I., to Eastman Kodak Company. Method and apparatus for digital scale halftoning with variable screen structure for electrophotographic printing devices. 5,446,561, Cl. 358-445.000.
Taisho Pharmaceutical Co., Ltd.: *See*—
Gotou, Yasuyuki, 5,445,812, Cl. 424-9.400.
Tait, William C.: *See*—
Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., 5,446,270, Cl. 219-730.000.
Tak, Yuen C.: *See*—
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, 5,445,698, Cl. 156-307.700.
Takagawa, Makoto: *See*—
Ozawa, Shinji; Takagawa, Makoto; and Fujimori, Takayasu, 5,446,226, Cl. 585-411.000.
Takagi, Kazutoshi; and Kitajima, Nobuaki, to Kabushiki Kaisha TOPCON. Operation microscope. 5,446,582, Cl. 359-385.000.
Takagi, Mikio, to F.T.L. Co., Ltd. Method and apparatus for manufacturing semiconductor devices. 5,445,676, Cl. 118-719.000.
Takagi, Tadao: *See*—
Watanabe, Tsuneo; Takagi, Tadao; Saya, Daisuke; Suganuma, Ryouichi; and Fukino, Kunihiro, 5,446,331, Cl. 310-323.000.
Takagi, Yasuyuki: *See*—
Yamanouchi, Junichi; Tamura, Yutaka; and Takagi, Yasuyuki, 5,445,931, Cl. 430-627.000.
Takagiwa, Hiroyuki: *See*—
Ishikawa, Michiaki; Ogawa, Keiko; Shirose, Meizo; and Takagiwa, Hiroyuki, 5,445,910, Cl. 430-106.600.
Takahashi, Hideaki: *See*—
Gomi, Hiroshi; Nishikawa, Masao; Hirose, Masato; Takahashi, Hideaki; and Matsumoto, Takashi, 5,445,235, Cl. 180-8.600.
Takahashi, Hidehiro: *See*—
Takebayashi, Mamoru; Tateshima, Takashi; Mitsui, Tomonori; Ogawa, Makoto; Takahashi, Hidehiro; and Kataoka, Takehiro, 5,446,708, Cl. 369-32.000.
Takahashi, Jun; Yasuda, Akira; and Ochi, Hideo, to Somar Corporation. Laser beam absorbing resin composition and laser beam marking method. 5,445,923, Cl. 430-340.000.
Takahashi, Kenji: *See*—
Kinoshita, Touru; Takahashi, Kenji; Yanagisawa, Tsuneo; Uehara, Masaru; and Kimata, Hitoshi, 5,446,339, Cl. 313-478.000.
Takahashi, Tomonori: *See*—
Soma, Takao; Takahashi, Tomonori; Kawasaki, Shinji; and Yoshioka, Katsuki, 5,445,902, Cl. 429-30.000.
Takahashi, Toru: *See*—
Sasaki, Mitsuo; Kabuzaki, Shinobu; Yamaoka, Fumiyuki; Takahashi, Toru; and Kimura, Makoto, 5,446,663, Cl. 364-424.050.
Takahata, Ryoichi; and Shibayama, Motoaki, to Koyo Seiko Co., Ltd. Superconducting bearing device. 5,446,018, Cl. 310-90.500.
Takai, Hitoshi: *See*—
Urabe, Yoshio; Takai, Hitoshi; and Yamasaki, Hidetoshi, 5,446,770, Cl. 375-219.000.
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, to Matsushita Electric Works, Ltd. Method of fabricating an internal composite layer composed of an electrically insulating substrate with a copper layer formed thereon and a film of a coupling agent covering the copper layer for a multilayer circuit board. 5,445,698, Cl. 156-307.700.
Takano, Misuzu: *See*—
Itsuzaki, Yoshihiro; Takano, Misuzu; Horikami, Kinji; and Nakao, Masaya, 5,446,801, Cl. 382-141.000.
Takano, Seiichi; and Ogasawara, Kunio, to Chisso Corporation. Optically active compounds and a method for producing them. 5,446,175, Cl. 549-344.000.
Takano, Tsurumatsu: *See*—
Ishibashi, Nobuyuki; Takano, Tsurumatsu; and Mori, Yoshio, 5,445,588, Cl. 493-31.000.
Takase, Shigehiro: *See*—
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,446,022, Cl. 514-11.000.
Takashi, Hayakawa, to Sharp Kabushiki Kaisha. Photoconductor coupled liquid crystal light valve with impurity doping which varies in the thickness direction. 5,446,563, Cl. 359-72.000.
Takashi, Morihiko: *See*—
Mohri, Kaneo; Kano, Mitsunari; Matsuda, Toshihiko; Kino, Jiro; Takashi, Morihiko; Konishi, Yoshiharu; and Oizumi, Junichi, 5,446,377, Cl. 324-207.130.
Takashina, Shoichi; and Ishihara, Koichi, to Fuji Oil Co., Ltd. Apparatus for cleaning a piping. 5,444,886, Cl. 15-3.510.
Takata Corporation: *See*—
Kamiyama, Misao; and Zeze, Kazuo, 5,445,411, Cl. 280-733.000.
Takayama, Makoto, to Canon Kabushiki Kaisha. Signal processing apparatus. 5,446,598, Cl. 360-32.000.
Takayanagi, Hisao: *See*—
Funami, Yasuo; Takayanagi, Hisao; and Toyoshima, Omito, 5,444,979, Cl. 60-460.000.
Takebayashi, Mamoru; Tateshima, Takashi; Mitsui, Tomonori; Ogawa, Makoto; Takahashi, Hidehiro; and Kataoka, Takehiro. Pickup driving system for optical disk apparatus. 5,446,708, Cl. 369-32.000.
Takeda, Hiromitsu: *See*—
Masaki, Mitsuo; Yamakawa, Tomio; Satoh, Masaru; Takeda, Hiromitsu; Yoshino, Yasushi; and Matsukura, Hitoshi, 5,446,146, Cl. 540-575.000.
Takeda, Katsumi: *See*—
Kitano, Masahiro; Ohfusa, Yoshitaka; Kohda, Katsuya; Sasaki, Keiichi; Okura, Hiroyuki; and Takeda, Katsumi, 5,446,841, Cl. 395-200.000.
Takemoto, Sohei; Woodhouse, Kenneth A.; Gallo, Luigi C.; and Stern, John D., to Accom, Incorporated. Three-dimensional median and recursive filtering apparatus and method for video image enhancement. 5,446,501, Cl. 348-620.000.
Takemoto, Takatoshi; and Kawashima, Kazunari, to Kabushiki Kaisha Ace Denken. Paper strip conveying and stacking apparatus. 5,445,277, Cl. 209-534.000.
Takenaka, Hiroshi: *See*—
Terada, Jiro; Takenaka, Hiroshi; Ushihara, Masaharu; Tamura, Masami; Nishimura, Hitoshi; and Kaino, Kikuo, 5,445,025, Cl. 73-504.150.

Takigen Manufacturing Co., Ltd.: *See*—
Oukouchi, Terunaga, 5,445,472, Cl. 403-348.000.
Takizawa, Hirotsugu: *See*—
Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.
Takizawa, Mitsuharu: *See*—
Tahara, Hisatsugu; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Kaneko, Satoshi; Fukada, Taisei; Iseki, Yukimasa; Sato, Mitsuhiko; and Takizawa, Mitsuharu, 5,446,522, Cl. 355-202.000.
Taligent, Inc.: *See*—
Schaeffer, Arnold; Anderson, David R.; Palevich, Jack H.; and Rosenstein, Larry S., 5,446,842, Cl. 395-200.010.
Talluri, Madhusudhan: *See*—
Khalidi, Yousef A.; Talluri, Madhusudhan; Williams, Dock G.; and Joshi, Vikram P., 5,446,854, Cl. 395-401.000.
Tam, Kwok C., to General Electric Company. Tomography with generation of radon data on polar grid points. 5,446,776, Cl. 378-4.000.
Tamaru, Ikuhiro: *See*—
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kurokawa, Jitsuo, 5,446,116, Cl. 526-68.000.
Tamura, Hitoshi: *See*—
Okuno, Yasuo; Tamura, Hitoshi; and Maruyama, Tsuyoshi, 5,445,706, Cl. 156-637.100.
Tamura, Masami: *See*—
Terada, Jiro; Takenaka, Hiroshi; Ushihara, Masaharu; Tamura, Masami; Nishimura, Hitoshi; and Kaino, Kikuo, 5,445,025, Cl. 73-504.150.
Tamura, Naoyuki: *See*—
Kato, Shigekazu; Tamura, Naoyuki; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,445,484, Cl. 414-217.000.
Tamura, Shin-Ichiro: *See*—
Hayashi, Yoko; Tamura, Shin-Ichiro; Murooka, Takao; and Yanagisawa, Yoshitake, 5,445,853, Cl. 428-64.400.
Tamura, Yutaka: *See*—
Yamanouchi, Junichi; Tamura, Yutaka; and Takagi, Yasuyuki, 5,445,931, Cl. 430-627.000.
Tan, Hitashi: *See*—
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hitashi; Tsuji, Takahiro; and Oishi, Keiichiro, 5,445,687, Cl. 148-433.000.
Tanaka, Chinari: *See*—
Adachi, Rensuke; Sone, Hiroshi; and Tanaka, Chinari, 5,445,157, Cl. 128-664.000.
Tanaka, Fuminori: *See*—
Sugiura, Horoaki; Tanaka, Fuminori; and Uesugi, Daisuke, 5,445,784, Cl. 264-521.000.
Tanaka, Hiroshi: *See*—
Ohmori, Masashi; Tanaka, Hiroshi; Nishimoto, Akira; Sasai, Hiroshi; Fujino, Naohiko; and Kotoh, Satoru, 5,445,171, Cl. 134-61.000.
Yoshizaki, Kouji; and Tanaka, Hiroshi, 5,444,978, Cl. 60-276.000.
Tanaka, Katsuyuki; Kato, Masanori; Ohara, ouzi; Kohama, Tokio; and Nishio, Yoshitaka, to Nippondenso Co., Ltd. Intake sound control apparatus. 5,446,790, Cl. 381-71.000.
Tanaka, Keisuke: *See*—
Inoue, Koichi; Okubo, Kazutoshi; Kitagawa, Kohei; Tanaka, Keisuke; and Watanabe, Tomoya, 5,445,908, Cl. 429-229.000.
Tanaka, Masaaki: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,445,798, Cl. 422-121.000.
Tanaka, Mitsuru, to Murata Mfg. Co., Ltd. Piezoelectric vibrator for reduction of undesired vibrations. 5,446,429, Cl. 333-187.000.
Tanaka, So; Nakamura, Takao; and Ilyama, Michitomo, to Sumitomo Electric Industries, Ltd. Method for forming a patterned oxide superconductor thin film. 5,446,016, Cl. 505-329.000.
Tanaka, Tadao: *See*—
Miichi, Yoshinori; Harara, Mitsuhiko; and Tanaka, Tadao, 5,446,660, Cl. 364-424.050.
Tanaka, Tadashi; Sakamoto, Masaaki; and Kidokoro, Hideyuki, to Daido Metal Company Ltd. Sliding bearing material including overlay having excellent anti-seizure property. 5,445,896, Cl. 428-647.000.
Tanaka, Takayuki; Suyama, Junichi; Fukudome, Kazukiyo; and Hashimoto, Yuki, to Oki Electric Industry Co., Ltd. Semiconductor memory device. 5,446,694, Cl. 365-203.000.
Tanaka, Takemi; Okemoto, Hisashi; and Kuwahara, Nobuhiro, to Ensuiko Sugar Refining Co., Ltd. Quercetin-containing coloring. 5,445,842, Cl. 426-540.000.
Tanaka, Takeshi: *See*—
Juso, Hiromi; and Tanaka, Takeshi, 5,446,911, Cl. 395-800.000.
Tanaka, Tamiya: *See*—
Yamamoto, Takeshi; Tanaka, Tamiya; Yamamoto, Hirotaka; and Tabe, Rikizo, 5,446,879, Cl. 395-180.000.
Tanaka, Toshihiro; Kato, Masataka; Sasaki, Toshio; Kume, Hitoshi; Kotani, Hiroaki; and Furusawa, Kazunori, to Hitachi, Ltd. Semiconductor nonvolatile memory device. 5,446,690, Cl. 365-185.000.
Tang, Jiansheng: *See*—
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Tani, Makoto: *See*—
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Taniai, Yukio: *See*—
Yoshio, Junichi; Taniai, Yukio; and Moriichi, Munetoshi, 5,446,714, Cl. 369-48.000.
Tanielyan, Setrak K.: *See*—
Augustine, Robert L.; and Tanielyan, Setrak K., 5,446,003, Cl. 502-159.000.
Tanigawa, Sadao: *See*—
Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,446,523, Cl. 355-207.000.
Tanimura, Yasuhiro: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,445,798, Cl. 422-121.000.
Taniuchi, Fujio, to Shoei Kako Kabushiki Kaisha. Helmet for riding vehicle. 5,444,875, Cl. 2-424.000.
Tanski, William J.; Carroll, Roger; and Branciforte, Emilio J., to Westinghouse Norden Systems. Low resistance, thermally stable electrode structure for electroluminescent displays. 5,445,711, Cl. 216-13.000.
Tanuma, Toshihiro: *See*—
Harasawa, Masako; Misuda, Katsutoshi; Matsubara, Toshiya; and Tanuma, Toshihiro, 5,445,868, Cl. 428-206.000.
Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., to Eaton Corporation. Optical sensor with movable refraction element to adjust sensor range. 5,446,281, Cl. 250-221.000.
Tarbet, Bryon J.: *See*—
Bruening, Ronald L.; Tarbet, Bryon J.; Izatt, Reed M.; and Bradshaw, Jerald S., 5,446,182, Cl. 556-427.000.
Tarcha, Peter J.; Rohr, Thomas E.; Cottos, Therese; and Winter, Gary E., to Abbott Laboratories. Raman label and its conjugate in a ligand-binding assay for a test sample analyte. 5,445,972, Cl. 436-544.000.
Tashiro, Satoshi: *See*—
Ikuta, Yuzo; Tashiro, Satoshi; Hatano, Yoshiyuki; Fujita, Tadasu; Andoh, Noboru; Asaoka, Sachio; Kobayashi, Haruto; and Minami, Takeshi, 5,445,955, Cl. 435-180.000.
Tateishi, Kiyoshi, to Pioneer Electronic Corporation. Optical pickup drive control apparatus with vibration restraint. 5,446,713, Cl. 369-44.280.
Tateshima, Takashi: *See*—
Takebayashi, Mamoru; Tateshima, Takashi; Mitsui, Tomonori; Ogawa, Makoto; Takahashi, Hidehiro; and Kataoka, Takehiro, 5,446,708, Cl. 369-32.000.
Tatsuno, Tsuneo: *See*—
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,445,776, Cl. 264-65.000.
Tatzlaff, Heribert: *See*—
Maheras, Joanne C.; Hopkins, John B., Jr.; and Tatzlaff, Heribert, 5,446,140, Cl. 536-123.000.
Taub, Mase J.: *See*—
Tedrow, Kerry D.; Javanifard, Jahanshir J.; and Taub, Mase J., 5,446,408, Cl. 327-530.000.
Taussig, Carl P.: *See*—
Abramovitch, Daniel Y.; and Taussig, Carl P., 5,446,648, Cl. 364-148.000.
Tayca Corporation: *See*—
Kinugasa, Masanori; Tsubomoto, Naoto; and Kobayashi, Osamu, 5,445,806, Cl. 423-598.000.
Taylor, Benjamin R., to Renishaw plc. Method of and apparatus for calibrating machines including a measuring probe and a measuring apparatus. 5,446,545, Cl. 356-358.000.
Taylor, Don M.; Allen, Lynn M.; and Schroeder, Myron E., to Amoco Corporation. Thermal cracking process with reduced coking. 5,446,229, Cl. 585-648.000.
Taylor, Lloyd D.: *See*—
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.
Taylor, Russell H., to International Business Machines Corporation. System for advising a surgeon. 5,445,166, Cl. 128-897.000.
TBC Orthopedics, Inc.: *See*—
Harlow, Robert R., 5,445,601, Cl. 602-19.000.
TEAC Corporation: *See*—
Thanos, William N.; Kaczeus, Steven L.; and Fahey, James D., 5,446,609, Cl. 360-97.020.
Umehara, Shinji; Hasegawa, Mitsuru; Nagai, Kohji; and Yanagibashi, Yoshinobu, 5,446,605, Cl. 360-74.600.
Technip: *See*—
Berthelier, Jean M. F., 5,445,320, Cl. 239-2.200.
Technology Management, Inc.: *See*—
Cable, Thomas L.; and Petrik, Michael A., 5,445,903, Cl. 429-33.000.
Tedrow, Kerry D.; Javanifard, Jahanshir J.; and Taub, Mase J., to Intel Corporation. Method and apparatus for providing selectable sources of voltage. 5,446,408, Cl. 327-530.000.
Teem Systems, Inc.: *See*—
Utke, Reinhold E.; Eidsness, John L.; Van de Loo, Dale P.; Ellingson, Gary L.; and Aslakson, Joel T., 5,446,701, Cl. 367-118.000.
Teepak, Inc.: *See*—
Meeker, Douglas K.; Rossi, Scott J.; and Watts, Keith A., 5,445,560, Cl. 452-39.000.
Teijin Limited: *See*—
Masuho, Yasuhiko; Sugano, Toru; Matsumoto, Yoh-Ichi; Hersh, Evan M.; Petersen, Eskild A.; Lake, Douglas; and Kawamura, Takashi, 5,445,960, Cl. 435-240.270.
Matsumura, Shunichi; Ito, Takashi; and Miyoshi, Takanori, 5,446,109, Cl. 525-420.000.

Teijin Seiko Co., Ltd.: *See*—
Toyama, Kiyoshi; and Togawa, Masayuki, 5,445,707, Cl. 216-22.000.
Tektronix, Inc.: *See*—
Overhage, Craig; and Austin, Richard, 5,446,650, Cl. 364-487.000.
Tel-Varian Limited: *See*—
Kubodera, Masao; Kasai, Shigeru; and Osada, Hatsuo, 5,445,675, Cl. 118-719.000.
Telediffusion de France S.A.: *See*—
Berrou, Claude, 5,446,747, Cl. 371-45.000.
Telefonaktiebolaget LM Ericsson: *See*—
Djupsjobacka, Anders G.; and Egnell, Lars, 5,446,574, Cl. 359-181.000.
Lindstrom, Anders O.; Bostrom, Anna K.; and Broberg, Hans M., 5,446,781, Cl. 379-6.000.
Lofmark, Bengt G., 5,446,728, Cl. 370-32.100.
Lofmark, Bengt G., 5,446,787, Cl. 379-410.000.
Telfer, Stephen J.: *See*—
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Mischke, Mark R.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,445,917, Cl. 430-270.000.
Temoshenko, Leo: *See*—
Sekiya, Jeffrey G.; Staytos, Michael W.; and Temoshenko, Leo, 5,446,680, Cl. 364-550.000.
Temple, Victor A. K.; and Glascock, Homer H., II, to Harris Corporation. Hermetic package for a high power semiconductor device. 5,446,316, Cl. 257-704.000.
Temtec, Inc.: *See*—
Haas, David J.; and Haas, Sandra F., 5,446,705, Cl. 368-327.000.
Tenten, Andreas; and Weidlich, Peter, to BASF Aktiengesellschaft. Multimetal oxide compositions. 5,446,004, Cl. 502-312.000.
Terada, Jiro; Takenaka, Hiroshi; Ushihara, Masaharu; Tamura, Masami; Nishimura, Hitoshi; and Kaino, Kikuo, to Matsushita Electric Industrial Co., Ltd. Angular velocity sensor having a balanced tuning fork structure and the method of manufacture. 5,445,025, Cl. 73-504.150.
Terakura, Seiji; and Maeda, Toyoyuki, to Kaigen Co., Ltd. Powdered medicament-mixed gas injecting apparatus and powdered medicament-mixed gas injecting nozzle to be connected to the same. 5,445,612, Cl. 604-58.000.
Terasawa, Masaaki: *See*—
Kuroda, Kenichi; Terasawa, Masaaki; and Matsubara, Kiyoshi, 5,445,987, Cl. 437-43.000.
Terastore, Inc.: *See*—
Hurt, Thomas D.; and Halpine, Scott A., 5,446,687, Cl. 365-121.000.
Terbrack, Ulrich: *See*—
Siol, Werner; Felger, Erwin; and Terbrack, Ulrich, 5,446,095, Cl. 525-93.000.
Terradas, Fernand: *See*—
Palmer, David C.; and Terradas, Fernand, 5,445,951, Cl. 435-100.000.
Terry, Stephen C.: *See*—
Allen, Henry V.; Terry, Stephen C.; and De Bruin, Diederik W., 5,445,006, Cl. 73-1.00D.
Terver, Roland A.: *See*—
Nguyen, Gia V.; and Terver, Roland A., 5,445,202, Cl. 152-454.000.
Teach, Gunter. Three-dimensional structural component. 5,444,959, Cl. 52-794.100.
Tetra Laval Holdings & Finance S.A.: *See*—
Tuckner, Ronald; and Persells, David, 5,445,793, Cl. 422-28.000.
Tetsuya, Ohtani; Yokohama; Uchiyama, Yoshiharu; and Nomura, Hideo, to International Business Machines Corporation. Personal computer security apparatus with lockable slides engaging removable cover. 5,446,618, Cl. 361-683.000.
Texaco Inc.: *See*—
Chafetz, Harry; Liu, Christopher S.; Papke, Brian L.; and Kennedy, Thomas A., 5,445,750, Cl. 252-49.600.
Khan, Motasimur R.; Albert, Christine C.; and DeCanio, Stephen J., 5,445,659, Cl. 48-197.00R.
Prelat, Alfredo E., 5,445,459, Cl. 374-43.000.
Sherwood, David E., Jr.; and Hardee, Johnnie R., Jr., 5,445,728, Cl. 208-216.00R.
Tuohey, David; Bartels, Craig R.; and Shah, Vatsal M., 5,445,731, Cl. 202-173.000.
Texas Instruments: *See*—
Moslehi, Mehrdad M., 5,446,824, Cl. 392-416.000.
Texas Instruments Deutschland GmbH: *See*—
Bierl, Lutz, 5,446,373, Cl. 324-142.000.
Texas Instruments Incorporated: *See*—
Bayraktaroglu, Burhan, 5,446,294, Cl. 257-34.000.
Gale, Richard O.; and Mignardi, Michael A., 5,445,559, Cl. 451-388.000.
Henderson, Timothy S.; and Hill, Darrell G., 5,445,976, Cl. 437-31.000.
Moslehi, Mehrdad M.; Davis, Cecil J.; and Matthews, Robert T., 5,446,825, Cl. 392-416.000.
Moyse, Phillip; Roskell, Derek; and Simpson, Richard D., 5,446,651, Cl. 364-760.000.
Romm, Douglas W.; Nye, Larry W.; and Head, Michael R., 5,444,923, Cl. 34-233.000.
Thompson, E. Earle; and DeMond, Thomas W., 5,446,479, Cl. 345-139.000.
Van Aken, Jerry R.; and Yin, Chenwei J., 5,446,482, Cl. 345-199.000.
Yoshino, Toshiaki; and Chan, Kwok K., 5,446,321, Cl. 326-57.000.
Thakur, Randhir P. S.; and Mathews, Viju K., to Micron Technology, Inc. Advanced technique to improve the bonding arrangement on silicon surfaces to promote uniform nitridation. 5,445,999, Cl. 437-242.000.
Thanos, William N.; Kaczeus, Steven L.; and Fahey, James D., to TEAC Corporation; and Post Peripherals Corporation. Low profile disk drive assembly. 5,446,609, Cl. 360-97.020.
Theeuwes, Felix: *See*—
Haak, Ronald P.; Theeuwes, Felix; and Roe, David K., 5,445,606, Cl. 604-20.000.
Thenappan, Alagappan: *See*—
Van Der Puy, Michael; Madhavan, G. V. Bindu; Thenappan, Alagappan; and Tung, Hsueh S., 5,446,217, Cl. 570-156.000.
TheraTech, Inc.: *See*—
Venkateshwaran, Srinivasan; and Cheng, Daniel C. H., 5,445,607, Cl. 604-20.000.
Theriault, John P.: *See*—
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Theurant, Gilbert: *See*—
Lhomer, Gerard; and Theurant, Gilbert, 5,446,449, Cl. 340-611.000.
Theus, Ulrich; and Kessel, Juergen, to Deutsche ITT Industries GmbH. Monolithic integrated voltage regulator. 5,446,380, Cl. 323-275.000.
Thieroff-Ekerdt, Ruth: *See*—
Neef, Gunter; Steinmeyer, Andreas; Kirsch, Gerald; Schwarz, Katica; Thieroff-Ekerdt, Ruth; Wiesinger, Herbert; and Haberey, Martin, 5,446,031, Cl. 514-167.000.
Thoen, Christiaan A.: *See*—
Didier, Gazeau; and Thoen, Christiaan A., 5,445,756, Cl. 252-104.000.
Thoen, Christiaan A. J. K.; Fredj, Adbennaceur; and Johnston, James P., to Procter & Gamble Company, The. Detergent compositions inhibiting dye transfer in washing. 5,445,651, Cl. 8-111.000.
Thomas, Anthony J.: *See*—
Augelli-Szafran, Corinne E.; Jaen, Juan C.; Schwarz, Roy; and Thomas, Anthony J., 5,446,057, Cl. 514-356.000.
Thomas & Betts Corporation: *See*—
Rodrigues, Julio F.; Bartholomew, Paul J.; Bowman, Timothy S.; and Lowery, Gary L., 5,445,538, Cl. 439-460.000.
Thomas, David E.: *See*—
Czapp, Adelbert T.; Huber, Mark A.; Bos, Bradley C.; Diss, William F.; and Thomas, David E., 5,445,410, Cl. 280-728.300.
Thomas, Gareth J.: *See*—
Handa, Balraj K.; Machin, Peter J.; Martin, Joseph A.; Redshaw, Sally; and Thomas, Gareth J., 5,446,161, Cl. 546-225.000.
Thomas, Lewis J.: *See*—
Daft, Christopher M. W.; Hall, Anne L.; Noujaim, Sharbel E.; Thomas, Lewis J.; and Welles, Kenneth B., II, 5,445,156, Cl. 128-661.080.
Thomas, V. Stanton: *See*—
Poli, Robert G.; Johnson, Noel L.; Burnside, Robert R.; Chamness, Leland D.; Huang, J. Terry; and Thomas, V. Stanton, 5,445,621, Cl. 604-246.000.
Thomasson, James S.: *See*—
Brinkley, Paul A.; Flinchum, Jack G., Jr.; and Thomasson, James S., 5,445,169, Cl. 131-297.000.
Thompson, Brian S.: *See*—
Marzullo, Joseph H.; and Thompson, Brian S., 5,445,371, Cl. 271-21.000.
Thompson, E. Earle; and DeMond, Thomas W., to Texas Instruments Incorporated. Multi-dimensional array video processor system. 5,446,479, Cl. 345-139.000.
Thompson, Raymon F.; and Owczarz, Aleksander, to Semitool, Inc. Wafer holder with flexibly mounted gripping fingers. 5,445,172, Cl. 134-153.000.
Thompson, Robert: *See*—
Shen, Ya X.; and Thompson, Robert, 5,446,118, Cl. 526-245.000.
Thomson Consumer Electronics, Inc.: *See*—
Kechkaylo, David L., 5,446,421, Cl. 332-100.000.
Thomson-CSF: *See*—
Avignon, Bruno; and Canal, Yves, 5,446,470, Cl. 343-713.000.
Beaucourt, Dominique; Lemaire, Daniel; and Weschler, Gilles, 5,446,463, Cl. 342-198.000.
Tourtier, Philippe; Vial, Jean-Francois; Diascorn, Jean-Louis; and Pecot, Michel, 5,446,495, Cl. 348-398.000.
Thomson-CSF Semiconducteurs Specifiques: *See*—
Dautriche, Pierre, 5,446,283, Cl. 250-332.000.
Thornton, Arnold O.; Nguyen, Hang T.; Nguyen, Greg N.; and Williams, Don P., to Areal Technology, Inc. Self loading suspension for hard disk drives. 5,446,612, Cl. 360-104.000.
Thrislington Sales Limited: *See*—
Goodwin, David, 5,444,945, Cl. 52-65.000.
Thrush, Roger L.: *See*—
Billman, Timothy B.; and Thrush, Roger L., 5,445,531, Cl. 439-160.000.
Thuerig, Peter J., to Fuelmaker Corporation. Split-ring breakaway connector. 5,445,419, Cl. 285-1.000.
Thunberg, Jon C., to Hampshire Chemical Corp. Process for the preparation of micronutrient blends. 5,446,179, Cl. 556-148.000.
Thundat, Thomas G.: *See*—
Wachter, Eric A.; and Thundat, Thomas G., 5,445,008, Cl. 73-24.060.
TI Corporate Services Limited: *See*—
Cudini, Ivano G.; Mason, Murray R.; and Klages, Gerrald A., 5,445,002, Cl. 72-62.000.
Tibbals, Edward C., Jr., to Johnston, William Calvin. Load counterbalancing coiled wire spring assembly. 5,445,364, Cl. 267-74.000.

Tickner, Robert H.: *See*—
Steckler, Thomas M.; Gryger, Dana A.; and Tickner, Robert H., 5,446,844, Cl. 395-250.000.
Tidland Corporation: *See*—
Miller, William R.; and Becker, Timothy J., 5,445,342, Cl. 242-571.200.
Tierney, Gordon L.: *See*—
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Tihanyi, Jenoe: *See*—
Gantioler, Josef-Matthias; and Tihanyi, Jenoe, 5,446,406, Cl. 327-427.000.
Timberlake, Larry D.: *See*—
Sanders, Dave C.; Mack, Arthur G.; and Timberlake, Larry D., 5,446,212, Cl. 568-726.000.
Timex Corporation: *See*—
Schwartz, Herbert, 5,446,703, Cl. 368-80.000.
Tippett, Janet M.: *See*—
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TLV Co., Ltd.: *See*—
Yumoto, Hideaki, 5,445,501, Cl. 417-133.000.
Tobagi, Fouad A.; Gang, Joseph M., Jr.; and Lieberman, Bruce L., to Starlight Networks. Bandwidth allocation in a shared transmission channel employing CSMA/CD. 5,446,735, Cl. 370-85.300.
Tobayama, Masashi: *See*—
Tabuchi, Yasuo; Tobayama, Masashi; Ohguchi, Junichi; and Kishibuchi, Akira, 5,445,256, Cl. 192-84.00C.
Tobita, Kenichi: *See*—
Sekiguchi, Shinichi; Kusukawa, Hirotaka; and Tobita, Kenichi, 5,445,574, Cl. 475-346.000.
Tobler, Ulrich J., to General Electric Company. Circuit for detecting noise and producing a squelch signal. 5,446,921, Cl. 455-221.000.
Toda, Masaaki; Miyamoto, Tumoru; and Arai, Yoshinobu, to Ono Pharmaceutical Co., Ltd. (Fused) benz (thio) amides. 5,446,058, Cl. 514-381.000.
Toda, Toshimasa; Naito, Satoru; Osawa, Hisayu; and Yamazaki, Takaaki, to Sankyo Company, Limited. Piperidyl-triazine derivatives and their use as polymer stabilizers. 5,446,144, Cl. 544-198.000.
Toda, Yoshifumi: *See*—
Matsumoto, Yoshihiro; and Toda, Yoshifumi, 5,446,920, Cl. 455-126.000.
Todd, Terry R.: *See*—
Gethner, Jon S.; Todd, Terry R.; and Brown, James M., 5,446,681, Cl. 364-554.000.
Todo, Yuji: *See*—
Matsui, Isamu; Maeda, Yoshiyasu; Todo, Yuji; Kiriake, Masaharu; and Nakao, Takashi, 5,445,334, Cl. 242-35.50A.
Todoki, Kenji, to Noritsu Koki Co., Ltd. Apparatus for arraying sheets of photosensitive material. 5,446,520, Cl. 355-27.000.
Togawa, Masayuki: *See*—
Toyama, Kiyoshi; and Togawa, Masayuki, 5,445,707, Cl. 216-22.000.
Tognella, Sergio; Livi, Valeria; Menta, Ernesto; and Spinelli, Silvano, to Boehringer Mannheim Italia S.p.A. Aminoacyl derivatives of gem-diphosphonic acids, a process for the preparation thereof and pharmaceutical compositions containing them. 5,446,187, Cl. 562-13.000.
Toho Electronics, Inc.: *See*—
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Tohoku Electric Power Co., Inc.: *See*—
Sakurai, Takeshi; Sugii, Nobuyuki; Adachi, Seiji; Ichikawa, Michiharu; Yaegashi, Yuji; Yamauchi, Hisao; Shimada, Masahiko; and Takizawa, Hirotsugu, 5,446,017, Cl. 505-125.000.
Tokai Kogyo Kabushiki Kaisha: *See*—
Yada, Yukihiko; and Ito, Toshikazu, 5,445,780, Cl. 264-259.000.
Toki, Motoyuki: *See*—
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, 5,445,698, Cl. 156-307.700.
Tokita, Suguru; Yamase, Kenji; Inagaki, Hajime; and Kurisu, Masayoshi, to Mitsui Petrochemical Industries, Ltd. Active energy ray-curable composition and optical recording medium having cured product of the composition. 5,445,855, Cl. 428-65.100.
Toko Kabushiki Kaisha Toshiba: *See*—
Nakayama, Kazuhiro; Ochiai, Ikuo; and Nakazawa, Michiya, 5,446,427, Cl. 333-181.000.
Tokunaga, Hiroyuki; and Atoji, Tadashi, to Canon Kabushiki Kaisha. Process for forming a silicon carbide film. 5,445,992, Cl. 437-100.000.
Tokunaga, Norikazu: *See*—
Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, 5,446,645, Cl. 363-71.000.
Tokuno, Masatera: *See*—
Kunihisa, Kazuo; Shimazu, Hiroto; Bando, Takashi; and Tokuno, Masateru, 5,445,713, Cl. 162-304.000.
Tokura, Kunihiko; and Uryu, Masaru, to Sony Corporation. Resin material reclaimed from optical recording disk and method of reclaiming same. 5,445,555, Cl. 451-28.000.
Tokushu Denkyoku Company Ltd.: *See*—
Sakamoto, Koji, 5,445,307, Cl. 228-119.000.
Tokuyama Corporation: *See*—
Kaneko, Shingo; Murakami, Yoshio; and Yamashita, Yoshinari, 5,445,862, Cl. 428-148.000.
Tokyo Electron Kabushiki Kaisha: *See*—
Miyagi, Katsushin; Mitsuhashi, Hiroyuki; and Akimoto, Kazuo, 5,445,522, Cl. 432-156.000.
Yamaguchi, Eiji; Fujihara, Kaoru; Matsuo, Takenobu; and Kitayama, Hirofumi, 5,445,521, Cl. 432-5.000.
Tokyo Electron Kyushu Limited: *See*—
Kamikawa, Yuuji; Matsumura, Kimiharu; Nomura, Masafumi; and Nagata, Junichi, 5,445,699, Cl. 156-345.000.
Tokyo Electron Limited: *See*—
Hasebe, Tetsuya; Hayashi, Hiroaki; and Shinoda, Kazuki, 5,446,748, Cl. 371-61.000.
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.
Tokyo Electron Sagami Limited: *See*—
Kitayama, Hirofumi; Iwai, Hiroyuki; Wada, Shinichi; and Oosawa, Tetsu, 5,445,486, Cl. 414-416.000.
Tokyo Electron Tohoku Kabushiki Kaisha: *See*—
Miyagi, Katsushin; Mitsuhashi, Hiroyuki; and Akimoto, Kazuo, 5,445,522, Cl. 432-156.000.
Yamaguchi, Eiji; Fujihara, Kaoru; Matsuo, Takenobu; and Kitayama, Hirofumi, 5,445,521, Cl. 432-5.000.
Tokyo Electron Yamanashi Limited: *See*—
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.
Tokyo Yogyo Kabushiki Kaisha: *See*—
Koide, Kunihiro; and Yajima, Tamotsu, 5,445,725, Cl. 204-153.100.
Tolve, Pietro; Tonelli, Riccardo; and Capotosti, Romeo, to Centro Sviluppo Materiali S.p.A. Rolls for strip continuous casting machines. 5,445,211, Cl. 164-428.000.
Tombo Trading International B.V.: *See*—
Bokstijn, Tom, 5,445,449, Cl. 312-9.310.
Tomic, Mirjana: *See*—
Kovacevic, Mice; Herak, Jure J.; Mandiec, Zora; Lukic, Irena; Tomic, Mirjana; and Britic, Zinka, 5,446,038, Cl. 514-210.000.
Tomikawa, Arifumi: *See*—
Ishizuka, Hironori; Maruoka, Wataru; and Tomikawa, Arifumi, 5,445,534, Cl. 439-352.000.
Tomioka, Kazuhiro: *See*—
Hori, Masaru; Yano, Hiroyuki; Horioka, Keiji; Hayashi, Hisataka; Jimbo, Sadayuki; Okano, Haruo; Tomioka, Kazuhiro; Ito, Yasuhiro; and Mori, Haruki, 5,445,710, Cl. 156-643.100.
Tomisawa, Naoki; and Watanabe, Satoru, to Unisia Jecs Corporation. Method and apparatus for controlling the idle speed of an internal combustion engine. 5,445,124, Cl. 123-339.110.
Tomita, Kazuhsi: *See*—
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.
Tomita, Yoshimi, to Pioneer Electronic Corporation. Optical disc and recording and reproducing method for an optical disc with a high density. 5,446,717, Cl. 369-58.000.
Tomiyama, Tetsuo: *See*—
Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,446,523, Cl. 355-207.000.
Tomoegawa Paper Co., Ltd.: *See*—
Shima, Takeshi; Nakabe, Katsuji; Kobayashi, Masaharu; and Sakumoto, Yukinori, 5,446,080, Cl. 524-99.000.
Tonelli, Riccardo: *See*—
Tolve, Pietro; Tonelli, Riccardo; and Capotosti, Romeo, 5,445,211, Cl. 164-428.000.
Tonomura, Akira: *See*—
Ru, Qing X.; Endo, Junji; and Tonomura, Akira, 5,446,589, Cl. 359-577.000.
Torgerson, Kevin L.; Keefe, Kevin M.; Schultz, David A.; and Matsuzawa, Minoru, to Orion-Bebeon Co., Ltd. Pipe connecting structure to be used for a milk delivery pipe. 5,445,357, Cl. 251-146.000.
Torii, Masafumi: *See*—
Hayakawa, Kunio; and Torii, Masafumi, 5,446,011, Cl. 503-209.000.
Torimaru, Yasuo, to Sharp Kabushiki Kaisha. Non-volatile semiconductor memory device. 5,446,688, Cl. 365-145.000.
Torre, Alfred G.: *See*—
Ayres, Kathryn J.; Beardsley, Brent C.; Bello, Keith A.; Benhase, Michael T.; Nordahl, Donald M.; Torre, Alfred G.; Trieu, Bao T.; and VanPatten, Linda D., 5,446,872, Cl. 395-180.000.
Torres, David O.: *See*—
Chemali, Roland E.; and Torres, David O., 5,446,654, Cl. 364-422.000.
Torrington Company, The: *See*—
Drechsler, Peter H., 5,445,945, Cl. 435-29.000.
Toshiba Chemical Corporation: *See*—
Hoshino, Masayoshi; and Yayoshi, Masakazu, 5,445,526, Cl. 439-69.000.
Toshiba Kiksi Kabushiki Kaisha: *See*—
Nakagawa, Yoshinori; Mitani, Shinichi; Kobayashi, Takehiko; and Honda, Takaaki, 5,445,491, Cl. 414-786.000.
Totten, Kevin J.: *See*—
Richter, Simon J.; Totten, Kevin J.; Credle, William S., Jr.; and Boston, Thomas R., 5,445,186, Cl. 137-614.200.
Tournier, Herve : *See*—
Schneider, Michel; Tournier, Herve ; and Lamy, Bernard, 5,445,810, Cl. 424-9.400.
Tourtier, Philippe; Vial, Jean-Francois; Diascorn, Jean-Louis; and Pecot, Michel, to Thomson-CSF. Television signal sub-band coder/decoder with different levels of compatibility. 5,446,495, Cl. 348-398.000.

Tovey, H. Jonathan, to United States Surgical Corporation. Endoscopic surgical device. 5,445,140, Cl. 600-117.000.

Towey, James P.: *See*—
Wiegand, Walter J.; Gobetz, Frank W.; Bullis, Robert H.; Towey, James P.; and Lennon, James W., 5,444,901, Cl. 29-25.420.

Toyama, Kiyoshi; and Togawa, Masayuki, to Teijin Seiko Co., Ltd. Method of manufacturing article having magnetic patterns. 5,445,707, Cl. 216-22.000.

Toyama, Masamichi: *See*—
Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, 5,446,494, Cl. 348-349.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Asai, Haruo; Kuwahara, Mitsuru; and Kotera, Nobukazu, 5,446,082, Cl. 524-389.000.

Toyo Chemical Co., Ltd.: *See*—
Uchida, Hiromichi, 5,445,264, Cl. 206-307.000.

Toyo Communication Equipment Co., Ltd.: *See*—
Ishii, Osamu, 5,445,708, Cl. 216-17.000.
Kawanabe, Masatoshi; Sowa, Kenichi; Mori, Akihisa; and Sawada, Tomoyuki, 5,446,244, Cl. 174-261.000.

Toyo Valve Co., Ltd.: *See*—
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hisashi; Tsuji, Takahiro; and Oishi, Keiichiro, 5,445,687, Cl. 148-433.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Yamashita, Yasuhiro; Manabe, Kunpei; and Asada, Atsuhisa, 5,446,669, Cl. 364-468.000.

Toyofuku, Kunitaka; and Iwasaki, Akiko, to New Oji Paper Co., Ltd. Thermosensitive recording material. 5,446,010, Cl. 503-208.000.

Toyoshima, Omito: *See*—
Funami, Yasuo; Takayanagi, Hisao; and Toyoshima, Omito, 5,444,979, Cl. 60-460.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Mori, Rentaro, 5,445,796, Cl. 422-98.000.
Onozawa, Satoru; Yamada, Naoki; Isogai, Shigetaka; and Ogawa, Kazuo, 5,445,405, Cl. 280-707.000.
Yoshizaki, Kouji; and Tanaka, Hiroshi, 5,444,978, Cl. 60-276.000.

Tozawa, Shigeki: *See*—
Kojima, Masayuki; Ito, Yoshikazu; Tomita, Kazuhsi; Tozawa, Shigeki; Iimuro, Shunichi; Arasawa, Masashi; and Nishimura, Eiichi, 5,445,709, Cl. 216-71.000.

Trans-Chattin, Inc.: *See*—
Chattin, Jessie R., 5,445,567, Cl. 474-78.000.

Trapp, William B. Adjustable arch support. 5,444,948, Cl. 52-127.200.

Trask, Philip A.; Pillai, Vincent A.; and Gierhart, Thomas J., to Hughes Aircraft Company. Electrical interconnection substrate with both wire bond and solder contacts, and fabrication method. 5,445,311, Cl. 228-175.000.

Tratberger, Karl: *See*—
Bourkel, Arsene; Lanfermann, Bernd; Tratberger, Karl; and Post, Karl H., 5,445,188, Cl. 137-625.640.

Traugott, Thomas D.; and Workentine, Shari L., to Dow Chemical Company, The. Maleimide-modified high heat ABS resins. 5,446,103, Cl. 525-282.000.

Travers, Christine; and Martino, Germain, to Institut Francais Du Petrole. Chlorinated, alumina-based, bimetallic catalyst and its use in the isomerization of C_4-C_6 paraffins. 5,446,230, Cl. 585-748.000.

Trayco, Inc.: *See*—
Koenig, Paul J.; Hutchings, Douglas F.; Gibbard, David W.; and Manwell, Richard C., 5,444,953, Cl. 52-282.100.

Tremblay, Jules: *See*—
Saucier, Stanton D.; Savaria, Pierre; Tremblay, Jules; and Tremblay, Nelson, 5,445,488, Cl. 414-546.000.

Tremblay, Nelson: *See*—
Saucier, Stanton D.; Savaria, Pierre; Tremblay, Jules; and Tremblay, Nelson, 5,445,488, Cl. 414-546.000.

Tri-Point Medical L.P.: *See*—
Clark, Jeffrey G.; Spranger, Douglas M.; Mulhauser, Paul J.; and Lacotta, Paul R., 5,445,597, Cl. 602-48.000.

Triarco Industries, Inc.: *See*—
Rohde, Rodger R., Jr.; Schuler, Edward F.; and Handel, Richard A., 5,445,957, Cl. 435-200.000.

Trieu, Bao T.: *See*—
Ayres, Kathryn J.; Beardsley, Brent C.; Bello, Keith A.; Benhase, Michael T.; Nordahl, Donald M.; Torre, Alfred G.; Trieu, Bao T.; and VanPatten, Linda D., 5,446,872, Cl. 395-180.000.

Trinh, Toan: *See*—
Kvietok, Lisa L.; Trinh, Toan; and Hollingshead, Judith A., 5,445,747, Cl. 252-86.000.

Tronich, Wolfgang: *See*—
Billeb, Gilbert; and Tronich, Wolfgang, 5,446,190, Cl. 560-103.000.

Trost, Barry M.; and Dumas, Jacques, to Leland Stanford Junior Univ., Board of Trustees of the. Palladium catalyzed akylative cyclization useful in syntheses of Vitemin D and analogues. 5,446,225, Cl. 585-359.000.

TRW Inc.: *See*—
Chung, Hsin-Hsien; and Douglass, Jeffrey A., 5,446,471, Cl. 343-770.000.
Stokes, Robert B.; Crawford, Jay D.; Cushman, Drew; and Kong, Alvin M. W., 5,446,306, Cl. 257-416.000.

Tsai, Boh C.: *See*—
Rotter, George E.; Melquist, John L.; Chiang, Weilong; Tsai, Boh C.; and Kelly, John J., 5,446,111, Cl. 525-444.000.

Tsai, Tzong-Bin: *See*—
Landry, Christian C.; Tsai, Tzong-Bin; Chapin, Bradford G.; and Lou, Jin-Bond, 5,446,623, Cl. 361-737.000.

Tschaen, David M.: *See*—
Jones, Todd K.; Mills, Sander G.; Askin, David; Reamer, Robert A.; Desmond, Richard; Tschaen, David M.; Volante, Ralph P.; and Shinkai, Ichiro, 5,446,158, Cl. 546-14.000.

Tschang, Chung-Ji: *See*—
Schwendemann, Volker; Glaser, Klaus; Tschang, Chung-Ji; Burkhart, Bernd; Offring, Alfred; and Dung, Bernhard, 5,445,727, Cl. 205-271.000.

Tseng, Carol L.: *See*—
Chen, Benjamin Y.-H.; Tseng, Carol L.; and Peterson, Frank B., 5,445,105, Cl. 114-338.000.

Tsubomoto, Naoto: *See*—
Kinugasa, Masanori; Tsubomoto, Naoto; and Kobayashi, Osamu, 5,445,806, Cl. 423-598.000.

Tsubone, Tsunehiko: *See*—
Kato, Shigekazu; Tamura, Naoyuki; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,445,484, Cl. 414-217.000.

Tsuji, Shigeki: *See*—
Yoshida, Yoshio; Kurata, Yukio; and Tsuji, Shigeki, 5,446,719, Cl. 369-116.000.

Tsuji, Takahiro: *See*—
Sugegawa, Tosuke; Shimoda, Yoshihito; Tan, Hisashi; Tsuji, Takahiro; and Oishi, Keiichiro, 5,445,687, Cl. 148-433.000.

Tsunoda, Michio: *See*—
Suzuki, Satoshi; Tsunoda, Michio; Murai, Kunitaka; and Yamada, Katsumi, 5,446,328, Cl. 310-233.000.

Tsuruoka, Tetsumei, to Fujitsu Limited. Congestion processing mode and congestion processing circuit in frame relay exchange apparatus. 5,446,733, Cl. 370-60.100.

Tsuzuki, Wakako: *See*—
Kobayashi, Shoichi; Miwa, Shoji; and Tsuzuki, Wakako, 5,445,950, Cl. 435-99.000.

Tucker Housewares, Inc.: *See*—
Evans, David, 5,445,397, Cl. 280-47.180.

Tuckner, Ronald; and Feneelis, David, to Tetra Laval Holdings & Finance S.A. Method and apparatus for sterilizing cartons and breaking carton score lines. 5,445,793, Cl. 422-28.000.

Tumer, Tumay O. Integrated substance detection instrument. 5,446,288, Cl. 250-390.050.

Tummoscheit, Gunter: *See*—
Becker, Gunnar; Borsken, Norbert; Gudesen, Alwin; Klemp, Jurgen; Tummoscheit, Gunter; and Vilmar, Gordian, 5,446,291, Cl. 250-559.240.

Tung, Hsueh S.: *See*—
Van Der Puy, Michael; Madhavan, G. V. Bindu; Thenappan, Alagappan; and Tung, Hsueh S., 5,446,217, Cl. 570-156.000.

Tuohey, David; Bartels, Craig R.; and Shah, Vatsal M., to Texaco Inc. Pervaporation vessel. 5,445,731, Cl. 202-173.000.

Turenne, Sylvain; and Mongeon, Paul-EmEmile, to National Research Council of Canada. Method of producing elements from powders. 5,445,788, Cl. 419-42.000.

Turner, Charles J.: *See*—
Taranowski, Michael G.; Langland, Kenneth A.; Duncan, Eugene F.; Jambor, George F.; and Turner, Charles J., 5,446,261, Cl. 250-221.000.

Turner, Duane L.: *See*—
Leach, Thomas C.; Turner, Duane L.; and Carter, Darryl, 5,446,431, Cl. 335-18.000.

Turner, J. Keith; Meester, Matthew A.; and Van Scyoc, Thomas W., to Gaston County Dyeing Machine Company. Carrier for supporting textile material in a wet treatment machine. 5,444,997, Cl. 68-198.000.

Turner, S. Richard: *See*—
Blevins, Richard W.; and Turner, S. Richard, 5,446,106, Cl. 525-379.000.

Tuy, Heang K., to Picker International, Inc. CT Scanner with improved processing efficiency 180 degrees+ fan angle reconstruction system. 5,446,799, Cl. 382-132.000.

Twichell, Brian C.: *See*—
Levine, Frank E.; Twichell, Brian C.; and Welbon, Edward H., 5,446,876, Cl. 395-184.010.

Tyree, Lewis, Jr. Filler for small tanks or the like. 5,445,196, Cl. 141-297.000.

Uang, M. S., to Favpon Enterprise Co., Ltd. Laminator. 5,445,700, Cl. 156-359.000.

Ubelhor, Paul L., to George Koch Sons, Inc. Corrugated product dryer. 5,444,922, Cl. 34-210.000.

Uchida, Hiromichi, to Toyo Chemical Co., Ltd. Floppy disk accommodation device. 5,445,264, Cl. 206-307.000.

Uchida, Hiroshi; Onuki, Mituhiro; and Watanabe, Hideo, to CCA Inc. Method of producing patterned shaped article. 5,445,772, Cl. 264-32.000.

Uchida, Tadatoshi, to Suntory Limited; and Nisaho Corporation. Fluid delivery system. 5,445,631, Cl. 604-412.000.

Uchikata, Yoshio: *See*—
Asakura, Osamu; Uchikata, Yoshio; Kawazoe, Kenji; and Kanome, Yuji, 5,445,464, Cl. 400-249.000.

Uchiyama, Yoshiharu: *See*—
Tetsuya, Ohtani; Yokohama; Uchiyama, Yoshiharu; and Nomura, Hideo, 5,446,618, Cl. 361-683.000.

Uchiyama, Yukihiro, to Seiko Epson Corporation. Automatic platen gap adjusting apparatus. 5,445,458, Cl. 400-55.000.

Udd, Eric; and Theriault, John F., to McDonnell Douglas Corporation. Fiber optic measuring apparatus and method. 5,446,533, Cl. 356-73.100.

Ueda, Hiroshi: *See*—
Nakayama, Shohachiro; Iwata, Toyomi; Kuroda, Masahiro; Goto, Naoyuki; Ueda, Hiroshi; and Ishii, Michio, 5,445,691, Cl. 152-209.000.

Ueda, Kouichi; Toyama, Masamichi; Suda, Hirofumi; Kaneda, Naoya; and Iwasaki, Youichi, to Canon Kabushiki Kaisha. Focus detecting system. 5,446,494, Cl. 348-349.000.

Ueda, Sanae: *See*—
Nishishita, Makoto; Goto, Masato; and Ueda, Sanae, 5,446,202, Cl. 568-23.000.

Ueda, Yoshimichi: *See*—
Mori, Toru; Sugawa, Hideo; Yamada, Nobutoshi; and Ueda, Yoshimichi, 5,446,129, Cl. 530-324.000.

Uehara, Izushi, to NEC Corporation. Process dispatching method. 5,446,893, Cl. 395-650.000.

Uehara, Katsuhiro; Endo, Mikio; Araki, Hitoyuki; Arai, Takeo; and Kawase, Yasuhiro, to Shin-Etsu Chemical Co., Ltd. Method and apparatus for preparing 3-[N-(2-aminoethyl)]aminopropylalkoxysilane. 5,446,181, Cl. 556-424.000.

Uehara, Masaru: *See*—
Kinoshita, Touru; Takahashi, Kenji; Yanagisawa, Tsuneo; Uehara, Masaru; and Kimata, Hitoshi, 5,446,339, Cl. 313-478.000.

Ueki, Norihito: *See*—
Nonaka, Shuichi; Ueki, Norihito; and Mishima, Takashi, 5,446,097, Cl. 525-193.000.

Uematsu, Kyouichi: *See*—
Yokomakura, Mitsunori; Uematsu, Kyouichi; Imai, Kanji; Seikiguchi, Tomohiro; and Nakatani, Toshifumi, 5,446,337, Cl. 313-422.000.

Uemura, Kazuyoshi: *See*—
Miya, Tatsuya; and Uemura, Kazuyoshi, 5,446,419, Cl. 331-99.000.

Ueshima, Yoshiyuki; Mizoguchi, Toshiaki; Miyazawa, Kenichi; and Nishimura, Satoshi, to Nippon Steel Corporation. Fe-Cu alloy sheet having an alloy structure of high uniformity. 5,445,686, Cl. 148-330.000.

Uesugi, Daisuke: *See*—
Sugiura, Horoaki; Tanaka, Faminori; and Uesugi, Daisuke, 5,445,784, Cl. 264-521.000.

Uhling, Thomas F.; Yearsley, Philip J.; Pittock, Dale L.; and Mathews, Mark E., to Hewlett-Packard Company. Method of trimming an electronic circuit. 5,446,260, Cl. 219-121.690.

Ukon, Masayuki: *See*—
Yamaguti, Shuji; Ukon, Masayuki; Misawa, Shiroji; and Arisaka, Masakazu, 5,445,722, Cl. 204-229.000.

Ulano Corporation: *See*—
Curtis, John, 5,445,916, Cl. 430-270.000.

Ullman, Edwin F., to Syntex (U.S.A.) Inc. Methods for determining peroxidately active substances. 5,445,944, Cl. 435-28.000.

Ullrich, Gunter; Honlinger, Herwig; and Henrich, Uwe, to Carl Freudenberg, Firma. Torsional vibration damper. 5,445,049, Cl. 74-574.000.

Ulrey, Joseph N.: *See*—
Cullen, Michael J.; Ulrey, Joseph N.; Giangrande, Michael R.; and Eggers, Patrick J., 5,445,127, Cl. 123-422.000.

Ultradent Products, Inc.: *See*—
Fischer, Dan E.; and Fischer, David V., 5,445,523, Cl. 433-90.000.

Umeda, Yasushi: *See*—
Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,446,523, Cl. 355-207.000.

Umehara, Hideki: *See*—
Itoh, Hisato; Oguchi, Takahisa; Sugimoto, Kenichi; Oi, Ryu; Umehara, Hideki; and Aihara, Shin, 5,446,142, Cl. 540-139.000.

Umehara, Shinji; Hasegawa, Mitsuru; Nagai, Kohji; and Yanagibashi, Yoshinobu, to TEAC Corporation. Method and apparatus for moving head from one tape track to another against the risk of damaging the tape. 5,446,605, Cl. 360-74.600.

Umekage, Yasuhiro: *See*—
Kondou, Masamitsu; Umekage, Yasuhiro; and Nakamura, Kunio, 5,445,517, Cl. 431-18.000.

Underhill, Allan E.: *See*—
Winter, Christoper S.; Oliver, Stephen N.; Rush, James D.; Underhill, Allan E.; and Hill, Callum A. S., 5,445,767, Cl. 252-587.000.

UNEX Corporation: *See*—
Lucey, Robert E.; Ela, John; Lada, Christopher O.; Shubert, Lawrence G.; and Loew, Christopher, 5,446,788, Cl. 379-430.000.

Uni-Charm Corporation: *See*—
Mizutani, Satoshi; and Kashiwagi, Masahiro, 5,445,627, Cl. 604-385.200.

Union Oil Company of California: *See*—
Lundegard, Paul D.; Flint, Carl E.; and Chaffee, Brent F., 5,445,474, Cl. 405-128.000.

Union Special GmbH: *See*—
Bartholoma, Hans-Dieter, 5,445,091, Cl. 112-199.000.

Unisia Jecs Corporation: *See*—
Hara, Seinosuke, 5,445,116, Cl. 123-90.160.
Tomisawa, Naoki; and Watanabe, Satoru, 5,445,124, Cl. 123-339.110.
Yamamuro, Shigeaki, 5,445,189, Cl. 137-625.650.
Yamamuro, Shigeaki, 5,445,446, Cl. 303-117.100.

Unisys Corporation: *See*—
Idleman, Thomas E.; and Stanness, Jesse L., 5,446,861, Cl. 395-427.000.
Prestifilippo, James; and Kogen, Clark C., 5,446,889, Cl. 395-600.000.
Russ, Craig F., 5,446,857, Cl. 395-427.000.
Steckler, Thomas M.; Gryger, Dana A.; and Tickner, Robert H., 5,446,844, Cl. 395-250.000.

United Microelectronics Corporation: *See*—
Hong, Gary, 5,445,983, Cl. 437-43.000.
Hong, Gary; and Chen, Hwi-Huang, 5,445,984, Cl. 437-43.000.
Lur, Water; and Yen, Po-Wen, 5,445,989, Cl. 437-67.000.

United Parcel Service of America, Inc.: *See*—
Bonnet, Henri, 5,444,962, Cl. 53-417.000.

United States Bronze Powders, Incorporated: *See*—
Matthews, Paul E.; and Pelletiers, Thomas W., II, 5,445,665, Cl. 75-255.000.

United States Department of Energy: *See*—
Berry, Ray A.; Fincke, James R.; and McHugh, Kevin M., 5,445,324, Cl. 239-99.000.

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Army: *See*—
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Koyama, Hirohisa; and Bushida, Takeshi, 5,446,238, Cl. 84-669.000.

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Kai, Manabu, 5,445,121, Cl. 123-198.0DC.
Oka, Ryusuke, 5,446,250, Cl. 181-208.000.

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Saito, Kenji; Kajikawa, Akira; Nakatani, Akihiro; Yamahira, Atsushi; Noma, Hiroyuki; and Kawamura, Kazuhiko, 5,445,203, Cl. 152-527.000.

Yamakawa, Tomio: *See*—
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Yamamiya, Kunio, to Olympus Optical Co., Ltd. Apparatus for recording and/or reproducing information and/or from optical information record disk. 5,446,711, Cl. 369-44.140.

Yamamoto Chemicals, Incorporated: *See*—
Itoh, Hisato; Enomoto, Katashi; Oguchi, Takahisa; and Nishizawa, Tsutomu, 5,446,141, Cl. 540-139.000.
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Komori, Kazuhiro; Meguro, Satoshi; Nishimoto, Toshiaki; Kume, Hitoshi; and Yamamoto, Hideaki, 5,445,980, Cl. 437-43.000.

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Yamamoto, Takeshi; Tanaka, Tamiya; Yamamoto, Hirotaka; and Tabe, Rikizo, 5,446,879, Cl. 395-180.000.

Yamamoto, Kaoru: *See*—
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Yamamoto, Keisuke: *See*—
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Yamamoto, Ken; Kuroyanagi, Isao; Yamanaka, Yasushi; and Kakehashi, Nobuharu, to Nippondenso Co., Ltd. Condenser for refrigerating cycle. 5,444,993, Cl. 62-473.000.

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Yamamoto, Masahiro: *See*—
Nagamoto, Shunichi; Muramatu, Takeshi; Yoshimura, Yasuo; and Yamamoto, Masahiro, 5,446,453, Cl. 340-825.060.

Yamamoto, Masanobu: *See*—
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Yamamoto, Nobumasa, to Berg Technology, Inc. Connector apparatus. 5,445,529, Cl. 439-81.000.

Yamamoto, Takashi: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wade, Katsuyoshi; and Ishii, Minoru, 5,445,507, Cl. 418-55.100.

Yamamoto, Takeshi, to Kabushiki Kaisha Toshiba. Trimming circuit. 5,446,407, Cl. 327-525.000.

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Ikeda, Katsumi; and Yamamoto, Yushin, 5,446,647, Cl. 363-89.000.

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Yamanaka, Masahiro: *See*—
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Yamanaka, Tooru: *See*—
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Yamanaka, Yasushi: *See*—
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Yamane, Kenji: *See*—
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Yamano, Akihiko: *See*—
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Yamanouchi, Junichi; Tamura, Yutaka; and Takagi, Yasuyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,445,931, Cl. 430-627.000.

Yamaoka, Fumiyuki: *See*—
Sasaki, Mitsuo; Kakizaki, Shinobu; Yamaoka, Fumiyuki; Takahashi, Toru; and Kimura, Makoto, 5,446,663, Cl. 364-424.050.

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Sakata, Shinji; Machida, Haruhiko; Ijichi, Katsuhi; and Kano, Fumitaka, 5,446,031, Cl. 514-50.000.

Yamasaki, Harumasa: *See*—
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; Sasaki, Mitsuhiro; and Yamasaki, Harumasa, 5,446,527, Cl. 355-279.000.

Yamasaki, Hidetoshi: *See*—
Urabe, Yoshio; Takai, Hitoshi; and Yamasaki, Hidetoshi, 5,446,770, Cl. 375-219.000.

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Yamashita, Michio: *See*—
Fujie, Akihiko; Takase, Shigehiro; Yamashita, Michio; Sato, Tomoko; Hashimoto, Seiji; and Okuhara, Masakuni, 5,446,022, Cl. 514-11.000.

Yamashita, Yasuhiro; Manabe, Kunpei; and Asada, Atsuhisa, to Toyoda Koki Kabushiki Kaisha. Method and apparatus for managing a machining system. 5,446,669, Cl. 364-468.000.

Yamashita, Yoshinari: *See*—
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Yamashita, Yukihiro; and Suzumura, Toshihiro, to Nippondenso Co., Ltd. Air-fuel ratio control apparatus for internal combustion engines. 5,445,136, Cl. 123-689.000.

Yamato, Ikuo: *See*—
Shirahama, Hidefumi; Jifuku, Yorito; Kobayashi, Akira; Shimada, Keizo; Tokunaga, Norikazu; Sakurai, Yoshimi; Yamato, Ikuo; Mino, Tomoaki; and Inukai, Satoru, 5,446,645, Cl. 363-71.000.

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Yamaura, Hiroshi: *See*—
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Yamawaki, Yuichiro, to Awaji Ferryboat Kabushiki Kaisha. Traffic accident data recorder and traffic accident reproduction system. 5,446,659, Cl. 364-424.030.

Yamazaki, Hiroaki: *See*—
Kobayashi, Hideshi; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 5,446,042, Cl. 514-222.500.

Yamazaki, Takaaki: *See*—
Toda, Toshimasa; Naito, Satoru; Osawa, Hisayu; and Yamazaki, Takaaki, 5,446,144, Cl. 544-198.000.

Yamazaki, Tatsuya, to Canon Kabushiki Kaisha. Measuring apparatus with optically conjugate radiation fulcrum and irradiated area. 5,446,532, Cl. 356-73.000.

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Schneider, Michel; Brochot, Jean; Puginier, Jerome; and Yan, Feng, 5,445,813, Cl. 424-9.510.

Yanagibashi, Yoshinobu: *See*—
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Yanagida, Toshiharu, to Sony Corporation. Dry etching method. 5,445,712, Cl. 156-662.000.

Yanagisawa, Tsuneo: *See*—
Kinoshita, Touru; Takahashi, Kenji; Yanagisawa, Tsuneo; Uehara, Masaru; and Kimata, Hitoshi, 5,446,339, Cl. 313-478.000.

Yanagisawa, Yoshitake: *See*—
Hayashi, Yoko; Tamura, Shin-Ichiro; Murooka, Takao; and Yanagisawa, Yoshitake, 5,445,853, Cl. 428-64.400.

Yancey, Drew A., to Southwest AES Inc. Golf training device. 5,445,384, Cl. 273-188.00A.

Yang, Dominic C.: *See*—
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Yang, Min: *See*—
Ahn, Hyung S.; No, Min S.; Si, Sang K.; Choi, Won T.; Seo, Joo O.; Lim, Jin H.; and Yang, Min, 5,445,993, Cl. 431-129.000.

Yang, Na N., to Eli Lilly and Company. Method for screening anti-osteoporosis agents. 5,445,941, Cl. 435-6.000.

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Yang, Ziwan: *See*—
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Yano, Hiroyuki: *See*—
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Yasuda, Akira: *See*—
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Yasuda, Masahiro, to Kabushiki Kaisha Yasuda Corporation. Hair clip. 5,445,170, Cl. 132-279.000.

Yasuda, Shin-ichiro; Kawabe, Kuniyasu; Sasaki, Mitsuhiro; and Yamasaki, Harumasa, to Kao Corporation. Method of forming fixed images. 5,446,527, Cl. 355-279.000.

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Yatani, Hiroshi: *See*—
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Yayoshi, Masakazu: *See*—
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Yen, Po-Wen: *See*—
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Yilmaz, Hamza, to Siliconix Incorporated. Method of making power device with buffered gate shield region. 5,445,978, Cl. 437-41.000.

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Yingling, Richard A.: *See*—
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Yokohama: *See*—
Tetsuya, Ohtani; Yokohama; Uchiyama, Yoshiharu; and Nomura, Hideo, 5,446,618, Cl. 361-683.000.

Yokomakura, Mitsunori; Uematsu, Kyouichi; Imai, Kanji; Sekiguchi, Tomohiro; and Nakatani, Toshifumi, to Matsushita Electric Industrial Co., Ltd. Image display apparatus and method of making the same. 5,446,337, Cl. 313-422.000.

Yokota, Katsumasa: *See*—
Orimoto, Hiroyuki; Yokota, Katsumasa; Amari, Fumiya; and Suzuki, Saburo, 5,445,515, Cl. 425-526.000.

Yokoyama, Shigeki: *See*—
Kobayashi, Seizo; Mizoe, Takashi; Iwanami, Yoshimu; Yokoyama, Shigeki; and Jimbo, Keizi, 5,445,883, Cl. 428-355.000.

Yoneyama, Kouichi: *See*—
Tabe, Koichi; and Yoneyama, Kouichi, 5,446,724, Cl. 369-275.100.

Yoo, Seung-Moon; Hag, Ejaz ul; Choi, Yun-Ho; Cho, Soo-In; Chin, Dae-Je; Kang, Nam-Soo; and Lee, Seung-Hun, to Samsung Electronics Co., Ltd. Semiconductor memory device. 5,446,697, Cl. 365-226.000.

Yook, Hyung S.; Park, Sang H.; Baek, Hyun C.; Lee, Young C.; Kim, Sang I.; and Baik, Dong W., to Hyundai Electronics Industries Co., Ltd. Method for forming a field oxide film in a semiconductor device. 5,445,990, Cl. 437-69.000.

Yoon, Inbae; Yoon, Samuel C.; and Yoon, Suzanne J. Methods of applying surgical chips and suture tie devices to bodily tissue during endoscopic procedures. 5,445,167, Cl. 128-898.000.

Yoon, InBae. Surgical instrument stabilizer. 5,445,615, Cl. 604-96.000.

Yoon, InBae. Automatic retractable safety penetrating instrument for portal sleeve introduction and method of use. 5,445,617, Cl. 604-165.000.

Yoon, Samuel C.: *See*—
Yoon, Inbae; Yoon, Samuel C.; and Yoon, Suzanne J., 5,445,167, Cl. 128-898.000.

Yoon, Suzanne J.: *See*—
Yoon, Inbae; Yoon, Samuel C.; and Yoon, Suzanne J., 5,445,167, Cl. 128-898.000.

Yoshida, Atsuya, to Kabushiki Kaisha Toshiba. X-ray imaging tube. 5,445,846, Cl. 427-65.000.

Yoshida, Hiroki: *See*—
Kurokawa, Osamu; Yoshida, Hiroki; and Inabe, Tsutomu, 5,446,782, Cl. 379-58.000.

Yoshida, Ichiro; Katayama, Tsukuru; and Hashimoto, Jun-ichi, to Sumitomo Electric Industries, Ltd. Method of sorting semiconductor lasers. 5,446,537, Cl. 356-256.000.

Yoshida, Ichiro, to Sumitomo Electric Industries, Ltd. Current block type semiconductor laser. 5,446,753, Cl. 372-46.000.

Yoshida, Masaya; Noda, Nobuhisa; Namura, Ichiro; and Kawamura, Kiyoshi, to Nippon Shokubai Co., Ltd. Thermosetting resin composition. 5,446,099, Cl. 525-204.000.

Yoshida, Tadao, to Sony Corporation. Input device for entering data for electronic equipments and so forth. 5,446,480, Cl. 345-157.000.

Yoshida, Yasuhisa: *See*—
Namiki, Koichi; Matsumoto, Takuya; Hashimoto, Toru; and Yoshida, Yasuhisa, 5,445,015, Cl. 73-118.100.

Yoshida, Yoshikazu; and Mizuguchi, Shinichi, to Matsushita Electric Industrial Co., Ltd. Laser ablation apparatus. 5,446,755, Cl. 372-109.000.

Yoshida, Yoshio; Kurata, Yukio; and Tsuji, Shigeki, to Sharp Kabushiki Kaisha. Optical information reproducing apparatus. 5,446,719, Cl. 369-116.000.

Yoshikawa, Hiroyuki: *See*—
Shimomura, Yoshiki; Tanigawa, Sadao; Umeda, Yasushi; Tomiyama, Tetsuo; and Yoshikawa, Hiroyuki, 5,446,523, Cl. 355-207.000.

Yoshimitsu, Tokio: *See*—
Takano, Hidekazu; Yoshimitsu, Tokio; Hibino, Akinori; Sawa, Yoshihide; Toki, Motoyuki; Wu, Yang; Tak, Yuen C.; and Ohnaka, Tadao, 5,445,698, Cl. 156-307.700.

Yoshimori, Masanori, to NEC Corporation. Noise tolerant code setting circuit. 5,446,402, Cl. 326-108.000.

Yoshimoto, Masanori: *See*—
Sato, Mitsutaka; and Yoshimoto, Masanori, 5,446,317, Cl. 257-734.000.

Yoshimura, Terumi, to Fujitsu Limited; and Fujitsu VLSI Limited. Developing method and apparatus of hierarchical graphic data for use in a semiconductor integrated circuit. 5,446,675, Cl. 364-489.000.

Yoshimura, Yasuo: *See*—
Nagamoto, Shunichi; Murasatu, Takeshi; Yoshimura, Yasuo; and Yamamoto, Masahiro, 5,446,453, Cl. 340-825.060.

Yoshino Kogyosho Co., Ltd.: *See*—
Sugiura, Horoaki; Tanaka, Fumimori; and Uesugi, Daisuke, 5,445,784, Cl. 264-521.000.

Yoshino, Toshiaki; and Chan, Kwok K., to Texas Instruments Incorporated. BICMOS tri-state circuit with full output voltage swing. 5,446,321, Cl. 326-57.000.

Yoshino, Yasushi: *See*—
Masaki, Mitsuo; Yamakawa, Tomio; Satoh, Masaru; Takeda, Hiromitsu; Yoshino, Yasushi; and Matsukura, Hitoshi, 5,446,146, Cl. 540-575.000.

Yoshino, Yutaka: *See*—
Yamada, Yonekazu; Yoshino, Yutaka; Kitada, Mitsuhira; and Seki, Kazuo, 5,445,309, Cl. 228-170.000.

Yoshio, Junichi; Taniai, Yukio; and Moriichi, Munetoshi, to Pioneer Electronic Corporation. Disc changer and player that reads and stores program data of all discs prior to reproduction and method of reproducing music on the same. 5,446,714, Cl. 369-48.000.

Yoshioka, Katsuki: *See*—
Soma, Takao; Takahashi, Tomonori; Kawasaki, Shinji; and Yoshioka, Katsuki, 5,445,902, Cl. 429-30.000.

Yoshioka, Kimitomo: *See*—
Kobayashi, Hideshi; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 5,446,042, Cl. 514-222.500.

Yoshizaki, Kouji; and Tanaka, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Catalyst warming up device of an internal combustion engine. 5,444,978, Cl. 60-276.000.

Yotsuyanagi, Michio, to NEC Corporation. Current comparator. 5,446,397, Cl. 327-66.000.

You, Shiryu: *See*—
Fukuda, Hideo; Fujita, Haruhiko; Shimoda, Hideyoshi; and You, Shiryu, 5,446,098, Cl. 525-194.000.

Young, Ian; Wong, Keng L.; and Smith, Jeffrey, to Intel Corporation. Microprocessor PLL clock circuit with selectable delayed feedback. 5,446,867, Cl. 395-550.000.

Yourgalite, Ray A.; Becicka, Kenneth F.; Dark, Jay A.; Reece, Alan R.; and Kleber, Robert J., to Simplimatic Engineering Company. Apparatus for palletizing/unitizing easily compressible products. 5,445,493, Cl. 414-791.600.

Yuasa, Satoshi: *See*—
Kaneko, Shuzo; Okada, Shinjiro; Yuasa, Satoshi; Shinjo, Katsuhiko; Miyata, Hirokatsu; and Shibata, Masaaki, 5,446,570, Cl. 359-87.000.

Yue, Stephen T.: *See*—
Roth, Bruce L.; Millard, Paul J.; Yue, Stephen T.; and Haugland, Richard P., 5,445,946, Cl. 435-34.000.

Yukio, Hosoya, to Nissinbo Industries, Inc. Antiskid brake system having rear brake apportioning control. 5,445,445, Cl. 303-113.500.

Yukitomo, Tatsuhiko: *See*—
Aoki, Eiji; Yamada, Koichoro; and Yukitomo, Tatsuhiko, 5,445,096, Cl. 114-74.00A.

Yumoto, Hideaki, to TLV Co., Ltd. Snap action float valve assembly for liquid feeding device. 5,445,501, Cl. 417-133.000.

Yun, Chen L. Structure of jump rope. 5,445,586, Cl. 482-82.000.

Yung-Sung, Chuang. Adjustable sunshade. 5,445,428, Cl. 296-97.700.

Yungers, Christopher R.: *See*—
Griffin, Michael E.; and Yungers, Christopher R., 5,446,768, Cl. 375-377.000.

Yuvee Company: *See*—
Higginson, Timothy B., 5,444,890, Cl. 15-214.000.

Zaiser, Wolfgang; and Bender, Helmut, to Mercedes-Benz AG. Gearwheel change transmission of the countershaft type. 5,445,041, Cl. 74-331.000.

Zambon Group S.p.A.: *See*—
Pozzi, Franco; and Furlani, Pia, 5,445,828, Cl. 424-476.000.

Zareck, Mark A. Book holder. 5,445,416, Cl. 281-42.000.

Zarif, Leila: *See*—
Pavia, Andre A.; Pucci, Bernard; Riess, Jean G.; Zarif, Leila; and Guedj, Camille, 5,446,023, Cl. 514-12.000.

Zeigler, Theodore R., to World Shelters, Inc. Portable shelter assemblies. 5,444,946, Cl. 52-86.000.

Zeneca Limited: *See*—
Doba, Takahisa; and Watanabe, Bunya, 5,445,918, Cl. 430-285.000.
Ely, Susan; and Tippett, Janet M., 5,446,019, Cl. 514-2.000.
Hutton, Jonathan; and Waterson, David, 5,446,165, Cl. 546-152.000.

Zeneca Pharma: *See*—
Hutton, Jonathan; and Waterson, David, 5,446,165, Cl. 546-152.000.

Zeneca Resins BV: *See*—
Stevens, Emile J. M.; and Lear, Peter, 5,446,083, Cl. 524-458.000.

Zenith Data Systems Corporation: *See*—
Belt, Steven L.; and Hovey, Scott A., 5,446,904, Cl. 395-750.000.
Witkowski, Todd R., 5,446,403, Cl. 327-143.000.

Zenyaku Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Hideshi; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 5,446,042, Cl. 514-222.500.

Zeze, Kazuo: *See*—
Kamiyama, Misao; and Zeze, Kazuo, 5,445,411, Cl. 280-733.000.

Zhang, Tony: *See*—
Scriven, Eric F. V.; Keay, James G.; and Zhang, Tony, 5,446,163, Cl. 546-277.000.

Zhang, William H.: *See*—
Huang, Xiaoli; and Zhang, William H., 5,446,676, Cl. 364-578.000.

Zhou, Fu M. DC voltage divider. 5,446,644, Cl. 363-62.000.

Zilch, Harald: *See*—
Seela, Frank; Bourgeouis, Werner; Gumbiowski, Rainer; Roling, Angelika; Rosemeyer, Helmut; Merteas, Alfred; Zilch, Harald; Konig, Bernhard; and Koch, Edith, 5,446,139, Cl. 536-26.700.

Zilog, Inc.: *See*—
Vahabi, Mahammadreza; and Kohanteb, Alfred, 5,446,742, Cl. 371-27.000.

Zimmer, Hans-Guenter, to Deutsche ITT Industries GmbH. Method for the global planarization of surfaces of semiconductor integrated circuits. 5,445,998, Cl. 437-228.000.

Zimmer, Inc.: *See*—
Johnson, Todd S.; Lane, Richard A.; Petersen, Thomas D.; Nichols, Chuck; and Howard, John R., 5,445,640, Cl. 606-86.000.

Zimmerman, Patrick G.: *See*—
Chamberlain, Craig S.; Connell, Glen; LePere, Pierre H.; Minick, Chris A.; Palmgren, Charlotte M.; Tait, William C.; Vesley, George F.; and Zimmerman, Patrick G., 5,446,270, Cl. 219-730.000.

Zimmermann, abine: *See*—
Buchner, Norbert; Domke, Klaus; Reichert, Manfred; Stotkiewitz, Herbert; Wilke, Bernd; Zimmermann, abine; Lemke, Kuno; and Voegele, Guenther, 5,445,870, Cl. 428-214.000.

Zimmermann, Christian: *See*—
Kugler, Karl-Heinz; Gollin, Walter; and Zimmermann, Christian, 5,446,385, Cl. 324-388.000.

Zmijewski, Milton J., Jr.: *See*—
Briggs, Barbara S.; and Zmijewski, Milton J., Jr., 5,445,959, Cl. 435-228.000.

Zoller & Froehlich GmbH: *See*—
Weiland, Bruno; Leonhardt, Herbert, deceased; Geier, Claus; and Froehlich, Hans, 5,445,544, Cl. 439-879.000.

Zook, Christopher P., to Cirrus Logic, Inc. Coefficient updating method and apparatus for Reed-Solomon decoder. 5,446,743, Cl. 371-371.000.

Zorner, Walter, to Siemens Aktiengesellschaft. Method and apparatus for detecting and locating defects in a component of a turbine. 5,445,027, Cl. 73-593.000.

Zublin-Systemtechnik GmbH fur Lager-und Transportanlagen: *See*—
Poutet, Jean C., 5,445,485, Cl. 414-280.000.

Zuccarello, William; Kurtz, Andrew D.; Kirschner, Lawrence; and Marder, Herman, to Church & Dwight Co., Inc. Large potassium bicarbonate crystals and process for the preparation thereof. 5,445,805, Cl. 423-422.000.

Zufelt, Jon E.; Clark, Charles H.; and Deck, David S., to United States of America, Army. River ice motion detector. 5,446,448, Cl. 340-580.000.

Zukas, Florian J.; and Condon, Nancy J., to Hughes Aircraft Company. Low-temperature curing resin system. 5,445,889, Cl. 428-413.000.

Zurmuhlen, Frank; Bauer, Klaus; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. 2-alkyl-or-aryl-substituted-2-(pyrimidinyl-or-traizinyl-oxy(or-thio))-acetic acid derivatives, process for preparation, and use as herbicides or plant-growth regulators. 5,446,013, Cl. 504-242.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF AUGUST, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Casebolt, Scott C.; and Fisk, Brian K., to D B Industries, Inc. Safety harness with adjustable front D-ring. Re. 35,028, Cl. 119-857.000.
Cunnally, William T.: *See*—
Sandor, Ellen R.; Sandin, Daniel J.; Cunnally, William T.; and Meyers, Stephan B., Re. 35,029, Cl. 355-22.000.
D B Industries, Inc.: *See*—
Casebolt, Scott C.; and Fisk, Brian K., Re. 35,028, Cl. 119-857.000.
Delaware Capital Formation, Inc.: *See*—
Ragard, Phillip A., Re. 35,027, Cl. 29-740.000.
Fisk, Brian K.: *See*—
Casebolt, Scott C.; and Fisk, Brian K., Re. 35,028, Cl. 119-857.000.
Meyers, Stephan B.: *See*—
Sandor, Ellen R.; Sandin, Daniel J.; Cunnally, William T.; and Meyers, Stephan B., Re. 35,029, Cl. 355-22.000.
Phacogram Venture, Inc., The: *See*—
Sandor, Ellen R.; Sandin, Daniel J.; Cunnally, William T.; and Meyers, Stephan B., Re. 35,029, Cl. 355-22.000.
Ragard, Phillip A., to Delaware Capital Formation, Inc. Pick and place method and apparatus. Re. 35,027, Cl. 29-740.000.
Reynolds, Howard: *See*—
Siemon, John A.; and Reynolds, Howard, Re. 35,030, Cl. 439-532.000.
Sandin, Daniel J.: *See*—
Sandor, Ellen R.; Sandin, Daniel J.; Cunnally, William T.; and Meyers, Stephan B., Re. 35,029, Cl. 355-22.000.
Sandor, Ellen R.; Sandin, Daniel J.; Cunnally, William T.; and Meyers, Stephan B., to Phacogram Venture, Inc., The. Computer-generated autostereography method and apparatus. Re. 35,029, Cl. 355-22.000.
Siemon Company, The: *See*—
Siemon, John A.; and Reynolds, Howard, Re. 35,030, Cl. 439-532.000.
Siemon, John A.; and Reynolds, Howard, to Siemon Company, The. Wiring block having detachable leg assemblies. Re. 35,030, Cl. 439-532.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Lafter, Fred A., Jr., to Perma-Fix Corporation. System, apparatus and method for disposing of solid waste. B1 5,086,716, 8-29-95, Cl. 110-345.000.
Perma-Fix Corporation: *See*—
Lafter, Fred A., Jr., B1 5,086,716, Cl. 110-345.000.

LIST OF DESIGN PATENTEES

AAMP of Florida, Inc.: *See*—
Ansley, Micah S., 361,750, Cl. D13-151.000.
AB Ph. Nederman & Co.: *See*—
Engstrom, Hans T., 361,836, Cl. D23-387.000.
Abloy Security Ltd Oy: *See*—
Kahonen, Hannu O., 361,708, Cl. D8-347.000.
Abrudan, Ioan. Amusement game. 361,795, 8-29-95, Cl. D21-7.000.
Ader, Charles E.: *See*—
Barry, Timothy C.; and Ader, Charles E., 361,761, Cl. D14-115.000.
Akabane, Jun; and Ono, Arata, to Nikon Corporation. Binoculars. 361,777, 8-29-95, Cl. D16-133.000.
Alcatel Australia Ltd.: *See*—
Van Emmerik, David L., 361,746, Cl. D13-133.000.
Alkelai, Mazal, to Lasroc Ltd. Carrier for printed circuits. 361,753, 8-29-95, Cl. D13-182.000.
American Standard Inc.: *See*—
Segenschmid, Ludwig A., 361,830, Cl. D23-293.100.
Amie, Richard, to Arthur Eugster AG. Coffee maker. 361,690, 8-29-95, Cl. D7-309.000.
Andersen, Erik: *See*—
Kuhn, Thomas; Andersen, Erik; Nassif, George; and Quinn, David G., 361,838, Cl. D24-118.000.
Anderson, Eric: *See*—
Chan, Eric; and Anderson, Eric, 361,669, Cl. D4-138.000.
Ansley, Micah S., to AAMP of Florida, Inc. Electrical conductor distribution block. 361,750, 8-29-95, Cl. D13-151.000.
Apple Computer, Inc.: *See*—
Seid, Calvin; Parsey, Tim; and Meschter, James C., 361,756, Cl. D14-100.000.
Aquarium Pharmaceuticals, Inc.: *See*—
Layton, James R.; Yoshpa, Michael; and Talberg, Pavel, 361,823, Cl. D23-207.000.
Arthur Eugster AG: *See*—
Amie, Richard, 361,690, Cl. D7-309.000.
Maass, Rudolf, Jr., 361,691, Cl. D7-309.000.
Asano, Osamu, to Nitto Kohki Co., Ltd. Shank for a hole cutter. 361,776, 8-29-95, Cl. D15-138.000.
Atico International, Inc.: *See*—
Sutker, Martin, 361,695, Cl. D7-401.200.
Australian Broadcasting Corporation: *See*—
Barber, Anthony A., 361,805, Cl. D21-171.000.
Baker, Jay J., to Jamestown Plastics, Inc. Package for a football shaped object. 361,718, 8-29-95, Cl. D9-455.000.
Barber, Anthony A., to Australian Broadcasting Corporation. Toy figure. 361,805, 8-29-95, Cl. D21-171.000.
Barnes, Michael. Neckwear. 361,650, 8-29-95, Cl. D2-608.000.
Barreiro, Jose Luis D. Fuel economizer. 361,770, 8-29-95, Cl. D15-5.000.
Barry, Thomas J. Chain saw angle guide. 361,774, 8-29-95, Cl. D15-133.000.
Barry, Timothy C.; and Ader, Charles E., to Microspeed, Incorporated. Computer keyboard. 361,761, 8-29-95, Cl. D14-115.000.
Bartlett, Randall, to Diversified Products Corporation. Treadmill. 361,807, 8-29-95, Cl. D21-192.000.
Bartlett, Randall N., to Diversified Products Corporation. Exercise treadmill. 361,806, 8-29-95, Cl. D21-192.000.
Bartlett, William L.: *See*—
Hewitt, Richard E.; Clay, John K.; and Bartlett, William L., 361,789, Cl. D19-86.000.
Bartling, Craig A.: *See*—
Richards, Scott H.; Sorensen, Robert L.; and Bartling, Craig A., 361,769, Cl. D14-265.000.
Beliard, Claire H.: *See*—
Paull, Mike M.; Nelson, Michael D.; Beliard, Claire H.; Giuntoli, Domenic S.; Evans, Robert C., III; and Stiles, William P., 361,759, Cl. D14-114.000.
Bemis Manufacturing Company: *See*—
Wolfenden, Anthony H., 361,696, Cl. D7-584.000.
Bergeron, Gregory B.: *See*—
Saddler, Damon R.; and Bergeron, Gregory B., 361,784, Cl. D19-64.000.

Berry, Adrian, to Nokia Mobile Phones Ltd. Portable telephone. 361,762, 8-29-95, Cl. D14-138.000.
Birkholz, Douglas J., to Fiskars Oy Ab. Tool handle. 361,700, 8-29-95, Cl. D8-5.000.
Birkholz, Douglas J., to Fiskars Inc. Scissors. 361,705, 8-29-95, Cl. D8-57.000.
Black & Decker Inc.: *See*—
McCloskey, Don R., 361,689, Cl. D7-309.000.
Boeshart, Patrick E. Concrete forming tie. 361,710, 8-29-95, Cl. D8-354.000.
Boifava, Mario, to Zamperla, Inc. Airplane amusement ride. 361,817, 8-29-95, Cl. D21-242.000.
Booth, Minnie S.: *See*—
Booth, Robert L.; and Booth, Minnie S., 361,660, Cl. D3-265.000.
Booth, Robert L.; and Booth, Minnie S. Wrap for goggles. 361,660, 8-29-95, Cl. D3-265.000.
Brandon, John B., to Harrow Products Inc. Kitchen stove hood. 361,835, 8-29-95, Cl. D23-372.000.
Brandt, Dean; and Johnson, Greg, to Multi-Tech Systems, Inc. Combined telephone and modem case for a computer-based multifunction communications system. 361,764, 8-29-95, Cl. D14-149.000.
Braun, Morris, to W. Braun Company. Bottle. 361,721, 8-29-95, Cl. D9-568.000.
Bressler, Peter W.; and Coleman, John D., to Tapelicator, Inc. Tape applicator. 361,785, 8-29-95, Cl. D19-69.000.
Brown, Harry L., to Brown, Harry L.; and Tatroe, Lyle L. Ladder caddy. 361,664, 8-29-95, Cl. D3-315.000.
Brown, Tom. Basketball court line marker. 361,667, 8-29-95, Cl. D4-122.000.
Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Dressing table. 361,679, 8-29-95, Cl. D6-479.000.
Bryant, Keith R., to SDX Business Systems Limited. Telephone apparatus. 361,765, 8-29-95, Cl. D14-151.000.
BTJ, Inc.: *See*—
Palsson, Leif, 361,680, Cl. D6-479.000.
Bulgari, Giovanni, to Gianni Bulgari S.p.A. Wristwatch. 361,728, 8-29-95, Cl. D10-39.000.
Burke, Terrence M., to TSD Industries, Inc. Food grill. 361,693, 8-29-95, Cl. D7-337.000.
Bycraft, John T.: *See*—
Pomeroy, Charles; and Bycraft, John T., 361,673, Cl. D6-344.000.
Calder, Gordon M., to Over-Panel Technology, Ltd. Panel cap for a display panel. 361,681, 8-29-95, Cl. D6-494.000.
Canon Kabushiki Kaisha: *See*—
Matsumura, Yoshiyuki, 361,778, Cl. D16-202.000.
Carlson, Alden J.: *See*—
Ledbetter, Carl J.; Howell, Roger L.; and Carlson, Alden J., 361,657, Cl. D3-228.000.
Carsello, Anthony J., to Embart Inc. Door handleset. 361,706, 8-29-95, Cl. D8-302.000.
Carter, Michael C., Sr. Multi-purpose, rotational, vibrating, acoustical chair. 361,674, 8-29-95, Cl. D6-364.000.
Carter Wallace, Inc.: *See*—
Nazareth, Albert R.; and Klawson, Rennold L., 361,842, Cl. D24-213.000.
Cateye, Co., Ltd.: *See*—
Tsushi, Masao, 361,729, Cl. D10-98.000.
Cetrulo, Marc E., to Hollaender Manufacturing Co., The. Split corner slip-on pipe fitting. 361,847, 8-29-95, Cl. D25-68.000.
Chan, Eric; and Anderson, Eric, to Goody Products, Inc. Handle and head unit for a round brush. 361,669, 8-29-95, Cl. D4-138.000.
Cheatham, Earl: *See*—
Havens, W. Clair, 361,862, Cl. D27-102.000.
Chen, Cheng-Ho, to Yel Li Electrical Works Co., Ltd. Air heater. 361,828, 8-29-95, Cl. D23-335.000.
Chen, Shu-ying, to Horng Technical Enterprise Co. Ltd. Telephone securing frame. 361,768, 8-29-95, Cl. D14-251.000.
Chen, Wen J. Electrical receptacle in dinosaur caricature shape for extension. 361,747, 8-29-95, Cl. D13-137.000.
Chen, Wen J. Electrical receptacle extension. 361,748, 8-29-95, Cl. D13-139.000.
Chieda, Robert, to Newell Operating Company. Pull. 361,707, 8-29-95, Cl. D8-305.000.
Choi, Min K. Combination toothpaste dispenser, cup and toothbrush holder. 361,685, 8-29-95, Cl. D6-531.000.
Chung, Stephen, to Silitek Corporation. Trackball. 361,760, 8-29-95, Cl. D14-114.000.
Chung, Won Y. Pocket notebook. 361,782, 8-29-95, Cl. D19-26.000.
Citizen Watch Co., Ltd.: *See*—
Koga, Ryoichi, 361,722, Cl. D10-30.000.
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Clay, John K.: *See*—
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Coleman, John D.: *See*—
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Compaq Computer Corporation: *See*—
Youens, John E.; and Watson, Richard C., 361,758, Cl. D14-107.000.
Corpak, Inc.: *See*—
Kuhn, Thomas; Andersen, Erik; Nassif, George; and Quinn, David G., 361,838, Cl. D24-118.000.
County Line Limited, L.L.C.: *See*—
Nottingham, John R.; Pastrick, John J.; and Spirk, John W., Jr., 361,873, Cl. D30-124.000.
Cunning, Joseph M., to Holmes Products Corp. Heater fan. 361,832, 8-29-95, Cl. D23-328.000.
Cytowic, Richard E., executor: *See*—
Tatum, Michael D.; and Purdom, Robert W., deceased, 361,677, Cl. D6-436.000.
Davis Water & Waste Industries, Inc.: *See*—
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Tavone, John H.; and Garafano, Frank, Jr., 361,678, Cl. D6-457.000.
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Doss, Margaret S. Diaper. 361,839, 8-29-95, Cl. D24-126.000.
Doughty, Frederic C.; and Mark, Darren M., to Embart Inc. Faucet body. 361,827, 8-29-95, Cl. D23-241.000.
Dow, James C.; Dimond, Steven A.; Williams, Phillip R.; and Riester, Thomas, to Hewlett-Packard Company. Magazine for tape cartridges or cassettes. 361,687, 8-29-95, Cl. D6-629.000.
Draheim, Harvey J.: *See*—
Brunner, Merlin A.; and Draheim, Harvey J., 361,679, Cl. D6-479.000.
Drucker, John R., to Speer Lamp Corp. of New York, The. Table lamp base. 361,860, 8-29-95, Cl. D26-110.000.
Dumontier, Franck: *See*—
Guibaud, Jean-Marc; Mimeur, Nicolas; Dumontier, Franck; Stolz, Pascal; and Peters, Mike, 361,813, Cl. D21-220.000.
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Saddler, Damon R.; and Bergeron, Gregory B., 361,784, Cl. D19-64.000.
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Endeavour IV, Inc.: *See*—
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Engstrom, Hans T., to AB Ph. Nederman & Co. Combined extraction and feeding articulated conduit arm unit for gas. 361,836, 8-29-95, Cl. D23-387.000.
Evans, Robert C., III: *See*—
Paull, Mike M.; Nelson, Michael D.; Beliard, Claire H.; Giuntoli, Domenic S.; Evans, Robert C., III; and Stiles, William P., 361,759, Cl. D14-114.000.
Fazekas, Craig A. Golf tool. 361,815, 8-29-95, Cl. D21-234.000.
Febus, Hiram. Safety razor with disposable blade. 361,866, 8-29-95, Cl. D28-46.000.
Ferreira, Eduardo M. Trundle toy. 361,799, 8-29-95, Cl. D21-71.000.
Fischette, Robert G.; Johnson, Kirk R.; and Myoga, Maki, to Sentrol, Inc. Smoke detector housing. 361,732, 8-29-95, Cl. D10-106.000.
Fisher-PRice, Inc.: *See*—
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Fiskars Inc.: *See*—
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Flanagan, John M. Multiple flechettes sabbot. 361,820, 8-29-95, Cl. D22-116.000.
Florentino, Anthony V. Casino gambling game board. 361,796, 8-29-95, Cl. D21-37.000.
Fogarty, Thomas C., Jr. Hand gun holster. 361,656, 8-29-95, Cl. D3-222.000.
Fortenbery, J. David, to Mantissa Corporation. Extruded bracket for a tilt tray sorting conveyor. 361,709, 8-29-95, Cl. D8-349.000.
Frank, Edward H.; Sheridan, Michael R.; and Peart, Steve, to Sun Microsystems, Inc. Hand held computer housing. 361,755, 8-29-95, Cl. D14-100.000.
Franke, Jeffery S.: *See*—
Kidwell, Michael E.; and Franke, Jeffery S., 361,702, Cl. D8-8.000.
Franklin Brass Manufacturing Company: *See*—
Sharpe, Norton, 361,671, Cl. D6-323.000.
Fujinaka, Yoshiaki; Maruyama, Yukio; Hada, Toshiaki; and Shimazu, Yoshikazu, to Iwaki Co., Ltd. Tank used for pump. 361,822, 8-29-95, Cl. D23-302.000.
Fujitsu General Limited: *See*—
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Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kanesisu, 361,781, Cl. D18-55.000.
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, to Yazaki Sogyo K.K.; and Toyota Jidosha K.K. Electrical charging plug. 361,749, 8-29-95, Cl. D13-146.000.
Fun-Time International, Inc.: *See*—
Lipson, Erik, 361,688, Cl. D7-300.200.

Garafano, Frank, Jr.: *See*—
Tavone, John H.; and Garafano, Frank, Jr., 361,678, Cl. D6-457.000.

Gavrila, G. Nicholas; and Listl, Heinz J., to Knorr Brake Holding Corporation. Fluid brake control valve. 361,824, 8-29-95, Cl. D23-233.000.

Geis, Mark W., to Woods Industries, Inc. Strain relief for electrical connectors. 361,751, 8-29-95, Cl. D13-154.000.

Gemini Industries, Inc.: *See*—
Tinaphong, Paul, 361,767, Cl. D14-230.000.

Geroux, Robert M.; and O'Hara, Catherine Y. Set of terminals for battery booster cables. 361,745, 8-29-95, Cl. D13-120.000.

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Bulgari, Giovanni, 361,728, Cl. D10-39.000.

Giuntoli, Domenic S.: *See*—
Paull, Mike M.; Nelson, Michael D.; Beliard, Claire H.; Giuntoli, Domenic S.; Evans, Robert C., III; and Stiles, William P., 361,759, Cl. D14-114.000.

Goody Products, Inc.: *See*—
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Grant, John A. Hanger for pot covers. 361,713, 8-29-95, Cl. D8-373.000.

Grimm, Thomas H.; Page, Christopher S.; and Scott, William A., to OddzOn Products, Inc. Toasing ball. 361,811, 8-29-95, Cl. D21-204.000.

Guibaud, Jean-Marc; Mimeur, Nicolas; Dumontier, Franck; Stolz, Pascal; and Peters, Mike, to Taylor Made Golf Company, Inc. Golf club head. 361,813, 8-29-95, Cl. D21-220.000.

Hada, Toshiaki: *See*—
Fujinaka, Yoshiaki; Maruyama, Yukio; Hada, Toshiaki; and Shimazu, Yoshikazu, 361,822, Cl. D23-202.000.

Haigh, Iain. Basketball backboard. 361,810, 8-29-95, Cl. D21-201.000.

Hannon, John F.: *See*—
Nagele, Albert L.; and Hannon, John F., 361,763, Cl. D14-144.000.

Harrow Products Inc.: *See*—
Brandon, John B., 361,835, Cl. D23-372.000.

Hasegawa, Toshiaki: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 361,749, Cl. D13-146.000.

Haupert, Joseph, to National Bait Inc. Container and lid. 361,715, 8-29-95, Cl. D9-424.000.

Havens, W. Clair, to Havens, W. Clair; and Cheatham, Earl. Round ashtray. 361,862, 8-29-95, Cl. D27-102.000.

Hayden, Richard C. Frame for a scarecrow. 361,793, 8-29-95, Cl. D20-31.000.

Heckathorne, William L. Stake mounted support for plants. 361,739, 8-29-95, Cl. D11-164.000.

Hewitt, Richard E.; Clay, John K.; and Bartlett, William L., to Endeavour IV, Inc. Stackable photo file. 361,789, 8-29-95, Cl. D19-86.000.

Hewlett-Packard Company: *See*—
Dow, James C.; Dimond, Steven A.; Williams, Phillip R.; and Riester, Thomas, 361,687, Cl. D6-629.000.

Highland Supply Corporation: *See*—
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Weder, Donald E.; and Straeter, Joseph G., 361,734, Cl. D11-164.000.
Weder, Donald E.; and Straeter, Joseph G., 361,735, Cl. D11-164.000.
Weder, Donald E.; and Straeter, Joseph G., 361,736, Cl. D11-164.000.
Weder, Donald E.; and Straeter, Joseph G., 361,737, Cl. D11-164.000.

Hill, Robert N. Wand for rolling a hoop. 361,801, 8-29-95, Cl. D21-101.000.

Hollaender Manufacturing Co., The: *See*—
Cetrulo, Marc E., 361,847, Cl. D25-68.000.

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Cunning, Joseph M., 361,802, Cl. D23-328.000.

Homelite, Inc.: *See*—
Kidwell, Michael E.; and Franke, Jeffery S., 361,702, Cl. D8-8.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Sofue, Shuichi; and Shibata, Yumio, 361,741, Cl. D12-110.000.

Hornery, Jennifer: *See*—
McMahon, Franklin; and Hornery, Jennifer, 361,872, Cl. D30-118.000.

Horng Technical Enterprise Co., Ltd.: *See*—
Chen, Shu-ying, 361,768, Cl. D14-251.000.

Houry, Robert L.; Nottingham, John R.; and Spirk, John W., Jr., to Little Tikes Company, The. Upright portion of a toy vacuum cleaner with aperture for storing a toy hand vacuum. 361,803, 8-29-95, Cl. D21-122.000.

Howell, Roger L.: *See*—
Ledbetter, Carl J.; Howell, Roger L.; and Carlson, Alden J., 361,657, Cl. D3-228.000.

Huang, Ming-Chih. Arm exerciser. 361,809, 8-29-95, Cl. D21-198.000.

Hulsey, Wayne E. Front end loader attachment for moving rocks. 361,772, 8-29-95, Cl. D15-32.000.

Hunniford, David J., to Davis Water & Waste Industries, Inc. Air scrubber unit for use in the removal of pollutants from the air. 361,834, 8-29-95, Cl. D23-364.000.

Ichikawa, Minoru, to Nisso Industry Co., Ltd. Aquarium tank. 361,870, 8-29-95, Cl. D30-101.000.

Ichikawa, Minoru, to Nisso Industry Co., Ltd. Aquarium tank. 361,871, 8-29-95, Cl. D30-101.000.

Inaba, Shigemitsu: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 361,749, Cl. D13-146.000.

Iwaki Co., Ltd.: *See*—
Fujinaka, Yoshiaki; Maruyama, Yukio; Hada, Toshiaki; and Shimazu, Yoshikazu, 361,822, Cl. D23-202.000.

Izumi, Hiroaki, to Yoshida Kogyo K.K. Hinge connector for a shoulder strap. 361,665, 8-29-95, Cl. D3-318.000.

Izumi Products Company: *See*—
Nakano, Tsuyoshi, 361,864, Cl. D28-50.000.

Jack-Post Corporation: *See*—
Pomeroy, Charles; and Bycraft, John T., 361,673, Cl. D6-344.000.

Jacob, Norman F. Reflective belt. 361,651, 8-29-95, Cl. D2-627.000.

Jambhekar, Shrirang; and Krolopp, Rudolf W., to Motorola, Inc. Combined portable phone organizer and computer. 361,754, 8-29-95, Cl. D14-100.000.

Jamestown Plastics, Inc.: *See*—
Baker, Jay J., 361,718, Cl. D9-455.000.

Jenkins, Ian R., to Pitney Bowes Inc. Mail processing machine. 361,780, 8-29-95, Cl. D18-51.000.

Jennings, Miles P., to Stovax Limited. Tile. 361,850, 8-29-95, Cl. D25-157.000.

Jennings, Miles P., to Stovax Limited. Tile. 361,851, 8-29-95, Cl. D25-157.000.

Jennings, Miles P., to Stovax Limited. Tile. 361,852, 8-29-95, Cl. D25-157.000.

Jimenez, Antonio, to Mefina SA. Sewing machine. 361,773, 8-29-95, Cl. D15-69.000.

John Fluke Mfg. Co., Inc.: *See*—
Ledbetter, Carl J.; Howell, Roger L.; and Carlson, Alden J., 361,657, Cl. D3-228.000.

Johnson, Greg: *See*—
Brandt, Dean; and Johnson, Greg, 361,764, Cl. D14-149.000.

Johnson, Kirk R.: *See*—
Fischette, Robert G.; Johnson, Kirk R.; and Myoga, Maki, 361,732, Cl. D10-106.000.

Jones, Harvey; and Stubblefield, Lavette. Purse light. 361,855, 8-29-95, Cl. D26-37.000.

Josephson, Joseph M. Combination saw. 361,775, 8-29-95, Cl. D15-133.000.

Juhl, Darrol L. Removable lawn chair headrest. 361,683, 8-29-95, Cl. D6-501.000.

K-2 Corporation: *See*—
Meibock, Antonin A.; and Svensson, John E., 361,814, Cl. D21-226.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Matsumoto, Hiroshi; Otobe, Tetsuro; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, 361,743, Cl. D12-129.000.

Kahl, W. Henry; and Koenig, John, to Rubbermaid Specialty Products Inc. Tackle box. 361,659, 8-29-95, Cl. D3-260.000.

Kahonen, Hannu O., to Abloy Security Ltd Oy. Key blank. 361,708, 8-29-95, Cl. D8-347.000.

Kalin, Jonathan A., to Rehrig Pacific Company, Inc. Stackable crate for bottles. 361,663, 8-29-95, Cl. D3-318.000.

Kanaoka, Yukio: *See*—
Mizusugi, Kanji; and Kanaoka, Yukio, 361,757, Cl. D14-105.000.

Keane, Patsy. Combined disposable toothbrush and cap. 361,666, 8-29-95, Cl. D4-108.000.

Keller Industries, Inc.: *See*—
Pangborn, Kenneth, 361,843, Cl. D25-47.000.

Keller, Karen S.: *See*—
Keller, Steven F.; and Keller, Karen S., 361,874, Cl. D30-129.000.
Keller, Steven F.; and Keller, Karen S., 361,875, Cl. D30-130.000.

Keller, Steven F.; and Keller, Karen S. Animal feeding bowl. 361,874, 8-29-95, Cl. D30-129.000.

Keller, Steven F.; and Keller, Karen S. Animal feeding bowl. 361,875, 8-29-95, Cl. D30-130.000.

Kidd, Susan F. Interchangeable button. 361,740, 8-29-95, Cl. D11-228.000.

Kidwell, Michael E.; and Franke, Jeffery S., to Homelite, Inc. Power head for a vegetation cutter. 361,702, 8-29-95, Cl. D8-8.000.

Kimball International, Inc.: *See*—
Tatum, Michael D.; and Purdom, Robert W., deceased, 361,677, Cl. D6-436.000.

King, William L.; and Oltrogge, Terry, to Samsonite Corporation. Satchel. 361,662, 8-29-95, Cl. D3-276.000.

Kino, Moriya, to Royal Co., Ltd. Toy piano. 361,798, 8-29-95, Cl. D21-64.000.

Klatz, Susan F. Gas tank location sticker. 361,791, 8-29-95, Cl. D20-11.000.

Klawson, Rennold L.: *See*—
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Knorr Brake Holding Corporation: *See*—
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Koenig, John: *See*—
Kahl, W. Henry; and Koenig, John, 361,659, Cl. D3-260.000.

Koga, Ryoichi, to Citizen Watch Co., Ltd. Wrist watch. 361,722, 8-29-95, Cl. D10-30.000.

Koga, Ryoichi, to Citizen Watch Co., Ltd. Wrist watch. 361,727, 8-29-95, Cl. D10-32.000.

Krent, Edward D.: *See*—
Paffett, Nicholas B.; and Krent, Edward D., 361,869, Cl. D29-120.000.

Krolopp, Rudolf W.: *See*—
Jambhekar, Shrirang; and Krolopp, Rudolf W., 361,754, Cl. D14-100.000.

Krupa, Calvin S., to Ultra Pac, Inc. Clamshell package for cored pineapple fruit. 361,714, 8-29-95, Cl. D9-329.000.

Kuhn, Thomas; Andersen, Erik; Nassif, George; and Quinn, David G., to Corpak, Inc. Fluid access port for medical container. 361,838, 8-29-95, Cl. D24-118.000.

Kulik, Mark J. Dart point. 361,797, 8-29-95, Cl. D21-49.000.

Kuno, Hiromichi: *See*—
Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 361,749, Cl. D13-146.000.

L. D. Kichler Co., The: *See*—
Porter, David H., 361,857, Cl. D26-81.000.

Lambert, Kenneth A., Jr. String puller. 361,779, 8-29-95, Cl. D17-11.000.

Lasroc Ltd.: *See*—
Alkelai, Mazal, 361,753, Cl. D13-182.000.

Lawn Comfort S.A.: *See*—
Westerburgen, Josephus P. M., 361,676, Cl. D6-429.000.

Layton, James R.; Yoshpa, Michael; and Talberg, Pavel, to Aquarium Pharmaceuticals, Inc. Water treatment device. 361,823, 8-29-95, Cl. D23-207.000.

Le Petit Fils de L.U. Chopard & Cie/S.A.: *See*—
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Matsumoto, Hiroshi; Otobe, Tetsuro; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, 361,743, Cl. D12-129.000.

Ledbetter, Carl J.; Howell, Roger L.; and Carlson, Alden J., to John Fluke Mfg. Co., Inc. Test tool holster. 361,657, 8-29-95, Cl. D3-228.000.

Ledingham, John. Lawnmower. 361,771, 8-29-95, Cl. D15-14.000.

Lee, Chen-Kun. Kettle. 361,692, 8-29-95, Cl. D7-322.000.

Lenihan, Gary, to Fisher-PRice, Inc. Toy car. 361,800, 8-29-95, Cl. D21-78.000.

Lennartsson, Kenneth: *See*—
Sonden, Carl-Gustaf; and Lennartsson, Kenneth, 361,829, Cl. D23-262.000.

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Sonden, Carl-Gustaf; and Lennartsson, Kenneth, 361,829, Cl. D23-262.000.

Lipson, Erik, to Fun-Time International, Inc. Straw. 361,688, 8-29-95, Cl. D7-300.200.

Lisco, Inc.: *See*—
Mariol, John V.; and Meeker, Paul K., 361,672, Cl. D6-339.000.

Listl, Heinz J.: *See*—
Gavrila, G. Nicholas; and Listl, Heinz J., 361,824, Cl. D23-233.000.

Little Tikes Company, The: *See*—
Houry, Robert L.; Nottingham, John R.; and Spirk, John W., Jr., 361,803, Cl. D21-122.000.

Lum, James. Lighted house number. 361,792, 8-29-95, Cl. D20-17.000.

Lunceford, Lester T. Combined crutch and light. 361,655, 8-29-95, Cl. D3-1.000.

Maass, Rudolf, Jr., to Arthur Eugster AG. Pump-type espresso machine. 361,691, 8-29-95, Cl. D7-309.000.

Mabbitt, Robert L. Sports watch with racing theme appearance. 361,726, 8-29-95, Cl. D10-32.000.

Mackay, Spencer L., to Voice It Technologies, Inc. Audio recorder/-player. 361,766, 8-29-95, Cl. D14-167.000.

Mantissa Corporation: *See*—
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Mariol, John V.; and Meeker, Paul K., to Lisco, Inc. Adjustable high chair. 361,672, 8-29-95, Cl. D6-339.000.

Mark, Darren M.: *See*—
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Martin, Susan A., to U.S. Action Concepts, Inc. Combined harness and tool belt. 361,658, 8-29-95, Cl. D3-228.000.

Maruyama, Yukio: *See*—
Fujinaka, Yoshiaki; Maruyama, Yukio; Hada, Toshiaki; and Shimazu, Yoshikazu, 361,822, Cl. D23-202.000.

Masuda, Isamu, to Nihonkenkozoshinkenkyukai Co., Ltd. Storage box for cosmetics. 361,661, 8-29-95, Cl. D3-273.000.

Masuda, Isamu, to Nihon Kenko Zoushin Kenkyukai Corporation. Poster. 361,733, 8-29-95, Cl. D11-130.000.

Matlaga, Bill. Bicycle display rack. 361,742, 8-29-95, Cl. D12-115.000.

Matsumoto, Hiroshi; Otobe, Tetsuro; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Leaman, Inc. Baby chair. 361,743, 8-29-95, Cl. D12-129.000.

Matsumura, Yoshiyuki, to Canon Kabushiki Kaisha. Video camera with video tape recorder. 361,778, 8-29-95, Cl. D16-202.000.

McCloskey, Don R., to Black & Decker Inc. Under-the-cabinet-coffeemaker. 361,689, 8-29-95, Cl. D7-309.000.

McCormack, Bill. Bottle holder. 361,717, 8-29-95, Cl. D9-455.000.

McHugh, John T. Hot dog cooker. 361,699, 8-29-95, Cl. D7-683.000.

McMahon, Franklin; and Hornery, Jennifer, to Univier International Corp. Bed for pets. 361,872, 8-29-95, Cl. D30-118.000.

McMillan, William, to Scottish Football Association Limited, The. Tartan textile. 361,670, 8-29-95, Cl. D5-46.000.

McNaughton, Inc.: *See*—
McNaughton, Patrick J., 361,697, Cl. D7-667.000.

McNaughton, Patrick J., to McNaughton, Inc. Can strainer. 361,697, 8-29-95, Cl. D7-667.000.

Meeker, Paul K.: *See*—
Mariol, John V.; and Meeker, Paul K., 361,672, Cl. D6-339.000.

Mefina SA: *See*—
Jimenez, Antonio, 361,773, Cl. D15-69.000.

Meibock, Antonin A.; and Svensson, John E., to K-2 Corporation. In-line roller skate brake. 361,814, 8-29-95, Cl. D21-226.000.

Melzian, John; and Schwartz, Daniel, to Rubbermaid Office Products Inc. Pencil box. 361,787, 8-29-95, Cl. D19-82.000.

Melzian, John; and Schwartz, Daniel, to Rubbermaid Office Products Inc. Storage box for school supplies. 361,788, 8-29-95, Cl. D19-82.000.

Meschter, James C.: *See*—
Seid, Calvin; Parsey, Tim; and Meschter, James C., 361,756, Cl. D14-100.000.

Mezei, Bruce. Confection dispenser. 361,790, 8-29-95, Cl. D20-7.000.

Microsoft Corporation: *See*—
Paull, Mike M.; Nelson, Michael D.; Beliard, Claire H.; Giuntoli, Domenic S.; Evans, Robert C., III; and Stiles, William P., 361,759, Cl. D14-114.000.

Microspeed, Incorporated: *See*—
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Mikron Industries: *See*—
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Oliver, Teresa A., 361,849, Cl. D25-124.000.

Mimeur, Nicolas: *See*—
Guibaud, Jean-Marc; Mimeur, Nicolas; Dumontier, Franck; Stolz, Pascal; and Peters, Mike, 361,813, Cl. D21-220.000.

Mine, Yukio, to Toto Ltd. Infrared faucet. 361,825, 8-29-95, Cl. D23-234.000.

Mine, Yukio, to Toto Ltd. Infrared faucet. 361,826, 8-29-95, Cl. D23-238.000.

Miracle Recreation Equipment Company: *See*—
Von Parrish, Terry, 361,818, Cl. D21-245.000.

Miyaji, Seiichi: *See*—
Tsuchida, Makoto; Miyaji, Seiichi; and Uchiyama, Kaneatsu, 361,781, Cl. D18-55.000.

Mizusugi, Kanji; and Kanaoka, Yukio, to Sharp Kabushiki Kaisha. Cash register. 361,757, 8-29-95, Cl. D14-105.000.

Monneret, Alain, to Monneret Jouets. Toy cradle. 361,804, 8-29-95, Cl. D21-123.000.

Monneret Jouets: *See*—
Monneret, Alain, 361,804, Cl. D21-123.000.

Moody, Ronald G. Foot brush. 361,668, 8-29-95, Cl. D4-134.000.

Motobayashi Co., Ltd.: *See*—
Motobayashi, Shohzoh, 361,863, Cl. D27-154.000.

Motobayashi, Shohzoh, to Motobayashi Co., Ltd. Pocket lighter. 361,863, 8-29-95, Cl. D27-154.000.

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Fukao, Yasuyoshi; Sekimori, Toshiyuki; Kuno, Hiromichi; Yoshioka, Nobuaki; Hasegawa, Toshiaki; and Inaba, Shigemitsu, 361,749, Cl. D13-146.000.
Yoshpa, Michael: *See*—
Layton, James R.; Yoshpa, Michael; and Talberg, Pavel, 361,823, Cl. D23-207.000.
Youens, John E.; and Watson, Richard C., to Compaq Computer Corporation. Expansion base for a notebook personal computer. 361,758, 8-29-95, Cl. D14-107.000.
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Jessel, Walter H., Jr., 9,266, Cl. 70.400.
Jessel, Walter H., Jr., 9,267, Cl. 70.500.
Jessel, Walter H., Jr., 9,268, Cl. 70.700.
Jessel, Walter H., Jr., 9,269, Cl. 70.700.
Chamberlain, Thomas O., to Metropolitan Life Insurance Company. Nectarine tree—'Scarlet Sun' cultivar. 9,264, 8-29-95, Cl. 41.300.
Conard-Pyle Company, The: *See*—
Meilland, Alain A., 9,262, Cl. 15.000.
Devor Nurseries, Inc.: *See*—
Olesen, Pernille; and Olesen, Mogens N., 9,261, Cl. 1.000.
Ebbinghaus, Rainer: *See*—
Preil, Walter; and Ebbinghaus, Rainer, 9,265, Cl. 55.000.
Geo. J. Ball, Inc.: *See*—
Trees, Scott C., 9,272, Cl. 87.600.
Hoff, Petrus M. M., to Hoffgaarde B.V. Variety of Lilium named 'Holeby'. 9,271, 8-29-95, Cl. 87.400.
Hoffgaarde B.V.: *See*—
Hoff, Petrus M. M., 9,271, Cl. 87.400.
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Preil, Walter; and Ebbinghaus, Rainer, 9,265, Cl. 55.000.
Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named 'CFPC Nugget'. 9,266, 8-29-95, Cl. 70.400.
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Metropolitan Life Insurance Company: *See*—
Chamberlain, Thomas O., 9,264, Cl. 41.300.
Olesen, Mogens N.: *See*—
Olesen, Pernille; and Olesen, Mogens N., 9,261, Cl. 1.000.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 29, 1995

NOTE.—First number, class; second number, subclass; third number, patent number

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456 5,444,881
618 5,444,882
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CLASS 8
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58 E 5,445,375
109 5,445,376
149 R 5,445,377
150 5,445,378
155 5,445,380
167 R 5,445,382
176 H 5,445,381
187.2 5,445,383
188 A 5,445,384
189 A 5,445,385
194 A 5,445,386
216 5,445,387
237 5,445,388
243 5,445,389
5,445,390
304 5,445,391
CLASS 277
27 5,445,392
167.5 5,445,393
173 5,445,394
207A 5,445,395
CLASS 280
33.998 5,445,396
47.18 5,445,397
47.26 5,445,398
47.27 5,445,399
276 5,445,401
281.1 5,445,400
310 5,445,403
367 5,445,402
389 5,445,404
707 5,445,405
728.2 5,445,406
5,445,407
5,445,408
5,445,409
728.3 5,445,410
733 5,445,411
735 5,445,412
5,445,413
143.1 5,445,414
425 5,445,415
CLASS 281
42 5,445,416
46 5,445,417
CLASS 283
58 5,445,418
117 5,445,420
CLASS 285
1 5,445,419
CLASS 290
1 R 5,446,319
CLASS 291
216 5,445,421
247 5,445,422
336 5,445,326
336.3 5,445,423
CLASS 294
1.1 5,445,424
31.2 5,445,425
67.3 5,445,426
CLASS 296
97.6 5,445,427
97.7 5,445,428
107 5,445,429
153 5,445,430
CLASS 297
339 5,445,431
344.18 5,445,432
380 5,445,433
391 5,445,434
490.12 5,445,435
492.63 5,445,436
CLASS 299
39 5,445,437
CLASS 300
21 5,445,438
CLASS 301
35 5,445,439
CLASS 303
7 5,445,440
10 5,445,441
133.5 5,445,445
147.1 5,445,446

5,445,447
119.2 5,445,448
125 5,445,444
137 5,445,443
141 5,445,442
CLASS 307
109 5,446,320
CLASS 310
12 5,446,323
45 5,446,324
67 R 5,446,325
83 5,446,326
90.5 5,446,018
105 5,446,327
233 5,446,328
313 A 5,446,329
313 R 5,446,330
323 5,446,331
324 5,446,332
334 5,446,333
338 5,446,334
359 5,446,335
CLASS 312
9.31 5,445,449
223.2 5,445,450
333 5,445,451
405.1 5,445,452
CLASS 313
25 5,446,336
422 5,446,337
478 5,446,338
5,446,339
493 5,446,340
623 5,446,341
CLASS 315
129 5,446,342
156 5,446,343
169.4 5,446,344
200 A 5,446,345
209 R 5,446,346
5,446,347
209 SC 5,446,348
241 S 5,446,349
248 5,446,350
CLASS 318
139 5,446,351
248 5,446,352
254 5,446,353
439 5,446,354
587 5,446,356
632 5,446,357
661 5,446,355
696 5,446,358
701 5,446,359
727 5,446,360
747 5,446,361
801 5,446,362
806 5,446,363
CLASS 320
2 5,446,364
14 5,446,365
CLASS 323
222 5,446,366
266 5,446,367
275 5,446,380
315 5,446,368
CLASS 324
71.2 5,446,369
76.11 5,446,370
96 5,446,381
121 R 5,446,371
126 5,446,372
142 5,446,373
5,446,374
163 5,446,375
165 5,446,376
207.13 5,446,377
232 5,446,382
238 5,446,378
240 5,446,379
5,446,383
307 5,446,384
388 5,446,385
424 5,446,386
522 5,446,387
550 5,446,388
555 5,446,389
5,446,390
661 5,446,391
678 5,446,392
754 5,446,393
762 5,446,394
763 5,446,395
CLASS 326
16 5,446,399
57 5,446,321
64 5,446,400

108 5,446,401
5,446,402
CLASS 327
44 5,446,322
66 5,446,396
5,446,397
113 5,446,398
143 5,446,403
5,446,404
362 5,446,405
427 5,446,406
525 5,446,407
530 5,446,408
538 5,446,409
565 5,446,410
CLASS 329
325 5,446,411
CLASS 330
277 5,446,413
285 5,446,412
288 5,446,414
302 5,446,415
CLASS 331
11 5,446,416
57 5,446,417
5,446,418
99 5,446,419
179 5,446,420
CLASS 332
100 5,446,421
103 5,446,422
170 5,446,423
CLASS 333
104 5,446,424
116 5,446,425
125 5,446,426
181 5,446,427
185 5,446,428
187 5,446,429
202 5,446,430
CLASS 335
18 5,446,431
213 5,446,432
216 5,446,433
301 5,446,434
CLASS 336
178 5,446,435
CLASS 337
273 5,446,436
CLASS 338
25 5,446,437
CLASS 340
146.2 5,446,438
326 5,446,439
331 5,446,440
432 5,446,441
438 5,446,442
505 5,446,443
514 5,446,444
521 5,446,445
566 5,446,446
572 5,446,447
580 5,446,448
611 5,446,449
635 5,446,450
682 5,446,451
825.06 5,446,453
825.52 5,446,454
870.17 5,446,452
CLASS 341
118 5,446,456
136 5,446,457
143 5,446,460
145 5,446,455
CLASS 342
1 5,446,458
5,446,459
22 5,446,461
45 5,446,462
175 5,446,464
198 5,446,463
357 5,446,465
385 5,446,466
386 5,446,467
5,446,468
CLASS 343
702 5,446,469
713 5,446,470
770 5,446,471
880 5,446,472
890 5,446,473
915 5,446,474
CLASS 345
139 5,446,479

157 5,446,480
163 5,446,481
199 5,446,482
212 5,446,483
CLASS 346
138 5,446,477
CLASS 347
68 5,446,484
72 5,446,485
85 5,446,486
102 5,446,487
158 5,446,478
191 5,446,475
232 5,446,476
CLASS 348
3 5,446,488
5,446,489
7 5,446,490
15 5,446,491
192 5,446,492
320 5,446,493
349 5,446,494
398 5,446,495
441 5,446,496
443 5,446,497
448 5,446,498
596 5,446,499
618 5,446,500
620 5,446,501
625 5,446,502
628 5,446,503
645 5,446,504
738 5,446,505
CLASS 381
43 5,446,506
158 5,446,507
169 5,446,508
206 5,446,509
CLASS 383
20 5,446,510
103 5,446,511
CLASS 384
131 5,446,512
204 5,446,513
234.1 5,446,514
290 5,446,515
298 5,446,516
400 5,446,517
412 5,446,518
CLASS 385
22 Re.35,029
27 5,446,520
33 5,446,519
5,446,521
202 5,446,522
207 5,446,523
208 5,446,524
210 5,446,525
251 5,446,526
279 5,446,527
309 5,446,528
CLASS 396
4.01 5,446,529
5.01 5,446,530
72 5,446,531
73 5,446,532
73.1 5,446,533
128 5,446,534
153 5,446,535
229 5,446,536
256 5,446,537
318 5,446,538
339 5,446,544
345 5,446,540
357 5,446,547
358 5,446,545
5,446,546
375 5,446,548
376 5,446,549
399 5,446,541
400 5,446,542
405 5,446,543
CLASS 398
298 5,446,550
335 5,446,551
5,446,552
340 5,446,539
402 5,446,553
404 5,446,554
406 5,446,555
5,446,556
444 5,446,557
445 5,446,560
5,446,561
454 5,446,558
473 5,446,559
CLASS 359
19 5,446,565

49 5,446,567
59 5,446,562
5,446,568
72 5,446,563
5,446,564
78 5,446,569
87 5,446,570
107 5,446,571
133 5,446,572
158 5,446,573
181 5,446,574
267 5,446,576
273 5,446,577
282 5,446,578
333 5,446,579
350 5,446,580
357 5,446,581
385 5,446,582
388 5,446,583
393 5,446,584
411 5,446,585
427 5,446,586
562 5,446,587
565 5,446,588
577 5,446,589
645 5,446,590
666 5,446,591
689 5,446,592
704 5,446,593
742 5,446,594
804 5,446,595
827 5,446,596
CLASS 360
19.1 5,446,597
32 5,446,598
35.1 5,446,599
46 5,446,600
5,446,601
48 5,446,602
5,446,603
49 5,446,604
74.6 5,446,605
75 5,446,606
97.02 5,446,608
5,446,609
99.08 5,446,610
104 5,446,611
5,446,612
113 5,446,613
137 5,446,614
CLASS 361
18 5,446,607
225 5,446,615
283.2 5,446,616
674 5,446,617
683 5,446,618
695 5,446,619
704 5,446,620
729 5,446,621
737 5,446,622
760 5,446,623
761 5,446,625
774 5,446,624
785 5,446,626
CLASS 362
11 5,446,627
32 5,446,628
34 5,446,629
66 5,446,630
5,446,631
89 5,446,632
118 5,446,633
147 5,446,634
259 5,446,635
294 5,446,636
321 5,446,637
341 5,446,638
350 5,446,639
407 5,446,640
CLASS 363
17 5,446,641
40 5,446,642
5,446,643
62 5,446,644
71 5,446,645
89 5,446,646
5,446,647
CLASS 364
143 5,446,648
167.01 5,446,649
401 5,446,653
422 5,446,654
424.01 5,446,655
5,446,658
424.02 5,446,656
424.03 5,446,659
424.05 5,446,657
5,446,660
5,446,661
5,446,662
5,446,663

109 5,446,755
CLASS 376
43 5,445,453
CLASS 395
200 5,446,756
202 5,446,769
219 5,446,770
224 5,446,771
239 5,446,757
257 5,446,772
259 5,446,758
267 5,446,759
295 5,446,760
317 5,446,761
324 5,446,762
340 5,446,763
354 5,446,764
359 5,446,765
373 5,446,766
376 5,446,767
377 5,446,768
CLASS 376
170 5,446,773
345 5,446,774
CLASS 377
24.2 5,446,775
CLASS 378
4 5,446,776
45 5,446,777
125 5,446,778
182 5,446,779
204 5,446,780
CLASS 379
6 5,446,781
88 5,446,782
59 5,446,783
102 5,446,784
142 5,446,785
377 5,446,786
410 5,446,787
430 5,446,788
433 5,446,789
CLASS 380
13 5,446,795
24 5,446,796
CLASS 381
71 5,446,790
118 5,446,791
160 5,446,792
188 5,446,793
192 5,446,797
CLASS 382
128 5,446,800
132 5,446,799
141 5,446,801
154 5,446,798
170 5,446,802
240 5,446,806
290 5,446,803
298 5,446,804
CLASS 383
107 5,445,454
CLASS 384
45 5,445,455
126 5,445,456
277 5,445,457
CLASS 385
11 5,446,807
13 5,446,808
17 5,446,809
22 5,446,810
23 5,446,811
24 5,446,812
31 5,446,813
5,446,814
5,446,815
5,446,816
72 5,446,817
78 5,446,818
80 5,446,819
123 5,446,820
128 5,446,821
135 5,446,822
5,446,823
CLASS 393
416 5,446,824
5,446,825
CLASS 395
3 5,446,826
5,446,827
5,446,828
24 5,446,829
51 5,446,830
50 5,446,754

113 5,446,832
123 5,446,833
127 5,446,834
133 5,446,835
141 5,446,836
145 5,446,837
161 5,446,838
163 5,446,839
166 5,446,840
180 5,446,871
5,446,872
5,446,873
5,446,877
5,446,878
5,446,879
184.01 5,446,876
200 5,446,861
200.01 5,446,575
5,446,842
250 5,446,843
5,446,844
5,446,845
5,446,846
280 5,446,847
5,446,848
375 5,446,849
5,446,850
5,446,851
5,446,852
401 5,446,854
5,446,855
5,446,856
410 5,446,853
427 5,446,857
5,446,858
500 5,446,859
5,446,860
5,446,861
5,446,862
5,446,863
5,446,864
500 5,446,865
5,446,866
5,446,868
5,446,869
5,446,870
550 5,446,867
575 5,446,874
5,446,875
600 5,446,480
5,446,881
5,446,882
5,446,883
5,446,884
5,446,885
5,446,886
5,446,887
5,446,888
700 5,446,898
5,446,899
5,446,900
5,446,901
5,446,902
728 5,446,903
750 5,446,904
5,446,905
5,446,906
800 5,446,908
5,446,909
5,446,910
5,446,911
5,446,912
5,446,913
5,446,914
5,446,915
5,446,916
5,446,917
CLASS 400
55 5,445,458
76 5,445,459
120.16 5,445,460
240 5,445,463
249 5,445,464
322 5,445,461
CLASS 401
132 5,445,462
175 5,445,465
199 5,445,466
CLASS 403
57 5,445,467
73 5,445,468
CLASS 403
30 5,445,469

79 5,445,470
203 5,445,913
220 5,445,471
348 5,445,472

CLASS 404

75 5,445,473

CLASS 405

128 5,445,474
186 5,445,475
224 5,445,476
259.1 5,445,477

CLASS 408

1 R 5,445,478
16 5,445,479
87 5,445,480

CLASS 409

140 5,445,481

CLASS 410

115 5,445,482

CLASS 411

181 5,445,483

CLASS 414

217 5,445,484
280 5,445,485
416 5,445,486
458 5,445,489
843 5,445,487
546 5,445,488
607 5,445,490
786 5,445,491
5,445,492
791.6 5,445,493

CLASS 415

107 5,445,494
177 5,445,495
208.3 5,445,496

CLASS 416

131 5,445,497
191 5,445,498
220 WR 5,445,499

CLASS 417

54 5,445,500
133 5,445,501
203 5,445,502
360 5,445,503
368 5,445,504
374 5,445,505
477.2 5,445,506

CLASS 418

55.1 5,445,507

CLASS 419

2 5,445,786
38 5,445,787
42 5,445,788
44 5,445,790
52 5,445,789

CLASS 420

514 5,445,791

CLASS 422

78 5,445,792
5,445,793
63 5,445,794
86 5,445,795
98 5,445,796
100 5,445,797
111 5,445,798
146 5,445,799
186.3 5,445,800
197 5,445,801
302 5,445,802

CLASS 423

339 5,445,804
422 5,445,805
598 5,445,806
625' 5,445,807
629 5,445,808
657 5,445,803

CLASS 424

1.81 5,445,809
9.4 5,445,810
5,445,811
5,445,812
9.51 5,445,813
52 5,445,814
59 5,445,815
62 5,445,816
93.1 5,445,817
184.1 5,445,818
194.1 5,445,817
237.1 5,445,820
821 5,445,821
5,445,822
5,445,823
448 5,445,825
451 5,445,826
466 5,445,827
476 5,445,828
480 5,445,829
484 5,445,830
489 5,445,831
491 5,445,832
520 5,445,824
551 5,445,833

CLASS 425

28.1 5,445,508
72.2 5,445,509
182 5,445,510
183 5,445,511
193 5,445,512
200 5,445,513
255 5,445,514
526 5,445,515

CLASS 426

3 5,445,834
9 5,445,835
52 5,445,836
74 5,445,837
129 5,445,838
270 5,445,839
297 5,445,840
312 5,445,841
340 5,445,842
548 5,445,843
580 5,445,844
582 5,445,845

CLASS 427

65 5,445,846
74 5,445,847
141 5,445,848
215 5,445,849
407.1 5,445,850
450 5,445,851
474 5,445,852

CLASS 428

1 5,445,854
35.9 5,445,856
84.4 5,445,853
85.1 5,445,855
89 5,445,857
71 5,445,858
76 5,445,859
87 5,445,860
116 5,445,861
148 5,445,862
156 5,445,863
192 5,445,864
5,445,865
195 5,445,866
5,445,867
206 5,445,868
209 5,445,869
214 5,445,870
215 5,445,871
5,445,872
220 5,445,873
228 5,445,875
252 5,445,874
283 5,445,876
5,445,877
288 5,445,878
304.4 5,445,879
323 5,445,880
328 5,445,881
329 5,445,882
355 5,445,883
370 5,445,884
403 5,445,886
408 5,445,887
411.1 5,445,888
413 5,445,889
431 5,445,890
450 5,445,891
469 5,445,892
500 5,445,893
557 5,445,894
567 5,445,895
647 5,445,896
688 5,445,897
690 5,445,898
5,445,899

CLASS 429

1 5,445,900
27 5,445,901
30 5,445,902
33 5,445,903
34 5,445,904
105 5,445,905
162 5,445,906
178 5,445,907
229 5,445,908

CLASS 430

58 5,445,909
106.6 5,445,910
115 5,445,911
159 5,445,912
204 5,445,914
5,445,915
270 5,445,916
5,445,917
285 5,445,918
287 5,445,919
311 5,445,920
5,445,921
314 5,445,922
340 5,445,923
363 5,445,924
393 5,445,925
399 5,445,926
502 5,445,927
508 5,445,928
511 5,445,929
588 5,445,930
627 5,445,931

CLASS 431

8 5,445,516
18 5,445,517
129 5,445,993
153 5,445,518
286 5,445,519
321 5,445,520

CLASS 432

5 5,445,521
156 5,445,522

CLASS 433

90 5,445,523

CLASS 434

153 5,445,524

CLASS 435

5 5,445,932
6 5,445,933
5,445,934
5,445,935
5,445,936
5,445,937
5,445,941
7.23 5,445,938
7.24 5,445,939
5,445,940
18 5,445,942
26 5,445,943
28 5,445,944
29 5,445,945
34 5,445,946
69.1 5,445,947
69.7 5,445,948
71.1 5,445,949
99 5,445,950
100 5,445,951
121 5,445,952
172.3 5,445,953
180 5,445,955
195 5,445,956
200 5,445,957
214 5,445,958
228 5,445,959
240.27 5,445,960
240.5 5,445,961
252.1 5,445,962
252.33 5,445,954
280 5,445,963

CLASS 436

60 5,445,964
81 5,445,965
139 5,445,966
164 5,445,967
510 5,445,968
526 5,445,969
5,445,970
5,445,971
544 5,445,972

CLASS 437

5 5,445,973
6 5,445,974
10 5,445,975
31 5,445,976
40 5,445,977
41 5,445,978
5,445,979
43 5,445,980
5,445,981
5,445,982
5,445,983
5,445,984
5,445,987
51 5,445,985
60 5,445,986
67 5,445,989
69 5,445,990
100 5,445,992
183 5,445,994
211 5,445,995
225 5,445,996
228 5,445,997
5,445,998
242 5,445,999

CLASS 439

66 5,445,525
69 5,445,526
78 5,445,527
79 5,445,528
81 5,445,529
157 5,445,530
160 5,445,531
161 5,445,532
184 5,445,533
352 5,445,534
394 5,445,535
419 5,445,536
449 5,445,537
460 5,445,538
532 Re.35,030
535 5,445,539
573 5,445,540
595 5,445,541
609 5,445,542
727 5,445,543
879 5,445,544

CLASS 440

6 5,445,545
17 5,445,549
75 5,445,546
77 5,445,547
89 5,445,548

CLASS 445

24 5,445,550

CLASS 446

209 5,445,551
477 5,445,552

CLASS 451

7 5,445,553
11 5,445,554
28 5,445,555
5,445,556
75 5,445,557
344 5,445,558
388 5,445,559

CLASS 452

39 5,445,560
133 5,445,561
138 5,445,562

CLASS 455

5.1 5,446,918
6.2 5,446,919
8 5,446,924
126 5,446,920
221 5,446,921
277.2 5,446,922
330 5,446,923

CLASS 460

69 5,445,563

CLASS 472

31 5,445,564
57 5,445,565

CLASS 473

62 5,445,566

CLASS 474

78 5,445,567
144 5,445,568
145 5,445,569
213 5,445,570
219 5,445,571

CLASS 475

182 5,445,572
298 5,445,573
346 5,445,574

CLASS 477

99 5,445,575
105 5,445,576
120 5,445,577
142 5,445,578
156 5,445,579
211 5,445,580

CLASS 482

46 5,445,581
48 5,445,582
52 5,445,583
69 5,445,585
82 5,445,586
108 5,445,587

CLASS 492

31 5,445,588
58 5,445,589

CLASS 493

317 5,445,590
439 5,445,591
444 5,445,592

CLASS 494

43 5,445,593

CLASS 501

64 5,446,007
68 5,446,008

CLASS 502

5,446,000
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199 5,446,003
332 5,446,004
433 5,446,005
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208 5,446,010
209 5,446,011
227 5,446,012

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250 5,446,014

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3 5,446,020
9 5,446,021
11 5,446,022
12 5,446,023
5,446,024
18 5,446,025
26 5,446,026
171 5,446,027
279 5,446,028
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361 5,446,031
417 5,446,030
482 5,446,032
486 5,446,033
167 5,446,034
5,446,035
178 5,446,036
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213 5,446,039
222.5 5,446,042
249 5,446,043
252 5,446,044
258 5,446,045
263 5,446,046
280 5,446,047
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CLASS 523

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01 :	5,445,348	5,445,148	5,445,721	5,446,584	5,446,091		5,446,603
	5,445,431	5,445,160	5,445,723	5,446,591	5,446,896		5,446,687
	5,446,090	5,445,176	5,445,770	5,446,594	5,446,900		5,446,828
02 :	5,445,137	5,445,178	5,445,825	5,446,600	5,446,901		5,446,838
04 :	5,444,909	5,445,182	5,445,826	5,446,609	5,446,902	10 :	5,444,898
	5,445,012	5,445,200	5,445,845	5,446,612	5,446,906		5,444,887
	5,445,078	5,445,205	5,445,856	5,446,613	5,446,908		5,446,039
	5,445,295	5,445,230	5,445,889	5,446,616	5,446,910		5,446,118
	5,445,384	5,445,222	5,445,922	5,446,628	5,446,914		5,446,216
	5,445,420	5,445,230	5,445,934	5,446,633	5,446,916		5,446,219
	5,445,557	5,445,273	5,445,944	5,446,637	5,446,919	11 :	5,445,117
	5,445,729	5,445,274	5,445,947	5,446,648	08 : 5,445,377		5,445,858
	5,445,774	5,445,275	5,445,956	5,446,665	5,445,401	12 :	5,444,907
	5,445,775	5,445,298	5,445,974	5,446,676	5,445,416		5,444,913
	5,446,085	5,445,299	5,445,978	5,446,685	5,445,492		5,444,930
	5,446,394	5,445,303	5,446,020	5,446,686	5,445,680		5,444,973
	5,446,423	5,445,304	5,446,024	5,446,691	5,445,952		5,444,983
	5,446,446	5,445,310	5,446,041	5,446,696	5,446,260		5,444,988
	5,446,462	5,445,311	5,446,091	5,446,706	5,446,353		5,445,053
	5,446,547	5,445,319	5,446,120	5,446,723	5,446,357		5,445,064
	5,446,567	5,445,329	5,446,121	5,446,726	5,446,375		5,445,085
	5,446,585	5,445,347	5,446,137	5,446,735	5,446,393		5,445,080
	5,446,710	5,445,349	5,446,145	5,446,736	5,446,457		5,445,088
	5,446,760	5,445,350	5,446,225	5,446,742	5,446,492		5,445,100
	5,446,814	5,445,379	5,446,259	5,446,749	5,446,496		5,445,101
	5,446,872	5,445,393	5,446,273	5,446,756	5,446,741		5,445,102
05 :	5,445,164	5,445,415	5,446,279	5,446,765	5,446,743		5,445,139
	5,445,513	5,445,427	5,446,288	5,446,774	5,446,754		5,445,163
	5,445,808	5,445,433	5,446,295	5,446,791	5,446,853		5,445,174
06 :	5,444,877	5,445,451	5,446,306	5,446,800	Re.35,030		5,445,184
	5,444,878	5,445,474	5,446,323	5,446,806	5,444,896		5,445,207
	5,444,879	5,445,479	5,446,366	5,446,811	5,444,901		5,445,256
	5,444,881	5,445,480	5,446,399	5,446,817	5,445,061		5,445,378
	5,444,882	5,445,482	5,446,408	5,446,818	5,445,074		5,445,380
	5,444,888	5,445,488	5,446,412	5,446,823	5,445,092		5,445,386
	5,444,912	5,445,494	5,446,414	5,446,833	5,445,140		5,445,388
	5,444,921	5,445,525	5,446,436	5,446,834	5,445,215		5,445,437
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	5,445,006	5,445,606	5,446,506	5,446,855	5,445,711		5,445,730
	5,445,013	5,445,614	5,446,529	5,446,860	5,445,898		5,445,754
	5,445,030	5,445,620	5,446,530	5,446,861	5,445,899		5,445,819
	5,445,058	5,445,621	5,446,533	5,446,866	5,445,945		5,445,835
	5,445,063	5,445,622	5,446,534	5,446,870	5,446,047		5,446,046
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